The Networking Function of Investment Banks: Evidence from Private Investments in Public Equity

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Abstract

We examine investment banks' networking function in capital markets, using a sample of Private Investments in Public Equity (PIPEs). We argue that investment banks develop relationships with investors through repeat dealings, and that such relationships form the basis of their networking function. We find that investment banks, especially those with stronger networking abilities, help issuers attract more investors. Investors are more likely to participate in an issue if they have an existing relationship with the issue's investment bank(s). Correspondingly, an issuer that desires more investors is more likely to hire an investment bank than place the shares directly. We also find that issuers pay higher fees to hire investment banks with stronger networking abilities. Our empirical findings suggest that the networking function of investment banks is important in securities offerings.

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1. Introduction

Investment banking is a relationship-based rather than transaction-based business. Investment banks not only accumulate relationship-specific assets with securities issuers through repeat dealings as suggested by James (1992), but they also develop relationships with investors and establish networks of relationship investors through repeat dealings in securities offerings, brokerage services, and analyst research coverage. Such investor networks are useful for investment banks in lowering the costs of searching for potential investors. The investor networks could also help investment banks win trust from investors and induce investors to produce and truthfully reveal information (e.g., Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), Cornelli and Goldreich (2001), Sherman and Titman (2002), and Sherman (2000, 2005)). We call the use of investor networks by investment banks to certify, market, and distribute securities to investors as their networking function.

In many financial markets, financial institutions and investors form widespread networks. Hochberg, Ljungqvist, and Lu (2007) show that better networked venture capital (VC) firms demonstrate better investment performances, and that start-up companies supported by better networked VCs are more likely to survive. For securities offerings, issuing firms often cite the distributional ability as one of the most important factors in selecting managing underwriters (Corwin and Schultz (2005)). Despite its importance, the networking role of investment banks in securities offerings has not been explicitly examined. One limitation to empirically examining investment banks' networking role is that investment banks are not required to disclose and are highly protective of order book and allocation information in public securities offerings.[1]

[1] Cornelli and Goldreich (2001) obtain bid and allocation details for a sample of 39 initial public offerings (IPOs) and seasoned equity offerings (SEOs) in the U.K. during 1995-1997 from one investment bank who acted as the

In this paper, we shed light on investment banks' networking function by studying a sample of Private Investments in Public Equity (PIPEs) during 2000-2005. PIPE issuers can choose to place securities either directly with investors or indirectly with the help of one or more investment banks as placement agents (throughout the paper, we use the terms "investment bank" and "placement agent" interchangeably). More importantly, allocation information for PIPEs is disclosed. The availability of allocation information allows us to directly construct for each investment bank in our sample of 2,096 PIPE deals a measure for its investor network: the number of investors related to the investment bank in past deals, which we also refer to as the investment bank's relationship investors. This measure helps capture investment banks' networking abilities. With this measure, as well as the fact that not all PIPEs in our sample use the service of investment banks, we provide insights into the networking function of investment banks by answering three interlinked questions: (1) How are investment banks with different networking abilities related to the participation of an investor and the number of investors in a PIPE deal? (2) Do issuing firms recognize the usefulness of investment banks' networking function in their decisions of whether to hire an investment bank? And (3) Do issuing firms pay for investment banks' networking function?

We first provide evidence on the importance of investment banks' networking function and on the source of their networking abilities by examining the determination of the number of investors in a PIPE deal. We find that investment banks help attract investors to a deal and that those with stronger networking abilities can attract more investors, especially new investors without a prior relationship with the issuer. Specifically, the number of investors in a PIPE deal increases by 41.9% if the deal is intermediated instead of being

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bookrunner for these offerings. They find that regular investors play an important role in the pricing and distribution of securities. However, their sample of only one investment bank prevents any cross-sectional analysis of investment banks' networking function.

directly placed, other things being equal. Conditional on intermediation, a one standard deviation increase from the sample median in the measure of networking abilities, the number of relationship investors, of the deal's placement agent(s) further increases the number of participating investors by 14.1%. These findings suggest that investment banks play an important networking role and they help issuing firms achieve less concentrated ownership structures.

To further understand how investment banks help attract more investors, we also examine the determinants of investor participation in a deal from the investor's perspective. We find that an investor is more likely to participate in a PIPE deal if it has a prior relationship with the placement agent(s). While the unconditional likelihood for an investor to participate in a PIPE deal is 2.5%, this probability increases to 8.8% if an investor has a prior relationship with the placement agent(s). This finding suggests that investment banks' prior relationships with their investor clients help improve their networking abilities.

Several papers have compared deals with and without investment banks. Smith (1977) raises the question of why underwriters are employed in the vast majority of public offerings, despite lower issuing costs for right offerings (see Eckbo, Masulis, and Norli (2007) for an excellent survey of seasoned equity offerings). Similarly, Scholes and Wolfson (1989) question why many eligible shareholders do not participate in discount dividend-reinvestment and stock-purchase plans. Servaes and Zenner (1996) find that transaction costs, contracting costs, and information asymmetries are related to the acquirer's decision of whether or not to hire an investment bank in mergers. We build on these studies and examine whether issuers recognize the networking role of investment banks in their decisions of whether to hire an investment bank. We use issue and firm characteristics as proxies for issuing firms' different

needs for access to investors. We find that smaller issues and issues motivated by strategic alliances are less likely to be intermediated. The fact that investment banks are selectively used by issuers based on their need for access to investors not only suggests that an important reason for hiring investment banks is their access to networks of investors, but also provides new insight into broad issues such as the way issuers choose to raise capital and its potential association with their desired ownership structures.

To answer the third question, we link the fees paid by issuers to their placement agents' networking abilities. We find that issuers pay higher fees to investment banks with larger investor networks. More specifically, when an issuing firm moves from a placement agent with median networking abilities (i.e., number of relationship investors) of 42 to one with the mean of 67, the fees would increase by 12 basis points, or $28,000. Our results thus suggest that issuing firms do pay for investment banks' networking function.

Our major contribution is threefold. First, to our best knowledge, this paper is the first to emphasize the networking function of investment banks and use investment banks' investor networks to explicitly measure their networking abilities. Second, we provide the first direct evidence on how investment banks with different networking abilities can affect investor participation and how issuing firms can selectively use investment banks to achieve their desired ownership structures when they raise capital. The direct evidence on the networking function of investment banks adds to the vast literature on the role of investment banks in securities offerings for information production, certification, and marketing (e.g., Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), Carter and Manaster (1990), Corwin and Schultz (2005), Gao and Ritter (2008), and Huang and Zhang (2008)). Third, the existing literature focuses on investment bank compensation for equity issuances in the public market

(e.g., Altinkiliç and Hansen (2000), and Chen and Ritter (2000)). We add to the literature by providing evidence on how investment banks are compensated in the PIPE market, and more importantly, whether investment banks are compensated for their networking abilities.

The PIPE market has become an increasingly significant source of external financing for public firms. Sagient Research Systems, a leading provider of information on PIPEs, reports total PIPE issuances of less than $2 billion in 1995 and about $141 billion in 2007.[2] Our paper also complements other recent papers in understanding this increasingly important market (see Brophy, Ouimet, and Siam (2006), Chaplinsky and Haushalter (2006), Huson, Malatesta, and Parrino (2006), Meidan (2006), and Dai (2007), among others).

The rest of the paper is organized as follows. Section 2 presents the hypotheses. Section 3 describes the data and reports the summary statistics. Section 4 analyzes the determination of the number of investors in a PIPE deal and an investor's participation decision. Section 5 analyzes the issuer's decision to hire placement agents and the determination of agent compensation. Section 6 concludes the paper.

2. Hypotheses

Investment banking is a relationship business. James (1992) suggests that investment banks benefit from accumulating issuer relationship-specific assets through repeat dealings with securities issuers. Burch, Nanda, and Warther (2005) show that such relationship capital can help lower the issuing costs of a repeat issuer using the same underwriter. Both James (1992) and Burch et al. (2005) focus on the relationships between investment banks and the sell-side clients, the issuing firms.

[2] The amounts exclude structured equity lines and Canadian-domiciled issuers. A structured equity line is an agreement that requires investors to purchase a predetermined value of the company's common stock over a certain period of time. See http://www.sagientresearch.com/pt/ for details.

Similarly, investment banks can also develop relationships with buy-side clients through repeat dealings. Such investor relationships could help investment banks to certify, market, and distribute securities. First, investor relationships could facilitate the search for potential investors. Second, investor relationships could strengthen the certification function of investment banks with their repeat investors. Investment banks have an incentive to conduct "due diligence" investigations of issuers and credibly certify issuers' quality (see Beatty and Ritter (1986), Booth and Smith (1986), and Chemmanur and Fulghieri (1994), among others). Although investment banks' reputation capital is not necessarily investor-specific, an investment bank is likely to have more trust from an investor if they have worked together before. Third, investment banks' abilities to bundle different offerings could induce investors to produce and truthfully reveal information (Benveniste and Spindt (1989)). Binay, Gatchev, and Pirinsky (2007) show that in initial public offerings (IPOs) investors who received shares in the past tend to receive shares in a current deal by the same underwriter. Empirical evidence also shows that investors and investment banks establish relationships through brokerage services and analyst research coverage (Nimalendran, Ritter, and Zhang (2007) and Reuter (2006)). Such relationships could enhance investment banks' abilities to bundle different securities offerings. Sherman (2000, 2005) argues that investment banks' abilities to form regular institutional clienteles help to explain the globally increased use of bookbuilding as an IPO mechanism.

In short, investor relationships enhance investment banks' networking abilities in securities offerings, which, in turn, can help attract investors for securities issuers. We use the number of investors that participated in the past deals of an investment bank, which we often

refer to as the investment bank's relationship investors, as a measure for its networking abilities. Thus, everything else being equal, we have:

Hypothesis 1: *Investment banks help attract investors, and the stronger the placement agent's networking abilities (i.e., greater number of relationship investors), the more likely for investors to participate and the more investors.*

Due to different needs for risk sharing, liquidity, and corporate control, some firms may desire that more investors participate in their deals than other firms desire (Barclay and Holderness (1989), Wruck (1989), Booth and Chua (1996), Brennan and Franks (1997), and Barclay, Holderness, and Sheehan (2007)). For example, firms raising more capital could need more investors while firms involved in a strategic alliance could desire fewer investors. If investment banks act as an important bridge between issuers and investors, then issuers that desire more investors should be more likely to hire investment banks as their placement agents. Thus, we have the second hypothesis:

Hypothesis 2: *Issuers that desire more investors are more likely to use investment banks.*

Little evidence on investment banks' networking function has been provided because investor identities are not disclosed in public offerings. Hypotheses 1 and 2 are thus to establish and document the importance of investment banks' networking abilities. For repeat dealings between an issuing firm and an investment bank, the investment bank can pass on the cost savings due to the issuer relationship-specific assets and lower the underwriting fees charged to the issuing firm (James (1992) and Burch et al. (2005)). For repeat dealings between investors and an investment bank, an issuing firm is on the buy-side to use such investor relationships and investor networks to certify and market its security. The issuing

firm may need to pay for such investor relationships accumulated by the investment bank. Alternatively, investment banks with established investor networks could incur lower costs of searching for investors and correspondingly charge less fees. So we have two competing hypotheses for how the networking function is related to investment bank compensation:

Hypothesis 3a: *Everything else being equal, issuers are willing to pay a premium for hiring investment banks with stronger networking abilities (i.e., greater number of relationship investors).*

Hypothesis 3b: *Everything else being equal, investment banks with stronger networking abilities charge lower fees because of lower search costs.*

3. Data and Summary Statistics

3.1. Data

We use the PlacementTracker database of Sagient Research Systems to construct our sample of PIPEs by U.S. companies during 2000-2005. We start our sample from 2000 because information on placement agent fees is less comprehensive in earlier years. We include all years available in the PlacementTracker database, not just the sample period of 2000-2005, for pre-issue information of the deals in our final sample.

The PlacementTrakcer database includes three types of PIPEs: Regulation D offerings, shelf sales, and offerings of structured equity lines.[3] Regulation D of the Securities and Exchange Commission (SEC) allows firms to offer securities to private investors before registration. Within 15 days after the offering, the issuing firm must file "Form D", a brief

[3] Following the existing literature, we do not consider Regulation S and Rule 144A offerings as PIPEs (e.g., Dai (2007) and Brophy, Ouimet, and Siam (2006)). Regulation S allows U.S. firms to sell unregistered securities to non-U.S. investors. Rule 144A allows qualified institutional investors (QIBs) to trade privately placed securities among themselves without having to hold them for two years following the offering.

notice that includes the names and addresses of the firm's owners and stock promoters. Unlike Regulation D offerings, shelf sales and structured equity lines require an effective registration prior to the offering. This makes them more like public offerings. We thus exclude shelf sales and structured equity lines from our sample.

The initial sample of Regulation D offerings includes 3,121 common stock deals, 1,729 fixed convertible deals, 425 floating convertible deals, 171 "company installment" convertible deals, 124 convertible reset deals, and 55 common stock reset deals, or a total of 5,625 deals by U.S. firms from 2000-2005.[4] Common stock and fixed convertible PIPEs are often categorized as traditional PIPEs, while other PIPEs are categorized as structured PIPEs. The main difference between traditional and structured PIPEs is that structured PIPEs provide investors with downside protection against declines in the issuer's stock price after the offering.

We exclude deals that we are unable to link to CRSP and Compustat and deals with missing values of stock return volatility, market leverage, profitability, and Tobin's Q, resulting in a sample of 3,060 PIPEs. We further require deals to have non-missing gross proceeds, market capitalization of the issuer ≥$1 million, and market price ≥$1 at the market close when the placement closes, reducing the sample to 2,650 observations. Since our analysis focuses on investor participation and the networking role of investment banks, we exclude deals for which we are unable to determine whether they are direct or intermediated,

[4] Convertible securities include both convertible debt and convertible preferred stock. A fixed convertible can be converted into the company's common stock at a fixed conversion price. A floating convertible can be converted into the company's common stock at a variable conversion price that is based on the future market price of the stock. A "company installment (self-amortizing)" convertible requires the issuer to make periodic payments of principal and interest in either cash or stock. An issuer that chooses to make these payments in stock is subject to an automatic downward conversion feature if the company's stock has declined in value since the offering. A convertible reset has a fixed conversion price that is subject to a number of resets at specified times after the offering. A common stock reset includes repricing rights that allow investors to receive additional shares of the stock if the market price drops after the closing date.

deals without participation of any institutional investors, and deals with unknown identity of institutional investors. Our final sample includes 2,096 PIPE deals.

3.2. Summary Statistics

3.2.1. Sample Distribution

We report detailed classifications of deals along various dimensions in our sample in Panel A of Table 1. Our sample includes 1,356 intermediated and 740 direct PIPE deals. The large percentage of intermediated PIPEs (64.69%) suggests a prevalent role of investment banks in the PIPE market. For each deal in our sample, we check all deals during all years available in the PlacementTracker database to determine if the same firm has other PIPE deals in the five years prior to its current deal. The majority of both the intermediated and the direct deals in our sample involve repeat issuers. Among 673 cases where firms hire an agent for both prior and current issues, 280 use the same agent for the prior and current issues.

Sagient Research Systems categorizes investors as a bank, broker/dealer, buyout firm/private equity, charitable/educational/family trust, corporation, hedge fund, insurance firm, mutual fund, pension fund, venture capital firm, or individual. There are also a smaller number of issues where the investor type is unknown, although investor names are disclosed. Following Meidan (2006), we refer to the investor with the most shares in a PIPE deal as the lead investor of the deal. Hedge funds are the lead investors for 45.66% of our sample deals, followed by mutual funds and corporations. The deal purpose is strategic alliance for 8.06% of our sample deals, and insiders participate in about 2.96% of the sample.

NYSE-listed firms account for only a small percentage of deals in our sample, with other firms being listed on either Amex or NASDAQ (mostly NASDAQ). Over half of our

sample deals have warrants attached. Common stock (1,283 deals) and fixed convertible PIPEs (573 deals) are the two most frequent types in our sample.[5] Sagient Research Systems categorizes PIPE issuers into 11 industry sectors. The top three sectors ranked by the number of deals in our sample are healthcare, communications, and technology. Approximately 70% of PIPEs are by firms from these three sectors. Our sample of PIPEs from 2000-2005 is not concentrated in any one year.

Panel B of Table 1 reports the sample distribution of issuers, agents, and investors for deals in our sample. Our sample deals represent 1,229 distinct firms. Among these firms, about 63% have one deal, 20% have two deals, and 17% have three or more deals.

A total of 360 distinct agents place all of the intermediated deals in our sample. Among these agents, 46.7% place only one deal, 15.0% place two deals, and 38.3% place three or more deals. We do not see any investment bank dominate the PIPE market. Roth Capital Partners, the top agent ranked by the number of deals, only places 71 or 3.39% of the 2,096 deals in our sample. We list the top ten agents ranked by the total number of issues in Panel A of the appendix.

We have a total of 2,984 distinct investors who participate in deals in our sample. Many of these investors are repeat investors in PIPE deals. For example, nearly 45% of the 2,984 investors participate in at least two deals, and 664 (22%) of them participate in four or more deals. A list of the top ten investors ranked by the total number of deals is reported in Panel B of the appendix. These investors are quite active. For example, MGP Advisors participates in 277 or 13.22% of our sample deals.

[5] Chaplinsky and Haushalter (2006) report that common stock and floating convertible deals were the most frequently issued PIPEs during their sample period of 1995-2000, although the use of floating convertibles declined in 2000. They suggest two reasons for the declining use of floating convertibles. First, floating convertibles received adverse publicity. Second, certain contract terms introduced by NASD ruling has effectively reduced the downside protection that floating convertibles provided to investors.

3.2.2. Key Deal and Firm Characteristics

Table 2 reports the means and medians of key firm and issue characteristics by placement method. The t-statistics for the difference in means and the z-statistics for the difference in medians are reported in the last two columns. The mean (median) of *Placement agent fees* for intermediated PIPEs is 6.15% (6.00%) of gross proceeds.

Taking advantage of the availability of investor identities, we also report information on the number of investors and the numbers of old and new investors. One important difference between direct and intermediated deals is that intermediated deals attract more investors, especially new investors. This suggests that a potential reason for using a placement agent is to attract more investor participation. We use the number of investors related to the agent(s) as a measure of the networking abilities of a PIPE deal's agent(s). The number of such relationship investors is defined as the number of unique investors that participated in at least one PIPE deal by at least one agent of the current deal in the five years prior to the current deal. For the intermediated deals in our sample, the mean (median) of this variable is 66.66 (42), suggesting that a typical investment bank is familiar with many potential investors. In untabulated analysis, we also find that the standard deviation of this variable is 75.87, suggesting that there are substantial variations of investment banks' networking abilities in the PIPE market. Both t-statistics and z-statistics suggest that intermediated and direct PIPEs also have significantly different *Relative issue siz*e, *Market leverage, Profitability,* and *Tobin's Q*.

To gain further insight into the fees charged by investment banks in the PIPE market, Figure 1 plots the distribution of placement agent fees as a percentage of gross proceeds.

Approximately 90% of intermediated PIPEs pay 2%-10% fees, and about 60% of them pay 5%-8% fees. When the sample is sorted by the number of investors, our untabulated analysis suggests that placement fees are positively related to the number of investors of a deal.

3.2.3. Interactions between Investment Banks and Investors

Table 3 sheds further light on the importance of relationships between investors and investment banks. Panel A reports the distribution of investors participating in direct and intermediated deals. While 72.75% of investors only participate in intermediated deals, only 12.77% of investors participate in both intermediated and direct deals, and 14.48% of investors only participate in direct deals. These results suggest that firms are able to gain access to a larger pool of investors through investment banks, consistent with investment banks' networking function. For investors participating in only intermediated deals, the average investor participates in 2.82 intermediated deals. In contrast, for investors participating in only direct deals, the average investor participates in 1.38 direct deals. Investors participating in both intermediated and direct deals are also much more active in their participation in intermediated deals.

In untabulated analysis, we further find that among all investors participating in only intermediated deals, 58.82% participate in only one deal, 17.04% participate in two deals, 7.78% participate in three deals, and over 16% participate in at least four deals. In contrast, among all investors participating in only direct deals, 79.63% participate in only one direct deal, 12.04% participate in two deals, 4.4% participate in three deals, and less than 4% participate in at least four deals. Among investors participating in both intermediated and direct deals, 20.73% participate in only one intermediated deal while 40.94% participate in

only one direct deal. These results suggest that investors can have access to more deals through investment banks.

Panels B and C of Table 3 show the degree of repeat interactions between investment banks and investors in the PIPE market. In Panel B, we calculate *(R – 1/ND) / (1 – 1/ND)* for each investor participating in at least two, five, ten, and 20 intermediated deals, where *ND* is the number of intermediated deals participated by the investor, and *R* is the ratio of the number of unique agents over *ND*. The ratio *R* takes the minimum value of *1/ND* when the *ND* intermediated deals in which the investor participates are always led by the same investment bank, and the maximum value of one when the *ND* intermediated deals are led by *ND* distinct investment banks. Since *ND* varies across investors, we calculate the standardized ratio, *(R – 1/ND) / (1 – 1/ND)*, which ranges between zero and one for all investors with $ND \geq 2$. If the standardized ratio is closer to zero, then more repeat interactions exist between investors and investment banks. A total of 1,001 unique investors participate in at least two intermediated deals in our final sample. For these investors, both the mean (0.71) and the median (0.81) of the standardized ratio are less than one, suggesting some degree of repeat interactions between investors and investment banks. As the number of deals in which the investors participate increases, the mean and median values of the standardized ratio tend to decrease, suggesting more repeat interactions.

In Panel C we calculate *(S – 1/ND) / (1 – 1 /ND)* for each investor with at least two, five, ten, and 20 intermediated deals, where *S* is the share of an investor's intermediated deals by its most favorite lead agent, and *ND* is as defined earlier. We define the most favorable lead agent as the investment bank that leads the largest number of deals participated by the investor. The standardized share ranges from approximately zero when the investor does not

favor any investment bank to one when the investor only participates in deals by the same investment bank. The median value of this measure is between 0.09 and 0.13, suggesting that an average investor does favor deals led by certain investment banks.

4. Networking by Investment Banks and Investor Participation

The results in Tables 2 and 3 indicate that investment banks develop relationships with investors and can help attract more investors. Securities issuers, especially PIPE issuers, may desire a certain number of investors out of liquidity, corporate control, or monitoring concerns (see Barclay and Holderness (1989), Wruck (1989), Mikkelson and Regassa (1991), Hertzel and Smith (1993), Booth and Chua (1996), Brennan and Franks (1997), Huson, Malatesta, and Parrino (2006), and Barclay, Holderness, and Sheehan (2007), among others). In this section we examine the factors that are related to the number of investors in a PIPE deal and the investor's participation in a deal. The focus of these investigations is on the networking role of investment banks in helping attract investor participation.

4.1. The Determination of the Number of Investors

To test Hypothesis 1 and see how placement agents' networking abilities affect the number of investors, we estimate three regressions with similar model specifications. The dependent variables are the natural logarithm of the number of all investors in the current issue, the natural logarithm of one plus the number of old investors, and the natural logarithm of one plus the number of new investors, respectively. We add one to the numbers of old and new investors, respectively, to avoid taking the natural logarithm of zero. We classify an

investor as an old investor if it also participated in at least one deal of the same issuer in the past five years.

We use two variables to capture the impact of placement agents' networking abilities. The first variable, *Intermediation dummy*, equals one if the issuer hires one or more placement agents and zero otherwise. The second variable is *Agent network*, defined as the natural logarithm of one plus the total number of unique investors that participated in at least one deal placed by the agent(s) in the past five years (the number of relationship investors). We add one to the number of unique investors because we set the number of unique investors for an agent (agents) to zero if the current deal is its (their) first deal. Note that we set *Agent network* to zero for direct deals. This essentially makes this variable an interaction variable of *Intermediation dummy* and *Agent network*, capturing the impact of an agent's networking abilities conditional on it being used. We expect that the use of placement agents, especially those with stronger networking abilities, would help attract more investors.

Issuer and deal characteristics could also affect whether an investor would participate in a deal. We include these variables as control variables. Among them, *Prior issue dummy* equals one if the same issuer had at least one PIPE deal in the past five years, and zero otherwise; *NYSE dummy* equals one if the issuer is listed on NYSE, and zero otherwise; *Strategic alliance dummy* equals one if the purpose of the deal is for strategic alliance, and zero otherwise; *Insider dummy* equals one if at least one insider participates in the deal, and zero otherwise; and *Warrant attached dummy* equals one if warrants are attached to the offered shares, and zero otherwise. Other control variables are as defined earlier in Table 2.

Table 4 reports the regression results. We first discuss the results of Regression (1) for the total number of investors. Consistent with Hypothesis 1, both proxies for investment

banks' networking functions have significantly positive coefficients. The coefficient on *Intermediation dummy* is 0.35, which translates into a 41.9% ($e^{0.35} - 1 = 0.419$) increase in the number of investors from direct to intermediated issues, other things being equal. The coefficient on *Agent network* is 0.13. Conditional on intermediation, if the number of unique investors that participated in a deal placed by the agent(s) in the past five years increases by one standard deviation (75.87, untabulated) from the median (42, as reported in Table 2), the total number of investors would increase by 14.1% ($e^{0.13(Ln(1+42+75.87)-Ln(1+42))} - 1 = 0.141$). The statistically and economically significant coefficients on *Intermediation dummy* and *Agent network* suggest that investment banks help issuers attract investors. This is consistent with the conventional wisdom that marketing and distribution abilities are important considerations when an investment bank is hired in securities offerings.

The coefficients on the control variables generally have expected signs. The coefficients on *Ln(Proceeds), Relative offer size, Ln(Market price)*, *NYSE dummy*, *Profitability*, and *Return volatility* suggest that riskier and more informationally opaque issuers require more investors for risk sharing. *Strategic alliance dummy* has a very significantly negative coefficient. This is expected in that an issue for strategic alliance purpose may be more preemptive.

We use the number of old investors as the dependent variable in Regression (2). Since deals without a prior deal by the same issuing firm always have zero number of old investors, this regression uses only the sub-sample of 1,262 PIPEs with at least one PIPE deal by the same firm in the five years prior to the current deal. Interestingly, the coefficient on *Intermediation dummy* in Regression (2) becomes negative and statistically significant, although agents with stronger networking abilities still have a significantly positive impact on

old investors' participation. The negative coefficient on *Intermediation dummy* is likely because, for risk sharing or corporate control reasons, PIPE issuers use placement agents to find new investors to replace old investors. Note that this does not necessarily contradict the positive coefficient on *Agent network*. As shown later in Regression (3), investment banks with stronger networking abilities can attract more new investors. Conditional on intermediation (i.e., *Intermediation dummy* being one), more new investors can accommodate more old investors without creating concentrated holdings by a few old investors.

Regression (3) reports the results with the number of new investors as the dependent variable. As reported in Table 2, the number of new investors is on average more than six times the number of old investors. It is thus not surprising that the coefficients on almost all the independent variables in Regression (3) have the same signs as those in Regression (1). One variable, *Prior issue dummy*, is worth more explanation. Although it has the same negative sign as in Regression (1), it now becomes statistically significant. This suggests that frequent issuers are less likely to attract new investors, perhaps because old investors in previous issues result in a reduced need for new investors, or because such issuers tend to be more financially distressed.

Overall, the results reported in Table 4 support Hypothesis 1, suggesting that investment banks play an important role, both statistically and economically, in helping issuers connect with investors in the PIPE market.

4.2. The Investor Participation Decision

To shed further light on the source of investment banks' networking abilities, we estimate a probit model to examine investors' decision to participate in a deal. The dependent

variable equals one if an eligible investor participates in a PIPE deal, and zero otherwise. The set of eligible investors includes all investors that participate in at least 0.5% of all PIPE deals during the year of the current PIPE deal.[6] The participation decision concerns the 2,096 PIPE deals in our sample, and we include one observation for every eligible investor for each PIPE deal. This results in 445,970 observations. The sample mean value of the dependent variable is 2.5%.

We estimate two regressions. In both regressions, we include two variables as proxies for the networking abilities of investment banks as placement agents. The first variable, *Intermediation dummy,* is defined the same way as in Table 4. We expect this variable to have a positive coefficient because investment banks, if they have developed or are expected to develop relationships with investors, will help attract these investors. The second variable, *Agent investor relation dummy*, equals one if the investor participated in at least one deal placed by at least one agent of the current deal in the five years prior to the current deal. Investment banks' networking is developed partly through repeat dealings in past PIPE deals, and hence we expect that this variable has a positive coefficient. Note that we also assign zero values to *Agent investor relation dummy* for direct deals, which makes it a de facto interaction variable with *Intermediation dummy*.

Among the control variables, we include two investor-related variables. *Ln(# of prior deals involving the investor)* is the natural logarithm of one plus the number of deals that involves the investor within the five years prior to the current deal. This variable captures how active the investor has been, and we expect that a more active investor is more likely to

[6] For instance, the set of eligible investors in the year of 2000 includes 164 investors that participated in at least 0.5% or six of that year's 1,029 PIPE deals. Note that we include all the deals for which the investor identities are available, and some of the deals are not part of our final sample for reasons discussed in Section 3.1. Several cutoff points other than 0.5% are used in unreported analyses and our major results are qualitatively the same.

participate in a deal. *Issuer investor relation dummy* equals one if the investor participated in at least one deal by the issuer in the five years prior to the current deal. Prior relationships between the issuer and the investor could lower the information production costs, and thus this variable should have a positive impact on the likelihood of the investor's participation. The rest of the independent variables have the same definitions as in the previous sub-section. We expect the same signs on them as in Table 4.

Table 5 reports the probit estimation results. We report both the coefficient and the marginal effect multiplied by 100 ((dF/dx) ×100) for each independent variable. The marginal effects for the non-binary variables are evaluated at the means. For the dummy variables, the marginal effects are calculated as the sample averages of the changes in the participation likelihood when the dummy variables increase from zero to one. We first discuss Regression (1) results. For most control variables, the coefficients have the same signs as those reported in Table 4. This is expected in that the issuer and deal characteristics should impact the investor participation decision and the eventual number of participating investors in the same way. The only exception is the coefficient on *Insider dummy*, which is positive in the regression of the number of investors but negative in the investor participation regression. One explanation is that, although insider participation generally deters the participation of eligible investors, it could actually encourage participation of investors that can effectively handle management entrenchment issues. These particular investors could result in a positive association between the number of investors and *Insider dummy*.

As expected, the coefficient on *Ln(# of prior deals involving the investor)* is positive and statistically significant, suggesting that active PIPE investors are more likely to participate in the current deal. Consistent with our expectation, the coefficient on *Issuer*

investor relation dummy is positive with high statistical significance. Economically, a relationship investor is 15.6% more likely (e.g., from 2.5% to 18.1%) to participate in the current issue.

With respect to the investment bank networking variables, the coefficient on *Intermediation dummy* is positive and statistically significant, consistent with Table 4. As expected, the coefficient on *Agent investor relation dummy* is positive and highly statistically significant, suggesting that an investor that has dealt with the same placement agent before is more likely to participate in the current issue. Economically, an investor that has a prior relationship with the placement agent is about 5.3% more likely to participate in the current issue. The coefficients on these two networking variables are again supportive of the networking function of investment banks.

In Regression (2), we further include *Strength of agent investor relation*, defined as the share of the current deal's agent(s) of the investor's purchasing amount in all of the deals in which the investor participated in the five years prior to the current deal. To ensure that this variable captures the strength of a relationship, we only calculate it when the number of deals in which the investor participated in the past five years is at least five. This restriction reduces the number of observations by 27%. This relationship strength variable has a positive coefficient, suggesting that a stronger relationship between the agent(s) and a potential investor further increases the likelihood of the investor's participation in the current deal. Other results in Regression (2) are similar to those in Regression (1).

In sum, Table 5 provides further support for Hypothesis 1. Our results indicate that investment banks have an impact on investors' decision to participate in a PIPE deal. We also provide evidence that prior investor-agent relationships and the strength of such relationships

have a significant effect on the participation decision. This is a clear indication that investment banks develop relationships with investors. Research on this effect has been missing for public securities issuances due to the lack of disclosure on investor identities.

5. Issuer's Decision to Hire an Agent and the Determination of Placement Fees

The preceding section provides evidence that investment banks help attract more investors for issuers of PIPEs by using their existing investor networks. It is interesting to see how this function affects the issuer's decision of whether or not to hire a placement agent. The analysis on the intermediation decision also sheds light on when investment banks' networking function is most useful in terms of firm and issue characteristics. It is also interesting to see, if a placement agent is hired, to what extent the issuer values and accordingly agrees to pay for the function.

5.1. The Decision to Hire a Placement Agent

Although securities issuances in the public market almost always involve at least one underwriter, only 64.69% of the PIPE deals in our sample are intermediated. We estimate a probit model to shed light on the decision of whether to use placement agents. The dependent variable equals one if one or more placement agents are hired, and zero if the offer is placed directly to investors. We estimate two regressions. In Regression (1), we only include firm and issue characteristics. We include two additional variables in Regression (2) as instrumental variables in order to address the sample selection problem when we study the determination of placement fees later. Table 6 reports both the coefficients and the marginal effects for the probit estimations.

We first discuss the results of Regression (1). The coefficient on *Ln(Proceeds)* is positive and statistically significant. This is expected because larger offers may require more investors to share risk. Issuers of larger deals hence are more likely to hire placement agents. Firms with higher return volatility are riskier and more informationally opaque. Such firms need more help from investment banks to place shares with investors. This explains the positive and statistically significant coefficient on *Return volatility*. The coefficient on *Market leverage* is negative and statistically significant. PIPE issuers on average have very low market leverage as reported in Table 2 due to their limited access to debt financing. Higher *Market leverage* thus could be an indicator of better financing positions. This is likely to reduce the need of using help from placement agents.

The coefficients on *Strategic alliance dummy* and *Insider dummy* are both negative and statistically significant, suggesting that deals for strategic alliance purposes and deals with insider participation are less likely to hire placement agents. The reasons for the negative coefficients on these two variables, however, are likely to be different. As reported in Tables 4 and 5, issuers of PIPE deals for strategic alliance have less need for investors not in the alliance. This is likely to reduce the need for a placement agent. As discussed in the previous section, deals with insider participation are only attractive to certain investors that can effectively deal with management entrenchment issues. These investors, even if they have no prior investment relationships with the issuer, are likely to know the issuer. This in turn reduces the need for a placement agent. The effect of *Insider dummy* is consistent with Servaes and Zenner (1996) who find that acquiring firms are more likely to use an investment bank when they have lower insider ownership in their target firms.

In Regression (2), we include two additional variables as instruments because we need to calculate the inverse Mills ratio from the probit regression to control for the sample selection issue in our later regressions of placement fees (Heckman (1976)). The first instrument variable, *Prior intermediation dummy*, equals one if the issuer had another intermediated deal during the five years prior to the current issue, and zero otherwise. We expect that a firm that used a placement agent before is more likely to use one again. The second variable, *% intermediation*, is defined as the percentage of all PIPE deals that are intermediated during the three months prior to the current deal. This variable captures the market environment towards the use of intermediation in the PIPE market. We also expect a positive coefficient on this variable. The results reported in Regression (2) are consistent with our expectations. Furthermore, the coefficients on both instrument variables are statistically significant. Note that both instruments are historical measures and hence are exogenous. Thus the results suggest that they are valid instruments. The coefficients on the other independent variables in Regression (2) are largely the same as those in Regression (1). The only exception is *Prior issue dummy*, which becomes significantly negative. Note that when *Prior intermediation dummy* is included in the regression, *Prior issue dummy* will only capture the impact of not using placement agents. So the coefficients on these two variables simply suggest inertia or issuer fixed effect in their decisions of whether to hire agents in consecutive deals.

Overall, the results in both Regressions (1) and (2) are supportive of Hypothesis 2, suggesting that issuers that need more investors are more likely to hire investment banks as placement agents.

5.2. Agent Networking and Placement Fees

We examine the determination of placement agent fees for PIPEs in this sub-section. We are particularly interested in the effect of agent networking abilities on agent fees. Our study is the first in the literature to examine this issue for PIPE offerings.

The dependent variable of our regression model is the fees (as a percentage of gross proceeds) charged by the placement agent(s). In our sample, 1,082 intermediated issues have non-missing values for placement agent fees. The variable of interest is *Agent network*, a proxy for investment banks' networking abilities. As we discussed in Section 2, we test two competing hypotheses, Hypotheses 3a and 3b, related to this variable.

As for control variables, we include *Issuer agent relation dummy.* If an agent has placed a deal for the issuer recently, the costs of placing the current deal are likely to be lower (Burch, Nanda, and Warther (2005)). We thus expect the coefficient on the relationship dummy to be negative. We also include *Prior issue dummy*, a dummy variable that equals one if the issuer had another PIPE issue in the five years prior to the current issue. Relatively large offers are more likely to be difficult to place. We thus include *Relative offer size* to capture the difficulty of placing a deal. We also follow the existing literature to choose several other independent variables. Lee et al. (1996) and Bajaj, Mazumdar, and Sarin (2002) find that economies of scale play an important role in the determination of investment bank compensation in SEOs and preferred stocks issuances. Therefore, we include *Ln(Proceeds)* to capture economies of scale. We include *Ln(Market price), NYSE dummy, Return volatility*, *Market leverage*, *Profitability*, and *Tobin's Q* to control for the degree of information asymmetry and risk. It could be more costly for investment banks to conduct "due diligence" investigations of riskier and more opaque issuers (Altinkiliç and Hansen (2000)). Thus, we

expect such issuers to incur larger percentage placement agent fees. As additional control variables, we also include dummy variables for strategic alliance, insider participation, security types, and years.

Table 7 reports the regression results. In Regression (1), we do not control for the sample selection issue. In Regression (2), we include the inverse Mills ratio calculated based on Regression (2) in Table 6 to control for the sample selection issue. The coefficient on the inverse Mills ratio is virtually zero, and for all other variables, the coefficients are virtually the same in both regressions. This suggests that the sample selection issue is not a concern. We thus use Regression (1) in our discussion of the results.

The coefficient on the investment bank networking variable, *Agent network*, is positive and statistically significant. Economically, if an issuer moves from an agent with the median networking abilities (42) to one with the mean (66.66), the fees would increase by about 12 basis points, or about $28,000 for an average size intermediated issue. This is not a huge amount, but nevertheless costly. The results thus suggest that issuers pay more when they need to attract more investors, which is supportive of Hypothesis 3a.

As expected, the coefficient on *Issuer agent relation dummy* is negative and statistically significant. If an issuer has a prior relationship with the agent(s), the fees could be reduced by 41 basis points. The coefficient on *Relative offer size* is positive and statistically significant. This is consistent with our expectation that issuers have to compensate placement agents more for difficult deals. The coefficient on *Ln(Proceeds)* is negative and statistically significant. This is consistent with the existence of economies of scale. The coefficient on *Ln(Market price)* is also negative and statistically significant, suggesting that high priced firms pay lower percentage fees. This is consistent with Altinkiliç and Hansen (2000) that

riskier and informationally more opaque firms pay higher fees. The coefficients on other control variables are not statistically significant.

Previous studies of underwriter compensation for SEOs are able to explain a substantial portion of the variation in the percentage gross spreads. For example, Altinkiliç and Hansen (2000) report an adjusted R^2 of 41% in their regression of SEO gross spreads using the natural logarithm of gross proceeds as the only explanatory variable (see their Table 2 on page 201). In contrast, we are able to explain a smaller portion of the variation in the percentage PIPE fees, with an adjusted R^2 of about 14%. This suggests that in the PIPE market unobserved characteristics such as the issuer's bargaining power and industry practices may play a more important role in determining agent compensation (Chen and Ritter (2000) and Hansen (2001)). Future research is warranted to further explore the difference in the determination of placement agent compensation between the public and PIPE markets.

6. Conclusion

Investment banks develop relationships with investors through their repeat dealings in brokerage services, analyst research coverage, and securities offerings. The resulting networks of investors assist investment banks in performing a networking function in which the investment banks certify, market, and distribute securities to investors. Because the PIPE market differs from the public market in several aspects, it provides us with a unique opportunity to shed new light on investment banks' networking function in capital markets.

We find that investment banks, especially those with larger investor networks, help issuers attract more investors. We also find that investors are more likely to participate in an issue if they have an existing relationship with the hired investment bank(s). These findings

suggest that investment banks' investor relationships contribute to their networking function, and that investment banks play an important role in helping issuing firms achieve less concentrated ownership structures. We also find that issuing firms that desire more investors are more likely to hire investment banks as their placement agents than place the shares directly, suggesting that they do recognize investment banks' networking role. Finally, we find that PIPE issuers pay higher fees when they hire investment banks with larger investor networks.

In this paper, we focus on the benefits of investment banks' networking function. However, we note that repeat dealings between investment banks and investors could also cultivate agency problems. For example, investment banks could allocate underpriced PIPEs to their favorite investor clients (e.g., certain hedge funds) in order to attract brokerage commissions, just as they do with IPOs (Loughran and Ritter (2004) and Reuter (2006)). We leave this important issue to future research.

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Appendix. Top Placement Agents and Investors

Panel A reports the top ten agents ranked by the total number of deals during 2000-2005. For deals with multiple agents, each agent receives the credit for the deal. Panel B reports the top ten investors ranked by the total number of deals. The percentage reported in the last column in both panels is based on 2,096 deals in our sample.

Panel A. Top Ten Agents Ranked by Total Number of Deals

Rank	Agent Name	# of Common Stock Deals	# of Other Deals	Total # of Deals	Percent
1	Roth Capital Partners, LLC	59	12	71	3.39
2	Rodman & Renshaw, LLC	42	8	50	2.39
3	Banc of America Securities LLC	30	14	44	2.10
4	Cowen and Company, LLC	28	5	33	1.57
4	H.C. Wainwright & Co. Inc.	14	19	33	1.57
6	J.P. Morgan Chase & Co.	15	14	29	1.38
6	UBS Investment Bank	22	7	29	1.38
8	Shemano Group, Inc. (The)	17	11	28	1.34
8	U.S. Bancorp Piper Jaffray, Inc.	24	4	28	1.34
10	Lehman Brothers, Inc.	17	9	26	1.24
10	Needham & Company, Inc.	20	6	26	1.24

Panel B. Top Ten Investors Ranked by Total Number of Deals

Rank	Investor Name	# of Direct Deals	# of Inter-mediated Deals	Total # of Deals	Percent
1	MGP Advisors, LLC	37	240	277	13.22
2	Wellington Management Company LLP	75	167	242	11.55
3	Downsview Capital, Inc.	9	169	178	8.49
4	OrbiMed Advisors, LLC	17	157	174	8.30
5	Highbridge International, LLC	9	161	170	8.11
6	Iroquois Capital L.P.	22	147	169	8.06
7	Gruber & McBaine Capital Man. LLC	11	143	154	7.35
7	Omicron Capital, L.P.	14	140	154	7.35
9	SF Capital Partners, Inc.	4	136	140	6.68
10	North Sound Capital	9	123	132	6.30

Table 1. Sample Distribution

Panel A reports the sample distribution of PIPE deals from 2000-2005 sorted by various dimensions. For placement methods, a PIPE is defined as an intermediated PIPE if it is placed to investors through one or more placement agents, and is defined as a direct PIPE if it is placed directly to investors without a placement agent. If the sample distribution along a dimension (e.g., placement method) has only two possible outcomes, the distribution statistics are only reported for one of the outcomes. Panel B reports the sample distribution of issuers, investors, and agents, respectively, based on the number of deals in which they participate. The percentage reported in Panel A is based on 2,096 deals in the sample. The percentage reported in Panel B is based on the respective numbers of issuers, agents, and investors.

Panel A. Sample Distribution of PIPE Deals

		N	Percent
	All	2,096	100.00
Placement method:	Intermediated	1,356	64.69
Prior issue placement method of intermediated deals:	No prior issue	518	24.71
	Prior issue directly placed	125	5.96
	Prior issue intermediated	673	32.11
	Prior issue agent not disclosed	40	1.91
Prior issue placement method of direct deals:	No prior issue	316	15.08
	Prior issue directly placed	135	6.44
	Prior issue intermediated	248	11.83
	Prior issue agent not disclosed	41	1.96
Agent switching:	Prior issue by the same agent	280	13.36
Lead investor type:	Hedge fund	957	45.66
	Mutual fund	238	11.35
	Corporation	206	9.83
	Other	695	33.16
Strategic alliance:	Yes	169	8.06
Insider participation:	Yes	62	2.96
Exchange / stock market:	NYSE	122	5.82
Warrants attached:	Yes	1,104	52.67
Security type:	Common stock	1,283	61.21
	Fixed convertible	573	27.34
	Other	240	11.45
Industry:	Consumer- healthcare	721	34.40
	Communications	413	19.70
	Technology	330	15.74
	Other	632	30.15
Year:	2000	471	22.47
	2001	392	18.70
	2002	291	13.88
	2003	349	16.65
	2004	341	16.27
	2005	252	12.02

Panel B. Sample Distribution of Issuers, Investors, and Agents

		N	Percent
Number of issuers with:	1 deal	774	62.98
	2 deals	246	20.02
	≥3 deals	209	17.01
	All	1,229	100.00
Number of agents with:	1 deal	168	46.67
	2 deals	54	15.00
	≥3 deals	138	38.33
	All	360	100.00
Number of investors with:	1 deal	1,621	55.32
	2 deals	480	16.09
	3 deals	219	7.34
	≥4 deals	664	22.25
	All	2,984	100.00

Table 2. Key Deal and Firm Characteristics

This table reports the means and medians of key deal and firm characteristics. A PIPE offering is defined as an intermediated deal if it is placed to investors through one or more placement agents, and is defined as a direct deal if it is placed directly to investors without a placement agent. *Placement fees (%)* are the percentage fees of the gross proceeds charged by placement agents. *Number of investors* is the total number of investors that participate in the deal. *# of old investors* is the number of investors that not only participate in the issuer's current deal but also participated in at least one prior deal of the issuer in the five years prior to the current deal. *# of new investors* is the number of investors that participate in only the issuer's current deal but not any other deal of the issuer in the five years prior to the current deal. *Number of agents* is the number of placement agents for an intermediated deal. *Number of investors related to the agent(s)* is the number of unique investors that participated in at least one deal of the current deal's agent(s) in the five years prior to the current deal. *Gross proceeds* is the gross proceeds in millions of dollars. *Relative offer size (%)* is defined as the number of shares offered as a percentage of the total number of shares outstanding at the market close prior to the closing date. *Market cap.* is the total market capitalization of the issuer in millions of dollars 30 days prior to the placement closing date. *Market price* is the market price of the issuer's stock 30 days prior to the placement closing date. *Return volatility* is the standard deviation of daily close-to-close percentage returns over the three months ending 30 days before the offer. *Market leverage* is defined as the book value of long-term and short-term debt (items 9 + 34) divided by the sum of the market value of equity (items 25×199) and the book value of debt (items 181+10-35-79) at the fiscal year end prior to the offer date. *Profitability* is defined as the operating income before depreciation (item 13) divided by total assets (item 6). *Tobin's Q* is the defined as the sum of the market value of equity (items 25×199) and the book value of debt (items 181+10-35-79) divided by the book value of total assets (item 6) at the fiscal year end prior to the offer date. The t-statistics for the difference in means and the z-statistics for the difference in medians between intermediated and direct deals are reported in the last two columns.

	Intermediated deals		Direct deals		Difference	
	Mean	Median	Mean	Median	t-stat	z-stat
Placement agent fees (%)	6.15	6.00	--	--	--	--
Number of investors	7.53	6.00	2.04	1.00	24.90***	23.43***
Number of old investors	0.97	0.00	0.40	0.00	8.69***	4.26***
Number of new investors	6.57	5.00	1.64	1.00	23.61***	22.19***
Number of agents	1.21	1.00	--	--	--	--
Number of investors related to the agent(s)	66.66	42.00	--	--	--	--
Gross proceeds ($millions)	23.43	10.19	27.08	6.29	-0.91	7.11***
Relative offer size (%)	12.47	9.56	7.83	3.49	6.56***	8.89***
Market cap. ($millions)	202.23	85.82	384.52	78.22	-2.99***	0.88
Market price	7.98	4.90	8.65	4.54	-1.39	0.12
Return volatility (%)	6.47	5.58	6.18	5.59	1.81*	-0.32
Market leverage	0.10	0.03	0.13	0.06	-4.72***	-5.75***
Profitability	-0.37	-0.22	-0.29	-0.18	-3.50***	-2.11**
Tobin's Q	4.17	2.68	3.73	2.32	2.08**	-2.35**

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels in a two-tailed test, respectively.

Table 3. Repeat Interactions between Investment Banks and Investors

This table reports repeat interactions between investment banks and investors. Panel A shows the distribution of investors based on the number of intermediated and direct deals in which they participate. Panels B and C show the degree of repeat interactions between investment banks and investors for investors in our final sample of 1,356 intermediated deals. If there are multiple placement agents, then only the lead agent is considered. If a deal has co-lead agents, then only the agent listed in the first place is considered. Panel B reports a standardized ratio for an investor, *(R – 1/ND) / (1 – 1 /ND)*, where *R* is the ratio of the number of unique lead agents to the number of intermediated deals in which the investor participates, and *ND* is the total number of intermediated deals in which the investor participates. The standardized ratio ranges from 0 to 1. A lower ratio suggests a higher degree of repeat interactions. Panel C reports a standardized share for an investor's most favorite lead agent, *(S – 1/ND) / (1 – 1 /ND)*, where *S* is the share of the investor's intermediated deals by its most favorite lead agent. We define the most favorite lead agent for an investor as the investment bank that, as a lead agent, has the largest share of the number of the intermediated deals participated by the investor. The standardized share ranges from 0 to 1. The higher the value, the more favored is the investment bank.

Panel A. Investor Participation in Direct and Intermediated Deals

Investors with:	Number of Investors (%)	Mean (Median) No. of Intermediated Deals per Investor	Mean (Median) No. of Direct Deals per Investor
only intermediated deal(s)	2,171 (72.75)	2.82 (1)	--
only direct deal(s)	432 (14.48)	--	1.38 (1)
both intermediated and direct deal(s)	381 (12.77)	21.20 (8)	3.97 (2)
All	2,984 (100)	4.76 (1)	0.71 (0)

Panel B. Standardized Ratio of Number of Unique Agents Over Number of Intermediated Deals of An Investor

Investors with:	N	Mean	Min	Q1	Median	Q3	Max
≥ 2 intermediated deals	1,001	0.71	0.00	0.50	0.81	1.00	1.00
≥ 5 intermediated deals	370	0.68	0.00	0.54	0.70	0.80	1.00
≥ 10 intermediated deals	177	0.64	0.18	0.53	0.64	0.75	1.00
≥ 20 intermediated deals	81	0.58	0.31	0.50	0.65	0.67	0.86

Panel C. Standardized Share of An Investor's Intermediated Deals by Its Most Favorite Agent

Investors with:	N	Mean	Min	Q1	Median	Q3	Max
≥ 2 intermediated deals	1,001	0.24	0.00	0.00	0.09	0.33	1.00
≥ 5 intermediated deals	370	0.21	0.00	0.10	0.17	0.25	1.00
≥ 10 intermediated deals	177	0.17	0.00	0.09	0.14	0.20	0.81
≥ 20 intermediated deals	81	0.14	0.04	0.09	0.13	0.19	0.37

Table 4. Determination of the Number of Investors

This table reports OLS regression results. In Regression (1), the dependent variable is the natural logarithm of the total number of investors that participate in the current deal. In Regression (2), the dependent variable is the natural logarithm of one plus the number of investors that participate in not only the current deal, but also at least one prior deal of the issuer in the five years prior to the current deal. Note that this regression uses only the sub-sample of 1,262 PIPEs with at least one PIPE deal by the same firm in the five years prior to the current deal. In Regression (3), the dependent variable is the natural logarithm of one plus the number of investors that only participate in the current deal of the issuer but did not participate in any other deal of the issuer in the five years prior to the current deal. *Intermediation dummy* equals one if a PIPE is placed to investors through one or more placement agents, and zero otherwise. *Agent network* is defined as the natural logarithm of one plus the number of unique investors that participated in at least one deal of at least one of the agents of the current deal in the five years prior to the current deal. For direct deals, this variable is set to zero. *Prior issue dummy* equals one if there was at least one PIPE issue by the firm in the five years prior to the current issue, and zero otherwise. *Ln(Proceeds)* is the natural logarithm of the gross proceeds in millions of dollars. *Ln(Market price)* is the natural logarithm of the market price of the issuer's stock 30 days prior to the placement closing date. *NYSE dummy* equals one if the issuer is listed on NYSE, and zero otherwise. *Strategic alliance dummy* equals one if the purpose of the deal is strategic alliance, and zero otherwise. *Insider dummy* equals one if one of the investors is an insider of the issuer, and zero otherwise. *Warrant attached dummy* equals one if warrants are attached to the offered shares, and zero otherwise. *Fixed convertible dummy* equals one if the offered security is fixed convertible, and zero otherwise. *Structured security dummy* equals one if the offered security is neither common stock nor fixed convertible, and zero otherwise. All other independent variables are defined in the same way as in Table 2. The t-statistics are robust to heteroskedasticity (White (1980)) and adjusted for clustering at the firm level (Rogers (1993)).

	(1) All Investors		(2) Old Investors		(3) New Investors	
Independent variables	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intermediation dummy	0.35	4.91***	-0.19	-3.49***	0.33	5.75***
Agent network	0.13	7.65***	0.09	5.77***	0.09	6.13***
Prior issue dummy	-0.01	-0.19			-0.23	-6.98***
Relative offer size (%)	0.37	2.83***	0.02	0.17	0.34	2.97***
Ln(Proceeds)	0.19	8.65***	0.07	3.63***	0.17	8.62***
Ln(Market price)	-0.08	-3.28***	-0.07	-2.63***	-0.06	-2.81***
NYSE dummy	-0.40	-3.94***	0.17	1.45	-0.38	-4.29***
Return volatility (%)	0.01	1.87*	0.00	0.08	0.01	1.42
Market leverage	-0.17	-1.11	-0.26	-1.43	-0.04	-0.33
Profitability	-0.09	-2.12**	-0.10	-2.24**	-0.06	-1.50
Tobin's Q	-0.01	-1.19	-0.01	-1.39	0.00	-0.49
Strategic alliance dummy	-0.73	-12.47***	-0.25	-3.85***	-0.44	-9.13***
Insider dummy	0.24	2.63***	0.04	0.50	0.18	2.36**
Warrant attached dummy	0.05	1.13	0.04	1.01	0.02	0.55
Fixed convertible dummy	-0.48	-9.81***	-0.07	-1.65*	-0.41	-10.11***
Structured security dummy	-0.53	-8.47***	-0.12	-1.99**	-0.44	-7.54***
Intercept	0.38	3.74***	0.38	4.13***	0.87	10.11***
Industry and year dummies	Yes		Yes		Yes	
N	2,096		1,262		2,096	
Adjusted R^2	45.7%		13.6%		40.2%	

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels in a two-tailed test, respectively.

Table 5. Determination of Investor Participation

This table reports probit regression results. The dependent variable equals one if an eligible investor participates in a PIPE deal, and zero otherwise. The set of eligible investors for a deal includes all investors that participate in at least 0.5% of all PIPE deals during the year of the current PIPE deal. *Ln(# of prior deals of the investor)* is the natural logarithm of one plus the number of deals that the investor participated in during the five years prior to the current deal. *Issuer investor relation dummy* equals one if the investor participated in an issue of the firm in the five years prior to the current issue, and zero otherwise. *Agent investor relation dummy* equals one if the investor participated in an issue in the five years prior to the current issue placed by at least one agent of the current issue, and zero otherwise. *Strength of Agent investor relation* equals the share of all agents of the current deal of the potential investor's purchasing amount in all of the deals in which the investor participated in the five years prior to the current deal. This variable ranges between zero and one, and is calculated only when the number of deals in which the investor participated in the five years prior to the current issue is at least five. An investment bank receives credit for an investor's purchasing amount in a deal if the investment bank is the only agent or one of the agents of the deal. All other independent variables have the same definitions as in Table 4. We report both the coefficients and the marginal effects multiplied by 100 ((dF/dx)×100). The marginal effects for the non-binary variables are evaluated at the means. For the dummy variables, the marginal effects are calculated as the sample averages of the changes in the participation likelihood when the dummy variables increase from zero to one. The z-statistics are robust to heteroskedasticity (White (1980)) and adjusted for clustering at the firm level (Rogers (1993)).

Independent variables	(1)			(2)		
	Coeff	z-stat	(dF/dx) ×100	Coeff	z-stat	(dF/dx) ×100
Intermediation dummy	0.20	6.07***	0.63	0.20	5.84***	0.70
Agent investor relation dummy	0.77	29.67***	5.33	0.65	23.95***	4.36
Strength of agent investor relation				1.01	6.10***	3.79
Ln(# of prior deals of the investor)	0.08	7.65***	0.27	0.14	8.72***	0.51
Issuer investor relation dummy	1.29	24.44***	15.63	1.23	22.67***	15.23
Prior issue dummy	-0.05	-1.91*	-0.17	-0.06	-2.19***	-0.22
Relative offer size (%)	0.06	1.10	0.20	0.09	1.59	0.34
Ln(Proceeds)	0.19	13.08***	0.62	0.17	12.29***	0.63
Ln(Market price)	-0.04	-2.87***	-0.15	-0.03	-2.07**	-0.12
NYSE dummy	-0.20	-2.24**	-0.54	-0.21	-2.94***	-0.66
Return volatility (%)	0.01	3.42***	0.03	0.01	3.71***	0.04
Market leverage	-0.13	-1.28	-0.43	-0.08	-0.72	-0.28
Profitability	-0.03	-1.35	-0.09	-0.03	-1.51	-0.12
Tobin's Q	0.00	0.55	0.00	0.00	0.85	0.01
Strategic alliance dummy	-0.79	-6.73***	-1.35	-0.87	-6.19***	-1.60
Insider dummy	-0.15	-2.54**	-0.42	-0.11	-1.97**	-0.38
Warrant attached dummy	-0.05	-2.07**	-0.18	-0.02	-0.70	-0.07
Fixed convertible dummy	-0.29	-9.31***	-0.84	-0.30	-9.40***	-0.97
Structured security dummy	-0.20	-5.05***	-0.55	-0.15	-3.66***	-0.50
Intercept	-2.82	-38.26***		-3.04	-37.60***	
Industry and year dummies		Yes			Yes	
N		445,970			324,938	
Pseudo R^2		19.1%			19.7%	

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels in a two-tailed test, respectively.

Table 6. The Choice between Direct and Intermediated PIPEs

This table reports probit regression results. The dependent variable equals one for an intermediated PIPE and zero for a direct PIPE. A PIPE is defined as an intermediated PIPE if it is placed to investors through one or more placement agents. *Prior intermediation dummy* equals one if the issuer had another intermediated PIPE deal in the five years prior to the current deal, and zero otherwise. *% intermediation* is the number of intermediated PIPE deals as a percentage of the total number of PIPE deals in the three months prior to the current deal. All other independent variables are defined in the same way as in the previous tables. In addition to the coefficients, we also report the marginal effects multiplied by 100 ((dF/dx)×100). The marginal effects for the non-binary variables are evaluated at the means. For the dummy variables, the marginal effects are calculated as the sample averages of the changes in the participation likelihood when the dummy variables increase from zero to one. The z-statistics are robust to heteroskedasticity (White (1980)) and adjusted for clustering at the firm level (Rogers (1993)).

Independent variables	(1)			(2)		
	Coeff	z-stat	(dF/dx) ×100	Coeff	z-stat	(dF/dx) ×100
Prior issue dummy	-0.01	-0.08	-0.20	-0.37	-4.10***	-13.10
Prior intermediation dummy				0.55	5.65***	19.63
% intermediation				1.59	2.48**	58.02
Relative offer size (%)	0.31	1.22	11.51	0.38	1.44	13.89
Ln(Proceeds)	0.30	8.12***	10.82	0.30	8.44***	11.07
Ln(Market price)	-0.05	-0.98	-1.72	-0.05	-1.07	-1.88
NYSE dummy	-0.18	-1.13	-6.93	-0.17	-1.05	-6.22
Return volatility (%)	0.03	2.90***	1.11	0.03	2.95***	1.12
Market leverage	-0.61	-2.33**	-22.21	-0.56	-2.15**	-20.54
Profitability	-0.08	-0.96	-2.91	-0.07	-0.86	-2.61
Tobin's Q	0.00	0.39	0.10	0.00	0.40	0.10
Strategic alliance dummy	-1.42	-9.49***	-51.67	-1.44	-9.79***	-52.15
Insider dummy	-0.45	-2.45**	-17.42	-0.43	-2.37**	-16.47
Warrant attached dummy	0.40	5.29***	14.66	0.36	4.75***	13.24
Fixed convertible dummy	-0.47	-5.19***	-17.82	-0.45	-5.01***	-17.07
Structured security dummy	-0.05	-0.40	-1.80	-0.02	-0.20	-0.91
Intercept	-0.47	-2.32**		-1.39	-3.39***	
Industry and year dummies	Yes			Yes		
N	2,096			2,096		
Pseudo R^2	15.8%			17.5%		

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels in a two-tailed test, respectively.

Table 7. Placement Fees for Intermediated PIPEs

This table reports regression results of placement agent fees for intermediated PIPEs. A PIPE is defined as an intermediated PIPE if it is placed to investors through one or more placement agents. The dependent variable in both regressions is the percentage fees of the gross proceeds charged by the placement agent(s). *Issuer agent relation dummy* equals one if at least one agent of the current deal participated in at least one deal of the same issuer in the five years prior to the current issue, and zero otherwise. All other independent variables are defined in the previous tables. For the Heckman two-stage estimation, only the second stage results are reported in this table, and the first-stage results are reported in Regression (2) of Table 6. The t-statistics for the OLS regressions are robust to heteroskedasticity (White (1980)) and adjusted for clustering at the firm level (Rogers (1993)).

	(1) OLS		(2) Heckman	
Independent variables	Coeff.	t-stat	Coeff.	t-stat
Agent network	0.27	4.37***	0.27	5.26***
Issuer agent relation dummy	-0.40	-2.25**	-0.41	-2.04**
Prior issue dummy	-0.04	-0.25	-0.04	-0.23
Relative offer size (%)	1.02	2.30**	1.02	2.40**
Ln(Proceeds)	-0.65	-6.23***	-0.66	-4.94***
Ln(Market price)	-0.26	-2.37**	-0.26	-2.48**
NYSE dummy	-0.56	-1.50	-0.54	-1.44
Return volatility (%)	0.00	0.14	0.00	0.11
Market leverage	0.60	0.96	0.62	1.01
Profitability	-0.16	-0.85	-0.16	-1.04
Tobin's Q	0.01	0.52	0.01	0.44
Strategic alliance dummy	-1.28	-1.34	-1.20	-1.38
Insider dummy	-0.46	-1.07	-0.44	-0.90
Warrant attached dummy	-0.20	-1.21	-0.22	-1.00
Fixed convertible dummy	-0.33	-1.58	-0.30	-1.06
Structured security dummy	-0.11	-0.38	-0.11	-0.40
Inverse Mills ratio			-0.09	-0.13
Intercept	7.03	13.16***	7.14	7.60***
Industry and year dummies	Yes		Yes	
N	1,082		1,082	
Adjusted R^2	13.9%		13.8%	

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels in a two-tailed test, respectively.

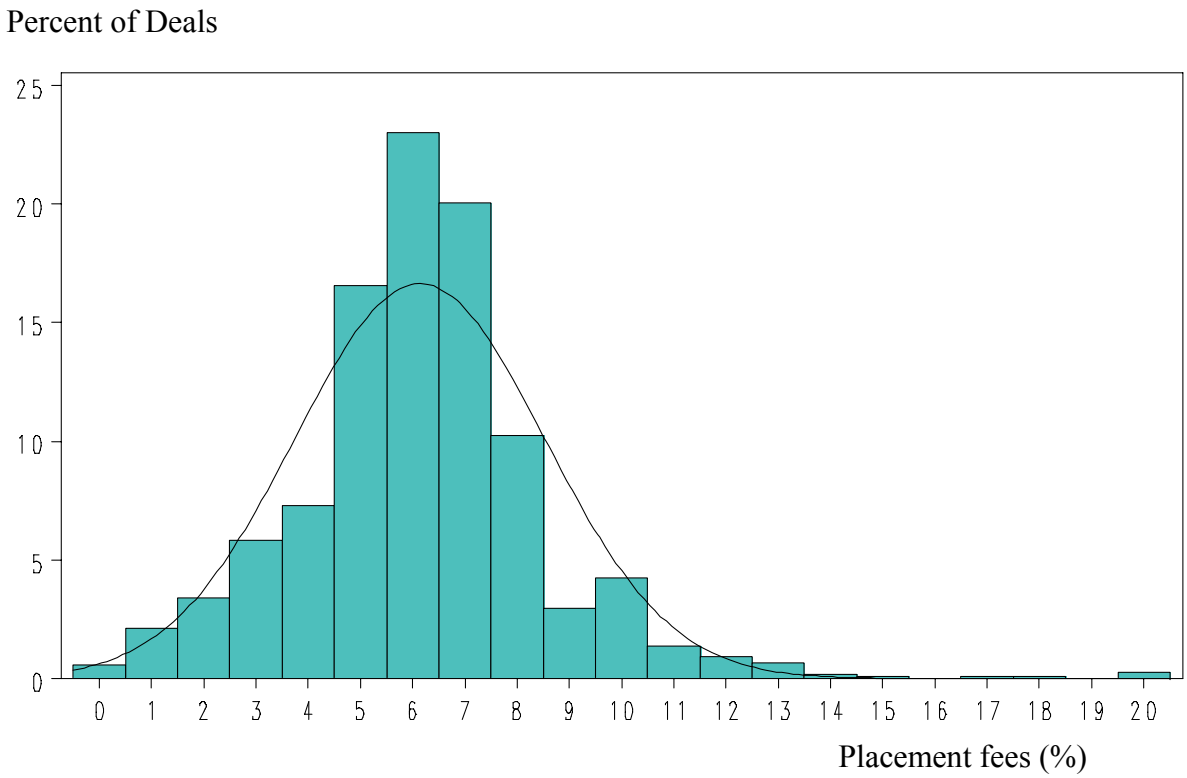

Figure 1. Histogram of Placement Fees. Placement fees is defined as the percentage fees of the gross proceeds charged by the placement agent(s). The sample for this histogram includes 1,082 intermediated PIPE deals with non-missing placement fees. Fees greater than 20% of three deals are winsorized in this figure for a better presentation. A normal density curve with the sample mean and standard deviation is also plotted.