Financing Under Extreme Uncertainty:

Contract Terms and Returns to Private Investments in Public Equity*

Susan Chaplinsky[a] and David Haushalter[b]

[a]*Darden Graduate School of Business, University of Virginia, Charlottesville, VA 22906*
[b]*Smeal College of Business, The Pennsylvania State University, University Park, PA 16802*

Abstract

We investigate the motivations and the returns to the firms and investors using Private Investments in Public Equities (PIPE) financing, an increasingly common form of equity-linked financing. PIPE issuers perform poorly before the PIPE offering – making traditional forms of financing difficult to obtain – and continue to perform poorly after the offering with mean 12 month abnormal returns of –9% or less, depending on the benchmark and the type of PIPE issued. In exchange for making relatively large equity investments in such poorly performing companies, PIPE investors receive warrants, price resets, and other cash flow rights that can differentiate their returns from shareholders. These rights enable PIPE investors to on average significantly outperform shareholders and to meet or beat benchmark portfolios. The results support the view that cash flow rights reflect private investors' outlook for the issuer's future returns.

JEL classification: G24
Keywords: private placements, private equity, equity issuance, financial constraints

First Draft: March 2003
Latest Draft: May 2006

*We thank Tom Bates, Audra Boone, Randall Heron, Mike Hertzel, Laura Lindsey, Antonio Mello, David McLean, Lei Zhou, and the seminar participants at the University of Wisconsin, Ohio University, West Virginia University, Miami of Ohio, SUNY Buffalo, and the 2003 FMA and 2006 NAEFA meetings for helpful comments. We thank the Batten Institute at the Darden Graduate School of Business and individuals at Placementtracker, especially Robert Kyle, Bobbie Sue Richardson, and Tassanee Sukramule for technical and financial assistance in obtaining the PIPE data. Kulwant Rai provided excellent research assistance on the project.

Author contact information:

a. Susan Chaplinsky (corresponding), Darden Graduate School of Business, University of Virginia, Charlottesville, VA 22906, Tel: (434) 924-4810, email: chaplinskys@virginia.edu
b. David Haushalter, Smeal College of Business, The Pennsylvania State University, University Park, PA 16802, Tel: (814) 863-7969, email: dhaushalter@psu.edu

Financing Under Extreme Uncertainty:

Contract Terms and Returns to Private Investments in Public Equity

Abstract

We investigate the motivations and the returns to the firms and investors using Private Investments in Public Equities (PIPE) financing, an increasingly common form of equity-linked financing. PIPE issuers perform poorly before the PIPE offering – making traditional forms of financing difficult to obtain – and continue to perform poorly after the offering with mean 12 month abnormal returns of –9% or less, depending on the benchmark and the type of PIPE issued. In exchange for making relatively large equity investments in such poorly performing companies, PIPE investors receive warrants, price resets, and other cash flow rights that can differentiate their returns from shareholders. These rights enable PIPE investors to on average significantly outperform shareholders and to meet or beat benchmark portfolios. The results support the view that cash flow rights reflect private investors' outlook for the issuer's future returns.

Financing Under Extreme Uncertainty:
Contract Terms and Returns to Private Investments in Public Equity

1. Introduction

Companies with operating difficulties or information asymmetries frequently face hurdles raising capital through traditional financing instruments, such as follow-on equity, public or private debt offerings.[1] In this study we examine an increasingly common form of equity-linked financing, private investments in public equity, generally referred to as PIPEs, largely used by firms facing these hurdles. PIPEs are negotiated sales of securities by listed firms to private investors which can take the form of Floating Rate Convertible Debt or Preferred Stock, Convertible Resets, Common Stock Resets, Structured Equity Lines, and Common Stock PIPEs. These contracts are common stock or securities that will almost certainly convert into common stock. PIPEs differ from traditional equity offerings by allowing investors through their choice of contract terms to vary their exposure to the post-issue value of an issuer's equity. From 1995-2000, 1,466 firms issued 2,626 PIPEs that raised more than $29 billion, or almost 25% of the public equity that companies issued during this period. Since then, the PIPE market continues to grow with proceeds annually exceeding $10 billion. We investigate the motivations and the returns to firms and investors using this rapidly growing market.

The PIPE investments we study differ from the private placements studied by, among others, Wruck, (1989), Hertzel and Smith (1993), Barclay, Holderness, and Sheehan (2003) and Krishnamurthy, Spindt, Subramaniam, and Woidtke (2005) and Wruck and Wu (2006), on several dimensions. First, although private placements usually include restricted shares that prevent investors from selling their shares in the public market for a year or longer, the equity issued via a PIPE offering can be publicly traded once it is registered, typically within a few months after the transaction. Second, as a result of this greater liquidity, PIPE investors are not for the most part long-term shareholders of the firm. Hedge

[1] The literature on financing constraints examines the limitations and costs imposed on firms by a lack of external capital. For example, see Fazzari, Hubbard, and Petersen (1988), Kaplan and Zingales (1997), Whited (1992), and Hoshi, Kashyap, and Scharfstein (1991).

funds are the most frequently observed investors and they retain their stake in an issuer for a matter of months rather than years. PIPE investors tend to be passive investors which suggests that the monitoring and long-term ownership benefits expected to result from the private placements investigated in Barclay, et al. (2003) and Wruck and Wu (2006) are unlikely to arise with PIPEs. Third, previous studies of private placements usually restrict their samples to issues that include only a purchase discount whereas our sample includes "plain vanilla" private placements and issues that also include warrants, convertibles, and other complex features. However, an important similarity between PIPEs and the private placements examined in the aforementioned studies is that both represent substantial equity investments in the issuer. For example, the average proceeds from a PIPE represent approximately 16% of the issuer's equity compared to 17% of shares outstanding in Barclay, et. al (2003) and 16% of the value of equity in Hertzel and Smith (1993).

One goal of this study is to understand the characteristics and circumstances of the companies issuing PIPEs. By almost any standard, PIPE issuers exhibit dramatically more negative performance prior to the issue than firms using more traditional forms of financing. For example, public and private debt issuers are generally profitable firms in the years prior to issue (Chaplinsky and Hansen (1993) and Denis and Mihov (2003)). The stock prices of firms making follow-on equity offerings increase 30% or more in the months leading up to the issue and earnings are positive and growing ahead of the offer.[2] Hertzel, Lemmon, Linck, and Rees (2002) find that firms making private placements of equity have relatively poor pre-issue operating performance but their stock prices increase by over 50% on average in the year prior to issue. By comparison, more than 84% of PIPE issuers have negative operating cash flow and over 50% of the issuers have falling stock prices in the year prior to issue. Moreover, a majority of the companies will be out of cash within a year. Relative to prior studies of financing, PIPE issuers are

[2] For a discussion of returns and earnings around equity offerings see Heron and Lie (2004), Ritter and Loughran (1997), Korajczyk, Lucas and McDonald (1990), Asquith and Mullins (1986), Masulis and Korwar (1986), and Mikkelson and Partch (1986).

extremely poorly performing firms, urgently in need of cash, and therefore likely shut off from traditional forms of financing.

Following the issue, PIPE issuers continue to perform poorly. Similar to prior studies of private placements and PIPEs (Hertzel, Lemmon, Linck, and Rees (2002), Hillion and Vermaelen (2004) and Brophy, Ouimet, and Sialm (2005)), we find negative long term returns for the shareholders of PIPE issuers. The abnormal returns to the existing shareholders of PIPE issuers are –16% through 12 months (median of −43%) and –33% through 24 months (median of −70%), with 28% of the issuers delisted within 24 months after the offering. We examine short-selling, operating performance, alternative benchmarks, and other possible explanations for these results but find little evidence that can systematically explain the variation in returns. Nonetheless, what is clear is that on average PIPE issuers perform poorly before and after the issue.

The second, and primary, goal of our analysis is to investigate the financing terms for companies facing these uncertainties and their effect on investor returns. First, we examine determinants of the financing terms and investors' resulting exposure to the issuer's performance. Similar to venture capital investments, PIPE investors generally take relatively large equity stakes in companies with substantial operating uncertainties. Although the degree of illiquidity that PIPE investors face is not as great as for a private company, investors are likely to incur substantial costs in quickly liquidating their stakes. PIPE contracts do not provide control rights (e.g., board seats, super majority voting rights) to the same extent as the venture capital contracts discussed by Kaplan and Stromberg (2003). Instead, the contracting terms award PIPE investors substantial cash flow rights. These cash flow rights can take the form of purchase discounts, dividends or interest payments, warrants, or protective features such as repricing rights that help preserve investors' capital. PIPEs contracts can range from contracts that include only a purchase discount to more complex contracts that include all of the above mentioned cash flow rights. When we combine the cash flow rights and other protective features investors negotiate upfront into an "All-in Net Discount," we find that the "All-in" discount more than doubles from 14.3% for plain vanilla contracts to

34.7% for the most complex contracts. The cash flow rights are also associated with the ex-ante uncertainties of the equity stake. In particular, we find PIPEs are more likely to include repricing rights that protect investors from the downside risk of the issuer, the shorter the time remaining until the issuer will run out of cash and the greater the difficulties the investors will likely face in liquidating or hedging their equity stake.

With respect to the realized returns to PIPE investors, although investors have an equity stake in the issuer, their cash flow rights can potentially differentiate their returns from those of existing shareholders. Because the length of time an investor holds a position is unobservable to researchers, we compute post-issue investor returns over intervals ranging from three months to two years. We estimate investors' excess returns using several benchmarks to account for size and the volatility of the returns. From three to 12 months post-issue, average returns consistently exceed benchmarks returns, often by double digits. Through 24 months post-issue, investor returns for the most part become statistically insignificant or negative. The distribution of investors' returns is positively skewed. These estimated returns do not directly factor in investors' trading activities, for example shorting of the issuer's shares, or the costs of liquidating their positions. However, our analysis indicates that the costs from these are unlikely to exceed our estimated returns. Therefore, our results indicate that PIPE investors meet or beat market benchmarks and substantially outperform the returns to existing shareholders. These returns help explain the willingness of PIPE investors to provide financing to companies facing extreme uncertainties.

Our study contributes to the financing literature in a several ways. First, the study adds to the literature on performance following equity issuance. Given the fact that important information is conveyed from the terms of the PIPE contract, the reason for the post-offering long-term underperformance of PIPE issuers is not entirely clear. Similar to Hillion and Vermilian (2004) we find that companies perform poorly after issuing a PIPE and this underperformance is associated with the cash flow rights of private investors. However, there is little evidence to indicate that increased short selling, as

suggested by their "faulty contracting" story, or other issuer and market characteristics can broadly explain this underperformance.

The long-term underperformance of PIPE issuers is more consistent with explanations that have been attributed to overoptimistic investors. Our results for PIPEs indicate that this overoptimism, or possibly underpessimism, extends even to firms facing the bleakest prospects. However, based on the issuers' poor pre-issue performance it is difficult to attribute the post-issue returns to shareholders overweighting recent performance in making long-term forecasts, as suggested by Loughran and Ritter (1997) in explaining the underperformance of firms following seasoned equity offerings. An alternative explanation is provided by Tversky and Kahneman (1992) who argue that individuals often overweight the extreme tails of the distribution of potential outcomes when making a decision. As shown by Barberis and Huang (2005) when individuals overweight extreme tails, securities exhibiting a lottery type payoff can earn negative excess returns. They offer this an explanation for the underperformance of IPOs and other return anomalies. These issues are particularly relevant in the PIPE market, in which a handful of issuers generate phenomenal returns. For example, 1% of issuers have 12 month returns in excess of 500%. Moreover, the importance of investors overweighting tails and the lottery like payoffs of PIPE issuers is compounded by the fact that the characteristics of many PIPE issuers make them difficult to short. As described by Pontiff and Schill (2002) and Asquith, Pathak, and Ritter (2005), these costs can limit arbitrage and allow mispricing to persist. Therefore the long-term underperformance of PIPE issuers can be attributed to the characteristics of their payoffs as well as to market frictions.

Second, the study has implications for the choice of financing between public and private markets. As shown by Gomes and Phillips (2005), companies with greater risks are more likely to raise capital in the private rather than the public market. They attribute this association to private investors' superior ability to gain and process information. This argument builds on earlier work by Hertzel and Smith (1993) that the information private placement investors develop about the issuer allows them to overcome some of the information asymmetry surrounding the issue. However, given the extreme

operating uncertainties faced by some PIPE issuers, it is unlikely that informational advantages fully explain private investors' willingness to invest. Our analysis shows how the contracting terms of private equity can allow investors to manage their exposure to an issuer's uncertainties. By altering their exposure – to enhance upside or mitigate downside – investors offset some of the uncertainties associated with the issuer, enabling funding to proceed in the presence of great risk.

The paper is organized as follows. In Section 2, we describe the institutional background of the PIPE market and the sample of PIPEs. In Section 3, we discuss the basic contracts and the motivations for investors to invest in a particular type of PIPE. In Section 4, we provide evidence on the contract features and estimate an "all-in" purchase discount to PIPE investors. In Section 5, we investigate how the post-issue returns realized by PIPE investors compare to those realized by the shareholders of PIPE issuers and to other performance benchmarks. Section 6 gives our conclusions.

2. Institutional Background and Sample Description

2.1 Origins of PIPEs

The strong growth in the PIPE market can be traced to several parallel developments over the course of the 1990s. First, the PIPE market has its origins in the U.S. Security and Exchange Commission's (SEC) adoption of Regulation S in May 1990. Under Regulation S, U.S. companies were permitted to sell unregistered shares to foreign investors at any price in "off-shore" markets without first registering the offer with the SEC or publicly disclosing it. While Reg S was used, for example, by large companies to sell debt in the Eurobond market, a certain segment of the market focused on small cap and troubled companies in need of capital. For these firms, Reg S equity or convertible offerings were sold at steep discounts to the company's current price and investors could resell ("flip") the shares back into the U.S. public markets after a 40 day holding period. Investors shorted the shares of the issuer, thereby locking in the discount – and an average profit of 33% – from the first days of the offer (Aggarawal, Gray, and Singer (1999)). Over the next six years a market of U.S investors situated in offshore corporations

became involved in targeting companies for Reg S offerings and in trading and unwinding these positions.

Second, over time, a number of instances came to light in the popular press that highlighted abuses of Reg S and prompted the SEC to institute changes in November 1996.[3] The new rules required issuers to report the sale of Reg S shares in an 8K filing within 15 days of the transactions, as well as in their 10Q filings, and lengthened the period investors were required to hold the securities to one year. These changes alerted shareholders of the potential future sale of shares associated with the offer and eliminated the undisclosed resale option of investors. The net effect of these regulatory changes was that after 1996, the quality of issuers improved and the average purchase discount decreased (Aggarawal, Gray, and Singer (1999)). Broadly speaking, these changes brought Reg S offerings into greater compliance with other private placements issued under Regulation D of Rule 144. Regulation D had always enabled a public company to issue securities to a group of private investors without registering the shares, so long as the investors held the shares for up to two years following purchase.[4] PIPEs eliminate these resale restrictions by requiring the issuer to register the shares received by private investors through the PIPE, in whole via a shelf registration or in part, with the SEC within 30 days after the deal closes. Once the registration becomes effective, the shares can be publicly traded – typically within 90 days of registration. Thus, the registration process is key to transforming what would otherwise be a private (non-liquid) asset into a publicly tradable asset.

A final reason for the strong growth in the PIPE market is demand driven. Brown and Kapadia (2005) argue that over the last 40 years increasingly risky firms have publicly listed. Moreover, Fama and French (2004) document that since 1990 a tendency for firms to go public at an earlier age has resulted in more public firms with less consistent profitability and lower survival rates. The age of PIPE

---

[3] See for example, "Easy Money," Jayve Scholl, *Barron's*, April 29, 1996.

[4] PIPE investors do not necessarily need to meet SEC's standards for being an "accredited investor" to participate in the deal. However no more than 30 percent of the investors can be non-accredited. The SEC classifies an investor as "accredited" if it meets one of several requirements. For a full list of these requirements see http://www.sec.gov/answers/accred.htm.

issuers and other characteristics we discuss later are consistent with the deteriorating quality of "new lists." For example, for the PIPE issuers in our sample the average time from the founding date to IPO date is 7.1 years and 12 years from founding date to first PIPE issue.[5] By comparison, Fink, Fink, Grullon, and Weston (2005) document that prior to 1992 the average time from founding to IPO was at least 14 years for NASDAQ firms. Over time there has been an increase in the number of young risky firms with heavy demands for capital. For investors to bear these risks, they demand contracting terms that are difficult to obtain using traditional forms of financing, thereby contributing to the overall growth in the PIPE market.

2.2 PIPEs in comparison to traditional private placements

At this point it is reasonable to ask how PIPEs differ from traditional private placements, such as those studied by Wruck (1989), Hertzel and Smith (1993), Barclay, et al. (2003), and Krishnamurthy, et al. (2005) and Wruck and Wu (2006). These studies exclude private placements with warrants and those that are convertible into equity. Although PIPEs include the "plain vanilla" private placements, more commonly they contain warrants, caps, floors, and other complex features. A second difference is that the private placements previously examined typically were assumed to be issued under Reg D of Rule 144 which, as alluded to above, imposed lengthy resale restrictions on the purchaser. Accordingly these studies focus on the characteristics of the purchasers of private placements with an eye toward uncovering the benefits associated with granting control rights to, presumably long-term, block holders of the firm. By contrast, the most frequent investors in PIPEs are hedge funds (Brophy, Ouimet, and Sialm (2005)) who, generally, are passive investors with little desire to become long-term block holders of the firm. They, as opposed to other institutional investors, have the trading flexibility and expertise to maximize the value of the embedded options in PIPE contracts. Their investments are governed by more technical factors associated with the issuer's stock (e.g., liquidity, volatility, availability to short shares) than traditional private equity investments.

---

[5] We thank Laura Field and Jay Ritter for data on founding dates. The remainder were gathered from EDGAR.

Before agreeing to make a PIPE investment, a potential investor has the opportunity to conduct extensive due diligence on the issuer and to negotiate the terms of the security. This due diligence and negotiation process usually involves an extensive review of public filings and discussions with management. Although these activities do not necessarily result in the investors obtaining non-public information, such activities can potentially enable the investors to overcome some of the informational asymmetries associated with these firms. A similar point is made by Hertzel and Smith (1993) for traditional private placements. If the company and investors reach agreement on the terms, the company will issue a press release describing the PIPE transaction at closing.[6] The press release is often quite general, but the company frequently files an accompanying 8-K or S-3 form with the SEC containing a more detailed description of the terms and a list of the investors participating in the deal.

2.3 Sample description

We use Sagient Research, Inc.'s *Placementtracker* database to collect a sample of 2,626 PIPEs over 1995 – 2000, which is reduced to 2,145 PIPEs after imposing the requirement that issuers have stock price data available on *CRSP*. The *Placementtracker* database is to the best of our knowledge an exhaustive list of all PIPEs issued since 1995.[7] Relative to the private placements available in *Security Data Corporation's New Issues* database, it includes many more issues and has a greater number of contract specific items available for analysis. We use *Placementtracker* data to identify the type of PIPE issued, the terms of the contract, and the closing date of the agreement. We cut-off the sample at 2000 to allow for several years of post-issue performance. To be included in our sample the PIPE issuer is required to have data available on *Compustat* and *CRSP*. Upwards of 90 percent of the issuers in our sample are traded on NASDAQ. Table 1 shows summary statistics for five commonly issued PIPE instruments by the sample firms. The two most frequently issued PIPEs are Common Stock PIPEs and

[6] *Placementtracker*, a market clearing house for PIPE information, internally records the date at which its analysts first learn of a PIPE transaction but this date is not available in the database. For deals offered in 2003 and 2004, it reports a median 2 day time lapse between its first learning of a deal and the closing date it reports. We thank Robert Kyle for providing this information. For a description of *Placementtracker,* see http://www.placementtracker.com.

[7] For 1995 and 1996, we check the sample of PIPEs from *Placementtracker* against press announcements of PIPEs. All of the companies identified from press announcements are in *Placementtracker*.

Floating Rate Convertibles. Common Stock PIPEs account for almost 50% of the total number of PIPEs and roughly 67.0% of the capital raised from these transactions. Floating Rate Convertibles account for 37.8% of the PIPE transactions and approximately 22.8% of the capital raised. Convertible Resets, which are similar to Floating Rate Convertibles, account for an additional 6% of the capital raised. Hence, these three categories account for 96% of the $26.7 billion total capital raised by the PIPEs in our sample. The use of Common Stock PIPEs increases each year, whereas Floating Rate Convertibles increase from 30 in 1995 to a peak of 233 in 1997, but then trail off to 89 in 2000. The drop in Floating Rate Convertibles has been attributed to adverse publicity about the controversial nature of the securities (e.g., "death spirals," "toxic converts") and an NASD ruling that introduced certain contract terms which effectively limited the downside protection provided to investors.[8] The number of PIPEs issued and the amount of capital raised through PIPE transactions increases steadily over the sample period, reaching a high of $12.6 billion in 2000. For the entire window between 1995 and 2000, a total of $26.2 million was raised in the PIPE market by these companies, excluding structured equity lines that are pending agreements to issue equity. By comparison, Gomes and Phillips (2005) report that public companies issued $112.9 billion in public equity during this period, so that PIPEs equal roughly a quarter of this total. Consequently, the results in Table 1 indicate that PIPEs are an increasingly important source of funding.[9]

2.4 Financial characteristics of PIPE issuers

In Tables 2 and 3 we examine the financial characteristics of PIPE issuers and to what extent other forms of financing might be available to them. Table 2 presents information on selected financial

[8]The National Association of Securities Dealers (NASD) views structured equity lines and floating rate convertibles and resets as "future priced securities." Certain NASDAQ listing rules regarding future priced securities are codified in NASD Rule 4350 which was approved in March 2002 after several years of consideration. Under this rule, the issuance of certain PIPEs requires a vote by shareholders if the lowest possible conversion price is below the book or market value of the stock at the time of issuance or if investors can receive more than 20% of the shares upon conversion from such low prices. To eliminate the need for shareholder approval, an issuer can place a cap on the number of shares that can be issued upon conversion to 20% of the common stock before the issuance of the PIPE or place a floor on the conversion price. See the *Federal Register*, Vol. 67, Number 45, March 7, 2002. In spite of the ruling, the issuance of FRCs increased four times in 2004 after reaching a low in 2003.

[9] Since 2000, the PIPE market continues to grow. For example, in 2004 for the five categories of PIPEs we examine, there were 1,585 PIPEs issued which raised a total of $14.2 billion. Of this total, $13.6 billion was raised through 1,379 Common Stock PIPEs and $324.9 million was raised through 90 Floating Rate Convertibles and Convertible Resets.

and operating characteristics of the companies by contract type.[10] Notably, there is evidence of poor performance regardless of the type of PIPE issued. With the exception of Common Stock Resets, all categories of PIPEs experience negative median stock returns in the six months prior to issue and all categories of PIPEs have negative return on assets (ROA). Consistent with the arguments of Almeida, Campello, and Weisbach (2004) that constrained firms appear to hoard cash, the median ratio of cash and marketable securities to total assets ranges from 20.2% for issuers of floating rate convertibles to 38.9% for firms obtaining structured equity lines. By comparison, Opler, Pinkowitz, Stulz, and Williamson (1999) report the median ratio of cash to net asset ratio of 6.5% for a sample of U.S.-based publicly traded firms. The fraction of PIPE issuers with negative operating income ranges from 78% for Common Stock PIPEs to 88% for Floating Rate Convertibles. Finally, in the last two rows of Table 2, we report two summary measures of the cash needs of PIPE issuers. The first, "Cash Burn Rate," measures given the company's existing cash resources how long it can meet its current operating obligations without new financing. The second measure, "Time Gained," measures the additional time gained through the PIPE to continue operations at the firm's current level of profitability. In all cases, the cash burn rate shows that PIPE issuers have less than a year of cash remaining. With the exception of convertible resets, issuers at least double their median survival time through the PIPE, suggesting that the issue provides some valuable breathing room to the issuer.

2.5 Availability of other forms of financing

Based on the rate at which these companies are burning through cash, it is clear that they will require additional financing to continue operations, raising the question of what other forms of financing might be available to them. The generally small size of PIPE issues and issuers, along with their poor operating performance likely rule out public debt issuance and otherwise make other forms of debt difficult to obtain. For example, Denis and Mihov (2003) find that between 1995 and 1996, the median

[10] We do not find a strong industry pattern to PIPEs issues. Chemicals (SIC Code 2800) and Business Services (SIC Code 7300) each account for 20% of the issues and Instruments and Related Products (SIC Code 3800) accounts for 10%. The top two industry groups include firms in respectively, pharmaceutical and biotech, and computer programming, software and system design. The other issues are scattered among a number of industries.

firm issuing public debt has total assets of $2.2 billion and an average return on assets of 13.5% in the three years before the issue. Although the median company obtaining a bank loan is substantially smaller with assets of $145 million, it also had an average return on assets of 11.2% in the three years prior to the loan. Hovakimian, Opler, and Titman (2001) report that on average companies issuing convertible debt between 1979 and 1997 had total assets of $239 million, stock returns of 61%, and return on assets of 11% in the two years prior to issue.

The characteristics of PIPE issuers are also much different from public companies that make follow-on equity issues.[11] For example, Heron and Lie (2004) report that between 1980 and 1998, the stock returns for companies making primary equity issues exceeded industry returns by a median of 25% in the 250 days preceding the issue. The median assets and ratio of operating income to sales for these firms are $71 million and 10.3% in the year prior to the issue.

In sum, the pervasive nature of poor pre-issue operating and stock performance, as well as their generally small size, suggests that PIPE issuers are not candidates for debt financing or follow-on stock financing, their best chance, is beyond the reach of many issuers. The foregoing results are consistent with Hillion and Vermalen's (2004) contention that floating rate convertibles represent financing of last-resort – except, we note, this contention applies to the broad range of PIPE instruments.

3. Investors' Motivations to Invest in PIPEs

In this section, we discuss the important differences among the different types of PIPE securities to generate predictions about the level of exposure an investor undertakes with respect to an issuer's future performance. Our initial discussion of the contracts assumes that investors are *not* able to short the issuer's equity.

[11] We also compare PIPEs to all follow-on equity issues (SEOs) made during 1995-2000 on a number of financial and operating characteristics. The results show that SEO issuers are significantly larger and better performing firms than PIPE issuers. If these characteristics are suggestive of the threshold necessary for a public equity issue, PIPE issuers fail to meet this threshold by a wide margin. For brevity's sake, we do not report the SEO comparisons but they are available from the authors.

3.1 Price Protected PIPEs

Floating Rate Convertible Preferred Stock or Debt (FRC) and Convertible Resets (CVR) offer investors significant downside protection from adverse movements in the issuer's stock price, while preserving the ability to benefit from strong post-issue stock performance.[12] The familiar fixed rate convertible typically has a single conversion price above the current market price of the common stock that is maintained throughout the term of the contract. Relative to fixed rate convertibles, the conversion price (or rate) on a floating rate convertible changes on a daily basis in accordance with movements in the issuer's stock price. Reset convertibles allow for a discrete number of changes of the conversion price at specified intervals (e.g. six months, one year, and two years from closing). Prior to the reset points, the security is convertible only at the last fixed conversion price. Because of these repricing rights, Brennan (1985) argues that floating rate convertibles are an ideal form of financing for high risk and high asymmetric information firms.[13] However, an most important distinction between a PIPE and a conventional floating rate convertible is that for about half of the issues in our sample the conversion price on the PIPE *can not be adjusted above the offer price*.[14]

Although variations to the basic contract exist, in a typical PIPE an investor purchases an amount ($50 million) in newly issued convertible preferred stock (or analogously convertible debt) from a company for a certain number of shares (5,000) at stated par value per share ($10,000). Following issuance, if the stock price of the issuer falls, the investor will receive sufficiently more shares upon conversion to maintain the value of investment principal. If the stock price of the issuer rises, the conversation will usually take place at the originally agreed upon contract price. Therefore, although

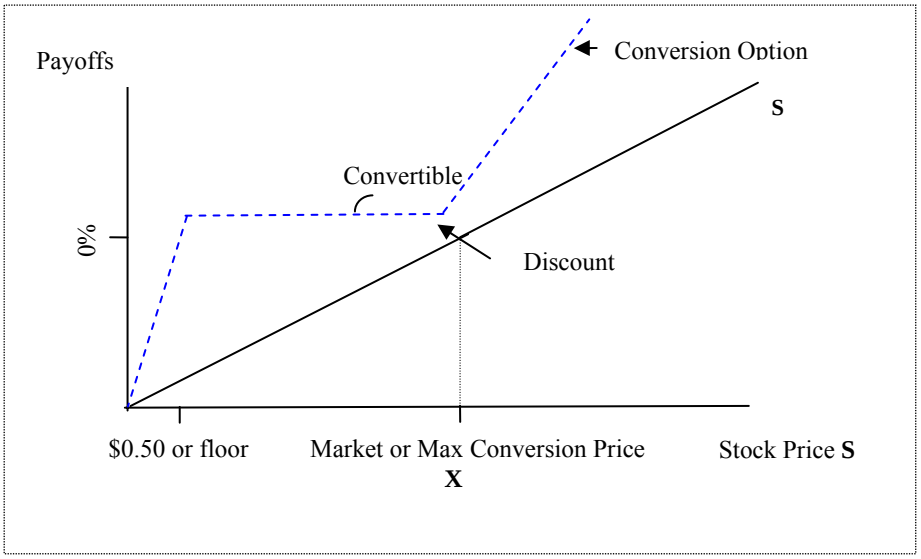
---

[12] A common stock reset (CRS) allows investors to buy common stock at a set price less a discount. The payoffs to CSRs are similar to FRCs and CVRs. However, the contract terms typically allow investors to adjust the purchase price downward only once within a relatively short time, 30 – 90 days, in the event an issuer's stock declines following issue. Thus, the period of price protection is much shorter than for Floating Rate Convertibles and Resets.

[13] If management believes that the firm's equity is currently undervalued and possesses positive information that will eventually lead to a higher price, floating rate convertibles in effect allow shares to be issued at a higher price after the good news is revealed. However, Hillion and Vermaelen (2004) find no evidence that this argument characterizes the performance of floating rate convertibles or resets.

[14] In some instances, PIPEs will allow for the maximum conversion price to be set at a premium over the current price but unlimited upsides are not observed.

investors generally benefit from stock price appreciation following issuance of a PIPE, the issuer does not. Additionally, PIPEs usually have a purchase price discount and require the payment of dividends or interest, typically paid in kind rather than in cash. The payoffs to investors in floating rate and reset convertibles are depicted by a dashed line in the diagram below:



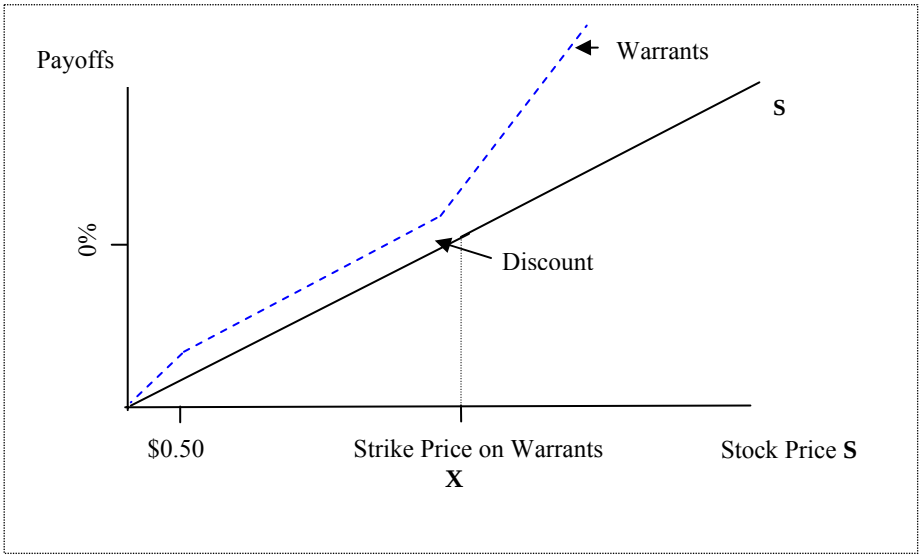
The holder of a floating rate or convertible reset can be viewed as being long stock (S) at the price at which the PIPE is issued (assuming this is the maximum conversion price of the security) and long a put option at this price. However, the protection offered by this put option is limited by the degree of liquidity in the stock and can cease to exist as the stock price approaches zero in the event of distress or delisting. This is depicted in the diagram as being short a put at a $0.50 share price (delisting price).[15] To control the liquidation process, PIPE contracts can stipulate a maximum number of shares that can be converted within a given time period. However, if the issuer's stock price drops below some minimum stated price (e.g., $2 or $3 per share), investors can have the right to accelerate conversion of the remaining unconverted portion of the security. Finally, because of the floating conversion rate, these instruments are structured to end up in the money at maturity. Therefore, unlike conventional fixed rate convertible bonds or preferred stock, these instruments are almost always converted into common equity.

[15] In theory, if the stock price is delisted or the company declares bankruptcy before the PIPE investor has converted any of the position, the investor could lose his or her entire investment.

3.2 Unprotected PIPEs

In contrast to protected PIPEs, Common Stock PIPEs and Structured Equity Lines (SEL) do not contain repricing rights which allow investors to adjust the purchase price of the shares after the closing date and therefore limit the downside protection provided contractually. Investors can purchase the company's stock at a discount to the current market price or some average of prices in a short interval before the issue. CS PIPEs typically involve one upfront purchase of stock while SELs involve several purchases of stock over a specified time interval. These contracts frequently enhance investors' upside with warrants to purchase the company's stock at a price generally at or above the current market price of the stock.

The payoffs to investors in Common Stock PIPEs and SELs are depicted by a dashed line in the diagram below.



In sum, through their choice of PIPE contract, investors can significantly vary their upside and downside exposure to an issuer's post-issue common equity.[16] The due diligence process that precedes a

[16]Our results are robust to various alternative classifications for protected and unprotected PIPEs. For example, the results are similar if we exclude structure equity lines and common stock resets or if we switch the classification of these instruments between the price protected and unprotected categories.

PIPE issue potentially enables investors to overcome some of the informational asymmetries associated with these firms, although substantial uncertainties remain. Therefore that the more concerned investors are with the potential for adverse post-issue stock performance, the more likely they are to choose a protected versus an unprotected PIPE.

4. Investors' All-in Net Purchase Discount

The due diligence process investors undertake should influence their outlook for the issuer and accordingly the type and terms of the contracts they negotiate. In this section we examine the contract features of PIPEs and estimate investors' "all-in net purchase discount" which is our estimated value of the security investors receive relative to their investment at the time of issuance.

4.1 Cash flow rights

Kaplan and Stromberg (2003) report that venture-backed companies typically contract with investors on the basis of cash flow and control rights. In contrast to venture capitalists who make heavy use of control rights, PIPE investors primarily obtain terms that allocate *supra* cash flow rights which enable them to enhance their returns and reduce risk.[17] In Table 3, we detail the features of PIPE contracts that affect investors' realizations of cash or their risk. Seventy eight percent of protected PIPEs require the payment of interest or dividends and have a median dividend/coupon payment of 6.0%. Some 47% of protected PIPEs also include warrants. Only 23% of the contracts contain a floor, which means that in 77% of the cases investors have unlimited downside protection as long as the shares remain liquid. Investors can buy shares at a median purchase discount of 18% below the current market price. By comparison, no unprotected PIPEs require the payment of dividends, a smaller percentage have warrants (35%), and the purchase discount is lower (median=15.7%).

[17] Since 2003, *placementtracker* has begun to record data on control rights. For all PIPEs issued since 2003, only eight percent involve management or investor board participation, a much smaller percentage than typically found in venture capital.

As is often the case, a given PIPE will contain several contract features. Because these features are negotiated to increase the investors' returns, we estimate an "All-in Net Discount" that combines the effects of these features. The computation of the "All-in Net Discount" necessitates valuing the embedded options contained within each PIPE contract. To do this, we must make assumptions about the length of time investors hold their position – something which is otherwise unobservable – and value the embedded options and warrants using the Black Scholes model. We value the options using the issuer's historic stock price volatility prior to closing, U.S. Treasury rates at the time of closing, and holding periods from six months to two years. The reported results assume a 1.5 year holding period. The Appendix details our estimation procedure and provides a sensitivity analysis of alternative assumptions. The average and median All-in Net Discount for protected PIPEs is –30.0%. For unprotected PIPEs these values are, respectively, –23.5% and –19.2%. The differences in the average and median discounts between the two groups are significant at the 1% level. This is consistent with investors requiring more compensation at the outset for companies issuing protected PIPEs compared to unprotected PIPEs.

In the bottom panel of Table 3 we assess how the all-in net discount varies by the level of cash flow rights contained in the PIPE by categorizing PIPEs into the most and least complex contracts. The least complex contracts are those that contain a single cash flow right; the most complex contracts include several cash flow rights. For unprotected PIPEs, "plain vanilla" contracts contain only a purchase discount, while for protected PIPEs "plain vanilla" contracts contain only a repricing right (i.e., a floating rate or reset feature). As noted earlier, no unprotected PIPEs require dividend payments or have repricing rights, caps, or floors, so that the most complex unprotected PIPEs include a maximum of two features – a purchase discount and warrants. The most complex protected PIPEs include six features: repricing rights, purchase discounts, dividends, caps, floors, and warrants. For unprotected PIPEs, one observes a higher frequency of plain vanilla contracts (62.3%) than complex contracts (37.6%). The reverse holds for protected PIPEs – there is a much higher percentage of complex contracts (26.5%) than plain vanilla contracts (2.3%). For both groups of PIPEs, the all-in net discount is about two times greater for complex

versus plain vanilla contracts. This indicates that the additional terms have an important effect on the returns investors' perceive for these contracts.

4.2 Trading characteristics of the issuer's stock

Because returns depend on the ability to realize cash from the sale of shares in the market, in Table 4 we examine several measures of the liquidity of the issuer's stock. In terms of trading volume and volatility, the average daily trading volume ("ADTV") and standard deviation of stock returns do not differ on average between protected and unprotected PIPEs. The "Days to Exit Contract" is the ratio of the amount of shares issued to investors in the PIPE to the average daily trading volume of the issuer's shares. Assuming an investor makes up the entire trading volume of the day, the shares issued in a PIPE are a median 28.2 and 41.7 times ADTV for protected and unprotected PIPEs, respectively. Were investors to attempt to liquidate their position all at once, such sales would likely place unusual demands for liquidity on the market and negatively impact the price. Amihud (2002) defines a measure of "Illiquidity" as the average ratio of the absolute value of stock returns to dollar trading volume from day –100 to day –10. Higher values indicate greater price impact from trading which has been interpreted as greater illiquidity. The average illiquidity ratios of protected and unprotected PIPEs are 1.89 (median=0.33) and 2.42 (median=0.37), respectively. By comparison, the average value of this ratio for other companies on *CRSP* during this period is 0.18 (median=0.17). By all accounts, the shares of PIPE issuers are far less liquid than the typical firm, underscoring the potential challenge PIPE investors face exiting their position.

If a PIPE investor can short the issuer's equity, the distinctions between protected and unprotected PIPEs narrow but do not completely disappear. By shorting stock against an unprotected PIPE investment, investors can adjust or even eliminate their exposure to the stock. This would allow an investor to lock in the purchase discount on the stock and provides downside protection against a falling stock price similar to a protected PIPE. However, unlike a protected stock position, this requires an investor to be able to short the stock, often in great quantities, relative to the issuer's trading volume.

This position also reduces an investor's ability to benefit from an increase in the value of the underlying stock (i.e., ignoring the discount, the payoffs become a horizontal line at the amount invested in the above diagram.)

To get a sense of the difficultly of shorting the stock, we follow Nagel (2004) and Ali and Trombley (2006) and examine the characteristics of PIPE issuers that D'Avolio (2002) and Geczy, Musto, and Reed (2002) find to be associated with a stock being "hard to borrow." In Table 4, we first consider several variables related to the supply of shares available to borrow. Because institutions are the largest suppliers of stock to the equity lending market, the supply of stock available for loan is likely positively related to the level of institutional ownership. The median institutional ownership as a fraction of outstanding shares for protected PIPE issuers is 1.2% which is significantly lower than the 5.0% for unprotected PIPE issuers. By comparison, Asquith, Pathak, and Ritter (2005) report that the median percentile of institutional ownership for NASDAQ firms over 1995-2000 is around 15% and is considerably higher for NYSE-AMEX firms. The supply of stock available to loan can also be affected by the price level of the stock. The supply of stock in the equity lending market from a brokerage firm is usually the shares that customers purchased on margin. However, if the stock trades for less than $5 per share, most brokerage firms no longer allow investors to buy stock on margin and these shares will cease to be available to short. We find that 55% of protected PIPE issuers and 44% of unprotected PIPE issuers had a stock price less than $5 at the time of the offering.

D'Avolio (2002) finds that the cost to borrow stocks is greater for firms with low cash flow, low book to market ratios, high dispersion of analyst forecasts, and high share turnover. In Table 4 greater than 80% of PIPE issuers have negative operating income and the median book to market ratio is less than 0.16, which puts them in the bottom decile of stocks listed on the NYSE. With the exception of the book to market ratio, the characteristics indicate that it is significantly harder to obtain shares to short for protected versus unprotected PIPEs.

In Table 4, short interest as a percent of shares outstanding averages 3.46% (median=1.39%) for protected PIPEs and 2.58% (median=0.59%) for unprotected PIPEs. Based on the reasoning set forth in Asquith, et. al (2005), we include the variable "Short Constrained" which is the percentage of firms whose short interest as a fraction of shares outstanding exceeds their institutional ownership as a fraction of shares outstanding. Forty-six percent of protected PIPEs and 23% of unprotected PIPEs are short constrained. Further, note that the median Days to Exit Contract (Proceeds ÷ ADTV) is a minimum of 15 times the median Short Interest ÷ ADTV for both groups of PIPEs. This indicates that the exposure investors have with the PIPE likely exceeds their ability to short against it. Therefore, although investors may seek to short the shares of PIPE issuers to offset a long position, the evidence suggests that it is costly – or even impossible – to fully do so. The implication is that the more costly it is to short, the more likely investors are to choose a PIPE contract that directly provides the protection they seek.

4.3 Multivariate analysis of contract terms

All else equal, we should observe a higher probability of price protection the greater the degree of uncertainty regarding the issuer's future performance and the more difficult it is for investors to protect against downside risk, such as high trading costs that make shorting costly. In Table 5, we perform a logit analysis where the dependent variable is 1 if the PIPE is unprotected and 0 if the PIPE is price protected. In the first specification, the independent variables are limited to pre-issue operating performance characteristics of the issuer. The other specifications include variables related to contract terms and trading costs.[18] With respect to the issuer's performance, companies that experienced poorer pre-issue stock performance and that will run out of cash sooner (cash depletion rate) issue PIPEs with a significantly higher probability of price protection.

Turning to trading costs, higher percentages of institutional ownership are strongly associated with a higher probability of unprotected PIPE issue. One interpretation of this result is that investors in

[18] The choice of price protection and discount are likely to be interrelated so we also examine regressions where the dependent variable is the all-in net discount and the same independent variables appear as in Table 5. Higher discounts are significantly related to smaller market capitalizations and lower levels of institutional ownership, and to higher cash depletion rates, stock price volatility, and an issuer being short constrained.

unprotected PIPE issues look for issuers with higher percentages of institutional ownership because they have a demand to short the shares (i.e., to protect their downside). A second interpretation is that institutions take positions in unprotected PIPEs because they hold a more favorable outlook for the firm. Some caution must be exercised in interpreting the results for institutional ownership because it likely has some endogeneity with the dependent variable. When the effects of institutional ownership and short interest are combined in the short constrained variable, one observes that issuers that are short constrained are more likely to be price protected. This suggests that firms with higher costs of shorting are more likely to choose a contract that intrinsically provides downside protection. Overall the logit results provide evidence that financial performance and potential trading costs affect investors' choice of PIPE instrument in ways one would expect based on their potential exposure.

4.4 Market reaction to announcement of contracting terms

Since a number of studies have examined the announcement date price reactions to private placements of equity, we only briefly report the results for our sample. The main issue is whether the choice of contract terms reveals information to the market at the time of the issue. In untabulated results we conduct a series of univariate and multivariate tests, including tests that account for the dilution from the PIPE issue, to examine the association between a contract's terms and the cumulative abnormal returns around the announcement of the issue. Our primary analysis focuses on whether the PIPE is price protected. The tests show that the announcement date returns for an unprotected PIPE are positive (e.g., the average return from day -1 to +1 is 3.34%) and greater compared to the returns for protected PIPEs. The announcement date returns of protected PIPEs are generally statistically insignificant or negative, although they are positive in the days leading up to the announcement. Univariate t-tests and regression analysis of the differences in returns between protected and unprotected PIPEs reveal that the announcement date returns to unprotected PIPEs are significantly higher than the returns to protected PIPEs in all cases. The results indicate that the contracting terms of the PIPE convey

information to the market and that the returns are more positive that greater the investor's exposure to the issuer.

5. Investors' versus Shareholder' Long Run Returns

In this section, we turn to the issue of how the long term returns realized by PIPE investors compare to those realized by existing shareholders of PIPE issuers. The term "existing shareholders" is used throughout to refer to the shares acquired by individuals or entities apart from the PIPE transaction.

5.1 Long run abnormal returns to existing shareholders

As a baseline for later comparison to investors returns, we begin by calculating the abnormal post-issue stock performance to an issuer's common shareholders. The earlier reported characteristics of PIPE issuers suggest that these firms are small, distressed, and their equity is relatively illiquid. In addition, we also find that their stock returns exhibit a high degree of volatility and skewness. Therefore, we employ several benchmarking techniques to assess abnormal performance.

In panel A of Table 6 we compute buy-and-hold abnormal returns to shareholders from three to 24 month intervals. In the near term, the three month interval allows enough time for the registration of the securities to become effective, and at the other end, 24 months allows sufficient time to gauge how the companies perform following the issue. Buy-and-hold abnormal returns (BHAR) are computed for the various holding periods using the following approach:

$$R_{i,T} = \left[\prod_{t0}^{T} (1 + R_{i,t}) - 1 \right]$$

$R_{i,t}$ is the monthly return for the sample firm or a benchmark portfolio for month t. If the sample firm is delisted before month T, returns are set equal to zero in the month following delisting until month T. Abnormal returns for the window between t_0 and T are the returns on the sample firm minus the return on a benchmark portfolio.

Abnormal returns for the first benchmark, denoted as CAR_SBM, control for size and book-to-market ratios (see Brav and Gompers (1997) and Chalmers, Dann, and Harford (2002)).[19] Given the concerns about the size and liquidity of the issuers, we follow Cochrane (2005) and also compare the returns earned by existing shareholders to two other benchmark portfolios formed from small NASDAQ firms. He finds that venture capital returns which are illiquid and highly volatile exhibit similar characteristics to small NASDAQ firms. Abnormal returns are computed relative a second benchmark portfolio of NASDAQ decile 1 firms (CAR_DEC1) and a third benchmark portfolio of NASDAQ firms with market capitalizations below $2 million which is rebalanced monthly (CAR<$2M).

In panel A of Table 6, the average CAR_SBM for the full sample of PIPEs declines from –4.9% to –33.3% from three months to 24 months following issue. Over longer intervals, on average one observes sharply deteriorating performance. Since similar results are reported for the returns benchmarked by the NASDAQ portfolios, for brevity's sake we report only the returns benchmarked by NASDAQ decile 1. Consistent with the results for CAR_SBM, CAR_DEC1 declines from –7.7% to –48.5% over the three to 24 months post-issue. In all cases the median returns are substantially more negative than the average returns. The abnormal returns for protected PIPEs are always below those for unprotected PIPEs and significantly below in all but one case (CAR_SBM(0, +12)).[20]

---

[19] Companies are assigned to one of twenty-five benchmark portfolios in the year prior to the PIPE offering using the market value of equity and the ratio of book value to market value. The benchmark portfolios are constructed on an annual basis by first taking the companies appearing in both the *CRSP* and *COMPUSTAT* databases and separating them into quintiles according to the market value of assets as of June of the previous year. Then, each of these quintiles is separated into quintiles based upon the ratio of the book value to the market value of assets in June of the previous year. If a company is delisted within the 12 month window following the PIPE issue, the delisting return (if available) is used as the return for the month of the delisting. The returns for the remaining months are set equal to 0 percent. These returns are then adjusted by the returns on the benchmark portfolio to calculate abnormal returns.

[20] In untabulated results, we perform several robustness tests of the buy-and-hold abnormal returns. We eliminate issues made in 1999-2000, whose post-issue performance might have been most adversely affected by the sharp decline in equity market returns beginning in 2001, and we restrict the sample to the first PIPE issue made by an issuer, to issues with stock prices above $5 at closing, and to issues that are short constrained. There is strong consistency between the median abnormal returns estimated for the sub samples at each post-issue interval (e.g., 12 and 24 months) and those reported for the full sample. Thus the significantly negative shareholders returns hold across a number of sub-samples.

Figure 1 shows the distribution of raw returns to PIPE shareholders at 12 months post-issue. Note the mass of the distribution is to the left of zero. Only 24% of protected PIPE shareholders experience positive 12 month returns compared to 35% of unprotected PIPE shareholders. However, among this sea of poor performance, there are a few firms with very large positive returns. For example, in the 12 months after the issue 10% of all issuers have excess returns greater than 100% and 1% of all issuers have returns exceeding 500%.

A criticism of buy-and-hold returns is that they are clustered in event time which may create some cross-sectional dependencies in returns (Fama (1998), and Mitchell and Stafford (2000)). Therefore in Table 6 we compute calendar time (CT) returns for an event portfolio of PIPE issues relative to the previously defined benchmarks in panel B and an explicit asset pricing model in panel C. For each month from January 1995 to December 2002 we form equal (EW) and value weighted (VW) portfolios of all firms that issued a PIPE in the previous 24 month period. We use monthly returns to account for the aforementioned issue of illiquidity and potentially stale prices. Because a number of issuers make multiple issues, we compute calendar time returns for two groups: one which allows for multiple offerings by the same issuer and the other which limits an issuer to one issue within the previous 24 month period.[21] The equally weighted calendar time benchmark abnormal returns in panel B at 12 months post-issue are similar to the buy-and-hold returns reported in panel A. For the full sample, the average calendar time returns are –14.5% for the size and book-to-market benchmark and –19.2% for the NASDAQ decile 1 benchmark. Although not reported, there is little sensitivity in the CT returns estimated for portfolios that include multiple issues by the same firm. For example, for the full sample of PIPEs making multiple issues the 12 month post-issue returns average –14.4% for the size and book-to-market benchmark and –18.7% for the NASDAQ decile 1 benchmark. Consistent with the BHAR, the CT returns to protected PIPEs are substantially lower than unprotected PIPEs (p-value of difference in returns = 0.01).

[21] There are 94 monthly observations in the calendar time analysis: the sample months in the period 1995-2000 plus two years of post-issue data.

In panel C, we report the intercepts ("alpha") of regressions of the monthly portfolio excess calendar time returns on factors from the Fama-French three factor model and the conditional co-skewness factor from Harvey and Siddique (2000). All else equal Harvey and Siddique (2000) maintain that an asset's returns on the skewness of well diversified portfolio should affect its required return. Assets increasing the negative skewness of a well diversified portfolio should command higher expected returns, while those increasing positive skewness should command lower expected returns.[22] The characteristics of shareholder returns are highly negatively skewed (Figure 1) and those of investors, reported later, are positively skewed, suggesting that conditional co-skewness is potentially a priced factor. The model we estimate is:

$$R_{p,t} - R_{f,t} = \alpha + b\,(R_{M,t} - R_{f,t}) + s\,SBM_t + h\,HML_t + k\,LMR_t + \varepsilon_t$$

To the extent this model provides a complete description of expected returns, the intercept measures abnormal performance. The intercepts of the regressions are uniformly negative in panel C and those particularly for equally weighted returns are reasonably close in magnitude to those reported in panels A and B. The intercepts from regressions of value weighted returns are somewhat less negative suggesting that poor performance is associated more with small firms. The intercepts for protected PIPEs are significantly different from zero but are not significant for unprotected PIPEs.

In panel D of Table 6, we also report the percentage of issuers that are delisted. Given the volatility of PIPE returns, delistings serve as a useful "non-parametric" measure of shareholder performance. For the full sample, the percentage of delisted issuers climbs from 1.2% to 27.5% from three to 24 months post-issue. Protected PIPEs experience a significantly higher percentage of delistings than unprotected PIPEs.

---

[22] $R_{p,t}$ is the return on the calendar time portfolio *p* in month *t* and $R_{f,t}$ is the risk free rate in month *t*. $R_{M,t}$ is the return on the *CRSP* equal or value weighted portfolio in month *t*. SMB is a zero investment portfolio of small stocks minus large stocks, LMH is a zero investment portfolio of low book-to-market firms minus high book-to-market firms, and LMR is a zero investment portfolio of stocks with returns with the lowest 30 percent of co-skewness minus those with the highest 30 percent of co-skewness. We thank David McLean for providing the conditional co-skewness factors.

In sum, all of the evidence reported in Table 6 establishes that shareholders experience poor long run performance following PIPE issuance. Our results are consistent with previous studies of traditional private placements and PIPEs that also find that shareholders experience abnormally poor performance following issuance.

5.2 Regressions of post-issue shareholder performance

To gain a better understanding of the factors that systematically explain the long run returns of PIPEs, we estimate pooled regressions of the protected and unprotected PIPEs in Table 7. The regressions include consideration of the role of short interest on shareholders' returns. The extent to which short-selling drives the long-run poor performance of PIPE issuers is unresolved. The "faulty contract" story of Hillion and Vermaelen (2004) argues that the profits investors potentially earn from short selling an issuers' shares after a protected PIPE is announced (they do not consider unprotected PIPEs) can adversely affect post-issue stock price performance. The larger the role that short interest plays in influencing returns, the more the returns realized by investors depend on factors other than the PIPE contract itself. The dependent variables in models 1, 2 and 3 are the cumulative abnormal returns (CAR_SBM) from month 0 to month +6, month +12 and month +24, respectively.[23] To mitigate the effect of outliers, we winsorize these returns at ± 5%. In Models 4 and 5, we follow the approach of Hillion and Vermaelen (2004) who, noting the high volatility of long run returns, examine delistings. In this case, the dependent variable is equal to 1 if the company's stock was delisted by the end of 12 or 24 months, respectively and is 0 otherwise. The independent variables include a dummy variable, UNPROTECT, which is equal to 1 for an unprotected PIPE and is 0 for a protected PIPE. The other independent variables in the regression include relative issue size, log of market capitalization, the all-in net discount, the issuer's pre-issue stock performance, cash burn rate, illiquidity, and short constrained (or $\Delta SI/Vol(+t,-3)$).

[23] The results for the two alternative NASDAQ benchmarks are qualitatively similar to those we report.

The coefficients of the UNPROTECT dummy in the first three models are positive and significant, suggesting that the abnormal returns are significantly higher for price unprotected PIPEs. After controlling for the other characteristics of the PIPE offering, the +6, +12 and +24 month returns are, respectively, more than 26, 16 and 13 percentage points greater for unprotected PIPEs than protected PIPEs issuers. As shown in Table 6, this difference largely reflects the abnormally poor performance of protected PIPE issuers rather than positive performance of unprotected PIPE issues. In Models 4 and 5 based on delistings, the coefficients of UNPROTECT are negative and significant indicating that unprotected PIPEs have a lower probability of being delisted than protected PIPEs. The odds of being delisted within 12 months are 1.8 times greater for issuers of protected PIPEs than unprotected PIPEs. These odds decrease marginally to 1.63 times through 24 months. Both the results for abnormal returns and delistings are consistent with unprotected PIPEs outperforming protected PIPEs.

We include two variables, short constrained and ΔSI/Vol(+t,−3), to control for the effects of short selling. Short Constrained measures the cost of borrowing shares, whereas ΔSI/Vol(+t,-3) measures the actual change in short interest to volume from +t months following issue relative to the ratio's level three months prior to issue. The coefficient of short constrained is negative and significant at the 10% level or better in models 1-3. This suggests that firms with high costs of borrowing shares experience lower abnormal returns. Rather than suggesting that high costs of shorting result in lower returns, lower returns are more likely attributable to the characteristics that make shares "hard to borrow" (see Table 4). Further support that short selling is not the "cause" of lower returns is the small and insignificant coefficient on ΔSI/Vol(+12,−3). In untabulated results we estimate returns for PIPE issuers that experience no change or decreases in short interest over several post-issue time periods and compare them to the returns of issuers which experience increases in short interest.[24] If short interest were the principal driver of long run returns, we would expect, all else equal, returns to be more negative for PIPEs with post-issue increases in

[24] We also examine short interest in relation to average daily trading volume (ADTV). These results are similar to those reported for the level of short interest. We report the results for the level of short interest to eliminate the possibility that changes in the ratio of short interest to ADTV come from the denominator rather than from short interest itself.

short interest. Instead we find the contrary. For example, CAR_SMB(0, +6) averages 0.101 (median –0.221) for 556 PIPE issuers experiencing a post–issue increase in short interest and averages –0.163 (median –0.331) for 394 PIPE issuers experiencing no change or a decrease in post-issue short interest. Similar results occur for the other time intervals from three to 24 months post-issue. Although we cannot rule out that short selling can adversely effect an individual issuer's share price, we do not find a consistent influence of short sales on average and median shareholder returns. For that matter, as the low R-squares of the regressions demonstrate, few significant systematic factors are uncovered to explain long run returns.

5.3 Long run returns to PIPE investors

The evidence so far shows that existing shareholders in PIPE issuers experience highly negative returns and that few factors systematically explain the variation in their returns. The question remains why PIPE investors are motivated to invest in securities that apparently yield such negative returns. In Table 8, we estimate the long run returns to PIPE investors by incorporating the paper gains and losses from several of the aforementioned features that can differentiate investors' returns from those of existing shareholders. This analysis takes into account the size of the discount or premium on the purchase of shares, repricing rights (i.e., floating or reset features), dividends or interest paid on the security, and whether any warrants included in the deal would have been "in-the-money" at the end of the respective three to 24 month windows. We assume that investors do not convert any shares or sell any of their equity stake between the time of the PIPE issue and the end of the test window. If the stock is delisted or is trading below $0.50, we assume that the terms of the PIPE contract will not be honored and set the return to PIPE investors equal to the return earned by existing shareholders. For firms that are delisted, the returns are calculated using *CRSP's* delisting return in the month of delisting and a zero percent return in the remaining months of the test window. If investors are likely to have liquidated all or part of their position ahead of delisting, our assumptions provide a conservative estimate of their gross returns. For issuers that are delisted because they are acquired, we alter the above approach and assume that the PIPE

contract will be honored and calculate returns based on the value of the terms at the delisting price. The Appendix details the estimation procedure and provides a sensitivity analysis of alternative assumptions.

Estimated buy-and-hold investor returns are shown in panel A of Table 8. On average investors' buy-and-hold returns are positive through 12 months, regardless of whether we use the SMB or NASDAQ decile 1 benchmark. The magnitude of these returns is sizeable, exceeding 25% in most cases. An investor's ability to realize returns through shorter windows (e.g., 3 or 6 months) depends on their ability to liquidate their holdings within this time frame. If they do not do so, performance trails off considerably. Through 24 months post-issue, average buy-and-hold returns are generally not significant or negative.

Abnormal returns for investors are of a similar magnitude when we use the calendar time (CT) portfolios. As shown in panel B, first focusing on the equally weighted returns, for the full sample one observes that the CT returns accord well with the 12 month buy-and-hold returns reported in panel A. For example, the BHAR for the equally weighted size and book-to-market benchmarked returns in panel A are 31.7% compared to 27.9% for the CT returns in panel B. In general, with the exception of one category of returns (protected PIPEs benchmarked by NASDAQ decile 1), the CT returns are positive and in several instances significant. We also use the CT monthly returns to compute annualized Sharpe ratios for investors and the benchmark portfolios (unreported). The ratios are similar for investors and the benchmark portfolios. For example, the Sharpe ratio is 1.78 for investors, 1.78 for the SMB benchmark, and 1.81 for the NASDAQ decile 1 benchmark.

In panel C, we report the intercepts of regression of the CT portfolio excess returns on the FF factors and the conditional co-skewness factor, reasoning that the latter factor should control for some of the option like features in PIPE investors' contracts.[25] The intercepts are positive for all categories of PIPEs and significant for the full sample and unprotected PIPEs. Accordingly, these results suggest that

[25] The coefficient of the conditional co-skewness factor is positive and significant in the CT regressions of equally weighted shareholder returns but it is not significant in any of the investor return regressions.

investors either meet or beat benchmark returns. By comparison, recall that in Table 6, the intercepts of regressions for shareholder returns were negative for all categories of PIPEs.

5.3.1 Proceeds-weighted returns

So far our discussion of investor returns has focused on equally weighted returns which assume investors invest an equal dollar amount in each deal. However, investors' realized returns are more accurately measured by the size of the offering or proceeds which represents their initial investment. Therefore we also report proceeds-weighted (PW) CT returns in panels B and C and in untabulated results proceeds-weighted buy-and-hold returns for the three to 24 month post-issue intervals. In general the PW returns decrease relative to EW returns, but remain in some instances sizeable. With the same exception noted above (protected PIPEs benchmarked by NASDAQ decile 1), the proceeds-weighted returns are positive, although fewer of the returns are significantly different from zero. For the untabulated BHAR results, the average PW buy-and-hold return at 12 months post-issue for NASDAQ decile 1 and SMB are substantially lower than equally weighted returns and insignificant for the full sample and unprotected PIPEs. The returns for protected PIPEs are positive and significant though somewhat lower than the equally weighted BHAR (e.g., ICAR_SMB(0, +12) = 27.5% versus 21.6% on a proceeds-weighted basis). Consequently, a PIPE investor's ability to correctly select potential issuers can have a pronounced effect on his or her returns, with the greatest returns resulting from some of the smaller issues.

5.3.2 Investor versus shareholder returns

Another way to judge the effectiveness of PIPE contracting terms is to compare the differences in returns between existing shareholders and PIPE investors. In panel D of Table 8 we report significance tests of the differences in the buy-and-hold CARs and ICARs. Since the benchmarks are the same for shareholder and investor returns the results are equivalent for SMB and DEC1 returns. Both the mean and median returns to PIPE investors are significantly greater than the returns for existing shareholders. For the full sample, the mean difference in returns is 51% through +6 months, 47% through +12 months, and 38% through +24 months. The buy-and-hold return differential between investors and shareholders is

significant at the 1% level for all categories of PIPEs. Similarly, a significance test (unreported) of the differences in equally weighted CT investor and shareholder returns for the full sample of PIPEs is significant at the 2% level. Additionally, we use average monthly CT returns to compute an annualized Sharpe ratio for shareholders and compare it to that for investors. This ratio is –0.59 for shareholders, substantially less than the 1.78 for investors reported above.

Although on average investors outperform shareholders, the median differences in these returns are of a smaller magnitude. Therefore, much of the difference in returns is driven by how the contracts alter payments for the outliers, either by enhancing investors' exposure in cases of large positive returns or mitigating their exposure to negative returns. To visualize these differences, in Figure 2 we plot the raw returns to investors and existing shareholders. Figure 2 reveals that investors often realize losses on their investments. In fact, for the full sample of PIPEs 40% of investor returns are negative and 24% are below −50%. However, investors are less likely to incur negative returns than existing shareholders. Seventy-two percent of shareholder returns are negative and 45% are below −50%. On the upside, when issuers perform well PIPE investors are able to magnify their gains relative to shareholders through warrants and other contract features. The top ten percent of all investors earn returns in excess of 135% compared to 75% for the top ten percent of shareholders. Similar to the return distribution reported by Cochrane (2005) for venture capital investments, the high volatility of returns is responsible for high average returns rather than the high returns of individual PIPE investments. These return characteristics help explain the large differences between the average and median returns. Given that the return characteristics of PIPEs are similar to venture capital but their liquidity as publicly traded securities is much enhanced, one can appreciate the growing interest in PIPEs.

5.4 Decomposition of investors' estimated returns

The evidence in Table 8 reveals that PIPE investors can potentially earn sizable returns in relatively short periods of time. Given the distress associated with many PIPE issuers, the magnitude of investors' returns and the speed with which they are realized (upwards of 30% after six month) naturally

raises the question of what drives such sizable returns. It is important to note that investor returns do not arise because the post-issue operating performance of the firms has improved. In untabulated results, we find that the post-issue operating performance of these firms does not improve markedly. Through two years post-issuance, the median issuer's ROA remains negative and the cash burn rate is almost unchanged from before the issue for both protected and unprotected issuers.

To understand the drivers of returns, in Table 9 we decompose our estimates of investors' returns into the value associated with the individual cash flow rights contributing to investors' wealth at 12 months post-issue: initial stock holdings, repricing rights, warrants, and interest/dividend payments. PIPEs can contain several discounts (or premia), and if applicable, they are captured in the initial purchase price of shares, the conversion price, or the intrinsic value of warrants. For both types of PIPEs, the largest single influence on investor returns is the value derived from their initial stock holdings which reflects their purchase discount and the fact that 27.1% of issuers have stock prices that are higher at the end of 12 months than at closing. For protected PIPEs repricing rights account for 33% of the return on average, with the rest resulting from interest (5%) and warrants (1%).[26] The source of investor gains varies by performance. For the entire sample of protected PIPEs, repricing rights make a substantial contribution to investor returns. However, for protected PIPE with returns exceeding 50%, the gains are primarily due the value associated with their initial stock holdings and warrants. The effect of repricing rights is negative indicating that the issuer's share price has increased since the time of the PIPE offering, thereby reducing the number of shares the investor receive from conversion. This shift in the source of the gains for the full sample from repricing rights to warrants for the above +50% group is consistent with investors earning their greatest returns when issuers achieve better performance. For unprotected PIPEs,

[26] Note that although the effect of the repricing rights on investor returns can be positive, they can be negative if the repricing right allows the conversion price to increase. To calculate the effect of the repricing right we first calculate the difference between the number of shares investors would receive based on the stock price at the time of the offering less the purchase discount (initial stock holdings) and the number of shares they would receive based on the stock price after 12 months (less applicable premia or discounts). If the contract permits the conversion price to increase and the issuer's stock price increases, investors can have fewer shares after 12 months than they had initially. We then multiply the difference in shares by the stock price at 12 months post issue.

98% of the return derives from the initial stock holdings and price increases while warrants account for only a small percentage of the return. However, when investor returns exceed 50%, warrants become more influential and account for 8% of the return on average. The reason warrants are not more influential is that fewer than half of the contracts contain warrants and the amount of warrant coverage is 22% on average. The results in Table 9 indicate that individual cash flow rights can have an important impact on the investor returns, although the relative importance of each right varies with the extent and direction of the issuer's post-issue performance.

5.5 Final considerations

The investor return calculations omit the effects of short sales and the costs of liquidating a position and these require further consideration in evaluating how investors ultimately perform.

5.5.1 The role of short interest

The effect of an investor shorting on our return calculations is not clear. On the one hand, all else equal, we underestimate the profits investors can make by short selling an issuer's shares if the stock subsequently declines. On the other hand, if investors offset their exposure to a stock that subsequently outperforms, we are overestimating the returns earned by investors. The earlier regression evidence in Table 7 did not find evidence that changes in short interest were significantly associated with the post-issue shareholder returns. However, to determine to what degree investors alter their exposure to PIPE investments through shorting we examine the change in short interest relative to the shares issued to investors through the PIPE over the three to 24 month post-issue windows. The shares issued through the PIPE measures the exposure an investor has to the issuer's equity and the amount he or she may attempt to alter by shorting. For the full sample, the average (median) change in short interest to shares issued is 11.8% (0.00%) after six months and is 14.5% (0.00%) after 12 months. Over the same intervals for protected PIPEs the average is 14.8% (0.00%) and 14.2% (0.00%), respectively. For unprotected PIPEs the average is 9.3% (0.00%) after six months and 14.9% (0.00%) after 12 months. The reported results are representative of other time intervals. Assuming that PIPE investors are responsible for all of the changes

in short interest, these results show they are typically able to short only a small portion of the exposure they have through the PIPE. This reinforces our earlier conclusion that the returns investors' realize from PIPEs result largely from the terms of the contracts themselves and are not due to short-selling

5.5.2 Liquidation costs

The costs PIPE investors incur liquidating their positions are not explicitly included in our calculations. To the extent that prices are based on the expectation of the supply of investors' shares that will enter the market, these liquidation costs should be reflected in the returns we observe. However, given the earlier evidence of the illiquid nature of the many of the issuers' shares and the size of PIPE investors' equity stakes, it is possible that these returns do not fully reflect these costs. As a result, the net return an investor realizes could be materially less than the gross returns that we calculate.

6. Conclusions

This study examines financing through private investments in public equity (PIPEs), a growing form of equity-linked financing. The large majority of PIPEs are issued by companies experiencing poor operating and stock performance. In the year prior to issue, more than 80% of PIPE issuers have negative operating income and more than half experience declining stock returns and will be out of cash within a year. Regardless of the benchmark used, shareholders in PIPE issuers experience large negative average and median abnormal returns in the two years following issue. The reason for this underperformance following a PIPE issue is not obvious. This underperformance potentially reflects the overoptimism of investors regarding the positive skewness of issuer returns, frictions in the capital market such as the difficulties in shorting the issuer's stock, or a combination of both. However, these results make clear why PIPE firms have difficulty tapping traditional forms of financing even though they are urgently in need of capital.

We examine the contracting terms and returns to investors taking large equity stakes in such poorly performing firms. We show that in contrast to other forms of private equity that make heavy use of control rights, the returns to PIPE investors result from *supra* cash flow rights that can enhance the

exposure to the issuer's upside returns or reduce exposure to the issuer's downside risks. Consistent with the notion that PIPE contracting terms can reflect private investors' outlook for the issuer, the estimated returns for PIPE investors that include these cash flow rights are comparable to benchmark portfolios.

The paper shows that companies facing high risks and informational asymmetries benefit from the customization of PIPE contracting terms. These terms help investors to manage the issuer's risks in ways that are not possible using traditional sources of financing enabling highly risky firms to obtain much needed capital.

References

Aggarawal, R. and I. Gray, and H. Singer, 1999, Capital Raising in Offshore Markets, *Journal of Banking and Finance* 23, 1181-1194.

Ali, A. and M. Trombley, 2006, Short Sales Constraints and Momentum in Stock Returns, Journal of Business, Finance, and Accounting.

Almeida, H., M., Campello, and M. Weisbach, 2004, The Cash Flow Sensitivity of Cash, *Journal of Finance* 59, 1777-1804.

Amihud, Y., 2002, Illiquidity and Stock Returns: Cross-section and Time-Series Effects, *Journal of Financial Markets*, 5, 31-56.

Asquith, P. and D. Mullins, 1986, Equity Issues and Offering Dilution, *Journal of Financial Economics* 15, 61-89.

Asquith, P., P. Pathak, and J. Ritter, 2005, Short Interest, Institutional Ownership, and Stock Returns, *Journal of Financial Economics* 78, 243-276.

Barberis, N. and M. Huang (2005), Stocks as Lotteries: The Implications of Probability Weighting for Security Prices, Yale University, working paper.

Barclay, M., C. Holderness, and D. Sheehan, 2003, Private Placements and Management Entrenchment, University of Rochester, working paper.

Brav, A., and P. Gompers, 1997, Myth or Reality? The Long Run Underperformance of Initial Public Offerings: Evidence from Venture and Non venture Capital-Backed Companies, *Journal of Finance* 52, 1791- 1821.

Brennan, M., 1985, Costless Financing Policies under Asymmetric Information, UCLA, unpublished manuscript.

Brophy, D., P. Ouimet, and C. Sialm, 2005, PIPE Dreams? The Impact of Security Structure and Investor Composition on the Stock Price Performance of Companies Issuing Equity Privately, University of Michigan, working paper.

Brown, G. and N. Kapadia, 2005, Firm-specific Risk and Equity Market Development, *Journal of Financial Economics*, forthcoming.

Chalmers, J., L. Dann, and J. Harford, 2002, Managerial Opportunism? Evidence from Directors' and Officers' Insurance Purchases, *Journal of Finance* 57, 609 – 635.

Chen, J., H. Hong, and J. Stein, 2002, Breadth of Ownership and Stock Returns, *Journal of Financial Economics* 66, 171-205.

Chaplinsky, S. and R. S. Hansen, 1993, Partial Anticipation, the Flow of Information and the Economic Impact of Corporate Debt Sales, *Review of Financial Studies* 6, no. 3, 1863-1889.

Cochrane, J., 2005, The Risk and Return of Venture Capital, *Journal of Financial Economics* 75, 3-52.

D'Avolio, G., 2002, The Market for Borrowing Stock, *Journal of Financial Economics* 66, 271-306.

Denis, D. J., and V. Mihov, 2003, The Choice among Bank Debt, Non-Bank Private Debt, and Public Debt: Evidence From New Corporate Borrowings, *Journal of Financial Economics* 70, 3-28.

Duffie, D., N. Garleanu, and L. H. Pedersen, 2002, Securities Lending, Shorting, and Pricing, *Journal of Financial Economics* 66, 307-339.

Fama, E., 1998, Market Efficiency, Long Run Returns, and Behavioral Finance, *Journal of Financial Economics* 49*,* 283-306.

Fama, E. and K. French, 2004, New Lists: Fundamentals and Survival Rates, *Journal of Financial Economic* 72, 229-269.

Fazzari, S. M., Hubbard, R. Glenn, and B. Petersen, 1988, Financing Constraints and Corporate Investment, *Brookings Papers on Economic Activity*, no. 1, 141-195.

Fink, J., Fink, K., G. Grullon, and J. Weston, 2005, IPO Vintage and the Rise of Idiosyncratic Risk, James Madison University, working paper.

Gezcy, C., D. Musto, and A. Reed, 2002, Stocks are Special Too: An Analysis of the Equity Lending Market, *Journal of Financial Economics* 66, 241-269.

Gomes, A., and G. Phillips, 2005, Why Do Public Firms Issue Private and Public Equity, Convertibles and Debt?, University of Maryland, working paper.

Gopalan, M., 2004, Short Constraints, Difference of Opinion, and Stock Returns, Fuqua School of Business working paper, Duke University.

Harvey, C. and A. Siddique, 2000, Conditional Skewness in Asset Pricing Tests, *Journal of Finance* 55, 1263-1295.

Hertzel, M., and L. Rees, 1998, Earnings and Risk Changes Around Private Placements of Equity. *Journal of Accounting, Auditing, and Finance* 13, No. 1, Winter.

Heron, R., and E. Lie, 2004, A Comparison of the Motivations for and the Information Content of Different Types of Equity Offerings, *Journal of Business* 77*,* 605-632.

Hertzel, M. and R. L. Smith, 1993, Market Discounts and Shareholder Gains for Placing Equity Privately, *Journal of Finance* 48, 459-485.

Hertzel, M., M. Lemmon, J. Linck, and L. Rees, 2002, Long-run Performance Following Private Placements of Equity, *Journal of Finance* 57, 2595-2617.

Hillion, P., and T. Vermaelen, 2004, Death Spiral Convertibles, *Journal of Financial Economics* 71, 381-415.

Hoshi, T., Kashyap, A., and D. Scharfstein, 1991, Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups, *The Quarterly Journal of Economics* 106, 33-60.

Hovakimian, A., Opler, T., and S. Titman, 2001, The Debt-Equity Choice. *Journal of Financial and Quantitative Analysis* 36, 1-24.

Hull, J., 2003, Options, Futures, and Other Derivatives. Prentice-Hall, Upper Saddle River, NJ, 5th ed.

Harford, J., 1999, Corporate Cash Reserves and Acquisitions, *Journal of Finance* 54, 1969-1997.

Kaplan, S. N. and L. Zingales, 1997, Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints? *The Quarterly Journal of Economics* 112, no. 1, 169-215.

Kaplan, S. N. and P. Stromberg, 2003, Financial Contracting Theory Meets the Real World: An Empirical Analysis of Venture Capital Contracts, *Review of Economic Studies* 70, no. 2, 281-315.

Korajczyk, R., D. Lucas, and R. McDonald, 1990, Understanding Stock Price Behavior around the Time of Equity Issues, in *Asymmetric Information, Corporate Finance and Investment*, R. Glenn Hubbard, editor, (NBER: University of Chicago Press.)

Krishnamurthy, S., P. Spindt, V. Subramaniam, and T. Woidtke, 2005, Does Investor Identity Matter in Equity Issues? Evidence from Private Placements, *Journal of Financial Intermediation* 14, 210-238.

Loughran, T. and J. Ritter (1997), The Operating Performance of Firms Conducting Seasoned Equity Offerings, *Journal of Finance* 52, 1823-1850.

Masulis, R. and A. Korwar, 1986, Seasoned Equity Offerings: An Empirical Investigation, *Journal of Financial Economics* 15, 91-118.

McDonald, R., 2003, Derivative Markets, Addison Wesley, Boston, MA, 1st ed.

Mikkelson, W. and M. Partch, 1986, Valuation Effects of Security Offerings and the Issuance Process, *Journal of Financial Economics* 15, 30-31.

Miller, E., 1977, Risk, Uncertainty, and Divergence of Opinion, *Journal of Finance* 32, no. 5, 1151-1168.

Mitchell, M. and E. Stafford, 2000, Managerial Decisions and Long Term Stock Price Performance, *Journal of Business* 73, 287-329.

Nagel, S., 2005, Short Sales, Institutional Investors, and the Cross Section of Stock Returns, *Journal of Financial Economics* 78, 277-309.

Pontiff, J. and M. Schill, 2002, Long-run Seasoned Equity Offering Returns: Data Snooping, Model Misspecification, or Mispricing? A Costly Arbitrage Approach, University of Virginia, Darden School of Business, working paper.

Silber, W., 1991, Discounts on Restricted Stocks: The Impact of Illiquidity on Stock Prices, *Financial Analysts Journal* 47, 60-64.

Tversky, A. and D. Kahneman (1992), Advances in Prospect Theory: Cumulative Representation of Uncertainty, *Journal of Risk and Uncertainty* 5, 297-323.

Whited, T. M., 1992, Debt, Liquidity Constraints, and Corporate Investment: Evidence from Panel Data, *Journal of Finance* 47, no. 4, 1425-1460.

Wruck, K., 1989, Equity Ownership Concentration and Firm Value: Evidence from Private Equity Financings, *Journal of Financial Economics* 23, 3-18.

Wruck, K. and S. Wu, 2006, The Value of Relationship Investing: Evidence from Private Placements of Equity by U.S. Public Firms, Ohio State University, working paper.

Appendix

Estimating the All-in Net Discount and Returns to PIPE Investors

"All-in Net Discount" to Investors

The all-in net discount to the PIPE investor is an inclusive measure of the value of the equity and other contract features and embedded options PIPE investors receive in exchange for the funds they provide to the issuer at the time of the transaction. In general, the net discount is estimated as $(I / V_0) - 1$, where $\mathbf{V_0}$ is the sum of the underlying market value of equity investors receive in the company (plus the value of other securities or payments they potentially receive) and **I** is the proceeds the *issuer receives* from PIPE investors.

Unprotected PIPEs

For common stock PIPEs, V_0 is the sum of the market value of equity and the value of warrants, if any, granted to the PIPE investors. The market value of equity is the product of the stock price one day prior to the closing of the transaction times the number of shares *issued to the PIPE investor*. The number of shares issued to the PIPE investor incorporates any purchase price discounts to the current market price. For example, in the absence of warrants, if a common stock PIPE allows an investor to purchase stock at a 20% discount below the closing market price of $10 per share, the PIPE investor will receive 125,000 shares ($1 million/$8 per share) in return for a $1 million investment. The all-in net discount, $(I /V_0) - 1$, in this case is simply [($1 million / (125,000 shares × $10 per share) – 1] or –20%. For a common stock PIPE issued with warrants, the value of warrants investors receive is added to the market value of equity to obtain V_0.

The warrants are valued using the Black-Scholes model adjusted for the dilution of the warrants (see McDonald (2003)). This value is calculated using the historical volatility of the stock for a 90 day window ending 10 days before the closing of the PIPE, the stock price on the day prior to closing, and the yield on six month Treasury bills. As data are not widely available regarding the expected life of the warrants, we calculate the warrants' value for maturities ranging from six months to two years but report

the results for an expected life of 1.5 years. For the issues for which we have data on the warrants' maturity, the average maturity is 47 months so that the reported results for 1.5 years are conservative. Based on the statistical properties of the returns around these offerings, it is unlikely that the assumptions the Black- Scholes' model are fully met. However, we are not aware of any bias this imparts to our results.

For a structured equity line, I represents the proceeds the investors has *agreed in total to provide* to the company. V_0 is unchanged and remains the sum of the market value of equity and the value of the warrants granted to the PIPE investors with the structured equity line. These are valued using the same approach described for the common stock PIPEs.

Protected PIPEs

To the best of our knowledge there is no widely accepted model for valuing floating rate convertibles, convertible resets, or common stock resets. Therefore we value these instruments using a building block approach. For floating rate convertible PIPEs with warrants, V_0 is the sum of the market value of the equity that the bond (or preferred stock) can convert into, the value of any warrants issued to investors, interest or dividends payments, and the value of the floating rate features on the bond (or preferred stock). The market value of equity and the value of the warrants are calculated using the same approach described for the common stock PIPEs. The value of interest or dividend payments is calculated as the product of the interest rate (or dividend yield) times the proceeds from the investor, I.

We consider several floating rate features. The first floating rate feature is a reduction in conversion price if the value of the underlying stock decreases after the issue (as the price decreases the number of shares issued increases.) The payoff structure of this position is similar to having a long put position to accompany the long stock position. However, as the stock price approaches zero, the value of this price reset provision dissipates. For example if the company goes bankrupt, the security will also likely be worthless. Moreover, as the company approaches the point of bankruptcy, uncertainties arise regarding whether the conversion provision will be fully honored and an investor's ability to liquidate his

or her shares if the provision is honored. To account for the fact that this reset provision will likely have no value if the company approaches bankruptcy, we value this floating rate feature as an exotic option referred to as a down-and-out put. With this approach the PIPE investor is assumed to be long a put with a strike price equal to the market price at the time of issue that will be worthless or "knocked-out" if the price of the stock drops below a barrier price. In our calculations we use a barrier price of $0.50. This is roughly the average price at which stocks in our sample are delisted from *CRSP* either because the issue was liquidated or dropped from a major exchange. We value this option using an expected life of 0.5, 1, 1.5 and 2 years but report the results only for 1.5 years.

If a security has a "floor" that designates the lowest price at which the stock can be converted, the investor is considered to be short a put at this floor price. The size of the short position is set equal to the size of the investor's long put position. The result is a position similar to a put spread in which the value of the price protection is capped by the difference between the closing market price and the floor price.

The second floating rate feature is a cap that limits the increase in the conversion price if the value of the underlying stock increases after issuance (the number of shares issued does not change if the stock price increases). For example a cap allows the conversion price of the bond to increase up to 20% above the market price of the stock at closing. In this case, if the market price of the stock at the time of issue is $5, the conversion price of the bond will increase as the stock price increases, but will not exceed $6. We view this provision as a call spread in which the investor is long a call with a strike price equal to the cap, and short a call at the closing market price.

We value these floating rate features using a Black-Scholes model or variations of this model (See Hull (2003) or McDonald (2003)) for a description of the valuation of the down-and-out put.) In making these calculations we use the previously described historic stock price volatility, stock price one day prior to closing, six month yield on Treasury Bills and an expected life of 0.5, 1, 1.5 or 2 years.

Although we use the same general approach to value the floating rate features of a common stock reset, there is greater variation in the way reset provisions are implemented for common stock resets.

Some common stock resets are very similar to floating rate convertibles in which the investor receives additional shares if the market price is less than the closing prices at the time of the reset. Other common stock resets have multiple reset dates with adjustments being made to the number of warrants or to the exercise price of the warrants rather than to the number of shares issued. Common stock resets typically allow the terms to be adjusted for a 60 to 90 day period following closing and therefore, we follow the same approach described for floating rate convertibles to value them but assume an expected life of three months. Common stock resets make up a relatively small fraction of the capital raised via PIPEs and our results are qualitatively similar if we use alternative assumptions to value these features or exclude common stock resets from the sample entirely.

Sensitivity of Assumptions

As shown in the table below, our estimates of the discount are not particularly sensitive to alternative assumptions regarding the expected life of the embedded options and warrants or the barrier price (i.e., the price at which the protection provided by the floating rate feature loses its value).

Sensitivity Analysis of Estimates of the All-in Net Discount Full Sample (N=1,196)			
	Barrier Price		
Expected Life (years) of embedded options or warrants[27]	$0.25	$0.50	$1.0
1			Mean 24%, Median 23%
1.5		Mean 27%, Median 26%	
2.0	Mean 28%, Median 28%		

The data we have for the contracts and our estimates cannot fully capture the dynamics or adjustments investors make in the management of their positions. However absent detailed knowledge of investors' positions and trading in these securities, we believe our estimates are a reasonable approximation of the value of these securities based on the best available public information.

[27] As noted earlier, the common stock resets are assumed to have a three month life in the sensitivity analysis.

Estimates of the Realized Returns to PIPE Investors

We estimate the returns realized by PIPE investors at the end of holding periods ranging from three to 24 months following issue assuming that investors have not liquidated any of their position or taken offsetting positions (i.e., shorted shares to hedge the PIPE). The return to the PIPE investors is calculated as: $(V_e / I) - 1$. **I** represents the original investment made in the PIPE issuer, or in the case of the structured equity line, scheduled to be made by investors. $\mathbf{V_e}$ is the sum of the value of the underlying shares and the intrinsic value of warrants investors hold *at the end* of 3, 6, 12, 18 or 24 month holding periods, and any interest (or dividends) they receive over the same interval.

The value of the underlying shares is the number of shares held by the investor at the end of a holding period (henceforth S_e) times the share price at the end of the same holding period (henceforth P_e). With respect to S_e, there is no adjustment necessary to the initial number of shares received by investors in common stock PIPEs. However, for floating rate convertibles, convertible resets, and common stock resets, the number of shares initially granted to PIPE investors can change after the offering. For floating rate convertibles and convertible resets, we calculate S_e as **I**, the initial investment, divided by the lesser of $P_e \times$ (1- discount %) or the maximum conversion price.[28] For example, assume I = $1 million, a purchase discount of 10%, and a maximum conversion price of $10. If P_e = $12, the investor will receive 100,000 shares ($1 million / $10), because $10 is less than $12×(1–10%) = $10.8. Alternatively, if P_e=$8.89, the investor will receive 125,000 shares ($1 million / ($8.89×(1-10%)). If there is no purchase discount, S_e is calculated using the lesser of P_e or the maximum conversion price. For common stock resets, we follow a similar approach but calculate S_e based on the stock price three months following the offering. This methodology assumes that the repricing provisions affect the number of shares issued rather than the strike price of the warrants or the number of warrants issued. This assumption is based on

[28] The maximum conversion price is calculated using the variable labeled as "fixed conversion price" or "ceiling" in *Placementtracker*. Discount is calculated using what is referred to as the "variable conversion price" or "floating conversion price" in *Placementtracker*.

our reading of the details of PIPE contracts and conversations with technical analysts at *Placementtracker*.

To the ending value of equity, we add the intrinsic value of the warrants. The intrinsic value of the warrants is calculated as P_e minus the strike price of the warrants (less applicable discounts) times the number of warrants held by investors. Finally, we add the appropriate interest (or dividend) payments received by investors over the respective holding period to complete the calculation of V_e.

For structured equity lines the timing of the investment is not known. Therefore, V_e is calculated by multiplying S_i by the issuer's price at closing and adding the intrinsic value of any warrants the investor receives at the end of the holding period. In this case **I** represents the proceeds that the investor agrees to provide to the company.

Finally, if the stock is delisted or is trading below $0.50 at the end of the period, we assume that contracting terms of the PIPE contract will not be honored and no longer have value at this point. In these cases, we ignore the terms of the PIPE contract and set the return to PIPE investors equal to the return earned by existing shareholders. For delisted firms, these returns are calculated using *CRSP's* delisting return in the month of delisting and a zero percent return in the remaining months of the sample period. An exception to this approach is if the PIPE issuer is delisted due to merger or acquisition. In these cases, we assume the PIPE contract will be honored at the time of the acquisition and calculate PIPE returns through the acquisition date based the stock price at the time of the acquisition. We then assume zero percent returns on the PIPE contract for the remaining months of the sample period and adjust these by the returns on the benchmark portfolio.

Sensitivity of Assumptions

Based on the assumptions above, we estimate the average return earned by all PIPE investors as 40% (median= 6%) through +12 months and 14% (median= –36%) through +24 months following issue (See Exhibit 8). If we assume the terms of the PIPE contract are honored when the stock price drops below $0.50 but it is not delisted, the average return earned by PIPE investors increases to 43% (median=

7%) through +12 months and 18% (median= –24%) through +24 months. Investor returns increase further if we assume investors are able to exit their position in the month of delisting. Returns in this case are calculated only for the period up to and including the delisting month. In this case, the average return increases to 51% (median= 11%) through 12 months and 44% (median= 6%) through 24 months. Note that the results we present in the text use the most conservative assumptions with respect to estimating investor returns.

Table 1

Private Placements of Public Equity 1995 – 2000

Data on the companies issuing PIPEs are from *Placementtracker*. The table shows values for PIPE issuers between 1995 and 2000 that are also in *CRSP* and *Compustat*.

($ millions)		**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**Total by Type**
Floating Rate Convertibles	Amount Raised	$232.4	$1,307.0	$1,832.9	$1,059.3	$869.4	$782.3	$6,083.3
	No. of issues	30	149	233	194	116	89	811
Convertible Resets	Amount Raised	$9.6	$186.2	$145.8	$92.0	$96.5	$1,079.1	$1,609.2
	No. of issues	2	10	9	9	12	37	79
Common Stock Resets	Amount Raised	$28.3	$7.4	$24.2	$75.0	$145.1	$338.1	$618.1
	No. of issues	5	2	6	13	21	34	102
Structured Equity Lines	Amount Raised	$0.0	$7.5	$41.3	$28.2	$46.1	$368.6	$491.7
	No. of issues	0	1	10	12	10	69	102
Common Stock PIPEs	Amount Raised	$624.3	$1,425.9	$1,544.0	$1,007.5	$3,245.3	$10,032.9	$17,879.9
	No. of issues	58	99	118	127	285	385	1,072
Total Raised per Year		**$894.6**	**$2,934.0**	**$3,588.2**	**$2,262.0**	**$4,402.4**	**$12,682.2**	**$26,682.2**

Table 2

Pre-Issue Characteristics of Companies issuing PIPEs by Contract Type

The sample includes all security offerings that are identified by *Placementtracker* as a private placement of public equity (PIPE) and that have *CRSP* and *Compustat* data available. Unless otherwise noted, the reported value is the median of the variable in year –1. *CAR(–6,–1)* is the cumulative abnormal stock return from month –6 to month –1 adjusted by a market benchmark based on size and book-to-market. *Return on Assets* is the return on assets in year–1. *% with Negative Operating Income* is the percent of firms with operating income less than $0. *Cash ÷ Assets* is the ratio of cash and equivalents to total assets. *% Paying Dividends* is the percent of companies paying common dividends. *Book to Market Ratio* is the ratio of the book equity as defined by Fama and French (2000) to market value of equity. *Debt to Assets* is long term debt plus the current portion of long term debt ÷ total assets. *Cash Burn Rate* is calculated as the cash and cash equivalents ÷ the absolute value of cash flow from operations (DATA #308). This variable is computed only for firms with negative cash flow. *Time Gained* is the gross proceeds of the PIPE ÷ the absolute value of cash flow from operations. This variable is also computed only for firms with negative operating income.

	Floating Rate Convertible	Convertible Reset	Common Stock Reset	Structured Equity Line	Common Stock PIPE
CAR(–6,–1) (%)	–9.5	–23.2	12.8	–12.0	–3.5
Total Assets ($M)	16.8	30.0	20.1	19.9	19.7
Return on Assets (%)	–27.8	–21.3	–27.7	–36.8	–25.3
% with Negative Operating Income	88.2	85.7	80.4	86.2	77.7
Cash ÷ Assets (%)	20.2	27.0	28.9	38.9	29.2
% Paying Dividends	2.7	3.6	2.1	3.4	2.1
Book to Market Ratio (%)	0.16	0.14	0.15	0.15	0.19
Debt to Assets (%)	14.6	10.0	10.3	8.7	7.5
Cash Burn Rate (Years of Cash Remaining)	0.63	0.88	0.68	0.79	0.98
Time Gained (Years of Cash Gained from PIPE)	0.81	0.42	0.79	1.42	1.32

Table 3
Contract Features and Discounts associated with PIPEs

Contract features for price protected and price unprotected PIPEs are shown. Median values are presented below average values. Price protected PIPEs have repricing rights which allow the conversion price to be adjusted if the stock price decreases following the offering. Unprotected PIPEs do not have repricing rights. *Proceeds* is the gross proceeds. For structured equity lines this value is the expected proceeds. *Proceeds as Percent of Outstanding Shares* is the ratio of the gross proceeds to the number of shares outstanding prior to the PIPE issue. *Purchase Discount* is the ratio between the price at which shares can be converted or purchased to the market price minus one. *Interest Coupon/Dividend Yield* is the yield stated in the PIPE contract. *Percent with Warrants* is the percent of issues that include warrants. *Percent with Floors* is the percent of issues that include a floor provision (i.e., a minimum conversion price). *All-in Net Discount* combines the value of the purchase discount, the value of warrants, repricing rights, floors, and caps. See the Appendix for the estimation procedure. A price protected PIPE contract is classified as plain vanilla if its only feature is a repricing right. An unprotected PIPE contract is classified as plain vanilla if its only feature is an initial purchase price discount.

Contract Features	Protected	Unprotected	p-value of Differences
Proceeds ($M)	9.0 5.0	19.5 6.0	0.01 0.01
Proceeds as Percent of Outstanding Shares	13.9 9.8	17.8 10.4	0.10 0.38
Percent of Contracts including Purchase Discount	90.1	79.8	0.01
Purchase Discount (%)	−18.5 –18.0	–19.7 –15.7	0.14 0.08
Percent of Contracts requiring payment of Interest or Dividends	78.5	0	0.01
Interest Coupon/Dividend Yield (%)	5.1 6.0	--	--
Percent of Contracts with Warrants	46.8	35.0	0.01
Percent of Contracts with Floors	22.7	0	0.01
All-in Net Discount (%)	–30.0 –30.0	–23.5 –19.2	0.01 0.01
Number of observations	577	619	--
Least Complex Contracts ("Plain Vanilla")			
Percent of Contracts only with Purchase Discount Only	--	62.3	--
Percent of Contracts only with Repricing Rights	2.3	--	--
All-in Net Discount (%)	–17.9	–14.3	0.27
Most Complex Contracts			
Percent of Contracts with Purchase Discount and Warrants	--	37.6	--
Percent of Contracts with Repricing Rights, Purchase Discount, Caps, Floors, Dividend/Interest Payments, and Warrants	26.5	--	--
All-in Net Discount (%)	–34.7	–29.5	0.01

Table 4
Trading Characteristics of Issuer's Stock

Days to Exit Contract is the ratio number of shares issued or shares convertible through the PIPE to the average daily trading volume from day –260 to –10. *Illiquidity* is the average ratio of the absolute value of returns to the dollar trading volume from day –100 to –10 × 10^6 (higher values indicate less liquid stocks). *ADTV (–260,–10)* is the average of daily trading volume (DTV) from day –260 to –10. *SD RET(–260,–10)* is the annualized standard deviation of stock returns based on returns from day –260 to –10. *Institutional ownership* is the percentage of shares held by institutions from the quarter immediately preceding the PIPE offering as reported in *CDS Spectrum*. *Short Interest* is computed three months immediately preceding the PIPE offering date. *Short Constrained* is a dummy variable equal to 1 if a firm's *Short Interest ÷ Shares Outstanding* is greater than its *%Institutional ownership*. *Fraction with Price < $5* is a dummy variable equal to 1 if the issuer's stock price one day prior to the closing of the offer is less than $5 per share. *Fama-French Breakpoint* is the market capitalization of the issuer one day prior to the closing of the offer relative the market value of equity of all NYSE stocks using the 5 percent breakpoints available from Ken French's data library. *Book to Market Ratio* is the book to market ratio using Fama-French's definition of book value. *Time from IPO* is the years between the IPO and the closing of the PIPE offering.

	Protected	Unprotected	p-value of Differences
ADTV(–260,–10) (000s)	199.7 103.6	201.2 82.7	0.94 0.03
SD RET(–260, –10) (%)	109.3 94.0	110.4 97.8	0.88 0.51
Days to Exit Contract	47.44 28.16	64.83 41.70	0.01 0.01
Illiquidity	1.89 0.33	2.42 0.37	0.05 0.38
Fama-French Breakpoint (percentile)	11 5	16 10	0.01 0.01
Book to Market Ratio	0.23 0.16	0.24 0.17	0.68 0.12
Time from IPO (years)	6.28 4	5.97 4	0.35 0.44
% with Negative Operating Cash Flow	0.87	0.81	0.01
Fraction with Price < $5 (%)	55	44	0.01
Institutional Ownership (%)	6.3 1.2	14.1 5.0	0.01 0.01
Short Interest ÷ Shares Outstanding (%)	3.46 1.39	2.58 0.59	0.09 0.01
Short Interest ÷ ADTV	5.15 1.81	5.13 1.50	0.97 0.19
Short Constrained (%)	46.5	23.1	0.01

Table 5
Regression Analysis of Investors' Choice of Price Protection

The dependent variable is equal to 1 for a Unprotected PIPE and is 0 for a Protected PIPE. The independent variables include: *Market Cap* is the log of market capitalization. *CAR(–12,–1)* is the issuer's abnormal stock return over month –12 to –1 relative to the PIPE issue. *Cash Depletion Rate* is the ratio of 1 ÷ the ratio of cash and marketable securities to operating income before depreciation. For companies that have positive operating income this variable is set equal to 0 (the greater this variable the more time a company has until it runs out of cash.) *Book to Market Ratio* is the book to market ratio using Fama-French's definition of book value. *Days to Exit Contract* is the ratio of the number of shares the PIPE can be converted into or shares issued to investors divided by ADTV (average daily trading volume). *Illiquidity* is the average ratio of the absolute value of returns to the dollar trading volume from day –100 to –10 $\times 10^6$ (higher values indicate less liquid stocks). *SD RET(–260,–10)* is the annualized standard deviation of stock returns based on returns from day –260 to –10. *%Institutional Ownership* is the fraction of shares held by institutions. *Price < $5* is a dummy variable equal to 1 if the issuer's stock price one day prior to the closing of the offer is less than $5 per share. *Short Constrained* is a dummy variable equal to 1 if a firm's *Short Interest ÷ Shares Outstanding* is greater than its *%Institutional ownership*. T-statistics and Chi-square statistics are reported in parenthesis. ***,**,* denotes significance at the 1, 5, and 10% level, respectively.

Dependent Variable	Unprotected =1 Protected=0		
Intercept	0.328	0.566	0.318
	(1.65)	(1.37)	(0.38)
Market Cap	0.001	–0.172**	0.052
	(0.000)	(3.87)	(0.38)
CAR(–12, –1)	0.088**	0.131**	0.200***
	(4.65)	(4.61)	(8.14)
Cash Depletion Rate	0.134***	0.092***	0.108***
	(27.91)	(8.73)	(9.70)
Book to Market Ratio	–0.061	–0.359*	–0.510**
	(0.163)	(2.67)	(3.85)
Proceeds ÷ Market Cap (%)		–0.968	–0.390
		(1.11)	(0.16)
Days to Exit Contract		0.007***	0.004
		(9.47)	(1.91)
Illiquidity (%)		0.018	0.037
		(0.603)	(1.94)
SD RET (–260,–10)		0.130	
		(0.84)	
%Institutional Ownership		3.45***	
		(24.34)	
Price < $5		–0.362*	
		(3.56)	
Short Constrained (%)			–0. 799***
			(17.41)
N (Protected/Unprotected)	443/465	312/372	253/314
F-Value/Likelihood Ratio	40.26***	77.13***	54.76***
Adjusted/Pseudo R^2	57.3	68.4	67.6

Table 6
Post-Issue Abnormal Returns to Existing Shareholders

In panel A, the first row gives the mean and the second row gives the median. Buy-and-hold abnormal stock returns are equally weighted and calculated as the differences in returns between the sample firm and a portfolio matched on size and book-to-market (CAR_SBM) and a portfolio of NASDAQ decile 1 firms (CAR_DEC1). The returns for month 0 begin on the announcement of the PIPE offering. Companies that are delisted during the sample period are assigned *CRSP's* delisting return in the month of the delisting and a 0% return in the remaining months of the sample period. In panel B, monthly calendar time (CT) abnormal returns are computed for a portfolio of all PIPE issuers within the previous 24 months relative to the above benchmarks. Panel C reports the intercept from regressions of monthly equal (EW) and value weighted (VW) calendar time portfolio excess returns on the market excess return, and zero investment portfolios based on size (SMB), book-to-market (HML) and conditional co-skewness (LMH). The returns in panel B and C are annualized. ***, **, * indicates values are significantly different from zero at the 1%, 5%, and 10% level, respectively.

	All PIPEs		Protected		Unprotected		p-value Protected vs. Unprotected
Panel A: Buy-and-Hold Benchmark Returns							
CAR_SBM(0, +3)	1,081	–0.049**	519	–0.103***	562	0.001	0.011
		–0.161***		–0.206***		–0.106***	<0.01
CAR_DEC1(0, +3)		–0.077***		–0.120***		–0.038	0.040
		–0.170***		–0.224***		–0.119***	<0.01
CAR_SBM(0, +6)	1,079	–0.019	517	–0.131**	562	0.085	0.012
		–0.267***		–0.352***		–0.181***	<0.01
CAR_DEC1(0, +6)		–0.059		–0.162***		0.036	0.019
		–0.294***		–0.368***		–0.209***	<0.01
CAR_SBM(0, +12)	1,075	–0.157***	515	–0.226***	560	–0.093*	0.136
		–0.431***		–0.488***		–0.368***	<0.01
CAR_DEC1(0, +12)		–0.230***		–0.292***		–0.174***	<0.01
		–0.496***		–0.561***		–0.442***	<0.01
CAR_SBM(0, +24)	1,055	–0.333***	505	–0.482***	550	–0.192**	<0.01
		–0.704***		–0.779***		–0.638***	<0.01
CAR_DEC1(0, +24)		–0.485***		–0.659***		–0.325***	<0.01
		–0.827***		–0.913***		–0.780***	<0.01
Panel B: Calendar Time Benchmark Returns (N=94)							
CT_CAR_SBM_EW		–0.145***		–0.232		–0.063***	<0.01
CT_CAR_DEC1_EW		–0.192***		–0.292**		–0.108***	<0.01
Panel C: Intercept of Regressions of Calendar Time Portfolio Excess Returns (N=94)							
EW		–0.129		–0.221**		–0.044	
VW		–0.076		–0.192*		–0.044	
Panel D: Percent of Issuers Delisted							
%Delisted (0, +3)	1,081	0.012	519	0.022	562	0.003	<0.01
%Delisted (0, +6)	1,079	0.037	517	0.054	562	0.022	<0.01
%Delisted (0, +12)	1,075	0.119	515	0.148	560	0.091	<0.01
%Delisted (0, +24)	1,055	0.275	505	0.320	550	0.223	<0.01

Table 7

Regression Analysis of Post-Issue Returns to Existing Shareholders

The dependent variables in models 1, 2 and 3 are the cumulative abnormal returns from month 0 to month +6, month +12 and month +24, respectively. The dependent variables in models 4 and 5 are equal to 1 if the firm is delisted through the end of 12 or 24 months after issue and is 0 otherwise. *UNPROTECT* is a dummy variable that equals 1 if the PIPE is unprotected and is 0 if the PIPE is price protected. *Proceeds ÷ Market Cap* is the ratio of the proceeds from the PIPE offering to the market value of equity for the fiscal year prior to the offer. *All-in Net Discount* is the estimated discount to PIPE investors. *CAR(–12,–1)* is the issuer's cumulative abnormal stock performance from month –12 to month –1 relative to a size and book-to-market matched benchmark portfolio. *Cash Depletion Rate* is the ratio of 1 ÷ the ratio of cash and marketable securities to operating income before depreciation. For companies that have positive operating income this variable is set equal to 0. *Log of Market Capitalization* is calculated for the day immediately prior to the offering. *Illiquid* is the average ratio of the absolute value of returns to the dollar trading volume from day –100 to –10. *Short Constrained* is a dummy variable equal to 1 if a firm's *Short Interest ÷ Shares Outstanding* is greater than its *Institutional ownership÷ Shares Outstanding*. *ΔSI/Volume(+12,-3)* is short interest divided by average daily trading volume (ADTV) at month +12 minus short interest divided by ADTV at month –3. T or chi-square statistics are in parentheses.

Dependent Variable:	1 CAR_SMB(0, +6)	2 CAR_SMB(0, +12)	3 CAR_SMB(0, +24)	4 CAR_SMB(0, +12)	5 Delisted through 12 months	6 Delisted through 24 months
Intercept	–0.153 (–1.13)	–0.059 (–0.37)	–0.294 (–1.60)	–0.120 (–0.73)	–2.217** (8.57)	–0.860 (2.15)
UNPROTECT	0.258*** (4.81)	0.160** (2.53)	0.132* (1.81)	0.155** (2.52)	–0.723** (5.58)	–0588*** (7.06)
Proceeds ÷ Market Cap	–0.024 (–0.10)	0.227 (0.79)	0.840** (2.55)	0.276 (1.12)	1.11 (0.94)	–0.257 (0.067)
All-in Net Discount	0.082 (0.43)	0.558 (2.49)	0.574** (2.22)	0.464** (2.18)	–0.744 (0.509)	–1.313* (2.852)
CAR (–12, –1)	0.015 (0.83)	–0.001 (–0.03)	–0.041* (–1.69)	–0.032 (–1.42)	–0.766*** (12.18)	–0.465** (13.79)
Cash Depletion Rate	–0.002 (–0.17)	0.018 (1.57)	0.034** (2.62)	0.006 (0.60)	–0.08* (3.35)	–0.086** (5.811)
Log of Market Capitalization	–0.014 (–0.61)	–0.026 (–0.97)	–0.020 (–0.64)	–0.020 (–0.69)	–0.071 (0.28)	–0.185* (3.12)
Illiquidity	0.004 (0.67)	–0.004 (–0.49)	–0.011 (–1.24)	0.005 (0.73)	0.012 (0.14)	0.015 (0.35)
Short Constrained	–0.171** (–2.11)	–0.163* (–1.70)	–0.181* (–1.64)		0.143 (0.12)	0.945*** (10.27)
ΔSI/Volume(+12,–3)				–0.001 (–0.35)		
Number of Observations	571	571	571	591	572	572
Adjusted/Pseudo R^2	0.05	0.04	0.05	0.02	0.06	0.09

***, **, * indicates values are significantly different from zero at the 1%, 5%, and 10% level, respectively.

Table 8

Post-Issue Abnormal Returns to PIPE Investors

Returns to PIPE Investors incorporate discounts, warrants, repricing rights, or interest on the security. For details of the procedure used to estimate investor returns, see the Appendix. In panel A, the first row gives the mean and the second row gives the median. Buy-and-hold abnormal stock returns are equally weighted and calculated as the differences in investor returns and a portfolio matched on size and book–to-market (ICAR_SBM) and a portfolio of NASDAQ decile 1 firms (ICAR_DEC1). In panel B, monthly calendar time (CT) investor abnormal returns are computed for a portfolio of all PIPE issuers within the previous 24 months relative to the above benchmarks. Returns can be equal weighted (EW) or proceeds weighted (PW). Panel C reports the intercepts from regressions of the monthly calendar time portfolio excess returns to investors on the market excess return, and zero investment portfolios based on size (SMB), book-to-market (HML) and conditional co-skewness (LMH). The returns in panel B and C are annualized. Panel D reports the differences in investor minus shareholder returns. ***, **, * indicates values are significantly different from zero at the 1%, 5%, and 10% level, respectively.

	All PIPEs		Protected		Unprotected		p-value Protected vs. Unprotected
Panel A: Buy-and-Hold Benchmark Returns							
ICAR_SMB(0, +3)	1,081	0.306***	519	0.164***	562	0.437***	<0.01
		0.049***		–0.007		0.119***	<0.01
ICAR_DEC1(0, +3)		0.277***		0.147***		0.398***	<0.01
		0.037***		–0.014		0.084***	<0.01
ICAR_SMB(0, +6)	1,079	0.494***	517	0.360***	562	0.619***	0.134
		0.113***		0.164***		0.047***	0.093
ICAR_DEC1(0, +6)		0.455***		0.330***		0.570***	0.161
		0.092***		0.161***		–0.024**	0.038
ICAR_SMB(0, +12)	1,075	0.317***	515	0.275***	560	0.354***	0.647
		-0.043*		0.068		–0.188***	0.003
ICAR_DEC1(0,+12)		0.243***		0.210*		0.273**	0.713
		–0.083***		0.040*		–0.255***	0.003
ICAR_SMB(0,+24)	1,055	–0.051	505	–0.186**	550	0.268	0.048
		–0.468***		–0.402***		–0.557***	0.841
ICAR_DEC1(0, +24)		–0.101***		–0.359***		0.135	0.030
		–0.697***		–0.616***		–0.719***	0.456
Panel B: Calendar Time Benchmark Returns (N=94)							
CT_ICAR_SMB_EW		0.279		0.041		0.469***	0.075
CT_ICAR_DEC1_EW		0.233***		–0.032**		0.443***	0.039
CT_ICAR_SMB_PW		0.149		0.020		0.214	0.359
CT_ICAR_DEC1_PW		0.113		–0.058		0.189	0.175
Panel C: Intercepts of Calendar Time Portfolio Excess Returns (N=94)							
EW		0.447*		0.175		0.649**	
PW		0.288		0.097		0.397*	

Table 8 - *Continued*

	All PIPEs		Protected		Unprotected		p-value Protected vs. Unprotected
Panel D: Investor minus Shareholder Buy-and-Hold Benchmark Returns							
INV_SH (0, +3)	1,081	0.355***	519	0.267***	562	0.435***	<0.01
		0.171***		0.168***		0.172***	0.437
INV_SH (0, +6)	1,079	0.514***	517	0.491***	562	0.534***	0.691
		0.238***		0.393***		0.153***	<0.01
INV_SH (0, +12)	1,075	0.473***	515	0.502***	560	0.447***	0.602
		0.174***		0.372***		0.107***	<0.01
INV_SH (0, +24)	1,055	0.383***	505	0.299***	550	0.460***	0.296
		0.050***		0.043***		0.052***	0.675

Table 9

Effects of Individual Cash Flow Rights on Investors' Estimated Returns

This analysis assumes that investors hold their positions through the end of 12 months. The value of each of the following rights is divided by proceeds so that the total of all components equals 100% of an investor's estimated raw 12 month return. The value of initial stock holdings is the initial number of shares investors receive (proceeds divided by closing market price less purchase discount) times the market price at the end of 12 months (Price12). The value of repricing rights is the number of shares investors have at the end of 12 months times Price12. The number of ending shares is proceeds divided by the minimum of Price12 or the conversion price (typically the initial closing market price adjusted for applicable conversion premia or discounts). The value of warrants is the intrinsic value of warrants adjusted for applicable premia or discounts to the exercise price. Interest or dividends are the total paid over 12 months.

	Initial Stock Holdings	Repricing Rights	Warrants	Interest/ Dividends
Protected (N=514)				
Mean	60%	33%	1%	5%
Median	59%	35%	0%	5%
Protected with Returns > 50% (N=88)				
Mean	95%	–4%	7%	2%
Median	98%	–2%	0%	2%
Unprotected (N=576)				
Mean	98%	--	2%	--
Median	100%	--	0%	--
Unprotected with Returns > 50% (N=136)				
Mean	92%	--	8%	--
Median	100%	--	0%	--

Figure 1

Distribution of Post-Issue Stock Returns to Existing Shareholders

Raw returns are cumulated from the date of the closing of the PIPE to end of month +12. The sample includes PIPEs issued between 1995 and 2000 by companies that are in the *CRSP* database. The figure separates the returns for protected and unprotected PIPE contracts.

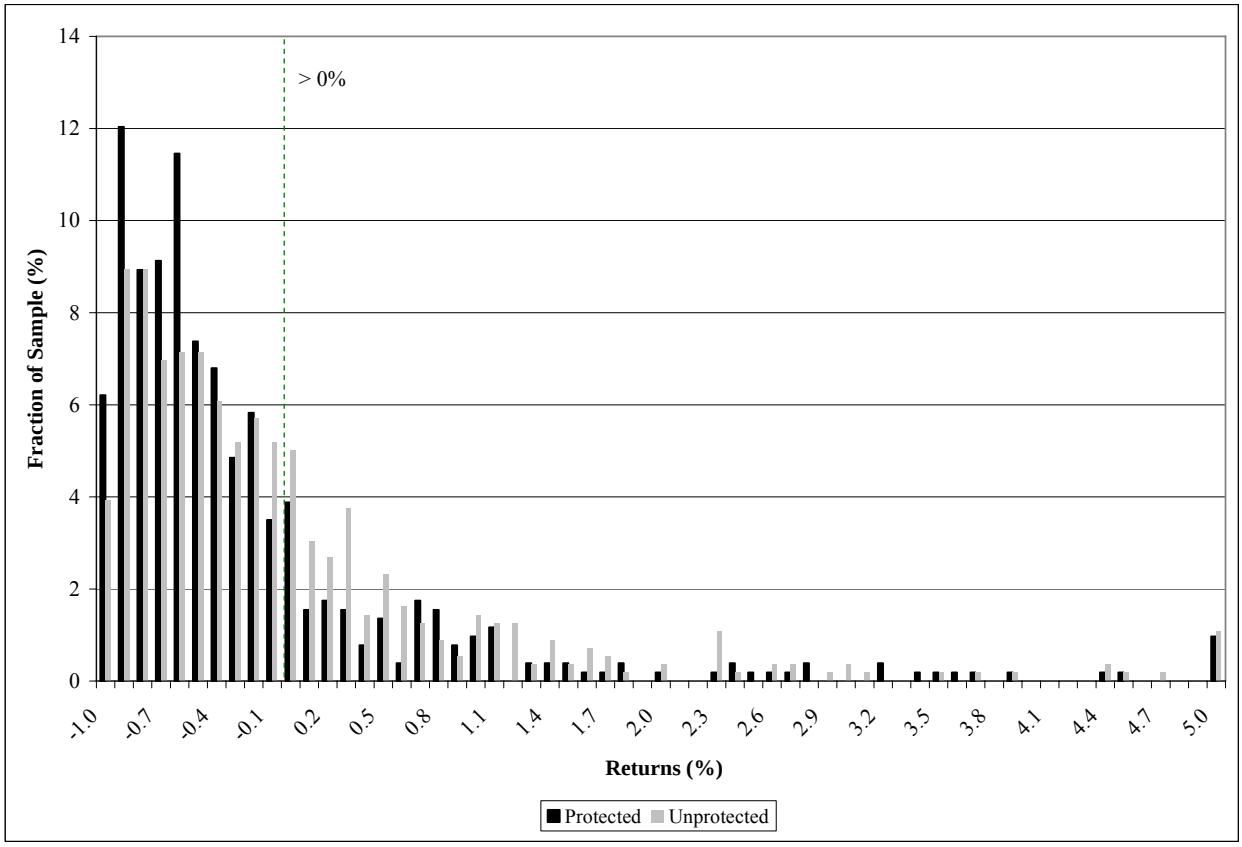


Figure 2

Distribution of Post-Issue Stock Returns to PIPE Investors and Existing Shareholders

Raw returns are cumulated from the date of the closing of the PIPE to the end of month +12. The sample includes PIPEs issued between 1995 and 2000 by companies that are in the *CRSP* database. Estimated returns to PIPE investors are calculated using an approach described in the Appendix.