



ELSEVIER

Contents lists available at [ScienceDirect](#)

Journal of Financial Markets

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

Short on drugs: Short selling during the drug development process

Henk Berkman*, Marco Eugster

Department of Accounting and Finance, University of Auckland Business School, Auckland, New Zealand

ARTICLE INFO

Article history:

Received 4 July 2016

Received in revised form

30 January 2017

Accepted 2 February 2017

Keywords:

Short selling

Drug development

FDA announcements

Insider trading

Private information

ABSTRACT

Announcements related to the drug development process can have a profound impact on the market value of firms operating in the pharmaceutical and healthcare industries. We examine a large number of these events and document a strong negative relation between short selling during the days leading up to an event's announcement and the announcement return. Several additional tests indicate that insider information is a likely source for at least part of this profitable trading activity.

© 2017 Elsevier B.V. All rights reserved.

1. Introduction

In mid-2011, NASDAQ-listed AVEO Pharmaceuticals reported promising Phase 2 trial results for its lead kidney cancer drug, Tivozanib.¹ One year later, the firm's share price dropped by 27% following an expression of concern by the U.S. Food and Drug Administration (FDA) about patients' survival rates in the drug's Phase 3 trial. Finally, in mid-2013 the firm lost almost 50% of its market value after the announcement that an FDA advisory panel had voted against the new drug application for Tivozanib.

The above example illustrates the critical nature of the drug development process for companies in the healthcare and pharmaceutical industries. Successful development of a new drug can bring enormous rewards for a firm and its shareholders, while failure can result in bankruptcy. The dramatic impact on firm value of the drug development process obviously creates highly profitable opportunities for sophisticated investors with superior information or analytical abilities. In this paper, we examine the trading behavior of a particularly sophisticated group of investors, namely short sellers, around a total of 4756 events related to the drug development process.

We find that short sellers successfully anticipate the outcomes of important events in the drug development process during the weeks leading up to the events' announcement. For example, the average daily level of abnormal short selling in the week prior to the tercile of events with the most negative announcements is a statistically significant 0.5% of daily trading volume. In contrast, there is no abnormal short selling in the week prior to the tercile of events with the most positive announcements. We find that abnormal short positions generate economically significant profits, averaging between \$12,000 and \$125,000 per event, depending on the assumed establishment period and covering day.

* Corresponding author.

E-mail addresses: h.berkman@auckland.ac.nz (H. Berkman), marco.eugster@auckland.ac.nz (M. Eugster).

¹ Details obtained from Factiva and <http://www.aveooncology.com/>.

We utilize a comprehensive database of significant events related to the drug development process that we obtain from Sagient Research Systems, a financial research provider. Using daily data on short sales transactions over a period of five years, we conduct an event study to examine the relation between pre-announcement short selling and the announcement return of the affected firm.

Our results document a negative relation between preannouncement abnormal short sales and the announcement return. This holds in a univariate setting, as well as for multivariate regression specifications in which we control for factors including firm size, book-to-market ratio, long- and short-term momentum, volatility, stock price, and the bid-ask spread. We also divide the events into three subsamples: FDA decisions, trial information releases, and other. We find that the results generally hold for these individual subsamples, though with reduced significance. In additional robustness tests, we show that the relation persists if we define alternative benchmark levels of short sales using matching portfolios for each firm based on market capitalization and industry, or market capitalization and book-to-market ratio.

The effect that we document may arise for two reasons. First, short sellers may have superior information processing abilities allowing them to derive a trading advantage from analyzing public information. Short sellers are generally viewed as sophisticated investors who follow a variety of different trading strategies including fundamental ratio-based strategies (Dechow et al., 2001), responding to short-term overreaction, supplying liquidity, and performing a risk-bearing function (Diether et al., 2009). Prior evidence suggests that short sellers may be able to anticipate negative future information releases. For example, studies have found that short interest tends to rise up to several months before the announcement of adverse events including accounting restatements (Desai et al., 2006; Drake et al., 2015), financial misrepresentation (Karpoff and Lou, 2010), and bond rating downgrades (Henry et al., 2015).

An explanation based on superior information processing abilities would support the notion that short sellers play an important role in improving the informational efficiency of stock markets, as envisaged in various theoretical models (Miller, 1977; Diamond and Verrecchia, 1987). Empirical evidence that short selling encourages the assimilation of information into stock prices is also provided by numerous studies (e.g., Aitken et al., 1998; Boehmer et al., 2008; Cohen et al., 2007; Boehmer and Wu, 2013).²

A second possible explanation is that short sellers may be exploiting insider information. Related to this idea, short selling has been found to intensify in the days leading up to analyst downgrades (Christophe et al., 2010) and insider sales (Chakrabarty and Shkilko, 2013; Khan and Lu, 2013).³ Evidence of abnormal short selling during the days prior to announcements of this kind are at least suggestive that some type of information leakage or front running is taking place. Along similar lines, Massoud et al. (2011) find that material non-public information arising from the syndicated lending process is being profitably exploited by short sellers. Berkman et al. (2017) find that short interest rises prior to the announcement of private placements in which hedge funds are involved. Anderson et al. (2012) conclude that informed short selling is more prevalent for firms controlled by families relative to other firms.

Some recent insider trading cases in the United States illustrate the potential for information leakage during the drug development process. In 2012, a chemist was sentenced to five years in prison for trading on confidential information accessed while working for the FDA.⁴ In 2014, two medical investigators involved in drug trials allegedly engaged in insider trading after receiving negative news about the trials from the company involved.⁵ These examples illustrate that insider information about the drug development process can come from a variety of sources. Company insiders but also regulatory employees and medical professionals can be privy to confidential and material information. Some researchers have also examined the incidence of information leakage during the drug development process. For example, Bosch and Lee (1994) and Reeb et al. (2014) find that pre-announcement stock returns are related to the outcome of FDA decisions. In contrast, Sarkar et al. (2006) find no evidence of such a relation.

We conduct several tests to explore whether the negative relation between pre-announcement short selling and announcement returns is attributable to the superior analytical abilities of short sellers, or to leakage of material non-public information. First, we document that the strength of the negative relation between preannouncement short selling and announcement returns is weaker following periods of higher SEC insider trading litigation activity, suggesting the short sellers in our sample are sensitive to the potential costs of illegal insider trading (Cohen et al., 2012). Second, we use large block holdings as a proxy for the quality of corporate governance but find little evidence of a relation between this variable and pre-announcement short selling. Third, we show that profitable pre-announcement short selling is limited to firms incorporated in the U.S., whereas there is no relation between pre-announcement short selling and announcement returns for non-U.S. firms. While this result might seem surprising given the relatively strict enforcement of insider trading laws in the U.S. (e.g., Beny, 2005), a possible explanation is that when given a choice, informed short sellers prefer to avoid U.S. markets and trade in overseas markets, escaping the scrutiny of U.S. regulators. Our final test is based on the assumption that smaller firms are likely to have a higher level of information asymmetry. Consistent with the idea that some of the pre-announcement short selling is motivated by insider information, we find that the negative relationship between

² An exception is Henry and Koski (2010), who present evidence that manipulative trading by short sellers surrounding seasoned equity offerings can reduce price efficiency.

³ Blau and Wade (2012) challenges the result documented by Christophe et al. (2010). These authors find that abnormally high short selling of a similar scale takes place prior to upgrades as well as downgrades, arguing that this is more indicative of speculative rather than informed short selling.

⁴ See <http://www.wsj.com/articles/SB10001424052970203458604577263710156553368>.

⁵ See <http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370541857556>.

Download English Version:

<https://daneshyari.com/en/article/5100687>

Download Persian Version:

<https://daneshyari.com/article/5100687>

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