

Institutional Trading, Allocation Sales, and Private Information in IPOs

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Abstract

We analyze the profitability and informativeness of institutional trading in IPOs, using a large sample of proprietary transaction-level trading data. We analyze the pattern and profitability of institutional IPO allocation sales, the profitability of post-IPO institutional trading, and the predictive power of institutional trading for subsequent long-run IPO performance. Our results can be summarized as follows. First, institutions continue to sell significant portions of their IPO allocations beyond the immediate post-IPO period (flipping during the first two trading days constitutes only 26.47 percent of total allocations sold by institutions within the first year after the IPO). Larger institutions sell their allocations faster than smaller institutions, suggesting that they have greater bargaining power with respect to the investment banking syndicate. Second, institutions realize most (96 percent) of the “money left on the table” for IPO allocations sold within the first year. Third, post-IPO institutional trading outperforms a buy-and-hold investment strategy in IPOs (but does not outperform or underperform the market in general), suggesting that institutions do possess some private information about IPOs. Institutions outperform more when trading shares in IPOs about which there is higher information asymmetry (younger firms and those underwritten by less reputable investment banks); further, larger institutions outperform by a higher margin than smaller institutions, suggesting that they have a comparative advantage in information production. Fourth, institutional trading has predictive power for subsequent long-run IPO performance, even after controlling for publicly available information, though this predictive power decays over time, becoming insignificant after the initial three to four months. Overall, our results indicate that institutional investors possess a significant informational advantage over retail investors about IPOs and receive considerable compensation for participating in these IPOs.

JEL classification: G14; G24

Keywords: Initial public offerings; Institutional investors; Trading; IPO allocations; Flipping

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1. Introduction

Starting with the Rock (1986) model, institutional investors have played an important role in the theoretical literature on the pricing and allocation of initial public offerings (IPOs). Rock (1986) argues that these institutional investors with private information about the true long-run value of the shares of the firm going public bid only on undervalued shares, leaving retail investors with a disproportionate share of overvalued IPOs. Thus, in the Rock (1986) setting, IPO underpricing is a mechanism to mitigate the adverse selection faced by retail investors, ensuring that they do not withdraw from the IPO market. A second strand of the literature is the bookbuilding literature (e.g., Benveniste and Spindt (1989)), which builds on the Rock (1986) assumption of informed institutional investors, and argues that the IPO bookbuilding process is a mechanism for extracting information from these institutional investors in order to use it to price shares in the IPO at the appropriate level. In their setting, underpricing is a means of compensating these institutional investors for truthfully revealing all value-relevant information useful in pricing shares in the IPO. A third strand of the literature (e.g., Chemmanur (1993)) views underpricing as a way of inducing information production by institutional and other investors about the firm going public. This information is reflected in the secondary market price of the firm's equity as a result of post-IPO trading by these informed investors, moving it closer to the firm's intrinsic value.¹

The central role played by institutional investors with private information in the theoretical literature on IPOs raises two sets of interesting empirical questions. The first set of questions deal with the information possessed by institutional investors. Do institutional investors really have private information about IPOs? If so, do they have more information about some IPOs than others? Further, do some institutions have more value-relevant information about IPOs than other institutions? Finally, is all the value-relevant information held by institutional investors incorporated into the IPO offer price, or are

¹ See Ritter and Welch (2002) for an excellent review of related theoretical and empirical literature on IPOs.

institutional investors left with residual information that they can profitably use in post-IPO trading? The existing literature has not been able to address most of these questions, perhaps due to data limitations.

The second set of questions deal with the “compensation” that institutions receive for the role they play in the IPO process, as postulated in the bookbuilding literature. While a large literature has documented that IPOs are underpriced on average, and several recent papers (e.g., Aggarwal (2003), Aggarwal, Prabhala, and Puri (2002), and Hanley and Wilhelm (1995)) have documented that institutions receive significant allocations in “hot” IPOs (where a considerable amount of money is “left on the table”), the ability of institutions to fully realize this money left on the table has been called into question. In particular, while institutional investors can fully realize all the money left on the table if they are able to sell their entire IPO allocation at the first-day closing price, it is well known that underwriters actively discourage them from doing so using various mechanisms.² Aggarwal (2003) documents that institutions sell only about 25.77 percent of the shares allocated to them during the first two days of post-IPO trading, and concludes that original investors hold onto their allocations for the most part.³ Clearly, if institutions cannot sell their allocations immediately after the IPO, then their realized profits might be significantly lower than the money left on the table, since IPOs underperform in the long run (see, e.g., Ritter (1991) and Ritter and Welch (2002)). However, there is no evidence in the literature so far regarding how institutions sell their IPO allocations beyond the immediate post-IPO period, so that the *realized* profitability of the IPO allocations that institutions receive is an open question in the existing literature. A separate but related question is whether, even if institutions realize superior profits from selling their IPO allocations, they dissipate these profits (partially or fully) in post-IPO trading.⁴

² For example, underwriters may penalize members of any selling group whose customers “flip” shares in the aftermarket by taking away their selling concession, which is referred to as penalty bids (Aggarwal (2003)). Another way of penalizing flippers is to reduce allocations to them in future IPOs (Ritter and Welch (2002) and Loughran and Ritter (2004)).

³ The 25.77 percent figure is calculated based on results reported in table 3 of Aggarwal (2003).

⁴ This last question has become particularly important in light of recent allegations of “laddering,” where institutions precommit to the underwriter to buy additional shares of equity in IPOs firms in the secondary market, in exchange for receiving larger IPO allocations in these firms (see, e.g., “Trade-offs: seeking IPO shares, investors offer to buy more in after-market” by Susan Pulliam and Randall Smith in the *Wall Street Journal*, December 6, 2000). In their

In this paper, we make use of a large sample of proprietary transaction-level institutional trading data to answer many of the above questions. Our sample includes transactions from January 1999 to December 2004 originated from 419 different institutions with total annualized principal traded of \$4.4 trillion. For an average IPO, our sample institutions collectively account for 11.2 percent of total trading volume reported in CRSP within the first year post-IPO. With this dataset, we are able to track institutional trading in 909 IPOs from January 1999 to December 2003 for one full year post-IPO. We identify IPO allocation sales and separate institutional IPO trading into two categories, namely, institutional IPO allocation sales and post-IPO institutional trading. This allows us to analyze them separately.

Our study has four parts. First, we study the pattern of institutional sales of their IPO allocations over a period of one year after the IPO. Second, we analyze the profitability of these institutional IPO allocation sales. This allows us to assess the extent of compensation that institutions actually receive for their participation in IPOs. Third, we examine the profitability of post-IPO institutional trading (i.e., profits from buying and selling shares in the secondary market alone). Fourth, we analyze the relation between institutional trading after the IPO (in the two days immediately following the IPO as well as in the months subsequent to the IPO up to one year) and subsequent long-run IPO performance. The latter two parts of our study allow us to answer the questions discussed earlier regarding the nature of the private information held by institutional investors.

Our paper provides a number of new results on IPOs and institutional trading. First, we document, for the first time in the literature, patterns of institutional IPO allocation sales over a period of one year after the IPO. We find that flipping during the first two trading days post-IPO constitutes only 26.47 percent of total allocations sold by institutions within the first year after the IPO. In other words, institutions continue to sell significant portions of their IPO allocations beyond the immediate post-IPO

theoretical model, Fulghieri and Spiegel (1993) argue that investment banks may use share allocations in underpriced IPOs to reward institutional investors in return for fees from other (non-underwriting) businesses. See also Loughran and Ritter (2002) for a similar argument.

period.⁵ We present the first evidence in the literature on how institutions sell their IPO allocations in the long run. Institutional IPO allocation sales drop sharply after month 1 and there is no spike in month 2, after underwriters stop monitoring investors' flipping activities, which usually occurs at the end of month 1 (see Aggarwal (2003) and Boehmer, Boehmer, and Fishe (2005)). We interpret this result as evidence that underwriters' monitoring mechanism for flipping does not appear to be very binding for institutions. We find that larger institutions flip faster than smaller institutions, suggesting that larger institutions have more bargaining power with respect to the investment banking syndicate and hence have more freedom to flip their allocations immediately after the IPO. We find that institutions sell hotter (more underpriced) and younger IPOs faster. Institutions also sell IPOs with poorer subsequent long-run performance faster.

Second, we study, for the first time in the literature, the *realized* profitability of institutional IPO allocation sales, using actual transaction prices. We are also able to incorporate the impact of trading commissions on realized institutional profitability.⁶ We document that institutional IPO allocation sales are highly profitable and institutions realize most of the money left on the table for allocations sold within the first year. After accounting for Fama/French factors, institutions realize 96 percent of the money left on the table, or 57 percent in terms of abnormal return. By selling IPO allocations, our sample institutions collectively made about \$8.6 billion in raw profits and \$7.9 billion in abnormal profits.

Third, we study the profitability of post-IPO trading by institutional investors, also for the first time in the literature. Post-IPO institutional trading outperforms a buy-and-hold investment strategy in

⁵ If one were to combine Aggarwal's (2003) with our results on flipping during the first two days after the IPO, one might infer that institutions sell about 97.36 percent (25.77 percent divided by 26.47 percent) of their total IPO allocations within the first year post-IPO. This number should be viewed with caution, since Aggarwal's (2003) findings may not apply to our sample. The lack of allocation data makes it impossible for us to make precise inferences in this regard. However, as long as our sample institutions do not behave dramatically differently from those in Aggarwal (2003), it is perhaps reasonable to conclude, based on both Aggarwal's (2003) and our results, that institutional investors sell most of their IPO allocations within the first year. Therefore, even though institutions hold onto their shares for the most part in the short run (as Aggarwal (2003) concludes after studying flipping within the first two trading days), institutions hold onto only a small fraction of their original IPO allocations by the end of the first year post-IPO.

⁶ In addition to trading commissions (which directly reduce realized profits), implicit trading costs such as implementation shortfall (Perold (1988)) could further reduce investors' realized profits. Our results account for both trading commissions and implicit trading costs, since we use actual transaction prices to calculate institutional investors' realized profits.

IPOs, suggesting that institutions continue to possess private information about IPO firms even after the IPO. Institutions are able to outperform more when there is higher information asymmetry about the IPO firm, namely younger IPOs and IPOs underwritten by less reputable investment banks. However, institutions' post-IPO trading does not outperform or underperform the market in general. Larger institutions outperform a buy-and-hold strategy in IPOs by a higher margin than smaller institutions. This suggests that larger institutions have a comparative advantage in producing information about IPO firms relative to smaller institutions, indicating the existence of economies of scale in information production.

Fourth, we study the predictive power of institutional trading on subsequent long-run IPO performance. This is the first paper to study the predictive power of institutional trading beyond the immediate post-IPO period. We document that institutional trading has predictive power for subsequent long-run IPO performance, even after controlling for publicly available information. However, the predictive power decays over time, becoming insignificant after the initial three to four months. After a company goes public, it has to make a significant amount of information publicly available (e.g., audited financial statements), which reduces outsiders' cost of information production. Therefore, our results suggest that institutions have a greater informational advantage when the cost of producing information is higher (during the immediate post-IPO period). Institutions gradually lose their informational advantage as more and more information about the IPO firm becomes publicly available. We also find that trading by large institutions has more predictive power, especially after controlling for publicly available information.

Krigman, Shaw, and Womack (1999) show that first-day block sales can predict long-run IPO performance. Our result on the predictive power of the first two days of institutional trading is thus consistent with theirs. However, there are important differences between our study and Krigman, Shaw, and Womack (1999), and we extend their long-term post-IPO return predictability results in several directions. First, in addition to institutional trading immediately after IPOs, we study the predictive power of subsequent institutional trading (up to one year post-IPO), and find that institutions' apparent predictive power early on diminishes over time. Second, unlike their study, which infers institutional

flipping by identifying block sales in the TAQ data, we use transaction-level institutional trading data that include the direction of each trade. It is widely known that the algorithm for inferring trade direction, while useful, is far from perfect. Third, we are able to study institutional trading even when their trades are not blocks, and find that even trades from small institutions have some predictive power. This is especially relevant given recent developments in trading such as program trading and decimalization, which have caused dramatic reductions in institutional trade sizes. Fourth, instead of flipping alone, we study institutional net buying (buying minus selling) in IPOs, and thus provide a more complete picture.⁷

Aggarwal (2003) studies IPO allocation and immediate flipping over the first two days after the IPO.⁸ Boehmer, Boehmer, and Fishe (2005) study the relation between IPO allocation, flipping, and long-term IPO performance. Ellis, Michaely, and O'Hara (2000) and Ellis (2006) study aftermarket trading by market makers in IPOs.⁹ While these papers focus on trading in the immediate post-IPO period (flipping), we characterize patterns of institutional IPO allocation sales over one full year after the IPO.

Our paper considerably enhances our understanding of the role of institutional investors in IPOs. First, our results indicate that, consistent with information production theories, institutional investors are able to generate superior information about IPOs. Further, we document that, as assumed by Rock (1986), institutional investors possess an informational advantage over retail investors, enabling them to select better performing IPOs. Second, we show that institutional investors are able to realize significant abnormal profits from selling their IPO allocations. They are thus able to realize most of the money left on the table in IPOs, even in the face of the long-term underperformance of IPOs and potential discouragement of flipping from members of the underwriting syndicate. In other words, institutional

⁷ See also Field and Lowry (2005), who find, using quarterly institutional holdings data, that IPOs with higher institutional ownership soon after the offering date have better long-run returns. Our results suggest that one reason underlying this could be that institutions sell more IPOs with worse long-run performance and buy more IPOs with better long-run performance.

⁸ There is a significant literature on IPO share allocation: see, e.g., Cornelli and Goldreich (2001) and Ljungqvist and Wilhelm (2002), who study share allocation in bookbuilding IPOs.

⁹ See also Griffin, Harris, and Topaloglu (2006), who study trading by clients through the lead underwriter immediately after an IPO, and investigate the reason for the predominance of buys over sells in such trading.

investors receive considerable compensation for participating in IPOs, broadly consistent with the implications of bookbuilding theories. Third, the fact that institutional trading in the months after the IPO has predictive power for subsequent long-term returns indicates that institutional investors retain a residual informational advantage even after the IPO. Consistent with this, the post-IPO trading of institutions is able to outperform a naive buy-and-hold strategy in IPOs, so that the superior profits institutions generate from their IPO allocation sales are not dissipated in post-IPO trading (allowing institutions to extract informational rents overall from investing in IPOs). Finally, our results show that larger institutions have a greater informational advantage relative to that of smaller institutions, indicating the existence of significant economies of scale in information production.

The remainder of this paper is organized as follows. Section 2 describes the data and sample selection procedures. Section 3 presents our algorithm for identifying institutional IPO allocation sales. Section 4 presents our results on the patterns of institutional IPO allocation sales. Sections 5 and 6 present our results on the profitability of institutional IPO allocation sales and post-IPO institutional trading, respectively. Section 7 presents our results on the relation between institutional trading and subsequent long-run IPO performance. Section 8 concludes with a discussion of our results.

2. Data and Summary Statistics

2.1. IPO Sample

We first identify all IPOs conducted in the U.S. markets from January 1999 to December 2003 using Securities Data Company (SDC) new issues database. This time period is chosen because the proprietary institutional trading data is from January 1999 to December 2004, and we track institutional IPO trading for one full year post-IPO. We exclude certificates, ADRs, shares of beneficial interest, units, closed-end funds, REITs, IPOs with an offer price less than \$5, and IPOs not found in CRSP. 990 IPOs satisfy the above criteria. We compute Book Equity for each IPO using COMPUSTAT data.¹⁰ 11 IPOs with missing Book Equity are excluded. Further, since we continuously track institutional IPO

¹⁰ For detailed definition of Book Equity, please see Ken French's website.

trading for one full year post-IPO, we also exclude 45 IPOs that are delisted within the first year post-IPO in CRSP.

Our initial sample consists of 934 IPOs from January 1999 to December 2003. Summary statistics of these IPOs can be found in Table 1 Panel A. The mean IPO Initial Return, measured from the offer price to the first-day closing price, is 54.85 percent. The total Money Left on the Table, defined as Offer Proceeds multiplied by Initial Return, is \$51.93 billion. Table 1 Panel A partitions our initial sample IPOs into two groups. IPOs traded by institutions are those traded by sample institutions within the first year post-IPO, and IPOs not traded by institutions are those not traded by any sample institution within the first year post-IPO. 909 out of 934 IPOs are traded by sample institutions. Institutions display some selectivity in IPOs. Perhaps not surprisingly, compared to IPOs traded by institutions, IPOs not traded by institutions have much lower offer prices on average (\$8.01 versus \$14.87), and much smaller offer sizes (1.89 million Shares Offered and \$18.39 million Offer Proceeds versus 7.31 million Shares Offered and \$122.11 million Offer Proceeds). Interestingly, IPOs not traded by institutions are also much “colder,” with average Initial Return of 3.73 percent versus 56.25 percent, and average Money Left on the Table of -\$0.29 million versus \$57.13 million. These differences are statistically significant. IPOs not traded by institutions also have worse long-run performance, even though the differences are not statistically significant. Overall, IPOs not traded by institutions are relatively unimportant, accounting for only 0.41 percent of total Offer Proceeds and leaving almost no money on the table.

Table 1 Panel B further partitions the 909 IPOs traded by institutions into hot versus cold IPOs using the median Initial Return of 24.4% as the cutoff. Hot IPOs have higher offer prices. As expected, most Money Left on the Table come from hot IPOs. Hot IPOs appear to have worse long-run performance (the differences in means are not statistically significant, but the differences in medians are). Throughout this paper, we separately examine hot versus cold IPOs for most of our results.

2.2. *Institutional Trading Sample*

We obtain proprietary 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, Keim and Madhavan (1995), Jones and Lipson (2001), Conrad, Johnson, and Wahal (2001), and Goldstein, Irvine, Kandel, and Wiener (2004). This is the first paper to use institutional trading data to study institutional investors' trading behavior in IPOs.

The data cover equity trading transactions by a large sample of institutions from January 1999 to December 2004. 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 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. An example of plan sponsors is the California Public Employees' Retirement System (CalPERS). Since we continuously track post-IPO trading for one full year, in order to be included in our sample, an institution has to have trading data for at least 13 consecutive months. For example, in order to for an institution to be included for January 1999 IPOs, the institution needs to have some trading data (in any stock, not just IPOs) in every month from January 1999 to January 2000.¹¹ Also sample institutions must have traded in at least one sample IPO within the first year post-IPO. 419 sample institutions satisfy the above criteria.

Summary statistics of our institutional trading sample are presented in Table 2. The total Annualized Principal Traded is \$4.39 trillion, the total Annualized Shares Traded is 147.70 billion, and

¹¹ This restriction is imposed so as to ensure data integrity. Conversations with our data provider reveal that most institutions provide their trading data to our data provider on a monthly basis. Sometimes, an institution may miss one or more months of data. Institutions may also come in or out of the trading data when they start or terminate our data provider's services.

the total Annualized Commissions Paid is \$5.40 billion. For an average IPO, our sample institutions collectively account for 11.24 percent of total trading volume reported in CRSP within the first year post-IPO.

The 419 sample institutions are further partitioned into large versus small institutions using \$10 billion Annualized Principal Traded as the cutoff. The distribution of the size of sample institutions is highly skewed. As a result, sample means are much larger than medians for Annualized Principal Traded, Annualized Shares Traded, and Annualized Commissions Paid. However, within each of the two institution size categories, sample means are much closer to medians (the distributions are much less skewed). There are 52 large institutions and 367 small institutions. Even though the number of large institutions is much smaller, they account for most (91 percent) of the total Annualized Principal Traded. This reflects the fact that the U.S. fund industry is highly concentrated. For example in 2000, the top 25 mutual fund families account for 74 percent of industry total assets under management (Investment Company Institute (2004)). Throughout this paper, we separately examine large versus small institutions for most of our results.

3. Identifying Institutional IPO Allocation Sales

We start our analysis by identifying institutional IPO allocation sales. For each sample IPO from January 1999 to December 2003, we continuously track trading by sample institutions for one full year starting on the first IPO trading day. This enables us to infer institutional IPO allocation sales within the first year post-IPO using the algorithm detailed below, even though we do not have data on IPO allocations. Simply put, the basic idea behind our algorithm is that, at any point of time, when shares sold exceed shares bought, these shares sold are classified as allocation sales.

For each IPO/institution pair, we implement the following algorithm recursively everyday starting from the first IPO trading day ($t=1$) to trading day 252 ($t=252$). It is important to note that the algorithm needs to be implemented recursively because our inferences are “path dependent.” For example, if an institution sells 100 shares of an IPO on the first day and then buys 500 shares of the same

IPO on the second day, the 100 shares sold on the first day is classified as allocation sales. However, if we reverse the order of these two trades (buys 500 shares on the first day and then sells 100 shares on the second day), the 100 shares sold is not classified as allocation sales (in this case, both trades are classified as post-IPO trading).

For each IPO/institution pair, we calculate the number of shares bought on day t , $N_B(t) = \sum_{j=1}^{B_t} N_B(j)$ where B_t is the number of buy trades in the IPO for the institution on day t , and $N_B(j)$ is the number of shares bought in the j th 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 the institution's IPO position on day t is the institution's trading imbalance:

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

Unfortunately, we cannot calculate the total cumulative IPO position, because we do not have IPO allocation data. We can, however, calculate the cumulative IPO position from “pure” post-IPO trading (buying and selling in the secondary market, excluding IPO allocation sales):

$$POS_{POSTIPO}(t) = POS_{POSTIPO}(t-1) + \Delta POS_{POSTIPO}(t), \quad (2)$$

where

$$POS_{POSTIPO}(0) = 0,$$

and

$$\Delta POS_{POSTIPO}(t) = \max(\Delta POS(t), -POS_{POSTIPO}(t-1)).$$

The IPO allocation shares sold on day t is:

$$N_S^{ALLO}(t) = -\min(0, POS_{POSTIPO}(t-1) + \Delta POS(t)). \quad (3)$$

And shares bought and sold in “pure” post-IPO trading excluding IPO allocation sales are:

$$\begin{aligned} N_B^{POSTIPO}(t) &= N_B(t) \\ N_S^{POSTIPO}(t) &= N_S(t) - N_S^{ALLO}(t). \end{aligned} \quad (4)$$

The above algorithm implies that shares bought in the secondary market are used to offset shares sold first, and are not considered IPO allocation sales. In other words, only those shares sold over and above what the institution bought in the secondary market are counted as allocation sales. This is consistent with the rules used by the Depository Trust Company's (DTC) IPO Tracking System (Aggarwal (2003)). By identifying IPO allocation sales, we effectively separate institutional IPO trading into two categories: IPO allocation sales and post-IPO trading. We then proceed to analyze them separately.

4. Patterns of Institutional IPO Allocation Sales

In this section, we study the patterns of institutional IPO allocation sales and the determinants of the speed of institutional IPO allocation sales, after identifying them using the algorithm detailed in the previous section. This is the first paper to analyze how institutions sell their allocations beyond the usual immediate post-IPO period (up to one year post-IPO).

4.1. Patterns of Institutional IPO Allocation Sales, Partitioned by IPO Initial Return

Table 3 Panel A reports results on institutional IPO allocation sales, partitioned by IPO Initial Return into hot versus cold IPOs. For institutional IPO allocation sales, Amount Invested on day t equals offer price multiplied by allocated shares sold on day t , $AI_{ALLO}(t) = P_{OFFER} N_S^{ALLO}(t)$, where P_{OFFER} is the IPO offer price. The Amount Invested in Table 3 is the total Amount Invested over the first year (252 trading days) post-IPO, $\sum_{t=1}^{252} AI_{ALLO}(t)$. On average for each IPO, sample institutions sold allocations with Amount Invested of \$15.35 million within first year post-IPO, which is 12.57 percent of Offer Proceeds. As we can see, the Fraction of Offer (Amount Invested divided by IPO Offer Proceeds) is higher for hot IPOs (15.34 percent for hot IPOs versus 10.31 percent for cold IPOs). There are two possible explanations: institutions get more allocations in hot IPOs or institutions sell more allocations in

hot IPOs. Because we do not have allocation data, we cannot distinguish between these two potential explanations. Hanley and Wilhelm (1995) show that institutional IPO allocation is constant at about 70 percent. Aggarwal (2003) show that institutions get only slightly higher allocations in hotter IPOs, but the first 2-day flipping is much higher in hotter IPOs. Taken together, our results suggest that institutions sell more allocations in hot IPOs during the first year post-IPO.

Table 3 also reports time series patterns of institutional IPO allocation sales. The first year post-IPO is divided into 13 trading periods. First 2-Day is the first two trading days post-IPO. Month 1 through Month 12 each consists of 21 trading days. In other words, Month 1 includes First 2-Day, and Month 1 through Month 12 are mutually exclusive. For each trading period, the table lists the ratio of the Amount Invested for allocations sold during that period divided by the total Amount Invested for all allocations sold during the first year post-IPO. Therefore by construction, percentages for Month 1 through Month 12 should sum to 100 percent.

Aggarwal (2003) analyze the First 2-Day flipping and find that institutions flip about 25.77 percent of shares allocated to them. She concludes that original investors hold onto their shares for the most part. This is perhaps partly due to the fact that underwriters actively monitor and discourage short-term flipping. It is also well known that IPOs tend to underperform in the long run (e.g., Ritter (1991) and Ritter and Welch (2002)). A naive buy-and-hold strategy in our sample IPOs generates a negative significant abnormal return of -22.59 percent within the first year post-IPO (Table 7). This raises the question that whether (and to what extent) Money Left on the Table is “real.”

Unlike Aggarwal (2003), we do not have total shares allocated to institutions, making it difficult for us to draw inferences about allocation sales relative to total IPO allocations. It is important to note that, however, given our institutional trading data, we can make reliable inferences about the time series dynamic patterns of institutional allocation sales relative to total allocation sales within the first year, and we can also compare the dynamic patterns of institutional allocation sales across different types of IPOs or institutions. These inferences enable us to answer questions previously unanswered.

We show that the First 2-Day flipping, while high, is only 26.47 percent of total allocations sold within the first year post-IPO. Our results suggest that institutions continue to sell significant portions of their IPO allocations after the immediate two trading days post-IPO: 15.81 percent (42.28 percent - 26.47 percent) for Month 1 excluding First-2 Day and 57.72 percent (100 percent - 42.28 percent) for the rest 11 months (Month 2 to Month 12). Our results later show that, for IPO allocations sold within the first year, most of the Money Left on the Table are indeed realized by institutions (after subtracting trading commissions and using real transaction prices by institutions). Thus, Money Left on the Table represents real gains to institutions that receive IPO allocations.

An interesting question is whether underwriters' mechanism for monitoring flipping activities is a binding constraint on institutions. If so, IPO allocation sales should be abnormally high in Month 2, because the practice is to track IPO flipping for 30 calendar days (Aggarwal (2003) and Boehmer, Boehmer, and Fishe (2005)). We do not observe a spike in flipping in Month 2. Allocation sales in Month 2 are much lower than in Month 1 and are perhaps only slightly higher than in subsequent months. These findings, combined with the fact that the First 2-Day is the most intensive period for allocation sales, suggest that underwriters' flipping monitoring mechanism is not very binding for institution investors.

Looking at hot versus cold IPOs separately, hot IPO allocations are sold much faster (32.56 percent versus 19.07 percent for First 2-Day and 48.37 percent versus 34.88 percent for Month 1; these differences are statistically significant). These results suggest that underwriters more actively discourage flipping in cold IPOs.

4.2. Patterns of Institutional IPO Allocation Sales, Partitioned by Institution Size

Table 3 Panel B reports results on institutional IPO allocation sales, partitioned by institution size into large versus small institutions. Each small institution gets \$6.05 million in IPO allocations, while each large institution gets \$225.62 million. An interesting finding here is that large institutions engage in much more short-term flipping than small institutions. For large institutions, First 2-Day flipping is 29.41

percent and Month 1 flipping is 45.61 percent, while for small institutions, First 2-Day flipping is only 10.95 percent and Month 1 flipping is only 24.74 percent. The differences are statistically significant. These results are consistent with large institutions having relatively more bargaining power with underwriters, and therefore having more freedom to flip their IPO allocations immediately.

4.3. *Determinants of Speed of Institutional IPO Allocation Sales*

In this subsection, we study the determinants of the speed of institutional IPO allocation sales. In terms of research design, we run different specifications of the following regression:

$$\begin{aligned}
 \text{First 2 - Day (Month 1) Flipping} = & \alpha + \beta_1 \text{Log}(\text{Age} + 1) + \beta_2 \text{Log}(\text{Reputation}) \\
 & + \beta_3 \text{Initial Return} + \beta_4 \text{Log}(\text{Proceeds}) + \beta_5 \text{Log}(\text{Institution Size}) + \beta_6 \text{Bubble} \\
 & + \beta_7 \text{NASDAQ} + \beta_8 \text{High - Tech} + \beta_9 \text{Financial} + \beta_{10} \text{Venture Capital} + \beta_{11} \text{Lockup} \\
 & + \beta_{12} \text{Log}(\text{ME}) + \beta_{13} \text{Log}(\text{BE/ME}) + \beta_{14} \text{Subsequent Return} + \varepsilon
 \end{aligned} \tag{5}$$

Table 4 reports results on regression analysis of the speed of institutional IPO allocation sales. We use two alternative measures of the speed of institutional IPO allocation sales as dependent variables. For regressions (1) to (4), the dependent variable is First 2-Day Flipping, which is defined as the ratio of First 2-Day IPO allocation sales and the first year IPO allocation sales. For regressions (5) to (8), the dependent variable is Month 1 Flipping, which is defined as the ratio of Month 1 IPO allocation sales and the first year IPO allocation sales.

Definitions of independent variables are as follows. $\text{Log}(\text{Age}+1)$ is the natural logarithm of the IPO firm age plus one, where age is IPO year minus company founding year. Company founding year data are obtained from the Field-Ritter dataset of company founding dates (Field and Karpoff (2002) and Loughran and Ritter (2004)). $\text{Log}(\text{Reputation})$ is the natural logarithm of the lead underwriter reputation ranking. The 1992-2000 rankings are used for 1999-2000 IPOs, and the 2001-2004 rankings are used for 2001-2003 IPOs. The maximum ranking is used when there are multiple lead underwriters. The rankings are obtained 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. Initial Return is the IPO return from the offer price to first-day closing price. $\text{Log}(\text{Proceeds})$ is the natural logarithm of the IPO Offer

Proceeds. $\text{Log}(\text{Institution Size})$ is the natural logarithm of the Annualized Principal Traded of the institution. Bubble equals one for 1999 and 2000 IPOs, and zero otherwise. NASDAQ equals one if it is a NASDAQ IPO, and zero otherwise. High-Tech equals one if the IPO firm is in high-tech industries (defined by SIC codes, see Ljungqvist and Wilhelm (2003) and Loughran and Ritter (2004) for details), and zero otherwise. Financial equals one if the IPO firm is in the financial industry (SIC codes 60-63 and 67), and zero otherwise. Venture Capital equals one if the IPO has venture capital backing, and zero otherwise. Lockup equals one if the IPO has a lockup provision, and zero otherwise. $\text{Log}(\text{ME})$ is the natural logarithm of the IPO firm's Market Equity, which equals shares outstanding multiplied by the first-day closing price. $\text{Log}(\text{BE}/\text{ME})$ is the natural logarithm of the ratio of the IPO firm's Book Equity and Market Equity. Subsequent Return is the IPO one-year abnormal return (net of the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return) starting after the IPO allocation sales period (First 2-Day for regressions (1) to (4), and Month 1 for regressions (5) to (8)). If delisted, the CRSP delisting return is used.

The regression coefficients on $\text{Log}(\text{Age}+1)$ are all negative and are significant in 7 out of 8 regressions, suggesting that institutions sell allocations in younger IPOs faster. Consistent with earlier univariate results, there is some evidence that institutions sell hotter (more underpriced) IPO allocations faster. However, Initial Return becomes insignificant once more independent variables are included. Also consistent with our univariate results, $\text{Log}(\text{Institution Size})$ is always positive and significant. This shows that after controlling for various IPO characteristics, larger institutions still sell their IPO allocations faster, indicating that they have more bargaining power with underwriters. Institutions sell allocations in IPOs issued during the 1999-2000 bubble period faster. We also find some evidence suggesting that high-tech IPOs and IPOs with lockup provisions are sold faster. Finally, the speed of institutional IPO allocation sales seems to have some predictive power for subsequent long-run abnormal returns. In other words, institutions flip out of worse long-run performers faster, suggesting that they may have private information.

5. Profitability of Institutional IPO Allocation Sales

Our results in the previous section suggest that institutions continue to sell significant portions of their IPO allocations beyond the immediate post-IPO period. In this section, we study how profitable these allocation sales are to institutions and how much of the Money Left on the Table is realized by institutions.

5.1. Profitability of Institutional IPO Allocation Sales, Partitioned by IPO Initial Return

Table 5 Panel A reports results on the profitability of institutional IPO allocation sales, partitioned by IPO initial return into hot versus cold IPOs. The Amount Invested by institutional investors reported in Table 5 is defined similarly to that in Table 3. For each IPO, sample institutions sold IPO allocations within the first year with \$9.04 million of Money Left on the Table. The Money Left on the Table is \$17.00 million per IPO for hot IPOs, and only \$1.06 million for cold IPOs. Institutional Raw Profit reported in Table 5 is defined as the total raw profit earned by institutions from selling their IPO allocations, using real transaction prices and net of trading commissions. Institutional Abnormal Profit is computed by discounting Institutional Raw Profit back to the first day of IPO using the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. We discount the raw profit to make it directly comparable to the money left on the table, which is calculated on the first day of IPO. We find that Institutional Abnormal Profit is in general close to Money Left on the Table, i.e., institutions realize most of the Money Left on the Table. For each IPO, sample institutions make \$8.69 million in abnormal profits from selling their allocations, which is about 96 percent (\$8.69 million divided by \$9.04 million) of the Money Left on the Table. Across IPO categories, the Institutional Abnormal Profit is slight less than the Money Left on the Table for hot IPOs, and for cold IPOs, Institutional Abnormal Profit can actually exceed Money Left on the Table. Overall, institutional IPO allocation sales are highly profitable. By selling IPO allocations, our sample institutions collectively made about \$8.6 billion (\$9.41 million multiplied by 909 IPOs) in raw profits and \$7.9 billion (\$8.69 million multiplied by 909 IPOs) in abnormal profits.

Raw \$ Realization Shortfall is defined as Money Left on the Table minus Institutional Raw Profit, and Abnormal \$ Realization Shortfall is defined as Money Left on the Table minus Institutional Abnormal Profit. We use these two measures to quantify how much of Money Left on the Table institutions fail to realize (hence the name realization shortfall). For all IPOs, the two \$ shortfall measures are small and not significantly different from zero, indicating both Institutional Raw Profit and Institutional Abnormal Profit are not significantly different from Money Left on the Table. Institutions realize significantly (at 5 percent level) less abnormal profits for hot IPOs, and significantly (at 10 percent level) more abnormal profits for cold IPOs.

We define Institutional Raw Return as Institutional Raw Profit divided by Amount Invested, and Institutional Abnormal Return as Institutional Abnormal Profit divided by Amount Invested.¹² Similar to findings using dollar values, we find that Institutional Abnormal Return is close to IPO Initial Return. Both Institutional Raw Return and Institutional Abnormal Return are very high, 61.33 percent and 56.64 percent respectively. In other words, IPO allocation sales are very profitable to institutions on return basis.

We define Raw Realization Shortfall as Raw \$ Realization Shortfall divided by Amount Invested, and Abnormal Realization Shortfall as Abnormal \$ Realization Shortfall divided by Amount Invested. Note that, by definition, Raw Realization Shortfall is also the difference between IPO Initial Return and Institutional Raw Return, and that Abnormal Realization Shortfall is the difference between IPO Initial Return and Institutional Abnormal Return. For all IPOs, both measures are small and not significantly different from zero. This means that institutions realize most of Money Left on the Table. Similar to dollar value results, institutions realize significantly (at 5 percent level) less abnormal profits for hot IPOs, and significantly (at 5 percent level) more abnormal profits for cold IPOs. When measured as a

¹² Following Ellis, Michaely, and O'Hara (2000), we study the dollar profitability of IPOs to institutions. In Table 5, all percentage values are value-weighted using Amount Invested as weights. This is done because value-weighted percentage values better reflect the true profitability of IPOs to institutions. This way, results on dollar and percentage values are consistent, for example, IPO Initial Return is equal to Money Left on the Table divided by the Amount Invested. This is also why the Initial Return reported in Table 5 is slightly different from the equal-weighted Initial Return reported in Table 1. The Initial Return reported in Table 5 better reflects the true profitability of IPOs allocated to institutions.

percentage of Money left on the Table (or Initial Return), institutions are able to realize about 85 percent of Money Left on the Table (or Initial Return) for hot IPOs, after controlling for Fama/French return factors.

5.2. Profitability of Institutional IPO Allocation Sales, Partitioned by Institution Size

Table 5 Panel B reports results on the profitability of institutional IPO allocation sales, partitioned by institution size into large versus small institutions. Each large institution realizes \$118.88 million in abnormal profits from selling their IPO allocations in the first year, while each small institution realizes \$4.69 million in abnormal profits. We find no evidence that large institutions are allocated hotter IPOs. In fact, the IPO Initial Return for large institutions is lower than that for small institutions, though the difference across institution categories is not statistically significant. Both large and small institutions are able to realize most of the money left on the table. After accounting for Fama/French return factors, the abnormal realization shortfall measures are not significantly different from zero for all, large, or small institutions.

6. Profitability of Post-IPO Institutional Trading

Our results in the previous section show that institutional IPO allocations sales are very profitable, and institutions realize most of the money left on the table within the first year post-IPO. In this section, we study the profitability of institutional post-IPO trading, and in particular, whether institutions can outperform a buy-and-hold investment strategy in IPOs. We then analyze the determinants of institutional outperformance in post-IPO trading.

6.1. Profitability of Post-IPO Institutional Trading, Partitioned by IPO Initial Return

Table 6 Panel A reports results on the profitability of post-IPO institutional trading, partitioned by IPO initial return hot versus cold IPOs. In Table 6, Amount Invested is defined as the actual dollar amount of buy principal plus trading commissions spent by sample institutions in post-IPO trading within

the first year post-IPO. Amount Invested in Current Dollars is computed by discounting Amount Invested back to the first day of IPO using the return on the matched Fama/French 25 Size and Book-to-Market portfolio. Both Amount Invested and Amounted Invested in Current Dollars are much higher for hot IPOs than for cold IPOs (both differences are statistically significant), suggesting that hot IPOs attract more post-IPO institutional investment.

We define Institutional Raw Profit as the raw profit earned by institutions from post-IPO trading (excluding allocation sales) within the first year post-IPO, using real buying and selling prices by institutions and net of trading commissions, and marking net positions to the market at the end of the first year post-IPO. Institutional Abnormal Profit is computed by discounting Institutional Raw Profit back to the first day of IPO using the return on the matched Fama/French 25 Size and Book-to-Market portfolio. On average, both Institutional Raw Profit and Institutional Abnormal Profit from post-IPO trading are much smaller compared to the profits from IPO allocation sales in Table 5 Panel A, even though the Amount Invested is much higher in post-IPO trading. Note that none of the dollar profits from post-IPO trading are significantly different from zero, suggesting that institutions do not significantly gain or lose money in post-IPO trading.

We define Institutional Raw Return as Institutional Raw Profit divided by Amount Invested. None of the Institutional Raw Returns are significantly different from zero. IPO Buy-and-Hold Raw Return is the first day closing market value-weighted buy-and-hold return from the first trading day to trading day 252 for the 934 initial sample IPOs. Further, we define Institutional Raw Outperformance as Institutional Raw Return minus IPO Buy-and-Hold Raw Return. Our objective is to see whether institutions can outperform a naive buy-and-hold investment strategy in IPOs by analyzing the difference between the above two returns. Overall, institutional post-IPO trading performs significantly better than a buy-and-hold strategy in IPOs (14.48 percent). The outperformance seems to mostly come from hot IPOs. Note that hot IPOs also have significantly negative buy-and-hold returns. Therefore, one explanation for our findings could be that institutions outperform a buy-and-hold strategy in post-IPO trading by avoiding IPOs that underperform significantly in the long run.

We define Institutional Abnormal Return as Institutional Abnormal Profit divided by Amount Invested in Current Dollars. IPO Buy-and-Hold Abnormal Return is computed by discounting IPO Buy-and-Hold Raw Return back to the first day of IPO using the return on the matched Fama/French 25 Size and Book-to-Market portfolio. Further, we define Institutional Abnormal Outperformance as Institutional Abnormal Return minus IPO Buy-and-Hold Abnormal Return. None of the Institutional Abnormal Returns are significantly different from zero, suggesting that institutions do not significantly outperform or underperform the overall stock market in post-IPO trading (after controlling for Fama/French factors). However, institutions do show some ability in trading IPOs in the secondary market, since they outperform a naive buy-and-hold investment strategy in IPOs, which is money-losing. Again, institutions' ability in post-IPO trading seems to stem from the ability to avoid "bad" IPOs, i.e., they outperform in hot IPOs, where the buy-and-hold returns are negative.

6.2. *Profitability of Post-IPO Institutional Trading, Partitioned by Institution Size*

Table 6 Panel B reports results on the profitability of post-IPO institutional trading, partitioned by institution size into large versus small institutions. The interesting result here is that while dollar profits and returns for large institutions are not significantly different from zero, they are negative and significant for small institutions. In other words, small institutions significantly underperform the overall stock market in post-IPO trading, while large institutions do not. When calculating the benchmark returns for the naive buy-and-hold strategy in IPOs, all 934 IPOs are included for small and large intuitions, because any institution can trade in any IPO. Both large and small institutions are able to outperform the naive buy-and-hold strategy in IPOs, but large institutions outperform by a larger margin and only large institutions do not significantly lose money. These results suggest that large institutions have more ability in post-IPO trading than small institutions.

6.3. *Determinants of Institutional Abnormal Outperformance in Post-IPO Trading*

In this subsection, we study the determinants of institutional abnormal outperformance in post-IPO trading in a regression framework. We run different specifications of the following regression:

$$\begin{aligned} \text{Institutional Abnormal Outperformance} = & \alpha + \beta_1 \text{Log}(\text{Age} + 1) + \beta_2 \text{Log}(\text{Reputation}) \\ & + \beta_3 \text{Initial Return} + \beta_4 \text{Log}(\text{Proceeds}) + \beta_5 \text{Log}(\text{Institution Size}) + \beta_6 \text{Bubble} \\ & + \beta_7 \text{NASDAQ} + \beta_8 \text{High-Tech} + \beta_9 \text{Financial} + \beta_{10} \text{Venture Capital} + \beta_{11} \text{Lockup} \\ & + \beta_{12} \text{Log}(\text{ME}) + \beta_{13} \text{Log}(\text{BE/ME}) + \varepsilon \end{aligned} \quad (7)$$

Table 7 reports the results of our regression analysis of institutional abnormal outperformance in post-IPO trading. The dependent variable is Institutional Abnormal Outperformance in post-IPO trading (see section 6.1. for more details). Definitions of the independent variables can be found in section 4.3.

Our results in Table 7 show that institutions are able to outperform more when there is higher information asymmetry about the IPO firm, namely in younger IPOs and IPOs underwritten by less reputable investment banks (coefficients on both $\text{Log}(\text{Age}+1)$ and $\text{Log}(\text{Reputation})$ are negative and significant). Consistent with our univariate results, larger institutions outperform more than smaller institutions (coefficients on $\text{Log}(\text{Institution Size})$ are positive and significant). This suggests that larger institutions have a comparative advantage in producing information about IPO firms relative to smaller institutions, perhaps due to economies of scale in information production. Also consistent with our univariate results, institutions tend to outperform more in hotter IPO (coefficients on Initial Return are all positive and significant in two out of four regressions). There is some evidence that institutions outperform more in NASDAQ IPOs (coefficients on the NASDAQ dummy are positive and significant in two out of three regressions). Coefficients on Bubble and High-Tech dummies are not significant. Institutions also appear to outperform more in IPOs with lockup provisions. Being sophisticated investors, institutional investors may be able to avoid the pitfalls of lockup expiration (see, e.g., Brav and Gompers (2003), who show that stock prices for IPOs decline at the time of lockup expiration). Our results are robust to various other control variables.

7. Institutional Trading and Subsequent Long-Run IPO Performance

In the previous two sections, we studied the realized profitability of institutional IPO allocation sales and post-IPO trading. We now study whether institutional trading can predict subsequent long-run IPO performance. We extend Krigman, Shaw, and Womack (1999) by using transaction-level institutional trading data that include the direction of each trade and studying institutional net buying (buying minus selling) in IPOs. We also analyze the information content of institutional trading beyond the immediate post-IPO period.

7.1. *Can Institutional Trading Predict Subsequent Long-Run IPO Performance?*

Table 8 Panel A reports results on the relation between trading by all institutions over time and subsequent long-run IPO performance. As before, the first year (252 trading days) post-IPO is divided into 13 trading periods. First 2-Day is the first two trading days post-IPO. Month 1 through Month 12 each consists of 21 trading days. In other words, Month 1 includes First 2-Day, and Month 1 through Month 12 are mutually exclusive. We define Net Buying for each trading period as total shares bought by institutions minus total shares sold by institutions normalized by Shares Offered in the IPO. We then sort our sample IPOs into quintiles based on Net Buying. The lowest, middle three, and highest quintiles of institutional Net Buying are categorized as Low, Moderate, and High IPOs, respectively. Subsequent Raw Return is the IPO one-year buy-and-hold raw return starting after each of the 13 trading periods. If delisted, the CRSP delisting return is used. Subsequent Abnormal Return is the difference between Subsequent Raw Return and the return on the matched Fama/French 25 Size and Book-to-Market portfolio.

The High - Low differences in returns are the focus of Table 8. If institutional trading is informative, then the difference should be positive, that is the IPOs bought by institutions should experience higher subsequent returns than IPOs sold by institutions. For First 2-Day, Month 1, and Month 2, High - Low in Subsequent Raw Return and Subsequent Abnormal Return are all positive and significant. For Month 3, High - Low in Subsequent Abnormal Return continues to be positive and

significant at the 10 percent level. However after Month 3, the differences in returns become insignificant, and sometimes are even negative. Also, after First 2-Day, the mean returns for high net buying IPOs are mostly negative. This suggests that the apparent return predictability by institutions early on mainly comes from selling subsequent losers rather than buying subsequent winners. The High - Low differences in returns in Table 8 Panel A are plotted in Figure 1 Panel A. There is clearly a downward sloping trend over time. These results suggest that while institutions do possess private information immediately after an IPO, their informational advantage decays over time. This could be a result of institutions trying to exploit their private information as much as possible early on.

Table 8 Panels B and C report results on the relation between institutional trading over time and subsequent long-run IPO performance, partitioned by institution size. Panels B and C report results for large and small institutions, respectively. For large institutions (Table 8 Panel B), the High - Low differences in returns are positive and significant for First 2-Day, Month 1 and Month 2. After Month 2, High - Low differences in returns are not significantly positive and sometimes are even negative. For small institutions (Table 8 Panel C), the High - Low differences in returns are not significant for First 2-Day, while they are mostly positive and significant for Month 1, Month 2, and Month 4. After Month 4, the High - Low differences in returns are mostly not significant. Results in Table 8 Panels B and C are plotted in Figure 1 Panels B and C. To summarize, both large and small institutions appear to have some private information in the months immediately after the IPO, but the informational advantage decays over time. Note that the plot in Figure 1 Panel C for small institutions can be a bit misleading in the sense that our results later show that the predictive power of small institutions mostly disappear after controlling for variables derived from publicly available information.

7.2. Can Institutional Trading Predict Subsequent Long-Run IPO Performance After Controlling for Publicly Available Information?

In this subsection, we study the relation between institutional trading and subsequent long-run IPO performance in a regression framework. The research question here is whether institutional trading

can predict long-run IPO performance after controlling for publicly available information (and factors known to affect expected stock returns: size and book-to-market). In terms of research design, we run the following regression for each of the 13 trading periods:

$$\begin{aligned}
 \text{Subsequent Abnormal Return} = & \alpha + \beta_1 \text{Net Buying} + \beta_2 \text{Log}(\text{Age} + 1) + \beta_3 \text{Log}(\text{Reputation}) \\
 & + \beta_4 \text{Initial Return} + \beta_5 \text{Log}(\text{Proceeds}) + \beta_6 \text{Bubble} + \beta_7 \text{NASDAQ} + \beta_8 \text{High-Tech} \\
 & + \beta_9 \text{Financial} + \beta_{10} \text{Venture Capital} + \beta_{11} \text{Lockup} + \beta_{12} \text{Log}(\text{ME}) + \beta_{13} \text{Log}(\text{BE/ME}) + \varepsilon
 \end{aligned} \tag{8}$$

Table 9 reports the results of our regression analysis institutional trading over time and subsequent long-run IPO performance. Panels A, B, and C report results for all, large, and small institutions, respectively. The dependent variable is Subsequent Abnormal Return, which is the IPO one-year buy-and-hold return (starting one day after each of the 13 trading periods) net of the return on the matched Fama/French 25 Size and Book-to-Market portfolio. *Net buying* is as defined in section 7.1. Definitions of other independent variables can be found in section 4.3.

Results for all institutions in Table 9 Panel A show that our univariate results in Table 8 Panel A are robust after controlling for various variables reflecting publicly available information. In particular, institutional trading (Net Buying) can predict long-run IPO performance even after controlling for publicly available information. In other words, the informational advantage possessed by institutions is indeed derived from private information. The overall pattern of the informativeness of institutional Net Buying after controlling for publicly available information is very similar to our previous univariate results: that is, the predictive power of institutional Net Buying decays over time, and becomes insignificant after the initial four months post-IPO. After a company goes public, it has to make a significant amount of information publicly available (e.g., audited financial statements), which reduces outsiders' cost of information production. Therefore, our results suggest that institutions have a greater informational advantage when the cost of producing information is higher (during the immediate post-IPO period). Institutions may gradually lose this informational advantage as more and more information about the IPO firm becomes publicly available.

As for the control variables, older IPOs (and, to some extent, IPOs underwritten by more reputable investment banks) tend to have better long-run performance. Hotter IPOs, IPOs issued during the bubble period, NASDAQ IPOs, and IPOs with lockup provisions tend to have worse long-run performances.

Results in Table 9 Panels B and C show that while the predictive power of Net Buying by large institutions is robust after controlling for publicly available information, the predictive power of trading by small institutions mostly disappears. It appears that while large institutions produce and make use of private information that is orthogonal to publicly available information, small institutions mainly make use of publicly available information. One reason could be that large institutions may be able to afford many in-house analysts, while small institutions may not.

8. Discussion of Results and Conclusion

In this paper, we analyzed the profitability and informativeness of institutional trading in IPOs, using a large sample of proprietary transaction-level trading data from 419 institutional investors on 909 IPOs. We analyzed the pattern and profitability of institutional IPO allocation sales, the profitability of post-IPO institutional trading, and the predictive power of institutional trading for subsequent long-run IPO performance.

Our results can be summarized as follows. First, institutions continue to sell significant portions of their IPO allocations beyond the immediate post-IPO period (flipping during the first two trading days constitutes only 26.47 percent of total allocations sold by institutions within the first year after the IPO). Larger institutions sell allocations faster than smaller institutions, suggesting that larger institutions have greater bargaining power with respect to the investment banking syndicate, and have more freedom to sell their allocations faster. Second, institutional IPO allocation sales are highly profitable. Institutions realize most (96 percent) of the “money left on the table” for IPO allocations sold within the first year. Third, post-IPO institutional trading outperforms a buy-and-hold investment strategy in IPOs, suggesting that institutions do possess some private information about IPOs (though institutions’ post-IPO trading

does not outperform or underperform the market in general). Institutions are able to outperform more when there is higher information asymmetry about the IPO firm, namely younger IPOs and IPOs underwritten by less reputable investment banks. Larger institutions outperform a buy-and-hold strategy in IPOs by a higher margin than smaller institutions, suggesting that larger institutions have a comparative advantage in producing information about IPO firms relative to smaller institutions.

Finally, institutional trading has predictive power for subsequent long-run IPO performance. This is still true after controlling for publicly available information. Even institutional trading beyond the immediate post-IPO period has predictive power, indicating that institutions retain residual private information for some time after the IPO. However, the predictive power decays over time and becomes insignificant after the initial three to four months. Our results suggest that institutions have a greater informational advantage when outsiders' cost of producing information is higher (during the immediate post-IPO period). Institutions gradually lose their informational advantage as more and more information about the IPO firm becomes publicly available. We also find that trading by large institutions has more predictive power, especially after controlling for publicly available information.

How do our results relate to various theories of IPO pricing and the behavior of different categories of investors around IPOs? First, our results indicate that, consistent with information production theories, institutional investors are able to generate superior information about IPOs. Further, we document that, as assumed by Rock (1986), institutional investors possess an informational advantage over retail investors, enabling them to select better performing IPOs. Second, we show that institutional investors are able to realize significant abnormal profits from selling their IPO allocations. They are thus able to realize most of the money left on the table in IPOs, even in the face of the long-term underperformance of IPOs and potential discouragement of flipping from members of the underwriting syndicate. In other words, institutional investors receive considerable compensation for participating in IPOs, broadly consistent with the implications of bookbuilding theories. Third, the fact that institutional trading in the months after the IPO has predictive power for subsequent long-term returns indicates that institutional investors retain a residual informational advantage even after the IPO. Consistent with this,

the post-IPO trading of institutions is able to outperform a naive buy-and-hold strategy in IPOs, so that the superior profits institutions generate from their IPO allocation sales are not dissipated in post-IPO trading (allowing institutions to extract informational rents overall from investing in IPOs). Finally, our results show that larger institutions have a greater informational advantage relative to that of smaller institutions, indicating the existence of significant economies of scale in information production.

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Table 1. Summary Statistics of IPO Sample

This table presents summary statistics of the IPO sample. Sample mean, median, and in some cases total are presented. Initial sample IPOs are those conducted in the U.S. markets from January 1999 through December 2003 identified using the Securities Data Company (SDC) data. Certificates, ADRs, shares of beneficial interest, units, closed-end funds, REITs, IPOs with an offer price less than \$5, and IPOs not found in CRSP are excluded. Further, we exclude IPOs with missing Book Equity data in COMPUSTAT (11) and IPOs that are delisted within the first year post-IPO in CRSP (45), leaving 934 initial sample IPOs. Shares Offered and Offer Proceeds are those offered in the U.S. markets. Initial Return is the IPO return from the offer price to first-day closing price. Money Left on the Table is defined as Offer Proceeds multiplied by Initial Return. 1-Year Raw Return is the raw buy-and-hold return measured from the closing price of the first trading day to trading day 252. 1-Year Abnormal Return is the difference between 1-Year Raw Return and the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Panel A partitions the 934 initial sample IPOs into two groups. IPOs traded by institutions are those traded by sample institutions within the first year post-IPO, and IPOs not traded by institutions are those not traded by any sample institution within the first year post-IPO. Panel B further partitions the 909 IPOs traded by institutions into hot versus cold IPOs using the median Initial Return of 24.4% as the cutoff. The last column tests the significance of the differences in the means and medians between the two groups. P-values, which are in parentheses, are based on t-tests for the difference in means and the Mann-Whitney tests for the difference in medians. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

Table 1. Panel A. Initial Sample IPOs, Partitioned by Institutional Trading

	Initial Sample IPOs	IPOs Traded by Institutions	IPOs Not Traded by Institutions	Test Equality
Number of IPOs	934	909	25	
Offer Price (\$)				
Mean	14.69	14.87	8.01	(0.0000)***
Median	14.00	14.00	7.00	(0.0000)***
Shares Offered (million)				
Mean	7.16	7.31	1.89	(0.0000)***
Median	4.61	4.70	1.30	(0.0000)***
Total	6,690.30	6,643.13	47.18	
Offer Proceeds (\$ million)				
Mean	119.34	122.11	18.39	(0.0000)***
Median	65.42	67.20	8.61	(0.0000)***
Total	111,461.80	111,002.10	459.70	
Initial Return (%)				
Mean	54.85	56.25	3.73	(0.0000)***
Median	23.29	24.43	1.04	(0.0000)***
Money Left on the Table (\$ million)				
Mean	55.59	57.13	-0.29	(0.0000)***
Median	16.50	18.65	0.09	(0.0000)***
Total	51,925.71	51,932.91	-7.20	
1-Year Raw Return (%)				
Mean	-8.69	-8.27	-23.70	(0.5321)
Median	-41.36	-41.18	-63.16	(0.3793)
1-Year Abnormal Return (%)				
Mean	-15.08	-14.65	-30.82	(0.4719)
Median	-41.24	-40.68	-49.11	(0.2351)

Table 1. Panel B. IPOs Traded by Institutions, Partitioned by IPO Initial Return

	Hot IPOs	Cold IPOs	Test Equality
Number of IPOs	455	454	
Offer Price (\$)			
Mean	16.51	13.24	(0.0000)***
Median	16.00	13.00	(0.0000)***
Shares Offered (million)			
Mean	5.73	8.89	(0.0001)***
Median	4.48	5.00	(0.0016)***
Total	2,608.13	4,035.00	
Offer Proceeds (\$ million)			
Mean	109.70	134.55	(0.1669)
Median	71.17	60.48	(0.0190)**
Total	49,914.96	61,087.14	
Initial Return (%)			
Mean	108.28	4.11	(0.0000)***
Median	75.00	2.34	(0.0000)***
Money Left on the Table (\$ million)			
Mean	106.74	7.42	(0.0000)***
Median	57.32	1.25	(0.0000)***
Total	48,566.46	3,366.45	
1-Year Raw Return (%)			
Mean	-14.19	-2.34	(0.1483)
Median	-57.66	-26.40	(0.0000)***
1-Year Abnormal Return (%)			
Mean	-18.99	-10.30	(0.2585)
Median	-48.06	-28.71	(0.0001)***

Table 2. Summary Statistics of Institutional Trading Sample

This table presents summary statistics of the institutional trading sample. We obtain proprietary institutional trading data from the Abel/Noser Corporation for the period of January 1999 to December 2004. Since we continuously track post-IPO trading for one full year, in order to be included in our sample, an institution has to have trading data for at least 13 continuous months. For example, in order to for an institution to be included for January 1999 IPOs, the institution needs to have some trading data (in any stock, not just IPOs) in every month from January 1999 to January 2000. Also sample institutions must have traded in at least one sample IPO within the first year post-IPO. All institutions refer to the 419 sample institutions satisfying the above criteria. Sample mean, median, and total are presented. Annualized Principal Traded, Annualized Shares Traded, and Annualized Commissions Paid are computed based on all U.S. domestic equity traded by institutions from January 1999 through December 2004. For these three variables, sample statistics are based on cross sections of sample institutions. For a given IPO, Fraction of Total IPO Trading is computed as the aggregate shares traded by sample institutions divided by the aggregate CRSP volume (NASDAQ volumes are adjusted for double counting by dividing CRSP reported volumes by two) within the first year post-IPO. For Fraction of Total IPO Trading, sample statistics are based on the cross section of the 909 sample IPOs. All institutions are further partitioned into large versus small institutions using \$10 billion Annualized Principal Traded as the cutoff. The last column tests the significance of the differences in the means and medians between the two groups. P-values, which are in parentheses, are based on t-tests for the difference in means and the Mann-Whitney tests for the difference in medians. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

	All Institutions	Large Institutions	Small Institutions	Test Equality
Number of Institutions	419	52	367	
Annualized Principal Traded (\$ million)				
Mean	10,471.10	76,693.02	1,088.16	(0.0007)***
Median	573.14	23,932.63	458.11	(0.0000)***
Total	4,387,389.90	3,988,036.79	399,353.11	
Annualized Shares Traded (million)				
Mean	352.50	2,555.09	40.42	(0.0005)***
Median	19.51	795.99	15.24	(0.0000)***
Total	147,697.74	132,864.75	14,832.99	
Annualized Commissions Paid (\$ million)				
Mean	12.90	93.49	1.48	(0.0004)***
Median	0.66	28.08	0.51	(0.0000)***
Total	5,403.11	4,861.57	541.54	
Fraction of Total IPO Trading (%)				
Mean	11.24	9.34	1.90	(0.0000)***
Median	8.04	6.67	1.17	(0.0000)***

Table 3. Patterns of Institutional IPO Allocation Sales

This table presents results on patterns of institutional IPO allocation sales. All IPOs refer to the 909 sample IPOs from January 1999 to December 2003. Panel A presents results partitioned by IPO Initial Return into hot versus cold IPOs, using the median Initial Return of 24.4% as the cutoff. All institutions refer to the 419 sample institutions. Panel B presents results partitioned by institution size into large versus small institutions using \$10 billion Annualized Principal Traded as the cutoff. Amount Invested equals the offer price multiplied by allocated shares sold by sample institutions within the first year post-IPO (trading day one to trading day 252). Fraction of Offer equals Amount Invested divided by IPO Offer Proceeds. The first year (252 trading days) post-IPO is divided into 13 trading periods. First 2-Day is the first two trading days post-IPO. Month 1 through Month 12 each consists of 21 trading days. In other words, Month 1 includes First 2-Day, and Month 1 through Month 12 are mutually exclusive. For each trading period, the table lists the ratio of the Amount Invested for allocations sold during that period divided by the total Amount Invested for all allocations sold during the first year post-IPO. Sample means of dollar values and dollar value-weighted means of percentages are reported. The last column tests the significance of the differences in the means between the two groups, with p-values in parentheses. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

Table 3. Panel A. Partitioned by IPO Initial Return

	All IPOs	Hot IPOs	Cold IPOs	Test Equality
Number of IPOs	909	455	454	
Amount Invested (\$ millions)	15.35	16.83	13.87	(0.3673)
Fraction of Offer (%)	12.57	15.34	10.31	(0.0001)***
First 2-Day (%)	26.47	32.56	19.07	(0.0007)***
Month 1 (%)	42.28	48.37	34.88	(0.0069)***
Month 2 (%)	5.87	5.99	5.73	(0.8375)
Month 3 (%)	4.69	4.25	5.21	(0.3146)
Month 4 (%)	4.33	3.26	5.63	(0.1295)
Month 5 (%)	3.69	3.17	4.32	(0.1934)
Month 6 (%)	5.31	3.63	7.35	(0.0352)**
Month 7 (%)	7.60	6.96	8.38	(0.6697)
Month 8 (%)	5.88	4.42	7.66	(0.2642)
Month 9 (%)	5.30	3.59	7.39	(0.1125)
Month 10 (%)	4.11	4.60	3.52	(0.3749)
Month 11 (%)	6.40	7.39	5.20	(0.5012)
Month 12 (%)	4.53	4.37	4.73	(0.7442)

Table 3. Panel B. Partitioned by Institution Size

	All Institutions	Large Institutions	Small Institutions	Test Equality
Number of Institutions	419	52	367	
Amount Invested (\$ millions)	33.30	225.62	6.05	(0.0053)***
First 2-Day (%)	26.47	29.41	10.95	(0.0000)***
Month 1 (%)	42.28	45.61	24.74	(0.0000)***
Month 2 (%)	5.87	5.66	6.97	(0.3260)
Month 3 (%)	4.69	4.56	5.38	(0.5032)
Month 4 (%)	4.33	4.12	5.47	(0.2477)
Month 5 (%)	3.69	3.46	4.89	(0.1234)
Month 6 (%)	5.31	4.73	8.37	(0.0773)*
Month 7 (%)	7.60	7.66	7.27	(0.8301)
Month 8 (%)	5.88	4.25	14.52	(0.1323)
Month 9 (%)	5.30	5.41	4.73	(0.6625)
Month 10 (%)	4.11	3.22	8.80	(0.0068)***
Month 11 (%)	6.40	6.84	4.09	(0.3404)
Month 12 (%)	4.53	4.49	4.76	(0.7843)

Table 4. Regression Analysis of Speed of Institutional IPO Allocation Sales

This table presents regression analysis of the speed of institutional IPO allocation sales. For regressions (1) to (4), the dependent variable is First 2-Day Flipping, which is defined as the ratio of First 2-Day IPO allocation sales and the first year (252 trading days) IPO allocation sales. For regressions (5) to (8), the dependent variable is Month 1 Flipping, which is defined as the ratio of Month 1 (21 trading days) IPO allocation sales and the first year IPO allocation sales. Definitions of independent variables are as follows. Log(Age+1) is the natural logarithm of the IPO firm age plus one, where age is IPO year minus company founding year. Company founding year data are obtained from the Field-Ritter dataset of company founding dates (Field and Karpoff (2002) and Loughran and Ritter (2004)). Log(Reputation) is the natural logarithm of the lead underwriter reputation ranking. The 1992-2000 rankings are used for 1999-2000 IPOs, and the 2001-2004 rankings are used for 2001-2003 IPOs. The maximum ranking is used when there are multiple lead underwriters. The rankings are obtained 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. Initial Return is the IPO return from the offer price to first-day closing price. Log(Proceeds) is the natural logarithm of the IPO Offer Proceeds. Log(Institution Size) is the natural logarithm of the Annualized Principal Traded of the institution. Bubble equals one for 1999 and 2000 IPOs, and zero otherwise. NASDAQ equals one if it is a NASDAQ IPO, and zero otherwise. High-Tech equals one if the IPO firm is in high-tech industries (defined by SIC codes, see Ljungqvist and Wilhelm (2003) and Loughran and Ritter (2004) for details), and zero otherwise. Financial equals one if the IPO firm is in the financial industry (SIC codes 60-63 and 67), and zero otherwise. Venture Capital equals one if the IPO has venture capital backing, and zero otherwise. Lockup equals one if the IPO has a lockup provision, and zero otherwise. Log(ME) is the natural logarithm of the IPO firm's Market Equity, which equals shares outstanding multiplied by the first-day closing price. Log(BE/ME) is the natural logarithm of the ratio of the IPO firm's Book Equity and Market Equity. Subsequent Return is the IPO one-year abnormal return (net of the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return) starting after the IPO allocation sales period (First 2-Day for regressions (1) to (4), and Month 1 for regressions (5) to (8)). If delisted, the CRSP delisting return is used. The unit of observation is an IPO/institution pair. P-values, which are in parentheses, are adjusted using White's robust standard errors with clustering on IPOs. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

	First 2-Day Flipping				Month 1 Flipping			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Age+1)	-0.0309*** (0.0010)	-0.0213** (0.0293)	-0.0186* (0.0661)	-0.0149 (0.1401)	-0.0397*** (0.0000)	-0.0274*** (0.0056)	-0.0231** (0.0223)	-0.0187* (0.0625)
Log(Reputation)	0.0249 (0.7179)	0.0150 (0.8239)	0.0275 (0.7076)	0.0410 (0.5706)	0.0055 (0.9396)	-0.0018 (0.9801)	0.0911 (0.2489)	0.0988 (0.2081)
Initial Return	0.0208** (0.0398)	0.0136 (0.1904)	0.0028 (0.8547)	-0.0005 (0.9715)	0.0252*** (0.0030)	0.0159* (0.0622)	0.0139 (0.3062)	0.0120 (0.3769)
Log(Proceeds)	-0.0185** (0.0404)	-0.0047 (0.6598)	-0.0322 (0.2052)	-0.0356 (0.1628)	-0.0143 (0.1652)	0.0017 (0.8802)	-0.0047 (0.8520)	-0.0076 (0.7612)
Log(Institution Size)	0.0122*** (0.0000)	0.0129*** (0.0000)	0.0129*** (0.0000)	0.0128*** (0.0000)	0.0027* (0.0690)	0.0036** (0.0172)	0.0035** (0.0197)	0.0034** (0.0236)
Bubble		0.0456** (0.0320)	0.0429* (0.0594)	0.0388* (0.0875)		0.0598** (0.0116)	0.0763*** (0.0025)	0.0706*** (0.0054)
NASDAQ		0.0239 (0.4812)	0.0255 (0.4827)	0.0206 (0.5685)		0.0374 (0.2954)	0.0446 (0.2520)	0.0433 (0.2592)
High-Tech		0.0290* (0.0717)	0.0234 (0.1630)	0.0244 (0.1437)		0.0220 (0.1648)	0.0206 (0.2048)	0.0209 (0.1956)
Financial		-0.0457 (0.1889)	-0.0555 (0.1664)	-0.0507 (0.1970)		-0.0455 (0.2403)	-0.0467 (0.2645)	-0.0448 (0.2765)
Venture Capital			0.0025 (0.9022)	0.0037 (0.8532)			0.0091 (0.6671)	0.0098 (0.6364)
Lockup			0.0247 (0.1987)	0.0204 (0.2863)			0.0553*** (0.0046)	0.0515*** (0.0076)
Log(ME)			0.0303 (0.1840)	0.0299 (0.1906)			0.0089 (0.6879)	0.0098 (0.6523)
Log(BE/ME)			0.0094 (0.6087)	0.0050 (0.7910)			0.0024 (0.8898)	0.0003 (0.9855)
Subsequent Return				-0.0208*** (0.0011)				-0.0216* (0.0548)
Intercept	0.4500** (0.0198)	0.1222 (0.6040)	-0.0130 (0.9600)	0.0232 (0.9278)	0.8650*** (0.0001)	0.4628* (0.0572)	0.1438 (0.6010)	0.1548 (0.5701)
N	20,371	20,371	19,756	19,756	20,371	20,371	19,756	19,756
Adj. R-Squared	0.0144	0.0175	0.0172	0.0201	0.0148	0.0189	0.0206	0.0236

Table 5. Profitability of Institutional IPO Allocation Sales

This table presents results on the profitability of institutional IPO allocation sales. All IPOs refer to the 909 sample IPOs from January 1999 to December 2003. Panel A presents results partitioned by IPO Initial Return into hot versus cold IPOs, using the median Initial Return of 24.4% as the cutoff. All institutions refer to the 419 sample institutions. Panel B presents results partitioned by institution size into large versus small institutions using \$10 billion Annualized Principal Traded as the cutoff. Amount Invested equals the offer price multiplied by allocated shares sold by sample institutions within the first year post-IPO (trading day one to trading day 252). Money Left on the Table equals Amount Invested multiplied by IPO Initial Return, where IPO Initial Return is the IPO return from the offer price to first-day closing price. Institutional Raw Profit is the raw profit earned by institutions from selling their IPO allocations within the first year post-IPO (raw allocation sales principal minus Amount Invested), using real transaction prices and net of trading commission. Institutional Abnormal Profit is computed by discounting raw allocation sales principal within the first year post-IPO back to the first day of IPO using the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return, and then subtracting Amount Invested. Raw \$ Realization Shortfall equals Money Left on the Table minus Institutional Raw Profit. Abnormal \$ Realization Shortfall equals Money Left on the Table minus Institutional Abnormal Profit. Institutional Raw Return equals Institutional Raw Profit divided by Amount Invested. Institutional Abnormal Return equals Institutional Abnormal Profit divided by Amount Invested. Raw Realization Shortfall equals Raw \$ Realization Shortfall divided by Amount Invested. Abnormal Realization Shortfall equals Abnormal \$ Realization Shortfall divided by Amount Invested. Sample means of dollar values and dollar value-weighted means of percentages are reported. The last column tests the significance of the differences in the means between the two groups, with p-values in parentheses. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

Table 5. Panel A. Partitioned by IPO Initial Return

	All IPOs	Hot IPOs	Cold IPOs	Test Equality
Number of IPOs	909	455	454	
Amount Invested (\$ millions)	15.35	16.83	13.87	(0.3673)
Money Left on the Table (\$ millions)	9.04*** (0.0000)	17.00*** (0.0000)	1.06*** (0.0000)	(0.0000)***
Institutional Raw Profit (\$ millions)	9.41*** (0.0000)	15.95*** (0.0000)	2.86*** (0.0042)	(0.0000)***
Institutional Abnormal Profit (\$ millions)	8.69*** (0.0000)	14.52*** (0.0000)	2.85** (0.0111)	(0.0000)***
Raw \$ Realization Shortfall (\$ millions)	-0.37 (0.6439)	1.05 (0.4270)	-1.80** (0.0495)	(0.0765)*
Abnormal \$ Realization Shortfall (\$ millions)	0.35 (0.6562)	2.48** (0.0344)	-1.79* (0.0820)	(0.0062)***
IPO Initial Return (%)	58.91*** (0.0000)	101.02*** (0.0000)	7.68*** (0.0000)	(0.0000)***
Institutional Raw Return (%)	61.33*** (0.0000)	94.79*** (0.0000)	20.63*** (0.0001)	(0.0000)***
Institutional Abnormal Return (%)	56.64*** (0.0000)	86.29*** (0.0000)	20.58*** (0.0009)	(0.0000)***
Raw Realization Shortfall (%)	-2.42 (0.6423)	6.24 (0.4201)	-12.95** (0.0204)	(0.0443)**
Abnormal Realization Shortfall (%)	2.26 (0.6589)	14.73** (0.0345)	-12.90** (0.0401)	(0.0032)***

Table 5. Panel B. Partitioned by Institution Size

	All Institutions	Large Institutions	Small Institutions	Test Equality
Number of Institutions	419	52	367	
Amount Invested (\$ millions)	33.30	225.62	6.05	(0.0053)***
Money Left on the Table (\$ millions)	19.62*** (0.0025)	128.52** (0.0120)	4.19*** (0.0000)	(0.0149)**
Institutional Raw Profit (\$ millions)	20.42*** (0.0006)	125.32*** (0.0069)	5.56*** (0.0001)	(0.0096)***
Institutional Abnormal Profit (\$ millions)	18.86*** (0.0008)	118.88*** (0.0065)	4.69*** (0.0000)	(0.0087)***
Raw \$ Realization Shortfall (\$ millions)	-0.81 (0.5298)	3.20 (0.7303)	-1.37** (0.0428)	(0.6232)
Abnormal \$ Realization Shortfall (\$ millions)	0.75 (0.6152)	9.64 (0.4067)	-0.50 (0.3374)	(0.3832)
IPO Initial Return (%)	58.91*** (0.0000)	56.96*** (0.0000)	69.18*** (0.0000)	(0.3092)
Institutional Raw Return (%)	61.33*** (0.0000)	55.55*** (0.0000)	91.88*** (0.0000)	(0.0170)**
Institutional Abnormal Return (%)	56.64*** (0.0000)	52.69*** (0.0000)	77.52*** (0.0000)	(0.0176)**
Raw Realization Shortfall (%)	-2.42 (0.5656)	1.42 (0.7101)	-22.69*** (0.0087)	(0.0107)**
Abnormal Realization Shortfall (%)	2.26 (0.5824)	4.27 (0.3136)	-8.34 (0.2795)	(0.1518)

Table 6. Profitability of Post-IPO Institutional Trading

This table presents results on the profitability of post-IPO institutional trading. All IPOs refer to the 909 sample IPOs from January 1999 to December 2003. Panel A presents results partitioned by IPO Initial Return into hot versus cold IPOs, using the median Initial Return of 24.4% as the cutoff. All institutions refer to the 419 sample institutions. Panel B presents results partitioned by institution size into large versus small institutions using \$10 billion Annualized Principal Traded as the cutoff. Amount Invested is the actual dollar amount of buy principal plus trading commissions spent by sample institutions in post-IPO trading within the first year post-IPO (trading day one to trading day 252). Amount Invested in Current Dollars is computed by discounting Amount Invested back to the first day of IPO using the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Institutional Raw Profit is the raw profit earned by institutions from post-IPO trading (excluding allocation sales) within the first year post-IPO, using real buying and selling prices and net of trading commissions, and marking net positions to the market at the end of the first year post-IPO. Institutional Abnormal Profit is computed by discounting Institutional Raw Profit back to the first day of IPO using the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Institutional Raw Return equals Institutional Raw Profit divided by Amount Invested. IPO Buy-and-Hold Raw Return is the first day closing market value-weighted buy-and-hold return from the first trading day to trading day 252 for the 934 initial sample IPOs, including the 25 IPOs not traded by sample institutions (hot and cold IPOs are defined using the 24.4% Initial Return cutoff). Institutional Raw Outperformance equals Institutional Raw Return minus IPO Buy-and-Hold Raw Return. Institutional Abnormal Return equals Institutional Abnormal Profit divided by Amount Invested in Current Dollars. IPO Buy-and-Hold Abnormal Return is computed by discounting IPO Buy-and-Hold Raw Return back to the first day of IPO using the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Institutional Abnormal Outperformance equals Institutional Abnormal Return minus IPO Buy-and-Hold Abnormal Return. Sample means of dollar values and dollar value-weighted means of percentages are reported. The last column tests the significance of the differences in the means between the two groups, with p-values in parentheses. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

Table 6. Panel A. Partitioned by IPO Initial Return

	All IPOs	Hot IPOs	Cold IPOs	Test Equality
Number of IPOs	909	455	454	
Amount Invested (\$ millions)	137.08	198.70	75.32	(0.0000)***
Amount Invested in Current Dollars (\$ millions)	124.33	175.69	72.86	(0.0000)***
Institutional Raw Profit (\$ millions)	-0.43 (0.9375)	-0.25 (0.9814)	-0.61 (0.7547)	(0.9739)
Institutional Abnormal Profit (\$ millions)	-1.93 (0.6666)	-3.83 (0.6646)	-0.03 (0.9863)	(0.6709)
Institutional Raw Return (%)	-0.31 (0.9377)	-0.13 (0.9814)	-0.80 (0.7565)	(0.9097)
IPO Buy-and-Hold Raw Return (%)	-14.79** (0.0376)	-21.32** (0.0238)	1.75 (0.8122)	(0.0539)*
Institutional Raw Outperformance (%)	14.48* (0.0757)	21.20* (0.0510)	-2.55 (0.7436)	
Institutional Abnormal Return (%)	-1.55 (0.6732)	-2.18 (0.6736)	-0.03 (0.9863)	(0.6994)
IPO Buy-and-Hold Abnormal Return (%)	-22.59*** (0.0002)	-31.73*** (0.0001)	0.56 (0.9314)	(0.0017)***
Institutional Abnormal Outperformance (%)	21.03*** (0.0033)	29.54*** (0.0019)	-0.60 (0.9305)	

Table 6. Panel B. Partitioned by Institution Size

	All Institutions	Large Institutions	Small Institutions	Test Equality
Number of IPOs	419	52	367	
Amount Invested (\$ millions)	297.38	2,161.95	33.19	(0.0496)**
Amount Invested in Current Dollars (\$ millions)	269.73	1,950.54	31.58	(0.0458)**
Institutional Raw Profit (\$ millions)	-0.93 (0.9325)	2.24 (0.9800)	-1.37*** (0.0013)	(0.9677)
Institutional Abnormal Profit (\$ millions)	-4.19 (0.5909)	-21.36 (0.7366)	-1.76*** (0.0004)	(0.7576)
Institutional Raw Return (%)	-0.31 (0.9339)	0.10 (0.9796)	-4.14*** (0.0001)	(0.3097)
IPO Buy-and-Hold Raw Return (%)	-14.79** (0.0376)	-14.79** (0.0376)	-14.79** (0.0376)	
Institutional Raw Outperformance (%)	14.48* (0.0718)	14.89* (0.0686)	10.65 (0.1387)	
Institutional Abnormal Return (%)	-1.55 (0.6319)	-1.10 (0.7530)	-5.57*** (0.0000)	(0.2238)
IPO Buy-and-Hold Abnormal Return (%)	-22.59*** (0.0002)	-22.59*** (0.0002)	-22.59*** (0.0002)	
Institutional Abnormal Outperformance (%)	21.03*** (0.0024)	21.49*** (0.0023)	17.02*** (0.0064)	

Table 7. Regression Analysis of Institutional Abnormal Outperformance in Post-IPO Trading

This table presents regression analysis of Institutional Abnormal Outperformance in post-IPO institutional trading. The dependent variable is Institutional Abnormal Outperformance, which equals Institutional Abnormal Return minus IPO Buy-and-Hold Abnormal Return (see Table 7 for more details). Definitions of independent variables are as follows. Log(Age+1) is the natural logarithm of the IPO firm age plus one, where age is IPO year minus company founding year. Company founding year data are obtained from the Field-Ritter dataset of company founding dates (Field and Karpoff (2002) and Loughran and Ritter (2004)). Log(Reputation) is the natural logarithm of the lead underwriter reputation ranking. The 1992-2000 rankings are used for 1999-2000 IPOs, and the 2001-2004 rankings are used for 2001-2003 IPOs. The maximum ranking is used when there are multiple lead underwriters. The rankings are obtained 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. Initial Return is the IPO return from the offer price to first-day closing price. Log(Proceeds) is the natural logarithm of the IPO Offer Proceeds. Log(Institution Size) is the natural logarithm of the Annualized Principal Traded of the institution. Bubble equals one for 1999 and 2000 IPOs, and zero otherwise. NASDAQ equals one if it is a NASDAQ IPO, and zero otherwise. High-Tech equals one if the IPO firm is in high-tech industries (defined by SIC codes, see Ljungqvist and Wilhelm (2003) and Loughran and Ritter (2004) for details), and zero otherwise. Financial equals one if the IPO firm is in the financial industry (SIC codes 60-63 and 67), and zero otherwise. Venture Capital equals one if the IPO has venture capital backing, and zero otherwise. Lockup equals one if the IPO has a lockup provision, and zero otherwise. Log(ME) is the natural logarithm of the IPO firm's Market Equity, which equals shares outstanding multiplied by the first-day closing price. Log(BE/ME) is the natural logarithm of the ratio of the IPO firm's Book Equity and Market Equity. The unit of observation is an IPO/institution pair. P-values, which are in parentheses, are adjusted using White's robust standard errors with clustering on IPOs. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

	(1)	(2)	(3)	(4)
Log(Age+1)	-0.0971*** (0.0069)	-0.0893** (0.0277)	-0.0851** (0.0389)	-0.0949** (0.0307)
Log(Reputation)	-0.8410*** (0.0018)	-0.8246*** (0.0034)	-0.4858** (0.0216)	-0.4252* (0.0519)
Initial Return	0.0562 (0.1601)	0.0594 (0.1559)	0.0773* (0.0551)	0.1991*** (0.0011)
Log(Proceeds)	0.2030*** (0.0002)	0.2363*** (0.0001)	0.2419*** (0.0003)	0.2579*** (0.0034)
Log(Institution Size)	0.0197*** (0.0001)	0.0189*** (0.0001)	0.0185*** (0.0001)	0.0199*** (0.0001)
Bubble		-0.1219 (0.1154)	-0.0475 (0.5885)	-0.0324 (0.7179)
NASDAQ		0.1293 (0.1265)	0.1590* (0.0647)	0.2025** (0.0360)
High-Tech		0.0259 (0.8475)	0.0284 (0.8307)	0.0675 (0.6255)
Financial		-0.1559 (0.1240)	-0.1306 (0.1696)	-0.1808 (0.1125)
Venture Capital			-0.0456 (0.7010)	-0.0240 (0.8408)
Lockup			0.2160* (0.0671)	0.2050* (0.0991)
Log(ME)				-0.0342 (0.6640)
Log(BE/ME)				0.1636** (0.0204)
Intercept	-2.4098** (0.0187)	-3.0750*** (0.0057)	-4.0808*** (0.0025)	-3.6940*** (0.0080)
N	20,424	20,424	20,424	19,636
Adj. R-Squared	0.0304	0.0339	0.0411	0.0537

Table 8. Institutional Trading and Subsequent Long-Run IPO Performance

This table presents results on the relation between institutional trading over time and subsequent long-run IPO performance. Panel A presents results for all 419 sample institutions. Panels B and C present results for large and small institutions (using \$10 billion Annualized Principal Traded as the cutoff), respectively. The first year (252 trading days) post-IPO is divided into 13 trading periods. First 2-Day is the first two trading days post-IPO. Month 1 through Month 12 each consists of 21 trading days. In other words, Month 1 includes First 2-Day, and Month 1 through Month 12 are mutually exclusive. Net Buying for each trading period is total shares bought by institutions minus total shares sold by institutions normalized by the Shares Offered in the IPO. For the 934 initial sample IPOs, the lowest, middle three, and highest quintiles of Net Buying are categorized as Low, Moderate, and High IPOs, respectively. Subsequent Raw Return is the IPO one-year buy-and-hold raw return starting after each of the 13 trading periods. If delisted, the CRSP delisting return is used. Subsequent Abnormal Return is the difference between Subsequent Raw Return and the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Sample means across IPOs are reported. P-values for testing whether High - Low differences in returns (not Net Buying because we sort on it) are different from zero are in parentheses. Statistical significance of High - Low differences in returns is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

Table 8. Panel A. All Institutions

	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)
	First 2-Day			Month 5			Month 10		
Low	-6.76	-18.81	-24.72	-3.82	-34.42	-30.56	-5.43	-33.07	-24.36
Moderate	-0.16	-11.50	-18.16	0.22	-24.65	-23.21	0.30	-25.19	-16.54
High	10.41	7.91	2.63	8.52	-31.56	-24.21	11.54	-34.17	-25.14
High - Low	17.17	26.72** (0.0417)	27.35** (0.0244)	12.33	2.85 (0.7172)	6.35 (0.3593)	16.97	-1.10 (0.8654)	-0.78 (0.8828)
	Month 1			Month 6			Month 11		
Low	-7.77	-33.19	-35.26	-3.79	-34.51	-25.95	-7.47	-26.43	-17.74
Moderate	0.65	-19.57	-24.34	0.36	-28.00	-23.72	0.40	-24.56	-15.43
High	15.52	-4.42	-9.02	8.93	-21.11	-15.20	12.10	-32.08	-21.22
High - Low	23.29	28.77** (0.0119)	26.24** (0.0115)	12.73	13.40 (0.1058)	10.74 (0.1435)	19.58	-5.65 (0.4460)	-3.48 (0.5592)
	Month 2			Month 7			Month 12		
Low	-3.53	-34.49	-34.81	-3.99	-32.91	-24.37	-6.92	-30.49	-22.64
Moderate	0.46	-23.65	-28.07	0.60	-26.33	-21.38	0.36	-19.66	-10.18
High	6.33	-9.08	-6.10	13.13	-34.28	-23.49	12.30	-29.40	-21.58
High - Low	9.86	25.40** (0.0200)	28.71*** (0.0034)	17.12	-1.37 (0.8505)	0.88 (0.8902)	19.22	1.09 (0.8708)	1.06 (0.8462)
	Month 3			Month 8					
Low	-3.80	-28.74	-30.21	-4.16	-28.84	-21.59			
Moderate	0.32	-29.64	-30.85	0.56	-26.50	-20.66			
High	6.37	-18.57	-16.29	12.19	-33.44	-24.01			
High - Low	10.17	10.18 (0.2754)	13.93* (0.0999)	16.34	-4.61 (0.5591)	-2.43 (0.7255)			
	Month 4			Month 9					
Low	-3.76	-28.43	-28.35	-5.02	-26.67	-19.37			
Moderate	0.29	-28.37	-29.04	0.47	-25.60	-17.66			
High	7.70	-28.77	-21.54	12.16	-36.19	-27.83			
High - Low	11.46	-0.34 (0.9668)	6.81 (0.3526)	17.18	-9.52 (0.1911)	-8.46 (0.1828)			

Table 8. Panel B. Large Institutions

	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)
	First 2-Day			Month 5			Month 10		
Low	-7.04	-15.85	-21.03	-3.60	-33.56	-29.20	-4.78	-30.58	-22.66
Moderate	-0.45	-13.71	-20.34	0.21	-25.24	-23.82	0.25	-25.72	-17.34
High	9.25	11.55	5.47	7.66	-30.64	-23.73	10.44	-35.09	-24.45
High - Low	16.29	27.40*	26.50**	11.26	2.91	5.47	15.22	-4.52	-1.79
		(0.0524)	(0.0431)		(0.7183)	(0.4407)		(0.4903)	(0.7363)
	Month 1			Month 6			Month 11		
Low	-8.06	-34.51	-35.46	-3.47	-28.94	-21.93	-6.96	-28.43	-20.29
Moderate	0.10	-20.59	-25.30	0.28	-29.61	-25.38	0.33	-23.23	-14.13
High	14.10	-0.04	-5.96	7.89	-21.87	-14.22	11.46	-34.04	-22.59
High - Low	22.16	34.47***	29.50***	11.35	7.07	7.71	18.42	-5.61	-2.30
		(0.0038)	(0.0065)		(0.3963)	(0.2879)		(0.4350)	(0.6914)
	Month 2			Month 7			Month 12		
Low	-3.38	-29.08	-30.71	-3.72	-29.10	-21.55	-6.33	-30.37	-21.24
Moderate	0.35	-25.83	-29.39	0.46	-27.82	-22.55	0.32	-19.22	-10.99
High	6.09	-7.96	-6.23	12.34	-33.63	-22.78	11.93	-30.84	-20.54
High - Low	9.47	21.13*	24.48**	16.06	-4.53	-1.22	18.26	-0.47	0.69
		(0.0512)	(0.0119)		(0.5583)	(0.8580)		(0.9434)	(0.8972)
	Month 3			Month 8					
Low	-3.79	-23.00	-25.17	-3.60	-22.41	-16.42			
Moderate	0.26	-30.17	-31.26	0.51	-28.60	-22.40			
High	5.77	-22.72	-20.09	11.73	-33.58	-23.99			
High - Low	9.56	0.29	5.08	15.34	-11.17	-7.58			
		(0.9752)	(0.5458)		(0.1680)	(0.2886)			
	Month 4			Month 9					
Low	-3.50	-26.20	-26.86	-4.70	-21.79	-16.28			
Moderate	0.27	-27.94	-28.71	0.38	-25.02	-17.14			
High	6.96	-32.28	-24.03	11.67	-42.80	-32.48			
High - Low	10.46	-6.08	2.82	16.37	-21.01***	-16.21***			
		(0.4444)	(0.6913)		(0.0027)	(0.0075)			

Table 8. Panel C. Small Institutions

	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)	Net Buying (%)	Subsequent Raw Return (%)	Subsequent Abnormal Return (%)
	First 2-Day			Month 5			Month 10		
Low	-0.53	-18.74	-27.59	-0.94	-31.88	-27.75	-1.40	-39.60	-24.78
Moderate	0.18	-7.13	-13.45	0.00	-28.14	-25.38	0.01	-26.35	-17.96
High	2.29	-5.27	-8.61	1.63	-23.66	-20.52	1.92	-24.18	-20.49
High - Low	2.82	13.46	18.98	2.57	8.23	7.23	3.32	15.42**	4.29
		(0.2945)	(0.1168)		(0.3656)	(0.3811)		(0.0237)	(0.4589)
	Month 1			Month 6			Month 11		
Low	-1.00	-34.62	-41.97	-1.02	-37.82	-27.36	-1.34	-23.68	-15.27
Moderate	0.33	-15.90	-19.83	0.02	-25.85	-22.01	0.01	-24.75	-15.20
High	3.36	-13.99	-15.80	1.93	-24.25	-18.91	1.64	-34.24	-24.39
High - Low	4.36	20.63*	26.17***	2.95	13.57	8.45	2.98	-10.56	-9.11
		(0.0514)	(0.0076)		(0.1082)	(0.2573)		(0.1436)	(0.1274)
	Month 2			Month 7			Month 12		
Low	-0.81	-32.18	-31.58	-1.07	-34.96	-26.41	-1.67	-38.72	-27.99
Moderate	0.02	-22.20	-26.55	0.03	-28.15	-21.24	0.00	-17.96	-8.60
High	1.17	-15.72	-13.87	1.94	-26.79	-21.85	1.58	-26.27	-20.97
High - Low	1.98	16.46	17.72*	3.01	8.17	4.56	3.24	12.45*	7.02
		(0.1237)	(0.0686)		(0.2626)	(0.4652)		(0.0646)	(0.2085)
	Month 3			Month 8					
Low	-0.89	-31.98	-28.77	-1.50	-33.32	-23.24			
Moderate	0.00	-24.84	-27.44	0.00	-29.87	-23.68			
High	1.66	-29.67	-27.93	1.56	-18.87	-13.33			
High - Low	2.54	2.31	0.84	3.05	14.45	9.92			
		(0.7958)	(0.9178)		(0.1022)	(0.2023)			
	Month 4			Month 9					
Low	-0.84	-40.15	-35.59	-1.04	-39.42	-30.55			
Moderate	0.00	-27.60	-28.28	0.01	-27.87	-19.07			
High	1.39	-19.36	-16.57	1.43	-16.63	-12.43			
High - Low	2.23	20.79**	19.02**	2.48	22.79***	18.12***			
		(0.0133)	(0.0133)		(0.0035)	(0.0067)			

Table 9. Regression Analysis of Institutional Trading and Subsequent Long-Run IPO Abnormal Performance

This table presents regression analysis of institutional trading over time and subsequent long-run IPO abnormal performance. Panel A presents results for all 419 sample institutions. Panels B and C present results for large and small institutions (using \$10 billion Annualized Principal Traded as the cutoff), respectively. The first year (252 trading days) post-IPO is divided into 13 trading periods. First 2-Day is the first two trading days post-IPO. Month 1 through Month 12 each consists of 21 trading days. In other words, Month 1 includes First 2-Day, and Month 1 through Month 12 are mutually exclusive. The dependent variable is Subsequent Abnormal Return, which is the difference between Subsequent Raw Return and the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return. Subsequent Raw Return is the IPO one-year buy-and-hold raw return starting after each of the 13 trading periods. If delisted, the CRSP delisting return is used. Definitions of independent variables are as follows. Net Buying for each trading period is total shares bought by institutions minus total shares sold by institutions normalized by the Shares Offered in the IPO. $\text{Log}(\text{Age}+1)$ is the natural logarithm of the IPO firm age plus one, where age is IPO year minus company founding year. Company founding year data are obtained from the Field-Ritter dataset of company founding dates (Field and Karpoff (2002) and Loughran and Ritter (2004)). $\text{Log}(\text{Reputation})$ is the natural logarithm of the lead underwriter reputation ranking. The 1992-2000 rankings are used for 1999-2000 IPOs, and the 2001-2004 rankings are used for 2001-2003 IPOs. The maximum ranking is used when there are multiple lead underwriters. The rankings are obtained 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. Initial Return is the IPO return from the offer price to first-day closing price. $\text{Log}(\text{Proceeds})$ is the natural logarithm of the IPO Offer Proceeds. Bubble equals one for 1999 and 2000 IPOs, and zero otherwise. NASDAQ equals one if it is a NASDAQ IPO, and zero otherwise. High-Tech equals one if the IPO firm is in high-tech industries (defined by SIC codes, see Ljungqvist and Wilhelm (2003) and Loughran and Ritter (2004) for details), and zero otherwise. Financial equals one if the IPO firm is in the financial industry (SIC codes 60-63 and 67), and zero otherwise. Venture Capital equals one if the IPO has venture capital backing, and zero otherwise. Lockup equals one if the IPO has a lockup provision, and zero otherwise. $\text{Log}(\text{ME})$ is the natural logarithm of the IPO firm's Market Equity, which equals shares outstanding multiplied by the first-day closing price. $\text{Log}(\text{BE}/\text{ME})$ is the natural logarithm of the ratio of the IPO firm's Book Equity and Market Equity. IPOs are dropped if independent variables are not available. P-values are in parentheses. Statistical significance is indicated by *** for one percent level, ** for five percent level, and * for ten percent level.

Table 9. Panel A. All Institutions

Trading Period	First 2-Day	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Net Buying	1.144* (0.0564)	0.941** (0.0191)	1.584** (0.0306)	1.194** (0.0124)	0.972** (0.0168)	0.225 (0.5572)	0.290 (0.4005)	0.619** (0.0296)	0.067 (0.8215)	-0.146 (0.5388)	0.096 (0.7047)	-0.016 (0.9364)	-0.220 (0.3381)
Log(Age+1)	0.153*** (0.0027)	0.156*** (0.0005)	0.153*** (0.0000)	0.146*** (0.0000)	0.127*** (0.0000)	0.113*** (0.0002)	0.113*** (0.0001)	0.119*** (0.0000)	0.102*** (0.0006)	0.102*** (0.0003)	0.085*** (0.0018)	0.084*** (0.0037)	0.084*** (0.0061)
Log(Reputation)	0.397** (0.0395)	0.185 (0.2750)	0.132 (0.3439)	0.067 (0.5776)	0.101 (0.3527)	0.149 (0.1885)	0.072 (0.5151)	0.117 (0.2641)	0.093 (0.4073)	0.068 (0.5247)	-0.087 (0.3953)	-0.089 (0.4115)	-0.167 (0.1503)
Initial Return	-0.137* (0.0631)	-0.081 (0.2090)	-0.062 (0.2486)	-0.059 (0.2031)	-0.058 (0.1630)	-0.086** (0.0482)	-0.083** (0.0494)	-0.068* (0.0876)	-0.083* (0.0524)	-0.078* (0.0588)	-0.078** (0.0492)	-0.086** (0.0417)	-0.073 (0.1016)
Log(Proceeds)	-0.143 (0.1865)	-0.065 (0.4931)	-0.078 (0.3161)	-0.039 (0.5627)	-0.018 (0.7677)	-0.025 (0.6914)	-0.013 (0.8337)	-0.010 (0.8614)	-0.053 (0.3966)	0.007 (0.9112)	0.028 (0.6277)	-0.018 (0.7639)	0.019 (0.7753)
Bubble	-0.231** (0.0473)	-0.283*** (0.0057)	-0.266*** (0.0016)	-0.211*** (0.0038)	-0.234*** (0.0004)	-0.270*** (0.0001)	-0.229*** (0.0006)	-0.177*** (0.0053)	-0.147** (0.0298)	-0.103 (0.1082)	-0.100 (0.1070)	-0.109* (0.0976)	-0.137** (0.0494)
NASDAQ	-0.202 (0.1904)	-0.103 (0.4449)	-0.152 (0.1747)	-0.179* (0.0626)	-0.110 (0.2066)	-0.129 (0.1549)	-0.064 (0.4651)	-0.103 (0.2175)	-0.173* (0.0547)	-0.196** (0.0222)	-0.146* (0.0744)	-0.146* (0.0940)	-0.141 (0.1287)
High-Tech	0.077 (0.3931)	0.028 (0.7200)	0.012 (0.8518)	-0.010 (0.8529)	-0.042 (0.4056)	-0.059 (0.2600)	-0.031 (0.5455)	-0.059 (0.2224)	-0.076 (0.1451)	-0.069 (0.1617)	-0.058 (0.2253)	-0.038 (0.4546)	-0.031 (0.5688)
Financial	0.142 (0.4190)	0.086 (0.5795)	0.113 (0.3761)	0.119 (0.2766)	0.128 (0.1984)	0.099 (0.3418)	0.138 (0.1711)	0.104 (0.2777)	0.144 (0.1616)	0.131 (0.1803)	0.099 (0.2892)	0.064 (0.5182)	0.076 (0.4740)
Venture Capital	-0.013 (0.8912)	-0.029 (0.7381)	-0.028 (0.6957)	-0.037 (0.5447)	-0.035 (0.5257)	-0.007 (0.9094)	0.058 (0.3009)	0.025 (0.6422)	0.028 (0.6217)	0.018 (0.7440)	0.024 (0.6439)	0.045 (0.4130)	0.068 (0.2464)
Lockup	-0.191** (0.0441)	-0.156* (0.0612)	-0.122* (0.0746)	-0.106* (0.0739)	-0.096* (0.0718)	-0.062 (0.2701)	-0.056 (0.3021)	-0.062 (0.2280)	-0.060 (0.2796)	-0.057 (0.2806)	-0.029 (0.5607)	-0.015 (0.7857)	-0.036 (0.5285)
Log(ME)	0.016 (0.8687)	0.020 (0.8118)	0.024 (0.7360)	0.008 (0.8911)	-0.017 (0.7555)	-0.025 (0.6666)	-0.021 (0.7064)	-0.057 (0.2835)	-0.044 (0.4409)	-0.083 (0.1249)	-0.080 (0.1256)	-0.055 (0.3175)	-0.079 (0.1809)
Log(BE/ME)	-0.165** (0.0232)	-0.103 (0.1061)	-0.057 (0.2742)	-0.047 (0.2941)	-0.042 (0.3008)	-0.039 (0.3598)	-0.023 (0.5758)	-0.033 (0.3987)	-0.044 (0.2939)	-0.074* (0.0666)	-0.069* (0.0723)	-0.039 (0.3413)	-0.048 (0.2661)
Intercept	1.202 (0.2483)	0.089 (0.9225)	0.441 (0.5603)	0.164 (0.8014)	0.239 (0.6838)	0.527 (0.3908)	0.286 (0.6308)	0.852 (0.1316)	1.503** (0.0135)	1.211** (0.0365)	1.055* (0.0568)	1.477** (0.0123)	1.449** (0.0208)
N	864	864	864	864	864	864	864	864	864	864	864	864	864
Adj. R-Squared	0.0335	0.0379	0.0525	0.0703	0.0777	0.0759	0.0633	0.0730	0.0581	0.0643	0.0572	0.0522	0.0498

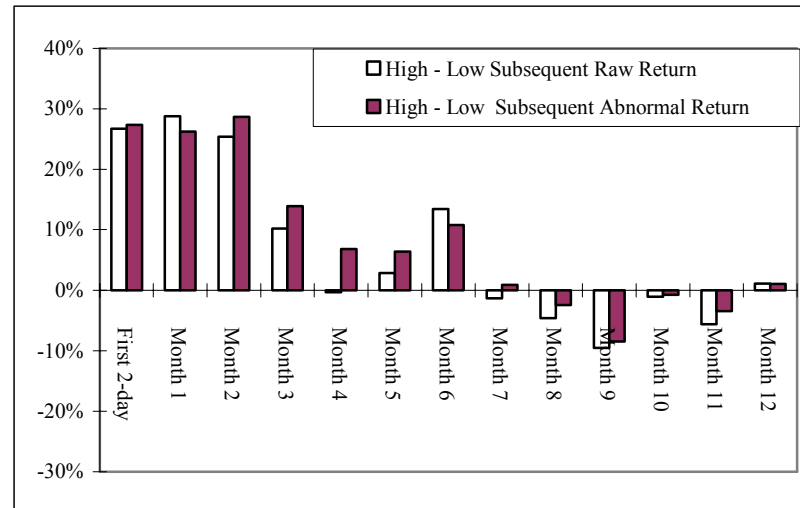
Table 9. Panel B. Large Institutions

Trading Period	First 2-Day	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Net Buying	1.115* (0.0760)	0.920** (0.0286)	1.454* (0.0529)	1.736*** (0.0013)	1.173*** (0.0066)	0.380 (0.3632)	0.368 (0.3818)	0.666** (0.0214)	0.014 (0.9641)	-0.212 (0.3827)	-0.029 (0.9167)	-0.012 (0.9528)	-0.188 (0.4290)
Log(Age+1)	0.153*** (0.0028)	0.157*** (0.0005)	0.154*** (0.0000)	0.145*** (0.0000)	0.127*** (0.0000)	0.113*** (0.0002)	0.114*** (0.0001)	0.119*** (0.0000)	0.102*** (0.0007)	0.101*** (0.0003)	0.085*** (0.0018)	0.084*** (0.0037)	0.084*** (0.0062)
Log(Reputation)	0.403** (0.0366)	0.190 (0.2624)	0.133 (0.3408)	0.071 (0.5560)	0.104 (0.3373)	0.149 (0.1902)	0.070 (0.5226)	0.118 (0.2594)	0.093 (0.4065)	0.069 (0.5181)	-0.086 (0.4029)	-0.090 (0.4111)	-0.167 (0.1493)
Initial Return	-0.137* (0.0634)	-0.081 (0.2100)	-0.063 (0.2387)	-0.057 (0.2156)	-0.056 (0.1773)	-0.086** (0.0490)	-0.083** (0.0493)	-0.069* (0.0856)	-0.083* (0.0525)	-0.077* (0.0603)	-0.075* (0.0587)	-0.086** (0.0415)	-0.072 (0.1036)
Log(Proceeds)	-0.143 (0.1851)	-0.068 (0.4762)	-0.080 (0.3045)	-0.041 (0.5396)	-0.016 (0.7881)	-0.024 (0.7128)	-0.012 (0.8445)	-0.009 (0.8797)	-0.054 (0.3956)	0.006 (0.9239)	0.027 (0.6355)	-0.018 (0.7621)	0.019 (0.7675)
Bubble	-0.239** (0.0396)	-0.293*** (0.0043)	-0.269*** (0.0014)	-0.223*** (0.0021)	-0.238*** (0.0003)	-0.270*** (0.0001)	-0.232*** (0.0005)	-0.179*** (0.0048)	-0.148** (0.0292)	-0.103 (0.1105)	-0.101 (0.1020)	-0.109* (0.0977)	-0.137** (0.0498)
NASDAQ	-0.199 (0.1958)	-0.106 (0.4354)	-0.151 (0.1779)	-0.181* (0.0593)	-0.117 (0.1767)	-0.131 (0.1498)	-0.062 (0.4800)	-0.102 (0.2244)	-0.173* (0.0547)	-0.198** (0.0210)	-0.147* (0.0730)	-0.146* (0.0935)	-0.141 (0.1281)
High-Tech	0.074 (0.4118)	0.027 (0.7351)	0.012 (0.8472)	-0.003 (0.9630)	-0.039 (0.4419)	-0.059 (0.2593)	-0.032 (0.5367)	-0.058 (0.2297)	-0.076 (0.1461)	-0.069 (0.1633)	-0.057 (0.2317)	-0.038 (0.4543)	-0.031 (0.5617)
Financial	0.142 (0.4202)	0.083 (0.5903)	0.113 (0.3773)	0.114 (0.2978)	0.127 (0.2010)	0.100 (0.3363)	0.144 (0.1522)	0.107 (0.2611)	0.144 (0.1610)	0.130 (0.1815)	0.100 (0.2831)	0.064 (0.5189)	0.076 (0.4741)
Venture Capital	-0.014 (0.8852)	-0.026 (0.7613)	-0.028 (0.6909)	-0.037 (0.5394)	-0.032 (0.5662)	-0.005 (0.9303)	0.059 (0.2894)	0.023 (0.6604)	0.029 (0.6159)	0.018 (0.7334)	0.024 (0.6439)	0.045 (0.4124)	0.069 (0.2433)
Lockup	-0.191** (0.0442)	-0.155* (0.0627)	-0.122* (0.0757)	-0.106* (0.0729)	-0.096* (0.0722)	-0.061 (0.2742)	-0.057 (0.2914)	-0.062 (0.2254)	-0.060 (0.2782)	-0.057 (0.2791)	-0.029 (0.5617)	-0.015 (0.7862)	-0.036 (0.5291)
Log(ME)	0.017 (0.8644)	0.023 (0.7887)	0.026 (0.7149)	0.007 (0.9090)	-0.021 (0.7056)	-0.027 (0.6422)	-0.022 (0.6982)	-0.058 (0.2762)	-0.044 (0.4442)	-0.083 (0.1267)	-0.079 (0.1275)	-0.055 (0.3181)	-0.079 (0.1777)
Log(BE/ME)	-0.164** (0.0241)	-0.100 (0.1154)	-0.056 (0.2849)	-0.045 (0.3198)	-0.042 (0.3086)	-0.039 (0.3625)	-0.023 (0.5845)	-0.034 (0.3932)	-0.045 (0.2919)	-0.074* (0.0669)	-0.069* (0.0720)	-0.039 (0.3420)	-0.049 (0.2635)
Intercept	1.202 (0.2487)	0.091 (0.9211)	0.437 (0.5639)	0.238 (0.7143)	0.281 (0.6315)	0.533 (0.3850)	0.286 (0.6309)	0.843 (0.1355)	1.501** (0.0136)	1.219** (0.0351)	1.058* (0.0562)	1.478** (0.0123)	1.449** (0.0209)
N	864	864	864	864	864	864	864	864	864	864	864	864	864
Adj. R-Squared	0.0329	0.0371	0.0515	0.0748	0.0795	0.0764	0.0633	0.0736	0.0580	0.0647	0.0570	0.0522	0.0495

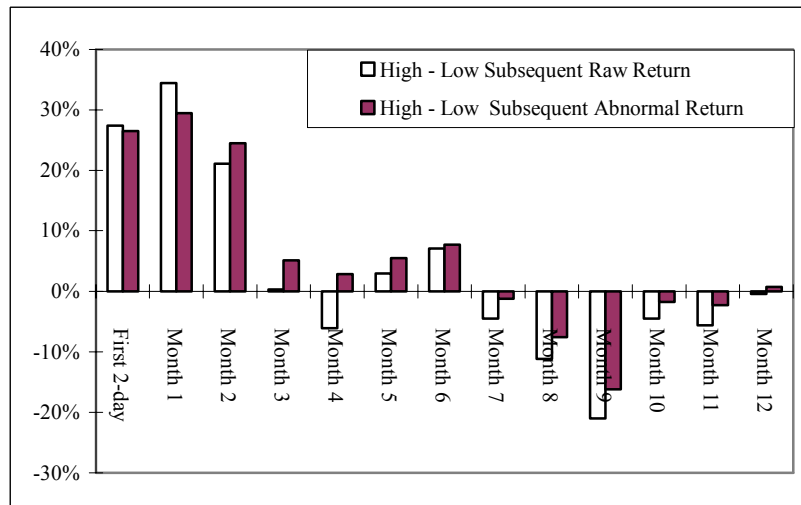
Table 9. Panel C. Small Institutions

Trading Period	First 2-Day	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Net Buying	2.197 (0.3766)	1.221 (0.3827)	3.531 (0.2526)	-0.553 (0.5265)	-0.873 (0.5570)	-1.080 (0.4036)	0.141 (0.8225)	-0.627 (0.6635)	1.233 (0.3832)	3.389* (0.0651)	1.357 (0.1101)	-0.088 (0.9199)	-1.182 (0.3200)
Log(Age+1)	0.153*** (0.0027)	0.156*** (0.0005)	0.153*** (0.0000)	0.144*** (0.0000)	0.125*** (0.0000)	0.114*** (0.0002)	0.114*** (0.0001)	0.116*** (0.0000)	0.103*** (0.0006)	0.100*** (0.0004)	0.087*** (0.0014)	0.084*** (0.0038)	0.084*** (0.0064)
Log(Reputation)	0.387** (0.0454)	0.179 (0.2919)	0.118 (0.3989)	0.059 (0.6268)	0.103 (0.3455)	0.152 (0.1806)	0.073 (0.5052)	0.124 (0.2354)	0.093 (0.4068)	0.064 (0.5500)	-0.092 (0.3682)	-0.089 (0.4128)	-0.171 (0.1401)
Initial Return	-0.131* (0.0762)	-0.076 (0.2398)	-0.066 (0.2184)	-0.062 (0.1786)	-0.064 (0.1258)	-0.086** (0.0475)	-0.083** (0.0490)	-0.069* (0.0852)	-0.087** (0.0434)	-0.087** (0.0347)	-0.076* (0.0513)	-0.086** (0.0395)	-0.072 (0.1018)
Log(Proceeds)	-0.138 (0.2030)	-0.062 (0.5142)	-0.081 (0.3045)	-0.035 (0.6094)	-0.038 (0.5317)	-0.032 (0.6204)	-0.015 (0.8081)	-0.022 (0.7027)	-0.058 (0.3591)	0.004 (0.9412)	0.024 (0.6716)	-0.018 (0.7683)	0.023 (0.7211)
Bubble	-0.232** (0.0486)	-0.295*** (0.0043)	-0.264*** (0.0018)	-0.229*** (0.0018)	-0.253*** (0.0001)	-0.281*** (0.0001)	-0.234*** (0.0005)	-0.195*** (0.0022)	-0.149** (0.0279)	-0.090 (0.1656)	-0.088 (0.1566)	-0.109* (0.0974)	-0.134* (0.0553)
NASDAQ	-0.199 (0.1982)	-0.097 (0.4765)	-0.144 (0.1992)	-0.173* (0.0741)	-0.122 (0.1649)	-0.134 (0.1423)	-0.063 (0.4757)	-0.099 (0.2361)	-0.175* (0.0523)	-0.200** (0.0196)	-0.155* (0.0585)	-0.146* (0.0963)	-0.137 (0.1384)
High-Tech	0.063 (0.4844)	0.014 (0.8549)	0.007 (0.9173)	-0.003 (0.9523)	-0.042 (0.4024)	-0.059 (0.2615)	-0.030 (0.5630)	-0.057 (0.2410)	-0.078 (0.1367)	-0.071 (0.1487)	-0.057 (0.2305)	-0.038 (0.4519)	-0.033 (0.5395)
Financial	0.144 (0.4137)	0.093 (0.5467)	0.105 (0.4092)	0.122 (0.2677)	0.108 (0.2767)	0.100 (0.3333)	0.142 (0.1624)	0.110 (0.2531)	0.144 (0.1597)	0.137 (0.1607)	0.091 (0.3329)	0.065 (0.5169)	0.076 (0.4744)
Venture Capital	-0.010 (0.9168)	-0.026 (0.7607)	-0.028 (0.6902)	-0.030 (0.6222)	-0.031 (0.5742)	-0.004 (0.9463)	0.058 (0.2981)	0.030 (0.5752)	0.029 (0.6087)	0.017 (0.7487)	0.025 (0.6356)	0.045 (0.4153)	0.066 (0.2591)
Lockup	-0.181* (0.0566)	-0.151* (0.0712)	-0.122* (0.0761)	-0.109* (0.0672)	-0.099* (0.0648)	-0.063 (0.2580)	-0.057 (0.2950)	-0.062 (0.2283)	-0.063 (0.2517)	-0.054 (0.3008)	-0.028 (0.5772)	-0.015 (0.7838)	-0.034 (0.5502)
Log(ME)	0.016 (0.8686)	0.027 (0.7512)	0.035 (0.6221)	0.008 (0.8992)	0.001 (0.9827)	-0.020 (0.7273)	-0.019 (0.7282)	-0.045 (0.3938)	-0.040 (0.4809)	-0.080 (0.1393)	-0.076 (0.1441)	-0.056 (0.3166)	-0.081 (0.1700)
Log(BE/ME)	-0.164** (0.0238)	-0.103 (0.1064)	-0.057 (0.2789)	-0.048 (0.2949)	-0.035 (0.3882)	-0.037 (0.3890)	-0.024 (0.5642)	-0.032 (0.4098)	-0.046 (0.2768)	-0.076* (0.0599)	-0.067* (0.0815)	-0.039 (0.3402)	-0.048 (0.2706)
Intercept	1.121 (0.2822)	-0.079 (0.9310)	0.294 (0.6974)	0.132 (0.8398)	0.283 (0.6314)	0.553 (0.3682)	0.289 (0.6271)	0.846 (0.1352)	1.514** (0.0128)	1.188** (0.0394)	1.051* (0.0574)	1.475** (0.0125)	1.407** (0.0248)
N	864	864	864	864	864	864	864	864	864	864	864	864	864
Adj. R-Squared	0.0302	0.0325	0.0488	0.0639	0.0718	0.0763	0.0625	0.0681	0.0589	0.0676	0.0598	0.0522	0.0499

Panel A. All Institutions



Panel B. Large Institutions



Panel C. Small Institutions

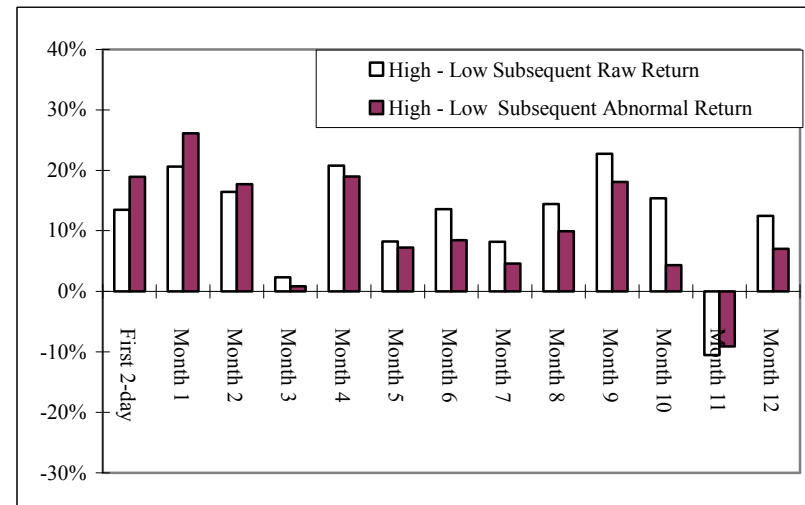


Figure 1. Institutional Trading and Subsequent Long-Run IPO Performance. This figure plots mean High - Low differences in Subsequent Raw Return and Subsequent Abnormal Return over time. Panel A plots results for all 419 sample institutions. Panels B and C plot results for large and small institutions (using \$10 billion Annualized Principal Traded as the cutoff), respectively. The first year (252 trading days) post-IPO is divided into 13 trading periods. First 2-Day is the first two trading days post-IPO. Month 1 through Month 12 each consists of 21 trading days. In other words, Month 1 includes First 2-Day, and Month 1 through Month 12 are mutually exclusive. Net Buying for each trading period is total shares bought by institutions minus total shares sold by institutions normalized by the Shares Offered in the IPO. For the 934 initial sample IPOs, the lowest, middle three, and highest quintiles of Net Buying are categorized as Low, Moderate, and High IPOs, respectively. Subsequent Raw Return is the IPO one-year buy-and-hold raw return starting after each of the 13 trading periods. If delisted, the CRSP delisting return is used. Subsequent Abnormal Return is the difference between Subsequent Raw Return and the matched Fama/French 25 Size and Book-to-Market portfolio buy-and-hold value-weighted return.