WPS6484

Policy Research Working Paper 6484

The Role of Private Equity Investments in Public Firms

International Evidence

Sandeep Dahiya
Leora Klapper
Harini Parthasarathy
Dorothe Singer

The World Bank
Development Research Group
Finance and Private Sector Development Team
June 2013

Policy Research Working Paper 6484

Abstract

This paper compares the raising of external equity capital from private equity investors via private investments in public equity (PIPEs) and seasoned equity offerings (SEOs) using a sample of 456 PIPEs and 1,910 SEOs drawn from nine Asian countries. Consistent with the idea that insiders attempt to time the markets, firms issuing SEOs are preceded by a significantly higher run-up in stock price compared with those issuing PIPEs. This result is consistent with the undervaluation hypothesis that states that firms are more likely to issue PIPEs when they perceive their stock to be undervalued. In contrast to the United States where this undervaluation appears to be driven by financial distress and asymmetric information, the results show PIPE and SEO issuers to be statistically undistinguishable from each other. The announcement of a PIPE offering is on average associated with a significantly higher stock market reaction compared with an issue of a SEO, suggesting that private equity investors may play a certification or monitoring role. However, a comparison of PIPE issuers' operating performance and stock market returns in the pre-issue and the post-issue periods does not detect any significant improvements.

This paper is a product of the Finance and Private Sector Development Team, Development Research Group. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org.
The authors may be contacted at lklapper@worldbank.org.

The Role of Private Equity Investments in Public Firms: International Evidence

Sandeep Dahiya, Leora Klapper, Harini Parthasarathy and Dorothe Singer*

Keywords: Private Equity, SEOs, PIPE Securities, Emerging Markets, Asia

JEL Classification: G15, G32

Sector Board: Finance and Private Sector Development

---

* Dahiya: McDonough School of Business, Georgetown University, sd@georgetown.edu; Klapper: World Bank, lklapper@worldbank.org; Parthasarathy: The Office of the Comptroller of the Currency, Harini.Parthasarathy@occ.treas.gov; Singer: World Bank, dsinger@worldbank.org. We are grateful for research funding from the World Bank "Knowledge for Change Program." This paper's findings, interpretations, and conclusions are entirely those of the authors and do not necessarily represent the views of the World Bank, their Executive Directors, or the countries they represent.

"Wall Street, where information is transformed into cold, hard cash, is also a place where secrets have their own special currency. And while trading on inside information, to most people, means buying a stock ahead of news that sends it soaring…..The hot tips at issue in these cases involve an increasingly popular type of security called a ''private investment in public equity.''….

- *"Secrets in the Pipeline", Gretchen Morgenson and Jenny Anderson, Wall Street Journal, August 13, 2006*

1. Introduction

Private Investment in Public Equity (PIPE) has recently become an important equity selling mechanism and a viable alternative to Seasoned Equity Offering (SEO) for public firms to raise follow-on equity. In the US, PIPEs have surpassed SEOs both by number and amount of capital raised in recent years (Chen et al. 2010). PIPEs are also becoming popular in other parts of the world. PIPEs accounted for 56% to 75% of all follow-on equity issues by value in Canada, UK and Australia and 22% in Hong Kong, Special Administrative Region of China in 2008 (Haggard et al. 2009). Emerging markets, such as India and China, have also experienced a significant increase in PIPEs. Yet little is known about how firms in these countries make the choice between PIPEs and SEOs to raise equity capital.

PIPEs are a form of private placements that allow public firms to issue stocks privately to a small group of investors, without the need for public registration prior to the issue. Typical SEOs, in comparison, entail selling new shares to a large number of relatively uninformed retail investors. The literature has identified asymmetric information and access to public markets as an important determinant of this choice between PIPEs and SEOs (Chemmanur and Fulghieri, 1999, Gomes and Philips, 2012, Hertzel and Smith, 1993, and Wu 2004). Firms are more likely to issue PIPEs rather than SEOs when information asymmetry is high. For example, a firm

manager/owner (i.e. insiders) may have significant information about the future prospects of the firm but cannot reveal it either due to strategic reasons or due to lack of credibility. In such a situation potential investors (i.e. outsiders) may undervalue the firm. Most of the existing empirical work on the choice between those two equity issuing mechanisms has focused on US based firms (Hertzel and Smith, 1993 and Wu 2004).[1] A major contribution of our paper is to extend this analysis to firms based in developing countries. These firms are more likely to suffer from problems associated with asymmetric information that drive the choice between those two equity selling mechanisms.

Our paper empirically examines potential motivations of why certain firms choose to raise equity in the PIPE market rather than the traditional SEO market in nine developed and developing Asian countries. We use data from the Asian Venture Capital Journal (AVCJ) database that provides data on PIPE financing raised from Private Equity (PE) investors. While many other institutional investors also buy stakes in publicly listed companies in the PIPE market, PE firms are regarded as sophisticated investors who conduct rigorous screening before making their investments. Retail investors who buy equity in the SEO market are typically perceived to be uniformed with limited ability to obtain and process information about firms. The pronounced difference in investor sophistication across these two groups allows us to clearly test the impact of asymmetric information on issuance choice. By focusing on a single class of PIPE investors we also hope to reduce any regulatory variation that may exist across the different countries in our sample.

[1] The few studies looking at equity raising in international markets have focused largely on other developed countries. For example, Cronqvist and Nilsson (2005) examine the choice between private placement and rights offerings in Sweden. Carpentier and Suret (2010) describe the Canadian PIPE market while Haggard et al. (2009) examine separately the PIPE markets in Canada, Australia, Hong Kong, Speical Administrative Region of China and the UK.

To explore the firm's choice of equity raising mechanism, we first examine if the pre-issue stock price performance differs systematically across PIPE and SEO issuers. Any study of follow-on equity issuance needs to account for widely documented "market –timing" effect. Firms that undertake SEOs experience a significant run up in their share price immediately prior to the SEO announcement (see, for example, Asquith and Mullins, 1986, Jung et al. 1996, Loughran and Ritter, 1997, and Hovakimian et al. 2001). Baker and Wurgler (2002) argue that this pattern can be explained by managers attempting to time the market when issuing equity to benefit existing shareholders by selling overvalued equity. This argument has been supported by an anonymous survey of CFOs reported by Graham and Harvey (2001). Almost two-thirds of the CFOs admitted to being influenced in their equity issue decision by the prevailing share price of their firm. We extend the tests of such market timing to our sample of PIPE as well as SEO issuers.

Thus, we test if a "market-timing" effect exists for our sample of international issuers. We find that firms with poorer pre-issue stock market performance are more likely to issue PIPEs. In the 12 months before the issue date, the stock market return of SEO issuing firms is almost twice as large as that of PIPE issuing firms and firms with a stronger pre-issue stock market performance are more likely to issue equity via a SEO. Even though we find that SEO issuers have a significantly higher run-up preceding the issue, both SEO and PIPE issuers have a significant increase in stock price before the equity issue.

Next we test whether, compared to SEO issuing firms, PIPE issuing firms suffer from higher levels of asymmetric information and/or are more financially distressed. The literature on the US market suggests that both issues are present and that PIPEs in that sense present a "financing of last resort" for firms that may otherwise not have access to more traditional capital

raising alternatives. Our empirical analysis fails to find any evidence that suggests that issuers choosing PIPEs over SEOs have higher levels of asymmetric information or weaker operating performance. In fact, PIPE issuers in our sample are likely to have a stronger operating performance. This stands in sharp contrast to the US literature that finds PIPE issuers to be small, young, and financially distressed (Dai 2007, Brophy et al. 2009, Chaplinsky and Haushalter, 2010 and James 2012). Our results on lack of significance for asymmetric information are in contrast to Wu (2004) and Gomes and Phillips (2012) who provide empirical evidence that shows that the probability of private placement increases significantly as asymmetric information increases for US based firms.

We also examine if PE investors provide certification and monitoring benefits to PIPE issuers. We find that the announcement of a PIPE issue is, on average, associated with a significantly higher stock market reaction compared to an SEO issue announcement. This finding suggests that PE investors may play a certification and monitoring role (see Wruck 1989 and Hertzel and Smith, 1993)[2]. Our finding of a smaller but still significantly positive announcement effect for SEO issuances is consistent with positive announcement effects for SEOs in Japan (Cooney et al. 2003) and Hong Kong, Special Administrative Region of China (Wu et al. 2005) but in contrast to the US literature which has documented a significantly negative reaction.[3]

Finally, we compare the post-issue performance of PIPEs and SEOs. If PE investors do indeed provide significant monitoring services (Kaplan and Stromberg, 2009), PIPE-issuing firms should outperform those that issue SEOs. However, we fail to find any significant

[2] More recent literature suggests alternative explanations for the positive announcement effect. Barclay, Holderness, and Sheehan (2007) interpret the PIPE discount as compensation to investors for their implicit support of management entrenchment. Chakrabarty and Gantchev (2012) suggest that the positive announcement effect obtains because PIPE issuance improves the coordination ability of equity holders and facilitates negotiations of firm policy with debt-holders, reducing the firm's likelihood of default.

[3] Again, see Eckbo et al. (2007) for a comprehensive review.

improvement in either stock market or operating performance of PIPE issuers when we compare the pre- and post-issue periods. This finding suggests that the anticipated benefits from PE investors (as reflected in the positive announcement effect) may not actually materialize. Our results are similar to other papers on private placements such as Hertzel et al. (2002) and Carpentier et al. (2011). For instance, Hertzel et al. (2002) find that US firms have poor operating performance both before and after the private equity placement despite an abnormal positive announcement effect. They attribute this to investor over-optimism that does not put sufficient weight on the pre-issue performance of companies and overestimates the value private investors can bring to such firms. Carpentier et al. (2011) find using Canadian data on PIPES that such over-estimation is particularly prevalent within a sub-sample of small growth PIPE issuing firms. Our failure to find any significant improvement in the stock market performance is also consistent with other US studies. [4]

The remainder of the paper is organized as follows. The next section provides some background on the development of the PIPEs market and PE investors. Section 3 describes our data sources and sample selection and provides summary statistics. Section 4 presents our results. Section 5 concludes.

2. Background on PIPEs and Private Equity (PE) Investors

Private placements have become widely used in the US over the past two decades and more recently also outside the US. They include both traditional private placements and PIPEs. The

[4]For a detailed discussion and comprehensive review of post SEO stock price performance see Ritter (2003) and Eckbo et al. (2008). Chaplinsky and Haushalter (2010), Dai (2007) and Brophy et al. (2009) document significantly negative post-issue returns for PIPEs that vary by investor type, due to pre-issue discounts. Krishnamurthy et al. (2005) and Marciukaityte et al. (2005) also find evidence of poor post-issue performance by issuers of private placements.

main difference between them is that traditional private placements usually include restricted shares that prevent investors from selling their shares in the public market for a year or longer whereas the equity issued via a PIPE offering can be publicly traded once it is registered, typically within 90 days of registration. Thus, the registration process is the key to transforming what would otherwise be a private (non-liquid) asset into a publicly tradable asset. Moreover, the closing of the PIPE transaction need not wait for the registration to be complete; this feature makes PIPE a time-efficient mechanism for issuers to raise capital. While traditional private placements were the most common form of private placements in the US until the first half of the nineties, the PIPE market has grown tremendously since then, with PIPEs transactions accounting for the majority of private placements in recent years. Historically, hedge funds have been the primary investors in PIPEs in the US, but PE investors have recently become more active. According to Floros and Sapp (forthcoming), PE investors accounted for 12 percent of PIPE investments by value in 2008, up from about 6 percent or half that size in 2004. Not much is known yet about the investor base for this type of equity issue in other countries.

We define PE firms as a broad category comprised of traditional buy-out and venture capital funds, sovereign wealth funds, and private investment vehicles of international development organizations.[5] Typically, such funds are run by investment professionals who raise capital from large investors such as pension funds, endowments, and wealthy individuals and who follow an investment strategy of acquiring public or private companies. Over time PE firms focus on improving the operations of the firm, eventually selling them to generate a significant return on their original investment. Historically, PE investments were largely synonymous with

[5] A typical PE firm is organized as a partnership or a limited liability corporation (LLC). A typical PE fund has a "self-liquidating" structure with a fixed life of ten years. For most funds the first 5-6 years are devoted to searching and investing in a number of firms (portfolio companies). The remaining life of the fund is devoted to exiting these investments and to returning the capital and profits to LPs. See Kaplan and Stormberg (2009) for a more detailed discussion.

leveraged buy-outs (LBOs) that resulted in complete transfer of control to the PE investor. However, in recent years PE firms have also started to take minority equity stakes in already publicly-listed firms via PIPE transactions.

PE firms are usually credited with three potential value creating strategies. Kaplan and Stromberg (2009) define them as financial, governance and operational improvements. Financial engineering entails the use of higher levels of debt to create tax shields as well as to sharpen the incentives of the management team. Governance improvement is largely driven by providing a significantly larger share of equity to the operating management and through mitigation of agency problems via concentrated ownership. Operational improvement entails deploying significant industry-specific knowledge to create better-run organizations. Thus, unlike other institutional investors, PE firms are more likely to be involved in the day to day operations of the firms that they invest in. Successful PE investors are credited with the ability to source and screen investment ideas as well as the ability to monitor firms, especially those with poor corporate governance, using mechanisms such as board representation and active involvement in the strategic decisions of the firm.

3. Data and Summary Statistics

3.1 PIPE and SEO Sample

Our data on PE financed PIPE issues come from the Asian Venture Capital Journal (AVCJ) Database, a new electronic database that maintains information on private equity (PE), venture capital (VC), and mergers and acquisitions (M&A) transactions in Asia. We consider PIPEs from a set of nine countries, including Australia, China, Hong Kong, Special Administrative Region of China, India, Japan, Singapore, South Korea, Taiwan, China, and Thailand, all of which report at

least five PE financed PIPEs during the 2000-2009 period.[6] Our data on SEOs come from the Security Data Corporation's (SDC) New Issues Database on equity issues and covers the same countries and the same period as the PIPEs sample. Appendix A documents the sample selection process and filters applied to each database in detail.

While AVCJ and SDC provide transaction specific data such as the issue date and the amount raised, they do not provide accounting or stock price related information about the issuers. We match our sample of PIPEs and SEOs to the Worldscope database using SEDOL as the unique identifier to obtain accounting data and to the Datastream database to obtain stock return as well as trading volume data.[7] Datastream is also the source for country level stock returns. We extract data on the number of analysts covering the firm by matching the combined sample with the IBES database. Appendix B provides detailed definitions for each variable.

We focus on PIPEs and SEOs by industrial companies and exclude transactions by financial companies, insurance companies and real estate entities. To ensure that minimal accounting data is available for the firm in Worldscope, we only keep those transactions that have information available on sales, operating income, total debt, and market capitalization in the fiscal year immediately preceding the issue date. Finally, to make sure that we focus on economically meaningful transactions, we retain only those transactions for which the total proceeds from the equity issue are greater than one million US dollars (in 2008 constant US dollars).

[6] More countries are covered in the AVCJ database; however, only the nine countries in our sample have a non-negligible number of PIPE issues after we apply the sample filters described in Appendix A. The countries in AVCJ that we exclude are Malaysia, Philippines, Indonesia, New Zealand, Vietnam, Pakistan, Sri Lanka, and Macau.
[7] AVCJ does not report SEDOLs; thus, we hand-match the issuing firm name to firms covered in Worldscope. The SEDOL number associated with the firm is then assigned to the PIPE issuing firm. This SEDOL number is subsequently used for matching with the Datastream and Worldscope databases. The SDC New Issues Database, on the other hand, provides SEDOLs.

Our combined sample consists of 456 PIPE issues to PE firms and 1,910 SEO issues by industrial firms.[8] Figure 1 presents the calendar time distribution of the PIPE and SEO issues and illustrates the rise of PIPE financing over the sample period. The number of SEO issues is almost 20 times the number of PIPE issues in the year 2000. This ratio decreases to three SEOs per one PIPE in 2007, the year both PIPE and SEO issues reach a peak, before widening again to a ratio of about seven to one. Since these numbers report PIPE issues financed by PE firms only, the overall number of PIPEs is likely significantly higher than the numbers we report. Figure 1 also illustrates the recent decline in both SEOs as well as PIPEs. The decline in PE sponsored PIPE deals is especially dramatic. We speculate that this decline reflects the sharp decline in global PE investments following the financial crisis in the US.

3.2 Summary Statistics

Table 1 provides a breakdown of the sample in terms of the number of issues and proceeds for each country and over time. Overall, the sample consists of 456 PIPEs (US $ 21.3 billion in constant 2008 dollars) and 1,910 SEOs (US $ 102.4 billion in constant 2008 dollars). Both the PIPE and SEO market have grown over time in number of issues and volume over the 2000-2007 period with some reduction over the subsequent two years, the beginning of the global financial crisis. The distribution of issues in Table 1 shows substantial variation across countries. The three emerging markets in our sample, China, India and Thailand, account for over 40% of the overall PIPEs sample, both by number and issue volume. The ratio of PIPEs to SEOs in these three countries (129% by number of issues and 50% by issue volume) is also considerably higher than those in the other six countries with more developed stock markets (PIPE to SEO ratio is 15% by number of issues and 14% by volume).

[8] In our final sample of 456 PIPEs 82.02 % have a single investor, 94.74% have at most two investors and 97.59% have at most three investors. The maximum number of investors in our PIPE sample is eight.

We classify all issuers in our sample based on the Industrial Classification Benchmark Super Sector Code (ICBSSC). Table 2 reports the industry breakdown by equity issue type and there appear to be no distributional differences: Industrial goods and services sector firms are the most frequent PIPE issuers (89) as well as SEO issuers (454) followed by technology firms as the second most frequent group in both samples (64 PIPEs and 174 SEOs). Even though the industry distribution for the two samples is similar we control for industry effects in our regressions by including industry dummies.

Table 3 provides descriptive statistics of key issuer characteristics separately for PIPE and SEO issuers.[9] We report both mean and median values. While the average amount raised by PIPEs and SEOs is similar, the median issue proceeds are significantly higher for PIPEs. Both PIPE and SEO issuers are similar in size with average annual sales of $420 million. The distribution of firm size appears to be quite skewed as the median levels of sales is far lower for both PIPEs ($91 million) and SEOs ($80 million). The difference between mean and median net sales of the two samples is statistically insignificant. This suggests that issuer size may not play a big role in the choice between SEO and PIPE financing. This is a strikingly different finding compared to evidence from the US. For example, Chen et al. (2010) report that the book value of assets for SEO issuers is nearly six times larger than the book value of assets of PIPE issuers. Another contrasting feature is the relative profitability of PIPE issuers compared to SEO issuers in our sample. As mentioned earlier, evidence from the US suggests that PIPEs are issued by distressed firms which have few or no alternative funding options. In our sample, however, PIPE issuers appear to be more profitable than SEO issuers. Both the average and the median return on assets (ROA) are significantly higher for PIPE issuers than for SEO issuers and we find that,

[9] We winsorize our samples at the 5 percent and 95 percent levels to remove the effect of extreme outliers for all variables except issue proceed amount, number of analysts following the firm and fraction of firms with negative operating income.

compared to the PIPE sample, a significantly larger fraction of the SEO sample reports negative operating income for the fiscal year before the equity issue.

We also report mean and median values for the information asymmetry proxies we employ in our later tests in Table 3. The univariate analysis of these measures provides no evidence in support of the hypothesis that PIPE issuers suffer from higher levels of asymmetric information than SEO issuers and is at odds with the profile of PIPE issuers in the US (Dai, 2007, Brophy et al. 2009, Chen et al. 2010 and Gomes and Philips, 2012). Asset tangibility as measured by NPPE to Total Assets is significantly higher for PIPE issuers compared to SEO issuers. However, trading volume for an average PIPE issuer is lower than that of an average SEO issuer. PIPE and SEO issuers are statistically similar with regard to analyst coverage and market to book ratio. And finally, the age of PIPE issuers is marginally higher than that of SEO issuers.

Overall, the results of the univariate tests described in Tables 2 and 3 suggest that while PIPE and SEO issuers appear to be of similar size, from similar industries, and have similar levels of asymmetric information, there are differences in terms of their operating performance. PE financed PIPEs in Asia thus appear to bear little resemblance to similar financing in the US where PIPE issuers are commonly described as young, small and risky firms both in absolute terms and relative to SEO issuers. However, the statistics presented so far only explore the characteristics of PIPE and SEO issuing firms in a univariate way. In the next section we employ multivariate regression models to test more rigorously for differences between PIPE and SEO issuers. We also use event studies to study the stock market performance of firms pre- and post issue to examine whether there are significant differences by issue type.

4. Methodology and Results

4.1 *Does pre-issue stock price performance matter to the choice of equity issuance?*

A large body of empirical research finds that SEO issuers in the US experience significant stock price appreciation leading up to the announcement of a SEO.[10] Baker and Wurgler (2002) argue this is no coincidence as managers actively exploit such run-ups in stock price by issuing over-valued stock via a SEO and engage in "market-timing." On the other hand, Hertzel and Smith (1993) argue that firms opt for private placements when management perceives the firm's stock to be undervalued.

We examine whether a similar pattern in pre-issuance stock returns is observed in Asian firms. Following the approach described in Brophy et al. (2009) we calculate buy and hold returns over different event windows as defined below:

$$\text{Raw Return}_i \ (T_1, T_2) = \left(\prod_{t=T_1}^{T_2} (1 + r_{it}) \right) - 1 \qquad (1)$$

where *r* is the daily return of stock *i* at time *t*. We calculate the buy and hold raw returns for each issuer *i*, over three different event windows and then average raw returns over each window separately for PIPEs and SEOs. To strip out any confounding effect due to the broader stock market movements during the announcement period we also estimate market-adjusted Cumulative Abnormal Returns (CAR):

[10] See Ritter (2003) and Eckbo et al. (2007) for comprehensive reviews.

$$\text{Cumulative Abnormal Return}_i\ (T_1, T_2) = \left(\prod_{t=T_1}^{T_2} \frac{(1 + r_{it})}{(1 + r_{mt})} \right) - 1 \qquad (2)$$

where r_{mt} is the daily return for the home market stock index of the country in which the issuer is based. As with raw returns, we calculate the mean CAR separately for both the PIPE and SEO samples.

Figure 2 illustrates the growth of a hypothetical one dollar investment that is made 260 days before the day of the SEO or PIPE announcement and is held up until 10 days before the announcement date. For an average SEO issuer, the one dollar investment grows by more than 1.6 times while for the PIPE issuer it grows by roughly 1.4 times. Adjusting for market-wide returns reduces the buy and hold returns, however, the returns remain positive. This suggests that both SEO and PIPE issuers may be using a market timing strategy.

Table 4 provides the corresponding average raw and market adjusted buy and hold returns for 250, 120 and 55 day holding periods leading up to the PIPE or SEO issue. Similar to the patterns documented in the US, our SEO sample, on average, has a raw return of 71% and a CAR of 37.8% over the year (i.e. 250 trading days) preceding the issue announcement. The shorter pre-announcement periods of 120 days and 55 days also generate highly significant positive abnormal returns. PIPE issuers echo the broad pattern observed for SEOs with significant positive run-up in stock prices in the pre-announcement period. However, as already illustrated in Figure 2, the magnitude of the stock price increase is significantly smaller for the PIPE sample. For example, in the 55 day window SEO issuers generate a market adjusted excess return of almost 8.5% while the PIPE issuers experience an increase that is only a third as large (2.9%). Overall, our results confirm the market-timing of SEOs found in the US context and the

relatively stronger stock market performance of SEO compared to PIPE issuing firms, which have a weaker but still positive performance (Brophy et al. 2009 and Chen et al. 2010).

4.2 *Do PIPE issuers suffer from higher levels of asymmetric information?*

What firm characteristics may influence a firm's choice to raise equity capital from SEOs or from PE investors via a PIPE issue? The literature argues that firms with higher levels of asymmetric information are more likely to raise capital from a few sophisticated investors who have the ability to assess the true value of the firm and to whom the firm can credible communicate inside information. Wu (2004), Cronqvist and Nilsson (2005), Gomes and Phillips (2012), Brophy et al. (2009), Chen et al. (2010), and Chaplinsky and Haushalter (2010) all provide empirical evidence that shows that the probability of private placement in general and PIPEs in particular increases significantly as asymmetric information about a firm's value increases. We test whether firms issuing PIPEs to PE investors have higher levels of asymmetric information than SEO issuers for our sample of Asian firms. Specifically, we estimate the following probit model for our combined sample:

$$PIPE_i = \alpha + \beta_i\,(Asymmetric\ Information) + \gamma_i\,(Controls) + \varepsilon_i \qquad (3)$$

where the dependent variable equals one if the issuer chooses to use a PE sponsored PIPE and zero if the issuer chooses a SEO. Our variable of interest is *Asymmetric Information* which we capture in four different ways. Our first empirical proxy is the ratio of Net Plant, Property and Equipment (NPPE) to Total Assets which captures the idea of asset tangibility. Arguably firms with a higher NPPE to asset ratio face lower levels of asymmetric information as tangible assets

are easier to value. A complementary measure is R&D intensity. A large outlay on R&D implies significant investment in hard to value, proprietary assets. Firms with a high R&D to sales ratio are therefore considered to have higher levels of asymmetric information. Third, we employ the ratio of average daily trading volume divided by the total number of shares outstanding – a market microstructure measure of asymmetric information – which we refer to as Volume. Public firms that have a deep and liquid market for their stocks are considered to face lower levels of asymmetric information. Finally, there is a long tradition of using analyst following as a measure of information availability about a firm. Issuers that are covered by a large number of analysts are arguably less susceptible to problems of asymmetric information. *Controls* is a vector of firm and issue specific factors including amount issued, reported sales of the issuer, age of the issuer calculated as the time elapsed between the firm's IPO date and the date of equity issue announcement, pre-announcement period stock returns and market to book ratio. We also include year, industry and country fixed effects.

Our results in Table 5 indicate that none of the measures of asymmetric information have any explanatory power for the observed choice of equity raising mechanisms in our sample of firms. Unlike in the US, we thus find no evidence that higher levels of asymmetric information increase the likelihood of a PIPE issuance versus a SEO issuance. The only variable that is consistently significant among the firm- and issue-specific variables we include is the age of the firm at the time of the equity issue. We measure age in number of years from the date of the IPO to the date of the proposed equity issue. The marginal effect of 0.002 implies that holding all else constant at sample mean, a firm that is 10 years older has a two percent higher probability of issuing a PIPE versus a SEO. This finding is also different from the US where PIPE issuers tend to be younger and smaller than SEO issuers. Consistent with the earlier univariate results, we

find that a larger pre-issue stock return significantly reduces the probability of issuing PIPEs, or in other words, increases the probability of a SEO issue, across all specifications. An extra 1 percent pre-issue period stock return decreases the probability of choosing a PIPE by almost 2 percent, holding all else constant at the sample mean. While the issuer size by itself is not significant, once we include the pre-issue stock performance, the coefficient for size becomes significant and larger issuers are slightly more likely to choose to issue a PIPE.

Given that the literature argues that private investors and PE investors in particular would be especially apt at overcoming potential undervaluation due to asymmetric information it is surprising that we do not find any evidence that asymmetric information significantly influences the equity selling choice.

4.3 *Are PIPE issuers in greater financial distress than SEO issuers?*

All recent studies on the US PIPEs have reported that PIPE financing appears to be the financing of last resort (Dai 2007, Brophy et al. 2009, Chaplinsky and Haushalter, 2010 and James 2012), in addition to PIPEs being positively related to measures of asymmetric information. In sharp contrast to findings in the US, our univariate statistics in Table 3, however, suggest that PE-financed PIPEs in Asia are associated not only with profitable firms but moreover with more profitable firms compared to SEOs. However, those results do not control for other characteristics that may differ systematically across PIPE and SEO issuers. To more robustly test whether PIPE issuers are more financially constrained or in greater financial distress than SEO issuers, we estimate a probit model similar to the one estimated for Table 5:

$$PIPE_i = \alpha + \beta_i\,(Financial\ Health) + \gamma_i\,(Controls) + \varepsilon_i \qquad (4)$$

where the dependent variable is a dummy variable that equals one if the issue is a PIPE and zero if a SEO.

This time our variable of interest is *Financial Health* in the fiscal year immediately preceding the year of the equity issue which we proxy with firm profitability. As in our earlier specifications, we control for a number of firm and issue specific factors including amount issued, reported sales of the issuer and pre-announcement period stock returns as well as year, industry and country fixed effects.

Our results in Table 6 suggest that PIPE issues to PE firms are significantly more likely to be done by firms that are less financially distressed, i.e. firms that have a higher profitability compared to SEO issuers, even after controlling for a number of firm- and issue specific characteristics. While a dummy for negative operating income in the fiscal year prior to the issue does not turn up significant, a higher return on assets (ROA) does make it more likely that a firm issues equity via PIPE rather than a SEO. A marginal effect of 0.082 implies that if all else is held constant at the sample mean, a one percent increase in ROA in the year before the issue increases the likelihood of a firm choosing a PIPE over a SEO by 8.2%. The result holds when we use an alternative form of ROA in the last column. There we adjust the regular ROA for the median ROA of firms in the same industry, country, and year as that of the issuer. Since this is an alternative approach to control for year, industry and country fixed effects we do not include the dummy variables in this specification.

Similarly to our finding regarding the lack of asymmetric information being a deciding factor for the choice of equity issue in the previous section, the lack of financial stress for PIPE issuing firms stands in sharp contrast to evidence from the US. Indeed, we find PIPE issuing firms to be less financially distressed as compared to SEO issuers. While the lack of financial

distress of the PIPE issuing firms in our sample might be a characteristic of PIPE issuing firms in Asia, the fact that our analysis concentrates on PE financed PIPEs may also play a role. We are not aware of a study that directly contrasts PE investors with other types of investors but the literature documents significant differences in profitability of PIPE issuing firms by investor identity (Dai 2007, Brophy et al. 2009 and Chaplinsky and Haushalter, 2010).

4.4 Are PE funds perceived to possess certification or monitoring abilities?

Hertzel and Smith (1993) report a significant positive announcement effect for private equity placements by US firms and argue that their findings suggest a certification role played by private investors. Studying announcement effects of PIPEs by investor identity, Brophy et al. (2009) document significant positive announcement returns for PIPE investments issued to non-hedge fund investors but insignificant returns to PIPEs issued to the hedge fund investors. Other papers such as Barclay, Holderness, and Sheehan (2007) and Chakrabarty and Gantchev (2012) also document the positive announcement effect in the US. Issuers of SEOs, on the other hand, generally experience a negative announcement effect in the US, though positive announcement effects have been documented for Hong Kong, Special Administrative Region of China (Wu et al. 2005) and Japan (Cooney et al. 2003).

We test in this section whether the patterns of announcement effects across the two different types of follow-on equity financing established in the literature can also be found in our sample of Asian firms by calculating raw buy and hold returns as well as CARs around the announcement date of the PIPE and SEO issues using the methodology from equations 1 and 2 above. Figure 3 illustrates the change in value of a notional one dollar invested 10 days before the issue announcement and held till 10 days after the announcement. On average, a one dollar investment grows to one dollar and eight cents for PIPE issuers. A similar investment in a SEOs

issuer only grows to one dollar and five cents. This difference persists even after adjusting for market-wide stock movements.

In Table 7 we report both the raw returns as well as CARs for three different event windows of 21 days, 7 days and 3 days around the announcement date. On average, PIPE issuers experience a raw return ranging from 7.64 percent over a 21 day window to 3.64 percent over a 3 day window. Adjusting for market movements reduces the returns slightly but they continue to be significant at the one percent level. These results suggest that markets do indeed perceive PE investors to provide valuable certification or monitoring services. However, it is worth comparing the market reaction of PIPE issues to that of SEO issues. Unlike in the US – but consistent with evidence from Hong Kong, Special Administrative Region of China and Japan – SEO issues in our sample are also associated with significant positive performance.

Yet while both SEO and PIPE issuing firms on average experience a positive announcement effects, investor identity appears to matter. Regardless of the window we pick, both the raw return and the CAR for an average PIPE issuer are two to three times larger than for an average SEO issuer. These differences are significantly different from zero at the one percent level for shorter windows and at the five percent level for the 21-day window. This suggests markets perceive PE investors to bestow certification or provide monitoring services above and beyond the ability of SEO investors.

While the event study results show that markets appear to reward PE investments, factors other than the choice of equity-selling mechanism may be driving the announcement returns. To examine the relationship between announcement-related return and equity-issue mechanism in a multivariate context, we estimate a general specification of the following form:

$$CAR_i = \alpha + \beta_i\,(PIPE) + \gamma_i\,(Controls) + \varepsilon_i \quad (5)$$

where the dependent variable is the CAR for issuer *i* over three, five, or seven days around the announcement date. The variable of interest is *PIPE,* a dummy variable that equals one if the equity issue is a PIPE and zero if a SEO. In case PE investors provide value enhancing certification, β is predicted to be positive and significant. *Controls* is a vector of firm and issue specific factors including amount issued, reported sales of the issuer, operating performance, pre-announcement period stock returns and market to book ratio. We also include year, industry and country fixed effects.

The regression results reported in Table 8 support our findings in the event study that the announcement effect of a PIPE issue is more positive and thus perceived as more value enhancing by the market than that of a SEO issue, even after controlling for firm and issue specific characteristics. The coefficient estimates for the PIPE dummy range from 0.033 for the three day CAR to 0.041 for the seven day CAR suggesting that the announcement of a PIPE investment by PE investors is associated with an almost four percent greater return compared to that of an SEO announcement. Among the control variables, the profitability of an issuer is negatively associated with the announcement period return suggesting that more profitable firms see a larger decline in share price. All other firm and issue specific control variables have no significant impact on the level of announcement returns.

While our finding of a positive announcement return for PIPE issuers is in line with empirical evidence from the US, as discussed earlier, and some other developed countries (Eckbo et al. 2007), it is in contrast to the findings of no significant announcement effect for all types of PIPEs in Australia and Hong Kong, Special Administrative Region of China in 2008

(Haggard et al. 2009). One possible explanation for the different findings is that we focus on PIPE investments by PE firms whereas Haggard et al. (2009) consider all investors. As mentioned earlier, Brophy et al. (2009) document significant positive announcement returns for PIPE investments issued to non-hedge fund investors such as the PE investors in our sample but insignificant returns to PIPEs issued to hedge fund investors in the US. Similarly, Barclay et al. (2007) find that the positive short-run abnormal stock returns for US private equity placements seem to be driven largely by a relatively small fraction (about 15%) of the transactions and that these are generally the very transactions in which the buyer becomes publicly involved in the operations of the firm. For the private placement transactions where the investors are passive (about 85% of the sample), the stock market reaction is not significant.

4.5 *Does firm performance improve after PIPEs issues to PE funds?*

The event study results of Table 7 around the issue date and Table 4 in the run-up to the issue date suggest a strong certification and monitoring role for PE investors. Here, we consider the post-investment performance of our sample to examine whether the perceived value PE investors bring to firms actually materializes. In the US the post-issue performance of both PIPE and SEO issuers has been shown to suffer significant declines (see Krishnamurthy et al. 2005 and Marciukaityte et al. 2005, Dai 2007 and Chaplinsky and Haushalter, 2010 for PIPES and Eckbo et al. 2007 for SEOs). Further, Brophy et al. (2009) find that returns vary by investor type for PIPEs and buy-and-hold abnormal returns for non-hedge fund investors while negative are insignificant.

We test whether the post-issue performance of firms raising money from PE investors via PIPEs differs significantly from the firms that raise equity via SEO issues in two different ways.

First, we focus on stock market returns.[11] Table 9 presents statistical evidence on average raw and cumulative abnormal returns experienced by PIPE and SEO issuers over the 250 trading day period starting 10 days after the issue. On average, the unadjusted raw return for PIPE issuers is 14.92 percent while raw returns for SEO issuers are also positive and significant (6.22 percent) but only about half the level experienced by PIPE issuers. The difference between the PIPE and the SEO sample is significant at the ten percent level. However, it is much harder to argue that the higher stock market performance of the PIPE issuers is associated with PE investors. Once we adjust for market returns the cumulative abnormal return for PIPEs turns negative (-1.76 percent) but is statistically insignificant from zero while the post-issue stock return for SEOs is almost two and half times lower (-4.66 percent) and significantly so. The difference in the performance of PIPEs and SEOs is economically large but statistically insignificant. The negative stock market performance for both PIPE and SEO issuers is in general consistent with the literature, although unlike in the US we find that investors in SEOs face a greater loss relative to PE investors in PIPEs (Chen et al. 2010).

Second, we consider changes in the operating performance. We compare the change in firm profitability in the post-issue period relative to the pre-issue period and report the results in Table 10. We consider the difference between the ROA of each issuing firm two years (three years) after the issue over its ROA in the two years (three years) prior to the issue. The table shows the change for the average PIPE and SEO issuer. We successively look at raw ROA; ROA adjusted for the median ROA in the country of the issuer; ROA adjusted for the median ROA of firms in the same country and year as the issuer; and ROA adjusted for the median ROA of firms in the same industry, country and year as the issuer. None of the issuers, whether PIPE or SEO,

[11] Our data collection extends to the year 2010, and as such we do not observe 2 years of post-issue performance for issues made in 2009. Even for issues made in 2008 and earlier, there is considerable attrition in our sample and post-issue performance data is unavailable for a substantial number of both PIPEs and SEOs.

experience a significant improvement in profitability. In addition, the difference in improvement is not significant across PIPE and SEO issuers.

Overall, looking at the change in stock market performance or operating performance of firms after the issue, there is no evidence that PE funds bring about an improvement in performance to the issuing firms. This evidence is inconsistent with PE funds engaging in active monitoring of firms (Wruck 1989) and the value creating strategies PE investors are commonly credited with (Kaplan and Stromberg 2009). However, our observations are in line with investor over-optimism (Hertzel et al. 2002 and Carpentier et al. 2011) whereby they overestimate the value private investors can bring to such firms.

5. Conclusion

This paper explores why certain firms choose to raise equity in the PIPE market instead of the SEO market. Our paper extends the literature on the equity selling choice between PIPEs and SEOs that has so far been almost exclusively focused on the US by providing evidence from nine Asian countries, including China and India. Consistent with the idea that insiders attempt to time the markets and issue equity when the stock price is high, we find that firms issuing SEOs are preceded by a significant higher run-up in stock price compared to those issuing PIPEs. This result is also consistent the undervaluation hypothesis that states that firms are more likely to issue PIPEs when their stock market performance is weak and they perceive their stock to be undervalued. In contrast to the US where this undervaluation appears to be driven by financial distress and asymmetric information, we find PIPE and SEO issuers to be statistically undistinguishable from each other. We also find that the announcement of a PIPE is associated with a significantly higher stock market reaction compared to an SEO announcement, suggesting

that PE investors may play a certification or monitoring role. However, we fail to detect any significant improvements in PIPE issuers' operating performance, stock returns, or liquidity when we compare these measures for the pre-issue and the post-issue periods.

References

Asquith, P. and D. W. Mullins, 1986, "Equity issues and offering dilution", *Journal of Financial Economics* 15, 61-89.

Baker, M., and J. Wurgler, 2002, "Market Timing and Capital Structure," *Journal of Finance*, 57, pp. 1-32.

Barclay, M., C. Holderness, and D. Sheehan, 2007, "Private Placements and Management Entrenchment," *Journal of Corporate Finance*, 13, pp. 461-484

Brophy, D., P. Ouimet, and C. Sialm, 2009, "Hedge Funds as Investors of Last Resort? " *Review of Financial Studies*, 22, pp. 541-574.

Carpentier, C. and J.Suret, 2010, "Private Placements by Small Public Entities: Canadian Experience," *Private Equity: Fund Types, Risks and Returns, and Regulation*, D. Cumming, Ed., Chapter 8, pp. 129-152, Wiley.

Carpentier, C. J. L'Her and J.Suret, 2011, "The return on private investment in small public entities," Working Paper.

Chaplinsky, S. and D. Haushalter, 2010, "Financing under extreme risk: Contract terms and returns to private investments in public equities," *Review of Financial Studies*, 23:7, pp. 2789-2820.

Cooney, J., J. Kato, and J. Schalheim, 2003, "Underwriter Certification and Japanese Seasoned Equity Issues," *Review of Financial Studies*, 16:3, pp. 949-982.

Chen, H.-C., N. Dai, and J. Schatzberg, 2010, "The Choice of Equity Selling Mechanisms: PIPEs Versus SEOs," *Journal of Corporate Finance*, 16, pp. 104-119.

Cronqvist, H. and M. Nilsson, 2005, "The choice between rights offerings and private equity placements," *Journal of Financial Economics*, 78, pp. 375-407.

Dai, N., 2007, "Does investor identity matter? An empirical examination of investments by venture capital funds and hedge funds in PIPEs," *Journal of Corporate Finance*, 13, pp. 538-563.

Dai, N., "Monitoring via Staging? Evidence from Private Investment in Public Equity," *Journal of Banking and Finance*, Forthcoming.

Eckbo E, R. Masulis, and Ø. Norli, 2007, "Security Offerings," *Handbook of Corporate Finance: Empirical Corporate Finance, Vol. 1, B.* E. Eckbo, Ed., Chapter 6, pp. 233-373, Elsevier/North-Holland Handbook of Finance Series.

Floros, I. and T. Sapp, "Why Do Firms Issue Private Equity Repeatedly? On the Motives and Information Content of Repeated PIPE Offerings, " *Journal of Banking and Finance*, Forthcoming.

Gomes, A., and G. Phillips, 2012, "Why do Public Firms Issue Private and Public Securities," *Journal of Financial Intermediation*, 21, pp. 619-658.

Graham, J., and C. Harvey (2001), "The Theory and Practice of Corporate Finance: Evidence from the Field," *Journal of Financial Economics*, 60, pp. 187-243.

Haggard, K., Y. Zhang, and T. Ma, 2009, "PIPEs around the World." *Journal of Private Equity*, 12, pp. 57-68.

Hertzel, M., and R. L. Smith, 1993, "Market Discounts and Shareholder Gains for Placing Equity Privately," *Journal of Finance*, 48, pp. 459–85.

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

Hovakimian, A., Opler, T., and S. Titman, 2001, "The debt-equity choice," *Journal of Financial and Quantitative Analysis*, 36, pp. 1-24.

Jung, K., Kim, Y., and R. Stulz, 1996, "Timing, investment opportunities, managerial discretion, and the security issue decision," *Journal of Financial Economics*, 42, pp. 159-185.

Kaplan, S. and P. Stromberg, 2009, "Leveraged Buyouts and Private Equity," *Journal of Economic Perspectives*, 23:1, pp. 121-146.

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(2): 210-238.

Loughran, T. and J. Ritter, 1997, "The operating performance of firms conduction seasoned equity offers," *Journal of Finance* 52, pp. 1823-1850.

Marciukaityte, D., S. H. Szewczyk and R. Varma, 2005, "Investor Over-optimism and Private Equity Placements," *Journal of Financial Research* 28 (4): 591-605.

Myers, S. and N. Majluf, 1984, "Corporate Financing and Investment Decisions when Firms have Information that Investors Do Not Have", *Journal of Financial Economics*, 13:2, pp. 187-221.

Park, J., "*Equity Issuance and Returns to Distressed Firms*", Mimeo.

Ritter, J. , 2003, “Investment banking and securities issuance”, *Handbook of the Economics of Finance, Vol 1, Part 1*, G. Constantinides, M. Harris and R. Stulz, Eds, Chapter 5, pp. 255-306, Elsevier, 2003.

Wruck, K., 1989. “Equity Ownership Concentration and Firm Value. Evidence from Private Equity Financings.” *Journal of Financial Economics* 23, pp.3–28.

Wu X., X. Wang and J. Yao, 2005, “Understanding the positive announcement effects of private equity placements: New insights from Hong Kong data,” *Review of Finance*, 9, pp. 385– 414.

Wu, Y., 2004, “The Choice of Equity-Selling Mechanisms,” *Journal of Financial Economics* 74, pp. 93–119.

Appendix A: Detailed PIPE and SEO Sample Selection

PIPE Sample

AVCJ classifies PE and VC transactions under different categories, including Seed & RD Venture Capital, Start-Up/Early Stage Capital, Expansion/Growth Capital, Mezzanine/Pre-IPO Capital, PIPE Financing, Franchise Funding, Turnaround/Restructuring and Buyouts. We start with the universe of all transactions that are identified by AVCJ as "PIPE Financing," "Mezzanine/Pre-IPO" or "Expansion/Growth Capital."[12] AVCJ identifies "PIPE Financing" deals as PE firms investing in public companies. This category specifically *excludes* those cases in which a PE firm buys out a public company completely because such transactions are recorded under the "Buyouts" category. AVCJ collects its data on "PIPE Financing" deals from three sources: (1) interviews with PE fund managers or data provided by them directly; (2) searching the announcements from stock exchanges; and, (3) searching news reported by newspapers, journals and data providers. We examine all deals classified as "PIPE Financing" by AVCJ to ensure that these deals involve listed companies. We also examine all deals in the "Mezzanine/Pre-IPO" and "Expansion/Growth Capital" categories for potential PIPE transactions that may have been misclassified by AVCJ. Furthermore, we limit our sample to those transactions for which AVCJ confirms that the transaction did not involve a seller of the equity other than the issuing company and the acquisition technique used is coded as "private placement."

We obtain the IPO date for all firms involved in these three types of transactions from Datastream. We only consider as true PIPEs firms whose IPO date is before the date of the transaction; this ensures that our sample only includes those deals that were undertaken by an already publicly listed firm.

SEO Sample

The SDC database records every type of new equity issues. In order to create the sample of SEO issues we use the following procedure. First, we exclude all issues that involve initial public offerings (IPOs), or offer no new primary shares, or have a missing or zero proceeds amount or a zero offer price. Next, we exclude all issues that are flagged as a rights offering, a private placement, or a strategic investor tranche. This exclusion ensures that the SEO sample consists of firms raising new money from retail investors which allows us to make a cleaner comparison with our PIPE sample. In many instances the SDC database records multiple observations of the same issue, if, for example, tranches of the same issue are placed at different stock exchanges. We aggregate such multiple records by collapsing them into a single observation to ensure we do not double-count any issues. We calculate the amount of total proceeds of the issue as the sum of offer price times total shares offered in this market for each individual issue tranche.

[12] We consider both PE and VC "Expansion/Growth Capital" deals as AVCJ classifies these investments based not on investor characteristics but on the investee's asset value and industry and the investment amount.

Appendix B: Definition of Variables

PIPE issues are taken from the AVCJ Database and SEO issues from the SDC New Issues Database and cover the period 2000-2009 for the following nine countries in our sample: Australia, China (PRC), Hong Kong, Speical Administrative Region of China, India, Japan, Singapore, South Korea, Taiwan, China, and Thailand. We exclude any deals that have missing proceeds or proceeds of less than 1 mio in constant 2008 USD; are classified as "Financials" (8000) according to the Industry Classification Benchmark: cannot be matched in Datastream; have a base date in Datastream (IPO date) after the issue date; and have no information available on sales (wc01001), operating income (wc01250), total debt (wc03255), and market capitalization (wc08001) in the fiscal year ending immediately before the issue date. See data section for more details on which issues reported in the databases we consider as "PIPE" and "SEO".

Note:

(1) all balance sheet data is matched by last fiscal year ending immediately before the issue date.

(2) all variables, except the proceeds amount and number of analysts variables are winsorized at 5% at each tail by year.

Variable	Definition	Source
Panel A. Issue Types and Deal Characteristics		
Dummy==1 if PIPE	Dummy ==1 if issue is "PIPE", 0 otherwise.	AVCJ, SDC
Proceeds of Issue	Proceeds amount of issue in mio constant USD.	AVCJ, SDC
ICBSSC	Industrial Classification Benchmark (ICB) supersector code (19 sectors). If missing in Datastream, manually entered according to findings of internet research.	Datastream
Panel B. Information Asymmetry		
NPPE over Total Assets	Net Property and Plant and Equipment (wc02501)/Total Assets (wc02999)	WorldScope
Volume	Mean of daily trading volume in number of shares over total number of ordinary shares that represent the capital of the firm vo/(nosh)) over trading days (-260,-10) relative to issue date.	Datastream
Ln (1 + Number of Analysts in IBES)	ln(1 + number of analysts in IBES).	IBES
Market-to-Book	Market to Book (Total Assets (wc02999)- Book Value of Equity (wc03995)+ Market Capitalization (wc08001))/Total Assets (wc02999)	WorldScope

R&D Expenses over Net Sales	R&D Expenses/Sales with missing R&D coded as 0: wc01201/wc01001	WorldScope

Panel C. Other Financial Ratios and Balance Sheet Information

Net Sales	Net Sales in constant 2008 USD.	WorldScope, Datastream
ROA	Return on Assets: (EBIT(wc18191)/ Total Assets (wc02999))	WorldScope
Dummy==1 if Negative Operating Income	Dummy ==1 if operating income (wc01250) < 0, 0 otherwise	WorldScope
Years Public	Number of years firm has been public before issue	AVCJ, SDC, Datastream

Panel D. Daily Datastream Data Variables over (-260, 260) relative to issue date

Note:

(1) return is calculated from the Return Index (RI) available in Datastream.

(2)homemarket is identified as the country of which the firm is part of the WorldScope constituent list in Datastream/ WorldScope

(3) d1 and d2 indicate the start and end date of the period over which Raw Return and CAR are calculated.

Raw Return (d1, d2)	Raw return (d1,d2) calculated as product(1+return)-1	Datastream
CAR (d1, d2)	Cumulative abnormal return (d1, d2) calculated as product((1+return)/(1 + return homemarket))-1	Datastream

Figure 1: Distribution of PIPE and SEO Issues over Time

This figure reports the number of issues pooled across all nine sample countries by issue type and year. For an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper.

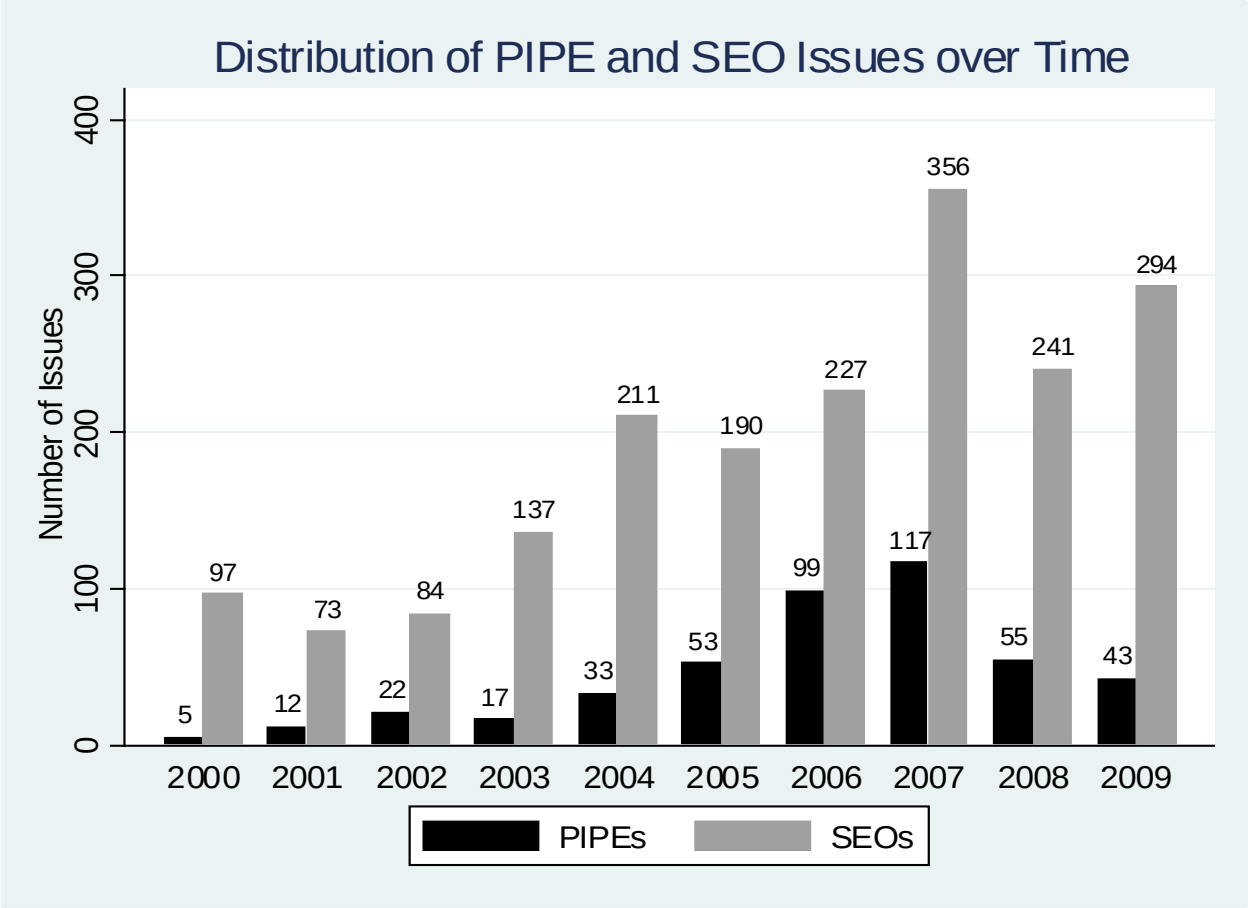

Figure 2: Stock Returns during Run-Up to Issue Date

This figure depicts the average daily Raw Return and Market Adjusted Return, respectively, by issue type and trading day relative to the issue date over the period -260 to -10 trading days before the issue date, across all countries for all years. Daily Raw Returns are derived from the return index in Datastream. Daily Market Adjusted Returns are calculated as ((1+return)/(1 + return homemarket)) – 1. Returns are normalized to one on trading day -260 relative to issue date.

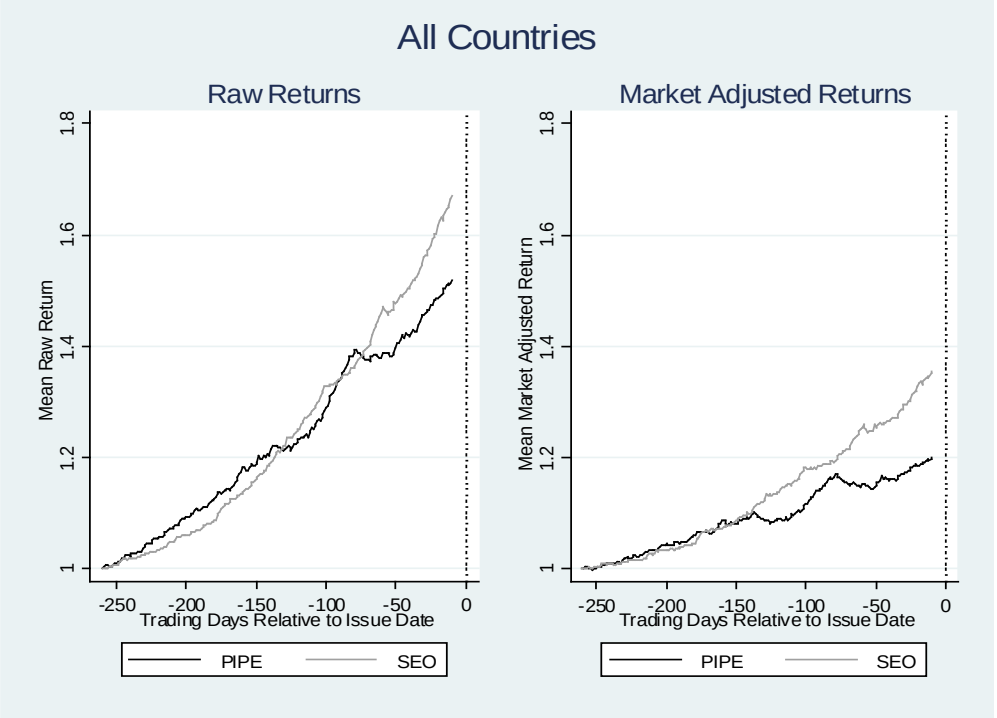

Figure 3: Stock Returns Around Announcement Date

This figure depicts the average daily raw return and market adjusted return, respectively, by issue type and trading day relative to the issue date across all countries for all years over the period -10 to +10 trading days before and after the issue date. Daily Raw Returns are derived from the return index in Datastream. Daily market adjusted return is calculated as ((1+return)/(1 + return homemarket)) – 1. Returns are normalized to one on trading day -10 relative to issue date.

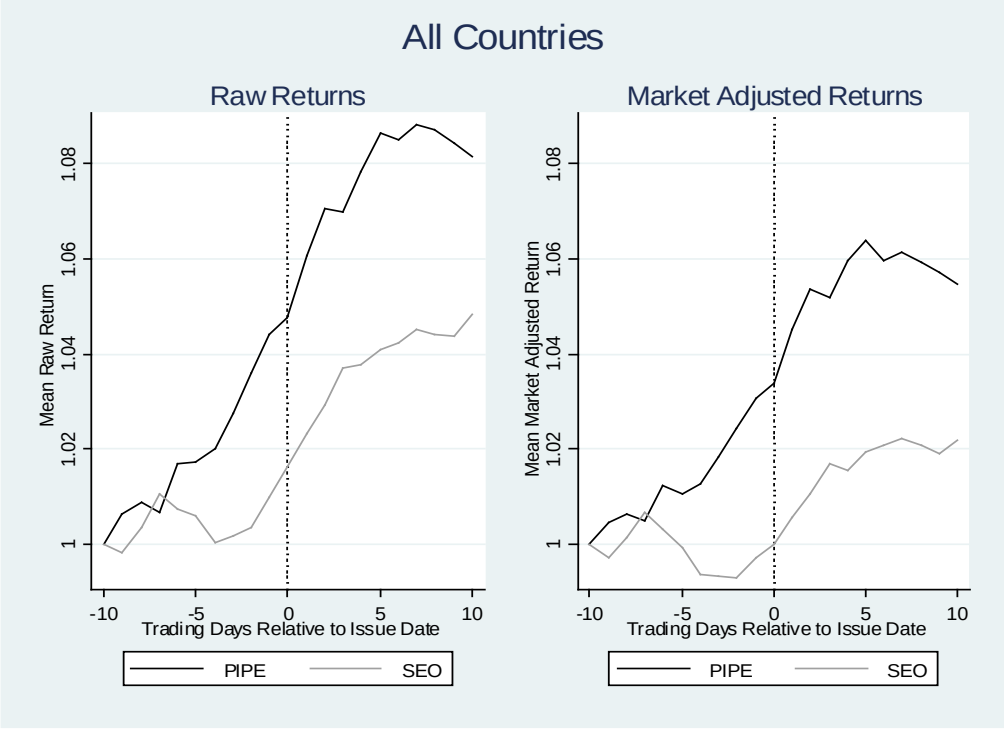

Table 1: Amount Raised by PIPE and SEO Issues by Country and Year in 2008 constant US Dollars million

This table reports the proceeds amounts raised in 2008 constant US Dollars million by issue type for each country-year over the sample period 2000 to 2009 for the nine sample countries. For an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix.

Panel A: PIPE

Year/Country	Australia	China (PRC)	Hong Kong, Special Administrative Region of China	India	Japan	Singapore	South Korea	Taiwan, China	Thailand	Total
2000	0	0	22	0	13	143	0	19	0	196
2001	18	0	14	117	31	23	41	0	4	247
2002	43	0	132	77	173	48	36	43	0	552
2003	50	35	27	297	8	244	0	29	0	690
2004	37	118	0	525	263	57	37	0	0	1,036
2005	93	466	44	394	605	111	112	51	9	1,884
2006	153	507	372	1,025	814	632	213	56	7	3,779
2007	807	258	755	3,599	522	82	248	643	80	6,995
2008	775	268	591	500	133	130	33	167	0	2,596
2009	90	1,386	113	285	8	1,239	248	0	0	3,368
Total	2,066	3,037	2,068	6,818	2,569	2,709	968	1,008	100	21,343
Number of Issues	64	50	45	138	71	31	23	28	6	456
Average Issue Size	32.3	60.7	46.0	49.4	36.2	87.4	42.1	36.0	16.7	46.8

Panel B: SEO

Year/Country	Australia	China (PRC)	Hong Kong, Special Administrative Region of China	India	Japan	Singapore	South Korea	Taiwan, China	Thailand	Total
2000	0	0	243	0	6,903	14	0	0	0	7,160
2001	125	152	240	0	7,131	12	765	0	1	8,425
2002	213	0	164	0	1,854	61	5	259	0	2,556
2003	241	256	123	0	2,974	84	3,070	107	564	7,419
2004	554	97	194	0	7,492	101	262	332	102	9,133
2005	565	1,391	181	112	5,251	93	2,026	473	192	10,283
2006	486	2,840	486	409	8,766	72	1,125	97	178	14,459
2007	1,163	5,053	1,637	248	3,058	540	1,389	0	3	13,091
2008	1,119	3,998	389	460	615	57	5,518	5	5	12,167
2009	664	3,749	2,122	0	9,401	349	1,035	359	33	17,711
Total	5,129	17,536	5,780	1,230	53,445	1,384	15,195	1,631	1,077	102,406
Number of Issues	222	100	428	31	575	129	350	56	19	1910
Average Issue Size	23.1	175.4	13.5	39.7	92.9	10.7	43.4	29.1	56.7	53.6

Table 2: Amount Raised by PIPE and SEO Issues by Industry and Year in 2008 constant US Dollars million

This table reports the proceeds amounts raised by issue type for each industry-year in 2008 constant US Dollars million over the sample period 2000 to 2009 for the nine sample countries. Note that our sample excludes firms in the financial industry. For an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix.

Panel A: PIPE

Industry/ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total	Number of Issues
Oil & Gas	0	0	0	0	0	24	55	166	7	9	261	15
Chemicals	0	0	0	0	75	155	72	20	61	107	490	20
Basic Resources	4	0	12	53	24	14	71	321	32	53	584	22
Construction & Materials	0	94	47	0	186	107	147	1,049	118	15	1,763	30
Industrial Goods & Services	162	0	42	265	184	46	938	856	1,088	791	4,371	89
Automobiles & Parts	0	0	0	0	12	82	227	59	215	244	838	22
Food & Beverage	0	0	9	7	0	38	145	136	7	724	1,065	26
Personal & Household Goods	18	16	156	39	96	306	132	276	632	153	1,825	46
Health Care	0	46	42	72	46	16	237	264	80	26	830	42
Retail	0	29	36	0	11	149	280	438	116	643	1,702	26
Media	0	0	0	18	32	58	55	295	16	158	633	21
Travel & Leisure	0	2	29	5	0	349	533	97	16	1	1,032	21
Telecommunications	0	0	120	0	0	0	405	2,150	0	0	2,674	8
Utilities	0	0	0	8	0	4	19	44	0	0	74	4
Technology	13	61	58	222	372	535	464	826	208	445	3,202	64
Total	196	247	552	690	1,036	1,884	3,779	6,995	2,596	3,368	21,343	456

Panel B: SEO

Industry/ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total	Number of Issues
Oil & Gas	0	9	42	46	218	292	635	709	325	664	2,940	59
Chemicals	156	13	8	85	143	299	380	1,090	286	2,106	4,566	90
Basic Resources	7	97	92	744	24	1,648	998	1,007	1,609	905	7,131	129
Construction & Materials	68	2	33	2,289	231	590	449	360	2,153	487	6,664	119
Industrial Goods & Services	984	297	894	1,137	2,505	1,657	1,986	5,483	5,612	7,186	27,741	454
Automobiles & Parts	473	28	28	113	483	184	310	192	9	1,181	3,001	40
Food & Beverage	173	11	4	78	21	74	471	365	112	275	1,584	63
Personal & Household Goods	681	600	101	196	620	124	436	1,048	392	1,205	5,404	179
Health Care	67	37	82	305	221	374	248	519	230	602	2,684	127
Retail	634	451	339	747	1,514	592	3,101	367	672	419	8,836	147
Media	45	15	33	94	1,098	833	33	673	208	217	3,249	91
Travel & Leisure	69	34	136	364	249	611	1,271	215	26	807	3,782	83
Telecommunications	2,144	5,728	4	0	0	88	650	7	6	254	8,881	14
Utilities	31	152	12	39	109	188	1,516	368	0	269	2,683	40
Technology	1,629	952	749	1,182	1,696	2,730	1,975	686	528	1,133	13,260	275
Total	7,160	8,425	2,556	7,419	9,133	10,283	14,459	13,091	12,167	17,711	102,406	1910

Table 3: Summary Statistics

This table reports the mean (median) for the proceeds amount for each issue type and the mean (median) values of all the variables used in subsequent regressions. All variables, except the proceeds amount and number of analysts variables, are winsorized at 5% at each tail. For variable definitions and an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

	Mean				Median			
	PIPE	SEO	Difference		PIPE	SEO	Difference	
Proceeds of Issue	46.81	53.62	-6.81		16.28	10.38	5.90	***
Net Sales	418.88	421.18	-2.30		91.47	79.88	11.58	
ROA	1.97%	-6.49%	8.46%	***	6.77%	4.55%	2.22%	***
Dummy==1 if Negative Operating Income	0.29	0.37	-0.09	***	0.00	0.00	0.00	***
NPPE over Total Assets	32.59%	29.12%	3.47%	***	29.66%	24.97%	4.69%	***
Volume	0.91%	1.22%	-0.31%	***	0.34%	0.43%	-0.09%	**
Number of Analysts in IBES	2.74	2.34	0.41		0.00	0.00	0.00	***
Market-to-Book	1.85	1.81	0.05		1.40	1.36	0.05	
R&D Expenses over Net Sales	0.66%	0.69%	-0.03%		0.00%	0.00%	0.00%	
Years Public	10.14	9.49	0.64	*	9.15	7.35	1.80	***

Table 4: Stock Returns during Run-Up to Issue Date

The table below reports the return over the period indicated in trading days relative to the issue date averaged across all countries for all years by issue type. For each issuing firm, daily raw returns are derived from the return index in Datastream, and raw return over the period is calculated as product(1+return) - 1 over the indicated period. Cumulative Abnormal Returns (CAR) are calculated as product((1+return)/(1 + return home market)) – 1 over the indicated period. For an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

Period relative to issue date	Mean					
	PIPE		SEO		Difference	
Raw Return (-260, -10)	51.36%	***	71.00%	***	-19.64%	*
Raw Return (-130, -10)	19.72%	***	36.68%	***	-16.96%	***
Raw Return (-65, -10)	8.10%	***	14.47%	***	-6.37%	***
CAR (-260, -10)	20.66%	***	37.85%	***	-17.20%	**
CAR (-130, -10)	6.86%	***	20.61%	***	-13.76%	***
CAR (-65, -10)	2.85%	**	8.48%	***	-5.63%	***

Table 5: PE Investors in PIPEs are not Financiers of Firms With Higher Levels of Asymmetric Information, All Countries 2000-2009

This table reports the results of a Probit regression with the dependent variable being a dummy variable that takes value one if the issue is a PIPE and zero if the issue is a SEO, and the main independent variable of interest being a measure of firm asymmetric information. Instead of coefficient estimates, marginal effects at sample mean are reported. P-values are reported in parentheses. Columns (1) to (8) use different measures of firm asymmetric information such as asset tangibility, market to book ratio, research and development intensity of the firm, trading volume and analyst coverage, used with and without pre-issue stock price run-up as a control variable. Other control variables include proceeds amount, firm size and firm age, and country, year, and industry (IBC Supersector; 19 categories) dummies. For variable definitions, please consult the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
CAR (-260, -10)		-0.020**		-0.020**		-0.018**		-0.019**
		(0.016)		(0.018)		(0.031)		(0.021)
Ln (Proceeds of Issue)	0.009	0.012*	0.008	0.011	0.010	0.012*	0.006	0.009
	(0.167)	(0.082)	(0.223)	(0.112)	(0.149)	(0.078)	(0.366)	(0.225)
Ln (Net Sales)	0.000	-0.004	0.001	-0.003	-0.004	-0.005	-0.004	-0.008
	(0.996)	(0.424)	(0.845)	(0.540)	(0.501)	(0.338)	(0.545)	(0.176)
Years Public	0.002**	0.002**	0.002**	0.002**	0.002**	0.002**	0.002**	0.003**
	(0.042)	(0.028)	(0.049)	(0.031)	(0.029)	(0.040)	(0.042)	(0.026)
NPPE over Total Assets	-0.027	-0.024						
	(0.505)	(0.550)						
R&D Expenses over Net Sales			0.864	0.780				
			(0.150)	(0.182)				
Volume					-0.787	-0.481		
					(0.144)	(0.379)		
Ln (1 + Number of Analysts in IBES)							0.015	0.016
							(0.216)	(0.180)
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2,362	2,326	2,364	2,327	2,317	2,317	2,364	2,327
Log Likelihood	-895.41	-861.02	-894.92	-860.47	-861.75	-858.92	-895.17	-860.45
Pseudo Adjusted R-squared	0.226	0.229	0.228	0.229	0.226	0.228	0.228	0.229

Table 6: PE Investment in PIPEs is not a Funding of Last Resort, All Countries 2000-2009

This table reports the results of a Probit regression with the dependent variable being a dummy variable that takes value one if the issue is a PIPE and zero if the issue is a SEO, and the main independent variable of interest being a measure of firm profitability. Instead of coefficient estimates, marginal effects at sample mean are reported. P-values are reported in parentheses. Other control variables include proceeds amount, firm size and firm age, and country, year, and industry (IBC Supersector; 19 categories) dummies. For variable definitions, please consult the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	**(2)**	**(3)**
CAR (-260, -10)	-0.020**	-0.022***	-0.016**
	(0.018)	(0.008)	(0.020)
Ln (Proceeds of Issue)	0.013*	0.013*	0.030***
	(0.057)	(0.052)	(0.000)
Ln (Net Sales)	0.001	-0.007	-0.009*
	(0.876)	(0.239)	(0.075)
Dummy==1 if Negative Operating Income	0.027		
	(0.245)		
ROA		0.082**	
		(0.040)	
ROA minus median Country-Year-Industry ROA			0.035**
			(0.011)
Country Dummy	Yes	Yes	No
Year Dummy	Yes	Yes	No
Industry Dummy	Yes	Yes	No
N	2,327	2,307	2,307
Pseudo Adjusted R-squared	0.227	0.230	0.015

Table 7: Stock Return Around Announcement

This table reports the average raw and market adjusted return by issue type around the issue date. The announcement effect is shown for periods of 10, 3 and 1 trading days before and after the issue date, and the averaging is done across all countries and for all years by issue type. Raw Returns are calculated as product(1+return) - 1 over the indicated period. Cumulative Abnormal Returns (CAR) are calculated as (product((1+return)/(1 + return homemarket))) – 1 over the indicated period. For an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

Period relative to issue date	Mean					
	PIPE		SEO		Difference	
Raw Return (-10, 10)	7.64%	***	3.56%	***	4.08%	**
Raw Return (-3, 3)	5.29%	***	1.85%	***	3.44%	***
Raw Return (-1, 1)	3.64%	***	0.93%	***	2.70%	***
CAR (-10, 10)	5.43%	***	2.18%	**	3.25%	**
CAR (-3, 3)	4.69%	***	1.39%	***	3.30%	***
CAR (-1, 1)	3.41%	***	0.67%	**	2.73%	***

Table 8: Certification and Monitoring Effect of PE Investment in PIPEs Around Announcment, All Countries 2000-2009

This table reports the results of the OLS regression using average cumulative abnormal return around the issue date for PIPES and SEOs as the dependent variable and a PIPE/SEO issue type dummy as the main independent variable of interest. P-values are reported in parentheses. The three columns use as the dependent variable Average Cumulative Abnormal Returns by issue type (CAR) over different periods, namely CAR (-1,1), CAR (-2,2), and CAR (-3,3), respectively, which represents the average cumulative abnormal return over the trading period indicated relative to the issue date, across all countries and years. Daily Raw Returns are derived from the return index in Datastream, and CARs of each issuing firm are calculated as (product((1+return)/(1 + return home market)))– 1 over all the days in the indicated period. The regression includes several control variables and country, year, and industry (IBC Supersector; 19 categories) dummies. For variable definitions, please consult the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

	(-1,1)	**(-2,2)**	**(-3,3)**
Dummy==1 if PIPE	0.033***	0.037***	0.041***
	(0.000)	(0.000)	(0.000)
CAR (-260, -10)	0.000	0.001	0.000
	(0.744)	(0.404)	(0.959)
Ln (Proceeds of Issue)	0.000	-0.000	-0.001
	(0.947)	(0.946)	(0.829)
Ln (Net Sales)	-0.002	-0.003	-0.003
	(0.459)	(0.318)	(0.395)
ROA	-0.023*	-0.041***	-0.054***
	(0.062)	(0.008)	(0.003)
Market-to-Book	-0.000	0.002	0.001
	(0.857)	(0.621)	(0.806)
Ln (1 + Number of Analysts in IBES)	-0.000	0.001	0.000
	(0.922)	(0.809)	(0.953)
Constant	0.054**	0.088***	0.117***
	(0.028)	(0.005)	(0.001)
Country Dummy	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes
N	2,305	2,305	2,305
Adjusted R-squared	0.034	0.038	0.041

Table 9: Stock Return Analysis After Issue Date

The table below reports the return over the period indicated in trading days relative to the issue date averaged across all countries for all years by issue type. Raw Returns are calculated as product(1+return) - 1 over the indicated period. Cumulative Abnormal Returns (CAR) are calculated as product((1+return)/(1 + return homemarket)) – 1 over the indicated period. For an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix. or an exact definition of what types of issues are considered PIPE and SEO in the sample, please refer to the data section in the paper and the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

Period relative to issue date	Mean		
	PIPE	SEO	Difference
Raw Return (10, 65)	3.12% **	3.98%	-0.86%
Raw Return (10, 130)	5.75% **	5.05%	0.69%
Raw Return (10, 260)	14.92% ***	6.22% **	8.70% *
CAR (10, 65)	-0.08%	1.25%	-1.32%
CAR (10, 130)	-1.01%	-0.97%	-0.05%
CAR (10, 260)	-1.72%	-4.66% **	2.95%

Table 10: Does Firm Performance Improve Post-Issue?

This table reports the difference of a firm's performance after and before the issue for the time period specified. The measures are averaged over the two- (three-) year period before and after the issue date for each firm and then the before issue average value is subtracted from the after issue average value. If specified, the values are de-medianed, separately for the before and after values, where the median value is determined using the respective universe of firms with available data in WorldScope. For variable definitions, please consult the appendix. *, **, and *** indicate significance at the 1%, 5%, and 10% level, respectively.

	Observations		Mean			
	PIPE	SEO	PIPE	SEO	Difference	
Change in ROA						
2-year	313	1292	-0.0193	-0.0035	-0.0159	
2-year, demedianed by year	313	1292	-0.0194	-0.006	-0.0134	
2-year, demedianed by country-year	313	1292	-0.0155	-0.0025	-0.0129	
2-year, demedianed by country-year-industry	313	1292	-0.0138	-0.0023	-0.0116	
3-year	192	846	-0.0317	0.0152	-0.0469	*
3-year, demedianed by year	192	846	-0.0367	0.0086	-0.0453	
3-year, demedianed by country-year	192	846	-0.0313	0.0113	-0.0426	
3-year, demedianed by country-year-industry	192	846	-0.0272	0.0129	-0.0402	