Journal of Banking & Finance 37 (2013) 1560–1572

Contents lists available at SciVerse ScienceDirect

Journal of Banking & Finance

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

Information transfers and learning in financial markets: Evidence from short selling around insider sales

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ARTICLE INFO

Article history:
Received 8 November 2011
Accepted 29 December 2012
Available online 22 January 2013

JEL classification:
G14
G30

Keywords:
Insider trading
Short selling
Information transfers
Brokerage effect

ABSTRACT

We document significant increases in short positions on days when company insiders sell their firms' shares. Short selling increases before insider sales are publicly reported and often before insiders finish selling. Furthermore, the magnitude of short selling activity is consistent with short sellers' knowledge of the insider's rank (e.g., CEO, CFO, or a lower-ranked manager) and with knowledge of the unobservable size of the insider's trading position. We show that short sellers' superior timing is consistent with (i) monitoring of order flow and (ii) obtaining price-relevant information from brokerages that execute insider sales. Some of our results extend to insider purchases.

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1. Introduction

Research often finds that short sellers successfully trade on short-lived price-relevant information. Nevertheless, the exact nature of short sellers' informedness is not fully understood. While some argue that short sellers analyze public information, others suggest that short sellers trade on private information. Yet another group of researchers finds no evidence of superior information processing skills and attributes short seller behavior to speculative motives.

In this study, we conduct a comprehensive examination of short seller informedness regarding recently completed (or ongoing) insider sales. Our evidence is consistent with the notion that some short sellers become informed about insider sales ahead of an average investor. Specifically, short selling by non-market makers increases by 26% on insider sale days. An average insider sale is reported to the public two days after the sale date and is accompanied by an abnormal announcement return of −1.35%. Thus, a short position opened before the public announcement of an insider sale and closed upon the market reaction to the announcement may represent a profit opportunity.

We show that some of short sellers' informedness about insider sales may be credited to their ability to analyze visible order flow. Because insider sales are often large, they create significant disturbances in the supply of shares. Our results suggest that such disturbances are detected by sophisticated tape monitors, who subsequently sell short.

Yet the data also indicate that a much larger portion of abnormal short selling is attributable to information that is not observable from order flow. For instance, short sellers' activities are consistent with knowledge of such unobservables as the insider's status (e.g., CEO, CFO, or lower level manager) and the size of the insider's trading interest. Specifically, short selling is higher concurrent with stock sales by higher-ranked executives and when an insider's trading interest is large. Both insider status and trading interest are not immediately observable by short sellers. These details are usually publicly reported two business days after the insider transaction occurs.

A unique feature of our data is that, for each insider sale, we observe the identity of the broker who executed this sale. This is made possible by merging two insider trading datasets – Form 4 and Form 144. Applied to the combined dataset, our bootstrapping procedure produces results consistent with the view that dissemination of price-relevant information about ongoing insider sales is often associated with the brokerages that execute these sales.

Our study adds to the literature on short sellers' informedness. Some studies, e.g., Wu and Zhang, 2011; Blau and Pinegar, 2012; Engelberg, et al., 2012, suggest that short sellers analyze publicly available information (e.g., corporate news and observable anomalies) better and faster than other investors. Others, e.g., Christophe

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http://dx.doi.org/10.1016/j.jbankfin.2012.12.017

et al., 2004, 2010; Massoud et al., 2011, propose that short selling patterns are often consistent with access to non-public information prior to the event announcement.

Another growing body of research finds no support for the notion that short sellers are skillful short-term traders. Blau et al. (2012) discover no evidence of short selling driven by non-public information prior to merger announcements. Neither do they find any evidence of short sellers' superior public information processing skills. Along the same lines, studies find that short selling adjacent to seasoned equity offerings (Henry and Koski, 2010) and analyst recommendations (Blau and Wade, 2012) is more consistent with manipulative trading or speculation than with superior informedness.

In this light, the results of Blau and Wade (2012) are particularly notable. Blau and Wade revisit conclusions of Christophe et al. (2010), who had found that abnormally high short selling prior to analyst downgrades is consistent with superior informedness. Blau and Wade discover that abnormal short selling does not only precede downgrades, but also upgrades. Had short sellers been truly informed, they would have opened fewer short positions prior to the upgrades. Blau and Wade therefore conclude that short selling around analyst recommendation changes is more consistent with speculation than with informed trading. In this paper, we show that short sellers react to insider sales and purchases in a manner consistent with informed trading. Specifically, short selling increases on insider sale days and declines on insider purchase days. Thus, our results revalidate the notion of short sellers' informedness about certain corporate events.

Our contribution to the existing literature is threefold: (i) we uncover conclusive evidence of brokerage involvement in information dissemination about insider transactions (we are unaware of any previous work that establishes such results); (ii) our results extend to insider purchases, thereby satisfying Blau and Wade's (2012) criticism that short selling activity around corporate events may be speculative rather than informed; and (iii) we identify a source of short seller informedness that has been generally overlooked by prior studies – learning by observing public order flow.

The remainder of the paper is organized as follows. Section 2 describes the existing literature on insider sales and on information dissemination in the financial industry. Section 3 describes the data and the sample. Section 4 contains the empirical analysis of short selling around insider sales and documents the brokerage effect. Section 5 relates abnormal short selling to the firm and insider characteristics and offers a discussion of profitability of short positions. Section 6 concludes.

2. Background

2.1. Information content of insider trades

Researchers generally agree that insiders are informed and profit from this informedness even in the presence of trading restrictions. Early studies (e.g., Jaffe, 1974; Seyhun, 1986; Lin and Howe, 1990) document that insiders foresee firm prospects several years into the future. On the other hand, Lakonishok and Lee (2001) argue that insiders are contrarians, whereas Piotroski and Roulstone (2005) find evidence of insiders' being both contrarian and informed about their companies' future prospects, although contrarian traits appear stronger.

According to Bettis et al. (2000), most firms establish blackout periods, successfully restricting insider activity around corporate events and thus reducing the likelihood of litigation. Huddart et al. (2007) find that, despite the restrictions, insiders are still able to profit if they trade after the blackout periods and before the filings of 10-K or 10-Q forms. These forms contain detailed information on the earnings origin and often lead to sizeable price adjustments. Thus, although restricted, insider trading remains informed. The market recognizes this fact and reacts negatively (positively) to announcements of insider sales (purchases). Therefore, the knowledge of insider transactions ahead of the market may present a profit opportunity.

2.2. Information dissemination in the financial industry

Information dissemination in the financial industry is of significant interest to both finance scholars and regulators. Irvine et al. (2007) and Christophe et al. (2010) posit that some traders receive tips from their brokerages about the upcoming downgrades by the analysts affiliated with these brokerages. Blau and Wade (2012) question these conclusions on the grounds that a reverse short selling pattern does not accompany analyst upgrades. In this study, we examine short selling that accompanies both insider sales and purchases. We show that, unlike in the case of analyst recommendation changes, abnormally positive short selling accompanies insider sales, and abnormally negative short selling accompanies insider purchases. Thus, our results are consistent with information transfers and are generalizable for both directions of insider activity.

In a study related to ours, Geczy and Yan (2006) hypothesize that brokers relay insider information to preferred clients, and that broker-affiliated market makers (MMs) subsequently quote more aggressively to fill these clients' sell orders. Although this hypothesis finds confirmation in Geczy and Yan's data, aggressive quoting by MMs may be alternatively ascribed to inventory management. For instance, an MM may create a short position in the stock preparing to absorb the selling pressure on the insider sale announcement day. To create such a position, the MM will actively sell, submitting aggressive ask quotes in the process. Because they focus solely on dealer quotes, Geczy and Yan (2006) do not separate the inventory management explanation from the information transfer explanation. The advantage of our approach is that we are able to distinguish between the two explanations by separating the market maker and the non-market maker (non-MM) short sales. We find that, on insider sale days, short sales by non-MMs increase by at least 26.11%, and short sales by MMs increase by at least 83.13%.[1] These results are consistent with both the inventory management and the information transfer hypotheses.

Blau and Pinegar (2012) study short selling around earnings announcements (EAs) and find that short sellers mainly profit from ability to process public information in EAs, rather than from access to non-public information. Although we examine a seemingly similar setting, namely short sellers' reaction to corporate events, our results are different from Blau and Pinegar's. We note that the difference in our results should not appear surprising. Information about earnings announcements enters the public domain as soon as the announcement is made, while information about an average insider sale takes two days to become public. As such, insider sale information remains private long enough to benefit traders who have access to superior information sources.

In a recent working paper, Khan and Lu (2011) suggest that short sellers learn about insider sales several days in advance and open abnormally high numbers of new positions during the five days before insider sales, in effect front-running the insiders. We do not find evidence supportive of this claim in our data. We suggest that Khan and Lu's findings may be due to confounding events and insufficient controls for common short selling determinants. Our robustness checks are consistent with this suggestion.

[1] These numbers are reported in Table 4 and discussed in Section 4.2.

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