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Retail investor attention and stock liquidity☆

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A B S T R A C T

We use the search volume index (SVI) of the stock ticker provided by Google Trends to capture the active attention that retail investors pay to stocks. Based on the analysis of S&P 500 stocks from 2004 to 2009, we show that the majority of the variation in SVI cannot be explained by passive attention measures, including Google News coverage and advertising expenditure. We find that retail investor attention, reflected by the level and change in SVI, significantly enlarges the shareholder base and improves stock liquidity. The results are robust to the control of endogeneity issues.

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1. Introduction

The "under-diversification puzzle" documented in the literature shows that investors have "home bias" because they tend to favor investment in firms they are familiar with (French Poterba, 1991; Tesar and Werner, 1995; Cao et al., 2011). In order to get familiar with such firms, investors have to spend time and effort collecting relevant information, which suggests that attention from investors might predict the subsequent trading activity. On the theoretical side, studies on asset pricing posit that investor attention is a necessary condition for a stock price to fully reflect public information, as investors need to be aware of the information before they can analyze and react to it (Hirshleifer and Teoh, 2003; Hou et al., 2009; Hirshleifer et al., 2011). However, because of the limits on the information-processing capacity of human beings, attention is largely concentrated on the stocks that investors are interested in or familiar with, which implies that attention paid to stocks by investors could result in subsequent trading of these stocks. Our study aims to provide fresh insights into the capital market consequences of investors' attention.

Building on the assumption that the investors passively attend to publicly available information, previous studies have used advertising expenditure (Grullon et al., 2004) and media coverage (Fang and Peress, 2009) to capture investors' attention and examine its implications for stock liquidity and stock returns. In this paper, we employ a measure of active attention

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from investors, recently developed by Da et al. (2011), namely the aggregate search volume index (SVI) provided by Google Trends (available from: www.google.com/trends), and test the impact of investors' attention paid to listed firms on two aspects of listed firms: breadth of ownership and liquidity. After controlling for the passive attention measures documented in the literature, we find that increased investors' attention measured by the SVI contributes to a broader shareholder base. This is in line with the argument of Barber and Odean (2008) that retail investors tend to search for information about the firm's history, product, environment and strategies when selecting stocks, and can be interpreted with the "investor recognition hypothesis" (Merton, 1987), which states that the shareholder base measures the recognition of the firm among investors, so that an enlarged shareholder base indicates that the firm has been well recognized. In other words, potential investors have to be aware of a firm before they can gradually become familiar with it and then eventually decide to invest, suggesting that investor attention is a necessary condition for a firm to be recognized. The impact of passive attention measures, however, is not always significant in the results, showing that retail investors do not necessarily invest in firms with more advertising expenditure or media coverage[1]. Furthermore, we find that increased investors' attention, as measured by the SVI, results in reduced bid-ask spread, and our results remain consistent after controlling for the passive attention measures, firm characteristics, and year and industry fixed effects. Our findings remain robust to alternative liquidity measures, including effective spread, relative effective spread, and turnover rate (trading volume divided by shares outstanding).

This paper makes three important contributions to the literature. First, our study contributes to the broad literature on the "investor recognition hypothesis" (i.e., Merton, 1987; Grullon et al., 2004; Tetlock, 2010; Fang and Peress, 2009)[2]. Merton (1987) asserts that "ceteris paribus, an increase in the relative size of the firm's investor base will reduce the firm's cost of capital and increase the market value of the firm." A stock's visibility is associated with its price, publicity and popularity of the core products and social image. However, we suggest that these measures are passive, in that it is implicitly assumed that firms with high visibility will attract more attention from investors which is difficult to empirically verify. Our study is built on an active measure of ex post attention, as Google search is a confirmed measure of attention: if an individual intentionally searches for information about a stock, it is evident that one is paying attention to it (Da et al., 2011)[3]. Furthermore, Google search index captures investors' attention in a more timely way than passive measures of attention. When individual investors actively search for a stock using Google, they acquire useful information relevant to the stock, which mitigates the information asymmetry problem for these stocks. As a result, liquidity improves for stocks with better investor recognition.

Second, our paper adds to the emerging literature on investor attention and asset pricing dynamics, including Barber and Odean (2008) on investor attention and individual investors' trading behavior, Engelberg and Parsons (2011) on the casual impact of local media coverage on local trading, Da et al. (2011) on the impact of active attention on IPO returns and price changes in subsequent periods and Aouadi et al. (2013) on the effect of investor attention on stock market liquidity and volatility use Google French data.

Finally, our study extends the literature on the stock market consequence of investors' information demand. For example, Vlastakis and Markellos (2012) use the Google search volume of constituents of Dow Jones Industrial Average Index as a proxy of investors' information demand, and find that such information demand has significant impact on stock trading volume and the conditional variance of excess return. Siganos (2013) use Google search volume of target firms involved in a merger between 2004 and 2010 in the UK as a proxy for investor's information demand for the target firms, and find that such measure can explain a large percentage of the price increase in target firms prior to the merger. Vozlyublennaia (2014) use Google search to proxy for investor attention (investors' information demand) and reports that attention has a short-lived influence on performance of index of stocks, bonds and commodities. In addition, attention weakens the predictability of index return because more revealed information due to increasing attention improves market efficiency. We contribute to this stream of literature by showing investors' attention leads to larger shareholder base and improved stock liquidity.

The remainder of the paper is organized as follows. Section 2 describes the research design and the data. Sections 3 and 4 present the empirical results. Section 5 describes the robustness checks. Section 4 concludes by providing suggestions for future research.

[1] We argue that the SVI captures investor attention in a more timely and accurate manner than passive attention measures for the following reasons: (1) media coverage of a firm is sporadic, while the SVI is continuous; (2) media coverage does not necessarily guarantee attention unless investors attend to it, and the same news coverage could generate different levels of investor attention for different stocks (Da et al., 2011).

[2] Empirical evidences largely support the investor's recognition hypothesis. Chen et al. (2004) report an increased investor's awareness after a firm is added to the S&P 500 index, which leads to a reduction in both the information asymmetry component of the bid-ask spread and the Merton (1987)'s cost of under-diversification. By the same token, Lehavy and Sloan (2008) contend that an exchange listing increases investor's recognition of a firm. Furthermore, a positive association between investor's recognition and contemporaneous stock return id documented. Bushee and Miller (2012) find that small and mid-cap firms can enhance their visibility among investors and analysts by hiring an investor relation firm, which contributes to improved market valuation.

[3] Our study is related to, but different from, Grullon et al. (2004) because our paper focuses on the relation between investors' active attention (to a stock) and the firm's shareholder base as well as its liquidity, while Grullon et al. (2004) investigate firms' advertising expenditure, as a (passive) approach used to reach a broad audience, and its impact on breadth of ownership and liquidity.

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