On August 23, 2013, a remarkable event occurred: A new unicorn was born. Unlike the mythical beast that has captured man’s imagination since antiquity, however, this unicorn was the transportation network company, Uber Technologies, Inc. The event that happened was the completion of a $258 million private market funding round with venture capital investors that included the likes of Google Ventures, TPG Growth, and Benchmark. In fact, this was Uber’s third venture capital fundraising event. (The previous two series raised $31 million and $11 million, and they followed earlier angel ($1.3 million) and seed capital ($0.2 million) rounds that dated back to October 2010.) What made this funding event in August 2013 particularly noteworthy is that, with this capital infusion, Uber’s estimated market valuation exceeded $1 billion for the first time, which allowed it to join the growing ranks of companies that achieved that lofty status while remaining privately held. And in so doing, Uber became—in the parlance of today’s capital markets—a “unicorn.”

Besides introducing another colorful term to the lexicon, this transaction highlights an important trend that has been developing in the financial markets over the past few years. Specifically, there has been a dramatic shift in the way that private technology firms are now raising growth capital. Rapidly growing companies have historically funded several small rounds of private capital from various sources and investors (including seed, angel, venture capital, and private equity) before having to turn to the public market with an initial public offering (IPO) to raise the large-scale funding necessary to finance their long-term expansion needs. That process has changed as private firms are now able to raise growth capital in the private markets at a scale that was previously accessible only from public markets. These non-public capital fundraisings are, in essence, private IPOs (or PIPOs) that are deferring (and sometimes displacing altogether) IPO events by allowing firms to raise hundreds of millions of dollars—billions in some cases—while remaining private.

These PIPO funding rounds began to appear in financial markets in force during 2012 and have grown to the point that, in some industries, they now exceed public IPOs in both frequency and dollar volume. For instance, as can be seen in Figure 1, although the number of IPO and PIPO transactions for U.S.-based technology companies were roughly the same from the beginning of 2012 through the middle of 2013, since that time there has been a clear preference among start-up technology companies to continue to raise capital in private markets. In fact, CB Insights, a private equity investor database, recently estimated that by the end of the first quarter in 2015, there were nine times more technology-related PIPOs than IPOs.

Further, this movement toward financing a company outside of the public markets can continue well beyond the point at which it reaches the unicorn valuation level. Uber is a good example of that, having completed several additional PIPO rounds since its August 23, 2013 capital funding. Indeed, of the five equity financing series that occurred after that date through July 31, 2015, four of them raised $1 billion or more, with the largest, on June 6, 2014, raising $1.2 billion. With the completion of its $1 billion financing round on July 31, 2015, the private company achieved a market valuation of nearly $51 billion and increased the total amount of ownership capital it has raised to more than $60 billion. And Uber, while certainly a dramatic example of this new funding trend, is by no means an isolated case. As of this writing (August 2015), we have been able to identify 142 unicorn companies headquartered in regions throughout the world with a combined valuation of almost $625 billion.

Given the size and rapid development of this financing vehicle, it is quite likely that PIPOs—and the unicorns they create—will have widespread and significant impacts on the financial markets and the economies in which they operate. 

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1. The use of the term “unicorn” to describe private firms that have market valuations of at least $1 billion is widely attributed to Aileen Lee, managing partner of the seed capital-stage investment firm Cowboy Ventures; see Katie Benner, 2015, “The ‘Unicorn’ Club, Now Admitting New Members,” The Wall Street Journal, August 23.
2. Morgan Bender, Benedict Evans, and Scott Kupor, 2015, “US Tech Funding,” Andreessen Horowitz Working Paper. In their presentation, the authors make the point that PIPOs represent a rebalancing away from the traditional IPO format and that technology IPOs have essentially become a dormant funding tool.
corporate finance, private equity, and investment markets. Most importantly, by helping companies to remain private for a longer period of time than in the past, PIPO fundings may allow these firms to avoid many of the organizational and governance problems that often plague publicly traded corporations, such as misaligned incentives between management and ownership, and a sometimes oppressive regulatory environment. As a consequence of the extended time that PIPO financing permits a company to stay private before turning to public sources of capital, private investors are likely to capture a much greater proportion of the increase in value from emerging growth companies. Conversely, when IPOs do occur, the post-offering share price increases may be substantially smaller than investors have come to expect from past experience since those public launches may now follow one or more PIPO funding rounds. In fact, an increase in the tendency for firms to fund themselves privately may lead to a decline in the number of small firms available to go public in the first place, which could in turn lead to a reduction in the number of equity funds specializing in holding portfolios of small capitalization stocks.

Our goal in this study is to examine the development and economic consequences of the recent capital market movement toward the growing use of PIPO financing. We begin our investigation by analyzing the research literature on private equity transactions to assess the likely effects of private market investments on corporate operations and governance, and we then offer our speculations as to how PIPO transactions fit into that story. Next we describe the details of a large data sample of unicorn firms we have gathered, including the industry affiliations and geographical dispersion of the companies involved in addition to the range of market valuations and funding rounds raised. Following that analysis, we consider the specific supply and demand conditions that are driving the present market for PIPOs and address some prospective research implications about companies that are able to grow with the use of private capital rather than having to resort to financing themselves in public markets.

Private Equity, Corporate Governance, and the Market for Corporate Control

To provide some context for understanding why PIPOs are emerging as a viable funding source for companies that are evolving from the “new venture” phase of their development, it is useful to consider what the scientific evidence tells us about the multi-faceted role that private equity (PE) investments have played in the capital markets, particularly with respect to helping align incentives between the owners and the management of a firm. Traditionally, PE investors have concentrated their investments at the opposite ends of the corporate life cycle/growth spectrum: that is, venture capital (VC) firms have focused on underperforming private and public companies, or divisions of corporate finance, private equity, and investment markets. 5

Most importantly, by helping companies to remain private for a longer period of time than in the past, PIPO fundings may allow these firms to avoid many of the organizational and governance problems that often plague publicly traded corporations, such as misaligned incentives between management and ownership, and a sometimes oppressive regulatory environment. As a consequence of the extended time that PIPO financing permits a company to stay private before turning to public sources of capital, private investors are likely to capture a much greater proportion of the increase in value from emerging growth companies. Conversely, when IPOs do occur, the post-offering share price increases may be substantially smaller than investors have come to expect from past experience since those public launches may now follow one or more PIPO funding rounds. In fact, an increase in the tendency for firms to fund themselves privately may lead to a decline in the number of small firms available to go public in the first place, which could in turn lead to a reduction in the number of equity funds specializing in holding portfolios of small capitalization stocks.

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5. First Round Capital’s Josh Kopelman wrote, for example: “I don’t think we’ll fully understand or appreciate the impact of the “private IPO” phenomenon for another decade, or at least until a full cycle plays out...By relying on private financing events as “comps,” we risk pricing new financings (and creating new unicorns) based on stale valuations.” See CB Insights (2015), op cit.

Those companies. VC funds, therefore, invest in early-stage companies with the goal that, after several capital-raising rounds, the company will have gained significant scale, customer adoption, and, hopefully, cash flow generation to allow it to be acquired or gain access to larger pools of growth capital available through an IPO. LBO funds engage in strategic acquisitions of underperforming companies and, after a restructuring period that usually lasts from three to five years, these funds plan to exit the investment through either the sale of the firm to another private buyer or by taking the company public (i.e., a reverse LBO).

**PE Investing as a Source of Corporate Discipline**

Over the past twenty-five years, there has developed a substantial research literature that provides consistent evidence that PE firms, particularly those that invest in larger companies, impose a superior governance structure that reduces agency costs and the free cash flow problems that often arise in public companies. In public corporations, diffuse owners (i.e., large numbers of shareholders with relatively small percentage holdings) bear the residual risk of the firm, while managers make resource allocation decisions within the firm but do not supply capital and typically bear very little of the residual risk of the firm. This separation of management and risk-bearing can sometimes lead managers to make decisions that are suboptimal from the perspective of shareholders, particularly when the governance structure in place at the firm is weak or ineffective. Furthermore, there is a free-rider problem that arises when individual owners do not have sufficient personal incentives to monitor management on behalf of all shareholders. The benefits of a shareholder’s monitoring activity will be spread across all of the firm’s owners while the costs are borne solely by that shareholder.

Agency costs are said to result in a “residual” loss in firm value that comes from the separation of decision-making and residual risk bearing. Shareholders attempt to minimize this loss in value through a variety of means, including “contracting” (compensation agreements), reporting (audit and other periodic reports), and board oversight of management. Ultimately, contracting cannot eliminate agency conflicts, and board members often have minimal equity ownership and provide limited oversight.

The emergence of LBOs in the 1980s revolutionized the market for corporate control and began to affect the governance structures of not only those companies that were currently the targets of buyout funds, but also those that might become targets in the future. The emergence of significant pools of capital from both LBO funds and the debt financing that accompanied those LBO deals provided the resources for superior management teams to target underperforming management teams at even the largest corporations. Managers that had previously been relatively insulated from the disciplining forces of effective corporate governance either became targets of LBO funds or understood that they could be in the future.

In response, public companies began to adopt some of the governance practices of PE-controlled companies, including tying management compensation more closely to share performance and establishing more active boards. The impact of PE involvement on the governance of public companies is particularly impressive, given that PE transactions in the U.S. have typically accounted for only about 2-3% of total global capitalization. Figure 2, which comes from recent analysis by Karen Wruck, provides a visual indication of how and where PE investments fit into the process of improving the governance and operating policies of a public company.

**How PE Investments Change a Firm’s Operations and Governance**

Given that the goal of a private buyout is to instill more discipline in the operations of the target company, it is not surprising that considerable research has been conducted on the governance structure employed by successful PE firms. The findings of these studies have shown that the best governance structures consist of several key elements, such as (1) small boards of directors (i.e., 5-7 members), (2) concentrated ownership and board control, and (3) board members and management with significant equity-based incentives, either through direct share ownership or an incentive plan. The PE governance structure provides a better alignment between boards or outside investors; see Michael C. Jensen, 1991, “Corporate Control and the Politics of Finance,” Journal of Applied Corporate Finance 4, no. 2: 13-33.


Both the size and composition of a company’s board tend to change after it undergoes a buyout. When companies are taken private, the number of board members usually declines by one or two seats, which is a reduction of approximately 15% to 30%. Smaller boards are correlated with better company performance and are thus consistent with the movement toward better governance structures. In addition, the number of insiders on the board increases after the company becomes privately held. LBO sponsors take about 30% of the seats and insiders as a group hold between 56% and 78% of board seats. Management may have a majority of the seats on the boards, but the LBO funds still have effective control because they tend to own between 90% and 100% of the equity. To further enhance the alignment of interests between shareholders and managers, PE firms usually require managers to make meaningful equity investments in their companies, and studies have shown that management ownership increases by roughly four-fold, on average, when public companies are taken private.

Corporate governance improvements help drive the enhanced efficiency and value increases that have been reported for PE-invested firms, but financial leverage and shareholder and management objectives than that typically found in public firms because it provides effective oversight from board members with significant ownership interest, a management team with significant equity incentives that better match its interests with major shareholders, and an efficient organizational structure with minimal overhead costs.


17. Cornelli and Karakas (2015), ibid. Even organizing something as seemingly simple as a board conference call becomes more complex as the number of board members increases.

18. Ibid. Note that the percentage of insiders on a board does not change after an LBO, but that percentage does increase dramatically for management-led buyouts (MBOs), from 62% to 78%.


operating improvements also contribute. Increased leverage from buyouts reduces free cash flows and allows firms to concentrate ownership in the hands of management and PE funds, both of which help reduce agency costs.20 In addition, debt also provides the well-documented increase in corporate tax shields and enhanced returns from leveraged equity. PE-invested firms are also able to implement operating changes that may take some time to implement without the pressure to report quarterly financial performance to the public markets.

The evidence indicates that both financial leverage and operating changes are consistent factors in driving PE valuations, but that the relative contribution of each seems to vary over time. In particular, while operating improvements and tax shields remain critical drivers of PE-invested firm performance, the operating improvements associated with LBOs after 1990 made considerably less of a contribution to increased value than those that occurred during the 1980s. Additionally, it appears that firms do not reduce the amount they had previously borrowed after returning to the public markets, suggesting that leverage drives LBO performance and that the sustained change in capital structure is an objective of the LBO structure.21

In fact, the relative importance of financial leverage and operating enhancements may be changing. One recent study argues that the decline in debt costs since 2007 and the difficulty in obtaining leverage have limited the ability of PE firms to create value through financial engineering.22 This, in turn, suggests that PE funds will depend increasingly on their ability to enhance operating performance to drive returns, which, in turn, depends upon the PE firms’ ability to attract and retain experienced personnel and industry experts to manage the companies in which they invest. Finally, it is worth noting that while financial and governance engineering continue to be important in creating value in PE investments, the best buyout firms have focused on “operational engineering” by establishing a network of operating partners to ensure that their portfolio companies retain the best managers and advisors.23 Finding and retaining operational talent is a constraint on the ability of private equity firms to achieve superior financial performance.

**The Investment Performance of PE Funds**

It is often difficult to assess PE fund performance because (1) there are limited data reported on fund activities, (2) what data are available are not consistently available for all funds, (3) funds do not often disclose cash flow data, and (4) data that are available may not be available consistently over time.24 Despite these challenges, there is compelling evidence that PE funds provide superior returns compared to publicly traded companies. One recent study found that U.S. buyout fund returns have exceeded those of public markets, as measured by a range of market indices, for most fund vintages since 1984. Buyout fund investments outperformed the S&P 500 index averages by between 20% and 27% over the life of the fund, which is a performance increment of more than 3% per year.25 On the other hand, although VC funds outperformed public equities during the 1990s, they underperformed during the vintage years from 1999 through 2008.26

There is also evidence that the best PE firms outperform the market and their peers over time, indicating that there is persistence in performance. For instance, recent research headed by Professor Steven Kaplan has established a clear tendency for the best PE funds to consistently outperform the market, on a net-of-fee basis.27 Using a new data set that comprises detailed cash flow information from PE fund limited partners, he and his colleagues find that there is significant persistence in returns to PE investors in funds raised prior to 2000. After 2000, however, they find that performance persistence for LBO funds has mostly disappeared, except for those in the bottom quartile of funds. In the case of VC funds, by contrast, although average performance has been disappointing for almost 15 years, the best VC funds continue to outperform the S&P 500, and thus evidence of persistence continues.28

But the bottom line on PE funds is that LBO fund returns across all quartiles have exceeded those of public markets as measured by the S&P 500 benchmark. For VC funds, only those that provide performance greater than the median of all funds tend to remain above the median and exceed returns from public markets.

22. Some buyout firms, such as Silver Lake, have recently begun to shift their acquisition focus toward firms in high-growth industries, where the use of leverage is less appropriate. See also Gary Matheus, Mark Bye, and James Howland, 2009, “Operational Improvement: The Key to Value Creation in Private Equity,” *Journal of Applied Corporate Finance* 21, no. 3: 21-27.
23. Kaplan, as interviewed by Chew (2009), op cit.
25. Ibid. Although measuring the systematic risk of private companies is difficult, the authors’ results remain consistent even when higher risk levels are incorporated into their analysis.
27. Kaplan, as interviewed by Chew (2009), op cit.
A typical incubation path for a newly formed business organization is to experience two or more relatively small capital infusions (i.e., funding rounds) in the private market. At some point, though, the company will need a more substantial “liquidity event” to accelerate the growth of the firm’s operations and, perhaps, to allow the original owners to sell a portion of their otherwise non-marketable ownership interests. While a large PE buyout fund may be the source of this liquidity, this is traditionally the role that IPOs have filled in the financial markets. However, with the sizeable inflow of new equity capital that an IPO brings come the attendant problems of running a company in the public arena (and under public scrutiny). And, of course, the irony for many of these companies that do choose to go public is that those same problems will eventually have to be addressed in the future by another LBO.

Therefore, the primary role that a PIPO transaction appears to serve in modern capital markets is to provide companies with the opportunity to continue to be run privately for an extended period of time before they need to seek public sources of equity.

In the technology sector, for instance, between 1999 and 2014 the median time for a new venture to undergo an IPO event after inception increased from four to 11 years as the incidence of new venture to undergo an IPO event after inception increased from four to 11 years as the incidence

Table 1  Summary Statistics for the Unicorn Transaction Sample

<table>
<thead>
<tr>
<th>Total Number of Unicorn Firms</th>
<th>142</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firms by Vertical Market Segment:</td>
<td></td>
</tr>
<tr>
<td>Technology: Internet</td>
<td>80</td>
</tr>
<tr>
<td>Technology: Software</td>
<td>35</td>
</tr>
<tr>
<td>Technology: Financial</td>
<td>10</td>
</tr>
<tr>
<td>Technology: Hardware/Systems</td>
<td>7</td>
</tr>
<tr>
<td>Healthcare</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
<tr>
<td>Aggregate Sample Market Value ($ Billions)</td>
<td>622.9</td>
</tr>
<tr>
<td>Mean Firm Market Value ($ Billions)</td>
<td>3.7</td>
</tr>
<tr>
<td>Median Firm Market Value ($ Billions)</td>
<td>1.6</td>
</tr>
<tr>
<td>Minimum Firm Market Value ($ Billions)</td>
<td>1.0</td>
</tr>
<tr>
<td>Maximum Firm Market Value ($ Billions)</td>
<td>51.0</td>
</tr>
<tr>
<td>Number of Firms With a Value of:</td>
<td></td>
</tr>
<tr>
<td>Exactly $1.0 Billion</td>
<td>38</td>
</tr>
<tr>
<td>Between $1.0 and $4.9 Billion</td>
<td>82</td>
</tr>
<tr>
<td>Between $5.0 and $9.9 Billion</td>
<td>10</td>
</tr>
<tr>
<td>Greater Than or Equal to $10.0 Billion</td>
<td>12</td>
</tr>
<tr>
<td>Median Year of Company Founding</td>
<td>2008</td>
</tr>
<tr>
<td>Earliest Year of Company Founding</td>
<td>1994</td>
</tr>
<tr>
<td>Most Recent Year of Company Founding</td>
<td>2014</td>
</tr>
</tbody>
</table>

of big-scale private equity rounds proliferated. In that sense, these additional PIPO funding transactions fill a gap in the natural progression that a new venture goes through between accessing smaller private funding rounds before seeking a larger public launch. That is, PIPO deals provide a company with at least some of the benefits of a large-scale public funding while allowing it to continue to operate in the private market and thereby avoid (or at least significantly postpone) many of the public company governance problems that the PE market has corrected in the past. Further, this also suggests that the PE funds and other institutional investors that provide PIPO financing are likely to participate in the valuation creation process longer as well, thereby potentially enhancing their own return performance. Figure 3 illustrates the equity funding progression for a new business venture, both without (Panel A) and with (Panel B) the presence of PIPO transactions.

The Emergence of PIPO Transactions and the Anatomy of a Unicorn

As noted previously, PE investors have typically focused on early-stage investments through VC funds or on buyouts of mature business through LBO funds. The growth capital needed to develop a company from an earlier-stage business to one that is more mature was traditionally provided by either larger companies that strategically acquired those smaller firms or from the public market through IPOs. Now, however, emerging growth companies have begun to raise significant amounts of capital in private funding rounds, or PIPOs, that allow them to remain privately managed until they become more established businesses with higher valuations.

We have gathered myriad financial details on a collection of 142 firms that qualified as unicorns as of August 31, 2015. Specifically, in order to be included in the sample, a company must (1) have always been private, (2) have received at least one funding round of institutional capital, (3) not be a divisional buyout of a public company, and (4) have an estimated market valuation of $1 billion or more. The identity of and data for our sample of unicorn companies were gathered from several sources, including Wells Fargo, CB Insights, and CrunchBase, as well as our own research.

Although we have endeavored to assemble a comprehensive list of sample firms, there are always challenges in gathering data on private equity investments. Private companies and their investors maintain high levels of confidentiality regarding their financial and operating performance. For example, there are several privately held businesses for which we were able to identify the amount of the most recent funding round, but not the total amount of capital raised. We did not include those firms in our sample.

Despite these challenges, we believe that we have identified a representative list of unicorns that has been cross-checked against multiple data sources. Table 1 provides summary data about the number of firms, the industry classifications and market valuations of those firms, and their founding years. The 142 unicorn companies in our sample have a mean and a median market valuation of $3.7 billion and $1.6 billion, respectively. The aggregate value of all of the firms in the sample is $623 billion, and the vast majority of them can be classified within some vertical market segment of the technology sector (e.g., internet, software, hardware), with internet-based businesses being by far the most prevalent (80 of 142). The highest valuation is $51 billion for Uber, and the second largest is China-based Xiaomi, at $46 billion. However, the distribution of valuations is heavily skewed toward the smaller firms in the sample. As Table 1 and Panel A of Figure 4 illustrate, there are only 12 companies with a valuation greater than $10.0 billion and ten with a value between $5.0 and $9.9 billion, but 120 with a value between $1.0 and $4.9 billion. Consistent with the concentration of unicorn firms in the internet market segment, Panel B of Figure 4 indicates that this industry category represents a sizeable majority of the aggregate.
35. See Benner (2015), op. cit.

One very interesting feature of the sample is that there are 38 unicorn companies with a valuation of exactly $1.0 billion. Clearly, reaching this valuation benchmark is considered to be important for many firms, if for no other reason than the marketing and recruiting benefits that unicorn status conveys. Bill Gurley, Managing Partner at Benchmark, has warned, however, that: “In trying to achieve a $1 billion valuation, some entrepreneurs cut deals with investors—such as financial terms that promise investors a certain return on their money—that in reality make the valuation lower.” Entrepreneurs can, for example, exchange either higher preference payments or warrant coverage that effectively lower the net proceeds to both prior investors and the entrepreneurs in order to achieve higher gross valuations. Preferred stock agreements almost always include terms which provide for a preference payment that must be distributed upon the occurrence of a liquidation event. Any proceeds, net of those preference payments, are then distributed pro rata to all common shareholders.

To see how this might work, assume that a company negotiates a $100 million, Series C preferred stock financing round on a $900 million pre-money valuation for a post-money valuation of $1 billion, which would allow the firm to attain unicorn status. The new investors in this case would own 10% of the company. Further assume that immediately after the capital infusion, the company receives an offer to be acquired for $1 billion, which the board of directors decides to accept. If the PIPO financing round provided no preference payment, then the total proceeds provided to the shareholders would be the full $1 billion, which was the post-money valuation of the company. The Series C investors would then receive 10% of the total proceeds from the sale (i.e., $100 million), which equals their original investment. If, however, these new inves-

![Figure 4 Distribution of Market Valuations Across the Unicorn Sample](image-url)

A. By Individual Firm

B. By Vertical Market Segment
The valuation of the firm. Assume that the same company agreed to a $100 million Series C round with no preference payment but with 100% warrant coverage, which would produce a unicorn outcome. For instance, warrant coverage also affects the effective interests of the prior investors by somewhat less than an additional 10%. The returns to new investors agree to a higher gross valuation, but the impact of the higher $70 million. So, with a 3-times preference, the new investors also receive their 10% pro rata distribution of net proceeds, or $30 million preference payment (i.e., three times the new investors' commitment) is deducted. Further, the Series C investors would also receive their 10% pro rata distribution of net proceeds, or $70 million. So, with a 3-times preference, the new investors agree to a higher gross valuation, but the impact of the higher preference payment significantly reduces the net valuation of the company.36

We also reviewed when each of the unicorn firms in our sample was founded. The average firm was established in 2008, but the earliest launch was 1994 and the most recent was 2014. There are four companies in the sample that were founded in 2014: three are based in China and one is based in the U.S. Many of the companies have, therefore, been operating for more than five years, but many of these firms have been able to achieve valuations of at least $1 billion in very short periods of time. In fact, 21 of the sample firms were founded in 2012 or later, representing a total market value of $70.6 billion with more than $5.4 billion in total capital raised.

Table 2 provides more specific summary information about the most recent funding rounds and the total amount of capital raised for these unicorn companies. The most important thing to note from these data is that funding round sizes for unicorns are substantial. The mean and median sizes of the most recent funding rounds are $228.6 million and $145.0 million, respectively. The funding rounds range from a minimum of $5.0 million to a maximum of $1.1 billion for Uber's most recent round.37 Also, there are eight companies that have raised up to $99 million, while the majority of firms in the sample (i.e., 92) have raised between $100 and $499 million. There are 42 firms, about 30% of the sample, that have raised more than $500 million in equity financing, with 22 of them raising a cumulative total of more than $1 billion.

It is particularly instructive to note that were it not for PIPO transactions, the 134 firms that have remained private and have raised more than $100 million would likely have had to access funds in the public markets to raise that amount of capital. PwC reports that during the fifteen-month period ending in mid-2015, the median proceeds from technology-based IPOs globally was $265 million, which is less than the median amount of total capital ($287 million) raised by unicorn firms through PIPO financing.38

Figure 5 provides supplementary information about the distribution of total capital raised across the 142 individual companies in the sample (Panel A) as well as on an aggregate level by vertical market segments (Panel B). Internet companies have raised almost two-thirds of the total capital represented in the sample (i.e., $49.0 of $75.7 billion), which once again is not surprising since most of the unicorn firms come from this industry group. In terms of the level of PIPO fundraising in individual firms, Uber has raised the most capital, at more than $7.6 billion, while at the other extreme the Chinese firm Fanli has accessed just $30 million. Despite the funding disparity between them, these two particular companies serve to highlight the fact that unicorns are very much a global phenomenon. In fact, our collection of 142 unicorn companies contains firms headquartered in 16 countries. There are 53 firms domiciled outside of the United States, in countries that include India, China, Israel, South Korea, Singapore, Germany, and England, among others.

Figure 6 provides the geographic dispersion of regions throughout the world in which these companies are located. Nearly 63% of the sample (89 firms) is headquartered in the United States. China is home to nearly 15% of the sample, with a total of 21 unicorn companies, while the Europe, Asia-Other, and “Other” regions follow with 14, 11 and

Table 2 PIPO Funding Information for the Unicorn Sample

<table>
<thead>
<tr>
<th>Type of Total Capital Raised</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Than or Equal to $99 Million</td>
<td>8</td>
</tr>
<tr>
<td>Between $100 and $499 Million</td>
<td>92</td>
</tr>
<tr>
<td>Between $500 and $999 Million</td>
<td>20</td>
</tr>
<tr>
<td>Greater Than or Equal to $1 Billion</td>
<td>22</td>
</tr>
</tbody>
</table>

36. There are other ways to manipulate the reported value of a company in order to produce a unicorn outcome. For instance, warrant coverage also affects the effective valuation of the firm. Assume that the same company agreed to a $100 million Series C round with no preference payment but with 100% warrant coverage, which would provide the new investors with options to purchase $100 million of the company's common stock at the pre-money price per share. If the company then sells for more than the post-money valuation, the investors will exercise their warrants, which will dilute the interests of the prior investors by somewhat less than an additional 10%. The returns to the Series C funding round will therefore increase as the acquisition offer price increases. Unlike the preference payments, warrant coverage reduces the net proceeds to investors as the value of the company increases.

37. It is also worth mentioning that besides the equity funding rounds discussed earlier, Uber also acquired a $1.6 billion round of debt financing on January 21, 2015 and has raised total debt and equity capital in private market transactions of approximately $7.6 billion.

The research literature we summarized earlier highlighted the transformative power that PE investments can have on public firms with ineffective management and governance structures. We also argued that PIPO investments have the ability to forestall these problems by providing privately held companies the opportunity to remain out of the public markets for a longer period of time. But given that these arguments could have been made at virtually any point over the past 25 years, the specific question that remains to be addressed is why are PIPOs emerging now as a viable funding vehicle?

We think that the answer to that question must consider several economic forces involving both the supply and demand for large-scale private capital infusions. That is, there are reasons that growing companies might prefer to raise private capital instead of going public, but there are also reasons that investors might be increasingly interested in making private company investments.

The emergence of PIPO funding arrangements and, as a
result, the creation of some unicorn firms may be a part of a longer-term trend. Professor Jay Ritter has documented that IPO volume has declined in the U.S. since 2001 and has identified several potential causes, including heavy-handed regulation, reductions in analyst coverage, market conditions, and economies of scope.\textsuperscript{40} Although we will discuss each of these below, they can be viewed primarily as demand-side drivers of the PIPO story.

**Forces Behind the Demand for PIPO Funding:**

*Heavy-handed Regulation of Public Companies.* The past several years have seen the imposition of a number of regulatory changes that impact the way in which public companies must operate. Arguably the most attention-getting of these regulatory adjustments resulted from the passage of the Sarbanes-Oxley Act (SOX) of 2002, which requires that CEOs and CFOs personally certify that their financial statements and operating results comply fully with the Act or face criminal penalties, jail, and potential claw-backs of compensation. Certainly, companies have found post-IPO SOX compliance costs to be material, if not outright prohibitive. On May 20, 2015, for example, CFO.com reported that 58% of large firms reported spending more than $1 million on SOX compliance in 2014.

Recognizing that compliance costs were particularly burdensome on smaller companies, Congress amended the statute in 2007 to exempt these firms from many of the law’s requirements. However, it has been hard to determine the net effect of these relaxed standards since they were implemented at the same time the financial crisis began to develop. Overall, however, it has been noted that there has been no rebound in small company IPO activity since SOX was amended, suggesting that regulation must not be the sole deterrent to a company going public.\textsuperscript{41}

*Analyst Coverage and IPO Activity.* The introduction of the Security and Exchange Commission’s (SEC) Regulation FD in 2000 and the Global Settlement in 2003 have both contributed to the decline in the number of analysts following smaller companies. Analysts provide an important conduit through which prospective public investors receive information about public companies. With fewer analysts, there is less information available to the market and less interest in smaller company IPOs. It has been estimated that there might be as many as ten additional small company IPOs per year if there was greater analyst coverage in this segment of the market.\textsuperscript{42}

*IPO Costs and Risks.* There are substantial direct and indirect costs of going public. Direct costs include investment banking underwriting fees, which are typically 5-7% of the amount of capital being raised in a public offering. In addition, a company must pay significant legal, auditing, printing, road show, and other fees during the process. The indirect costs include loss of operational discipline as senior management and others in the firm become focused on successfully completing an offering. After an IPO event, there are ongoing compliance costs, an increased risk of litigation, and ongoing financial and operational disclosures required by management.

There are also compliance and approvals risks associated with going public. The SEC reviews public offering documents, including registration statements under the Securities Act of 1933. During the review and comment process, which may last several weeks, the SEC may request additional information or require the company to amend its offering documents. Under certain circumstances, the SEC may also demand that the company pull its offering. If the SEC does grant its approval, there will then be additional demands placed on the CEO’s and CFO’s time, including road shows, media events, and analyst presentations that do not necessarily lead to operational improvements.


\textsuperscript{41} See Ritter (2013), ibid. Of course, it is also worth mentioning that PIPOs provide companies with a way to raise growth capital while avoiding many of these public market regulations altogether and that these private funding sources emerged in force after the worst part of the financial crisis had passed.

\textsuperscript{42} Ibid.
Private company officers may be able to better limit these demands and focus more on value-increasing activities. Compared to a private offering in which investors can negotiate the agreement and draft definitive documents in a matter of days or weeks without public disclosures, the timing and ultimate success of an IPO process can be much more uncertain.

**Economies of Scope.** Jay Ritter, as well as several of the investment bankers with whom we have spoken, has noted that there are fewer barriers to entry to launching companies in the technology sector. Open source software, cloud services, outsourced development teams, and enhanced remote communication and collaboration tools have lowered the cost and increased the speed with which companies can be conceived and established. Ritter argues that being a small company that grows organically is an inferior business strategy compared with trying to grow rapidly by acquiring other firms or being acquired by larger organizations that can quickly implement new technologies.

There is evidence supporting this Economy of Scope hypothesis, which shows that since the early 1990s small companies, whether recent IPOs or more seasoned firms, have become increasingly unprofitable and that the frequency of those firms being acquired within three years of going public has increased. IPOs of small companies have also produced disappointing stock returns for public market investors in the last three decades.44

**Forces Behind the Supply for PIPO Funding:** We have also identified a number of supply-of-PIPO-capital drivers that may help more fully explain current market conditions.

**Low Interest Rates and the Search for Yield.** Since December 2008, the Federal Reserve has maintained a federal funds target rate of between 0 and 25 basis points, which has effectively dampened rates of return on financial assets and caused institutional and private investors to seek higher yields in other investment vehicles, including a wide variety of private market vehicles such as real estate, natural resources, venture capital, and private equity. For example, according to Preqin, a leading provider of data for the alternative asset industry, private equity firms had raised more than $1.7 trillion from the first quarter of 2012 through the middle of 2015 and had more than $1.3 trillion in “dry powder” (i.e., uninvested capital commitments) at the end of 2014, all of which was seeking attractive private investments.

**Poor Performing Smaller Company IPOs and PE Governance.** The recent poor performance of small company IPOs we just mentioned has likely reduced demand for these deals.45 As noted earlier, remaining private longer allows companies to operate under a private equity governance structure that may enhance management’s ability to more fully develop its company’s operating, sales, and revenue models. As we have also argued, remaining private also allows a company to operate without disclosing sensitive financial and operational initiatives and results to the public and prospective competitors.

Private equity investors may be willing to invest in growing private companies because they can more effectively implement operational changes that enhance value. Additionally, if they do not commit their capital, these investors risk missing most of the increase in company value, which increasingly occurs in the private markets before companies go public. For example, it has been noted that while several of the largest technology firm launches in the 1980s and 1990s realized nearly all of their valuation creation in public markets (including those of Apple, Microsoft, Oracle, and Amazon), a significant portion of that value creation is now occurring in the private market before an IPO event (as in the cases of LinkedIn, Yelp, Facebook, and Twitter).46

**Mainstream Acceptance of PE Investments.** PE investing has transitioned from a boutique business to a mainstream, increasingly important component of capital market activity.47 Government and corporate pension funds, endowment funds, insurance companies, sovereign wealth funds, and many other institutional investors now make PE investments a standard part of their asset allocation strategies. In particular, a recent examination of the strategic allocation policies of more than 800 university endowment funds showed that the average allocation to various forms of private equity investments had increased to 6.6% of assets under management in 2013 from only 0.8% in 1990.48

There are several reasons for these increased allocations to private forms of ownership, including the need to meet challenging spending goals—usually in the range of 7-8% per annum on a nominal basis—in the face of the lower return environment for traditional public market securities described earlier. Further, there is an increasingly pervasive belief among institutional investors that private markets tend to be less efficient than public markets for reasons such as less frequent trading and more costly information acquisition, and that this increases the chances for capturing abnormal risk-adjusted returns through investments in these assets.49 In fact, this trend in which institutional investors consider more and larger direct investments in private companies was emphasized in a recent study that predicted that the venture capital arms of public corporations (such as Google Ventures, Comcast Ventures, and

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43. See Ritter (2013), ibid, and Bender, Evans, and Kupor (2015), op cit.
45. Ibid.
47. Wruck (2008), op cit.
Intel Capital) will become a major source of PIPO funding in the future.\textsuperscript{50}

\textbf{Implications of the Trend Toward PIPO Financing}

The ability of companies to remain private longer under the potentially superior governance structure provided by PE investors is likely to have several repercussions for participants in both private and public capital markets. We summarize below some of the potential implications and areas for future research generated by our discussions with many of the corporate finance and investment professionals who have contemplated the impact of PIPOs on company fundraising in the future.

\textit{Private equity investors will capture much of the value increase.} If privately held companies are able to raise capital in sufficient amounts to provide the funding needed to carry them through the majority of their growth phase, they will be able to defer IPO events and perhaps avoid them altogether. To the extent such companies are able to continue operating as private firms, investors in the public markets will find it increasingly difficult to acquire stakes in, for example, promising technology companies early in their development cycles, and instead be forced to invest only after private equity investors have captured the majority of a firm’s increased market valuation.

As we have seen, Uber is now valued at more than $50 billion. Assuming the company eventually does become publicly traded, the early suppliers of capital will earn many multiples of their initial investments. Subsequent investors, therefore, may have limited upside potential if most of the value creation in the firm occurred while it was under private ownership. For those unicorns that do end up going public, we will be interested in comparing the post-IPO return performance of unicorn firms with that of companies that went public before they achieved the status of having a $1 billion private valuation.

\textit{Investor preferences may change.} To gain access to emerging technology companies, public investors will either need to invest in PE-oriented partnerships, which require that they be properly accredited, or to invest through mutual funds, pension funds, or other institutionally managed portfolios that have access to private market opportunities. Established money management companies such as Wellington Asset Management, T. Rowe Price, and Fidelity Investments, among others, have all recently created fund products to invest in PIPO transactions. However, investing in private companies through intermediaries will limit the ability of investors to obtain meaningful exposure to specific individual companies, depending on whether the intermediary has the willingness or ability to invest in any particular deal.

Institutional investors with whom we have met have indicated that it has been very difficult, if not impossible, to invest in certain private companies for a variety of reasons: Either existing investors are already completing in-progress funding rounds, the companies are approaching other institutional investors with whom they have existing co-investment relationships, or the firms intend to approach targeted new investors who can provide strategic operating benefits as well as new sources of capital.

If institutional investors are limited in their ability to invest directly in unicorn companies, we expect that they will increasingly seek to deploy capital with the leading PE managers that have proven access to these transactions. If that is the case, these investments might then become substitutes for small-cap public equity funds as a way to gain ownership exposure to emerging technology companies. Small-cap equity funds may also suffer from poorer performance, because fewer attractive small firms will be available to go public or those firms will remain private through their early growth phases and not go public until they are already large companies. We would therefore expect to see institutional asset allocation policies shift away from small-cap public stock holdings and toward an increased reliance on private equity holdings.

We are also interested in investigating the cross-ownership of unicorn companies among PE funds to assess if the market for these companies has become relatively closed (i.e., limited access to new investment capital), or if there is broad and meaningful diversity among the investment managers who own them. The less diversity in the fund ownership structure, the more closed and less liquid the market may be.

\textit{PIPO funding may signal IPO success.} With wider-spread development of the PIPO market, it may become increasingly difficult for smaller companies to effect successful public launches. PE funds have historically had greater access to high-quality corporate management resources, and can also perform greater due diligence prior to their investments, than the average public investor. Private companies that are not able to raise sufficient growth capital through PIPOs may effectively be indicating to the market that PE investors found them to be unattractive investment opportunities. Accordingly, it would be more difficult for these companies to then attempt to complete a successful IPO, because of the negative signaling effect of their inability to complete a successful PIPO. We would expect more of these firms to be acquired by larger corporations, for IPO qualification standards to rise, and for the average size of IPO companies to increase.

\textit{Investment banking services and fees may change.} If private firms are able to develop more fully their operating, sales, and business models under private ownership, the placement risk associated with underwriting IPO transactions is likely to decline considerably, which should in turn put downward pressure on the underwriting fees that investment banks can charge, which currently fall in the range of 5-7\%.\textsuperscript{51} To offset this decline in underwriting revenue, investment banks may

\textsuperscript{50} Thomas Grota, 2015, “Corporate Venture Capital Will Come to Play an Even Larger Role in Unicorn Financing,” CB Insights (www.cbinsights.com: August 14).

find they need to shift to merger and acquisition advisory work or private placement services to generate additional income.

Unicorns may be better able to withstand market volatility. Unicorn firms may be somewhat more insulated from market volatility in that PE managers typically have sufficient capital commitments in reserve to continue to fund their existing portfolio companies and new investment opportunities, regardless of the prevailing public market environment. By contrast, a successful IPO depends upon many factors, some of which are internal (e.g., the quality of the company’s management and its ability to follow a disciplined operational process) and some of which are beyond the firm’s control (e.g., general economic and equity market conditions). For example, in 2000, there were many potentially successful companies that were in registration to go public, but when the celebrated “dot-com” bubble burst and the stock market declined, most of these IPOs were abandoned. Many of those companies were then unable to obtain sufficient financing to cover their operating costs and, ultimately, had to shut down.

As we noted earlier, PIPO transactions have contributed to the fact that private equity funds are lengthening the time in which they hold their portfolio company investments. Assuming they are able to continue funding their growth opportunities in that manner, those private firms may be more insulated from changing public market conditions. Nevertheless, there were many cases, though, after the 2007-2008 market decline in which private equity managers were either unable to collect promised capital commitments from their limited partners or were asked by those partners to return some or all of the capital that had already been committed. The market declines during those years reduced public stock values by up to 50% in the U.S. and by even more in other global regions.

Even in those circumstances, however, private equity may provide a more stable funding source than public markets. For instance, during the last two weeks of August 2015, the S&P 500 index declined by in excess of 11% before recovering by more than 6%. During that same period, four companies completed PIPO funding rounds and became unicorns.

Long-term capital market performance of unicorn firms. If PE ownership provides companies with superior management and governance structures and PIPO funding opportunities allow them to remain in that position longer, then we would expect the long-term performance of unicorn companies to be superior, all else held constant, to those firms that are unable to raise sufficient private growth capital. Further, we would expect relatively few unicorns to ultimately become distressed, bankrupt, or sold at a considerable discount to the valuations realized in prior funding rounds. We would also anticipate less management turnover, particularly following any subsequent IPO event, among the set of unicorn firms because, as large companies already, they would have had sufficient time to recruit experienced senior management with substantial operational experience. It would be interesting to address these long-term performance issues in future research.

Diversification of management ownership holdings. One significant advantage of public companies is a tradable market into which managers can sell some of their personal stock holdings—which they often receive as part of their incentive compensation packages—in order to diversify their personal investment portfolios. To achieve similar diversification benefits, we would expect to see managers of unicorn companies increasingly be able to sell some portion of their ownership interests as new rounds of PIPO capital are raised. We also forecast the development, to the extent permissible by state and federal securities laws, of a broader market for the exchange of private company ownership stakes.52

Concluding Thoughts

Until recently, managers of new and developing corporations have had few alternatives for raising significant growth capital other than through the IPO market, which entailed accepting the potential costs and risks associated with becoming a public company. Over the past few years, this situation has begun to change as privately held firms have been able to access substantial sources of funds through an arrangement known as a private initial public offering, or PIPO. Indeed, helping emerging ventures remain in the private market for a longer period of time—and hence avoid the governance challenges that often negatively impact the value and operational efficiency of public companies—is the primary benefit that these PIPO transactions have to offer. With PIPO financing available, the average time that companies can remain outside the public markets has increased from less than five years to more than a decade. Further, with this longer period in which to harvest their growth opportunities as private firms, a sizeable number of the companies have been able to achieve market valuations in excess of $1 billion while remaining privately owned enterprises, a stature that was previously so rare as to warrant the use of the term “unicorn” to describe them.

Despite the many potential benefits to a company using PIPO financing to continue operating in the private market, a cautionary note about this phenomenon is in order. Given the recognition that attaining unicorn status now receives in the capital market, there are tremendous practical consequences to a firm having a market value of $1 billion versus, say, $980 million, even if the actual difference in these amounts is largely immaterial. Thus, as we showed earlier, managers of some companies may have the incentive (or otherwise feel pressured) to manipulate the market valuation

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52. One extant market mechanism that allows private equity firms to sell companies to each other is the secondary buyout deal; see Francois Degeorge, Jens Martin, and Ludovic Phalippou, 2015, “On Secondary Buyouts,” Journal of Financial Economics, forthcoming. Although motivated as an exit strategy for the current outside owners of a privately held firm, it is possible that the managers of the company could see an increase in the liquidity of their equity stake through this arrangement.
funding or even aware that the company valuation may have been manipulated.

With that caveat noted, it remains the case that the ultimate success of all corporations—unicorns and non-unicorns alike—depends upon the quality of their business and operational performance over time. The existing evidence strongly suggests that this performance can be enhanced in a developing company by its ability to remain private and operate under the superior governance structure offered by PE ownership. The growth of PIPO financing arrangements that we have witnessed in recent years underscores the point that these transactions have become a preferred funding method for a rapidly expanding number of firms. If this degree of capital market acceptance continues at the same pace, we would expect these private funding transactions to expand into different industry segments and have a lasting impact on the way corporations seek to finance their growth opportunities.

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