The Role of Investor Attention in Seasoned Equity Offerings:

Theory and Evidence

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Abstract

Models of seasoned equity offerings (SEOs) such as Myers and Majluf (1984) assume that all investors in the economy pay immediate attention to SEO announcements and the pricing of SEOs. In this paper, we analyze, theoretically and empirically, the implications of only a fraction of investors in the equity market paying immediate attention to SEO announcements. We first show theoretically that, in the above setting, the announcement effect of an SEO will be positively related to the fraction of investors paying attention to the announcement and that there will be a post-announcement stock-return drift that is negatively related to investor attention. In the second part of the paper, we test the above predictions using the media coverage of firms announcing SEOs as a proxy for investor attention, and find evidence consistent with the above predictions. In the third part of the paper, we develop and test various hypotheses relating investor attention paid to an issuing firm to various SEO characteristics. We empirically show that institutional investor participation in SEOs, the post-SEO equity market valuation of firms, SEO underpricing, and SEO valuation are all positively related to investor attention. The results of our identification tests show that the above results are causal.

1 Introduction

Equity issues are an important source of external financing for corporations. Corresponding to their importance, there is a large theoretical and empirical literature in corporate finance that has studied various phenomena around seasoned equity offerings (SEOs). In particular, there is an important theoretical literature (see, e.g. Myers and Majluf (1984) or Giammarino and Lewis (1988)) that has attempted to explain the negative announcement effect that has been widely documented upon the announcement of an SEO (see, e.g. Asquith and Mullins (1986) or Masulis and Korwar (1986)). The theoretical literature has focused on the asymmetric information facing the firm in the equity market as the main driving force to explain the negative announcement effect of an equity issue. Further, in models such as Myers and Majluf (1984), a crucial assumption is that all investors pay immediate attention to the equity issue announcement. The objective of this paper is to relax the above assumption, assuming instead that only a fraction of investors in the equity market pay attention to the SEO announcement, while the remaining fraction update their beliefs in a delayed manner after the announcement. We then analyze the consequences of such partial investor attention paid to SEOs theoretically and empirically in this paper.

In the first part of the paper, our focus is on theoretically analyzing a setting where an SEO conveys a negative signal to the equity market, but where, unlike in Myers and Majluf (1984), a fraction of investors do not pay immediate attention to the equity issue and update their beliefs about the firm announcing the equity issue only in a delayed manner. We show that, in the above setting with limited investor attention, the equity market underreacts to the SEO announcement (compared to the full attention setting). Further, we show that the announcement effect of an equity issue is increasing in investor attention (the fraction of investors paying attention to the SEO announcement). We then show that there will be a post-announcement stock return drift (driven by inattentive investors engaging in delayed updating of their beliefs after the SEO announcement). Further, this post-announcement stock return drift will be negatively related to the extent of investor attention paid to the SEO announcement. Finally, our model implies that both the abnormal stock return upon an SEO announcement and the post-announcement stock return drift will have predictive power for the subsequent operating performance of the firm.

In the second part of the paper, we empirically test the implications of the above theory for

the announcement effect of an SEO and the post-announcement drift associated with the SEO announcement. We conduct the above empirical analyses making use of the media coverage of an SEO firm in the days before its SEO announcement as a proxy for investor attention and using data on SEOs from 2000 to 2018. In using media coverage as a proxy for investor attention, we follow several papers in the IPO literature that have used media coverage as a proxy for investor attention: see, e.g. Liu, Sherman, and Zhang (2014) or Bajo, Chemmanur, Simonyan, and Tehranian (2016). Our baseline results from the above empirical analyses are as follows. First, the announcement effect of an equity issue is positively related to the investor attention paid to the SEO announcement: i.e., while the announcement effect is negative, it is larger in magnitude for SEOs with greater investor attention paid to the announcement. Second, the post-announcement stock return drift is decreasing in the investor attention paid to the SEO announcement: i.e., the post-announcement drift, while it is also negative, will be decreasing in magnitude with greater investor attention. Third, both the above variables (i.e., the announcement effect of the SEO on firm equity and the post-announcement stock return drift) have predictive power for the future operating performance of a firm (as confirmed by running a multivariate regression of post-SEO operating performance on the SEO announcement effect and on the post-SEO stock return drift).

We conduct two different identification tests to establish the causality of our baseline results. First, it may be argued that SEO firms with certain firm characteristics (omitted in our baseline regressions) may be more likely to attract investor attention, so that the baseline results we document above may be driven by such omitted variables rather than the investor attention received by the firm's SEO announcement. To rule out the above omitted variable problem, our first identification test analyzes the relationship between the "abnormal" media coverage received by the SEO firm prior to its SEO announcement (where abnormal media coverage is defined as the media coverage immediately prior to the SEO announcement minus the media coverage one year previously) and the relevant SEO characteristics (namely, the SEO announcement effect and the post-announcement stock return drift). Second, it may be argued that there may be some informational or other confounding event occurring before the SEO announcement that affects both the media coverage received by the firm prior to its SEO announcement and the relevant SEO characteristics (namely, the SEO announcement effect and the post-announcement stock return drift). To control for this type of endogeneity, we instrument for the investor attention received by the SEO

firm immediately before the SEO announcement using the media coverage received by the firm one year before the SEO announcement. Using the above instrument, we conduct an instrumental variable (IV) analysis of the relation between investor attention and the SEO announcement effect and also the relation between investor attention and the post-SEO stock return drift.[1] The results of the above two identification tests are also consistent with the predictions of our theory, thus confirming that the relationships we documented earlier in our baseline analyses are causal.

In the third part of the paper, we extend our analysis to study the relationship between investor attention and the pricing and characteristics of the SEO itself (in the U.S., the actual SEO occurs four to six weeks after the SEO announcement). We first develop testable hypotheses regarding the relation between the investor attention received by a firm immediately before the actual SEO and the pricing of the SEO and other SEO characteristics. In order to develop these testable hypotheses, we start by assuming that, for institutional investors to participate in a firm's SEO, they not only need to receive information about various aspects of the firm from the SEO underwriter, but also to pay attention to or "recognize" this information. This last assumption is in the spirit of Merton's (1987) investor recognition or attention model, which assumes that an investor will incorporate a security into his portfolio only if he pays attention to (or acquires information about) that security by incurring a cost. While Merton (1987) posits several possible sources of this "attention" or "recognition" cost, he views this cost mainly as arising from the cost of investors becoming aware of (or familiar with) a firm: in his setting, investors consider investing only in the stock of firms with which they have a certain level of familiarity. In a similar vein, we can think of institutional and other investors considering for investment only the stock of firms making SEO that they have become familiar with by incurring an "attention cost". Then, if a larger number of institutions have paid attention to a firm's SEO, we would expect to find, *ceteris paribus*, a larger number of institutional investors investing in the equity of the SEO firm. Further, if the demand for the SEO firm's equity from institutional investors is greater for SEOs receiving greater investor attention, we expect the market clearing price of the equity of such firms to be higher (for a given supply of shares offered in the SEO). We therefore expect to find a positive relationship between investor

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[1]It should be noted that our IV analysis using the media coverage received by the firm one year before the SEO announcement as the instrument rules out the possibility that our results are driven by asymmetric information rather than investor attention, since it is unlikely that any private information held by firm insiders is so long-lived (i.e., having a one year horizon).

attention and post-SEO market valuations. As we discuss in more detail in subsection 8.1, if SEO underpricing is unrelated to investor attention (e.g., driven only by considerations of information extraction as argued by Benveniste and Spindt (1989)), then we expect to find a positive relation between investor attention and firm valuation at the SEO offer price as well. If, however, SEO underpricing is itself positively related to investor attention (as implied by the theoretical SEO model of Chemmanur and Jiao (2011) or by the IPO model of Liu, Lu, Sherman, and Zhang (2019)), then the relation between investor attention and firm valuation at the SEO offer price will turn ambiguous.

We test the above hypotheses using the media coverage received by the firm prior to the actual equity issue (i.e., after the SEO announcement but before the pricing of the SEO) as a proxy for investor attention. First, we find that the institutional investor participation in an SEO is increasing in the investor attention received by the SEO firm. This result also holds after we control for SEO underpricing. Second, we find that the post-SEO secondary market valuation of the SEO firm is increasing in investor attention. This result holds regardless of whether the market valuation is calculated using the closing stock price of the firm on the first trading day post-SEO, or using the stock price one quarter after the completion of the SEO. Third, we find that the underpricing of an SEO (as measured by the stock return from the SEO offer price to the closing price on the first trading day) is positively related to the investor attention received by the SEO firm. Fourth, we find that firm valuation at the SEO offer price is also positively related to the investor attention received by the SEO firm. We conduct two identification tests: the first, analyzing the relation between the "abnormal" media coverage received by the SEO firm and various SEO characteristics; and the second, an IV analysis using the media coverage received by the SEO firm one year prior to the SEO announcement as an instrument for the media coverage received by the firm immediately before the SEO. The above two identification tests establish that the baseline results we discussed earlier are causal.

The rest of this paper is organized as follows. Section 2 discusses how our paper is related to the existing literature and describes its contribution relative to this literature. Section 3 presents the set-up of our theoretical analysis of the relationship between investor attention, the announcement effect of an SEO, and the post-SEO stock return drift; Section 4 develops results and describes the testable implications of our theoretical model. Section 5 describes our data and sample selection

procedures and our proxies for investor attention. Section 7 describes our empirical tests and results on the relation between the investor attention received by a firm prior to an SEO and the SEO announcement and the post-SEO stock return drift and our empirical analysis of the predictive power of the SEO announcement effect and post-SEO stock return drift for post-SEO operating performance. Section 8 develops testable hypotheses on the relationship between the investor attention received by an SEO firm and various SEO characteristics and presents our empirical tests (and results) of the above hypotheses. Section 9 concludes. Appendix A gives a list of constants used in various propositions and proofs. The proofs of all propositions are confined to Online Appendix B. Online Appendix C presents some additional empirical tests not included in the main text due to space limitations.

2   Relationship to the Existing Literature and Contribution

Our paper is related to several strands in the literature. The first strand is the theoretical and empirical literature on the stock market reaction to SEO announcements: see, e.g., Myers and Majluf (1984) or Giammarino and Lewis (1988). The theoretical model of Myers and Majluf (1984) suggests that equity issues will have a negative announcement effect in a setting of asymmetric information, since they convey that insiders of a firm announcing an equity issue have less favorable private information about their firm's future prospects. Since, in Myers and Majluf (1984), all investors pay immediate attention to the equity issue announcement, there will be no post-announcement drift in their setting. Thus, our model can be viewed as building on the Myers and Majluf (1984) setting where the announcement of an equity issue conveys a negative signal to the equity market, but where, unlike in Myers and Majluf (1984), a fraction of investors do not pay immediate attention to the equity issue and update their beliefs about the firm announcing an equity issue only in a delayed manner, thereby giving rise to a significant post-announcement stock return drift.[2]

The second strand is the theoretical and empirical literature on the pricing of SEOs as well as the discounting and underpricing of SEOs. Two theoretical models of the pricing of SEOs are those

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[2]There is also a large empirical literature documenting the negative stock market reaction to the announcement of equity issues: see, e.g., Asquith and Mullins (1986) or Masulis and Korwar (1986). Asquith and Mullins (1986) documents a significant negative SEO announcement effect and find that the extent of price reduction is negatively related to the size for the equity issue.

of Chemmanur and Jiao (2011) and Gerard and Nanda (1993). These papers develop theoretical rationales for the pricing of SEOs, and, in particular, for SEO discounts and underpricing based on asymmetric information (albeit driven by different motivations). Unlike the above papers, our focus in the third part of this paper is on empirically analyzing the implications of investor attention on SEO underpricing, post-SEO firm valuation, and institutional investor participation in SEOs.

There is also a large empirical literature on the underpricing of SEOs. Since Smith (1977), who first empirically documented a significant SEO underpricing, the academic literature has offered various explanations for this phenomenon. Loderer, Sheehan, and Kadlec (1991) document a more significant SEO underpricing for stocks listed on the Nasdaq than stocks listed on other exchanges such as NYSE and Amex. Corwin (2003) studies the determinants of SEO underpricing such as offer size, uncertainty of firm value, the magnitude of preoffer returns, price rounding, and the pricing relative to the bid quote. Altınkılıç and Hansen (2003) decompose SEO discounting into a predictable component and a surprise component, and argue that the surprise component is used by underwriters as a channel to release additional information to investors. Gao and Ritter (2010) study the effect of various choices of offer method on consequent SEO characteristics such as discount and underpricing. Gibson, Safieddine, and Sonti (2004) show that SEO firms with the greatest increase in institutional investment around the issue date significantly outperform those with the greatest decrease in institutional investment. Chemmanur, He, and Hu (2009) analyze the relation between institutional trading around SEOs and various SEO characteristics, and conclude that their findings are consistent with institutions being able to produce information about the firm making the SEO. Huang and Zhang (2011) document a negative relation between the number of managing underwriters and SEO discount. Gustafson (2018) documents a higher offer price and less post-issue return for over-night SEO offerings than non-overnight offerings. Unlike the above empirical papers, our focus in the second part of this paper is on the relation between investor attention paid to a firm making an SEO and SEO underpricing, immediate post-SEO firm valuation, and the participation of institutional investors in the SEO which has not been analyzed before in the literature.[3]

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[3] Pinto-Gutiérrez (2018) empirically analyzes the relation between the media coverage received by an SEO firm prior to its offering and the SEO discount, and also the relation between the above media coverage and the abnormal stock return during the three-day window around the day of the equity issue (not the SEO announcement day). However, the above paper does not analyze any of the relationships that we study in this paper.

The third strand is the theoretical literature on limited attention. Hirshleifer and Teoh (2003) use a static limited-attention model where only a fraction of investors pay attention to public information immediately and correctly to study the effects of firms' different presentations of financial disclosure and reporting on market prices. Hirshleifer, Lim, and Teoh (2011) use a related model to analyze the interpretation of different earnings components and investors' underreaction to earnings announcements and overreaction to accruals. Our model builds on the above two static models by introducing random supply shocks on trading dates, so that we are able to explicitly characterize the post-announcement drift following SEO announcements.[4] The broader "investor recognition" or "investor attention" literature that builds on Merton (1987)'s model is also related to our paper: we build on this literature to develop testable hypotheses for own empirical analysis of the relation between investor attention and various SEO characteristics such as SEO underpricing and post-SEO equity valuation. One paper from this literature that is related to ours is Liu, Lu, Sherman, and Zhang (2019) who develop a model, in the context of IPO, in which underwriters attract potential investors to an IPO by offering underpriced shares. In their setting, IPO underpricing is a way of compensating investors for their cost of paying attention to the firm going public.

The fourth and final strand in the literature our paper is related to is the empirical literature on investor attention in the context of IPOs. In the context of IPOs, Bajo, Chemmanur, Simonyan, and Tehranian (2016) study two functions of underwriters, information dissemination and information extraction, within underwriter networks in IPOs and find that higher investor attention leads to more favorable IPO characteristics, using pre-IPO media coverage as a proxy for investor attention. Chemmanur, Krishnan, and Yu (2018) analyze the role of backing by venture capitalists (VCs) in enhancing the investor attention paid to an IPO firm and the role of this enhanced investor attention in offering favorable IPO characteristics. Da, Engelberg, and Gao (2011) use Google Search Volume Index data to proxy for retail investor attention and document a positive relation between the retail investor attention and the initial return of IPOs and a negative relation between the retail investor attention and the long-run stock return performance after IPO. Liu, Sherman, and Zhang (2014) use media coverage as a proxy for investor attention to document a positive relation between investor attention and long-run stock return performance. Cook, Kieschnick, and

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[4]Peng (2005) applies the setting of limited attention to regimes such as the learning process of investors; Peng and Xiong (2006) applies such a setting to investors' category learning and consequent return comovement when investors also suffer from overconfidence.

Van Ness (2006), document the positive effects of underwriters' promotional efforts in IPOs on IPO offer price revision, and IPO initial return.[5] Unlike the above literature, that has focused on the effect of investor attention in IPOs, the focus of our paper is the role of investor attention in SEOs. In particular, we are the first to analyze the effect of pre-SEO investor attention on the stock market reaction to SEO announcements, and also the first to analyze the effect of investor attention on various SEO characteristics.

3 Model Setup

We develop a discrete-time dynamic model to study how the attention of investors to announcements affects the announcement effects and post-announcement drifts. The model builds upon the SEO model of Myers and Majluf (1984) and the static limited attention model in Hirshleifer and Teoh (2003). By introducing a supply shock into the model, we are able to explicitly represent the drift and study the corresponding comparative statics on both the announcement effect and the post-announcement drift.

3.1 Timeline

There are four dates in the model (Figure 1): $t = 0, 1, 2, 3$.

t=0	t=1	t=2	t=3
Investors form their initial portfolios based on their prior beliefs of the firm.	An upcoming SEO is announced. Attentive investors pay attention to the announcement, but inattentive investors do not. Investors trade.	Inattentive investors notice that they missed the SEO announcement at t=1 and correct their beliefs in a delayed manner at t=2. Investors trade again.	All payoffs are realized.

Figure 1: **Timeline of Model**

At $t = 0$, investors are endowed with homogeneous wealth (or equal shares of the asset). There

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[5]The broader literature on the role of media coverage in the financial market is also distantly related. Engelberg and Parsons (2011) establish the causal effect of media coverage on investor trading by studying the relationship between the trading in local markets following local paper reporting the earnings announcement of a S&P 500 firm. Fang and Peress (2009) document a negative relation between media coverage and stock return, consistent with the explanation that media coverage diminishes information asymmetry and thus decreases the expected return of stocks in equilibrium.

is no trading on this day. All investors hold homogeneous prior belief on the payoff of asset. At $t = 1$, an upcoming seasoned equity offering (SEO) is announced. Attentive investors update their beliefs conditional on the announcement; inattentive investors do not update their beliefs (still hold the prior belief). Investors trade to rebalance their portfolios. At $t = 2$, inattentive investors realize that they missed the SEO announcement at $t = 1$ and correct their beliefs in a delayed manner at $t = 2$. There is no change in attentive investors' beliefs. Investors trade again. At $t = 3$, asset payoff is realized and there is no further trading.

3.2 Assets and the SEO Announcement

There are two assets in the market: a risky asset issued by the SEO firm and the riskfree asset.

Riskfree asset. The riskfree asset offers a net return of r, which is normalized to 0.[6] The riskfree asset has unlimited supply.

Risky asset. The SEO firm issues a risky asset, which can be naturally interpreted as a stock of the firm or, equivalently, as the liquidation value of the firm in the end. The terminal payoff of the risky asset is represented by a random variable f:

$$f = \mu + z, \text{ where } \mu = E(f) \text{ and } z \sim N(0, \sigma_0^2). \tag{1}$$

The unconditional expected supply of the risky asset is $\bar{x}$ and there is an independent supply shock $x_t \sim N(0, \sigma_x^2)$ at each period of $t = 1$ and $t = 2$, i.e. the aggregate supply of the risky asset at t is $\bar{x} + \sum_{s=1}^{t} x_s$ where $x_s \sim N(0, \sigma_x^2)$, for $t = 1, 2$.[7]

The SEO announcement. On date $t = 1$, a public signal $e_1 = z + \epsilon_1$ is revealed at the SEO announcement, where $\epsilon_1 \sim N(0, \sigma_e^2)$. The error ϵ_1 is independent of all other shocks in the model. We interpret the public signal e_1 as the public information on the firm cash flow as a result of the SEO.

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[6] The results of the model are qualitatively the same if we allow r to be a nonzero constant, so, without loss of generality, we set it as zero to keep the model simple in exhibition.

[7] The supply shock is not observable directly. However, since there is no private signal in the model, an investor may be able to figure out the total supply shock from the equilibrium price if they do know (pay attention to) all public signals available contemporaneously (e.g. attentive investors at $t = 1$). More will be mentioned in the next subsection.

3.3 Market Participants

The continuum of investors consists of two types of investors: attentive investors ("type-a") and inattentive investors ("type-u"). The total mass of investors is 1; a fraction of f^a are attentive, and the rest, $f^u = 1 - f^a$, are inattentive. We use i as the generic index for "type", i.e. $i = a$ for attentive investors and $i = u$ for inattentive investors.

Attentive investors (indexed by type a). An attentive investor updates his/her belief immediately on the SEO announcement at date $t = 1$. Since no investor in the market observes any private signal, the equilibrium prices do not contain additional information about the terminal payoff of the risky asset. However, the equilibrium price does reflect information about the current supply shock. Therefore, attentive investors always keep track of contemporaneous supply shocks as they pay attention to all public signals immediately.

Inattentive investors (indexed by type u). Because of limited attention, inattentive investors do not pay attention to the SEO announcement e_1 immediately at $t = 1$ and delay their belief updating on e_1 till $t = 2$.[8] Also because of their limited attention, they are unaware of their delay even though they may notice the change in equilibrium prices from S_0 to S_1, hence they are not able to figure out the supply shock x_1 right away.[9] Instead, on a later date, $t = 2$, they notice that they missed the SEO announcement (or, equivalently, they are finally able to evaluate the effect of SEO on the firm value) and update their beliefs based on e_1 in a delayed manner and rebalance their portfolios.[10]

Utility. All investors hold the constant-absolute-risk-aversion (CARA) utility with a common risk aversion parameter ρ. On each trading date ($t = 0, 1, 2$), they all optimally choose their demands $\{D_t^i\}_{i \in \{a,u\}}$ of the risky asset to maximize their personal expected utilities on terminal wealth,

$$\max_{D_t^i} E_t^i(-\exp[-\rho W_3^i]), \text{ for } i \in \{a, u\} \text{ and } t = 0, 1, 2, \tag{2}$$

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[8]We can also interpret the inattention to the SEO announcement as the inability to evaluate the effect of announcement immediately. Since the SEO announcement may be way ahead of the actual offering, investors may wait for more updates about the firm performance (and thus to evaluate the firm stock) before the actual offering to make their trading decisions.

[9]Alternatively, the ignorance of learning from price can be interpreted as overconfidence by investors.

[10]Once inattentive investors pay attention to e_1 and understand the components in the equilibrium price S_1, they are able to figure out the supply shock x_1 retroactively at $t = 2$ and thus they learn about x_2 by looking at the equilibrium price S_2.

subject to the following budget constraints

$$W_{t+1}^i \;=\; W_t^i + D_t^i(S_{t+1} - S_t), \text{ for } t = 0, 1, \tag{3}$$

$$W_3^i \;=\; W_2^i + D_2^i(f - S_2). \tag{4}$$

4   Equilibrium and Results

We calculate the update of beliefs forward as more information arrives on each date. In contrast, we solve the equilibrium prices and demands backwards, since investors' demands depend on their expectation on the capital gain in each subsequent period.

4.1   Bayesian Updating of Beliefs

The information set for an investor of type i at time t is denoted by $\mathcal{F}_t^i$.

At $t = 0$, all investors hold the prior belief: $f = \mu + z$, where μ is the unconditional expectation of f and $z \sim N(0, \sigma_0^2)$. Since μ is a constant, the updating of beliefs occurs only on the random component z in later periods.

At $t = 1$, an attentive investor, type a, pays attention to the SEO announcement e_1, and has an information set $\mathcal{F}_1^a = \{e_1\}$. The posterior belief is

$$z|_{\mathcal{F}_1^a} \sim N(\hat{z}_1^a, (\sigma_1^a)^2), \text{ where } \hat{z}_1^a = (\sigma_1^a)^2 \sigma_e^{-2} e_1 \text{ and } (\sigma_1^a)^{-2} = \sigma_0^{-2} + \sigma_e^{-2}. \tag{5}$$

An inattentive investor, type u, does not pay attention immediately to the SEO announcement e_1, and hence still holds the prior belief, i.e.

$$z|_{\mathcal{F}_1^u} \sim N(\hat{z}_1^u, (\sigma_1^u)^2), \text{ where } \hat{z}_1^u = 0 \text{ and } \sigma_1^u = \sigma_0. \tag{6}$$

At $t = 2$, an attentive investor, type a, has no change in his/her information set, $\mathcal{F}_2^a = \mathcal{F}_1^a = \{e_1\}$ and therefore has no change in belief, i.e.

$$z|_{\mathcal{F}_2^a} \sim N(\hat{z}_2^a, (\sigma_2^a)^2), \text{ where } \hat{z}_2^a = (\sigma_2^a)^2 \sigma_e^{-2} e_1 \text{ and } (\sigma_2^a)^{-2} = \sigma_0^{-2} + \sigma_e^{-2}. \tag{7}$$

An inattentive investor, type u, now notices the upcoming SEO, i.e. the public signal e_1, (or is finally able to interpret the effect of the SEO announcement on the firm's fundamental value f), so the information set is now $\mathcal{F}_2^u = \{e_1\}$. The posterior belief of a type-u investor is

$$z|_{\mathcal{F}_2^u} \sim N(\hat{z}_2^u, (\sigma_2^u)^2), \text{ where } \hat{z}_2^u = (\sigma_2^u)^2 \sigma_e^{-2} e_1 \text{ and } (\sigma_2^u)^{-2} = \sigma_0^{-2} + \sigma_e^{-2}. \tag{8}$$

Therefore, investors of both types have the same posterior beliefs, i.e. $\hat{z}_2^i$ and σ_2^i are both independent of $i = a$ or u, and are denoted by $\hat{z}_2$ and σ_2 respectively for conciseness and without ambiguity.[11]

4.2 Equilibrium Prices and Demands

On each trading date ($t = 0, 1, 2$), given their updated beliefs of z, investors decide their optimal demands $\{D_t^i\}_{i \in \{a,u\}}$ for the risky asset to maximize their expected CARA utilities of terminal wealth $E_t^i(-\exp[-\rho W_3^i])$. At each t, the equilibrium price S_t clears the market, i.e.[12]

$$\int D_t^i di = f^a D_t^a + f^u D_t^u = \bar{x} + \sum_{s=1}^{t} x_s, \text{ for } t = 0, 1, 2. \tag{9}$$

Proposition 1 (The Equilibrium Prices and Investors' Optimal Demands)

(i) *For $t = 0, 1, 2$, the equilibrium price S_t has the following expressions respectively:*

$$S_2 = \mu + \hat{z}_2 - \rho\sigma_2^2(\bar{x} + x_1 + x_2), \tag{10}$$

$$S_1 = \mu + \frac{A_a}{A_a + A_u}\hat{z}_1^a - \rho(B_0\bar{x} + B_1 x_1), \tag{11}$$

$$S_0 = \mu - \rho\frac{Q_a + Q_u + 1}{P_a + P_u}\bar{x}, \tag{12}$$

where the definitions of all constants A_a, A_u, B_0, B_1, P_a, P_u, Q_a, and Q_u are listed in Appendix A.

(ii) *For $t = 0, 1, 2$, the optimal demands of the risky asset by investors of type $i \in \{a, u\}$ are*

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[11] Notice that although all investors have the same posterior belief at $t = 2$, their conditional expectations of $\hat{z}_2$ at $t = 1$, i.e. $E_1^i[\hat{z}_2]$ for $i \in \{a, u\}$, are different, because the SEO announcement e_1 is in $\mathcal{F}_1^a$ and hence deterministic for attentive investors at $t = 1$ but not in $\mathcal{F}_1^u$ and hence still random for inattentive investors at $t = 1$.

[12] Here we apply the convention that $\sum_{s=M}^{N} x_s = 0$ for any integers $N < M$.

respectively

$$D_2^i = \rho^{-1}\sigma_2^{-2}(\mu + \hat{z}_2 - S_2) \; for \; i \in \{a, u\}, \tag{13}$$

$$D_1^a = \rho^{-1}\frac{A_a}{f^a}(\mu + \hat{z}_1^a - S_1) - [\frac{A_a}{f^a}(\sigma_1^a)^2 - 1](\bar{x} + x_1), \tag{14}$$

$$D_1^u = \rho^{-1}\frac{A_u}{f^u}(\mu - S_1) - [\frac{A_u}{f^u}\sigma_0^2 - 1]\bar{x}, \tag{15}$$

$$D_0^a = \rho^{-1}\frac{P_a}{f^a}(\mu - S_0) - \frac{Q_a}{f^a}\bar{x}, \tag{16}$$

$$D_0^u = \rho^{-1}\frac{P_u}{f^u}(\mu - S_0) - \frac{Q_u}{f^u}\bar{x}, \tag{17}$$

where the definitions of all constants are listed in Appendix A.

The equilibrium prices on all trading dates are in the form of "μ+(investors' belief on z)-(a term of $\bar{x}$ and x_s for $x \leq t$)". Generally speaking, if investors interpret the public signal from the announcement at $t = 1$ as good news on the terminal firm value, i.e. $e_1 > 0$, then investors modify their beliefs on z upward and thus the equilibrium prices increase; if, however, the announcement is interpreted as bad news on the terminal firm value, i.e. $e_1 < 0$, then investors modify their beliefs on z downward and thus the equilibrium prices decrease. Given that we focus mainly on the effect of investor attention on SEO announcement rather than the nature of the SEO announcement *per se*, we assume $e_1 < 0$ in the rest of the paper, in the spirit of the pecking order theory by Myers and Majluf (1984) that equity financing is less preferred by outside investors than internal financing and debt financing and thus the announcement effect of SEOs would be overall negative. The term containing $\bar{x}$ and $x_s(x \leq t)$ represents a compensation (risk premium) for holding the risky asset by investors.

On each date, the optimal demand of risky asset by an investor increases with the investor's conditional expectation of z. Observe that investors' demands at $t = 2$ are homogeneous regardless of their attention type. This is because at $t = 2$ both attentive and inattentive investors have their beliefs updated correctly on the SEO announcement e_1, thus they all have homogeneous beliefs and hence homogeneous demands. In contrast, the demands at $t = 1$ and $t = 0$ depend on the attention type since only attentive investors pay attention to the SEO announcement e_1 immediately at $t = 1$ and therefore hold different beliefs from inattentive investors.

4.3 Announcement Effect and Post-announcement Drift

In this subsection, we are going to study the abnormal stock returns (announcement effects) at $t = 1$ and the corresponding post-announcement stock return drifts from $t = 1$ to $t = 2$. This is done by looking at the differences in the equilibrium prices of the risky asset across time and analyzing the sensitivity of the price change with respect to the public signal (announcement) realized.

By taking the difference between (11) and (12), we rewrite the price change of the risky asset from $t = 0$ to $t = 1$ as follows

$$S_1 - S_0 = \frac{A_a}{A_a + A_u} \frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} e_1 - \rho[(B_0 - \frac{Q_a + Q_u + 1}{P_a + P_u})\bar{x} - B_1 x_1] \tag{18}$$

The first term represents the average change in investors' beliefs (from 0 to $\hat{z}_1^a$ by attentive investors, diluted by the existence of inattentive investors) and the second term represents a combination of the decrease in risk premium (hence the increase in price) and the effect of supply shock at $t = 1$. Since the supply shock x_1 is on average zero and that the change in risk premium is not the focus of our study, we focus on the first component to analyze the effect of investor attention on the announcement effect of SEOs.

Proposition 2 (The Announcement Effect of SEO Announcements)

(i) Let $e_1 < 0$, the abnormal stock return upon the SEO announcement will be negative with its magnitude increasing in the realization e_1 of the announcement, given by:

$$\frac{A_a}{A_a + A_u} \frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} e_1 < 0, \tag{19}$$

where the constants A_a and A_u are both positive and increasing functions of f^a and f^u respectively (defined in Appendix A).

(ii) For any given public signal e_1 from the SEO announcement, the magnitude of the abnormal stock return upon announcement will be increasing in the proportion of investors who are attentive to the announcement. In other words, the more investors pay attention to the SEO announcement, the more negative is the SEO announcement effect.

Intuitively, as more investors pay immediate attention to the public signal revealed in the SEO announcement, i.e. a higher f^a, more investors update their beliefs to reflect the information

included in e_1 at $t = 1$ right away, and thus the equilibrium price S_1 reflects a larger proportion of e_1 and creates a higher announcement effect in $S_1 - S_0$. Furthermore, since fewer investors would delay their belief updating till $t = 2$, we expect a smaller proportion of e_1 to be reflected in the post-announcement drift represented by $S_2 - S_1$, which is studied in the next paragraph.

By taking the difference between (10) and (11), we rewrite the price change of the risky asset from $t = 1$ to $t = 2$ as follows

$$S_2 - S_1 = \frac{A_u}{A_a + A_u} \frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} e_1 - \rho[(\sigma_2^2 - B_0)\bar{x} + (\sigma_2^2 - B_1)x_1 + \sigma_2^2 x_2]. \tag{20}$$

The price change consists of two parts: the first part is the delayed belief update with respect to the SEO announcement e_1 by inattentive investors at $t = 2$, and the second part is the change in risk premium as a combination of uncertainty resolution over time and additional supply shock contemporaneously. Since the supply shocks x_1 and x_2 are on average zero and the change in risk premium is not the focus of our study, we focus on the first component to analyze the effect of investor attention on the post-announcement drift of SEOs.

Proposition 3 (The Post-Announcement Drift of SEO Announcements)

(i) *Let $e_1 < 0$, there will be a negative post-announcement drift represented by*

$$\frac{A_u}{A_a + A_u} \frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} e_1 < 0, \tag{21}$$

where the constants A_a and A_u are both positive and increasing functions of f^a and f^u respectively (defined in Appendix A).

(ii) *For any given public signal e_1 from the SEO announcement, the magnitude of the post-announcement stock return drift decreases as the proportion of attentive investors f^a increases. In other words, the more investors pay attention to the SEO announcement, the less negative is the post-announcement drift.*

4.4 Implications and Testable Hypotheses

Our model generates several testable implications and we develop corresponding testable hypotheses for our empirical analysis.

1. *Relationship between a proxy for investor attention and the abnormal stock return following SEO announcements:* proposition 2 of our model predicts a positive relation between the extent of investor attention paid to a given SEO announcement and the magnitude of the abnormal stock return upon that announcement. Since the abnormal stock return is on average negative after SEO announcements, in the spirit of Myers and Majluf (1984) and also as shown in the next section of this paper, our model predicts a more negative abnormal stock return when more investor attention is paid to the SEO announcement. This is the first hypothesis that we test here (**H1**). We use a proxy for investor attention (namely, media coverage) to test the above hypothesis.

2. *Relationship between a proxy for investor attention and the post-announcement drift following SEO announcements:* proposition 3 of our model predicts a negative relation between the extent of investor attention paid to a given SEO announcement and the magnitude of the post-announcement stock return drift following that announcement. Since our model predicts that the post-announcement drift overall will be negative, we expect a less negative drift when more investor attention is paid to the SEO announcement. This is the second hypothesis that we test here (**H2**). We use a proxy for investor attention (namely, media coverage) to test the above hypothesis.

3. *The predictability of the abnormal stock return and the post-announcement drift following SEO announcements on long-term firm performance:* as shown in Propositions 2 and 3, both the abnormal stock return upon the SEO announcement and the subsequent post-announcement drift are positively correlated with the information released at the SEO announcement, about the firm's future cash flows. Therefore, we expect both the abnormal stock return upon the SEO announcement and the subsequent post-announcement drift to be positively correlated with the long-term firm cash flow and, more broadly, with the post-SEO operating performance of the firm. This is the third hypothesis that we test here (**H3**). We use multiple proxies for the firm operating performance (e.g. ROA, and cash flow) to test this hypothesis.

5   Data and Sample Selection

We collect data on SEOs from the Securities Data Company (SDC)/Platinum Global New Issues database. We first obtain the list of all SEOs conducted in the U.S. from 2000 to 2018 and then select only offerings of common shares (thus excluding all other types of offerings such as real

estate investment trusts, units, rights, spin-offs, American Depository Receipts, etc.) from this list. We collect data on SEO firms' media coverage from RavenPack News Analytics (Dow Jones Edition). RavenPack covers news items from Dow Jones Newswires, regional editions of Wall Street Journal, Barron's, and MarketWatch starting from January 1, 2000 (thus the starting date of our sample period is determined by the availability of media coverage data collected from RavenPack). We obtain accounting data from Compustat; stock return data from the Center for Research in Security Prices (CRSP); analyst forecast data from the Institutional Brokers' Estimation System (IBES) database; and institutional holdings data from Thomson Reuters' institutional holdings (13F) database.

6 Measures of Investor Attention and Summary Statistics

We use the pre-SEO media coverage of firms conducting SEOs as our proxy for the amount of attention paid by market investors to SEO firms. We construct our measures of investor attention for each SEO firm by counting the number of news items mentioning the firm over a certain period of time (namely, 1 week, 2 weeks, 1 month, and 2 months) prior to the SEO announcement date (*NumNewsFile*) or prior to the SEO issue date (*NumNewsIss*). For example, *NumNewsFile [-60:-1]* and *NumNewsIss [-60:-1]* are the numbers of news items covering an SEO firm over a two-month period (60-day period from day -60 to day -1) prior to the SEO announcement date and prior to the SEO issue date, respectively. We also construct abnormal investor attention measures (*AbnNumNewsFile* and *AbnNumNewsIss*) as the difference between the media coverage of an SEO firm immediately prior to its SEO as described above and the media coverage of the same firm exactly one year before its SEO announcement date. In other words, e.g., *AbnNumNewsFile [-60:-1]* is equal to *NumNewsFile [-60:-1]* minus *PriorYrNumNewsFile [-60:-1]*, where *PriorYrNumNewsFile [-60:-1]* is the number of news items covering an SEO firm over a two-month period ending one year prior to its SEO announcement date.

Panel A of Table 1 reports the summary statistics of our investor attention measures for SEO firms in our sample. The average numbers of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to their SEO announcement dates are 2.15, 4.04, 8.32, and 15.62 news items, respectively; while the average numbers of news items covering SEO firms over a

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1-week, 2-week, 1-month, and 2-month periods prior to their SEO issue dates are 3.02, 5.10, 10.13, and 19.60, respectively. Further, the mean abnormal media coverage proxies measuring abnormal investor attention both prior to the SEO announcement date and prior to the SEO issue date are positive, suggesting that SEO firms receive somewhat more investor attention prior to their SEOs. For example, the mean abnormal numbers of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to the SEO announcement date are 0.49, 0.87, 1.82, and 3.21, respectively; while the mean abnormal numbers of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to the SEO issue date are 1.62, 2.28, 3.50, and 5.62, respectively.

Panel B of Table 1 reports the summary statistics of various SEO firm characteristics as well as certain SEO characteristics.[13] For example, the average book value of SEO firms' assets at the end of the fiscal year prior to the SEO announcement is \$505 million, the mean return on assets (ROA measured at the end of the first post-announcement fiscal quarter) is -3.74 %, the mean industry-adjusted Q ratio (measured using the issue day closing price) is -0.041, the mean SEO underpricing (the percentage difference between the issue day closing price and the SEO offer price) is 3.6%, the mean midpoint of initial filing price range is \$24.1, and the mean number of institutional investors holding SEO firm shares at the end of the first post-issue fiscal quarter is 132.

7   Investor Attention and the Market Reaction to SEO Announcements

In this section, we present our empirical findings on how the extent of investor attention paid to firms prior to their SEOs affects the market reaction to the announcements of these SEOs. We first present summary statistics of SEO announcement effects and baseline regression results on the relationship between investor attention and SEO announcement effects in subsection 7.1. Next, we present summary statistics of SEO post-announcement drift and empirical results on the relationship between investor attention and SEO post-announcement drift in subsection 7.2. Further, in subsection 7.3 we examine the relationship between the market reaction to SEO announcements

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[13]We winsorize all firm and SEO characteristics variables at the 0.5% and 99.5% levels to reduce potential biases in our analysis caused by outliers. Our results without winsorization are qualitatively similar to those reported in this paper.

(both announcement effects and post-announcement drift) on SEO firms' post-announcement operating performance. Finally, we address potential endogeneity concerns and present a set of robustness tests and instrumental variable analyses in subsection 7.4.

7.1 Investor Attention and SEO Announcement Effects

In this subsection, we first present the summary statistics of SEO announcement effects. We estimate SEO announcement effects as cumulative abnormal returns (CARs) over a certain window around the SEO announcement date. We estimate abnormal returns using the market model with CRSP value-weighted index return as the market return; market model variables (alphas and betas) are estimated over a 150-day period ending 50 days prior to the SEO announcement date.[14] Panel A of Table 2 reports the summary statistics of SEO announcement effects and their statistical significance. The mean abnormal return on the SEO announcement day, *CAR [0:0]*, is -0.76%, which is statistically significantly different from zero at the 1% level. We will use *CAR [0:0]* as our main measure of SEO announcement effects in our subsequent tests. Further, the mean cumulative abnormal returns upon SEO announcements over a 3-day (*CAR [-1:1]*), a 5-day (*CAR [-2:2]*), and a 7-day (*CAR [-3:3]*) windows are -2.30%, -2.13%, and -2.07%, respectively. These announcement effects are statistically significantly different from zero at the 1% level as well. Our findings in Panel A of Table 2 are consistent with the existing literature which has documented negative announcement effects for SEOs.

Next, we test our first hypothesis **H1** which predicts that the more investors pay attention to the SEO firm the more negative the announcement effect of the SEO will be. We test this proposition in a multivariate regression setting by regressing announcement-day abnormal return (*CAR [0:0]*) on our investor attention proxies and other controls. The announcement-day abnormal return is estimated using the market model as described above in this subsection. The independent variables of interest in our regressions are our four investor attention measures (*NumNewsFile [-7:-1]*, *NumNewsFile [-14:-1]*, *NumNewsFile [-30:-1]*, *NumNewsFile [-60:-1]*) as described in subsection 6. We also add several control variables to rule out potentially confounding effects. First, we control for lead SEO underwriter reputation. Following Bajo, Chemmanur, Simonyan, and Tehranian

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[14]We also estimate abnormal returns using alternative models such as Fama-French three-factor model, and Carhart four-factor model(see, e.g., Fama and French (1993), and Carhart (1997)). Our results remain qualitatively similar using these alternative estimation models.

(2016), we construct a measure of lead SEO underwriter reputation, *UndwrtReputation*, as the lead SEO underwriter's share of total proceeds raised in the SEO market over previous five years. In our regressions we also control for SEO firm size (*FirmSize*), which is the natural logarithm of the book value of SEO firm's total assets at the end of the fiscal quarter prior to the SEO announcement date; the midpoint of initial filing range (*MidFilePrice*); the level of information asymmetry about the SEO firm using the earnings surprise for the fiscal quarter prior to the SEO announcement date (*PriorQtrEarnSurpFile*), where earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price; and the return on the CRSP value-weighted index over a one-month (21-trading-day) period prior to the SEO announcement date (*PriorMktRetFile*). Finally, we also include announcement year × two-digit SIC industry code fixed effects to control for time-varying unobservables across different industries.

Table 3 presents the results of our regressions of SEO announcement effects on investor attention proxies. The coefficient estimates of all four investor attention measures in our regressions are negative and statistically significant at the 1% level. Given that the mean abnormal returns upon SEO announcements are negative as shown in Table 2, this finding suggests that the announcements of SEOs conducted by firms which receive more attention from market investors are associated with more negative announcement-period abnormal returns. The results in Table 3 are also economically significant. For example, a one-standard-deviation increase in the number of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to the SEO announcement date (which corresponds to an increase in the number of news items by approximately 5, 9, 18, and 32 news items, respectively) decreases announcement-day abnormal returns (*CAR [0:0]*) by 0.27, 0.32, 0.33, and 0.29 percentage points, respectively (i.e., augments negative announcement effects by 35.2%, 41.4%, 43.9%, and 38.0%, respectively). These findings suggest that indeed the greater the extent of investor attention paid to SEO firms the more negative the SEO announcement effects are, and provide support for our hypothesis **H1**.

7.2 Investor Attention and SEO Post-announcement Stock Return Drift

In this subsection, we first present summary statistics of post-announcement drift. We estimate post-announcement drift as cumulative abnormal returns (CARs) over a certain window after the SEO announcement date. Abnormal returns are estimated using the market model as described

in subsection 7.1. Panel B of Table 2 reports the summary statistics of two proxies for SEO post-announcement drift and their statistical significance. The mean SEO post-announcement cumulative abnormal returns over a one-month (21-trading day) period (*CAR [1:21]*) and over a two-months (42-trading day) period (*CAR [1:42]*) are -3.53% and -5.63%, respectively. These SEO post-announcement drift proxies are statistically significantly different from zero at the 1% level. Overall, the summary statistics in Table 2 provide an indication that not all information about SEOs (or firms conducting SEOs) is incorporated in SEO firms' stock prices upon the announcement of SEOs, but that information continues to be incorporated in the stock price over a longer period of time in a form of post-announcement drift.

Next, we test our second hypothesis **H2** which predicts that the more investors pay attention to the SEO firm the less negative the SEO post-announcement drift will be. We test this proposition in a multivariate regression setting by regressing SEO post-announcement cumulative abnormal return over a one-month (21-trading-day) period (*CAR [1:21]*) on our investor attention proxies and the same set of control variables and fixed effects as described in subsection 7.1. The results of our regressions are reported in Table 4. The coefficient estimates of all four investor attention measures in our regressions are positive and statistically significant at the 1% level. This suggests that the SEO post-announcement drift is less negative for those firms which receive more investor attention. These findings are also economically significant. For example, a one-standard-deviation increase in the number of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to the SEO announcement date (which corresponds to an increase in the number of news items by approximately 5, 9, 18, and 32 news items, respectively) increases post-announcement one-month cumulative abnormal returns (*CAR [1:21]*) by 1.24, 1.35, 1.05, and 0.74 percentage points (i.e., shrinks negative post-announcement drift by 35.1%, 38.3%, 29.9%, and 20.9%, respectively). These results suggest that indeed the greater the extent of investor attention paid to SEO firms the less negative the SEO post-announcement drift is, and provide support for our hypothesis **H2**.

7.3 The Relationship between SEO Announcement Effect, Post-announcement Stock Return Drift, and Subsequent Operating Performance

In this subsection, we test our hypothesis **H3**, which predicts that both SEO announcement effects and SEO post-announcement drift will be positively correlated with post-SEO operating performance. In other words, we examine whether better market reaction upon SEO announcement (less negative announcement effect and less negative post-announcement drift) leads to better post-SEO operating performance. We measure post-announcement operating performance of firms conducting SEOs using two proxies: return on assets (*ROA*) and cash flow (*Cash Flow*) measured over one, two, three, and four fiscal quarters after the SEO announcement. *ROA* is defined as the ratio of net income to the book value of total assets and *Cash Flow* is defined as the ratio of income before extraordinary items plus depreciation to the book value of total assets. We regress these measures of post-SEO operating performance on the proxy for announcement effects (*CAR [0:0]*) and the proxy for SEO post-announcement drift (*CAR [1:21]*) while controlling for the same set of control variables and fixed effects as described in 7.1.

The results of our regressions are presented in Table 5: Panel A presents our regressions using ROA as a dependent variable and Panel B presents our regressions using Cash Flow as a dependent variable. Table 5 shows that the coefficient estimates of both *CAR [0:0]* and *CAR [1:21]* are positive in all four regressions in both Panels A and B and they are statistically significant for both operating performance measures computed over two, three, and four fiscal quarters after the SEO announcement. These findings suggest that firms with better market reaction upon their SEO announcements realize better post-SEO operating performance starting two fiscal quarters after their SEO announcements. Further, our finding of *CAR [0:0]* and *CAR [1:21]* both having significant coefficient estimates also suggests that information released at the SEO announcement regarding the firm's future expected (operating) performance is incorporated into the firm's stock price not only upon the announcement of the SEO (announcement effect) but also over a longer period of time after the announcement (post-announcement drift).

The results in Table 5 are also economically significant. For example, a one-standard-deviation increase in announcement-day abnormal return and a one-standard-deviation increase in one-month post-announcement cumulative abnormal return lead to an increase in *ROA* computed over three

fiscal quarters after SEO by 0.79 and 0.86 percentage points, respectively. Similarly, a one-standard-deviation increase in announcement-day abnormal return and a one-standard-deviation increase in one-month post-announcement cumulative abnormal return lead to an increase in *Cash Flow* computed over three fiscal quarters after SEO by 0.72 and 0.89 percentage points, respectively. These findings provide support for our hypothesis **H3**.

7.4 Identification

While our baseline results are consistent with our hypotheses (**H₁** through **H₃**) derived from our theoretical model, our baseline empirical design may potentially suffer from endogeneity problems. The first problem is due to potential omitted variables problem. One could argue that certain (long-term) firm characteristics which are omitted in our baseline analysis may affect both the extent of attention paid by investors to a firm conducting an SEO as well as affect the market reaction upon its SEO announcement that we study here, so that the baseline results we reported above can potentially be driven by such omitted variables rather than the extent of investor attention. In order to address this potential omitted variable problem, we regress SEO announcement effects and SEO post-announcement drift variables on abnormal media coverage variables as described in Section 6, where abnormal media coverage for a given firm is computed as the media coverage received by that firm immediately prior to its SEO announcement minus the media coverage of the same firm one year before the SEO announcement.

The results of our regressions are presented in Panels A (for SEO announcement effects) and B (for SEO post-announcement drift) of Table 6. In Panel A of Table 6 all four measures for abnormal investor attention have statistically significant negative coefficient estimates and are consistent with our baseline results in Table 3. This finding indicates that the negative relationship between investor attention and SEO announcement effects we documented in our baseline regressions is not due to omitted variables problem. In Panel B of Table 6 three out of four measures for abnormal investor attention have positive coefficient estimates and one of them (*AbnNumNewsFile [-14:-1]*) is statistically significant. These results are also broadly consistent with our baseline findings in Table 4 and provide a weak indication that our baseline findings on the positive relationship between investor attention and SEO post-announcement drift is unlikely to be caused by omitted variables problem.

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The second problem that our baseline analysis may potentially suffer from is due to the fact that there could be some informational or other confounding events happening prior to a firm's SEO announcement which could potentially affect both the extent of attention paid by investors to the firm as well as the market reaction upon its SEO announcement that we study here. We address this potential endogeneity concern by making use of an instrumental variable analysis. We instrument for the extent of investor attention received by the firm immediately before its SEO announcement using the media coverage received by the firm one year before the SEO announcement.[15]   For example, we use *PriorYrNumNewsFile [-60:-1]*, which is the number of news items covering an SEO firm over a two-month period ending one year prior to its SEO announcement date, as our instrumental variable for *NumNewsFile [-60:-1]*. We expect the media coverage received by an SEO firm one year before its SEO announcement to be positively correlated with the media coverage received by the firm immediately before it SEO announcement; however, we do not expect the SEO characteristics we study here (SEO announcement effects and SEO-post announcement drift) to be correlated with the media coverage received by the SEO firm one year before its SEO announcement.

The results of our instrumental variable analysis are presented in Panels A (for SEO announcement effects) and B (for SEO post-announcement drift) of Table 7. In our first-stage regressions we regress SEO firms' media coverage variables prior to their SEO announcements on the media coverage one year before SEO announcements (which are our instrumental variables) and the same set of control variables and year fixed effects as described in Subsection 7.1. Both Panels A and B of Table 7 show, consistent with our expectation discussed above, that in first-stage regressions our instrumental variables are significantly positively correlated with our investor attention measures. We also report the F-statistics of the weak instruments test (or the test of excluded instruments) for each first-stage regression in Table 7. This test is used to determine whether instrumental variables used in first-stage regressions are strong. In their survey of the literature on weak instruments, Stock, Wright, and Yogo (2002) develop benchmarks for the necessary magnitude of the F-statistic. They indicate that if the number of instruments is equal to one, then the critical value of the F-statistic is 8.96. Given that the F-statistics reported for the first-stage regressions in Table 7 are all well above the critical value of 8.96, the null hypothesis that our instruments are weak is

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[15]Liu and McConnell (2013) use a similar instrument in their instrumental variable analysis to study the role of media coverage in corporate governance.

strongly rejected.

Our second-stage regressions in both Panels A and B of Table 7 show that the coefficient estimates of predicted values of investor attention measures from all first-stage regressions have the same signs as reported in baseline regressions in Tables 3 and 4, and three out of four coefficient estimates in Panel A and all four coefficient estimates in Panel B are statistically significant. These results suggest that, even after controlling for the potential endogeneity of investor attention paid to SEO firms immediately prior to their SEO announcements, firms which receive a higher level of investor attention prior to their SEO announcement dates are associated with larger (more negative) SEO announcement effects and smaller (less negative) SEO post-announcement drifts. Overall, our analysis in this subsection, which deals with the potential endogeneity of investor attention, demonstrates the robustness of our baseline findings in previous subsections on the relationship between investor attention and the market reaction upon SEO announcements.

8 The Relationship between Investor Attention and SEO Characteristics

In this section, we study the relationship between the extent of investor attention paid to firms conducting SEOs and certain SEO-related offering and firm characteristics such as SEO initial returns (underpricing), SEO equity valuation of firms conducting SEOs, and the extent of institutional investor interest in SEO firms' shares post-SEO. We first develop testable hypotheses regarding these relationships in subsection 8.1. In subsequent subsections (8.3 to 8.2), we present our empirical findings on the relationship between investor attention and SEO initial returns, SEO equity market valuation, and institutional investor holdings of SEO firms' equity. Finally, we discuss the results of our two identification tests that establishes causality in subsection 8.6.

8.1 Theory and Hypothesis Development

We first develop testable hypotheses regarding the relation between the investor attention received by a firm immediately before its actual SEO and the pricing of the SEO and other SEO characteristics. In order to develop these testable hypotheses, we start by assuming that, for institutional investors to participate in a firm's SEO, they not only need to receive information about various

aspects of the firm from the SEO underwriter, but also to pay attention to or "recognize" this information. This last assumption is in the spirit of Merton's (1987) investor recognition or attention model, which assumes that an investor will incorporate a security into his portfolio only if he pays attention to (or acquires information about) that security by incurring a cost. While Merton (1987) posits several possible sources of this "attention" or "recognition" cost, he views this cost mainly as arising from the cost of investors becoming aware of (or familiar with) a firm. In his setting, investors consider investing only in the stock of firms with which they have a certain level of familiarity. Similarly, in our setting, we can think of institutional and other investors considering for investment only the stock of firms making SEOs that they have become familiar with by incurring an attention cost. Then we would expect the extent of institutional investor participation in the SEOs of firms that received greater investor attention to be greater. This is the first hypothesis that we test here (**H4**).

This has implications for the valuation of equity both in the immediate aftermarket (pricing in the equity market after the SEO) and for firm valuation at the SEO offer price as well. We first discuss the relation between investor attention and post-SEO secondary market valuation. Since the demand from investors for the equity of firms whose SEOs receive greater investor attention will be greater (for a given supply of shares offered in the SEO), the market clearing price for the equity of these firms will be higher as well. Assuming that the immediate aftermarket share price of the SEO firm is the market clearing price, this implies that there will be positive relationship between investor attention and the immediate post-SEO market valuation of firms (**H5**).

We now turn to the relation between investor attention and SEO initial returns and also to the relation between investor attention and SEO firm valuation at the offer price. These relations depend on the process of price setting in SEOs. While there is no consensus in the theoretical or empirical literature in SEOs on how the SEO offer price is set, there is some agreement that the office price is set at a discount to the expected market clearing price (which can be viewed as the same as the expected aftermarket price) giving rise to positive SEO initial returns (SEO underpricing). There are a number of alternative theories about the drivers of SEO underpricing. One theory, obtained by analogy to IPOs, is the one advanced by Benveniste and Spindt (1989). Benveniste and Spindt (1989) argue that the equity of firms making IPOs are priced at a discount to the market clearing (immediate secondary market) price in order to ensure that institutions have

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an incentive to reveal their true demand for the firm's equity (i.e., it ensures that their incentive compatibility or truth-telling conditions hold). If the discount applied to the market clearing price to arrive at the SEO offer price is driven by considerations similar to those advanced by Benveniste and Spindt (1989) in the context of IPOs (i.e., unrelated to investor attention), then we would expect pre-SEO investor attention to be unrelated to SEO initial returns (**H6A**).

However, there have also been some theories suggesting that there may be a positive relation between investor attention and SEO initial returns. For example, Chemmanur and Jiao (2011) show in their theoretical analysis that SEO initial returns (underpricing) may be positively related to pre-SEO institutional demand for SEO firm equity.[16] Given that SEOs characterized by greater investor attention are likely to have greater pre-SEO institutional investor demand as well, this implies a positive relationship between investor attention and SEO initial returns (**H6B**).[17]

Consider now the relation between investor attention and firm valuation at the SEO offer price. If SEO underpricing is unrelated to investor attention (e.g., driven only by considerations of information extraction, as posited by Benveniste and Spindt (1989)), then we would expect an unambiguously positive relation between investor attention and firm relation at the SEO offer price (**H7A**). On the other hand, if SEO underpricing is positively related to investor attention (e.g., following the argument made by Chemmanur and Jiao (2011) discussed above), then the predicted relation between investor attention and firm valuation at the SEO offer price becomes ambiguous (**H7B**). This is because the greater secondary market price associated with greater investor attention may potentially be overcome by the even greater SEO underpricing associated with greater investor attention, so that the relation between investor attention and firm valuation at the SEO offer price may turn negative.

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[16]See Proposition 8 of Chemmanur and Jiao (2011).

[17]An alternative theory that suggests a positive relation between investor attention and SEO underpricing is provided by Liu, Sherman, and Zhang (2014) and Liu, Lu, Sherman, and Zhang (2019). They argue in the context of IPOs that IPO underpricing is a way of compensating investors for their cost of paying attention to the IPO firm. In a similar vein, it may be argued that SEO underpricing (initial returns) is a way of enhancing the investor attention paid to an SEO by implicitly compensating investors for their cost of paying attention to the firm making SEOs. Given the alternative theory, we will show some specifications in our empirical analysis of SEO valuation, post-SEO valuation, and institutional investor participation in SEOs where we control for the extent of SEO initial returns (underpricing).

8.2 Investor Attention and Post-SEO Participation of Institutional Investors

In this subsection, we test our hypothesis **H4** which predicts that a greater amount of investor attention received by a firm prior to its SEO will be associated with greater institutional investor ownership of the firm's equity after the SEO. We measure the extent of institutional investors' ownership of issuing firm's equity after its SEO by the number of institutional investors holding firm's shares at the end of the first quarter after the SEO (*InstN*). We regress *InstN* on our four investor attention measures (*NumNewsIss*) as described in subsection 6 and other controls which include underwriter reputation, firm size, the midpoint of initial filing range, the level of information asymmetry about the SEO firm earnings surprise one quarter prior to the SEO issue date, one-month stock market return prior to the SEO issue date, and issue year × two-digit SIC industry code fixed effects. In our regressions we include only those SEOs for which the number of days between the announcement date and the issue date is greater than the number of days that we use to measure investor attention. For example, if in our regressions we use investor attention measure computed as the number of news items over a 7-day period prior to the SEO issue date, then in such regressions we only use a sub-sample of SEOs with at least a 7-day gap between the SEO announcement date and SEO issue date. We report the results of our regressions in Table 8. In regression specifications (2), (4), (6), and (8) we include SEO underpricing as an additional control variable in order to control for the potential effect of SEO underpricing on issuing firm's equity ownership by institutional investors post-SEO. Table 8 demonstrates that all four investor attention measures have significantly positive coefficient estimates in all regressions (with and without controlling for SEO underpricing), suggesting that a firm which receives more investor attention prior to its SEO is likely to have a greater number of institutional investor shareholders after the SEO. The positive coefficient estimates of SEO underpricing (statistically significant in regression specifications (2) and (4)) provide further support for our theoretical prediction that firms conducting SEOs may leave more money on the table to attract more institutional investors to invest in their firms' equity. These results are also economically significant. For example, a one-standard-deviation increase in the number of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to their SEO issue dates (which corresponds to an increase in the number of news items by approximately 6, 11, 23, and 46 news items, respectively)

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increases the number of institutional investors holding SEO firms' equity by 29, 37, 40, and 39 (i.e., a 22.0%, 28.0%, 30.0%, and 29.8% increase in the number of institutional investors), respectively. These results indicate that a greater extent of investor attention paid to issuing firms immediately prior to their SEOs is associated with a greater number of institutional investors holding issuing firms' equity post-SEO, and support for our hypothesis **H4**.

8.3   Investor Attention and the Post-SEO Market Valuation of Issuing Firms

In this subsection, we test our hypothesis **H5** which predicts a positive relationship between investor attention received by firms immediately prior to their SEOs and their post-SEO market valuation. We measure post-issue market valuation of SEO firms using industry-adjusted Q ratios computed either using SEO issue day closing stock price (*QFTDAdj*) or the stock price at the end of the first post-issue fiscal quarter (*QFQAdj*). We define Q ratio as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and either SEO issue day closing price (*QFTD*) or the price at the end of the first post-issue fiscal quarter (*QFQ*). We further adjust these ratios for median industry valuation by subtracting contemporaneous 2-digit SIC code industry median Q ratios from the above Q ratios of SEO firms. We regress these two measures of post-SEO market valuation (*QFTDAdj* and *QFQAdj*) on our four investor attention measures (*NumNewsIss*) while controlling for the same set of control variables and fixed effects as described in subsection 8.2. As discussed in subsection 8.3, in our regressions we include only those SEOs for which the number of days between the announcement date and the issue date is greater than the number of days that we use to measure investor attention.

The results of our regressions are reported in Panels A (using *QFTDAdj* as the dependent variable) and B (using *QFQAdj* as the dependent variable) of Table 9. In regression specifications (2), (4), (6), and (8) in each panel we include SEO underpricing as an additional control variable in order to control for the potential effect of SEO underpricing on immediate post-SEO valuation of issuing firms. Both Panels A and B of Table 9 show that all four pre-SEO investor attention measures have significantly positive coefficient estimates in all regressions (both with and without SEO underpricing as a control variable). This suggests that firms receiving more investor attention immediately prior to their SEOs are likely to have higher post-SEO market valuations. These

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results are also economically significant. For example, a one-standard-deviation increase in the number of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to their SEO issue dates (which corresponds to an increase in the number of news items by approximately 6, 11, 23, and 46 news items, respectively) increases the magnitude of *QFQAdj* by 0.126, 0.166, 0.184, and 0.182, respectively, which is a sizable increase compared to the mean *QFQAdj* of -0.037 in our sample. These results imply that a greater extent of investor attention paid to issuing firms immediately prior to their SEOs leads to higher post-SEO market valuations, and support for our hypothesis **H4**.

8.4 Investor Attention and SEO Underpricing

In this subsection, we study the relationship between investor attention and SEO underpricing by regressing SEO underpricing on our investor attention measures and other controls. We compute SEO underpricing as the percentage difference between SEO issue day closing price and SEO offer price (*Underpricing*). We test the above hypothesis by regressing SEO underpricing on our pre-SEO-issue investor attention measures (*NumNewsIss*) while controlling for the same set of control variables and fixed effects as described in subsection 8.2. As discussed in subsection 8.3, in our regressions we include only those SEOs for which the number of days between the announcement date and the issue date is greater than the number of days that we use to measure investor attention.

In Table 10 we report the results of our regressions using SEO underpricing (*Underpricing*) as the dependent variable. All four investor attention measures have positive and statistically significant coefficient estimates, suggesting that firms receiving more investor attention prior to their SEOs are associated with greater SEO underpricing. These results are also economically significant. For example, a one-standard-deviation increase in the number of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to their SEO issue dates (which corresponds to an increase in the number of news items by approximately 6, 11, 23, and 46 news items, respectively) increases SEO underpricing by the magnitude of 0.265, 0.554, 0.760, and 0.683, respectively (i.e., increases the magnitude of underpricing by 7.4%, 15.6%, 21.4%, and 19.2%, respectively). These findings suggest that indeed a greater extent of investor attention paid to issuing firms immediately prior to their SEOs is associated with a greater degree of SEO underpricing, and support for our hypothesis **H6B**.

8.5 Investor Attention and SEO Valuation of Issuing Firms

In this subsection, we study the effect of investor attention received by firms immediately prior to their SEOs on their firm valuation at the SEO offer price. We measure SEO valuation of issuing firms using industry-adjusted Q ratios computed either using the SEO offer price (*QOPAdj*). We define Q ratio as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and the SEO offer price (*QOP*). We further adjust these ratios for median industry valuation by subtracting contemporaneous 2-digit SIC code industry median Q ratios from the above Q ratios of SEO firms. We regress SEO valuation (*QOPAdj*) on our four investor attention measures (*NumNewsIss*) while controlling for the same set of control variables and fixed effects as described in subsection 8.2. As discussed in subsection 8.3, in our regressions we include only those SEOs for which the number of days between the announcement date and the issue date is greater than the number of days that we use to measure investor attention.

The results of our regressions are reported in Table 11. In regression specifications (2), (4), (6), and (8) in each panel we include SEO underpricing as an additional control variable in order to control for the potential channel of using SEO underpricing to compensate investor attention. Table 11 show that coefficients of all four pre-SEO investor attention measures are significantly positive in all regressions and remain unchanged with and without SEO underpricing as a control variable. This suggests that firms receiving more investor attention immediately prior to their SEOs are likely to have higher SEO valuation. These results are also economically significant. For example, a one-standard-deviation increase in the number of news items covering SEO firms over a 1-week, 2-week, 1-month, and 2-month periods prior to their SEO issue dates (which corresponds to an increase in the number of news items by approximately 6, 11, 23, and 46 news items, respectively) increases the magnitude of *QOPAdj* by 0.202, 0.266, 0.322, and 0.228, respectively, which is a sizable increase compared to the mean *QOPAdj* of -0.036 in our sample. These results imply that a greater extent of investor attention paid to issuing firms immediately prior to their SEOs leads to higher post-SEO market valuations. Combining results from subsection 8.4, the results here support for our hypothesis **H7B**.

8.6   Identification

In order to deal with the potential endogeneity problems in our analysis of the effect of investor attention on various SEO-related offering and firm characteristics (discussed previously in subsection 7.4), we perform a similar set of robustness tests and instrumental variable analyses as in subsection 7.4. First, we regress SEO underpricing, SEO valuation and post-SEO market valuation of issuing firms, and post-SEO institutional investors' participation in issuing firm's equity ownership on our four abnormal investor attention measures while controlling for the same set of control variables and fixed effects as described in subsection 8.2. For the sake of brevity, the results of these regressions can be found in the Internet Appendix of this paper Tables C.1, C.2, C.3, and C.4. The coefficient estimates of all four abnormal investor attention measures in these regressions have the same signs as those reported in our baseline results in Tables 8, 9, 10, and 11 are statistically significant in all of the *QOPAdj*, *QFTDAdj* and *InstN* regressions, in two of the *Underpricing* and *QFQAdj* regressions. Overall, these regression results on the relationship between abnormal investor attention and various SEO-related offering and firm characteristics are consistent with our baseline regression results.

Next, we also implement instrumental variable analyses of the effect of investor attention on various SEO-related offering and firm characteristics making use of the same instrumental variables as described in subsection 7.4. The results of our instrumental variable analyses for SEO underpricing, post-SEO market valuation, and post-SEO institutional investor participation are reported in Tables 12, 13, 14, and 15, respectively. Our first-stage regressions in all four tables show that our instrumental variables are significantly positively correlated with our investor attention variables and the F-statistics of the weak instruments test are well above the critical value of 8.96. Our second-stage regressions in Tables 12, 13, 14, and 15, show that the coefficient estimates of predicted values of investor attention measures from first-stage regressions have the same signs as reported in baseline regressions in Tables 8, 9, 10, and 11, and are statistically significant (except for regression specifications (4) and (6) in Table 13). These results suggest that, even after controlling for the potential endogeneity of investor attention paid to SEO firms immediately prior to their SEOs, firms which receive a higher level of investor attention prior to their SEOs are associated with greater participation of institutional investors in their post-SEO equity ownership, higher

post-SEO market valuations, larger SEO underpricing, and higher firm valuation at the offer price. Overall, our instrumental variable analysis demonstrates the robustness of our baseline findings in previous subsections.

9   Conclusion

Models of seasoned equity offerings (SEOs) such as Myers and Majluf (1984) assume that all investors in the economy pay immediate attention to SEO announcements and the pricing of SEOs. In this paper, we relax the above assumption and analyze, theoretically and empirically, the implications of a fraction of investors in the equity market paying only delayed attention to SEO announcements. We first show theoretically that, in the above setting, the announcement effect of an SEO will be positively related to the fraction of investors paying attention to the announcement and that there will be a post-announcement stock-return drift that is negatively related to investor attention. In the first part of the paper, we test the above predictions using the media coverage of firms announcing SEOs as a proxy for investor attention, and find evidence consistent with the above predictions. In the second part of the paper, we develop and test various hypotheses relating investor attention paid to the issuing firm (between the announcement and the equity issue) to various SEO characteristics. We empirically show that institutional investor participation in SEOs, the post-SEO equity market valuation of firms, SEO underpricing, and SEO valuation are all positively related to investor attention. The results of our identification tests show that the above results are causal.

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The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *NumNewsFile [-60:-1]* and *NumNewsIss [-60:-1]* are the numbers of news items covering SEO firms over a two-month period (from day -60 to day -1) prior to their SEO announcement dates and prior to their SEO issue dates, respectively. *PriorYrNumNewsFile [-60:-1]* is the number of news items covering SEO firms over a two-month period ending one year prior to their SEO announcement dates. *AbnNumNewsFile [-60:-1]* is the abnormal investor attention over a two-month period (from day -60 to day -1) prior to the SEO announcement date, which is defined as the difference between *NumNewsFile [-60:-1]* and *PriorYrNumNewsFile [-60:-1]*. *AbnNumNewsIss [-60:-1]* is the abnormal investor attention over a two-month period (from day -60 to day -1) prior to the SEO issue date, which is defined as the difference between *NumNewsIss [-60:-1]* and *PriorYrNumNewsFile [-60:-1]*. Other investor attention measures are defined in a similar fashion and their precise definitions can be found in Section 6. *ROA* is the ratio of net income over the book value of total assets at the end of the first post-announcement fiscal quarter. *Cash Flow* is the ratio of income before extraordinary items plus depreciation to the book value of total assets at the end of the first post-announcement fiscal quarter. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *QOPAdj* is the industry-adjusted Q ratios calculated using the SEO offer price. *QFTDAdj* and *QFQAdj* are the industry-adjusted Q ratios calculated using the SEO issue day closing price and the price at the end of the first post-issue fiscal quarter, respectively. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and either the SEO issue day closing price (*QFTDAdj*) or the price at the end of the first post-issue fiscal quarter (*QFQAdj*). Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *InstN* is the number of institutional investors holding SEO firms' shares at the end of the first post-issue fiscal quarter. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *MidFilePrice* is the midpoint of initial filing range. *PriorQtrEarnSurpFile* and *PriorQtrEarnSurpIss* are the earnings surprises one quarter prior to the SEO announcement date and prior to the SEO issue date, respectively. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetFile* and *PriorMktRetIss* are the returns on the CRSP value-weighted index over one-month (21-trading-day) periods prior to the SEO announcement date and prior to the SEO issue date, respectively.

Panel A: Summary statistics on investor attention measures

	N	Mean	Median	Min.	Max.	S.D.
NumNewsFile [-7:-1]	6,309	2.148	1	0	173	5.249
NumNewsFile [-14:-1]	6,309	4.044	2	0	287	9.013
NumNewsFile [-30:-1]	6,309	8.329	5	0	18	17.601
NumNewsFile [-60:-1]	6,309	15.620	10	0	31	32.142
NumNewsIss [-7:-1]	4,862	3.016	1	0	176	6.305
NumNewsIss [-14:-1]	4,510	5.100	3	0	355	11.080
NumNewsIss [-30:-1]	3,577	10.135	7	0	20	23.038
NumNewsIss [-60:-1]	2,713	19.602	13	3	35	45.532
PriorYrNumNewsFile [-7:-1]	6,309	1.663	0	0	146	4.506
PriorYrNumNewsFile [-14:-1]	6,309	3.178	1	0	239	7.597
PriorYrNumNewsFile [-30:-1]	6,309	6.524	3	0	15	15.201
PriorYrNumNewsFile [-60:-1]	6,309	12.417	8	0	26	29.007
AbnNumNewsFile [-7:-1]	6,309	0.485	0	-49	126	3.929
AbnNumNewsFile [-14:-1]	6,309	0.866	0	-56	212	5.846
AbnNumNewsFile [-30:-1]	6,309	1.805	0	-5	10	9.835
AbnNumNewsFile [-60:-1]	6,309	3.203	1	-7	15	16.024
AbnNumNewsIss [-7:-1]	4,862	1.616	0	-56	129	5.220
AbnNumNewsIss [-14:-1]	4,510	2.280	1	-119	280	8.422
AbnNumNewsIss [-30:-1]	3,577	3.492	2	-5	12	14.612
AbnNumNewsIss [-60:-1]	2,713	5.608	3	-8	19	26.033

Panel B: Summary statistics on SEO and firm characteristics

	N	Mean	Median	Min.	Max.	S.D.
ROA	6,194	-3.741	0.200	-75.153	11.279	10.572
Cash Flow	5,345	-3.390	0.515	-80.311	12.947	11.251
Underpricing	6,006	3.556	2.227	-20.661	38.321	6.583
QOPAdj	6,189	-0.036	-0.009	-6.873	13.298	2.048
QFTDAdj	5,902	-0.041	-0.005	-7.234	13.749	2.144
QFQAdj	6,182	-0.037	-0.009	-7.902	12.086	1.939
InstN	6,079	131.664	102	1	907	128.516
UndwrtReputation	6,309	0.036	0.007	0	0.193	0.050
FirmSize	6,174	6.225	6.150	1.515	12.506	2.122
MidFilePrice	6,009	24.073	18.700	0.350	158.550	23.017
PriorQtrEarnSurpIss	5,469	-0.077	0.001	-13.393	2.400	1.040
PriorQtrEarnSurpFile	5,382	0.028	0	-4.030	8.889	0.768
PriorMktRetIss	6,300	0.014	0.017	-0.127	0.140	0.039
PriorMktRetFile	6,309	0.012	0.016	-0.164	0.151	0.044

Table 2: **Summary statistics of SEO announcement effects and SEO post-announcement drift**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *CAR [0: 0]* is the abnormal return on SEO firm's equity on the SEO announcement day. CAR [-1:1] is the cumulative abnormal return on SEO firm's equity over a 3-day window (from day -1 to day +1) around the SEO announcement date. *CAR [-2:2]* is the cumulative abnormal return on SEO firm's equity over a 5-day window (from day -2 to day +2) around the SEO announcement date. *CAR [-3:3]* is the cumulative abnormal return on SEO firm's equity over a 7-day window (from day -3 to day +3) around the SEO announcement date. *CAR [1:21]* is the cumulative abnormal return on SEO firm's equity over a 21-day window (from day 1 to day 21) after the SEO announcement date. *CAR [1:42]* is the cumulative abnormal return on SEO firm's equity over a 42-day window (from day 1 to day 42) after the SEO announcement date. Abnormal returns are estimated using the market model with CRSP value-weighted index return as the market return; market model variables (alphas and betas) are estimated over a 150-day period ending 50 days prior to the SEO announcement date. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Summary statistics of SEO announcement effects

	N	Mean	Median	Min.	Max.	S.D.	t-Statistic (Means= 0)	z-Statistic (Medians= 0)
CAR [0:0]	5,821	-0.761	-0.445	-19.573	17.677	4.302	-13.492***	-15.307***
CAR [-1:1]	5,818	-2.298	-1.698	-34.642	33.101	7.821	-22.411***	-27.192***
CAR [-2:2]	5,815	-2.131	-1.794	-38.164	49.046	9.901	-16.415***	-22.709***
CAR [-3:3]	5,815	-2.068	-1.890	-41.185	62.389	11.425	-13.804***	-20.123***

Panel B: Summary statistics of SEO post-announcement drift

	N	Mean	Median	Min.	Max.	S.D.	t-Statistic (Means= 0)	z-Statistic (Medians= 0)
CAR [1:21]	5,828	-3.530	-2.778	-65.918	68.419	17.546	-15.358***	-18.543***
CAR [1:42]	5,829	-5.625	-4.198	-98.238	101.048	26.018	-16.506***	-18.918***

Table 3: **Relationship between investor attention and SEO announcement effects**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *CAR [0: 0]* is the abnormal return on SEO firm's equity on the SEO announcement day. *NumNewsFile [-7:-1]*, *NumNewsFile [-14:-1]*, *NumNewsFile [-30:-1]*, and *NumNewsFile [-60:-1]* are measures of investor attention prior to the SEO announcement date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpFile* is the earnings surprise one quarter prior to the SEO announcement date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetFile* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO announcement date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	CAR [0:0]			
	(1)	(2)	(3)	(4)
NumNewsFile [-7:-1]	-0.051***			
	(-3.15)			
NumNewsFile [-14:-1]		-0.035***		
		(-3.85)		
NumNewsFile [-30:-1]			-0.019***	
			(-4.15)	
NumNewsFile [-60:-1]				-0.009***
				(-3.66)
UndwrtReputation	-1.625	-1.549	-1.568	-1.590
	(-1.11)	(-1.06)	(-1.07)	(-1.09)
FirmSize	0.157***	0.170***	0.176***	0.172***
	(3.00)	(3.23)	(3.35)	(3.26)
PriorQtrEarnSurpFile	0.260***	0.259***	0.257***	0.258***
	(3.23)	(3.21)	(3.18)	(3.20)
PriorMktRetFile	0.662	0.507	0.434	0.512
	(0.43)	(0.33)	(0.28)	(0.33)
MidFilePrice	0.009***	0.009***	0.009***	0.009***
	(2.65)	(2.76)	(2.73)	(2.67)
Constant	-7.308	-7.410	-7.516	-7.395
	(-1.20)	(-1.22)	(-1.24)	(-1.22)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.170	0.171	0.171	0.171
Observations	4735	4735	4735	4735

Table 4: **Relationship between investor attention and SEO post-announcement drift**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *CAR [1:21]* is the cumulative abnormal return on SEO firm's equity over a 21-day window (from day 1 to day 21) after the SEO announcement date. *NumNewsFile [-7:-1]*, *NumNewsFile [-14:-1]*, *NumNewsFile [-30:-1]*, and *NumNewsFile [-60:-1]* are measures of investor attention prior to the SEO announcement date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpFile* is the earnings surprise one quarter prior to the SEO announcement date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetFile* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO announcement date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	CAR [1:21]			
	(1)	(2)	(3)	(4)
NumNewsFile [-7:-1]	0.236***			
	(3.60)			
NumNewsFile [-14:-1]		0.150***		
		(4.09)		
NumNewsFile [-30:-1]			0.060***	
			(3.25)	
NumNewsFile [-60:-1]				0.023**
				(2.28)
UndwrtReputation	-8.611	-8.918	-8.718	-8.592
	(-1.45)	(-1.51)	(-1.47)	(-1.45)
FirmSize	0.649***	0.609***	0.649***	0.697***
	(3.07)	(2.87)	(3.04)	(3.25)
PriorQtrEarnSurpFile	0.706**	0.712**	0.721**	0.718**
	(2.16)	(2.18)	(2.21)	(2.20)
PriorMktRetFile	16.078**	16.806***	17.058***	16.824***
	(2.58)	(2.70)	(2.73)	(2.70)
MidFilePrice	-0.031**	-0.033**	-0.032**	-0.031**
	(-2.37)	(-2.47)	(-2.40)	(-2.33)
Constant	45.202*	45.516*	45.333*	44.661*
	(1.84)	(1.85)	(1.84)	(1.81)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.155	0.156	0.155	0.154
Observations	4742	4742	4742	4742

Table 5: **Relationship between the SEO announcement effect, post-announcement drift, and subsequent operating performance**

The sample consists of seasoned equity offerings (SEO) conducted in 2000 - 2018. $ROA_{1(2,3,4)}$ is the ratio of net income over the book value of total assets measured over one (two, three, four) quarters after the SEO announcement. *Cash Flow*$_{1(2,3,4)}$ is the ratio of income before extraordinary items plus depreciation to the book value of total assets measured over one (two, three, four) quarters after the SEO announcement. *CAR [0:0]* is the abnormal return on SEO firm's equity on the SEO announcement day. *CAR [1:21]* is the cumulative abnormal return on SEO firm's equity over a 21-day window (from day 1 to day 21) after the SEO announcement date. *NumNewsFile [-7:-1]*, *NumNewsFile [-14:-1]*, *NumNewsFile [-30:-1]*, and *NumNewsFile [-60:-1]* are measures of investor attention prior to the SEO announcement date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpFile* is the earnings surprise one quarter prior to the SEO announcement date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetFile* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO announcement date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Relationship between the SEO announcement effect, post-announcement drift, and subsequent ROA

Dependent Variable	ROA_1	ROA_2	ROA_3	ROA_4
	(1)	(2)	(3)	(4)
CAR [0:0]	0.042	0.107**	0.183**	0.166*
	(1.56)	(2.16)	(2.54)	(1.76)
CAR [1:21]	0.016**	0.029**	0.049***	0.070***
	(2.42)	(2.39)	(2.79)	(3.05)
UndwrtReputation	3.269	7.207	10.963*	14.924*
	(1.30)	(1.58)	(1.66)	(1.73)
FirmSize	1.262***	2.498***	3.706***	4.862***
	(14.44)	(15.79)	(16.09)	(16.17)
PriorQtrEarnSurpFile	-0.740***	-1.075***	-2.145***	-2.573***
	(-5.33)	(-4.24)	(-5.77)	(-5.29)
PriorMktRetFile	0.497	-0.838	-0.769	-1.638
	(0.19)	(-0.18)	(-0.11)	(-0.18)
MidFilePrice	0.032***	0.064***	0.092***	0.126***
	(5.72)	(6.37)	(6.31)	(6.53)
Constant	-2.313	-7.664	51.963*	-79.156***
	(-0.22)	(-0.41)	(1.93)	(-2.79)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.462	0.514	0.531	0.539
Observations	4724	4688	4561	4438

Panel B: Relationship between the SEO announcement effect, post-announcement drift, and subsequent Cash Flow

Dependent Variable	Cash Flow$_1$	Cash Flow$_2$	Cash Flow$_3$	Cash Flow$_4$
	(1)	(2)	(3)	(4)
CAR [0:0]	0.043	0.102*	0.168**	0.108
	(1.38)	(1.80)	(2.03)	(0.98)
CAR [1:21]	0.014*	0.030**	0.051**	0.073***
	(1.78)	(2.12)	(2.52)	(2.72)
UndwrtReputation	2.991	7.494	12.083	17.188
	(0.99)	(1.36)	(1.50)	(1.63)
FirmSize	1.493***	2.985***	4.424***	5.795***
	(14.50)	(15.89)	(16.04)	(16.06)
PriorQtrEarnSurpFile	-0.768***	-1.110***	-2.161***	-2.711***
	(-4.99)	(-3.93)	(-5.17)	(-4.97)
PriorMktRetFile	0.149	-2.389	-3.995	-4.646
	(0.05)	(-0.40)	(-0.46)	(-0.41)
MidFilePrice	0.035***	0.070***	0.102***	0.140***
	(5.06)	(5.59)	(5.59)	(5.83)
Constant	-3.738	-9.113	53.131*	-79.932**
	(-0.33)	(-0.44)	(1.80)	(-2.56)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.472	0.525	0.543	0.553
Observations	4076	4010	3858	3728

Table 6: **Relationship between abnormal investor attention and market reaction upon SEO announcement**

The sample consists of seasoned equity offerings (SEO) conducted in 2000 - 2018. *CAR [0:0]* is the abnormal return on SEO firm's equity on the SEO announcement day. *CAR [1:21]* is the cumulative abnormal return on SEO firm's equity over a 21-day window (from day 1 to day 21) after the SEO announcement date. *AbnNumNewsFile [-7:-1]*, *AbnNumNewsFile [-14:-1]*, *AbnNumNewsFile [-30:-1]*, and *AbnNumNewsFile [-60:-1]* are measures of abnormal investor attention prior to the SEO announcement date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpFile* is the earnings surprise one quarter prior to the SEO announcement date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetFile* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO announcement date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Relationship between abnormal investor attention and SEO announcement effect

Dependent Variable	CAR [0:0]			
	(1)	(2)	(3)	(4)
AbnNumNewsFile [-7:-1]	-0.041**			
	(-2.42)			
AbnNumNewsFile [-14:-1]		-0.041***		
		(-3.35)		
AbnNumNewsFile [-30:-1]			-0.019***	
			(-2.73)	
AbnNumNewsFile [-60:-1]				-0.011**
				(-2.44)
UndwrtReputation	-1.672	-1.508	-1.492	-1.471
	(-1.14)	(-1.03)	(-1.02)	(-1.00)
FirmSize	0.120**	0.122**	0.121**	0.121**
	(2.36)	(2.41)	(2.39)	(2.39)
PriorQtrEarnSurpFile	0.260***	0.262***	0.259***	0.258***
	(3.23)	(3.24)	(3.21)	(3.20)
PriorMktRetFile	0.585	0.582	0.491	0.499
	(0.38)	(0.38)	(0.32)	(0.32)
MidFilePrice	0.008***	0.009***	0.009***	0.009***
	(2.60)	(2.68)	(2.69)	(2.64)
Constant	-7.013	-7.014	-7.060	-6.933
	(-1.15)	(-1.15)	(-1.16)	(-1.14)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.169	0.170	0.169	0.169
Observations	4735	4735	4735	4735

Panel B: Relationship between abnormal investor attention and post-announcement drift

Dependent Variable	CAR [1:21]			
	(1)	(2)	(3)	(4)
AbnNumNewsFile [-7:-1]	0.071			
	(1.06)			
AbnNumNewsFile [-14:-1]		0.079*		
		(1.65)		
AbnNumNewsFile [-30:-1]			0.019	
			(0.70)	
AbnNumNewsFile [-60:-1]				-0.008
				(-0.46)
UndwrtReputation	-7.751	-8.075	-7.936	-7.581
	(-1.34)	(-1.40)	(-1.37)	(-1.31)
FirmSize	0.802***	0.799***	0.804***	0.810***
	(3.98)	(3.96)	(3.98)	(4.01)
PriorQtrEarnSurpFile	2.122	2.123	2.150	2.160
	(1.56)	(1.56)	(1.58)	(1.59)
PriorMktRetFile	18.330***	18.311***	18.473***	18.505***
	(2.92)	(2.92)	(2.95)	(2.95)
MidFilePrice	-0.031**	-0.031**	-0.031**	-0.030**
	(-2.21)	(-2.26)	(-2.22)	(-2.17)
Constant	44.363*	44.370*	44.362*	44.271*
	(1.86)	(1.86)	(1.86)	(1.85)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.155	0.155	0.155	0.155
Observations	4742	4742	4742	4742

Table 7: **Instrumental variable analysis of the relationship between investor attention and market reaction upon SEO announcement**

The sample consists of seasoned equity offerings (SEO) conducted in 2000 - 2018. *CAR [0: 0]* is the abnormal return on SEO firm's equity on the SEO announcement day. *CAR [1:21]* is the cumulative abnormal return on SEO firm's equity over a 21-day window (from day 1 to day 21) after the SEO announcement date. *NumNewsFileHat [-7:-1]*, *NumNewsFileHat [-14:-1]*, *NumNewsFileHat [-30:-1]*, and *NumNewsFileHat [-60:-1]* are predicted values of investor attention variables as described in Table 1 (*NumNewsFile [-7:-1]*, *NumNewsFile [-14:-1]*, *NumNewsFile [-30:-1]*, and *NumNewsFile [-60:-1]*) from first-stage regressions. *PriorYrNumNewsFile [-7:-1]*, *PriorYrNumNewsFile [-14:-1]*, *PriorYrNumNewsFile [-30:-1]*, and *PriorYrNumNewsFile [-60:-1]* are instrumental variables which measure investor attention one year prior to the SEO announcement date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpFile* is the earnings surprise one quarter prior to the SEO announcement date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetFile* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO announcement date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Relationship between investor attention and SEO announcement effect

Dependent Variable	1st-stage	CAR [0:0]	1st-stage	CAR [0:0]	1st-stage	CAR [0:0]	1st-stage	CAR [0:0]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.570***							
	(37.31)							
NumNewsFileHat [-7:-1]		-0.031						
		(-1.06)						
PriorYrNumNewsFile [-14:-1]			0.832***					
			(58.28)					
NumNewsFileHat [-14:-1]				-0.022*				
				(-1.79)				
PriorYrNumNewsFile [-30:-1]					0.899***			
					(71.49)			
NumNewsFileHat [-30:-1]						-0.017***		
						(-3.03)		
PriorYrNumNewsFile [-60:-1]							1.003***	
							(87.87)	
NumNewsFileHat [-60:-1]								-0.009***
								(-3.00)
UndwrtReputation	0.562	-1.646	4.127**	-1.597	9.694***	-1.580	19.804***	-1.597
	(0.46)	(-1.22)	(2.20)	(-1.19)	(2.86)	(-1.18)	(3.68)	(-1.19)
FirmSize	0.388***	0.141***	0.366***	0.150***	0.535***	0.170***	0.429**	0.168***
	(8.79)	(2.71)	(5.39)	(2.99)	(4.35)	(3.42)	(2.18)	(3.39)
PriorQtrEarnSurpFile	0.070	0.259***	0.098	0.258***	0.064	0.257***	0.078	0.258***
	(1.02)	(3.50)	(0.95)	(3.49)	(0.34)	(3.47)	(0.26)	(3.48)
PriorMktRetFile	2.777**	0.594	1.981	0.500	-0.204	0.440	0.926	0.510
	(2.14)	(0.42)	(1.00)	(0.35)	(-0.06)	(0.31)	(0.16)	(0.36)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MidFilePrice	0.004	0.009***	0.011***	0.009***	0.024***	0.009***	0.026**	0.009***
	(1.51)	(2.84)	(2.71)	(2.92)	(3.16)	(2.96)	(2.17)	(2.90)
Constant	-2.644	-2.250	-8.475	-2.303	-5.405	-2.229	-10.969	-2.288
	(-0.63)	(-0.49)	(-1.33)	(-0.51)	(-0.47)	(-0.49)	(-0.60)	(-0.50)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.170		0.170		0.171		0.171
Observations	4735	4735	4735	4735	4735	4735	4735	4735
F Statistics	1391.92		3396.03		5110.44		7720.30	

Panel B: Relationship between investor attention and post-announcement drift

Dependent Variable	1st-stage	CAR [1:21]	1st-stage	CAR [1:21]	1st-stage	CAR [1:21]	1st-stage	CAR [1:21]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.571***							
	(37.33)							
NumNewsFileHat [-7:-1]		0.389***						
		(3.29)						
PriorYrNumNewsFile [-14:-1]			0.832***					
			(58.30)					
NumNewsFileHat [-14:-1]				0.194***				
				(3.91)				
PriorYrNumNewsFile [-30:-1]					0.899***			
					(71.40)			
NumNewsFileHat [-30:-1]						0.084***		
						(3.75)		
PriorYrNumNewsFile [-60:-1]							1.003***	
							(87.72)	
NumNewsFileHat [-60:-1]								0.041***
								(3.54)
UndwrtReputation	0.503	-8.763	4.020**	-9.077*	9.534***	-8.860	19.483***	-8.754
	(0.41)	(-1.61)	(2.14)	(-1.67)	(2.82)	(-1.63)	(3.62)	(-1.61)
FirmSize	0.391***	0.527**	0.369***	0.541***	0.535***	0.570***	0.437**	0.590***
	(8.85)	(2.50)	(5.44)	(2.67)	(4.35)	(2.83)	(2.22)	(2.94)
PriorQtrEarnSurpFile	0.070	0.697**	0.098	0.710**	0.064	0.722**	0.079	0.718**
	(1.03)	(2.32)	(0.95)	(2.37)	(0.34)	(2.41)	(0.27)	(2.39)
PriorMktRetFile	2.761**	15.559***	1.944	16.785***	-0.299	17.134***	0.744	16.786***
	(2.13)	(2.71)	(0.99)	(2.93)	(-0.08)	(2.99)	(0.13)	(2.93)
MidFilePrice	0.004	-0.032***	0.011***	-0.033***	0.024***	-0.032***	0.026**	-0.031***
	(1.51)	(-2.65)	(2.72)	(-2.75)	(3.17)	(-2.67)	(2.16)	(-2.59)
Constant	-2.645	-0.627	-8.476	-0.796	-5.398	-2.016	-10.968	-1.767
	(-0.63)	(-0.03)	(-1.33)	(-0.04)	(-0.47)	(-0.11)	(-0.60)	(-0.10)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.154		0.156		0.155		0.153
Observations	4742	4742	4742	4742	4742	4742	4742	4742
F Statistics	1393.29		3398.43		5097.53		7693.97	

Table 8: **Relationship between investor attention and post-SEO participation of institutional investors in the ownership of issuing firms' equity**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *InstN* is the number of institutional investors holding SEO firms' shares at the end of the first post-issue fiscal quarter. *NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]* are measures of investor attention prior to the SEO issue date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	InstN							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NumNewsIss [-7:-1]	4.593***	4.591***						
	(17.58)	(17.54)						
NumNewsIss [-14:-1]			3.330***	3.326***				
			(18.70)	(18.62)				
NumNewsIss [-30:-1]					1.723***	1.718***		
					(14.74)	(14.64)		
NumNewsIss [-60:-1]							0.866***	0.863***
							(13.16)	(13.06)
Underpricing		0.484**		0.436*		0.355		0.311
		(2.16)		(1.91)		(1.31)		(0.95)
UndwrtReputation	19.050	20.258	22.962	23.691	71.773**	71.129**	79.433**	77.654*
	(0.69)	(0.73)	(0.79)	(0.82)	(2.06)	(2.04)	(1.97)	(1.92)
FirmSize	43.146***	43.206***	42.261***	42.290***	43.815***	43.834***	45.555***	45.535***
	(41.47)	(41.25)	(38.61)	(38.36)	(33.09)	(32.75)	(29.20)	(28.89)
PriorQtrEarnSurpIss	-1.822	-1.602	-1.649	-1.453	-1.459	-1.313	-1.869	-1.731
	(-1.59)	(-1.39)	(-1.45)	(-1.27)	(-1.10)	(-0.99)	(-1.28)	(-1.18)
PriorMktRetIss	-7.902	-11.573	-0.806	-4.363	31.472	28.633	24.887	22.354
	(-0.24)	(-0.36)	(-0.02)	(-0.13)	(0.80)	(0.72)	(0.52)	(0.47)
MidFilePrice	1.032***	1.042***	1.067***	1.076***	1.238***	1.246***	1.336***	1.345***
	(14.31)	(14.42)	(14.02)	(14.12)	(13.26)	(13.32)	(11.84)	(11.88)
Constant	-262.282**	-268.652***	-271.063***	-276.603***	-304.249***	-308.994***	-344.022*	-432.622***
	(-2.53)	(-2.59)	(-2.64)	(-2.70)	(-2.76)	(-2.80)	(-1.77)	(-2.62)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.729	0.728	0.744	0.743	0.766	0.765	0.781	0.780
Observations	3883	3854	3569	3541	2796	2770	2156	2132

Table 9: **Relationship between investor attention and post-SEO market valuation of issuing firms**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *QFTDAdj* and *QFQAdj* are the industry-adjusted Q ratios calculated using the SEO issue day closing price and the price at the end of the first post-issue fiscal quarter, respectively. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and either the SEO issue day closing price (*QFTDAdj*) or the price at the end of the first post-issue fiscal quarter (*QFQAdj*). Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]* are measures of investor attention prior to the SEO issue date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Relationship between investor attention and post-SEO market valuation measured using the first trading day closing price

Dependent Variable	QFTDAdj							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NumNewsIss [-7:-1]	0.033***	0.033***						
	(4.03)	(3.98)						
NumNewsIss [-14:-1]			0.025***	0.024***				
			(4.31)	(4.21)				
NumNewsIss [-30:-1]					0.015***	0.014***		
					(4.26)	(4.14)		
NumNewsIss [-60:-1]							0.005***	0.005***
							(3.03)	(2.99)
Underpricing		0.013*		0.013*		0.014*		0.008
		(1.82)		(1.86)		(1.80)		(0.96)
UndwrtReputation	4.069***	4.141***	3.711***	3.784***	2.759***	2.795***	2.403**	2.412**
	(4.65)	(4.73)	(3.97)	(4.04)	(2.72)	(2.75)	(2.34)	(2.35)
FirmSize	-0.519***	-0.517***	-0.512***	-0.509***	-0.465***	-0.461***	-0.425***	-0.426***
	(-15.92)	(-15.79)	(-14.65)	(-14.51)	(-12.16)	(-12.00)	(-10.81)	(-10.78)
PriorQtrEarnSurpIss	0.016	0.020	0.015	0.019	-0.013	-0.010	-0.027	-0.025
	(0.48)	(0.59)	(0.44)	(0.55)	(-0.37)	(-0.28)	(-0.78)	(-0.70)
PriorMktRetIss	-0.146	-0.177	-0.315	-0.352	-0.391	-0.408	-0.097	-0.072
	(-0.14)	(-0.17)	(-0.29)	(-0.32)	(-0.34)	(-0.35)	(-0.08)	(-0.06)
MidFilePrice	0.031***	0.032***	0.031***	0.031***	0.025***	0.026***	0.022***	0.022***
	(13.79)	(13.88)	(12.57)	(12.66)	(9.44)	(9.51)	(7.68)	(7.74)
Constant	-1.421	-1.590	-1.516	-1.697	-1.194	-1.392	15.880***	15.817***
	(-0.43)	(-0.48)	(-0.46)	(-0.51)	(-0.37)	(-0.43)	(3.76)	(3.75)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.119	0.121	0.117	0.119	0.124	0.126	0.174	0.176

| Observations | 3915 | 3911 | 3597 | 3593 | 2813 | 2809 | 2163 | 2161 |

Panel B: Relationship between investor attention and post-SEO market valuation measured using the price at the end of the first post-issue fiscal quarter

Dependent Variable	QFQAdj							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NumNewsIss [-7:-1]	0.021***	0.020***						
	(2.79)	(2.74)						
NumNewsIss [-14:-1]			0.015***	0.015***				
			(2.90)	(2.86)				
NumNewsIss [-30:-1]					0.008***	0.008**		
					(2.74)	(2.57)		
NumNewsIss [-60:-1]							0.004**	0.004**
							(2.42)	(2.34)
Underpricing		0.004		0.006		0.011		0.003
		(0.68)		(0.92)		(1.55)		(0.42)
UndwrtReputation	4.149***	4.148***	3.571***	3.572***	2.516***	2.499***	2.151**	2.105**
	(5.31)	(5.30)	(4.28)	(4.28)	(2.76)	(2.74)	(2.35)	(2.30)
FirmSize	-0.470***	-0.469***	-0.457***	-0.454***	-0.426***	-0.419***	-0.408***	-0.405***
	(-16.21)	(-16.04)	(-14.71)	(-14.52)	(-12.45)	(-12.15)	(-11.67)	(-11.48)
PriorQtrEarnSurpIss	0.004	0.005	0.003	0.004	-0.014	-0.012	-0.019	-0.018
	(0.12)	(0.16)	(0.10)	(0.15)	(-0.44)	(-0.37)	(-0.60)	(-0.57)
PriorMktRetIss	-0.051	-0.092	-0.090	-0.142	-0.162	-0.311	0.526	0.363
	(-0.06)	(-0.10)	(-0.09)	(-0.15)	(-0.16)	(-0.30)	(0.48)	(0.33)
MidFilePrice	0.021***	0.021***	0.019***	0.020***	0.017***	0.017***	0.014***	0.014***
	(10.54)	(10.57)	(8.95)	(9.00)	(6.98)	(7.04)	(5.51)	(5.55)
Constant	-2.997	-3.064	-3.024	-3.114	-2.864	-3.038	10.584**	15.185***
	(-1.02)	(-1.04)	(-1.02)	(-1.05)	(-0.99)	(-1.05)	(2.38)	(4.03)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.133	0.130	0.133	0.130	0.146	0.142	0.218	0.212
Observations	3934	3905	3615	3587	2829	2803	2180	2156

Table 10: **Relationship between investor attention and SEO underpricing**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]* are measures of investor attention prior to the SEO issue date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	Underpricing			
	(1)	(2)	(3)	(4)
NumNewsIss [-7:-1]	0.042**			
	(2.00)			
NumNewsIss [-14:-1]		0.050***		
		(3.44)		
NumNewsIss [-30:-1]			0.033***	
			(3.52)	
NumNewsIss [-60:-1]				0.015***
				(2.93)
UndwrtReputation	-4.869**	-4.688**	-1.553	1.696
	(-2.22)	(-1.97)	(-0.56)	(0.55)
FirmSize	-0.363***	-0.400***	-0.500***	-0.423***
	(-4.42)	(-4.50)	(-4.78)	(-3.57)
PriorQtrEarnSurpIss	-0.285***	-0.279***	-0.237**	-0.321***
	(-3.44)	(-3.28)	(-2.43)	(-3.04)
PriorMktRetIss	4.582*	4.735*	3.681	1.736
	(1.77)	(1.72)	(1.17)	(0.47)
MidFilePrice	-0.014**	-0.014**	-0.009	-0.011
	(-2.50)	(-2.20)	(-1.23)	(-1.35)
Constant	14.443*	14.525*	15.429*	10.844
	(1.74)	(1.72)	(1.75)	(0.85)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.228	0.243	0.288	0.326
Observations	3920	3601	2817	2166

Table 11: **Relationship between investor attention and SEO valuation of issuing firms**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *QOPAdj* is the industry-adjusted Q ratios calculated using the SEO offer price. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and the SEO offer price. Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]* are measures of investor attention prior to the SEO issue date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. t-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	QOPAdj							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
NumNewsIss [-7:-1]	0.032***	0.032***						
	(4.00)	(4.00)						
NumNewsIss [-14:-1]			0.024***	0.024***				
			(4.29)	(4.35)				
NumNewsIss [-30:-1]					0.014***	0.014***		
					(4.23)	(4.25)		
NumNewsIss [-60:-1]							0.005***	0.005***
							(3.04)	(3.13)
Underpricing		-0.010		-0.010		-0.009		-0.015*
		(-1.55)		(-1.43)		(-1.19)		(-1.95)
UndwrtReputation	4.103***	4.019***	3.746***	3.660***	2.737***	2.670***	2.321**	2.278**
	(4.88)	(4.77)	(4.17)	(4.06)	(2.81)	(2.73)	(2.34)	(2.29)
FirmSize	-0.494***	-0.498***	-0.487***	-0.491***	-0.442***	-0.446***	-0.409***	-0.415***
	(-15.78)	(-15.78)	(-14.53)	(-14.53)	(-12.07)	(-12.04)	(-10.78)	(-10.82)
PriorQtrEarnSurpIss	0.022	0.019	0.021	0.018	-0.007	-0.009	-0.019	-0.024
	(0.69)	(0.60)	(0.64)	(0.55)	(-0.20)	(-0.27)	(-0.57)	(-0.71)
PriorMktRetIss	-0.127	-0.071	-0.305	-0.249	-0.209	-0.215	0.176	0.150
	(-0.13)	(-0.07)	(-0.29)	(-0.24)	(-0.19)	(-0.19)	(0.15)	(0.13)
MidFilePrice	0.030***	0.030***	0.030***	0.030***	0.025***	0.025***	0.021***	0.021***
	(13.89)	(13.79)	(12.65)	(12.56)	(9.59)	(9.54)	(7.80)	(7.72)
Constant	-1.815	-1.666	-1.903	-1.759	-1.644	-1.510	10.848**	15.464***
	(-0.57)	(-0.52)	(-0.59)	(-0.55)	(-0.53)	(-0.49)	(2.25)	(3.78)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.120	0.119	0.119	0.118	0.126	0.125	0.173	0.173
Observations	3940	3911	3621	3593	2835	2809	2185	2161

Table 12: **Instrumental variable analysis of the relationship between investor attention and post-SEO participation of institutional investors in the ownership of issuing firms' equity**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *InstN* is the number of institutional investors holding SEO firms' shares at the end of the first post-issue fiscal quarter. *NumNewsIssHat [-7:-1]*, *NumNewsIssHat [-14:-1]*, *NumNewsIssHat [-30:-1]*, and *NumNewsIssHat [-60:-1]* are predicted values of investor attention variables as described in Table 1 (*NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]*) from first-stage regressions. *PriorYrNumNewsFile [-7:-1]*, *PriorYrNumNewsFile [-14:-1]*, *PriorYrNumNewsFile [-30:-1]*, and *PriorYrNumNewsFile [-60:-1]* are instrumental variables which measure investor attention one year prior to the SEO announcement date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. t-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	1st-stage	InstN	1st-stage	InstN	1st-stage	InstN	1st-stage	InstN
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.566***							
	(22.51)							
NumNewsIssHat [-7:-1]		9.437***						
		(13.98)						
PriorYrNumNewsFile [-14:-1]			0.687***					
			(32.49)					
NumNewsIssHat [-14:-1]				5.386***				
				(16.87)				
PriorYrNumNewsFile [-30:-1]					0.667***			
					(38.12)			
NumNewsIssHat [-30:-1]						2.285***		
						(13.73)		
PriorYrNumNewsFile [-60:-1]							0.840***	
							(42.00)	
NumNewsIssHat [-60:-1]								1.105***
								(13.72)
Underpricing	0.021	0.329	0.053***	0.266	0.113***	0.254	0.165*	0.223
	(1.52)	(1.52)	(2.62)	(1.26)	(2.96)	(1.04)	(1.96)	(0.78)
UndwrtReputation	3.753**	5.929	8.929***	9.600	9.892**	67.705**	21.689**	75.417**
	(2.16)	(0.22)	(3.46)	(0.36)	(2.01)	(2.17)	(2.07)	(2.13)
FirmSize	0.825***	37.479***	1.102***	38.176***	1.898***	41.647***	2.578***	43.646***
	(12.71)	(30.09)	(11.37)	(33.03)	(10.26)	(32.12)	(6.34)	(30.06)
PriorQtrEarnSurpIss	-0.003	-1.492	-0.043	-1.308	-0.091	-1.225	-0.079	-1.643
	(-0.04)	(-1.36)	(-0.42)	(-1.24)	(-0.48)	(-1.03)	(-0.21)	(-1.28)

PriorMktRetIss	3.196	-32.790	2.184	-15.350	2.455	25.656	10.008	18.819
	(1.57)	(-1.05)	(0.73)	(-0.50)	(0.44)	(0.72)	(0.81)	(0.45)
MidFilePrice	-0.000	1.054***	0.005	1.074***	0.006	1.249***	-0.018	1.356***
	(-0.07)	(15.25)	(0.79)	(15.24)	(0.43)	(14.92)	(-0.60)	(13.63)
Constant	-8.597	-217.755**	-7.670	-247.806***	-5.408	-296.564***	-13.311	-416.064***
	(-1.32)	(-2.19)	(-0.84)	(-2.61)	(-0.35)	(-3.01)	(-0.31)	(-2.86)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.699		0.732		0.763		0.779
Observations	3854	3854	3541	3541	2770	2770	2132	2132
F Statistics	506.58		1055.81		1452.81		1763.62	

Table 13: **Instrumental variable analysis of the relationship between investor attention and post-SEO market valuation of issuing firms**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *QFTDAdj* and *QFQAdj* are the industry-adjusted Q ratios calculated using the SEO issue day closing price and the price at the end of the first post-issue fiscal quarter, respectively. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and either the SEO issue day closing price (*QFTDAdj*) or the price at the end of the first post-issue fiscal quarter (*QFQAdj*). Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *NumNewsIssHat [-7:-1]*, *NumNewsIssHat [-14:-1]*, *NumNewsIssHat [-30:-1]*, and *NumNewsIssHat [-60:-1]* are predicted values of investor attention variables as described in Table 1 (*NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]*) from first-stage regressions. *PriorYrNumNewsFile [-7:-1]*, *PriorYrNumNewsFile [-14:-1]*, *PriorYrNumNewsFile [-30:-1]*, and *PriorYrNumNewsFile [-60:-1]* are instrumental variables which measure investor attention one year prior to the SEO announcement date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Relationship between investor attention and post-SEO market valuation measured using the first trading day closing price

Dependent Variable	1st-stage	QFTDAdj	1st-stage	QFTDAdj	1st-stage	QFTDAdj	1st-stage	QFTDAdj
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.568***							
	(22.77)							
NumNewsIssHat [-7:-1]		0.037*						
		(1.83)						
PriorYrNumNewsFile [-14:-1]			0.681***					
			(32.46)					
NumNewsIssHat [-14:-1]				0.016				
				(1.60)				
PriorYrNumNewsFile [-30:-1]					0.664***			
					(38.13)			
NumNewsIssHat [-30:-1]						0.007		
						(1.39)		
PriorYrNumNewsFile [-60:-1]							0.838***	
							(42.24)	
NumNewsIssHat [-60:-1]								0.004*
								(1.78)
Underpricing	0.020	0.013**	0.052***	0.014**	0.106***	0.015**	0.157*	0.008
	(1.48)	(1.97)	(2.63)	(2.14)	(2.86)	(2.19)	(1.91)	(1.16)
UndwrtReputation	3.550**	4.130***	8.723***	3.840***	10.428**	2.841***	21.760**	2.426***
	(2.06)	(5.18)	(3.40)	(4.52)	(2.13)	(3.14)	(2.10)	(2.70)
FirmSize	0.827***	-0.521***	1.089***	-0.493***	1.857***	-0.433***	2.549***	-0.415***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(13.03)	(-14.07)	(11.48)	(-13.67)	(10.24)	(-11.64)	(6.43)	(-11.43)
PriorQtrEarnSurpIss	0.006	0.020	-0.001	0.018	-0.076	-0.011	-0.106	-0.025
	(0.09)	(0.65)	(-0.01)	(0.60)	(-0.44)	(-0.35)	(-0.30)	(-0.82)
PriorMktRetIss	3.040	-0.194	2.305	-0.308	2.282	-0.370	9.814	-0.053
	(1.50)	(-0.21)	(0.78)	(-0.31)	(0.41)	(-0.36)	(0.80)	(-0.05)
MidFilePrice	-0.000	0.032***	0.004	0.031***	0.006	0.026***	-0.019	0.022***
	(-0.07)	(15.26)	(0.65)	(13.99)	(0.49)	(10.65)	(-0.66)	(8.81)
Constant	-8.597	-1.547	-7.520	-1.807	-5.114	-1.552	-12.899	15.723***
	(-1.32)	(-0.52)	(-0.82)	(-0.60)	(-0.33)	(-0.54)	(-0.30)	(4.25)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.121		0.118		0.125		0.176
Observations	3911	3911	3593	3593	2809	2809	2161	2161
F Statistics	518.49		1053.76		1453.65		1783.83	

Panel B: Relationship between investor attention and post-SEO market valuation measured using the price at the end of the first post-issue fiscal quarter

Dependent Variable	1st-stage	QFQAdj	1st-stage	QFQAdj	1st-stage	QFQAdj	1st-stage	QFQAdj
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.568***							
	(22.75)							
NumNewsIssHat [-7:-1]		0.039**						
		(2.13)						
PriorYrNumNewsFile [-14:-1]			0.681***					
			(32.42)					
NumNewsIssHat [-14:-1]				0.016*				
				(1.72)				
PriorYrNumNewsFile [-30:-1]					0.664***			
					(38.07)			
NumNewsIssHat [-30:-1]						0.007		
						(1.55)		
PriorYrNumNewsFile [-60:-1]							0.838***	
							(42.17)	
NumNewsIssHat [-60:-1]								0.004**
								(2.16)
Underpricing	0.020	0.004	0.052***	0.006	0.106***	0.011*	0.156*	0.003
	(1.47)	(0.65)	(2.62)	(1.00)	(2.84)	(1.77)	(1.90)	(0.45)
UndwrtReputation	3.434**	4.098***	8.638***	3.567***	10.292**	2.506***	21.607**	2.101***
	(1.99)	(5.75)	(3.36)	(4.71)	(2.10)	(3.08)	(2.08)	(2.62)
FirmSize	0.826***	-0.490***	1.088***	-0.456***	1.856***	-0.415***	2.550***	-0.408***
	(13.00)	(-14.80)	(11.45)	(-14.18)	(10.21)	(-12.43)	(6.42)	(-12.60)

PriorQtrEarnSurpIss	0.006	0.005	-0.001	0.004	-0.075	-0.012	-0.106	-0.018
	(0.10)	(0.19)	(-0.01)	(0.16)	(-0.44)	(-0.42)	(-0.30)	(-0.65)
PriorMktRetIss	3.002	-0.167	2.249	-0.146	2.198	-0.306	9.894	0.357
	(1.48)	(-0.20)	(0.76)	(-0.17)	(0.39)	(-0.33)	(0.80)	(0.37)
MidFilePrice	-0.000	0.022***	0.004	0.020***	0.006	0.017***	-0.019	0.014***
	(-0.06)	(11.64)	(0.65)	(9.95)	(0.49)	(7.89)	(-0.66)	(6.34)
Constant	-8.592	-2.873	-7.512	-3.103	-5.100	-3.063	-12.882	15.215***
	(-1.32)	(-1.07)	(-0.82)	(-1.16)	(-0.33)	(-1.19)	(-0.30)	(4.61)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.129		0.130		0.142		0.212
Observations	3905	3905	3587	3587	2803	2803	2156	2156
F Statistics	517.55		1051.18		1449.09		1778.37	

Table 14: **Instrumental variable analysis of the relationship between investor attention and SEO underpricing**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *NumNewsIssHat [-7:-1]*, *NumNewsIssHat [-14:-1]*, *NumNewsIssHat [-30:-1]*, and *NumNewsIssHat [-60:-1]* are predicted values of investor attention variables as described in Table 1 (*NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]*) from first-stage regressions. *PriorYrNumNewsFile [-7:-1]*, *PriorYrNumNewsFile [-14:-1]*, *PriorYrNumNewsFile [-30:-1]*, and *PriorYrNumNewsFile [-60:-1]* are instrumental variables which measure investor attention one year prior to the SEO announcement date as described in Table 1. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	1st-stage	Underpricing	1st-stage	Underpricing	1st-stage	Underpricing	1st-stage	Underpricing
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.569***							
	(22.83)							
NumNewsIssHat [-7:-1]		0.090*						
		(1.78)						
PriorYrNumNewsFile [-14:-1]			0.683***					
			(32.60)					
NumNewsIssHat [-14:-1]				0.064**				
				(2.49)				
PriorYrNumNewsFile [-30:-1]					0.666***			
					(38.28)			
NumNewsIssHat [-30:-1]						0.031**		
						(2.32)		
PriorYrNumNewsFile [-60:-1]							0.840***	
							(42.41)	
NumNewsIssHat [-60:-1]								0.016**
								(2.53)
UndwrtReputation	3.468**	-5.000**	8.479***	-4.778**	10.361**	-1.540	22.102**	1.689
	(2.02)	(-2.49)	(3.31)	(-2.22)	(2.12)	(-0.62)	(2.14)	(0.62)
FirmSize	0.817***	-0.420***	1.069***	-0.427***	1.809***	-0.492***	2.496***	-0.429***
	(12.94)	(-4.53)	(11.30)	(-4.68)	(10.02)	(-4.87)	(6.32)	(-3.93)
PriorQtrEarnSurpIss	0.000	-0.284***	-0.016	-0.278***	-0.101	-0.237***	-0.159	-0.321***
	(0.01)	(-3.76)	(-0.17)	(-3.61)	(-0.59)	(-2.74)	(-0.45)	(-3.46)
PriorMktRetIss	3.240	4.366*	2.695	4.653*	2.606	3.693	10.054	1.726
	(1.60)	(1.85)	(0.91)	(1.87)	(0.47)	(1.31)	(0.82)	(0.54)
MidFilePrice	-0.001	-0.014***	0.004	-0.014**	0.005	-0.009	-0.021	-0.011
	(-0.15)	(-2.72)	(0.54)	(-2.43)	(0.42)	(-1.38)	(-0.73)	(-1.54)
Constant	-8.291	14.931**	-6.765	14.699*	-3.482	15.388**	-11.290	10.892
	(-1.28)	(1.98)	(-0.74)	(1.92)	(-0.22)	(1.96)	(-0.26)	(0.97)

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Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.227		0.243		0.288		0.326
Observations	3920	3920	3601	3601	2817	2817	2166	2166
F Statistics	521.35		1062.51		1465.18		1798.93	

Table 15: **Instrumental variable analysis of the relationship between investor attention and SEO valuation of issuing firms**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *QOPAdj* is the industry-adjusted Q ratios calculated using the SEO offer price. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and the SEO offer price. Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *NumNewsIssHat [-7:-1]*, *NumNewsIssHat [-14:-1]*, *NumNewsIssHat [-30:-1]*, and *NumNewsIssHat [-60:-1]* are predicted values of investor attention variables as described in Table 1 (*NumNewsIss [-7:-1]*, *NumNewsIss [-14:-1]*, *NumNewsIss [-30:-1]*, and *NumNewsIss [-60:-1]*) from first-stage regressions. *PriorYrNumNewsFile [-7:-1]*, *PriorYrNumNewsFile [-14:-1]*, *PriorYrNumNewsFile [-30:-1]*, and *PriorYrNumNewsFile [-60:-1]* are instrumental variables which measure investor attention one year prior to the SEO announcement date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	1st-stage	QOPAdj	1st-stage	QOPAdj	1st-stage	QOPAdj	1st-stage	QOPAdj
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PriorYrNumNewsFile [-7:-1]	0.568***							
	(22.77)							
NumNewsIss [-7:-1]		0.037*						
		(1.89)						
PriorYrNumNewsFile [-14:-1]			0.681***					
			(32.46)					
NumNewsIss [-14:-1]				0.016*				
				(1.67)				
PriorYrNumNewsFile [-30:-1]					0.664***			
					(38.13)			
NumNewsIss [-30:-1]						0.007		
						(1.47)		
PriorYrNumNewsFile [-60:-1]							0.838***	
							(42.24)	
NumNewsIss [-60:-1]								0.004*
								(1.89)
Underpricing	0.020	-0.011*	0.052***	-0.009	0.106***	-0.008	0.157*	-0.015**
	(1.48)	(-1.72)	(2.63)	(-1.48)	(2.86)	(-1.15)	(1.91)	(-2.15)
UndwrtReputation	3.550**	4.005***	8.723***	3.714***	10.428**	2.715***	21.760**	2.291***
	(2.06)	(5.21)	(3.40)	(4.54)	(2.13)	(3.11)	(2.10)	(2.63)
FirmSize	0.827***	-0.503***	1.089***	-0.476***	1.857***	-0.418***	2.549***	-0.404***
	(13.03)	(-14.09)	(11.48)	(-13.69)	(10.24)	(-11.68)	(6.43)	(-11.47)
PriorQtrEarnSurpIss	0.006	0.019	-0.001	0.017	-0.076	-0.010	-0.106	-0.025
	(0.09)	(0.66)	(-0.01)	(0.60)	(-0.44)	(-0.33)	(-0.30)	(-0.83)

PriorMktRetIss	3.040	-0.091	2.305	-0.207	2.282	-0.179	9.814	0.169
	(1.50)	(-0.10)	(0.78)	(-0.22)	(0.41)	(-0.18)	(0.80)	(0.16)
MidFilePrice	-0.000	0.030***	0.004	0.030***	0.006	0.025***	-0.019	0.021***
	(-0.07)	(15.17)	(0.65)	(13.89)	(0.49)	(10.68)	(-0.66)	(8.78)
Constant	-8.597	-1.616	-7.520	-1.866	-5.114	-1.664	-12.899	15.372***
	(-1.32)	(-0.56)	(-0.82)	(-0.64)	(-0.33)	(-0.60)	(-0.30)	(4.28)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2		0.119		0.117		0.123		0.172
Observations	3911	3911	3593	3593	2809	2809	2161	2161
F Statistics	518.49		1053.76		1453.65		1783.83	

Appendices

A   List of Constants in Propositions and Proofs

$$A_a \equiv f^a(\sigma_1^a)^{-2}[1 + \rho^{-2}(\sigma_1^a)^{-2}\sigma_x^{-2}] > 0, \tag{A.1}$$

$$A_u \equiv f^u\sigma_0^{-2}[1 + \frac{\frac{1}{2}\sigma_0^{-2}}{\rho^2\sigma_x^2 + \frac{1}{2}\sigma_e^{-2}}] > 0, \tag{A.2}$$

$$B_0 \equiv \frac{A_a(\sigma_1^a)^2 + A_u\sigma_0^2}{A_a + A_u} > 0, \tag{A.3}$$

$$B_1 \equiv \frac{A_a(\sigma_1^a)^2 + f^u}{A_a + A_u} > 0, \tag{A.4}$$

$$E \equiv \frac{A_a}{f^a}(\frac{A_u}{A_a + A_u})^2 + (\sigma_1^a)^{-2}\sigma_e^2\sigma_0^{-2} > 0, \tag{A.5}$$

$$F_0 = \frac{A_u}{A_a + A_u}[\frac{A_a}{f^a}B_0 - \frac{A_a}{f^a}(\sigma_1^a)^2 + 1], \tag{A.6}$$

$$F_1 = \frac{A_u}{A_a + A_u}[\frac{A_a}{f^a}B_1 - \frac{A_a}{f^a}(\sigma_1^a)^2 + 1], \tag{A.7}$$

$$G \equiv \frac{A_a}{f^a}[B_1 - (\sigma_1^a)^2]^2 + 2B_1 - (\sigma_1^a)^2 - \frac{F_1^2}{E} + \rho^{-2}\sigma_x^{-2}, \tag{A.8}$$

$$H_0 \equiv B_1 + \frac{A_a}{A_a + A_u}\frac{F_1}{E}, \tag{A.9}$$

$$H_1 \equiv -\frac{A_a}{f^a}B_0B_1 + \rho^{-2}(\sigma_1^a)^{-2}\sigma_x^{-2}(B_0 + B_1) - \rho^{-2}\sigma_x^{-2} + \frac{F_0F_1}{E}, \tag{A.10}$$

$$J \equiv \frac{A_u}{f^u}(\frac{A_a}{A_a + A_u})^2 + (\sigma_1^a)^{-2}\sigma_e^2\sigma_0^{-2} > 0, \tag{A.11}$$

$$K \equiv \frac{A_u}{f^u}\frac{B_1^2}{J}(\sigma_1^a)^{-2}\sigma_e^2\sigma_0^{-2} + \rho^{-2}\sigma_x^{-2} > 0, \tag{A.12}$$

$$L_0 \equiv \frac{B_1}{J}(\sigma_1^a)^{-2}\sigma_e^2\sigma_0^{-2}, \tag{A.13}$$

$$P_a \equiv f^a[\frac{1}{E}(\frac{A_a}{A_a + A_u})^2 + \frac{H_0^2}{G}]^{-1}, \tag{A.14}$$

$$Q_a \equiv f^a[\frac{1}{E}(\frac{A_a}{A_a + A_u})^2 + \frac{H_0^2}{G}]^{-1}(B_0 + \frac{A_a}{A_a + A_u}\frac{F_0}{E} + \frac{H_0H_1}{G}), \tag{A.15}$$

$$P_u \equiv f^u[\frac{1}{J}(\frac{A_a}{A_a + A_u})^2 + \frac{L_0^2}{K}]^{-1}, \tag{A.16}$$

$$Q_u \equiv f^u\{B_0[\frac{1}{J}(\frac{A_a}{A_a + A_u})^2 + \frac{L_0^2}{K}]^{-1} - \frac{A_u}{f^u}(B_0 - \sigma_0^2)1\}. \tag{A.17}$$

Both A_a and A_u are positive because they both consist of sums and products of variances terms (σ's) and positive parameters (ρ, f^a, and f^u). This further confirms the positivity of B_0, B_1, E, J, and K.

B   Proof of Propositions

Proof of Proposition 1. We solve the investors' utility maximization problems (UMP) backwards.

- At $t = 2$, an investor of type i (for both $i = a$ and $i = u$) solves the following UMP

$$\max_{D_2^i} E_2^i[-\exp(-\rho W_3^i)], \text{ where } W_3^i = W_2^i + D_2^i(f - S_2) \tag{B.1}$$

The only random component here is $f = \mu + z$, which follows normal distribution, hence the above UMP is equivalent to

$$\max_{D_2^i} D_2^i(\mu + E_2^i[z] - S_2) - \frac{\rho}{2} D_2^i V_2^i[z] D_2^i = D_2^i(\mu + \hat{z}_2 - S_2) - \frac{\rho}{2}(D_2^i)^2 \sigma_2^2 \tag{B.2}$$

By the standard optimization procedure, the optimal demand is therefore

$$D_2^i = \frac{\mu + \hat{z}_2 - S_2}{\rho \sigma_2^2}, \text{ for } i = a, u. \tag{B.3}$$

To clear the markets, $\sum\limits_{i=a,u} D_2^i = \bar{x} + x_1 + x_2$, hence

$$\bar{x} + x_1 + x_2 = \frac{\mu + \hat{z}_2 - S_2}{\rho \sigma_2^2}, \tag{B.4}$$

and the equilibrium price at $t = 2$ is therefore

$$S_2 = \mu + \hat{z}_2 - \rho \sigma_2^2(\bar{x} + x_1 + x_2). \tag{B.5}$$

The consequent value function (optimized utility), after substituting in (B.3) and (B.5), is

$$E_2^i[-\exp(-\rho W_3^i)] = -\exp\{-\rho W_2^i - \frac{1}{2}\rho^2 \sigma_2^2(\bar{x} + x_1 + x_2)^2\} \tag{B.6}$$

- At $t = 1$, an investor of type i maximizes the following expected utility

$$E_1^i[-\exp(-\rho W_3^i)] = E_1^i[-\exp\{-\rho W_2^i - \frac{1}{2}\rho^2 \sigma_2^2(\bar{x} + x_1 + x_2)^2\}]. \tag{B.7}$$

Since the information set of an investor (and thus the corresponding posterior belief on z) depends on the type of the investor, the calculation for (B.7) is carried out separately for type $i = a$ and type $i = u$.

Type-a investors. As to be confirmed, the equilibrium price follows a linear structure that combines the public signal e_1 and the supply shock x_1. Once an attentive investor correctly observes

the public signal e_1, he/she can back out the contemporaneous supply shock x_1 from the equilibrium price. Hence, the supply shock x_1 is essentially "known" to a type-a investor and not a random variable in his/her UMP at $t = 1$, and the only relevant random variable here is $x_2 \sim (0, \sigma_x^2)$. Therefore, continuing from (B.7), we get

$$
\begin{aligned}
E_1^a[-\exp(-\rho W_3^a)] \quad \propto \quad &-\exp\Big(-\rho\{W_1^a + D_1^a[\mu + \hat{z}_1^a - \rho(\sigma_1^a)^2(\bar{x} + x_1) - S_1] + \frac{\rho}{2}(\sigma_1^a)^2(\bar{x} + x_1)^2\} \\
&+ \frac{1}{2}\rho^2(\sigma_1^a)^2[1 + \rho^{-2}(\sigma_1^a)^{-2}\sigma_x^{-2}]^{-1}[D_1^a - (\bar{x} + x_1)]^2\Big)
\end{aligned} \tag{B.8}
$$

The standard optimization procedure derives the optimal demand by an attentive investor as

$$
D_1^a = \rho^{-1}\frac{A_a}{f^a}(\mu + \hat{z}_1^a - S_1) - [\frac{A_a}{f^a}(\sigma_1^a)^2 - 1](\bar{x} + x_1), \tag{B.9}
$$

where we applied the constants A_a and A_u as defined in Appendix A.

Type-u investors. Inattentive investors are not aware of the SEO announcement immediately at $t = 1$, thus they are unable to back out the exact number of x_1 from the equilibrium price contemporaneously either.[18] Therefore, the calculation of (B.7) for $i = u$ involves taking two expectations: one with respect to the random variable $\hat{z}_2 = \sigma_2^2\sigma_e^{-2}e_1 \sim N(0, \sigma_2^4\sigma_e^{-4}(\sigma_0^2 + \sigma_e^2))$, the other with respect to the random variable $x_1 + x_2 \sim N(0, 2\sigma_x^2)$. Indeed,

$$
\begin{aligned}
E_1^u[-\exp(-\rho W_3^u)] \quad \propto \quad &-\exp\Big(-\rho\{W_1^u + D_1^u[\mu - \rho\sigma_2^2\bar{x} - S_1] + \frac{\rho}{2}\sigma_2^2\bar{x}^2\} \\
&+ \frac{\rho^2}{2}(D_1^u)^2\sigma_2^2\sigma_e^{-2}\sigma_0^2 + \frac{1}{2}[\rho^2\sigma_2^2 + \frac{1}{2}\sigma_x^{-2}]^{-1}\rho^4\sigma_2^4(D_1^u - \bar{x})^2\Big) \tag{B.10}
\end{aligned}
$$

The standard optimization procedure implies the optimal demand by an inattentive investor as

$$
D_1^u = \rho^{-1}\frac{A_u}{f^u}(\mu - S_1) - [\frac{A_u}{f^u}\sigma_0^2 - 1]\bar{x}. \tag{B.11}
$$

The equilibrium price of the risky asset at $t = 1$ is thus

$$
S_1 = \mu + \frac{A_a}{A_a + A_u}\hat{z}_1^a - \rho(B_0\bar{x} + B_1 x_1), \tag{B.12}
$$

assuming the market clearing condition $\bar{x} + x_1 = f^a D_1^a + f^u D_1^u$ holds.

- At $t = 0$, all investors maximize their expected utility based on their prior belief on the

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[18]At $t = 2$, however, as inattentive investors realized that they missed the SEO announcement at $t = 1$, they could retroactively find the value of x_1 when they looked back at S_1, and thus when they make their portfolio rebalance decision at $t = 2$, x_2 (rather than $x_1 + x_2$ as a whole) is the only random component they do not know directly (but then can be learned from the equilibrium price S_2, same as for type-a investors).

fundamental value of the firm's stock. The calculation is in principle similar to the one for $t = 1$.

Type-a investors. The calculation of $E_0^a[-\exp(-\rho W_3^a)]$ consists of two expectations of $E_1^a[-\exp(-\rho W_3^a)]$: one with respect to $\hat{z}_1^a \sim N(0, \sigma_2^4 \sigma_e^{-4}(\sigma_0^2 + \sigma_e^2))$, the other with respect to $x_1 \sim N(0, \sigma_x)$. In fact,

$$
\begin{aligned}
E_0^a[-&\exp(-\rho W_3^a)] \\
&\propto -\exp\Big(-\rho D_0^a(\mu - \rho B_0 \bar{x} - S_0) + \frac{1}{2E}[\rho^2 (D_0^a)^2 (\frac{A_a}{A_a + A_u})^2 + 2\rho^2 D_0^a \frac{A_a}{A_a + A_u} F_0 \bar{x}] \\
&\quad + \frac{\rho^2}{2G}(H_0 D_0^a + H_1 \bar{x})^2\Big)
\end{aligned}
\tag{B.13}
$$

By maximizing (B.13), we obtain the optimal demand of a type-a investor at $t = 0$ as

$$
D_0^a = \rho^{-1} \frac{P_a}{f^a}(\mu - S_0) - \frac{Q_a}{f^a}\bar{x}.
\tag{B.14}
$$

Type-u investors. The calculation for $E_0^u[-\exp(-\rho W_3^u)]$ is in essence similar to that for $E_0^a[-\exp(-\rho W_3^a)]$, and we eventually obtain the UMP as

$$
E_0^u[-\exp(-\rho W_3^u)] = -\exp\{-\rho D_0^u(\mu - \rho B_0 \bar{x} - S_0) + \frac{\rho^2}{2K}(L_0 D_0^u + L_1 \bar{x})^2\},
\tag{B.15}
$$

and the optimal demand of a type-u investor at $t = 0$ as

$$
D_0^u = \rho^{-1} \frac{P_u}{f^u}(\mu - S_0) - \frac{Q_u}{f^u}\bar{x},
\tag{B.16}
$$

The market clearing condition $f^a D_0^a + f^u D_0^u = \bar{x}$ implies that the equilibrium price at $t = 0$ is

$$
S_0 = \mu - \rho \frac{Q_a + Q_u + 1}{P_a + P_u}\bar{x}.
\tag{B.17}
$$

This completes the proof for Proposition 1.

Proof of Proposition 2.

(i) The calculation of (19) is straightforward by taking the difference between (11) and (12) and then setting both of $\bar{x}$ and x_1 to zero, i.e.,

$$
(S_1 - S_0)|_{\bar{x}=x_1=0} = \frac{A_a}{A_a + A_u} \frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} e_1.
\tag{B.18}
$$

From the discussion in Appendix A, both A_a and A_u are positive, and thus the coefficient of e_1 is positive. Since $e_1 < 0$, the right hand side of (B.18) is negative.

(ii) For any given e_1, the magnitude of the abnormal stock return (B.18) depends on the coefficient of e_1, and it suffices to show that this coefficient is an increasing function of f^a. In fact,

$$\frac{\partial}{\partial f^a}\left(\frac{A_a}{A_a + A_u}\frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}}\right) = \frac{A_a A_u}{f^a f^u (A_a + A_u)^2}\frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} > 0, \tag{B.19}$$

where we apply the fact that $f^u = 1 - f^a$ and the positivity of constants A_a and A_u (as discussed in Appendix A).

This completes the proof of Proposition 2.

Proof of Proposition 3.

(i) The calculation of (21) is by taking the difference between (10) and (11) and then setting all of $\bar{x}$, x_1, and x_2 to zero, i.e.,

$$(S_2 - S_1)|_{\bar{x}=x_1=x_2=0} = \frac{A_u}{A_a + A_u}\frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}}e_1. \tag{B.20}$$

From the discussion in Appendix A, both A_a and A_u are positive, and thus the coefficient of e_1 is positive. Since $e_1 < 0$, the right hand side of (B.20) is negative.

(ii) For any given e_1, the magnitude of the post-announcement drift (B.20) depends on the coefficient of e_1, and it suffices to show that this coefficient is a decreasing function of f^a. In fact,

$$\frac{\partial}{\partial f^a}\left(\frac{A_u}{A_a + A_u}\frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}}\right) = -\frac{A_a A_u}{f^a f^u (A_a + A_u)^2}\frac{\sigma_0^{-2} + \sigma_e^{-2}}{\sigma_e^{-2}} < 0, \tag{B.21}$$

where we apply the fact that $f^u = 1 - f^a$ and the positivity of constants A_a and A_u (as discussed in Appendix A).

This completes the proof of Proposition 3.

C   Online Appendix: Additional Empirical Results

Table C.1: **Relationship between abnormal investor attention and post-SEO participation of institutional investors in the ownership of issuing firms' equity**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *InstN* is the number of institutional investors holding SEO firms' shares at the end of the first post-issue fiscal quarter. *AbnNumNewsIss [-7:-1]*, *AbnNumNewsIss [-14:-1]*, *AbnNumNewsIss [-30:-1]*, and *AbnNumNewsIss [-60:-1]* are measures of abnormal investor attention prior to the SEO issue date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	InstN							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AbnNumNewsIss [-7:-1]	2.421***	2.440***						
	(8.70)	(8.74)						
AbnNumNewsIss [-14:-1]			1.550***	1.558***				
			(7.37)	(7.39)				
AbnNumNewsIss [-30:-1]					0.504***	0.505***		
					(3.45)	(3.44)		
AbnNumNewsIss [-60:-1]							0.361***	0.359***
							(3.70)	(3.67)
Underpricing		0.599**		0.647***		0.620**		0.580*
		(2.58)		(2.71)		(2.19)		(1.70)
UndwrtReputation	21.500	23.189	29.579	31.053	76.068**	75.535**	79.412*	76.987*
	(0.75)	(0.81)	(0.97)	(1.02)	(2.09)	(2.07)	(1.88)	(1.82)
FirmSize	47.181***	47.285***	47.740***	47.854***	49.835***	49.989***	51.592***	51.704***
	(45.33)	(45.16)	(43.51)	(43.38)	(37.98)	(37.79)	(33.20)	(33.00)
PriorQtrEarnSurpIss	-2.003*	-1.736	-1.924	-1.642	-1.796	-1.549	-2.280	-2.036
	(-1.69)	(-1.46)	(-1.61)	(-1.37)	(-1.30)	(-1.12)	(-1.50)	(-1.33)
PriorMktRetIss	7.363	2.939	17.214	12.219	41.214	37.114	35.144	31.680
	(0.22)	(0.09)	(0.49)	(0.35)	(1.00)	(0.90)	(0.70)	(0.63)
MidFilePrice	1.017***	1.028***	1.058***	1.069***	1.221***	1.231***	1.301***	1.312***
	(13.62)	(13.75)	(13.25)	(13.38)	(12.51)	(12.59)	(11.02)	(11.08)
Constant	-291.507***	-299.458***	-307.050***	-315.648***	-339.162***	-348.055***	-379.480*	-490.675***

	(-2.72)	(-2.79)	(-2.86)	(-2.94)	(-2.95)	(-3.02)	(-1.86)	(-2.84)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.709	0.709	0.718	0.718	0.744	0.744	0.760	0.759
Observations	3883	3854	3569	3541	2796	2770	2156	2132

Table C.2: **Relationship between abnormal investor attention and post-SEO market valuation of issuing firms**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *QFTDAdj* and *QFQAdj* are the industry-adjusted Q ratios calculated using the SEO issue day closing price and the price at the end of the first post-issue fiscal quarter, respectively. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and either the SEO issue day closing price (*QFTDAdj*) or the price at the end of the first post-issue fiscal quarter (*QFQAdj*). Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *AbnNumNewsIss [-7:-1]*, *AbnNumNewsIss [-14:-1]*, *AbnNumNewsIss [-30:-1]*, and *AbnNumNewsIss [-60:-1]* are measures of abnormal investor attention prior to the SEO issue date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Relationship between abnormal investor attention and post-SEO market valuation measured using the first trading day closing price

Dependent Variable	QFTDAdj							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AbnNumNewsIss [-7:-1]	0.026***	0.025***						
	(3.00)	(2.98)						
AbnNumNewsIss [-14:-1]			0.023***	0.023***				
			(3.55)	(3.49)				
AbnNumNewsIss [-30:-1]					0.015***	0.014***		
					(3.60)	(3.53)		
AbnNumNewsIss [-60:-1]							0.006**	0.006**
							(2.37)	(2.34)
Underpricing		0.013*		0.015**		0.015**		0.009
		(1.91)		(2.01)		(1.97)		(1.09)
UndwrtReputation	4.056***	4.130***	3.659***	3.735***	2.666***	2.703***	2.319**	2.326**
	(4.63)	(4.71)	(3.90)	(3.98)	(2.62)	(2.66)	(2.26)	(2.26)
FirmSize	-0.494***	-0.492***	-0.479***	-0.477***	-0.422***	-0.419***	-0.395***	-0.396***
	(-15.68)	(-15.56)	(-14.33)	(-14.22)	(-11.67)	(-11.54)	(-10.56)	(-10.54)
PriorQtrEarnSurpIss	0.014	0.018	0.013	0.017	-0.015	-0.011	-0.029	-0.026
	(0.43)	(0.55)	(0.38)	(0.50)	(-0.43)	(-0.32)	(-0.84)	(-0.75)

PriorMktRetIss	-0.059	-0.095	-0.194	-0.239	-0.326	-0.349	-0.076	-0.054
	(-0.06)	(-0.09)	(-0.18)	(-0.22)	(-0.28)	(-0.30)	(-0.06)	(-0.04)
MidFilePrice	0.031***	0.031***	0.031***	0.031***	0.025***	0.025***	0.021***	0.022***
	(13.73)	(13.82)	(12.51)	(12.60)	(9.33)	(9.41)	(7.62)	(7.69)
Constant	-1.576	-1.751	-1.737	-1.926	-1.536	-1.745	15.561***	15.490***
	(-0.48)	(-0.53)	(-0.52)	(-0.58)	(-0.48)	(-0.54)	(3.68)	(3.67)
Industry $\times$ Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.117	0.119	0.115	0.117	0.122	0.125	0.173	0.175
Observations	3915	3911	3597	3593	2813	2809	2163	2161

Panel B: Relationship between abnormal investor attention and post-SEO market valuation measured using the price at the end of the first post-issue fiscal quarter

Dependent Variable	QFQAdj							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AbnNumNewsIss [-7:-1]	0.011	0.012						
	(1.49)	(1.51)						
AbnNumNewsIss [-14:-1]			0.010*	0.011*				
			(1.82)	(1.90)				
AbnNumNewsIss [-30:-1]					0.006	0.006		
					(1.56)	(1.51)		
AbnNumNewsIss [-60:-1]							0.002	0.002
							(1.01)	(1.00)
Underpricing		0.005		0.007		0.012*		0.004
		(0.75)		(1.03)		(1.69)		(0.55)
UndwrtReputation	4.157***	4.157***	3.570***	3.569***	2.496***	2.479***	2.137**	2.087**
	(5.32)	(5.31)	(4.27)	(4.26)	(2.73)	(2.71)	(2.32)	(2.27)
FirmSize	-0.453***	-0.451***	-0.435***	-0.433***	-0.399***	-0.394***	-0.384***	-0.381***
	(-16.13)	(-15.97)	(-14.64)	(-14.48)	(-12.32)	(-12.07)	(-11.53)	(-11.38)
PriorQtrEarnSurpIss	0.003	0.004	0.002	0.003	-0.015	-0.013	-0.020	-0.019
	(0.09)	(0.13)	(0.06)	(0.12)	(-0.48)	(-0.40)	(-0.65)	(-0.61)
PriorMktRetIss	0.013	-0.033	-0.013	-0.072	-0.120	-0.277	0.559	0.391
	(0.01)	(-0.04)	(-0.01)	(-0.07)	(-0.12)	(-0.27)	(0.51)	(0.36)
MidFilePrice	0.021***	0.021***	0.019***	0.020***	0.017***	0.017***	0.014***	0.014***
	(10.50)	(10.54)	(8.92)	(8.97)	(6.92)	(6.98)	(5.45)	(5.49)
Constant	-3.123	-3.192	-3.169	-3.266	-3.048	-3.226	10.440**	14.953***
	(-1.06)	(-1.08)	(-1.07)	(-1.10)	(-1.05)	(-1.12)	(2.34)	(3.97)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.131	0.129	0.131	0.129	0.144	0.141	0.215	0.209
Observations	3934	3905	3615	3587	2829	2803	2180	2156

Table C.3: **Relationship between abnormal investor attention and SEO underpricing**

The sample consists of seasoned equity offerings (SEO) conducted in 2000 - 2018. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *AbnNumNewsIss [-7:-1]*, *AbnNumNewsIss [-14:-1]*, *AbnNumNewsIss [-30:-1]*, and *AbnNumNewsIss [-60:-1]* are measures of abnormal investor attention prior to the SEO issue date as described in subsection 6. *UndwrtReputation* is the reputation measure of the lead underwriter, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in the previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO issue date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean estimates of earnings and actual earnings adjusted by price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	Underpricing			
	(1)	(2)	(3)	(4)
AbnNumNewsIss [-7:-1]	0.021			
	(0.97)			
AbnNumNewsIss [-14:-1]		0.032*		
		(1.95)		
AbnNumNewsIss [-30:-1]			0.021*	
			(1.86)	
AbnNumNewsIss [-60:-1]				0.010
				(1.45)
UndwrtReputation	-4.842**	-4.661*	-1.613	1.593
	(-2.20)	(-1.95)	(-0.58)	(0.51)
FirmSize	-0.326***	-0.324***	-0.394***	-0.326***
	(-4.11)	(-3.81)	(-3.97)	(-2.88)
PriorQtrEarnSurpIss	-0.287***	-0.283***	-0.242**	-0.327***
	(-3.45)	(-3.31)	(-2.48)	(-3.09)
PriorMktRetIss	4.717*	4.997*	3.844	1.855
	(1.83)	(1.81)	(1.22)	(0.50)
MidFilePrice	-0.014**	-0.014**	-0.009	-0.012
	(-2.52)	(-2.22)	(-1.28)	(-1.42)
Constant	14.172*	14.020*	14.711*	9.903
	(1.71)	(1.65)	(1.67)	(0.78)
Industry × Year FE	Yes	Yes	Yes	Yes
R^2	0.227	0.241	0.285	0.324
Observations	3920	3601	2817	2166

Table C.4: **Relationship between abnormal investor attention and SEO valuation of issuing firms**

The sample consists of seasoned equity offerings (SEO) conducted in 2000-2018. *QOPAdj* is the industry-adjusted Q ratios calculated using the SEO offer price. Q ratio is defined as the market value of assets over the book value of assets, where the market value of assets is equal to the book value of assets minus the book value of equity plus the product of the number of shares outstanding and the SEO offer price. Industry adjustment is performed by subtracting contemporaneous 2-digit SIC code industry median Q ratios from SEO firms' Q ratios. *AbnNumNewsIss [-7:-1]*, *AbnNumNewsIss [-14:-1]*, *AbnNumNewsIss [-30:-1]*, and *AbnNumNewsIss [-60:-1]* are measures of abnormal investor attention prior to the SEO issue date as described in Table 1. *Underpricing* is the percentage difference between the issue day closing price and the SEO offer price. *UndwrtReputation* is the lead SEO underwriter's reputation measure, which is defined as the lead underwriter's share of total proceeds raised in the SEO market in previous five years. *FirmSize* is the natural logarithm of the book value of total assets at the end of the fiscal quarter prior to the SEO announcement date. *PriorQtrEarnSurpIss* is the earnings surprise one quarter prior to the SEO issue date. Earnings surprise is defined as the difference between the mean earnings estimate and actual earnings divided by the stock price. *PriorMktRetIss* is the return on the CRSP value-weighted index over one-month (21-trading-day) period prior to the SEO issue date. *MidFilePrice* is the midpoint of initial filing range. Year × industry (two-digit SIC code) fixed effects are included in all regressions. *t*-statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	QOPAdj							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AbnNumNewsIss [-7:-1]	0.024***	0.024***						
	(2.97)	(2.97)						
AbnNumNewsIss [-14:-1]			0.022***	0.022***				
			(3.54)	(3.60)				
AbnNumNewsIss [-30:-1]					0.014***	0.014***		
					(3.61)	(3.58)		
AbnNumNewsIss [-60:-1]							0.006**	0.006**
							(2.39)	(2.42)
Underpricing		-0.010		-0.009		-0.008		-0.014*
		(-1.46)		(-1.29)		(-1.02)		(-1.81)
UndwrtReputation	4.090***	4.009***	3.695***	3.612***	2.645***	2.582***	2.238**	2.193**
	(4.85)	(4.75)	(4.10)	(4.00)	(2.71)	(2.64)	(2.25)	(2.20)
FirmSize	-0.471***	-0.474***	-0.456***	-0.459***	-0.402***	-0.404***	-0.380***	-0.384***
	(-15.53)	(-15.54)	(-14.21)	(-14.21)	(-11.58)	(-11.55)	(-10.52)	(-10.54)
PriorQtrEarnSurpIss	0.021	0.018	0.019	0.016	-0.009	-0.011	-0.021	-0.026
	(0.65)	(0.56)	(0.59)	(0.50)	(-0.26)	(-0.31)	(-0.62)	(-0.76)
PriorMktRetIss	-0.043	0.009	-0.186	-0.137	-0.140	-0.156	0.200	0.169
	(-0.04)	(0.01)	(-0.18)	(-0.13)	(-0.13)	(-0.14)	(0.17)	(0.14)
MidFilePrice	0.030***	0.030***	0.030***	0.029***	0.025***	0.024***	0.021***	0.021***
	(13.83)	(13.73)	(12.59)	(12.51)	(9.49)	(9.44)	(7.74)	(7.66)

Constant	-1.963	-1.824	-2.113	-1.987	-1.969	-1.858	10.666**	15.131***
	(-0.62)	(-0.57)	(-0.66)	(-0.62)	(-0.64)	(-0.60)	(2.21)	(3.69)
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.118	0.117	0.117	0.116	0.124	0.123	0.172	0.171
Observations	3940	3911	3621	3593	2835	2809	2185	2161