INTERNATIONAL JOURNAL OF BUSINESS, 20(1), 2015 ISSN: 1083-4346

The Early Bird Gets the Worm? The Stock Returns and Operating Performance of Quick SEOs

Yi Jiang[a*], Mark Stohs[b], Xiaoying Xie[c]
[a] *Department of Finance, Mihaylo College of Business and Economics*
California State University, Fullerton
yjiang@fullerton.edu
[b] *Department of Finance, Mihaylo College of Business and Economics*
California State University, Fullerton
mstohs@fullerton.edu
[c] *Department of Finance, Mihaylo College of Business and Economics*
California State University, Fullerton
xxie@fullerton.edu

ABSTRACT

This paper examines the rationale and performance of firms that issue quick SEOs (SEOs issued within six months of IPOs). We find that firms experiencing larger IPO underpricing, larger stock price run–ups after the IPO, and larger IPO offer size tend to return to the market with an SEO earlier than the others. Firms that issue SEOs quickly after an IPO underperform in comparison to their peers. The mean announcement effect of firms issuing SEOs within six months of the IPO is 2.69% lower than that of firms issuing SEOs six months or more following their IPOs. Firms issuing SEOs shortly after their IPOs also exhibit worse long–run stock returns and operating performance. The results are most consistent with the hypothesis that managers time the market by issuing overvalued equities to take advantage of the "windows of opportunity."

JEL Classifications: G14, G34, G32

*Keywords***:** *seasoned equity offering; initial public offering; market timing; market feedback*

[*]We thank Matt Billett, Philip Davis, Jon Garfinkel, Erik Lie, Yiming Qian, Jay Ritter, Ashish Tiwari, and Anand Vijh for helpful comments and suggestions. All errors are our own.

I. INTRODUCTION

Some firms decide to issue seasoned equity offerings (SEOs) very quickly after an initial public offering (IPO). Such corporate decisions are puzzling for the following reasons. First, it is known that the average impact on firm value from an SEO is negative. So why issue SEOs at all? Second, most firms issuing SEOs typically wait one to three years after an IPO. Why then do some act so quickly, i.e., by issuing SEOs within six months of an IPO, a very sensitive time period for existing shareholders?[1] The primary objective of our research is to investigate why some firms issue SEOs quickly following their IPOs. While prior studies have improved our understanding of related decisions, very few have examined the time between an IPO and the first SEO. Our contribution fills this void.

The finance literature offers two primary explanations for quick SEO decisions. First is the market feedback hypothesis, which states that high stock returns after an IPO signal that the marginal return to the project is high, encouraging managers to increase investment by raising additional capital. Jegadeesh, Weinstein, and Welch (1993) find that firms experiencing larger post–IPO returns tend to issue SEOs within three years of their IPOs, and that the size of the SEOs is larger, which they interpret as being consistent with the market feedback hypothesis.

The second explanation points to market timing opportunities (also labeled as the overvaluation hypothesis by Myers and Majluf (1984)). According to this hypothesis, managers use quick SEOs to take advantage of "open financing windows" to sell overvalued equity.

Overall, we find support for the market timing/overvaluation hypothesis in explaining firms' SEO decisions shortly after their IPOs. The support relies on studying publicly traded firms that issue SEOs within six months of their IPOs. Specifically, we address the following research questions: (1) which hypothesis best explains why firms conduct quick SEOs? (2) How does the market react to the announcement of a quick SEO? (3) What is the long–run stock performance of firms conducting quick SEOs? (4) What is the operating performance of our sample firms?

Jegadeesh, Weinstein, and Welch (1993) find that firms with larger post–IPO returns are more likely to issue SEOs within three years of their IPOs.[2] They interpret their results as being most supportive of the market feedback hypothesis. Yet they overlook the overvaluation hypothesis and some of their results do not support the market feedback hypothesis. Their analysis employs a long (three–year) window. We suggest that a short window is more likely to capture a firm's equity issuance decision soon after its IPO. In addition, we examine the post–issue performance of SEO firms to detect whether managers engage in market timing.

DeAngelo, DeAngelo, and Stulz (2010) study the factors determining a firm's decision to issue an SEO at a given year and find that near–term cash need is the primary motivation for SEOs. They argue that both market–timing opportunities and a firm's corporate lifecycle (which is defined as the number of years listed) play a statistically significant but only ancillary role in the decision. DeAngelo et al. (2010) treat the time between an IPO and SEO as exogenous to an SEO issue decision, using the number of years listed as a proxy for a firm's lifecycle. Our analysis differs by treating the time between an IPO and SEO as endogenously determined by firm characteristics and market conditions. To control for the corporate lifecycle hypothesis,

following Loughran and Ritter (2004), we use the number of years since the founding date of the firm as a proxy for a firm's lifecycle stage.[3] Our results suggest that the market–timing hypothesis holds after controlling for a firm's lifecycle stage.

There has been very little empirical work on the timing of a firm's first SEO. Since firms issuing early SEOs tend to be smaller, younger, and risker, the SEO timing decision may be extremely valuable to them. In contrast, firms conducting SEOs at least one to three years after their IPOs are larger, more mature, and are followed by more analysts (e.g., Jegadeesh, Weinstein and Welch, 1993; DeAngelo, DeAngelo, and Stulz, 2010; Krigman, Shaw, and Womack, 2001). Issuing SEOs when the equity market is hot may not be as valuable for these more mature firms. Jegadeesh, Weinstein and Welch (1993) interpret their results as support for the market feedback hypothesis. DeAngelo, DeAngelo, and Stulz (2010) argue near-term cash need is the primary SEO motive. Krigman, Shaw, and Womack (2001) examine underwriter switching for follow–on SEOs and find evidence consistent with signaling hypothesis. Using these findings as a foundation, we reason that an analysis of quick SEOs should provide more evidence about the proper role of the market timing hypothesis. An analysis of quick SEOs is of particular interest because of the high frequency of such SEOs in the US stock market. In our sample, many firms use quick SEOs to reach a higher level of capitalization soon after their IPOs. Thus, identifying factors determining the time between firms' IPOs and their first SEOs is of great importance to investors.

Our research approach is as follows. First, we address the question of why some firms issue SEOs earlier than others. Results indicate that quick SEO firms tend to be smaller and younger, have larger IPO issue size and greater IPO underpricing, and larger post–IPO stock price run-ups.

Next, we examine market reaction by analyzing the announcement effect of SEOs. Prior research has generally demonstrated a negative announcement effect upon an SEO announcement (e.g., Asquith and Mullins, 1986; Eckbo and Masulis, 1995).[4] Our study differs in that we compare the announcement effect for firms issuing very early SEOs and late SEOs. We find that the market is more surprised by quick SEOs and that the price decline associated with the SEO announcement is more severe for these firms, presumably because of stock price overvaluation. We argue that such results support the overvaluation rather than the investment opportunity hypothesis.

Third, we analyze whether the market properly values firms. Specifically, if companies announce stock issues when their stock is grossly overvalued, can the market reevaluate the stock appropriately, or will the stock still be substantially overvalued when the issue occurs? To address this question, we compare the long–term stock returns of firms issuing SEOs in our sample against five alternative matching benchmarks. Consistent with Loughran and Ritter (1995), we find strong evidence of poor performance following equity issuance. The mean three–year buy–and–hold abnormal–return (BHAR) for all SEOs in our sample is –23.13%, while quick SEOs have a more negative BHAR of –59.97%, compared with a BHAR of –17.54% for late SEOs. Our results indicate current shareholders benefit from a quick SEO, while new shareholders suffer a loss in the long–run.[5]

To evaluate the impact of the timing of SEOs and firm characteristics on the firm's subsequent share performance more thoroughly, we perform multivariate regressions of BHARs on the logarithm of the time between the IPO and the first SEO (or early issue dummy), pre–issue stock–price appreciation, and other control variables.

We find that firms' three–year BHARs are positively related to the logarithm of the time between IPO and the first SEO (or negatively related to the early issue dummy), which provides evidence for the poorer long–run performance of quick SEOs.

Beyond the buy–and–hold returns approach, we employ two additional procedures to examine the underperformance of firms conducting quick SEOs. The first procedure uses a time–series of cross–sectional regressions on monthly individual firm returns. The results suggest that firms conducting new issues underperform by 41.5 basis points per month, and firms conducting quick SEOs underperform by 111 basis points per month.[6] This evidence suggests that firms conducting quick SEOs experience more severe underperformance.

The second procedure is the calendar–time portfolio analysis. We regress portfolio excess returns on Fama–French's three factors and report the "alphas," which measure the monthly abnormal returns associated with the SEO announcement. In the three–factor regressions, the alphas of non–issuers are larger than the alphas of issuers. For all issuers, the alpha of issuers conducting a late SEO significantly exceeds that of issuers conducting an early SEO. These results also support the overvaluation hypothesis.

We also consider the market feedback hypothesis as an alternative to market timing. This hypothesis implies that investments increase with aftermarket returns. Hence, firms issuing early SEOs should have higher investment rates. Hovakimian and Hutton (2010) examine repeat SEOs and document a positive relationship between the first year post–issue returns and the likelihood of a follow–on equity issuance. They interpret their results as most consistent with the market feedback hypothesis: that a high post–issue return encourages managers to increase the firm's investment because the marginal return to the project is high. We test this hypothesis by estimating regressions of investment on aftermarket returns, an SEO within six months of IPO dummy, as well as the interaction variables between aftermarket returns and the six months dummy. Our estimation results are inconsistent with the market feedback hypothesis.

Finally, we examine whether the timing of an SEO affects post–issue operating performance. We find that firms conducting quick SEOs exhibit the most severe decline in operating performance among all the issuing firms. As the inflated stock price cannot be sustained following the IPO, the returns decline, reflecting poor operating performance. This finding is also consistent with the overvaluation hypothesis.

The rest of the paper is organized as follows. Section II describes our hypotheses and data, Section III discusses the methodology for measuring SEO underperformance, Section IV presents the main results, Section V provides robustness checks, and Section VI summarizes.

II. HYPOTHESES AND DATA

A. Hypotheses

The market feedback hypothesis states that high stock returns signal high marginal returns to the projects, which in turn, encourage managers to increase investment by raising additional capital. The hypothesis therefore predicts:

H1: Firms with higher aftermarket returns are more likely to issue SEOs earlier than firms with lower aftermarket returns.

Intuitively, firms with high aftermarket returns are high quality firms with good investment opportunities. It is more costly for high–quality firms to defer their investments in new projects than it is for low quality firms.

H2: The market reacts less unfavorably to the announcement of quick SEOs.

If firms with good investment opportunities are more likely to issue quick SEOs, the market should be less surprised at SEO announcements by these firms.

H3: Firms conducting quick SEOs exhibit relatively better long–run stock performance.

If firms that issue quick SEOs are high–quality firms with good investment opportunities, then these firms will exhibit better long–run stock performance after the issue.

H4: Investment rates are higher for firms that issue SEOs shortly after IPOs.

High aftermarket returns encourage managers to increase the firm's investments because the marginal return to the project is high. Thus, the investment rates should be higher for quick SEOs.

H5: Firms conducting quick SEOs exhibit stronger post–issue operating performance.

The overvaluation hypothesis, in contrast, states that firms issue equity when they believe their stock prices are overvalued relative to management's private information. Thus, market timing hypothesis predicts:

H1a: Firms with higher aftermarket returns are more likely to issue quick SEOs than firms with lower aftermarket returns.

Under the overvaluation hypothesis, if managers believe their stocks are overvalued, they tend to issue quick SEOs to exploit "windows of opportunity" in ways that benefit existing shareholders.

H2a: The market reacts more unfavorably to the announcement of quick SEOs.

The market treats the SEO announcement shortly after an IPO less favorably because such equity issuances might signal a greater degree of stock price overvaluation.

H3a: Firms issuing quick SEOs experience poorer long–run stock performance.

If the stock prices of firms issuing quick SEOs are even more significantly overvalued

than the others, then the poorer long–run performance is merely a consequence of the market's failure to incorporate all the information. The stock is still substantially overvalued when the issue occurs.

H4a: Investment rates are not necessarily higher for firms that issue quick SEOs.

If a firm's equity issuance decision is driven by overvaluation rather than good investment opportunities, investment rates may not be higher for firms issuing quick SEOs.

H5a: Firms conducting quick SEOs exhibit no better or even worse post–issue operating performance.

The rationale behind this proposition is that after the issue, as the inflated stock price cannot be sustained, the returns may decline, reflecting poor operating performance.

B. Data

We use Thomson Financial's SDC Global New Issues database to identify firms that conduct IPOs during 1970–2006, and then select the first–time SEOs by these firms for the same time period. Our ending date is restricted to 2006 so that we have available data from CRSP to compute long–run returns. Our sample IPOs satisfy the following criteria: (1) include only common share offers listed on NYSE (the New York Stock Exchange), AMEX (the American Stock Exchange) or NASDAQ; (2) exclude IPOs with offer price $\leq$ \$5[7]; (3) exclude IPOs with gross proceeds (in real 1984 dollar) less than \$1 million; (4) exclude financial companies, such as banking, insurance and REITs (SIC codes between 6000–6999) and utility companies (SIC codes 4900–4949); (5) exclude unit offers, spinoffs, carve–outs, rights, and shelf offerings[8]; (6) include only firms with stock return data available in CRSP after the issue, and with financial data available in COMPUSTAT, and (7) exclude firms with a market cap of less than \$10 million at the time of issue during 1970–2006 to minimize the influence of outliers in the analysis. The resulting sample consists of 1,610 first time SEOs.

Table 1 reports summary statistics of firm characteristics and other main explanatory variables used in the paper, with more complete definitions and the COMPUSTAT origins of data presented in the Appendix. ΔT is the number of calendar days between IPO and the first SEO. The median value of ΔT is about one and half years (496 days). Under IPO is IPO underpricing, defined as the difference between the first day post–issue price and the IPO offer price divided by the offer price, with a median underpricing of 8.93%. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date, with a median of 3.79%. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. The median abnormal return 20 days before SEO issues is 3.59% (not presented in Table 1), indicating the fact that SEO firms experience strong price run–ups prior to the issue. SEO AR is the SEO 3–day announcement period abnormal return, calculated over the event days –1, 0, and +1. The median SEO AR equals –3.40%.

Table 1
Descriptive statistics for sample SEO firms (first time SEOs)

Description	Mean	Median	Min.	Max	Std. Dev.	N
Market value ($M)	694.49	277.73	10.02	40098.59	2101.12	1610
Total Assets ($M)	405.55	162.18	5.62	22384.00	1040.07	1610
Book–to–market (B/M)	0.47	0.38	–0.06	2.11	0.38	1610
Tobin's Q	2.58	1.91	0.66	11.08	1.89	1610
ROA	0.06	0.12	–1.00	0.43	0.24	1598
CAP EXP RATIO	0.09	0.06	0.00	0.47	0.09	1589
FCF ($M)	–0.03	0.13	–5.69	1.42	0.78	1610
IPO SIZE ($M)	53.61	32.90	1.60	2745.50	96.16	1610
SEO SIZE ($M)	82.45	50.70	0.70	1292.20	110.39	1610
SEO/IPO	2.03	1.54	0.23	11.72	1.80	1610
SEO/MV EQ	0.28	0.18	0.02	2.42	0.36	1610
ΔT (days)	898.67	496.00	64.00	9290.00	1051.48	1610
UNDER IPO	21.65%	8.93%	–22.79%	458.41%	41.79%	1608
AB RET 20	6.44%	3.79%	–95.18%	176.09%	21.64%	1610
AB RET 40	3.94%	2.43%	–72.05%	119.10%	18.45%	1610
SEO AR	–3.46%	–3.40%	–40.00%	49.39%	7.48%	1610
AGE	16.38	10.00	1.00	166.00	19.45	1591
SECOND	0.34	0.00	0.00	1.00	0.47	1610
IPORANK	2.98	0.00	0.00	9.00	3.73	1610
SEORANK	3.26	0.00	0.00	9.00	3.85	1610
SWITCHBETTER	0.18	0.00	0.00	1.00	0.38	1610
INTEGER_IPO	0.79	1.00	0.00	1.00	0.41	1610
INTEGER_SEO	0.41	0.00	0.00	1.00	0.49	1610

Note: The sample consists of all 1,610 firms listed on NASDAQ, AMEX, or NYSE that conducted both IPO and (first time) SEO during calendar years from 1970–2006, after applying our sample screening criteria. Market value is price multiplied by the number of shares outstanding. B/M is the ratio of book value of equity to market value of equity. Tobin's Q is the ratio of total market value of assets to total book value of assets. ROA is the OIBD (Operating Income before Depreciation) normalized by total assets. CAP EXP RATIO is capital expenditure to total assets. FCF is the free cash flow, defined as net income after tax plus depreciation less common and preferred dividends, deflated by the firm's beginning–of–year capital. IPO SIZE is the amount of capital raised in the IPO. SEO SIZE is the amount of capital raised in the first SEO. SEO/IPO is SEO size as a fraction of capital raised in the IPO. SEO/MV EQ is SEO size as a fraction of market value of equity. ΔT is the number of calendar days between IPO and the first SEO. UNDER IPO is IPO underpricing, defined as the difference between the first post–issue price and the IPO offer price divided by the offer price. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. SEO AR, the SEO 3–day announcement period abnormal return, is calculated using market model over the event days –1, 0 and +1, where day 0 is the filing date. AGE is the number of years since the founding date of the firm to the year issuing the SEO. SECOND is a dummy variable equal to one if the percentage of secondary shares offered in an SEO is greater than 50 percent of total offerings. IPORANK is the underwriter reputation ranking at the time of the IPO. SEORANK is the underwriter reputation ranking at the time of the

SEO. SWITCHBETTER is a dummy variable that equals one if the SEO underwriter is ranked higher than the IPO underwriter. INTEGER_IPO is a dummy variable equal to one if IPO offer price is an integer. INTEGER_SEO is a dummy variable equal to one if SEO offer price is an integer. All ratio variables are winsorized at the top and bottom 1%.

Table 1 also reports firm characteristics traditionally used to identify market timing. The median market value of equity for our SEO sample is $277.73 million. The mean is larger at $694.49 million, indicating skewness of distribution. Our sample firms have a median Tobin's Q of 1.91, which suggests that the typical SEO firm is profitable and has valuable growth opportunities. Finally, firms that issue SEOs on average raise 2.03 times as much capital through SEOs as they raise from their IPOs (measured by SEO/IPO).

We distinguish primary share offerings and secondary share offerings for the sample. For SEO issues, the shares offered may include pure primary shares (newly created shares that generate proceeds for the firms), pure secondary shares (insider's shares that do not increase the cash holdings of firms) or a mix of both. In the unreported univariate analysis, we find that for early issuers, 18% (39 firms) are pure secondary offerings, 69% (147 firms) are mixed offerings (60% of which (89 firms) with primary shares less than 50% of total offers); for late issuers, 13% are pure secondary offerings, 54% are mixed offerings (32% of which with primary shares less than 50% of total offers). We define pure secondary offerings or mixed offers with secondary shares greater than 50% as "second". For early issuers, 60% of firms are "second", and for late issuers, 30% of firms are "second". The difference is significant at the 1% level. Table 1 shows that for the overall sample, 34 percent of the first time SEO issues are dominated by secondary offerings.

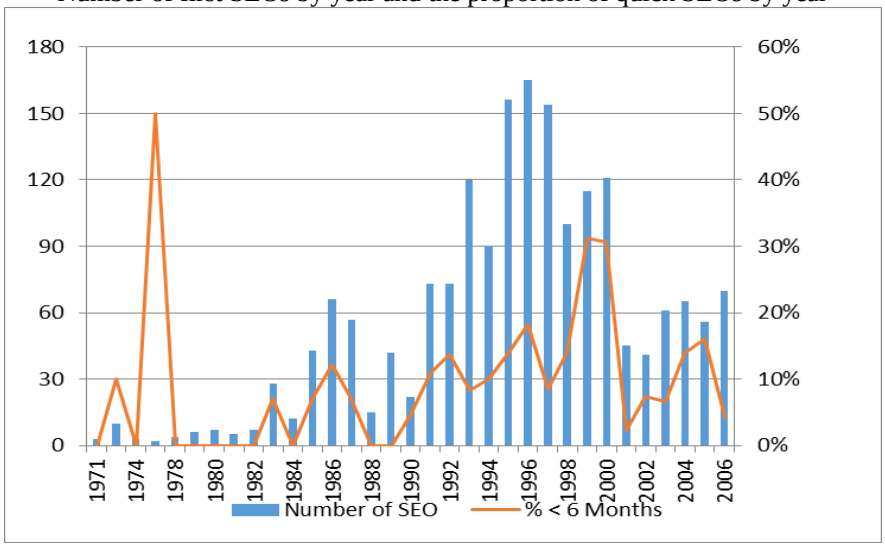
Krigman, Shaw, and Womack (2001) examine underwriter switching for follow–on SEOs and document that SEO firms often switch to underwriters with a higher reputation and more analyst coverage. To control for the potential issue of underwriter quality on very quick SEOs, we construct several variables relating to the underwriters' reputation (IPO underwriter reputation, SEO underwriter reputation, and whether firms switch to better ranked underwriters in their first SEOs) to proxy for information asymmetry in share offerings. We use the Carter-Manaster (CM) ranking, which is based on an underwriter's relative position in IPO/SEO tombstone announcements. This measure is developed by Carter and Manaster (1990) and extended by Carter, Dark, and Singh (1998) and Loughran and Ritter (2004).[9] We find that the reputation of SEO underwriters (SEORANK) is on average higher than that of IPO underwriters (IPORANK). About 18 percent of firms in our sample switched to better ranked underwriters for their SEOs (SWITCHBETTER).

It is argued that the integer offer price of IPO or SEO may serve as a measure of uncertainty as investment bankers are more likely to settle for an integer price if they cannot discover the true intrinsic price of an offer. Mola and Loughran (2004) argue that integer price clustering provides evidence that reputable investment banks use their influence to extract rents from issuing firms. Bradley et al (2004) find that IPOs with integer offer prices experience higher underpricing. Table 1 shows that 79 percent of our sample firms issued IPOs with integer offer prices (INTEGER_IPO), and 41% of them issued SEOs with integer offer prices (INTEGER_SEO).

Figure 1 presents the number of SEOs in our sample by year and the proportion

of quick SEOs. The volume of SEOs displays large variations over time, with the period 1991–2000 being the "hot" issue period, and we observe a higher proportion of quick SEOs during this period as well. Quick SEOs account for 10%–30% of all SEOs during this hot issue period.

Figure 1
Number of first SEOs by year and the proportion of quick SEOs by year



III. MEASURING SEO UNDERPERFORMANCE

We use three procedures to examine the underperformance of seasoned equity offerings. The first procedure is the BHAR analysis. The second procedure uses a time–series of cross–sectional regressions on monthly returns. The last procedure is the Fama–French three–factor regressions.

A. Buy–and–hold Abnormal Returns

Extensive literature exists about long–run stock performance following corporate events, yet long–term studies on stock returns remain controversial. We follow Billett, Flannery, and Garfinkel (2005) in calculating the BHAR as[10]:

$$R_{i,T} = \left[\prod_{t=1}^{T} (1 + R_{i,t}) - 1 \right] \times 100\%, \quad (1)$$

where $R_{i,t}$ is the daily return for firm i, T is the number of trading days in the three–year window following the issue, and $R_{i,T}$ is the cumulative holding period return.

For each issuing firm, we select five separate sets of matching non–issuing firms, following Vijh's procedure (1999).[11] We discuss the results based on the last set, where non-issuing firms are matched by size, industry and book–to–market ratio.

B. Cross–sectional Regressions on Monthly Returns

Our second procedure for measuring SEO underperformance uses a time–series of cross–sectional regressions based on monthly individual firm returns. We run cross–sectional regressions on all firms listed on NASDAQ, AMEX, or NYSE during 1970–2006 as follows:

$$r_{it} = a + b\ln MV_{it} + c\ln B/M_{it} + dISSUE_{it} + eISSUE6month_{it} + \varepsilon_{it}, \qquad (2)$$

where lnMV is the natural logarithm of the market value of equity (MV EQ), lnB/M is the natural logarithm of the ratio of the book value of equity to the market value of equity, and the book value is the book value of equity for the most recent fiscal year end. ISSUE is a dummy variable which equals one if a company conducted at least one public equity offering (SEO or IPO) within the 60 months preceding a given June 30th. ISSUE6month is a dummy variable which equals one if a company conducted an SEO within six months of its IPO. The dependent variable is the monthly percentage of stock returns. This procedure allows us to test whether there is an independent "new issues effect" and whether firms conducting quick SEOs experience more severe underperformance.

C. Fama–French Three–factor Regressions

Our third approach is to compute the calendar time abnormal return and compare it with the buy–and–hold abnormal returns. Barber and Lyon (1996), Kothari and Warner (1997), and Lyon, Barber, and Tsai (1999) suggest that unbiased statistical significance levels are difficult to compute using buy–and–hold returns. Consequently, long–run returns are commonly computed using the Fama and French (1993) three–factor time–series model:

$$(R_{pt} - R_{ft}) = a + b(R_{mt} - R_{ft}) + sSMB_t + hHML_t + \varepsilon_t \ , \qquad (3)$$

where R_{pt} is the equally weighted portfolio returns of sample firms in month t; R_{mt} is the return on the equally–weighted index of NYSE, AMEX, and NASDAQ stocks in month t; R_{ft} is the three–month T–bill yield in month t; SMB_t is the return on small firms minus the return on large firms in month t, and HML_t is the return on high book–to–market stocks minus the return on low book–to–market stocks in month t. The intercepts from these regressions are interpreted as abnormal returns. Abnormal returns will be associated with the event studied if the intercepts in the regressions are economically and statistically significant.

IV. RESULTS

A. Why Do Some Firms Return to the Equity Market Earlier Than the Others?

We begin our analysis by examining why some firms return to the equity issue market earlier than the others. Results are presented in Table 2. We first focus on what kind of

Table 2
Firm characteristics and quick SEO

	Ln ΔT			Likelihood of a Quick SEO		
	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble period)	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble period)
UNDER IPO	–0.267***	–0.276***	–0.503***	0.447***	0.390***	0.902***
	[0.062]	[0.062]	[0.120]	[0.123]	[0.124]	[0.264]
Ln IPO SIZE	–0.214***	–0.126***	–0.184***	0.213**	0.191*	0.304**
	[0.039]	[0.044]	[0.047]	[0.099]	[0.108]	[0.129]
AB RET 20	–0.822***	–0.745***	–0.721***	1.483***	1.427***	1.403***
	[0.099]	[0.103]	[0.139]	[0.219]	[0.225]	[0.336]
AB RET 40	–0.544***	–0.491***	–0.813***	1.033***	0.947***	1.842***
	[0.110]	[0.113]	[0.138]	[0.242]	[0.248]	[0.336]
Tobin's Q	0.003	0.002	0.002	–0.011	–0.012	–0.022
	[0.008]	[0.008]	[0.008]	[0.017]	[0.017]	[0.022]
CAP EXP RATIO	–0.674***	–0.856***	–0.671**	1.060*	0.97	0.721
	[0.231]	[0.266]	[0.265]	[0.546]	[0.631]	[0.683]
FCF	–0.013	0.003	–0.047	0.032	0.025	0.131
	[0.016]	[0.017]	[0.034]	[0.039]	[0.039]	[0.132]
Ln(Total Assets)	0.173***	0.122***	0.184***	–0.081	–0.076	–0.181**
	[0.027]	[0.030]	[0.032]	[0.066]	[0.070]	[0.084]
ROA	–0.123	–0.101	–0.009	–0.375	–0.39	–0.472
	[0.111]	[0.115]	[0.138]	[0.271]	[0.280]	[0.398]
AGE	0.007***	0.006***	0.005***	–0.010***	–0.012***	–0.011***
	[0.001]	[0.001]	[0.001]	[0.003]	[0.004]	[0.004]
SECOND	–0.294***	–0.347***	–0.272***	0.600***	0.582***	0.462***
	[0.049]	[0.054]	[0.058]	[0.115]	[0.123]	[0.144]
IPORANK	0.052***	0.057***	0.060***	–0.066**	–0.060**	–0.089***
	[0.009]	[0.010]	[0.010]	[0.027]	[0.029]	[0.034]
SEORANK	–0.085***	–0.091***	–0.096***	0.084***	0.082***	0.103***
	[0.010]	[0.011]	[0.011]	[0.029]	[0.030]	[0.036]
SWITCHBETTER	0.703***	0.737***	0.724***	–1.015***	–0.918***	–0.913***
	[0.079]	[0.090]	[0.091]	[0.254]	[0.264]	[0.291]
INTEGER_IPO	–0.048	–0.121**	–0.107*	0.117	0.221	0.271
	[0.050]	[0.059]	[0.058]	[0.139]	[0.159]	[0.175]
Mkt_ret	–0.418	–0.298	–0.961**	1.208	0.696	2.338*
	[0.375]	[0.458]	[0.482]	[0.946]	[1.117]	[1.292]
Intercept	7.074***	5.604***	5.489***	–6.301	–6.194	–6.377
	[0.969]	[0.659]	[0.641]	[135.642]	[119.757]	[123.586]

Industry and year dummies	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Sample size	1,532	1,169	1,007	1,532	1,169	1,007
Adjusted R^2	0.36	0.294	0.314			
p–value of regression				0.000	0.000	0.000

Note: This table reports (1) the cross–sectional regression of the logarithm of time between IPO and the first SEO. The dependent variable is the logarithm of the time between the IPO and the first SEO (Ln ΔT), and (2) probit regression of the factors leading to a quick SEO after IPO. The dependent variable is a dummy variable with value equal to one when an SEO is issued within six months of IPO and zero otherwise. The independent variables include: UNDER IPO is IPO underpricing, defined as the difference between the first post–issue price and the IPO offer price, divided by the offer price. Ln IPO SIZE is the logarithm of IPO size (the amount of equity capital raised in the IPO). AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. Tobin's Q is the ratio of total market value of assets to total book value of assets. CAP EXP RATIO is capital expenditure scaled by total assets. FCF is the free cash flow, defined as net income after tax plus depreciation less common and preferred dividends, deflated by the firm's beginning–of–year capital. Ln (Total Assets) is the logarithm of the total assets. ROA is the OIBD (operating income before depreciation) normalized by total assets. AGE is the number of years since the founding date of the firm to the year issuing an SEO. SECOND is a dummy variable equal to one if the percentage of secondary shares offered in an SEO is greater than 50 percent of total offerings. IPORANK is the underwriter reputation ranking at the time of the IPO. SEORANK is the underwriter reputation ranking at the time of the SEO. SWITCHBETTER is a dummy variable that equals one if the SEO underwriter is ranked higher than the IPO underwriter. INTEGER_IPO is a dummy variable equal to one if IPO offer price is an integer. Mkt_ret is NYSE/Amex value weighted cumulative return in the prior three months before the SEO. The independent variables also include dummy variables for industry and the year of SEO. Standard errors are listed in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

firms is more likely to issue SEOs within six months of IPO. To address the concern that the "6 months" classification of "early" issue is "arbitrary," we also use a continuous variable LnΔT, defined as the logarithm of the time between a firm's IPO and its first SEO, as a dependent variable. To address the concern that the IPO/SEO market may have changed over time (Loughran and Ritter, 2004) regarding types of issuers, incentives of issues and market conditions, we run the analyses for both the full sample (1970–2006) and subsample (1990-2006). We also run the regression analyses for the subsample (1990-2006) by excluding the period 1999-2000 to address the concern if our results are driven by the internet bubble period in particular.

Our probit regression shows that firms with larger IPO underpricing (Under IPO) are more likely to conduct an "early" issue. This is consistent with the signaling hypothesis of IPOs by Chemmanur (1993) and Welch (1989), which proposes that firms underprice their IPOs so they can subsequently issue seasoned equity at a favorable price, and can return more quickly to the equity market with SEOs. The coefficients of AB RET 20 and AB RET 40 are also positively significant, suggesting that firms experiencing larger stock price run–ups after the IPO tend to return to the market with SEOs earlier than other firms. Since large pre–issue stock price appreciation signals that the current stock price is overvalued, the above results are consistent with the hypothesis that management uses their private information to time equity offerings to take advantage of the "windows of opportunity."

The associated coefficient estimates on firm size and firm age are all negative, suggesting that larger firms and older firms are less likely to conduct quick SEOs ($t < 6$ months following the IPO). We also find that firms with dominating secondary share

offerings are more likely conduct a quick SEO. Regarding the impact of underwriter reputation, the regression shows that firms with better ranked IPO underwriters are less likely, while firms with better ranked SEO underwriters are more likely to issue quick SEOs. In addition, a firm is less likely to launch a quick SEO if the firm chooses to switch to a better ranked underwriter for its SEO.

Similar results are found in regressions on the length of time between an IPO and the first SEO. In addition to taking advantage of overvalued stocks, the results also show that firms with higher expenditure ratios and dominating secondary share offerings return to the equity issuance market more quickly. The results for the subsample (1990–2006) and the subsample excluding the internet bubble period are mostly consistent with the full sample analyses. Overall, we conclude that a firm's decision to issue a quick SEO is explained by market timing rather than broader economic considerations.[12]

B. Market Reaction

Prior research generally shows a negative announcement effect upon the announcement of an SEO (Loughran and Ritter, 1995; Houston and Ryngaert, 1997; Jegadeesh, Weinstein and Welch, 1993).[13] We extend the existing literature by examining the relations between the timing of SEOs and SEO announcement effects. Specifically, we address whether or not the market is more surprised by firms that conduct quick SEOs. If the market timing hypothesis holds, we expect to find a less favorable market response because an earlier SEO issue may signal a greater degree of stock overvaluation. To address this question, we report the abnormal returns around SEO announcements categorized by length of time since the IPO at the date of the first SEO in Panel A of Table 3.

Table 3
First time SEO three–day announcement abnormal returns and stock price run–ups

Panel A: Abnormal returns ordered by length of time since IPO at the date of first SEO

Time (*t*) between IPO and SEO	N	SEO AR (%)	AB RET 20 (%)	AB RET 40 (%)
(1) $t < 6$ months	214	–5.79	22.29	11.39
(2) 6 months $\leq t < 1$ year	428	–3.67	8.38	5.91
(3) 1 year $\leq t < 2$ years	379	–2.59	2.59	2.40
(4) 2 years $\leq t < 3$ years	185	–2.63	2.37	0.82
(5) 3 years $\leq t < 4$ years	115	–2.82	1.26	0.06
(6) 4 years $\leq t < 5$ years	82	–3.97	1.75	0.63
(7) $t \geq 5$ years	207	–3.10	1.44	1.25
Sample Size/Averages	1,610	–3.46	6.44	3.94

Panel B: Difference tests

	< 6 months		≥6 months		Difference Tests [p – value]	
	Mean	Median	Mean	Median	T– test	Median Test
SEO AR (%)	–5.79	–5.34	–3.10	–3.17	[0.00]***	[<0.001]***
AB RET 20	22.29	14.63	4.01	2.43	[0.00]***	[<0.0001]***
AB RET 40	11.39	11.80	2.80	1.74	[0.00]***	[<0.0001]***

Note: The SEO AR (3–day announcement period abnormal return) is calculated using standard market model over the event days –1, 0 and +1, where day 0 is the filing date. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. They are calculated by subtracting the market index from the returns at time t. *p*–values are in the brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Consistent with the market timing hypothesis, we find that the price decline associated with SEO announcement is more severe for the group of firms conducting SEOs within six months of their IPOs (with an SEO 3–day announcement period abnormal return of –5.79%). Panel B of Table 3 shows the difference test between the groups of firms issuing "quick SEOs" and firms whose SEO takes place more than six months after an IPO. Based on the t–test and Wilcoxon test, the differences in the SEO 3–day announcement–period abnormal return are statistically significant at the 1% level. Table 3 also shows that among the seven groups of firms classified by the timing of SEOs, the group of firms conducting "quick SEOs" (t < 6 months) experience the largest AB RET 20 (22.29%) and AB RET 40 (11.39%). This finding confirms our results in Table 2, indicating that firms with higher stock price run–ups after the IPO tend to return to the market with an SEO earlier than the others.

To provide an additional test of the hypothesis that the market might be more surprised by SEO announcements shortly after IPOs, we conduct a regression analysis with the dependent variable being the SEO 3–day announcement abnormal returns, and the key independent variables being either an "issuing within dix months" dummy or a continuous variable representing the time difference between IPO and the first SEO ($\ln\Delta T$). The results are presented in Table 4.

The coefficient of the six month dummy is negative and significant for the full sample and the sub–sample excluding the bubble period, suggesting that the market is more surprised by "quick SEOs" and that the price decline associated with the SEO announcement is more severe for these firms. The interaction between market overvaluation (AB RET 20) and quick SEOs dummy is negative and significant for the full sample period and the subsample period. The decision to issue equity for these firms appears to be driven more by overvaluation rather than by investment opportunities. Hence, there is a more negative market reaction when good motivations are not apparent. The regression with continuous days ($\ln\Delta T$) also shows that firms waiting longer to return to equity issue market generally experience higher announcement abnormal returns. In addition, the SECOND dummy shows that SEOs with dominating secondary share offerings tend to experience more negative announcement abnormal returns.

Table 4
Regression of the first time SEO three–day announcement period abnormal returns

	6 Months Dummy			Ln ΔT		
	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble period)	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble period)
UNDER IPO	0.348	–0.092	1.33	0.061	–0.215	1.309
	[0.633]	[0.687]	[1.054]	[0.629]	[0.685]	[1.054]
Ln (SEO/IPO)	0.061	0.171	0.183	–0.004	0.118	0.159
	[0.217]	[0.269]	[0.284]	[0.220]	[0.270]	[0.284]
AB RET 20	0.451	–0.183	–0.186	–0.306	–1.168	–0.562
	[0.962]	[1.111]	[1.384]	[0.909]	[1.023]	[1.292]
AB RET 40	–0.284	–1.022	–1.231	0.219	–0.637	–0.941
	[1.064]	[1.211]	[1.352]	[1.008]	[1.132]	[1.261]
6 months dummy or Ln ΔT	–1.482**	–1.08	–1.382*	0.400**	0.535**	0.528**
	[0.664]	[0.735]	[0.785]	[0.177]	[0.230]	[0.245]
AB RET 20× 6 months (Dummy)	–5.823**	–5.762**	–2.666			
	[2.758]	[2.881]	[3.733]			
AB RET 40× 6 months (Dummy)	3.838	2.227	2.27			
	[3.127]	[3.373]	[3.734]			
Tobin's Q	0.022	–0.035	–0.065	0.034	–0.026	–0.061
	[0.070]	[0.073]	[0.077]	[0.070]	[0.073]	[0.077]
ROA	1.147	1.331	1.491	1.101	1.399	1.39
	[0.965]	[1.085]	[1.245]	[0.970]	[1.085]	[1.246]
CAP EXP RATIO	1.576	1.155	1.158	1.456	1.089	1.081
	[1.587]	[1.898]	[1.923]	[1.592]	[1.901]	[1.921]
Ln(Total Assets)	0.502***	0.511***	0.424**	0.490***	0.484***	0.411**
	[0.146]	[0.172]	[0.180]	[0.146]	[0.172]	[0.179]
FCF	–0.08	–0.09	0.125	–0.077	–0.095	0.122
	[0.165]	[0.185]	[0.339]	[0.166]	[0.186]	[0.339]
AGE	–0.001	–0.005	–0.003	–0.001	–0.005	–0.003
	[0.007]	[0.008]	[0.008]	[0.007]	[0.008]	[0.008]
SECOND	–0.787**	–1.054***	–1.182***	–0.786**	–0.939**	–1.054**
	[0.326]	[0.390]	[0.405]	[0.332]	[0.405]	[0.418]
SEORANK	–0.001	0.006	0.027	0.006	0.013	0.033
	[0.045]	[0.054]	[0.056]	[0.045]	[0.054]	[0.056]
SWITCHBETTER	0.397	0.513	0.281	0.323	0.48	0.225
	[0.436]	[0.557]	[0.572]	[0.443]	[0.560]	[0.574]
INTEGER_SEO	–0.227	–0.361	–0.303	–0.27	–0.419	–0.356
	[0.296]	[0.348]	[0.359]	[0.297]	[0.348]	[0.359]
Mkt_ret	3.668	4.505	4.858	3.747	4.554	4.753
	[2.740]	[3.581]	[3.700]	[2.749]	[3.586]	[3.698]
Intercept	–1.313	–4.698	–4.246	–3.764	–7.917**	–7.462*
	[6.537]	[3.580]	[3.605]	[6.671]	[3.909]	[3.955]

Industry and year dummies	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Sample size	1,532	1,169	1,007	1,532	1,169	1,007
Adjusted R^2	0.034	0.042	0.035	0.027	0.039	0.035

Note: The dependent variable is the SEO 3–day announcement period abnormal returns in percentages (SEO AR). The SEO 3–day announcement period return is calculated over the event days –1, 0, and +1, where day 0 is the filing date. 6 months dummy (SEO within six months of IPO) is a dummy variable that takes on the value of 1 if the number of calendar days between IPO and the first SEO is less than six months. Ln ΔT is the logarithm of the number of calendar days between IPO and the first SEO. UNDER IPO is IPO underpricing. Ln (SEO/IPO) is the logarithm of the relative size of the SEO and IPO. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. Tobin's Q is the ratio of total market value of assets to total book value of assets. ROA is the OIBD (operating income before depreciation) scaled by total assets. CAP EXP RATIO is capital expenditure scaled by total assets. Ln (Total Assets) is the logarithm of the total assets. FCF is the free cash flow, defined as net income after tax plus depreciation less common and preferred dividends, deflated by the firm's beginning–of–year capital. AGE is the number of years since the founding date of the firm to the year issuing an SEO. SECOND is a dummy variable equal to one if the percentage of secondary shares offered in an SEO is greater than 50 percent of total offerings. SEORANK is the underwriter reputation ranking at the time of the SEO. SWITCHBETTER is a dummy variable that equals one if the SEO underwriter is ranked higher than the IPO underwriter. INTEGER_SEO is a dummy variable equal to one if SEO offer price is an integer. Mkt ret is NYSE/Amex value weighted cumulative return in the prior three months before the SEO. The independent variables also include dummy variables for industry and the year of SEO. Standard errors are listed in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

C. Buy–and–hold Abnormal Returns Analysis

Table 5 reports the three–year buy–and–hold abnormal returns for the sample firms between 1970 and 2006. Consistent with prior studies, firms issuing SEOs underperform their size, industry and book–to–market matched counterparts. The mean BHAR is –23.13% and is reliably different from zero. Similar results are obtained for our sample firms based on the other four alternative matching methods. The poor long–run performance of issuers suggests that the market does not fully react to the information implied by an equity issue announcement, because only part of the overvaluation problem is corrected upon the announcement of an equity issue.

Panel A of Table 5 reports the BHAR as categorized by the length of time since IPO at the date of first SEO. Among the seven groups of firms classified by the timing of SEOs, the group of firms conducting "quick SEOs" (t < 6 months) experiences the most severe long–run underperformance, as shown using size, industry and book–to–market matched benchmarks. Panel B of Table 5 shows the difference test between the groups of firms who use quick SEOs and those with SEOs after six months of IPOs. Using size, industry and book–to–market matched peer firms, firms returning to the equity market within six months of an IPO experience a three–year BHAR of –59.97%, while firms conducting SEOs more than six months of IPOs experience a BHAR of –17.54%. The difference in the BHAR between the two groups of firms is negative and statistically significant (p=0.035).

Table 5
The long–run performance of SEOs by length of time between IPO and first time SEO

Panel A: BHAR

Time (*t*) between IPO and SEO	3–Year Mean Buy–and–Hold Abnormal Returns %				
	Size alone	Size and book–to–market	Size and SIC	Size and earnings–to–price ratio	Size, SIC and book–to–market
(1) $t < 6$ months	–51.80	–68.98	–37.89	–22.53	–59.97
(2) 6 months ≤ t < 1 year	–16.87	–32.27	–9.45	–24.22	–24.81
(3) 1 year ≤ t < 2 years	–20.04	–22.72	–19.34	–22.68	–11.85
(4) 2 years ≤ t < 3 years	–4.54	–23.55	–12.99	–16.55	–23.86
(5) 3 years ≤ t < 4 years	–17.39	–32.61	–25.17	–14.34	–25.42
(6) 4 years ≤ t < 5 years	–4.05	–3.90	4.79	–6.32	–19.01
(7) t ≥ 5 years	–9.65	–9.87	–9.19	–18.90	–2.44
(8) All SEOs (1970–2006)	–19.27	–29.53	–16.31	–20.46	–23.13

Panel B: Difference tests on BHAR

Time (*t*) between	3–Year Mean BHR (%)			
IPO and SEO	N	SEOs	Matching firms	BHAR (%)
(1) $t < 6$ months	208	–12.09	47.88	–59.97
(2) t≥ 6 months	1370	21.48	39.01	–17.54
Difference Tests (p–value)				[0.035]**

Note: The sample of first seasoned equity offering during 1970 to 2006 is categorized by the length of time since IPO at the date of SEO. BHAR is the abnormal return defined as the difference between a sample firm's BHR and its matching firm's BHR. We use five sets of matching firms. The first set controls for size. The second controls for size and book–to–market. The third set controls for size and industry effect. The fourth set controls for size and earnings–to–price effect, and the fifth set controls for size, industry, and book–to–market. Panel A reports BHAR using the five alternative matching procedures. Panel B presents the difference tests on BHAR (matched by size, SIC and B/M). *p*–values of t–tests are in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

To evaluate the impact of SEO timing and firm characteristics on a firm's subsequent share performance in more detail, we run multivariate regressions of BHAR with the key explanatory variables being the "quick SEO" dummy (the six months dummy) or the logarithm of the time between a firm's IPO and its first SEO (lnΔT). Table 6 reports the regression results.

Table 6
Regression analysis of three–year buy–and–hold abnormal return (BHAR) of first Time SEOs

	6 Months Dummy			Ln ΔT		
	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble period)	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble period)
UNDER IPO	1.852	2.244	0.131	2.983	3.709	4.547
	[14.006]	[14.969]	[33.925]	[13.955]	[14.992]	[33.993]
Ln (SEO/IPO)	–17.846**	–18.864**	–19.619*	–20.580***	–20.716**	–21.688**
	[7.244]	[8.743]	[10.348]	[7.328]	[8.768]	[10.391]
AB RET 20	–2.931	–14.456	–23.434	1.33	–13.143	–19.48
	[23.946]	[26.430]	[39.920]	[23.951]	[26.305]	[39.949]
AB RET 40	–3.277	–9.475	–14.131	0.618	–7.801	–10.717
	[26.706]	[29.397]	[39.619]	[26.751]	[29.384]	[39.562]
6 months dummy or Ln ΔT	–28.639*	–33.340*	–37.349*	14.886**	17.907**	21.409**
	[15.868]	[17.293]	[20.537]	[5.837]	[7.619]	[9.071]
Tobin's Q	6.397***	6.446***	7.068***	6.647***	6.567***	7.169***
	[1.889]	[2.003]	[2.354]	[1.889]	[2.001]	[2.351]
ROA	72.387***	63.569**	74.683**	69.922***	64.356**	73.030*
	[25.731]	[28.805]	[37.313]	[25.738]	[28.763]	[37.286]
CAP EXP RATIO	–68.902	–60.917	–67.597	–70.761	–60.629	–68.863
	[56.148]	[69.109]	[75.494]	[56.065]	[69.050]	[75.402]
Ln(Total Assets)	7.684	10.701*	10.498	8.831*	11.550*	11.472
	[5.260]	[6.233]	[7.190]	[5.287]	[6.251]	[7.201]
FCF	7.253*	3.214	1.831	7.318*	3.074	1.967
	[3.890]	[4.474]	[9.587]	[3.886]	[4.471]	[9.576]
AGE	–0.322	–0.365	–0.308	–0.379	–0.403	–0.357
	[0.272]	[0.317]	[0.352]	[0.273]	[0.318]	[0.353]
SECOND	–18.722	–16.546	–15.306	–15.539	–13.368	–11.497
	[12.692]	[14.320]	[16.709]	[12.800]	[14.492]	[16.875]
Intercept	0.648	–182.422	–193.515	–99.669	–300.727*	–334.522**
	[231.918]	[145.161]	[155.242]	[235.526]	[154.752]	[167.582]
Industry and year dummies	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Sample size	1,532	1,169	1,007	1,532	1,169	1,007
Adjusted R^2	0.047	0.0188	0.0127	0.0491	0.0203	0.015

Note: The dependent variable is the BHAR of SEOs in percentages, computed as the difference between the BHRs of sample firms and the matching firms selected by size, industry, and book–to–market over a three–year holding period. 6 months dummy (SEO within six months of IPO) is a dummy variable that equals 1 if the number of calendar days between IPO and the first SEO is less than six months. Ln ΔT is the logarithm of the number of calendar days between IPO and the first SEO. UNDER IPO is IPO underpricing, defined as the difference between the first post–issue price and the IPO offer price divided by the offer price. Ln (SEO/IPO)

is the logarithm of the relative size of SEO and IPO. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. Tobin's Q is the ratio of a firm's total market value of assets to total book value of assets. ROA is the OIBD (operating income before depreciation) normalized by total assets. CAP EXP RATIO is capital expenditures scaled by total assets. Ln (Total Assets) is the logarithm of the total assets. FCF is the free cash flow, defined as net income after tax plus depreciation less common and preferred dividends, deflated by the firm's beginning–of–year capital. AGE is the number of years since the founding date of the firm to the year issuing an SEO. SECOND is a dummy variable equal to one if the percentage of secondary shares offered in an SEO is greater than 50 percent of total offerings. The independent variables also include dummy variables for industry and the year of SEO. Standard errors are in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

We find that firms issuing "quick SEOs" experience lower BHAR for the full sample period 1970–2006 and the subsample period. In general, a longer waiting time between an IPO and the first SEO ($\ln\Delta T$) is associated with higher ex post peer–adjusted, long–term stock returns. This result provides further evidence about the poorer long–run performance of firms using quick SEOs. In addition, we find that firms with dominating secondary share offerings in their first SEO do not perform better in the long run.

D. Cross–sectional Regressions on Monthly Returns

To test whether there is a "new issues effect" independent of a more severe underperformance of firms conducting SEOs within six months of IPOs, we perform a time–series of cross–sectional regressions on monthly individual firm returns following Loughran and Ritter (1995). Table 7 presents the multivariate analysis of monthly firm returns under seven different model specifications

The key variables we examine are "ISSUE" and "ISSUE 6 month". In the full model (7), the coefficients of ISSUE and ISSUE6month indicate that firms conducting new issues underperform by 41.5 basis points per month, and firms conducting quick SEOs underperform by additional 69.5 basis points per month. In model (2), we report the average coefficients for monthly regressions where the sole explanatory variable is the new issue dummy variable. The mean parameter value of –0.47 indicates that firms conducting new issues subsequently underperform by 47 basis points. In model (3), where the only explanatory variable is the ISSUE 6 month dummy, the coefficient estimate of –0.968 implies that firms conducting quick SEOs subsequently underperform by 96.8 basis points. In model (4), when we consider both the new issues effect and the effect of quick SEOs, firms conducting quick SEOs underperform by 64.9 basis points. The results in model (4) and (7) imply that the underperformance of new issues cannot be solely attributed to the size and book–to–market effects. Instead, a "new issues effect" exists, demonstrating that issuing firms underperform non–issuing firms, and that firms conducting quick SEOs experience more severe underperformance.

E. Fama–French Three–factor Regressions

Table 8 reports the alphas from time–series regressions of monthly portfolio excess returns on Fama–French three factors, as used in Fama et al. (1993). The advantage of

Table 7
Monthly cross–sectional regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	1.105***	1.460***	1.355***	1.46***	1.171***	1.104***	1.171***
	[2.69]	[5.06]	[4.45]	[5.06]	[2.94]	[2.69]	[2.94]
Ln MV EQ	0.091**				0.097**	0.091**	0.097**
	[1.98]				[2.12]	[1.99]	[2.13]
Ln B/M	0.25***				0.241***	0.25***	0.241***
	[5.25]				[5.15]	[5.25]	[5.15]
ISSUE		–0.470***		–0.466***	–0.42***		–0.415***
		[–3.84]		[–3.86]	[–3.7]		[–3.72]
ISSUE 6 Month			–0.968***	–0.649*		–0.974***	–0.695**
			[–2.62]	[–1.95]		[–2.64]	[–2.08]
Avg R^2	0.019	0.003	0.0001	0.004	0.022	0.019	0.022
# months	444	444	444	444	444	444	444

Note: The sample consists of all firms listed on NASDAQ, AMEX, or NYSE during 1970–2006. Ln MV EQ is the logarithm of the market value of equity. Ln B/M is the logarithm of B/M, using the book value of equity for the most recent fiscal year end. ISSUE is a dummy variable that takes the value of 1 if a company conducted at least one public equity offering (SEO or IPO) within the 60 months preceding a given June 30th. ISSUE 6 Month is dummy variable that equals 1 if a company conducted SEO within six months of its IPO. The dependent variable is the firm's monthly percentage stock return. T–statistics are listed in brackets. *, **, and *** denote significance levels at the 10%, 5%, and 1% levels.

Model (2) $r_{it} = a + b\ln MV_{it} + c\ln B/M_{it} + dISSUE_{it} + eISSUE6month_{it} + \varepsilon_{it}$

Table 8
Monthly alphas using Fama–French three–factor model

Panel A: Issuers vs. Non-issuers				Panel B: Early Issuers vs. Late issuers			
	Issuers	Non-issuers	Difference		< 6 months	≥6 months	Difference
All firms	–0.27	0.21	–0.50	All issuers	–0.89	0.12	–1.09
	[–1.66]*	[2.03]*	[–4.94]***		[–1.97]**	[1.06]	[–2.62]***
Large firms	0.17	0.29	–0.13	Large issuers	–0.13	0.28	–0.41
	[1.01]	[4.18]***	[–1.02]		[–0.26]	[3.02]***	[–0.86]
Small firms	–0.70	0.13	–0.86	Small issuers	–0.56	–0.01	–0.73
	[–3.62]***	[0.91]	[–7.46]***		[–0.63]	[–0.08]	[–0.84]

Note: The sample consists of all firms listed on NASDAQ, AMEX, or NYSE during 1970–2006. Large firms are those whose market capitalization on June 30 of year *t* is greater than the market capitalization of the median company in the sample. Small firms are those whose market capitalization is below the median. The monthly data for the market, size, and book–to–market factor returns are obtained from French's website. Panel A reports regression alphas for portfolios of issuers and non-issuers and the difference in alphas. Panel B reports regression alphas for portfolios of issuers conducting SEOs within six months of IPOs (early issuers), issuers conducting SEOs after six months of IPOs (late issuers), and the difference in alphas. T–statistics are listed in brackets. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Model (3) $(R_{pt} - R_{ft}) = a + b(R_{mt} - R_{ft}) + sSMB_t + hHML_t + \varepsilon_t$

forming portfolios is that the cross–sectional dependence problem in Table 7 is reduced while the disadvantage is that power is sacrificed. We find that for all firms, the alpha of non–issuers exceeds that of issuers by 0.50 on a monthly basis, and the difference is statistically significant at the 1% level (Panel A). We split the sample into large firms and small firms. Large firms are those whose market capitalization is above the size of the median NASDAQ, AMEX and NYSE firm in the sample. We find that for small firms, the alpha of non–issuers is significantly higher than that of issuers.

We also form portfolios of firms issuing an SEO both within six months of an IPO (quick SEO) and more than six months following an IPO (Panel B). The results show that for all issuers, the alpha of firms conducting an SEO more than six months following an IPO exceeds that of quick SEO issuers by 1.09 on a monthly basis. We find negative differences when we split the sample into large and small issuers, though the differences are not statistically significant. Overall, we find underperformance of issuers and more severe underperformance of those with "quick SEOs".

F. Aftermarket Returns and Investments

According to the market feedback hypothesis, high stock returns signal that the marginal return to the project is high, which encourages managers to increase investment by raising additional capital. Therefore, firms issuing quick SEOs should have higher investment rates. We test this hypothesis by estimating regressions of investment (measured by total net property, plant and equipment, following Hovakimian and Hutton (2010)[14] on aftermarket returns, six month issue dummy or the logarithm of the time between a firm's IPO and its first SEO ($\ln\Delta T$), and the interaction variables between aftermarket returns and the 6 months dummy. We also include control variables such as book–to–market, free cash flow and other firm characteristics.

Results reported in Table 9 are inconsistent with the market feedback hypothesis. The coefficient estimates on AB RET 20 is negative and significant and the coefficient on SEO within six months of the IPO dummy is negative (though insignificant) for the full sample period and the period of 1990–2006, instead of being positively significant. The coefficients of the interacted terms are statistically insignificant from zero. Overall, we find no evidence that capital expenditures increase with the aftermarket returns for firms that conduct SEOs within six months of IPOs. Interestingly, the SECOND dummy carries a significantly negative sign, suggesting that SEOs with dominating secondary share offerings actually decrease investment expenditures.

G. Changes in Operating Performance

Finally, we examine the operating performance of firms conducting SEOs by addressing the questions: (1) does the post–issue operating performance of issuers deteriorate relative to non–issuing firms? and (2) is there more severe deterioration of operating performance among the group of issuers who conducted SEOs shortly after IPOs? Table 10 presents the results.

Table 9
Aftermarket returns and investments

	6 Months Dummy			Ln ΔT		
	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble pd.)	Full Sample (1970–2006)	Subsample 1 (1990–2006)	Subsample 2 (exclude bubble pd.)
AB RET 20	–7.863***	–8.103***	–9.955**	–5.556**	–6.498***	–8.692**
	[2.450]	[2.771]	[4.269]	[2.297]	[2.504]	[3.866]
AB RET 40	1.694	1.284	0.644	1.562	1.118	–0.021
	[2.672]	[2.850]	[4.413]	[2.586]	[2.616]	[3.953]
6 months dummy or Ln ΔT	–1.998	–2.337	–1.632	1.030*	0.638	0.986
	[1.680]	[1.969]	[2.518]	[0.606]	[0.795]	[0.945]
AB RET 20 × 6 months (Dummy)	5.953	5.229	4.044			
	[4.463]	[4.680]	[8.332]			
AB RET 40 × 6 months (Dummy)	–1.226	0.449	–3.878			
	[5.446]	[6.060]	[8.983]			
B/M	–0.466	–0.625*	0.172	–0.416	–0.589	0.145
	[0.426]	[0.363]	[1.364]	[0.433]	[0.374]	[1.373]
FCF	0.234***	0.202***	0.213***	0.227***	0.198***	0.212***
	[0.045]	[0.041]	[0.045]	[0.044]	[0.040]	[0.043]
ROA	6.941**	3.878	4.35	6.362**	3.575	4.153
	[2.782]	[2.725]	[3.106]	[2.740]	[2.613]	[3.003]
Ln (Total Assets)	3.156***	3.653***	3.815***	3.278***	3.725***	3.884***
	[0.888]	[0.965]	[1.025]	[0.887]	[0.959]	[1.018]
SECOND	–4.716***	–4.813***	–4.366***	–4.377***	–4.735***	–4.155***
	[1.287]	[1.357]	[1.537]	[1.331]	[1.309]	[1.473]
Intercept	29.856***	–4.466	–5.891	22.694***	–8.947	–12.719
	[5.034]	[6.978]	[7.151]	[7.173]	[8.955]	[9.581]
Industry and year dummies	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Sample size	1,451	1,115	958	1,451	1,115	958
Adjusted R^2	0.256	0.275	0.247	0.258	0.276	0.249

Note: The table reports an OLS regression estimating the determinants of corporate investment. The dependent variable is corporate investment measured by total net property, plant and equipment scaled by total assets. 6 months dummy (SEO within six months of IPO) is a dummy variable that takes on the value of 1 if the number of calendar days between IPO and the first SEO is less than six months. Ln ΔT is the logarithm of the number of calendar days between IPO and the first SEO. AB RET 20 is the abnormal return over the period from trading day 1 to trading day 20 after the IPO date. AB RET 40 is the abnormal return over the period from trading day 21 to trading day 40 after the IPO date. B/M equals the ratio of book value of equity to market value of equity. FCF is the free cash flow. The cash flow measure is scaled by the firm's beginning–of–year capital. ROA is the OIBD (operating income before depreciation) normalized by total assets. Ln (Total Assets) is the logarithm of the total assets. SECOND is a dummy variable equal to one if the percentage of secondary shares offered in an SEO is greater than 50 percent of total offerings. Industry and year dummy variables are included in the regression but results are not reported. Standard errors are in brackets. *, **, and *** denote significance level at the 10%, 5% and 1% levels.

Table 10
Changes in operating performance: Median ROA (%)

Year	Less than 6 months			More than 6 months			Difference
	N	Unadjusted	Adjusted	N	Unadjusted	Adjusted	in Adjusted
–1	218	8.66	0.08**	1,460	12.45	0.08***	–0.01
+1	169	5.58	–0.89	1,245	11.13	0.71***	–1.60*
+2	153	6.87	–0.27	1,139	10.69	2.00***	–2.27**
+3	138	6.39	–4.26	1,071	10.53	2.40***	–6.66**
–1 to 1			–5.21**			–0.92**	–4.29**
–1 to 2			–3.25**			0.00	–3.25**
–1 to 3			–2.74			0.25	–2.99

Note: This table reports the median operating performance for issuers and non-issuers matched on industry, firm size and pre–issue operating performance. The matching procedure follows Bouwman, Fuller, and Nain (2009). The adjusted operating performance is the paired difference between the ROA of the issuing firms and the ROA of their matching non-issuing firms. We categorize the issuing firms by the length of time since IPO at the date of first SEO. The tables reports the median OIBD (operating income before depreciation) scaled by assets. The ratio is winsorized at the top and bottom 1%. Statistical tests are based on the Wilcoxon signed–rank test. *, **, and *** denote significance level at the 10%, 5%, and 1% levels.

Table 10 reports the median operating performance ratios for issuers and non–issuers matched on industry, firm size and pre–issue operating performance.[15] The matching procedure follows Barber and Lyon (1996) and Bouwman, Fuller, and Nain (2009). We match the non–issuance firms with SEO firms by: (1) same industry and year; (2) size is within 70% and 130% range; (3) for those firms that satisfy criteria (1) and (2), we select the firms with the closest pre–issue performance (return on assets, ROA). We report the results based on the median ROA (defined as Operating Income before Depreciation scaled by assets). To examine whether the timing of an SEO affects post–issue operating performance, we categorize the issuing firm by the length of time since IPO at the date of the first SEO: early issuer (an SEO issued within six months of an IPO) vs. late issuer (an SEO issued more than six months following an IPO).

We find that the median late issuer on average demonstrates a better post–SEO operating performance than the median non–issuer, but the median early issuer does not. The difference between the two categories (difference in adjusted) is statistically significant for year +1, +2 and +3. In addition, when comparing matching firms adjusted operating performance change from prior–SEO to post–SEO (–1 to 1, –1 to 2, and –1 to 3), we find median early issuers demonstrate more deterioration than median late issuers. For example, for late issuers, the median benchmark–adjusted ROA from year –1 to year 2 is around 0, but the median benchmark–adjusted ROA for early issuers from year –1 to year 2 is –3.25%. The difference between early issuers and late issuers is statistically significant. Again, our results indicate that firms conducting an SEO shortly after going public exhibit the most severe decline in operating performance among all the issuing firms.

V. ROBUSTNESS CHECKS[16]

A. Impact of Lockup Period and Firm Performance

Existing literature has documented that many IPOs specify a lockup period for future equity issues, and in general, most lockup restrictions expire six months after the IPO (Field and Hanka, 2002). Chen, Chen, and Huang (2012) find that insiders' (especially senior executives) selling of shares has a negative impact on the long–run stock returns subsequent to the lockup expiration. To test the impact of lockup days, we perform univariate and regression analyses.

The median lockup period of early issuers is 180 days, not different from that of late issuers. Figure 2 provides the lockup patterns of IPOs and SEOs for our quick SEO sample.[17] To examine the impact of lockup period on SEO firm performance, we further control for the lockup period in the announcement return and buy–and–hold abnormal return regression analyses, and find no impact of lockup period on the more negative performance of quick SEOs.

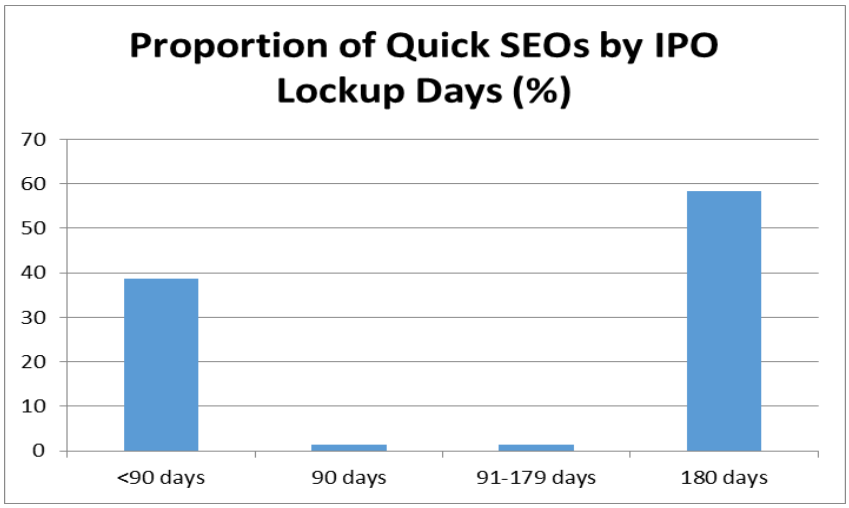
B. Impact of Secondary Shares Offering, Venture–capital Backed Offerings, and High–tech Industry

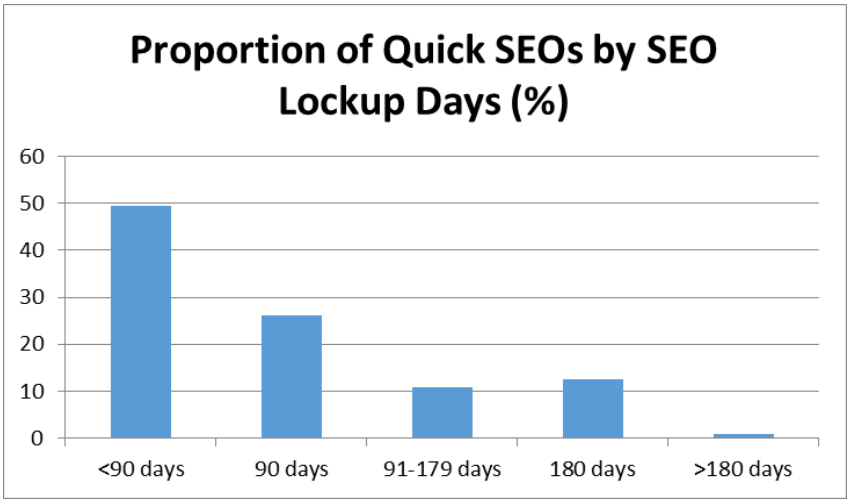
The shares offered with SEOs may include pure primary shares, pure secondary shares or a mix of both. As motivations of firms issuing secondary shares may differ significantly from those mainly issuing primary shares, we perform a robustness check to test whether our results are driven by secondary shares offerings. In particular, we exclude pure secondary offerings from our sample and only keep firms with at least some newly issued primary shares (Loughran and Ritter, 1995). Re–running all analyses confirms the original results.

It is also possible that if an IPO is venture capital (VC) based, the existing owners may desire to exit via secondary shares as early as possible (Brav and Gompers, 1997). To test this hypothesis, we tabulate the percentage of VC–backed IPOs for early issuers and late issuers. The key market timing opportunities variables, IPO underpricing, AB RET 20, and AB RET 40, remain significant after controlling for VCs and offerings type.[18]

Another concern is that high–tech/internet firms may behave differently, as noted in the literature.[19] Loughran and Ritter (2004) find that riskier IPOs offered by high–tech firms are more underpriced than less–risky IPOs. Bartov et al. (2002) document differences in IPO valuations between internet and non–internet firms. In our sample, 38.32% of early issuers are high tech/internet firms while 21.56% late issuers are high tech/internet firms. In the subsample, about 26% of IPO issuers are high tech firms during 1990–2006 (about 33% of IPO issuers are high tech firms during 1995–2000). We add a high–tech firm dummy variable to the regressions and the coefficient estimates for our key market–timing variables are still significant after controlling for high–tech firms.[20]

Figure 2
The lockup pattern of IPO issues and the SEO issues – Quick SEOs only





C. Cash Needs and the Possibility of Quick SEO Issue

As noted above, the results of DeAngelo, DeAngelo and Stulz (2010) and McLean (2011) suggest that firms' near–term cash needs are the primary motivation for SEOs. We address this concern by performing two analyses, and find that our main results still hold.[21] We believe near–term cash need around SEOs is a powerful factor determining whether a firm issues an SEO, but it may not predict or explain why some firms issue sooner than others.

VI. CONCLUSION

Our research investigates whether firms take advantage of transitory "windows of opportunity" to time seasoned equity issues when their equity is substantially overvalued with respect to managers' private information. Our main results provide support for the market timing hypothesis. First, we find that firms experiencing larger IPO underpricing, larger stock price run–ups after the IPO, and larger IPO offer size tend to return to the market with an SEO earlier than the others. This implies that overvalued firms tend to time their equity issues. Second, we find that firms issuing quick SEOs on average earn a 2.69% lower three–day announcement excess return than those issuing late SEOs, indicating that the market treats quick SEO announcements less favorably because such equity issues might signal a greater degree of stock price overvaluation.

Third, we show that a firm's three–year BHAR is positively related to the logarithm of the time between its IPO and first SEO. Using three different approaches (the buy–and–hold return analysis, cross–sectional regressions, and calendar time portfolio analysis) we document more severe underperformance for firms issuing quick SEOs. The results hold after controlling for the effects of firm age, secondary share offerings, lockup period and venture capital based nature of IPOs.

In addition, we find no evidence that investments increase with aftermarket stock returns for firms conducting quick SEOs, which is inconsistent with the market feedback hypothesis. Our results also suggest that firms conducting SEOs shortly after their IPOs exhibit the most severe deterioration in operating performance among all issuing firms.

In general, the combined evidence is consistent with the overvaluation hypothesis that managers with private information time SEOs in ways that benefit existing shareholders. We find little support for the market feedback hypothesis, which assumes that firms issuing SEOs shortly after IPOs are high–quality firms with good investment opportunities. Because their stock is more overvalued at the time of issuance, firms conducting quick SEOs are worse off in terms of: (1) the market's reaction to their SEO announcement, (2) their long–run share returns, and (3) their subsequent operating performance. These results are best explained by management's ability to time the market by issuing overvalued equity to take advantage of the "windows of opportunity."

ENDNOTES

1. See ΔT (days) in Table 1. The period is sensitive because after an initial public offering, most existing shareholders are subject to a lock–up period in which they cannot sell their shares for a pre–specified time. In addition, asymmetric information is supposed to be greater for new IPO firms, especially in the first few months after the IPO.
2. They study 411 first SEOs issued during 1980–1986. They found similar results when they used a five–year period window.
3. Loughran and Ritter (2004) define firm age as the year of the IPO minus the year of founding.

4. Cooney and Kalay (1993) extend the Myers–Majluf framework by introducing the existence of negative NPV projects. They show that an announcement of SEO can contain favorable information about a firm and that a positive price reaction upon the announcement of an SEO is possible. Korajczyk, Lucas and McDonald (1991) report less of a negative announcement effect when an SEO is conducted shortly after a favorable earnings release.
5. With issuers and non–issuers matched by size, industry and book–to–market.
6. 111 basis points = 41.5 basis points (new issue) + additional 69.5 basis points (issue within six months of an IPO) as shown in Table 7 Panel (7).
7. Analyses using the offer price<=$1 yield quantitatively similar results.
8. A shelf SEO is defined as an SEO whose issue date is 60 days after the filing date. Following Altinkilic and Hansen (2003) and Huang and Zhang (2011), we exclude shelf registered offers.
9. CM rankings are obtained from Jay Ritter's website (http://bear.warrington.ufl.edu/ritter/ipodata.htm). For underwriters that do not have a rank in Ritter's file, we assign rank value zero to it.
10. The BHAR is over a three–year holding period following the SEO issue. The BHAR is calculated from the first CRSP–listed post–issue closing price to the appropriate anniversary date of the offering.
11. The five alternative sets of matching firms are constructed as follows. The first set controls only for size. Each SEO firm is matched with the non–issuing firm having the closest market capitalization on the prior December 31. The second set controls for size and book–to–market. We identify firms whose market value lies between 70% and 130% of the sample firm value. Of those, we select the firm with the closest book–to–market value. The third set controls for size and industry effect. Each sample firm is paired with a peer firm that has the closest market value and the same two–digit SIC code. The fourth set controls for size and earnings–to–price effect. We identify firms whose market value lies between 70% and 130% of the sample firm value, and then select the firm that has the closest earnings–to–price value. The last set controls for size, industry and book–to–market. Following the existing literature, if a matching firm is delisted before the three–year anniversary date of the offering, the next closest matching firm's return is used. Up to four matching firms are kept for each sample SEO firm. If sample firms are delisted, the BHAR is calculated until the delisting date, and the corresponding matching firm's return is used. The BHAR is the difference between the holding period return for each sample firm and its matching firm.
12. To address the concern that firms may issue quick SEOs to reflect their efforts to capture the hot stock markets, we control in the regressions a market performance variable (named Mkt_ret, measured by the NYSE/Amex value weighted cumulative return three months prior to an SEO). We find that it is more likely and it takes shorter for firms to go back to capital market during the period 1990–2006 (with bubble period excluded) if the market is hot.
13. Literature has documented on average a –3% SEO announcement abnormal return, followed by another –3% SEO issue day abnormal return. Loughran and Ritter (1995) find that SEO firms underperform size and industry matched non–issuance firms over the five years following SEOs.

14. We find similar results when using the measure of change of a firm's capital expenditure ratio as the dependent variable.
15. In an earlier version, we matched non–issuers by industry and pre–issue operating performance only. Our conclusion still holds.
16. Complete robustness results are available from the authors upon request.
17. We follow Karpoff et al. (2013) and report five categories of lockup patterns: <90, 90, 91–179, 180, and >180 days. For those firms that issue quick SEOs, the majority specify a 180–day lockup period, while in their SEOs, the majority have a lockup period shorter than or equal to 90 days.
18. We find that 66.82% of early issuers are backed by venture capital while 49.07% of late issuers are backed by venture capital. The difference is significant at the 1% level. We then control for VCs, and the interaction of VCs and secondary offering type in a probit regression to assess the decision to conduct a quick SEO. We find that VC dummy is not significant in the regressions, but VC backed secondary offerings are conducted sooner than non–VC backed secondary offerings.
19. We follow Loughran and Ritter (2004) and Cliff and Denis (2004) to categorize firms with the following SIC codes as tech firms: 2833, 2834, 2835, 2836, 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3674, 3812, 3823, 3825, 3826, 3827, 3829, 3841, 3845, 4812, 4813, 4899, 7370, 7371, 7372, 7373, 7374, 7375, 7377, 7378, and 7379.
20. Regression results indicate: (1) high–tech firms do not necessarily return to the equity issuance market earlier than others (the coefficient estimate is not statistically significant) after controlling for other firm characteristics; (2) high–tech firms do not experience greater negative SEO 3–day announcement abnormal returns (the coefficient estimate is not statistically significant); (3) high–tech firms do not exhibit more negative long–run returns (the coefficient estimate is not statistically significant). We also perform the univariate analyses as shown in Table 5, with separate analyses for non–high–tech firms and high–tech firms by early issue and late issue. For both high tech and non–high–tech firms, early issuers demonstrate more negative BHAR than late issuers. However, there is no significant difference in BHAR between non–high–tech firms and high–tech firms categorized by either early issuers or late issuers. Regression results are available from the authors upon request.
21. First, following DeAngelo, DeAngelo and Stulz (2010), we measure a company's near–term cash needs as: Pro Forma Cash/TA ratio = (Cash $_{t+1}$– SEO proceeds from primary shares)/(Total Assets $_{t+1}$ – SEO proceeds from primary shares), and add the variable to the probit regression. As predicted, this variable carries no explanatory power regarding early issue or late issue. The market–timing hypothesis still holds after controlling for a company's cash saving needs. Second, we consider the counterfactual condition that had there been no SEO issue, would a firm run out of cash. We find that for early issuers, about 68.4% of firms would have run out of cash without the issue, and that 67.7% of the late issuers would have run out of cash. The difference is statistically insignificant.

Appendix
Definitions of variables (COMPUSTAT items)

Phrase Used in Text	Acronym	Definition	COMPUTSAT XPF NAME
Total Assets	Total Assets		AT
Operating Income Before Depreciation	OIBD		OIBDP
Number of Shares Outstanding	Shrs Out		CSHO
Book Value of Equity	BV EQ		CEQ
Capital Expenditures	Cap Exp		CAPX
Share Price	Price		PRCC_F
Market Value of Equity	MV EQ	Share Price × Shares Outstanding	PRCC_F × CSHO
Book–to–market	B/M	BV EQ ÷ MV EQ	
Tobin's Q		Total Market Value of assets÷ Total book value of Assets	(AT–CEQ+MV EQ) ÷ AT
Return on Assets	ROA	OIBD ÷ Total Assets	
Cap Exp Ratio		Cap Exp ÷ Total Assets	CAPX ÷ AT
Free Cash Flow	FCF	Net Income After Tax + Depreciation + Amortization – Dividends – Preferred Dividends	NI + DP – DVC – DVP
IPO SIZE		Amount of Equity Capital Raised by IPO	
SEO SIZE		Amount of Equity Capital Raised by SEO	
SEO/IPO		SEO SIZE ÷ IPO SIZE	
SEO/MV EQ		SEO SIZE ÷ MV EQ	
ΔT (days)	ΔT	Number of calendar days between IPO and first SEO.	
Underpricing IPO	Under IPO	(1st post–issue price – IPO offer price) ÷ IPO offer price	
Abnormal Return IPO (1 – 20)	AB RET 20	IPO abnormal return from trading day 1 to trading day 20 after IPO date.	
Abnormal Return IPO (21 – 40)	AB RET 40	IPO abnormal return from trading day 21 to trading day 40 after IPO date.	
SEO AR	Equation 1	SEO Abnormal Return = SEO 3–day announcement–period return; from event day –1 to +1, where day 0 = filing date.	

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