



Short selling around the expiration of IPO share lockups



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ABSTRACT

We are the first to examine daily short selling activity around the expiration of IPO share lockups. We find that short selling increases before the lockup expiration date and declines afterward, and the level of short selling is higher in stocks of venture capital (VC)- and private equity (PE)-backed IPOs than other IPOs. Unlike VC-backed IPO stocks, PE-backed IPO stocks do not experience a negative return or a trading volume jump on the lockup expiration date. PE investors do not reduce percentage ownership in the IPO firm as much as VC investors do after lockup expirations. Short selling in PE- and VC-backed IPO stocks prior to the lockup expiration date can predict PE and VC ownership reduction but not the stock returns after the lockup expires. In contrast, short selling in stocks of the IPO firms without a PE or VC investor can predict stock returns after the lockup expires.

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1. Introduction

A typical initial public offering (IPO) sells about one-third of the outstanding shares to the public, leaving the rest of the shares to be locked up for a few months after the IPO. The expiration dates of IPO share lockup represent the first time when the shares that are locked up can be sold on the market. Consequently, the public float may be increased significantly. While the expiration date of share lockup is pre-scheduled, it is not known beforehand how many shares will be sold by insiders and, more importantly, how the stock price will react to the lockup expiration.

While the literature confirms the negative stock price impact of the lockup expiration, we do not have answers to the following questions. Does short selling increase in the days leading up to the lockup expiration date? Is short selling before the lockup expiration date informative about the post-lockup stock returns? Is short selling before the lockup expiration date related to insider selling, especially venture capital (VC) and private equity (PE) ownership reduction in the IPO firm, after lockup expires? By examining daily short selling activity around the expiration of IPO share lockups, we try to answer these questions.

We not only find that short selling increases significantly prior to the lockup expiration date, but we also determine that short selling increases more in VC- and PE-backed IPO stocks than in other IPO stocks. Our findings provide evidence as to whether short sales are constrained prior to lockup expirations. In addition, we find that short selling over several days prior to the lockup expiration date can predict the post-lockup stock returns for firms without a VC or PE investor, but not for VC- or PE-backed firms. Using hand collected data on insider ownership change around the lockup expiration date, we discover that short selling prior to the lockup expiration date can predict VC and PE investors' ownership reduction but not the directors and executive officers' ownership reduction after lockups expire. We discuss possible reasons for the findings.

Furthermore, unlike VC-backed IPO stocks, PE-backed IPO stocks do not have a negative return or a jump in trading volume on the lockup expiration date. Post-lockup abnormal stock returns are significantly higher for PE-backed firms than VC-backed firms. The results are robust to alternative measures of abnormal returns. While we confirm that PE funds do not reduce their proportional ownership in the IPO firm as much as VC funds do after lockup expirations, we argue that this is not the only reason for the different price impact of lockup expirations between VC- and PE-backed firms. A more important reason is that VC- and PE-backed firms are associated with different levels of information asymmetry. Specifically, VC-backed firms are smaller and not yet profitable

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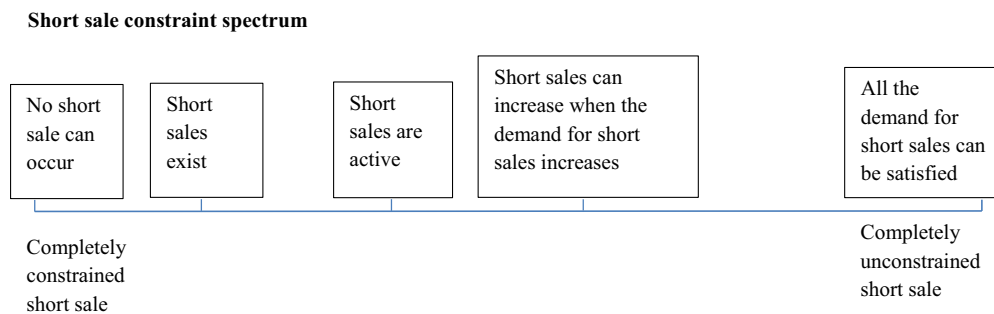


Fig. 1. Short sale constraint spectrum.

firms that are more likely to be in technology industries. In contrast, PE-backed firms, which are primarily reverse leveraged buy-outs (LBOs), are larger and profitable. Firms with little information asymmetry such as reverse LBOs are less likely to have a price impact upon lockup expiration because the signaling effect is likely to be small (Brav and Gompers, 2003). Moreover, compared to VC-backed firms, PE-backed firms offer more shares in the IPO and release fewer shares relative to the public float on the lockup expiration date, which also contributes to the different price impact of lockup expirations.

In addition to our main findings, we also find that the SDC New Issues Database reports a lockup expiration date that is one day earlier than the actual lockup expiration date for 78% of the IPOs in our sample. We conjecture that this one-day error contributes to the finding in the literature that trading volume jumps one day after the lockup expiration date rather than on the lockup expiration date itself (e.g., Field and Hanka, 2001, Fig. 3; Bradley et al., 2001, Fig. 5; Brav and Gompers, 2003, Fig. 2; Cao et al., 2004, Fig. 1).

Our study makes two contributions. First, we fill a gap in the IPO lockup expiration literature by providing empirical evidence as to how short sellers trade around the lockup expiration date on a daily basis. IPO share lockup is among the most widely watched features of IPOs. However, due to data availability, no prior study has examined daily short selling around the expiration of IPO share lockups. Two studies are related to short selling around lockup expirations. Geczy et al. (2002) study equity loans, while Johnston et al. (2005) examine monthly short interests around lockup expirations. However, neither of them provides direct evidence of short selling on a daily basis. Our study is made possible because the Securities and Exchange Commission (SEC)'s Regulation SHO mandates each trading venue to publicly disclose intra-day short sale transaction data. Our findings contribute to the debate over whether short selling is constrained for IPO stocks.

Second, our study adds to the literature regarding private equity and reverse LBOs. For example, Kaplan and Strömberg (2009), Cao and Lerner (2009), Levis (2011), Lerner et al. (2011), Acharya et al. (2013), Huang, Ritter, and Zhang (2016), Visnjic (2013), Fang et al. (2013), and Cumming and Zambelli (2013), among others. In contrast to the view that private equity investors are short-term oriented and are likely to flip their investments quickly (e.g., Kosman, 2009), our evidence suggests that private equity backers do not reduce their investments as much as VC funds do at the earliest opportunity after bringing their portfolio firm public. PE investors, in our sample, maintain a significant amount of ownership after the lockups expire.

Our paper proceeds as follows. Section 2 discusses the related literature. Section 3 outlines the data used in this study. Section 4 presents our empirical analyses and findings, while Section 5 provides our conclusions.

2. Related literature and hypothesis development

An extensive body of research has examined short selling (e.g., Brent et al., 1990; DeChow et al., 2001; Desai et al., 2002; Chen and Singal, 2003; Arnold et al., 2005; Asquith et al., 2005; Boehmer et al., 2008; Diether et al., 2009; Henry and Koski, 2010). However, research on short selling in IPO stocks is scant. A notable exception is Edwards and Hanley (2010), who focus on short selling in the immediate aftermarket and find active short selling on the first trading day for IPO stocks. Their finding is consistent with Geczy et al. (2002), who determine that stock loans are made as early as the first trading day for IPO stocks. Both studies suggest that short selling in IPO stocks is not as constrained as suggested by the prior literature.

As a significant event in an IPO stock's early public life, share lockup expiration represents a unique setting to study short selling. IPO stocks are new to the public and are less likely to be associated with traded options. Thus, short selling becomes almost the only way for pessimistic investors to express their view in the stock market.

The literature documents negative stock returns around the share lockup expiration date and the effect is larger in venture-backed firms compared to non-venture-backed firms (e.g., Field and Hanka, 2001; Bradley et al., 2001). Given that the lockup expiration date is publicly declared beforehand, one reason for negative stock returns around the lockup expiration is considered to be short sale constraints. The rationale is that if short sales are not constrained prior to the lockup expiration, then any predictable price drop around the lockup expiration would be arbitrated away by short sellers. However, it is debatable whether the stock returns around lockup expirations are completely predictable. For example, shares of PokerTek Inc., a maker of electronic poker tables that went public in October 2005, surged 14% on its lockup expiration date. VC-backed Yelp Inc. stock soared nearly 23% on its lockup expiration date leading to the comment quoted in Russolillo and Benoit (2012) that "The lesson for all those people that got short in anticipation of the lockup [ending] is there is no such thing as a sure thing."

Additionally, there is an important debate in the literature as to the role of lockups, particularly as it relates to the technology stock bubble and burst from 1999–2000. Ofek and Richardson (2003) consider lockups as a short selling constraint. However, Schultz (2008) debunks the Ofek and Richardson argument and finds that internet stocks declined sharply in March and April 2000 regardless as to whether their lockup periods had expired. Geczy et al. (2002) find that stock price drops around lockup expiration even for IPO stocks with little shorting frictions suggesting that short selling constraints are not a reason for the price behavior around lockup expirations. Johnston et al. (2005) examine monthly short interests for IPO stocks from January 1998–June 2001. They find that short interests are larger for stocks that ex-

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