Available online at www.sciencedirect.com

SciVerse ScienceDirect

Journal of Financial Markets 16 (2013) 308–330

Journal of FINANCIAL MARKETS

www.elsevier.com/locate/finmar

Short sales and put options: Where is the bad news first traded?☆

Xiaoting Hao[a], Eunju Lee[b], Natalia Piqueira[c,*]

[a]*Sheldon B. Lubar School of Business, University of Wisconsin-Milwaukee, Milwaukee, WI 53211, USA*
[b]*C.T. Bauer College of Business, University of Houston, Houston, TX 77204, USA*
[c]*The Brattle Group, Washington, DC 20036, USA.*

Received 9 March 2012; received in revised form 21 August 2012; accepted 12 September 2012
Available online 2 November 2012

Abstract

Although the literature provides strong evidence supporting the presence of informed trading in both the option and the short equity markets, it is not clear which market attracts more informed trading. Using a unique dataset that covers intraday transaction data in the option and short equity markets, we investigate informed trading in a cross-market environment by explicitly studying the lead–lag relationship between the put net trade volume and short sales of the underlying stock. Our high frequency analysis shows that in general short sales contain more information. However, put options become more informative before the release of negative earnings announcements.

JEL classification: G14

Keywords: Put option; Short sales; Informed trading; Earnings announcements

☆We thank the Editor Amit Goyal, an anonymous referee, Alex Boulatov, Tom George, Kris Jacobs, Archana Jain, Praveen Kumar, Bruce N. Lehmann, Stuart Turnbull, and participants at the 2010 Financial Management Association Annual Meeting and the 2011 Midwest Finance Association Annual Meeting for helpful comments and suggestions. We thank the C.T. Bauer College of Business for providing access to the BAuer Research DataSet (BARDS), and Yadira Taylor for her assistance with this database.
*Corresponding author.
E-mail addresses: haox@uwm.edu (X. Hao), elee@bauer.uh.edu (E. Lee), Natalia.Piqueira@brattle.com (N. Piqueira).

1386-4181/$ - see front matter © 2012 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.finmar.2012.09.005

1. Introduction

Accumulating evidence in the literature supports the presence of informed trading in option markets. Black (1975) suggests that informed investors may choose to trade in the option market since it is typically characterized by lower capital requirements and trading restrictions, and by higher leverage. A formal model developed by Easley, O'Hara, and Srinivas (1998) suggests the existence of a pooling equilibrium in which informed investors choose to trade in both equity and option markets. Subsequent empirical research further supports the presence of informed trading in the option market, by showing that option trading volume predicts subsequent returns of the underlying stock (Pan and Poteshman, 2006; Chakravarty, Gulen, and Mayhew, 2004; Cao, Chen, and Griffin, 2005, etc.).

At the same time, extensive recent research focuses on the role of short sellers in conveying valuable information about the stocks they short. Most of the empirical evidence suggests that short sellers are indeed informed traders and therefore they play an important role in the price discovery process (e.g. Boehmer, Jones, and Zhang, 2008; Diether, Lee, and Werner, 2009; Boehmer and Wu, in press, among others).

Although the literature provides evidence supporting the presence of informed trading in both the option and the short equity markets, it is not clear which market attracts more informed trading. The purpose of this paper is to compare the information content of short sales and put options trading, thus helping to understand which market is more conducive to price discovery and information incorporation. The practical implications of this research are also relevant given recent temporary changes in short selling regulation and the possibility of further changes in the near future.[1] If indeed short sellers play the most important role in contributing to price efficiency, what would be the impact for market efficiency of a more strict regulatory system?

In this paper, we investigate the role of short sales and put option trading in revealing negative information of the underlying stock, by explicitly studying the effects of short sales and put option trading imbalance on subsequent quote revisions and trading volume in the short equity and put option markets. We use a unique dataset that covers intraday transaction data in the option and equity markets for a sample of NYSE stocks from March 2005 to June 2007 to estimate, using 5-minute intervals, a structural model based on Hasbrouck (1991). We extend his bivariate VAR model of stock market trades and quote revisions to also include the option and short equity markets. By doing so, we can directly observe the price impact and the lead–lag relationships of put option trading and short sales, which allows us to compare the information content between put option trading and short sales.

Our high frequency analysis shows that during the sample period, short sales appear to contain more information since they predict subsequent stock and option returns and that the predictive power of short sales on subsequent put net trade volume is larger than that of put net trade volume on subsequent short sales. This result suggests more information can be learnt from the short equity market than from the put option market. We also perform subgroup analysis using the information shares measurement (Hasbrouck, 1995; Chakravarty, Gulen, and Mayhew, 2004) and the relative liquidity in the put option and short equity markets. Consistent with our expectation, put option trading is more

[1]See, for example, Boehmer, Jones, and Zhang (2011) for an analysis of the effects of the September 2008 shorting ban for financial stocks.