Contents lists available at ScienceDirect

### Journal of Contemporary Accounting & Economics

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

## Market ambiguity and individual investor information demand

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#### ARTICLE INFO

Keywords: Market ambiguity uncertainty Google search index and institutional investors JEL classification:

G40 M20 M40

#### ABSTRACT

We examine whether ambiguity in the market leads to an increase in information demand by individual investors. Drawing on the asset-pricing model proposed by Mele and Sangiorgi (2015), which incorporates market ambiguity, we measure individual information demand using daily Google searches and measure market ambiguity using a metric based on the market trades of institutional investors. We find that individual investors increase their information demand during periods of greater market ambiguity. We also provide evidence that information demand from individual investors spikes around earnings announcement days primarily when market uncertainty is driven by net-selling activity. Overall, these results suggest that the disagreement among institutional investors either represents uncertainty or contributes to the uncertainty related to a stock, leading to increased demand for information from individual investors.

#### 1. Introduction

Underlying the efficiency of capital markets is the flow of information. Given the importance of the information channel, it is not surprising that it has been a focus in prior research. Much of this research examines the role of information intermediaries, such as financial analysts (Healey and Palepu, 2001) and the media (Peress, 2014). More recent research has explored how the flow of information through the Internet and social media outlets, e.g., Twitter, affects capital markets (Drake et al., 2012; Blankespoor et al., 2014). Building on this research we examine how ambiguity in the market leads to an increase in information demand by uninformed market participants, i.e., individuals, measuring individual information demand using daily Google searches (Drake et al., 2012; Brown et al., 2015), and extend the research on this information channel. We base our hypotheses on the asset-pricing model proposed by Mele and Sangiorgi (2015) which shows that investors mitigate market ambiguity, Knightian uncertainty, through information acquisition. We also introduce a unique measure of market ambiguity, uncertainty among institutional investors.

The primary drivers of firm-level uncertainty are the unknown and/or random factors affecting the information environment of the firm (Diamond and Verrecchia 1991). Such uncertainty creates disagreement among not only uninformed market participants but also among informed participants, and this uncertainty is reflected in their trading practices (i.e., some will buy and some will sell). In the U.S. market, institutional investors own more than 60 percent of all publicly traded stocks and account for an even larger share of trading volume, making them one of the most important participants in the equity market.<sup>1</sup> Prior research provides evidence that these institutional investors have the resources to analyze publicly available information and the ability to access proprietary information. For example, they are invited to investor conferences with corporate executives that are not available to other market participants (Ke and Ramalingegowda, 2005; Green et al., 2014; Ng and Troianovski, 2015; Solomon and Soltes, 2015). Therefore, the disagreement reflected in the trades of the most sophisticated investors suggests the existence of ambiguity about the fundamental

<sup>1</sup> Source: Securities Industry and Financial Markets Association (2015).







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value of the underlying stock, which leads uninformed individual investors to be uncertain about the information held by the informed institutional investors (Mele and Sangiorgi, 2015).

Differential trading activity among informed institutional investors, who have the resources to assess risk, reflects the uncertainty associated with a particular security. We may also view this type of trading activity as a lack of consensus among institutional investors' interpretation of market information, i.e., some institutional investors interpret the information as good news while others interpret it as bad news. As a result, some institutional investors sell in large orders, pushing down the price, whereas other institutions buy, pushing up the price. We argue that this type of institutional investor trading behavior not only suggests a disagreement among informed investors but also proxies for market-wide uncertainty existing about the true state of the underlying security. Therefore, we assess overall market uncertainty on a particular security by measuring the level of disagreement in the trades of these informed institutional investors, i.e., *informed uncertainty*. We develop our measure of investor disagreement based on literature examining the impact of institutional investor order imbalances on market activity (Chordia et al., 2002; Chordia and Subrahmanyam, 2004).<sup>2</sup>

Mele and Sangiorgi (2015) hypothesize that uninformed, risk averse investors in an uncertain market will be motivated to seek information from informed investors. Based on this theory, we hypothesize that individual investors not only demand information during the earnings announcement periods, as suggested by Drake et al. (2012), but also undertake similar information search behavior during days when the trades of informed investors indicate higher levels of differential interpretation of the market information. In other words, individual investors increase their information demand around the days when large investors' trading behavior reflects market uncertainty in an attempt to decrease ambiguity and more accurately interpret the information revealed by stock prices.

We create a metric measuring institutional investor disagreement as a proxy for market uncertainty and then investigate the relation between market uncertainty and individual investors' demand for information. We employ the daily Google Search Volume Index (SVI) on a particular security as a measure of demand for information by individual investors. We follow the construction of the search metric from Drake et al. (2012) to capture the abnormal information demand from individual investors.

Overall, we find that individual investors increase their information demand during periods of high market uncertainty. Further, our results show that during earnings announcement periods, when there is higher disagreement among institutional investors, i.e., low consensus, individual investors demand more information. While this evidence corroborates Drake et al.'s (2012) finding that information demand from individual investors spikes around earnings announcements, further analysis shows that this heightened information demand from individual investors occurs primarily around earnings announcement days when market ambiguity is driven by net selling pressure. These results collectively indicate that market uncertainty, as measured by the trading patterns of informed investors, influences information demand by uninformed investors, suggesting that the disagreement among institutional investors either represents uncertainty or contributes to the uncertainty related to a stock. This ambiguity leads to increased demand for information from individual investors.

Our study contributes to the literature in several ways. First, we add to the limited research seeking to understand the relation between informed uncertainty and information demand from uninformed investors. Second, we develop and introduce a unique measure of market uncertainty based on institutional investor trading activity that reflects the composition of today's equity market. Further, we expand the recent research examining the flow of information through Internet searches adding to our understanding of the ways in which information flows from firms to individual investors. We also contribute to the growing literature suggesting that information searches revise investors' beliefs by reducing information asymmetry. Thus, we expand the evidence on market efficiency and provide support for research proposing explanations for market volatility based on information demand. Finally, our measurement of trading imbalance among institutional investors adds to the work examining order imbalance and trading activity.

We organize our paper as follows. The next section discusses the literature and develops our hypotheses. Section 3 presents our Google Search Volume index extraction method and the institutional investor daily trading data used in our sample. Section 4 and 5 present our research design and results, respectively. Finally, we discuss our conclusions and research limitations in Section 6.

#### 2. Literature and hypotheses development

#### 2.1. The flow of information

The efficient flow of information to investors is fundamental to a capital market that relies on investors to make investment decisions. Healey and Palepu (2001) argue that within this capital market structure the "demand for financial reports and disclosure arises from information asymmetry" (p. 406). In their model, presented in Fig. 1, information flows from firms directly to individual investors through financial reports and press releases and indirectly through information intermediaries such as financial analysts. Capital flows from investors to firms through the financial markets and financial intermediaries, such as institutional investors. However, with the availability of internet technologies, the way in which firm information and financial disclosures flow to individuals is evolving. Research provides evidence that individual investors seek to resolve the long-standing information asymmetry issue by searching for firm information on Google and social media platforms such as Twitter, Facebook, and Wikipedia.

Drake et al. (2012) use Google search volume index (SVI) as a proxy for individual information demand. They find that investor search activity in the pre-earnings announcement period is positively associated with trading volume and the market reaction to

<sup>&</sup>lt;sup>2</sup> Chordia and Subrahmanyam (2004) suggest a large order imbalance could denote informed trading (page 510).

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