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Short sales, margin purchases and bid–ask spreads

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ABSTRACT

This study examines intraday patterns of short sales, margin purchases, adverse selection, and bid–ask spreads in the order-driven market of the Taiwan Stock Exchange (TWSE). We find that both short sales and margin purchases exhibit a U-shaped intraday pattern in the TWSE. We further show that short sales and margin purchases have a significantly positive relationship with adverse selection and bid–ask spreads. We provide evidence that the U-shaped pattern of bid–ask spreads can be explained by short selling and margin trading activities.

1. Introduction

Previous microstructure literature documents a U-shaped intraday pattern of bid–ask spreads. McInish and Wood (1992) and Corwin and Schultz (2012) find that the bid–ask spreads of the New York Stock Exchange (NYSE) are widest immediately after the opening, narrow during the day, and widen near the closing. The NYSE is a hybrid market in which both specialists and limit-order traders establish prices. Over the past decade, limit-order trading has received growing attention as the use of electronic public limit order books in order-driven markets grows rapidly. Similar U-shaped intraday patterns of bid–ask spreads are documented in order-driven markets as well, such as the Tokyo Stock Exchange (Ahn et al., 2002) and the Taiwan Stock Exchange (TWSE, Ke et al., 2004).

The spread generally has three cost components: order processing costs, inventory holding costs, and adverse selection (information asymmetry) costs (Stoll, 1989). The order processing cost component

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represents the fee charged by specialists for standing by to match buy and sell orders. The inventory holding cost component compensates market makers for maintaining and managing inventories. The adverse selection cost component represents the reward to specialists for taking on the risk of dealing with traders who may possess superior information. Numerous microstructure studies have examined the information asymmetry component and related it to the intraday pattern of bid–ask spreads.

Stoll (1989), Barclay and Hendershott (2004), and Chordia et al. (2008) find that wider spreads are accompanied by greater information asymmetry. Several studies further document that the level of information asymmetry is greater at the opening and the closing of the trading day. Thus, information asymmetry may help explain the U-shaped pattern of spreads. Li et al. (2005) show that the U-shaped pattern of spreads is driven by limit-order traders who keep bid–ask spreads wide during the first and last hours of trading to offset high adverse selection costs in the NYSE market. Nyholm (2000) finds that the intraday pattern of the Probability of Informed Trading (PIN) exhibits a U-shaped pattern. Informed traders may tend to execute their trades at the opening and closing of the trading day when the degree of information asymmetry is high.

The purpose of this study is to analyze the intraday patterns of information asymmetry and bid–ask spreads in the pure limit-order market of the TWSE. Unlike the NYSE, the TWSE is an order-driven market. Order-driven markets involve the submission of public limit orders which supply liquidity to the market. The price dynamics are determined by all market participants instead of a single specialist or a few market makers. Thus, the adverse selection component in an order-driven market can be interpreted as private information that is impounded into prices through the order flow.

A high level of information asymmetry could be driven by informed traders who have access to private information. We examine the intraday patterns of information asymmetry by studying the trading patterns of two types of informed traders: short sellers and margin purchasers. Since higher adverse selection costs widen the bid–ask spread, the U-shaped pattern of bid–ask spreads could be explained by the trading activities of these informed traders.

Short sellers are usually assumed to be rational and more informed than other traders (Diamond and Verrecchia, 1987; Aitken et al., 1998; Christophe et al., 2004). Diamond and Verrecchia (1987) suggest that a short seller is able to take advantage of private information by trading shares before negative information reaches the public. The fact that stocks with high levels of short interests earn abnormally lower returns in the future suggests that short sellers have superior information. Consistent with the hypothesis of Diamond and Verrecchia (1987), Desai et al. (2002) show that heavily shorted firms experience significant negative abnormal returns after controlling for the size, book-to-market ratio, and momentum factors. Diether et al. (2009) find that short sellers increase their trading following positive returns and correctly predict future negative abnormal returns. Hu et al. (2009) examine the informational role played by short interest in the TWSE stock price formation. They show that heavily shorted stocks generate significant negative risk-adjusted abnormal returns. Recent studies also try to examine the intraday behavior of short selling activities. For instance, Blau et al. (2010) show the U-shaped pattern of short selling in all major US exchanges.

A similar argument should apply to margin purchases. Buying on margin involves using leverage in the margin account to buy stocks. The cost of margin purchases is high since interest is charged on the borrowed funds. Liquidity traders are likely not engaged in margin purchases. However, informed traders who receive positive private information about a firm may purchase its stocks on margin to enhance their returns. Wang (2012) shows that the introduction of margin trading in China may lead to more information based trading and higher adverse selection and bid–ask spreads. Hirose et al. (2009) find that stocks experience positive subsequent returns after margin traders increase their long positions.

We find that short sales and margin purchases both exhibit intraday U-shaped patterns in the TWSE. This evidence implies that informed traders, such as short sellers and margin traders tend to execute their trades at the opening and closing of a trading day. We further show that short sales and margin purchases have a significant positive relationship with adverse selection. Since bid–ask spreads widen when the information asymmetry is greater, we provide evidence that the U-shaped pattern of bid–ask spreads could be explained by the trading patterns of short sellers and margin purchasers.

The evidence we present contributes to the microstructure literature in several ways. First, previous empirical research on intraday patterns has focused on spreads, trading activity and volatility. No research has yet attempted to examine the intraday pattern of margin trading activities. We are the first to show