Premium PIPEs: Why Do Investors Frequently Pay More than the Prevailing Market Price?

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Abstract

Private investments in public equity (PIPEs) are frequently issued at a price above the prevailing market price. Although premium PIPEs are largely ignored by prior literature, they constitute 24.5% of common stock PIPE issuances during our sample period from 2001 to 2015. They are prevalent across time, issuer industry, and investor type. They are not explained by offer size or the liquidity of the issuer. Average abnormal announcement returns are 9.4% greater for premium PIPEs than discount PIPEs. Long-term abnormal returns are also significantly higher for premium PIPEs. We find investors' willingness to pay a premium credibly signals issuer undervaluation resulting from either private information or evolving strategic/monitoring relationships. Our results are not consistent with investors paying a premium in return for contractual features, such as warrants or board seats, then used to extract excess value from issuers.

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Abstract

Private investments in public equity (PIPEs) are frequently issued at a price above the prevailing market price. Although premium PIPEs are largely ignored by prior literature, they constitute 24.5% of common stock PIPE issuances during our sample period from 2001 to 2015. They are prevalent across time, issuer industry, and investor type. They are not explained by offer size or the liquidity of the issuer. Average abnormal announcement returns are 9.4% greater for premium PIPEs than discount PIPEs. Long-term abnormal returns are also significantly higher for premium PIPEs. We find investors' willingness to pay a premium credibly signals issuer undervaluation resulting from either private information or evolving strategic/monitoring relationships. Our results are not consistent with investors paying a premium in return for contractual features, such as warrants or board seats, then used to extract excess value from issuers.

Introduction

Issuing equity is costly for public firms (Pagano, Panetta and Zingales, 1998; Ritter and Welch, 2002; Ritter, 2003). These costs affect firms' capital structure decisions and shape the theories explaining those capital structure decisions. For example, the information cost of issuing equity relative to debt is a fundamental element to the pecking order theory (Myers and Majluf, 1984), and the high cost of issuing equity magnifies the option value of financial slack in the dynamic capital structure model of DeAngelo, DeAngelo, and Whited (2011).

Firms issuing equity not only incur direct costs such as investment banking fees and the other well-documented flotation costs,[1] but also incur costs from discounting, the need to issue equity at a price below the prevailing market price. Issuance discounts significantly reduce the revenues received from seasoned equity offerings (SEOs). Chemmanur, Simonyan, and Zheng (2020) report average SEO discounts of 4.5% in their sample between 1980 and 2017, and Chan and Chan (2014) find SEO discounts averaged around 3% over the period 1995 to 2007.

Private investments in public equity (PIPEs) offer an alternative method for public firms to issue equity. In a PIPE, a public firm privately places securities with a select group of accredited investors. The PIPE contract stipulates any restrictions, obligations, or special features related to the newly issued securities. As reported in Chakraborty and Gantchev (2013), the U.S. market for privately placed equity offerings has become increasingly active over time. PIPEs have evolved from a financing source of last resort into a legitimate alternative to SEOs for a broad cross-section of firms as well as a potential funding source from strategic, long-term partners (Billett, Floros and Tian, 2022).

Prevailing wisdom suggests that PIPEs require even larger discounts than SEOs. Many studies support this view. Wruck (1989) reports an average discount of 13.5% attributing it to the resale restrictions carried in private placements and compensation for investors' monitoring services. Hertzel and Smith (1993) reports an average discount of 20.1% attributing it to compensation for due diligence costs when informational asymmetries with issuers are present. More recently, Lim, Schwert and Weisbach (2021) documents an average 11.2% discount offered in PIPE transactions.

[1] These direct costs include legal and accounting costs and printing fees as documented in Eckbo, Masulis and Norli, 2007.

Prevailing wisdom, however, is incomplete. Around one quarter of common stock PIPEs are issued at a *premium*, meaning the investors pay more than the current market price of the issuer's shares in the PIPE transaction.[2] We observe 3,101 premium PIPEs in our overall sample of 12,661 common stock PIPEs. Despite the prevalence of premium PIPEs, equity issuance models do not address negative discount issuances. Our study documents the frequency and breadth of premium PIPEs across time, industry, and investor types and then investigates why they occur in such a substantial percentage of PIPE offerings. We conclude that premium PIPEs are an instrument for issuers to credibly signal positive information about their value and future prospects while simultaneously issuing shares at a premium to the prevailing market price. In the case of premium PIPEs, undervalued firms issue shares instead of repurchasing shares.

PIPEs come in many different flavors with wide variation across the type of security and the type of investor. We focus our analysis on common stock PIPEs which are the most liquid of the underlying securities and compose 61.5% of our sample of 20,588 PIPEs between 2001 and 2015. Table 1 demonstrates the prevalence of premium PIPEs across time. The percentage of premium PIPEs per year remains between 20% and 30% except for 18.4% and 14.0% in 2003 and 2004 respectively and 34.4% in 2008. Premium PIPEs are also prevalent across industries. The percentage varies from a low of 19.9% in the industrial sector to a high of 38.0% in the basic materials sector. We further find that premium PIPEs are prevalent across investor types. PIPEs trade at a premium in 45.2% of PIPEs led by a corporate investor, 19.8% of hedge fund led PIPEs, 29.0% for venture capital led PIPEs, and 32.7% of insider led PIPEs.

After documenting the pervasiveness of premium PIPEs, we introduce and test potential motives for the above current market price issuances. Extant literature offers several motives for *discount* PIPEs. Hertzel and Smith (1993) highlight the cost of information acquisition in an environment with asymmetric information and find that PIPE discounts compensate the investors for their cost of assessing the value of the issuing firm and that greater discounts are associated with greater announcement returns. Wruck and Wu (2009) find that issuing firms benefit from private placements when investors create new relationships with the issuers that improve governance. They further find that larger discounts are associated with stronger governance

[2] Chan and Chan (2014) find only 3.9% of SEOs (196 out of 5,087) in their sample are priced at a premium to the market price.

influences. Alternatively, Barclay, Holderness and Sheehan (2007) find that PIPE discounts compensate investors for passivity that enhances managerial entrenchment.

Premium PIPEs, however, offer no direct compensation to investors through a discount issuance price. Moreover, investor compensation cannot adjust through greater discounts to compensate for the increased costs of greater information acquisition or greater monitoring. We adapt these motives for discount PIPEs to apply to the premium PIPE setting. We propose that the willingness of an informed investor to pay a premium price either credibly signals positive information about issuer valuation that results in a positive announcement return or signals negative information about financial distress or managerial entrenchment and self-dealing that results in a negative announcement return.

Specifically, the *Value Enhancement Hypothesis*, related to the Wruck and Wu (2009) story, posits that premium PIPEs are associated with an enhanced relationship between the issuer and investor that increases the value of the issuer. The willingness of the informed PIPE investor to pay a premium credibly signals the value increasing relationship to the market. The *Undervaluation Hypothesis*, related to the Hertzel and Smith (1993) story, posits that PIPEs help resolve market uncertainty about issuer valuation. The PIPE investor's knowledge and expertise about the issuer combined with information acquired during the PIPE negotiation and due diligence process reveals issuer undervaluation. The willingness of the informed PIPE investor to pay a premium credibly signals this undervaluation to the market.

Our third positive signaling hypothesis for premium PIPEs is novel. The *Courtship Hypothesis* posits that PIPEs resolve issuer-investor information asymmetry. The investor pays a premium to learn about the issuer through interactions with the issuer *after* the PIPE transaction but before committing to more binding ties such as an acquisition. The information gathered *after* the PIPE allows the potential acquirer to reduce the likelihood of pursuing a value destroying acquisition. The willingness of the PIPE investor to pay an insurance premium to avoid a bad acquisition signals a potential value increasing acquisition of the issuer to the market.

Our fourth hypothesis, related to the Barclay, Holderness and Sheehan (2007) story, generates a negative signal of issuer value. The *Value Extraction Hypothesis* posits that in return for paying a premium issuance price, investors obtain contractual protections or influence over the firm that allow the investors to extract value from the firm. Because a rational investor would require the expected value extraction to outweigh the value of the premium paid, the PIPE destroys

issuer value and signals a weak issuer with limited financing options (Brophy, Ouimet and Sialm, 2009; Kang and Park, 2020) or managerial entrenchment and self-dealing. Finally, the *Illiquidity Hypothesis* is not associated with a clear prediction about the premium PIPE signal. It posits that accruing a substantial ownership stake of an illiquid stock in the open market would result in a higher average price than the premium price paid in the PIPE.[3]

We begin our empirical tests of the hypotheses with an examination of the market's initial responses to PIPE announcements. We find the average 11-day abnormal announcement return for premium PIPEs is 8.63% *(p-value* = 0.000) and is significantly higher than the average abnormal return for discount PIPEs of -1.49% (*p-value* = 0.000). Similarly, we find significantly positive abnormal returns for premium PIPEs in the 3-day, 5-day, and 21-day windows that are significantly greater than the respective abnormal returns for discount PIPEs. To control for potential effects from covariates of announcement returns, we run a series of regression models with the abnormal announcement returns as the dependent variable and a premium indicator as the variable of interest. Consistent with the univariate announcement returns, the coefficients on the premium indicator variables are positive and significant. The observed positive market response to premium PIPE announcements which dominates the market response to discount PIPE announcements is predicted by the positive signal in the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis* but is not consistent with negative signal in the *Value Extraction Hypothesis*.

To further test the *Value Extraction Hypothesis*, we examine the subsample of PIPEs that have no additional contractual terms (e.g., vanilla PIPEs). The omission of additional contractual features within these vanilla PIPEs limits the scope for investors to extract value from the issuer through these PIPEs. We find that the percentage of all PIPEs issued at a premium is actually higher in the subsample of vanilla PIPEs than in the subsample of non-vanilla PIPEs that include additional contractual features (28.8% versus 21.8%). Moreover, the announcement period abnormal returns in both the subsample of vanilla PIPEs issued at a premium and the subsample of non-vanilla PIPEs issued at a premium are positive and significant. Neither the higher frequency of premium PIPEs in the subsample of vanilla PIPEs nor the consistency of the positive

[3] In this context, we focus on the issuer stock illiquidity before the PIPE, not the illiquidity specific to the PIPE investors' shares after the PIPE resulting from any limitations on trading the shares acquired in the PIPE.

announcement returns within the subsamples of vanilla and non-vanilla premium PIPEs is consistent with the *Value Extraction Hypothesis*.

The *Illiquidity Hypothesis* predicts that PIPEs are issued at a premium because of issuer stock illiquidity. We find, however, that premium PIPEs are prevalent across all quintiles of issuer illiquidity. The percentage of premium PIPEs within the quintiles of illiquidity are 22.0%, 19.6%, 19.3%, 21.9%, and 26.6%, respectively, as the quintiles go from least illiquid to most illiquid. The pervasiveness of premium PIPEs across all quintiles suggests that illiquidity is not a primary motivation for premium PIPEs.

The motives to pay a premium for a PIPE can vary across investors. When examining the individual investor types, we find no evidence within any investor type that premium PIPEs destroy value on average. For each investor category, the average announcement CARs for premium PIPEs are positive and significant, indicating premium PIPEs signal positive information for all investor types. We further find no evidence that investors are simply increasing the issue price to a premium in return for excess value extraction. The CARs for premium PIPEs are higher than the average CARs for discount PIPEs in all investor categories and announcement windows and statistically significant for all investors and announcement windows except the 21-day window for corporate investors.[4]

The cumulative return graph in Figure 1 further clarifies the pattern of the announcement period abnormal returns for premium PIPEs. The average cumulative return is stable around zero from ten days before the announcement through two days before the announcement. Returns drift up on average on the day before the announcement, suggesting possible leakage of information related to the premium PIPE. Returns then increase sharply on the day of the announcement and continue to drift higher through six days after the announcement, leveling off at around 9.5%. The strong positive market reaction to premium PIPEs followed by an upward trend continuing for several days as additional information is digested by the market reinforces the evidence that premium PIPEs serve as positive signals of issuer value.

The announcement period return analysis demonstrates that the market responds positively on average to premium PIPEs, thus benefiting existing shareholders. This benefit could come through two channels. First, issuing shares at above the market price mechanically increases the

[4] We do, however, find evidence consistent with hedge funds using discount PIPEs to extract value from issuers. Specifically, we find negative average announcement CARs for discount PIPEs when hedge funds are the primary investor. Alternatively, hedge fund led discount PIPEs could signal negative information about the issuing firm.

value of existing shareholders' shares. Second, as described in the hypotheses, the PIPE announcement can signal information about issuer value. To distinguish between these two channels and refine our tests of the hypotheses, we separate the mechanical effect of the issuance price from the signaling effect.

By construction, we find a positive (negative) mechanical effect on existing shareholder value in the sample of premium (discount) PIPEs. More interestingly, the average signaling effect is positive and significant (5.66%, *p-value* = 0.000) in the sample of premium PIPEs and negative and significant (-1.62%, *p-value* = 0.000) in the sample of discount PIPEs. Similarly, when the signaling effect is the dependent variable in our regression models, the coefficients on the premium indicator variables are positive and significant. As with the overall announcement returns, the observed positive signaling effect for premium PIPEs which dominates the signaling effect for discount PIPEs is predicted by the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis* but is not consistent with the *Value Extraction Hypothesis*.

Given the available data, conclusively distinguishing between the *Value Enhancement Hypothesis* and the *Undervaluation Hypothesis* is challenging, but our results suggests that both play a role in motivating premium PIPEs. Not surprisingly, because corporate investors are operating firms, we find PIPEs designated as strategic transactions occur almost exclusively within PIPEs led by corporate investors. Further, we find that premium PIPEs are most likely within the set of corporate investor led PIPEs, where 45.2% of PIPEs are issued at a premium. Moreover, we find that premium PIPEs are almost three times as likely in strategic PIPEs than in PIPEs not designated as strategic (57.9% vs. 20.0%). These results suggest that value enhancement through strategic partnerships plays a role in motivating premium PIPEs. On the other hand, despite strategic partnerships being unlikely to motivate hedge fund led PIPEs, we observe a significant percentage of premium PIPEs within the hedge fund led group, where 19.8% of PIPEs are issued at a premium. Issuer undervaluation likely motivates many of the hedge fund led premium PIPEs. Although certain hedge funds may create value through an active role in the issuer, we find that 77.6% of hedge fund led premium PIPEs are not active investor PIPEs.[5]

[5] We define active investor PIPEs as PIPEs in which an investor receives a board seat or a 13D filing related to the issuer is made within the 60 days after the PIPE issue date.

To distinguish the *Courtship Hypothesis*, we investigate subsequent acquisitions targeting the PIPE issuer. The evidence in support of the *Courtship Hypothesis* is limited. In the overall sample of PIPEs, takeover announcements targeting the issuing firms are more frequent after premium PIPEs than after discount PIPEs. This result supports the *Courtship Hypothesis*. However, in the subsample best suited for testing the *Courtship Hypothesis*, corporate led PIPEs, the frequency of takeover announcements targeting the issuer after premium PIPEs is slightly *lower* in magnitude than the frequency of takeover announcements targeting the issuer after discount PIPEs. Although the difference is not significant, this result is the opposite of what we would expect under the *Courtship Hypothesis* and suggests that corporate investors are not paying a premium to reduce the risk of a value destroying acquisition by becoming more acquainted with the issuers before committing to a potential acquisition.

To complete the circle in the investigation of incentives for premium PIPEs, we examine if paying a premium is consistent with the interest of PIPE investors. We find that issuance prices on average are consistent with investor interest for PIPE investors paying a low to moderate premium, but the results for investors paying a high premium are less clear. Specifically, we divide the premium sample into terciles based on the premium level. The low tercile group includes premiums below 4%, the moderate tercile group includes premiums of 4% up to 14%, and the high tercile includes premiums of 14% and above. We calculate the net gain for each investor by subtracting the premium percentage from the cumulative abnormal return from the day of the public revelation of the PIPE through the end of our announcement period window.[6] The average net gain through five days after announcement for investors in the premium terciles are 1.3%, 0.1%, and -25.8%, respectively, suggesting that low and moderate premium PIPE investments are consistent with investor interests in the short-term, but high premium PIPE investments are not.

We find that investors in high premium PIPEs are likely to be long-term investors. Thus, long-term gains can make up for the short-term losses suffered by high premium investors. Our long-term returns analysis suggests issuers of high premium PIPEs preform significantly better after the PIPE than issuers of discount PIPEs. Average long-term buy and hold raw returns and average long-term buy and hold abnormal returns (BHAR) are both significantly greater after high premium PIPEs than after discount PIPEs. In absolute terms, the positive average long-term *raw*

[6] Throughout the paper, the market price used to calculate the discount of the issue price is the closing price of the issuer stock on the day before any information about the PIPE is publicly revealed.

return after high premium PIPEs makes up for the short-term losses, suggesting that long-term investors in high premium PIPEs do not suffer an overall loss on their PIPE investment on average. However, we find negative long-term BHAR returns on average even within the high premium PIPEs, suggesting high premium PIPE investors lose on average when the opportunity costs of the investment are considered. When we restrict the sample of high premium PIPEs to initial PIPE issuances by a firm, the most informative PIPE issuances, we find that both the raw and the abnormal long-term returns make up for the short-term losses on average. The results suggest that long term investments in high premium PIPEs that are the firm's initial PIPE issuance cover the opportunity cost of the investment and are consistent with investor interests.

Although our long-term return results do not explain the motives for investors in high premium PIPEs that are not the initial issuance by an issuer, other benefits in addition to short-term and long-term returns can motivate long-term premium PIPE investors. Strategic investors can benefit from strategic gains accruing directly to investors and investors in large blocks of shares can benefit from the value of control. The average premium paid in the high premium tercile is 32.3% and the investors in this tercile, on average, are issued 50.6% of the pre-issuance outstanding shares. These large premiums and large share purchases look more like long-term investments with control implications, such as acquisitions, than investments motivated by undervaluation. Although we are unable to observe either the strategic benefits that accrue directly to investors or the value of control accruing to investors, these benefits could play an important role in high premium investor motives and further explain the short-term net investor losses in this tercile. We also note that in strategic PIPEs with a large portion of the surplus accruing directly to the investor, a higher premium transfers a portion of this surplus to the issuing firm's existing shareholders. In these cases, the transfer of surplus to the issuer could motivate high premium PIPEs.

In summary, this paper documents the prevalence of premium PIPEs and investigates their motivations and implications. Investors pay a premium to the market price of the issuer stock in 24.5% of common stock PIPEs. Premium PIPEs are prevalent through time and across industries and investor types. The evidence suggests that premium PIPEs resolve information asymmetry about either issuer value or an evolving relationship with an investor that is expected to enhance issuer value. The resolution of asymmetric information results in positive average announcement period abnormal returns and positive average signaling returns. Essentially, we find firms needing

an infusion of capital that have value increasing private information or value increasing strategic opportunities can substantially reduce or even reverse the issuance costs of equity by issuing premium PIPEs.

We are the first paper to document the pervasiveness of premium stock issuances and investigate the motives and outcomes for premium PIPEs. To our knowledge, the first paper to document the significant decrease in PIPE discounts occurring during the period 1995 to 2011 was Huson, Malatesta and Parrino (2012). The study attributes the gradual decrease in discounts to evolving the capital market conditions and the issuer characteristics associated with the growing number of PIPEs that are no longer financing sources of last resort. Premium prices are not documented in this earlier sample period.[7] Recently, Kang and Park (2020) investigate the PIPE features associated with monitoring/certification. The study uses deal pricing (i.e., whether the deal was offered at a premium) as one of three indicators for value enhancing PIPEs. The study reports significantly higher announcement returns and long-term performance for the deals that have any combination of the three value enhancing attributes. We note that none of the earlier studies examines the pervasiveness of premium PIPEs or the motives for premium PIPEs.

Our paper contributes to the literature studying PIPEs and asymmetric information, PIPEs and corporate governance, PIPEs and managerial entrenchment, and PIPEs and block trades. Hertzel and Smith (1993) study the role of PIPEs in resolving information asymmetry. Their paper incorporates PIPEs into the share issuance model of Myers and Majluf (1984) and posits that PIPE discounts compensate investors for their information costs. The resulting PIPE credibly signals positive information about the issuer standalone or new project value. The resolution of information asymmetry leads to positive PIPE announcement returns that increase with the size of the discount. Our paper incorporates the friction of information asymmetry into the *Undervaluation Hypothesis* and finds that investor willingness to pay above the prevailing market price for the issuer stock credibly resolves information asymmetry. In contrast to discount PIPEs, however, premium PIPEs offer no direct compensation for information costs because investors are paying above the prevailing stock price.

Wruck and Wu (2009) find that PIPEs involving new relationships with the PIPE investors are associated with higher announcement returns and that larger discounts are associated with

[7] Wu (2004) uses premium PIPEs as one partition in a set of robustness checks partitioning the sample to explore if insiders benefit more from deal pricing in any of the partitions. No significant differences are reported.

stronger governance influences from the investors. We incorporate the motives of new relationships and improved governance into the *Value Enhancement Hypothesis*. In contrast to discount PIPEs, however, premium PIPEs offer no direct compensation for stronger governance. The compensation for improved governance from premium PIPEs must accrue through a subsequent increase in the share value of the issuer or via a direct increase in the investor value stemming from the new relationship forged through the PIPE.

Barclay, Holderness and Sheehan (2007) find that, in the vast majority of cases, PIPE discounts compensate investors for passivity that enhances managerial entrenchment. They further find that arms-length block trades typically trade at a premium and lead to active engagement in the firm by the block investors. We incorporate managerial entrenchment into the *Value Extraction Hypothesis*. In contrast to discount PIPEs, premium PIPEs offer no compensation for passivity. In contrast to block trades, premium PIPEs are negotiated directly between the issuer and the investor, and the issuer itself receives the proceeds from the anti-dilutive premium price paid by the investor. In this context, a premium PIPE that results in active investor engagement resembles an invitation from an undervalued issuer for investor involvement that results in an accretive increase in issuer equity and a positive signal of issuer prospects.

Our results also contribute to our understanding of the types of firms that issue shares. Theory predicts that undervalued firms tend to repurchase shares and overvalued firms tend to issue shares (Myers and Majluf, 1984; Ickenberry and Vermaelen, 1995; Ickenberry, Lakonishok, and Vermaelen, 1995). Premium PIPEs can alter this pattern. Engaging a single investor or a small group of investors in an issuance reduces the costs of informing the investors of positive private information about the issuing firm (Leland and Pyle, 1977), including potential information about an evolving relationship with the PIPE investors. The informed investors can then credibly signal the private information by paying a premium issue price in the publicly announced PIPE, resulting in positive announcement returns. Thus, premium PIPEs flip the cost of a discount in an equity issuance into a benefit while simultaneously increasing the value of the issuer shares through the positive signal sent by the premium PIPE. In the case of premium PIPEs, undervalued firms issue shares.

Our study also makes two methodological contributions to the investigation of PIPEs. First, we introduce an improved methodology to determine the date of the initial public revelation of the PIPE. We define the revelation day as the first of two dates listed in PrivateRaise, namely the

announcement date and the issue date. This approach decreases the dispersion of the cumulative abnormal return pattern and concentrates abnormal returns in the PIPE revelation day. The results suggest that the announcement date listed in Private Raise is not always the initial day the PIPE was publicly revealed. Second, based on the cumulative return patterns around PIPEs announcements, we find the optimal symmetric window for calculating announcement period abnormal returns for PIPEs is at least eleven days. The (-5, +5) window captures the vast majority of the average announcement effect, while the (-10, +10) window offers a small increase in the average announcement period abnormal returns but doubles the exposure to confounding events.

Motivation and theory development

This section proposes explanations for premium PIPEs and details the resulting predictions from each hypothesis. The motives for *discount* PIPEs have been examined in the prior literature. For example, Hertzel and Smith (1993) extend the model of Myers and Majluf (1984) to include the cost of information acquisition in an environment with asymmetric information. They find that discounts compensate the investors for their cost of assessing the value of the issuing firm and that greater discounts are associated with greater announcement returns. Wruck and Wu (2009) find that issuing firms benefit from private placements when investors create new relationships with the issuers that improve governance. They further find that larger discounts are associated with stronger governance influences. We modify the information asymmetry and monitoring motives previously applied to discounted private placements to apply to a setting in which the negative discounts of premium PIPEs offer no direct compensation to investors and investor compensation cannot adjust through greater discounts to compensate for the increased costs of greater information acquisition or greater monitoring.

Two dimensions of information asymmetry generate three hypotheses for premium PIPEs. Information asymmetry between the issuer and the market leads to the *Undervaluation Hypothesis*. The market is aware that the PIPE investor acquires private information about the issuer during the PIPE negotiation and due diligence process. The investor's willingness to pay a premium for the shares credibly signals that the shares are undervalued in light of the positive private information. The *Undervaluation Hypothesis* predicts positive announcement returns for premium PIPEs.

The *Value Enhancement Hypothesis* posits that a premium PIPE is negotiated conjointly with a value increasing relationship between the issuer and investor, such as a strategic partnership

or a monitoring and advising role. The premium paid in the PIPE credibly signals the value creating relationship. The *Value Enhancement Hypothesis* predicts that premium PIPEs are associated with positive announcement returns. It also predicts premium PIPEs are related to strengthened relationships between the issuers and investors.

Alternatively, information asymmetry between the issuer and the investor leads to the *Courtship Hypothesis*. It posits that the PIPE investor is considering creating binding ties with the issuer but wants more clarity about a potential union before committing to it. Because the investor expects to learn about the issuer through interactions *after* the PIPE investment, the investor is willing to pay an information premium for the PIPE shares. Essentially, the PIPE investor is paying a premium to insure against committing to a bad marriage with the issuer. The *Courtship Hypothesis* predicts premium PIPEs are associated with a higher frequency of subsequent acquisitions of the issuer by the investor.

As an additional motive for premium PIPEs, the *Value Extraction Hypothesis* posits that premium PIPE investors benefit from paying a premium to the market price of the shares because the expected total private benefits they extract from the issuer outweigh the total premium paid. PIPE investors extract value through contractual features included in the PIPE, such as warrants and board seats, or through influence they exert as large shareholders in the issuer. Frictions such as financial constraints or agency conflicts motivate the issuer to accept these contractual features and the investor influence. (e.g. see Brophy, Ouimet and Sialm, 2009; Chaplinsky and Haushalter, 2010). As a result of the expected net value destruction for the issuer, the *Value Extraction Hypothesis* predicts negative announcement returns for premium PIPEs. The hypothesis also predicts that premium PIPEs will be more common in PIPEs with additional contractual features than PIPEs without additional contractual features.

Illiquidity in the market for the issuer's shares prior to the PIPE creates another potential explanation for premium PIPEs. If the issuer's stock is illiquid, the price impact from accruing a substantial number of shares in the open market can require an investor acquiring a large block of shares to pay an average price significantly higher than the current trading price. Consequently, paying a premium in a PIPE can be a cheaper way to acquire a large block of shares. The *Illiquidity Hypothesis* predicts that low liquidity drives premium PIPEs.

Sample construction and summary statistics

The data on Private Investments in Public Equity (PIPEs) come from PrivateRaise database.[8] PrivateRaise database consists of four modules, namely the transaction-related information (pricing, gross proceeds amounts, security type, offering status and contractual terms etc), the placement agent-related information, the investor type-related information and the legal counsel-related data. We incorporate all PIPE transactions issued by both U.S. and foreign issuers that are closed in the U.S. with their closing date ranging from 1/1/2001 to 12/31/2015. We require three years of available pricing data following each PIPE transaction in order to execute our long-term stock performance analysis (Table 11). Because of increased volatility in global markets and increased PIPE activity resulting from the COVID-19 pandemic, we exclude data during this period and end the PIPE sample in 2015. [9]

Our initial sample includes 21,370 closed PIPE transactions in the U.S. spanning the period 2001 to 2015. We exclude Rule-144A, At-The-Market offerings (ATMs), and Confidentially Marketed Public Offerings (CMPOs) which lowers our sample size to 20,588 transactions.[10]We exclude any convertible preferred stock or convertible debt offerings that could elicit significantly different announcement wealth effects. We identify 11,770 common stock PIPEs with available GVKEY identifiers allowing for the use of Compustat data.

For these transactions we have the complete roster of participating investors together with the purchase amount of each investor. This information comes from PrivateRaise for all years post-2006 and from PlacementTracker for the prior years (2001-2006).[11] PrivateRaise reports 13 distinct investor types: financial institutions, foreign investment houses, broker-dealers, insurance

[8] PrivateRaise has been used as the main data source in recent studies analyzing PIPE transactions. For more information on the database, we refer the reader to Lim, Schwert, and Weisbach (2021) and Floros, Nagarajan and Sivaramakrishnan (2020).

[9] Some useful references of the recent market trends in the PIPE market (widely perceived to be transient), are the following: https://corpgov.law.harvard.edu/2021/03/30/energizing-the-ma-market-post-crisis/ , https://www.sullcrom.com/files/upload/Market-Trends-2020_21_%20PIPEs.pdf . PIPEs became even more appealing during the pandemic as a) NYSE and NASDAQ relaxed existing shareholder approval rules and provided liquidity to issuers to engage in large transactions and b) PIPEs constituted the main financing venues fueling de-SPAC transactions as well as recent M&A activity.

[10] Both Rule-144A and ATM transactions have characteristics that are not present in PIPE transactions. Rule 144As are deals that are solely offered to Qualified Institutional Buyers (QIBs) and ATMs are sold at par to retail investors. CMPOs are hybrid offerings that are initially negotiated privately and then switch to public offerings.

[11] For the years of 1995 to 2000, we match PIPE transactions to PIPE investors' data, both coming from PlacementTracker and for the years of 2001 to 2005 we match PIPE transactions coming from PrivateRaise with PIPE investors' data coming from PlacementTracker. All matches are achieved counting on the closing trading symbol and the PIPE transaction closing date.

firms, mutual funds, pension funds/trusts/endowments, sovereign wealth funds, hedge funds, corporate insiders, individual investors, corporations, venture capital firms, private equity funds/buyout firms. Billett, Elkamhi, and Floros (2015) categorize private equity firms, VCs, and corporations as *strategic* investors, and hedge funds as *arms-length* investors. Brophy, Ouimet, and Sialm (2009) focus on hedge funds as financiers of last resort in PIPE transactions. Our final sample of PIPEs with PERMNOs and CIKs allowing for the calculation of returns is composed of 5,676 observations. This final dataset includes financial, pricing, stock performance, investor type, contractual terms, intermediation and registration information. The 5,676 transactions are issued by 2,509 distinct PIPE issuers.

Turning to our univariate analysis in Table 1, Panel A presents the total number of observations for the common stock and all other security type-offering PIPEs separately for each of our sample years. For this analysis, we use the broad sample of 12,661 closed common stock PIPEs and 7,927 closed non-common stock PIPEs. We note that the total annual count of common stock PIPEs dominates the total count of all other security types. Specifically, common stock PIPEs that are the focus of our study exceed 50% of the total sample count from 2002 onward with some of the years (2010 and 2011) reaching approximately 70%. In Panels B (C), we present the decomposition of common stock (all other security types) PIPEs, based on the transaction's pricing. Columns 2, 3 and 4 present the count of the issuances at a discount, at par and at a premium, respectively. Column 5 tabulates the percentage of PIPEs issued at a premium each year for the common stock sample (Panel B) and the other security type sample (Panel C).[12] The average percentage of premium PIPEs for the entire sample amounts to a striking 24.5% with the annual percentages ranging between 14% and 34.4%. Premium PIPEs are even more frequent in the non-common stock sample in Panel C with the average percentage of premium PIPEs for the entire sample of 29.9%.

[Insert Table 1 about here]

Table 2 examines the frequency of premium PIPEs across quintiles of issuer size and quintiles of issuer stock illiquidity. Issuer size is measured by the issuer's market capitalization as of the trading day before PIPE closing and issuer illiquidity is measured by the Amihud illiquidity

[12] We measure PIPE transaction pricing (discount, par and premium) based on the definition provided by PrivateRaise, namely: PIPE pricing is the percentage of the transaction offering price divided by the closing price the trading day before the first of the following dates: definitive agreement/pricing date, date of offering announcement and date of closing.

measure.[13] Panel A presents the quintiles based on issuer size and Panel B presents the quintiles based on issuer stock illiquidity. Both panels of the table analyze the sample of 5,676 PIPEs with CRSP data available. The percentage of premium PIPEs by issuer size quintiles from smallest to largest are 27.2%, 22.8%, 18.7%, 20.5%, and 21.1% respectively. The percentage of premium PIPEs by issuer stock illiquidity quintiles from least illiquid to most illiquid are 22.0%, 19.6%, 19.3%, 21.9%, 26.6% respectively. The results indicate that premium PIPEs are not limited to firms of a specific size or stock illiquidity. Instead, we find that premium PIPEs are prevalent across all quintiles of issuer size and issuer stock illiquidity. The pervasiveness of premium PIPEs across all quintiles suggests that illiquidity is not a primary motivation for premium PIPEs. The results are not consistent with the *Illiquidity Hypothesis*.

[Insert Table 2 about here]

Table 3 presents the industry distribution of our sample PIPE issuers. We match our sample of all common stock PIPEs with Compustat data based on ticker symbol and retrieve SIC information. The four sectors with the most numerous PIPEs are healthcare, basic materials, technology, and energy. The percentage of premium PIPEs in these sectors is 25.4%, 38.0%, 22.2%, and 27.4%, respectively. The industrial sector has the lowest percentage of premium PIPEs with 19.9%. Similar to our analysis of issuer size and issuer illiquidity, we find premium PIPEs are not limited to firms in a particular industry but instead are prevalent across all industries.

[Insert Table 3 about here]

Further, Table 4, presents the number of premium PIPEs and discount PIPEs for each of the leading investor types. For each transaction, the lead investor type is defined as the investor type purchasing the largest share of the PIPE.[14] We find that corporation-led PIPEs are the transactions with the highest occurrence of premium PIPEs (45.2%) and in contrast hedge fund-led PIPEs the ones with the lowest (19.8%). We note that the presence of premium PIPEs is consistently high with the average premium PIPEs' presence reaching 25.5% across all leading investor types.

[Insert Table 4 about here]

[13] Amihud illiquidity is computed as the absolute value of the daily holding period return divided by the product of the respective daily closing price and the share volume averaged over the 66-day window ending two days before the PIPE closing.

[14] If the purchased amounts are missing for more than 50% of the gross proceeds in a transaction, then the transaction is excluded from the analysis.

Empirical findings

We begin the tests of the hypotheses with an investigation of the market responses to PIPE announcements. We calculate the cumulative abnormal return (CAR) based on the market model for four different windows around the public revelation of each PIPE.[15] We define day 0 as the day information about the PIPE is first publicly revealed (the earliest between the announcement date or the closing date). The 3-day window covers days (-1, +1). The 5-day, 11-day, and 21-day windows cover days (-2, +2), days (-5, +5), and days (-10, +10) respectively. Table 5 presents the results of our analysis.

Panel A through Panel D tabulate the results for the 3-day, 5-day, 11-day, and 21-day windows, respectively. The first three columns of each panel present the results for discount PIPEs, the next three columns present the results for premium PIPEs and the last two columns present the differences between the premium PIPEs and the discount PIPEs. The rows in each panel examine different subsamples based on the primary PIPE investor type. The first row includes all PIPEs and the next two rows divide the full sample into PIPEs with no additional contract terms and PIPEs with at least one additional contract term. The remaining rows examine PIPEs led by corporate investors, hedge fund investors, insider investors, venture capital investors, other investor types, and PIPEs without information on the lead investor type.

The results are consistent across the different announcement period windows. For the full sample of all investors, the average CARs for premium PIPEs are positive and statistically significant at the 0.01 level for each time window. The average range between 7.22% and 9.03%. This contrasts sharply with the average CARs for discount PIPEs which are negative for each window and statistically significant at the 0.01 level for all except the 21-day window. We further find that the CARs for premium PIPEs are significantly higher than the CARs for discount PIPEs for all announcement period windows. The differences in announcement returns are economically substantial, ranging from 9.41% to 10.21. These findings of consistently positive market responses to premium PIPE announcements which dominate the market response to discount PIPE announcements is predicted by the positive signal in the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis* but is not consistent with negative signal in the *Value Extraction Hypothesis*.

[15] The estimation window for the market model is the 252 trading day period ending 12 days before the PIPE announcement.

In the second and third row of each panel, we find the average CARs for premium PIPEs are positive and significant at the 0.01 level within both the subsample with additional contractual features and the subsample without additional contractual features in all four time periods. Curiously, the average CARs in each time window are higher in the subsample with additional contract terms than the subsample without additional contract terms. Moreover, the average CARs are significantly higher for premium PIPEs than discount PIPEs within both the subsample of PIPEs with additional contract terms and within the subsample of PIPEs without additional contract terms for all four time windows. Thus, even in the subsample of PIPEs with deal sweeteners that could be used by the PIPE investor to extract value from the issuing firm, we find the market responds positively to the premium PIPEs announcements and more positively than to discount PIPE announcements. These results are not consistent with negative signal in the *Value Extraction Hypothesis*.

The fourth through ninth rows in each panel break the full sample into six mutually exclusive subsamples based on the type of lead investor in the PIPE. We find the average announcement returns for premium PIPEs are positive and significant for each investor type in all four announcement windows. Further, the average CARs of the premium PIPEs are higher than the average CARs of the discount PIPEs for all investor subsamples in all announcement windows and are significantly different in all except the for corporate led PIPEs and other investor led PIPEs in the 21-day window. The findings within all investor subsamples of consistently positive market responses to premium PIPE announcements which dominate the market response to discount PIPE announcements offer further support for the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis* but are not consistent with negative signal in the *Value Extraction Hypothesis*.

The lack of significance in the difference between premium PIPE CARs and discount PIPE CARs within the corporate investor led PIPEs and other type investor led PIPEs results from the large positive CARs for discount PIPEs within each of these two groups. Corporate investors and other investor types are the only two groups in which the average CARs for discount PIPEs are positive and significant in all four announcement windows. The results suggest that PIPEs led by corporate investors or other investor types are positive signals for the issuer regardless of the discount or premium issuance. Conversely, hedge fund led PIPEs and missing investor type led PIPEs are the only two groups in which the average CARs for discount PIPEs are negative and

significant in all four announcement windows. The negative average CARs suggest that discount PIPEs negotiated with these investors send a negative signal of issuer value to the market or that the market expects these types of investors to extract excess value from distressed issuers.

[Insert Table 5 about here]

In the remainder of the paper, when we breakdown the sample of PIPEs by investor type our analysis will focus on four primary subsamples of investors: all investors, corporation led investors, hedge fund led investors, and missing investor types.

Figure 1 further clarifies the pattern of the announcement period abnormal returns for premium PIPEs. The figure presents the average cumulative abnormal return for all premium PIPEs beginning ten days before the first public revelation of the PIPE and continues for 21 days to end ten days after the first public revelation. The daily abnormal returns are calculated using the market model described above and then cumulated through the day of interest.

The average cumulative return remains stable around zero from day -10 until the day before the public revelation of the PIPE. It then drifts up by around 1% on the day before the announcement, suggesting possible leakage of information related to the premium PIPE. The average cumulative return jumps sharply over the next two days, increasing by around 6%. Because the announcement date data are not time stamped, we cannot distinguish PIPEs revealed before the end of trading on day 0 from PIPEs revealed after trading hours on day 0. Thus, a large portion of the day +1 return is likely the initial market reaction to PIPEs revealed after the close of trading on day 0. The average cumulative return then drifts up around 0.5% per day for the next five days before levelling off at around 9.5% on day +6. The results suggest the use of 11-day or 21-day windows from among the commonly used windows for the analysis of premium PIPE returns. The 11-day window minimizes the exposure to confounding events while capturing the bulk of the announcement returns. The 21-day window captures all the announcement returns but doubles the exposure to confounding events.

The observed pattern is consistent with the market responding quickly to an unanticipated positive signal of issuer value from the premium PIPE, followed by an upward trend for several days as additional information is digested by the market. The pattern refines the precise timing of the signal revealed in Table 5 and reinforces the support for the positive signal predicted by the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis*. The pattern is not consistent with the negative signal predicted by the *Value Extraction Hypothesis*.

[Insert Figure 1 about here]

Table 6 extends our analysis of announcement returns to a regression setting. Panel A examines various models in which the dependent variable in each model is the 11-day CAR and the variable of interest is the premium PIPE indicator. The first two models control for *Deal size*, the ratio of shares issued in the PIPE to outstanding shares in the issuer before the PIPE, and *Runup*, the abnormal return in the period starting on day -77 and ending on day -11. Models 3 and 4 add indicators for PIPE contractual features. The contractual features include antidilution provisions, selling restrictions, the right of first refusal for investors, assurance of a board seat, a registration provision, limitations on future issuances by the issuing firm, hedging restrictions, warrants, the use of a placement agent, and termination provisions. PIPEs without additional contractual features are the baseline group. Models 5 and 6 add the log of the Amihud illiquidity measure, the log of the issuer market cap, and the fraction of institutional ownership in the issuer. Finally, models 7 and 8 add the following accounting variables based on Compustat data: leverage ratio, market to book ratio, cash to assets ratio, sales to asset ratio, return on assets (ROA), and the cash burn rate. The number of observations drops substantially in the last two models when Compustat data is required. Variable definitions are listed in Appendix A. Models 1, 3, 5, and 7 do not include fixed effects. Models 2, 4, 6, and 8 include year fixed effects.

The coefficient on the premium indicator, the primary variable of interest, is positive and significant at the 0.01 level in all models and the inclusion of year fixed effects has minimal effect on the estimates. The results reinforce the univariate finding that announcement returns for premium PIPEs are higher than for discount PIPEs. The coefficients on the board seat indicator are positive in each of their respective models, suggesting that the market expects the investors to increase issuer value through the board seats. The coefficients on the illiquidity measure are also positive in each of their respective models, suggesting the PIPE signal is stronger in less liquid firms that are associated with greater information asymmetry. Registration requirements, limitations on future issuances, warrants, and the use of placement agents are negatively associated with PIPE announcement returns in each of their respective models. These results are consistent with the findings in the extant literature.

Panel B of Table 6 drills down into the four different time windows for the calculation of the announcement period abnormal returns, the dependent variable in the regressions. We tabulate two models for each time window, Model 6 and Model 8 from Panel A. Once again, we find the

average CARs for premium PIPEs are significantly higher than the average CARs for discount PIPEs. The coefficient on the premium indicator is positive and significant at the 0.01 level in each model. Although the magnitude of the coefficients is modestly smaller for the samples requiring Compustat data, even in this subsample the coefficients remain statistically and economically significant, ranging between 4.6% and 6.3%. The decrease in the coefficients within the Compustat sample is consistent with greater public information about the PIPE issuer reducing the impact of the signal of value from premium PIPEs. In sum, Panel A and Panel B consistently indicate that announcement period returns are higher for premium PIPEs than discount PIPEs across all the permutations of our control variables and across all four announcement windows, offering robust support for the positive signal predicted by the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis*.[16]

Panel C of Table 6 examines different subsamples based on lead investors in the PIPE. Models 1 and 2, examining all investors, are the baseline regressions from Models 5 and 6 of Panel B. Models 3 and 4 examine PIPEs led by corporate investors, while Models 5 and 6 (7 and 8) examine PIPEs led by hedge fund investors (unknown investors). The dependent variable in all eight models is the 11-day abnormal announcement return. Interestingly, the announcement returns for PIPEs led by corporate investors do not differ significantly between premium and discount PIPEs. This result combined with the Table 5 finding that CARs for corporate led PIPEs are significantly positive, both economically and statistically, suggest that the presence of a corporate lead investor is a strong signal of positive issuer value regardless of the discount or premium paid in the PIPE. The lack of significance for the estimated coefficient on the illiquidity measure within the corporation led subsample further suggests that the signal sent by the presence of a corporate lead investor dominates other dimensions of signal strength. One additional control variable, an indicator that the PIPE is classified as strategic by PrivateRaise, is added to the models for corporate lead investors. The coefficient on the variable is positive but is not statistically significant. The lack of significance could result from an imprecise classification of strategic PIPEs within corporation led PIPEs (e.g. Billett, Elkamhi, and Floros (2015) classify all corporation led PIPEs as strategic).

[16] In untabulated robustness checks, we further find that adding industry fixed effects to the models in Panel B of Table 6 has little effect on the results.

For the sample of hedge fund led PIPEs, the positive coefficient for the premium indicator is significant in the full sample but not in the subsample requiring Compustat data. As in the Panel B results, the decrease in the coefficient within the Compustat sample is consistent with greater public information about the PIPE issuer reducing the impact of the signal of value from premium PIPEs. In this case, however, the estimated coefficient of 4.6% does not attain significance for the smaller sample of firms with more available public information. Notably, the estimated coefficients on the board seat indicator in the hedge fund sample are negative although not statistically significant.

For the sample of unknown investor types, the positive coefficient for the premium indicator is significant in both models. The results for the unknown investor subsample are very similar to the results for the all investors sample, although some of the coefficients on the control variables lose statistical significance in the smaller unknown investor subsample.

[Insert Table 6 about here]

The announcement period return analysis demonstrates that the market responds positively on average to premium PIPEs, thus benefiting existing shareholders. We now separate this benefit to existing shareholders into two potential channels, the direct effect and the signal effect. The direct effect is a mechanical result of the issuance price. Issuing shares at below the market price mechanically decreases the value of existing shareholders' shares through dilution, and issuing shares at above the market price mechanically increases the value of existing shareholders' shares through accretion. Through an alternative channel, as described in the hypotheses, the PIPE announcement can signal information about issuer value, resulting in the signal effect. To distinguish between these two channels and refine our tests of the hypotheses, we separate the mechanical effect of the issuance price from the signal effect.

The direct effect measures the change in value of a pre-PIPE outstanding share of issuer stock as a result of the issuance of new shares at a price different than the prevailing market price. It is defined as $\frac{1 + Discount * Ratio\ of\ shares\ issued}{1 + Ratio\ of\ shares\ issued} - 1$, where *Discount* is the ratio of the issuance price to the prevailing market price of the issuer stock immediately before the PIPE and *Ratio of shares issued* is the ratio of the number of shares issued to the number of outstanding pre-PIPE shares. The signal effect is the remaining abnormal return after adjusting for the direct effect. It is

defined as the abnormal return for day 0 through the end of the announcement window minus the direct effect.[17]

Table 7 presents the results for the direct effect and the signal effect for the different lead investor samples. The first column of each panel tabulates the average direct effect, and the second column tabulates the average signal effect for the window ending on day +1. Columns 3, 4, and 5 tabulate the average signal effect for the windows ending on day +2, day +5, and day +10, respectively. The first (third) row presents the average effect for premium (discount) PIPEs in the sample. The second (fourth) row presents the *p-value* resulting from the test that the average effect for the premium (discount) sample is zero. The last two rows of each panel present the difference in means between the premium and discount PIPEs for the sample and the *p-value* resulting from a difference in means test between the two samples.

Panel A examines the sample of all PIPEs. By construction, the average direct effect for premium PIPEs is positive, in this case 2.02%, and the average direct effect for discount PIPEs is negative, in this case -2.11%. More interestingly, the average signal effect for premium PIPEs is positive and significant at the 0.01 level for all windows, ranging from 4.14% to 6.03%. The average signal effect for discount PIPEs is negative and significant at the 0.01 level for all windows, ranging from -1.40% to -1.89%. The difference between the average signal effect for premium PIPEs and discount PIPEs is also significant at the 0.01 level for all windows, ranging from 5.54% to 7.92%. Thus, even after subtracting out the mechanical effect on issuer stock prices due to the issuance price, we find premium PIPEs convey a positive signal to the market about the issuer's value. The results again reinforce the support for the positive signal predicted by the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis* but are not consistent with negative signal predicted by the *Value Extraction Hypothesis*.

Panel B examines the subsample of PIPEs led by corporate investors. The average signal value in this subsample is higher for both premium and discount PIPEs than in the overall sample. Moreover, the average signal value for the discount PIPEs is significantly positive, further suggesting that corporate investor PIPE convey a signal of positive value regardless of the

[17] For example, consider the case of a premium PIPE. Assume the stock is trading at $100 per share and the PIPE is issued at $110 per share. Also assume the issuer has 100,000 shares outstanding before the PIPE and issues 15,000 shares in the PIPE. Thus, the discount is 1.10 and 15% of shares outstanding are issued in a PIPE. The direct effect on the stock price from issuing new shares at a premium is a return of (1 + 1.10 * .15) / (1 + .15) – 1 = 0.0130. In this case, the direct effect is an abnormal return of 1.30%. If the total abnormal return is 5.00% then the signal effect is (5.00% - 1.30%) = 3.70%.

premium or discount. Notably, the difference in means in the signal value between premium and discount PIPEs is not significant when the announcement window is extended to day +10, suggesting that the positive signal of a corporate investor can dominate the other dimensions of the PIPE signals.

Panel C and Panel D examine PIPEs led by hedge fund investors and unknown investor types, respectively. The results in the two subsamples are similar. The results for each are also similar to the results in the sample of all PIPEs, albeit the average signal effects are shifted 1% to 2% lower.

[Insert Table 7 about here]

Table 8 extends the analysis of the signal effect to our regression setting. The table uses the regression models examining lead investor subsample from Panel C of Table 6 but replaces the dependent variable in each model with the signal effect for the window ending at day +5. The results are similar to the results in panel C of Table 6. As in the Panel C regressions, the coefficients on the premium indicators are positive and significant for the sample of all PIPEs and the sample of unknown investors, but the coefficients are not significant for the sample of corporate investor. The coefficients on the premium indicators, however, are now positive and significant in both models of the hedge fund sample whereas only one of the coefficients in the two hedge fund models are significant in Panel C.

[Insert Table 8 about here]

The evidence supports the *Value Enhancement Hypothesis*, the *Undervaluation Hypothesis*, and the *Courtship Hypothesis*. Although conclusively distinguishing between these three positive signaling hypotheses is challenging, our results suggest that both the *Value Enhancement Hypothesis* and the *Undervaluation Hypothesis* play a role in motivating premium PIPEs. The *Value Enhancement Hypothesis* posits that strategic transactions drive premium PIPEs. Strategic transactions occur almost exclusively in corporate investor led PIPEs, which is not surprising given that corporations are operating firms. Thus, our finding that premium PIPEs are most likely within the set of corporate investor led PIPEs, where 45.2% of PIPEs are issued at a premium, suggests the *Value Enhancement Hypothesis* has a significant role in premium PIPEs. Moreover, we find that premium PIPEs are almost three times as likely in strategic PIPEs than in PIPEs not designated as strategic (57.9% vs. 20.0%).

Additional evidence suggests that the *Undervaluation Hypothesis* also plays a role in motivating premium PIPEs. Strategic partnerships are unlikely to motivate hedge fund led PIPEs, because hedge funds are not operating companies. Despite the lack of strategic partnerships in hedge funds, we observe that 19.8% of PIPEs within the hedge fund led group are issued at a premium. In lieu of strategic transactions, hedge funds may create value through active involvement with the issuer.

Table 9 examines the distribution of active investors within our primary investor subsamples of PIPEs. We define active investor PIPEs as PIPEs in which an investor receives a board seat or a 13D filing related to the issuer is made within the 60 days after the PIPE issue date. The first two columns of the table examine the frequency of active investors within discount PIPEs, the next two examine the frequency of active investors within premium PIPEs and the last two columns tabulate the difference between the two frequencies and the p-values of difference in means tests of the two frequencies. The rows in the table present different investor subsamples. The frequency of active investor PIPEs is significantly higher in premium PIPEs than discount PIPEs for all investor samples except corporate led PIPEs. This result again highlights the uniqueness of corporate led PIPEs. However, hedge fund led PIPEs offer an excellent setting to investigate the *Undervaluation Hypothesis*. Specifically, in the absence of strategic motivations the question is whether hedge fund led premium PIPEs are the result of active investor value enhancement or issuer undervaluation. Table 9 documents that 77.6% of hedge fund led premium PIPEs are not active investor PIPEs. The high percentage of non-active investors in hedge fund led premium PIPEs suggest that issuer undervaluation likely motivates a significant portion of the hedge fund led premium PIPEs.

[Insert Table 9 about here]

To further investigate the *Courtship Hypothesis*, Table 10 analyzes acquisition announcements targeting the PIPE issuer after the PIPE issuance. We merge acquisition data from the SDC Platinum database with our sample firms and create an indicator variable equal to one if the PIPE issuer was the target of an acquisition announcement within 12 months after the PIPE transaction in which the bidding firm sought to acquire at least 20% of the PIPE issuer. Columns 1 through 3 of Table10 present the analysis for discount PIPEs, columns 4 through 6 present the analysis for premium PIPE transactions, and the last two columns present and test the difference between the percentage of premium PIPE issuers and discount PIPE issuers that are the target of a

subsequent acquisition announcement. The rows in the table examine different samples of PIPE issuers based on the lead investor type in the PIPE. The first row of the table uses the entire sample of PIPEs. The remaining six rows examine corporate led PIPEs, hedge fund led PIPEs, insider led PIPEs, venture capital led PIPEs, other investor type led PIPEs, and missing investor type led PIPEs, respectively.

Overall, the evidence supporting the *Courtship Hypothesis* is limited. When considering the entire sample of PIPEs, we find issuers of premium PIPEs are targets of acquisition announcements within one year after the PIPE significantly more frequently than issuers of discount PIPEs. This result is consistent with the with the *Courtship Hypothesis*. Within the subsamples based on investor types, we do not find a significant difference between the premium and discount percentages for any of the investor groups. Although the magnitude of the percentage differences within the Insider-led PIPEs and the Other investor type-led PIPEs are larger than the magnitude of the percentage difference within the entire sample, the limited sample sizes within the subsamples reduces the power of the tests.

Most interesting are the results for the corporate investor led PIPEs, because corporate investor led PIPEs offer an excellent setting for testing the *Courtship Hypothesis*. Corporate investors, as operating companies, offer the greatest potential operating synergies in an acquisition, but are also vulnerable to the greatest potential losses if the integration of the two firms does not proceed smoothly. As such, corporate investors stand to gain the most from greater familiarity with potential acquisition targets before committing to the acquisition. Thus, we view the corporate investor led PIPE subsample as the best experimental setting for testing *Courtship Hypothesis*. In the corporation led subsample, however, we find that the percentage of premium PIPEs issuers that are targets of acquisition announcements is slightly *lower* than the percentage of issuers of discount PIPEs issuers that are targets of acquisition announcements. This evidence is not consistent with the *Courtship Hypothesis* and suggests that the higher acquisition announcement percentage for premium PIPE issuers we find in the overall sample of PIPEs could be driven by non-*Courtship Hypothesis* acquisition motives such as acquisitions resulting from financial distress in the issuing firm or acquisitions resulting from improved governance in the issuing firm that overcomes entrenched manager self-interest.[18]

[18] In future analysis, we plan to drill down into the identities of the bidders in the acquisition announcements in order to distinguish the *Courtship Hypothesis* related acquisition announcements, in which the PIPE investor is the bidder in the announcement, from acquisition announcements by other bidders unrelated to the PIPE (e.g., acquisitions

[Insert Table 10 about here]

We now turn from the consideration of the issuer shareholder perspective on returns to the investor perspective by examining the short-term net gains and losses for premium PIPE investors. The premium PIPE investors have two sources of short-term gains and losses: the loss from paying a premium for the issuer shares and the gain or loss from the PIPE abnormal announcement return. We define a premium PIPE investor's *Short-term net gain* as the negative of the premium percentage plus the abnormal announcement return for the window starting on the day of the public revelation of the PIPE through the end of the announcement window.[19]

Panel A of Table 11 separates the premium PIPE investors into terciles based on the percentage of premium paid and tabulates the average net investor gains within each tercile. The low premium tercile is composed of PIPEs with premiums of less than 4%. The middle premium tercile is composed of PIPEs with premiums of at least 4% and less than 14%. The high premium tercile is composed of PIPEs with premiums of at least 14%. The first column of Panel A presents the average premium within each tercile. The next two columns present the average announcement returns that the investors receive for two announcement windows, day 0 through day +5 and day 0 through day +10, within each tercile. The last two columns of Panel A present the average net investor gains for the two announcement windows within each tercile.

By construction, the premiums paid within each premium tercile increase as we move from lower to higher terciles, with averages of 1.9%, 7.9%, and 32.3%, respectively. The abnormal announcement returns also increase monotonically as we move up the premium terciles, from 3.2% to 11.9%. Combining these average premiums and announcement returns in the net investor gain columns yield small positive short-term net investor gains for the low premium tercile and the middle premium tercile but large negative short-term gains for the high tercile investors. Thus, while the low and middle premium tercile investors' investments appear to be rational on average in the short-term, the high premium tercile investors face substantial short-term loses on average.

To further understand the motivations of high premium investors, Panel B of Table 11 explores additional characteristics of the PIPEs within each premium tercile. The first column of Panel B presents the average *Dealsize* within each premium tercile and the second column presents

resulting from financial distress in the issuing firm or acquisitions resulting from improved governance in the issuing firm that overcomes entrenched manager self-interest).

[19] For example, if a PIPE investor pays a 5.0% premium for the PIPE shares and the shares then have an 8.0% abnormal return over the subsequent announcement window, then the net gain for the investor would be (8.0% - 5.0%) = 3.0%.

the percentage of PIPEs designated as strategic by PrivateRaise within each premium tercile. The average *Dealsize* in the low and middle premium terciles are 18.6% to 19%, respectively, but jumps to 50.6% in the high premium tercile, suggesting many high tercile investors are buying a controlling interest in the issuer. The percentage of PIPEs classified as strategic also jumps in the high premium tercile, from 7.5% and 11.5% in the low and middle terciles to 22.9% in the high tercile, suggesting many high premium PIPEs are strategic investments. When we further consider that high premium investors pay 32.3% premiums on average, the large portion of strategic, large share purchases in the high premium tercile resemble long-term investments with control implications such as acquisitions more than investments motivated by undervaluation. Accounting for the long-term benefits to investors in this tercile may be important to understanding the PIPE investors motivations, particularly for investors in high premium PIPEs.

[Insert Table 11 about here]

Table 12 examines the long-term returns for PIPE investments. Panels A presents the long-term buy and hold *raw* returns for three windows with each window beginning six trading days after the public revelation of the PIPE. The windows remain open for 12-months, 24-months, and 36-months, respectively. The first three columns present statistics for discount PIPEs, the next three columns present statistics for premium PIPEs, and the last two columns calculate and test the difference in means between the two groups. Panel B repeats the analysis from Panel A for long-term buy and hold *abnormal* returns. To calculate abnormal returns, we match a non-PIPE issuing firm to each PIPE issuer. The matching firm chosen is the non-PIPE issuing firm within the same 2-digit SIC industry that minimizes the three-dimensional Euclidian distance between the issuer and the set of non-PIPE firms. The three matching dimensions are the standardized log market capitalization, book to market ratio, and illiquidity.

The long-term returns for premium PIPEs consistently dominate long-term returns for discount PIPEs. In the last two columns of panels A and B, we find the long-term returns for premium PIPEs are significantly higher than the long-term returns for discounts for all three time windows regardless of the return calculation method. The differences range from 9.36% to 19.31% for the raw return measure and 13.82% to 17.35% for the abnormal return measure.

In absolute terms, the sign of the long-term return for premium PIPEs depends on the return calculation methodology. Using the *raw* return measure in Panel A, we find the average long-term returns for premium PIPEs are positive and significant for all three windows, ranging from 3.62%

to 11.15%, while the long-term returns for discount PIPEs are negative and significant for all three windows, ranging from -5.74% to -8.16%. Using the *abnormal* return measure in Panel B, however, we find the average long-term returns for premium PIPEs are negative and significant for all three windows, ranging from -5.81% to -29.83%. The abnormal long-term returns for discount PIPEs are even more negative for all three windows, ranging from -19.63% to -47.18%.

Given our finding that high premium PIPE investors tend to be long-term strategic investors, we further refine our understanding of the long-term outcomes for the high premium PIPE investors. Panel C presents the average long-term returns for PIPEs in the high premium tercile. The first two columns present buy and hold raw returns, and the last two columns present buy and hold abnormal returns. For these high premium investors, the raw returns are positive and significant for all three windows, 16.55%, 29.31%, and 34.74%, respectively. Interestingly, both the 24-month and the 36-month raw returns outweigh the average short-term losses for this tercile presented in Table 11 of -25.8%. This counterbalancing, however, does not hold for the long-term abnormal returns. For the high premium investors, the abnormal returns are not significantly different from zero in any of the windows. The results suggest that high premium long-term investors do not incur an overall loss on their investment, however the investment returns for these investors do not cover the opportunity costs of the investments.

We next focus on the most informative PIPEs. If an issuer issues a series of PIPEs over time, the first PIPE provides the strongest signal. Panel D repeats the Panel C analysis of high premium tercile PIPEs but restricts the sample to the first PIPE issuance by an issuer. In Panel D, we find that when the PIPE is the first PIPE issued by an issuer both the raw returns and the abnormal returns for the 2-year and 3-year windows outweigh the short-term losses for high premium investors on average. The results suggest that long-term investments in high premium PIPEs that are the firm's initial PIPE issuance cover the opportunity cost of the investment and are consistent with the interests of PIPE investors. Our results do not explain the motives for investors in high premium PIPEs that are not the initial issuance by an issuer.

[Insert Table 12 about here]

If the overall returns considering opportunity costs are negative on average for investors in high premium repeat PIPEs, why are they willing to pay such high premiums? As discussed above, many high premium PIPEs resemble long-term strategic investments with control implications. These investments can benefit from two additional sources of gain. First, strategic investors can

gain from the strategic benefits accruing directly to the investing entity. Second, investors purchasing a controlling interest in the issuer can realize benefits of control. Although we are unable to observe either the strategic benefits that accrue directly to investors or the value of control accruing to investors, these benefits could play an important role in high premium investor motives.

We also note that in strategic PIPEs with a large portion of the surplus accruing directly to the investor, a higher premium transfers a portion of this surplus to the issuing firm's existing shareholders. In these cases, the transfer of surplus to the issuer could motivate high premium PIPEs. Ultimately, however, we are unable to conclusively identify the motives for repeat PIPE high premium investors.

Concluding remarks

This paper documents the prevalence of and motivations for premium PIPEs. Investors pay a premium to the market price of the issuer stock in 24.5% of common stock PIPEs. Premium PIPEs are pervasive across time, industry, and PIPE investor type. The evidence suggests that premium PIPEs resolve information asymmetry about issuer value or an evolving relationship with an investor that is expected to enhance issuer value. The resolution of asymmetric information results in positive average announcement period abnormal returns and positive average signaling returns. Our results suggest firms that have value increasing private information or value increasing strategic opportunities can substantially reduce or even reverse the issuance costs of equity by issuing premium PIPEs.

Our results enhance our understanding of the types of firms that issue shares. Theory predicts that undervalued firms tend to repurchase shares and overvalued firms tend to issue shares. Premium PIPEs can flip this pattern. Engaging a single investor or a small group of investors in an issuance reduces the costs of informing the investors of positive private information about the issuing firm, including potential information about an evolving relationship with the PIPE investors. The informed investors can credibly signal the positive private information by paying a premium issue price in the publicly announced PIPE, resulting in positive announcement returns. Thus, premium PIPEs transform the cost of a discount in an equity issuance into a benefit while simultaneously sending a positive signal, thus increasing the value of the issuer shares. In the case of premium PIPEs, undervalued firms issue shares.

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Appendix A: Variable Definitions

Variables	Definitions
Dependent Variables	
CARs [-1, +1], [-2, +2], [-5, +5] and [-10,+10]	Cumulative abnormal returns using the market model at [-1, +1], [-2, +2], [-5, +5] and [-10,+10], days around the PIPE first public announcement date. The first public announcement date is the earlier of the announcement and the closing date. If the announcement date is missing, the closing date is considered to be the first public announcement date.
Signal effect [0,+5]	Signal effect is computed following Wruck (1989). The signal effect is computed as: CAR – direct effect, whereas the formula for the calculation of the direct effect is: ((1+discount*ratio of shares issued)/(1+ratio of shares issued)-1).
Independent Variables	
Premium indicator	It takes the value of 1 when the price offered is higher than the closing price as of the trading day before the closing day, and 0 otherwise.
Deal size/Market cap	The PIPE deal size is the number of shares issued scaled by the number of shares outstanding as of the trading day before the PIPE first public announcement date. The variable is mean-centered.
Runup (day -77 to -11)	Cumulative abnormal returns for the time period of (day -77 to -11) preceding the PIPE first public announcement date.
Antidilution	It takes the value of 1 if the PIPE investor(s) are granted anti-dilution protection in the event the PIPE issuer issues equity or equity-linked securities, and 0 otherwise.
Selling restrictions	It takes the value of 1 if the PIPE investor(s) are restricted from their ability to re-sell PIPE purchased stock, and 0 otherwise.
Log market cap	The natural logarithm of the firm's market capitalization as of the trading day preceding the PIPE first public announcement date. The variable is mean-centered.
Hedging restrictions	It takes the value of 1 if there are restrictions imposed on the PIPE investor(s) on their ability to engage in short sales or related hedging activities in relation to the securities originally purchased by them, and 0 otherwise.
Institutional ownership	The firm's institutional ownership percentage as of the quarter preceding the PIPE first public announcement quarter. The variable is winsorized at the 1% and the 99% level.
Warrants	It takes the value of 1 if the PIPE contract includes warrants and 0 otherwise.
Board seats	It takes the value of 1 when the issuer grants board seat(s) to the investor, and 0 otherwise.

Right of first refusal	It takes the value of 1 when PIPE investor(s) are granted the right to participate in any future issuances of securities by the PIPE issuer, and 0 otherwise.
Registration	It takes the value of 1 when the PIPE transaction is pre-registered, and 0 otherwise (Registered Directs).
Placement agent	It takes the value of 1 if the deal is intermediated by a placement agent, and 0 otherwise.
Limitation on future issuances	It takes the value of 1 if the PIPE investor(s) are granted the right to prohibit the PIPE issuer to issue any new shares through any issuance method within a certain time period following the PIPE first public announcement date, and 0 otherwise.
Termination provisions	It takes the value of 1 if the agreement may be terminated prior to Closing either (i) automatically in the event the agreement and plan of merger governing the business combination is terminated, (ii) by mutual agreement of the PIPE issuer and PIPE investor or (iii) by either the PIPE issuer or the PIPE investor if, as of the closing date, any applicable conditions to closing have not been satisfied, and 0 otherwise.
Log Amihud illiquidity	The natural logarithm of the firm's Amihud illiquidity measure following Amihud (2002). The formula we utilize, is the following: 1000000*abs(return)/(abs(trading price)*volume). This illiquidity measure is computed over the time window [-77, -11]. The variable is mean-centered.
Cash to assets ratio	The firm's cash and equivalents scaled by the concurrent book value of assets. The variable is mean-centered and winsorized at the 5% and 95% level.
Leverage ratio	The firm's long-term and short-term debt scaled by concurrent book value of assets. The variable is mean-centered and winsorized at the 5% and 95% level.
Sales to assets ratio	The firm's revenues scaled by the concurrent book value of assets. The variable is mean-centered and winsorized at the 5% and 95% level.
Cash burn rate	The absolute value of the firm's EBITDA scaled by cash and equivalents. Takes value 0 if the firm's EBITA is positive. The variable is mean-centered and winsorized at the 5% and 95% level.
Market to book ratio	The firm's market to book ratio calculated as market value scaled by book value. The variable is mean-centered and winsorized at the 5% and 95% level.
ROA	The firm's net income scaled by the concurrent book value of assets. The variable is mean-centered and winsorized at the 5% and 95% level.
Other variables	
Direct effect	Following Wruck (1989), it is computed following the formula:

	((1+discount*ratio of shares issued)/(1+ratio of shares issued)-1)
Net investor gains	They are computed as the negative of the premium percentage plus the abnormal announcement return for the window starting on the day of the public revelation of the PIPE through the end of the announcement window.
Strategic PIPEs	These are the transactions that are identified by the PrivateRaise database as strategic alliances, or joint ventures or strategic partnerships.
Buy-and-hold raw returns (12-month, 24-month and 36-month)	Raw buy-and-hold returns for each of the three long-term windows following the PIPE closing date. They are based on monthly observations.
Active investor PIPEs	We define as active investor PIPEs the transactions in which an investor receives a board seat or a 13D filing related to the issuer is made within the 60 days after the PIPE issue date.
Buy-and-hold abnormal returns (12-month, 24-month and 36-month)	Abnormal buy-and-hold returns for each of the three long-term windows following the PIPE first public announcement date. They are computed relative to the returns of a matched firm (with no PIPEs during the preceding five year period) which is constructed out of all firms in the same 2-digit SIC industry, with the minimum absolute difference among the standardized book-to-market equity ratio, the standardized log market capitalization and the standardized Amihud illiquidity measure. They are based on monthly observations.

Figure 1: Announcement cumulative abnormal returns for premium PIPEs

This figure shows the cumulative abnormal returns for premium PIPE transactions. The event window we conduct our analysis on starts 10 trading days prior to the event date and finishes 10 trading days after the event date. The event date is the earlier of the announcement date and the closing date. When the announcement date was not available, we used the closing date as our event date. We used the one factor model to calculate daily abnormal returns and compounded the daily abnormal returns into cumulative abnormal returns. We count on our final sample of 5,676 observations with available pricing information.

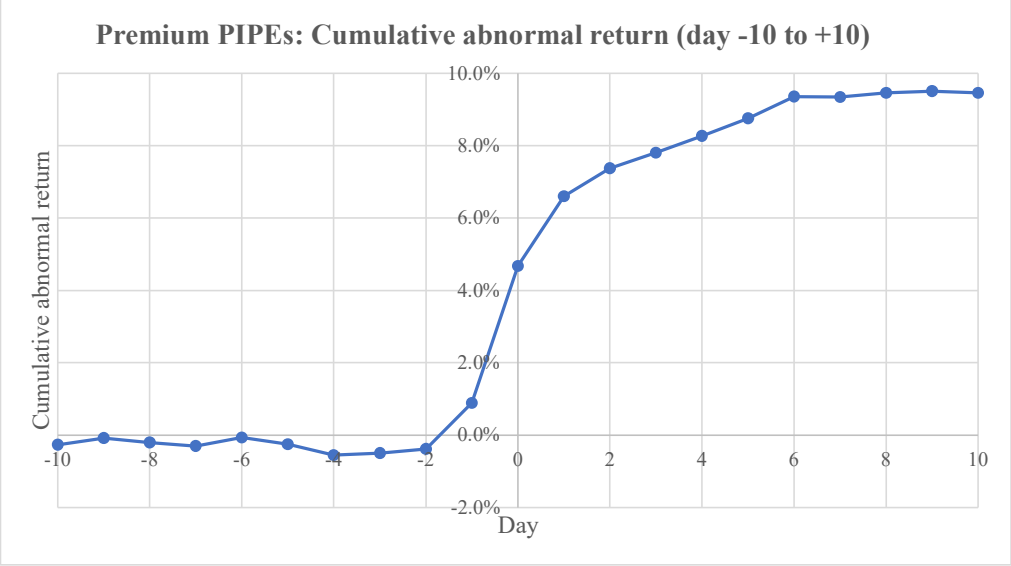

Table 1: Annual distribution of common stock and non-common stock PIPEs

This table shows the annual distribution of discount, at par and premium PIPEs closed within the time period 2001-2015. Panel A (B) shows the premium, at par and discount PIPEs issuing common stock (non-common stock) PIPEs. The percentage of premium PIPEs on all PIPEs for each year is displayed on the last column. We count on all common stock (Panel A) and all non-common stock PIPEs (Panel B) that contain 12,661 and 7,927 observations, respectively.

Panel A: Common Stock PIPEs

Year	Discount Observations	At Par Observations	Premium Observations	Percentage at a Premium
2001	439	26	168	26.5%
2002	373	17	152	28.0%
2003	664	15	153	18.4%
2004	817	20	136	14.0%
2005	657	20	198	22.6%
2006	839	33	254	22.6%
2007	881	55	314	25.1%
2008	472	33	265	34.4%
2009	576	38	216	26.0%
2010	749	39	266	25.2%
2011	607	36	259	28.7%
2012	480	58	188	25.9%
2013	508	47	175	24.0%
2014	543	34	188	24.6%
2015	441	43	169	25.9%
Total	9,046	514	3,101	24.5%

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Panel B: Non-common Stock PIPEs

Year	Discount Observations	At Par Observations	Premium Observations	Percentage at a Premium
2001	424	52	185	28.0%
2002	307	32	173	33.8%
2003	319	29	146	29.6%
2004	432	34	202	30.2%
2005	459	36	213	30.1%
2006	534	29	185	24.7%
2007	501	32	196	26.9%
2008	321	25	207	37.4%
2009	290	19	131	29.8%
2010	318	40	106	22.8%
2011	246	28	116	29.7%
2012	244	28	116	29.9%
2013	199	42	127	34.5%
2014	235	34	132	32.9%
2015	228	37	138	34.2%
Total	5,057	497	2,373	29.9%

Table 2: Premium PIPEs occurrence by market capitalization and illiquidity quintile

This table presents the occurrence of premium PIPEs for each market capitalization and illiquidity quintile in our sample. The issuer's market capitalization is computed as of the trading day preceding the PIPE closing date and the illiquidity measure refers to the Amihud illiquidity measure computed over the trading days preceding the PIPE transaction [-68,-2]. All variable definitions are reported in Appendix A. We count on our final sample of 5,676 observations with available market capitalization (Panel A) and illiquidity (Panel B) information.

Panel A: Premium % by Market Cap Quintile

Market Capitalization Quintile	Total observations	Discount observations	Premium observations	Percentage at a Premium
Smallest	1,134	826	308	27.2%
2	1,134	876	258	22.8%
3	1,135	923	212	18.7%
4	1,134	902	232	20.5%
Largest	1,135	896	239	21.1%
Total	5,672	4,423	1,249	22.0%

Panel B: Premium % by Illiquidity Quintile

Illiquidity Quintile	Total observations	Discount observations	Premium observations	Percentage at a Premium
Least Illiquid	1,098	856	242	22.0%
2	1,098	883	215	19.6%
3	1,099	887	212	19.3%
4	1,098	857	241	21.9%
Most Illiquid	1,099	807	292	26.6%
Total	5,492	4,290	1,202	21.9%

Table 3: Premium PIPEs occurrence by industry

This table presents the industry distribution of all common stock PIPEs. The industry distribution is based on the 1-digit SIC code as provided by EDGAR as of the year before the PIPE transaction year. For each of the 1-digit SIC codes, we provide discount and premium PIPE observations as well as the percentage of premium PIPEs on all observations. All variable definitions are reported in Appendix A. We count on all common stock PIPEs containing 12,661 observations with available 1-digit SIC code information.

SIC 1-digit	Total observations	Discount observations	Premium observations	Percentage at a Premium
Basic Materials	3,236	2,007	1,229	38.0%
Consumer/Retail	499	364	135	27.1%
Energy	1,386	1,006	380	27.4%
Financial Institutions	652	435	217	33.3%
Healthcare	3,269	2,439	830	25.4%
Industrial	869	696	173	19.9%
Media	200	141	59	29.5%
Real estate	197	137	60	30.5%
Technology	1,989	1,547	442	22.2%
Telecommunications	329	250	79	24.0%

Table 4: Premium PIPEs occurrence by leading investor type

This table presents the distribution of all common stock discount and premium PIPEs by leading investor type. We determine the leading investor type after summing up all purchased amounts by investor type for the same PIPE transaction and identifying the investor type with the highest total purchased amount. The data come from PrivateRaise and the available investor types are the following: financial institutions, foreign investment houses, broker-dealers, insurance firms, mutual funds, pension funds/trusts/endowments, sovereign wealth funds, hedge funds, corporate insiders, individual investors, corporations, venture capital firms, private equity funds/buyout firms. We count on all common stock PIPEs containing 12,661 observations with available investor type information.

Lead Investor Type	Total observations	Discount observations	Premium observations	Percentage at a Premium
Corporation	745	408	337	45.2%
Hedge Fund	1,877	1,505	372	19.8%
Insider	545	367	178	32.7%
Venture Capital	479	340	139	29.0%
Other investor types	1,340	1,012	328	24.5%
Unknown investor types	7,161	5,414	1,747	24.4%
Total	12,147	9,046	3,101	25.5%

Table 5: Premium PIPE announcement market reactions – Contrast with discount PIPEs

This table presents and contrasts the mean announcement cumulative abnormal returns (CARs) for the discount and the premium PIPEs. Each of four panels presents different event windows surrounding the common stock PIPE first public announcement date. Panel A refers to the 3-trading day window, Panel B to the 5-trading day window, Panel C to the 11-trading day window, and Panel D to the 21-trading day window. Each panel presents the market reaction for the discount PIPEs, the premium PIPEs and the comparison between the two. The rows present subsample based on the investor types of interest. CARs are based on the market model with the estimation window spanning the time period of [-264,-12]. The first public announcement date (event date) is the first of the announcement date or the closing date of the PIPE transaction. If the announcement date is not available (observations prior to 2004), the closing date is the first public announcement date. The first three columns refer to the number of observations the mean CARs and the associated p-values of the discount PIPEs, the following three columns contain the same statistics for the premium PIPEs and the last two columns present the difference in mean CARs between the two samples the p-value from a test of the difference in means. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on all common stock PIPEs containing 12,661 observations with available pricing information.

Panel A: 3-day CARs

	Discount PIPEs			Premium PIPEs				
	N	CAR (-1, +1)	*P-value*	N	CAR (-1, +1)	*P-value*	Difference	*P-value*
All investors	4,196	-2.99%	*0.000****	1,172	7.22%	*0.000****	10.21%	*0.000****
No terms	904	0.36%	*0.288*	365	4.75%	*0.000****	4.39%	*0.000****
Added terms	3,292	-3.91%	*0.000****	807	8.34%	*0.000****	12.25%	*0.000****
Corporation	191	3.35%	*0.001****	192	14.03%	*0.000****	10.68%	*0.000****
Hedge Fund	1,007	-4.39%	*0.000****	211	6.58%	*0.000****	10.97%	*0.000****
Insider	99	-5.16%	*0.000****	40	6.21%	*0.018***	11.37%	*0.000****
VC	187	0.17%	*0.862*	78	9.67%	*0.000****	9.50%	*0.001****
Other investor types	429	1.71%	*0.075**	132	6.50%	*0.000****	4.79%	*0.003****
Missing investor types	2,283	-3.95%	*0.000****	519	4.86%	*0.000****	8.81%	*0.000****

Panel B: 5-day CARs

	Discount PIPEs			Premium PIPEs				
	N	CAR (-2, +2)	*P-value*	N	CAR (-2, +2)	*P-value*	Difference	*P-value*
All investors	4,196	-2.67%	*0.000****	1,172	8.01%	*0.000****	10.68%	*0.000****
No terms	904	0.91%	*0.029*	365	5.10%	*0.000****	4.19%	*0.001****
Added terms	3,292	-3.66%	*0.000****	807	9.33%	*0.000****	12.98%	*0.000****
Corporation	191	4.67%	*0.000****	192	13.70%	*0.000****	9.03%	*0.000****
Hedge Fund	1,007	-4.51%	*0.000****	211	6.71%	*0.000****	11.22%	*0.000****
Insider	99	-4.98%	*0.000****	40	7.50%	*0.013***	12.49%	*0.000****
VC	187	1.49%	*0.164*	78	11.90%	*0.000****	10.41%	*0.001****
Other investor types	429	1.95%	*0.062**	132	8.49%	*0.000****	6.54%	*0.001****
Missing investor types	2,283	-3.59%	*0.000****	519	5.76%	*0.000****	9.35%	*0.000****

Panel C: 11-day CARs

	Discount PIPEs			Premium PIPEs				
	N	CAR (-5, +5)	*P-value*	N	CAR (-5, +5)	*P-value*	Difference	*P-value*
All investors	4,196	-1.49%	*0.000****	1,173	8.63%	*0.000****	10.13%	*0.000****
No terms	904	2.32%	*0.000****	365	7.25%	*0.000****	4.93%	*0.002****
Added terms	3,292	-2.54%	*0.000****	808	9.26%	*0.000****	11.80%	*0.000****
Corporation	191	7.86%	*0.000****	192	13.46%	*0.000****	5.60%	*0.041***
Hedge Fund	1,007	-2.98%	*0.001****	211	6.51%	*0.001****	9.49%	*0.000****
Insider	99	-1.79%	*0.343*	40	13.50%	*0.003****	15.30%	*0.002****
VC	187	1.50%	*0.254*	78	11.96%	*0.000****	10.46%	*0.002****
Other investor types	429	2.96%	*0.014***	132	8.03%	*0.000****	5.07%	*0.017***
Missing investor types	2,283	-2.69%	*0.000****	520	6.99%	*0.000****	9.68%	*0.000****

Panel D: 21-day CARs

	Discount PIPEs			Premium PIPEs				
	N	CAR (-10, +10)	*P-value*	N	CAR (-10, +10)	*P-value*	Difference	*P-value*
All investors	4,197	-0.39%	*0.415*	1,173	9.03%	*0.000****	9.41%	*0.000****
No terms	905	2.60%	*0.002****	365	7.61%	*0.000****	5.01%	*0.023***
Added terms	3,292	-1.21%	*0.031***	808	9.67%	*0.000****	10.87%	*0.000****
Corporation	191	11.38%	*0.000****	192	12.66%	*0.000****	1.28%	*0.711*
Hedge Fund	1,007	-2.45%	*0.024***	211	8.77%	*0.000****	11.22%	*0.000****
Insider	99	-0.19%	*0.942*	40	13.09%	*0.018***	13.28%	*0.029***
VC	187	3.08%	*0.100**	78	13.26%	*0.002****	10.18%	*0.024***
Other investor types	429	5.23%	*0.001****	132	7.64%	*0.002****	2.40%	*0.397*
Missing investor types	2,284	-1.81%	*0.003****	520	7.19%	*0.000****	9.00%	*0.000****

Table 6: Explaining announcement market reactions

This table presents OLS regressions of PIPE announcement market reactions. Panel A presents estimates only for the 11-day event window, Panel B for all four event windows ([-1,+1], [-2,+2], [-5,+5], [-10,+10]) and Panel C for each of the leading investor type of our interest using the 11-day window. Our right-hand side variables aside from the premium PIPE transaction indicator include previous run-up, deal characteristics, deal terms, deal leading investor types and issuer financial profiling. For each regression model except models 1, 3, 5, and 7 in Panel A, year fixed effects have been employed. All variable definitions are reported in Appendix A. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on our final sample of 5,676 observations with available pricing, financials and terms information.

Panel A: Only 11-trading event windows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)
Premium indicator	0.101***	0.100***	0.068***	0.068***	0.067***	0.067***	0.055***	0.055***
	(10.903)	(11.861)	(6.825)	(7.844)	(6.784)	(7.732)	(4.025)	(4.387)
Deal size	0.005	0.005***	0.003	0.003**	0.003	0.003**	0.021	0.021
	(1.501)	(3.132)	(1.289)	(2.288)	(1.305)	(2.181)	(1.580)	(1.633)
Runup (day -77 to -11)	0.002	0.002	0.002	0.002	-0.004	-0.003	-0.025**	-0.025***
	(0.123)	(0.290)	(0.153)	(0.326)	(-0.293)	(-0.565)	(-2.124)	(-3.174)
Antidilution			-0.049***	-0.051**	-0.050***	-0.052***	-0.029	-0.026
			(-2.868)	(-2.543)	(-2.926)	(-2.580)	(-1.178)	(-0.862)
Selling restrictions			-0.006	-0.007	0.003	0.003	0.019	0.018
			(-0.478)	(-0.463)	(0.246)	(0.174)	(1.037)	(0.870)
Right of first refusal			-0.006	-0.005	-0.007	-0.005	0.011	0.015
			(-0.544)	(-0.423)	(-0.592)	(-0.452)	(0.641)	(0.969)
Board seats			0.077***	0.076***	0.077***	0.076***	0.101***	0.098***
			(3.808)	(4.639)	(3.846)	(4.621)	(3.364)	(4.017)
Registration			-0.058***	-0.059***	-0.050***	-0.050***	-0.045***	-0.047***
			(-6.701)	(-6.609)	(-5.563)	(-5.483)	(-3.273)	(-3.519)
Limitation on future issuances			-0.037***	-0.035***	-0.036***	-0.035***	-0.036**	-0.037***
			(-3.638)	(-3.678)	(-3.591)	(-3.659)	(-2.368)	(-2.706)
Hedging restrictions			0.016	0.015	0.017	0.015	0.013	0.010
			(1.285)	(1.206)	(1.344)	(1.209)	(0.679)	(0.541)

Warrants			-0.024***	-0.023***	-0.029***	-0.027***	-0.034***	-0.035***
			(-3.180)	(-3.143)	(-3.300)	(-3.456)	(-2.651)	(-3.079)
Placement agent			-0.028***	-0.026***	-0.029***	-0.028***	-0.035**	-0.032**
			(-3.160)	(-2.866)	(-3.339)	(-3.059)	(-2.541)	(-2.458)
Termination provisions			0.044	0.047**	0.049	0.052**	0.008	0.008
			(1.408)	(2.173)	(1.561)	(2.393)	(0.235)	(0.252)
Log Amihud illiquidity					0.009***	0.009***	0.015***	0.014***
					(3.769)	(4.060)	(3.718)	(4.257)
Log market cap					0.004	0.005	0.019***	0.019***
					(0.905)	(1.123)	(2.644)	(2.975)
Institutional ownership					-0.000	0.003	-0.003	-0.007
					(-0.011)	(0.157)	(-0.134)	(-0.268)
Leverage ratio							-0.033	-0.031
							(-1.540)	(-1.447)
Market to book ratio							-0.002**	-0.002**
							(-2.425)	(-2.213)
Cash to assets ratio							0.038*	0.043**
							(1.714)	(1.995)
Sales to assets ratio							0.019	0.021*
							(1.541)	(1.923)
ROA							-0.022	-0.020
							(-1.321)	(-1.310)
Cash burn rate							0.008	0.008*
							(1.380)	(1.729)
Constant	-0.014***		0.053***		0.053***		0.060***	
	(-3.754)		(5.880)		(5.323)		(3.703)	
Observations	5,265	5,265	5,265	5,265	5,265	5,265	2,778	2,778
Year fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted R-square	0.0281	0.0317	0.0709	0.0710	0.0746	0.0747	0.0789	0.0779

Panel B: All event windows

	(1) CAR (-1, +1)	(2) CAR (-1, +1)	(3) CAR (-2, +2)	(4) CAR (-2, +2)	(5) CAR (-5, +5)	(6) CAR (-5, +5)	(7) CAR (-10, +10)	(8) CAR (-10, +10)
Premium indicator	0.071***	0.063***	0.075***	0.068***	0.067***	0.055***	0.062***	0.046***
	(11.780)	(7.343)	(11.158)	(6.982)	(7.732)	(4.387)	(5.582)	(3.001)
Deal size	0.002	0.009	0.002**	0.015	0.003**	0.021	0.002	0.027*
	(1.464)	(1.063)	(2.075)	(1.477)	(2.181)	(1.633)	(0.920)	(1.695)
Runup (day -77 to -11)	0.008*	-0.006	0.004	-0.013**	-0.003	-0.025***	0.005	-0.010
	(1.882)	(-1.167)	(0.871)	(-2.061)	(-0.565)	(-3.174)	(0.599)	(-1.004)
Antidilution	-0.020	-0.006	-0.031*	-0.026	-0.052***	-0.026	-0.042	-0.044
	(-1.454)	(-0.302)	(-1.960)	(-1.088)	(-2.580)	(-0.862)	(-1.604)	(-1.179)
Selling restrictions	0.009	0.008	0.000	0.007	0.003	0.018	-0.006	0.001
	(0.907)	(0.528)	(0.034)	(0.457)	(0.174)	(0.870)	(-0.304)	(0.020)
Right of first refusal	-0.007	0.002	-0.012	0.007	-0.005	0.015	0.005	0.036*
	(-0.908)	(0.142)	(-1.431)	(0.564)	(-0.452)	(0.969)	(0.347)	(1.812)
Board seats	0.062***	0.089***	0.077***	0.095***	0.076***	0.098***	0.106***	0.103***
	(5.391)	(5.368)	(5.946)	(5.018)	(4.621)	(4.017)	(4.978)	(3.441)
Registration	-0.049***	-0.049***	-0.051***	-0.051***	-0.050***	-0.047***	-0.055***	-0.069***
	(-7.579)	(-5.293)	(-7.072)	(-4.836)	(-5.483)	(-3.519)	(-4.689)	(-4.161)
Limitation on future issuances	-0.030***	-0.028***	-0.024***	-0.022**	-0.035***	-0.037***	-0.028**	-0.030*
	(-4.392)	(-2.986)	(-3.221)	(-2.056)	(-3.659)	(-2.706)	(-2.280)	(-1.775)
Hedging restrictions	0.018**	0.016	0.019*	0.016	0.015	0.010	0.005	0.001
	(2.032)	(1.258)	(1.939)	(1.096)	(1.209)	(0.541)	(0.327)	(0.063)
Warrants	-0.024***	-0.039***	-0.027***	-0.043***	-0.027***	-0.035***	-0.024**	-0.034**
	(-4.346)	(-4.962)	(-4.414)	(-4.889)	(-3.456)	(-3.079)	(-2.309)	(-2.409)
Placement agent	-0.021***	-0.030***	-0.025***	-0.031***	-0.028***	-0.032**	-0.029**	-0.041**
	(-3.279)	(-3.261)	(-3.508)	(-2.994)	(-3.059)	(-2.458)	(-2.460)	(-2.549)
Termination provisions	0.056***	0.037*	0.055***	0.030	0.052**	0.008	0.034	0.008
	(3.662)	(1.718)	(3.225)	(1.210)	(2.393)	(0.252)	(1.230)	(0.199)
Log Amihud illiquidity	0.004***	0.007***	0.006***	0.009***	0.009***	0.014***	0.012***	0.016***
	(2.821)	(3.062)	(3.407)	(3.520)	(4.060)	(4.257)	(4.359)	(3.939)
Log market cap	0.001	0.007	0.003	0.011**	0.005	0.019***	0.009*	0.023***
	(0.350)	(1.613)	(0.820)	(2.254)	(1.123)	(2.975)	(1.805)	(2.898)

Institutional ownership	0.014	0.004	0.009	-0.002	0.003	-0.007	0.002	0.015
	(1.088)	(0.265)	(0.624)	(-0.094)	(0.157)	(-0.268)	(0.091)	(0.477)
Leverage ratio		-0.022		-0.031*		-0.031		-0.023
		(-1.449)		(-1.841)		(-1.447)		(-0.855)
Market to book ratio		-0.001		-0.001		-0.002**		-0.002**
		(-1.205)		(-1.375)		(-2.213)		(-2.037)
Cash to assets ratio		0.022		0.026		0.043**		0.065**
		(1.466)		(1.516)		(1.995)		(2.408)
Sales to assets ratio		0.011		0.010		0.021*		0.030**
		(1.521)		(1.163)		(1.923)		(2.218)
ROA		-0.018*		-0.025**		-0.020		-0.030
		(-1.700)		(-2.127)		(-1.310)		(-1.612)
Cash burn rate		0.001		0.005		0.008*		0.016***
		(0.442)		(1.259)		(1.729)		(2.634)
Observations	5,264	2,778	5,264	2,778	5,265	2,778	5,266	2,778
Sample	All firms	All firms	All firms	All firms	All firms	All firms	All firms	All firms
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.126	0.141	0.110	0.117	0.0747	0.0779	0.0472	0.0609

Panel C: All leading investor types

	All Investors		Corporate Investors		Hedge Fund Investors		Unknown Investors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)	CAR (-5, +5)
Premium indicator	0.067***	0.055***	0.030	0.011	0.091***	0.046	0.066***	0.063***
	(7.732)	(4.387)	(1.034)	(0.262)	(4.112)	(1.532)	(5.380)	(3.423)
Deal size	0.003**	0.021	0.048	-0.027	0.012***	0.038	-0.000	0.027
	(2.181)	(1.633)	(0.539)	(-0.226)	(3.763)	(0.640)	(-0.153)	(0.952)
Runup (day -77 to -11)	-0.003	-0.025***	0.166***	0.220***	0.010	-0.054**	-0.017*	-0.027**
	(-0.565)	(-3.174)	(5.234)	(4.930)	(0.706)	(-2.579)	(-1.811)	(-2.099)
Antidilution	-0.052***	-0.026	-0.187*	-0.184	-0.082**	-0.070	-0.024	0.028
	(-2.580)	(-0.862)	(-1.843)	(-1.437)	(-2.129)	(-1.321)	(-0.807)	(0.587)
Selling restrictions	0.003	0.018	-0.043	0.028	-0.030	0.008	0.015	0.028
	(0.174)	(0.870)	(-1.176)	(0.567)	(-0.693)	(0.104)	(0.643)	(0.836)
Right of first refusal	-0.005	0.015	0.036	0.024	-0.015	0.024	-0.013	-0.006
	(-0.452)	(0.969)	(0.827)	(0.434)	(-0.705)	(0.796)	(-0.741)	(-0.229)
Board seats	0.076***	0.098***	0.089**	0.103*	-0.046	-0.043	0.047	0.047
	(4.621)	(4.017)	(2.075)	(1.741)	(-0.999)	(-0.531)	(1.505)	(0.967)
Registration	-0.050***	-0.047***	-0.045	-0.071	-0.056***	-0.028	-0.028**	-0.033*
	(-5.483)	(-3.519)	(-0.824)	(-0.998)	(-2.799)	(-0.978)	(-2.156)	(-1.693)
Limitation on future issuances	-0.035***	-0.037***	0.043	0.059	-0.041*	-0.070**	-0.017	-0.004
	(-3.659)	(-2.706)	(0.692)	(0.722)	(-1.931)	(-2.358)	(-1.257)	(-0.193)
Hedging restrictions	0.015	0.010	0.059	0.066	0.004	0.002	-0.002	-0.018
	(1.209)	(0.541)	(1.371)	(1.105)	(0.167)	(0.049)	(-0.085)	(-0.611)
Warrants	-0.027***	-0.035***	-0.016	-0.091	-0.025	-0.023	-0.023**	-0.024
	(-3.456)	(-3.079)	(-0.411)	(-1.619)	(-1.289)	(-0.855)	(-2.091)	(-1.538)
Placement agent	-0.028***	-0.032**	0.037	0.106**	-0.025	-0.087***	-0.036**	-0.037*
	(-3.059)	(-2.458)	(1.250)	(2.525)	(-1.070)	(-2.611)	(-2.494)	(-1.755)
Termination provisions	0.052**	0.008	-0.014	0.018	0.179***	0.018	0.128***	0.089
	(2.393)	(0.252)	(-0.287)	(0.296)	(3.208)	(0.190)	(2.734)	(1.358)
Strategic PIPEs			0.044	0.020				
			(1.405)	(0.429)				
Log Amihud illiquidity	0.009***	0.014***	0.003	-0.011	0.019***	0.031***	0.007**	0.011**

	(4.060)	(4.257)	(0.352)	(-0.725)	(3.569)	(4.014)	(2.489)	(2.272)
Log market cap	0.005	0.019***	-0.009	-0.039*	0.036***	0.061***	-0.001	0.016*
	(1.123)	(2.975)	(-0.582)	(-1.697)	(3.404)	(3.906)	(-0.093)	(1.753)
Institutional ownership	0.003	-0.007	-0.037	-0.004	-0.032	-0.039	0.019	-0.011
	(0.157)	(-0.268)	(-0.613)	(-0.047)	(-0.721)	(-0.626)	(0.775)	(-0.329)
Leverage ratio		-0.031		-0.119		0.015		-0.013
		(-1.447)		(-1.445)		(0.310)		(-0.433)
Market to book ratio		-0.002**		0.002		-0.001		-0.003**
		(-2.213)		(0.713)		(-0.628)		(-2.172)
Cash to assets ratio		0.043**		-0.083		0.076		0.038
		(1.995)		(-0.958)		(1.525)		(1.290)
Sales to assets ratio		0.021*		-0.006		0.001		0.030*
		(1.923)		(-0.144)		(0.054)		(1.956)
ROA		-0.020		0.003		-0.006		-0.023
		(-1.310)		(0.045)		(-0.189)		(-1.101)
Cash burn rate		0.008*		0.012		0.013		0.009
		(1.729)		(0.545)		(1.267)		(1.265)
Observations	5,265	2,778	376	239	1,203	628	2,749	1,421
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.0747	0.0779	0.102	0.148	0.0903	0.0759	0.0564	0.0491

Table 7: Premium PIPEs direct and signal effects – Contrast with discount PIPEs

This table presents mean direct and signal effects for premium and discount PIPEs. Direct and signal effects are computed based on Wruck (1989). The formula for the calculation of the direct effect is: ((1+discount*ratio of shares issued)/(1+ratio of shares issued)-1). The formula for the signal effect is: CAR – direct effect. The signal effect is computed for various event windows, namely: [0,+1], [0,+2], [0,+5] and [0,+10]. Mean values are presented on the top row and p-values on the lower one. All variable definitions are reported in Appendix A. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on our final sample of 5,676 observations with available pricing information.

Panel A: All PIPEs

	Direct effect	Signal effect (0, +1)	Signal effect (0, +2)	Signal effect (0, +5)	Signal effect (0, +10)
Premium	2.02%	4.14%	4.80%	5.66%	6.03%
p-value		*0.000****	*0.000****	*0.000****	*0.000****
Discount	-2.11%	-1.40%	-1.52%	-1.62%	-1.89%
p-value		*0.000****	*0.000****	*0.000****	*0.000****
Difference in means		5.54%	6.33%	7.28%	7.92%
p-value Diff-in-means		*0.000****	*0.000****	*0.000****	*0.000****

Panel B: Corporate Investor PIPEs

	Direct effect	Signal effect (0, +1)	Signal effect (0, +2)	Signal effect (0, +5)	Signal effect (0, +10)
Premium	2.37%	10.47%	10.01%	10.33%	10.73%
p-value		*0.000****	*0.000****	*0.000****	*0.000****
Discount	-1.51%	4.02%	4.40%	4.90%	7.01%
p-value		*0.000****	*0.000****	*0.000****	*0.000****
Difference in means		6.45%	5.62%	5.43%	3.71%
p-value Diff-in-means		*0.005****	*0.018***	*0.034***	*0.216*

Panel C: Hedge Fund Investor PIPEs

	Direct effect	Signal effect (0, +1)	Signal effect (0, +2)	Signal effect (0, +5)	Signal effect (0, +10)
Premium	2.12%	2.01%	2.50%	2.55%	2.88%
p-value		*0.099**	*0.050**	*0.078**	*0.094**
Discount	-2.55%	-2.64%	-3.31%	-3.71%	-4.84%
p-value		*0.000****	*0.000****	*0.000****	*0.000****
Difference in means		4.65%	5.81%	6.26%	7.72%
p-value Diff-in-means		*0.001****	*0.000****	*0.000****	*0.000****

Panel D: Unknown Investor PIPEs

	Direct effect	Signal effect (0, +1)	Signal effect (0, +2)	Signal effect (0, +5)	Signal effect (0, +10)
Premium	2.10%	2.08%	2.61%	3.41%	3.44%
p-value		*0.002***	*0.001***	*0.000***	*0.002***
Discount	-1.91%	-2.45%	-2.53%	-2.73%	-3.06%
p-value		*0.000***	*0.000***	*0.000***	*0.000***
Difference in means		-2.08%	-2.61%	-3.41%	-3.44%
p-value Diff-in-means		*0.000***	*0.000***	*0.000***	*0.000***

Table 8: Explaining signal effects

This table presents OLS regressions explaining PIPE signal effects. The event window utilized is [0,+5]. Signal effects are computed based on Wruck (1989). The formula for the signal effect is: CAR – direct effect.(the formula for the calculation of the direct effect is: ((1+discount*ratio of shares issued)/(1+ratio of shares issued)-1). Our right-hand side variables aside from the premium PIPE transaction indicator include previous run-up, deal characteristics, deal terms, deal leading investor types and issuer financial profiling. Regression models are presented for all leading investor types and for corporations, hedge funds (and unknown) acting as leading investor types, respectively. For each regression model, year fixed effects have been employed. All variable definitions are reported in Appendix A. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on our final sample of 5,676 observations with available pricing, deal terms and financial information.

	All Investors		Corporate Investors		Hedge Fund Investors		Unknown Investors	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Signal effect (0, +5)	Signal effect (0, +5)	Signal effect (0, +5)	Signal effect (0, +5)	Signal effect (0, +5)	Signal effect (0, +5)	Signal effect (0, +5)	Signal effect (0, +5)
Premium indicator	0.037***	0.035***	0.038	0.009	0.059***	0.039**	0.027***	0.026**
	(5.784)	(4.153)	(1.380)	(0.227)	(3.984)	(2.419)	(3.264)	(2.544)
Deal size	0.003**	0.033***	0.031	-0.105	0.018***	0.079**	-0.005***	0.013
	(2.433)	(3.862)	(0.375)	(-0.920)	(8.398)	(2.451)	(-4.198)	(0.808)
Runup (day -77 to -11)	0.006	-0.005	0.179***	0.255***	0.019*	-0.026**	-0.017***	-0.022***
	(1.366)	(-0.975)	(6.073)	(6.090)	(1.956)	(-2.291)	(-2.763)	(-3.009)
Antidilution	-0.028*	0.000	-0.124	-0.099	-0.036	-0.037	-0.018	0.058**
	(-1.908)	(0.019)	(-1.314)	(-0.820)	(-1.389)	(-1.300)	(-0.912)	(2.134)
Selling restrictions	-0.004	-0.005	-0.064*	0.000	-0.029	-0.034	0.014	0.007
	(-0.403)	(-0.364)	(-1.853)	(0.003)	(-0.999)	(-0.820)	(0.864)	(0.359)
Right of first refusal	-0.013	0.003	0.065	0.042	-0.022	-0.016	-0.018	0.004
	(-1.591)	(0.281)	(1.610)	(0.817)	(-1.595)	(-0.961)	(-1.524)	(0.249)
Board seats	0.072***	0.078***	0.041	0.062	-0.038	0.017	0.074***	0.056**
	(5.868)	(4.796)	(1.031)	(1.120)	(-1.223)	(0.389)	(3.442)	(2.024)
Registration	-0.058***	-0.061***	-0.030	-0.045	-0.070***	-0.060***	-0.038***	-0.041***
	(-8.527)	(-6.731)	(-0.588)	(-0.679)	(-5.177)	(-3.954)	(-4.245)	(-3.681)
Limitation on future issuances	-0.050***	-0.044***	-0.013	-0.007	-0.057***	-0.054***	-0.035***	-0.034***
	(-7.018)	(-4.826)	(-0.230)	(-0.094)	(-4.005)	(-3.368)	(-3.887)	(-3.159)

Hedging restrictions	0.029***	0.033***	0.089**	0.105*	0.034*	0.046**	0.009	0.010
	(3.008)	(2.694)	(2.233)	(1.856)	(1.863)	(2.256)	(0.659)	(0.621)
Warrants	-0.047***	-0.058***	-0.009	-0.079	-0.045***	-0.024	-0.047***	-0.060***
	(-8.065)	(-7.627)	(-0.261)	(-1.489)	(-3.410)	(-1.619)	(-6.404)	(-6.743)
Placement agent	-0.014**	-0.023**	0.056**	0.120***	-0.031**	-0.098***	-0.018*	-0.018
	(-1.990)	(-2.557)	(2.012)	(3.049)	(-1.970)	(-5.472)	(-1.811)	(-1.533)
Termination provisions	0.076***	0.015	0.019	0.055	0.203***	-0.019	0.097***	0.078**
	(4.704)	(0.696)	(0.410)	(0.971)	(5.409)	(-0.373)	(3.040)	(2.118)
Strategic PIPEs			0.021	0.005				
			(0.712)	(0.106)				
Log Amihud illiquidity	0.002	0.006***	0.000	-0.006	0.002	0.010**	-0.001	0.002
	(1.487)	(2.656)	(0.013)	(-0.465)	(0.693)	(2.339)	(-0.294)	(0.895)
Log market cap	-0.011***	0.001	-0.013	-0.035	0.001	0.025***	-0.017***	-0.001
	(-3.713)	(0.121)	(-0.921)	(-1.603)	(0.128)	(2.904)	(-4.483)	(-0.226)
Institutional ownership	0.039***	0.031*	0.015	0.048	0.029	0.029	0.044***	0.016
	(2.963)	(1.903)	(0.267)	(0.643)	(0.987)	(0.864)	(2.588)	(0.841)
Leverage ratio		-0.020		-0.095		-0.012		-0.001
		(-1.351)		(-1.227)		(-0.447)		(-0.048)
Market to book ratio		-0.001		0.003		-0.000		-0.001
		(-1.253)		(1.049)		(-0.355)		(-1.573)
Cash to assets ratio		0.034**		-0.088		0.027		0.059***
		(2.304)		(-1.076)		(0.997)		(3.487)
Sales to assets ratio		0.019***		-0.007		0.005		0.026***
		(2.645)		(-0.158)		(0.364)		(3.068)
ROA		-0.013		0.003		-0.015		0.008
		(-1.319)		(0.055)		(-0.823)		(0.656)
Cash burn rate		-0.002		0.009		-0.002		0.001
		(-0.758)		(0.426)		(-0.338)		(0.201)
Observations	5,251	2,775	375	238	1,202	628	2,740	1,419
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-square	0.132	0.158	0.115	0.172	0.231	0.229	0.126	0.178

Table 9: Active investors in premium PIPEs – Contrast with discount PIPEs

This table presents the occurrence of active investors in PIPE transactions. An active investor is present if we identify at least one Schedule 13D filing within 60 calendar days after the PIPE closing date or if a board seat was granted to any of the PIPE investors through the PIPE transaction. The occurrence of active investors is separated by whether the PIPE transaction was offered at a premium or discount with the statistical significance of the difference in the active investors' occurrence of the two samples being tested. Separate univariate active investors' statistics are reported for each leading investor type. All variable definitions are reported in Appendix A. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on our final sample of 5,676 observations with investor type information.

	Discount PIPEs		Premium PIPEs		Premium - Discount	
	Obs	% Active	Obs	% Active	Difference	*p-value*
All investors	4,425	13.8%	1,251	25.2%	11.4%	*0.000****
Corporation	204	38.2%	199	39.7%	1.5%	*0.764*
Hedge Fund	1,062	12.3%	223	22.4%	10.1%	*0.001****
Missing investor types	2,401	9.4%	560	15.2%	5.8%	*0.000****

Table 10: Premium PIPEs subsequently targeted in acquisitions – Contrast with discount PIPEs

This table presents the occurrence of acquisitions following PIPE transactions. Acquisitions' frequencies are reported for the discount PIPEs and the premium PIPEs as well as the comparison of the two. Acquisitions are counted when the trading symbol of the target firm is the same as the closing symbol of the PIPE issuer and when the acquisition effective date comes up to three calendar years following the PIPE closing date. Only the acquisitions with the percentage sought by the bidder being greater than 10%, are factored in. All variable definitions are reported in Appendix A. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on our final sample of 5,676 observations with investor type information.

	Discount PIPEs			Premium PIPEs				
	Observations	Targets	% Targeted	Observations	Targets	% Targeted	Difference	*P-value*
All investors	4,425	122	2.76%	1,251	45	3.60%	0.84%	*0.0101***
Corporation	204	8	3.92%	199	7	3.52%	-0.40%	*0.2407*
Hedge Fund	1,062	33	3.11%	223	8	3.59%	0.48%	*0.7640*
Insiders	104	4	3.85%	42	3	7.14%	3.30%	*0.4625*
VCs	199	6	3.02%	86	2	2.33%	-0.69%	*0.8387*
Other investor types	455	8	1.76%	141	6	4.26%	2.50%	*0.1180*
Missing investor types	2,401	63	2.62%	560	19	3.39%	0.77%	*0.2290*

Table 11: Premium PIPE terciles: Net investor gains, deal size and strategic transactions

This table presents statistics for premium PIPEs separated into terciles of the premium percentage paid. Panel A presents the average premiums paid, the average investor announcement returns, and the average net investor gains within each tercile for the [0,+5] and the [0,+10] event windows. Panel B presents the average premium PIPE deal size and average frequency of strategic PIPEs for each premium PIPE tercile. Net investor gains are computed as the negative of the premium percentage plus the abnormal announcement return for the window starting on the day of the public revelation of the PIPE through the end of the announcement window. Strategic PIPEs are identified in the PrivateRaise database and include strategic alliances, joint ventures, strategic partnerships as declared in the accompanying registration documents. The low premium tercile includes all premium PIPEs with a premium lower than 4%, the medium premium tercile includes all premium PIPEs with premia ranging from 4% to 14% and the upper tercile includes all PIPEs with premia greater than or equal to 14%. All variable definitions are reported in Appendix A. We count on our final sample of 5,676 observations with available pricing and deal specific information.

Panel A:

Premium tercile	Avg. premium	Investor announcement return		Net investor gain	
		CAR (0,+5)	CAR (0,+10)	Net Gain (0,+5)	Net Gain (0,+10)
Low premium	1.9%	3.2%	2.9%	1.3%	1.0%
Medium premium	7.6%	7.6%	8.6%	0.1%	1.0%
High premium	32.3%	11.9%	12.2%	-25.8%	-25.5%

Panel B:

Premium tercile	Deal size	Strategic PIPE
Low premium	18.6%	7.5%
Medium premium	19.0%	11.5%
High premium	50.6%	22.9%

Table 12: Premium PIPE long-term stock performance – Contrast with discount PIPEs

This table presents the average raw and abnormal buy-and hold returns for the premium and the discount PIPEs. In Panel A, we present the 12-month, 24-month and 36-month raw returns for the discount PIPEs, the premium PIPEs, and the comparison of the two. In Panel B, we present the 12-month, 24-month and 36-month abnormal buy-and-hold returns again for the discount PIPEs, the premium PIPEs, and the comparison of the two. Premium PIPEs buy-and-hold returns are relative to the returns of a matched firm (with no PIPEs during the preceding five year period) which is constructed out of all firms in the same 2-digit SIC industry, with the minimum absolute difference among the standardized book-to-market equity ratio, the standardized log market capitalization and the standardized Amihud illiquidity measure. In Panel C, we present the 12-month, 24-month and 36-month average raw and abnormal buy-and-hold returns only for the high premium PIPE tercile. In Panel D we repeat the same analysis only for the first PIPE transaction of the PIPE issuers that have been identified to belong in the high premium PIPE tercile. All variable definitions are reported in Appendix A. Asterisks *, **, *** represent significance at the 10%, 5% and 1% level, respectively. We count on our final sample of 5,676 observations with available pricing information.

Panel A: Buy and hold *raw* returns

	Discount PIPEs			Premium PIPEs			Premium - Discount	
Return window	Obs	Mean	p-value	Obs	Mean	p-value	Diff means	p-value
12-month	4,319	-5.74%	0.000***	1,210	3.62%	0.270	9.36%	0.007***
24-month	4,354	-6.74%	0.000***	1,224	8.11%	0.083*	14.85%	0.003***
36-month	4,374	-8.16%	0.000***	1,233	11.15%	0.048**	19.31%	0.001***

Panel B: Buy and hold *abnormal* returns

	Discount PIPEs			Premium PIPEs			Premium - Discount	
Return window	Obs	Mean	p-value	Obs	Mean	p-value	Diff means	p-value
12-month	4,211	-19.63%	0.000***	1,176	-5.81%	0.039**	13.82%	0.000***
24-month	4,219	-32.72%	0.000***	1,176	-15.97%	0.000***	16.75%	0.001***
36-month	4,374	-47.18%	0.000***	1,233	-29.83%	0.000***	17.35%	0.002***

Panel C: High premium tercile

	Raw returns		BHARs	
	Mean	*p-value*	Mean	*p-value*
12-month	16.55%	*0.038***	2.89%	*0.582*
24-month	29.31%	*0.013***	-1.33%	*0.868*
36-month	34.74%	*0.008****	-13.14%	*0.107*

Panel D: High premium tercile & 1st PIPE for issuer

	Raw returns		BHARs	
	Mean	*p-value*	Mean	*p-value*
12-month	25.60%	*0.051**	16.44%	*0.064**
24-month	26.96%	*0.006****	25.21%	*0.054**
36-month	44.07%	*0.000****	23.80%	*0.098**