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journal homepage: www.elsevier.com/locate/jcorpfinSEO timing and liquidity risk[☆]Ji-Chai Lin^a, YiLin Wu^{b,*}^a Department of Finance, E.J. Ourso College of Business Administration, Louisiana State University, Baton Rouge, LA 70803-6308, USA^b Department of Economics, College of Social Sciences, National Taiwan University, 21 Hsu-Chow, Road, 10055 Taipei City, Taiwan, ROC

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ABSTRACT

We extend the market timing literature to show that SEO timing can be characterized by the dynamics of liquidity risk. That is, firms tend to issue SEOs when liquidity risk declines to the point where investors have least concern of the risk. In the absence of liquidity risk, market risk rises right before SEOs and then gradually falls afterwards, consistent with the Q-theory (Carlson et al., 2010). However, once we include liquidity risk factor into the model for expected returns, issuing firms' market risk behaves like that of matched non-issuers, suggesting an omitted risk factor problem in SEO studies that does not take into account the effect of liquidity risk on stock returns. Furthermore, there is no evidence of post-issue long-run underperformance. Our results imply that, instead of timing alpha (i.e., exploiting overpricing, as behavioral finance has suggested), issuing firms time liquidity beta to minimize their cost of equity capital. The liquidity beta timing is especially evident in large offer size issuers.

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1. Introduction

Acharya and Pedersen (2005), Liu (2006, 2010), and Pastor and Stambaugh (2003) among others,¹ have shown that market liquidity is time-varying and that a firm's liquidity risk, which captures the sensitivity of its stock returns to shocks to market liquidity, plays a very important role in determining its expected return. Given the importance of liquidity risk in asset pricing, would firms take this important factor into consideration when making seasoned equity offering (SEO) decisions?² If so, what role would liquidity risk play in SEO timing and post-issue long-run stock returns? In this paper, we address these questions to help resolve the SEO timing debate.

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¹ See, for example, Amihud (2002), Bekaert et al. (2007), Eckbo and Norli (2005), Korajczyk and Sadka (2008), Sadka (2006), and Watanabe and Watanabe (2008).

² In addition to academic literature, considerable financial press has emphasized the importance of liquidity in equity offering decision. For example, a senior managing director at Morgan Stanley Dean Witter commented that, following the Internet crash of mid-2000, there has been a flight to quality and a flight to liquidity in the NASDAQ equity market. The number of NASDAQ IPO was down by 30% and the number of NASDAQ SEOs was down by 40% from the second quarter of 1999 (Wall Street Journal; June 27, 2000).

It is well known that firms tend to conduct SEOs when their stock prices are high, and that their post-issue long-run stock returns tend to be low. [Eckbo et al. \(2007\)](#) survey the literature and conclude that “The debate about what causes the apparent ability of firms to time their equity issues to periods that are followed by low market returns is still inconclusive.” [Loughran and Ritter \(1995\)](#), [Baker and Wurgler \(2002\)](#), and [Baker and Stein \(2004\)](#) argue that the stylized facts imply that firms exploit a “window of opportunity” by selling shares at SEOs when their shares are overvalued, which is followed by market corrections. As we will discuss in [Section 2](#), many studies have challenged this behavioral explanation and proposed risk-based and investment-based explanations.

In this study we add to this SEO timing debate by proposing an alternative, rational explanation in which liquidity risk plays a leading role for SEO timing. Specifically, we propose that firms tend to issue SEOs when liquidity risk declines to the point where investors have least concern of the risk, and that low liquidity risk is the main cause of low post-issue long-run stock returns. Furthermore, we argue that timing SEOs to periods that investors have low concerns of liquidity risk would also help issuing firms mitigate the adverse effect of SEO announcements in the secondary market, and reduce the offering price discount in the primary market.

To test our hypothesis, we use calendar-time factor model portfolio regressions and employ [Liu's \(2006\)](#) liquidity-augmented CAPM (LCAPM), a parsimonious and seemingly powerful model, and show that it can better explain post-issue stock returns than the CAPM, Fama–French three-factor model, and [Lyandres et al. \(2008\)](#) investment-augmented CAPM. Furthermore, we use Liu's LCAPM and apply [Ibbotson's \(1975\)](#) RATS (returns across time and securities) regression technique to capture time-varying systematic risks.³ Our main findings are: (1) issuing firms' liquidity risk steadily declines to the lowest point prior to SEO filing and then rebounds in the filing month, suggesting that managers monitor the market for the lowest liquidity risk to occur, and when it does, they promptly file for SEOs; (2) to a lesser extent, issuing firms' market risk also declines prior to SEO filing; (3) comparable non-issuers experience the same improvement in market risk and a lesser improvement in liquidity risk as issuing firms, suggesting that issuing firms are more likely to file for SEOs when market conditions have generally improved; (4) issuing firms' liquidity risk remains relatively low for two to three years, compared to their matched non-issuers; and (5) for issuing firms that exhibit more liquidity risk reduction, the markets react less negatively to their SEO announcements, and investors demand less offering price discounts at issuance.⁴

We repeat our analysis across three SEO offer size groups (small, medium, and large) and find a particularly sharp and persistent decline in liquidity risk prior to SEO filing for the large offer size issuers. We also find that the reason that larger issuing firms show lower post-issue stock returns, as documented by [Fama and French \(2008\)](#) and [Pontiff and Woodgate \(2008\)](#), is largely because their investors face lower liquidity risk in the post-issue period.

Based on the notion that firms with greater stock liquidity tend to have lower liquidity risk (see [Acharya and Pedersen, 2005](#); [Pastor and Stambaugh, 2003](#)), for a robustness check, we examine pre- and post-SEO stock liquidity to see whether changes in liquidity are consistent with our inferences from liquidity risk. An advantage of drawing inference from examining changes in stock liquidity surrounding the SEOs is that it does not require a specific asset pricing model. As expected, we find that substantial liquidity improvement occurs prior to SEO filing and that stock liquidity remains high following the SEOs. While it is understandable that an SEO could lead to more share turnover and higher stock liquidity since it increases the number of outstanding shares and enlarges investor base, our hypothesis highlights the importance of stock liquidity improvement that leads to SEO filing decisions. Indeed, we estimate probit regressions of SEO filing decisions and show that the likelihood of filing for an SEO in a given quarter (or a given year) is significantly related to the stock liquidity level in the previous month and the improvement in stock liquidity over the previous six months.

Our results that liquidity risk explains long-run stock performance of SEO issuers are consistent with [Eckbo and Norli's \(2005\)](#) findings of a liquidity risk effect in new-issue stocks, and complement [Butler and Wan's \(2010\)](#) findings that liquidity risk explains long-run stock performance of debt issuers and [Ben-Rephael et al.'s \(2012\)](#) findings that the liquidity is higher in actual stock repurchase months. The evidence implies that U.S. equity markets are efficient in pricing issuing firms' shares, and provides a strong contrast to the behavioral explanation that firms time SEOs to exploit overpricing.

Regarding the risk dynamics of SEO firms, [Carlson et al. \(2010\)](#) present an alternative theory. They argue that committing to future investments raises the market risk of issuing firms, and that as the firms use SEO proceeds to put down investment commitments over time, the risk gradually drops. We test their commitment-to-invest theory using the market model (without considering liquidity risk), and find similar results to theirs. Indeed, issuing firms' market beta increases substantially right before the SEOs and then gradually decreases, but is still significantly higher than that of comparable non-issuers in the post-issue period. However, once we include [Liu's \(2006\)](#) liquidity factor to the market model, issuing firms' market beta behaves just like that of their matched non-issuers during both pre-filing and post-issue periods. Our analysis suggests that using the market model to capture market risk is subject to the omitted variable problem. Since shocks to market liquidity affect stock returns and

³ In [Ibbotson's \(1975\)](#) RATS approach, security excess returns are regressed on the excess market return and liquidity risk factor for each event month t relative to the month of SEO filing and relative to SEO issuance. The RATS methodology calculates a different market beta and liquidity beta for each month relative to the SEO event. Therefore, if risk systematically changes surrounding SEOs, then the coefficients on the risk factors are allowed to change month by month to reflect such changes in risk. [Ibbotson's \(1975\)](#) RATS technique has been employed by several studies to infer changes in systematic risks. For examples, [Ikenberry and Lakonishok \(1993\)](#) use it to estimate time-varying betas surrounding proxy contests; [Peyer and Vermaelen \(2009\)](#) use it to estimate time-varying betas surrounding share repurchases; and [Lin et al. \(2009\)](#) use it to infer changes in risks following stock splits.

⁴ Since information asymmetry and information quality are important elements of the liquidity environment, our finding is consistent with that of [Lee and Masulis \(2009\)](#), who show that as the quality of issuing firms' financial accounting improves, SEO underwriting spreads and the negative announcement return decrease.

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