JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS Vol. 58, No. 7, Nov. 2023, pp. 2852–2889

doi:10.1017/S002210902200148X

Investor Behavior at the 52-Week High

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Abstract

This study uncovers how household investors intensify the effect of the 52-week high (52WH): increased volume and momentum-like returns at the 52WH price. Using daily household and institutional trading data, we find that households sharply increase their selling, particularly with limit orders at the 52WH price. This behavior is indicative of anchoring, as it is robust to past returns and intensified by proximity, market uncertainty, and salience of the 52WH. This uninformed limit order selling at and prior to the 52WH leads to a doubling of unconditional 52WH anomaly returns. Post-event returns benefit institutions, which act as counterparties.

I. Introduction

The 52-week high (52WH) price (the highest price at which a stock has traded over the previous 365 days) is one of the key pieces of information communicated by the financial press. Perhaps the most salient trading cue for an individual, the 52WH price can be found on the front page of a Google search. Prior research finds increased trading volume near the 52WH (Huddart, Lang, and Yetman (2009)), as well as subsequent price continuation (George and Hwang (2004)). We refer to this phenomenon as the 52WH effect. Despite the 52WH effect being robust, the underlying mechanism is not yet known.

There are several proposed causes of the 52WH effect, which stem primarily from individual investor behavior. The key potential explanations are related to the disposition effect, anchoring bias, and expectational errors. First, stocks near the 52WH may carry high levels of capital gain overhang (Grinblatt and Han (2005)),

We thank the anonymous referee, Henk Berkman, Justin Birru, Barbara Bliss, Jennifer Conrad (the editor), Jared DeLisle, Ruchith Dissanayake, Mark Grinblatt, David Hunter, Petko Kalev, Markku Kaustia, Andrew Urquhart, and Mitch Warachka for their valuable feedback that shaped this article. We also wish to thank the seminar participants at the 2017 Australasian Finance and Banking Conference, the 2018 Financial Markets and Corporate Governance Conference, the 2018 University of Melbourne seminar series, the 2018 University of Queensland seminar series, the 2018 European Financial Management Association annual meeting, the 2018 Financial Management Association annual meeting, the 2018 Financial Research Network annual meeting, and the 2019 American Finance Association annual meeting for their comments.

and thus, as stocks approach this high and accumulate gains, they induce selling behavior among prospect theory (PT)/disposition effect investors (An (2016), Wang, Yan, and Yu (2017)). Such investors are more likely to sell near the 52WH as the stock is, on aggregate, in the domain of gains (Shefrin and Statman (1985)).

Second, the day of the 52WH may act as a salient attention-grabbing anchor (Aragon and Dieckmann (2011), Yuan (2015)). For example, Huddart et al. (2009) find that trading volume rises sharply when a stock's price passes its 52WH price threshold. This effect is amplified for smaller stocks, those with more valuation uncertainty, and those disproportionately held by individuals.[1] As the 52WH is widely reported by news outlets, websites, and brokers, it is a prominent anchor to which households can refer. Similar to past returns (Barber and Odean (2007)), the 52WH can be observed by individuals seeking to sell their holdings.

Third, errors in return expectations may be amplified at the 52WH. In accordance with this aspect, Birru (2015) uncovers that the return forecasts of both analysts and professional investors are driven down for stocks near the 52WH, as evidenced by the lowering of analyst price targets and the increase in earnings surprises as the 52WH approaches. Thus, investors may prefer to sell stocks near the 52WH, as they believe that future returns are likely to be lower based on erroneous analyst reports and their own lowered skewness expectations (Blau, DeLisle, and Whitby (2020)). Given the previous factors, there is ample evidence that household investors play a key role in the 52WH effect.

In this article, we uncover how the preference for individual investors to anchor to the 52WH with limit order selling contributes to and intensifies the 52WH effect (volume spikes and post-event return predictability). To investigate these phenomena, we use investor-account-level data on all trades from the clearinghouse of the NASDAQ Helsinki exchange. This data set allows us to classify traders (institutions or individuals) and executed order types (limit or market orders)[2] at and around the 52WH price. Therefore, we can see which investor class is demanding (via a market order) or supplying liquidity (via a limit order) with the corresponding trade price and quantity. Our data offer significant advantages over other available data sets from the U.S. market, which are comparatively less comprehensive/granular, include only a subsample of the market (Odean (1998)), aggregate the data at the weekly level (Kaniel, Saar, and Titman (2008)) or use trade size to estimate investor identity (Hvidkjaer (2008)).

Our results shed light on the mechanism through which household anchoring, the disposition effect, and expectational errors drive the 52WH effect. We highlight how institutional investors directly benefit from the willingness of individuals to anchor limit order sells to the 52WH.

First, we document that the 52WH acts as a significant anchor to individual investors; as stock prices approach the 52WH, we see an exponential increase in

[1]Tversky and Kahneman (1974) note that individuals are more likely to rely on heuristics, including anchors, when problems are uncertain, while Daniel, Hirshleifer, and Subrahmanyam (1998) note that behavioral biases are amplified in times of volatility. Peng and Xiong (2006) suggest that due to limited attention, investors prioritize certain anchors and attention-grabbing events over others.

[2]Similar data are used in other studies to investigate the trading behavior of individual investors solely (Grinblatt and Keloharju (2001), Linnainmaa (2010)), and when trading with institutions (Stoffman (2014)).

household selling. On an average day, the trade imbalance between households and institutions is 0% (neither group is a net buyer or seller). However, for stocks in the immediate vicinity of the 52WH, we observe a monotonic increase in selling from households to institutions. A stock that opens the day within 3% of the 52WH exhibits a net trade imbalance of −11%. In other words, for every 100 trades between households and institutions when the stock is within 3% of the 52WH, households are the selling party on 56 occasions. When the stock opens at the 52WH (100% of the 52WH price), the net trade imbalance shifts to −29% (i.e., households sell in approximately 65 of every 100 trades). We argue that the equity volume spikes identified by Huddart et al. (2009) represent the large-scale transfer of ownership from households to institutions.

Second, we find a sharp increase in the use of limit orders by households when selling near the 52WH. Conditional on selling, household limit order usage rises from 50% of all household orders when prices are at 97% of the 52WH to 65% of household orders when at the 52WH price, compared to a baseline of 47% of household orders on non-52WH days. Thus, the 52WH results in an abnormal increase in liquidity provision by households, which supports the finding that uninformed investors prefer to place limit orders when selling (Kaniel and Liu (2006)), and their tendency to cluster limit orders around attention-grabbing or novel prices (Bhattacharya, Holden, and Jacobsen (2012)). Our result stands in contrast to those of Bian, Chan, Shi, and Zhou (2018), who observed that individuals increase market order usage (prefer immediacy) as prices increase. Moreover, we corroborate the findings of Linnainmaa (2010) and Kelley and Tetlock (2013), who document that individuals tend to place latent, unsupervised limit orders at prices that they plan to trade a stock at in the future, which, in this case, offers liquidity to institutional investors.

Stoffman (2014) notes that when institutions and individuals engage in trade with each other, prices move and individuals tend to be on the losing side. Consistent with this finding, Fong, Gallagher, and Lee (2014) identify that orders submitted through discount brokerages (presumably, those of individuals) are less informative than those submitted through full-service brokers. As such, we argue that household tendencies to use limit orders when selling, exacerbated at the 52WH, contribute to the habitual underperformance of individual investors (Barber, Lee, Liu, and Odean (2008)).

Third, we find that household selling and limit order use is exacerbated when the 52WH is a more prominent trading cue. For example, when the stock is at a "new" 52WH (i.e., has reached the 52WH for the first time in 7 or more days), selling by households accounts for close to 72% of the net daily trades of households, and limit orders are employed in 65% of their sales. This result is intensified by but not fully explained as profit taking by individuals caused by greater capital gain overhang (Grinblatt and Han (2005)) in new 52WH stocks. Instead, the result reveals how the newness and salience of the 52WH leads to greater anchoring behavior by households. The 52WH is also likely to be a more salient anchor in periods of market-wide uncertainty (Kumar (2009)). While households exhibit increased buying in the cross section of stocks during periods of high uncertainty (which we measure using the top tercile of EuroVIX), a stock being at the 52WH significantly increases household limit order selling. At the 52WH, households use

11% more limit orders to sell during periods of high uncertainty compared to during periods of low uncertainty. The increased household limit order selling arises despite liquidity becoming more expensive (due to increased spreads and adverse selection risks) during periods of high uncertainty.

To remedy the concern that the day of the 52WH is simply a point of high prices or past gains, rather than a unique event, we undertake a 15-day event study centered on the 52WH day. We show that the 52WH day is the focal point of high household selling and limit order execution. We observe a V-shaped pattern in trade imbalance and limit order sales surrounding the 52WH day, after which household behavior returns to pre-52WH day levels; these results are robust to past momentum and stock-specific factors. We repeat the event study for the days in which the stock price reaches the respective 52WH quartile points (0.25, 0.5, 0.75, and 1 (i.e., the 52WH)) to test if investors undertake similar anchoring behavior at other values along the 52WH range. We detect no evidence of anchoring outside the 52WH price, supporting its uniqueness to individual investors. In addition, we find that the household limit order selling is not driven solely by past returns or capital gain overhang (newness) and that households are exponentially more sensitive to price when it is above 99% of the 52WH price relative to those prices below it (95%–98% of the 52WH).

Finally, we uncover that limit order selling by individuals significantly contributes to abnormal return continuation following the 52WH. In addition to the 52WH return predicted by George and Hwang (2004), we find that stocks in the highest tercile of limit order selling at the 52WH day return an additional 1.1% over the subsequent 90 days, relative to the unconditional 52WH, increasing to 1.7% at the 180-day horizon. The post-52WH return is further driven by stocks with high (top tercile) levels of household limit order selling in the 5 days leading up to the 52WH day. Furthermore, the results are robust to the effect of small stocks and stocks with high idiosyncratic volatility at the 52WH. Thus, stocks that are heavily sold by households, with limit orders at and prior to the 52WH day, generate returns of more than double than the 52WH unconditionally. We find these effects when looking at both raw return (RT) and cumulative abnormal return (CAR) out to 180 days.

We argue that the post-52WH price drift is partly driven by the slower movement of prices toward their fundamental value due to noninformational limit order selling by households (Grinblatt and Han (2005)). Stocks with high levels of household limit order selling experience a temporary reduction in price prior to the 52WH, which is consistent with compensation for liquidity provision (Kaniel et al. (2008)). However, the positive abnormal returns to such stocks post-52WH far exceed this temporary decline and do not revert at the 6-month horizon, which aligns with Barrot, Kaniel, and Sraer (2016), who show that households do not reap the benefits from liquidity provision. Overall, there is an increase in the bid–ask spread for stocks at the 52WH. However, the small contraction in the bid–ask spread on the day of the 52WH (and ensuing expansion) does not meaningfully contribute to post-52WH returns, which we attribute to a temporary dampening of information influenced by household limit order selling rather than a liquidity premium (Pastor and Stambaugh (2003)). The future returns that we identify are capitalized on by institutional investors, who benefit from the momentum-like return continuation.

In summary, we contribute to the literature by identifying a significant contributor to the 52WH effect (volume spikes and post-event returns): the disposition effect, expectational errors, and anchoring behavior of individual investors. The preference for households to use limit orders to sell, as identified in prior literature, is sharply increased at the 52WH. Accordingly, stocks with high levels of limit order selling by households at the 52WH achieve abnormally positive post-event returns for institutional investors. Therefore, this article uncovers another source of the poor performance of individual investors (Barber and Odean (2000)).

The remainder of this article proceeds as follows: Section II introduces the data and the method used to identify the 52WH and measure investor behavior. Section III reports the key findings and discusses their significance in relation to the literature. Finally, Section IV presents a summary of the results and offers an outline for future research.

II. Data and Metrics

A. Data Sources

To explore how households trade around the 52WH, this study investigates the behavior of individual investors on the NASDAQ Helsinki. The study combines 2 data sets: investor-level trade data from Euroclear Finland and stock-level data from the Thomson Reuters Datastream database and VSTOXX. First, the investor behavior data are acquired from Euroclear Finland.[3] This data set contains the official records of trades, including price, date/time, quantity, and identifiers that designate trader group identity (households, financial institutions, nonfinancial corporations, government agencies, nonprofit institutions, and foreigners). We remove government agencies, nonprofit institutions and foreigners, leaving the data set containing only households and institutional investors. The data include the raw intraday trades from Jan. 1, 2000 to Dec. 31, 2009,[4] on the NASDAQ Helsinki. Second, we obtain the end of day price, volume, and share characteristics data as well as the intraday trade and quote data from the Thomson Reuters Datastream database. We acquire the VSTOXX European volatility index (VIX) values from VSTOXX for the sample period.

The aim of the study is to identify the trading and limit order usage between households and institutions, along the lines of Linnainmaa (2010) and Stoffman (2014). The first step is to identify the counterparty to each household trade. Every trade includes a record of the buying and selling parties of the transaction. For example, if household A sells 100 units of stock Z at a particular price, then a corresponding observation exists in which institution B buys 100 units of stock Z for the same price. For partial execution, we separate the trade into the number of

[3]Euroclear is responsible for the clearing and settlement of all trades within Finland. Finland has a direct holding system in which all holdings are registered with Euroclear, and therefore, the data are highly accurate and reflective of the entire market. See Stoffman (2014) for a more comprehensive discussion of the data.

[4]The sample ends in 2009, as Euroclear no longer provides data on intraday trading between institutions but rather aggregates the trades due to netted clearing at day's end. Thus, after 2010, we are unable to distinguish between group trading statistics with the same accuracy.

units executed with each counterparty. Following the classification of both counterparties (i.e., household buyer and institutional seller) to a trade, we keep only the buys and sells of households when the counterparties are institutions, which allows us to observe the interaction between investor classes. Within-group trading (i.e., household with household) is removed from the main sample, as it is not possible to extract trade direction or trade type from these observations. Moreover, within-group trading is excluded, as Stoffman (2014) finds that is less likely to affect prices than is between group trading. Using this approach, we are able to measure the quantity and direction of household trading with institutions each day, allowing us to calculate the trade imbalance metric.

To estimate the extent of household limit order usage, we merge the Euroclear Plc Ltd.[5] investor-level trade data (also known as the Finnish/Nordic Central Securities Depositor (FCSD/NCSD) data) with the Thomson Reuters Tick History[6] trade and quote data at the millisecond level. These investor-level trade data contains all executed orders including the execution price and volume but does not include unexecuted limit orders. These data unambiguously identify whether the buyer or seller in a trade is a household or an institution. We define trades as a limit or market order by comparing the executed price of a trade with the prevailing bid, ask, and midpoint prices immediately prior to the trade.[7] First, we identify buys (sells) executed at the highest (lowest) bid (ask) as limit orders, whereas buys (sells) executed at the lowest (highest) ask (bid) are classified as market orders. Next, we designate buys (sells) that are executed previously (below) the midpoint to be market orders, with the inverse being limit orders. Using the midpoint to identify limit and market orders reflects the liquidity providing or liquidity taking nature of these trades, respectively.[8] For example, if household investor A sold stock X for €100 to institution B and the prevailing midpoint price for stock X is €99.50, then the executed trade would be classified as a household limit order sale, while the counterparty reported separately in the data would be classified as an institutional market order buy. This method is similar to the approach taken by prior studies (e.g., Stoffman (2014), Fong, Krug, Leung, and Westerholm (2020)) to identify limit and market orders from the same FCSD database. Following the merging of investor trade, trade and quote, and stock-level data, we then calculate trade imbalance, taking rate measures for each investor category and aggregating them at the daily level. This approach is again comparable to that implemented by Stoffman (2014).

The main advantage of the data is that they include all trades rather than a subsample of trades, which is regularly used in investor behavior studies (Barber

[5]These investor-level trade data from Euroclear are the official shareholding registry transactions for all trades of Finnish stocks and are hence reliable. These data are proprietary but available by subscription for future research. For reference, these data are known as Nordic Central Securities Depository (NCSD) in earlier papers.

[6]These data are publicly available through the Eikon platform by Refinitiv Ltd.

[7]All orders on the NASDAQ Helsinki exchange are submitted as limit orders to a limit order book. For simplicity, orders that are immediately executable and are liquidity taking (e.g., buy orders submitted at a price higher than the midpoint) are defined by us as "market orders," following Linnainmaa (2010).

[8]Using the midpoint to identify limit and market orders reflects the liquidity providing or liquidity taking nature of these trades, respectively. Thus, trades that are executed directly at the midpoint are unable to be classified as either market or limit orders. However, we are still able to calculate trade direction/trade imbalance from these midpoint trades, and thus, these observations remain in the sample.

and Odean (2000)). As a result, the data comprise hundreds of thousands of investors, providing far stronger identification of market-wide behavior compared to prior studies. The investors in our sample exhibit disposition effect trading (Grinblatt and Keloharju (2000)) and anchor to their purchase price, as is the case in the U.S. market (Ben-David and Hirshleifer (2012)), among other behavioral factors. Thus, the behavior of the Finnish investors in the sample is generalizable to the behavior of United States and global investors.

B. 52 Week High and Household Trading Metrics

The focus of this study is on both the 52WH ratio and the 52WH day itself. The 52WH ratio is the ratio of the current stock price to the maximum daily closing price over the previous year. A stock's 52WH RATIO is defined as follows:

$$\text{(1)} \qquad \text{52WH\_RATIO}_{i,t} = \frac{\text{PRICE}_{i,t}}{\text{HIGH}_{i,t}},$$

where $\text{PRICE}_{i,t}$ is the stock's price at the close of day t, while $\text{HIGH}_{i,t}$ is the highest daily closing price for stock i over the past year $(t-365, t)$, where t is measured in calendar days. This ratio therefore represents the nearness, in percentage terms, of the stock's current price to its 52WH price. In addition to the 52WH ratio, we examine investor behavior on days in which the stock's price opens at or near the high, which we refer to as the 52WH (or 52WH day).

To measure the rate and direction of trading between households and institutions and to estimate the relative buying of stock i on day t by households when trading with institutions, we use a measure of household trade imbalance (TRADEIMB).

$$\text{(2)} \qquad \text{TRADEIMB}_{i,t} = \sum_{i=1}^{n} \frac{\text{VOL\_BUYS}_{i,t} - \text{VOL\_SELLS}_{i,t}}{\text{VOL\_BUYS}_{i,t} + \text{VOL\_SELLS}_{i,t}},$$

where $\text{TRADEIMB}_{i,t}$ is the household's trade imbalance in stock i on day t, $\text{VOL\_BUYS}_{i,t}$ is the volume of buys and $\text{VOL\_SELLS}_{i,t}$ is the volume of sells in stock i on day t by households. Intuitively, this measure offers a daily ratio of the relative direction and intensity of trade in a given stock between households and institutions. The value of $\text{TRADEIMB}_{i,t}$ is bound between -1 and $+1$, where larger positive values indicate a greater share of buying by households relative to institutions. For example, a TRADEIMB of –0.5 corresponds to households selling 3 units of a given stock on a given day for every one they are purchasing. As this includes only between group trading, we do not report the corresponding measure for institutions.

Next, we construct measures of order aggressiveness. As previously mentioned, limit and market orders are identified based on order execution relative to the midpoint of the bid–ask spread. We then utilize the Bloomfield, O'Hara, and Saar (2009) measure, taking rate sells (TRSs), to determine the relative number of market order sells relative to total sell orders by households.

$$\text{(3)} \qquad \text{TRS}_{i,t} = \frac{\text{MARKET\_ORDERSs}_{i,t}}{\text{MARKET\_ORDERS}_{i,t} + \text{LIMIT\_ORDERS}_{i,t}},$$

where $\text{MARKET\_ORDERS}_{i,t}$ is the volume of executed market order sells and $\text{LIMIT\_ORDERS}_{i,t}$ is the volume of executed limit order sells by households for stock i at day t when the counterparties are institutions. The measure $\text{TRS}_{i,t}$ takes a value between 0 and 1, with smaller magnitudes indicating a stronger preference for limit orders when selling. For example, a TRS value of 0.4 means that households are executing 6 limit order sells for every 4 market order sells of a given stock on a given day. We also report BETWEEN_TURNOVER, which is the ratio of household to institutional volume relative to total volume, as well as INSTO_ TURNOVER and HH_TURNOVER, which are the ratios of institution to institution and household to household volume relative to total volume within the sample, respectively. A full description of the variables is provided in the Appendix.

III. Results

To observe the effect of the 52WH on household trading, it is necessary to first establish benchmarks for the behavior metrics across the sample, which we report in Table 1. We see that in the sample, the TRADEIMB between groups is near 0; thus, on any given day, households in aggregate are neither net buyers nor sellers of institutions. Next, we observe the household tendency to use limit orders to sell, as measured by TRS. The mean TRS value is 0.523, which, as it is greater than 0.50, reveals that households are slightly more likely to use market order when selling to institutions. The proportion of volume from between group trades (BETWEEN_TURNOVER) is the largest component in the sample at 54%. Next, INSTO_TURNOVER (institutional trades with institutions) accounts for just 14% of turnover, while HH_TURNOVER (household trades with households) accounts for approximately 30% of the sample volume.

A. 52-Week High Ratio

Our first analysis is to determine the general effect of the 52WH price on household trading behavior. To do so, we sort stocks into deciles based on their 52WH ratio. Table 2 and Figure 1 report the metrics for household trading (TRADEIMB and TRS) of stocks sorted into deciles by their nearness to the 52WH.

TABLE 1

Descriptive Statistics for Investor Trade Behavior

Table 1 reports the descriptive statistics for the investor trading metrics. For each daily observation, the mean, standard deviation, 25th percentile (25th Pctl), median, and 75th percentile (75th Pctl) are reported. TRADEIMB is the daily ratio of household net buying volume as a fraction of total household volume when trading with institutional investors (INSTO). TRS is the ratio of household market order usage as a fraction of total household selling when selling to institutions. BETWEEN_TURNOVER is the ratio of household to institutional volume relative to the sample volume. INSTO_TURNOVER is the ratio of institution to institution volume relative to the sample volume. HH_TURNOVER is the ratio of household to household volume relative to the sample volume. The sample covers the period from Jan. 2000 to Dec. 2009.

	Mean	Std. Dev.	25th Pctl	Median	75th Pctl
TRADEIMB	0.006	0.740	−0.742	0.000	0.747
TRS	0.523	0.363	0.194	0.525	0.897
BETWEEN_TURNOVER	0.543	0.364	0.185	0.588	0.907
INSTO_TURNOVER	0.142	0.293	0.000	0.000	0.030
HH_TURNOVER	0.315	0.353	0.017	0.150	0.551

TABLE 2

Household Trade Behavior by 52-Week High Price Deciles

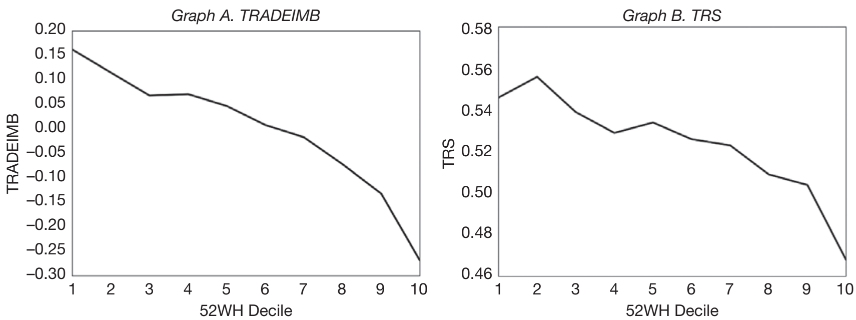
Table 2 presents the household between-group trading on a day stock basis by 52-week high (52WH) deciles (Near − Far). Panel A reports the mean daily household TRADEIMB and TRS sorted by the 52WH decile over the sample period of 2000 to 2009. Panel B reports the difference between the Near minus Far decile and the Near minus "9" decile for TRADEIMB and TRS. The sample covers Jan. 2000 to Dec. 2009. The *p*-values are presented in parentheses, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

52WH Decile	TRADEIMB	TRS
Panel A. Household Behavior Metrics by 52WH Decile		
1 (Far)	0.163	0.546
2	0.116	0.555
3	0.076	0.537
4	0.069	0.532
5	0.051	0.533
6	0.004	0.532
7	−0.022	0.527
8	−0.083	0.516
9	−0.126	0.494
10 (Near)	−0.248	0.462
Panel B. Mean Difference in Household Behavior		
Near − Far	−0.411***	0.084***
	(0.000)	(0.000)
Near − 9	−0.122***	0.032***
	(0.000)	(0.000)

FIGURE 1

Household Behavior by 52-Week High Decile Rank

Figure 1 plots the household investor trading behavior when trading with institutions, sorted into deciles, based on the stock's 52WH ratio from 1 (furthest from the 52WH price) to 10 (nearest to the 52WH price). Graph A plots the average TRADEIMB value within each decile, and Graph B plots the average TRS value within each decile.



In Panel A of Table 2, we observe that stocks closer to the 52WH (a 52WH decile greater than 6) begin to exhibit a negative trade imbalance (i.e., net selling). In addition, stocks in a 52WH decile greater than 8 begin to have TRS values of less than 0.5, showing that households are more likely to use limit orders when selling. The stocks in decile 10 (closest to the 52WH) exhibit a trade imbalance of −0.248, which indicates that households are the selling party in 62.5 of every 100 trades between households and institutions. When selling in decile 10, households use market orders on 46.2% of occasions (or use limit orders on 53.8% of occasions).

Panel B of Table 2 reports that the "Near" 52WH decile is significant at 0.411 lower than is the "Far" 52WH decile in TRADEIMB, indicating substantially higher selling by households to institutions. This finding supports the expectation of Grinblatt and Han (2005), whereby the likelihood of households selling a stock increases as it begins to accumulate capital gains by increasing in price. The difference in the top 2 deciles (Near−9) is a significant 0.122 higher in household net selling, supporting the notion that proximity to the 52WH exacerbates household willingness to sell to institutions. In Panel B of Table 2, we also find a significant drop in the TRS value for both the Near−Far deciles, with a 0.084 decrease, and the Near−9 deciles, with a 0.032 decrease. As the household limit order selling is relatively stable across the 52WH deciles up until decile 8, the findings provide preliminary support for the expectation that households use limit orders to anchor their selling specifically to the 52WH price. This finding stands in contrast to the results of Bian et al. (2018), who suggest that households increase their use of market orders as a stock's price rises.

B. 52-Week High Day

Having observed that individual investors are sensitive to different levels of the 52WH ratio, we next explore investor behavior on the days in which a stock opens at or within specific percentage ranges near the 52WH price. If the 52WH is an important cue for individual investor decision making, then we expect its anchoring influence to increase as the exact 52WH price is approached. In Table 3, we report the investor behavior metrics (TRADEIMB and TRS) and mean-comparison tests, by 52WH percentiles, for stocks above 94% of the 52WH. In Panel A of Table 3, we report TRADEIMB for increasing thresholds of the 52WH ratio, with the rows of the panel indicating stock-day combinations of a 1% band. For instance, the row labeled [0.95, 0.96) highlights stocks trading between 95% and 96% of their 52WH price, exhibiting a mean trade imbalance of −0.079. As the proximity to the 52WH increases, the rate of household net buying declines monotonically, ultimately reaching −0.293 for stocks at 100% of the 52WH. The clear pattern observed in trade imbalance as the thresholds increase confirms the influence of the anchor (the 52WH price).

To test the significance of the difference in the TRADEIMB metrics by percentage bands, Panel B of Table 3 reports the results of pairwise comparisons of household trade imbalance by 52WH ratio bands, which allows us to determine, for example, whether the net buying for stocks with a 52WH ratio between 0.96 and 0.97 (estimated as −0.117) are significantly different from those at other percentage bands of the 52WH ratio. The results indicate that the trade imbalance observed at the thresholds of [0.99, 1.00) and [1.00] are significantly less relative to the thresholds of [0.98, 0.99) and lower. This exponential pattern above 99% of the 52WH suggests that proximity to the 52WH provides an additional impetus for investors to sell in excess of high nominal prices.

Continuing the investigation into the effect of the 52WH on household trading, in Panel C of Table 3, we report the average values of TRS by percentage bands of the 52WH price. For prices below a 52WH ratio of 0.98, individuals exhibit a slight preference toward using market orders to sell (as TRS values are greater than 0.5). A dramatic decline in the use of market orders to sell is observed for stocks trading above a 52WH ratio of 0.98, at which point TRS drops below 0.458. Panel D of

TABLE 3
Household Trade Behavior by 52-Week High Ratio Percentiles

Table 3 presents the results for investor behavior metrics by 52WH ratio percentile. Panel A reports the mean and number of observations (No. of obs.) of the household TRADEIMB by 52WH ratio percentile. Panel B reports the mean difference TRADEIMB between the 52WH ratio percentiles. Panel C reports the mean and number of observations of the household TRS by 52WH ratio percentile. Panel D reports the mean difference TRS between the 52WH ratio percentiles. The sample covers Jan. 2000 to Dec. 2009. The *p*-values are presented in parentheses, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. TRADEIMB by 52WH Ratio

52WH Ratio	Mean	No. of obs.
<0.94	0.051	156,215
[0.94, 0.95)	−0.101	6,353
[0.95, 0.96)	−0.079	6,659
[0.96, 0.97)	−0.117	7,144
[0.97, 0.98)	−0.111	7,518
[0.98, 0.99)	−0.164	7,722
[0.99, 1.00)	−0.262	6,431
1.00	−0.293	3,111

Panel B. TRADEIMB Mean Difference by 52WH Ratio

	<0.94	[0.94, 0.95)	[0.95, 0.96)	[0.96, 0.97)	[0.97, 0.98)	[0.98, 0.99)	[0.99, 1.00)
[0.94, 0.95)	−0.152***						
	(0.000)						
[0.95, 0.96)	−0.130***	0.022					
	(0.000)	(0.180)					
[0.96, 0.97)	−0.168***	−0.016	−0.038*				
	(0.000)	(0.285)	(0.070)				
[0.97, 0.98)	−0.161***	−0.008	−0.031	0.007			
	(0.000)	(0.512)	(0.354)	(0.565)			
[0.98, 0.99)	−0.215***	−0.063***	−0.085***	−0.047***	−0.054***		
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)		
[0.99, 1.00)	−0.312***	−0.160***	−0.183***	−0.145***	−0.152***	−0.097***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
1.00	−0.343***	−0.191***	−0.213***	−0.176***	−0.183***	−0.128***	−0.031
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.361)

Panel C. TRS by 52WH Ratio

52WH Ratio	Mean	No. of obs.
<0.95	0.532	127,985
[0.94, 0.95)	0.527	5,485
[0.95, 0.96)	0.523	5,766
[0.96, 0.97)	0.512	6,355
[0.97, 0.98)	0.505	6,678
[0.98, 0.99)	0.486	6,968
[0.99, 1.00)	0.458	5,908
1.00	0.354	2,672

Panel D. TRS Mean Difference by 52WH Ratio

	<0.94	[0.94, 0.95)	[0.95, 0.96)	[0.96, 0.97)	[0.97, 0.98)	[0.98, 0.99)	[0.99, 1.00)
[0.94, 0.95)	−0.005						
	(0.426)						
[0.95, 0.96)	−0.009	−0.005					
	(0.215)	(0.412)					
[0.96, 0.97)	−0.020***	−0.015	−0.011				
	(0.000)	(0.638)	(0.161)				
[0.97, 0.98)	−0.027***	−0.022**	−0.018	−0.007			
	(0.000)	(0.019)	(0.178)	(0.381)			
[0.98, 0.99)	−0.046***	−0.041***	−0.036***	−0.025***	−0.018*		
	(0.000)	(0.000)	(0.000)	(0.001)	(0.089)		
[0.99, 1.00)	−0.074***	−0.070***	−0.065***	−0.054***	−0.047***	−0.029***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
1.00	−0.178***	−0.173***	−0.168***	−0.158***	−0.151***	−0.132***	−0.104***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Table 3 tests the differences between TRS values for the percentage bands of the 52WH ratio. The results show that there is a significantly higher tendency to use limit orders when selling for stocks trading above a 52WH ratio of 0.95 (compared with days when the stock is below this value). The significance of the two bottom-right entries in Panel D of Table 3 (−0.132 and −0.104), as prices move from 52WH ratios of 0.98, to 0.99, and then to 1.00, indicates that there is an exponential pattern to the increasing use of limit orders with proximity to the 52WH. The anchoring effect of the 52WH thus appears to impact not only the decision to sell by individuals but also their order submission strategies.

To better illustrate the effect of the 52WH on household selling, we plot the results of Table 3 in Figure 2. The raw values corresponding to the Panels A and B of Table 3 are shown graphically in Graphs A and B of Figure 2, respectively. The results of the first column of Panels B and D of Table 3, are shown graphically in Graph C of Figure 2. In Graph C of Figure 2, we plot the difference in TRADEIMB and TRS for stocks within 52WH ratio bands in excess of 0.94 (in 1% bands) and those with a 52WH ratio below 0.94 (as reported in the first columns of Panels B and D of Table 3). The concave pattern of TRADEIMB and TRS is apparent as a stock approaches the 52WH and supports the role of the 52WH as an anchor in excess of the disposition effect and capital gain overhang.

C. "New" 52-Week High

We next test whether when the 52WH is more prominent, it is relied on more by households as an anchor (Tversky and Kahneman (1992)). We do this by introducing, similarly to Huddart et al. (2009), a "new" 52WH. We explore the idea of the new 52WH by identifying stocks that are within 1% of (or at) the 52WH price (i.e., [0.99, 1]) and have not been in 1% of the 52WH in the last 7 or 14 calendar days.[9] For example, we recognize NEW7 (NEW14) if a stock opens the day within 1% of the 52WH price and has not been within 1% of the 52WH price within the prior 7 (14) days. This approach allows for a distinction between high-momentum stocks that are continually increasing in price and forming consecutive 52WH prices (as indicated by 52WH excluding NEW, i.e., 52WH_EXNEW) from those that have just broken through and established a new 52WH.

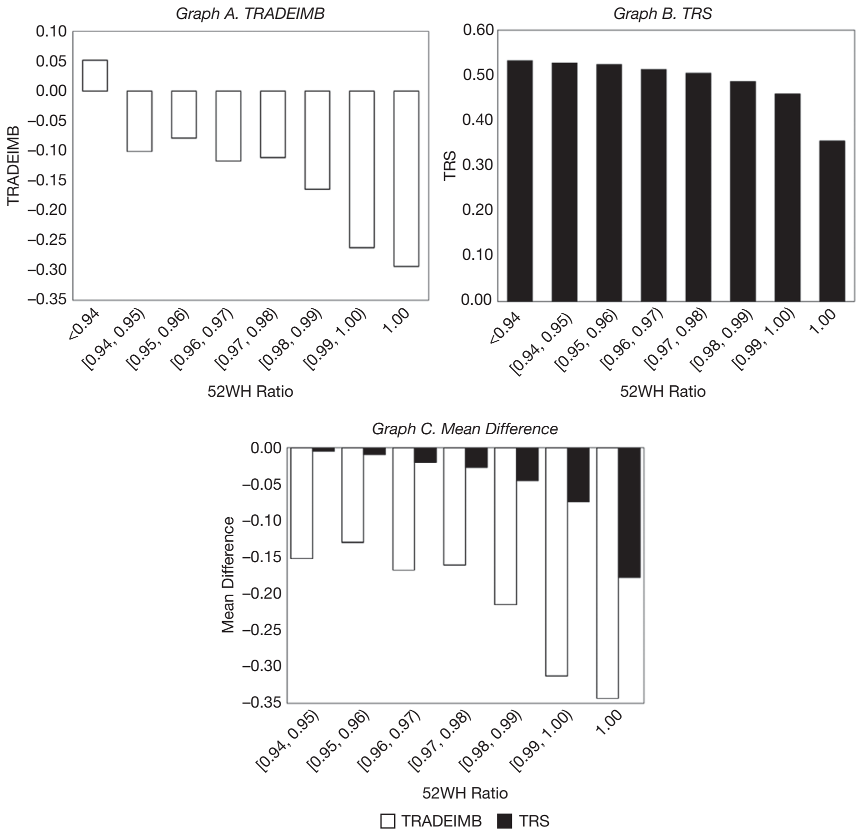
In Table 4, we report the descriptive statistics for TRADEIMB and TRS, and the results of the pairwise comparison tests between NON_52WH days, days at which the stock is within 1% of the 52WH and has been in the prior 7 days (52WH_EXNEW), and the new 52WH specifications (NEW7 and NEW14). In support of our expectation, we see that the trade imbalance is lower for NEW7 (−0.425) and NEW14 (−0.331) relative to 52WH_EXNEW (−0.254). When comparing directly in Panel B of Table 4, within the first column, we see that all specifications of the 52WH day are significant and negative relative to NON_52WH days. NEW7 and NEW14 both exhibit greater magnitudes of household selling (more negative household trade imbalance, −0.171 and −0.077, respectively) than does 52WH_EXNEW.

[9]In later robustness checks, we assess the effect of "newness" on other 52WH ratio percentile bands.

FIGURE 2

Mean Difference in Household Behavior by 52-Week High Ratio Percentile

Figure 2 presents TRADEIMB and TRS values by 52WH ratio percentile. Graph A plots the household TRADEIMB by 52WH ratio. Graph B plots the TRS by 52WH ratio. Graph C plots the TRADEIMB and TRS for stocks by 52WH ratio percentiles relative to the bounded mean (when the 52WH ratio is less than 0.94). Within Graph C, the white columns plot the bounded mean difference in TRADEIMB for the 52WH ratio percentiles relative to the bounded mean. The black columns plot the mean difference TRS for the 52WH ratio percentiles relative to the bounded mean.



We next test the effect of the new 52WH on TRS within Panels C and D of Table 4. We uncover a strong increase in household limit order selling at all specifications of the 52WH relative to NON_52WH days. A stock being at a 52WH, without having breached it in the days prior, increases the tendency for households to use limit orders to sell. For example, for NEW7, market orders account for 35.3% (limit orders account for 64.7%) of household sales compared to non-52WH days, in which market orders account for 52.8% of household sales. In Panel D of Table 4, we observe the marginal effect of newness on the 52WH through pairwise comparison tests. The increase in the proportion of limit orders used when selling is significant for both NEW7 and NEW14, relative to 52WH_EXNEW (TRS values of −0.174 and −0.084, respectively). Thus, the increased salience from a new 52WH (one that has not occurred for a week or more) intensifies household selling, specifically through the use of limit orders.

TABLE 4

Household Trade Behavior on the New 52-Week High Day

Table 4 presents the results for the household trading metrics at the new 52WH. Panel A reports the daily mean and number of observations (No. of obs.) of household TRADEIMB for stocks on NON_52WH day. We identify stocks and report the values for those within 1% of the 52WH (i.e., [0.99, 1]); we then specify whether the stock has not been within the lower bound (0.99) in the last 7 days (NEW7) or 14 days (NEW14) or has been above the lower bound more recently than the last 7 days (52WH_EXNEW). Panel B reports the daily mean difference TRADEIMB by stock across the prior specifications. Panel C reports the daily mean and number of observations of the household TRS for stocks on NON_52WH days and stocks that are at the 52WH_EXNEW, NEW7, and NEW14. Panel D reports the daily mean difference TRS by stock across the previous specifications. The sample covers Jan. 2000 to Dec. 2009. The *p*-values are presented in parentheses, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. TRADEIMB by NEW52WH

	Mean	No. of obs.
NON_52WH	0.019	191,611
52WH_EXNEW	−0.254	7,948
NEW7	−0.425	443
NEW14	−0.331	1,151

Panel B. TRADEIMB Mean Difference by NEW52WH

	NON_52WH	52WH_EXNEW	NEW7
52WH_EXNEW	−0.274***		
	(0.000)		
NEW7	−0.445***	−0.171***	
	(0.000)	(0.000)	
NEW14	−0.351***	−0.077***	0.094
	(0.000)	(0.000)	(0.136)

Panel C. TRS by NEW52WH

	Mean	No. of obs.
NON_52WH	0.528	159,237
52WH_EXNEW	0.439	7,121
NEW7	0.353	415
NEW14	0.366	1,044

Panel D. TRS Mean Difference by NEW52WH

	NON_52WH	52WH_EXNEW	NEW7
52WH_EXNEW	−0.089***		
	(0.000)		
NEW7	−0.174***	−0.084***	
	(0.000)	(0.000)	
NEW14	−0.162***	−0.073***	0.013
	(0.000)	(0.000)	(0.851)

This finding is in line with the result of Huddart et al. (2009), who identify that volume spikes more for new 52WHs than for highs occurring on consecutive days.

D. Volatility at the 52-Week High

When prices are more uncertain, individuals are more likely to rely on cues or signals to make their trading decisions (Tversky and Kahneman (1992), Kumar (2009)). We take the 20-day moving average of the market-wide VIX to determine if general uncertainty marginally affects household trading metrics TRADEIMB and TRS. Taking the entire time period from 2000 to 2009, we sort trading days by the EuroSTOXX VIX into terciles, which we define as LOWVIX, MEDVIX, and HIGHVIX.[10] Table 5 reports the descriptive statistics and pairwise comparisons

[10]We have taken the entire sample period in determining thresholds for the three VIX-related variables. An alternative approach is to find an abnormal VIX relative to a rolling average. Our findings are qualitatively similar using such a procedure.

TABLE 5

Household Behavior at the 52-Week High Day by Market Volatility

Table 5 presents the results for the household behavior metrics by market volatility tercile on the 52WH day. Panel A reports the mean and number of observations (No. of obs.) of household TRADEIMB for stocks on the 52WH ([0.99, 1)) day sorted independently by 20-day lagged EuroSTOXX volatility (VIX) terciles (LOWVIX, MEDVIX, and HIGHVIX). Panel B reports the mean difference TRADEIMB for the prior specifications. Panel C reports the mean and number of observations of the household TRS for stocks on the 52WH day, independently sorted by the lagged 20-day VIX terciles. Panel D reports the mean difference TRS for the prior specifications. The sample covers Jan. 2000 to Dec. 2009. The *p*-values are presented in parentheses, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. TRADEIMB on 52WH by VIX

	Mean	No. of obs.
NON_52WH	0.020	191,531
LOWVIX_52WH	−0.266	5,378
MEDVIX_52WH	−0.275	2,478
HIGHVIX_52WH	−0.286	1,686

Panel B. Mean Difference TRADEIMB on 52WH by VIX

	NON_52WH	LOWVIX_52WH	MEDVIX_52WH
LOWVIX_52WH	−0.286***		
	(0.000)		
MEDVIX_52WH	−0.295***	−0.009	
	(0.000)	(0.455)	
HIGHVIX_52WH	−0.305***	−0.020	−0.011
	(0.000)	(0.156)	(0.358)

Panel C. TRS on 52WH by VIX

	Mean	No. of obs.
NON_52WH	0.528	159,168
LOWVIX_52WH	0.465	4,898
MEDVIX_52WH	0.384	2,192
HIGHVIX_52WH	0.354	1,490

Panel D. Mean Difference TRS on 52WH by VIX

	NON_52WH	LOWVIX_52WH	MEDVIX_52WH
LOWVIX_52WH	−0.063***		
	(0.000)		
MEDVIX_52WH	−0.144***	−0.081***	
	(0.000)	(0.000)	
HIGHVIX_52WH	−0.174***	−0.111***	−0.030*
	(0.000)	(0.000)	(0.084)

for stocks within 1% of the 52WH price, which are then independently sorted into groups based on their VIX terciles. For example, stocks that are at the 52WH during a day, which is in the highest tercile of VIX, are labeled as HIGHVIX 52WH.

In Panels A and B of Table 5, we do not find a significant change in trade imbalance for stocks at the 52WH during periods of HIGHVIX relative to the other 2 periods (LOWVIX and MEDVIX). The 52WH results in significantly lower TRADEIMB across the different levels of market-wide volatility relative to non-52WH days; however, it appears that variations in market-wide uncertainty do not systematically increase the selling behavior of individuals at the 52WH.

We examine TRS conditional on periods of volatility in Panels C and D of Table 5. We see a monotonic decrease in TRS for stocks at the 52WH as volatility increases from the low to high VIX tercile. Market-wide uncertainty thus appears to increase the use of limit orders by households when selling at the 52WH.

The difference in taking rates to sell between low and medium volatility periods is −0.144, with a further −0.030 difference between medium and high volatility periods. Conditional on selling at the 52WH, individuals are much more likely to use limit orders during periods of high uncertainty. Thus, volatility does not spark an increase in general selling, but it does however result in individuals using limit orders to anchor directly to the price. This finding is also of interest because during periods of uncertainty, liquidity provision tends to be more costly due to either increased spreads or higher adverse selection costs (Linnainmaa (2010)). By providing liquidity in an order book during periods of high uncertainty, households are arguably adding a more valuable option to other traders in the market (Nagel (2012)).

Overall, the initial sorts and pairwise comparisons show strong support for our expectation; households sell, with limit orders, as a stock's price approaches and reaches the 52WH. This behavior becomes significantly stronger if the anchor becomes more salient with proximity (nearness to the 52WH), prominence (NEW7 and NEW14) and uncertainty (MEDVIX and HIGHVIX).

E. Investor Behavior Regressions

Next, we conduct a series of regressions of household trade imbalance and abnormal household trade imbalance on variables related to the 52WH, which allows us to examine the influence of the price anchor on household trading decisions. We employ a set of regressions with TRADEIMB from equation (2) and abnormal household trade imbalance (AB_TRADEIMB), which we define as TRADEIMB less the lagged 90-day stock level TRADEIMB, as the dependent variables. The variable AB_TRADEIMB allows us to examine the selling propensity of households relative to the recent stock activity, which may be higher than usual due to recent price increases (Grinblatt and Han (2005)). Our independent variables of interest are 52WHMAX (reflecting the stock being within 1% of the 52WH) and NEW7, alongside HIGHVIX and an interaction between HIGHVIX and 52WHMAX. This test provides further evidence concerning whether selling intensity by households is significantly increased at the 52WH and if this behavior is further enhanced by salience and uncertainty. We include a set of control variables that have been found to influence household selling behavior (Bian et al. (2018)), such as past returns, market capitalization, market- and firm-specific volatility, and stock price.

$$
\begin{aligned}
(4)\qquad \text{TRADE}_{i,t} = {} & \beta_0 + \beta_1 \text{52WHMAX}_{i,t} + \beta_2 \text{NEW7}_{i,t} \\
& + \beta_3 \text{HIGHVIX}_{i,t} + \beta_4 \text{HIGHVIX}_t \times \text{52WHMAX}_{i,t} \\
& + \text{Controls} + \varepsilon_{i,t},
\end{aligned}
$$

where the dependent variable $\text{TRADE}_{i,t}$ is a vector of household trade metrics: $\text{TRADEIMB}_{i,t}$, which is the daily ratio of household net buying with institutional investors in stock i on day t, or $\text{AB\_TRADEIMB}_{i,t}$, as defined above. The independent variables in the regression are as follows: $\text{52WHMAX}_{i,t}$ is an indicator variable that takes a value of 1 if stock i price opens day t within 1% of the 52WH price and 0 otherwise. $\text{NEW7}_{i,t}$ is an indicator variable that takes a value of 1 if stock i price opens day t within 1% of the 52WH price and has not been within 1% of the

52WH in the 7 previous calendar days and 0 otherwise. $HIGHVIX_t$ is an indicator variable that takes a value of 1 if the lagged 20-day average VSTOXX European volatility index (VIX) value is in the highest tercile on day t over the sample and 0 otherwise. The regressions include the following controls: $JTMOMHIGH_{i,t}$ is similar to the momentum measure of Jegadeesh and Titman (1993), in which it is an indicator variable that takes a value of 1 if the lagged 90-day stock return is in the highest tercile on day t and 0 otherwise. $MKTCAP_{i,t}$ is the market capitalization of the stock in 100 million euros. VIX_t is the average value of the VIX for the previous 20 trading days. $PRICE_{i,t}$ is the closing price of stock i on day t. $RISK_{i,t}$ is the lagged 20-day average standard deviation of returns to stock i on day t. The regressions include fixed effects at the stock and year levels, and the standard errors are clustered according to White (1980).

The regression results are presented in Table 6. In model 1, we examine the effect of the 52WHMAX price on TRADEIMB. The coefficient of −0.212 indicates that household selling increases substantially when a stock is at the 52WH. This effect holds after controlling for high momentum stocks (JTMOMHIGH). Thus, household selling at the 52WH is primarily motivated by anchoring to the 52WH price in addition to disposition-effect motivations for investors to realize capital gains. In model 2, we see an intensified impact on household selling when the stock is at a new 52WH. The coefficient for NEW7 of −0.286 is a 0.074 decrease from the unconditional value of 52WHMAX from model 1. Thus, the newness of the 52WH further drives household selling. In model 3, we find that high levels of the volatility index tend to lead to household buying but that this effect is offset when stocks are at the 52WH. Thus, we do not observe increased household selling at the 52WH in periods of high volatility relative to those of lower levels of volatility; however, the typical household purchasing seen during periods of high volatility is quelled when a stock is at the high.

In models 4–5, we employ AB_TRADEIMB as the dependent variable within the regression. We see that the results from models 4–6 are largely consistent with those from models 1–3. For example, in model 4, abnormal household selling increases by 0.131 at the 52WHMAX compared to non-52WH days, thus providing evidence, even when controlling for factors that typically drive household selling, that the 52WH represents a crucial selling cue for households.

To determine if households increase their propensity to use limit orders when selling at the 52WH, we repeat the above regression protocols from equation (3) with TRS and abnormal taking rate sales (AB_TRS) as the dependent variables, where AB_TRS is TRS less the average level of limit order sells in a stock over the preceding 90 days.

$$\text{(5)} \qquad \begin{aligned} \text{LIMIT}_{i,t} = \beta_0 + \beta_1 \text{52WHMAX}_{i,t} + \beta_2 \text{NEW7}_{i,t} \\ + \beta_3 \text{HIGHVIX}_{i,t} + \beta_4 \text{HIGHVIX}_t \times \text{52WHMAX}_{i,t} \\ + \text{Controls} + \varepsilon_{i,t}, \end{aligned}$$

where $LIMIT_{i,t}$ is a vector of household limit order selling variables. $LIMIT_{i,t}$ is either $TRS_{i,t}$, the ratio of market order sells relative to total sell orders by households for stock i on day t that are executed against institutional investors, or $AB\_TRS_{i,t}$, which is the daily $TRS_{i,t}$, as defined above. Other interaction and control variables

TABLE 6

Regression of Household Trade Imbalance on the 52-Week High Day

Table 6 presents the results from the daily regressions of TRADEIMB and abnormal TRADEIMB (AB_TRADEIMB) on the 52WH. The regressions include fixed effects at the stock and day levels. TRADEIMB is the daily ratio of household net buying volume as a fraction of total household volume when trading with institutional investors. AB_TRADEIMB is the daily TRADEIMB less the average lagged 90-day stock-level TRADEIMB. The independent variables in the regression are as follows: 52WHMAX is an indicator variable that takes a value of 1 if the stock price opens within 1% of the 52WH price and 0 otherwise. NEW7 is an indicator variable that takes a value of 1 if the stock price opens within 1% of the 52WH price and has not been within 1% of the 52WH price in the 7 calendar days prior and 0 otherwise. JTMOMHIGH is an indicator variable that takes a value of 1 if the lagged 90-day stock return is in the highest tercile on the day and 0 otherwise. HIGHVIX is an indicator variable that takes a value of 1 if the lagged 20-day average EuroVIX index value is in the highest tercile over the sample and 0 otherwise. The regressions include the following controls: MKTCAP, which is the market capitalization of the stock in 100 millions of euros. VIX is the average value for the EuroVIX index for the previous 20 days. PRICE is the closing price of the stock. RISK is the lagged 20-day average standard deviation of stock returns. The sample covers Jan. 2000 to Dec. 2009. White (1980) standard errors are used to compute the *p*-values, which are reported in parentheses beneath the coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable					
	TRADEIMB			AB_TRADEIMB		
	1	2	3	4	5	6
Intercept	−0.085***	−0.101***	0.028***	−0.014***	−0.023***	0.003
	(0.000)	(0.000)	(0.004)	(0.006)	(0.000)	(0.237)
52WHMAX	−0.212***		−0.195***	−0.131***		−0.123***
	(0.000)		(0.000)	(0.000)		(0.000)
NEW7		−0.286***			−0.180***	
		(0.000)			(0.000)	
HIGHVIX			0.144***			0.026***
			(0.000)			(0.000)
52WHMAX × HIGHVIX			−0.157***			−0.053*
			(0.004)			(0.073)
JTMOMHIGH	−0.132***	−0.142***	−0.132***	−0.035***	−0.041***	−0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MKTCAP	0.000	0.000	0.000	0.000***	0.000***	0.000***
	(0.638)	(0.598)	(0.539)	(0.000)	(0.000)	(0.000)
VIX	0.006***	0.007***		0.001***	0.001***	
	(0.000)	(0.000)		(0.000)	(0.000)	
PRICE	−0.001*	−0.001*	−0.001*	0.000	0.000	0.000
	(0.059)	(0.062)	(0.079)	(0.344)	(0.347)	(0.349)
RISK	−0.002	−0.001	−0.001	0.001	0.001	0.001
	(0.609)	(0.680)	(0.840)	(0.833)	(0.775)	(0.774)
No. of obs.	199,954	199,954	199,954	199,954	199,954	199,954
R^2	0.023	0.020	0.023	0.003	0.001	0.003
Stock FE	YES	YES	YES	YES	YES	YES
Day FE	YES	YES	YES	YES	YES	YES

are as defined in regression equation (4). The regressions include stock and day fixed effects, and we adjust the standard errors according to White (1980).

The regression results are presented in Table 7. In model 1, we find that the 52WH results in a significant increase in limit order usage by households (with a coefficient for 52WHMAX of −0.110), supporting the idea that households increase their tendency to use limit orders when selling at the 52WH. Complementary to the findings reported in Panel C of Table 4, a stock being at the 52WH leads households to switch from market orders to limit orders when selling. Previous positive returns, as represented by JTMOMHIGH, slightly increase the tendency for households to use limit orders when selling (−0.010); however, this effect is modest relative to the 52WH effect (−0.110). In model 2, we see an even greater tendency to use limit orders when selling at a new 52WH, with a substantial increase (i.e., −0.175 to −0.110) in TRS for NEW7 compared to the 52WHMAX.

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

TABLE 7

Regression of Household Limit Order Selling on the 52-Week High Day

Table 7 presents the results from the daily regressions of TRS and abnormal TRS (AB_TRS) on the 52WH. The regressions include fixed effects at the stock and day levels. TRS is the ratio of household market order usage as a fraction of total household selling when selling to institutions. AB_TRS is the daily TRS less the average lagged 90-day stock-level TRS. The independent variables in the regression are as follows: 52WHMAX is an indicator variable that takes a value of 1 if the stock price opens within 1% of the 52WH price and 0 otherwise. NEW7 is an indicator variable that takes a value of 1 if the stock price opens within 1% of the 52WH price and has not been within 1% of the 52WHMAX in the 7 calendar days prior and 0 otherwise. JTMOMHIGH is an indicator variable that takes a value of 1 if the lagged 90-day stock return is in the highest tercile across the day and 0 otherwise. HIGHVIX is an indicator variable that takes a value of 1 if the lagged 20-day average VSTOXX European volatility index (VIX) value is in the highest tercile across the sample and 0 otherwise. The regressions include the following controls: MKTCAP is the market capitalization of the stock in 100 millions of euros. VIX is the average value for the EuroVIX index for the previous 20 days. PRICE is the closing price of stock. RISK is the lagged 20-day average standard deviation of stock returns. The sample covers Jan. 2000 to Dec. 2009. White (1980) standard errors are used to compute the *p*-values, which are reported in parentheses beneath the coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable					
	TRS			AB_TRS		
	1	2	3	4	5	6
Intercept	0.575***	0.566***	0.543***	0.016***	0.010***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52WHMAX	−0.110***		−0.097***	−0.082***		−0.073***
	(0.000)		(0.000)	(0.000)		(0.000)
NEW7		−0.175***			−0.157***	
		(0.000)			(0.000)	
HIGHVIX			−0.036***			−0.012***
			(0.000)			(0.000)
52WHMAX × HIGHVIX			−0.055**			−0.051***
			(0.022)			(0.000)
JTMOMHIGH	−0.010***	−0.015***	−0.009***	0.008***	0.004**	0.008***
	(0.003)	(0.000)	(0.003)	(0.000)	(0.048)	(0.000)
MKTCAP	−0.000**	−0.000*	−0.000**	0.000***	0.000***	0.000**
	(0.040)	(0.050)	(0.050)	(0.008)	(0.000)	(0.015)
VIX	−0.002***	−0.001***		−0.000***	−0.000***	
	(0.000)	(0.000)		(0.000)	(0.000)	
PRICE	0.000	0.000	0.000	−0.000*	−0.000*	−0.000**
	(0.455)	(0.450)	(0.447)	(0.051)	(0.063)	(0.041)
RISK	−0.002	−0.002	−0.002	−0.002***	−0.002***	−0.002***
	(0.362)	(0.411)	(0.300)	(0.000)	(0.000)	(0.000)
No. of obs.	166,835	166,835	166,835	166,835	166,835	166,835
R^2	0.007	0.003	0.007	0.003	0.001	0.003
Stock FE	YES	YES	YES	YES	YES	YES
Day FE	YES	YES	YES	YES	YES	YES

Household limit orders are particularly likely to be utilized when a new high is reached, consistent with the theory of latent limit order submission (Linnainmaa (2010)). In model 3, we augment the 52WHMAX specification from model 1 with indicator variables for HIGHVIX and for the interaction between HIGHVIX and 52WHMAX; both variables increase the level of limit order usage by households. During periods of high uncertainty, households prefer to use limit orders when selling, an effect that is exacerbated by a stock being at the 52WH. Combined, the effect of high levels of uncertainty increases the level of limit order usage but not the tendency to sell, as seen in Table 6.

In models 4–6 in Table 7, we use AB_TRS as the dependent variable. Similar effects to the corresponding models 1–3 are observed. A stock trading at the 52WH exhibits a substantial increase in the household's use of limit orders when selling, and this effect is further pronounced for new highs and in periods of high

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

uncertainty. The findings from Table 7 support the univariate results, showing that households increase their usage of limit orders when selling at the 52WH. Our result stands in contrast to those of Bian et al. (2018), who contend that past returns are positively related to the demand for market orders.

Overall, the investor behavior regressions reveal that individual investors are key contributors to the volume spikes at the 52WH. Households are sensitive to the 52WH as a trading cue, around which they anchor their limit order selling. These results provide evidence that the selling behavior observed by Huddart et al. (2009) at the 52WH is a result of direct and latent household limit order selling (Linnainmaa (2010), Kelley and Tetlock (2013), and Bhattacharya et al. (2012)).

F. Event Analysis: Around the 52-Week High Day

Having identified the importance of the 52WH day, we next explore investor behavior in the days before and after the high. We do this for two reasons. First, we aim to ensure that the 52WH day itself is the novel event, rather than just the approximate time period when the price is high. Second, this approach allows us to investigate the behavior of households prior to and following the high. Along with contemporaneous increases in capital gain realization and accompanying changes in expectations as prices rise in the days prior, we expect that households begin to act in anticipation of the 52WH day.

To undertake such an analysis, we employ an event study methodology with a timeframe of $t-7$ to $t+7$ trading days around the 52WH price being reached, specifically when a stock commences a day's trade within 1% of the 52WH. We estimate the coefficients of the regressions of TRADEIMB and TRS on 52WHMAX and NEW7 each day from $t-7$ to $t+7$. Figure 3 plots the coefficients of the regressions on investor behavior 7 days on either side of the 52WH day, with Graphs A and B of Figure 3, showing the coefficients from the TRADEIMB regressions on 52WHMAX and NEW7, respectively. Graphs C and D of Figure 3 plot the coefficient from the TRS regressions on 52WHMAX and NEW7, respectively. 95% confidence intervals are overlaid on the parameter estimates.

For each day $t+k$ between $k=-7$ and $k=+7$, we run separate regressions of the following type, where $t=0$ is the day of the 52WH and $\text{HHTRADE}_{i,t}$ is either TRADEIMB or TRS in stock i on day t:

$$\text{(6)} \qquad \text{HHTRADE}^k_{i,t} = \beta^k_0 + \beta^k_1 \text{52WHIND}_{i,0} + \text{Controls} + \varepsilon^k_{i,t},$$

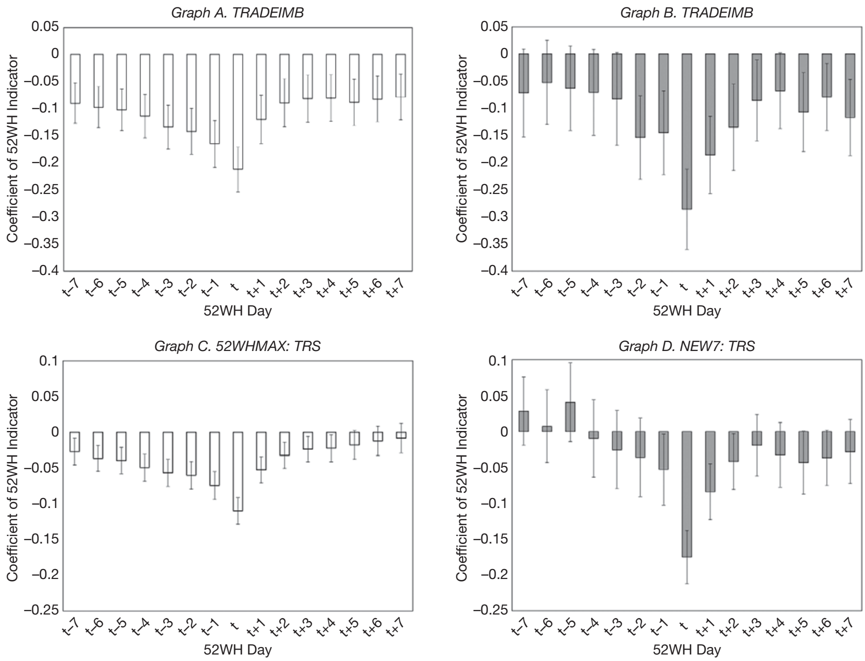
where $\text{52WHIND}_{i,0}$ denotes either 52WHMAX or NEW7, and the control variables are as defined in regression equation (4), including past momentum returns, market capitalization, market volatility, nominal price, and stock volatility. We include stock and day fixed effects and adjust standard errors as per White (1980) to produce our confidence interval estimates. The coefficient of β^k_1 is the variable of interest, which we plot in the columns of each graph of Figure 3.

In Graph A of Figure 3, we observe a consistent below-average (i.e., less than 0) trade imbalance at and around the 52WH day. This result remains despite controlling for previous momentum-like returns, which can induce disposition-effect-style selling. From $t-4$ to the 52WH day, a significant increase in household

FIGURE 3

Household Behavior Around the 52-Week High and New 52-Week High

Figure 3 plots the coefficients of the regressions of investor behavior (TRADEIMB and TRS) for stocks around the 52WHMAX and NEW7 from $t-7$ to $t+7$ days, centering at the 52WH day (t). For each column, we undertake regressions as per equation (6), in which we cycle through lagged and forward TRADEIMB or TRS as a dependent variable from $t-7$ to $t+7$. We plot the coefficients of the variable 52WHMAX for Graphs A and C and for NEW7 in Graphs B and D. 95% confidence intervals are overlaid on each column based on White (1980) standard error clustering with stock and day fixed effects.



selling occurs. Following the 52WHMAX day, there is a sharp rebound in household net buying, as household net selling is significantly lower on day $t+1$ than on the 52WH day. In Graph B of Figure 3, we examine how the trade imbalance varies around NEW7. Conditioning on NEW7, there is a larger jump in household selling from day $t-1$ to day t, indicative of a larger surprise. The rebound in trade imbalance following NEW7 is slower than that following the 52WHMAX, taking an average of 3 days to return to pre-52WH levels.

We observe a very similar V-shaped pattern for household limit order selling in Graph C of Figure 3. Limit order selling increases in the week leading up to and peaks at the 52WHMAX day, reverting to its average level within 5 days after the 52WH. Limit order selling around NEW7, from Graph D of Figure 3, appears as much more of a surprise than it does for the average 52WH and only slightly differs from its average level on the immediate day preceding NEW7. Thus, it is clear that the 52WHMAX and NEW7 are unique points of interest, rather than just days with high nominal prices.

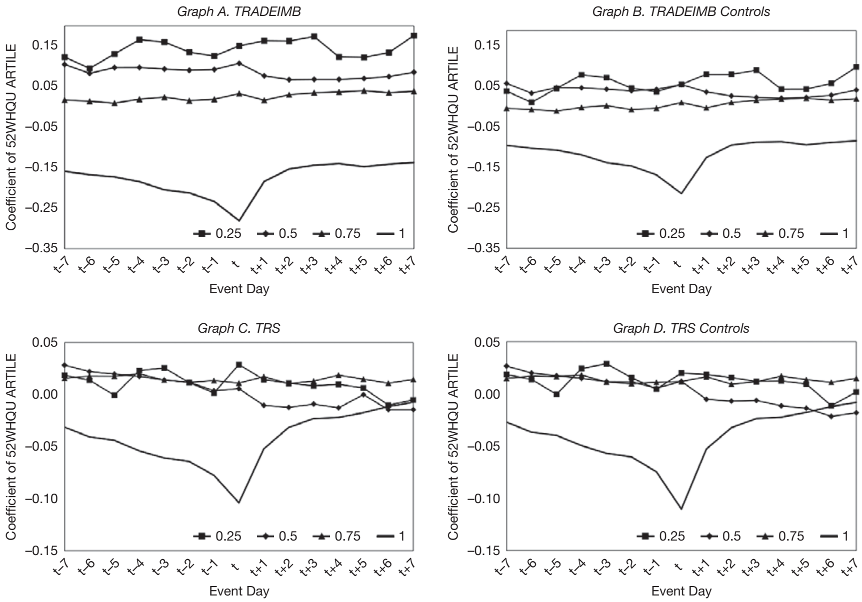
G. Event Analysis: 52-Week High Quartiles

To further remedy the concern that the 52WHMAX is one of many nominal points on the 52WH ratio to which investors anchor, we undertake a placebo test

FIGURE 4

Household Behavior Around the 52-Week High Quartiles

Figure 4 plots the coefficients of regressions of investor behavior (TRADEIMB and TRS) for stocks around the 52WHQUARTILE points (stocks at a 52WH ratio of 0.25, 0.50, 0.75, and 1) from $t-7$ to $t+7$ days, centering on the 52WHQUARTILE event day (t). For each day, we undertake regressions as per equation (7), in which we cycle through lagged and forward TRADEIMB or TRS as a dependent variable from $t-7$ to $t+7$. We plot the coefficients of the respective 52WHQUARTILE for TRADEIMB in Graphs A and B (with controls), and for TRS in Graphs C and D (with controls). The 0.25 quartile is represented by a line with square markers, the 0.5 quartile by diamond markers, the 0.75 by triangle markers, and lastly the 1 quartile (the 52WHMAX) is represented by a line without markers.



by considering alternative threshold percentiles of the 52WH ratio spectrum. This approach provides a test of whether the observed effect at the 52WH is replicated at 52WH ratio values of 0.25, 0.50, and 0.75. If investors are motivated to trade at quartiles of the 52WH, then similar findings to those in Figure 3 should be obtained. In Figure 4, we plot 7 days of TRADEIMB and TRS on either side of the placebo 52WH ratio quartiles (0.25, 0.50, and 0.75) alongside the 52WHMAX (1). As in the previous regressions, we control for multiple factors known to influence household trading, including past returns, to account for the disposition effect primarily driving the results.

To test the counterfactual, for each day $t+k$ between $k=-7$ and $k=+7$, we run separate regressions of the following type, where $t=0$ is the day in which the stock is at the precise 52WH ratio quartile and $\text{HHTRADE}_{i,t}$ is either TRADEIMB or TRS for stock i on day t:

$$\text{HHTRADE}_{i,t}^{k} = \beta_0^k + \beta_1^k \text{52WHQUARTILE}_{i,0,q} + \text{Controls}_{i,t} + \varepsilon_{i,t}^{k}, \quad (7)$$

where $\text{52WHQUARTILE}_{i,0,q}$ is an indicator variable that takes a value 1 if stock i on day 0 ($t=0$ in this case) opens the day within 1% of the respective 52WH ratio quartile q, at the specified value (0.25, 0.50, 0.75, or 1). The control variables are as defined in regression equation (4). We include stock and day fixed effects and adjust standard errors per White (1980). As in regression (6), the coefficient of β_1^k is the variable of interest, which we plot in each graph of Figure 4.

In support of our claim that the 52WHMAX is unique, in Graph A of Figure 4, across the 2-week period, we observe flat and mostly positive coefficients of TRADEIMB for the 0.25, 0.50, and 0.75 52WHQUARTILEs. This finding is in stark contrast to the behavior of individuals around the "1" 52WHQUARTILE (i.e., the 52WHMAX). Graph B of Figure 4 plots the coefficient of TRADEIMB for each of the 52WHQUARTILEs, in which the results hold when controlling for stock-specific factors and, importantly, past stock gains. Graphs C and D of Figure 4 plot the TRS values for the 52WHQUARTILEs. TRS is neutral or marginally positive, indicating that households tend to use market orders when selling over the 2-week period for the 0.25, 0.50, and 0.75 quartiles. Moreover, there is a sharp V-shaped pattern centering on the day of the 52WHMAX. The lack of any noticeable pattern for TRS for the non-52WH quartiles (0.25, 0.5, and 0.75) strengthens the claim that the 52WH is a unique anchor point on which household investors rely to make selling decisions and is not solely a feature of past returns.[11]

H. Post-52-Week High Returns

Grinblatt and Han (2005) argue that the existence of investors that display PT/mental accounting (MA) preferences are likely to create a spread between a stock's fundamental value and the current market price. As stocks at the 52WH are typically past winners and carrying capital gains, PT/MA investors tend to undervalue these stocks relative to their fundamental value, as they are strong candidates for selling. In accordance with this expectation, we have thus far identified increased household limit order selling at the 52WH day, which is likely a result of behavioral biases, that is, expectational errors (excessive PT/MA investor pessimism regarding post-52WH performance; Birru (2015)), the disposition effect, and anchoring, rather than information- or liquidity-based reasons.

In the period preceding the 52WH, high levels of household selling is predicted to be associated with a temporary, liquidity-induced decline in prices, with a corresponding reversal (Kaniel et al. (2008)). Following the 52WH, without the presence of excessive household selling, which acts as a "speed hump," prices are likely to drift upward toward the fundamental value. As the future returns are a result of undervaluation rather than overbidding, we do not anticipate mean reversion to occur in the post-52WH period. As such, we test for the existence of drift out to the 90- and 180-day horizons. In particular, we expect stocks that are more heavily sold by households with limit orders (which reflects a greater quantity of noninformational trading (Linnainmaa (2010)) at, and prior to, the 52WH to create a steeper barrier to the adjustment to fundamental value. Consequently, high limit order selling is predicted to be associated with lower contemporaneous and greater post-52WH returns.

[11]The regressions are also completed with high and low momentum as the variable of interest. We do not observe a V-shaped pattern or investor behavior intensifying around the event day for either trade imbalance or the taking rate for sells, further ruling out momentum as a possible explanation or as a similar phenomenon to the 52WH.

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

We quantify the household contribution to the post-52WH drift using Fama–MacBeth (1973) regressions of the 90- and 180-day cumulative RT and CAR, respectively, on the 52WH indicator and household TRS. First, we introduce variables that reflect the level of household limit order selling at and in the 5-day period prior to the 52WH day. We construct the indicator variable TRSLOW, which takes a value of 1 for stock-day cases in the lowest tercile of household limit order selling on the day. In this scenario, households execute more limit orders when selling to institutional counterparties on the 52WH day (lower TRS values indicate more liquidity provision by households). If household liquidity provision opens trading opportunities for institutional investors, TRSLOW should be positively related to post-52WH returns. We also construct the indicator variable LAGTRSLOW, which takes a value of 1 for stock-day cases where the average TRS value over days $t-5$ to $t-1$ is in the lowest tercile of household TRS on the given day. In cases where TRSLOW takes a value of 1 in the cross section on the given day, households execute the highest proportion of limit orders when selling in the previous 5 days.[12]

Second, we interact the 52WH indicator variable (52WHMAX) with the household limit order execution variables (TRSLOW and LAGTRSLOW) to determine whether the willingness of households to supply liquidity at the 52WH intensifies post-52WH returns. To test if the TRSLOW measure is concentrated only in small stocks and high volatility stocks, we control for and include interactions between these potentially confounding factors and the 52WHMAX. We construct MKTCAP_SMALL, which is an indicator variable that takes a value of 1 if a stock is in the bottom tercile based on market capitalization on day t and 0 otherwise. We follow Han and Kumar (2013) and calculate IVOL as the standard deviation of the residuals from a Fama–French (1993) 3-factor model on lagged 90-day daily returns. HIGHIVOL is an indicator variable that takes a value of 1 if a stock is in the top tercile based on IVOL on day t and 0 otherwise.

To examine the returns, we estimate the following Fama–MacBeth regression:

$$\begin{aligned}(8)\quad \text{RETURNS}_{i,[t,t+j]} =&\ \beta_0+\beta_1 \text{52WHMAX}_{i,t}+\beta_2 \text{TRSLOW}_{i,t}\\ &+\beta_3 \text{LAGTRSLOW}_{i,t}+\beta_4 \text{MKTCAP\_SMALL}_{i,t}\\ &+\beta_5 \text{HIGHIVOL}_{i,t}+\text{Interactions}_{i,t}+\text{Controls}_{i,t}+\varepsilon_{i,t},\end{aligned}$$

where $\text{RETURNS}_{i,[t,t+j]}$ denotes either the RT or the CAR, which is the daily raw return less the daily value weighted Finnish market return, from day t to day $t+j$. In the regressions, j takes a value of either 90 days or 180 days. $\text{52WHMAX}_{i,t}$ is an indicator variable that takes a value of 1 if stock i is within 1% of the 52WH price at the open of day t and 0 otherwise.[13] $\text{TRSLOW}_{i,t}$, $\text{LAGTRSLOW}_{i,t}$, $\text{MKTCAP\_SMALL}_{i,t}$, and $\text{HIGHIVOL}_{i,t}$ are as previously defined. The controls include the following: $\text{MKTCAP}_{i,t}$, which is the market capitalization of the stock in

[12]Arguably, an institution may not be able to predict which stocks will exhibit high levels of household liquidity supply on the 52WH day. However, LAGTRSLOW is observable prior to day t and is potentially available to institutional investors.

[13]We use the 1% threshold in the regressions to increase the sample of 52WH observations. Qualitatively similar results are obtained using 3% thresholds for the 52 week high price.

100 million euros; $LAGRETURN_{i,t}$, which is the lagged raw return of stock i for the prior 90 days; and $IVOL_{i,t}$, which is as previously defined.

The results of the Fama–MacBeth regressions are presented in Table 8. Consistent with the observations of George and Hwang (2004), the 52WHMAX leads to future positive returns at the 90- and 180-day horizons. From Panel A of Table 8, model 1 for instance, we estimate an excess return of 1.9% at the 90-day horizon for stocks at the 52WH. We next observe the effect of TRSLOW at the 52WH in model 2. When households are selling primarily with limit orders (the bottom one-third of daily TRS) at the 52WHMAX, returns average an excess of 1.1% over the following 90 days. In model 3, we find that stocks in the top tercile of household limit order selling in the previous 5 days exhibit subsequent returns similar to those of the TRS (0.011). Thus, the 52WH effect appears to be intensified in stocks with high levels of household limit order usage at and prior to the high. In model 4, we include interactions for both low TRS and small firm size at the 52WH. Small firms generate an additional 1.1% return over the subsequent 90 days following the 52WH, while high household limit order selling maintains its significance as a predictor at the 52WH. In model 5, we interact HIGHIVOL with the 52WHMAX. We find that HIGHIVOL at the 52WH leads to an additional 1.1% returns (similar to the impact of high household limit order selling); however, within model 5, the coefficient of TRSLOW × 52WHMAX remains similar to that in model 2. The results support our claim that household limit order selling in the lead-up to and on the day of the 52WH intensify post-52WH returns. We show that the effect of household limit order selling holds even when considering the effect of small and risky stocks.

In models 6–10 in Panel A of Table 8, we re-examine the results at the 180-day horizon. If the effect is driven by overbidding by institutions, then we expect to see a reversal of the returns between the 90- and 180-day periods. However, the returns to the 180-day horizon are largely consistent with the 90-day returns, supporting the role of household anchored selling in information dampening. For instance, in model 6, the 180-day excess subsequent returns for stocks at the 52WHMAX is 3.3%, an increase of 1.4% beyond the respective 90-day return. Stocks with high levels of limit order use by households exhibit even larger increases in returns between the 90- and 180-day horizons. From model 7, for example, the coefficient of 0.017 on 52WHMAX × TRSLOW at the 180-day horizon is much larger than the corresponding coefficient at the 90-day window (0.011). Stocks with a relatively high level of household limit order usage therefore appear to be particularly profitable when purchased at the high. A lack of reversal over the 180-day horizon indicates that systematic household limit order use when selling is positively related to future returns. Our results are consistent with those of Grinblatt and Han (2005), as we find that high levels of household limit order selling at the 52WH slow the upward drift of prices toward the fundamental value.

We next test in Panel B of Table 8, the effect of the 52WHMAX on CAR over the subsequent 90- and 180-day periods. Similarly to the RT regressions, we observe that the 52WHMAX is positive at the 90- and 180-day levels. In models 2 and 3, we see that 52WHMAX × TRSLOW and 52WHMAX × LAGTRSLOW lead to a positive 90-day CAR value of 1.1%. Showing no signs of mean reversion out to 180 days, both high limit order selling and high lagged limit

TABLE 8

Effect of Household Behavior on Returns Following the 52-Week High

Table 8 presents the average coefficient estimates from the daily Fama–MacBeth (1973) regressions of 52WH and investor behavior on lead 90- and 180-day RTs (Panel A) and CARs (Panel B), respectively. The 52WHMAX is an indicator variable that takes a value of 1 if the stock price opens within 1% of the 52WH price and 0 otherwise. TRSLOW is in indicator variable that takes a value of 1 if the TRS is in the lowest tercile across all stocks on the day and 0 otherwise. LAGTRSLOW is in indicator variable that takes a value of 1 if the lagged 5-day ($[t-5, t-1]$) average TRS is in the lowest tercile across all stocks on the day and 0 otherwise. MKTCAP is the market capitalization of the stock in 100 million euros. MKTCAP_SMALL is an indicator variable that takes a value of 1 if the MKTCAP is in the bottom tercile across all stocks on the day and 0 otherwise. IVOL is the standard deviation of the residuals from a Fama–French (1993) 3-factor model on lagged 90-day returns. HIGHIVOL is an indicator variable that takes a value of 1 if the IVOL is in the top tercile across all stocks on the day and 0 otherwise. The control variables include LAGRETURN, which is the lagged raw return for the prior 90 days. The sample covers Jan. 2000 to Dec. 2009. The *p*-values, which are adjusted for autocorrelation using the Newey and West (1987) method, are reported in brackets below the coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Raw Returns

	Dependent Variable									
	RT90					RT180				
	1	2	3	4	5	6	7	8	9	10
Intercept	−0.001	−0.002	−0.006	−0.005	0.059***	0.005	0.003	0.000	−0.004	0.098***
	(0.810)	(0.731)	(0.308)	(0.416)	(0.000)	(0.592)	(0.756)	(0.996)	(0.701)	(0.000)
52WHMAX	0.019***	0.015***	0.015***	0.014***	0.010***	0.033***	0.027***	0.025***	0.022***	0.018***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TRSLOW		0.002		0.001	0.003**		0.006***		0.005***	0.008***
		(0.236)		(0.508)	(0.034)		(0.001)		(0.006)	(0.000)
52WHMAX × TRSLOW		0.011***		0.009**	0.009***		0.017***		0.015***	0.013***
		(0.008)		(0.021)	(0.005)		(0.000)		(0.001)	(0.001)
LAGTRSLOW			0.000					0.004**		
			(0.777)					(0.044)		
52WHMAX × LAGTRSLOW			0.011***					0.015***		
			(0.001)					(0.005)		
MKTCAP_SMALL				0.022***					0.044***	
				(0.000)					(0.000)	
52WHMAX × MKTCAP_SMALL				0.011**					0.030**	
				(0.013)					(0.011)	
HIGHIVOL					−0.015***					−0.020***
					(0.000)					(0.000)
52WHMAX × HIGHIVOL					0.011***					0.021***
					(0.007)					(0.000)

(continued on next page)

TABLE 8 (continued)

Effect of Household Behavior on Returns Following the 52-Week High

Panel A. Raw Returns (continued)

	Dependent Variable									
	RT90					RT180				
	1	2	3	4	5	6	7	8	9	10
MKTCAP	−0.000*	−0.000*	0.000		−0.000***	−0.000***	−0.000***	−0.000		−0.000***
	(0.065)	(0.064)	(0.272)		(0.000)	(0.000)	(0.000)	(0.536)		(0.000)
LAGRETURN	0.026***	0.026***	0.020***	0.020***	−0.012**	0.056***	0.055***	0.053***	0.047***	−0.016*
	(0.000)	(0.000)	(0.001)	(0.001)	(0.041)	(0.000)	(0.000)	(0.000)	(0.000)	(0.073)
IVOL	0.855***	0.859***	1.269***	0.690***		1.803***	1.806***	2.458***	1.555***	
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	
No. of obs.	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004
R^2	0.126	0.145	0.120	0.157	0.134	0.134	0.153	0.134	0.169	0.130

Panel B. Cumulative Abnormal Returns

	Dependent Variable									
	CAR90					CAR180				
	1	2	3	4	5	6	7	8	9	10
Intercept	−0.016***	−0.017***	−0.021***	−0.019***	0.044***	−0.024***	−0.026***	−0.030***	−0.032***	0.069***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52WHMAX	0.022***	0.018***	0.017***	0.017***	0.013***	0.039***	0.033***	0.031***	0.028***	0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TRSLOW		0.001		0.001	0.003**		0.005***		0.004**	0.008***
		(0.256)		(0.572)	(0.043)		(0.004)		(0.021)	(0.000)
52WHMAX × TRSLOW		0.011***		0.009**	0.009***		0.016***		0.015***	0.013***
		(0.007)		(0.025)	(0.004)		(0.000)		(0.001)	(0.001)
LAGTRSLOW			0.001					0.004*		
			(0.703)					(0.062)		
52WHMAX × LAGTRSLOW			0.011***					0.016***		
			(0.001)					(0.003)		
MKTCAP_SMALL				0.021***					0.042***	
				(0.000)					(0.000)	

(continued on next page)

TABLE 8 (continued)

Effect of Household Behavior on Returns Following the 52-Week High

Panel B. Cumulative Abnormal Returns (continued)

	Dependent Variable									
	CAR90					CAR180				
	1	2	3	4	5	6	7	8	9	10
52WHMAX × MKTCAP_SMALL				0.011**					0.030***	
				(0.011)					(0.010)	
HIGHIVOL					−0.015***					−0.020***
					(0.000)					(0.000)
52WHMAX × HIGHIVOL					0.012***					0.024***
					(0.003)					(0.000)
MKTCAP	−0.000*	−0.000*	0.000		−0.000***	−0.000***	−0.000***	−0.000		−0.000***
	(0.064)	(0.063)	(0.266)		(0.000)	(0.000)	(0.000)	(0.545)		(0.000)
LAGRETURN	0.027***	0.028***	0.023***	0.021***	−0.011*	0.058***	0.058***	0.059***	0.050***	−0.015*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.054)	(0.000)	(0.000)	(0.000)	(0.000)	(0.095)
IVOL	0.850***	0.851***	1.276***	0.686***		1.822***	1.822***	2.520***	1.584***	
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)	
No. of obs.	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004
R^2	0.124	0.143	0.117	0.154	0.134	0.132	0.151	0.133	0.167	0.129

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

order selling at the 52WH increase CAR by 0.5% relative to the 90-day CAR. Consistent with the results in Panel A of Table 8, the predictability of high household limit order selling at the 52WH holds for CAR when interacting the small size and high volatility stocks at the 52WH. Overall, the findings in Panel B of Table 8, underpin the claim that increased household limit order selling at and prior to the 52WH substantially increase the unconditional 52WHMAX post-event returns.

We next test for the existence of the "speed hump" that is created by the high level of household limit order selling at and around the 52WH. In Figure 5, we plot the CARs for the TRSLOW (conditional on being in the TRSLOW group on the 52WH day) and non-TRSLOW stocks (conditional on not being in the TRSLOW group on the 52WH day) from $t-20$ to $t+180$ days around the 52WH day. In Figure 5, we see that prior to the 52WH day, stocks in the TRSLOW group generate muted returns relative to the non-TRSLOW group. Following the 52WH (day 0), stocks in the TRSLOW group drift steadily upward over the subsequent 180 days. In contrast, the non-TRSLOW group of stocks exhibit upward growth up to 50 days, after which they begin to stagnate and subsequently reverse. Thus, the high level of household limit order selling induced by the anchor provides a "speed hump" prior to the 52WH, slowing the trajectory of the TRSLOW group of stocks toward their fundamental value, which is in line with the expectations of Grinblatt and Han (2005).

The results of the Fama–MacBeth regressions and CAR figure support our expectations that households suffer by missing out on post-52WH returns due to their anchored selling behavior (Barber et al. (2008)). Moreover, post-52WH returns continue upward out to 180 days due to being restricted by household limit order selling at and prior to the high. The subsequent returns are not restricted to small or risky stocks. Thus, we uncover how the disposition effect, anchoring, and the placement of limit orders sells (Linnainmaa (2010)) by households suppress returns prior to the 52WH and allow institutions to open up momentum-like positions that in turn generate significantly higher returns following the high. This finding helps explain a source of the pervasive underperformance of household investors (Barber and Odean (2000)).

I. Robustness: New 52-Week High Percentiles

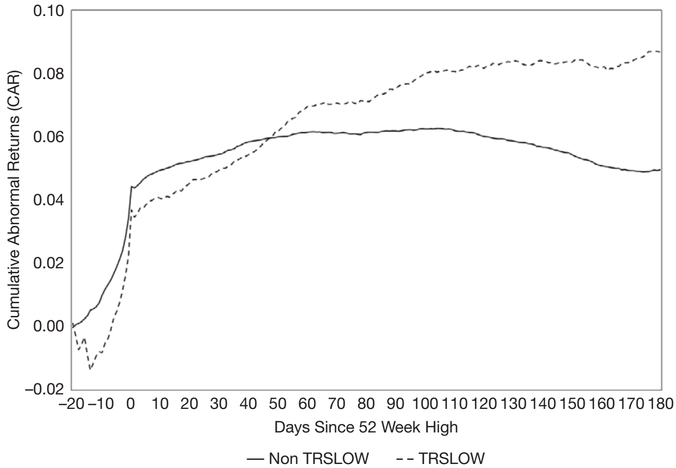
To examine whether past returns, rather than anchoring to the 52WH, drive the results, we test the effect of novelty (newness) on different 52WH ratio bounds. This approach allows us to compare the TRADEIMB and TRS values of NEW7 at different levels of the 52WH ratio with 52WH bounds that are not contingent on the most recent week's return (52WH_EXNEW). To do so, we undertake the daily sorting of the stocks into different specifications based on their 52WH ratio level [*i*,*j*). In a similar vein to Tables 3 and 4, we first identify stocks with a 52WH ratio from [0.94,0.97), [0.97,0.98), and [0.99, 1].[14] We then specify whether or not the stock's 52WH ratio has exceeded the lower bound, *i*, within the previous 7 days

[14]We include larger percentile bands due to the reduction in observations caused by splitting 52WH_EXNEW and NEW7.

FIGURE 5

Effect of High Household Limit Order Selling on the Cumulative Abnormal Returns Following the 52-Week High

Figure 5 plots the daily cumulative abnormal returns (CARs) for stocks conditional on being in the lowest tercile of household limit order selling on the 52WH day (TRSLOW) or the higher 2 terciles (non-TRSLOW). We plot the CAR for stocks starting from −20 to +180 days around the 52WH day (0). Non-TRSLOW stocks are represented by a solid line, while TRSLOW stocks are represented by a dashed line.



(NEW7 [*i*,*j*)) or has more recently exceeded the bound (52WH_EXNEW [*i*,*j*)). For example, a stock that has a 52WH ratio of 0.95 and has not been above a 52WH ratio of 0.94 over the previous 7 days, is classified as NEW7 [0.94,0.97). Moreover, a stock with a 52WH ratio of 0.95 that had a 52WH ratio of 0.98 on the prior day is classified as 52WH_EXNEW [0.94,0.97).

Panel A of Table 9 reports the results for trade imbalance at the different 52WH ratio bounds for the 52WH_EXNEW and NEW7 specifications. In Panel B of Table 9, we test the difference in TRADEIMB between the 52WH_EXNEW and NEW7 bounds. A stock within the percentile range [0.97, 0.99) of the 52WH that has not been above the lower bound within the past 7 days (NEW7 [0.97, 0.99)) exhibits a TRADEIMB of −0.267, compared with a stock in the same 52WH ratio range that has recently been at this level (52WH_EXNEW [0.94,0.97)) with a TRADEIMB of −0.115. Consistent with the novelty of the 52WH (or past returns) increasing the propensity of households to sell, each of the NEW7 bounds yield considerably lower TRADEIMB relative to their respective 52WH_EXNEW percentiles. However, the impact of novelty does not fully drive the household propensity to sell. All the reported TRADEIMBs for the percentile bands of the 52WH_EXNEW are significantly negative relative to NON_52WH days and become increasingly negative for thresholds closer to the 52WH. The concave pattern observed in household selling within proximity of the 52WH, particularly for nonrecent 52WH stocks, is consistent with the use of the 52WH as an anchor, regardless of past returns.

Panel C of Table 9 presents the household taking rate sales at different 52WH ratio bands for the 52WH_EXNEW and NEW7 specifications. In Panel D of Table 9, we test the differences in TRS values across the various 52WH specifications. The use of limit orders by households when selling increases for both NEW7 and 52WH_EXNEW specifications with nearness to the 52WH. In comparison with the TRADEIMB results, it is noticeable that the change in TRS value occurs much closer to the 52WH. Past returns, as reflected within the NEW7 specifications, clearly lead to an increased usage of limit orders by households when selling. For instance, at the NEW7 [0.97, 0.99) band, TRS takes a value of 0.414 relative to NON_52WH days, where it takes a value of 0.532. Moreover, there is a significantly higher level of limit order usage for each of the NEW7 specifications compared with the respective 52WH_EXNEW specifications. Importantly, however, we find that the use of limit orders remains relatively high in 52WH_EXNEW stocks. This effect is particularly pronounced for stocks within 1% of the 52WH, where the TRS value is 0.439, indicating approximately 12 more limit orders than market orders per 100 sales trades at this point. The use of limit orders when selling therefore appears to be driven in part by anchoring to the 52WH and not simply as part of a gain-realization process.

The existence of the anchoring effect at the 52WH in both the household decision to sell and the use of limit orders when doing so is seen not only in the NEW7 specifications but also for stocks that have exceeded thresholds within the previous 7 days (52WH_EXNEW). In addition to the regression results in Tables 6 and 7, which control directly for past 90-day returns, our findings demonstrate that the household anchoring behavior at the 52WH is not solely a function of the disposition effect or the realization of capital gains (Shefrin and Statman (1985), Grinblatt and Han (2005)).

J. Robustness: Liquidity

To ensure that the future returns observed are not due to a contemporaneous contraction and long-term widening of spreads and/or a liquidity premium (e.g., Pastor and Stambaugh (2003), Acharya and Pedersen (2005)), we analyze the changes in quoted bid–ask spreads[15] around the 52WH. We follow the method of regression (6) and estimate the coefficients of the regressions of the 52WHMAX on quoted spread (SPREAD) on the 52WHMAX for 30 days on either side of the 52WH. For each day $t+k$ between $k=-30$ and $k=+30$, we run separate regressions:

$$\text{SPREAD}_{i,t}^{k} = \beta_0^k + \beta_1^k \text{52WHMAX}_{i,t} + \text{Controls}_{i,t} + \varepsilon_{i,t}^{k}, \tag{9}$$

where $t=0$ is the day of the 52WH, $\text{SPREAD}_{i,t}^{k}$ is the quoted spread in stock i on day t, $\text{52WHMAX}_{i,t}$ is an indicator variable that takes a value of 1 if stock i opens within 1% of the 52WH on day t, and the control variables are as defined in regression equation (4). We include stock and day fixed effects and adjust standard errors according to White (1980) to produce our confidence interval estimates. The

[15]Quoted spread is the time-weighted roundtrip cost in basis points of a given market order that is executed against the current best bid and ask prices; that is, Quoted spread $= 2 \times \frac{\text{bid-ask}}{\text{midpoint}}$.

TABLE 9

Robustness: New 52-Week High Percentiles

Table 9 presents the TRADEIMB and TRS values for percentile bands of the 52WH, comparing stocks that have and have not recently been within range of the 52WH. The stocks are sorted into different specifications based on the percentile bounds of their 52WH ratio [*i*, *j*). We report the results for stocks with a 52WH ratio from [0.94, 0.97), [0.97, 0.99), and [0.99, 1], and those with a 52WH ratio below 0.94 (NON_52WH). We then specify whether or not the stock's 52WH ratio has exceeded the lower bound *i* within the past 7 days [*i*, *j*) (which we define as NEW7 [*i*, *j*)) or has been above the lower bound *i* within the past 7 days (52WH_EXNEW [*i*, *j*)). Panel A reports the daily mean and number of observations (No. of obs.) of household TRADEIMB for each specification. Panel B reports the daily mean difference in TRADEIMB for each of the groups from Panel A. Panel C reports the daily mean and number of observations of household TRS for each specification. Panel D reports the daily mean difference in TRS for each of the groups from Panel C. The sample covers Jan. 2000 to Dec. 2009. The *p*-values are presented in parentheses, and ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A. TRADEIMB by NEW52WH

	Mean	No. of obs.
NON_52WH	0.051	156,215
52WH_EXNEW [0.94, 0.97)	−0.073	15,461
52WH_EXNEW [0.97, 0.99)	−0.115	12,984
52WH_EXNEW [0.99, 1]	−0.255	7,948
NEW7 [0.94, 0.97)	−0.186	4,695
NEW7 [0.97, 0.99)	−0.267	2,256
NEW7 [0.99, 1]	−0.358	1,594

Panel B. TRADEIMB Mean Difference by NEW52WH

	NON_52WH	52WH_EXNEW [0.94, 0.97)	52WH_EXNEW [0.97, 0.99)	52WH_EXNEW [0.99, 1]	NEW7 [0.94, 0.97)	NEW7 [0.97, 0.99)
52WH_EXNEW [0.94, 0.97)	−0.124***					
	(0.000)					
52WH_EXNEW [0.97, 0.99)	−0.165***	−0.041***				
	(0.000)	(0.000)				
52WH_EXNEW [0.99, 1]	−0.305***	−0.181***	−0.139***			
	(0.000)	(0.000)	(0.000)			
NEW7 [0.94, 0.97)	−0.236***	−0.112***	−0.070***	0.068***		
	(0.000)	(0.000)	(0.000)	(0.000)		
NEW7 [0.97, 0.99)	−0.317***	−0.193***	−0.152***	−0.012	−0.081***	
	(0.000)	(0.000)	(0.000)	(0.854)	(0.000)	
NEW7 [0.99, 1]	−0.408***	−0.284***	−0.242***	−0.102***	−0.171***	−0.090***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Panel C. TRS by NEW52WH

	Mean	No. of obs.
NON_52WH	0.532	127,985
52WH_EXNEW [0.94, 0.97)	0.532	13,436
52WH_EXNEW [0.97, 0.99)	0.510	11,593
52WH_EXNEW [0.99, 1]	0.439	7,121
NEW7 [0.94, 0.97)	0.484	4,170
NEW7 [0.97, 0.99)	0.414	2,053
NEW7 [0.99, 1]	0.363	1,459

Panel D. TRS Mean Difference by NEW52WH

	NON_52WH	52WH_EXNEW [0.94, 0.97)	52WH_EXNEW [0.97, 0.99)	52WH_EXNEW [0.99, 1]	NEW7 [0.94, 0.97)	NEW7 [0.97, 0.99)
52WH_EXNEW [0.94, 0.97)	−0.000					
	(0.854)					
52WH_EXNEW [0.97, 0.99)	−0.022***	−0.022***				
	(0.000)	(0.000)				
52WH_EXNEW [0.99, 1]	−0.093***	−0.093***	−0.071***			
	(0.000)	(0.000)	(0.000)			
NEW7 [0.94, 0.97)	−0.048***	−0.048***	−0.026***	0.045***		
	(0.000)	(0.000)	(0.000)	(0.000)		
NEW7 [0.97, 0.99)	−0.118***	−0.118***	−0.096***	−0.024	−0.070***	
	(0.000)	(0.000)	(0.000)	(0.141)	(0.000)	
NEW7 [0.99, 1]	−0.169***	−0.169***	−0.147***	−0.076***	−0.121***	−0.051***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

coefficient of β_1^k is the variable of interest, which we plot in Figure 6. Within Figure 6, we see, much like TRADEIMB and TRS, that spreads begin to decrease from 10 days prior to the 52WH, reaching a floor on the day prior to and on the 52WH day. On day $t+1$, the quoted spread returns to the level equal to that 7 days prior, and 3 days following the 52WH, quoted spreads return up to a level that is not significantly different from that 30 days prior. The decrease in spreads shows that household limit order selling is improving liquidity at the 52WH in the form of lower spreads. As a result, institutional investors, who are more likely to buy at the 52WH, can take advantage of the lower cost of market orders, as crossing the bid–ask spread is, on average, lower by approximately 0.0015€. The V-shaped pattern shown for spreads around the 52WH is similar in style, but not magnitude, to household investor limit order selling. Overall, we show that the 52WH is an anchor around which liquidity tends to cluster; however, it is quickly consumed on the 52WH day, as spreads drifts back up within 3 days.

Figure 6 displays that spreads tend to decline as the 52WH approaches. To determine the role of increasing liquidity at the 52WH on post-event returns as separate phenomena to household limit order selling, we estimate the following Fama–MacBeth regression:

$$\text{(10)} \qquad \text{CAR}_{i,[t,t+j]} = \beta_0 + \beta_1 \text{52WHMAX}_{i,t} + \beta_2 \text{TRSLOW}_{i,t} + \beta_3 \text{SPREADDROP}_{i,t} + \text{Interactions} + \text{Controls} + \varepsilon_{i,t},$$

where $\text{52WHMAX}_{i,t}$ and $\text{TRSLOW}_{i,t}$ are as defined in equation (8). $\text{SPREADDROP}_{i,t}$ is an indicator variable that takes a value of 1 if stock i is in the tercile of stocks with the largest decrease in spreads (as measured by quoted spread) between day $t-5$ and day t and 0 otherwise.[16] The control variables are as defined in equation (8). In addition, we control for $\text{SPREAD}_{i,t}$, which is the quoted spread in basis points for stock i on day t.

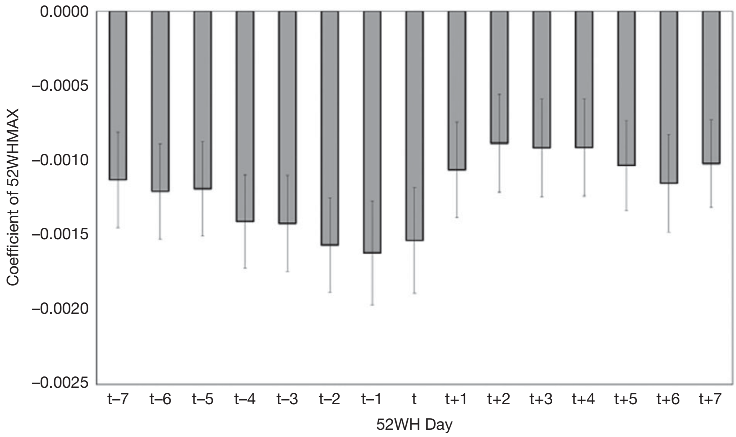
In Table 10, we present the results of the regressions. In models 1 and 2 in Table 10, we re-estimate models 1 and 2 from Panel B of Table 8, with the inclusion of SPREAD as a control variable. The addition of quoted spread does not materially change the coefficients of either 52WHMAX or TRSLOW × 52WHMAX, which suggests that spreads do not explain the post-52WH returns. In model 3, we include 52WHMAX × SPREADDROP and see that stocks with large decreases in spreads do not generate significantly higher post-52WH returns. In model 4, we include interactions with the 52WHMAX for both TRSLOW and SPREADDROP. If household limit order selling in the lead up to the 52WH is reflected in decreases in quoted spreads, then we expect TRSLOW to lose its significance in predicting post-event returns. However, in model 4, we observe that high household limit order selling is robust to the inclusion of SPREADDROP. We repeat the analysis by estimating 180-day CARs in models 5–8 in Table 10. The results at the 180-day horizon remain qualitatively similar to those at the 90-day horizon in models 1–4. Overall, changes in quoted spreads leading up to the 52WH do not explain future returns, which we attribute to an increase in household limit order selling.

[16]The results remain qualitatively similar using 7 or 10 days previous to calculate SPREADDROP.

FIGURE 6

Quoted Spread Around the 52-Week High

Figure 6 plots the coefficients of the regressions of quoted spread (SPREAD) for stocks around the 52WHMAX from $t-30$ to $t+30$ days, centering at the 52-week high day (t). For each column, we undertake regressions as per equation (6), in which we cycle through lagged and forward SPREAD as a dependent variable from $t-30$ to $t+30$. We plot the coefficients of the variable 52WHMAX. 95% confidence intervals are overlaid on each column based on White (1980) standard error clustering with stock and day fixed effects.



IV. Conclusion

This study exploits a rich data set from the NASDAQ Helsinki to examine how individual investors contribute to the 52WH effect. We investigate the behavior of household investors, when trading with institutions, at and around the 52WH price: in particular, the trade direction, order submission type and the subsequent price movements.

We uncover that individual investors undertake disposition-effect-style behavior, selling winners and anchoring around the 52WH price. They do so with latent limit order selling, which is intensified if the 52WH becomes more prominent, due to proximity, newness, and market-wide volatility. We highlight, through an event study, that the 52WH day is in fact a unique point of interest. We show that household limit order selling drastically increases leading up to and on the 52WH day and then recedes back to normal levels soon after. Using placebo tests, we also expose that the 52WH is unique, as we do not find similar investor behavior at other quartile points of the 52WH ratio.

We further contribute to the literature by showing that post-52WH returns (George and Hwang (2004)) are intensified by household limit order sells placed on and 5 days prior to the 52WH. This 52WH effect is not limited to stocks with high past returns, small firms, or risky stocks. Household selling behavior at the 52WH directly benefits institutional investors. As households increase their use of limit orders at the 52WH, institutional investors open up momentum-like positions that generate more than double the unconditional post-52WH returns over the subsequent 180-day period. The lead returns are not purely driven by small or risky stocks or a function of liquidity provision at the 52WH.

https://doi.org/10.1017/S002210902200148X Published online by Cambridge University Press

TABLE 10

The Effect of Spread Changes on the Cumulative Abnormal Returns Following the 52-Week High

Table 10 presents the average coefficient estimates from the daily Fama–MacBeth (1973) regressions of 52WH and investor behavior and spread changes on lead 90- and 180-day cumulative abnormal returns (CARs), respectively. The 52WHMAX is an indicator variable that takes a value of 1 if the stock price opens within 1% of the 52WH price and 0 otherwise. TRSLOW is in indicator variable that takes a value of 1 if the TRS is in the lowest tercile across all stocks on the day and 0 otherwise. SPREADDROP is an indicator variable that takes a value of 1 if SPREADCHANGE, which is SPREAD on day *t* less SPREAD on day *t* − 5, is in the lowest tercile within the stock year on day *t* and 0 otherwise. The controls include MKTCAP, which is the market capitalization of the stock in 100 million euros; LAGRETURN, which is the lagged raw return for the prior 90 days; IVOL, which is the standard deviation of the residuals from a Fama–French (1993) 3-factor model on lagged 90-day returns; and SPREAD is the quoted spread in basis points on day *t* for stock *i*. The sample covers Jan. 2000 to Dec. 2009. The *p*-values, which are adjusted for autocorrelation using the Newey and West (1987) method, are reported in brackets below the coefficients, and ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Dependent Variable							
	CAR90				CAR180			
	1	2	3	4	5	6	7	8
Intercept	−0.017***	−0.018***	−0.014***	−0.015***	−0.031***	−0.032***	−0.021***	−0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
52WHMAX	0.022***	0.018***	0.017***	0.014***	0.038***	0.034***	0.036***	0.033***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TRSLOW		0.002		0.001		0.004**		0.004**
		(0.231)		(0.328)		(0.015)		(0.020)
52WHMAX × TRSLOW		0.010**		0.008**		0.015***		0.011***
		(0.012)		(0.034)		(0.002)		(0.009)
SPREADDROP			−0.000	−0.000			0.001	0.001
			(0.760)	(0.815)			(0.745)	(0.708)
52WHMAX × SPREADDROP			0.002	0.001			0.001	0.002
			(0.540)	(0.684)			(0.878)	(0.729)
MKTCAP	−0.000*	−0.000*	−0.000**	−0.000**	−0.000***	−0.000***	−0.000***	−0.000***
	(0.051)	(0.052)	(0.042)	(0.043)	(0.000)	(0.000)	(0.000)	(0.000)
LAGRETURN	0.026***	0.026***	0.024***	0.024***	0.055***	0.055***	0.054***	0.054***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IVOL	0.799***	0.810***	0.689***	0.695***	1.669***	1.684***	1.578***	1.589***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SPREAD	0.223**	0.197*			0.847***	0.800***		
	(0.043)	(0.073)			(0.000)	(0.000)		
No. of obs.	167,004	167,004	167,004	167,004	167,004	167,004	167,004	167,004
R^2	0.149	0.168	0.150	0.169	0.158	0.177	0.158	0.176

Overall, this evidence contributes to the growing literature on the 52WH, the poor performance of household investors, and how their behavior affects returns. This study has many implications for future research regarding the drivers of individual investor behavior and investors' tendency to place limit orders, particularly around anchors and attention-grabbing events.

Appendix. Variable Definitions

52WH: Highest price the given stock has traded for over the prior 365 calendar days.

52WHMAX: Indicator variable that takes a value of 1 if the stock opens within 1% of the 52WH.

52WH_EXNEW: Indicator variable that takes a value of 1 if the stock opens within 1% of the 52WH and has been at or above the 52WH in the previous 7 days.

52WHQUARTILE: Indicator variable that takes a value of 1 if stock opens the day within 1% of the respective 52WH ratio quartile, which are at the specified values (0.25, 0.50, 0.75, or 1).

AB_TRADEIMB: Daily TRADEIMB less the lagged 90-day stock-level TRADEIMB.

AB_TRS: Daily TRS less the average level of TRS in a stock over the preceding 90 days.

BETWEEN_TURNOVER: Ratio of household to institutional volume relative to total volume.

FCSD: Finnish/Nordic Central Securities Depositor: the institution that records the investor behavior on the NASDAQ Helsinki.

HH_TURNOVER: Ratio of household to household volume relative to total volume within the sample.

HIGHVIX: Indicator variable that takes a value of 1 if the lagged 20-day average EuroVIX index value in the highest tercile on the given day over the sample.

HIGHIVOL: Indicator variable that takes a value of 1 if the IVOL is in the top tercile across all stocks on the day.

INSTO_TURNOVER: Ratio of institution to institution volume relative to total volume within the sample.

IVOL: Standard deviation of the residuals from a Fama–French (1993) 3-factor model on lagged 90-day daily returns (Han and Kumar (2013)).

JTMOMHIGH: Indicator variable that takes a value of 1 if the lagged 90-day stock return is in the highest tercile on the day (Jegadeesh and Titman (1993)).

LAGRETURN: Lagged raw return of the stock for the previous 90 days.

LAGTRSLOW: Indicator variable that takes a value of 1 for stock-day cases, where the average of TRS over days $t-5$ to $t-1$ is in the lowest tercile of household TRS on the given day.

LOW/MID/HIGH VIX: Lagged 20-day EuroSTOXX volatility (VIX) terciles (LOWVIX, MEDVIX and HIGHVIX).

MKTCAP: Market capitalization of the stock on the given day.

MKTCAP_SMALL: Indicator variable that takes a value of 1 if a stock is in the bottom tercile based on market capitalization in the stock on the given day.

NEW7(14): Indicator variable that takes a value of 1 if a stock opens the day within 1% of the 52WH price and has not been within 1% of the 52WH price within the previous 7 (14) days.

NON_52WH: Indicator variable that takes a value of 1 if the stock does not open within 1% of the 52WH on the given day.

PRICE: Closing price, in euros, of the stock on the given day.

RISK: 20-day average standard deviation of returns to the stock on the given day.

SPREAD: Reflects quoted spread, which is the time-weighted roundtrip cost in basis points of a given market order that executes against the current best bid and ask prices.

SPREADCHANGE: Indicator variable that takes a value of 1 if SPREAD on day t less SPREAD on day $t-5$ is in the lowest tercile within the stock year on the given day.

SPREADDROP: Indicator variable that takes a value of 1 if stock i is in the tercile of stocks with the largest decrease in spreads between day $t-5$ and day t and 0 otherwise.

TRADEIMB: Daily ratio of household net buying volume as a fraction of total household volume when trading with institutional investors.

TRS: Ratio of household market order usage as a fraction of total household selling when selling to institutions.

TRSLOW: Indicator variable that takes a value of 1 for stock-day cases in the lowest tercile of household limit order selling on the day.

VIX: 20-day moving average of the EuroSTOXX VIX.

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