The Role of Institutional Investors in Seasoned Equity Offerings

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Abstract

We make use of a large sample of transaction-level institutional trading data to study the role of institutional investors in SEOs, and in particular, to distinguish between a "manipulative trading" role and an "information production" role, as postulated by the theoretical literature on SEOs. Our data allow us to explicitly identify institutional SEO share allocations for the first time in the literature. We study whether institutional investors have private information about SEOs, and its consequences for: SEO share allocation; institutional trading before and after the SEO and realized trading profitability; and the SEO discount. Our results can be summarized as follows. First, institutions are able to identify and obtain more allocations in SEOs with better long-term returns. Second, more pre-offer net buying of the SEO firm's equity by institutional investors is associated with more institutional SEO share allocations, and also more post-offer net buying. Third, institutions flip only a very small fraction of their SEO share allocations: 3.20 percent during the first two days post-SEO. However, this lack of flipping does not appear to be costly to institutional investors: there is no significant difference between the extent of underpricing and the realized profitability of institutional SEO share allocation sales. Fourth, institutional investors' post-SEO trading significantly outperforms a naive buy-and-hold trading strategy in SEOs. Further, the profitability of post-offer trading in SEOs where institutions obtained allocations is higher than that of trading in SEOs where they did not obtain allocations. Finally, more pre-offer institutional net buying and larger institutional SEO share allocations are associated with a smaller SEO discount. Overall, our results are consistent with an information production rather than a manipulative trading role for institutional investors in SEOs.

JEL classification: G32, G24, G14

Keywords: Seasoned Equity Offerings, Institutional investors, Manipulative trading, Information production, SEO allocations, SEO discount and underpricing

1. Introduction

The role of institutional investors in financial markets and in equity offerings in particular has increased dramatically in recent years. For example, in 2003 institutional investors controlled 59.2 percent of the equity outstanding in the U.S. ($7.97 trillion), compared to only 28.4 percent or $376 billion in 1980 (Gompers and Metrick (2001)).[1] Further, investment banks often allocate equity in initial public offerings (IPOs) predominantly to institutional investors (Aggarwal, Prabhala, and Puri (2002)). Reflecting the above importance of institutional investors, there has been considerable research on the role of institutional investors in IPOs. In particular, starting with Rock (1986) and Benveniste and Spindt (1989), a number of papers in the theoretical IPO literature have analyzed the role of informed institutional investors in IPOs. More recently, there has also been significant empirical research on the role of institutional investors in IPOs: see, e.g., Aggarwal, Prabhala, and Puri (2002) on institutional share allocation in IPOs and Chemmanur and Hu (2006) on institutional trading around IPOs; see Ritter and Welch (2002) for a review of the IPO literature. Surprisingly, however, there has been considerably less research, especially empirical, on the role of institutional investors in seasoned equity offerings (SEOs).[2] The objective of this paper is to fill this gap in the literature by analyzing empirically the role of institutional investors in SEOs, making use of a large sample of transaction-level institutional trading data, for the first time in the literature.

SEOs differ from IPOs in two important ways. First, SEOs are made by firms which have matured beyond the IPO, having a significant track record of financial and operating performance at the time of the SEO. Second, the issuing firm's shares already trade in the equity market prior to the SEO, unlike in the case of an IPO, where there is no such trading in most countries. The above two differences

[1] See also the 2005 Institutional Investment Report: U.S. and International Trends – Report 1376, The Conference Board.

[2] There is, of course, an extensive literature on seasoned equity offerings in general. There are several strands in this literature. The first strand is the literature on the announcement effect of SEOs: see, e.g., Myers and Majluf (1984) and Giammarino and Lewis (1989) for theoretical models, and Asquith and Mullins (1986) for an empirical analysis. The second strand is the literature on the SEO discount and the SEO offering process, reviewed in detail later in this introduction. Finally, there is a third strand on the long-term post-issue underperformance of SEOs: see, e.g., Carlson, Fisher, and Giammarino (2006) for a theoretical analysis and Loughran and Ritter (1995) for an empirical analysis.

have several important economic consequences for SEOs. First, given that more information is available to all outside investors about firms making SEOs, the extent of information asymmetry facing uninformed (retail) investors about the prospect of SEO firms is likely to be smaller compared to that about firms making IPOs. This means that any informational advantage of institutional investors over retail investors may potentially be lower in the context of SEOs compared to IPOs. Second, assuming that institutional investors do indeed possess private information about firms making SEOs as well as IPOs, there are significant differences in the manner in which they may exploit this private information for profit. In particular, informed investors can trade on their private information in the pre-offer market in the case of SEOs, but cannot do so in the case of IPOs (given that such pre-offer equity market trading is absent in IPOs). In other words, while institutional investors can exploit their private information in both the pre-offer market and the equity offering itself in the case of SEOs, they can do so only in the equity offering in the case of IPOs.

Third, given the above likelihood that at least some of the information possessed by institutional investors will be reflected in pre-offer market prices (and trading volume) due to institutional investors exploiting their information through pre-offer trading in SEOs, issuers can use these variables to infer this information, and potentially use it to set their firm's SEO offer price. This contrasts with the IPO situation, where (as modeled by Benveniste and Spindt (1989) and others) issuers need to rely solely on various information revelation mechanisms to extract institutional investors' private information. Fourth, the possibility of issuers inferring institutional investors' private information from pre-offer equity market prices and trading volume in the context of SEOs brings up the possibility of attempts at SEO price manipulation by institutional investors by trading in the pre-offer market *against* their private information (for example, by selling shares in SEO firms about which they have favorable private information).[3] Clearly, given the absence of a pre-offer equity market in IPOs, such price manipulation is not a concern in IPOs. Fifth, given that, unlike in IPOs, institutional investors can acquire shares in the firm making an

[3] In an attempt to minimize such market manipulation, the SEC recently approved a rule change barring the purchase of shares in an offering by anyone who sold the shares short during a restricted period. See the *Wall Street Journal* June 21, 2007 article, "SEC Revises Rule On Short Selling."

SEO in the pre-offer market, the relationship between institutional share allocation across various categories of SEOs, SEO pricing, and institutional trading in the SEO firm's equity after the offering are likely to be quite different from the corresponding relationships in IPOs. Finally, the existence of pre-offer equity market trading in the context of SEOs gives rise to an important SEO phenomenon, namely, the SEO discount: i.e., the fact that the offer price in SEOs is set, on average, below the closing price on the previous day (a phenomenon which clearly does not exist in the case of IPOs, given the absence of pre-offer trading).

The above important economic differences between SEOs and IPOs and the role played by institutional investors in these equity offerings give rise to three sets of interesting empirical research questions. The first set of research questions pertains to whether institutional investors indeed have private information about SEOs and the consequences of this private information on share allocation. In other words, are institutional investors able to identify and obtain more allocations in better SEOs? The second set of research questions pertains to how institutions make use of their private information (if any) to trade in the equity of SEO firms before and after the SEO, and the profitability of such trading. In particular, what is the relationship between pre-offer institutional trading, institutional SEO share allocations, and post-offer institutional trading? What is the pattern of institutional selling of their SEO share allocations over time? Finally, are they able to realize superior profits from trading in these SEOs: either from selling their SEO share allocations, or from post-SEO trading in the equity of these firms (i.e., buying and selling shares in the stock market post-SEO), or both?[4] The third set of research questions relates to the effect of institutional private information on an important SEO phenomenon, namely, the SEO discount: i.e., the fact that the offer price in SEOs is set, on average, below the closing price on the previous day. In particular, what is the relationship between pre-offer institutional trading, institutional SEO share allocations, and the SEO discount?

[4] The realized profitability of institutional trading in SEOs has not been studied before in the literature, and is particularly important to study in the context of the well-documented long-term underperformance of SEOs (see, e.g., Loughran and Ritter (1995)).

In this paper, we make use of a large sample of transaction-level institutional trading data to answer many of the above questions. Our data include transactions from January 1999 to December 2005 originated from 786 different institutions with over $5.5 trillion annualized trading in U.S. equity market. For sample SEOs, these institutions collectively account for about 12 percent of total trading as reported by CRSP. With this dataset, we are able to track institutional trading in SEOs before and after the offer during the 1999-2005 period and gauge their realized trading profits. We are able to incorporate the impact of trading commissions and taxes and fees on realized institutional trading profitability.[5] We are also able to study institutional SEO share allocations. As we have mentioned before, while there is a recent literature studying issues like institutional IPO share allocation, institutional post-IPO trading, and the relationship of the above to long-term post-IPO returns, these issues have not been explored in the context of SEOs. Given this, and given the significant economic differences between IPOs and SEOs discussed above, our paper makes an important contribution by studying these and related issues in the context of SEOs for the first time in the literature.

We base many of the hypotheses we test in this paper on two important roles for informed institutional investors that have been postulated by the theoretical literature on SEOs: a "manipulative trading" role, suggested by Gerard and Nanda (1993), and an "information production" role, suggested by Chemmanur and Jiao (2005). Gerard and Nanda (1993) develop a model of informed trading around SEOs in a Kyle (1985) type setting. In the manipulative equilibrium in their model, informed investors sell shares of the SEO firm prior to the equity offering, thus driving down the SEO offer price, and profit subsequently by obtaining SEO share allocations at this reduced offer price. Thus, in this manipulation equilibrium, informed investors with favorable private information trade in a direction opposite to their private information. In a recent paper, Chemmanur and Jiao (2005) argue that institutional investors engage in costly information production about firms making SEOs, request allocations in those SEOs

[5] In addition to trading commissions and taxes and fees (which explicitly reduce realized profits), implicit trading costs such as implementation shortfall (Perold (1988)) could further reduce investors' realized profits. Our results account for both explicit and implicit trading costs, since we use actual transaction prices to calculate institutional investors' realized profits.

about which they obtain favorable information, and buy shares in these firms before and after the offering. Thus, in contrast to Gerard and Nanda (1993), in Chemmanur and Jiao (2005), informed investors trade in the same direction as their private information both before and after the SEO.[6] In section 2, we will develop in detail the testable hypotheses arising from the manipulative trading and the information production roles of institutional investors in SEOs.

We organize our empirical analysis into three parts, corresponding to the three sets of research questions outlined above. Our paper provides a number of new results on SEOs and especially the role of institutional investors in SEOs. First, we document, for the first time in the literature, the characteristics of institutional SEO share allocation, and the relationship between institutional SEO share allocation and long-term post-SEO stock returns. We find that institutions get more allocations in larger SEOs and those SEOs underwritten by more reputable investment banks. More interestingly, we find that institutional investors are able to obtain more allocations in those SEOs with better long-term post-SEO performance. This holds true both in our univariate results, and in our multivariate results after controlling for publicly available information. Our results are consistent with the notion that institutional investors do indeed possess private information about SEOs, and are able to identify and obtain more allocations in better SEOs.

Second, we study, for the first time in the literature, how institutions make use of their private information to trade in SEO firms before and after the SEO, and the profitability of such trading. The manipulative trading hypothesis predicts that more pre-offer net selling should be associated with more SEO allocations. To the contrary, we find that more pre-offer net buying (total buying minus selling of shares in SEO firms) by institutional investors is associated with more institutional SEO share allocations.

[6] Parsons and Raviv (1985) also develop a model that sheds light on the relationship between the SEO offering price and the secondary market price prior to the SEO (and therefore on the SEO discount). They assume that investors have heterogeneous valuations for the firm's shares. In such a setting, they show that the SEO offer price is set at a discount relative to the pre-issue share price in equilibrium. This equilibrium discount arises from the fact that, since the SEO may be oversubscribed, an investor is able to obtain a share allocation in the SEO only with a certain probability (less than one), while he can obtain shares with certainty by buying shares in the stock market prior to the SEO. However, while the differences in reservation prices across investors in Parsons and Raviv (1985) can be interpreted as arising from differences in information across investors, the implications of their model do not directly deal with the role of institutional investors in SEOs.

We also find that more institutional pre-offer net buying and more institutional SEO share allocations are associated with more post-offer net buying by institutional investors. Our results are robust to controlling for various SEO and institutional characteristics. Our findings paint a very different picture of the role of informed institutional investors in SEOs from that under the manipulative trading hypothesis, where informed traders engage in short-term price manipulation by selling shares prior to an SEO, and subsequently obtaining allocations in the SEO and then selling these allocations at a profit. Our findings are consistent with the information production hypothesis, where institutional investors produce information about SEO firms, identify and obtain more allocations in SEOs about which they receive favorable private information, and buy additional shares in these firms both before and after the offering.

We find that there is very little flipping (selling of allocations immediately post-offer) in SEOs by institutional investors: institutions sell only 3.20 percent of their SEO share allocations during the first two days post-SEO. This is in sharp contrast to institutional IPO flipping activities documented by previous studies. Aggarwal (2003) documents that institutions sell about 25.8 percent of the shares allocated to them within the first two days post-IPO.[7] This lack of flipping in SEOs does not seem to be due to institutional constraints (e.g., underwriter discouragement), because institutional SEO share allocation sales seem to be reasonably smooth over time up to one year post-SEO. We find that this lack of flipping is not costly to institutional investors, i.e., there is no significant difference between underpricing ("paper" profitability) and institutional realized profitability on SEO allocation sales, which may explain the lack of flipping by institutional investors in the first place.

SEOs underperform on average after the offering, as documented by previous studies (see, e.g., Loughran and Ritter (1995)). However, we find that institutional investors' trading post-SEO in those SEOs where they obtained share allocations significantly outperforms a naive buy-and-hold trading strategy in SEOs. Further, SEO/institution pairs with institutional share allocations significantly outperform SEO/institution pairs without allocations in post-SEO trading. In fact, SEO/institution pairs with allocations even outperform the size and book-to-market benchmark portfolios in post-SEO trading.

[7] The 25.8 percent figure is calculated based on results reported in table 3 of Aggarwal (2003).

On the other hand, SEO/institution pairs without allocations underperform the size and book-to-market benchmark portfolios, even though they neither significantly outperform nor underperform a naive buy-and-hold trading strategy in SEOs. Our results are consistent with institutional investors having private information about SEOs in which they obtained share allocations. In particular, they are consistent with the information production hypothesis, where institutional investors who produce information about SEOs during the SEO allocation process continue to have an informational advantage in post-SEO trading (i.e., their private information about SEOs is long-lived rather than short-lived).

Finally, we study the relationship between pre-offer institutional trading, institutional SEO share allocations, and the SEO discount, also for the first time in the literature. We find that more pre-offer institutional net buying is associated with a lower SEO discount (offer price relative to the closing price on the previous day). We also find that larger institutional SEO share allocations are associated with a smaller SEO discount. Our results are robust to controlling for various SEO characteristics. Under the manipulative trading hypothesis, informed traders sell more shares in SEOs about which they have more favorable private information, and then profit by obtaining more allocations in these SEOs at lower offer prices. These SEOs will also be offered with a larger discount in equilibrium, because of a more severe Rock (1986)-type winner's curse problem faced by uninformed investors. Therefore, this hypothesis predicts a positive correlation between pre-offer institutional net selling and the SEO discount, and a positive correlation between institutional SEO share allocations and the SEO discount. Our empirical findings are thus consistent with the first prediction, but inconsistent with the second prediction of the manipulative trading hypothesis. Both of our findings are, however, consistent with the predictions of the information production hypothesis, where both greater pre-offer institutional net buying and greater institutional SEO share allocations are associated with a smaller SEO discount. Our finding on the negative relationship between institutional SEO share allocation and the SEO discount is also in contrast to the findings of the IPO literature: see, e.g., Aggarwal, Prabhala, and Puri (2002), who find that institutions get more allocations in more underpriced IPOs.

Our paper is related to several strands in the empirical literature on SEOs. Safieddine and Wilhelm (1996) examine manipulative trading around SEOs by testing for a relationship between SEO discount and pre-offer short selling. Consistent with the manipulative trading hypothesis, prior to the adoption of Rule 10b-21, Safieddine and Wilhelm (1996) document unusually high levels of short interest in the pre-offer period and a positive relationship between short interest and SEO discount. They find no such relationship after the adoption of Rule 10b-21, supporting the notion that Rule 10b-21 was successful in curbing short selling and reducing the discount. However, due to data limitations, Safieddine and Wilhelm (1996) only study short selling activities. In contrast to Safieddine and Wilhelm (1996), Kim and Shin (2004) conclude that Rule 10b-21 has resulted in less informative pre-offer prices and that the adoption of the rule has increased the SEO discount (see also Singal and Xu (2005) for similar findings). Ours is the first paper to comprehensively study both institutional buying and selling activities surrounding SEOs.[8] Altinkilic and Hansen (2003) decompose the SEO discount into expected and unexpected components and examine the relationship between these components and SEO stock returns. Corwin (2003) conducts a comprehensive analysis of the determinants of the SEO discount. He finds that the SEO discount increases substantially over time, especially after the adoption of Rule 10b-21, and that the SEO discount is positively related to offer size, price uncertainty, and the magnitude of pre-offer returns.

Using quarterly institutional holdings data, Gibson, Safieddine, and Sonti (2004) document that SEO firms experiencing the greatest increase in institutional investment around the offer date significantly outperform those experiencing the greatest decrease. They interpret their results as evidence that institutions are able to identify above-average SEO firms and increase holdings in these potential outperformers. While our long-term post-SEO stock return results are broadly consistent with that of Gibson, Safieddine, and Sonti (2004), ours is the first paper to separately study institutional SEO share

[8] Rule 10b-21 was adopted by the SEC on August 25, 1988. Therefore, our sample period, 1999-2004, is after the adoption of the rule. However, Rule 10b-21 only restricts short selling activities prior to SEOs. The rule does not restrict institutional selling activities in general. Most institutional investors in our sample cannot or do not engage in short selling activities. Therefore, we do not expect the trading behavior of our sample institutions to be significantly affected by Rule 10b-21.

allocations, pre-offer institutional trading, and post-offer institutional trading. We are in a unique position to study these aspects of SEOs, given that we use institutional trading data rather than quarterly holdings data. For example, using quarterly holdings data one cannot distinguish whether changes in institutional holdings arise from pre-offer trading, SEO share allocation, or post-offer trading, which is crucial in identifying the precise role of institutional investors in SEOs. This is also the first paper to study the realized profitability of institutional trading in SEO firms, which also cannot be studied in the absence of the actual transaction prices at which institutions traded and the trading commissions and taxes and fees paid on each transaction. Finally, ours is also the first paper to study how pre-offer institutional net buying and institutional SEO share allocations are related to the SEO discount, highlighting the important role played by institutional investors in the SEO process.

The remainder of this paper is organized as follows. Section 2 discusses the manipulative trading and information production roles of institutional investors in more detail and develops testable hypotheses. Section 3 describes the data and sample selection procedures. Section 4 presents our empirical tests and results. Section 5 concludes with a discussion of our results.

2. Theory and Hypotheses

In this section, we will summarize the theoretical literature relating to the role of institutional investors with private information in SEOs, discuss the manipulative trading and information production roles of institutional investors in detail, and develop testable hypotheses for our empirical analysis. Gerard and Nanda (1993) develop a model of trading around SEOs where informed investors, acting strategically, attempt to manipulate stock prices prior to SEOs. In a setting broadly similar to Kyle (1985), they conjecture that these informed investors may sell shares in the SEO firm prior to the equity offering, even when they have favorable private information, thus driving down the SEO offer price. They then profit by obtaining SEO share allocations at this reduced offer price and selling these allocations subsequent to the offering. In other words, in Gerard and Nanda's (1993) manipulation equilibrium, informed institutional investors with favorable private information trade in a direction

opposite to their private information: they sell shares in the pre-SEO market even when they have favorable private information about the firm, in order to conceal this private information.[9] Such a trading strategy will be profitable if institutional investors can recoup their pre-SEO trading losses by obtaining (and subsequently selling) share allocations in these SEOs at a reduced offer price. In the above setting, the SEO discount is a way of compensating uninformed (retail) investors for the adverse selection (winner's curse) they face in the SEO allocation process (similar to the winner's curse faced by uninformed investors in Rock's (1986) IPO model). From now onwards, we refer to institutional investor behavior in SEOs along the lines conjectured in the above manipulation equilibrium as the manipulative trading hypothesis.

In contrast to the manipulative trading hypothesis, Chemmanur and Jiao (2005) argue that institutional investors engage in costly information production about firms making SEOs, request allocations in SEOs about which they obtain favorable private information, and buy shares in these firms before and after the offering. Thus, informed investors in Chemmanur and Jiao (2005) trade in the same direction as their long-lived private information both before and after the SEO. Since the private information held by institutional investors is reflected only partially in the pre-SEO secondary market price in this setting, issuing firms are able to make only a noisy inference about the realization of institutional investors' private information. Issuers choose the SEO discount in equilibrium balancing the desire to maximize SEO proceeds against the need to minimize the risk of SEO failure, at the same time ensuring that institutional investors have an adequate incentive to produce information about the firm. From now onwards, we refer to institutional investor behavior in SEOs along the lines conjectured by Chemmanur and Jiao (2005) as the information production hypothesis.

We now develop specific testable hypotheses for our empirical analysis. While some of our hypotheses are related to the above theories, it is not our objective in this paper to directly test these

[9] While Gerard and Nanda (1993) focus on this manipulative trading equilibrium and develop empirical implications related to it, they also explore other equilibria where institutional investors do not necessarily engage in manipulative trading. However, the hypotheses we test in this paper relate only to the manipulation equilibrium in their paper.

theories. Our first hypothesis relates to whether or not institutions have private information as conjectured by the theoretical literature, and the consequences of this private information on their SEO share allocation. If institutions do indeed have private information, they will be able to identify and obtain allocations in SEOs with better long-term performance (**H1**).

Our second set of hypotheses deals with how institutions make use of their private information (if any) to trade in the equity of SEO firms. The manipulative trading hypothesis predicts that those institutions which *sell* more of the equity in an SEO firm prior to the offering will demand and obtain larger share allocations in that SEO (**H2A**). In contrast, the information production hypothesis predicts that institutions which *buy* more of the equity of an SEO firm prior to the offering will demand larger share allocations in that SEO (**H2B**). The information production hypothesis also has predictions for the relationship between institutional pre-offer trading, share allocations, and institutional post-offer trading. This hypothesis predicts that institutions will not only demand larger share allocations in those SEOs about which they have favorable private information, but also use this private information to buy more shares in these firms both before and after the SEO. This implies that, post-SEO, institutions will buy more shares in those SEOs in which they obtained larger share allocations and bought more shares pre-SEO (**H3B**). In contrast, the manipulative trading hypothesis predicts a negative or no relationship between the SEO share allocation obtained by an institution and its post-offer net buying in that SEO (**H3A**).

Our third set of hypotheses deals with the pattern and profitability of post-SEO selling of institutions' share allocations. If institutions' demand for share allocations in SEOs is driven by a desire for short-term profits (in the spirit of the manipulative trading hypothesis), then one would expect a significant amount of flipping by institutional investors, especially in light of the well-documented long-term underperformance of SEOs (**H4A**). On the other hand, if institutions are longer term investors, or face costs associated with flipping their share allocations imposed by underwriters, one would expect institutions to sell their allocations only over a longer period of time (**H4B**). Further, if institutions were to flip their entire SEO allocations at the close of the first day of post-SEO trading, the return they would

realize would be equal to the extent of underpricing (initial return) of SEOs. Therefore, a comparison of the realized profitability of institutional SEO share allocation sales with SEO underpricing would reveal the magnitude of the opportunity cost incurred by institutions (if any) by not flipping immediately after the SEO (**H5**).

Our fourth set of hypotheses deals with the profitability of post-SEO trading by institutions (i.e., purely from buying and selling shares in the secondary market post-SEO). If institutions have long-lived private information about SEOs, they will be able to outperform a naive buy-and-hold strategy across SEOs (**H6**). Further, the information production hypothesis postulates that it is more efficient for institutions to produce information around the SEO, and continue to exploit this information in post-SEO trading. This implies that the profitability of post-SEO trading by institutions in SEOs in which they obtained allocations would be higher than in SEOs in which they did not obtain allocations (**H7**).

Our final set of hypotheses deals with the effect of institutional investors' private information on the SEO discount. Both the manipulative trading and the information production hypotheses predict a negative relationship between institutional pre-offer trading and the SEO discount (**H8**), though for different reasons. Under the manipulative trading hypothesis, this negative relationship arises from the fact that SEOs where informed institutional investors engage in a larger amount of manipulative selling pre-SEO are characterized by greater adverse selection faced by uninformed investors, who need to be compensated through a greater SEO discount. On the other hand, under the information production hypothesis, this negative relationship arises from the fact that a larger amount of pre-offer buying in an SEO by institutional investors indicates to the issuing firm that they have more favorable private information about that SEO, thereby reducing the risk of SEO failure, so that the issuing firm needs to offer only a smaller SEO discount. Under the manipulative trading hypothesis, when institutions engage in a larger amount of manipulative pre-offer selling of shares in an SEO, they need to obtain larger share allocations in that SEO in order to cover any losses incurred in the pre-offer trading. This further implies that, the greater the institutional share allocation in an SEO, the larger the SEO discount (**H9A**), since uninformed investors need to be compensated for the greater adverse selection in this case. In contrast,

under the information production hypothesis, the more favorable the private information of institutional investors about an SEO, the larger the allocations they request and obtain in that SEO. Since more favorable institutional private information also reduces the risk of SEO failure, SEOs with larger institutional share allocations would be characterized by smaller SEO discounts under the information production hypothesis (**H9B**).

3. Data and Summary Statistics

In this section, we describe our data and sample selection procedures, and present summary statistics of our data. Section 3.1 describes our institutional trading data and presents summary statistics. Section 3.2 describes our SEO sample and presents summary statistics. Section 3.3 explains how we identify institutional SEO share allocations in our institutional trading data and describes our algorithm for identifying institutional SEO allocation sales in post-SEO institutional trading.

3.1. Institutional Trading Data

We obtain transaction-level institutional trading data from the Abel/Noser Corporation, a leading execution quality measurement service provider for institutional investors. The data are similar to those used by several microstructure studies on institutional trading costs, for example, Conrad, Johnson, and Wahal (2001), Goldstein, Irvine, Kandel, and Wiener (2006), Jones and Lipson (2001), and Keim and Madhavan (1995). This is the first paper to use institutional trading data to study institutional investors' trading behavior in SEOs.

The data cover equity trading transactions by a large sample of institutions from January 1999 to December 2005. For each transaction the data include the date of the transaction, the stock traded (identified by both symbols and CUSIPs), the number of shares traded, the dollar principal traded, commissions and taxes and fees paid by the institution, and whether it is a buy or sell by the institution. The data are provided to us under the condition that the names of all institutions are removed from the data. However, identification codes are provided enabling us to separately identify all institutions.

Sample institutions are either investment managers or plan sponsors. Investment managers are mutual fund families such as Fidelity Investments, Putnam Investments, and Lazard Asset Management. Examples of plan sponsors include the California Public Employees' Retirement System (CalPERS), the Commonwealth of Virginia, and United Airlines. Going forward, we will call these two classes of institutions "mutual funds" and "plan sponsors."

Summary statistics of institutional trading sample are presented in table 1. The total annualized shares traded are 188 billion and the total annualized principal traded is $5.6 trillion. Table 1 also reports the commission and taxes and fees expenses associated with the institutional trading. Together, trading commission and taxes and fees expenses account for 13 basis points of institutional trading principal. For sample SEO firms, our sample institutions collectively account for about 12 percent of CRSP reported total dollar trading volume during the period starting 3 months before the offer and ending 1 year following the offer.

The 786 sample institutions are further partitioned into mutual funds and plan sponsors. There are 183 mutual funds (families) and 603 plan sponsors. In our sample, mutual funds tend to be much larger and trade more than plan sponsors. The annualized dollar trading volume by the 183 mutual funds is $4.1 trillion, while the annualized dollar trading volume by the 603 plan sponsors is only $1.5 trillion. We separately examine these two classes of institutions for most of our empirical results to see whether there are systematic differences. In our multivariate analysis, institution size (*Ln(instsize)*) is the natural logarithm of the institution's estimated asset size, assuming an annual turnover rate of 100 percent.

3.2. SEO Sample

The initial sample of SEOs between January 1999 and December 2004 is obtained from the Securities Data Company (SDC) new issues database. The sample focuses on firm-commitment underwritten SEOs of common shares to be listed on the NYSE, AMEX, and NASDAQ. Close-end funds, REITs, unit offerings, rights offers, ADRs, depositary shares, beneficial interests, limited partnerships, spin-offs, and shelf offerings are excluded. Offerings without an underwriter, offerings using

private placement, auctions, block trades, or accelerated bookbuilding methods are also excluded. Also excluded are offers with an offer price under $5. Our SEO sample ends in December 2004 because our institutional trading data ends in December 2005 and we track institutional trading for up to one year after the offer.

As described in the SEO literature (see, e.g., Safieddine and Wilhelm (1996) and Altinkilic and Hansen (2003)), the offer dates reported in SDC often do not accurately reflect the actual trading dates on which the securities are offered to the market. For the initial SEO sample from SDC, we further search for each issue in Factiva, a comprehensive business news archive service. For 98 percent of the SEO sample from SDC we found news regarding the offer date from Factiva, out of which about 70 percent Factiva offer dates differ from SDC offer dates.[10] To accurately measure SEO discount and underpricing, we use the Factiva offer date whenever it differs from the SDC offer date.

In our business press news search from Factiva, besides the offer date, we also search for the following issue-related information: the issue announcement date, offer price, and whether the issue is a shelf offer, a rights offer, a unit offer, or a spin-off. We primarily rely on the issue pricing news in Factiva for the offer price information, because SDC occasionally rounds the actual offer price to the second or third digit. We need a precise offer price to identify the allocation transactions as well as to calculate the exact SEO discount and underpricing. The news search from Factiva helped us to identify and exclude more shelf offerings, rights offerings, and unit offerings, which SDC failed to identify. We also exclude one SEO that had a merger rumor exactly on the day of offering according to the FACTIVA news search. We matched the sample of SEOs to the CRSP and COMPUSTAT databases, and require that the stock has to be covered by CRSP database for at least one month before and after the offer date. This yields a sample of 1109 SEOs by 969 firms, of which, sample institutions engaged in the trading of

[10] When the earliest press news story on the pricing of SEOs has a time stamp after the close of the market, the actual offer date is the next trading date. Hence, in such cases we assign the next trading date as the Factiva offer date. In most cases when the Factiva offer date differs from the SDC offer date, the Factiva offer date lags the SDC offer date by one trading day.

all but one of the SEO firms' stocks during the trading period that we study.[11] Therefore, most of our empirical tests are based on the 1108 SEOs by 968 firms, of which, 9 firms made three offerings during the six year period; 122 firms made two offerings; and 837 firms had only one seasoned offerings.

To summarize, the SEO data needed for our empirical analysis are constructed as follows. From SDC, we obtain information on the total shares offered, percentage of shares offered that are primary shares (*% Primary Shares*), total proceeds of the offer in the U.S. market (*Proceeds*), whether the issuer is in a high-tech industry, and the lead underwriter. We construct a high-tech dummy (*Hitek*), which equals 1 if SDC identifies the issuer as being in a high-tech industry, and 0 otherwise. We construct an underwriter reputation dummy (*Repuhi*) based on the highest lead underwriters' reputation rank from Jay Ritter's website (Loughran and Ritter (2004)).[12] Repuhi equals 1 if the highest lead underwriters' or the bookrunner's reputation rank is 9.1 (the highest possible ranking score), and 0 otherwise. From Factiva, we obtain information on the announcement date, the offer date, and the offer price. From CRSP and COMPUSTAT, we obtain daily stock prices and returns, shares outstanding, the primary exchange on which the stock is listed, the issuer's SIC code, and the book value of equity and the book value of assets at the end of the fiscal year before the offering. SEO discount (*Discount*) is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. SEO underpricing (*Underpricing*) is the natural logarithm of the ratio of the offer day closing price to the offer price. Market capitalization before the offering is calculated as the closing price five trading days (1 week) before the offering times the number of shares outstanding. Market capitalization after the offering is the market capitalization before the offering plus the offer proceeds from the primary shares sold. *Relative offer Size* is the ratio of the offer proceeds to the market capitalization before the offering. In our multivariate analysis, the size variable (*Lnsize*) is the natural logarithm of the market capitalization after the offering. Market to book (*Mkbk*) is

[11] The only stock that had an SEO but was not traded by sample institutions around the issue is an offer on February 20th, 2003 by Resource Bankshares Corp, VA.

[12] The reputation rankings in Loughran and Ritter (2004) are loosely based on the Carter and Manaster (1990) and Carter, Dark, and Singh (1998) rankings, with an update for 1992-2004. Since our SEO sample period is from 1999 to 2004, we use the Loughran and Ritter (2004) reputation ranking score for the period 1992-2004.

the ratio of the market value of assets to the book value of assets of the SEO firm at the immediate fiscal year end before offering.

Table 2 provides summary statistics of the 1108 SEOs traded by sample institutions. The average market capitalization of issuers before the offering is $1.636 billion, with the average offering proceeds equal to $0.168 billion. 56.5 percent (626 out of 1108) of the offerings are from high-tech industries and 56 percent (620 out of 1108) of the offerings use a high reputation lead underwriter. Sample SEOs have an average discount of 3 percent and an average underpricing of 3.5 percent. 36 SEOs (by 30 unique firms) are from the utility industry (SIC code 4900~4999), 126 SEOs (by 110 unique firms) are from the financial industry (SIC code 6000~6999), and the remaining 946 SEOs (by 828 unique firms) are by industrial firms.

3.3. Identifying Institutional SEO Share Allocations and Allocation Sales

Our institutional trading data provide detailed information about each transaction, including SEO share allocations. We identify institutional SEO share allocations in our database by requiring that transactions meet the following five criteria: (1) it is a buy side transaction; (2) the shares are bought exactly at the offer price; (3) the shares are bought on the day of the offering (or the day before when that is the SDC reported offer date);[13] (4) the commission paid on the transaction is equal to zero;[14] (5) the transaction size is least 1,000 shares or $10,000.[15] While these criteria may not capture institutional SEO share allocations with 100 percent precision, it seems reasonable to identify these transactions as share

[13] An interesting observation is that when the Factiva offer date is the trading day immediately after the SDC reported offer date (because the earliest pricing news of the issue was time stamped after the market close on the SDC reported offer date), the SEO share allocations identified are often on the SDC reported offer date rather than the Factiva offer date. It seems to be the case that when the SEO pricing and offer news is released after the market close, the SEO share allocation transactions often take place on the same calendar day, rather than one day later. Note that, for these SEOs, we still see a sharp increase in the CRSP reported trading volume on the Factiva offer date, a pattern documented as an empirical regularity after the offer (see, e.g., Safieddine and Wilhelm (1996) and Altinkilic and Hansen (2003)).

[14] Unlike regular institutional brokerage transactions, institutional SEO allocation transactions typically incur zero commission.

[15] Criterion (5) filters out less than 1 percent of potential allocation transactions (those transactions identified by criteria (1) through (4)), and only less than 0.01 percent of potential allocations in terms of share volume.

allocations.[16] This is the first paper in the literature to systematically study institutional SEO share allocations.

Having identified institutional SEO share allocations, we further identify allocation sales from institutional post-SEO trading. For sample institutions with continuous trading data for at least one year following the offer, we track those institutions' post-SEO trading and identify their SEO share allocation sales. This allows us to analyze the pattern and profitability of institutional share allocation sales and separately examine "pure" post-SEO institutional trading excluding allocation sales.

Simply put, the basic idea behind our algorithm for identifying allocation sales is that, at any point of time, when shares sold exceed shares bought post-SEO till that time, these shares sold are classified as SEO allocation sales. Figure 1 presents two simple numerical examples of our algorithm. Our algorithm is conservative in nature in that shares bought in the secondary market post-SEO are used to offset shares sold post-SEO first, so that only shares sold in excess of shares bought till that time post-SEO are considered SEO allocation sales. In other words, only after the shares bought post-SEO are exhausted, are shares assumed to be sold from SEO share allocations. This is consistent with the rules used by the Depository Trust Company (DTC) to identify IPO allocation sales in their IPO Tracking System (see, e.g., Aggarwal (2003)).

For each SEO/institution pair, we calculate the number of shares bought on day t post-SEO, $N_B(t) = \sum_{j=1}^{B_t} N_B(j)$, where B_t is the number of buy trades in the SEO for the institution on day t, and $N_B(j)$ is the number of shares bought in the jth trade, at price $P(j)$, and with trading commissions paid $COM(j)$. Similarly, the number of shares sold on day t is $N_S(t) = \sum_{j=1}^{S_t} N_S(j)$. The change in SEO position on day t is the institution's trading imbalance:

$$\Delta POS(t) = N_B(t) - N_S(t). \quad (1)$$

[16] An examination of institutional trading patterns in sample SEO firms shows that, on days when institutional SEO share allocations are identified, 93 percent of the total transactions are on the buy side, and 73 percent of these buy side transactions are identified as allocations. On the other hand, on regular trading days, buy side transactions account for 60 percent of the total number of daily transactions. The average transaction size of share allocations is about 3.6 times that of regular secondary market transactions.

We now calculate the cumulative position of an institution from post-SEO trading as:

$$POS_{POSTSEO}(t) = POS_{POSTSEO}(t-1) + \Delta POS_{POSTSEO}(t), \tag{2}$$

where $POS_{POSTSEO}(0) = 0$, and

$$\Delta POS_{POSTSEO}(t) = \max\left(\Delta POS(t), -POS_{POSTSEO}(t-1)\right). \tag{3}$$

The SEO allocation shares sold by the institution on day t are then given by:

$$N_S^{ALLO}(t) = \max\left(-\min\left(0, POS_{POSTSEO}(t-1) + \Delta POS(t)\right), POS_{ALLO}(t-1)\right), \tag{4}$$

where $POS_{ALLO}(t)$ is the position from SEO share allocations held by the institution on day t:

$$POS_{ALLO}(t) = POS_{ALLO}(t-1) - N_S^{ALLO}(t), \tag{5}$$

and its initial position from allocation $POS_{ALLO}(0)$ is equal to its total SEO share allocations. Shares bought and sold by the institution in "pure" post-SEO trading are:

$$\begin{aligned} N_B^{POSTSEO}(t) &= N_B(t) \\ N_S^{POSTSEO}(t) &= N_S(t) - N_S^{ALLO}(t). \end{aligned} \tag{6}$$

The above equations formally show our algorithm for identifying SEO allocation sales. Note that this algorithm needs to be implemented recursively every trading day starting from the first trading day post-SEO, since whether a given sale of SEO shares by an institution is classified as SEO allocation sales depends on the number of shares bought and sold in the secondary market post-SEO till that point in time by that institution. The two numerical examples in Figure 1 also illustrate this point.

4. Empirical Tests and Results

In this section we discuss the empirical methodology used to test our hypotheses and report our results. Section 4.1 presents the results of our empirical tests regarding the relationship between institutional SEO share allocation and SEO long-term performance. In section 4.2, we study how institutions trade before and after the SEO, and the profitability of such trading. In section 4.3, we study

the relationship between pre-offer institutional trading, institutional SEO share allocations, and the SEO discount.

4.1. Institutional SEO Share Allocation and Post-SEO Long-term Performance

In this subsection, we empirically examine the characteristics of institutional SEO share allocations. In particular, we attempt to study whether institutional investors indeed possess private information about SEOs, and whether they are able to identify and obtain more allocations in better SEOs.

Table 2 presents summary statistics of institutional SEO share allocation and offer characteristics. For the 1108 SEOs traded by sample institutions, we further split the sample into two groups by the median percentage of the offer allocated to sample institutions. Our univariate results suggest that SEOs with higher institutional share allocations tend to be larger, both in terms of pre-SEO market capitalization ($1.9 billion versus $1.3 billion) and in terms of offer proceeds ($189 million versus $149 million). SEOs with higher institutional share allocations are also more likely to be underwritten by high reputation underwriters. Previous studies show that institutional investors tend to get more allocations in more underpriced IPOs (see, e.g., Aggarwal, Prabhala, and Puri (2002)). In contrast, our results in table 2 indicate that SEOs with higher institutional share allocations tend to have lower discount and underpricing.

More interestingly, SEOs with above median institutional share allocations on average exhibit *positive* one year post-SEO raw buy-and-hold returns and *positive* abnormal returns, while SEOs with below median institutional share allocations on average exhibit *negative* one year post-SEO raw buy-and-hold returns and *negative* abnormal returns. The abnormal return is the one year post-SEO buy-and-hold return minus the return on the 25 Fama-French size and book-to-market benchmark portfolio.[17] The long-term post-SEO return differences between the SEOs with above median and below median institutional share allocations are highly significant, both statistically and economically. For instance, for the whole

[17] Because a few firms which had an SEO do not have a non-missing and positive book value of equity around the time of the offer, they are not assigned with a matched portfolio, thus their abnormal return is missing. Therefore, the number of observations for the abnormal returns is slightly different from the sample observations.

sample, SEOs with above median institutional share allocations outperform SEOs with below median institutional share allocations by 22.1 percent in terms of one year post-SEO raw buy-and-hold return. When we split our sample into mutual funds (panel B) and plan sponsors (panel C), the results are qualitatively similar to the results for the whole sample (panel A).

To further investigate whether institutional investors have private information about SEOs and thus are able to identify and obtain more allocations in better SEOs, we conduct the following multivariate OLS regression on the relationship between post-SEO long-term performance and institutional share allocations, controlling for various variables capturing publicly available information about the SEO:

$$\begin{aligned} &Post\text{-}SEO\ Return = \alpha + \beta_1 Ln(Pctallo) + \beta_2 Repuhi + \beta_3 Hitek + \beta_4 Lnsize + \beta_5 Mkbk \\ &+\beta_6 (\%\ Primary\ Shares) + \beta_7 Relative\ Offer\ Size + \beta_8 Utility + \beta_9 Financial \\ &+\beta_{10} Discount + \beta_{11} Underpricing + \beta_{12} Year\ Dummy + \varepsilon\ , \end{aligned} \tag{7}$$

where *Post-SEO Return* is the one year raw buy-and-hold return or abnormal return. *Ln(pctallo)* is the natural logarithm of the percentage of shares allocated to sample institutions, *Repuhi, Hitek, Lnsize, Mkbk*, *% Primary Shares, Relative Offer Size, Underpricing, Discount,* are defined as in the data section. Utility and Financial are two industry dummies that are equal to 1 if the SEO firm is a utility (SIC code 4900~4999) or a financial (SIC code 6000~6999) firm respectively, and are equal to 0 otherwise. We also include year dummies to account for the overall market condition that may affect the security offering market and stock return performance.

Table 3 presents the regression results in three specifications, for both the raw buy-and-hold return and the abnormal return. The first specification can be thought of as a base model that illustrates the relationship between institutional share allocation (*Ln(pctallo)*) in the offering and the post-SEO long-term stock return performance of the firm making an SEO, controlling for the underwriter reputation, whether the firm is in the hitech sector, and firm size. The second specification adds additional control variables which may influence on the SEO firm's long-term stock performance, such as the market-to-book ratio, percentage of primary share offered, relative offer size, and whether the firm belongs to the

Utility or the Financial industry. None of those control variables turn out to be significant factors that relate to an SEO firm's long-term stock return, as shown in the second regression specification in table 3. Since 15 SEO firms did not have the information regarding their book value of assets from COMPUSTAT at the time of the offering, their market-to-book ratio is thus missing; hence we only have 1093 SEOs for the second regression specification. In the third specification, we add the SEO discount and underpricing to see whether the issuer/underwriter information as reflected in the SEO discount, and the market reaction towards the issuance as reflected in the SEO underpricing have any predictive power for the long-term stock performance of an SEO. Since the market-to-book ratio of asset (*Mkbk*) is shown to have no effect on the SEO long-term stock return performance in the second specification, we drop *Mkbk* as a control variable in the third specification to have the whole sample of 1108 SEOs in the regression. The coefficients on both the *Discount* and *Underpricing* are negative, meaning the higher the SEO discount or the higher the SEO underpricing, the lower the SEO long-term stock return performance. However, neither coefficients are statistically significant. Even though none of the control variables (which are publicly available information at the time of offering) are shown to be significantly related to the long-term stock return performance of SEO firms, the coefficients on the institutional share allocation variable (*Ln(pctallo)*) are positive and statistically significant across the three specifications for both raw and abnormal returns This means the higher the institutional share allocations in an SEO, the better the post-SEO stock return performance, both in raw and abnormal terms. The results are both economically and statistically significant. For example, in the second regression specification in Panel A, a one standard deviation increase in the institutional share allocation variable (*Ln(pctallo)*) translates into a 9 (8.8) percent increase in the one year post-SEO raw buy-and-hold return (abnormal return).

Both our univariate and multivariate results lend support to the hypothesis that institutional investors possess private information about SEOs and they are able to identify and obtain more allocations in SEOs with better long-term performance (**H1**).[18] Boehmer, Boehmer, and Fishe (2006) find

[18] Note that a more direct test for this hypothesis is to use the institutional SEO share request information instead of their actual share allocations. We do not have the institutional SEO share request information. However, their

similar results in the IPO context: they find that institutional investors obtain more allocations in those IPOs with better long-term performance. Gibson, Safieddine, and Sonti (2004) document that SEOs experiencing the greatest increase in institutional investment between the quarter before the offering and the quarter after the offering outperformed their benchmark portfolios in the year following the issue by a significant margin relative to those experiencing the greatest decrease in institutional investment. However, their study is not able to distinguish between institutional secondary market trading and institutional share allocations. To the best of our knowledge, this is the first paper to study the informativeness of institutional share allocations in SEOs.

4.2. Institutional Trading around SEOs and Institutional Trading Profitability

In this subsection, we empirically examine the institutional trading pattern before and after SEOs and the corresponding trading profitability. In terms of empirical design, the unit of observation is an SEO/institution pair. For each SEO/institution pair, we aggregate the pre-offer net buy and post-offer net buy in different trading windows, and examine whether institutions trade in the same direction as their private information in SEOs as predicted by the information production role of institutional investors, or in the opposite direction as predicted by the manipulative trading role (section 4.2.1). For the institutions that obtained allocations in SEOs, we further track their allocation sales over the one year period following the SEO and examine whether they flip their allocations in the short period immediately after offering, and their cost or benefit of holding allocations for longer periods (section 4.2.2). Finally, for each SEO/institution pair, we examine the trading profitability in the year post-SEO to study whether institutions are able to make use of their private information to profitably trade after the offering (section 4.2.3).

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actual share allocation should be highly correlated with their allocation request. Therefore, we believe their actual share allocation is a good proxy for their allocation request. In the multivariate regression analysis, controlling for SEO discount and underpricing will also help to control for the possible discrepancy between institutional SEO share request and actual share allocation across SEOs.

4.2.1. Institutional Pre-Offer Trading, Institutional SEO Share Allocation, and Institutional Post-offer Trading

Under the manipulative trading hypothesis, strategic institutional investors who demand and (expect to) obtain a larger share allocation in an SEO will *sell* more of the equity in the SEO firm prior to the offering (**H2A**). In contrast, the information production hypothesis predicts that institutional investors who obtain favorable information about an SEO will ask for more allocations in that firm, and also will *buy* more of the equity in that firm prior to the offering (**H2B**).

We examine institutional pre-offer net buying in each SEO during the five trading days (1 week) immediately before the offer and 21 trading days (1 month) immediately before the offer. Normally, it takes about one month from the announcement of the SEO to the pricing of the offer and share allocation. Therefore, the 21 trading-day period approximately corresponds to the pre-SEO period when institutional investors learn about the upcoming SEO and have opportunities to get more information about the firm making the SEO through road shows, more news coverage in the media, and conference calls with analysts and firm management, etc. We also present results of institutional pre-offer trading within the five trading days immediately before the offer, because if the purpose of manipulative trading is to depress the offer price and increase the issue discount as suggested by the manipulative trading hypothesis, the short period immediately before the offering would be more suitable for the manipulative trading window.

Table 4 presents univariate results on institutional pre-offer trading and institutional SEO share allocations. The univariate results show that SEO/institution pairs with positive pre-offer net buy positions are allocated significantly more shares than SEO/institution pairs with pre-offer net sell positions. These results are inconsistent with **H2A** (manipulative trading), but consistent with **H2B** (information production).

Table 5 presents multivariate results on institutional pre-offer trading and institutional SEO share allocation, controlling for institution and SEO characteristics. We run different specifications of the following censored (Tobit) regression (SEO *i* and institution *j*):

$$Alloshroff_{i,j} = \alpha + \beta_1 Pre\text{-}offer Net\ Buy_{i,j} + \beta_2 Mf_j + \beta_3 Ln(instsize)_j + \beta_4 Ln(offer\ size)_i + \beta_5 Repuhi_i + \beta_6 Hitek_i + \beta_7 AbRet1yr_i + \beta_8 Discount_i + \beta_9 Underpricing_i + \varepsilon_{i,j} \quad , \tag{8}$$

where $Alloshroff_{i,j}$ is the number of shares in the *i*th offering allocated to institution *j* normalized by the total number of shares offered in the *i*th SEO. *Pre-offer Net Buy*$_{i,j}$ is institution *j*'s total net buy in shares of the *i*th issuing firm during the pre-offer period scaled by the firm's shares outstanding, in percentages. *Mf, Ln(instsize), Repuhi, Hitek, Discount, and Underpricing* are as described in the data section. *Ln(offer size)* is the natural logarithm of the size of the offer (measured as the offering proceeds). *AbRet1yr* is the one year post-SEO abnormal return benchmarked by the Fama-French size and book-to-market matched portfolio. We use White's robust standard errors with clustering on SEOs.

The coefficients on *Pre-offer Net Buy* are consistently positive and statistically significant at 1 percent level across different specifications in table 5, both for the 5 pre-offer trading days window and for the 21 pre-offer trading days window. That is, the more shares an institutional investor buys before the offer, the more share allocations the institutional investor obtains. This result is inconsistent with the predictions of the manipulative trading hypothesis (**H2A**), but consistent with the predictions of the information production hypothesis (**H2B**).

For offer characteristics, the multivariate analysis shows that sample institutions obtain more allocations in SEOs underwritten by high reputation underwriters. In the previous subsection, we show that institutional investors obtain more allocations in SEOs with better post-SEO long-term performance. In one specification we add the one year abnormal return as a control variable to see if the coefficient on *Pre-offer Net Buy* is still relevant. The coefficients on *Pre-offer Net Buy* remain statistically significant and at similar magnitude with or without the post-SEO one-year abnormal return as a control variable. In another specification, we control for SEO discount and underpricing, the coefficients on *Pre-offer Net Buy* remain positive and statistically significant. The coefficients on both SEO discount and SEO underpricing are negative, and the coefficients on SEO discount are statistically significant across different trading windows and types of institutions included in the sample.

Next, we study institutional post-offer trading from the first 5 trading days post-offer up to the first 3 months post-offer.[19] Table 6 presents univariate results on the relationship between institutional SEO share allocation and institutional post-offer trading. Comparing SEO/institution pairs with and without allocations, those pairs with allocations continue to buy more shares than do those without allocations during the first three months post-SEO.[20] For SEO/institution pairs with SEO allocations, we also document a monotonic relationship between institutional post-offer net buy and institutional share allocations.

Table 7 presents multivariate results on institutional post-offer trading, institutional share allocation, and institutional pre-offer trading, controlling for institution and offer characteristics. The multivariate analysis is based on the following OLS regression framework (SEO *i* and institution *j*):

$$\begin{aligned} \textit{Post-offer Net Buy}_{i,j} &= \alpha + \beta_1 \textit{Alloshroff}_{i,j} + \beta_2 \textit{Pre-offer Net Buy}_{i,j} \\ &+ \beta_3 Mf_j + \beta_4 Ln(instsize)_j + \beta_5 Lnsize_i + \beta_6 Repuhi_i + \beta_7 Hitek_i \\ &+ \beta_8 Discount_i + \beta_9 Underpricing_i + \varepsilon_{i,j} \ , \end{aligned} \tag{9}$$

where *Post-offer Net Buy*$_{i,j}$ is institution *j*'s net buy in shares of the *i*th issuing firm scaled by the firm's shares outstanding (in percentages) during the first 5 days, first one month, and first 3 months post-offer, respectively. All explanatory variables are as defined before. For each trading window, we report regression results in three specifications, with the share allocation variable (*Alloshroff*) and pre-offer trading variable (*Pre-offer Net Buy*) each separately, and combined. We use White's robust standard errors with clustering on SEOs.

Our regression results on the whole sample (panel A) show that for the first 5 days, first month, and first 3 months post-SEO, institutions continue to buy more shares in the SEO firm if they obtained more SEO share allocations (first regression specification) or bought more pre-offer (second regression specification). In the third specification, when we include both the institutional share allocation variable

[19] For institutional post-offer trading, we further decompose the trading into institutional pure post-SEO secondary market trading and SEO share allocation sales. The results based on the institutional pure post-SEO secondary market trading are qualitatively similar. We only report the total post-SEO trading to save space.

[20] This difference is more significant when we examine pure post-SEO secondary market trading excluding allocation sales.

and the institutional pre-offer trading variable in the regression, the coefficients of *Alloshroff* and *Pre-offer Net Buy* both remain positive and statistically significant. When we examine such relationships in mutual funds and plan sponsors separately, similar results are found in the mutual funds sub-sample. For the plan sponsors sub-sample, the positive and statistically significant relationship between pre-offer trading and post-offer trading continue to prevail; however, their allocations do not seem to play a role in their post-offer trading.

The pattern of institutional post-offer trading in the short period up to the first 3 months post-SEO seems to suggest that, overall, institutional investors do not reverse their positions immediately post-SEO, and if anything, they tend to buy more shares post-offer if they obtained larger share allocations or bought more shares pre-offer. These results are consistent with the information production hypothesis (**H3B**), but inconsistent with the manipulative trading hypothesis (**H3A**).

4.2.2. Pattern and Profitability of Institutional Share Allocation Sales

In this section, we track institutional share allocation sales for up to one year post-offer and examine the pattern and profitability of institutional share allocation sales during this period. Since in this section and the next section, we track institutional trading in SEOs for up to one year post-offer, for these two sections, we further restrict the SEO sample to only firms that did not make another seasoned equity offering within one year before and after the offer.[21] The procedures used to identify SEO allocations and allocation sales are described in the data section. Table 8 presents the pattern of institutional share allocation sales in terms of percentage of allocations sold in each month and the cumulative allocations sold at the end of each month for the 12 months post-SEO. For the first month immediately post-SEO, we take a closer look by studying allocation sales (or flipping) during day 1, day 2, and each of the first 4 weeks separately. The results in table 8 show that, overall, institutions tend to hold on to their SEO share allocations for a significant period of time. Institutions flip only a very small fraction of their SEO

[21] When a firm makes sequential equity offers within relatively short time frame, it is hard to disentangle allocations and allocation sales from different offers.

allocations: 3.20 percent during the first two days post-SEO. In contrast, Aggarwal (2003) documents that institutions sell about 25.8 percent of their IPO allocations within the first two days post-IPO. During the first year post-SEO, about 60 percent of institutional SEO share allocations are sold. This lack of flipping in SEOs does not seem to be due to institutional constraints (e.g., underwriter discouragement), because allocation sales seem to be reasonably smooth over time up to one year post-SEO. Mutual funds hold their allocations for longer periods than do plan sponsors. The pattern of allocation sales does not support the notion that institutions' demand for SEO share allocations is driven by a desire for short-term profits (**H4A**), but rather suggest that institutions obtain SEO share allocations for longer-term investment (**H4B**).

Table 9 presents realized returns from institutional share allocation sales, and compares them with underpricing of allocations (the opportunity cost of not flipping the entire allocation immediately post-offer). At the end of one year post-SEO, we mark unsold allocations to market using the closing price at the end of the year post-SEO. The raw return from allocation sales (and unsold allocations) is about 7.5 percent for the whole sample, which exceeds underpricing by 4.6 percentage point, meaning that share allocations sold overtime are on average executed at higher prices than the closing price on first day of offer. After we discount cash flows from allocation sales using the Fama-French size and book-to-market benchmark portfolio return, the return in current dollars is lower (only 1.8 percent) but positive (not statistically significant). This means that institutional investments in SEO primary markets and their subsequent selling and holding strategies fare as well as investments in Fama-French size and book-to-market benchmark portfolios. Table 9 shows that even in current dollar terms, institutional investors do not lose by not flipping their share allocations immediately after the offer. Therefore, the lack of flipping we have documented above does not appear to impose significant costs on institutional investors (**H5**).

4.2.3. Profitability of Institutional Post-offer Trading

We track institutional trading in SEOs during the one year period post-offer and examine the profitability of pure secondary market trading (excluding allocation sales) and total trading including

allocations and allocation sales. We calculate two return measures for post-SEO institutional trading, namely, return on buy principal and return on maximum investment. Return on buy principal is a simple and conservative measure, which is calculated by dividing total trading profits (raw or in current dollars) by total buy principal (raw or in current dollars). Return on maximum investment adjusts total investment (the denominator) by allowing the use of selling proceeds for later buying transactions instead of counting it as new investment. This measure more closely reflects the investment return from post-SEO institutional trading.

Table 10 presents results on the profitability of post-SEO institutional trading. We separately show post-SEO trading profitability for SEO/institution pairs with and without allocations. We also compare institutional trading profitability with a naive buy-and-hold trading strategy across SEOs. Institutional post-SEO trading returns in SEO where they obtained allocations across all measures are significantly higher than returns from the naive buy-and-hold trading strategy in SEOs, both statistically and economically. This supports the hypothesis that if institutional investors have long-lived private information, they will be able to outperform a naive buy-and-hold strategy in post-SEO trading (**H6**). However, institutional post-SEO trading returns in SEO where they did not obtain allocations do not outperform a naive buy-and-hold strategy. Further, SEO/institution pairs with allocations clearly trade more and realize more dollar profits than do SEO/institution pairs without allocations. The return measures for SEO/institution pairs with allocations are positive and statistically significantly different from zero, both in raw terms and in current dollars, including or excluding profits from allocations. In contrast, return measures for SEO/institution pairs without allocations are negative and statistically significantly different from zero, both in raw terms and in current dollars. We calculate two return measures: return on buy principal and return on maximum investment, as defined in detail in the table legends. Compared to return on maximum investment, return on buy principal is a more conservative measure. For pure post-SEO trading, SEO/institution pairs with allocations outperform SEO/institution pairs without allocations by 12.9 percent (raw return on buy principal), or 17.5 percent (raw return on maximum investment); the outperformance is 9.7 percent in terms of return using current dollars on buy

principal and 12.8 percent in terms of return using current dollars on maximum investment. These outperformances are both statistically and economically significant. This finding is consistent with the information production hypothesis (**H7**).

In summary, the profitability of post-SEO institutional trading suggests that institutional investors have long-lived private information about SEOs. In particular, institutions who have favorable information about certain SEOs and obtain allocations in those SEOs, continue to use their private information in post-offer trading to achieve superior performance.

4.3. Institutional Pre-offer Trading, Allocation, and the SEO Discount

In this subsection, we empirically study the role of institutional investors in the pricing of SEOs, and in particular, in the determination of the SEO discount.

Table 11 presents univariate results on the relationship between pre-offer institutional trading and the SEO discount.[22] We present pre-offer trading in 3 different trading windows: 3 trading days, 5 trading days, and 10 trading days. For 3 and 5 trading days pre-offer, those SEOs with above median net buy from sample institutions have a significantly smaller SEO discount than those with below median net buy. For example, for the 3 pre-offer trading day window, SEOs with above median institutional net buy are discounted for 0.77 percent less than those with below median net buy. At the sample average offer proceeds of $169 million, this translates into $1.3 million less in discount per SEO. For the 10 pre-offer trading day window, the difference is also in the same direction, though not statistically significant. Our results on the relationship between pre-offer institutional trading and the SEO discount are consistent with predictions from both the manipulative trading and the information production hypotheses (**H8**).

Table 12 presents SEO allocations partitioned by the SEO discount (Panel A) and underpricing (Panel B) quartiles. Note that, unlike SEO underpricing, SEO discount is a choice variable directly under

[22] Since we study the relationship between pre-offer institutional trading, institutional share allocation, and SEO discount, for this section, we restrict our SEO sample to offers starting from February 1999 (to leave one month for the pre-offer trading period). We also dropped from the whole SEO sample offers that have another seasoned equity offer within half a year before or after. This leaves us with 1033 SEOs.

the control of the underwriter and the SEO firm. In panel A, there is a clear pattern of more institutional share allocations in less discounted SEOs. This is not consistent with the manipulative trading hypothesis (**H9A**), but consistent with the information production hypothesis (**H9B**). In panel B, for underpricing quartiles, there is no such monotonic pattern in institutional SEO share allocations. Overall, institutions tend to get more allocations in SEOs with medium underpricing. However, plan sponsors seem to get more allocations in overpriced SEOs.

Table 13 presents multivariate results on pre-offer institutional trading, institutional SEO share allocations, and the SEO discount based on the following OLS regression framework:

$$\begin{aligned} Discount = {} & \alpha + \beta_1 Pre\text{-}offer\ Net\ Buy + \beta_2 Ln(pctallo) + \beta_3 Ln(Offer\ Size) \\ & + \beta_4 Relative\ Offer\ Size + \beta_5 (1/Offer\ Price) + \beta_6 Roundprc + \beta_7 Volatility \\ & + \beta_8 Repuhi + \beta_9 Hitek + \beta_{10} CAR_Positive + \beta_{11} CAR_Negative \\ & + \beta_{12} Year\ Dummy + \varepsilon\ , \end{aligned} \tag{10}$$

where *Discount, Ln(pctallo), Ln(Offer Size), Relative Offer Size, Repuhi,* and *Hitek* are defined previously. The *Pre-offer Net Buy* is aggregated across institutions to the SEO level. *1/(Offer Price)* is one over the SEO's offer price. *Roundprc* is a dummy variable which equals 1 if the SEO is priced at integer offer prices. Mola and Loughran (2004) show that issues with integer offer prices are associated with a larger discount. *Volatility* is the standard deviation of the issuing firm's daily stock returns during the 126 to 42 trading days before the offering. *CAR* is the cumulative market-adjusted return over the 5 trading days prior to the offer. Following Corwin (2003) who showed that the magnitude of pre-offer returns is associated with SEO discount and that positive and negative pre-offer returns could affect the SEO discount in a asymmetric manner, we also include the positive and negative pre-offer *CARs* (*CAR_Positive* and *CAR_Negative*) in the regression.[23] Regression (1) only relates the institutional share allocation to SEO discount, controlling for SEO characteristics. The coefficient on the institutional share allocation is negative and statically significant, meaning the larger the institutional SEO share allocations,

[23] Altinkilic and Hansen (2003) also found the asymmetric effect of pre-offer price movement on SEO discount. We also estimated the pre-offer abnormal returns by adjusting the returns using the returns on the Fama-French benchmark portfolios. The results using the benchmark portfolio adjusted returns are similar to those reported in table 13.

the smaller the SEO discount. A one standard deviation increase in institutional share allocation reduces the SEO discount by 0.76 percent. Regressions (2) to (4) also include the institutional pre-offer trading using three different pre-offer trading windows respectively. The coefficient estimates on the institutional share allocation variable remain qualitatively the same as in regression (1), and the coefficients on the institutional pre-offer trading variables are negative and statistically significant. That is, the more institutional pre-offer net buy of the shares in a firm about to make an SEO, the lower the SEO discount. In regression (5), the dependent variable is winsorized at the 5^{th} and 95^{th} percentiles. In regression (8), Tobit regression estimates are presented. The results remain robust in both columns. Regressions (6) and (7) separate the SEO sample into primary offer and secondary offer subsamples, and OLS regressions are run on the two subsamples separately. As in Altinkilic and Hansen(2003), a primary offer is defined as an offer with less than 10 percent of the shares offered being secondary shares. The coefficients on the institutional share allocation variable remain negative and statistically significant. The coefficients on the institutional pre-offer trading variable are negative for both types of offers, but only statistically significant for secondary offers.

In summary, our results on the negative relationship between pre-offer institutional trading and the SEO discount support **H8**, consistent with both the manipulative trading and the information production hypotheses. On the other hand, our results on the relationship between institutional share allocations and the SEO discount are inconsistent with the predications of the manipulative trading hypothesis (**H9A)**, but are consistent with the predictions of the information production hypothesis (**H9B)**.

The coefficients of other control variables are generally consistent with previous studies on the SEO discount. For example, the practice of setting the offer price at round dollars increases the discount; SEOs with higher stock return volatility have larger discounts; SEOs experienced positive price run-ups have larger discounts; larger offers and SEOs with higher price levels tend to have smaller discounts.

5. Discussion of Results and Conclusion

The theoretical literature has suggested two possible roles for institutional investors with private information in seasoned equity offerings (SEOs): a manipulative trading role, where institutional investors with private information sell shares prior to the SEO in order to lower the SEO offer price, and profit subsequently by obtaining allocations at this lowered offer price; or an information production role, where institutional investors produce information about firms making SEOs, request allocations in SEOs about which they obtain favorable private information, and also buy shares before and after the offering.

In this paper, we have made use of a large sample of transaction-level institutional trading data to study several important issues surrounding the role of institutional investors in SEOs in the above theoretical context. Our data allowed us to explicitly identify institutional SEO share allocations for the first time in the literature. We studied whether institutional investors indeed have private information about SEOs, and its consequences for: SEO share allocation; institutional trading before and after the SEO and realized trading profitability; and the SEO discount.

Our results can be summarized as follows. First, institutions are able to identify and obtain more allocations in SEOs with better long-term returns. Second, more pre-offer net buying of the SEO firm's equity by institutional investors is associated with more institutional SEO share allocations, and also more post-offer net buying. Third, institutions flip only a very small fraction of their SEO share allocations: 3.20 percent during the first two days post-SEO. However, this lack of flipping does not appear to be costly to institutional investors: there is no significant difference between the extent of underpricing and the realized profitability of institutional SEO share allocation sales. Fourth, institutional investors' post-SEO trading significantly outperforms a naive buy-and-hold trading strategy in SEOs. Further, the profitability of post-offer trading in SEOs where institutions obtained allocations is higher than that of trading in SEOs where they did not obtain allocations. Finally, more pre-offer institutional net buying and larger institutional SEO share allocations are associated with a smaller SEO discount. Overall, our results are consistent with an information production rather than a manipulative trading role for institutional investors in SEOs.

References

Aggarwal, Reena, 2003, Allocation of initial public offerings and flipping activity, *Journal of Financial Economics* 68, 111-135.

Aggarwal, Reena, N. Prabhala, and Manju Puri, 2002, Institutional allocation in initial public offerings: empirical evidence, *Journal of Finance* 57, 1421-1442.

Asquith, Paul, and David W. Mullins, 1986, Equity issues and offering dilution, *Journal of Financial Economics* 15, 61-89.

Altinkilic, Oya, and Robert S. Hansen, 2003, Discounting and underpricing in seasoned equity offers, *Journal of Financial Economics* 69, 285-323.

Benveniste, Lawrence M., and Paul A. Spindt, 1989, How investment bankers determine the offer price and allocation of new issues, *Journal of Financial Economics* 24, 343-362.

Boehmer, Beatrice, Ekkehart Boehmer, and Raymond P.H. Fishe, 2006, Do institutions receive favorable allocations in IPOs with better long run returns?, *Journal of Financial and Quantitative Analysis* 41, 809-828.

Carlson, Murray, Adlai Fisher, and Ron Giammarino, 2006, Corporate investment and asset price dynamics: implications for SEO event studies and long-run performance, *Journal of Finance* 61, 1009-1034.

Carter, Richard B., Frederick H. Dark, and Alan K. Singh, 1998, Underwriter reputation, initial returns, and the long-run performance of IPO stocks, *Journal of Finance* 53, 285-311.

Carter, Richard, and Steven Manaster, 1990, Initial public offerings and underwriter reputation, *Journal of Finance* 45, 1045-1067.

Chemmanur, Thomas J., and Gang Hu, 2006, Institutional trading, allocation sales, and private information in IPOs, Working paper, Boston College.

Chemmanur, Thomas J., and Yawen Jiao, 2005, Institutional trading, information production, and the SEO discount: a model of seasoned equity offerings, Working paper, Boston College.

Conrad, Jennifer S., Kevin M. Johnson, and Sunil Wahal, 2001, Institutional trading and soft dollars, *Journal of Finance* 56, 397-416.

Corwin, Shane A., 2003, The Determinants of Underpricing for Seasoned Equity Offers, *Journal of Finance* 58, 2249-2279.

Gerard, Bruno, and Vikram Nanda 1993, Trading and manipulation around seasoned equity offerings, *Journal of Finance* 48, 213–245.

Giammarino, Ronald M., and Tracy Lewis, 1989, A theory of negotiated equity financing, *Review of Financial Studies* 1, 265-288.

Gibson, Scott, Assem Safieddine, and Ramana Sonti, 2004, Smart investments by smart money: evidence from seasoned equity offerings, *Journal of Financial Economics* 72, 581-604.

Goldstein, Michael, Paul Irvine, Eugene Kandel, and Zvi Wiener, 2006, Brokerage commissions and institutional trading patterns, Working paper, Babson College.

Gompers, Paul A., and Andrew Metrick, 2001, Institutional Investors and Equity Prices, *Quarterly Journal of Economics* 116, 229-259.

Jones, Charles M., and Marc L. Lipson, 2001, Sixteenths: direct evidence on institutional execution costs, *Journal of Financial Economics* 59, 253-278.

Keim, Donald B., and Ananth Madhavan, 1995, Anatomy of the trading process: empirical evidence on the behavior of institutional traders, *Journal of Financial Economics* 37, 371-398.

Kim, Kenneth, and Hyun-Han Shin, 2004, The puzzling increase in underpricing of seasoned equity offerings, *The Financial Review* 39, 343-366.

Krigman, Laurie, Wayne H. Shaw, and Kent L. Womack, 1999, The persistence of IPO mispricing and the predictive power of flipping, *Journal of Finance* 54, 1015-1044.

Kyle, Albert S., 1985, Continuous auctions and insider trading, Econometrica 53, 1315-1336.

Loughran, Tim, and Jay R. Ritter, 1995, The new issues puzzle, *Journal of Finance* 50, 23-51.

Loughran, Tim, and Jay R. Ritter, 2004, Why has IPO underpricing changed over time?, *Financial Management* 33, 5-37.

Mola, Simona, and Tim Loughran, 2004, Discounting and clustering in seasoned equity offering prices, Journal of Financial and Quantitative Analysis 39, 1-23.

Myers, Stewart C., and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Parsons, John, and Artur Raviv, 1985, Underpricing of seasoned issues, *Journal of Financial Economics* 14, 377–397.

Perold, Andre F., 1988, The implementation shortfall: paper versus reality, *Journal of Portfolio Management* 14, 4-9.

Ritter, Jay R., and Ivo Welch, 2002, A review of IPO activity, pricing and allocations, *Journal of Finance* 57, 1795-1828.

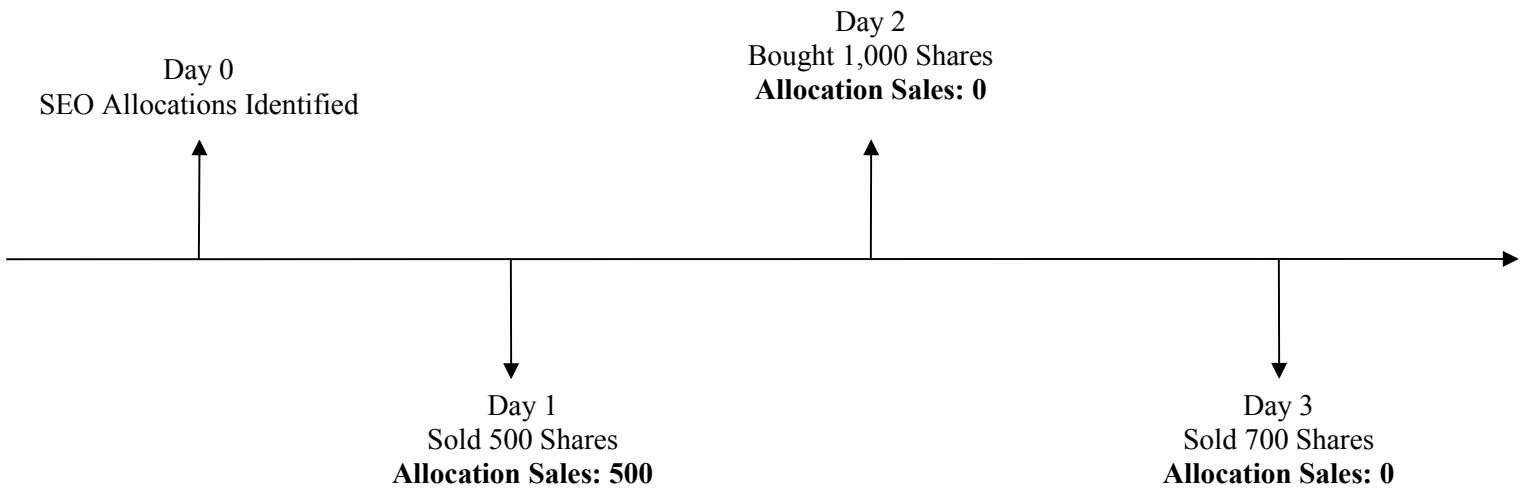
Rock, Kevin, 1986, Why new issues are underpriced, *Journal of Financial Economics* 15, 187-212.

Safieddine, Assem, and William J. Wilhelm, 1996, An empirical investigation of short-selling activity prior to seasoned equity offerings, *Journal of Finance* 51, 729–749.

Singal, Vijay, and Lily Xu, 2005, Do short sellers know more? Evidence from a natural experiment, Working paper, Virginia Tech.

Figure 1. Numerical Examples of Algorithm for Identifying Institutional SEO Allocation Sales

Example 1:



Example 2:

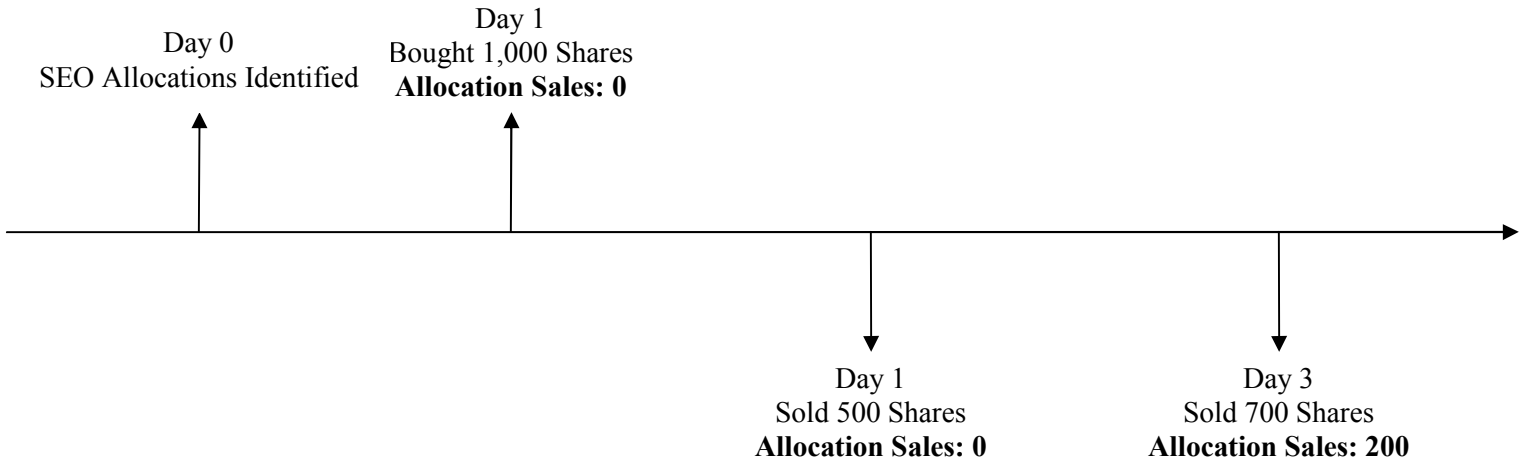


Table 1. Summary Statistics of Institution Sample. This table presents summary statistics of the 786 sample institutions from January 1999 through December 2004. Sample mean, median, and total are presented. Annualized shares and principal traded are computed based on all U.S. domestic equity traded from January 1999 through December 2004. Annualized commission expense and annualized taxes and fees expense are the trading commission, taxes and fees paid associated with the equity traded, respectively. Percentage of trading in SEOs equals the aggregate trading principal by sample institutions in the shares of the 1108 sample SEO firms divided by the aggregate trading principal reported in CRSP during the period from 3 months before SEO to 1 year post-SEO, within the January 1999 to December 2005 sample period. P-values for the Mann-Whitney test with the null hypothesis that the two groups of mutual funds and plan sponsors are independently and identically distributed are reported in the last column. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

	Total	Mutual Funds	Plan Sponsors	Mann-Whitney Test (p-value)
Number of Institutions	786	183	603	
Annualized shares traded (millions)				
Mean	239.449	738.343	88.043	
Median	21.739	192.829	13.111	(0.000)***
Total	188,207.001	135,116.792	53,090.209	
Annualized principal traded ($ millions)				
Mean	7,107.501	22,196.891	2,528.134	
Median	629.090	4,966.994	394.201	(0.000)***
Total	5,586,495.789	4,062,030.973	1,524,464.817	
Annualized commission expense ($ millions)				
Mean	8.326	26.640	2.768	
Median	0.711	6.385	0.441	(0.000)***
Total	6,544.229	4,875.044	1,669.186	
Annualized taxes and fees expense ($ millions)				
Mean	0.937	0.601	1.039	
Median	0.000	0.000	0.001	(0.000)***
Total	736.339	109.896	626.443	
Percentage of trading in SEOs				
Mean	11.921%	9.425%	2.496%	
Median	10.175%	7.901%	2.130%	(0.001)***

Table 2. Summary Statistics of Institutional Share Allocation and Offer characteristics. This table presents summary statistics on the relationship between institutional share allocations and offer characteristics. The sample includes 1108 firm-commitment underwritten seasoned equity offerings issued from January 1999 to December 2004 that are traded by sample institutions, and present in CRSP at the time of offering. Close-end funds, REITs, unit offerings, rights offers, ADRs, depositary shares, beneficial interests, limited partnerships, spin-offs, shelf offerings, and offers with an offer price under $5 are excluded. Offers without using an underwriter, offerings using block trade, private placement, auction, and accelerated building techniques are also excluded. Market Cap before Offer is the market capitalization of the issuing firm's equity, calculated as the closing price one week before the offering times the number of shares outstanding on that day. Offer Proceeds equals offer price times total shares offered. High reputation underwriters are those with the highest lead underwriters' (or bookrunner's) reputation score equal to 9.1 (the highest possible rank score). The underwriters' rank score is from Jay Ritter's website (Loughran and Ritter (2004)), which are loosely based on Carter and Manaster (1990) and Carter, Dark, and Singh (1998) rankings. Hitech firms are identified by the SDC hitech industry classification. Discount is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. Underpricing is the natural logarithm of the ratio of the offer day closing price to the offer price. Raw Buy & Hold Return 1 Year Post-offer is the post-offer market capitalization weighted 1 year raw buy-and-hold return. Abnormal Return 1 Year Post-offer is the raw buy-and-hold return 1 year post-SEO minus the return of the size and book-to-market matched portfolio. T-tests for equality of means assuming unequal variances are conducted for the two groups of SEOs split by the median percentage of the offering allocated to the sample institutions, where sample institutions refers to all the 167 institutions for Panel A, and to mutual funds and plan sponsors for panel B and panel C, respectively. P-values for t-tests are reported in parentheses in the last column. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

		Split by Median Institutional Share Allocation			
	All SEOs	Above Median	Below Median	Test of Difference (p-value)	
Panel A: Whole Sample					
Number of SEOs	1108	554	554		
Market Cap before Offer ($ mil.)	1636.367	1922.809	1349.925	(0.013)	**
Offer Proceeds ($ mil.)	168.854	188.898	148.809	(0.012)	**
Relative Offer Size	0.195	0.185	0.205	(0.148)	
% Primary Shares	0.680	0.655	0.704	(0.033)	**
Fraction of Offers by Hitech Firms	0.565	0.561	0.569	(0.809)	
Fraction of Offer by High Reputation Underwriters	0.560	0.662	0.457	(0.000)	***
Discount	2.97%	2.00%	4.00%	(0.000)	***
Underpricing	3.50%	2.40%	4.60%	(0.000)	***
Raw Buy & Hold Return 1 Year Post-offer	-7.40%	1.89%	-20.51%	(0.001)	***
Abnormal Return 1 Year Post-offer	-5.09%	3.88%	-17.66%	(0.001)	***
Number of Abnormal Return 1 Year Post-offer	1078	537	541		

Panel B: Mutual Funds					
Number of SEOs	1108	538	570		
Market Cap before Offer ($ mil.)	1636.367	2080.107	1217.539	(0.000)	**
Offer Proceeds ($ mil.)	168.854	204.002	135.679	(0.000)	***
Relative Offer Size	0.195	0.188	0.202	(0.292)	
Percentage of Primary Shares	0.680	0.642	0.715	(0.001)	***
Fraction of Offers by Hitech Firms	0.565	0.545	0.584	(0.184)	
Fraction of Offer by High Reputation Underwriters	0.560	0.693	0.433	(0.000)	***
Discount	2.97%	2.00%	3.90%	(0.000)	***
Underpricing	3.50%	2.40%	4.50%	(0.000)	***
Raw Buy & Hold Return 1 Year Post-offer	-7.40%	2.58%	-23.24%	(0.001)	***
Abnormal Return 1 Year Post-offer	-5.09%	5.65%	-22.05%	(0.001)	***
Number of Abnormal Return 1 Year Post-offer	1078	522	556		

Panel C: Plan Sponsors					
Number of SEOs	1108	554	554		
Market Cap before Offer ($ mil.)	1636.367	1885.714	1387.02	(0.031)	**
Offer Proceeds ($ mil.)	168.854	187.825	149.882	(0.017)	**
Relative Offer Size	0.195	0.186	0.204	(0.174)	
Percentage of Primary Shares	0.680	0.656	0.704	(0.036)	**
Fraction of Offers by Hitech Firms	0.565	0.594	0.536	(0.053)	
Fraction of Offer by High Reputation Underwriters	0.560	0.650	0.469	(0.000)	***
Discount	2.97%	2.00%	4.00%	(0.000)	***
Underpricing	3.50%	2.40%	4.60%	(0.000)	***
Raw Buy & Hold Return 1 Year Post-offer	-7.40%	0.63%	-18.24%	(0.002)	***
Abnormal Return 1 Year Post-offer	-5.09%	3.12%	-16.01%	(0.001)	***
Number of Abnormal Return 1 Year Post-offer	1078	535	543		

Table 3. Institutional Share Allocation and SEO Long-term Performance: Multivariate Analysis. This table presents an OLS regression analysis of the relationship between SEO long-term performance and institutional share allocations. The unit of observation is an SEO. The dependent variables are post-SEO 1 year raw buy & hold return (left 3 columns) and post-SEO 1 year abnormal returns benchmarked by Fama-French 5X5 size and book-to-market portfolios (right 3 columns). Ln(pctallo) is the natural logarithm of the percentage of shares offered allocated to sample institutions. Repuhi is a dummy variable for underwriter reputation. Repuhi equals 1 for high reputation underwriters (highest lead underwriters' or bookrunner's rank is 9.1), and 0 otherwise. The underwriters' rank is from Jay Ritter's website (Loughran and Ritter (2004)), which are loosely based on Carter and Manaster (1990) and Carter, Dark, and Singh (1998) rankings. Hitek is a dummy variable that equals 1 for issuers in a hitech industry and 0 otherwise, as identified by SDC. Utility is a dummy variable that equals 1 for utility firms (SIC code 4900~4999), and 0 otherwise. Financial is a dummy variable that equals 1 for financial firms (SIC code 6000~6999), and 0 otherwise. Discount is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. Underpricing is the natural logarithm of the ratio of the offer day closing price to the offer price. Lnsize is the natural logarithm of the SEO firms' market capitalization of equity after the offering (as measured by the market capitalization of the SEO firm one week before the offer plus the offering proceeds). Mkbk is the SEO firms' market-to-book ratio of assets at the fiscal year end immediately before the offering. All the regressions include year fixed effect. Panel A reports the results for the full sample of institutional share allocations. Panel B and Panel C report the results for the allocations of mutual funds and plan sponsors, respectively. P-values are in parentheses. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

Panel A: Whole Sample						
	Raw Buy & Hold Return			Abnormal Return		
Ln(pctallo)	0.024**	0.026**	0.018*	0.024**	0.025**	0.020*
	(0.021)	(0.014)	(0.095)	(0.023)	(0.016)	(0.071)
Repuhi	-0.065	-0.076	-0.078	-0.057	-0.069	-0.07
	(0.444)	(0.383)	(0.368)	(0.505)	(0.428)	(0.421)
Hitek	-0.067	-0.036	-0.024	-0.014	-0.005	0.009
	(0.382)	(0.677)	(0.773)	(0.855)	(0.955)	(0.917)
Lnsize	-0.057	-0.05	-0.058	-0.029	-0.021	-0.023
	(0.124)	(0.227)	(0.152)	(0.432)	(0.606)	(0.574)
Mkbk		-0.001			0.003	
		(0.937)			(0.693)	
% Primary Shares		0.023	0.02		0.058	0.048
		(0.826)	(0.841)		(0.573)	(0.639)
Relative Offer Size		0.146	0.127		0.148	0.127
		(0.392)	(0.452)		(0.379)	(0.445)
Utility		0.235	0.206		0.173	0.15
		(0.263)	(0.327)		(0.403)	(0.467)
Financial		0.036	0.038		-0.005	-0.004
		(0.771)	(0.752)		(0.969)	(0.977)
Discount			-1.651			-1.138
			(0.146)			(0.326)
Underpricing			-0.553			-0.372
			(0.324)			(0.505)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.173***	1.093***	1.148***	0.623**	0.513*	0.536*
	(0.000)	(0.000)	(0.000)	(0.011)	(0.085)	(0.073)
Observations	1108	1093	1108	1078	1064	1078
Adjusted R-squared	0.093	0.094	0.092	0.02	0.019	0.017

Panel B: Mutual Funds						
	Raw Buy & Hold Return			Abnormal Return		
Ln(pctallo)	0.030***	0.032***	0.026**	0.029***	0.031***	0.026**
	(0.004)	(0.003)	(0.018)	(0.005)	(0.003)	(0.015)
Repuhi	-0.076	-0.087	-0.089	-0.068	-0.08	-0.081
	(0.373)	(0.322)	(0.308)	(0.429)	(0.363)	(0.357)
Hitek	-0.062	-0.028	-0.017	-0.009	0.002	0.016
	(0.423)	(0.743)	(0.839)	(0.910)	(0.978)	(0.850)
Lnsize	-0.062*	-0.056	-0.063	-0.034	-0.027	-0.028
	(0.094)	(0.174)	(0.120)	(0.359)	(0.508)	(0.496)
Mkbk		0			0.004	
		(0.972)			(0.659)	
% Primary Shares		0.022	0.019		0.056	0.045
		(0.832)	(0.855)		(0.583)	(0.653)
Relative Offer Size		0.146	0.128		0.148	0.128
		(0.390)	(0.449)		(0.377)	(0.442)
Utility		0.235	0.208		0.173	0.152
		(0.262)	(0.319)		(0.401)	(0.461)
Financial		0.045	0.049		0.005	0.006
		(0.711)	(0.687)		(0.969)	(0.960)
Discount			-1.55			-1.07
			(0.168)			(0.351)
Underpricing			-0.578			-0.407
			(0.298)			(0.461)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.267***	1.194***	1.240***	0.713***	0.611**	0.625**
	(0.000)	(0.000)	(0.000)	(0.004)	(0.044)	(0.040)
Observations	1108	1093	1108	1078	1064	1078
Adjusted R-squared	0.095	0.097	0.095	0.022	0.022	0.02

Panel C: Plan Sponsors						
	Raw Buy & Hold Return			Abnormal Return		
Ln(pctallo)	0.028**	0.030**	0.02	0.028**	0.029**	0.022
	(0.037)	(0.028)	(0.156)	(0.038)	(0.033)	(0.113)
Repuhi	-0.058	-0.069	-0.073	-0.05	-0.062	-0.064
	(0.497)	(0.433)	(0.401)	(0.560)	(0.480)	(0.460)
Hitek	-0.071	-0.041	-0.028	-0.018	-0.011	0.004
	(0.358)	(0.631)	(0.739)	(0.817)	(0.902)	(0.960)
Lnsize	-0.053	-0.045	-0.055	-0.025	-0.017	-0.019
	(0.153)	(0.275)	(0.174)	(0.496)	(0.687)	(0.631)
Mkbk		-0.001			0.003	
		(0.889)			(0.733)	
% Primary Shares		0.024	0.022		0.06	0.05
		(0.814)	(0.827)		(0.559)	(0.624)
Relative Offer Size		0.139	0.123		0.141	0.123
		(0.415)	(0.468)		(0.401)	(0.461)
Utility		0.237	0.206		0.174	0.151
		(0.259)	(0.326)		(0.399)	(0.464)
Financial		0.024	0.03		-0.016	-0.012
		(0.842)	(0.805)		(0.895)	(0.918)
Discount			-1.675			-1.141
			(0.144)			(0.329)
Underpricing			-0.597			-0.414
			(0.286)			(0.457)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.191***	1.110***	1.158***	0.643**	0.530*	0.550*
	(0.000)	(0.000)	(0.000)	(0.010)	(0.081)	(0.069)
Observations	1108	1093	1108	1078	1064	1078
Adjusted R-squared	0.092	0.093	0.092	0.019	0.018	0.016

Table 4. Institutional Pre-Offer Trading and Institutional Share Allocation: Univariate Analysis. This table presents the summary statistics and univariate test results of institutional pre-offer trading and institutional share allocation. The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from February 1999 to December 2004. Offerings by firms that had at least one other equity issuance within half year before or after are excluded. Institutional pre-offer trading is aggregated over a 5 trading-day window (left 2 columns) and a 21 trading-day window (right 2 columns) before the offering, with both trading windows ending one day before the offering. Institutional pre-offer trading is grouped into Net Buy, Zero Net Buy, and Net Sell subgroups. Alloshroff is the institutional share allocation in shares scaled by total shares offered, in percentage unit. The difference in Alloshroff between the Net Buy and Net Sell subgroups is tested. Panel A reports the results for the full sample of SEO/institution pairs. Panel B and Panel C report the results for the subsamples of mutual funds and plan sponsors, respectively. P-values are based on two tailed t-tests for the difference in means, assuming unequal variances. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

	5 trading days pre-offer		21 trading days pre-offer	
	Number of Observations	Alloshroff (mean)	Number of Observations	Alloshroff (mean)
		Panel A: Full Sample		
Net Buy	3,683	0.624	7,627	0.421
Zero Net Buy	28,589	0.168	21,535	0.158
Net Sell	2,240	0.327	5,350	0.228
Difference(Buy-Sell)		0.297***		0.193***
P-value		(0.000)		(0.000)
		Panel B: Mutual Funds		
Net Buy	1,474	1.489	2,534	1.198
Zero Net Buy	5,537	0.682	3,679	0.676
Net Sell	853	0.836	1,651	0.703
Difference(Buy-Sell)		0.653***		0.494***
P-value		(0.000)		(0.000)
		Panel C: Plan Sponsors		
Net Buy	2,209	0.047	5,093	0.035
Zero Net Buy	23,052	0.044	17,856	0.051
Net Sell	1,387	0.013	3,699	0.015
Difference(Buy-Sell)		0.033***		0.019***
P-value		(0.000)		(0.000)

Table 5. Institutional Pre-Offer Trading and Institutional Share Allocation: Multivariate Analysis. This table presents a Tobit regression analysis of the relationship between institutional pre-offer trading and institutional share allocation in SEOs. The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from February 1999 to December 2004. Offerings by firms that had at least one other equity issuance within half year before or after are excluded. The dependent variable is the institutional share allocation scaled by total shares offered, in percentage units (Alloshroff). Pre-offer Net Buy is the institutional total net buy in shares scaled by the issuing firm's shares outstanding, in percentage unit, aggregated over a 5 trading-day window (left 3 columns) and a 21 trading-day window (right 3 columns) before the offering, with both trading windows ending one day before the offering. Mf is the mutual funds dummy, which equals 1 for mutual funds and 0 for plan sponsors. Ln(instsize) is the natural logarithm of institution size. Ln(offer size) is the natural logarithm of the issue proceeds. Repuhi is a dummy variable for underwriter reputation. Repuhi equals 1 for high reputation underwriters (highest lead underwriters' or bookrunner's rank is 9.1), and 0 otherwise. The underwriters' rank is from Jay Ritter's website (Loughran and Ritter (2004)), which are loosely based on Carter and Manaster (1990) and Carter, Dark, and Singh (1998) rankings. Hitek is a dummy variable that equals 1 for issuers in a hitech industry and 0 otherwise, as identified by SDC. Abret1yr is the 1 year post-SEO abnormal return, measured as the raw buy-and-hold return 1 year post-SEO minus the return of the size and book-to-market matched portfolio. Discount is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. Underpricing is the natural logarithm of the ratio of the offer day closing price to the offer price. Panel A reports the results for the full sample of SEO/institution pairs. Panel B and Panel C report the results for the sub-samples of mutual funds and plan sponsors, respectively. P-values are in parentheses. The p-values are based on White's robust standard errors with clustering on SEOs. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

	Panel A: Full Sample					
	5 trading days pre-offer			21 trading days pre-offer		
Pre-offer Net Buy	2.555***	2.526***	2.563***	1.690***	1.680***	1.707***
	(0.004)	(0.005)	(0.003)	(0.000)	(0.000)	(0.000)
Mf	1.050***	1.103***	1.082***	1.052***	1.104***	1.084***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(instsize)	0.229***	0.230***	0.237***	0.222***	0.224***	0.230***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(offer size)	-0.086	-0.141	-0.218	-0.087	-0.141	-0.219
	(0.623)	(0.449)	(0.217)	(0.618)	(0.448)	(0.214)
Repuhi	0.753***	0.865***	0.348	0.750***	0.860***	0.345
	(0.008)	(0.003)	(0.210)	(0.008)	(0.003)	(0.213)
Hitek	-0.006	0.021	0.159	-0.013	0.013	0.15
	(0.981)	(0.933)	(0.505)	(0.955)	(0.957)	(0.527)
Abret1yr		0.249***			0.247***	
		(0.002)			(0.003)	
Discount			-34.488***			-34.513***
			(0.000)			(0.000)
Underpring			-3.589			-3.519
			(0.103)			(0.110)
Constant	-8.000***	-7.945***	-6.358***	-7.932***	-7.881***	-6.291***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	34512	33667	34512	34512	33667	34512

Panel B: Mutual Funds						
	5 trading days pre-offer			21 trading days pre-offer		
Pre-offer Net Buy	3.321***	3.264***	3.375***	2.052***	2.025***	2.091***
	(0.005)	(0.006)	(0.002)	(0.000)	(0.000)	(0.000)
Ln(instsize)	1.497***	1.504***	1.524***	1.475***	1.483***	1.502***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(offer size)	0.431	0.309	0.023	0.419	0.302	0.011
	(0.249)	(0.424)	(0.951)	(0.260)	(0.432)	(0.975)
Repuhi	2.766***	2.979***	1.728**	2.763***	2.968***	1.724**
	(0.000)	(0.000)	(0.013)	(0.000)	(0.000)	(0.013)
Hitek	-0.255	-0.199	0.252	-0.278	-0.222	0.225
	(0.653)	(0.731)	(0.646)	(0.624)	(0.700)	(0.682)
Abret1yr		0.622**			0.606**	
		(0.013)			(0.015)	
Discount			-80.765***			-80.946***
			(0.000)			(0.000)
Underpring			-12.966**			-12.604**
			(0.013)			(0.016)
Constant	-31.219***	-30.894***	-26.751***	-30.914***	-30.621***	-26.453***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	7864	7694	7864	7864	7694	7864

Panel C: Plan Sponsors						
	5 trading days pre-offer			21 trading days pre-offer		
Pre-offer Net Buy	2.445***	2.443***	2.362***	1.029***	1.056***	0.991***
	(0.007)	(0.009)	(0.008)	(0.008)	(0.008)	(0.009)
Ln(instsize)	0.01	0.009	0.012	0.01	0.009	0.012
	(0.172)	(0.254)	(0.125)	(0.175)	(0.260)	(0.126)
Ln(offer size)	-0.086	-0.098*	-0.112*	-0.085	-0.098*	-0.111*
	(0.109)	(0.093)	(0.057)	(0.111)	(0.094)	(0.058)
Repuhi	0.128	0.151	0.042	0.127	0.149	0.041
	(0.145)	(0.110)	(0.571)	(0.148)	(0.113)	(0.584)
Hitek	0.008	0.014	0.04	0.008	0.014	0.041
	(0.895)	(0.820)	(0.508)	(0.889)	(0.812)	(0.505)
Abret1yr		0.045**			0.045**	
		(0.039)			(0.040)	
Discount			-7.220***			-7.220***
			(0.001)			(0.001)
Underpring			-0.87			-0.869
			(0.128)			(0.128)
Constant	-1.045***	-1.024***	-0.699***	-1.047***	-1.025***	-0.701***
	(0.000)	(0.001)	(0.004)	(0.000)	(0.001)	(0.004)
Observations	26648	25973	26648	26648	25973	26648

Table 6. Institutional Share Allocation and Institutional Post-Offer Trading: Univariate Analysis. This table presents the summary statistics and univariate test results of institutional share allocation and institutional post-offer trading in the SEO firms' shares during the periods of the first 5 trading days since the offering, the first month (21 trading days) since the offering, and the first 3 months (63 trading days) since the offering, respectively. The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from January 1999 to September 2004. Offerings by firms that had at least one other equity issuance within half year before or after are excluded. Total Post-offer Net Buy is institutional total post-offer net buy in the SEO firms' shares scaled by the SEO firms' shares outstanding, in percentage unit. Allocation is the institutional share allocation scaled by total shares offered, in percentage units (Alloshroff). Panel A reports the results for the full sample of SEO/institution pairs. Panel B and Panel C report the results for the sub-samples of mutual funds and plan sponsors, respectively. Sample means for Total Post-offer Net Buy are reported. P-values are based on the two tailed t-test for the difference in means, assuming unequal variances. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

Panel A: Full Sample				
		Total Post-offer Net Buy		
	Number of Observations	First 5 days	First 1 month	First 3 months
By Institutions in SEOs with and without Allocation				
Institutions in SEOs with Allocation	5,185	0.040	0.072	0.078
Institutions in SEOs without Allocation	28,982	0.011	0.018	0.030
Difference in Post-offer Net Buy		0.029	0.053	0.047
P-value		(0.000)***	(0.000) ***	(0.000) ***
Sample of Institutions in SEOs with Allocation, by Allocation Above and Below Median				
Allocation Above Median	2,592	0.077	0.137	0.152
Allocation Below Median	2,593	0.004	0.006	0.004
Difference in Post-offer Net Buy		0.073	0.131	0.148
P-value		(0.000) ***	(0.000) ***	(0.000) ***
Sample of Institutions in SEOs with Allocation, split into 5 quintiles				
Highest Quintile	1,037	0.160	0.295	0.323
Quintile 4	1,037	0.025	0.040	0.047
Quintile 3	1,037	0.010	0.016	0.014
Quintile 2	1,037	0.005	0.005	0.005
Lowest Quintile	1,037	0.001	0.002	0.000

Panel B: Mutual Funds				
		Total Post-offer Net Buy		
	Number of Observations	First 5 days	First 1 month	First 3 months
By Institutions in SEOs with and without Allocation				
Institutions in SEOs with Allocation	1,246	0.136	0.255	0.298
Institutions in SEOs without Allocation	6,424	0.039	0.061	0.109
Difference in Post-offer Net Buy		0.097	0.193	0.189
P-value		(0.000) ***	(0.000) ***	(0.000) ***
Sample of Institutions in SEOs with Allocation, by Allocation Above and Below Median				
Allocation Above Median	623	0.239	0.454	0.482
Allocation Below Median	623	0.034	0.056	0.114
Difference in Post-offer Net Buy		0.205	0.398	0.367
P-value		(0.000) ***	(0.000) ***	(0.000) ***
Sample of Institutions in SEOs with Allocation, split into 5 quintiles				
Highest Quintile	250	0.366	0.779	0.749
Quintile 4	253	0.178	0.260	0.328
Quintile 3	244	0.065	0.099	0.178
Quintile 2	249	0.042	0.084	0.139
Lowest Quintile	250	0.029	0.048	0.092

Panel C: Plan Sponsors				
		Total Post-offer Net Buy		
	Number of Observations	First 5 days	First 1 month	First 3 months
By Institutions in SEOs with and without Allocation				
Institutions in SEOs with Allocation	3,939	0.010	0.014	0.008
Institutions in SEOs without Allocation	22,558	0.003	0.006	0.008
Difference in Post-offer Net Buy		0.007	0.008	0.000
P-value		(0.000) ***	(0.000) ***	(0.895)
Sample of Institutions in SEOs with Allocation, by Allocation Above and Below Median				
Allocation Above Median	1,968	0.017	0.024	0.014
Allocation Below Median	1,971	0.003	0.004	0.002
Difference in Post-offer Net Buy		0.014	0.020	0.012
P-value		(0.000) ***	(0.000) ***	(0.001) ***
Sample of Institutions in SEOs with Allocation, split into 5 quintiles				
Highest Quintile	787	0.027	0.038	0.021
Quintile 4	788	0.012	0.015	0.012
Quintile 3	789	0.007	0.010	0.007
Quintile 2	788	0.003	0.004	0.002
Lowest Quintile	787	0.001	0.001	-0.001

Table 7. Institutional Pre-offer Trading, Institutional Share Allocation, and Institutional Post-Offer Trading: Multivariate Analysis. This table presents an OLS regression analysis of the relationship between institutional SEO share allocation, institutional pre-offer trading, and institutional post-offer trading. The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from January 1999 to September 2004. Offerings by firms that had at least one other equity issuance within half year before or after are excluded. The dependent variables are institutional total post-offer net buy in the SEO firms' shares scaled by the SEO firms' shares outstanding, in percentage unit, during the first 5 trading days, first 1 month, and first 3 months trading period since the offer, respectively. Mf is the mutual funds dummy, with 1 for mutual funds and 0 for plan sponsors. Alloshroff is the institutional share allocation scaled by total shares offered, in percentage units. Pre-offer Net Buy is the institutional total net buy in shares scaled by the issuing firm's shares outstanding, aggregated over a 5 trading-day window before the offering, with the trading window ending one day before the offering, in percentage unit. Ln(instsize) is the natural logarithm of institution size. Lnsize is the natural logarithm of the SEO firms' market capitalization of equity after the offering. Repuhi is a dummy variable for underwriter reputation. Repuhi equals 1 for high reputation underwriters (highest lead underwriters' or bookrunner's rank is 9.1), and 0 otherwise. The underwriters' rank is from Jay Ritter's website (Loughran and Ritter (2004)), which are loosely based on Carter and Manaster (1990) and Carter, Dark, and Singh (1998) rankings. Hitek is a dummy variable that equals 1 for issuers in a hitech industry and 0 otherwise, as identified by SDC. Abret1yr is the 1 year post-SEO abnormal return, measured as the raw buy-and-hold return 1 year post-SEO minus the return of the size and book-to-market matched portfolio. Discount is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. Underpricing is the natural logarithm of the ratio of the offer day closing price to the offer price. Panel A reports the results for the full sample of SEO/institution pairs. Panel B and Panel C report the results for the sub-samples of mutual funds and plan sponsors, respectively. P-values are in parentheses. The p-values are based on White's robust standard errors with clustering on SEOs. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

Panel A: Full Sample

	First 5 days			First 1 month			First 3 months		
Alloshroff	0.015***		0.013***	0.034***		0.032***	0.030***		0.028***
	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)
Pre-offer Net Buy		0.400***	0.384***		0.584***	0.545***		0.444**	0.410**
		(0.001)	(0.001)		(0.001)	(0.001)		(0.028)	(0.038)
Mf	0.027***	0.029***	0.024***	0.035***	0.044***	0.032***	0.055***	0.063***	0.052***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ln(instsize)	0.003***	0.003***	0.002***	0.005***	0.008***	0.004***	0.013***	0.015***	0.012***
	(0.001)	(0.001)	(0.008)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lnsize	-0.005***	-0.005***	-0.005***	-0.009***	-0.009***	-0.008***	-0.011***	-0.011***	-0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Repuhi	0.002	0.002	0.001	0.001	0.001	-0.001	-0.008	-0.007	-0.008
	(0.507)	(0.500)	(0.678)	(0.910)	(0.772)	(0.907)	(0.342)	(0.395)	(0.280)
Hitek	-0.001	-0.002	-0.002	-0.002	-0.002	-0.003	0.002	0.002	0.001
	(0.742)	(0.559)	(0.433)	(0.699)	(0.622)	(0.420)	(0.795)	(0.805)	(0.939)
Discount	0.001	-0.017	0.013	-0.006	-0.063	0.012	-0.023	-0.074	-0.009
	(0.992)	(0.726)	(0.784)	(0.936)	(0.423)	(0.880)	(0.871)	(0.591)	(0.948)
Underpricing	0.033	0.023	0.027	0.001	-0.019	-0.009	0.062	0.047	0.056
	(0.152)	(0.312)	(0.230)	(0.998)	(0.589)	(0.800)	(0.386)	(0.529)	(0.451)
Constant	0.023**	0.018*	0.024**	0.038**	0.026*	0.040**	0.004	-0.006	0.006
	(0.022)	(0.052)	(0.013)	(0.019)	(0.097)	(0.013)	(0.847)	(0.797)	(0.801)
Observations	34167	34167	34167	34167	34167	34167	34167	34167	34167
R-squared	0.028	0.061	0.072	0.046	0.053	0.08	0.021	0.021	0.028

	Panel B: Mutual Funds					Panel C: Plan Sponsors				
	First 5 days	First 5 days	First 5 days	First 1 month	First 3 months	First 5 days	First 5 days	First 5 days	First 1 month	First 3 months
Alloshroff	0.015***		0.013***	0.032***	0.027***	0.001		0.001	0.002	-0.008
	(0.001)		(0.001)	(0.001)	(0.001)	(0.952)		(0.962)	(0.791)	(0.463)
Pre-offer Net Buy		0.405***	0.390***	0.551***	0.409**		0.098***	0.098***	0.210***	0.149
		(0.001)	(0.001)	(0.002)	(0.044)		(0.002)	(0.002)	(0.008)	(0.122)
Ln(instsize)	0.007**	0.010***	0.005	0.010*	0.036***	0.002***	0.002***	0.002***	0.003***	0.005***
	(0.041)	(0.001)	(0.116)	(0.064)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lnsize	-0.017***	-0.016***	-0.015***	-0.027***	-0.033***	-0.003***	-0.003***	-0.003***	-0.004***	-0.005***
	(0.002)	(0.004)	(0.005)	(0.002)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Repuhi	0.014	0.013	0.010	0.003	-0.018	0.001	0.001	0.001	0.001	-0.003*
	(0.288)	(0.324)	(0.464)	(0.886)	(0.587)	(0.556)	(0.597)	(0.589)	(0.756)	(0.069)
Hitek	-0.006	-0.009	-0.010	-0.016	0.004	0.001	0.001	0.001	0.001	-0.002
	(0.605)	(0.377)	(0.349)	(0.320)	(0.890)	(0.622)	(0.663)	(0.660)	(0.388)	(0.146)
Discount	0.007	-0.053	0.053	-0.065	-0.189	-0.013	-0.012	-0.012	0.016	0.015
	(0.971)	(0.778)	(0.776)	(0.828)	(0.725)	(0.243)	(0.255)	(0.274)	(0.378)	(0.627)
Underpricing	0.133	0.091	0.103	-0.069	0.182	0.007	0.007	0.007	0.003	0.018
	(0.198)	(0.364)	(0.302)	(0.669)	(0.606)	(0.327)	(0.338)	(0.327)	(0.797)	(0.171)
Constant	0.078*	0.050	0.083*	0.151**	-0.024	0.013***	0.013***	0.013***	0.016***	0.017***
	(0.090)	(0.264)	(0.065)	(0.049)	(0.832)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Observations	7670	7670	7670	7670	7670	26497	26497	26497	26497	26497
R-squared	0.02	0.055	0.067	0.074	0.022	0.011	0.013	0.013	0.018	0.016

Table 8. Pattern of Institutional SEO Share Allocation Sales. This table presents the pattern of institutional SEO share allocation sales. The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from January 1999 to December 2004, which were present in COMPUSTAT at the time of the offering, and were covered by CRSP for at least one year from issuance, and have matched portfolios. The first year post-SEO is divided into 16 sub-periods. Day 1 is the first trading day post-offer. Day 2 is the second trading day post-offer. Week 1 (excluding the first 2 days) is trading day 3 to trading day 5. Week 2 through week 4 each consists of 5 trading days. Month 1 through month 12 each consists of 21 trading days. Allocation Sales are identified as described in section 3.4. Period Allocation Sales as Fraction of Allocation is computed as the total shares of allocation sold during the period divided by the total shares acquired in the allocation. Cumulative Allocation Sales as Fraction of Allocation is computed as the cumulative total shares of allocation sold till the end of the period divided by the total shares acquired in the allocation.

	Period Allocation Sales as Fraction of Allocation			Cumulative Allocation Sales as Fraction of Allocation		
	All Institutions	Mutual Funds	Plan Sponsors	All Institutions	Mutual Funds	Plan Sponsors
Number of Obs.	4,354	1,060	3,294	4,354	1,060	3,294
Day 1 (%)	2.185	2.320	1.170	2.185	2.320	1.170
Day 2 (%)	1.010	1.040	0.791	3.195	3.360	1.962
Week 1 (exclud. first 2 days) (%)	1.659	1.671	1.571	4.854	5.030	3.533
Week 2 (%)	2.935	2.880	3.341	7.788	7.911	6.874
Week 3 (%)	1.727	1.669	2.160	9.515	9.579	9.034
Week 4 (%)	1.630	1.462	2.888	11.145	11.041	11.922
Month 1 (%)	11.411	11.299	12.254	11.411	11.299	12.254
Month 2 (%)	7.458	7.114	10.032	18.870	18.413	22.286
Month 3 (%)	6.737	6.650	7.391	25.607	25.062	29.677
Month 4 (%)	5.156	4.853	7.420	30.762	29.915	37.097
Month 5 (%)	8.765	9.140	5.961	39.528	39.055	43.057
Month 6 (%)	4.952	5.032	4.354	44.479	44.087	47.412
Month 7 (%)	3.429	3.323	4.223	47.909	47.410	51.635
Month 8 (%)	3.221	3.147	3.772	51.078	50.502	55.381
Month 9 (%)	2.417	2.317	3.162	53.834	53.224	58.382
Month 10 (%)	3.054	3.082	2.846	56.837	56.318	60.742
Month 11 (%)	2.615	2.502	3.453	58.988	58.309	64.046
Month 12 (%)	1.320	1.074	3.136	60.417	59.497	67.206

Table 9. Profitability of Institutional SEO Share Allocation Sales. This table presents the profitability of institutional share allocation sales. The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from January 1999 to December 2004, which were present in COMPUSTAT at the time of the offering, and were covered by CRSP for at least one year from issuance. The SEOs also need to have non-negative book value of equity at the time of offering to be included in this analysis (in order to be assigned to a Fama-French size and book-to-market matched portfolio). Allocation Sales are identified as described in section 3.4. Panel A reports the summary statistics of institutional share allocation. Amount invested is computed as the offer price multiplied by the shares allocated. Fraction of Offer Allocated is calculated as the total amount invested by sample institutions in share allocations divided by the total proceeds by the SEOs. Money Left on the Table equals Amount Invested times the SEO underpricing. Panel B reports the profit in dollar amount and in return measured at 1 year post-SEO. Raw Profit is the total raw profit earned by sample institutions from selling their allocation during the 1 year post-SEO using actual transaction prices net of commissions and taxes and fees, with any unsold position from allocations marked to market at the end of 1 year. Raw Return from Allocation Sales is the total raw profit divided by the total dollar amount invested in allocations by sample institutions. Allocation Underpricing is the dollar proceeds weighted underpricing of the shares allocated to institutions. Raw Realization Shortfall (%) equals Allocation Underpricing minus the Raw Return from Allocation Sales. Profit in Current Dollars is computed by discounting the raw profit back to the day before the offering using the matched Fama-French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Return using Current Dollars from Allocation Sales is the total profit in current dollars divided by the total dollar amount allocated to sample institutions. Realization Shortfall in Current Dollars (%) equals Allocation Underpricing minus the Return using Current Dollars from Allocation Sales. Difference in the last column presents the difference in means of the profits and return measures between mutual funds and plan sponsors. The p-value for testing whether the mean is different from zero is in parentheses. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

	Panel A: Amount Investment in Allocation		
	All Institutions	Mutual Funds	Plan Sponsors
Number of Observation	4,354	1,060	3,294
Mean Amount Invested ($ million)	2.602	9.428	0.406
Total Amount Invested ($ million)	11,329.323	9,993.248	1,336.075
Fraction of Offer Allocated (%)	8.639	7.620	1.019
Mean Money Left on the Table ($ million)	0.075	0.279	0.009
Total Money Left on the Table ($ million)	324.217	296.209	28.008

	Panel B: Profit from Allocation Sales at 1 Year Post-SEO			
	All Institutions	Mutual Funds	Plan Sponsors	Difference
Raw Profit ($ thousand)	194.290	693.846	33.535*	660.312
	(0.334)	(0.400)	(0.069)	(0.423)
Raw Return from Allocation Sales (%)	7.467***	7.36**	8.268***	-0.908
	(0.001)	(0.041)	(0.001)	(0.823)
Allocation Underpricing (%)	2.8647***	2.9673***	2.0972***	0.870***
	(0.001)	(0.001)	(0.001)	(0.001)
Raw Realization Shortfall (%)	-4.592***	-4.380	-6.176***	1.7964
	(0.009)	(0.224)	(0.001)	(0.658)
Profit in Current Dollars ($ thousand)	46.803	167.613	7.926	159.686
	(0.766)	(0.795)	(0.611)	(0.805)
Return using Current Dollars from Allocation Sales (%)	1.799	1.778	1.954	-0.176
	(0.168)	(0.507)	(0.147)	(0.953)
Realization Shortfall in Current Dollars (%)	1.0721	1.1961	0.145	1.0511
	(0.412)	(0.656)	(0.914)	(0.726)

Table 10. Profitability of Institutional Post-offer Trading. This table presents the univariate results of the profitability of institutional trading over the 1 year period post-offer, split by SEO/institution pairs with and without allocations (Panel A), and by institution types (Panel B). The unit of observation is an SEO/institution pair. The SEOs include all sample seasoned equity offerings issued from January 1999 to December 2004 without any other offers during the immediate 1 year before and after the issuance. The SEOs also need to be present in COMPUSTAT and CRSP at the time of the offering, and have non-negative book value of equity at the time of offering to be included in this analysis (in order to be assigned to a Fama-French size and book-to-market matched portfolio). Institutional trading profitability is reported based on post-SEO secondary market trading, excluding allocation sales (left three columns) and on total trading which includes profits from allocation sales (right three columns), respectively. Allocation Sales are identified as described in section 3.4. Raw Profit is the total raw profit earned by institutions using actual transaction prices net of commissions and taxes and fees, with the net position marked to market at the end of 1 year post-SEO. Profit in Current Dollars is computed by discounting the raw profit back to the day before the offering using the matched Fama-French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. We use two measures to proxy the amount invested for post-SEO trading, namely, the Buy Principal and the Maximum Investment. Raw Buy Principal is the sum of the actual dollar amounts of all the buy transactions including commissions and taxes and fees spent by sample institutions during the 1 year post-SEO. Raw Maximum Investment is the maximum dollar amount committed to trading the SEO firms' shares during the 1 year post-SEO by sample institutions, as described in section 4.2.3. Buy Principal in Current Dollars and Maximum Investment in Current Dollars are computed by discounting the Raw Buy Principal and the Raw Maximum Investment, respectively, back to the day before offering using the matched Fama-French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Raw Return on Buy Principal (or on Maximum Investment) equals the raw profit divided by the Raw Buy Principal (or the Raw Maximum Investment). SEO Buy & Hold Raw Return is the post-issue market-capitalization-weighted raw 1 year post-SEO buy & hold return for all the sample SEOs issued during the 1999-2004 period which are included in this analysis. Raw Outperformance on Buy Principal (or on Maximum Investment) equals institutional raw return on Buy Principal (or on Maximum Investment) from post-SEO trading minus the SEO buy-and-hold raw return. Return using Current Dollars on Buy Principal (or on Maximum Investment) equals profit in current dollars divided by the Buy Principal (or Maximum Investment) in current dollars. SEO Buy & Hold Return using Current Dollars is computed by discounting SEO buy-and-hold raw return back to the day before the offering using the matched Fama-French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Outperformance Using Current Dollars on Buy Principal (or on Maximum Investment) equals institutional post-SEO trading return using current dollars on Buy Principal (or on Maximum Investment) minus the SEO buy-and-hold return using current dollars. All return measures are in percentage units. The p-value for testing whether the mean is different from zero is in parentheses. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

	Post-SEO Trading, Excl. Allo. Sales			Total Trading		
	With Allocation	Without Allocation	Test of Difference	With Allocation	Without Allocation	Test of Difference
Number of SEO/institution Pair	4354	23037		4354	23037	
Raw Profit ($ mil.)	0.885	-0.393		1.079	-0.393	
Raw Buy Principal ($ mil.)	13.503	6.202		16.105	6.202	
Raw Maximum Investment ($ mil.)	9.513	4.791		12.115	4.791	
Profit in Current Dollars ($ mil.)	0.267	-0.465		0.314	-0.465	
Buy Princ. in Current Dollars ($ mil.)	12.812	6.112		15.414	6.112	
Max. Inv. in Current Dollars ($ mil.)	9.227	4.68		11.829	4.68	
Raw Return on Buy Principal (%)	6.551***	-6.340***	12.891***	6.699***	-6.340***	13.039***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SEO Buy & Hold Raw Return (%)	-4.308	-4.308		-4.308	-4.308	
	(0.254)	(0.254)		(0.254)	(0.254)	
Raw Outperformance on Buy Princ. (%)	10.859***	-2.032		11.007***	-2.032	
	(0.005)	(0.592)		(0.005)	(0.592)	
Raw Return on Max. Investment (%)	9.299***	-8.207***	17.506***	8.906***	-8.207***	17.113***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SEO Buy & Hold Raw Return (%)	-4.308	-4.308		-4.308	-4.308	
	(0.254)	(0.254)		(0.254)	(0.254)	
Raw Outperformance on Max. Inv. (%)	13.607***	-3.899		13.214***	-3.899	
	(0.001)	(0.304)		(0.001)	(0.304)	
Return using Current Dollars	2.085***	-7.603***	9.688***	2.037**	-7.603***	9.640***
on Buy Principal (%)	(0.006)	(0.001)	(0.001)	(0.010)	(0.001)	(0.001)
SEO Buy & Hold Return Using Current	-10.167***	-10.167***		-10.167***	-10.167***	
Dollars (%)	(0.001)	(0.001)		(0.001)	(0.001)	
Outperformance Using Current Dollars	12.252***	2.564		12.204***	2.564	
On Buy Principal (%)	(0.001)	(0.367)		(0.001)	(0.367)	
Return using Current Dollars	2.895***	-9.929***	12.825***	2.654**	-9.929***	12.583***
(on Max. Inv.) (%)	(0.007)	(0.001)	(0.001)	(0.012)	(0.001)	(0.001)
SEO Buy & Hold Return Using Current	-10.167***	-10.167***		-10.167***	-10.167***	
Dollars (%)	(0.001)	(0.001)		(0.001)	(0.001)	
Outperformance Using Current Dollars	13.062***	0.238		12.821***	0.238	
On Maximum Investment (%)	(0.001)	(0.934)		(0.001)	(0.934)	

Table 11. Institutional Pre-Offer Trading and the SEO Discount: Univariate Analysis. This table presents the summary statistics and univariate test results of institutional pre-offer trading and the SEO discount. The sample includes 1033 SEOs issued between February 1999 and December 2004 that are traded by sample institutions, and present in the CRSP databases at the time of the offering. The SEO discount is the natural logarithm of the ratio of the pre-offer day closing price to the offer price, in percentage units. Pre-offer Net Buy is the institutional total net buy in shares aggregated at the SEO level scaled by the issuing firm's shares outstanding, in percentage unit. In panels A, B, and C, the sample of SEOs is split by above and below the median pre-offer net buy in the 3, 5, and 10 pre-offer trading days, respectively, ending at the day before the offering. P-value for Difference is the p-value (in parentheses) for testing the difference of the SEO discount between the above-median and below-median pre-offer net buy SEO groups (t-test for difference in means; Mann-Whitney test for difference in medians). Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

Panel A: Pre-offer 3 Trading days

Split by Median Pre-offer Net Buy	Number of SEOs	Pre-offer Net Buy (Mean)	Discount (Mean)	Discount (Median)
Above Median	516	0.339	2.62%	1.79%
Below Median	517	-0.110	3.39%	2.54%
P-value for Difference			(0.001)***	(0.001)***

Panel B: Pre-offer 5 Trading days

Split by Median Pre-offer Net Buy	Number of SEOs	Pre-offer Net Buy (Mean)	Discount (Mean)	Discount (Median)
Above Median	517	0.449	2.60%	1.89%
Below Median	516	-0.149	3.41%	2.43%
P-value for Difference			(0.001)***	(0.003)***

Panel C: Pre-offer 10 Trading days

Split by Median Pre-offer Net Buy	Number of SEOs	Pre-offer Net Buy (Mean)	Discount (Mean)	Discount (Median)
Above Median	516	0.659	2.90%	2.02%
Below Median	517	-0.260	3.11%	2.27%
P-value for Difference			(0.342)	(0.225)

Table 12. Institutional Share Allocation, the SEO Discount, and SEO Underpricing: Univariate Analysis. This table presents the summary statistics on institutional share allocation in SEOs by quartiles of the SEO discount and SEO underpricing. Discount is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. Underpricing is the natural logarithm of the ratio of the offer day closing price to the offer price. The sample includes 1033 SEOs issued between February 1999 and December 2004 that are traded by sample institutions, and present in the CRSP databases at the time of the offering. For discount, underpricing, proceeds, and % of offer allocated, means and medians are reported, with medians in parentheses. The p-values for the Kruskal-Wallis test for equality of medians across the quartile groups are reported in the last column. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

	Panel A: Partitioned by Discount Quartiles (Low to High)				
	1 Disc.<0.48%	2 0.48%<=Disc.<2.12%	3 2.12%<=Disc.<4.31%	4 Disc.>=4.31%	Kruskal-Wallis Test (p-value)
Number of SEOs	258	258	258	259	
Discount	0.004%	1.269%	3.045%	7.681%	
	(0.001%)	(1.277%)	(3.004%)	(6.551%)	
Proceeds Offered ($mil.)	210.508	200.435	144.158	99.541	
	(129.950)	(112.000)	(96.650)	(66.500)	(0.001) ***
Proceeds Allocated to All Institutions ($ mil.)	37.196	18.685	9.515	3.856	
	(12.709)	(4.949)	(0.001)	(0.001)	(0.001) ***
Proceeds Allocated to Mutual Funds ($ mil.)	32.852	16.383	8.224	3.145	
	(9.497)	(1.477)	(0.001)	(0.001)	(0.001) ***
Proceeds Allocated to Plan Sponsors ($ mil.)	4.344	2.302	1.291	0.711	
	(9.497)	(1.477)	(0.001)	(0.001)	(0.001) ***
% of Offer Allocated to All Institutions (%)	14.067	10.458	7.35	4.144	
	(11.540)	(4.837)	(0.001)	(0.001)	(0.001) ***
% of Offer Allocated to Mutual Funds (%)	11.821	8.404	6.175	3.448	
	(8.421)	(2.055)	(0.001)	(0.001)	(0.001) ***
% of Offer Allocated to Plan Sponsors (%)	2.247	2.054	1.175	0.697	
	(1.704)	(0.457)	(0.001)	(0.001)	(0.001) ***

	Panel B: Partitioned by Underpricing Quartiles (Low to High)				
	1 Und.<0%	2 0%<=Und.<2.15%	3 2.15%<=Und.<6.9%	4 Und.>=6.9%	Kruskal-Wallis Test (p-value)
Number of SEOs	222	294	258	259	
Underpricing %	-3.586%	0.555%	4.489%	12.031%	
	(-2.532%)	(0.239%)	(4.355%)	(10.228%)	
Proceeds Offered ($mil.)	155.2599	179.0119	189.2647	127.6811	
	(102.750)	(107.450)	(95.550)	(87.000)	(0.147)
Proceeds Allocated to All Institutions ($ mil.)	17.069	21.231	18.56	11.781	
	(4.242)	(5.097)	(0.060)	(0.001)	(0.001) ***
Proceeds Allocated to Mutual Funds ($ mil.)	14.18	18.823	16.603	10.323	
	(1.035)	(2.412)	(0.001)	(0.001)	(0.001) ***
Proceeds Allocated to Plan Sponsors ($ mil.)	2.888	2.407	1.957	1.459	
	(0.813)	(0.414)	(0.001)	(0.001)	(0.001) ***
% of Offer Allocated to All Institutions (%)	10.010	10.681	8.525	6.700	
	(4.632)	(5.751)	(0.059)	(0.001)	(0.001) ***
% of Offer Allocated to Mutual Funds (%)	7.802	9.081	7.119	5.659	
	(1.351)	(3.115)	(0.001)	(0.001)	(0.001) ***
% of Offer Allocated to Plan Sponsors (%)	2.208	1.600	1.406	1.042	
	(0.884)	(0.589)	(0.001)	(0.001)	(0.001) ***

Table 13. Institutional Pre-Offer Trading, Institutional Share Allocation, and the SEO Discount: Multivariate Analysis. This table presents an OLS regression analysis of the relationship between institutional pre-offer trading, institutional share allocation, and SEO discount (the last column presents Tobit estimates). The sample includes 1029 SEOs which were issued between February 1999 and December, 2004, covered by the CRSP and COMUSTAT databases at the time of offering, and have valid price and return information for at least half year before the offer (for estimating the stock volatility). The dependent variable is the SEO discount, in percentage units, which is the natural logarithm of the ratio of the pre-offer day closing price to the offer price. Pre-offer Net Buy is the institutional total net buy in shares aggregated at the SEO level scaled by the issuing firm's shares outstanding, in 3, 5, and 10 pre-offer trading days, respectively, ending at the day before the offering, in percentage unit. Ln(pctallo) is the natural logarithm of the percentage of shares offered allocated to sample institutions. Ln(offer size) is the natural logarithm of the issue proceeds. Relative Offer Size is the ratio of offer proceeds to the SEO firm's market capitalization before offer. 1/(Offer Price) is one over the offer price. Roundprc is a dummy variable that equals 1 if the offer price is set at a dollar integer, and 0 otherwise. Volatility is the standard deviation of the SEO firms' stock return during the previous 126 trading days ending at 42 trading days before the offering. Repuhi is a dummy variable for underwriter reputation. Repuhi equals 1 for high reputation underwriters (highest lead underwriters' or bookrunner's rank is 9.1), and 0 otherwise. The underwriters' rank is from Jay Ritter's website (Loughran and Ritter (2004)), which are loosely based on Carter and Manaster (1990) and Carter, Dark, and Singh (1998) rankings. Hitek is a dummy variable that equals 1 for issuers in a hitech industry and 0 otherwise, as identified by SDC. CAR is defined as the cumulative market-adjusted return over the 5 days prior to the offer, where market return is defined as the return on the CRSP value-weighted index. CAR_Positive (CAR_negative) equals CAR if positive (negative) and zero otherwise. In Column 5, the dependent variable is winsorized at the 5th and 95th percentiles. An offer is primary unless it is 10% or more secondary. All regressions include year fixed effect. P-values are in parentheses. Statistical significance is indicated by *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

					Winsorized	Primary Offers	Secondary Offers	Tobit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pre-offer Net Buy (3 days)		-0.304**						
		(0.031)						
Pre-offer Net Buy (5 days)			-0.323***		-0.295***	-0.192	-0.477**	-0.415***
			(0.008)		(0.003)	(0.250)	(0.011)	(0.003)
Pre-offer Net Buy (10 days)				-0.181*				
				(0.051)				
Ln(pctallo)	-0.221***	-0.225***	-0.224***	-0.224***	-0.207***	-0.237***	-0.217***	-0.274***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(offer size)	-0.339***	-0.330**	-0.328**	-0.327**	-0.308***	-0.304	-0.280*	-0.435***
	(0.009)	(0.010)	(0.011)	(0.011)	(0.003)	(0.138)	(0.099)	(0.003)
Relative Offer Size	0.36	0.423	0.431	0.425	0.545	0.321	0.622	0.581
	(0.397)	(0.320)	(0.310)	(0.318)	(0.114)	(0.542)	(0.485)	(0.218)
1/(Offer Price)	22.832***	22.809***	22.805***	22.785***	15.820***	26.225***	15.729***	23.415***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)
Roundprc	1.642***	1.652***	1.661***	1.656***	1.377***	2.157***	1.238***	2.098***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	17.121***	17.440***	17.541***	17.447***	14.939***	19.280***	18.524***	21.824***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.008)	(0.001)	(0.000)
Repuhi	-0.359	-0.337	-0.327	-0.334	-0.370**	-0.096	-0.586**	-0.382
	(0.101)	(0.123)	(0.134)	(0.126)	(0.037)	(0.784)	(0.032)	(0.119)
Hitek	0.343	0.355*	0.355*	0.364*	0.311*	0.631*	0.059	0.387
	(0.112)	(0.099)	(0.099)	(0.092)	(0.075)	(0.065)	(0.827)	(0.113)
CAR_Positive	3.298**	3.369**	3.441**	3.305**	3.402***	3.798	2.586	3.803**
	(0.030)	(0.026)	(0.023)	(0.029)	(0.006)	(0.106)	(0.181)	(0.025)
CAR_Negative	-0.45	-0.36	-0.393	-0.433	-0.534	-1.915	1.583	0.234
	(0.739)	(0.790)	(0.771)	(0.749)	(0.626)	(0.366)	(0.355)	(0.878)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.158*	1.097	1.085	1.087	1.405**	0.116	1.708*	0.511
	(0.097)	(0.115)	(0.119)	(0.119)	(0.013)	(0.913)	(0.075)	(0.517)
Observations	1029	1029	1029	1029	1029	488	541	1029
R-squared	0.265	0.269	0.27	0.268	0.292	0.304	0.25	