Journal of Financial Economics 116 (2015) 548–564

Contents lists available at ScienceDirect

Journal of Financial Economics

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

Market-wide attention, trading, and stock returns ☆

Yu Yuan *

Shanghai Advanced Institute of Finance, Shanghai Jiao Tong University, 211 West Huaihai Road, Shanghai 200030, China

ARTICLE INFO

Article history:
Received 26 February 2013
Received in revised form
14 October 2014
Accepted 2 November 2014
Available online 1 April 2015

JEL classification:
G14

Keywords:
Attention
Individual investor
Trading

ABSTRACT

Market-wide attention-grabbing events — record levels for the Dow and front-page articles about the stock market — predict the trading behavior of investors and, in turn, market returns. Both aggregate and household-level data reveal that high market-wide attention events lead investors to sell their stock holdings dramatically when the level of the stock market is high. Such aggressive selling has a negative impact on market prices, reducing market returns by 19 basis points on days following attention-grabbing events.

The fundamental scarcity in the modern world is scarcity of attention.

Herbert Simon

1. Introduction

Finance models generally assume that investors have unconstrained cognitive resources and at all times are fully active in processing information and making decisions. However, a large body of psychological literature establishes that there are limits to the central cognitive-processing capacity of the human brain.[1] In the real world, many participants, particularly individual investors, can devote only limited attention to their portfolios. Market-wide attention-grabbing events, we hypothesize, cause investors to pay increased attention to their portfolios, thereby increasing trading activity and, in turn, influencing stock prices.

This study's empirical analysis pursues two basic questions: Does market-wide attention affect the trading behavior of investors? Does such attention influence stock market returns? Specifically, we analyze the ability of record-breaking events for the Dow index and front-page articles about the stock market — market-wide attention-grabbing events — to predict trading patterns and market returns. We find that high market-wide attention generates significant trading and price changes.

☆ I am very grateful to Joao Gomes, Craig MacKinlay, Rob Stambaugh, and Geoff Tate for their invaluable support and comments. I also thank Andy Abel, Malcolm Baker, Brad Barber, Nick Barberis, Robert Battalio, Marshall Blume, Long Chen, Zhiwu Chen, Martijn Cremers, Nicolae Garleanu, Will Goetzmann, Itay Goldstein, David Hirshleifer, Jennifer Huang, Don Keim, Jingyang Li, Andrew Metrick, David Musto, Jay Ritter, Michael Roberts, Pavel Savor, Paul Schultz, Nick Souleles, Paul Tetlock, Jessica Wachter, Jerry Warner (the referee), John Wei, Xueping Wu, Jeff Wurgler, Hong Yan, Moto Yogo, Jianfeng Yu, Lu Zheng, and seminar participants at CKGSB, City University of Hong Kong, HKUST, Shanghai Advanced Institute of Finance, Penn Econometrics Lunch, UC Irvine, University of Florida, University of Iowa, University of Notre Dame, Wharton, and Yale for their helpful comments. I thank Linwen Chang, Annie Chiu, Haixia Chen, Ting Chen, Vivian Huang, Dayin Li, Jianan Liu, Mao Zhang, and Mengke Zhang for excellent research assistance. I am indebted to Trim Tabs for providing me with data on daily mutual fund flows and Terry Odean for brokerage data. I gratefully acknowledge financial support received in the form of a Rodney L. White Grant and a Financial Institution Center Grant. An earlier version of this paper was circulated under the title "Attention and Trading."

* Tel.: +86 21 6293 2114.
E-mail address: yyuan@saif.sjtu.edu.cn

http://dx.doi.org/10.1016/j.jfineco.2015.03.006
0304-405X/

[1] See Pashler and Johnston (1998) for a review.

Measuring a pure attention event presents a challenge, because attention-grabbing events typically coincide with the release of meaningful information. An event well suited for our empirical tests should attract investors' attention while enabling us to control for its economic content. We propose Dow record events and front-page market news events as those fitting these criteria.

As the oldest and most visible market indicator, the Dow Jones Industrial Average attracts heavy media coverage and investor attention when it sets a new record level. We control for the economic information associated with such events by using returns and record events of broader market indexes. Specifically, in addition to Dow record events, we include record events on three other market indexes: the Nasdaq Composite Index, the NYSE Composite Index, and the Standard & Poor's (S&P) 500 Index. To the extent that record events are related to economic fundamentals in a market in which investors fully process all information, we would expect record events of the broader market indexes, the NYSE and the S&P, to show empirical patterns at least as strong as the narrower indexes, the Dow and Nasdaq. Significant empirical patterns emerge only for the latter two indexes, however, consistent with the hypothesis that such patterns reflect the effects of attention attracted by those more visible indexes. The NYSE and the S&P have lower visibility among the four indicators, in that even the Nasdaq appeared nearly 20 times as often as the NYSE and the S&P in the titles of front-page articles in the *New York Times* and the *Los Angeles Times* from 1983 to 2005.

We confirm and generalize our findings using an alternative measure of market-wide attention, namely, prominent media coverage of the stock market. A front-page market news event is defined as an occasion when both the *New York Times* and the *Los Angeles Times* cover the change in the price level of the domestic stock market within front-page articles. In addition to Dow record events, the market news covers many types of events such as market runs, drops, and other indexes hitting new highs. Furthermore, whereas Dow record events happen only when the market price level is high, front-page news events occur during periods with both high price levels (good times) and low price levels (bad times).

Using Dow record events and front-page news events, we examine the ability of market-wide attention-grabbing events to predict trading patterns and market returns. The empirical results indicate that the impact of market-wide attention is pervasive across the entire market. To be specific, we have reached the following two conclusions:

First, Dow record events predict abnormally higher individual-investor selling activities. Front-page market news events exhibit a similar impact when the market index is high. We obtain such empirical results consistently across three independent data sources: individual-investor aggregate order flow from the Institute for the Study of Security Markets (ISSM) and the Trade and Quote database (TAQ) of NYSE, aggregate daily mutual fund flows from Mutual Fund Trim Tabs, and detailed individual trading records from a large brokerage firm provided by Terry Odean. Specifically, we find that following Dow record events or news events when the market index is high, there are higher levels of (i) individual-investor aggregate net selling flow, (ii) flows out of mutual funds, and (iii) selling by households in their brokerage-firm accounts.

Second, Dow record events also predict negative market returns. In our 75-year sample, Dow record events predict the next-day return of the value-weighted NYSE–Amex index to be 19 basis points lower than average. Furthermore, when the Dow first reaches 17 "milestones" (hundred marks when the Dow is below 1,000 and thousand marks when the Dow is over 1,000), the next day sees an additional 28 basis point market drop. When the market is high, front-page news events show a negative predictive ability comparable to that of Dow record events, but news events show little predictive ability when the market index is low. The results imply that aggressive selling places considerable pressure on market prices and lowers next-day returns.

The overall empirical results support the primary mechanism entertained in this study: Market-wide attention events raise the attention level investors pay to their portfolios, causing them to become more active in processing information and making trade decisions. To understand further why active individual investors sell following high market-wide attention, we explore two nonexclusive hypotheses, each of which combines the above-mentioned basic mechanism with a further characterization of how investors trade once their attention level is raised and they become more active. In the first hypothesis, once attention-constrained investors become more active, they trade subject to the "disposition" effect. That is, such investors tend to "sell winners too early and ride losers too long" (Shefrin and Statman, 1985). In the second hypothesis, once attention-constrained investors become more active, they trade to rebalance their portfolios to a desired set of weights. Additional empirical analysis we perform supports both hypotheses.

This study complements the existing literature on investor attention. Barber and Odean (2008) and Da, Engelberg, and Gao (2012) analyze investor attention with a cross-sectional focus, whereas the present study focuses on the variation over time in investors' overall attention level.[2] Barber and Odean (2008) argue that investors face thousands of candidates when they select stocks to buy, but they face relatively few candidates — the stocks they already hold — when they select those to sell. Hence, stock-specific attention-grabbing events have a stronger impact on an investor's allocation of attention across buying candidates than across selling candidates. They find supporting empirical evidence.[3]

[2] Seasholes and Wu (2007) and Huddart, Lang, and Yetman (2009) test the hypothesis of Barber and Odean (2008) with different settings. Hou, Peng, and Xiong (2009) and Li and Yu (2012) analyze the interaction of limited attention and overreaction (underreaction), and find supporting evidence for the impact of attention. Other related studies show that certain types of public information can predict returns on certain types of portfolios. Limited attention seems to be a potentially reliable and natural explanation. See, for example, Huberman and Regev (2001), Hirshleifer, Lim, and Teoh (2004), Hou and Moskowitz (2005), DellaVigna and Pollet (2007, 2009), Hong, Torous, and Valkanov (2007), and Cohen and Frazzini (2008).

[3] Barber and Odean (2008) find that stock-specific attention increases the buying volume of the corresponding stock but has little influence on its selling volume.