

PIPE Dreams?

The Impact of Security Structure and Investor Composition on the Stock Price Performance of Companies Issuing Equity Privately

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ABSTRACT

The number and volume of Private Investments in Public Equity (PIPEs) has increased substantially since the early 1990s. PIPEs have become an important source of financing for young, publicly-traded firms whose recent operating performance may limit alternative financing options. This paper compares the stock price performance of companies issuing traditional PIPEs (equity sold at predetermined fixed prices) and structured PIPEs (equity sold at uncertain variable prices). We document that traditional PIPEs are purchased by various institutional investors, while structured PIPEs are purchased primarily by hedge funds. Companies which issue structured PIPEs substantially under-perform companies which issue traditional PIPEs. Furthermore, we find evidence that investor classes matter even for firms which issue traditional PIPEs. Specifically, firms which sell PIPEs to hedge funds tend to subsequently perform significantly worse than firms which sell PIPEs to other institutional investors. Our findings provide support for two alternative but intertwined hypotheses. Hedge funds could act as investors of last resort, buying issuances of firms that are unable to obtain financing from other investors. Alternatively, the trading strategies of hedge funds could contribute to the poor stock price performance after the PIPE issuance.

1. Introduction

Over the past several years, private investments in public equity (PIPEs) have become an increasingly popular alternative to public offerings as a source of capital for small- and medium-sized public companies whose recent operating performance and high degree of asymmetric information may limit alternative financing options. PIPEs are negotiated with a small number of accredited and typically institutional investors. Deals are often completed within a few weeks with fewer regulatory requirements than public offerings. These deal characteristics have been valued by U.S. companies which chose to raise \$77 billion in 5,244 PIPE transactions between 1995 and 2002.

PIPE financings can take several forms. We distinguish two major groups of PIPEs: traditional and structured PIPEs. A traditional PIPE is a private placement, where the effective price of the common stock being sold is predetermined at the time the deal is closed (e.g., common stocks or convertibles with a fixed conversion ratio). A structured PIPE is a private placement, where the effective price of the common stock sold is unknown at the time the deal is closed (e.g., convertibles with variable conversion ratios). These structured securities typically include re-pricing rights, which protect investors against post-issuance stock price declines. For example, re-pricing rights can reduce the effective conversion price if the stock price of the issuing firm declines following the close of the PIPE transaction.

Firms issuing PIPEs tend to be young firms in high-growth or high risk sectors. These qualities complicate external assessments, resulting in significant asymmetric information between firm insiders and the external market. Myers (1984) and Myers and Majluf (1984) propose that the presence of asymmetric information can reduce the value at which firms can sell equity securities. Stein (1992) argues that the variable conversion prices of structured PIPEs may be ideal in the presence of asymmetric information, because this security protects investors against changes in the value of the issuing firm. Moreover, there is less potential for costly financial distress since the security converts into equity with certainty on the conversion date. If structured PIPEs can mitigate the adverse effects of asymmetric information and reduce the costs of financial distress, then managers in these firms may be motivated to sell structured PIPEs.

However, structured PIPE contracts may suffer from one important flaw. Investors have the incentive to temporarily depress stock prices during the conversion period, enabling them to redeem their convertibles for more shares. In return, this greater dilution results in permanent stock price declines. The U.S. Securities and Exchange Commission has expressed concern after investigating cases of market manipulation surrounding the issuance of structured PIPEs and has warned that these securities present the temptation for investors “to engage in manipulative short selling of the issuer’s stock in order to receive more shares”.¹

Our paper analyzes the short- and long-term stock price performance of companies issuing PIPEs. We investigate whether the stock market’s reaction to the PIPE transactions depend on the type of securities issued and on the investors in these transactions. We confirm Wruck’s (1989) result that stock prices react favorably to private placements during a short-term event window. Companies issuing PIPEs experience an average abnormal return of 3.7 percentage points over a 10-day event window around the closing date of the deal. We also confirm the results of Hertz et al. (2002) and show that companies issuing PIPEs experience an average abnormal return of -15.4 percent during the year following the closing of the deals.

Furthermore, we document that short- and long-term stock price performances of the issuing firms are related to the specific security issued. Companies issuing traditional PIPEs perform significantly better in the short- and long-term than companies issuing structured PIPEs. The underlying stocks of companies issuing traditional PIPEs have average abnormal returns of 5.6 percentage points during a 10-day event window around the closing of the deal and -8.4 percentage points during the subsequent year. On the other hand, companies issuing structured PIPEs have average abnormal returns of -0.52 percentage points during a 10-day event window around the closing of the deal and -30.6 percentage points during the subsequent year. The poor long-term performance of structured PIPEs confirms the results of Hillion and Vermaelen (2003), who analyze the long-term performance of death-spiral convertibles, a specific form of structured PIPEs, over the period between 1995 and 1998.

¹ See <http://www.sec.gov/news/press/2003-26.htm>.

Our most interesting results indicate that the identity of the investors matters. While traditional PIPEs are purchased by various institutional investors, structured PIPEs are primarily purchased by hedge funds. Hedge funds account for approximately 72 percent of the investments in structured PIPEs and for 15 percent of the investments in traditional PIPEs. We find that the long-term stock price performance of companies is worse for deals where hedge funds are participating even after controlling for the structure of the deals. Companies issuing traditional PIPEs purchased by mutual funds, venture capital funds, and private equity funds actually experience insignificantly positive performance during the year after the PIPE issuance.

Wu (2003) and Barclay et al. (2003) document that investors in PIPEs are typically passive and do not appear to increase firm value through monitoring; our results suggest that hedge funds may be playing a negative role. These results are consistent with Krishnamurthy et al. (2004) who show that private placements which include an affiliated investor (defined as officers, directors or affiliated institutions and individuals) have no long-run declines in contrast to negative long-run returns when a PIPE is sold to unaffiliated investors. These results also extend earlier results by Hillion and Vermaelen (2003), who find evidence indicating that structured PIPEs are faulty contracts as incentives exist for investors to temporarily manipulate equity prices (through short-selling) in order to profit. In our paper, we find that hedge funds, firms which are typically identified by their ability to place large short positions, are also associated with long term declines in traditional PIPEs. We find evidence consistent with two hypotheses. Hedge funds might be investors of last resort for troubled firms and the presence or the trading activities of hedge funds could also result in a permanent reduction in asset values of companies issuing PIPEs.

The remainder of the paper is structured as follows: In Section 2, we give a general overview over PIPE securities. Section 3 describes our data sources and provides summary statistics of the PIPE transactions. Sections 4 and 5 include the main long-term performance results. The determinants of the abnormal returns are analyzed in more detail in Section 6. Section 7 offers a discussion of our results and section 8 provides a brief conclusion.

2. PIPE Securities

There are numerous different structures of PIPE securities as specifications are customized to the preferences of the investors and issuing companies. Figure 1 describes the payoff patterns and the dilution effects of the three basic structures of PIPE securities: common stocks, fixed convertibles, and floating convertibles.

Common Stock PIPE

The most basic PIPE security is a common stock placement, where a fixed number of shares are issued and sold at a predetermined discount or premium to the market price.² The future value of the investor's position increases proportionally with the stock price, as shown in Figure 1. Common stock PIPEs sometimes include warrants that let the investor purchase additional shares at a predetermined price during a specific time period.

Fixed Convertible PIPE

A second basic security structure is a fixed convertible. Fixed convertibles yield a current return through interest or dividend payments and can be converted by investors into a fixed number of shares of the company's common stock at a predetermined ratio. Figure 1 depicts the value of the fixed convertible security on the conversion date (which is set equal to the termination date in this example.) If the future stock price is above the conversion price, then the value of convertible securities is proportional to the value of the common stock, otherwise, the PIPE security is not converted into common stock. This inherent protection against decreases in equity prices can partially mitigate some of the concerns for investors regarding asymmetric information. However, the convertible debt security can generate significant costs of financial distress if the company defaults on its debt obligations.

²The median discount of the common stock PIPEs in our dataset is 13.04 percent and is similar to other samples. Discounts are suggested to reflect compensation to investors for expected monitoring services and advice (Wruck 1989), illiquidity (Silber 1991), and information production (Hertzel and Smith 1993).

Floating Convertible PIPE

A third basic structure is a floating convertible, which includes re-pricing rights to the investors. Floating convertibles have a variable conversion price that is based on market prices of the common stock after the issuance. This feature protects the investor if the price of the common stock decreases after the PIPE deal is closed, as the investor will receive a larger number of shares following a decreasing stock price. For example, a basic floating convertible states that the convertible security can be redeemed for common stock with a fixed value V on the conversion date. Thus, if the stock price on the future conversion date is p , then the company would issue V/p shares to the owner of the floating convertible. The implication of this security is that decreasing stock prices will result in greater dilution of existing shareholders. Floating convertibles often include caps and floors which limit the possible range of conversion prices.

This floating security is essentially “adverse-selection-proof” equity (Stein, 1992), because all parties in the transaction can agree that this security has a fixed value of V on the conversion date – assuming the firm does not declare bankruptcy before the maturity date of the security. Furthermore, since the security converts into equity with certainty, there is less potential for costly financial distress.

One disadvantage of a floating convertible is that this security might be subject to market manipulation. For example, by short selling the common stocks, PIPE investors might want to depress stock prices during the conversion period, resulting in more favorable conversion ratios. Thus, investors will receive a larger number of common stocks through the convertible security. This excessive dilution would permanently reduce the stock value for the original stock holders.

Traditional and Structured PIPEs

In this paper, we divide the PIPE deals into two groups: traditional and structured PIPEs. Traditional PIPEs are private placements that sell common shares at predetermined prices. They include common stock and fixed convertible securities. Structured PIPEs have a variable conversion price that is based on future pre-conversion market prices of the common stock and include floating convertibles. We describe in Appendix A additional details of these security structures.

3. Data and Summary Statistics

This section describes the data sources and summarizes the main characteristics of our data set.

Data Sources

Our data set on PIPE transactions was obtained from Sagient Research in San Diego, California. They collect data on all registered and publicly announced private placements since 1995. The data includes detailed information on the specific characteristics of PIPE transactions and their investors. All the information from Sagient Research comes directly from SEC filings and public announcements made by the companies. Our data set excludes private placement transactions with gross proceeds of less than one million dollars. We also exclude Regulation S placements, which are purchased by foreign institutional investors and which have become less prevalent because of changes to SEC regulations. We also exclude 144-A placements, which are issued by larger and more mature companies and are not considered PIPEs due to different regulatory treatments including a specific requirement that 144-A placements.³

Characteristics of PIPE Transactions

Table 1 summarizes the characteristics of 5,244 PIPE securities issued between 1995 and 2002. These PIPE deals raised a total of \$77 billion. Traditional PIPEs account for the largest number of transactions and for the largest proceeds raised through PIPE transactions. The 3,585 traditional PIPEs raised \$65.2 billion, while the 1,659 structured deals raised \$11.6 billion. The average proceeds of traditional PIPEs (\$18.2 million) are substantially larger than the average proceeds of structured PIPEs (\$7.0 million).

Table 1 also summarizes additional characteristics of PIPE transactions. The average company has a market capitalization of \$182 million and raises \$14.7 million in a PIPE transaction. The PIPE transactions thus increase the funds available for companies substantially: the average ratio of the proceeds of a PIPE and the market capitalization of the company exceeds 20 percent. These values are similar to those found in Hertz et al.

³ Our qualitative results are not affected if we include the Reg S and the 144-A transactions. We exclude 95 Reg S placements and 469 144-A placements.

(2002). Average proceeds of private placements from their sample of issuances between 1980 and 1996 was \$12.7 million and the mean number of new shares issued as a percent of total shares outstanding after the issue is 21.2 percent.

The distribution of the market capitalization is skewed to the right as the median market capitalization of \$50 million is substantially smaller than the mean market capitalization of \$182 million. Companies issuing structured PIPEs have smaller market capitalizations than companies issuing traditional PIPEs. The number of investors per deal ranges between 1 and 84, with most PIPE transactions having only one investor.

Many companies are involved in multiple PIPE transactions over the period between 1995 and 2002. 1,560 companies issue exactly one PIPE, whereas 1,134 companies issue more than one PIPE. Most of these multiple transactions occur on different days. Only 173 companies issue different PIPE securities on the same date.

The total proceeds increased significantly in the late 1990s and decreased after 2000. The composition of the deals has also changed considerably over time. Between 1995 and 1998, structured deals accounted for 53.0 percent of the PIPE transactions and for 36.9 percent of the capital raised. Between 1999 and 2002, structured deals accounted for 24.4 percent of the PIPE transactions and for just 10.3 percent of the total proceeds. This significant decline in the proportion of structured deals might be a result of the negative publicity surrounding floating convertibles. Structured PIPEs were a new innovation in the 1990s and corporate executives might not have been aware of the potential problems of raising capital through structured PIPEs.

Characteristics of PIPE Investors

Table 2 summarizes the investor composition of PIPE securities. The investors can be identified for more than 80 percent of the capital raised in our sample. Each investor is classified in one of 11 different classes. Hedge funds are the largest investor class, accounting for approximately 24 percent of the total investments in PIPE securities by identified investors. Corporations, mutual funds and institutional advisors, venture capital, and private equity funds are also important investors in this market. Individual investors account for a relatively small portion of the investments in PIPEs.

The investor composition differs dramatically between the two basic security structures. Investors in traditional PIPEs belong to various groups of institutional investors. On the other hand, structured PIPEs are primarily purchased by hedge funds. Hedge funds participate in 83 percent of all structured PIPE transactions and account for 72 percent of the total investment volume of structured PIPEs with identifiable investor classifications. On the other hand, they account for just 15 percent of the purchases of traditional PIPEs.

Merge With CRSP, Compustat, and SDC Databases

To obtain accounting and stock price measures of companies issuing PIPEs, we match our PIPE data set with the CRSP/Compustat databases using the ticker symbols and names of the issuing companies. We can match almost all PIPE companies that are traded on the NYSE, NASDAQ, and AMEX to CRSP. However, we are usually not able to match companies that are traded Over-the-Counter (Bulletin Board). Of the 5,244 PIPE transactions, 914 companies cannot be found in CRSP. However, these un-matched transactions raise less than 5 percent of the total proceeds of PIPE transactions. In addition, we are able to match 3,793 companies in our sample to the Compustat database. In the following empirical estimations we will always use as many observations as possible.

We also identify public equity and public debt issuances using the SDC database and merge this dataset with our PIPEs data. We obtain all public issuances between 1990 and June 2003 and match them to our data. We further identify whether the companies which went public after 1980 were venture-backed or not.

Characteristics of PIPE Companies

PIPE issuers tend to be young, small, growth companies in high-technology sectors. The median company in our sample had its initial public offering less than four years prior to the issuance of the PIPEs. The majority of companies issuing PIPEs are traded on NASDAQ.

Companies that issue PIPEs differ significantly from companies in Compustat. Table 3 summarizes characteristics of firms issuing PIPEs. Panel A reports several

accounting measures during the fiscal year prior to the issuance of the PIPE transactions. Companies issuing PIPEs have assets valued at \$25 million, while the median company in Compustat has assets valued at \$146 million. The book-to-market ratio of the median PIPE company is substantially lower (0.23) than the book-to-market ratio of the median company in Compustat (0.52). PIPE companies also tend to have lower market leverage than the median company in Compustat.⁴

Companies issuing structured PIPEs tend to have fewer total assets, lower book-to-market ratios, and lower leverage than the median company issuing traditional PIPEs. The differences in the medians of these three measures between structured and traditional PIPEs are significantly different from zero at a 1 percent confidence level using a Wilcoxon rank sum test.

Companies in our sample experience very poor operating performance during the fiscal year prior to the issuance of the PIPEs. The return on equity for the median company issuing PIPEs is -50.80 percent. On the other hand, the median company in Compustat has a return on equity of 7.76 during the same period. While 71 percent of companies in Compustat have positive operating profit, only 23 percent of companies issuing PIPEs have positive operating profits. The profitability of companies issuing structured PIPEs is significantly worse than the profitability of companies issuing traditional PIPEs.

Brav and Gompers (1997) show that venture capital backing adds value even after the initial public offering: venture-backed companies substantially outperform nonventure-backed firms in the public aftermarket. In our sample, 47.72 percent of the companies that went public after 1980 were venture-backed, as indicated in Panel B of Table 3. Companies that issued structured PIPEs were less likely to have been venture-backed than companies that issued traditional PIPEs, indicating that the companies

⁴ The Compustat data items to calculate the ratios, total assets (item 6), market-adjusted leverage (book debt (total liabilities (item 181) + preferred stock liquidating value (item 10, if unavailable, preferred stock redemption value (item 56)) - deferred taxes (item 35) - convertible debt (item 79))/(book debt + market capitalization)), book to market (book equity (item 60)/(common shares used to calculate EPS (item 54) * fiscal year close price (item 199))), return on equity (income before extraordinary items (item 237)/book equity (item 60)), operating profit (operating income before depreciation (item 13)), capital expenditures & research and development/total assets (capital expenditures (item 128) + research and development expense (item 46)/total assets (item 6)).

issuing structured PIPEs might have had a more limited opportunity set when raising funds.

Companies issuing PIPEs make substantial capital expenditures and research and development investments despite their poor operating performance. These companies need to raise external funds to maintain their investment levels. The dismal operating performance may pose difficulties in raising capital through public debt markets and secondary equity offerings. According to SDC, just 0.20 percent of PIPE companies issue public debt and 3.16 percent of PIPE companies make secondary equity offerings in the year of PIPE transactions. During a three-year window around the PIPE transactions, 0.51 percent of PIPE companies issue public debt and 9.30 percent issue public equity. This supports our hypothesis that the PIPEs market is a source of last resort financing for these companies.

The remainder of the paper compares the long-term stock price performance of companies issuing traditional and structured PIPEs.

4. Event Study Analysis

This section studies the short- and long-term performance of the common stocks of companies that issue PIPEs. This analysis estimates the returns that original shareholders of common stocks would have experienced had they held their stocks for several years post-issuance. The return of these original investors will, in general, be different from the return of the new investors who purchase the PIPEs. PIPEs are usually sold at significant discounts and often include warrants and repricing rights. Moreover, many investors, especially hedge funds, often hold short positions in the common stocks of the issuing companies to hedge their risk exposure. Thus, hedged institutional investors might not be affected significantly if the companies they invest in experience poor long-term returns.

Estimation Methodology and Summary Results

In this section, we estimate the performance of the common stocks of companies issuing PIPEs. We follow Barber and Lyon (1997) and benchmark performance by using a single control firm for each PIPE firm. We analyze the performance of the stock price

during a four year window around the closing of the PIPE transaction. We match each company in our sample to a comparable company according to its industry, market capitalization, and book-to-market ratio, as described in more detail in Appendix B.

Subsequently, we compute daily buy-and-hold returns for all companies during a 1,000 trading day window around the closing date of the PIPE transaction. This window corresponds to roughly two years before and two years after the closing of the transaction. Abnormal returns are defined as the difference between the buy-and-hold return of the PIPE company and the buy-and-hold return of the matched company.

Finally, we run bootstrap simulations, based on Ikenberry, Lakonishok, and Vermaelen (1995) and Kothari and Warner (1997) to determine the statistical significance of the results.⁵ The bootstrap simulations take into account the lack of independence in our buy-and-hold returns resulting from some companies issuing multiple PIPEs and overlapping time periods.

Figure 2 depicts the average abnormal returns for the companies issuing traditional and structured PIPEs during the year before and after the closing. Companies that issue PIPEs outperform, on average, the matched companies in the year prior to the closing of the PIPE transaction.⁶ The average abnormal return of companies that issue PIPEs equals 25.9 percent during the 250 days preceding the close of the PIPE deal. However, it is not the case that all companies perform well before the issuance of a PIPE. Almost fifty percent of the companies experience negative stock returns during the 250 trading days prior to the close of the transaction.

PIPE companies have disappointing stock price performances after the close of the transactions. The average abnormal return of PIPE companies amounts to -15.5 percent during the 250 trading days following the closing.

The stock price performance differs substantially between companies issuing traditional and structured PIPEs. Structured PIPE companies perform much worse during the year after the close. Companies issuing traditional PIPEs have an abnormal return of

⁵ We also computed standard *t*-tests. These alternative significance levels are very similar to the levels obtained using bootstrap simulations.

⁶ Note that the companies were matched at the end of December of the year prior to the issue date of the PIPE. Thus, a portion of the 500 trading-day window before the PIPE close occurs also before the matching takes place. Matching at the beginning of the whole sample period reduces the number of PIPE companies

-8.4 percent during the subsequent 250 days and companies issuing structured PIPEs have an abnormal return of -30.6 percent.⁷

Short-Term Stock Price Performance

The performance of stock prices of PIPE companies during a ten-day event window around the close of the transaction is summarized in the fourth row of Table 4.

Companies issuing PIPEs experience a relatively strong positive return during a short event window around the close of the PIPE transaction. The average abnormal return of companies issuing PIPEs amounts to 3.66 percent during a ten-day event window around the close, as shown in the first column of Table 4. This average return is highly statistically significant. The p-value of the bootstrap simulations is summarized in brackets and equals in this case 0.000, as none of the 1,000 bootstrap simulations has an average return larger or equal to 3.66 percent during this 10-day event window.⁸ This result is in contrast to the negative average abnormal returns during a short-term window surrounding the announcement of a public offering of seasoned equity.⁹

We find a significant difference in the short-term returns of companies that issue traditional PIPEs and companies that issue structured PIPEs. Stocks of companies issuing traditional PIPEs have an abnormal return of 5.57 percent during these ten trading days, which is again highly statistically significant. On the other hand, stocks of companies issuing structured PIPEs have an abnormal return of -0.52 percent, which is not significantly different from zero. The fourth column reports the differences in the abnormal returns between structured and traditional PIPEs.

with available data substantially and also reduces the quality of the match during the time period after the issuance of the deal, which is our primary interest in this paper.

⁷ A relatively large number of companies issue multiple PIPEs over our sample period. Thus, the returns of these companies are weighted more heavily. However, our results are not affected if we only look at the first PIPE deal by each company. Moreover, our results do not change qualitatively if we exclude companies with stock prices below \$1 on the closing day of the transaction or if we exclude companies with market capitalizations below \$10 million. See Ball, Kothari, and Shanken (1995) for a discussion of potential problems caused by low-price stocks.

⁸ This result is similar to Wruck (1989), Fields and Mais (1991), Hertz and Smith (1993), Varma and Szewczyk (1993), Hertz et al. (2002), and Wu (2003).

⁹ See, for example: Smith (1986), Asquith and Mullins (1986), Masulis and Kowar (1986), Mikkelsen and Partch (1986), Shyam-Sunder (1991), and Cornett and Tehranian (1994).

Long-Term Stock Price Performance

Table 4 divides the long-term performance of the stock returns after the PIPE issuance into three different time periods, (i.e., [6, 100], [101, 250], and [251, 500]). The number of observations decreases as we move further away from the closing date as returns are only available until December 2002 at the time of our analysis. For example, the returns in the last row of Table 4 exclude all the common stocks that issued PIPEs between January 2001 and December 2002.¹⁰

We observe that companies issuing PIPEs have economically and statistically significantly negative abnormal returns during the three intervals after the closing of the deal. The abnormal returns are particularly poor for structured PIPEs. The level of long-term underperformance is also found for initial public offerings¹¹ and for seasoned equity offerings¹².

Table 4 also shows the performance during three time periods prior to the close of the deal (i.e., [-500, -251], [-250, -101], and [-100, -6]). Both companies issuing traditional and structured PIPEs have positive abnormal returns in the year before the PIPEs are issued. The differences between the abnormal returns of companies issuing structured and traditional PIPEs prior to the closing are not statistically significant.¹³

We plot in Figure 3 the cumulative probability functions of the abnormal returns during the 250 trading days following the closing of the PIPE deals, to investigate whether the averages of the long-term stock price performance are driven by outliers. The cumulative probability function of the abnormal stock returns of traditional PIPE companies lies almost everywhere to the right of the one of structured PIPEs. The median abnormal stock return is -10.45 percent for traditional PIPE companies and -28.25 percent for structured PIPE companies. In our sample, 57.2 percent of the companies issuing traditional PIPEs experience negative abnormal returns and 68.1 percent of the companies issuing structured PIPEs experience negative abnormal returns in the following year. We can reject the Kolmogorov-Smirnov test of the equality of the two

¹⁰ The results do not change qualitatively if we only analyze the PIPE deals issued between 1995 and 2000, which have complete return series. We discuss below the results over different sub-samples.

¹¹ See, for example: Ritter (1991) and Loughran and Ritter (1995).

¹² See, for example: Spiess and Affleck-Graves (1995) and Loughran and Ritter (1995, 1997).

distributions. The maximum distance between the two distributions is 12.63 percentage points, which corresponds to a p-value of 0.000. The results for structured PIPEs are similar to the ones reported by Hillion and Vermaelen (2003), who study floating convertible PIPEs issued between January 1995 and August 1998.

PIPE Investors

The composition of investors differs substantially between traditional and structured deals. Table 5 summarizes the average abnormal returns of the underlying stocks of companies that issue PIPEs by their investor classes.

Panel A summarizes the abnormal returns if we include all PIPEs. Companies that receive investments from hedge funds perform considerably worse than companies that receive investments from mutual, venture capital, and private equity funds. This result holds for both the 10-day event window around the close of the transaction and for the year following the close of the transaction.

Panel B summarizes the abnormal returns by investor types for traditional PIPEs. Hedge funds participate in a substantial number of traditional PIPE deals. The short- and long-term abnormal returns are lower for the companies when the investors are hedge funds. For example, stocks of companies issuing traditional PIPEs where mutual funds, venture capital and private equity funds are major investors have an insignificantly positive abnormal return between the 6th and the 250th trading day after the close of the deal, while stocks of companies where hedge funds are major investors have a significantly negative abnormal return during this time period. It is surprising that companies receiving funding from other corporations perform extremely well during the short-term window and poorly during the subsequent year. The negative or neutral long-term impact on shareholder value supports Wu's (2003) finding that investors in private placements remain passive and do not try to increase shareholder value through monitoring.

The short- and long-term abnormal returns of companies issuing structured PIPEs tend to be smaller than the returns of companies issuing traditional PIPEs, as summarized

¹³ We also use alternative risk-adjustments, including abnormal returns relative to the market return and CAPM-adjusted abnormal returns. The results are very similar to the results using the benchmark-adjusted

in Panel C. As discussed in Section 3, hedge funds participate in 83 percent of all structured PIPE transactions and account for 72 percent of the total investment volume of structured PIPEs. Moreover, structured deals done by other investors often also include hedge funds, as many PIPE transactions include multiple investors. This makes it more difficult to identify the impact of specific investors for structured deals.¹⁴ However, this evidence lends support to the hypothesis that hedge funds play an important role in the relatively poor performance of companies that issue structured PIPEs.

Detailed Security Analysis

In Table 6, we subdivide the PIPEs according to more detailed specifications of the securities issued and compute the abnormal returns. 1,641 of the 2,643 traditional PIPEs are common stock PIPEs, as shown in Panel A. Only 125 traditional PIPEs are shelf sales of common stocks, which are sales of a company's common stock from an existing shelf registration statement. About 60 percent of the fixed convertibles are preferred stock and the remaining are convertible debt securities.

The short- and long-term performances of the common stocks for these four different types of traditional PIPE transactions do not differ significantly. The underlying common stocks for all four categories of traditional PIPEs experience negative abnormal returns during the year after the close. Companies that issue fixed convertible PIPEs tend to have experienced slightly lower returns in the year prior to the close of the deal than companies that issue common stock PIPEs.

Panel B of Table 6 lists the different securities issued as structured PIPEs. The two largest groups are floating convertible preferred stock and floating convertible debt PIPEs. The abnormal returns in the year after the close are negative for all securities and they are statistically significant at the one percent level for four of six securities.

returns and are not reported.

¹⁴ Note that the three investor classes do not include all possible investors. This explains why the average post-close abnormal return of -29.53 percent for all investors is smaller than the average post-close abnormal return of the three investor classes listed in Table 5. Stock prices of companies issuing structured PIPEs funded by 'Various Unknown Institutional Investors' have an average abnormal return of -32.88 percent. A large fraction of these investors are probably also hedge funds, which are successful in remaining anonymous.

Sub-Period Analysis

Our sample period includes a very interesting aggregate stock price pattern of highly positive stock returns in the late 1990s and highly negative returns in the early 2000s. Table 7 summarizes the event study results for two sub-periods.

Companies issuing structured PIPEs experience statistically significant negative abnormal returns in the year after the close of the transaction during both sub-periods. Overall, the abnormal stock returns after the close tend to be lower for companies issuing both traditional and structured PIPEs after 2000 as compared to the earlier sub-period. This result indicates that the companies that issued PIPEs are affected more by the market downturn than the matched companies.

5. Calendar Time Abnormal Returns

In this section, we compute calendar-time abnormal returns of companies that issue PIPEs. Fama (1998) and Mitchell and Stafford (2000) argue that the event study methodology described in Section 4 does not appropriately take into account cross-sectional dependencies in returns. To address this issue, we estimate abnormal returns based on the calendar-time portfolio approach by Mitchell and Stafford (2000). In a first step, we form a portfolio of all the common stocks of companies that issue PIPEs during the past 250 trading days. In a second step, we compute the abnormal returns using various factor models.

Estimation Methodology

We form an equally-weighted portfolio of all the companies that issued PIPEs in the past 250 days.¹⁵ The portfolio invests at time $t-1$ $w_{i,t-1}=1/n_{t-1}$ in each stock of a company that issued a PIPE during the previous 250 days. The number of companies included in the portfolio in each period equals $n_{t-1}=\sum_j I_{j,t-1}$, where $I_{i,t-1}$ is an indicator variable that equals 1 if PIPE i was issued during the previous 250 days.

We analyze daily returns for these two portfolios over the sample period between 1996 and 2002. We compute abnormal returns using various factor models. The first

¹⁵ We obtain very similar results if we use a time window of 100 or 500 trading days.

model simply computes the average excess return relative to the market return. The second model estimates the abnormal return using the one-factor CAPM. The third model follows Fama and French (1993) and includes three factors capturing the returns to the market, a size portfolio, and a book-to-market portfolio. The fourth model adds a momentum factor following Jegadeesh and Titman (1993) and Carhart (1997).¹⁶ The fourth model is the more general model and has the following specification:

$$R_{i,t} - R_{F,t} = \alpha_i + \beta_{i,M}(R_{M,t} - R_{F,t}) + \beta_{i,S}SMB_t + \beta_{i,V}HML_t + \beta_{i,MOM}WML_t + e_{i,t}, \quad (1)$$

The dependent variable is the return on portfolio i on day t , $R_{i,t}$, minus the risk-free rate, $R_{F,t}$, and the independent variables are given by the returns of four zero-investment factor portfolios. The first variable is the excess return of the market portfolio, $R_{M,t}$, over the risk-free rate. The second variable is the return difference between small- and large-capitalization stocks, the third variable is the return difference between high and low book-to-market stocks, and the fourth variable is the return difference between past winner stocks and past loser stocks. The intercept of the model, α_i , is the measure of abnormal performance using a four-factor model.

Abnormal Returns

Table 8 summarizes the abnormal returns for portfolios of all PIPE companies, and for traditional and structured PIPE companies. The last column is the abnormal return of a portfolio that holds a long position in structured PIPE companies and a short position in traditional PIPE companies. The first row indicates that the difference between the average return of the portfolio and the average market return is -7.61 basis points per day. This negative return is both economically and statistically significant. We find a large difference between the abnormal returns of stocks of companies issuing traditional and structured PIPEs. Companies issuing traditional PIPEs have an average abnormal return of -2.47 basis points per day, which is not statistically significant. On the other hand, companies issuing structured PIPEs have an average abnormal return of -17.80 basis points per day, which is statistically significantly different from zero. The

¹⁶ The daily factor returns for the three-factor model are obtained from Kenneth French's web site: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library. The daily momentum return is

difference in the abnormal returns between structured and traditional PIPEs is also statistically significant. The abnormal returns are not very sensitive to the different factor models.¹⁷

We also estimate performance regressions for each calendar year. The abnormal returns of portfolios of companies issuing structured PIPEs are always lower than the abnormal returns of portfolios of companies issuing traditional PIPEs. This return difference is statistically significant for five out of the seven years. Although the number of structured PIPEs decreased significantly after 1999, the negative performance of companies issuing structured PIPEs remained unaffected after 1999.

6. Determinants of Stock Price Performance: Regression Evidence

This section analyzes the determinants of the performance of PIPE stocks using a regression framework. We analyze how specific characteristics of the PIPE transactions affect the performance of the underlying common stocks during the event windows studied previously. The excess return is computed by subtracting the buy-and-hold return of the value-weighted stock return from CRSP from the buy-and-hold returns of the individual stocks. The excess return of a PIPE company is regressed on indicator variables for the structure of and investors in the PIPE and on additional accounting variables observed during the year prior to the issuance of the PIPE. In separate regressions we also consider the interaction of the investor classes with the structure of the PIPE. All the accounting variables are winsorized at the 5 percent level to eliminate the impact of extreme outliers. The regressions also include additional month and industry fixed effects, which are not reported. The standard errors are robust and corrected for clustering of observations by the same company.

We estimate three specifications: The first specification estimates the effects of investors and deal structure controlling just for the time and industry fixed effects. The second specification includes additional lagged accounting variables as controls. The third specification also adds factors representing the interaction of investor groups and structure. The number of observations is smaller in the second and third specifications

constructed following the description on French's website.

since we were unable to match all companies with valid stock return data from Compustat.

The first column of Table 9 summarizes the results over the short event window using the first specification. Companies issuing structured PIPEs experience returns of 5.3 percentage points lower than companies issuing traditional PIPEs during this 10-day event window. This return difference is highly statistically significant. Companies selling PIPEs to hedge funds perform 2.4 percentage points worse than companies that are not funded by hedge funds.

The second column adds control variables for the characteristics of the issuing company. This reduces the statistical significance of the coefficients on the various investor classes. However, companies issuing structured PIPEs continue to perform significantly worse in the short-run compared to companies issuing traditional PIPEs. Companies that have a larger market capitalization experience a less significant short-term gain than companies that are smaller. For example, a ten-fold increase in the market capitalization of a company reduces the abnormal short-term return by 3.4 percentage points. This result indicates that the market interprets PIPE issuances as a less favorable signal for larger companies. The coefficient on the ratio of the total proceeds to the market capitalization is positive, indicating that companies that are able to raise a relatively large amount of capital through PIPE transactions perform better. A ten percentage point increase in the proceeds relative to the market capitalization increases the short-term excess return by about 0.5 percentage points.

The third row adds interaction terms between the indicator variables for structured PIPEs and for the various investor categories. Adding these additional control variables does not change the main results significantly.

The last three columns summarize the regression results using the long-term excess return as the dependent variable. The indicator variable for structured deals enters significantly and confirms the results summarized in Section 4. Companies that receive funding from hedge funds underperform companies that receive funding from other investor classes by a substantial margin. For example, companies that receive funding

¹⁷ We also run performance regressions for the matched companies. The abnormal returns of these portfolios of matched companies are almost always insignificantly different from zero.

from hedge funds perform, on average, 12.2 percentage points worse during the year after the PIPE issuance. On the other hand, companies receiving funding from mutual funds perform very well.

These results are not affected substantially if we control for various accounting variables, as shown in the fifth column. Larger companies issuing PIPEs perform, on average, considerably worse than smaller companies. For example, a ten-fold increase in the market capitalization of a company reduces the abnormal long-term return by 14.7 percentage points. In addition, leverage and the book-to-market ratio have an important impact on the long-term performance, as companies with lower leverage and with lower book-to-market ratios perform relatively better.

Brav and Gompers (1997) show that venture capital backing adds value even after the initial public offering: venture-backed companies substantially outperform nonventure-backed firms in the public aftermarket. We confirm this result using PIPE companies. Companies that were initially venture-backed outperform companies that were not venture-backed.

The last column adds interaction effects between the indicator variables for structured PIPEs and for the various investor classifications. None of these interaction terms are statistically significant, indicating that the impact of investors for structured PIPEs is not significantly different from the impact for traditional PIPEs. However, the general conclusions of the model remain identical to the specification without interaction terms. By controlling for investor, structure and accounting characteristics, we are able to partially resolve the puzzle originally raised by Hertz et al. (2002) of the contradiction between short-term gains of a PIPE issuance followed by long term losses. We find that negative returns (short and long-term) are primarily associated with structured PIPEs, hedge funds, and larger issuing firms.

7. Discussion

Our results indicate that the identity of the investor matters for the short and long-term performance of companies issuing PIPEs. The interesting question to be considered is the causal link between investor and performance.

As previously mentioned, Hillion and Vermaelen (2003) hypothesize that floating convertible debt, a structured PIPE, is a faulty contract due to the incentives for investors to manipulate the price downwards to receive a higher percentage of the firm upon conversion. Our finding of a negative association between structured PIPEs and long-term performance is consistent with their hypothesis. This conclusion is further strengthened by the fact that hedge funds are the major investors of structured PIPEs, as hedge funds are known to have few restrictions on short-selling and to frequently make use of such strategies. It is plausible that short-selling pressure by hedge funds decreases stock prices in the short-term.¹⁸

We also show that the identity of the investor has an important impact on the short- and long-term performance of companies issuing traditional PIPEs. Our finding that hedge funds are also associated with long-term declines in traditional PIPEs indicates that hedge funds might also take advantage of alternative security structures. Hedge funds might also want to take short positions in the common stocks of a company issuing traditional PIPEs to mitigate their risk exposure and to enable them to benefit if stock prices increase or decrease. For example, an investor might invest in a company through a fixed convertible security and simultaneously short-sell the common stocks of the company. If the stock price increases, then the investor will convert the security into common stocks and close out the short position. On the other hand, if the stock price declines, then the investor would benefit from the short position. Thus, a hedged investor might actually gain from stock price declines. Similarly, a hedge fund investor might want to purchase a common stock PIPE and simultaneously short-sell the underlying common stocks of the issuing company. This allows the investor to capture the initial discount of the PIPE security and to effectively eliminate the stock price risk.

An alternative hypothesis is that PIPEs are securities of last resort for troubled firms. At the time of the closing of the PIPE, the market may not have been fully aware of the troubled state of the issuing firm. Subsequently, as the market becomes informed prices might drop. Hedge funds are ideally suited to be investors of last resort as they are not very restricted in establishing short positions to hedge any downside risk. We find

¹⁸ This result is similar to Barclay and Litzenberger's (1988) suggestion that pre-issue price drops of companies issuing seasoned equity offerings due to short sales. Gerard and Nanda (1993) investigate in a

support for this hypothesis as PIPEs bought by hedge funds tend to have more negative accounting characteristics in the year preceding issuance and these characteristics are weakly associated with negative long run returns. However, in Table 9 we find that the negative coefficient on the hedge fund factor remains significant after controlling for accounting ratios. It is true that the information set of a PIPE investor extends beyond the five historic accounting ratios used in our analysis. However, in unreported results, the negative and significant coefficient on the hedge fund factor is robust to alternative accounting ratios as well as to controls for pre-issuing stock price performance.

However, one surprising result remains the slow stock price adjustment after the PIPE issuance. We would anticipate a market correction to occur at the time of the announcement of the security structure of the investor composition. One explanation for our results could be a slow release of information of the security structure and the investor composition. However, there are several reasons to believe this is not the case. For one, PIPEs are regulated by the SEC and are associated with both security filing requirements and Form 8-K disclosure following a sale. In particular, Form 8-K requires filing within 15 calendar days. In addition, in unreported results we looked at abnormal returns between 100 and 250 trading days after the PIPE issuance. We find very similar results for these regressions as in our base regressions. Hedge fund investors continue to have a negative and significant association with long-run returns for firms issuing PIPE and mutual funds continue to have a positive and significant relationship. While we are unable to conclusively separate between our two hypotheses, both hypotheses indicate a certain amount of market irrationality to explain the long-term declines.

8. Conclusions

This paper discusses the short- and long-term performance of companies issuing Private Investments in Public Equity. We show that these companies under-perform comparable firms in the two years following the closing of the PIPE transactions. The performance is particularly poor for companies that issue structured PIPEs.

We find that firms in our sample have significant need for external capital because of poor operating performance and large capital and research and development

theoretical model trading and market manipulation around seasoned equity offerings.

expenses. There is also evidence indicating that these firms have limited financing options complicated by high degrees of asymmetric information. These results support the hypothesis that PIPEs are a security of last resort for troubled firms. While the original shareholders of companies issuing PIPEs tend to lose in the long run, specific security features of PIPEs, such as discounts, favorable conversion ratios, and re-pricing rights, limit the potential losses to the new investors.

We find that hedge funds are the dominant investor class in structured PIPEs. Hedge funds might have an incentive to manipulate share prices in the short-run, resulting in greater dilution and permanent stock price declines for firms issuing structured PIPEs, as previously described by Hillion and Vermaelen (2003). The hypothesis that structured PIPEs are a faulty contract is also supported by the fact that the issuance of structured PIPEs has declined significantly over our sample period, indicating that firms learned gradually about the potential problems of raising capital through structured PIPEs.

We further find that hedge funds are associated with long term declines in firms issuing traditional PIPEs with fixed prices. These results are consistent with two hypotheses. Hedge funds could be investors of last resort for troubled firms or could be destabilizing investors.

Appendix A: Security Structure

This appendix describes the various PIPE securities in more detail and gives an example of a floating convertible PIPE.

Common Stock PIPEs

The most basic PIPE security is a common stock placement, where a fixed number of shares are issued and sold at a predetermined discount or premium to the market price. Common stock PIPEs sometimes include warrants that let the investor purchase additional shares at a predetermined price during a specific time period.

Common Stock PIPEs – Shelf Sale

A small number of PIPEs are shelf sales of common stocks, which are sales of a company's common stock from an existing shelf registration statement. The registration allows the company to sell the securities over a period of time.

Fixed Convertible PIPEs

Fixed convertible PIPEs are either specified as convertible preferred stock or convertible debt. Preferred stock represents equity ownership that is ranked higher than common stock. In case of bankruptcy or liquidation, the preferred stockholders would be paid before the common stockholders. Convertible debt is a loan obligation of the company that ranks higher than any equity securities. Fixed convertibles yield a current return through interest or dividend payments and can be converted by the investors into a fixed number of shares of the company's common stock at a predetermined ratio. The implied fixed conversion price is usually above the current market price. Investors in fixed convertibles exchange their securities for common stocks if the stock price is sufficiently high on the conversion date.

Floating Convertible PIPEs

Floating convertibles have a variable conversion price that is based on future market prices of the common stock after the issuance but before the time of conversion. This feature protects the investor if the price of the common stock changes after the PIPE

deal is closed, because the investor will receive increasing numbers of shares if stock prices decrease. Floating convertible PIPEs are either specified as convertible preferred stock or convertible debt. Floating convertibles often include caps and floors which limit the possible range of conversion prices.

Reset Convertible PIPEs

Reset convertibles have a fixed conversion price that is subject to a number of resets at specific times after following the closing date. At the time of each of the resets, the fixed conversion price is adjusted as a percentage of the current market price and then remains fixed at this new price until the next reset date.

Common Stock Reset PIPEs

A small number of common stock private placements are classified as common stock reset. These deals include repricing rights, which allow the investor to receive additional shares of common stocks if the market price decreases after the closing date. The repricing rights clause functions very similarly to a floating convertible in that the number of shares issuable can change every day. Additionally, there may be a limit on the number of shares which are issued pursuant to the repricing rights.

Structured Equity Line PIPEs

A structured equity line is an agreement that requires the investor to purchase a predetermined value of the company's common stock over a certain period of time. The price of the stock is usually determined as an average of the closing price during a pre-specified period in the future minus a fixed discount.

Example of Floating Convertible PIPE

Individual PIPE deals can be very complex and it is insightful to analyze one example of a structured PIPE in more detail. Sedona Corporation, an internet-application software company, raised, on November 22, 2000, \$2.5 million in a floating convertible debenture. Rhino Advisors, a hedge fund, was the only investor in this PIPE. The convertible debt had a term of 36 months and an interest rate of 5 percent. The debt was

convertible during the first 120 days at a fixed conversion price. Beginning 120 days after the closing date, the debentures were convertible at the variable price only, which was defined as 85 percent of the volume-weighted average price of the company's common stock during a five day look-back window immediately preceding the conversion. In addition, the investor of the deal also received 400,000 out-of-the-money warrants with a maturity of 36 months.¹⁹

Thus, if the stock price of the company increased sufficiently immediately after the close, the investor could acquire shares at a discounted price by converting at the fixed conversion price during the first 120 days. On the other hand, if the stock price decreased, then the investor could acquire stocks at a discount relative to the average prices during the look-back window by converting at the floating conversion price after waiting for 120 days. The number of stocks the investor receives after converting increases as the conversion price falls.

We have suggested that there is an incentive for large investors with means to manipulate the stock price during the time period when conversion prices are determined. For example, by short selling these thinly traded stocks during the look-back window, PIPE investors might depress stock prices, resulting in more favorable conversion ratios. Regarding this example, the U.S. Securities and Exchange Commission settled, on February 27, 2003, a civil action against Rhino Advisors "for directing a series of manipulative short sales of Sedona Corp. stock that contributed to the decline in price of Sedona's stock." It is interesting to note that the SEC investigated this case, because the purchase agreement for the debenture expressly prohibited the investor from short-selling shares of Sedona's stock while the debenture remained outstanding.²⁰

Appendix B: Estimation Methodology

This section explains the methodology used to perform the event study in Section 4. First, we download at the end of each calendar year from CRSP the SIC codes and the market capitalizations of all the common stocks that are not closed-end funds, ADRs, or REITs. We merge this data set with the corresponding book-to-market ratios from

¹⁹ These detailed deal specifications were obtained from <http://www.sagientresearch.com>.

Compustat. For companies with fiscal-year-ends before October, we use the book value at the end of the current fiscal year and for companies with fiscal-year-ends after September, we use the book values at the end of the previous fiscal year. Thus, the book values at the end of each calendar year are lagged by at least three months to allow some time delay for the publication of the accounting values after the end of the fiscal year.

Second, we match companies according to their industry classification, size, and book-to-market ratio. We classify all the companies into 48 industries according to the SIC codes, as described in Fama and French (1997).²¹ We rank the companies in each of these 48 industries by their market capitalization and their book-to-market ratio. We match each company to another company in the same industry such that the sum of the absolute deviations of the size and the book-to-market ranks is smallest. If either the book or the market values are missing, then we match the company to another company in the same industry group with a missing book or market value.²²

Third, we compute the daily buy-and-hold returns for all companies in our sample during a 1,000 trading day window around the closing date of the PIPE transaction. If the returns for a company that issues a PIPE are not available in CRSP, we set the returns equal to the returns of the matched companies. This avoids the introduction of a delisting bias, because companies that are delisted perform, on average, poorly before delisting.²³ If the holding period returns for a matched company are not available in CRSP, then we replace this company with the company that had the next-closest match at the end of the calendar year prior to the closing date of the PIPE.

Fourth, we compare these average returns for different PIPE deals over various sample periods. The abnormal return is defined as the difference between the buy-and-hold return of the PIPE company and the buy-and-hold return of the matched company.

²⁰ See the announcement on <http://www.sec.gov/news/press/2003-26.htm>. Most structured PIPEs in our database do not explicitly prohibit short selling.

²¹ The industry classification can be obtained from Kenneth French's web site: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library.

²² Our qualitative results are not affected if we match our companies at the end of each month instead. We chose annual matching to facilitate our bootstrap simulations.

²³ A relatively large number of our PIPE companies are delisted during the two years after the closing of the PIPE. For example, 8.5 percent of the companies delist within the first year after the PIPE security is issued.

Finally, we run bootstrap simulations to determine the statistical significance of the results. In each bootstrap simulation, we pick for each actual company that issues a PIPE a random company. The random company is selected from all the common stocks in the CRSP database that have available data at the end of December of the year prior to the PIPE deal and for all the shares that are classified as common stock.

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Figure 1: Payoff Patterns and Dilution of Three Basic PIPE Securities

This figure depicts the payoffs and the number of shares issued by common stock, fixed convertible, and floating convertible PIPEs.

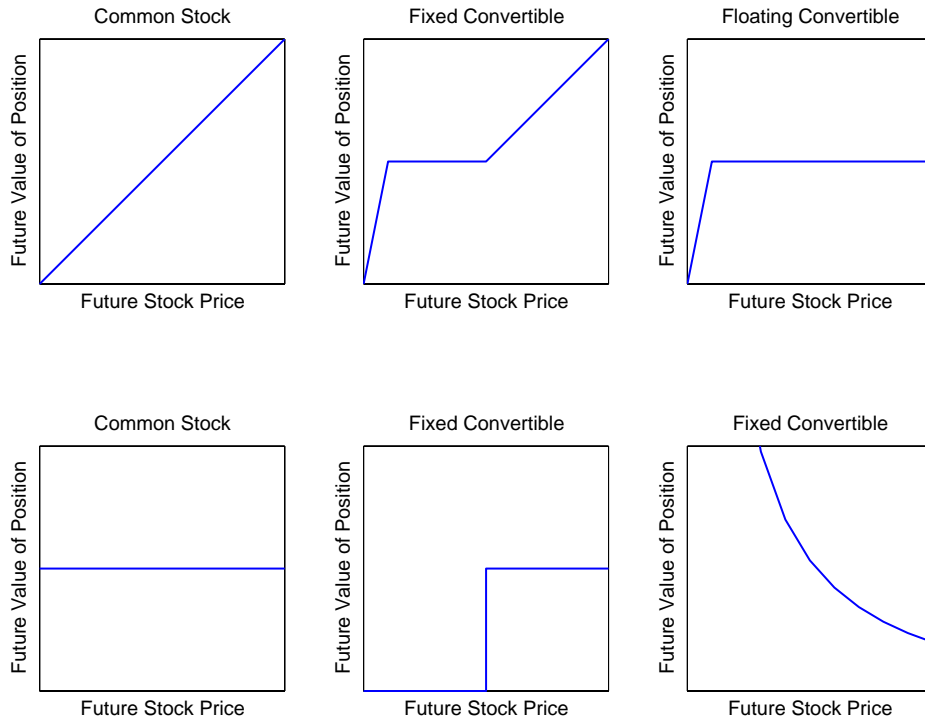


Figure 2: Abnormal Performance of Companies Issuing PIPEs by Security Type

This figure depicts the average abnormal buy-and-hold return of companies that issue traditional PIPEs and structured PIPEs.

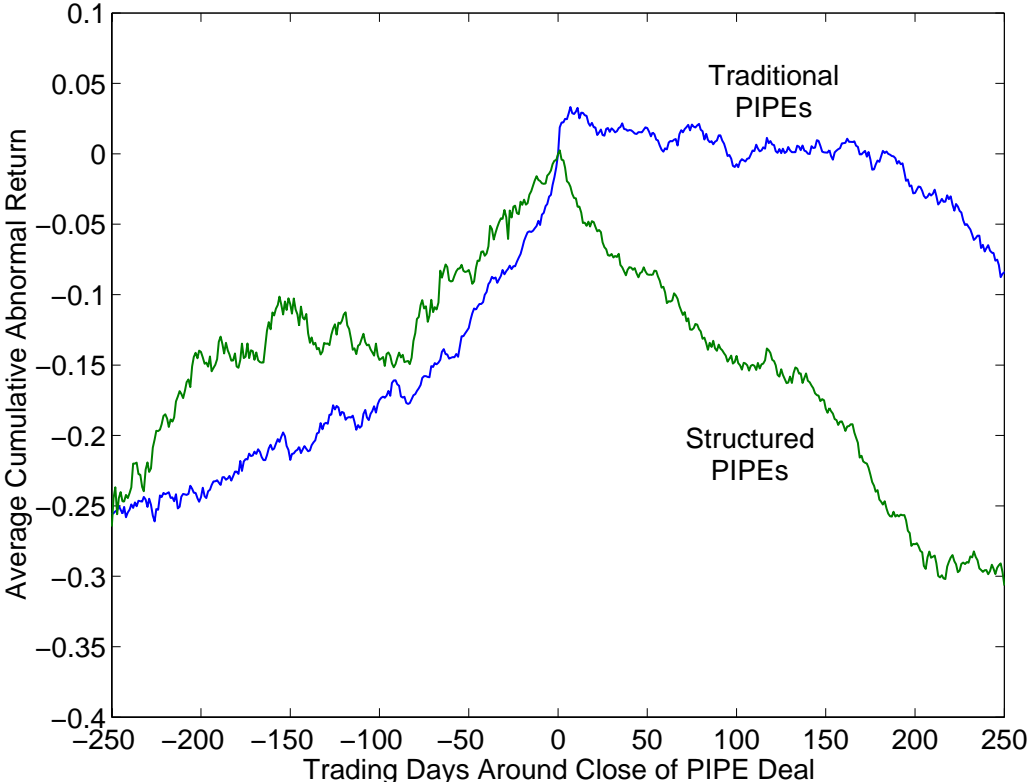


Figure 3: Cumulative Probability Functions of Companies Issuing PIPEs by Security Type

This figure depicts the cumulative probability function of the buy-and-hold abnormal returns of companies that issue common stock PIPEs, fixed convertibles, and structured PIPEs. The buy-and-hold returns are computed over the 250 trading days following the close of the PIPE deals. The Kolmogorov-Smirnov test of the equality of the two distributions is rejected at any conventional confidence level.

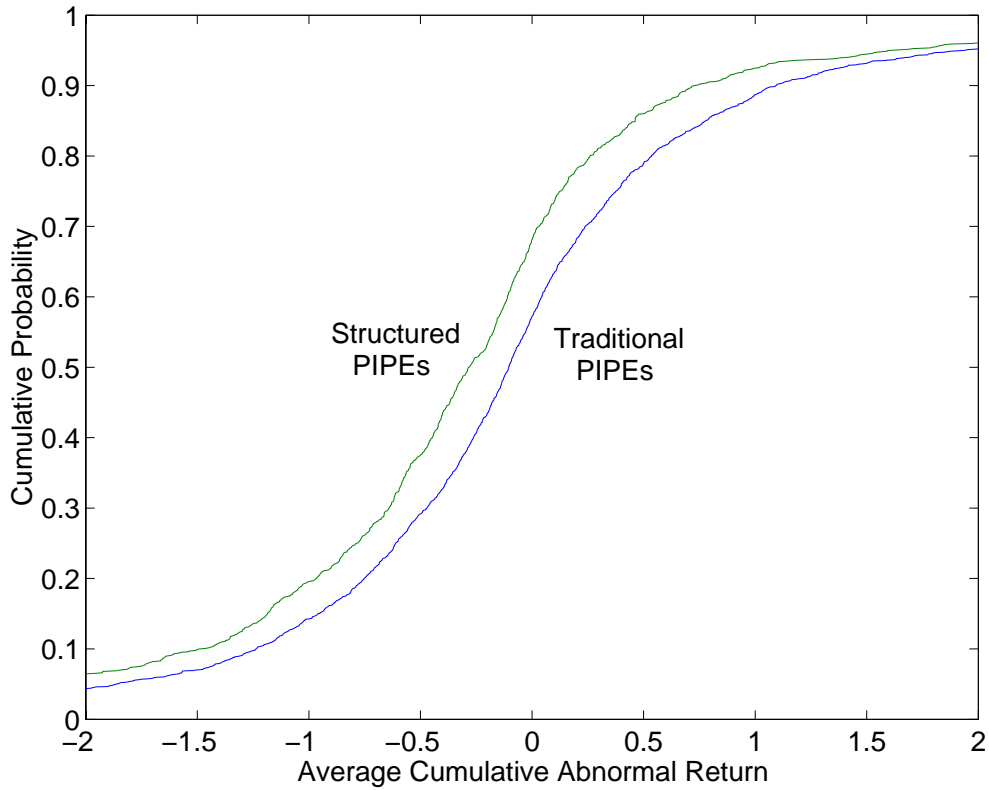


Table 1: Characteristics of PIPE Transactions

This table summarizes the characteristics of PIPE transactions.

	Total	Traditional PIPEs	Structured PIPEs
Number of Transactions	5,244	3,585	1,659
Total Capital Raised (in Millions)	76,871	65,240	11,631
Mean Capital Raised (in Millions)	14.66	18.20	7.01
Median Capital Raised (in Millions)	4.50	5.00	3.30
Mean Market Value (in Millions)	181.70	217.36	104.63
Median Market Value (in Millions)	50.03	52.93	43.63
Mean Ratio of Capital Raised to Market Value (in Percent)	20.92	22.84	16.76
Median Ratio of Capital Raised to Market Value (in Percent)	9.93	10.81	8.54
Mean Number of Investors per Deal	4.45	5.02	3.23
Median Number of Investors per Deal	1	2	1

Table 2: Total Capital Raised by Various Investor Classes

This table summarizes the composition of the investors, the industry, and the exchange classification of companies issuing PIPEs.

	All PIPEs	Traditional PIPEs	Structured PIPEs
Total Capital Raised (in Millions \$)	76,871	65,240	11,631
Hedge Funds	15,199	8,158	7,041
Corporations	10,744	10,262	482
Mutual Funds and Institutional Advisors	10,562	10,309	253
Venture Capital	7,326	6,767	559
Buyout Firm and Private Equity	7,176	7,107	69
Various Individual Investors	3,843	3,393	450
Brokers and Dealers	3,777	3,201	576
Banks	1,351	1,099	262
Insurance Companies	1,255	1,176	79
Pension Funds	563	554	9
Charitable, Educational, and Family Trusts	342	324	18
Various Unknown Institutional Investors	14,372	12,547	1,825

Table 3: Characteristics of PIPE Companies

Panel A compares the median accounting ratios of firms which issued PIPEs using Compustat data. Medians are reported to compensate for the presence of skew in the data. All reported numbers are sampled from the preceding fiscal year-end report. Panel B compares the activity of security issuances and whether the PIPE companies were venture capital backed. The data are taken from SDC.

	All PIPEs	Traditional PIPEs	Structured PIPEs
Panel A: Accounting Measures			
Total Assets (Median, in Million \$)	24.66	28.71	19.42
Market-adjusted Leverage (Median)	0.17	0.18	0.15
Book-to-Market Ratio (Median)	0.23	0.25	0.19
Return on Equity (Median, in Percent)	-50.80	-45.26	-62.91
Proportion of Firms with Positive Operating Profit (in Percent)	23	25	18
Capital Expenditures and Research & Development Divided by Total Assets (Median)	0.30	0.30	0.29
Panel B: Security Issuance Activity			
Probability of Being Venture Capital-Backed (in Percent)	47.72	50.20	41.00
Proportion of Firms that Issued Public Debt in the Year of the PIPE Transaction (in Percent)	0.20	0.29	0
Proportion of Firms that Issued Public Debt in a Three-Year Window around the PIPE Transaction (in Percent)	0.51	0.72	0
Proportion of Firms that Issued Public Equity in the Year of the PIPE Transaction (in Percent)	3.16	3.55	2.19
Proportion of Firms that Issued Public Equity in a Three-Year Window around the PIPE Transaction (in Percent)	9.30	10.21	7.09

Table 4: Returns to Common Stocks of Companies that issue PIPEs

This table summarizes the mean abnormal returns of the common stocks of companies issuing PIPEs. The returns are expressed in percent. P-values are computed using bootstrap simulations and are summarized in brackets. ‘*’, ‘**’, and ‘***’ denote estimates that are statistically different from zero at the 10, 5, and 1 percent confidence levels.

Trading Days Around Closing	All PIPEs	Traditional PIPEs	Structured PIPEs	Difference between Structured and Traditional PIPEs
Number of PIPE Transactions	3,840	2,643	1,197	
[-500, -251]	3.53 [0.224]	5.05 [0.118]	0.18 [0.894]	-4.87 [0.256]
[-250, -101]	9.63*** [0.000]	8.30*** [0.000]	12.55*** [0.002]	4.25 [0.168]
[-100, -6]	13.96*** [0.000]	14.42*** [0.000]	12.94*** [0.000]	-1.47 [0.522]
[-5, 5]	3.66*** [0.000]	5.57*** [0.000]	-0.52 [0.368]	-6.09*** [0.000]
[6, 100]	-6.97*** [0.000]	-3.89*** [0.008]	-13.45*** [0.000]	-9.56*** [0.000]
[101, 250]	-12.80*** [0.000]	-8.42*** [0.000]	-21.07*** [0.000]	-12.64*** [0.000]
[251, 500]	-10.26** [0.030]	-11.49** [0.024]	-8.47* [0.076]	3.02 [0.554]

Table 5: Abnormal Returns of Companies issuing PIPEs by Investor Type

This table summarizes the mean abnormal returns of the common stocks of companies issuing PIPEs by the major investors in the PIPE securities. P-values are computed using bootstrap simulations and are summarized in brackets. The mean returns are expressed in percent. ‘*’, ‘**’, and ‘***’ denote estimates that are statistically different from zero at the 10, 5, and 1 percent confidence levels.

Panel A: All PIPEs

Security	Number of PIPEs	Pre-Close Abnormal Return [-250, -6]	Short-Term Abnormal Return [-5, 5]	Post-Close Abnormal Return [6, 250]
All Investors	3,840	23.22*** [0.000]	3.66*** [0.000]	-16.86*** [0.000]
Hedge Funds	1,838	34.35*** [0.000]	1.45*** [0.012]	-20.95*** [0.000]
Corporations	328	7.48* [0.078]	7.07*** [0.000]	-15.24*** [0.006]
Mutual Funds and Institutional Advisors	558	45.18*** [0.000]	3.85*** [0.000]	1.70 [0.336]
Venture Capital and Private Equity Funds	539	6.35 [0.424]	8.86*** [0.000]	-2.99 [0.956]

Panel B: Traditional PIPEs

Security	Number of PIPEs	Pre-Close Abnormal Return [-250, -6]	Short-Term Abnormal Return [-5, 5]	Post-Close Abnormal Return [6, 250]
All Investors	2,643	24.17*** [0.000]	5.57*** [0.000]	-10.15*** [0.000]
Hedge Funds	998	43.60*** [0.000]	3.64*** [0.000]	-12.89*** [0.000]
Corporations	295	10.02 [0.108]	7.75*** [0.000]	-16.07*** [0.004]
Mutual Funds and Institutional Advisors	516	49.42*** [0.000]	4.46*** [0.000]	4.03 [0.800]
Venture Capital and Private Equity Funds	432	1.56 [0.700]	10.76*** [0.000]	2.41 [0.422]

Panel C: Structured PIPEs

Security	Number of PIPEs	Pre-Close Abnormal Return [-250, -6]	Short-Term Abnormal Return [-5, 5]	Post-Close Abnormal Return [6, 250]
All Investors	1,197	21.14*** [0.000]	-0.52 [0.368]	-29.53*** [0.000]
Hedge Funds	840	23.37*** [0.000]	-1.14* [0.064]	-28.85*** [0.000]
Corporations	33	-15.21 [0.250]	1.03 [0.658]	-8.98 [0.476]
Mutual Funds and Institutional Advisors	42	-6.90 [0.654]	-3.63 [0.167]	-23.08** [0.042]
Venture Capital and Private Equity Funds	107	25.71** [0.020]	1.23 [0.452]	-21.87*** [0.008]

Table 6: Abnormal Returns of Companies issuing PIPEs by Detailed Security Type

This table summarizes the mean abnormal returns of the common stocks of companies issuing PIPEs by the detailed security type. The mean returns are expressed in percent. P-values are computed using bootstrap simulations and are summarized in brackets. ‘*’, ‘**’, and ‘***’ denote estimates that are statistically different from zero at the 10, 5, and 1 percent confidence levels.

Panel A: Traditional PIPEs

Security	Number of PIPEs	Pre-Close Abnormal Return [-250, -6]	Short-Term Abnormal Return [-5, 5]	Post-Close Abnormal Return [6, 250]
All Traditional PIPEs	2,643	24.17*** [0.000]	5.57*** [0.000]	-10.15*** [0.000]
Common Stock	1,641	36.96*** [0.000]	5.84*** [0.000]	-10.99*** [0.000]
Common Stock – Shelf Sale	125	-0.46 [0.942]	-0.48 [0.748]	-16.54 [0.162]
Fixed Convertible Preferred Stock	536	-1.14 [0.612]	8.01*** [0.000]	-6.87* [0.098]
Fixed Convertible Debt	341	11.39** [0.014]	2.63*** [0.010]	-9.53* [0.056]

Panel B: Structured PIPEs

Security	Number of PIPEs	Pre-Close Abnormal Return [-250, -6]	Short-Term Abnormal Return [-5, 5]	Post-Close Abnormal Return [6, 250]
All Structured PIPEs	1,197	21.14*** [0.000]	-0.52 [0.368]	-29.53*** [0.000]
Common Stock – Reset	89	91.97*** [0.002]	0.54 [0.830]	-47.86*** [0.002]
Floating Convertible Preferred Stock	524	24.38** [0.000]	-0.42 [0.642]	-35.89*** [0.000]
Floating Convertible Debt	277	1.21 [0.878]	0.03 [0.950]	-20.83*** [0.000]
Reset Convertible Preferred Stock	82	36.91** [0.012]	0.51 [0.816]	-12.38 [0.160]
Reset Convertible Debt	46	-9.04 [0.396]	0.15 [0.968]	-3.82 [0.758]
Structured Equity Lines	179	7.81 [0.340]	-2.85* [0.064]	-27.45*** [0.000]

Table 7: Abnormal Returns of Companies issuing PIPEs for Two Sub-Periods

This table summarizes the mean abnormal returns of the common stocks of companies issuing PIPEs for two subperiods. The returns are expressed in percent. P-values are computed using bootstrap simulations and are summarized in brackets. ‘*’, ‘**’, and ‘***’ denote abnormal returns that are statistically different from zero at the 10, 5, and 1 percent confidence levels.

Panel A: First Sub-Period (1995-1999)

Trading Days Around Closing	All PIPEs	Traditional PIPEs	Structured PIPEs	Difference between Structured and Traditional PIPEs
Number of PIPE Transactions	1,726	935	791	
[-500, -251]	-3.29* [0.082]	-1.46 [0.464]	-5.44* [0.084]	-3.98 [0.326]
[-250, -101]	11.15*** [0.000]	16.49*** [0.000]	4.84* [0.096]	-11.64*** [0.002]
[-100, -6]	16.11*** [0.000]	18.85*** [0.000]	12.87*** [0.000]	-5.98** [0.032]
[-5, 5]	3.97*** [0.000]	6.06*** [0.000]	1.50** [0.016]	-4.56*** [0.000]
[6, 100]	-1.44 [0.450]	5.45** [0.040]	-9.59*** [0.000]	-15.05*** [0.000]
[101, 250]	-7.07*** [0.004]	2.25 [0.526]	-18.09*** [0.000]	-20.34*** [0.000]
[251, 500]	-7.24* [0.072]	-8.46* [0.060]	-5.80 [0.218]	2.65 [0.724]

Panel B: Second Sub-Period (2000-2002)

Trading Days Around Closing	All PIPEs	Traditional PIPEs	Structured PIPEs	Difference between Structured and Traditional PIPEs
Number of PIPE Transactions	2,098	1,134	404	
[-500, -251]	9.09* [0.052]	8.61* [0.066]	11.13 [0.182]	2.52 [0.798]
[-250, -101]	8.38*** [0.004]	3.82 [0.174]	27.55*** [0.002]	23.73*** [0.002]
[-100, -6]	12.20*** [0.000]	11.99*** [0.000]	13.09*** [0.004]	1.10 [0.828]
[-5, 5]	3.41*** [0.000]	5.29*** [0.000]	-4.49*** [0.000]	-9.78*** [0.000]
[6, 100]	-11.91*** [0.000]	-9.55*** [0.000]	-21.31*** [0.000]	-11.76*** [0.002]
[101, 250]	-19.17*** [0.000]	-16.68*** [0.000]	-27.91*** [0.000]	-11.23** [0.008]
[251, 500]	-16.69*** [0.000]	-16.68*** [0.000]	-17.67*** [0.006]	-0.99 [0.860]

Table 8: Returns of Portfolios of Companies that Issue PIPEs

This table summarizes the abnormal returns of a portfolio that includes all the stocks of companies which closed a PIPE deal in the last 250 trading days. The abnormal returns are expressed in basis points per day and the standard errors are summarized in parentheses. ‘*’, ‘**’, and ‘***’ denote abnormal returns that are statistically different from zero at the 10, 5, and 1 percent confidence levels.

Abnormal Performance (in Basis Points per Day)	All PIPEs	Traditional PIPEs	Structured PIPEs	Difference Structured and Traditional PIPEs
Abnormal Return above Market	-7.61** (3.16)	-2.47 (3.17)	-17.80*** (3.82)	-15.33*** (2.61)
CAPM Alpha	-7.50** (3.15)	-2.33 (3.15)	-17.75*** (3.82)	-15.42*** (2.60)
3-Factor Fama French Alpha	-7.43*** (2.35)	-2.45 (2.36)	-17.24*** (3.19)	-14.79*** (2.59)
4-Factor Model Alpha	-8.40*** (2.34)	-3.51 (2.35)	-17.81*** (3.19)	-14.32*** (2.60)

Table 9: Determinants of Short- and Long-Term Stock Performance

This table summarizes the results of regressing the excess returns during a 10-day event window around the closing of the deal (short-term returns) and the excess returns during the year following the closing of the deal (long-term returns) on the characteristics of the PIPE. The excess returns are computed by subtracting the value-weighted market return from the return of the individual stocks. All regressions include indicator variables for the months of the close of the deal and the industry sectors. The standard errors are robust and are also corrected for clustering of observations by the same company and are summarized in parentheses. ‘*’, ‘**’, and ‘***’ denote estimates that are statistically different from zero at the 10, 5, and 1 percent confidence levels.

Independent Variables	Short-Term Excess Return (in Percent, [-5, 5])			Long-Term Excess Return (in Percent, [6, 250])		
	Structured PIPE	-5.27*** (1.15)	-3.99*** (1.26)	-7.78*** (2.78)	-15.98*** (5.28)	-12.65** (5.75)
Hedge Fund Investor	-2.38** (0.94)	-1.50 (1.09)	-1.97 (1.29)	-12.22** (4.83)	-10.65** (5.44)	-13.23** (6.77)
Corporate Investor	2.10 (1.61)	3.09 (1.90)	3.16 (2.10)	-2.64 (6.19)	4.14 (6.53)	1.97 (7.20)
Mutual Fund Investor	-0.49 (1.09)	0.83 (1.22)	1.65 (1.35)	14.67** (6.88)	21.67*** (7.55)	23.08*** (8.27)
VC and PE Investor	2.31 (1.49)	0.79 (1.33)	1.06 (1.56)	2.84 (5.60)	1.25 (5.84)	4.10 (6.81)
Unidentified Investor	1.31 (0.99)	0.56 (1.10)	-0.84 (1.24)	-1.50 (4.90)	-8.91 (5.44)	-11.00 (6.83)
Hedge Fund Investor and Structured PIPE			3.18 (2.89)			8.72 (9.91)
Corporate Investor and Structured PIPE			-4.82 (4.89)			12.19 (17.23)
Mutual Fund Investor and Structured PIPE			-6.65** (2.94)			-9.10 (15.61)
VC and PE Investor and Structured PIPE			-0.06 (2.87)			-9.14 (11.49)
Unidentified Investor and Structured PIPE			6.41** (2.84)			8.04 (10.54)
Logarithm of Market Capitalization		-1.49*** (0.44)	-1.51*** (0.45)		-6.39*** (2.34)	-6.39*** (2.36)
Ratio of Proceeds to Market Capitalization		4.80** (2.27)	4.68** (2.26)		-0.34 (9.60)	-0.86 (9.86)
Leverage		1.26 (1.54)	1.17 (1.53)		24.91*** (7.84)	24.67*** (7.81)
Book-to-Market Ratio		2.15 (1.39)	2.21 (1.40)		22.36*** (6.07)	22.31*** (6.13)
Change in Working Capital		0.00 (0.38)	-0.00 (0.38)		3.08* (1.81)	3.04* (1.83)
Return on Equity		-0.00 (0.00)	-0.00 (0.00)		0.01 (0.01)	0.01 (0.01)
Venture Capital Funded		1.34 (1.34)	1.24 (1.34)		14.52** (7.13)	14.17** (7.09)
Number of Observations	3,825	3,115	3,115	3,280	2,655	2,655
R-Squared (in Percent)	8.49	9.92	10.20	13.32	17.45	17.52