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Journal of Empirical Finance 11 (2004) 163–184
Journal of EMPIRICAL FINANCE
www.elsevier.com/locate/econbase

An empirical analysis of the role of the trading intensity in information dissemination on the NYSE

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Accepted 20 December 2002

Abstract

In this paper, we use high-frequency data on five frequently traded stocks listed on the New York Stock Exchange (NYSE) in the year 1999 to examine the price impact of trades and its relation to the trading intensity. We show that the distribution of the absolute price change with fast trading first-order stochastically dominates the distribution of the absolute price change with slow trading. Moreover, we find significant causality from the trade characteristics to the trading intensity. Large trades significantly increase the speed of trading, while large returns tend to decrease the trading intensity. We show that this feedback has little impact on the distribution of the price impact of trades.

JEL classification: C41; G14
Keywords: Price impact; Trading intensity; VAR-model; ACD-model

1. Introduction

An important component of market microstructure theories is the concept of asymmetric information. This phenomenon arises when both uninformed and informed traders are present at the market. Uninformed traders trade for liquidity reasons. Informed traders, however, have private information on the fundamental value of the security to be traded. They trade to take advantage of their superior knowledge. Due to the presence of informed traders, the transaction process itself potentially reveals information on the value of the security.

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doi:10.1016/j.jempfin.2002.12.004

Information dissemination through trading has been the subject of both theoretical and empirical research. Hasbrouck (1991a,b) uses a VAR-model to jointly model returns and trading volume. He shows that trades contain information, since they have persistent impact on prices. Recently, the information content of the trading intensity has been investigated. The trading intensity refers to the process of durations, where a duration is defined as the time that elapses between two consecutive transactions. The main question is whether the trading intensity conveys any information in addition to trading volume. According to Diamond and Verrecchia (1987), slow trading indicates bad news. In the model of Admati and Pfleiderer (1988), fast trading refers to an increased risk of informed trading. In the model of Easley and O'Hara (1992), slow trading is associated to the lack of news. In an empirical setting, Dufour and Engle (2000) model the trading intensity using the ACD-model proposed by Engle and Russell (1998). Dufour and Engle (2000) use a bivariate VAR-model for returns and trade sign to assess the effect of the trading intensity on the price adjustment process in both transaction and calendar time. The authors show that the price impact of a trade is larger the higher the trading intensity, implying that trades are more informative in periods of frequent trading.

This paper extends Hasbrouck (1991a,b) and Dufour and Engle (2000). Using a joint model for returns on the midprice, trade size, trading intensity, and volatility we investigate the price impact of large trades and its relation to the trading intensity for a sample of frequently traded stocks listed on the New York Stock Exchange (NYSE). We show the distribution of the price change with fast trading first-order stochastically dominates the distribution of the price change with slow trading. As in Engle and Lunde (1998), we establish significant causality from trade characteristics to the trading intensity. Large returns slow down trading, while large trades increase the speed of trading. However, we show that this feedback has little impact on the distribution of the price impact of trades, both in transaction and in calendar time.

The organization of this paper is as follows. In Section 2, we review some market microstructure underpinnings with the focus on the role of the trading intensity in information dissemination. Section 3 provides a description of the data and their sample properties. Section 4 is devoted to a multivariate model for returns and trading volume that ignores the possible role for the trading intensity. Section 5 discusses the modeling of the trading intensity, while Section 6 examines the impact of trades on prices in a VAR-model that takes the role of the trading intensity into account. In Section 7, we allow for feedback from the trade characteristics such as returns and trading volume to the trading intensity and we investigate the effects of taking into account this feedback on the price impact of trades. Finally, Section 8 summarizes the main results of this paper.

2. Trading intensity and information

In this section, we briefly review some market microstructure studies that establish a relation between the trading intensity and the underlying value of the asset.

In the model of Easley and O'Hara (1992), an information signal is released at the beginning of the day with a certain probability. The market maker is uncertain about the