



## Does liquidity risk explain low firm performance following seasoned equity offerings?

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### ABSTRACT

A seasoned equity offering (SEO) can improve a firm's stock liquidity and lower its cost of capital. This paper examines whether SEO firms achieve a liquidity gain and the sources of this gain. It explores the role of liquidity risk in explaining SEO long-run performance. The evidence shows that SEO firms experience significant post-issue improvements in liquidity and reductions in liquidity risk. Size and book-to-market matching fails to control for these liquidity effects, generating the low long-term post-SEO performance documented in the literature. After adjusting for liquidity risk, SEO firms show normal long-term performance.

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## 1. Introduction

Firms care about their stock liquidity because it affects their costs of capital through the premium investors require for holding illiquid or high liquidity-risk stocks.<sup>1</sup> A seasoned equity offering (SEO) can improve liquidity by shifting the firm's shareholder base towards more active traders and by increasing market visibility, where the latter can stimulate trading by lowering the adverse selection costs of trading with a better informed counterparty. Eckbo et al. (2007) confirm that managers consider liquidity improvements when issuing equity.<sup>2</sup>

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<sup>1</sup> A growing literature shows that expected returns are positively related to illiquidity or liquidity risk (e.g., Amihud and Mendelson, 1986; Amihud, 2002; Pastor and Stambaugh, 2003; Acharya and Pedersen, 2005; Sadka, 2006; Liu, 2006).

<sup>2</sup> As a real-life example, New Oriental Education and Technology Group Inc (NYSE:EDU) justified a new equity issue as follows, "New Oriental Education and Technology Group Inc could embark on a secondary share issue valued at more than 100 mln USD next year to add liquidity to trading in its stock, chief financial officer Louis Hsieh said. The investment banks are asking us to float more shares, so that would be the most likely outcome, he said. Such an issue would help trading volume as well as allow long-term shareholders and venture capital firms to realize returns on their stock, he added." Xinhua Financial Network, 18 October 2006.

The purpose of this study is twofold. First, we investigate whether SEO firms improve their stock liquidity post-issue and where liquidity gains come from. In particular, we examine institutional investor share ownership and analyst coverage, the two factors that previous studies associate with lower adverse selection costs of trading and more frequent trading (Falkenstein, 1996; Irvine, 2003; Roulstone, 2003; Rubin, 2007; Agarwal, 2007). Second, we examine whether liquidity gains and reduced post-SEO liquidity risk explain low long-run post-SEO stock performance.

We examine four measures of liquidity to capture its multiple dimensions. The first two are Hasbrouck's (2009) Gibbs estimate of stock transactions costs, which captures effective spread, and Amihud's (2002) return to volume ratio, which measures the price impact of trade. Goyenko et al. (2009) show that these two liquidity proxies relate closely to realized trade cost and price impact measures estimated from high frequency TAQ and Rule 605 data. The other two measures are stock turnover, which captures the ability to trade large quantities of stock, and Liu's (2006) illiquidity measure, which captures multidimensional aspects of liquidity, with an emphasis on trading speed.

We show that SEO firms experience significant improvements in post-issue liquidity. Hasbrouck's (2009) Gibbs estimate falls by 24% over the 5 years after the issue compared with the 5 years pre-issue. Liu's (2006) trading discontinuity measure shows a 69% liquidity gain over the same period. Similar comparisons using

stock turnover and Amihud's (2002) return to volume ratio indicate liquidity gains of 70% and 56%. SEO firms have higher post-issue liquidity characteristics than size and book-to-market (B/M) matched firms, indicating that size–B/M matching fails to control for SEO firms' liquidity gains.

Examining the sources of post-issue liquidity improvements, SEO firms experience a 22% increase in analyst following over the 5 years after the issue compared with the 5 years pre-issue. A higher analyst following improves the amount and quality of information about the firm, lowering the adverse selection costs of trading and increasing market liquidity (Irvine, 2003; Roulstone, 2003). The number of institutional investors holding SEO firm stock increases by 39% on average, and their stake increases by 31%. This suggests that SEOs attract institutional investors, who become more dominant after the offering. Increased institutional trading and greater competition between sophisticated investors reduce the adverse selection costs of trading with a better informed party and can explain SEO liquidity gains (Falkenstein, 1996; Rubin, 2007; Agarwal, 2007). We also find that increases in analyst following and institutional investor holdings are larger for Nasdaq than NYSE/AMEX stocks, coinciding with the higher liquidity gains for Nasdaq listed SEOs. Regression analysis confirms that the higher post-issue liquidity of SEO firms relates to changes in analyst coverage and institutional holdings.

Consistent with past evidence, SEOs experience negative buy-and-hold abnormal returns relative to size–B/M matched stocks, and negative alphas in Fama and French (1993) three-factor model (FF3FM) regressions. Post-issue calendar time regressions show that SEO firms have lower exposure to the liquidity factor of a liquidity-augmented CAPM (LCAPM). The change in liquidity risk is  $-0.237$  using equal weighting (EW) and  $-0.106$  using value weighting (VW). Given an average monthly liquidity premium over 1970–2009 of 0.615%, these changes lower post-issue SEO expected returns by 0.146% (EW) and 0.065% (VW) per month. The result is that, after adjusting for liquidity risk, SEO firms show normal long-term performance.

A series of robustness checks confirms the liquidity risk explanation of low long-run post-SEO performance. These include examining SEOs by industry, firm age, type of equity issued, hot and cold issue periods, SEO portfolios formed 3- and 6-months after the issue, and SEOs where the post-issue period includes the liquidity drought during the recent financial crisis. Further analysis shows that size–B/M matched stocks have higher liquidity risk than SEO firms, which explains the significant negative long-run abnormal returns to SEO firms when using these as benchmark stocks. Matching on liquidity after the issue equates SEO and matched stock performance.

This study is not the first to examine the explanatory power of liquidity risk for the long-run performance of SEO firms. Eckbo et al. (2000), Eckbo and Norli (2005) and Eckbo et al. (2007) also investigate the relation between liquidity and SEO performance. Eckbo et al. (2000) show that SEO stock turnover improves after the issue. Eckbo and Norli (2005) show that a turnover liquidity augmented Carhart (1997) model explains long-term post-IPO performance and, in a robustness test, that this model explains long-term post-SEO returns. Eckbo et al. (2007) report no abnormal performance, using the same model, for industrial, financial, and utility SEOs. This study differs from and complements these earlier studies by providing a detailed and comprehensive description of the liquidity evolution of SEO firms.

First, to capture the multiple dimensions of liquidity, we use four measures to describe SEO liquidity characteristics before and after the issue, and provide a detailed analysis of SEO liquidity dynamics. Second, we show that post-issue liquidity gains are due to a reduction in information asymmetry and improved share trading, as analyst coverage of SEO stocks and institutional stock

ownership both increase. Third, we show that SEOs experience significant decreases in liquidity risk exposure. Existing studies largely ignore pre- to post-issue changes in liquidity.<sup>3</sup> Fourth, we use a liquidity risk factor based on trading discontinuity that captures multiple dimensions of liquidity. In contrast, Eckbo and Norli's (2005) liquidity risk factor is based on stock turnover. But Lee and Swaminathan (2000) find that high-turnover stocks tend to be small stocks, which questions turnover as a liquidity measure, and Liu (2010) reports an insignificant pre-1963 premium associated with stock turnover. Using all CRSP stocks, we show that the LCAPM describes the cross-section of stock returns based on liquidity sorts over the period 1970–2009, whereas the FF3FM and the FF3FM augmented by a turnover-based factor do not. Fifth, Eckbo and Norli (2005) and Eckbo et al. (2007) include a momentum factor in their analysis, which the literature commonly associates with less-than-rational investor behavior, so their analysis cannot rule out a behavioral explanation of SEO returns. In contrast, our results provide clear and comprehensive evidence of a liquidity-based discount rate explanation of post-SEO returns.

The paper continues as follows. Section 2 describes the data and the distribution of new equity issues over the sample period. Section 3 confirms previous findings of low SEO performance using 5-year buy-and-hold returns. Section 4 reports SEO firms' liquidity characteristics before and after the offering, and compared to size–B/M matched stocks. It also explores the relation between post-issue liquidity changes and analyst following and institutional share ownership. Section 5 analyzes SEO performance in calendar and event time. Section 6 presents robustness tests and Section 7 concludes.

## 2. Data and sample selection criteria

Our seasoned equity offerings sample is from the SDC New Issues database. The sample period starts in January 1970 and ends in December 2009. To allow for a 5-year holding period, the last offering is in December 2004. The sample includes all US domiciled companies listed on NYSE/AMEX/Nasdaq that make SEOs of pure primary shares or combinations of primary and equity sales by a major shareholder (combinations) in the US market. It includes industrial, financial, and utility firms but excludes unit offerings and SEOs that simultaneously offer debt, preferred stock, or warrants. The sample also excludes private placements, exchange offers of stock, 144A offers, cancelled offers, and spin-off related issues. These criteria lead to an initial sample of 9928 issues. From this we exclude equity offerings by the same company occurring during the (5-year) holding period of a previous equity offering, leaving a sample of 6986 SEOs. This is because Lyon et al. (1999) report severe cross-sectional correlation and misspecified tests when event windows for the same company overlap. Retaining offerings of common stock only (CRSP share codes 10 and 11) with return data available for at least a month after the issue leaves 6425 SEOs. Data requirements on market and book values of common equity from the Compustat/CRSP merged database leave 4503 offerings. We find control stocks for 4446 issues, which form our main sample.

Table 1 describes the sample distribution stratified by exchange, broad industry group (financial, industry, and utility), type of equity issue (pure sales of primary shares and offers accompanied by sales of equity by a major shareholder), membership of nine Fama and French (1993) size–B/M portfolios, issue period, and whether the issue takes place in a hot or cold issue period.<sup>4</sup>

<sup>3</sup> An exception is the independent study of Lin and Wu (2010) who focus on SEO timing and liquidity risk.

<sup>4</sup> We define an issue month as hot (cold) if the number of SEOs in the month before the issue is above (below) the median monthly number of SEOs in the previous 12 months.

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