

Contents lists available at [SciVerse ScienceDirect](#)

Journal of Banking & Finance

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

Public information arrival: Price discovery and liquidity in electronic limit order markets

Ryan Riordan^{a,*}, Andreas Storkenmaier^b, Martin Wagener^b, S. Sarah Zhang^b

^a University of Ontario Institute of Technology, Faculty of Business and Information Technology, 2000 Simcoe Street North, Oshawa, Ont., Canada L1H 7K4

^b Karlsruhe Institute of Technology, Institute of Information Systems and Management, Englerstr. 14, 76131 Karlsruhe, Germany

ARTICLE INFO

Article history:

Received 4 April 2011

Accepted 5 November 2012

Available online 20 November 2012

JEL classification:

G10

G14

Keywords:

Information

Liquidity

Price discovery

News

Limit order markets

ABSTRACT

How information is translated into market prices is still an open question. This paper studies the impact of newswire messages on intraday price discovery, liquidity, and trading intensity in an electronic limit order market. We take an objective ex ante measure of the tone of a message to study the impacts of positive, negative, and neutral messages on price discovery and trading activity. As expected, we find higher adverse selection costs around the arrival of newswire messages. Negative messages are associated with higher adverse selection costs than positive or neutral messages. Liquidity increases around positive and neutral messages and decreases around negative messages. Available order book depth as well as the trading intensity increases around all news. Our results suggest that market participants possess different information gathering and processing capabilities and that negative news messages are particularly informative and induce stronger market reactions.

© 2012 Elsevier B.V. All rights reserved.

1. Introduction

Technology and computers have not only changed trading in financial markets, but have also revolutionized the way financial news is disseminated and analyzed. As trading technology has advanced, news providers have kept pace and deliver news to traders around the world within a fraction of a second. News providers have also started to offer newswire products with machine-learning systems that cater to algorithmic traders. However, most news is still read by professional human traders who read newswires such as Thomson Reuters, Bloomberg, or Dow Jones on a regular basis. They spend a considerable amount of time and money on these information sources and emphasize the importance of the speed and accuracy of their news. Newswire messages represent much of the overall information and real-time information traders receive. The intraday impact of newswire messages is however still not well understood. It is not entirely clear whether newswire messages actually contain new information, whether traders act in advance or after the arrival of messages, and how newswire

messages impact liquidity and price dynamics in a modern electronic limit order market.

This paper studies the impact of Thomson Reuters newswire messages on the intraday price discovery, trading activity, and liquidity of stocks traded on the Toronto Stock Exchange. The Toronto Stock Exchange is well suited for such an analysis. First, it is a highly automated electronic limit order book market comparable to many international exchanges. Second, in contrast to most European markets, there are no major second language news streams. Third, the Canadian market has a very low level of fragmentation during our observation period.

In this paper, newswire messages are clustered by sentiment. The differentiation between positive, negative, and neutral news enables us to investigate potentially asymmetric reactions to newswire messages based on their tone. Liquidity increases around positive and neutral messages and decreases around negative messages. Trading intensity increases around all types of newswire messages. In general, we find higher adverse selection costs around newswire messages. Negative messages are associated with significantly higher adverse selection costs than positive messages.

Traditional financial theory does not differentiate between positive and negative public information. However, psychological studies from the field of impression formation show that humans react stronger to bad news than to good news (cf. Soroka, 2006). Overall, our results suggest that participants' possess different information

* Corresponding author. Tel.: +1 905 721 8668x5397; fax: +1 905 721 3178.

E-mail addresses: ryan.riordan@uoit.ca (R. Riordan), andreas.storkenmaier@kit.edu (A. Storkenmaier), martin.wagener@kit.edu (M. Wagener), sarah.zhang@kit.edu (S. Sarah Zhang).

gathering and information processing capabilities and that these participants react differently to good and bad news.

The remainder of the paper is structured as follows. Section 2 presents related literature. Section 3 gives an overview on the institutional structure of the Toronto Stock Exchange. Section 4 provides details on newswire messages, trade and order book data, and the sample selection. Section 5 introduces the research design and methodology. Section 6 provides the results and interpretation and Section 7 concludes.

2. Related work

The existing public information literature studies different types of public information, from unstructured media content to scheduled earnings announcements. The Thomson Reuters newswire messages are in-between these extremes. [Rinaldo \(2008\)](#) analyzes the intraday market dynamics of firm specific unstructured news at the Paris Bourse. The six months of news data is based on the Reuters alert system without ex ante measures news sentiment (i.e. positive, negative, or neutral). He finds a marginally significant increase in liquidity and slightly higher adverse selection costs around news arrivals. [Groß-Klußmann and Hautsch \(2011\)](#) use a news data set similar to ours in a study of high-frequency returns and profitability. They find that “high-frequency trading activity indeed significantly reacts to intraday company-specific news items”.

[Krinsky and Lee \(1996\)](#) analyze the impact of scheduled earnings announcements at the NYSE and AMEX. They find that the adverse selection component of the spread increases around earnings announcements. The authors attribute this effect to temporary information advantages of informed investors and to faster news processing capabilities of public information processors. In a study of macroeconomic announcements on US government bond trading, [Green \(2004\)](#) shows higher adverse selection costs around macroeconomic news releases. US government bond trading is organized as a dealer market which might yield different results than a public limit order market. [Berry and Howe \(1994\)](#) also analyze the intraday impact of public information arrivals. Their proxy for public information is the number of news releases by Thomson Reuters’ news service per unit of time. Their results suggest a “positive, moderate relationship between public information and trading volume, and no relationship with price volatility” ([Berry and Howe, 1994](#)). Algorithmic traders in the foreign exchange market monitor macroeconomic news and reduce their supply of liquidity directly after economic news arrivals to being adversely selected ([Chaboud et al., 2009](#)).

[Kim and Verrecchia \(1991\)](#) formulate a theoretical model that explains higher adverse selection costs prior to a scheduled announcement such as earnings announcements. Traders acquire costly private information to trade in advance of a public announcement. [Kim and Verrecchia \(1994\)](#) introduce the notion that different traders have varying capabilities to interpret earnings announcements. This might lead to an increase in adverse selection costs after earnings announcements due to higher information asymmetry. However, trading volume might still increase despite a decrease in liquidity around earnings announcements due to informed traders’ willingness to pay the spread. Another theoretical model developed by [Harris and Raviv \(1993\)](#) attributes effects around the announcement of public information to speculative trading. Traders disagree as a result of asymmetric private information or different information processing capabilities which leads to a surge in market activity.

One challenge in the analysis of public information is the transformation of ambiguous news and media content to variables that can be studied in econometric models. Several papers analyze ambiguous content and study its impact on financial markets.

Newspaper content is one of the most frequently studied types of media content. [Niederhoffer \(1971\)](#) provides one of the earliest papers that analyzes media content. He shows that world events are followed by larger price changes than under normal market conditions. [Tetlock \(2007\)](#) shows that high pessimism in the WSJ column “Abreast of the Market” is followed by lower market prices and thereafter by a reversal to fundamentals.

In a study of Internet stock message board postings, [Antweiler and Frank \(2004\)](#) find that an increase in postings correlates with an increase in volatility. News media also affects individual buyers’ perception of and their attention towards specific stocks ([Barber and Odean, 2008](#)). Individual buyers are more prone to buy stocks which have drawn their attention through media outlets. All these studies have in common that they quantify ambiguous media content or otherwise derive quantitative information from qualitative linguistic messages.

For our analyses, we use objectively quantified news messages from Thomson Reuters. First, we study how newswire messages affect price discovery, trading activity, and liquidity. Theory and empirical literature suggests an increase in trading activity around news arrivals. Empirical evidence for liquidity and adverse selection is mixed. Financial theory however suggests an increase in adverse selection costs and a reduction of liquidity. Second, we investigate how trading activity, liquidity, and adverse selection interact around news messages.

3. Institutional details

The Toronto Stock Exchange (TSX) is Canada’s most important equity exchange and is operated by the TMX Group.¹ The TSX is North America’s third largest equity exchange by trading volume after Nasdaq and the New York Stock Exchange.² We use prices on the TSX to calculate the S&P/TSX 60 index, Canada’s blue chip stock market index maintained by Standard and Poors.

The TSX operates an entirely electronic market with a centralized public limit order book. The market features basic limit and market orders. The TSX market model is based on price and time priority. Iceberg orders that display only a portion of their total size are available for a minimum of 500 shares. They sacrifice time priority on the non-displayed portion of the order. Liquidity is provided by public limit orders displayed in the order book.

4. Data and sample selection

Our news data consists of Thomson Reuters NewsScope Content and is tagged using the Thomson Reuters NewsScope Sentiment Engine (RNSE).³ The RNSE real-time data stream is disseminated to approximately 370,000 Reuters screens worldwide. According to Thomson Reuters, they “deliver over 500,000 alerts and over two million unique stories a year”.⁴ The RNSE data provide three pieces of automatically generated information: *Sentiment*, *Relevance*, and *Novelty*.⁵ *Sentiment* measures the stock specific tone of a news item

¹ Alternative trading systems do not play an important role during our observation period. The TSX’s market share by trading volume was still 94.2% in January 2009, directly after the end of our observation period, and close to 100% one year earlier. (Source: Financial Times, 20 November 2009, “Toronto’s trading platforms draw regulatory scrutiny”).

² World Federation of Exchanges, 2008, <http://www.world-exchanges.org/statistics>.

³ We thank Thomson Reuters for providing access to Thomson Reuters NewsScope Sentiment Engine archive data.

⁴ Thomson Reuters, <http://www.online.reuters.com/productinfo/newsscoperealttime>.

⁵ See further: Reuters NewsScope Sentiment Engine: Guide to sample data and system overview and Reuters NewsScope Sentiment Engine: Output image and file format.

Download English Version:

<https://daneshyari.com/en/article/5089675>

Download Persian Version:

<https://daneshyari.com/article/5089675>

[Daneshyari.com](https://daneshyari.com)