

**How Reverse Merger Firms Raise Capital in PIPEs:
The Role of Placement Agent Reputation and Stage Financing**

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Abstract

We analyze private investments in public equity (PIPE) deals of firms that went public via a reverse merger (RM). Our findings indicate that while RM firms advised by expert placement agents offer more investor-friendly PIPE contract terms, they are not able to negotiate higher offer prices. Our results are consistent with the hypothesis that expert agents exercise more bargaining power relative to PIPE issuers than non-expert agents. We also find that the expertise (reputation) of placement agents in RM firms' PIPEs is negatively associated with stage financing, which suggests that placement agent certification substitutes for monitoring by PIPE investors.

JEL classification: G23; G32; G34

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1. Introduction

In recent decades, reverse mergers (RMs) have grown to be an important alternative to initial public offerings (IPOs) as a mechanism of going public for private firms. A reverse merger takes place when an existing public “shell company” or its subsidiary merges with a private operating company. After the RM, the shell company contains the assets and liabilities of the private operating and is controlled by the private company’s shareholders. During 2008-2016, 1,007 firms went public through an initial public offering (IPO) in the United States while 1,346 firms went public through a reverse merger (RM).¹ Most RM firms are first listed in the over-the-counter (OTC) market, and they may upgrade to a major national exchange such as NYSE or NASDAQ in the years following the RM. Although the total amount of capital raised by the IPO firms are much larger than that raised by the RM firms, the observed phenomenon of many small private firms undertaking an RM to go public instead of a traditional IPO has attracted the attention of investors, regulators, and academics.² In 2010, regulators started investigating RM firms traded in the U.S. and issued several alerts (PCAOB 2010; PCAOB 2011a; PCAOB 2011b; SEC 2011).

While reverse mergers may increase the speed of going public and reduce legal and transaction costs, a potential disadvantage faced by RM firms is that they have not been screened and certified through the traditional IPO underwriting process. Since the outside investors of RM firms are likely to face significantly more information asymmetry than those of IPO firms, this may considerably increase the cost of raising new equity capital for RM firms. An important type

¹ IPO statistics are provided by Thomson Reuters SDC Platinum. Reverse merger statistics are provided by PrivateRaise. For IPOs we exclude American Depository Shares (ADS), unit offers, REITs, closed-funds, natural resource limited partnerships, small best efforts IPOs, banks and S&Ls. We also exclude IPOs not listed on Nasdaq, NYSE, Amex and OTC market.

² According to PrivateRaise and Thomson Reuters SDC Platinum, the total capital raised through PIPEs by RM firms during 2008-2015 is \$8.01 billion, while the total capital raised through PIPEs by traditional IPO firms is \$50.9 billion during the same time period.

of financing mechanism through which RM firms can secure new equity financing is a private investment in public equity (PIPE) deal. During our sample period from 2008 to 2016, about 30.6% of RM firms raised new capital through PIPEs.³

Although reverse mergers with PIPE financing have been documented by Floros and Shastri (2009) and Lee et al. (2014), the contract design of PIPEs conducted by RM firms have not been yet explored in the existing literature. Given the increased relevance of RMs as an alternative mechanism of going public, it is important to examine how RM firms are financed, since RM firms may have limited options to raise capital other than PIPEs. RM firms differ from IPO firms in several aspects: (1) RM firms are smaller, less profitable, more leveraged than IPO firms on average, (2) RM firms undergo a less stringent screening process by underwriters and regulators than IPO firms, increasing the adverse selection risk faced by investors, (3) RM firms are mostly listed on OTC/OTCBB market, while IPO firms are mostly traded on national exchanges.

The objective of this paper is to improve our understanding of how RM firms raise capital by studying the contractual terms of PIPE deals conducted by RM firms. We focus on the role of placement agents in the design of PIPE contracts and the use of stage financing. We examine the following research questions on the role of placement agents in PIPE deals of RM firms: 1) Does the expertise (the reputation) of a placement agent in an RM firm's PIPE affect the contract terms: i.e., whether these contract terms are more investor-friendly or issuer-friendly? 2) In the PIPEs of RM firms, does the expertise of the placement agent affect the likelihood of using stage financing in the PIPE deal? Finally, we examine differences in terms of contract design, pricing, and stage financing between the PIPE deals of RM firms and those of comparable IPO firms using an expanded sample of both RM firms and matched IPO firms.

³ In our sample of RM firms between 2008 and 2016, about 77% of the PIPE deals take place soon after the RM event, and the rest of the PIPE deals are simultaneously arranged with the RM.

Following Bengtsson and Dai (2014), we aggregate 16 functionally distinct contractual rights in PIPE deals into an Investor-friendly Index (IFI) to assess the design of the PIPE contract terms. To measure the expertise (the ranking) of a PIPE placement agent, we collect the data on each PIPE placement agent's total market share (in million dollars), the number of PIPEs advised annually, and the average market share of that agent in each year during our sample time period. If a placement agent ranks in the top 20% in terms of its PIPE volume, it is defined as an "expert agent".⁴

We propose two related theoretical explanations regarding the effect of the expertise of placement agents on PIPE contract design in RM firms. First, according to the bargaining power hypothesis, expert placement agents will have more bargaining power against RM issuers than lower-ranked placement agents in the design of PIPE contract terms. Since RM firms have not been screened through the traditional IPO underwriting process, there exists considerably more information asymmetry facing the PIPE investors of RM firms, which weakens the RM firms' bargaining position against reputable placement agents and their investor clients. In addition, since reputable financial intermediaries have repeated business interactions with some institutional investors, this may further enhance the bargaining power of a reputable placement agent against PIPE issuers. Therefore, expert placement agents with greater reputation may be able to extract more investor-friendly contract terms from their issuing RM clients, even if they don't necessarily offer better PIPE pricing terms to their issuing RM firms.

Second, expert placement agents may also have a better ability in screening and certifying RM issuers. A match between an expert placement agent and an RM firm in a PIPE might certify

⁴ We use three measures for PIPE volume: the number of PIPEs advised, the total market share, and the average market share (the total market share scaled by the number of PIPEs advised). When we use different cutoffs (for example, 25% or 30%) to define expert agent status, we reach qualitatively similar conclusions.

the intrinsic quality of the RM firm and increase investors' expectations about its future performance as a public firm (Klein and Leffler, 1981; Beatty and Ritter, 1986; Carter and Manaster, 1990; Megginson and Weiss, 1991; Chemmanur and Fulghieri, 1994; Logue et al. 2002; Fang, 2005). Since offering more investor-friendly contract terms has costly future implications for issuing firms conditional on poor performance, RM firms with higher intrinsic quality and better future prospects may be more likely to agree to these terms. Hence, investor-friendly (contingent) contract terms might both certify higher issuer quality and provide issuers with better post-PIPE incentives (Megginson and Weiss, 1991; Hertz and Smith, 1993; Chemmanur and Fulghieri, 1994; Gompers, 1995; Kaplan and Stromberg, 2003 and 2004). According to this hypothesis, higher-ranked placement agents will use more investor-friendly contract terms to screen and certify better RM firms in exchange for possibly offering better PIPE pricing terms.⁵

The use of stage financing in the PIPE deals of RM firms is also related to how RM firms are matched with their placement agents. If placement agents with greater reputation have a better ability in screening good-quality RM issuers ex ante (by setting more stringent evaluation standards) and they can provide better post-PIPE incentives through the design of PIPE contracts with the use of more investor-friendly (contingent) contract terms, this could also affect how investors provide the PIPE financing to the RM firm and monitor it.⁶ Thus, if expert placement

⁵ Bengtsson and Dai (2014) empirically analyze the role of placement agents in the PIPE deals of mature public firms. They argue that a contracting party may find it difficult to understand the payoff consequences of complex state contingent contract terms (Tirole, 2009). According to this cognitive bias hypothesis, PIPE issuers may pessimistically overestimate the consequences of investor-friendly contract terms, and expert agents may help potentially biased issuers better understand the payoff consequences of complex contingent contract terms that can reduce adverse selection and moral hazard problems (Anderson and Dai, 2010; Chaplinsky and Haushalter, 2010). Bengtsson and Dai (2014) find that in exchange for requiring more investor-friendly contract terms, expert agents offer concessions to RM firms in the pricing of their equity.

⁶ According to Gompers (1995), venture capitalists (VCs) use staged investments as a monitoring mechanism in the presence of agency problems and information asymmetry between entrepreneurs and VCs. Tian (2011) finds that when monitoring costs (measured by how far away the entrepreneur is located from venture capitalists) are large and the number of investors is small, investors tend to use a larger number of financing rounds.

agents can extract more investor-friendly (contingent) contract terms from their RM issuers, then PIPE investors may use stage financing as a monitoring mechanism less frequently. In other words, in exchange for agreeing to more investor-friendly contract terms (contingent contracting), RM issuers matched with expert placement agents may be more likely to receive their capital infusions as a lump sum rather than in multiple stages (closings).

We start our empirical analysis by examining the relation between the ranking of PIPE placement agents and the PIPE contract terms of RM firms. Our findings indicate that RM firms advised by expert agents offer more investor-friendly contracts in their PIPE deals than RM firms advised by lower-ranked agents. However, in contrast to Bengtsson and Dai (2014), we find no evidence that expert placement agents offer better equity pricing terms to RM firms and that RM firms with more investor-friendly contract terms have better long-run operating performance than RM firms with more issuer-friendly contract terms.⁷ These results are consistent with the bargaining power hypothesis which argues that the bargaining power of RM firms in PIPEs against more reputable placement agents and investors is considerably weaker than firms that go public through a traditional IPO. To check the robustness of our empirical results regarding the role of placement agents, we also use two-stage least square regression models with instrumental variables and propensity score matching methods to address potential endogeneity issues.

Second, our results also suggest that there is a negative relation between the use of stage financing by PIPE investors and the presence of an expert placement agent in PIPE deals of RM firms. We also find that if the PIPE of an RM firm is underwritten by an expert placement agent, the number of financing rounds is significantly smaller, and the total duration in months between

⁷ While Bengtsson and Dai (2014) focus on the PIPEs of larger and more mature public firms trading on major national exchanges, our study focuses on the PIPEs of smaller and more opaque firms that went public through reverse mergers. Different from Bengtsson and Dai (2014), we also analyze the use of stage financing in our sample of PIPEs by RM firms as we explain below.

the first-round and the last-round is significantly shorter. Stage financing is used as a monitoring tool in the face of severe agency problems and information asymmetry between outside investors and issuers (Gompers, 1995; Dai, 2011; and Tian, 2011). Staging of capital infusions allows investors to gather information and monitor the progress of firms, maintaining the option to periodically abandon projects. Investors weigh potential agency and monitoring costs when determining how frequently they should re-evaluate projects and supply capital. The negative association between stage financing and the presence of expert agents in our sample of RM PIPEs suggests that the certification provided by expert agents substitutes for the monitoring of RM firms by outside investors. Expert agents, like reputable IPO underwriters, might provide a greater certification role in reducing the information asymmetry between issuing RM firms and investors, thereby reducing outside investors' need to directly monitor RM firms by staging their capital infusions. Overall, our findings imply a trade-off where RM firms advised by expert placement agents agree to more investor-friendly contract terms in exchange for receiving their funds from PIPE investors in a smaller number of stages and therefore, less intensive monitoring.

Finally, we examine the differences between the PIPEs of RM firms and those of IPO firms in terms of contract design, stage financing, and pricing. First, we take into account the factors that affect a private firm's selection between an RM and an IPO as an exit mechanism and match RM firms with comparable IPO firms using propensity score matching. We find that RM firms' PIPE contracts offer more investor-friendly terms than the PIPEs of similar IPO firms, and that they are more likely to involve stage financing. Further, we find that RM firms offer greater pricing discounts than matched IPO firms in their PIPE offerings. The PIPEs of IPO firms are also placed by much more reputable underwriters than the PIPEs of RM firms. As the traditional IPO process provides a great deal of certification about the quality/risk and the future prospects of a firm going

public, our results are consistent with the idea that there is a much greater demand for contingent contracting and stage financing in the PIPEs of RM firms compared to those of IPO firms. While an RM transaction imposes much smaller direct costs and less stringent disclosure requirements compared to a traditional IPO, we show that RM firms incur larger costs of raising capital compared to IPO firms due to the greater information asymmetry facing RM firm investors and the relative lack of certification provided by more reputable placement agents.

Our paper contributes to several strands of literature. First, it complements the growing literature on reverse mergers, which examined various aspects of RM firms including the long-term performance of RM firms (Adjei, Cyree, and Walker, 2008; Gleason, Jain and Rosenthal, 2008; Lee, Li, and Zhang, 2014), the market reaction to RM transactions (Gleason, Rosenthal, and Wiggins, 2005; Floros and Sapp, 2011), and differences in firm characteristics between RMs and IPOs (Floros and Shastri, 2009; Greene, 2016). In this paper, we present some new evidence on the terms in which RM firms raise new capital in PIPEs and how their placement agents in PIPEs play an important role in the design of contingent contracting and the investors' use of staged capital infusions as a monitoring device.

Second, our paper contributes to the literature on PIPEs. While the existing literature investigates PIPEs completed by firms that went public through an IPO (Dai, 2007; Ellis and Twite, 2008; Brophy, Ouimet, and Sialm, 2009; Chaplinsky and Haushalter, 2010; Chen, Dai and Schatzberg, 2010; Floros and Sapp, 2012), our study focuses on the PIPE offerings of RM firms. RM firms are smaller and younger compared to firms that went public through an IPO, and therefore, their investors face a greater degree of information asymmetry. The results of our paper also provide new insights on the differences between the PIPEs of RM firms and those of traditional IPO firms in regard to PIPE contract terms, equity pricing, and stage financing. Further,

our paper contributes to the literature on the role of placement agents or financial advisors in new equity issuances (Carter and Manaster, 1990; Chemmanur and Fulghieri, 1994; Carter et al, 1998; Logue, et al. 2002; Fang, 2005; Fernando, et al. 2005; Dai, Jo, and Schatzberg (2010); Bao and Edmans, 2011; Golubov, et al., 2012; Bengtsson and Dai, 2014).

Third, our paper also contributes to the literature on going public and private firms' exit choices between IPOs and acquisitions. Chemmanur, He, and Nandy (2010) find that private firms facing less information asymmetry and those with projects that are cheaper for outsiders to evaluate are more likely to go public through an IPO. Poulsen and Stegemoller (2008), Bayar and Chemmanur (2012), and Chemmanur et al. (2018) show that an increasing number of private firms choose acquisitions by other public firms as an exit mechanism instead of IPOs. Greene (2016) examines the wealth of private firm owners that exit their firms through a reverse merger. Gao, Ritter, and Zhu (2013) empirically analyze why the number of IPOs has declined dramatically in recent years.⁸ Given that an increasing number of firms choose to go public by being acquired by public shell firms in RMs, it is important to further analyze the process of raising capital through PIPEs by RM firms. Our study sheds some new light on the indirect and implicit costs of going public through a reverse merger.

The remainder of this paper is organized as follows: Section 2 develops the hypotheses tested in our paper. Section 3 describes the data and sample selection. Section 4 presents our empirical results on the relation between PIPE contracting, stage financing, and expertise of placement agents. Section 5 presents our results on the differences between the PIPEs of RM firms and those of matched IPO firms. Section 6 concludes.

⁸ Gao et al. (2013) report that the number of initial public offerings (IPOs) in the United States dropped from an average of 310 IPOs per year during 1980–2000 to only 99 IPOs per year during 2001–2012. They attribute the low volume of IPOs during the last decade to the fact that an increasing number of small firms are acquired by large players due to economies of scope and the speed to the product market.

2. Hypothesis Development

In this paper, we first investigate the following research question: How do expert placement agents affect the contract terms of PIPEs of RM firms? First, we posit that more reputable (higher-ranked) placement agents will have greater bargaining power against RM firm issuers than lower-ranked placement agents. In the PIPE market, most investors are institutional investors such as VC funds, hedge funds, endowments and trust funds, brokers and dealers, and insurance companies. Since RM firms have not been screened through the traditional IPO underwriting process, there exists considerably more information asymmetry facing the investors of RM firms in PIPEs than that facing the investors of other public firms conducting private placements of equity. Therefore, RM firms may have a substantially weaker bargaining position against reputable placement agents and their investor clients in PIPEs compared to public firms that went public through a traditional IPO. Given the repeated nature of their business relations with institutional investors, expert agents may use their greater bargaining power to design the PIPE contract terms of RM firms more in favor of their sophisticated investor clients. Thus, our bargaining power hypothesis implies that, even after agreeing to more investor-friendly contract terms to get screened, issuing RM firms advised by expert agents may not obtain better PIPE pricing terms, since they are in a weaker bargaining position.

Second, we propose that the match between an RM firm issuing equity and the expertise of the placement agent might also convey some certification value to both the issuing firms and the investors. Since offering more investor-friendly contract terms is costly for issuing firms conditional on poor future performance, only better-quality firms can afford to match with more reputable expert placement agents. To maintain their reputation, expert agents are likely to set higher evaluation standards and will place the PIPEs of only those RM issuers who agree to sign

on more investor-friendly contract terms. Hence, investor-friendly (contingent) contract terms might certify higher issuer quality and provide issuers with better post-PIPE incentives (Hertzel and Smith, 1993; Chemmanur and Fulghieri, 1994; Gompers, 1995; Kaplan and Stromberg, 2003 and 2004). According to the certification/screening hypothesis, RM issuers that match with more reputable expert agents will agree to more investor-friendly contract terms in exchange for some certification benefits. One of these benefits could be better PIPE pricing terms, i.e., RM firms matched with higher-ranked expert agents may issue their equity at a higher premium (or a lower discount) compared to RM firms matched with lower-ranked placement agents.

H1: RM firms with expert placement agents agree to include more investor-friendly PIPE contract terms than RM firms with non-expert placement agents.

The next research question we investigate in this paper is the use of stage financing in the PIPEs of RM firms. Consistent with the certification/screening hypothesis, one can argue that the certification provided by a reputable placement agent may substitute for the monitoring role of PIPE investors through stage financing. Previous studies suggest that staging of capital infusions to private firms helps address agency problems between investors and the entrepreneurs (managers) of issuing firms (Sahlman, 1988; Gompers, 1995; Neher, 1999; Cornelli and Yosha, 2003; Wang and Zhou, 2004; Yerramilli, 2008; Tian, 2011). Stage financing is frequently used when agency problems exist and investors face a high degree of information asymmetry (Dai, 2011), which is typically the case for an RM firm. Staging of capital infusions allows investors to gather information and monitor the progress of firms, maintaining the option to periodically abandon projects. Investors weigh potential agency and monitoring costs when determining how frequently they should reevaluate projects and supply capital. If the presence of an expert placement agent certifies the value and the future prospects of an RM firm and incentivizes issuers to agree to more

investor-friendly contingent contract terms, investors may be willing to reduce the frequency with which they actively monitor the issuing RM firm through stage financing. Thus, an important potential benefit of the certification provided by expert placement agents to RM issuers might be the lower intensity of monitoring by outside investors. Therefore, we posit that the presence of expert placement agents will substitute for the monitoring role of stage financing in the PIPEs of RM firms.

H2a: RM firms with expert placement agents are less likely to use stage financing in their PIPEs than RM firms with non-expert placement agents.

H2b: Conditional on the incidence of stage financing, the number and the duration of stages will be greater in the PIPEs of RM firms with non-expert placement agents.

Compared to an RM, a traditional IPO can unlock a much greater certification value about the value/risk of a newly public firm and its future prospects. This is because the traditional IPO underwriting process and the SEC disclosure requirements for IPO firms may better contribute to bridging the information gap between issuing firms and outside investors. According to the bargaining power hypothesis, firms perceived to be much less mature and riskier by investors will have less leverage in negotiating the contingent contractual terms of their PIPEs and the pricing terms of these PIPE deals. If outside investors and placement agents perceive RM firms to be riskier and more prone to agency problems and information asymmetry than IPO firms, RM firms are likely to have less bargaining power against placement agents and outside investors than IPO firms. Thus, even after accounting for observable factors that determine a private firm's selection of exit mechanism, RM firms may still have to offer more investor-friendly PIPE contract terms and greater pricing discounts than IPO firms. Similarly, if RM firms are perceived to be riskier and less viable than IPO firms, the PIPEs of RM firms will involve more stage financing than the PIPEs

of comparable IPO firms under the same market conditions.

H3: PIPEs of RM firms are more likely to offer investor-friendly contracts, more likely to use stage financing, and involve greater pricing discounts than PIPEs issued by IPO firms.

3. Data

3.1 Sample Selection

The data used in this study are drawn from several databases. We first obtain the list of 1,346 RM firms that completed an RM transaction from January 2008 to March 2016 from PrivateRaise.⁹ We then extract the PIPE transactions of RM firms from the PIPE database of PrivateRaise.¹⁰ Out of the 1,346 RM firms from 2008 to 2016, 413 firms have PIPE deals. We further exclude the following PIPE deals: (1) 377 deals are conducted without placement agents; (2) 51 PIPE transactions that take place before the year of the RM transaction because the PIPE is done by shell companies; (3) 64 cancelled PIPE transactions since we need to analyze contract terms and thus only keep the closed, announced, and definitive agreement deals; (4) 73 PIPE deals with an issuance amount under \$1 million. This leaves us with 360 PIPE deals implemented by 336 RM firms with 222 unique placement agents from 2008 to 2016. We retrieve the financial information of these RM firms from Compustat. Since Compustat only covers mature and active public firms, we use Capital IQ to supplement the financial information that is not available through Compustat. We use CRSP for stock price data.

⁹ Dealflow Media's PrivateRaise is a data provider of PIPEs, reverse mergers, venture capital financing, and special purpose acquisition companies.

¹⁰ PrivateRaise only include shell firms prior to reverse merger. Therefore, our sample do not consider the merge of a former private firm and a former regularly public-traded firm.

As reported in Panel A of Table 1, of these 360 PIPE transactions, 305 (84.72%) are completed by U.S. domestic firms and 55 (15.28%) by foreign firms. Chinese firms completed 38 (69.09%) of the 55 PIPEs issued by foreign firms. After 2012, the number of PIPEs by Chinese RM firms has decreased substantially. This is likely due to the SEC investigation of Chinese RM firms and the SEC's more stringent recent listing requirements for RM firms.¹¹ In Panel B of Table 1, we also report the exchanges that the RM firms in our sample were traded on at the closing of their PIPE transactions and the current exchanges they are traded on as of 2016.¹² As of the PIPE closing date, 298 (82.78%) of RM firms were traded in the OTC market. As of March 2016, 220 (61.11%) of them are traded in the OTC market.¹³ In the subsample of RM firms listed on a national stock exchange, 71 firms (19.72%) are listed on the NASDAQ. A comparison of the closing and the current exchanges of RM firms reveals that (1) the number of RM firms traded on NASDAQ currently are much higher than the one at the closing of PIPE transactions, suggesting that RM firms move up to national exchanges during our sample period; and (2) a large proportion of RM firms are no longer trading. Panel C reports the industry distribution of these PIPEs. Of our 360 transactions, 137 (38.06%) of them are from the healthcare industry, 52 (14.44%) are from high technology industries, 50 (13.89%) are from the consumer and retail industry, and the rest are from other six industries.

[Insert Table 1 about here]

3.2 Measurements of Key Variables

The key research questions we examine relate to the role of PIPE placement experts and

¹¹In 2011, SEC approved new rules to toughen listing standards for reverse merger companies:

<http://www.sec.gov/news/press/2011/2011-235.htm>

¹² We hand collect the information on the current exchange of the reverse merger firms using 10-K filings reported by firms to SEC.

¹³ The OTC market consists of the OTC Bulletin Board (OTCBB, a facility of FINRA) and the OTC Markets Group's OTCQX, OTCQB and OTC Pink marketplaces.

PIPE contract terms. We next provide the details of our process for coding placement experts (*Expert Agent*) and investor-friendly index (*IFI*) in PIPE contracts.

Expert Agent

We use the placement agent's ranking in the PIPE advisory market to identify the certification ability or the bargaining power of a placement agent. We base our identification on the assumption that expert agents are more experienced agents that have been frequently chosen by issuers due to superior ability or strong reputation. Recall that our sample has 222 unique placement agents. Unlike the large investment banks that underwrite IPOs, placement agents in our sample are specialized in small-cap equity transactions. Hence, existing financial intermediary ranking lists such as Ritter's ranking or Megginson-Weiss ranking do not cover the majority of our PIPE placement agents (Megginson and Weiss, 1991; Carter, Dark, and Singh, 1998; Loughran and Ritter, 2004). Therefore, we collect the placement agent data from PrivateRaise on their total market share (PIPE issuance volume in million dollars), number of PIPE advisory services provided, and average market share (total market share divided by the number of PIPE advisory services provided). For each year, we rank them by total market share, the number of services provided, and average market share. We then set the top 20% agents in our sample as "expert agents" in that year. Typically, an RM firm's PIPE deal can have up to four placement agents.¹⁴ We create a dummy variable *Expert Agent*, which equals to one if any of the agents is an "expert agent" in that year and zero otherwise. In our main analysis, we report the results when *Expert Agent* is measured based on the number of advisory services.¹⁵ Appendix I provides the list of our

¹⁴ In our RM PIPE sample, 281 out of 360 have only one agent, 56 have two agents, 16 have three agents, 7 have four agents.

¹⁵ Our results remain robust when we calculate *Expert Agent* using the first 25% quantile in agents' rankings respectively. The sensitivity analysis using *Expert Agent* computed by ranking using total market share and average market share are not reported in this paper, but it is available upon request.

top 20 agents in our sample in 2015¹⁶. Our results do not change materially when we use alternative measurements in untabulated sensitivity analyses.

Investor-friendly Index (IFI)

Following Bengtsson and Dai (2014), we use sixteen distinct PIPE contract terms to construct an index, Investor-friendly Index (IFI), which measures the extent to which PIPE contract terms are more favorable to investors. Contract terms that provide protection to investors include warrants, anti-dilution provision, investor call option, investor green shoe option, investor purchase rights, investor redemption rights, mandatory registration rights, and specification of dividend/coupon payment. Contract terms that grant issuer rights include issuer put option, conversion restriction, forced conversion, issuer redemption rights, hard floor price, and soft floor price. Contract terms placing restrictions on investor trading include selling restrictions and hedging restrictions. A detailed description PIPE contract terms and the frequency with which they are used in RM firm PIPEs are provided in Table 2. Among the contract terms that protect investors, the most frequently used ones are mandatory registration rights (67.77%), warrants (66.39%), and dividend/coupon payment (36.94%). Among the contract terms that protect issuers, the most commonly used ones are forced conversion (20.27%), issuer redemption rights (19.72%), and conversion restrictions (14.17%).

[Insert Table 2 about here]

To construct the investor-friendly index (IFI), we add all contract terms favorable to investors (investor protection terms) and deduct all contract terms unfavorable to investors (i.e., issuer rights and trading restrictions). In total, there are eight investor protection terms, six issuer right terms and two trading restriction terms. Since we have eight possible deductions (trading

¹⁶ As of 2015, the top 5 expert agents in our sample are: 1) Cowen and Company, LLC; 2) J.P. Morgan Chase & Co.; 3) Bank of America Corporation; 4) Cantor Fitzgerald & Co.; and 5) H.C. Wainwright & Co., Inc.

restriction terms plus issuer right terms), we add eight to ensure that the aggregate IFI index is positive. Therefore, the maximum possible value of IFI is 16. As reported in Table 3, the mean of the IFI is 9.90, with a standard deviation of 1.43. The contract with the most investor-friendly terms has an IFI of 13, and the contract with the fewest has an IFI of 6. Similar to Bengtsson and Dai (2014), we calculate the IFI index based on the assumption that all contract terms are equally weighted.

Stage Financing

Our last variable of interest is *Stage Financing*. Our sample consists of 360 RM PIPE transactions, of which 154 (42.8%) are staged PIPEs. In our analysis, the dummy variable *Stage Financing* is equal to 1 if the issuer has conducted a PIPE with multiple closings with the same group of investors and 0 if the issuer has conducted only one single-closing PIPE. In addition, we collect the rounds and duration time of each staged PIPE. The average number of rounds in the sample of staged PIPEs is 4, with a standard deviation of 2.03. The maximum number of rounds is 16 and the minimum is 2.

3.3 Descriptive Statistics

Table 3 reports the descriptive statistics for some of the key variables used in our empirical analysis. The average value of *IFI* in a PIPE is 9.89 in our sample, which suggests that, in general, RM firms' PIPE contract terms are more investor-friendly rather than issuer-friendly. In addition, about 43% of RM firms in our sample have staged PIPEs (*Stage Financing*). 29.2% of our intermediated RM PIPE sample firms are advised by an expert agent (*Expert Agent*). The descriptive statistics show that 75% of PIPE transactions take place after the completion of RM transactions (*Subsequent*). The mean of *Price Multiple* is 0.83, suggesting that, on average, RM

firms grant a price discount of 17% to their PIPE investors, in contrast to the mean discount rate of 9.5% in the sample of more mature PIPE-conducting firms in Bengtsson and Dai (2014).

The summary statistics show that the RM firms in our sample are highly levered and have negative earnings on average. The average ROA of RM firms is negative at the time of the PIPE (*ROA*, -3.731) and remains negative even two years after the PIPE (*ROA in 2 Years*, -1.324). On average, the ratio of total debt to assets is 2.6 at the time of the RM PIPE, indicating the high degree of indebtedness of these firms. The mean leverage ratio still remains at 1.3 two years after the PIPE. The weak earnings performance and the high leverage of RM firms suggest that these firms are likely to be financially constrained and that they require new sources of external financing for their investments. Following Gompers (1995) and Dai (2011), we use *Tangibility*, *Capex/Assets*, and *Firm Size* as other control variables in our tests. To measure the post-PIPE performance of RM firms, we examine their ROA, leverage, and sales growth 2 years subsequent to their PIPEs, and the ratio of the RM firms upgrading to national exchanges. After originally trading at the OTCBB or the OTC markets, 12.8% of our sample RM firms successfully move to a national exchange during our sample period. *Upgrade* is a dummy variable that takes the value of 1 if the firm's closing exchange at the PIPE is OTCBB or the OTC markets and is trading on NASDAQ or NYSE at the end of our sample period (i.e., 2016).

[Insert Table 3 about here]

4. Empirical Results on Reverse Merger PIPEs

4.1. The Effect of Expert Agents on the Contract Terms of Intermediated PIPEs of RM

Firms

Our first hypothesis (**H1**) concerns the relation between the ranking of a placement agent

in a PIPE transaction and the extent to which the PIPE contract is investor-friendly (*IFI*). Panel A of Table 4 reports the results of univariate tests comparing RM PIPEs advised by expert agents and those by non-expert agents. We find that RM PIPEs with expert agents raise greater proceeds (*Offer Size*, 2.121 vs. 1.368) and offer more investor-friendly contract terms than RM PIPEs with non-expert agents (*IFI*, 10.067 vs. 9.827). Different from Bengtsson and Dai (2014), we do not find a significant relation between the ranking of a PIPE placement agent and the pricing of the RM firm's equity in a PIPE (*Price Multiple*) in our univariate tests.

With regard to other firm characteristics, we find that RM firms with expert agents are larger (*Firm Size*) and more profitable (*ROA*), and have lower leverage (*Leverage*) than RM firms with non-expert agents. This evidence suggests a positive assortative matching between reputable financial advisors and issuer firms, according to which better quality RM firms are matched with higher-ranked placement agents. RM firms matched with higher-ranked placement agents are also more likely to trade on a national exchange either at the closing of their PIPE transactions or at the end of our sample period (i.e., 2016). However, we do not find that RM firms with expert PIPE agents exhibit significantly superior operating performance than RM firms with non-expert agents in terms of profitability, leverage, and sales growth two years after the PIPE.

We use the following multivariate regression model to test hypothesis **H1**:

$$\begin{aligned}
 IFI_{i,k,t} = & \beta_0 + \beta_1 Expert Agent_{i,k,t} + \beta_2 Deal Characteristics_{i,k,t} + \beta_3 Firm Characteristics_{k,t} \\
 & + \beta_4 Year FE + \beta_5 Investor Type FE + \beta_6 Industry FE + \varepsilon_{i,t} \quad (1)
 \end{aligned}$$

In this baseline model, the dependent variable is Investor-friendly Index (*IFI*) and the independent variable is *Expert Agent*, which are both defined as above. The subscript *i* denotes the PIPE deal *i*, *k* denotes RM firm *k*, and *t* denotes the year of PIPE issuance. We control for year fixed effects, investor type fixed effects, and industry fixed effects in our regressions. We use Fama and French 48 industry classification to code our sample firms' industries and the standard

errors are clustered by firm and industry. The definitions of the control variables are stated in Table 4. The firm-specific financial variables are measured as of the pre-PIPE year.

Panel B of Table 4 reports the results of multivariate regressions testing hypothesis **H1**. Model (1) of Panel A presents the results of OLS regression in which the dependent variable is the investor-friendly index *IFI* and Model (2) presents the Poisson regression. In both specifications, our results indicate that the coefficient of the dummy variable *Expert Agent* is significantly positive. Consistent with the prediction of hypothesis **H1**, this suggests that RM firms advised by higher-ranked expert placement agents offer more investor-friendly contract terms to their PIPE investors.

Dai and Bengtsson (2014) argue that, by agreeing to more investor-friendly contract terms, PIPE-issuing firms advised by expert agents are able to obtain more favorable pricing terms and have better long-term stock performance on average. Our multivariate regression results reported in Table B2 (in Appendix B) show that RM firms do not obtain more favorable pricing terms in their PIPEs when they match with expert placement agents or when they agree to more investor-friendly contract terms. Similarly, the regression results reported in Table B1 show that the *IFI* index and the expert agent dummy variable are not significantly associated with proxies for the RM firms' long-term operating performance. Overall, our results are consistent with the hypothesis that more reputable PIPE placement agents are able to exercise their greater bargaining power when they negotiate the contract terms of RM firm PIPEs. This is also consistent with the argument that the underwriters and investors of RM firms face a significantly greater degree of information asymmetry and therefore a higher cost of equity capital in their PIPE offerings compared to more mature public firms issuing PIPEs.

Panel C of Table 4 presents the results of the regressions where we analyze if expert agents are also associated with higher agent fees/compensation. We find that the agent cash compensation

in dollars is significantly higher if an expert agent advises the PIPE of an RM firm. This is because reputable agents also tend to underwrite larger equity placements. Our results also show that the expert agent dummy is not significantly associated with the percentage compensation paid to the RM PIPE placement agent (defined as the dollar fee amount paid divided by the total proceeds raised).

[Insert Table 4 about here]

4.2. The Effect of PIPE Placement Agent Ranking on Stage Financing in RM PIPEs

The findings reported in Section 4.1 raise a natural question. In addition to issuing larger-sized PIPE offerings, what other potential benefits can RM firms advised by expert agents receive in exchange for agreeing to more investor-friendly PIPE contract terms? While RM PIPE issuers advised by more reputable agents may not obtain better equity pricing terms and do not exhibit superior long-term performance (as in Bengtsson and Dai, 2014), our hypothesis **H2** proposed that RM firms advised by expert agents may be able to raise the required PIPE financing amount more quickly in a single round rather than over multiple financing rounds (closings), thereby benefiting from a reduced intensity of monitoring by outside investors. To test our second hypothesis **H2**, we examine how the ranking of the PIPE placement agent affects the choice of stage financing in intermediated RM firm PIPEs. We report the related test results in Table 5. The results of univariate tests shown in Panel A of Table 5 indicate that an issuing RM firm advised by an expert agent receives new capital over multiple stages (rounds) in only 24% of all such PIPEs in our sample (*Stage Financing*). In contrast, in PIPEs in which the issuing RM firm is advised by a lower-ranked (non-expert) agent, stage financing occurs in 51% of these cases. As we discussed above, this seems to suggest that in exchange for agreeing to more investor-friendly contract terms, RM firms advised by expert placement agents are monitored less frequently by outside PIPE investors than

RM firms advised by non-expert agents. Further, they are more likely to complete their PIPEs by raising their new capital as a lump sum in a single round of financing.

Univariate results presented in Panel B of Table 5 show that staged PIPEs are less likely to involve expert agents (*Expert Agent*). On average, RM firms with staged PIPEs offer more discounted offer prices than single-round PIPEs (*Price Multiple*). Further, compared to RM firms with staged PIPEs, RM firms with single-round PIPEs are more likely to be traded on a national exchange at the PIPE closing date, and they have higher profitability, more tangible assets, and higher cash holdings. We also find that hedge funds are less likely to be associated with staged PIPEs as lead investors, which is consistent with Dai (2007) who shows that hedge fund investors' monitoring incentives are weaker in PIPEs.

To test hypothesis **H2a**, we implement the following multivariate probit regression model to examine the effect of expert agent ranking on the likelihood of stage financing:

$$\Pr(\text{Stage Financing}_{i,k,t}) = \beta_0 + \beta_1 \text{Expert Agent}_{i,k,t} + \beta_2 \text{Deal Characteristics}_{i,k,t} + \beta_3 \text{Firm Characteristics}_{k,t} + \beta_4 \text{Ind_FE} + \beta_5 \text{Year_FE} + \varepsilon_{i,t} \quad (2)$$

The dependent variable is the dummy variable *Stage Financing* defined as above. To test hypothesis **H2b**, we substitute the dependent variable *Stage Financing* in the above model with the number of rounds of each multiple-closing PIPE transaction (*Rounds*) and the total duration of such multiple-closing PIPE (*Duration*).

The results of the above regressions are presented in Panel C of Table 5. As shown in column (1), the likelihood of stage financing is significantly negatively associated with expert placement agents. *Ceteris paribus*, the probability of stage financing in PIPEs for an RM client with an expert agent is 17.3% lower than that for a client with a non-expert agent. This finding implies that while expert agents screen and certify RM firms with more investor-friendly contract terms (consistent with **H1**), these firms are more likely to receive their funds in a single round of

financing and therefore, they may be monitored less intensively by PIPE investors subsequent to the closing of the PIPE deal, supporting our hypothesis **H2a**. Furthermore, our results suggest that hedge fund investors are negatively associated with multiple-round PIPE, consistent with the arguments of Dai (2007) and Brophy et.al (2009) that hedge funds are last resorts of liquidity to financially constrained issuers without long-term monitoring incentives.¹⁷

Conditional on receiving PIPE funds over multiple rounds of financing, our hypothesis **H2b** predicts that RM firms advised by expert agents are likely to receive their capital infusions over fewer financing rounds and over a shorter time period (duration). Indeed, the regression results reported in columns (2) and (3) of Panel B in Table 5 show that there is a negative association between placement agent ranking (*Expert Agent*) and the number of financing rounds (*Rounds*) and the total duration of financing rounds (*Duration*), respectively.

Overall, these results support hypothesis **H2** which predicts that RM firms hiring expert agents are less likely to have staged financing and if they have staged financing it is in smaller rounds and has shorter duration. In conclusion, while expert agents use their bargaining power to extract more investor-friendly PIPE contract terms from the RM firms they certify, these RM firms are able to receive their funds from PIPE investors more quickly and in a smaller number of rounds.

[Insert Table 5 about here]

4.3. The Impact of Placement Agent Ranking on PIPE Contracts: Instrumental Variable

Analysis and Treatment Effect Regression Analysis

¹⁷ Floros and Sapp (2012) find that hedge funds show a greater presence in later successive rounds of repeated PIPEs. However, their sample studies the repeated PIPEs with the same issuer but different agents and investors throughout years, while in our sample the placement agents and the investors remain the same within a PIPE with multiple closings (rounds). Therefore, we are able to draw inferences about the monitoring effect of PIPE investors, since the lead investor does not change across multiple closings (rounds) of the same PIPE deal.

The ideas underlying our predictions in hypotheses **H1** and **H2** imply an endogenous assortative matching between high-quality RM firms (larger, more profitable, less levered, listed on a national exchange) and reputable expert placement agents in PIPEs. Hence, we recognize that while our empirical evidence is consistent with hypotheses **H1** and **H2**, this may not allow us to draw a strong causal inference about the impact of placement agent ranking on PIPE contract terms and the use of stage financing in PIPEs beyond our matching explanation based on bargaining power and certification/screening.

To examine whether the effect of expert agent ranking on PIPE contract terms (*IFI*) is causal, we conduct an instrumental variable (IV) analysis in a two-stage least squares (2SLS) regression framework. Our instrument for the likelihood that an RM firm is advised by an expert PIPE placement agent is the number of IPOs (*IPO count*) completed in the firm's industry (at the three-digit SIC level) in the year prior to the PIPE deal. A valid instrument should be highly correlated with the expert agent dummy (relevance condition), but it should not have a direct effect on our dependent variable, *IFI* (exclusion restriction). A thriving IPO market in a firm's industry in the prior year may increase the likelihood of a greater number of RM firms in that industry to hire a reputable placement agent to issue new equity in a private placement (PIPE), satisfying the relevance condition.¹⁸ On the other hand, the industry IPO volume in the prior year is unlikely to have a direct impact on the PIPE contract terms of an individual firm, possibly satisfying the exclusion restriction.¹⁹

¹⁸ The correlation between the industry IPO volume in the prior year and the Expert Agent dummy variable is 0.18 at 1% significance level.

¹⁹ Ewens and Marx (2015) use a similar rationale and use the lagged number of acquisitions in a VC-backed startup firm's industry as an instrument for executive replacement. They argue that exogenous shocks to the supply of executives in an industry might serve as a suitable instrument for executive replacements (the endogenous variable) in startups and is less likely to directly affect whether a startup can survive a struggling stage.

We report the results of our 2SLS regressions in Table 6. Columns (1) and (2) in Panel A of Table 6 report the first stage (linear probability model) and the second stage of our 2SLS regression results. Consistent with the relevance condition, the first-stage regression results reported in Model (1) show that the previous-year IPO volume in a firm's industry is significantly and positively associated with the likelihood of an expert agent placing the PIPE deal of a RM firm. The results of the second-stage regression show that the effect of expert agent ranking on the IFI index is positive and significant. Moreover, the economic magnitude of the effect of an expert agent on IFI is substantially larger compared to our OLS results presented in Table 4 (2.751 vs. 0.549).

As an additional robustness check, we also use a two-stage (Heckman-type) treatment effect regression model to account for unobservable factors that affect how RM firms are selected by placement agents. Panel B of Table 6 reports the results of treatment effect regressions in which the expert agent dummy is an endogenous dummy. In the first-stage probit regression, the dependent variable is an indicator which equals 1 if the PIPE of an RM firm is placed by an expert agent. The second-stage regression results in columns (2) and (3) show that the *Expert Agent* is still positively associated with IFI, and negatively associated to *Stage Financing* after accounting for the endogeneity of the treatment, although the coefficient of *Expert Agent* (0.391 and -0.135) are a bit smaller than the OLS regression coefficients reported in tables 4 and 5.

Overall, the results of our 2SLS and treatment effect regressions suggest that, even after controlling for the endogenous matching between RM PIPE issuers and underwriters, placement agent reputation still has a positive effect on the extent to which the PIPE contracts of RM firms are investor-friendly, which is consistent with hypothesis **H1**. Similarly, consistent with hypotheses

H2 and **H3**, the results of this section also confirm that placement agent reputation is negatively associated with the likelihood of stage financing.

[Insert Table 6 about here]

5. Reverse Merger Firm PIPEs versus IPO Firm PIPEs

So far, our empirical analysis has focused on the PIPEs of RM firms only. However, many firms which go public through a traditional IPO also use PIPEs as an equity-selling mechanism to raise funds and as an alternative to a seasoned equity offering (SEO) (Chen, Dai, and Schatzberg, 2010). In this section, we compare the PIPEs of RM firms to the PIPEs of firms that went public through a traditional IPO. We collect the data for 1,007 IPOs between 2008 and 2016 from the Thomson Reuters SDC Platinum database. Using the PrivateRaise database, we identify 852 IPO firms which issued a PIPE offering in the sample period between 2008 and 2016. We are able to retrieve the non-missing financial data of 730 IPO firms from Compustat. To further make our IPO PIPE sample and RM PIPE sample comparable, we exclude the PIPE transactions that take place more than 3 years after going public and PIPE transactions conducted without a placement agent. This filters our sample to 474 IPO PIPE transactions and 378 RM PIPE transactions.

5.1. Univariate Test Results on differences between IPO PIPEs and RM PIPEs

Panels A of Table 7 presents the results of the univariate tests for differences in IFI, stage financing, and price multiple between the RM firms and the IPO firms before matching in intermediated PIPEs. Consistent with hypothesis **H3**, we find that the PIPEs of RM firms include more investor-friendly contract terms, are more likely to involve stage financing, and offer greater pricing discounts (*Price Multiple* is measured as the purchase or conversion price of a PIPE divided by the stock price prior to the PIPE closing day) than the PIPEs of IPO firms. Having independently obtained a greater certification value through the traditional IPO process, IPO firms may have a

greater bargaining power against both their placement agents and their PIPE investors. We also find that the PIPEs of RM firms are advised by significantly lower-ranked placement agents on average than the PIPEs of IPO firms.²⁰

While RM firms may save substantial underwriting, disclosure, and legal costs than their IPO counterparts when going public, RM firms do not undergo the scrutiny of the disclosure requirements and the regulatory review required by SEC for IPO firms. Therefore, investors of RM firms are likely to face a significantly higher level of information asymmetry than IPO firm investors, which may increase RM firms' cost of raising funds in PIPEs compared to that of IPO firms. We find some evidence in Panel B of Table 8 showing that some specific PIPE contract terms occur significantly more often in the PIPE contracts of RM firms than those of IPO firms. For example, PIPE offerings of RM firms are more likely to include warrants and dividend/coupon payment clauses than IPO firm PIPEs, which can essentially be seen as a higher price discount (deal sweetener) offered to PIPE investors by RM firms. Further, strike prices of warrants issued by RM firms in their PIPEs are significantly lower than those issued by IPO firms both in dollar value and in percentage terms (warrant strike price/closing stock price). PIPE offerings of RM firms also have a greater incidence of anti-dilution provisions and mandatory registration, which suggests a stronger bargaining power of their PIPE investors. These results are consistent with those presented in Panel A showing that the PIPE contracts of RM firms are overall more investor-friendly than those of IPO firms. Our results suggest that while RM firms may save a fair amount of transaction and disclosure costs when going public, they have to bear a higher cost of raising capital when they issue securities in subsequent PIPE transactions.

[Insert Table 7 about here]

²⁰ Note that, in Tables 7 and 8, the variable *lead agent rank* is coded such that a higher value of this variable indicates a lower degree of reputation and expertise of the placement agent.

Simple univariate tests comparing the PIPE contract terms of RM firms and IPO firms may not be sufficient alone, because there are important observable and unobservable factors which affect how a private firm chooses its exit method of going public (Bayar and Chemmanur, 2012; Lee, Li, and Zhang, 2014; Chemmanur, He, He, and Nandy, 2018). In other words, differences in pre-exit firm characteristics of RM firms and IPO firms potentially affect the PIPE contract terms of these issuers and investors' attitudes to these security issues. Therefore, we use a propensity score matching method to control for the heterogeneity in the pre-exit firm characteristics of RM firms and IPO firms.

We first model the likelihood that the private firm may use an IPO or an RM as an exit mechanism following Bayar and Chemmanur (2012).

$$\begin{aligned} \Pr(\text{RM}_{k,t}) = & \beta_0 + \beta_1 \text{Firm Size}_{k,t-1} + \beta_2 \text{ROA}_{k,t-1} + \beta_3 \text{Capex/Assets}_{k,t-1} + \beta_4 \text{Tangibility}_{k,t-1} + \\ & \beta_5 \text{RD/Assets}_{k,t-1} + \beta_6 \text{Leverage}_{k,t-1} + \beta_7 \text{M/B}_{k,t-1} + \beta_8 \text{Crisis}_t + \beta_9 \text{HHI}_{m,t} + \\ & \beta_{10} \text{Private Benefit}_{m,t} + \beta_{11} \text{Big4 Auditor}_{k,t} + \beta_{12} \text{Mean Analyst Forecast Error}_{m,t} + \\ & \beta_{13} \text{VC Backed}_k + \varepsilon_{i,t} \end{aligned} \quad (3)$$

In this model, the dependent variable is *RM*, which takes the value of 1 if the firm went public through RM, and 0 if the firm went public through IPO. The subscript *k* denotes a firm. The subscript *t* denotes the year of exit. The subscript *m* denotes the firm's industry. Following Bayar and Chemmanur (2012), we control several firm-level characteristics (*Firm Size*, *ROA*, *Capex/Assets*, *Tangibility*, *Leverage*, *RD/Assets*, *M/B*), which are defined in Table 9. We also control whether the firm is audited by Big 4 firms (PwC, KPMG, E&Y, and Deloitte) (*Big4 Auditor*) and whether the firm is invested by a venture capitalist before going public (*VC Backed*) as well as industry-level characteristics (*Crisis*, *Private Benefit*, *HHI*, and *Mean Analyst Forecast Error*).²¹

²¹ *Crisis* is a dummy that is equal to 1 if the firm raises PIPE during the 2008-2009 crisis periods. *Private Benefit* is a dummy which equals to one if and only if a firm's industry is among both one of the top five CEO perk consumption

Firm-level financials are from the earliest fiscal-year data available for the merged firm or the IPO firm. Industry-level characteristics are measured at the year the firm goes public.

We use the predicted propensity score from the above model to match RM firms with IPO firms and then compare their differences in *IFI*, *Price Multiple*, and *Stage Financing*. Panel C of Table 8 presents the results of difference tests regarding our PIPE outcome variables after the propensity score matching. Consistent with hypothesis **H3**, the results of these univariate difference tests (using the matched samples) also suggest that RM firms offer more investor-friendly PIPE contract terms, are more likely to involve stage financing, and offer greater pricing discounts than IPO firms. Further, in our comparison between RM and IPO matched samples, we also find that the PIPEs of RM firms are advised by placement agents with a lower ranking (reputation) than the PIPEs of IPO firms.

Panel D and Panel E of Table 7 compare the univariate differences of some firm characteristics between RM firms and IPO firms listed in OTC and Nasdaq separately. We find that RM firms are smaller, have lower deal sizes, lower ROA, lower cash holdings, higher leverage, lower R&D expenses, and higher M/B ratios than IPO firms before matching, indicating that RM firms may obtain lower market valuations than IPO firms in that they are less profitable and carry greater financial risk.

5.2. Multivariate Tests Results on the Differences between IPO PIPEs and RM PIPEs

In this subsection, we perform two sets of multivariate analysis. First, we use the propensity-score-matched samples of RM PIPEs and IPO PIPEs in a multivariate regression

industries of Rajan and Wulf (2006) and one of those industries in which the CEO-Divisional Manager differential in the Rajan-Wulf perk consumption score is greater than 1. The Herfindahl Index (*HHI*) is calculated by summing up the squares of the market share in sales of all Compustat firms within the same three-digit SIC industry, at the year of PIPE issuance using sales data from Compustat. *Mean Analyst Forecast Error* is the average industry analysts' forecast mean error at the three-digit SIC level as a proxy for industry-wide valuation difficulty using analysts' earnings forecasts data from I/B/E/S.

framework and estimate the effect of the method of going public and the placement agent reputation (ranking) on PIPE contract terms, stage financing, and deal pricing multiples. Panel A of Table 8 displays the results of multivariate regressions in which the dependent variables are *IFI*, *Stage Financing*, and *Price Multiple*. We use *Lead Agent Rank* instead of the *Expert Agent* dummy to make placement agents across all PIPE issuers comparable because of the strong heterogeneity in the placement agents for RM firms and IPO firms.²² *Lead Agent Rank* is measured as the rank of the lead agent of a PIPE deal in each sample year based on the number of PIPEs advised. The higher the value of this rank, the lower a placement agent is ranked in the financial advisory market for PIPEs. The *Lead Agent Rank* calculated on the total market share and average market share of each agent yields the similar result.

Consistent with hypothesis **H3**, the regression results in column (1) of Table 9 (Panel A) indicate that RM firms are likely to offer more investor-friendly PIPE contract terms than IPO firms. The regression results in column (2) show that RM PIPEs are more likely to involve stage financing than IPO PIPEs, consistent with hypothesis **H3**. Further, higher-ranked placement agents are associated with a lower likelihood of stage financing, consistent with the idea that certification by more reputable agents substitutes for stage financing (hypothesis **H2**).

Panel B of Table 8 presents the results of our Heckman-style treatment effect regressions. After taking into account selection for unobservable factors that determine whether a private firm conducts an IPO or an RM, we find that the method of going public (RM dummy) and lead agent ranking do not have a statistically significant impact on IFI (see column (2)). Nevertheless, our results in columns (3) suggest that the method of going public still has a significant effect on the

²² The PIPE Placement agents of IPO firms have much higher rankings overall than those of RM firms. The placement agents for RM firms can hardly be labelled as “expert”. Therefore, we directly use the rankings of each agent in the PIPE market in our full sample.

likelihood of stage financing, consistent with the predictions of hypothesis **H3**. Finally, we also find a significant pricing difference in RM PIPEs and IPO PIPEs in the treatment model. The results reported in column (4) of Table 8 in Panel B suggest that RM firms receive lower offer prices in their PIPEs (they offer greater pricing discounts to their PIPE investors) than their IPO counterparts.

[Insert Table 8 about here]

6. Conclusion

Our paper contributes to the literature on PIPEs and RMs by studying how RM firms raise new equity capital in PIPE deals. It analyzes how placement agent reputation affects the contract terms, the pricing, and the use of stage financing in RM PIPEs and compares them to the PIPEs of IPO firms. Our empirical evidence suggests that it is significantly more costly to raise new equity capital for RM firms than IPO firms and other public firms in PIPEs.

Specifically, our findings indicate that RM firms advised by expert placement agents offer more investor-friendly contracts than RM firms advised by non-expert agents. However, different from the prior literature on PIPEs, we find that such RM firms do not necessarily obtain better pricing terms in their private placements of equity. This result is consistent with the hypothesis that expert agents certifying RM firms have greater bargaining power against their RM firm issuers than non-expert agents, as the investors of these firms face a significantly a greater degree of information asymmetry about firm prospects. However, our results also suggest that RM firms advised by (more reputable) expert agents may benefit from the fact that greater placement agent reputation may substitute for stage financing, the potential benefit of which is less intensive monitoring by PIPE investors.

Finally, our study compares the PIPE contracts of RM firms with those of firms going

public through a traditional IPO. We find that RM firm PIPEs are associated with more investor-friendly contracts, higher probability of stage financing, and lower PIPE pricing compared to the PIPEs of IPO firms. The negative relation between expert placement agents and stage financing remains robust in the full sample of RM PIPEs and IPO PIPEs. Given that an increasing number of firms choose to go public by being acquired by public shell firms in RM transactions, it is important to analyze the process of raising capital through PIPEs by RM firms. Our study sheds some new light on the indirect and implicit costs of going public through a reverse merger. Our results suggest that raising new equity capital in PIPEs entails significantly higher costs for RM firms than IPO firms.

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Table 1
Country Distribution, Trading Platforms, and Industry Distribution of RM Firms with PIPEs

This table provides an overview of RM PIPEs completed between January 2008 and March 2016. The data are collected from the PrivateRaise database. Panel A reports the geographic breakdown on the number of RM PIPEs. Panel B reports the current trading platforms of RM firms as well as the trading platforms at the closing of PIPE transactions. Panel C reports the industry breakdown RM PIPEs.

Panel A: Geographic Breakdown of PIPE Transactions of Reverse Merger Firms

Year of Completing PIPE	United States	China	Foreign (non- China)	Total
2008	18	13	1	32
2009	17	5	2	24
2010	24	14	2	40
2011	37	3	5	45
2012	46	1	2	49
2013	37	0	1	38
2014	62	1	2	65
2015	37	1	1	39
2016	27	0	1	28
Total	305	38	17	360

Panel B: Current (Closing) Exchanges of the PIPE Transactions of Reverse Merger Firms

Year of Completing PIPE	Nasdaq	NYSE	OTC BB/OTC Markets	No Longer Trading	Total
2008	2(1)	0(0)	17(31)	13(0)	32
2009	3(4)	0(1)	12(19)	9(0)	24
2010	2(4)	0(3)	27(33)	11(0)	40
2011	11(1)	3(2)	26(42)	5(0)	45
2012	12(7)	4(1)	25(41)	8(0)	49
2013	7(3)	1(3)	26(32)	4(0)	38
2014	15(9)	2(2)	43(54)	5(0)	65
2015	14(11)	1(2)	24(26)	0(0)	39
2016	5(5)	3(3)	20(20)	0(0)	28
Total	71(45)	0(17)	220(298)	55(0)	360

Panel C: Industry Breakdown for the PIPE Transactions of Reverse Merger Firms

Industry	Totals	Percentage
Basic Materials	15	4.17%
Consumer/Retail	50	13.89%
Energy	30	8.33%
Financial Institutions	11	3.06%

Healthcare	137	38.06%
Industrial	47	13.06%
Media	15	4.17%
Technology	52	14.44%
Telecommunications	3	0.83%
Totals	360	100%

Table 2**Descriptions of PIPE Contract Terms**

The sample consists of 360 intermediated PIPE transactions completed by reverse merger firms. Panel A lists contract terms that provide the investor with protections, Panel B lists contract terms that grant issuer rights, and Panel C lists contract terms that place limits on investor trading. Most of the contract terms here are also listed in Bengtsson and Dai (2014), which are indicated by superscript †.

Panel A: Investor Protections

ID	Term	Definition	Frequency
1	Mandatory Registration Rights [†]	Issuer's contractual COMMITMENT to the investors to: <ol style="list-style-type: none"> i. file an appropriate resale registration statement with the SEC no later than a negotiated filing deadline and/or ii. cause such registration statement to be declared effective by the SEC no later than a negotiated effectiveness deadline and/or have a registration statement declared effective by the SEC PRIOR TO the issuance of securities or funding of the investment (e.g., registered direct and/or equity line deals) 	67.77%
2	Warrants [†]	Issuer entitles the holder to buy a certain number of shares of a specified security (typically common stock) at a specified price during a specified time period. A warrant may be issued separately or together with other equity private placement securities (e.g., preferred stock).	66.39%
3	Dividend/Coupon Payment [†]	Issuers pay periodic interest or dividends to investors at the specified rate. They can be paid with cash, shares, or the same security as issued to investors.	36.94%
4	Anti-dilution Provision [†]	Provides investors with dilution protection in the event issuer issues equity or equity-linked securities (subsequent to the closing of an equity private placement) at a purchase/ conversion/exercise price BELOW A SPECIFIED PRICE.	34.72%
5	Investor Redemption Rights [†]	Investors' right to force an issuer to redeem all or a portion of the securities originally purchased by investors under certain specified conditions.	30.28%
6	Investor Purchase Rights [†]	Investors' right to participate in any future issuances of securities by the issuer - <i>Right of Participation, Right of First Refusal</i> , etc. - after the closing of an equity private placement.	26.39%
7	Investor Green Shoe Option	Investors' right to purchase additional securities from the Issuer during a specified time period. The type and purchase/conversion price <i>are identical to</i> the securities originally purchased by investors.	4.17%
8	Investor Call Option [†]	Investors' right to purchase additional securities from the issuer during a specified time period. The type and purchase/conversion price <i>may or may not be identical to</i> the securities originally purchased by investors.	1.94%

Panel B: Issuer Rights

ID	Terms	Definitions	Frequency
1	Forced Conversion [†]	Applicable to convertible securities and warrants. The issuer has the right, under certain specified conditions, to force investors to convert their preferred stock or debt or exercise their warrants into the underlying common stock prior to maturity of the security.	20.27%
2	Issuer Redemption Rights [†]	An issuer's right, under certain specified conditions, to redeem all or a portion of the securities originally purchased by investors.	19.72%
3	Conversion Restrictions	Applicable to convertible securities and warrants. Restrictions on the ability of investors to convert their preferred stock or debt or to exercise their warrants into the underlying common stock. Restrictions can include limitations based on a maximum principal amount for any given conversion/exercise, a percentage of trading volume of the common stock or passage of time.	14.17%
4	Soft Floor Price	Minimum purchase/conversion price which MAY BE SUBJECT TO certain conditions, time limitations or adjustments and/or provides alternative means for the investors to be “made whole” in the event the market price of the issuer's common stock falls below the soft floor price.	5.56%
5	Hard Floor Price	Minimum purchase/conversion price which remains in-force throughout the life of the investment and is NOT SUBJECT TO CERTAIN CONDITIONS OR ADJUSTMENTS (UPWARD OR DOWNWARD) and DOES NOT PROVIDE investors with a remedy to be “made whole” in the event the market price of the issuer's common stock falls below the hard floor price.	3.89%
6	Issuer Put Option [†]	An issuer’s right to sell additional securities to investors during a specified time period. The type and purchase/conversion price may or may not be identical to the securities originally purchased by investors.	0.56%

Panel C: Trading Restrictions

ID	Terms	Definitions	Frequency
1	Hedging Restrictions [†]	Restrictions on the ability of investors to engage in short sales or related hedging activities in relation to the securities originally purchased by the investors. Restrictions can include limitations based on the type of hedging activities, maximum principal amount or number of common shares that may be hedged or specified time periods where hedging activities are prohibited or limited.	13.33%
2	Selling Restrictions [†]	Restrictions on the ability of investors to resell purchased common stock or the common stock received from conversion of preferred stock or debt. Restrictions can include limitations based on a maximum number of common shares that can be sold over a specified time period, a percentage of trading volume of the common stock or passage of time.	1.39%

Table 3

Descriptive Statistics about Reverse Merger PIPEs and Reverse Merger Firms

Panel A presents summary statistics of 360 PIPE transactions implemented by RM firms from Jan 2008 to Mar 2016. Panel B presents the univariate test of PIPE and firm characteristics by stage financing and single-round financing. *IFI* is the Investor-friendly Index aggregated from the 16 PIPE contract terms following Bengtsson and Dai (2014). *Stage Financing* is 1 if the transaction is one of multiple closing PIPEs with the same group of investors and 0 otherwise. *Rounds* is the number of rounds that a multiple closing PIPE has with the same group of investors. *Duration* is the total duration in months from the first closing date to the last closing date. *Expert Agent* is 1 if any of the RM firm’s agents is among the high-rank agents in the PIPE issuance year based on the number of PIPEs advised and 0 otherwise. *Subsequent* is 1 if the PIPE is completed after the RM transaction and 0 if during the RM transaction. *Traditional* is 1 if the security type is “common stock” or “non-convertible debt” or “non-convertible preferred stock”. *Offer Size* is natural logarithm of the total issuance amount. *Firm Size* is the natural logarithm of the total book assets. *Tangibility* is the firm’s total tangible assets divided by total assets. *Capex/Assets* is the firm’s capital expenditure scaled by total assets. *Leverage* is the firm’s long-term and short-term debts scaled by total assets. *ROA* is the firm’s net income scaled by total assets. *China* is 1 if the RM firm’s headquarter is in China and 0 otherwise. *National Exchange at closing* is a dummy variable which equals to one if the firm’s PIPE closing/current exchange is NASDAQ or NYSE. *Adjusted Offer Size* is the issuance amount scaled by the firm’s market capitalization at closing. *Cash/Assets* is firm’s cash and equivalent scaled by total assets. *Price Multiple* is the PIPE purchase price divided by the stock price prior to the PIPE closing date. *Market Cap at RM* is the natural logarithm of the market capitalization of the firm on the merger date. *National Exchange current* is 1 if the firm’s trading exchange in 2016 is NASDAQ or NYSE and 0 otherwise. *Upgrade* is 1 if the firm’s closing exchange at the PIPE is OTC and is now trading in NASDAQ or NYSE. The financial variables are measured in the fiscal year prior to the PIPE issuance year. Variables are winsorized at 1% level.

	N	Mean	S.E.	Min	Median	Max
IFI	360	9.897	1.433	6.000	10.000	13.000
Stage Financing	360	0.428	0.495	0.000	0.000	1.000
Rounds	154	3.396	2.027	2.000	3.000	16.000
Duration	154	2.317	2.210	1.000	2.258	12.200
Expert Agent	360	0.292	0.455	0.000	0.000	1.000
Subsequent	360	0.747	0.435	0.000	1.000	1.000
Traditional	360	0.569	0.496	0.000	1.000	1.000
Offer Size	358	1.587	1.063	0.000	1.481	5.298
Firm Size	357	1.185	2.255	-7.055	1.244	5.354
Tangibility	357	0.133	0.241	0.000	0.000	0.927
Capex/Assets	339	0.058	0.117	0.000	0.008	0.585
Leverage	357	2.584	4.161	0.066	0.867	17.972
ROA	357	-3.731	6.141	-25.304	-1.287	0.203
China	360	0.106	0.308	0.000	0.000	1.000
National Exchange at closing	360	0.172	0.378	0.000	0.000	1.000
Adjusted Offer Size	354	0.257	0.358	0.014	0.133	1.986
Ebit/Asset	339	-2.527	4.248	-19.071	-0.962	0.199
Cash/Assets	339	0.312	0.330	0.000	0.166	1.000
<i>Additional Variables</i>						
Price Multiple	347	0.825	0.437	0.070	0.795	3.509
Market Cap at RM	356	3.603	1.268	-0.714	3.618	6.604
ROA in 2 years	134	-1.324	1.924	-8.177	-0.578	0.136
Leverage in 2 years	134	1.313	2.864	0.025	0.518	24.889
Sales Growth in 2 years	93	0.625	1.713	-1.000	0.317	14.104
National Exchange (current)	360	0.200	0.401	0.000	0.000	1.000
Upgrade	360	0.128	0.334	0.000	0.000	1.000

Table 4
The Relation between Expert Agents and Investor-friendly Index (IFI) in Intermediated Reverse Merger PIPEs

Panel A presents univariate tests between intermediated RM PIPEs with and without expert agents. Panel B presents multivariate regressions of intermediated RM PIPEs where the dependent variable is *IFI*, defined as the Investor-friendly Index aggregated from the 16 PIPE contract terms. *Expert Agent* is a dummy variable which equals to 1 if any of the RM firm’s agents is among the high-rank agents based on the number of PIPEs advised. *Subsequent* is a dummy variable that equals to 1 if the PIPE is completed after the reverse merger. *Traditional* is a dummy variable which equals to 1 if the security type is “Common Stock” or “non-convertible Debt” or “non-convertible Preferred Stock”. *Offer Size* is the natural log of total issuance amount. *Firm Size* is the natural log of the total book assets. *Tangibility* is the firm’s total tangible assets divided by total assets. *Capex/Assets* is the firm’s capital expenditure scaled by total assets. *Leverage* is the firm’s long-term and short-term debts scaled by total assets. *ROA* is the firm’s net income scaled by total assets. *Hedge Fund* is a dummy variable that equals to 1 if the PIPE’s leading investor is a hedge fund. *PE/VC financed* is a dummy variable that equals to 1 if Private Equity or Venture Capital invests in the PIPE. *China* is a dummy variable which equals to 1 if the reverse merger firm’s origin is from China. *National Exchange at closing* is a dummy variable which equals to one if the firm’s closing exchange is NASDAQ or NYSE. *Price Multiple* is the PIPE purchase price divided by the closing price prior to the PIPE closing date. *Sales Growth* is the one-year growth rate of the total revenue. *National Exchange current* is a dummy variable which equals to one if the firm’s trading exchange in 2016 is NASDAQ or NYSE. *VC Backed* is a dummy variable which equals to 1 if the firm received VC financing before exit. *Upgrade* is dummy variable is the firm’s closing exchange at the PIPE is OTC and is now trading in NASDAQ or NYSE. Variables are winsorized at 1% level. Asterisks ***, **, * represent significance level at the 1%, 5%, and 10% levels respectively. Standard errors are clustered at firm and industry level.

Panel A: Univariate Tests of the Relation between RM PIPE Characteristics and Expert Agents						
	Non-Expert Agent	Expert Agent	N	Diff	S.E.	p-value
IFI	9.827	10.067	360	-0.240	0.166	0.150
Subsequent	0.741	0.762	360	-0.021	0.051	0.682
Traditional	0.549	0.619	360	-0.070	0.057	0.224
Offer Size	1.368	2.121	358	-0.752	0.117	0.000***
Firm Size	0.858	1.968	357	-1.111	0.256	0.000***
Tangibility	0.133	0.134	357	-0.001	0.028	0.958
Capex/Assets	0.064	0.042	339	0.021	0.014	0.127
Leverage	2.986	1.620	357	1.365	0.479	0.005***
ROA	-4.278	-2.417	357	-1.862	0.707	0.009***
Hedge Fund	0.298	0.457	360	-0.159	0.055	0.004***
PE/VC financed	0.141	0.190	360	-0.049	0.042	0.242
China	0.075	0.181	360	-0.106	0.035	0.003***
National Exchange at closing	0.090	0.371	360	-0.281	0.041	0.000***
<i>Additional Variables</i>						
Price Multiple	0.833	0.808	347	0.025	0.052	0.629
ROA in 2 years	-1.422	-1.095	134	-0.326	0.364	0.371
Leverage in 2 years	1.413	1.077	134	0.336	0.542	0.536
Sales Growth in 2 years	0.811	0.214	93	0.597	0.380	0.120
National Exchange (current)	0.133	0.362	360	-0.229	0.045	0.000***
Upgrade	0.122	0.143	360	-0.021	0.039	0.584

Panel B: Multivariate Analysis of the Relation between Expert Agents and IFI in RM PIPEs

	Dependent Variable: IFI	
	(1) OLS Model	(2) Poisson Model
Expert Agent	0.549** (0.02)	0.055*** (0.00)
Subsequent	-0.498 (0.15)	-0.047* (0.09)
Traditional	-0.617*** (0.01)	-0.060*** (0.00)
China	-0.408 (0.34)	-0.038 (0.27)
Offer Size	-0.217 (0.14)	-0.022* (0.07)
Firm Size	0.311*** (0.00)	0.030*** (0.00)
Tangibility	-0.869 (0.13)	-0.088* (0.06)
Capex/Assets	1.283 (0.12)	0.133** (0.05)
Leverage	0.015 (0.76)	0.001 (0.75)
ROA	-0.035 (0.26)	-0.004 (0.17)
National Exchange at closing	-0.305 (0.41)	-0.027 (0.36)
Constant	10.686*** (0.00)	2.374*** (0.00)
Observations	201	201
R^2	0.541	
Year FE	Yes	Yes
Investor Type FE	Yes	Yes
Industry FE	Yes	Yes

Panel C: Multivariate Analysis of Agent Compensation

	Dependent Variable: Agent Compensation	
	(1) In Percentage	(2) In Dollars (Log)
Expert Agent	-0.007 (0.29)	0.531*** (0.01)
Adjusted Offer Size	-0.010 (0.23)	0.714*** (0.00)
Tangibility	-0.028** (0.04)	-0.573 (0.13)
Capex/Assets	-0.014 (0.46)	-0.134 (0.83)
Leverage	0.001 (0.19)	0.012 (0.62)

ROA	0.000 (0.59)	0.018 (0.27)
National Exchange at closing	-0.011 (0.16)	0.106 (0.75)
Firm Size		0.088* (0.08)
Hedge Fund	-0.004 (0.54)	0.113 (0.40)
PE/VC financed	-0.008 (0.22)	0.154 (0.41)
Constant	0.073*** (0.00)	11.600*** (0.00)
Observations	334	279
R^2	0.184	0.438
Year FE	Yes	Yes
Industry FE	Yes	Yes

Table 5**The Relation between Expert Agents and Stage Financing in Intermediated RM PIPEs**

This table presents univariate statistics of PIPE and firm characteristics by stage financing, and logistic regressions on the determinants of stage financing in intermediated RM PIPEs. Panel A presents the univariate test of PIPE and firm characteristics by expert agent. Panel B presents the univariate test of PIPE and firm characteristics by single or multiple closing rounds of PIPEs. Panel C presents the logit regression in which the dependent variable *Stage Financing* is dummy variable that equals to 1 if the transaction is a multiple closing PIPE with the same group of investors. Panel C presents OLS regression in which the dependent variable *Rounds* is the number of rounds that a multiple closing PIPE has with the same group of investors. Panel D presents the OLS regression in which the dependent variable *Duration* is the total duration in months from the first closing date to the last closing date. This table presents the regression specifications with and without industry and year fixed effect. *Expert Agent* is a dummy variable which equals to 1 if any of the RM firm's agents is among the high-rank agents based on the number of PIPEs advised. Control variables are defined as in Table 3. The financials variables are measured as the fiscal year prior to the PIPE issuance year. Variables are winsorized at 1% level. Standard errors are clustered at firm and industry level. Marginal effects are reported in brackets. P-values of coefficients are reported in the parentheses. Asterisks ***, **, * represent significance level at the 1%, 5%, and 10% levels respectively.

Panel A: Univariate Tests of Stage Financing by Agent Expertise						
	Non-Expert Agent	Expert Agent	N	Diff	S.E.	p-value
Stage Financing	0.506	0.238	360	0.268	0.056	0.000***
Rounds	3.488	2.920	154	0.568	0.442	0.201
Duration	2.355	2.119	154	0.236	0.484	0.627
Subsequent	0.741	0.762	360	-0.021	0.051	0.682
Traditional	0.549	0.619	360	-0.070	0.057	0.224
Adjusted Offer Size	0.259	0.251	354	0.007	0.042	0.859
Tangibility	0.133	0.134	357	-0.001	0.028	0.958
EBIT/Assets	-2.906	-1.596	339	-1.310	0.505	0.011**
Cash/Assets	0.283	0.384	339	-0.100	0.039	0.011**
Hedge Fund	0.298	0.457	360	-0.159	0.055	0.004***
PE/VC financed	0.141	0.190	360	-0.049	0.042	0.242
China	0.075	0.181	360	-0.106	0.035	0.003***
National Exchange at closing	0.090	0.371	360	-0.281	0.041	0.000***

Panel B: Univariate Tests of PIPE Characteristics by Stage Financing						
	Single closing PIPEs	Staged PIPEs	N	Diff	S.E.	p-value
IFI	9.893	9.903	360	-0.009	0.153	0.951
Price Multiple	0.865	0.773	347	0.092	0.047	0.052*
Expert Agent	0.388	0.162	360	0.226	0.047	0.000***
Hedge Fund	0.422	0.240	360	0.182	0.049	0.000***
PE/VC financed	0.155	0.156	360	-0.001	0.039	0.989
Offer Size	1.767	1.348	358	0.419	0.111	0.000***
Subsequent	0.777	0.708	360	0.069	0.046	0.137
Traditional	0.563	0.578	360	-0.015	0.053	0.780
Adjusted Offer Size	0.278	0.229	354	0.048	0.038	0.210
Tangibility	0.156	0.102	357	0.054	0.026	0.036**
EBIT/Asset	-2.028	-3.187	339	1.160	0.462	0.013**
Tangibility	0.156	0.102	357	0.054	0.026	0.036**
Cash/Assets	0.344	0.270	339	0.073	0.036	0.043**
China	0.141	0.058	360	0.082	0.033	0.012**
National Exchange at closing	0.267	0.045	360	0.222	0.039	0.000***
National Exchange current	0.252	0.130	360	0.123	0.042	0.004***
Upgrade	0.126	0.130	360	-0.004	0.036	0.918

Panel C: Multivariate Analysis of the Relation between Expert Agents and Stage Financing in Intermediated RM PIPEs

	Dependent Variable: Stage Financing		
	(1) Stage Dummy	(2) No. of Rounds	(3) Duration
Expert Agent	-0.714* [-0.173]	-1.086** (0.04)	-0.853* (0.07)
Subsequent	-0.292 [-0.071]	1.450* (0.07)	0.284 (0.67)
Adjusted Offer Size	-0.431 [-0.105]	-0.428 (0.37)	-0.085 (0.85)
China	-0.006 [-0.001]	-0.241 (0.72)	0.710 (0.54)
Traditional	-0.177 [-0.043]	0.527 (0.55)	-0.412 (0.53)
National Exchange at closing	-2.072*** [-0.503]	-1.933** (0.03)	0.020 (0.98)
Tangibility	-1.833*** [-0.445]	-1.522* (0.10)	-0.993 (0.23)
Ebit/Asset	-0.024 [-0.006]	-0.032 (0.52)	0.038 (0.44)
Cash/Assets	-1.460*** [-0.354]	-1.700** (0.02)	-2.059** (0.02)
Hedge Fund	-0.979*** [-0.237]	-0.731* (0.07)	-0.861*** (0.01)
PE/VC financed	-0.255 [-0.062]	-0.098 (0.83)	-1.451*** (0.00)
Constant	-0.362 (0.81)	3.118** (0.02)	3.165* (0.05)
Observations	315	146	146
Pseudo R^2	0.242	0.378	0.404
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes

Table 6**PIPEs of RM Firms: Instrumental Variable and Treatment Effect Analysis**

This table presents the IV regressions and treatment effect models on the Investor-friendly Index of intermediated RM PIPEs. Panel A Column (1) presents the first stage linear probability regression where the dependent variable is an indicator which equals to 1 if an RM firm hires an expert agent. The instrument variable *IPO Count* is the number of IPO in a firm's industry (with three-digit SIC) completed in year t-1. Column (2) presents the 2SLS regression where the dependent variable is IFI. The control variables are measured as the fiscal year prior to the PIPE issuance year. Panel B reports the treatment effect models when an expert agent is selected. Column (1) presents first-stage linear regression where the *Expert Agent* is the dependent variable. Column (2) and (3) present the second-stage maximum likelihood estimates where the dependant variables are IFI and Multiple Closings. Panel C reports the treatment effect models when a financial intermediary is selected. Control variables are defined as in Table 3. Variables are winsorized at 1% level. P-values are reported in the parentheses. Asterisks ***, **, * represent significance level at the 1%, 5%, and 10% levels respectively.

Panel A: IV Regressions		
	(1)	(2)
	Expert Agent	IFI
IPO count	0.003** (0.02)	
Expert Agent		2.751** (0.04)
Subsequent	-0.099 (0.24)	0.198 (0.50)
Traditional	0.071 (0.26)	-0.456** (0.03)
National Exchange at closing	0.340*** (0.00)	-1.178* (0.05)
Adjusted Offer Size	-0.143* (0.07)	0.032 (0.92)
Tangibility	0.046 (0.71)	-0.428 (0.29)
Leverage	-0.006 (0.53)	-0.017 (0.60)
ROA	0.009 (0.27)	-0.054** (0.04)
Hedge Fund	0.208*** (0.00)	-0.072 (0.84)
PE/VC financed	0.131 (0.13)	0.543* (0.08)
Constant	0.233** (0.03)	9.025*** (0.00)
Observations	210	210
R^2	0.225	0.121

Panel B: Treatment Effect Regressions			
	(1)	(2)	(3)
	Expert Agent	IFI	Stage Financing
Expert Agent		0.391**	-0.135*
		(0.04)	(0.07)
Subsequent	-0.156**	-0.111	-0.215
	(0.01)	(0.87)	(0.34)
Traditional	-0.009	-0.457***	-0.005
	(0.85)	(0.01)	(0.92)
China	0.169	-0.032	0.226
	(0.17)	(0.96)	(0.35)
Offer Size	0.073***	-0.303	0.076
	(0.01)	(0.24)	(0.43)
Firm Size	0.011	0.160**	0.025
	(0.53)	(0.03)	(0.35)
Tangibility	0.059	-0.571	-0.142
	(0.56)	(0.12)	(0.30)
Capex/Assets	-0.214	1.283	-0.651
	(0.31)	(0.30)	(0.12)
Leverage	-0.008	-0.006	0.001
	(0.29)	(0.90)	(0.95)
ROA	-0.002	-0.022	-0.007
	(0.67)	(0.28)	(0.34)
National Exchange at closing	0.262***	-0.300	-0.087
	(0.00)	(0.74)	(0.79)
Hedge Fund	0.113**	0.570	-0.012
	(0.02)	(0.22)	(0.94)
PE/VC financed	-0.076	0.835**	-0.136
	(0.28)	(0.02)	(0.34)
IMR2		0.442	1.896
		(0.95)	(0.44)
Constant	-0.134	8.713	-1.353
	(0.49)	(0.15)	(0.53)
Observations	337	337	337

Table 7
IPO PIPEs versus RM PIPEs

This table presents the univariate-test of RM and IPO firms in PIPEs before and after match. Panel A presents the univariate tests of PIPE characteristics of the intermediated IPO PIPEs and RM PIPEs. Panel B presents the contractual difference between intermediated IPO PIPEs and RM PIPEs. Panel C lists the univariate tests of PIPE characteristics of the intermediated IPO PIPEs and RM PIPEs after propensity score matching. Panel D and Panel E present the firm characteristics of IPO firms and RM firms conducting PIPEs by the national exchange listed respectively. *IFI* is the Investor-friendly Index aggregated from the 16 PIPE contract terms. *Price Multiple* is the PIPE purchase price divided by the closing price prior to the PIPE closing date. *Stage Financing* is dummy variable that equals to 1 if the transaction is one of multiple round PIPEs with the same group of investors. *Rank_lead_num* is the ranking of a firm's lead agent in PIPE based on the number of PIPE advised in the PIPE year. *Rank_lead_total* is the ranking of a firm's lead agent in PIPE based on the total market share of that agent in the PIPE year. *Rank_lead_average* is the ranking of a firm's lead agent in PIPE based on the average market share of that agent in the PIPE year.

Panel A: PIPEs							
	IPO firms	RM firms	N0	N1	Diff	S.E.	p-value
IFI	9.442	9.850	474	378	-0.408	0.122	0.001***
Price Multiple	0.944	0.833	474	378	0.111	0.031	0.000***
Stage Financing	0.110	0.428	474	378	-0.318	0.036	0.000***
Rank_lead_num	28.181	70.535	474	378	-42.354	3.976	0.000***
Rank_lead_total	58.732	134.283	474	378	-75.551	6.089	0.000***
Rank_lead_average	96.361	162.663	474	378	-66.302	5.282	0.000***

Panel B: PIPE Contract Terms							
	IPO firms	RM firms	N0	N1	Diff	S.E.	p-value
Warrants	0.359	0.537	474	378	-0.178	0.034	0.000***
Warrant Strike Price (dollar)	2.990	1.402	160	194	1.588	0.304	0.000***
Warrant Strike Price (percentage)	1.515	0.996	160	194	0.519	0.286	0.070*
Mandatory Registration	0.715	0.553	474	378	0.162	0.033	0.000***
Dividend Coupon Payment	0.228	0.344	474	378	-0.116	0.031	0.000***
Investor Redemption Rights	0.192	0.299	474	378	-0.107	0.029	0.000***
Anti-dilution	0.137	0.265	474	378	-0.127	0.027	0.000***
Investor Purchase Rights	0.177	0.196	474	378	-0.019	0.027	0.489
Investor Green Shoe	0.179	0.021	474	378	0.158	0.021	0.000***
Investor Call Option	0.015	0.026	474	378	-0.012	0.010	0.226
Issuer Redemption Rights	0.135	0.212	474	378	-0.077	0.026	0.003***
Forced Conversion	0.059	0.138	474	378	-0.078	0.020	0.000***
Conversion Restriction	0.148	0.111	474	378	0.037	0.023	0.117
Soft Floor Price	0.169	0.063	474	378	0.105	0.022	0.000***
Hard Floor Price	0.065	0.045	474	378	0.020	0.016	0.199
Issuer Put Option	0.042	0.011	474	378	0.032	0.011	0.006***
Hedge Restriction	0.141	0.225	474	378	-0.084	0.026	0.002***
Sell Restriction	0.086	0.016	474	378	0.071	0.016	0.000***

Panel C: Propensity Score Matching							
	IPO firms	RM firms	N	Diff	S.E.	Z-stat	p-value
IFI	9.194	9.430	604	-0.236	0.069	-3.421	0.000***
Price Multiple	0.942	0.762	604	0.180	0.011	15.989	0.000***
Stage Financing	0.111	0.385	604	-0.273	0.020	-13.527	0.000***
Rank_lead_num	38.557	73.582	604	-35.025	3.517	-9.959	0.000***
Rank_lead_total	72.732	13.548	604	-57.816	5.225	-11.063	0.000***
Rank_lead_average	107.113	155.696	604	-48.583	3.630	-11.535	0.000***

Panel D: Financial Characteristics (Nasdaq listed)							
	IPO firms	RM firms	N1	N2	Diff	S.E.	p-value
Total Assets(\$m)	71.648	33.810	336	41	37.838	13.897	0.007***
Total Revenue(\$m)	17.576	17.839	336	41	-0.263	6.602	0.968
Deal size(\$m)	29.765	11.947	344	41	17.817	5.303	0.001***
ROA	-0.943	-0.409	333	41	-0.534	0.301	0.077*
Cash Holding	0.521	0.354	333	41	0.166	0.058	0.005***
Current Ratio	7.822	13.723	336	41	-5.901	1.867	0.002***
Capital Expenditure	-0.034	-0.042	333	41	0.008	0.014	0.564
R&D Expenditure	0.171	0.051	333	41	0.119	0.030	0.000***
Tangibility	0.081	0.176	333	41	-0.094	0.032	0.003***
Leverage	0.208	0.372	333	41	-0.164	0.073	0.026**
Net Profit Margin	-44.589	-1.154	216	33	-43.435	24.861	0.082*
M/B ratio	3.176	8.327	333	41	-5.151	1.217	0.000***

Panel E: Financial Characteristics (OTC listed)							
	IPO firms	RM firms	N1	N2	Diff	S.E.	p-value
Total Assets(\$m)	20.917	12.684	126	321	8.233	3.120	0.009***
Total Revenue(\$m)	7.763	10.396	126	321	-2.633	2.448	0.283
Deal size(\$m)	10.073	6.057	125	320	4.015	1.089	0.000***
ROA	-2.800	-4.700	125	321	1.900	1.607	0.238
Cash Holding	0.500	0.353	125	321	0.147	0.034	0.000***
Current Ratio	3.982	2.952	126	321	1.030	0.597	0.085*
Capital Expenditure	-0.020	-0.055	125	321	0.035	0.010	0.000***
R&D Expenditure	0.493	0.865	125	321	-0.372	0.737	0.614
Tangibility	0.100	0.087	125	321	0.012	0.019	0.511
Leverage	0.709	0.925	125	321	-0.216	0.354	0.542
Net Profit Margin	-80.802	-30.093	79	224	-50.709	18.972	0.008***
M/B ratio	19.609	26.975	125	321	-7.366	5.888	0.212

Table 8

IPO PIPEs versus RM PIPEs: Investor-friendly Index, Stage Financing, and Price Multiples

Panel A presents the univariate analysis of the PIPE and firm characteristics on propensity score matched sample by intermediation. Panel B presents the regressions on propensity score matched PIPEs of RM firms and IPO firms. Panel C presents the treatment effect regressions. All the financial variables are measured as the fiscal year prior to the PIPE issuance year. *IFI* is the Investor-friendly Index aggregated from the 16 PIPE contract terms. *Stage Financing* is dummy variable that equals to 1 if the transaction is one of multiple round PIPEs with the same group of investors. *Price Multiple* is the PIPE purchase price divided by the closing price prior to the PIPE closing date. *Lead Agent Rank* is the ranking of a firm's lead agent in PIPE based on the number of PIPE advised in the PIPE year. Higher value in *Lead Agent Rank* indicates a less reputable agent. *Hedge Fund* is a dummy variable that equals to 1 if the PIPE's leading investor is a hedge fund. *PE/VC financed* is a dummy variable that equals to 1 if Private Equity or Venture Capital invests in the PIPE. *Firm Size* is the natural log of the total book assets. *ROA* is the firm's net income scaled by total assets. *Capex/Assets* is the firm's capital expenditure scaled by total assets. *Tangibility* is the firm's total tangible assets divided by total assets. *RD/Assets* is the firm's R&D expense scaled by assets. *Leverage* is the firm's long-term and short-term debts scaled by total assets. *M/B* is the firm's market-to-book ratio. *Crisis* is a dummy that is equal to 1 if the firm raises PIPE during the 2008-2009 crisis period. *HHI* is the Herfindahl Index of the industry a firm operates in at three-digit SIC level. *Private Benefit* is a dummy that is equal to 1 if and only if a firm's industry is among both one of the top five CEO perk consumption industries of Rajan and Wulf (2006) and one of those industries in which the CEO-Divisional Manager differential in the Rajan-Wulf perk consumption score is greater than 1. The four industries that satisfy these two filtering criteria include oil & gas production (SIC code 13), chemicals & allied products (SIC code 28), petroleum refining (SIC code 29), and transportation equipment (SIC code 37). *Big 4 Auditor* is a dummy which equals to 1 if a firm's external audit in the fiscal year of raising PIPE is one of the big four auditor firms. *Mean Analysts Forecast Error* is the average industry analysts' forecast error at the three-digit SIC. *VC Backed* is a dummy variable which equals to 1 if the firm received VC financing before listing publicly. Variables are winsorized at 1% level. Industry and year fixed effects are included. Standard errors are clustered at firm and industry level. P-values are reported in the parentheses. Asterisks ***, **, * represent significance level at the 1%, 5%, and 10% levels respectively.

Panel A: Matched Sample Regressions			
	(1)	(2)	(3)
	IFI	Stage Financing	Price Multiple
RM	0.472*** (0.00)	0.809*** (0.00)	-0.035 (0.20)
Lead Agent Rank	-0.203*** (0.00)	0.137** (0.02)	-0.013* (0.06)
Firm Size	-0.053 (0.30)	-0.346*** (0.00)	0.018* (0.06)
ROA	-0.001 (0.97)	0.010 (0.84)	0.000 (0.98)
Capex/Assets	-0.840 (0.18)	-1.805** (0.01)	-0.108 (0.35)
Tangibility	0.689 (0.13)	-0.345 (0.55)	-0.127 (0.14)
RD/Assets	0.025 (0.69)	0.103 (0.19)	-0.007 (0.55)
Leverage	-0.093 (0.33)	-0.271** (0.02)	0.026 (0.14)
M/B	0.002 (0.44)	0.000 (0.91)	-0.002*** (0.00)
Hedge Fund Lead	0.656*** (0.00)	-0.014 (0.94)	-0.034 (0.20)
PE/VC financed	0.654*** (0.00)	0.324 (0.17)	-0.052 (0.19)

Constant	9.756*** (0.00)	-0.910*** (0.01)	0.909*** (0.00)
Observations	428	428	410
R^2	0.208		0.138
Pseudo R^2		0.281	

Panel B: Treatment Regressions				
	(1)	(2)	(3)	(4)
	RM	IFI	Stage Financing	Price Multiple
RM		-0.002 (0.99)	0.604*** (0.01)	-0.051** (0.03)
Lead Agent Rank		0.013 (0.80)	0.184** (0.02)	0.000 (0.97)
Hedge Fund Lead		0.660*** (0.00)	-0.152 (0.35)	-0.034 (0.18)
PE/VC financed		0.630*** (0.00)	0.165 (0.46)	-0.045 (0.20)
Firm Size	-0.304** (0.01)	0.082 (0.37)	0.021 (0.90)	0.004 (0.85)
ROA	0.040 (0.52)	-0.013 (0.77)	-0.013 (0.78)	-0.009 (0.27)
Capex/Assets	-0.342 (0.78)	-0.673 (0.40)	-1.023 (0.16)	-0.088 (0.70)
Tangibility	0.577 (0.37)	0.280 (0.55)	-0.842 (0.12)	-0.002 (0.98)
RD/Assets	0.076 (0.37)	-0.064 (0.28)	0.043 (0.56)	-0.019* (0.08)
Leverage	-0.044 (0.78)	0.126 (0.19)	-0.160 (0.10)	0.015 (0.36)
M/B	0.004 (0.45)	0.001 (0.75)	-0.002 (0.53)	-0.002*** (0.00)
Crisis	1.809*** (0.00)	0.126 (0.72)	-1.442** (0.03)	0.069 (0.42)
HHI	-0.271 (0.74)	0.365 (0.35)	-0.065 (0.86)	-0.217** (0.02)
Private benefit	-0.583** (0.02)	0.112 (0.57)	0.515* (0.07)	0.014 (0.72)
Big 4 auditor	-0.364 (0.36)	-0.040 (0.87)	0.527* (0.09)	0.028 (0.31)
Mean analyst forecast error	0.531** (0.05)	0.016 (0.94)	-0.233 (0.38)	-0.032 (0.49)
VC backed	-0.629* (0.06)			
IMR		-0.379 (0.21)	-1.485** (0.05)	0.048 (0.33)
Constant	0.694 (0.13)	9.198*** (0.00)	-0.300 (0.57)	0.914*** (0.00)
Observations	420	420	420	420
R^2		0.157		0.134
Pseudo R^2	0.278		0.253	

Appendix A. Top 20 Placement Agents in the PIPE market in 2015

Ranking	Placement Agent	No. of PIPEs advised
1	Cowen and Company, LLC (f/k/a SG Cowen & Co., LLC)	75
2	J.P. Morgan Chase & Co. (J.P. Morgan Securities LLC)	65
3	Bank of America Corporation (Banc of America Securities LLC; Merrill Lynch Pierce Fenner & Smith)	58
4	Cantor Fitzgerald & Co. (Cantor Fitzgerald Canada Corporation)	57
4	H.C. Wainwright & Co., Inc. (Rodman & Renshaw)	57
6	Roth Capital Partners, LLC	56
7	Wells Fargo Securities, LLC	49
8	Jefferies Group, LLC	48
9	Citigroup Global Markets Inc. (Citigroup Global Markets Canada; Salomon Smith Barney Inc.)	46
9	RBC Capital Markets, LLC (Royal Bank of Canada; RBC Dominion Securities Inc.)	46
11	Morgan Stanley & Co., Incorporated	42
12	Maxim Group, LLC	39
13	Barclays Capital Inc.	38
14	MLV & Co. LLC (f/k/a McNicoll, Lewis & Vlaskovits LLC)	34
15	SunTrust Robinson Humphrey	29
15	Ladenburg Thalmann & Co., Inc.	29
17	Raymond James & Associates, Inc. (Raymond James Ltd.)	28
18	Deutsche Bank AG (Deutsche Bank Securities, Inc., Deutsche Bank AG London)	26
19	Piper Jaffray & Co.	25
20	Craig-Hallum Capital Group, LLC	24

Online Appendix B (not to be published)

Table B1. Expert Agents and Long-Run Operating Performance in RM Firm PIPEs

This table presents OLS regressions on reverse merger firms' performance measures two years following the PIPE. All the financial variables are measured at the fiscal year end two years after the PIPE. IFI is the Investor-friendly Index aggregated from the 15 PIPE contract terms. *Expert Agent* is a dummy variable which equals to 1 if any of the RM firm's agents is among the top 20% of all placement agents in the PIPE issuance year based on the number of PIPEs underwritten. *Stage Financing* is dummy variable that equals to 1 if the transaction is one of multiple closing PIPEs. *Subsequent* is a dummy variable that equals to 1 if the PIPE is completed after the reverse merger. *China* is a dummy variable which equals to 1 if the reverse merger firm's origin is from China. *Traditional* is a dummy variable which equals to 1 if the security type is "Common Stock" or "non-convertible Debt" or "non-convertible Preferred Stock". *National Exchange at closing* is a dummy variable which equals to one if the firm's closing exchange is NASDAQ or NYSE. *Offer Size* is the total issuance amount. *ROA* is the firm's EBIT scaled by total assets. *Leverage* is the firm's long-term and short-term debts scaled by total assets. *Sales Growth* is one-year growth rate of the total revenue. *Tangible/Assets* is the firm's total tangible assets divided by total assets. *Capex/Assets* is the firm's capital expenditure scaled by total assets. Variables are winsorized at 1% level. Asterisks ***, **, * represent significance level at the 1%, 5%, and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	ROA in 2	ROA in 2	Sales	Sales	Leverage in 2	Leverage in 2
IFI	0.274** (0.02)	0.197* (0.07)	-0.061 (0.49)	0.035 (0.78)	0.005 (0.97)	0.186 (0.24)
Expert Agent	0.022 (0.95)	-0.123 (0.62)	-0.685* (0.05)	-0.279 (0.50)	-0.225 (0.73)	0.161 (0.66)
Stage Financing	0.487 (0.19)	0.221 (0.41)	-0.562 (0.24)	-0.158 (0.60)	-0.459 (0.47)	0.155 (0.72)
Subsequent	-0.036 (0.93)	-0.188 (0.52)	0.417 (0.16)	-0.020 (0.97)	-0.762 (0.43)	-1.392** (0.05)
China	1.286*** (0.00)	-0.363 (0.29)	0.058 (0.85)	0.180 (0.83)	-1.487** (0.02)	1.033 (0.25)
Traditional	0.170 (0.59)	0.130 (0.57)	-0.101 (0.81)	-0.304 (0.44)	-0.069 (0.85)	0.243 (0.47)
National Exchange	0.721** (0.04)	-0.163 (0.56)	0.311 (0.54)	1.262* (0.06)	-0.999*** (0.00)	0.043 (0.92)
Offer Size		-0.091 (0.56)		-0.370 (0.12)		0.033 (0.84)
Total Assets in 2 years		0.654*** (0.00)		-0.468 (0.30)		-0.013 (0.95)
Capex/Assets in 2 years		-1.360 (0.41)		-0.552 (0.80)		-6.724*** (0.01)
Tangible/Assets in 2 years		0.931** (0.01)		0.466 (0.40)		3.707*** (0.00)
Leverage in 2 years		-0.343*** (0.00)		-0.138 (0.19)		
Observations	134	128	93	91	134	128
R ²	0.126	0.741	0.085	0.326	0.054	0.731
Year FE	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes

Table B2. Price Discounts, IFI, and Expert Agents in RM Firm PIPEs

This table presents multivariate regressions of where the dependent variable is Discount Rate, defined as one minus the purchase price divided by market close price prior to the PIPE transaction. *IFI* is defined as the Investor-friendly Index aggregated from the 16 PIPE contract terms. *Expert Agent* is a dummy variable which equals to 1 if any of the RM firm’s agents is among the high-rank agents based on the number of PIPEs advised. *Hedge Fund* is a dummy variable that equals to 1 if the PIPE’s leading investor is a hedge fund. *PE/VC financed* is a dummy variable that equals to 1 if Private Equity or Venture Capital invests in the PIPE. *Stage Financing* is dummy variable that equals to 1 if the transaction is one of a multiple round PIPE with the same group of investors. *Subsequent* is a dummy variable that equals to 1 if the PIPE is completed after the reverse merger. *Offer Size* is the natural log of total issuance amount. *China* is a dummy variable which equals to 1 if the reverse merger firm’s origin is from China. *Firm Size* is the natural log of the total book assets. *Tangibility* is the firm’s total tangible assets divided by total assets. *Capex/Assets* is the firm’s capital expenditure scaled by total assets. *Leverage* is the firm’s long-term and short-term debts scaled by total assets. *ROA* is the firm’s net income scaled by total assets. *Traditional* is a dummy variable which equals to 1 if the security type is “Common Stock” or “non-convertible Debt” or “non-convertible Preferred Stock”. *National Exchange at closing* is a dummy variable which equals to one if the firm’s closing exchange is NASDAQ or NYSE. Variables are winsorized at 1% level. Asterisks ***, **, * represent significance level at the 1%, 5%, and 10% levels respectively. Standard errors are clustered at firm and industry level.

	Dependent Variable Discount Rate
IFI	0.002 (0.96)
Expert Agent	0.067 (0.24)
Hedge Fund	0.042 (0.57)
PE/VC financed	0.185** (0.04)
Stage Financing	0.097 (0.18)
Subsequent	-0.155 (0.13)
Offer Size	-0.017 (0.58)
China	0.029 (0.85)
Firm Size	0.008 (0.78)
Tangibility	0.012 (0.94)
Capex/Assets	-0.138 (0.68)
Leverage	0.024** (0.04)
ROA	0.012 (0.33)
Traditional	0.245*** (0.00)
National Exchange at closing	-0.059 (0.53)
Observations	298
R ²	0.253
Year FE	Yes
Industry FE	Yes