

# **The Effect of Financial Reporting Quality on the Cost of Equity Financing:**

## **Evidence from PIPE Offerings**

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# **The Effect of Financial Reporting Quality on the Cost of Equity Financing:**

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### **Abstract**

We analyze the effect of corporate financial reporting quality (FRQ) on the cost of private placements of public equity (PIPE) offerings. Using PIPE offering data of U.S. publicly listed firms dating from 1995 to 2016, we find that a greater fraction of shares offered via PIPE is purchased by less informed investors for firms with higher quality of financial reporting. In addition, we find that a higher FRQ is associated with lower PIPE offer discount (i.e., higher offer price relative to lagged stock price). Our results are robust to alternative measure of financial reporting quality. Overall, our results highlight that a higher quality of corporate financial reporting can mitigate the information disadvantage of less informed investors and increase their participation in PIPE offerings, lowering the cost of equity capital for issuers.

**Keywords:** Private investments in public equity; financial reporting quality; cost of equity capital

JEL category: D82; G14; G32; M41

# 1. INTRODUCTION

Financial reports are important vehicles for firms to convey information about their financial performance to the outsiders. The quality of financial reporting is of great importance for outside investors because it helps to mitigate information asymmetry between insiders and outsiders. Prior literature has shown that high-quality financial reporting decreases the cost of equity capital when raising capital through public offerings in the open market (Francis et al. 2005; Lee and Masulis 2009). However, it is not clear whether financial reporting still matters when the capital providers are accredited professional investors who may have private information about the issuers. These questions remain unresolved in prior studies about initial public offerings (IPOs) and seasoned equity offerings (SEOs) because identities of equity capital providers in these public offerings are not disclosed.

In this paper, we analyze these questions with private investment of public equity (PIPE) which allows us to identify participating capital providers and study how different types of investors make use of financial reports of issuers when providing capital. There are two potential effects of financial reporting quality (FRQ) on institutional investors' investment decisions. On the one hand, poor FRQ can enhance the returns from trading strategies that rely on information discovery by increasing the value of private information.<sup>4</sup> For example, Maffett (2012) provides evidence that poor FRQ increases the association between changes in institutional investor ownership and future returns. On the other hand, poor FRQ could increase the arbitrage risk of trading strategies by increasing "holding costs," which are the costs associated with having to hold a position in a mispriced security for a long duration until the mispricing corrects (Bushee et al. 2019).<sup>5</sup> Therefore, it is an empirical question how FRQ of the issuers affects participation of institutional investors in the public offerings.

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<sup>4</sup> Poor FRQ negatively affects the speed with which new information is incorporated in the stock prices (e.g., Zhang, 2006; Callen, Khan, and Lu, 2013), making it possible for informed investors to trade and profit.

<sup>5</sup> Pontiff (2006) illustrates the importance of expected holding costs which depend on the length an investor holds a security (until the mispricing resolves) and the cost per period. In the case of PIPE offerings, investors who obtain share allocation from the issuers are normally required to hold the allocated shares for a certain "lock-up" period from six months to two years, making the holding cost an important consideration in their decision to participate in PIPE.

We test the above question by focusing on PIPE, an important channel for small and financial distressed firms to raise capital from institutional investors which contribute around 90% of total PIPE proceeds (Brophy et al. 2006). The market for PIPEs has boosted dramatically during the past decade and has surpassed SEO market in terms of transaction amount and dollar value (Chen et al. 2010; Floros and Sapp 2012). Unlike in SEO market where capital providers are provided with public disclosure by issuers, raising capital through PIPE allows firm management to legally convey private information to a small group of potential capital providers via private negotiations, which is often prohibited in the post-Regulation Fair Disclosure era. This important nature of private placement renders it as a unique venue to examine the value relevance of FRQ when capital providers have private access to firm management.

In this paper, we analyze whether and to what extent the quality of financial reporting affects investor participation in PIPE as well as the cost of equity capital. On the one hand, FRQ matters because firm's financial reports are the primary and publicly available source of information about profitability of the firm.<sup>6</sup> On the other hand, FRQ may not matter since capital providers in the PIPE market can privately negotiate with the issuers and potentially acquire timely private information about the firm, reducing the relative importance of financial reporting quality. In addition, since participants in PIPE are normally accredited institutional investors that are able to conduct their own research of the issuer and receive information from multiple sources, they may place less weight on any particular dimension of performance metric such as financial reporting quality.

There are considerable time-series and cross-sectional variations in the types of institutional investors participating in PIPEs over the past twenty years,<sup>7</sup> allowing us to analyze the effect of FRQ on different groups of investors with varying sophistication. While institutional investors in general

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<sup>6</sup> This view is consistent with prior literature showing that accounting-based attributes of earnings, in particular, accrual quality has a negative effect on cost of equity capital raised publicly (Francis, LaFond, Olsson, and Schipper, 2004; Barton, Hansen, and Pownall, 2010).

<sup>7</sup> Hedge funds used to be the major type of investors participating in the PIPEs in the beginning of the twenty-first century, while there are more and more other types of institutional investors, such as pension funds or mutual funds, entering this market in recent years (Brophy et al. 2006).

use information from public disclosures to guide their investment decisions (Heinrichs, Park, and Soltes, 2019), non-hedge-fund institutional investors are likely to be affected by FRQ to a larger extent than hedge funds for two reasons. First, hedge funds are better at acquiring and exploiting private information of the firm (Cohen et al. 2002; Campbell et al. 2009) and rely less on information in firms' financial reports as well as the quality of financial reports than non-hedge-fund investors; second, hedge funds can protect their PIPE investments with short-selling and derivatives from negative firm performance in the future, while non-hedge-fund investors are typically restrained to achieve similar protections due to regulatory requirements or self-imposed restrictions of investment strategies. The differences in risk hedging cause non-hedge-fund investors to rely more on issuer's FRQ to infer future firm performance. Overall, we predict that high FRQ can increase the participation of non-hedge-fund investors in the PIPE market.

Next, we study the effect of FRQ on cost of equity financing through PIPE. While hedge funds usually have a large bargain power against PIPE issuers and demand a huge compensation for their investments in PIPE through significantly discounted offer prices (Brophy et al. 2006), the emerging of non-hedge-fund investors in PIPE market offers additional capital to issuers and reduces their cost of equity capital. Therefore, we predict that high FRQ decreases the discount offered to PIPE investors (i.e., cost of equity capital) because high FRQ attracts more non-hedge-fund investors with cheaper capital to participate the PIPE.

To test the above conjectures, we construct a measure of FRQ based on accrual quality following (Dechow and Dichev 2002), which captures how precisely the mapping of accounting earnings into cash flows. This accrual quality captures information quality resulting from not only managerial discretion, but also operating fundamentals. We use this FRQ measure in our paper since it is designed, according to Statement of Financial Accounting Concepts No.1, for the purpose of "provide information about an enterprise's financial performance during a period."

Using a novel dataset of private placement transactions for publicly traded firms in U.S., we identify types of investors in each PIPE transaction and study the effect of FRQ on the investor participation and cost of financing. We distinguish hedge fund investors and non-hedge-fund investors providing capital in PIPE and classify non-hedge-fund investors as less-informed investors. Our empirical evidence is based on a sample of 4,433 US common share PIPE transactions from 1995 to 2016. There are two major findings in our paper. First, we find that PIPE issuers' FRQ is positively associated with the percentage of total PIPE proceeds contributed by less-informed investors and the likelihood of less-informed investors being the lead investor in the PIPE. Lead investor in the PIPE refers to the investor who purchases the majority of shares offered in a PIPE. This result suggests that PIPE issuers with high-quality of financial reporting can attract more participation by less-informed investors. The effect of FRQ is economically significant: one standard deviation increase in FRQ increases less-informed investors' investment by 1.3%. These findings suggest that a high-quality financial reporting reduces the information disadvantage of less-informed investors relative to informed investors and induces less-informed investors to participate more in PIPE deals. Meanwhile, a high-quality financial reporting encourages less-informed investors to compete with informed investors to be the lead investor in PIPE deal.

Second, we find that PIPEs issuers with better FRQ offer a lower discount rate (i.e., higher offer price) to their investors. This result is robust to the inclusion of year and industry fixed effects and a battery of controls. The inclusion of analyst coverage, which is an alternative source of information for investors, and Big 4-auditor indicator, which is a proxy for firm's financial reporting reliability, in the regression does not influence the effect of FRQ on PIPE offering discount, indicating that the information provided financial report is independent of the information provided by financial analysts or auditors. Our result suggests that financial reporting is an important information source for PIPE investors and is consistent with the well-established positive relation between information asymmetry and cost of equity capital in prior studies.

To study whether the effect of FRQ on the cost of PIPE issuance operates through the increased competition between informed and less-informed investors, we first regress less-informed investor's investment in PIPEs on the issuer's FRQ to obtain a predicted and a residual component of investor's investment. The predicted (residual) component corresponds to the investor participation explained by (orthogonal to) financial reporting quality. Next, we regress the PIPE discount on both the predicted and residual components of investor participation calculated from the previous step. We find that both the predicted value and residual value of less-informed investor's investment are negatively correlated with PIPE issuing discount, while the coefficient of the predicted value is significantly larger than the coefficient of residual value. This result indicates that the negative relation between participation by less-informed investors and the cost of PIPE issuing is largely due to the less-informed investors' participation explained by better FRQ rather than other factors which also affect investor participation.

In the supplementary tests, we first show that our main results are robust to alternative measurement of reporting quality measure with rank value of reporting quality. Second, we confirm that hedge funds PIPE investors are indeed more profitable than non-hedge funds PIPE investor in our sample by comparing the investment returns of hedge funds and non-hedge funds. We find that hedge fund investors on average earn a significantly higher return from PIPE investments and get a larger price discount from PIPE deals than non-hedge investors. Third, we look into the break-down of non-hedge-fund investors by checking the effect of FRQ on participation by ten different types of non-hedge-fund investors. We find that the issuance companies and buyout firms/PE are affected the most by financial reporting quality.

Overall, the contributions of this paper are twofolds. First, our paper contributes to literature of the relative importance of publicly available information given the co-existence of private information. In the corporate financing literature, the demand for high-quality financial reporting varies with lenders' expertise and information set. For example, Berger et al. (2017) find that banks

rely less on the information of firms' financial report when banks have private information from direct interactions with borrowers. Beatty et al. (2010) find that the importance of financial reporting quality decreases when banks can access to borrowers' private information. They argue that private information can substitute for accounting quality. Raman et al. (2013) find that bidders are likely to prefer negotiated takeovers, which allows the bidder to access the target's private information, over non-negotiated takeover when target's financial reporting quality is poor. Bushman et al. (2017) examine the role of media in private lending. They find that new lenders, who are in an informationally inferior position, have a strong incentive to offset their information disadvantage relative to related lenders, who have access to borrowers' confidential information due to past relations with the borrower, by looking for relevant and creditable information. The information provided by media can help to reduce the information disadvantage of new lenders because related lenders with confidential information rely less on the public available information. We add to this literature by providing fresh evidence that the quality of publicly disclosed information by issuers is also important conditional on the existence of private information in the private placement market. We also show that publicly available information is relatively more important for investors who are not able to conduct costly information acquisition than investors who can exploit private information by themselves.

Second, this paper highlights the importance of FRQ in institutional investors' participation in capital raising. Bushee et al. (2019) argue that institutional investors' trading strategies are affected by FRQ which increase the holding costs associated with hold a position in a mispriced security for a long duration. Our results support this argument: poor FRQ drives away potential institutional investors that have cheap and potentially long-term capital because of the concern of holding costs. Our paper enriches Lee and Masulis (2009) who find that high-quality financial reporting can help to reduce investors' uncertainty about issuers' operating performance, increase investors' demand for firms' equity, and lower the flotation cost in seasoned equity offerings (SEOs). However, their

results in SEO market may not be applicable to PIPE market because of the different information environment in two markets: investors may obtain private information from PIPE issuers during private negotiations with the management, reducing investors' reliance on FRQ. In addition, using the unique investor identity information, we directly show that the FRQ has two opposite effects on capital contributed by hedge funds (a negative effect) and non-hedge-fund investors (a positive effect).

The paper is organized as follows. Section 2 presents the literature review and hypothesis development. Section 3 presents the data and research design. Section 4 presents the empirical results and Section 5 concludes.

## **2. BACKGROUND AND HYPOTHESIS DEVELOPMENT**

### **2.1 Background of Private Investment in Public Equity**

Private investment of public equity (PIPEs) are one way of public firms' capital raising and have become a popular way for public listed firm to raise capital. According to *PrivateRaise*, a leading PIPE transaction database, PIPEs have raised 377.1 billion for US listed firms from 2009 to 2018. Prior studies document that the market for PIPEs has surpassed both the transaction amount and dollar value of SEO market (Chen et al. 2010; Floros and Sapp 2012).

Several advantages of PIPEs have made it a favorable way of capital raising. First, PIPEs can enlarge issuers' accredited investors base since this type of equity offering can only be sold to accredited investors. The increased accredited investor base enhances firm value because they are more likely to be active investors who can act as a monitor and have the power to influence the management. (Wruck 1989). Second, a typical PIPE transaction takes on average two to four weeks, while public offerings take several months for the issuance process. Third, PIPEs are available for firms with high level of information asymmetry between public investors and with weak operating performance, which normally have difficulties to get money through other public capital raising

mechanisms (e.g. SEO). High-level information asymmetry deters outside investors from estimating the true value of the firm, making them less willing to make investments in the issuer.

One important distinction between SEOs and PIPEs is the information environment for investors. In SEOs, firms cannot disclose non-public information to a select set of investors without informing other public investors due to the requirements of Regulation Fair Disclosure. However, PIPEs allow the issuer to selectively disclose material information to potential investors in PIPE, which may help to overcome investors' concern related to information asymmetry. Investors in PIPEs can directly talk to issuing firms' management team and conduct due diligence during the negotiation. So, potential investors in PIPE may obtain private information during this process.

Although PIPE is an efficient way for corporate capital raising, it is generally regarded as an expensive source for the issuers. The average discount rate for PIPE transaction ranges from 9.5% to 18.7% (Barclay et al. 2007; Bengtsson and Dai 2014), which is much larger than the average discount rate for SEO offering. Wruck (1989) argues that the discount in PIPE transaction is used to compensate for block purchasers monitoring on firms' management. Hertz and Smith (1993) argue that PIPE discount is used to compensate for efforts made by investors to dig out the information about firm's value. Wu (2004) attributes this discount to managerial opportunism by documenting the evidence that the discounts of PIPE are higher when managers are part of the investors in the PIPE transaction. Since shares obtained from PIPE cannot be immediately sold to the market, Hogboom (2004) and Lim et al. (2017) indicate that this price discount is to compensate for the sell restriction. Most of the studies indicate that the price discount in PIPE deals is (partially) due to information opaqueness of the issuers, however, no one directly examine the relation between information asymmetry and the PIPE price discount.

Another unique feature of PIPE is that the majority of investors in the PIPE transaction are sophisticated institutional investors. Unlike IPO and SEO which issue shares publicly, PIPEs are sold to an exclusive group of accredited investors under Regulation D. Brophy et al. (2006) find that

24.45% of investment in PIPE are made by hedge funds investors, and the remaining investment are made by mutual funds, venture capital, etc. Only around 6% are invested by individual accredited investors. Different types of investor behave differently in the PIPE issues. Compared with other investors in PIPE transactions, hedge funds investors are regarded as unfriendly capital provider in PIPE transactions who are more likely to exploit the urgent financing needs of issuers and therefore usually ask for a larger price discount and more cash flow rights (Floros and Sapp 2012). Besides, hedge funds usually cash out their position in PIPE shortly after the block time and do not ask for positions in corporate board (Dai 2007).

Prior literature suggests that PIPE issuers are usually characterized by severe information asymmetry and poor performance, making it difficult for investors to estimate the true value of the issuers (Chemmanur and Fulghieri 1999; Wu 2004; Gomes and Phillips 2012). An important feature of the PIPE market over the past twenty years is the emerging of non-hedge-fund institutional investors in this market which was used to be dominated by hedge funds (Brophy et al. 2006). We analyze whether FRQ of PIPE issuer helps to attract attention from investors in a wider spectrum and reduces its cost of equity capital.

## **2.2 Hypothesis Development**

Firm's financial reports are the main information sources for outside investors to understand a firm's operating performance, and the quality of firm's financial reporting has long been regarded to represent the information asymmetry level between the firms and investors. Prior studies about the relation between FRQ and cost of capital conclude that higher-quality financial reporting is associated with a lower cost of capital. For example, Francis et al. (2005) are among the first to test the relation between accrual quality and cost of capital and find that higher accrual quality is associated with lower cost of equity capital and cost of debt capital. The experimental findings of Elliott et al. (2020) show that investors are willing to pay more for firm shares when the firm's financial reporting quality is higher. Lee and Masulis (2009) examine the relation between reporting

quality cost of capital under a more specific setting: Seasoned equity offering. They argue that accounting statements are the primary information source for outsider investors to evaluate firms and poor accounting quality will increase the investors' uncertainty about the issuers which in turn decrease the demand for firm's new equity, leading to an increase in the underwriting cost charged by underwriters. Accordingly, they find that firms with higher level of information asymmetry, proxied by poor accrual quality, are more likely to suffer a larger SEO floatation cost. All these studies seem to imply one assumption that the reporting quality matters to investors once they use the information from firms' financial statements when making decisions. However, the effectiveness of FRQ in reducing the information asymmetry may change if information from financial statement become less important to investors or mean differently to different investors.

Investors who have the access to firm's private information will rely less on firm's public available information as well as the quality of the public information. Beatty et al. (2010) find that the importance of financial reporting decreases when capital providers can access firms' private information. Berger et al. (2017) find evidence that banks are less reliant on the information of firms' financial report when banks have high concentration lending portfolio in regions and industries of those firms. Berger et al. (2017) argue that for industries and regions where banks concentrate most, banks may obtain private information from the direct interaction with borrowers in those sectors thus lowering the demand for higher quality of financial reporting. Myers and Majluf (1984) argue that under the assumption of information asymmetry, firm may forgo positive NPV project and reject to issue new equity when issuing new shares will decrease the value of current shareholder.

PIPEs offer one approach for issuers to address this underinvestment problem caused by information asymmetry since firms can decrease the level of information asymmetry at a low cost by directly negotiating with a group of sophisticated investors. The sophisticated investors in PIPEs, analogous to concentrated bank lenders, can potentially obtain private information during the direct negotiations with PIPE issuers, which may lead to a lower demand for information from firms'

financial reports and for high-quality financial reporting. However, investors' informness can vary with their information acquisition ability. For example, mutual funds are restrained by their investing strategy and may be less likely to conduct costly information acquisitions due to limited resources. In contrast, hedge funds investors are better at exploiting firms' private information and make profits from the acquired information. Dai et al. (2011) find that hedge funds can acquire inside information and engage in trading based on this information prior to firms' M&A announcement. Compared with hedge funds, other non-hedge-fund investors are relatively less informed and may rely more on the public information when deciding whether to make investments in PIPEs. In other words, the quality of public available information should play an important role in decreasing the information disadvantage between less informed investors and informed investors, changing the less-informed investors' willingness to invest in PIPEs. Therefore, we hypothesize that higher-quality financial reporting of a PIPE issuer should be associated with more investments made by less-informed investors.

**Hypothesis 1: *Firm's FRQ has a positive effect on participation by less informed investors in the PIPE offerings***

Hedge funds are considered as unfriendly capital providers who are more likely to exploit the emergent financial needs of PIPE issuers than other investors. Dai (2007) examines the impact of investor identity in PIPE and finds that hedge funds seldom ask for a position in boards and usually cash out their positions shortly after the PIPE, indicating that hedge funds are more likely to target the quick profits from PIPE transactions. Brophy et al. (2006) argue that hedge funds are "last resort" of PIPE issuers to obtain capital and find that hedge funds often ask for a deep discount and short sell the PIPE issuer's stock after the PIPE. Floros and Sapp (2012) find that hedge funds extract a larger discount and require more cash flow rights than other types of PIPE investors. These findings indicate that the cost of PIPE issuing is related to the identity of investors. We conjecture that higher

quality of PIPE issuers' financial reporting leads to a higher offer price (or a lower price discount) through its effect on attracting more investment by non-hedge funds (or less informed investors):

**Hypothesis 2: *Firm's FRQ is negative related to the discount of PIPE.***

### **3. DATA AND RESEARCH DESIGN**

#### **3.1 DATA**

We obtain data on U.S. PIPE transactions from Sagient Research, Inc.'s Placementtracker database. We only focus on equity offerings with security type falling in ("Common Stock", "CATM (At the Market) Offering", "Common Stock - CMPO/Overnight Offering", "Common Stock - Reset", "Common Stock - Rights Offering", "Common Stock - Shelf Sale", "Structured Equity Line"). We exclude offerings with missing information of offering prices or offer closing dates. We also exclude transactions with missing announcement returns. We are left with 6,969 transactions after applying for these restrictions.

We obtain stock returns and stock volatility data from Center for Research in Security Price (CRSP) monthly stock file, annual financial data from Compustat, institutional investor information from Thomson Reuters 13F filings (S34 dataset). The initial sample begins with 6,969 PIPE deal from year 1995 to 2016. To construct our empirical sample, we removed 1,837 observations with missing FRQ data which reduces the sample to 5,132. We further require the observations to have available data of lag one-year total assets. Finally, we require the transactions to have nonnegative book value of equity and non-missing control variables (e.g., Tobin's Q ratio, past stock return, etc.). The final sample of the main empirical analysis contains 4,433 transactions for 1,880 firms. Panel A of table 1 presents the definition of variables used in regressions and panel B presents the details of the main sample construction.

### 3.2 Measurement of Financial Reporting Quality

In this paper, we use accrual quality derived from Dechow and Dichev (2002) model (hereafter DD) as our main measure of financial reporting quality. Prior literature has extensively used DD accrual quality as a proxy for FRQ (Aboody et al. 2005; Biddle et al. 2009; Dou et al. 2018; Francis et al. 2005; Francis et al. 2004; Lee and Masulis 2009; Rajgopal and Venkatachalam 2011). The underlying assumption of using accrual quality derived from DD model as FRQ is that earning is the final product of financial accounting system and (also an important source of information for investor's decision making) and earnings quality is mainly determined by accrual quality since accrual is one essential component of earnings. Accrual can reflect current cash flow, the reversal of past cash flow, and the anticipation of future cash flow based on its definition. Accrual can be affected by measurement errors including those from intentional earnings manipulation of management teams and those from business uncertainty.

The DD accrual quality is used to determine the extent of measurement errors in the mapping of accrual into operating cashflow realization. The standard deviation of the measurement over the past few years is a natural proxy for accrual quality since a higher standard deviation of the measurement error means an instable mapping of accrual into cash flow, and thus a lower accrual quality. The relation between accrual and operating cash flow in DD model is as follow:

$$ACC_{j,t} = \alpha_0 + \alpha_1 CFO_{j,t-1} + \alpha_2 CFO_{j,t} + \alpha_3 CFO_{j,t+1} + \varepsilon_{j,t}, \quad (1)$$

where  $ACC_{j,t}$  is accruals of firm  $j$  in year  $t$ ,  $CFO_{j,t-1}$ ,  $CFO_{j,t}$ , and  $CFO_{j,t+1}$  are cashflow from operations of firm in year  $t-1$ ,  $t$ , and  $t+1$ , respectively.  $\varepsilon_{j,t}$  is firm-specific residual. All variables are scaled by average total assets. McNichols (2002) presents evidence that DD's model specification can be improved by adding changes in revenue and gross value of property into equation (1). The adjusted  $R^2$  of DD's model increases from 0.201 to 0.301 after the inclusion of these two items.

Francis et al. (2005) recommend to run the DD's model by year and industry instead of running it by year and firm. Following these suggestions, we adopt the following revised version of DD's model in Eq. (2):

$$ACC_{j,t} = \alpha_0 + \alpha_1 CFO_{j,t-1} + \alpha_2 CFO_{j,t} + \alpha_3 CFO_{j,t+1} + \alpha_4 \Delta REV_{j,t} + \alpha_5 PPE_{j,t} + \varepsilon_{j,t}, \quad (2)$$

where  $\Delta REV_{j,t}$  is the change in sales of firm  $j$  in year  $t$ .  $PPE_{j,t}$  is the gross value of property, plant and equipment. Following the suggestion of Francis et al. (2005), we estimate equation (2) separately for each year in each Fama and French 48 industry groups. We require that there are at least 20 observations in each industry group. We winsorize the extreme values at the 1<sup>st</sup> and 99<sup>th</sup> percentile. The standard deviation of firm-specific residuals from equation (2) over year  $t-4$  to year  $t$  is our measure for accrual quality. A larger standard deviation of residuals means poorer accruals quality. We transform this measure by multiplying negative one, so that a higher value of this measure,  $FRQ$ , means a higher accruals quality.

### 3.3 Measurement of PIPE Characteristics

Prior literature has generally classified hedge funds investors as informed investors based on findings that trading decisions made by sophisticated investor are usually well-informed (Cohen et al. 2002; Campbell et al. 2009). In this study, we treat hedge fund investors participating in PIPEs as informed PIPE investors and treat non-hedge-fund participating investors as less informed PIPE investors. To measure the participation of less informed investor, we calculate the percentage of shares offered in PIPE that are purchased by non-hedge-fund investors (i.e., shares bought by non-hedge-fund investors / total number of shares offered in the PIPE transaction),  $Inv\_uninform$ . Similarly, we construct an indicator variable,  $Uni\_Lead$ , which equals to one (zero) if the majority of shares offered in PIPE is purchased by non-hedge funds (hedge funds).

Following prior literature, we measure the cost of PIPE offering using discount rate,  $Discount$ , which is defined as the difference between the price on the PIPE closing date and offer price scaled

by the closing price. A higher value of *Discount* means higher discount offered by the PIPE issuer (or lower offer price).

### 3.4 Research Designs

To examine the relation between the FRQ and the investment made by less informed investors in the PIPE, we run the following OLS and logit regression when the dependent variable is the *Inv\_uninform* and *Uni\_Lead*, respectively:

$$\begin{aligned} Inv\_uninform = & \beta_0 + \beta_1 FRQ + \beta_2 SIZE + \beta_3 ROA + \beta_4 Leverage + \beta_5 RET + \beta_6 AGE + \\ & \beta_7 CASH + \beta_8 IO + \beta_9 \log(1 + \#analysts) + \beta_{10} Std\_ret + \beta_{11} TBQ + \beta_{12} Big4 + \\ & \beta_{13} Agent\_ability + e, \end{aligned} \quad (3)$$

$$\begin{aligned} Uni\_Lead = & \beta_0 + \beta_1 FRQ + \beta_2 SIZE + \beta_3 ROA + \beta_4 Leverage + \beta_5 RET + \beta_6 AGE + \beta_7 CASH + \\ & \beta_8 IO + \beta_9 \log(1 + \#analysts) + \beta_{10} Std\_ret + \beta_{11} TBQ + \beta_{12} Big4 + \beta_{13} Agent\_ability + e, \end{aligned} \quad (4)$$

The dependent variable, *Inv\_uninform* (*Uni\_Lead*) is defined in the previous section. *FRQ* is our main independent variable (accrual quality) which is defined in the previous section. *SIZE* is the natural logarithm of firm's total assets. *Leverage* is the sum of firm's current liability and long-term liability and scaled by total assets. *ROA* is the ratio of income before extraordinary items to total assets. *Big4* is an indicator variable which takes the value of one if the auditor of the firm is from one of the Big4 audit companies, and zero otherwise. *RET* is firm's cumulative return over the past 12 months ending in the month immediately before the PIPE issuing date. *AGE* is the natural logarithm of years of firm's first appearance in CRSP month stock file. *CASH* is firm's cash reserve scaled by total assets. *IO* is firm's percentage of shares outstanding owned by institutional investors.  $\log(1 + \#analysts)$  is the natural logarithm of (1+ the number of analysts issuing the future one-year EPS). *TBQ* is Tobin's Q ratio. *Std\_ret* is the standard deviation of firm's monthly returns over the past 12 months ending in the month before the PIPE issuing date. *Agent\_ability* is the natural logarithm of 1 plus number of unique investors that have participated in PIPE deals underwritten by the current agent over the past five years. This measure captures the PIPE agent's ability of attracting different

investors. All the independent variables are defined as of the most recent annual financial report because investors are prone to use the most recent financial report when making investment decision.

To investigate the impact of FRQ on the PIPE issuing cost, we estimate the following OLS regression models where the dependent variable, *Discount*, is the discount rate in the PIPE offering.

$$Discount = \beta_0 + \beta_1 FRQ + \beta_2 SIZE + \beta_3 ROA + \beta_4 Leverage + \beta_5 RET + \beta_6 AGE + \beta_7 CASH + \beta_8 IO + \beta_9 \log(1 + \#analysts) + \beta_{10} Std\_ret + \beta_{11} TBQ + \beta_{12} Big4 + \beta_{13} Agent\_ability + e, (5)$$

To verify whether the relation between FRQ and PIPE discount is mainly through the effect of FRQ on the participation of less-informed investors, we conduct a two-stage analysis.

$$Inv\_uninform = \beta_0 + \beta_1 FRQ + \varepsilon, (6)$$

$$Discount = \beta_0 + \beta_1 Pred\_uninform + \beta_2 Residual\_uninform + \beta_3 SIZE + \beta_4 ROA + \beta_5 Leverage + \beta_6 RET + \beta_7 AGE + \beta_8 CASH + \beta_9 IO + \beta_{10} \log(1 + \#analysts) + \beta_{11} Std\_ret + \beta_{12} TBQ + \beta_{13} Big4 + \beta_{14} Agent\_ability + e, (7)$$

In the first stage, we regress the less-informed investor's investment on FRQ to calculate the predicted value of *Inv\_uninform* (*Pred\_uninform*) and residual value of *Inv\_uninform* (*Residual\_uninform*) in Eq. (6). This step allows us to decompose less-informed investor's investment into a component predicted by firm's FRQ and another unpredicted component. In the second stage, we regress PIPE discount on both the predicted value and residual value of *Inv\_uninform* after controlling for a set of controls. This second-stage regression allows us to check the effect of *Pred\_uninform* on PIPE discount outweighs the effect of *Residual\_uninform* on PIPE discount.

#### 4. EMPIRICAL RESULTS

#### 4.1 Summary statistics

Table 2 Panel A presents the descriptive statistics of our sample. Our sample consists of 4,927 deals which raised more than 167 billion USD for issuers from year 1995 to 2016. The average proceeds raised from each PIPE offering in our sample is around 37.7 million USD. The average age of firms in our sample is 9.7 years and the average size is 337.7 million. Firms issuing PIPE are small and young firms for which information asymmetry is a serious concern when raising capital from the open market. The mean ROA of PIPE firms is -0.454 which is consistent with conclusion in prior literature that firms with bad past performance are more likely to use private placements relative to SEOs. It is worth noting that the average discount rate of our sample is 7.4%, which is much larger than the discount rate of SEO documented in prior literature (e.g., 2.97% of Chemmanur et al. (2009), 3.2% of Huang and Zhang (2011)). The average number of shares issued during PIPE is about 21% of the total share outstanding which is a relatively large amount of equity compared to other types of equity issuances. When firms choose to privately placement of their public equity, they can either choose to hire an agent to issue PIPE or directly sell shares to a set of investors. Table 2 panel A shows that more than 60% of PIPE offerings in our sample hire an agent to issue the equity. One reason for firm to employ an agent is to attract more investors. The average number of investors in our sample is five which is quite a small number and indicates that PIPE deals are only sold to a limited number of investors. In our untabulated tables, we find that hiring an agent can significantly increase the number of investors in the deals, which forms the basis for us to control for agent's ability in the regressions.

To present a univariate relation between FRQ and cost of PIPE offering and PIPE firm characteristics, we sort our sample firms into five groups based on the level of FRQ measure and report the mean value of each variable. Panel B of table 2 shows that moving from the lowest FRQ group to the highest FRQ group, the average discount rate of PIPE deals decreases monotonically from 0.097 to 0.051, while the offer price increases from 4.135 to 12.247. This finding provides a

preliminary evidence for our prediction that PIPE issuers' FRQ affects discount demanded by PIPE investors. This table also shows an increasing trend of the investment made by less informed investors from 67.9% in the lowest FRQ group to 76.9% in the highest FRQ group. We have similar findings when we examine the likelihood of less informed investors being the major investor in the private placement deals, which moves from 65.7% in the lowest FRQ sample to 73.8% in the highest FRQ sample, suggesting a positive relation between FRQ and less-informed investors' participation.

In addition, other characteristics of issuers also correlate with the FRQ. The FRQ is higher for firm with less volatile past return, larger size, better past performance, higher institutional ownership, higher likelihood to have big 4 auditors and a higher analyst coverage.

Table 2 panel C presents the statistics by year. Since the sample stops in early 2016, we have very few observations in 2016. Overall, there is a growing trend of investments in PIPE by non-hedge-fund investors: the percentage of total PIPE shares purchased by non-hedge-fund investors increases from 76.5% in 1995 to 87.5% in 2015. There is also a decreasing trend of PIPE discount, falling from 27% in 1995 to 7.1% in 2015.

#### **4.2 Effect of FRQ on the Participation of Less Informed Investors**

Table 3 shows the main results. Column (1) shows the relation between percentage of investment made by less informed investors and past FRQ with only the inclusion of industry and year fixed effect. We find a positive and significant relation between *FRQ* and *Inv\_uninform* (0.134,  $t=4.73$ ). Similarly, we find a significantly positive relation between the likelihood of less informed investors being the major investor in the PIPE deals (*Uni\_lead*) and FRQ in column (3). These two findings suggest that higher quality of financial report will attract more investment made by less informed investors and increase the likelihood of less informed investors to compete for the lead investors in PIPE deals. We then add firm-level, PIPE agent-level control variables into regressions in columns (2) and (4) and find that FRQ is still positively correlated with both *Inv\_uninform* and *Uni\_Lead*.

As for the control variables, we find that less informed investors are more like to invest or to take the lead in firms with larger SIZE, audited by big four companies, have less volatile stock price and have higher cash reserve. The findings are consistent with the evidence of prior literature that less informed investors are less likely to invest in PIPE of smaller, riskier firms with high asymmetric information (Brophy et al. 2006). We also find results suggesting that in younger issuers and issuers with lower institutional ownership are favored by the less informed investors, indicating that these investors desire to seek extra returns from risk investments. We find that agent's ability is negatively correlated with both the investment and the likelihood of being the lead investor in PIPEs by less-informed investors. In other words, reputable PIPE agents that have a broader network preferentially allocate more shares to hedge funds which have dominated the PIPE market, while the non-hedge-fund investors can only get more allocations of PIPE shares from less reputable agents.

#### **4.3 The Effect of FRQ on the Cost of PIPE Offering**

We have examined and found that higher-quality financial reporting will attract more participation by less informed investor in the PIPE in the previous section. In this section, we turn to examine whether issuers' FRQ can affect PIPE's discount rate and whether this effect operates through financial reporting quality's positive effect on less-informed investors' participation.

In panel A of Table 4, we investigate the relation between FRQ and PIPE discount. We find that coefficient of FRQ is negative and significant at 1% level (-0.032,  $t=-3.23$ ), indicating that the quality of financial reporting mitigates information asymmetry between PIPE issuers and investors, leading to a lower issuing cost when firms sell equity privately. This is consistent with findings in prior literature regarding the positive relationship between information asymmetry and cost of equity capital.

In column (2), we control for other information asymmetry proxies and firm characteristics and find that firm size (-0.007,  $t=-2.07$ ) is negatively correlated with discount rate, indicating that the larger the firm, the lower the discount rate investors request to compensate for their risk. Firm's past

stock volatility, proxied by standard deviation of monthly stock returns over past twelve months, is also positively correlated with discount rate. This is consistent with investors' belief that higher risk should be compensated by higher return. These results are consistent with the finding of prior studies (Francis et al. 2005; Lee and Masulis 2009) which examine the relation between accounting quality and cost of capital in the setting of SEOs. The result on Tobin's Q ratio is different from the finding and prediction of prior studies (Francis et al. 2005; Lee and Masulis 2009). While they find a negative correlation between Tobin's Q ratio and gross spread of SEOs and argue that investment banks will charge less for firm with higher growth and profit potential, we find a positive relation between Tobin's Q ratio and PIPE discount rate, suggesting that PIPE investors are worried about the overvaluation of the issuers (captured by a higher Tobin's Q) and demand a higher discount. This result points out the uniqueness of PIPE when comparing it with SEO since PIPE issuers are in general more desperate for capital than SEO issuers. Almost all the investors in PIPE are sophisticated investors, so the growth potential may weaken the bargaining power of a firm in PIPE because investors know PIPE firms' demand for capital and their unavailability to raise capital from other places.

We find that agent's ability is positively correlated with PIPEs discount. This result implies not only the informed investors, but also capable agent will exploit the urgent financial needs of the issuers. This result may also imply that issuers' cost hiring a more capable agent is to offer a lower PIPE price. The coefficient of RET is significantly positive (0.088,  $t=3.60$ ) suggesting that investors treat high past return as an indicator of overvaluation, as suggested by the market-timing literature of equity offerings, and require a higher discount rate. We are also interested in the relation between analyst coverage and PIPE discount. Prior literature documents that higher analyst coverage can alleviate the concern of information asymmetry and lead to lower cost of capital. Consistent with this argument, we find a significantly negative coefficient on analyst coverage (-0.018,  $t= -2.87$ ). The inclusion of analyst coverage does not completely absorb the negative effect of FRQ on PIPE

discount rate, indicating that FRQ provides marginal information over and beyond that provided by financial analyst to PIPE investors.

We then test whether the negative effect of FRQ on PIPE discount rate operates through its positive effect on the participation of less-informed investors. In the hypothesis development, we argue that different types of investors may have differ in their abilities to obtain and process private information. Thus, a higher quality financial reporting can reduce the information asymmetry between firms and certain investors who use firms' financial reports as their primary information source.

In panel B of Table 4, we test our prediction that the relation between issuers' FRQ and PIPE discount is through the participation of less informed investor. We first regress the investments made by less informed investors on FRQ to obtain predicted and residual values of less-informed investor's investments (the results of the first-stage regressions are not reported). The predicted (residual) component corresponds to the investor participation explained by (orthogonal to) financial reporting quality.

We present the second-stage results by regressing PIPE discount rate on various measures of less-informed investor's investments in Table 4 panel B. Column (1) of table 4 panel B confirms that a larger participation by less-informed investor's decreases PIPE discount. Column (2) of table 4 panel B shows that the negative effect of participation by less-informed investor's holds after we control for reporting quality. Columns (3) and (4) of table 4 panel B show that both the predicted value and the residual value of *inv\_uninform* are negatively correlated with PIPE discount. This result is consistent our prediction that the participation of less-informed investors lowers the cost of PIPE issuers.

To test which component of *inv\_uninform* has the dominate impact on PIPE discount, we run a horse racing test in columns (5) and (6) by controlling for both predicted and residual terms and compare their coefficients. In column (5), we find that both two components of *inv\_uninform* are

negatively correlated with PIPE discount, and are significant at 1% level in a regression without additional control variables. The coefficient of *Pred\_uninform* is much larger than the coefficient of *Residual\_uninform*. In column (6), we include additional controls and industry and year fixed effects, and the result remains similar. The results of F-test in the bottom row reject the hypothesis that the coefficient of *Pred\_uninform* is equal to the coefficient of *Residual\_uninform*. This result indicates that the negative relation between participation by less-informed investors and the cost of PIPE issuing is largely due to the less-informed investors' participation explained by better FRQ rather than other factors which also affect investor participation. Overall, these results show that the effect of FRQ on PIPE discount mainly operates through its effect on the participation of less-informed investors.

In the appendix Table A1, we present the effect of FRQ on another type of issuance costs, fee paid by the issuers to placement agents. We lose some firms in this analysis due to the missing information of underwriting fee. The results show that the percentage placement fee (i.e., dollar fee scaled by total proceeds from offering) is not affected by financial reporting quality.

## **4.4 Supplementary Analyses**

### **4.4.1 Alternative Measure of Financial Reporting Quality**

We first address the concern that the relation between FRQ and PIPE issuance characteristics may be affected by outliers by using the rank value of FRQ measure as the main independent variable. Using rank measures can provide more reliable estimates if the true relations between FRQ and PIPE characteristics are nonlinear. Moreover, the rank measure helps to control for the influence of outliers given the skewness of the raw measure. We first rank the raw FRQ (FRQ\_RANK) measure in to 100 groups and assign a value ranging from 0 to 99, and then we scale the value by 99 to obtain a final rank measure ranging from 0 to 1. We repeat our main tests using this rank measure.

Table 5 presents the robustness results with the rank measure. We obtain a positive effect of FRQ on participation of less informed investors in PIPEs using the rank variable. We also find that

the rank measure of FRQ is negatively correlated with the discount rate in the PIPE issuance and is significant at 5% level. These results indicate that the relation between FRQ and PIPE offering characteristics is not driven by the effect of outliers and robust to alternative measurements.

#### **4.4.2 Profit of Hedge Funds Participating in PIPEs**

We also investigate whether hedge funds PIPE investors are indeed more sophisticated and informed than other investors in PIPE transactions by comparing their investment return over a short window and PIPE discount between these two types of investors.

Table 6 presents the comparison of mean (median in bracket) investment return and discount between PIPE deals led by (i.e., serve as the lead investor purchasing the majority of shares offered) hedge funds and deals led by non-hedge funds using the whole sample of PIPE. Our measure of investment return, *Inv\_ret*, is the difference between the price on PIPE closing date and PIPE's offer price and scaled by offer price. This measure captures the paper gain for an investor purchasing shares in PIPE at the offer price. We also report results based on the PIPE discount, *Discount*, which is the difference between price on PIPE closing date and the PIPE's offer price and scaled by price on PIPE closing date. Hedge funds investors earn an average of 17.13% investment return from PIPE deals that they lead while non-hedge investors earn 12.92% average return in PIPE transactions that they lead. The difference between hedge funds' investment return and non-hedge funds investment return is 4.21%, which is significant at 1% level. We also find that hedge funds can get an average 9.56% discount from PIPE issuers, which is 4.63% larger than the discount obtained by non-hedge funds investors. The results in table 6 is consistent with the argument that hedge funds investors are more informed than other non-hedge funds investors, providing evidence for our classification of informed and uninformed investors.

#### **4.4.3 Participation by Different Types of Non-hedge-fund Investors**

Lastly, we further decompose the PIPE investment made by non-hedge-fund (i.e., less-informed) investors based on the type of non-hedge-fund investors to investigate whether the demands for

better FRQ vary with the type of less-informed investors. There are ten types of non-hedge-fund investors for which we can identify organization structure in our sample: Insurance companies, Buyout Firm/PE, Bank, Broker/ Dealer, Trust, Corporation Investors, Institutional Advisor, Mutual Fund, Pension /Gov Funds, and Venture Capital. Please refer to Figure 1 for a breakdown of these ten types of PIPE investors.

Table 7 presents the effect of FRQ on the participation of ten different types of less-informed investors in PIPE. In panel A, the dependent variable is an indicator variable which equals one if a particular type of investors participate in the PIPE, and zero otherwise. We find that two type of non-hedge-fund investors, namely insurance companies and buyout firms/PE, are more likely to participate in PIPE offerings when the issuers' FRQ is higher, and the effect is significant at 5% level. The effect of FRQ on decision to participation by mutual funds, pension funds, and corporate investors are positive but insignificant.

In Table 7 panel B, we study the effect of FRQ on the relative participation by each type of non-hedge-fund investors. We calculate the relative investment in PIPE by each type of non-hedge-fund investors, *inv%*, as the aggregated PIPE shares purchased by the type of investor by the sum of PIPE investment by all ten types of non-hedge-fund investors. We find that mutual funds, insurance companies, and buyout firms/PE are significantly affected by financial reporting quality, indicating that they are affected more than other non-hedge-fund investors.

To conclude, the results indicate that the effect of FRQ is far from universal within the less-informed non-hedge-fund investors. The significant heterogeneity among different types of investors regarding their perception of FRQ highlights the importance to distinguish investor types in future research about the value relevance of accounting information.

## 5. CONCLUSIONS

In this paper, we analyze the effect of issuers' FRQ on the participation of less-informed investor and on firms' cost of equity financing in the setting of private placement of public equity. We find that the PIPE issuers' FRQ increases the participation of less-informed investor in PIPE by mitigating their informational disadvantageous position relative to informed investors. We also find that issuers' FRQ is negatively correlated with issuers' offer price discount, a direct cost of equity financing. We further show that the effect of FRQ of issuers' cost of capital is mainly through its effect on the participation of less-informed investors. Our results are robust to the inclusion of control variables capturing other sources of information available to investors and firm characteristics, and alternative construction of FRQ measure.

Our findings provide fresh supportive evidence of the value-relevancy of financial reports in the PIPE market where the investors can directly obtain private information from the issuer. Our results suggest that the quality of FRQ is still important to investors, especially investors who rely more on public disclosures, in the presence of private information.

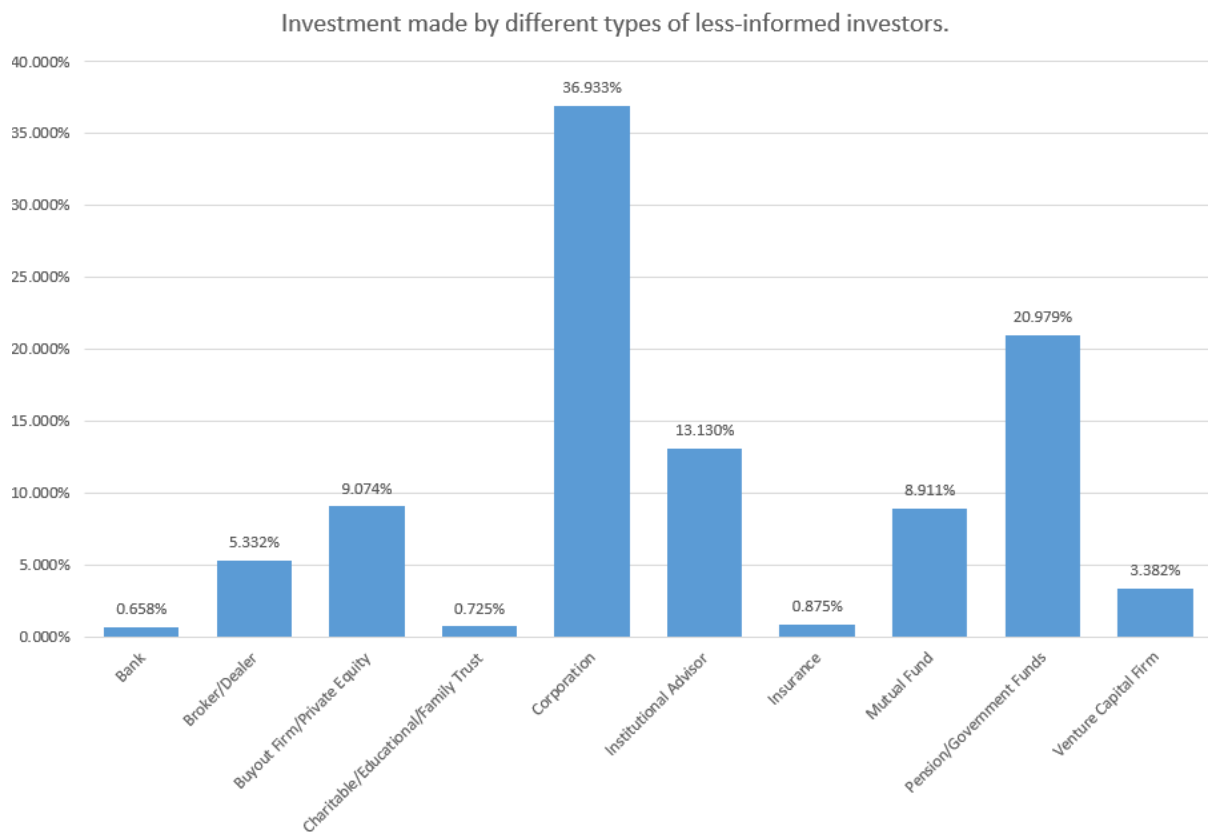
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**Figure 1: Breakdown of non-hedge-fund investors participating in PIPE**

This figure presents the percentage of PIPE investment for each type of non-hedge-fund investors (as a percentage of all non-hedge-fund investors). There are ten types of non-hedge-fund investors for which we can identify organization structures in our sample: Insurance companies, Buyout Firm/PE, Bank, Broker/ Dealer, Trust, Corporation Investors, Institutional Advisor, Mutual Fund, Pension/Gov Funds, and Venture Capital. We scale and plot the PIPE investment for each type of non-hedge-fund investors by the sum of PIPE investment by these ten non-hedge-fund investors.



**Table 1: Variable definitions and sample construction**

This table presents the definition of main variables, steps of construct the main sample used in our regression analyses, and sources of our data.

**Panel A : Variable definitions**

| Variable                         | Definition                                                                                                                                                                                                                                                                                                          |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Main Dependent Variable</b>   |                                                                                                                                                                                                                                                                                                                     |
| <i>Inv_uninform</i>              | Number of shares purchased by less informed investors scaled by number of shares offered in PIPE.                                                                                                                                                                                                                   |
| <i>Uni_Lead</i>                  | Dummy variable that equals one if less informed investors are the major buyer of stocks in PIPEs, and zero otherwise.                                                                                                                                                                                               |
| <i>Discount</i>                  | (Price on closing date-offer price) / price on closing date.                                                                                                                                                                                                                                                        |
| <i>Offer price</i>               | Offer price per share of stocks sold in the PIPEs.                                                                                                                                                                                                                                                                  |
| <i>Log_proceed</i>               | Log value of USD dollar amount of money raised from PIPE offering.                                                                                                                                                                                                                                                  |
| <i>Inv_ret</i>                   | The difference the price on PIPE closing date and PIPE's offer price and scaled by offer price.                                                                                                                                                                                                                     |
| <i>D_INV</i>                     | Dummy variable that equals one if the investors buy stocks offered in PIPEs, and zero otherwise.                                                                                                                                                                                                                    |
| <b>Main Independent Variable</b> |                                                                                                                                                                                                                                                                                                                     |
|                                  | The standard deviation of the firm-level residuals from the Dechow and Dichev model during year t-4 to t and multiplied by negative one. The model is a regression of total accrual on lagged, current, and future cash flows plus the change in revenue and PPE. All variables are scaled by average total assets. |
| <i>FRQ</i>                       |                                                                                                                                                                                                                                                                                                                     |
| <i>FRQ_RANK</i>                  | Rank value of FRQ from 0 to 99 and scaled by 99 to range from 0 to 1.                                                                                                                                                                                                                                               |
| <b>Control Variables</b>         |                                                                                                                                                                                                                                                                                                                     |

|                                 |                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <i>RET</i>                      | 12-month cumulative return end in one month prior to closing date of PIPE (require at least ten monthly return data points). |
| <i>AGE</i>                      | Log (1 + #years since a firm appears in CRSP monthly file).                                                                  |
| <i>LEV</i>                      | Long-term debt + short-term debt scaled by total assets.                                                                     |
| <i>SIZE</i>                     | Log value of total assets.                                                                                                   |
| <i>CASH</i>                     | Cash and Short-Term Investments scaled by total assets.                                                                      |
| <i>ROA</i>                      | Return on assets.                                                                                                            |
| <i>Log(1+#Analysts)</i>         | The number of distinct analysts issuing the future 1-year EPS of a given firm.                                               |
| <i>IO</i>                       | The institutional ownership.                                                                                                 |
| <i>TBQ</i>                      | Tobin's q ratio.                                                                                                             |
| <i>Big4</i>                     | Indicator variable that equals one if firm's auditors are from big four company.                                             |
| <i>Agent_ability</i>            | Log value of 1 plus number of unique investors in an agent's past five-year PIPE deals.                                      |
| <i><math>\sigma(RET)</math></i> | Standard deviation of return over the past 12 months starting from one month before the PIPE issuance.                       |

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**Panel B: Procedures to Construct the Main Sample**

|                                        | Num. of observations |
|----------------------------------------|----------------------|
| Observations with available price data | 6969                 |
| Observations without FRQ data          | -1837                |
| Observations with missing total assets | -50                  |
| Observations with missing RET          | -146                 |
| Observations with negative book value  | -503                 |
| Observations used in main analyses     | 4433                 |

**Table 2: Summary statistics**

This table presents the summary statistics of our sample. The sample period covers the period from 1995 to 2016. Panel A provides descriptive statistics of key variables. Panel B shows the mean of key variables for firms in quintile groups ranked based on FRQ. All continuous variables are winsored at top and bottom 1% level.

**Panel A: Descriptive statistics.**

|                                 | N     | Mean    | Skewness | Q1     | Median | Q3      | Std. Dev. |
|---------------------------------|-------|---------|----------|--------|--------|---------|-----------|
| <i>Offer Price</i>              | 4,433 | 7.302   | 33.874   | 1.595  | 3.500  | 7.750   | 19.027    |
| <i>Proceed</i>                  | 4,433 | 37.874  | 34.064   | 4.000  | 10.000 | 23.699  | 250.562   |
| <i>Inv_uninform</i>             | 4,433 | 0.726   | -0.977   | 0.427  | 1.000  | 1.000   | 0.382     |
| <i>Uni_Lead</i>                 | 4,433 | 0.699   | -0.866   | 0.000  | 1.000  | 1.000   | 0.459     |
| <i>Discount</i>                 | 4,433 | 0.074   | -0.971   | 0.000  | 0.077  | 0.167   | 0.187     |
| <i>Agent_ability</i>            | 4,433 | 65.929  | 2.155    | 0.000  | 1.000  | 88.000  | 115.281   |
| <i>FRQ</i>                      | 4,433 | -0.195  | -2.205   | -0.241 | -0.143 | -0.083  | 0.175     |
| <i>FRQ_rank</i>                 | 4,433 | 0.502   | -0.011   | 0.253  | 0.505  | 0.758   | 0.290     |
| <i>RET</i>                      | 4,433 | 0.395   | 2.492    | -0.378 | 0.026  | 0.652   | 1.287     |
| <i><math>\sigma(ret)</math></i> | 4,433 | 0.249   | 2.754    | 0.148  | 0.210  | 0.298   | 0.163     |
| <i>AGE</i>                      | 4,433 | 9.742   | 2.077    | 4.000  | 7.000  | 13.000  | 8.204     |
| <i>LEV</i>                      | 4,433 | 0.155   | 1.231    | 0.000  | 0.073  | 0.260   | 0.188     |
| <i>SIZE</i>                     | 4,433 | 337.039 | 7.621    | 17.322 | 41.500 | 110.356 | 1391.995  |
| <i>CASH</i>                     | 4,433 | 0.375   | 0.485    | 0.087  | 0.289  | 0.647   | 0.313     |
| <i>ROA</i>                      | 4,433 | -0.454  | -1.774   | -0.677 | -0.305 | -0.046  | 0.544     |
| <i>TBQ</i>                      | 4,433 | 2.426   | 1.026    | 1.294  | 2.050  | 3.214   | 1.409     |
| <i>IO</i>                       | 4,433 | 0.213   | 1.308    | 0.040  | 0.139  | 0.323   | 0.220     |
| <i>Big4</i>                     | 4,433 | 0.505   | -0.019   | 0.000  | 1.000  | 1.000   | 0.500     |
| <i>#Analysts</i>                | 4,433 | 3.051   | 1.754    | 0.000  | 2.000  | 4.000   | 3.846     |

**Panel B: Mean values of variables for firms in different quantile groups based on FRQ measure.**

| Variable                        | 1 (low FRQ) | 2       | 3       | 4       | 5(High FRQ) |
|---------------------------------|-------------|---------|---------|---------|-------------|
| <i>Offer Price</i>              | 4.135       | 4.778   | 6.482   | 8.785   | 12.247      |
| <i>Proceed</i>                  | 14.977      | 20.276  | 24.187  | 56.363  | 72.865      |
| <i>Inv_uninform</i>             | 0.679       | 0.712   | 0.725   | 0.743   | 0.769       |
| <i>Uni_Lead</i>                 | 0.657       | 0.674   | 0.704   | 0.719   | 0.738       |
| <i>Discount</i>                 | 0.097       | 0.079   | 0.076   | 0.066   | 0.051       |
| <i>Agent_ability</i>            | 72.163      | 72.281  | 72.860  | 62.829  | 49.623      |
| <i>RET</i>                      | 0.413       | 0.383   | 0.455   | 0.384   | 0.340       |
| <i><math>\sigma(ret)</math></i> | 0.289       | 0.263   | 0.254   | 0.240   | 0.200       |
| <i>AGE</i>                      | 8.895       | 9.310   | 9.613   | 9.883   | 10.992      |
| <i>LEV</i>                      | 0.116       | 0.131   | 0.144   | 0.166   | 0.217       |
| <i>SIZE</i>                     | 58.877      | 113.756 | 180.202 | 415.214 | 911.892     |
| <i>CASH</i>                     | 0.483       | 0.412   | 0.379   | 0.336   | 0.267       |
| <i>ROA</i>                      | -0.774      | -0.530  | -0.407  | -0.345  | -0.222      |
| <i>TBQ</i>                      | 2.987       | 2.496   | 2.469   | 2.245   | 1.950       |
| <i>IO</i>                       | 0.143       | 0.171   | 0.207   | 0.250   | 0.290       |
| <i>Big4</i>                     | 0.455       | 0.498   | 0.509   | 0.517   | 0.544       |
| <i>#Analysts</i>                | 2.167       | 2.728   | 2.592   | 3.581   | 4.161       |

**Panel C: Mean values of key variables by year.**

| <i>Year</i> | <i># of PIPE</i> | <i>Inv_uninform</i> | <i>Uni_Lead</i> | <i>Discount</i> |
|-------------|------------------|---------------------|-----------------|-----------------|
| 1995        | 48               | 0.765               | 0.750           | 0.270           |
| 1996        | 56               | 0.712               | 0.696           | 0.254           |
| 1997        | 60               | 0.763               | 0.767           | 0.180           |
| 1998        | 68               | 0.742               | 0.735           | 0.075           |
| 1999        | 199              | 0.698               | 0.653           | 0.140           |
| 2000        | 301              | 0.707               | 0.681           | 0.103           |
| 2001        | 293              | 0.700               | 0.638           | 0.070           |
| 2002        | 252              | 0.678               | 0.643           | 0.048           |
| 2003        | 370              | 0.554               | 0.489           | 0.134           |
| 2004        | 351              | 0.524               | 0.459           | 0.105           |
| 2005        | 271              | 0.635               | 0.613           | 0.063           |
| 2006        | 268              | 0.702               | 0.657           | 0.060           |
| 2007        | 285              | 0.706               | 0.649           | 0.039           |
| 2008        | 163              | 0.771               | 0.767           | 0.018           |
| 2009        | 238              | 0.852               | 0.853           | 0.052           |
| 2010        | 216              | 0.859               | 0.875           | 0.050           |
| 2011        | 198              | 0.842               | 0.848           | 0.019           |
| 2012        | 211              | 0.868               | 0.848           | 0.040           |
| 2013        | 212              | 0.866               | 0.877           | 0.044           |
| 2014        | 205              | 0.838               | 0.854           | 0.046           |
| 2015        | 160              | 0.877               | 0.881           | 0.026           |
| 2016        | 8                | 0.875               | 0.875           | 0.071           |

**Table 3: The effect of FRQ on participation of less informed investors in PIPEs**

This table presents the effect of FRQ on participation of less informed investors in PIPEs. The dependent variable in first two columns, *Inv\_uninform*, is the percentage of shares offered in PIPE purchased by less informed investors. The dependent variable in last two columns, *Uni\_Lead*, is an indicator variable which equals one if less informed investors are the major buyer of shares offered in PIPEs, and zero otherwise. We run OLS regressions in columns (1) and (2) and logit regressions in columns (3) and (4). The main independent variable, *FRQ*, and control variables are constructed based on information prior to the PIPE issuance. Definitions of other variables are provided in Table 1. T-statistics are presented in parentheses. Standard errors are corrected for heteroscedasticity and are clustered by industry. \*, \*\*, and \*\*\* indicate significance levels at 10%, 5%, and 1%, respectively.

|                                 | (1)                 | (2)                  | (3)                | (4)                  |
|---------------------------------|---------------------|----------------------|--------------------|----------------------|
|                                 | <i>Inv_uninform</i> | <i>Inv_uninform</i>  | <i>Uni_Lead</i>    | <i>Uni_Lead</i>      |
| <i>FRQ</i>                      | 0.134***<br>(4.73)  | 0.076**<br>(2.42)    | 0.727***<br>(4.24) | 0.464**<br>(2.23)    |
| <i>SIZE</i>                     |                     | 0.031***<br>(6.13)   |                    | 0.239***<br>(6.13)   |
| <i>ROA</i>                      |                     | 0.024<br>(1.26)      |                    | 0.090<br>(0.80)      |
| <i>LEV</i>                      |                     | -0.003<br>(-0.12)    |                    | 0.027<br>(0.14)      |
| <i>RET</i>                      |                     | -0.009<br>(-1.65)    |                    | -0.065**<br>(-2.13)  |
| <i>AGE</i>                      |                     | -0.031***<br>(-2.71) |                    | -0.173**<br>(-2.57)  |
| <i>CASH</i>                     |                     | 0.066***<br>(3.07)   |                    | 0.464***<br>(2.97)   |
| <i>IO</i>                       |                     | -0.084***<br>(-3.19) |                    | -0.631***<br>(-3.46) |
| <i>log (1+# analysts)</i>       |                     | 0.003<br>(0.24)      |                    | -0.027<br>(-0.37)    |
| <i>σ(RET)</i>                   |                     | -0.168***<br>(-3.56) |                    | -0.729***<br>(-2.71) |
| <i>TBQ</i>                      |                     | 0.009<br>(1.60)      |                    | 0.059*<br>(1.80)     |
| <i>Big4</i>                     |                     | 0.033**<br>(2.33)    |                    | 0.261**<br>(2.53)    |
| <i>Agent_ability</i>            |                     | -0.020***<br>(-5.38) |                    | -0.152***<br>(-6.04) |
| <i>Constant</i>                 | 0.367***<br>(4.50)  | 0.331***<br>(3.28)   | -0.995*<br>(-1.74) | -1.550**<br>(-2.12)  |
| Year FE                         | YES                 | YES                  | YES                | YES                  |
| Industry FE                     | YES                 | YES                  | YES                | YES                  |
| Observations                    | 4566                | 4433                 | 4528               | 4396                 |
| Adj. (or Pseudo) R <sup>2</sup> | 0.102               | 0.137                | 0.099              | 0.132                |

**Table 4: The effect of FRQ on the cost of PIPE financing**

This table presents the effect of FRQ on cost of PIPE financing. The dependent variable, *Discount*, is the difference between price on PIPE closing date and the PIPE's offer price and scaled by price on PIPE closing date. Panel A presents the direct relation between FRQ and PIPE discount. Panel B shows the effect of FRQ on discount through its effect on participation by uninformed investors. We regress participation by uninformed investors on FRQ to decompose it into two components: *Pred\_uninform* (*Residual\_uninform*) is the predicted (residual) component of participation by uninformed investors. They correspond to the investor participation explained by (orthogonal to) financial reporting quality, respectively. T-statistics are presented in parentheses. Industry and year fixed effect are included. Definitions of variables are presented in Table 1. Standard errors are corrected for heteroscedasticity and are clustered by industry. \*, \*\*, and \*\*\* indicate significance levels at 10%, 5%, and 1%, respectively.

**Panel A: FRQ and Discount.**

|                                 | (1)                  | (2)                  |
|---------------------------------|----------------------|----------------------|
|                                 | <i>Discount</i>      | <i>Discount</i>      |
| <i>FRQ</i>                      | -0.079***<br>(-7.01) | -0.032***<br>(-3.23) |
| <i>SIZE</i>                     |                      | -0.007**<br>(-2.17)  |
| <i>ROA</i>                      |                      | -0.010<br>(-1.49)    |
| <i>LEV</i>                      |                      | -0.002<br>(-0.08)    |
| <i>RET</i>                      |                      | 0.008***<br>(3.60)   |
| <i>AGE</i>                      |                      | -0.001<br>(-0.23)    |
| <i>CASH</i>                     |                      | -0.055***<br>(-3.12) |
| <i>IO</i>                       |                      | -0.005<br>(-0.27)    |
| <i>log (1+# analysts)</i>       |                      | -0.018***<br>(-2.87) |
| <i>σ(RET)</i>                   |                      | 0.068**<br>(2.63)    |
| <i>TBQ</i>                      |                      | 0.010***<br>(3.36)   |
| <i>Big4</i>                     |                      | 0.006<br>(0.95)      |
| <i>Agent_ability</i>            |                      | 0.006***<br>(3.55)   |
| <i>Constant</i>                 | 0.231***<br>(9.84)   | 0.240***<br>(8.02)   |
| Year FE                         | YES                  | YES                  |
| Industry FE                     | YES                  | YES                  |
| Observations                    | 4566                 | 4433                 |
| Adj. (or Pseudo) R <sup>2</sup> | 0.082                | 0.118                |

**Panel B: FRQ affects discount through its effect on participation by uninformed investors**

|                                 | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
|---------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                 | <i>Discount</i>      | <i>Discount</i>      | <i>Discount</i>      | <i>Discount</i>      | <i>Discount</i>      | <i>Discount</i>      |
| <i>Inv_uninform</i>             | -0.035***<br>(-5.29) | -0.033***<br>(-4.46) |                      |                      |                      |                      |
| <i>FRQ</i>                      |                      | -0.029***<br>(-3.11) |                      |                      |                      |                      |
| <i>Pred_uninform</i>            |                      |                      | -0.572***<br>(-4.54) |                      | -0.572***<br>(-4.58) | -0.274***<br>(-3.59) |
| <i>Residual_uninform</i>        |                      |                      |                      | -0.067***<br>(-9.31) | -0.067***<br>(-9.33) | -0.033***<br>(-4.46) |
| <i>Constant</i>                 | 0.241***<br>(8.17)   | 0.252***<br>(9.23)   | 0.489***<br>(5.33)   | 0.073***<br>(26.83)  | 0.489***<br>(5.38)   | 0.432***<br>(8.28)   |
| Controls                        | YES                  | YES                  | NO                   | NO                   | NO                   | YES                  |
| Year FE                         | YES                  | YES                  | NO                   | NO                   | NO                   | YES                  |
| Industry FE                     | YES                  | YES                  | NO                   | NO                   | NO                   | YES                  |
| Observations                    | 5489                 | 4433                 | 4566                 | 4566                 | 4566                 | 4433                 |
| Adj. (or Pseudo) R <sup>2</sup> | 0.113                | 0.122                | 0.004                | 0.018                | 0.023                | 0.122                |
| F-tests:                        |                      |                      |                      |                      |                      |                      |
| Pred_uninform equals            |                      |                      |                      |                      | Prob > F = 0.0001    | Prob > F = 0.0028    |
| Residual_uninform               |                      |                      |                      |                      |                      |                      |

**Table 5: Robustness test - Rank value of FRQ measure**

This table presents the effect of FRQ on PIPE outcomes based on rank value of FRQ measure. *FRQ\_RANK* is rank value of *FRQ* ranging from 0 to 1. *Inv\_uninform* is the percentage of shares offered in PIPE purchased by less informed investors; *Uni\_Lead* equals one if less informed investors are the major buyer of stocks offered in PIPEs, and zero otherwise. *Discount* is the difference between price on PIPE closing date and the PIPE's offer price and scaled by price on PIPE closing date. Definitions of other variables are provided in Table 1. T-statistics are presented in parentheses. Standard errors are corrected for heteroscedasticity and are clustered by industry. \*, \*\*, and \*\*\* indicate significance levels at 10%, 5%, and 1%, respectively

|                                 | (1)                  | (2)                  | (3)                  |
|---------------------------------|----------------------|----------------------|----------------------|
|                                 | <i>Inv_uninform</i>  | <i>Uni_Lead</i>      | <i>Discount</i>      |
| <i>FRQ_RANK</i>                 | 0.058**<br>(2.23)    | 0.342**<br>(2.00)    | -0.020**<br>(-2.41)  |
| <i>SIZE</i>                     | 0.030***<br>(6.21)   | 0.231***<br>(6.08)   | -0.006*<br>(-1.97)   |
| <i>ROA</i>                      | 0.025<br>(1.20)      | 0.091<br>(0.76)      | -0.010<br>(-1.53)    |
| <i>LEV</i>                      | -0.004<br>(-0.16)    | 0.018<br>(0.10)      | -0.002<br>(-0.07)    |
| <i>RET</i>                      | -0.009*<br>(-1.70)   | -0.067**<br>(-2.19)  | 0.008***<br>(3.66)   |
| <i>AGE</i>                      | -0.030***<br>(-2.73) | -0.170***<br>(-2.58) | -0.001<br>(-0.28)    |
| <i>CASH</i>                     | 0.067***<br>(3.07)   | 0.463***<br>(2.96)   | -0.055***<br>(-3.13) |
| <i>IO</i>                       | -0.086***<br>(-3.18) | -0.645***<br>(-3.41) | -0.004<br>(-0.24)    |
| <i>log (1+# analysts)</i>       | 0.003<br>(0.33)      | -0.021<br>(-0.30)    | -0.018***<br>(-2.94) |
| <i>σ(RET)</i>                   | -0.165***<br>(-3.55) | -0.714***<br>(-2.71) | 0.067**<br>(2.60)    |
| <i>TBQ</i>                      | 0.009<br>(1.60)      | 0.060*<br>(1.81)     | 0.010***<br>(3.38)   |
| <i>Big4</i>                     | 0.034**<br>(2.44)    | 0.265***<br>(2.59)   | 0.005<br>(0.88)      |
| <i>Agent_ability</i>            | -0.020***<br>(-5.30) | -0.152***<br>(-5.95) | 0.006***<br>(3.60)   |
| <i>Constant</i>                 | 0.289***<br>(2.88)   | -1.782**<br>(-2.46)  | 0.256***<br>(9.02)   |
| Year FE                         | YES                  | YES                  | YES                  |
| Industry FE                     | YES                  | YES                  | YES                  |
| Observations                    | 4433                 | 4396                 | 4433                 |
| Adj. (or Pseudo) R <sup>2</sup> | 0.130                | 0.132                | 0.118                |

**Table 6: Investment return: Deals led by hedge funds vs deals led non-hedge-fund investors**

This table presents the comparison of mean (median in bracket) investment return and discount between PIPE deals led by hedge funds (i.e., hedge funds are the majority buyer of shares offered in PIPE) and deals led by non-hedge funds with the whole sample of PIPEs. Our measure of investment return, *Inv\_ret*, is the difference between the price on PIPE closing date and PIPE's offer price and scaled by offer price. This measure captures the paper gain for an investor purchasing shares in PIPE at the offer price. *Discount* is the difference between price on PIPE closing date and the PIPE's offer price and scaled by price on PIPE closing date. \*, \*\*, and \*\*\* indicate significance levels at 10%, 5%, and 1%, respectively

|                   | Deals led by<br>Hedge funds | Deals led by<br>Non-hedge-fund investors | Difference<br>in mean |
|-------------------|-----------------------------|------------------------------------------|-----------------------|
| <i>Inv_ret</i>    | 17.13%<br>(12.58%)          | 12.92%<br>(5.83%)                        | 4.21%***              |
| <i>Discount</i>   | 9.56%<br>(11.17%)           | 4.93%<br>(5.51%)                         | 4.63%***              |
| <i>N of deals</i> | 1894                        | 5075                                     |                       |

**Table 7: The effect of FRQ on participation of different types of non-hedge-fund investors**

This table presents the effect of FRQ on participation of different types of investor in PIPEs. Panel A presents result of logit regressions to estimate the investors' decision to participate in PIPE. The dependent variable, *D\_INV*, equals one if the investors buy stocks offered in PIPEs, and zero otherwise. Panel B presents result of OLS regressions to estimate the percentage of investors' investment in PIPE. The dependent variable, *INV%*, is the percentage of investment made by one type of investors scaled by the total investment of all ten types of investors in the PIPE. The main independent variable, FRQ, and control variables are constructed based on information prior to the PIPE issuance. Definitions of other variables are provided in Table 1. T-statistics are presented in parentheses. Standard errors are corrected for heteroscedasticity and are clustered by industry. \*, \*\*, and \*\*\* indicate significance levels at 10%, 5%, and 1%, respectively.

**Panel A: The effect of FRQ on decision to participate in PIPE**

|                       | Bank                 | Buyout<br>Firm/PE    | Broker/<br>Dealer    | Trust                | Corporation<br>Investors | Institutional<br>Advisor | Insurance            | Mutual<br>Fund  | Pension<br>/Gov<br>Funds | Venture<br>Capital |
|-----------------------|----------------------|----------------------|----------------------|----------------------|--------------------------|--------------------------|----------------------|-----------------|--------------------------|--------------------|
|                       | <i>D_INV</i>         | <i>D_INV</i>         | <i>D_INV</i>         | <i>D_INV</i>         | <i>D_INV</i>             | <i>D_INV</i>             | <i>D_INV</i>         | <i>D_INV</i>    | <i>D_INV</i>             | <i>D_INV</i>       |
| <i>FRQ</i>            | -0.629<br>(-1.11)    | 1.689**<br>(2.33)    | -0.455<br>(-1.10)    | -0.051<br>(-0.08)    | 0.246<br>(0.51)          | -0.133<br>(-0.64)        | 1.364**<br>(2.12)    | 0.399<br>(1.15) | 0.146<br>(0.20)          | -0.115<br>(-0.76)  |
| <i>Constant</i>       | -2.831***<br>(-2.84) | -3.222***<br>(-4.21) | -3.303***<br>(-4.14) | -3.087***<br>(-3.27) | -4.518***<br>(-5.41)     | 0.403<br>(0.52)          | -3.148***<br>(-3.90) | 0.404<br>(0.35) | -2.254<br>(-1.20)        | 0.287<br>(0.40)    |
| Controls              | YES                  | YES                  | YES                  | YES                  | YES                      | YES                      | YES                  | YES             | YES                      | YES                |
| Year FE               | YES                  | YES                  | YES                  | YES                  | YES                      | YES                      | YES                  | YES             | YES                      | YES                |
| Industry FE           | YES                  | YES                  | YES                  | YES                  | YES                      | YES                      | YES                  | YES             | YES                      | YES                |
| N                     | 3426                 | 4149                 | 4280                 | 3792                 | 4335                     | 4338                     | 3888                 | 4219            | 3927                     | 4399               |
| Pseudo R <sup>2</sup> | 0.139                | 0.111                | 0.149                | 0.074                | 0.093                    | 0.102                    | 0.141                | 0.185           | 0.131                    | 0.108              |

Panel B: The effect of FRQ on the percentage of investors' investment in PIPE

|                     | Bank               | Broker/<br>Dealer  | Buyout<br>Firm/PE | Charitable/<br>Educational<br>/Family Trust | Corporation       | Institutional<br>Advisor | Insurance          | Mutual<br>Fund     | Pension/Gov<br>Funds | Venture<br>Capital<br>Firm |
|---------------------|--------------------|--------------------|-------------------|---------------------------------------------|-------------------|--------------------------|--------------------|--------------------|----------------------|----------------------------|
|                     | <i>INV%</i>        | <i>INV%</i>        | <i>INV%</i>       | <i>INV%</i>                                 | <i>INV%</i>       | <i>INV%</i>              | <i>INV%</i>        | <i>INV%</i>        | <i>INV%</i>          | <i>INV%</i>                |
| <i>FRQ</i>          | -0.012<br>(-0.76)  | -0.019<br>(-1.32)  | 0.030*<br>(1.68)  | -0.023<br>(-1.13)                           | 0.063<br>(0.93)   | -0.002<br>(-0.05)        | 0.029***<br>(3.93) | 0.046***<br>(2.78) | 0.005<br>(0.32)      | 0.031<br>(0.92)            |
| <i>Constant</i>     | 0.058***<br>(8.04) | 0.140***<br>(2.95) | 0.016<br>(0.54)   | 0.003<br>(0.20)                             | 0.179**<br>(2.48) | 0.260***<br>(4.73)       | 0.032***<br>(2.71) | 0.037<br>(0.79)    | -0.020<br>(-0.55)    | 0.214***<br>(6.68)         |
| Controls            | YES                | YES                | YES               | YES                                         | YES               | YES                      | YES                | YES                | YES                  | YES                        |
| Year FE             | YES                | YES                | YES               | YES                                         | YES               | YES                      | YES                | YES                | YES                  | YES                        |
| Industry FE         | YES                | YES                | YES               | YES                                         | YES               | YES                      | YES                | YES                | YES                  | YES                        |
| N                   | 2298               | 2298               | 2311              | 2315                                        | 2298              | 2118                     | 2299               | 2168               | 2302                 | 2281                       |
| Adj. R <sup>2</sup> | 0.043              | 0.086              | 0.049             | 0.024                                       | 0.180             | 0.082                    | 0.017              | 0.082              | 0.055                | 0.065                      |

## APPENDIX

**Table A1: The effect of FRQ on placement agent fee**

This table presents the effect of FRQ on agent fee. *Fee\_agent* is the dollar placement agent fee scaled by total proceeds from PIPE. The main independent variable, *FRQ*, and control variables are constructed based on information prior to the PIPE issuance. Definition of other variables are provided in Table 1. Column 1 (2) presents results without (with) control variables. We use the same set of control variables as that in Table 3. T-statistics are presented in parentheses. Standard errors are corrected for heteroscedasticity and are clustered by industry. \*, \*\*, and \*\*\* indicate significance levels at 10%, 5%, and 1%, respectively.

|                     | (1)                | (2)                 |
|---------------------|--------------------|---------------------|
|                     | <i>Fee_agent</i>   | <i>Fee_agent</i>    |
| <i>FRQ</i>          | -0.005<br>(-1.52)  | 0.000<br>(0.21)     |
| <i>Constant</i>     | 0.086***<br>(8.99) | 0.117***<br>(11.06) |
| Controls            | NO                 | YES                 |
| Year FE             | YES                | YES                 |
| Industry FE         | YES                | YES                 |
| Observations        | 2388               | 2311                |
| Adj. R <sup>2</sup> | 0.083              | 0.192               |