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The Growing Blessing of Unicorns: The Changing Nature of the Market for Privately Funded Companies

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One of the more striking developments in financial markets over the past decade has been the ascent of *unicorns*, companies that have reached market valuations of $1 billion without access to public capital. Once considered rare enough to liken to a mythic creature—the first unicorn sighted was the Chinese firm Alibaba in 2005, and the term itself was not coined until 2013—these firms have become almost commonplace in recent years.

CB Insights, a vendor of data on and analysis of private companies, reported that by March 2020, there were 464 firms throughout the world that could boast of that lofty status. That was more than triple the number in existence just five years earlier, with scores of former unicorns having already graduated to other organizational forms through acquisitions or initial public offerings (IPOs). Needless to say, this collection of companies controls a substantial amount of financial capital. The private equity research firm PitchBook Data estimates that, at the close of 2019, the market value of U.S.-based unicorns alone exceeded $600 billion.[1]

This remarkable growth of the unicorn market underscores the important fact that it has become increasingly common for companies to operate and grow to significant levels while remaining privately held. Of course, it is virtually impossible for firms to attain a $1 billion valuation through internal growth alone, since these companies almost always receive considerable infusions of financial capital from *private* sources, often through multiple funding rounds spread over several years. These private funding rounds, each of which can involve hundreds of millions to billions of dollars in new capital, have offered firms a viable alternative to the traditional path to raising sizeable amounts of capital through an IPO in the public market. Indeed, such non-public capital fundraisings, which have been dubbed "private IPOs"—or "PIPOs"—have increased dramatically in popularity since first appearing regularly in 2012. Indeed, such PIPOs are now an integral mechanism by which firms often become unicorns in the first place, thereby remaining outside the control of public equity investors for longer periods of time.

All of which begs the question: Why would the owners and decision-makers of a fledgling company prefer to receive financial capital from private investors rather than public ones? As has been well chronicled in the research literature over the past 30 years, the answer appears to involve issues related to how the firm is run and controlled. Specifically, the research provides consistent documentation of private investors' ability to impose better governance structures than public equity holders, particularly with respect to reducing agency and free cash flow problems. Karen Wruck, for example, has identified several key elements of privately held companies that have helped them outperform otherwise comparable public companies, including smaller, more active, and interested boards comprising the firm's largest shareholders and overseeing operating managers who are also motivated by large equity stakes.[2] Along with the spurs for efficiency and value

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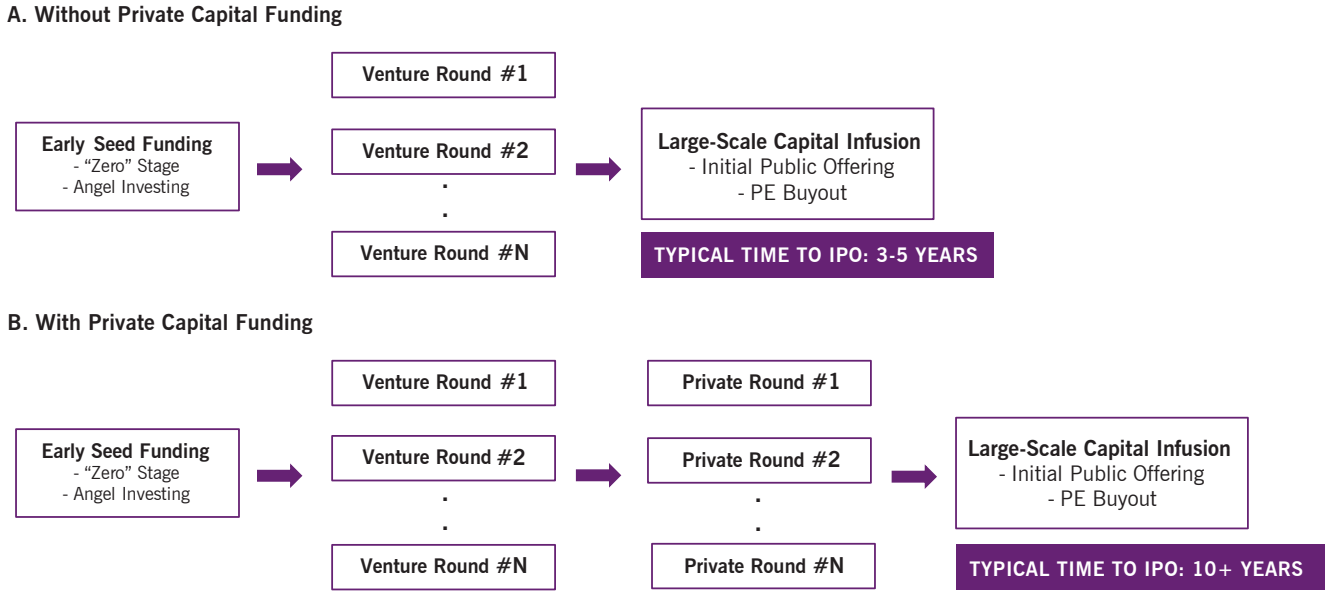
1 See Garrett James Black and Bryan Hanson, 2019, *Unicorn Report-2019*, PitchBook Data Inc., as well as Gené Teare, 2020, "Private Unicorn Board Now Above 600 Companies Valued At $2T," *Crunchbase News*, June 20. Also, as noted in Katie Benner, 2015, "The Unicorn Club, Now Admitting Members," *The Wall Street Journal*, August 23, the first person to use the term "unicorn" was Aileen Lee of Cowboy Ventures, a seed-capital venture firm. Incidentally, just as a group of wild horses is called a *herd*, a collection of unicorns is referred to as a *blessing*, which explains one meaning of the seemingly quixotic title for this study.

2 Karen H. Wruck, 2008, "Private Equity, Corporate Governance, and the Reinvention of the Market for Corporate Control," *Journal of Applied Corporate Finance* 20, no. 3: 8-21. For a review of how private equity involvement can improve corporate governance structures, see also Mike Wright, Kevin Amess, Charlie Weir, and Sourafel Girma, 2009, "Private Equity and Corporate Governance: Retrospect and Prospect," *Corporate Governance: An International Review* 17, no. 3: 353-375, as well as Edward Peter Stringham and Jack Vogel, 2018, "How Private Equity Enhances the Market for Corporate Control and Capitalism," *Columbia Law School Blue Sky Blog*, September 13.

Figure 1

Company Funding Progressions Without and With Significant Private Capital Infusions



Source: Brown and Wiles (2015)

creation provided by concentrated equity ownership, proponents of private capital also frequently point to its effectiveness in creating an environment where companies can grow and prosper without being subjected to short-term (i.e., quarterly) performance hurdles, thus allowing for the development of a more sensible and sustainable operating trajectory.[3]

This article presents the findings of our *second* major study of the market for unicorns. In our first, which was published in this journal five years ago, we analyzed the demographic and financial characteristics of the 142 global firms that qualified for unicorn status on August 31, 2015.[4] We also considered the economic forces supporting an increased level of large-scale private funding activity, which in turn led us to suggest a number of potential consequences of these investments.

First, and foremost, was the possibility that companies would be able—and indeed prefer—to stay privately held longer before turning to public sources of capital. This potential outcome is illustrated in Figure 1, which shows how the presence of a significant amount of private funding can extend the time from a company's founding to its eventual path to public market financing from three to five years to something closer to ten years.[5] It is interesting to note that this increase in the supply of private capital to late-stage private startups has been at least partly attributed to recent changes in security laws, especially the National Securities Markets Improvement Act (NSMIA) of 1996, which relaxed blue sky law restrictions that made it onerous for these companies to raise capital from out-of-state investors. As a fairly direct consequence, since the passage of the NSMIA, traditional investors in public securities such as mutual funds and hedge funds have become significant funding sources for private companies, alongside the venture capitalists and private equity firms that have traditionally supplied most private capital.[6]

3 An important, if somewhat ironic, counterpoint to the notion that the infusion of substantial amounts of private capital is unambiguously good for companies comes from Bill Gurley, a partner at the venture capital firm Benchmark: "The very act of dumping hundreds of millions of dollars into an immature private company can also have perverse effects on a company's operating discipline… As these late-stage private companies digest these large fund raises, they are pushing profitability further and further into the future, as well as the proof that their business model actually works." See Bill Gurley, 2015, "Investors Beware: Today's $100M+ Late-Stage Private Rounds Are Very Different from an IPO," *Above the Crowd*, February 25.

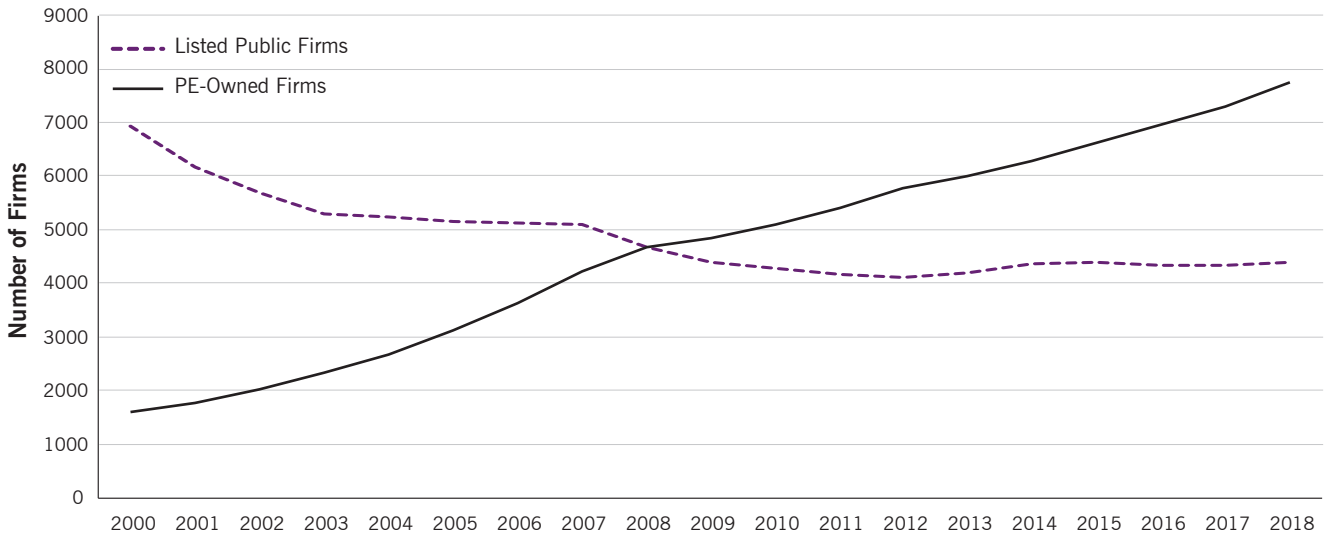
4 Keith C. Brown and Kenneth W. Wiles, 2015, "In Search of Unicorns: Private IPOs and the Changing Market for Private Equity Investments and Corporate Control," *Journal of Applied Corporate Finance* 27, no. 3: 34-48.

5 A recent study of funding sources for technology firms in the U.S. market documented that median time for a new venture to undergo an IPO increased from four years to eleven years over the period from 1999 to 2014. See Morgan Bender, Benedict Evans, and Scott Kupor, 2015, "US Tech Funding," Andreessen Horowitz Working Paper.

6 Michel Ewens and Joan Farre-Mensa, 2020, "The Deregulation of the Private Equity Markets and the Decline of IPOs," California Institute of Technology Working Paper, February 7. On the other hand, Sergey Chernenko, Josh Lerner, and Yao Zeng, 2020,

Figure 2

Number of U.S.-Listed Public Firms and PE-Owned Private Firms



Data Source: World Bank, PitchBook

A second potential outcome suggested by our earlier study was that, as a result of staying privately financed for a greater length of time during their growth phase, when unicorn companies do finally experience an IPO, the post-offering share price increases—both initially, and even over the longer run—were likely to be substantially smaller than public equity holders have come to expect.[7] Said differently, substantially more of the growth premium generated by the company was likely to be captured by private equity investors, thanks perhaps to better governance practices as well as improved firm operations.

Third and last, we also speculated that the continued development of the unicorn market was likely to contribute to the steady reduction in the number of publicly traded companies listed on organized exchanges, a trend that has been occurring for the past two decades. Figure 2 provides a striking illustration of this phenomenon, with the number of publicly traded firms listed on U.S. exchanges falling from 6,917 to 4,397 between 2000 and 2018—a period in which the number of private companies held by PE and venture capital firms more than quadrupled, from 1,586 to 7,746. In fact, in every year since 2008, when the numbers of both types of companies were roughly equal (4,668 private, 4,666 public), privately owned firms have outnumbered listed companies by a substantial margin. We also predicted that this reduction in the number of available public stocks would become particularly notable in the small-capitalization sector of the market, which, among other things, would make it far more challenging for institutional investors to manage their portfolios properly.[8]

So, to what extent have our predictions actually come to pass with the ascension of unicorns? Our goal in this study is to examine the evidence related to those forecasts to find out which, if any, may have come true. To this end, we started by looking at how many of the 142 unicorn firms from our original 2015 sample are still operating as private companies, and which among them have experienced a change in their organizational structure, whether through an IPO, a private acquisition, or dissolution. We also investigated how this market has evolved during the past five years by assessing the demographic characteristics of the 464 unicorns that now (as of March 2020) exist around the world. In particular, we

"Mutual Funds and Venture Capitalists? Evidence from Unicorns," European Corporate Governance Institute Working Paper, April, points out that the presence of mutual fund-sponsored investment in the capital structure of private company can exacerbate agency conflicts in the firm if the founders and investors have different priorities regarding eventual exit strategies.

7 Jay Ritter reports that the average first-day return for all 8,363 IPOs executed between 1980 and 2017 was 17.9%, with an average three-year buy-and-hold return of 21.9%. See Jay Ritter, 2019, "Initial Public Offerings: Updated Statistics on Long-Run Performance," U. of Florida Working Paper, April 9. In this context, it also bears mentioning that the number of U.S.-based IPOs has declined dramatically over the past 20 years; see Ewens and Farre-Means (2020), op. cit.

8 For instance, as of June 2018, the Wilshire 5000 index contained fewer than 3,500 names because there have not been 5,000 U.S.-listed stocks since 2005; see Jason M. Thomas, 2017, "Where Have All the Public Companies Gone?," *The Wall Street Journal*, November 16. See also Craig Doidge, Kathleen M. Kahle, Andrew Karolyi, and Rene M. Stulz, 2018, "Eclipse of the Public Corporation or Eclipse of the Public Markets?," *Journal of Applied Corporate Finance* 30, no. 1: 8-16 as well as David Shipley, 2018, "Where Have All the Public Companies Gone?," *Bloomberg Opinion*, April 9.

document some notable dimensions of how the global unicorn market has developed over time, including firm size, industry affiliations, and geographical location.

In the final part of our study, we followed the progress of the collection of unicorn firms from our 2015 sample that either went public or were acquired by another company, which will provide the most direct evidence on the set of predictions outlined above. As part of this last effort, we also examined the set of private firms that became unicorns after 2015, but had an IPO or acquisition event prior to 2020, thereby keeping them out of our latest sample. But before we get to any of the findings of that analysis, we will begin by taking a detailed look at the life cycle of one of the most prominent unicorns ever created: Uber Technologies.

The Birth, Ascension, and Afterlife of a Unicorn: A Case Study

As legend has it, Uber was born in Paris in December 2008 when Travis Kalanick and Garrett Camp, who both had previous experience creating technology firms, could not manage to get a ride on a cold winter night.[9] By March of the following year, Camp had designed the prototype for an application that would allow users to hail direct transportation from their mobile devices—at which point Kalanick joined him in the venture, which they initially called UberCab. By the spring of 2010, the two entrepreneurs had beta tested their website and, by September of that year, they raised their first outside seed capital of $1.6 million, which placed the value of the firm after funding at $5.4 million. They officially launched their mobile app in the San Francisco area in 2011, at which time they also changed the company's name to Uber. Two additional rounds of institutional funding were raised in 2011—the first for $14.1 million, the second for $43.8 million—which increased the post-money value of the company to $346.5 million by the end of the year. The firm then expanded its services dramatically over the next few years, both into new cities and global markets for the ride-hailing operation and into different services, such as food delivery. From early in its history, however, the founders considered Uber to be a "disruptive" technology firm, emphasizing that the massive amount of data it was able to gather was its most valuable asset.

How Did Uber Get to Be So Big?

While continuing to grow and expand the scope of its business, Uber was still not a unicorn at this point. That event occurred with their third institutional fund raise in August 2013, which included highly seasoned venture capital investors such as Google Ventures, TPG Growth, and Benchmark. This funding round actually left Uber with a post-money valuation of $3.7 billion, well in excess of the $1 billion value hurdle the company needed to clear to be officially designated a unicorn. From this point, the company continued to expand its operations and services at a rapid pace; and though still not profitable, it was able to attract several more rounds of private capital financing. The last of these private capital fundings took place in September 2018, which, in raising more than $3 billion, put the post-money valuation for the still-private firm at a staggering $76.0 billion.

On May 9, 2019, the company finally became a publicly traded company as Uber Technologies, Inc. with an IPO valued at $75.21 billion ($82.4 billion with overallotment options and restricted stock grants factored into the calculation), based on a price of $45.00 per share for the newly created common stock. This launch made Uber the highest valued IPO in the technology sector since Alibaba's 2014 IPO, which raised that firm's overall market value to $168 billion.[10]

Table 1 depicts several significant financial events in Uber's existence to date, including when the company was founded, each of the private capital funding rounds it raised (including its unicorn-establishing event), when it launched as a public firm, and four subsequent quarterly closing dates following its IPO. Listed for each of these dates is an indication of what the value of the equity stake in Uber was at that point in time (expressed in billions of U.S. dollars), with post-money valuations serving as estimates of those figures for each of the private funding rounds and the market capitalization of the firm's outstanding shares indicated once the firm became publicly traded.

It's important to keep in mind that because the equity stake in a private company does not, by definition, generate traded prices, its value must be estimated rather than observed directly. Post-money valuation, which is the usual method for that estimation process used in the venture capital industry, is calculated by multiplying the share price for the most recent funding round by the fully diluted number of shares from all previous funding rounds. However, as we noted in a previous study, this process can produce misleading valuation estimates whenever the company changes the terms of the ownership claims in successive financing rounds, which occurs quite often.[11] In fact, recent research has shown that post-money

9 Some of the material for discussion comes from A *History of Uber—Uber's Timeline*, Uber.com, June 16, 2020. Additional information on Uber's financing comes from CB Insights, Preqin, and Capital IQ.

10 Andrew J. Hawkins, 2019, "Uber Goes Public: Everything You Need to Know About the Biggest Tech IPO in Years," *The Verge,* May 10 and Michael J. de la Merced and Kate Conger, 2019, "Uber I.P.O. Values Ride-Hailing Giant at $82.4 Billion," *The New York Times,* May 9.

11 Keith C. Brown and Kenneth W. Wiles, 2016, "Opaque Financial Contracting and Toxic Term Sheets in Venture Capital," *Journal of Applied Corporate Finance* 28, no.1: 72-85. See also Robert C. Pozen, 2019, "Here's What Investors Need to Know About

Table 1

Valuation Time Line for Uber Technologies (in $ Billions)

Date	Event	Private Post-Money Value	Public Market Capitalization
Mar 2009	**Company Founded (Founder Capital)**	0.00	
Sep 2010	Seed Funding Round	0.01	
Feb 2011	Institutional Funding Round	0.05	
Dec 2011	Institutional Funding Round	0.35	
Aug 2013	Institutional Funding Round (Unicorn Status)	3.70	
Jun 2014	Institutional Funding Round	18.20	
Dec 2014	Institutional Funding Round	41.20	
Aug 2015	Institutional Funding Round	51.00	
Feb 2016	Institutional Funding Round	69.00	
Sep 2018	Institutional Funding Round	76.00	
May 2019	**Initial Public Offering**		75.21
Sep 2019	Market Valuation		51.91
Dec 2019	Market Valuation		51.04
Mar 2020	Market Valuation		48.30
Jun 2020	Market Valuation		52.97

Data Source: Preqin, Capital IQ, Bloomberg

valuations for a sample of unicorn firms overstated their fair market values (which adjusts for differential contract terms across various share classes, as well as for unexercised options) by an average of almost 50%.[12] Nevertheless, we report post-money numbers as the most widely available valuation estimates consistent with industry standards.

Did Uber Act as Predicted?

Table 1 reveals several pertinent things regarding how unicorn firms grow and prosper over time. For example, notice that the founders of Uber spent more than four years building the company's operations from its founding in March 2009 until it finally achieved a valuation in excess of $1 billion with the August 2013 funding round. (Of course, it is quite likely that Uber cleared this valuation hurdle even earlier, but the financing terms on this date are what mark it as the firm's unicorn birthday.) Notice also that Uber remained privately held for almost six more years—from August 2013 to May 2019—before its eventual transformation into a public company, a period during which it was able to raise enough additional capital to increase its value more than twenty-fold. This certainly highlights our earlier point regarding how the trend toward PIPO financing as a viable alternative to large-scale public funding events over the past two decades has altered the way in which capital markets function. It also confirms that Uber clearly benefited from the advantages of remaining privately owned during this period, despite the myriad controversies that beset the firm, from labor lawsuits and price-gouging allegations to removal of the founder/CEO and resignations of senior corporate officers.[13]

The valuation timeline exhibit also reveals additional information that bears on some of our previous predictions of the effects that might be associated with the rise of the unicorn market. Notice, first of all, that Uber remained a non-public firm for more than a decade (from March 2009 to May 2019), an outcome made possible only by its ability to support the dramatic growth of its operations over this time frame through multiple and significant infusions of private capital. Consistent with a PIPO-driven financing scheme depicted in the lower panel of Figure 1, Uber had eight distinct private funding rounds following its seed capital raise, the last six of which occurring when the company was at or past unicorn status. Further, by remaining privately owned for such an extended period, the founders and initial private investors in Uber were able to capture far more of the value in the company's growth phase than had the IPO event taken place sooner.

How Unicorn IPOs Are Really Priced," *MarketWatch*, April 25.

12 Will Gornall and Ilya A. Strebulaev, 2020, "Squaring Venture Capital Valuations With Reality," *Journal of Financial Economics* 135, no. 1: 120-143. Interestingly, these authors assess Uber's post-money valuation following the 2016 funding date to be only 12% higher than its fair market valuation, perhaps because the company maintained a single share class across its myriad financing rounds.

13 Kate Taylor and Benjamin Goggin, 2019, "49 of the Biggest Scandals in Uber's History," *Business Insider,* May 10, and Madison Malone Kircher, 2017, "How Uber Got Here," *New York Intelligencer,* March 8.

Table 2

Comparative Summary Statistics for the Unicorn Samples: 2015 vs. 2020

	August 2015	March 2020
Total Number of Unicorn Firms	142	464
A. Market Valuation ($ Billions)		
Aggregate Sample Market Value	522.0	1,370.7
Mean Firm Market Value	3.7	3.0
Median Firm Market Value	1.6	1.5
Minimum Firm Market Value	1.0	1.0
Maximum Firm Market Value	51.0	75.0
Number of Firms Having a Value of:		
Exactly $1.0 Billion	38 (27%)	141 (30%)
Between $1.0 and $2.4 Billion	57 (40%)	187 (40%)
Between $2.5 and $4.9 Billion	25 (18%)	73 (16%)
Between $5.0 and $9.9 Billion	10 (7%)	40 (9%)
$10.0 Billion or Greater	12 (8%)	23 (5%)
B. Firms by Vertical Market Segment		
Artificial intelligence	1	46
Auto & transportation	6	30
Consumer & retail	14	17
Cybersecurity	5	14
Data management & analytics	9	18
E-commerce & direct-to-consumer	21	55
Edutech	0	15
Fintech	14	61
Hardware	9	18
Health	8	33
Internet software & services	41	57
Mobile & telecommunications	6	28
Supply chain, logistics, & delivery	5	29
Travel	1	13
Other	2	30
C. Year of Company Founding		
Median Year of Company Founding	2008	2012
Earliest Year of Company Founding	1994	1919
Most Recent Year of Company Founding	2014	2018
Number of Companies Founded after 2015	---	38

For instance, the IPO value for the outstanding equity shares of $75.2 billion corresponds to the $76.0 billion post-money valuation following the last round of private funding that was finalized eight months earlier. On the other hand, the post-IPO performance of Uber's public equity has been far less successful; from its IPO date through June 30, 2020, the company's shares fell from $45.00 to $31.08, leading to an overall change in market capitalization of 29.6%. This suggests that Uber's original stakeholders were able to capture substantially all of the value associated with the company's early growth cycle and that the cumulative experience of the common stockholders has been disappointing, at least through the first year of its life as a publicly traded entity.

The Changing Landscape of the Market for Unicorns

How has the market for unicorn firms changed in recent years? To address that question, it is instructive to compare the demographic and financial characteristics for sets of active unicorns at two different points in time: August 31, 2015 (the sample from our original study) and March 1, 2020. As before, to be included in either sample, a company must satisfy the following conditions: (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. Throughout the entirety of our surveying process, the identity of and data for these samples were gathered from several sources, including CB Insights, Capital IQ, CrunchBase, PitchBook, Preqin, and Wells Fargo, as well as our own research. We believe these represent the most comprehensive lists available for each respective sample date.[14]

14 In our original study on PIPO financing and unicorns (Brown and Wiles (2015), op. cit.), we noted Steve Kaplan's caveat about the challenges of gathering private equity investment data, which bears repeating here: "No one has the data on returns to all PE funds. And for that reason, none of the conclusions of these studies—mine included—are completely definitive, or known with certainty. The findings are all conditional on the data available." See Steven Kaplan, as interviewed by Donald Chew, 2009, "The Future of Private Equity," *Journal of Applied Corporate Finance* 21, no. 3:8-20.

Comparative Market Valuations for Unicorns

Table 2 presents comparative summary statistics for the number of firms, market valuations for those firms (as of their sample date), their industry classifications, and the years in which they were founded. By far the most striking feature of these data is how dramatically the unicorn market expanded over this five-year period. This can be seen in terms of both increases in the number of active firms and the aggregate market value represented in the industry. The 142 firms that existed in 2015 had grown to a total of 464 by the first quarter of 2020. What's more, this increase of 322 companies understates the actual growth since not all of the unicorns in the earlier sample appear on the later list. (Uber Technologies, for instance, was part of the 2015 sample but became a publicly traded company prior to 2020.) In fact, 72 unicorns from 2015 were transformed in some manner—either through IPO, private acquisition, reduced market value, or business failure—prior to March 2020, meaning that the net expansion in newly established unicorns in the latest sample was actually 394, or almost three times the number that existed in 2015 to begin with. Interestingly, of the ten largest unicorns from 2015, only three—Airbnb, Palantir Technologies, and SpaceX—remain in the 2020 sample while seven others—Didi-Kuaidi, Dropbox, Flipkart, Pinterest, Snapchat, Uber, and Xiaomi—have all moved on. As the last row of the exhibit indicates, 38 of these new unicorn companies had not even been founded when the original list was assembled.

Equally compelling has been the growth of market value in the unicorn market. From the end of August 2015 to the beginning of March 2020, the aggregate valuation of these companies increased over 2.6 times, from $522.0 billion to $1.37 trillion. On an annualized basis, this equates to a compound growth rate of 23.9%. For perspective, the Standard & Poor's 500 index increased only 1.5 times over this same span, translating into a more modest compound annual growth rate of 9.4%. Thus, this important segment of the private equity market grew in both scope and scale in a way that cannot be explained by the returns enjoyed by other equity investors through the expansion of the public stock market that was continuing its own historic rise during this time.

What makes this development particularly notable is the considerable chorus of market professionals during the past five years cautioning that the blessing of unicorns, having once appeared, was now in danger of vanishing, "an endangered species" as one put it. The collective concern expressed was that the steep influx of investment capital into the private market had driven unicorn valuations to unsustainable levels. One European private investor remarked: "I get nervous when I see (unicorn) valuations…Where does it sit with the wall of capital chasing venture capital and other companies trying to stay private longer?" And a U.S.-based partner at a private equity firm warned that unicorn investments "will end very poorly for many…there are flowers in the garden but a lot of weeds, too."[15]

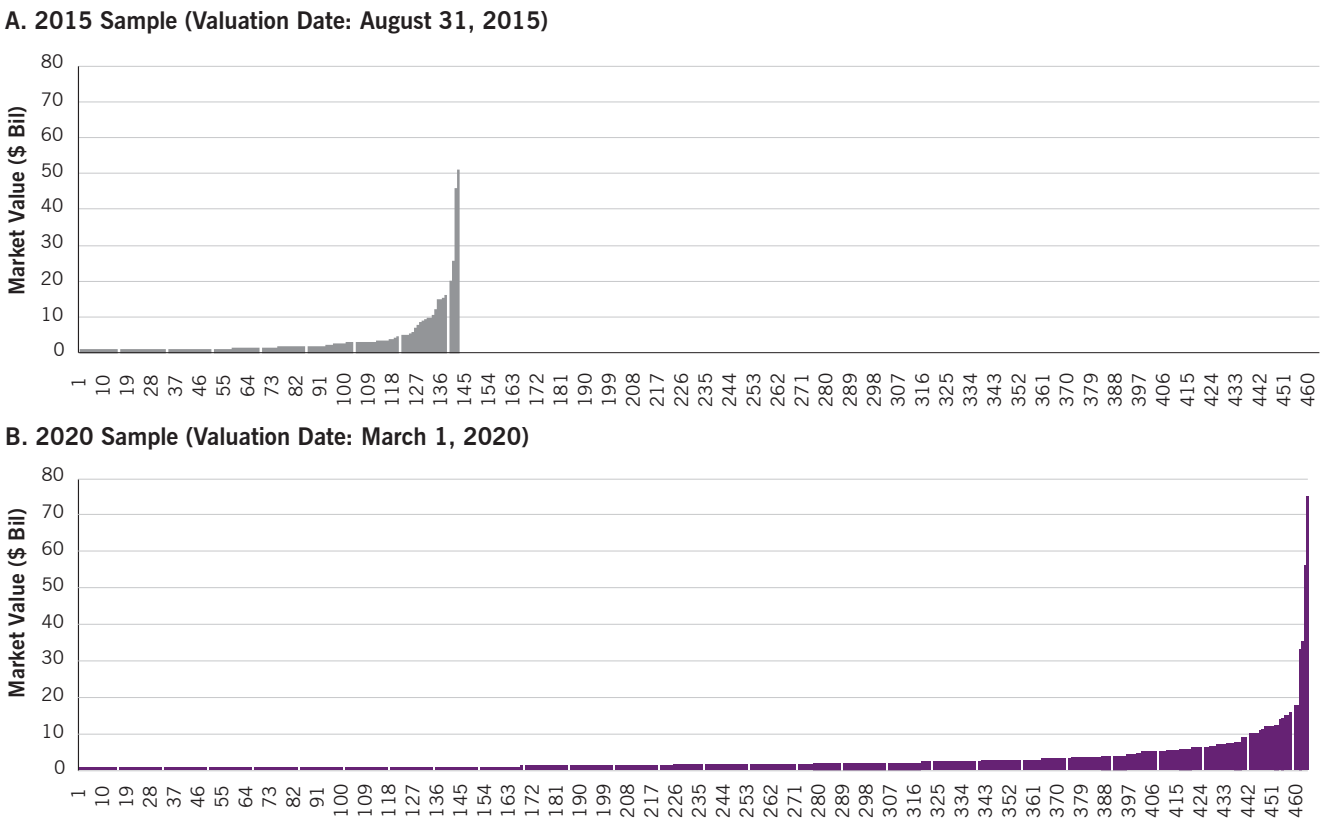
But as our new study makes clear, rumors of the imminent demise of the unicorn market turned out to be greatly exaggerated. Besides documenting the overall growth in the unicorn market that has occurred since 2015, the findings reported in the first panel in Table 2 provide considerable information about the dispersion of market valuations in the two samples. Perhaps the most interesting aspect of these data is that while the entire market for these firms expanded considerably, the market valuation for the typical unicorn did not. The mean and median company values in 2020 ($3.0 billion and $1.5 billion, respectively) are actually smaller than they were in 2015 ($3.7 billion and $1.6 billion). These differences are not just attributable to the later sample's comprising younger and new firms; Panel C of the display indicates that the average unicorn firm in 2015 had been in existence for about seven years (based on the median founding date of 2008) whereas the median firm in the 2020 samples was founded in 2012, making it about eight years old. On the other hand, the market values of the two largest unicorns in 2020—Toutiao, an artificial intelligence and data-mining firm ($75.0 billion), and Didi Chuxing, which provides mobile transportation services ($56.0 billion)—both exceed the valuation of the biggest unicorn in 2015 (Uber, with a $51.0 billion valuation).

As can be seen in Panel A of Table 2, both samples are tilted toward "smaller" unicorns. For example, 70% of the firms in the 2020 sample have a market valuation of less than $2.5 billion, as compared to 67% of the 2015 unicorns. This differential is essentially balanced by the 2015 sample having a higher percentage of the largest companies than the 2020 sample (8% versus 5% for unicorns with valuations of at least $10.0 billion). Figure 3, which provides a comparison the rank-ordered valuations for the two samples, illustrates the similarities and differences in these two entire distributions. In particular, besides highlighting once again the substantial disparity in the number of unicorns in existence in 2015 and 2020, the exhibit shows just how dominated both those distributions are by the smallest firms. Thus, while unicorns are large enough relative to other privately held companies to warrant their

15 Graham McDonald and Steve Rosen, respectively, in Arleen Jacobius, 2019, "Unicorns Could Become an Endangered Species," *Pensions & Investments,* January 21. See also David Trainer, 2019, "The Unicorn Bubble Is Bursting," *Forbes,* October 7 for a similar discussion.

Figure 3

Comparative Distributions of Market Valuations across Unicorn Firm Samples



Data Source: World Bank, PitchBook

own moniker, the vast majority of them remain entities with relatively small market values.

In this context, it is also interesting to see the number of unicorns that have a valuation of *exactly* $1.0 billion. We first noted this phenomenon in our initial study of the 2015 sample, which found that 38 of the 142 unicorns (or 27%) fell into this category.[16] As documented in Table 2, this trend appears only to have grown, with 141 (or 30%) of the 464 unicorns in the newest sample having precisely that qualifying valuation. We noted back then that this is very unlikely to be an accident; founders and early-stage investors in private enterprises clearly feel compelled to push their firms to achieve unicorn status, if only for the potential publicity, marketing, and recruiting benefits. For reasons not entirely clear to us, there appears to be a meaningful distinction in value between, say, $0.9 and $1.0 billion, even though there is no appreciable difference between $1.0 and $1.1 billion in terms of visibility and reputation in the market.

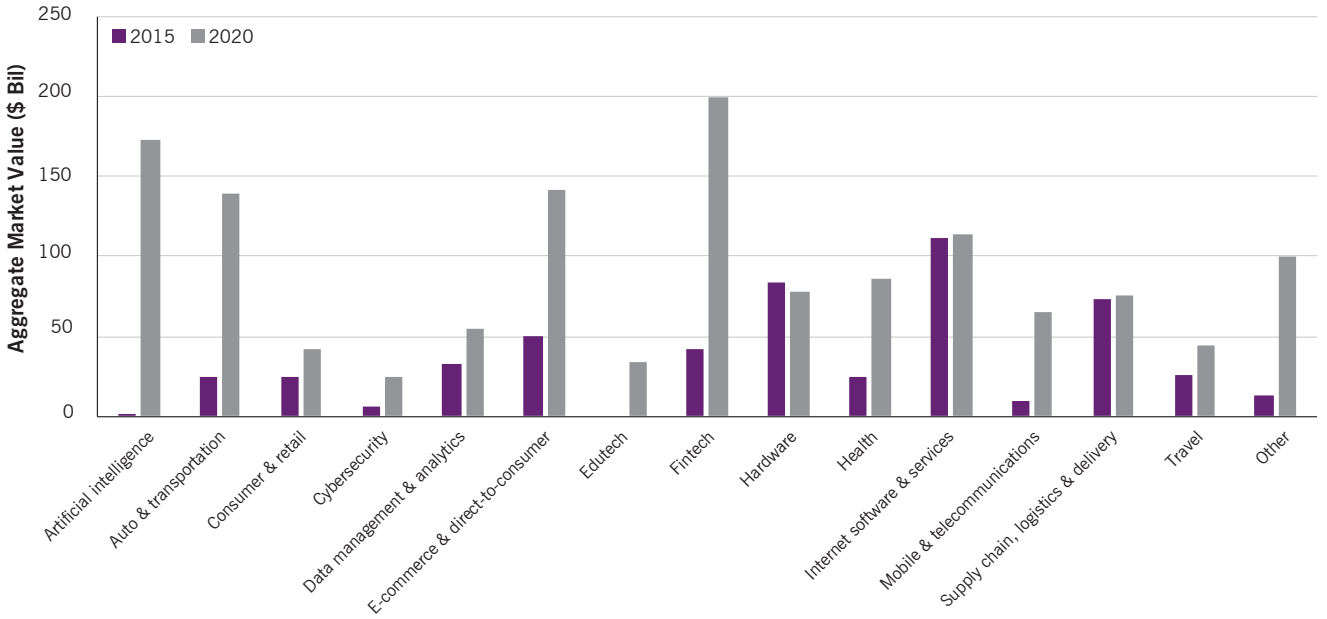
But whatever its benefits, this quest to join the unicorn blessing often comes with potentially significant costs. As discussed earlier, inflated post-money valuations can be achieved by offering preferable terms to investors in later funding rounds—such as higher preference payments or favorable warrant coverage terms—that effectively dilute the ownership interests of existing investors.[17] So why might founders be willing to put the interests of new investors over those of their existing investors (a group that could include themselves as well) to reach an artificially high valuation target?

One answer could involve the company's ability eventually to exit into the public market with a successful IPO, even if public equity investors do not always appreciate the nuances of what unicorns are actually worth. Professor Robert Pozen

16 See Brown and Wiles (2015), op. cit., pp. 41-42 for this discussion.

17 See Brown and Wiles (2016), op. cit. Bill Gurley explained this situation as follows: "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 can make the valuation lower"; see Benner (2015), op. cit. This is also exactly the point that Gornall and Strebulaev (2020), op. cit., make in their empirical analysis of the divergence between the post-money and fair market values for unicorn firms.

Figure 4
Comparative Distributions of Market Valuations across Industries: 2015 vs. 2020



accordingly cautions: "[W]hile many unicorns deserve high valuations, [IPO] investors need to be discerning…If the valuations of unicorns are based on the latest sales of preferred stock, they are probably too high; if they are based on recent grants of common shares to employees, these valuations are probably too low."[18]

Industry and Geographical Dispersion in the Unicorn Market

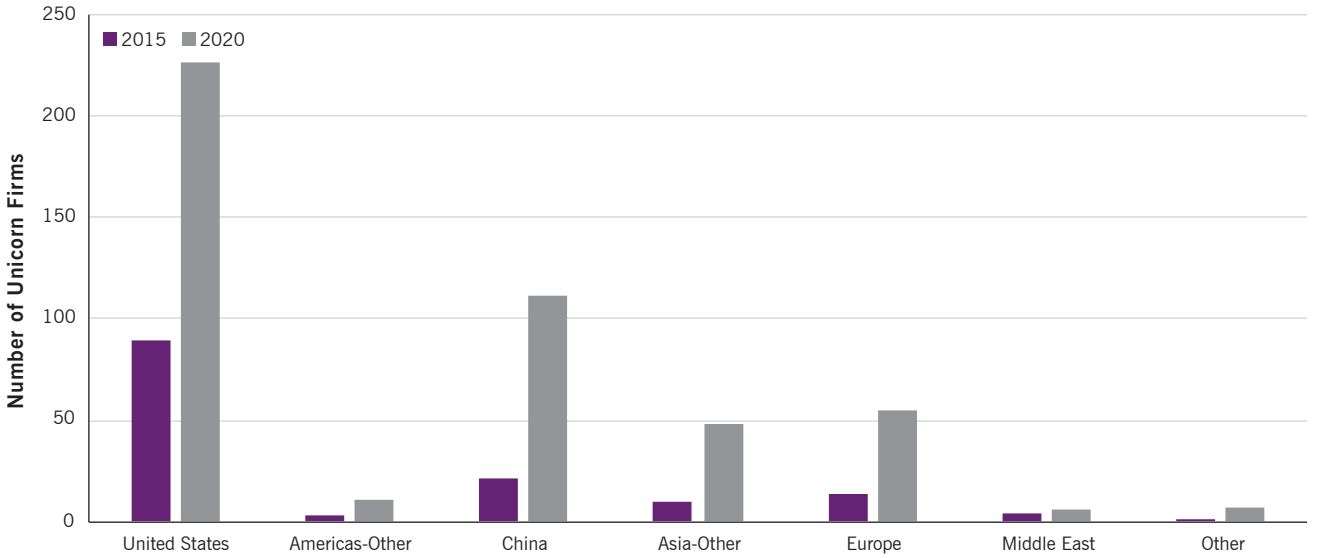
Another way in which the 2015 and 2020 samples differ from one another is in the concentration of industry affiliations for the respective unicorn firms. As shown in Panel B in Table 2, although unicorns still tend to be predominantly focused on the technology sector, the specific industry classifications have changed dramatically in the past five years. Specifically, unicorns are now well represented in emerging tech "spaces" such as Artificial Intelligence (46 firms in 2020, 1 in 2015), Educational Technology (15 vs. 0), and Fintech (61 vs. 14) where little activity existed before. A similar trend appears for healthcare companies, where the number of unicorns increased from 8 in 2015 to 33 in 2020, despite the fact that this market segment continues to be proportionally underrepresented in the unicorn market relative to the general economy (5.6% and 7.1% of the respective samples). Other industries, such as E-commerce & Direct-to-Consumer, as well as Internet Software & Services, were already well established in 2015 and appear to have grown in numbers of unicorns commensurately. And as can be seen in Figure 4, which shows the aggregate market value of the firms in each market segment, the industries commanding the highest current cumulative valuations are Fintech and Artificial Intelligence, underscoring the important role that unicorns play in developing these relatively new industry entrants in the technology sector.

Another important evolution in the unicorn market is the geographical dispersion of these companies. As can be seen in Figure 5, the global unicorn market is dominated by two countries: United States (226 unicorns in 2020, 89 in 2015) and China (111 vs. 21). These two countries now account for 72.6% of unicorns, which is down only slightly from 77.5% in 2015. Also apparent is that the concentration of the unicorn market residing in China is growing substantially faster than that in the U.S. Between 2015 and 2020, the share of the overall unicorn market located in China rose from 14.8% to 23.9%, while the U.S. share actually fell, from 62.7% to 48.7%.[19] (Recall that the two biggest unicorns in the 2020 sample—Toutiao and Didi Chuxing—are both Chinese companies, as are four of the ten largest.) Further, both the

18 Robert C. Pozen (2019), op. cit.

19 This trend is also discussed in Jianbin Gao and Yuqing Guo, 2019, "China's Herd of Unicorns," *Strategy+Business* 97, Winter Issue.

Figure 5
Comparative Geographical Dispersion of Unicorn Firms: 2015 vs. 2020



Asia-Other (notably Singapore and India) and Europe regions have also increased their relative penetrations in this market, by some three and two percentage points, respectively. And so the unicorn approach to financing private firms appears to be rapidly becoming a more globally diversified activity.

There are several reasons why Chinese unicorns may be proliferating faster than anywhere else in the world. First, Chinese entrepreneurs have access to a large and rapidly modernizing market—according to World Bank, China's gross domestic product grew from $6.1 trillion in 2010 to $14.2 trillion in 2019—as well a consumer base that is technically adept and receptive to new businesses in the technology sector.[20] Second, the Chinese regulatory environment both protects and encourages domestic company development. For example, foreign companies seeking access to Chinese markets are required to partner with domestic firms, provide access to their intellectual property, and modify their products or services to meet Chinese government regulations.[21] Beyond that, the China Securities Regulatory Commission has implemented regulations that make it easier for unicorns listed in foreign markets to pursue domestic listings, which further increases access to capital and exit opportunities for Chinese unicorns. Finally, the country has a deep pool of technology and management professionals and is focused on continuing to develop its science and technology talent by improving domestic education and attracting foreign expertise.[22]

Private Capital Fundraising by Unicorn Firms

As one last way of contrasting our 2015 and 2020 samples, we also looked at the amount of private capital raised by each unicorn firm from its founding date through the respective formation dates for the two samples. For each company, we gathered data for the PIPO financing generated in each funding round, with the total capital raised being the sum of the separate funding rounds.[23] As can be seen in Table 3, the typical funding round size is quite large and appears to have only grown over time. Whereas the mean and median size for a unicorn's most recent capital raise were $228.6 million and $145.0 million for our 2015 sample, by 2020, these amounts had increased significantly to $303.6 million and $200.0 million. The range of funds raised in the most recent round also expanded over this period, from a minimum of $5.0 million to a maximum of $1.1 billion—Uber's most recent financing at that point in time—for the 2015 sample to comparable 2020 values of $1.5 million to $3.7 billion for

20 Jianbin Gao and Yiqing Guo, 2018, "The New Chinese Unicorns: Seizing Opportunity in China's Burgeoning Economy," *PwC China*, October 31.

21 Mark Schaub, Atticus Zhao, Dai Xueyun, and Zheng Wei, 2019, "China Foreign Investment Law: How Will It Impact the Existing FIEs?, *China Law Insight,* June 3.

22 Remco Zwetsloot, 2020, "China's Approach to Tech Talent Competition: Policies, Results, and the Developing Global Response," *Global China,* April.

23 A complete set of funding round data was available for all 142 unicorns active in 2015, but for only 454 of the firms in the 2020 sample for which complete data for the remaining relevant data (i.e., market valuation, geographical location, industry classification) was otherwise available. Consequently, the funding statistics reported for the newest sample represent a slightly downward biased estimate of the total private capital that was raised by the entire collection of firms on this particular formation date.

Table 3

Comparative Funding Round Statistics for the Unicorn Samples: 2015 vs. 2020

	August 2015	March 2020
Number of Unicorn Firms Reporting Funding Round Data	142	454
A. Funding Round Private Capital Raised ($ Millions)		
Mean Size of Most Recent Funding Round	228.6	303.6
Median Size of Most Recent Funding Round	145.0	200.0
Minimum Size of Most Recent Funding Round	5.0	1.5
Maximum Size of Most Recent Funding Round	1,100.0	3,681.0
B. Total Private Capital Raised to Date ($ Millions)		
Aggregate Sample Total Raised	75,728.1	301,082.2
Mean Firm Total Raised	533.3	663.2
Median Firm Total Raised	286.6	344.7
Minimum Firm Total Raised	30.0	1.5
Maximum Firm Total Raised	7,608.7	18,760.0
C. Distribution of Total Capital Raised		
Number of Firms Having Total Capital Raised of:		
Less Than or Equal to $99 Million	8 (6%)	39 (9%)
Between $100 and $499 Million	92 (65%)	253 (56%)
Between $500 and $999 Million	20 (14%)	93 (20%)
$1.0 Billion or Greater	22 (15%)	69 (15%)

the last financing round of Grab, a ride-hailing service located in Singapore.[24]

As also shown in Table 3, during the last five years there has been a massive infusion of private investment into these unicorn firms, fueled in large part by the increased venture capital allocations in institutional portfolios described earlier.[25] As reported in Panel B, the total capital raised by the two samples surged from $75.7 billion to $301.1 billion, a four-fold increase that outpaced the rate of increase in the incremental number of new unicorns that joined the 2020 sample. The total PIPO financing raised by the median firm increased from $286.6 million to $344.7 million.

Interestingly, the unicorn raising the smallest amount of total private funds in 2020 was GoodRx, a U.S.-based healthcare provider, with just $1.5 million total private capital despite having a market valuation of $2.5 billion. But this is an anomaly, since as can also be seen in Table 3, one of the main developments reflected in the most recent unicorn sample has been the accumulation by individual companies of larger amounts of invested capital. While the $100-499 million category is still the most frequently populated by both samples, there was a sizeable shift in 2020 toward the $500-$999 million category, which more than offsets a smaller increase in the smallest category that also occurred. Nevertheless, the proportion of unicorns that raised $1.0 billion or more in PIPO investments remained unchanged from 2015 to 2020.

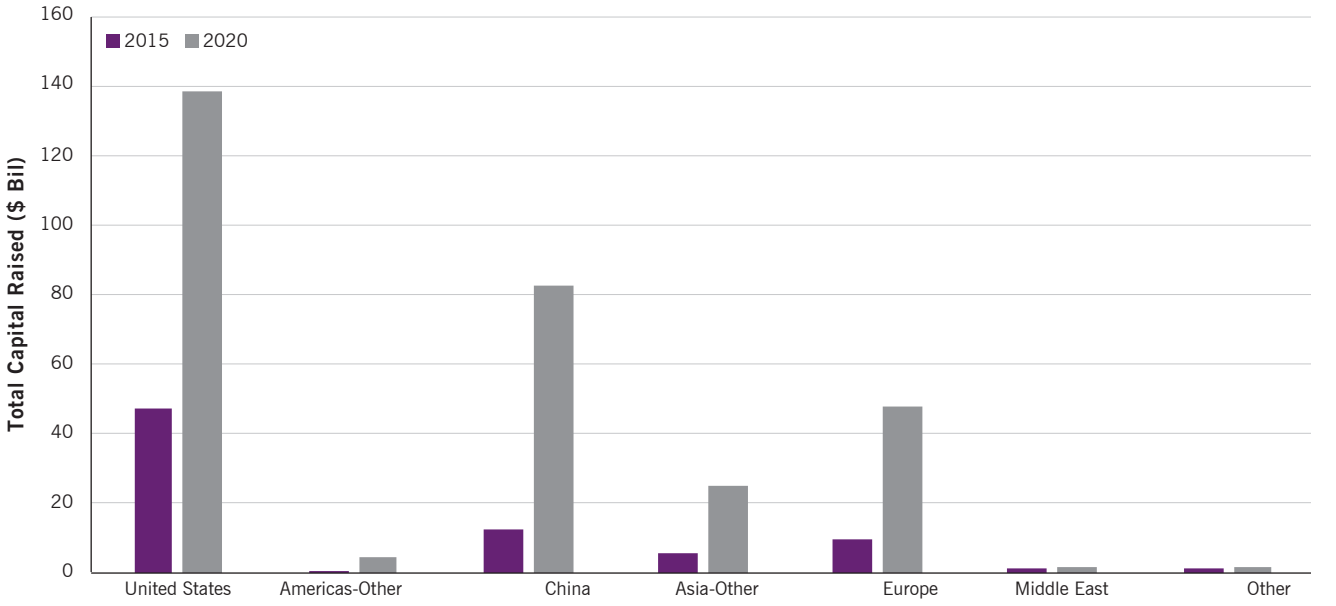
But the influx of new private capital invested during this period did not flow evenly throughout the world. As shown in Figure 6, which compares total funds raised by unicorns in 2015 and 2020 by global region, the United States and China continued to be the dominant destinations for these funds. The total capital raised by U.S.-domiciled firms grew from $47.1 billion to $138.2 billion, with the comparable amounts for China being $12.4 billion and $82.4 billion, respectively. Once again, however, these increases hide an important proportional shift in fundraising that took place between 2015 and 2020: namely, the U.S. share of global total capital raised shrank from 62% to 46% at the same time that China's share grew from 16% to 27%. Also contributing significantly to this regional share redistribution was the increased presence of Europe, with an increase in total capital raised from $9.6 billion to $47.7 billion, which translates in a percentage share change from 13% to 16%. On the other hand, the fundraising share commanded by the rest of the world did not change appreciably during this period. Thus, while the unicorn market has definitely become a more global diversified phenomenon, the private capital deployed to these firms remains concentrated in a subset of those geographical regions.

24 It should be noted that another unicorn from the 2020 sample (Didi Chuxing) had two funding rounds that raised more than $3.7 billion—a Series F round of $4.2 billion in June 2016 and a Series G round of $9.5 billion that closed in December 2017. However, the company also raised $600 million with a funding round in July 2019, making it the most recent financing of record. Not surprisingly, Didi Chuxing is also the unicorn having raised the most total private capital ($18.8 billion, as reported in Panel B of Table 3).

25 See Jacobius (2019), op. cit.

Figure 6

Total Private Capital Raised by Unicorn Firms in Geographical Regions: 2015 vs. 2020



Where Do the Unicorns Go?

What happens when a unicorn leaves the blessing and assumes a different organizational form, whether becoming a public company through an IPO, being acquired by a larger private company or fund, or experiencing business failure? To consider this question in more detail, we assembled a sample of privately owned companies that had achieved unicorn status and then subsequently exited in one of the three ways just described.

Our collection of exited unicorns combined two different lists: (1) the unicorns from our original August 2015 sample that had an IPO, a private acquisition, or a failure event; and (2) a separate set of privately held firms that reached a $1 billion market valuation *after* August 2015 but had an exit event *before* March 2020, and so do not show up in our most recent unicorn sample.[26] Our final sample of exited unicorns contained 107 companies, 67 from the 2015 sample and 40 from the 2020 list.

Given our earlier discussion of the potential import of a growing market for unicorns fueled by significant infusions of private capital, we were especially interested in using this new sample to address two questions. First, how long did these companies exist before experiencing their exit event? In particular, for those unicorns that became publicly owned companies, we want to establish the length of time between their founding date and their IPO exit date. Second, how much of the realized value generated by the exit event is captured by the investors who funded the company in the private market and, at least for those firms with a public exit, what is the post-IPO experience of the newly created common stock?

As a simple way of assessing the value captured by private investors, we divided the total market value of the firm on its exit date by the total amount of private capital raised by the firm before its exit—a measure we call the *private capital conversion ratio*. For the subsample of exited unicorns that became publicly traded, we then assessed the value captured by investors following the IPO by calculating the ratio of the market capitalization of the firm on March 1, 2020 divided by the market value of the company on its offering date. (In the Appendix, for each of the 107 exited unicorns, we show the founding year, unicorn birth date, exit date by type of exit, market valuation at exit date, market capitalization as of March 1, 2020 (for IPO exits), and total private capital raised between founding and exit dates.[27])

26 The source we used to identify this latter list was once again CB Insights. To be included in this overall sample of exited unicorns, we had to be able to identify for each company the date it was founded, the date it became a unicorn, the date of its ultimate exit, as well as the way it exited.

27 Most of the data in this exhibit was immediately observable from our previous analysis, but there were a few instances where judgment was necessary to fill in missing observations. In seven cases from our original 2015 sample (Beepi, Coupa Software, Fiverr, Sogou, Survey Monkey, Tinder, and Yext), the unicorn birth date was not available from the myriad databases we accessed, which can occur if a private firm has a secondary offering outside one of its normal funding rounds. For these instances, we assume a unicorn birth date of August 2015, which does not affect the examination of our main

Table 4

Lifespan of Exited Unicorn Firms

	Total Sample	IPO	Acquired	Failed
Number of Exited Unicorn Firms	107	65	37	5
A. Geographical Distribution of Sample				
United States	66	37	26	3
China	19	16	3	0
All Other Countries	22	12	8	2
B. Company Founding to Exit (full years)				
Average Length	9.5	8.9	10.2	11.2
Median Length	9.0	9.0	10.0	10.0
Minimum Length	2.0	2.0	2.0	4.0
Maximum Length	20.0	19.0	20.0	18.0
Distribution of Lifespan (full years)				
0	0	0	0	0
1-2	3	2	1	0
3-4	9	5	3	1
5-6	13	11	2	0
7-8	20	13	7	0
9-10	24	15	7	2
11-12	16	7	9	0
13-14	10	7	3	0
15+	12	5	5	2
C. Unicorn Birth to Exit (full years)				
Average Length	2.9	2.9	2.7	3.6
Median Length	2.0	2.0	2.0	4.0
Minimum Length	0.0	0.0	0.0	2.0
Maximum Length	9.0	9.0	8.0	6.0
Distribution of Unicorn Life (full years)				
0	7	6	1	0
1-2	47	27	18	2
3-4	36	22	12	2
5-6	9	3	5	1
7-8	7	6	1	0
9-10	1	1	0	0

How Long Do Privately Funded Companies Stay Private? Anecdotal evidence suggests that companies are staying private longer than they used to. Whereas companies in the past tended to move from their startup phase to IPO in three to five years—particularly in the technology sector—our evidence suggests that private market lifespans have become much longer.[28] Part of this trend can be attributed to factors driving the decline in IPO activity since 2001, including heavy-handed regulation (such as the Sarbanes-Oxley Act in 2002), reductions in analyst coverage of public equities, and unfavorable market conditions.[29] Nevertheless, the substantial influx of private capital from institutional investors described earlier has been a major contributing factor as well. Both forces have helped create the extraordinary reversal in the numbers of publicly listed and privately owned firms documented in Figure 2.

What is the startup-to-exit lifespan for the typical unicorn firm? Of the 107 companies in our sample, as reported in Table 4, 65 went public with an IPO, 37 were acquired by another company or private investor, and five experienced some kind of business failure. Panel A shows that the sample is once again dominated by unicorns from two countries: United States (66 exits) and China (19 exits). The average and median lifespans for the entire sample, as shown in Panel B, were 9.5 and 9.0 years, respectively. The longest-lived firm—Deem—remained private for 20 years before being acquired, while three firms—Jet.com, Luckin Coffee, and Qutoutiao—moved from founding to either IPO or acquisition in only two years.

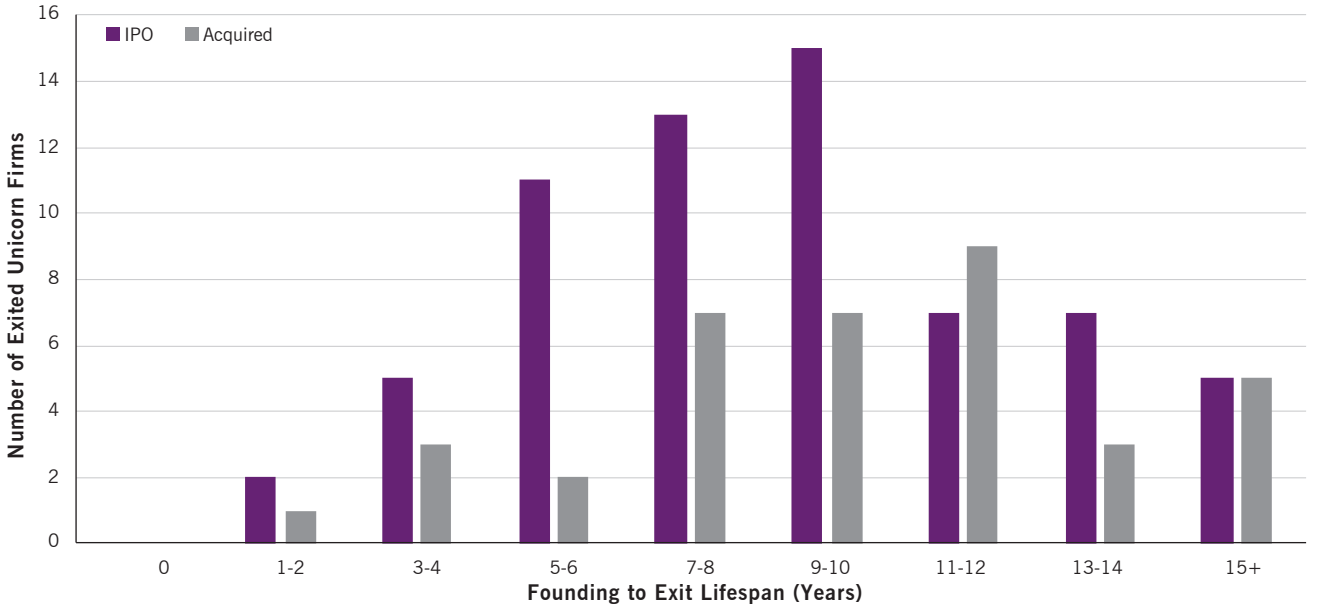
prediction concerning the length of time from founding to public exit. Also, in another case (Tinder), we were unable to establish a unique IPO date valuation because the firm was combined with another company (Match.com) in the initial public offering. Further, one company that was acquired privately (Deem, by Enterprise Holdings) did not report an acquisition value but is presumed to have been worthless. Finally, for the five unicorns that failed, we made the conservative assumption that their exit values were zero.

28 See Bender, Evans, and Kupor (2015), op. cit.

29 As noted in Xiaochui Gao, Jay R. Ritter, and Zhongyan Zhu, 2012, "Where Have All the IPOs Gone?," *Journal of Financial and Quantitative Analysis* 48, no. 6: 1663-1692, the average annual number of IPOs declined from 310 during 1980-2000 to just 99 over the years 2001-2012. See also Ewens and Farre-Mensa (2020), op. cit.

Figure 7

Comparative Lifespans of Exited Unicorn Firms: IPO vs. Acquired



But most telling, just under 60% of the firms (62 of 107) had private lifespans of nine years or longer before undergoing their organizational transformations.

Moreover, the acquired unicorns in our sample had somewhat longer lives that averaged 10.2 years, and thus a full year more than the analogous figure for the IPO sample. But, as can be seen in Figure 7, the Acquired lifespan distribution is shifted considerably to the right of the IPO distribution; in fact, the mode of the Acquired distribution is in a different frequency cell altogether (11-12 years) than that for IPOs (9-10 years). While beyond the purview of the present analysis, this difference may be explained by the widely alleged tendency of certain providers of private investment capital—notably, hedge funds and mutual funds—to push for quicker exit events, frequently via IPOs.[30] Thus, this lifespan differential that exists between the two exit type subsamples may be partly explained by agency conflicts among the stakeholders in these firms.[31]

We also explored the question, how long do unicorns remain unicorns after once having achieved that status? As reported in Panel C of Table 4 for our sample of 107 exited firms, the respective average and median time spent as a unicorn were 2.9 and 2.0 years, a period during which most companies continued to raise additional private capital. Further, more than half of these firms (54 of 107) spent two years or fewer as a unicorn. This suggests that becoming a unicorn might in itself function as a signal that a firm is anticipating an impending transformation, which may help explain why so many entrepreneurs seem willing to manufacture that status artificially (as we saw earlier in Table 2). Finally, unlike the founding-to-exit lifespan, there is virtually no difference in these statistics between the IPO and Acquired subsamples, although the five firms that failed did retain their unicorn status for a somewhat longer period of time before disappearing.

How Are Unicorn Exit Values Split between Private and Public Investors?

As defined above, we estimated the aggregate value captured by the founders and initial investors in a unicorn with the private capital conversion ratio, which measures the number of dollars received at the exit event per dollar invested prior to that point. While admittedly not a perfect metric for expressing the average annual return accruing to these investors (perhaps most important, it fails to consider the timing of the contributed capital flows), it does provide a useful composite statistic of the return multiple created by the exit deal. Similarly, for those unicorns with a public market exit, the ratio of the market capitalization of the common stock at a

30 See Chernenko, Lerner, and Zeng (2020), op. cit.

31 An interesting finding not reported directly in Table 4 is that Chinese unicorns had a substantially shorter mean lifespan (7.6 years) than the typical firm from the United States (10.2 years). This may be explained, in part, by the larger relative proportion of public market exits found in the Chinese unicorn sample.

Table 5

Investment Performance for Private and Public Investors in Exited Unicorn Firms

	Pre-Exit Investment Performance: (Market Value at Exit Date / Total Pre-Exit Private Capital Raised)				Post-IPO Performance: (Market Value at 3.1.20/Market Value at Exit Date)
	Total Sample	**IPO**	**Acquired**	**Failed**	
Number of Firms Having Exit Valuations	106	64	37	5	64
Average	8.3	10.0	6.4	0.0	1.8
Median	5.7	6.7	4.7	0.0	1.1
Minimum	0.0	0.7	0.0	0.0	0.0
Maximum	74.3	74.3	25.1	0.0	12.4
Distribution of Firms by Performance Ratio:					
0.0-1.0	12	1	6	5	30
1.1-3.0	16	9	7	0	24
3.1-5.0	19	12	7	0	6
5.1-7.0	20	14	6	0	1
7.1-10.0	15	10	5	0	1
10.1-15.0	9	8	1	0	2
15.1-20.0	7	4	3	0	0
20.1-25.0	2	1	1	0	0
25.1+	6	5	1	0	0

fixed ending date (March 1, 2020) to the market value of the equity at the IPO date offers a suitable measure of the post-IPO investment performance for the newly listed firm.[32]

As can be seen in Table 5, the private investors in the typical exited unicorn transaction did very well indeed. For the overall sample—which includes the five companies that failed altogether—the respective mean and median realized conversion multiples were 8.3 times and 5.7 times dollars invested. What's more, a sizeable majority of these deals made money, with only 12 of the them generating an exit multiple of 1.0 or lower. At the same time, more than half of the exited unicorns (54 of 106) rewarded the private investors with somewhere between three and 10 times their invested capital, and six deals returned a conversion ratio in excess of 25.0. (Atlassian, an Australian software firm that went public in December 2015, was the most successful deal by this measure, with an astounding exit multiple of 74.3.) Combined with the earlier unicorn lifespan findings, these performance statistics certainly suggest that those firms were able to stay private long enough for the initial investors to capture a considerable amount of the value created by the perceived success of the organizations.[33]

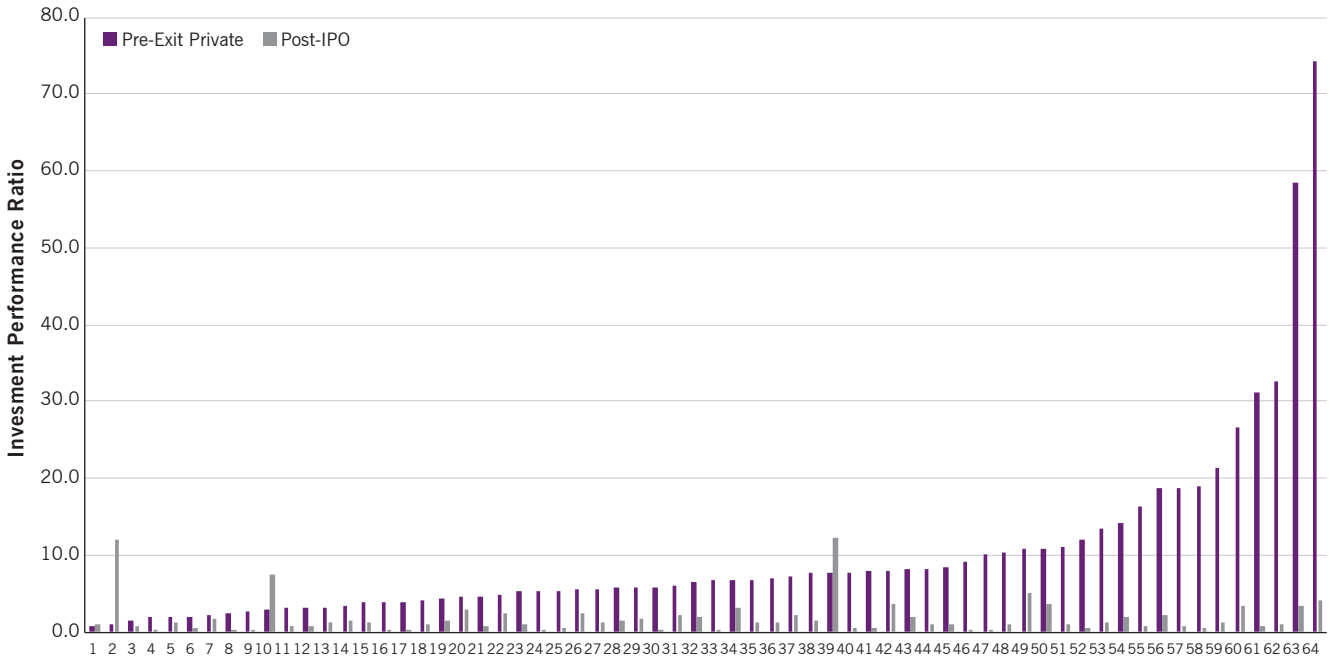
Table 5 also documents a sizeable difference in the private capital conversion ratios depending on how the unicorn exited. For the 101 companies that did not experience business failure, exiting by IPO was significantly more profitable than being acquired by another private firm or fund. Specifically, the 64 IPO-exit unicorns produced a median conversion ratio of 6.7 times invested capital, as compared to a 4.7 median multiple for the 37 companies that were acquired privately. Further, only one of these IPOs failed to generate an exit valuation in excess of the cumulative contributed funding level, whereas that outcome occurred in six of the cases for the Acquired sample. Conversely, 84.4% of the IPO sample returned at least 3.0 times invested capital whereas less than two-thirds of the Acquired firms (64.9%) were able to do the same. Thus, while both methods of transforming the original unicorn organizational form can be viewed as quite successful, the original investors in those private companies that launched a public offering were able to capture a substantially larger return multiple for each dollar of their invested capital,

32 Of course, this ratio must be interpreted with caution on a cross-sectional basis since each unicorn in the sample had a different IPO date and thus will have a performance ratio that covers a different length of time.

33 It appears that these investment outcomes are also higher than what is typically realized throughout the private equity industry as a whole. A recent research study that tracked the performance for 171 PE funds raised between 1992 and 2017 documented that these investors generated sample-wide multiple on invested capital (MOIC, which is only approximately comparable to the private capital conversion ratio we report) estimates in the range of 1.5-2.0. See Markus Biesinger, Cagatay Bircan, and Alexander Ljungqvist, 2020, "Value Creation in Private Equity," *European Bank for Reconstruction and Development Working Paper*, May 18.

Figure 8

Comparative Distribution of Pre-Exit Private and Post-IPO Performance Ratios for Exited Unicorn Firms



providing them with a superior method of cashing out of their equity positions.

A final important result in this exhibit involves a comparison of the pre- and post-IPO performance metrics for the 64 unicorns that had a public market exit. Before discussing these findings, it's important to keep in mind that these ratios were calculated over substantially different time frames that were usually shorter in the post-IPO period. Nevertheless, the difference in these values is striking. For instance, the median private capital conversion ratio of 6.7 reported earlier compares to the post-IPO performance multiple of just 1.1. This means that the typical investor in the public market who purchased an equity position at the IPO had realized a relatively meager return on her investment by March 2020, a period that could span four years or more. Additionally, just under half of these IPO-exit transactions (30 of 64) had not produced a positive return by the terminal value date used in this analysis. (Uber Technologies, the case study highlighted earlier, is included in this set with a post-IPO performance ratio of 0.8.)

What's more, as shown in Figure 8, 60 of the 64 unicorns that exited through a public offering had private capital conversion ratios that exceeded their respective post-IPO public performance multiples. As can be seen, the relative levels of these deal-specific pre- and post-IPO performance ratios are seldom even close to one another; in fact, the median *difference* in these respective multiples is 4.7. This provides strong support for the supposition that an investor who funded a unicorn in the private market is able to capture substantially more of the firm's value than someone who subsequently takes an equity position once the stock starts trading in the public market.[34]

Public Exit by Direct Listing: A Special Case

Of all the unicorn companies that successfully completed public offerings, two of them, Slack Technologies and Spotify, did so using a *direct listing* method, wherein a firm's shares are sold directly to the public without the support of a traditional investment banker acting as an underwriter. These companies instead engage advisors—often investment bankers—to recommend projected valuation ranges for the companies' shares and help determine how many shares might be sold

34 One curiosity about this outcome of the dominant investment performance in the pre-IPO period is that it does not appear that the level of the pre-exit performance multiple is meaningfully related to how long the company was in existence prior to its public offering. To make that assessment, we calculated the correlation coefficient between the firm's private capital conversion ratio and its founding-to-exit lifespan. This established a value of 0.019, meaning that the two characteristics were virtually uncorrelated. Thus, although it is the case that companies that remain private long enough to become unicorns experience significantly better outcomes upon exit, the exact length of time that they remain private beyond that point does not appear to matter.

on the first day of trading. Slack and Spotify began trading on the New York Stock Exchange, which requires that the designated market maker consult with financial advisors to help implement an orderly offering process. On the day of the direct listing, company shares owned by pre-offering shareholders simply begin trading without first passing through an underwriter's inventory.

There are several advantages to a direct listing IPO process, particularly for the pre-offering shareholders (such as founders and venture capitalists) who may have been invested in the company for many years. One is that there are no lockup agreements—which often run up to 180 days—that restrict existing shareholders from selling their equity positions at the offering. Also, the offered shares begin trading at a market-determined price and consequently are not subject to traditional underwriting discounts. For example, Slack's shares began trading on June 20, 2019 at a price of $38.50, which was 48% higher than the "reference price"—the price at which the shares were expected to launch—of $26.00. Thus, the company did not suffer an opportunity loss as a result of the underpricing that would have resulted had they been offered at that lower reference level. Spotify began trading on April 3, 2018 at $165.90 per share, which was 28% above its reference price of $132.00.

The primary disadvantage of a direct listing IPO, at least from the company's perspective, is that existing investors may sell their shares, but the company does not issue securities concurrently and, therefore, does not raise capital in the offering. This constraint may limit the use of direct listing IPOs to those companies that are already profitable, have raised sufficient capital previously to fund business activities and pay fees, or can access other pools of investment capital. (The total fees paid by Spotify, for example, in conjunction with its IPO totaled about $44.7 million.) To be sure, the firm may raise private funds before the direct listing, issue debt in the public or private markets, or register to issue equity securities under a secondary offering; but it may have to wait at least a year from the date of the IPO to remain in compliance with federal securities law.[35]

How do these two direct listing firms compare to the overall sample of unicorn companies that exited via an IPO in terms of the lifespan and performance metrics we just considered? Both of the direct-listed companies remained private longer than the typical unicorn that went public: Spotify's direct listing came 12 years after its founding date and Slack's came after 10 years. Their private capital conversion ratios greatly exceeded the sample average as well. The respective exit market values for Spotify and Slack were approximately $29.6 billion and $20.9 billion, based on the first traded share price, which translated into performance ratios of 18.8 and 16.4 times the total private capital they raised.

On the other hand, the post-IPO performance of each stock has fallen well short of the typical unicorn that exits with a traditional IPO. As of March 1, 2020, the market value for Spotify was $25.9 billion, leading to a post-exit performance ratio of 0.9. For Slack, its end-period value of $15.4 billion is 0.7 times its direct listing-date value. From all indications, the private investors who funded these companies before their public launches appear to have done much better than their post-exit counterparts.

Concluding Thoughts

When we last went searching for unicorns in 2015, we found 142 companies that had been able to access sufficient non-public sources of financial capital to grow to market valuations of at least $1 billion while still retaining their status as privately held enterprises. At that time, the concept of large, private capital infusions totaling millions (or even billions) of dollars was itself a sufficiently novel concept to merit the new designation "private initial public offerings," or PIPOs. In assessing the forces behind these capital market developments, we considered a number of factors that might encourage and enable companies to stay privately owned longer, including the beneficial discipline that comes with PIPO financing. Above all, we argued that the ultimate success of every corporation depends upon its operating performance, which can be significantly enhanced by the governance structures offered through private ownership. At the same time, however, we also cautioned that the pursuit of status as a unicorn could cause the firm's founders and managers to become distracted from pursuing their core business objectives.

Our recent study addresses the question: has the market for unicorns continued to thrive since then, or has the evolution toward private financing that we documented already begun to slow? Early indications since publication of our first unicorn study five years ago did not appear to favor the continued growth and prosperity of the blessing, as several negative capital market trends became immediately apparent. For instance, IPO activity in the United States dried up in 2016 and 2017, particularly in the technology sector where most unicorns reside. Indeed, during the first quarter of 2016, no technology-based companies went public on any U.S. exchanges, which had not happened since the first quarter of 2009, during the Great Recession. Further, during the fourth quarter of 2015, startup funding in general fell

35 Sophia Kunthara, 2019, "IPO vs. Direct Listing," *Crunchbase News*, November 26.

by 30%, from 38.7 billion to $27.2 billion.[36] Even leading venture capitalists made dire predictions about long-term private company ownership, with one arguing that investing in unicorn companies is a "substantially more dangerous and complicated practice" because "the pressures of lofty paper valuations, massive burn rates (and the subsequent need for more cash), and unprecedented low levels of IPOs and M&A have created a complex and unique circumstance that many unicorn CEOs and investors are ill-prepared to navigate."[37]

More recently, Larry Fink, the CEO of BlackRock, has even argued that privately held companies should actually go public sooner: "The process of going public is a key component for building a strong organization, because it gives investors transparency into the business." [38] This may well seem like a cogent argument against the type of private capital funding that gives birth to unicorns. Nevertheless, it is important to recognize that transparency into public company business operations is relevant only to the extent shareholders are able to insist on and be assured of corporate governance practices that provide managers with properly aligned incentives.

This outcome can be easily undermined. Consider, for example, the issuance of dual classes of shares that convey disparate voting privileges to different classes of investors. Following Snap's IPO in March 2017 in which it sold newly created Class A Shares to the public, the company's two founders controlled about 96% of the voting rights through their holdings with different ownership rights. Thus, there may be very little oversight for these dual-share public companies, which diminishes shareholder control over corporate governance at the same time that private investors are exiting the company.

Despite myriad concerns expressed to the contrary, the revisiting of the unicorn marketplace reviewed in these pages shows a thriving market for privately financed unicorn companies, with a blessing that has seen its numbers triple, and its aggregate market valuation quadruple, in the past five years. What's more, the continued development of non-public channels for funding that flow from increased allocations in institutional investor portfolios toward alternative assets of all kinds has resulted in a number of outcomes that were suggested by our earlier analysis. Most notably, we now see companies remaining privately owned longer, private investors capturing a greater proportion of value created through the growth phase of an enterprise's business operations, and larger amounts of total capital being invested in unicorn companies representing a more diversified set of industries and geographical regions than ever before. Whether these trends continue into the future is difficult to predict, but those skeptics who have been forecasting the imminent demise of the phenomenon for at least the past five years have yet to be proven right.

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36 See Alison Griswold, 2016, "The Market for Tech IPOs Hasn't Been this Awful Since the Great Recession," *Quartz,* April 1 and Dennis Fortnum, Biran Hughes, and Arik Speier, 2016, "Venture Pulse Q4 2015," *KPMG and CB Insights,* January 19.

37 Bill Gurley, 2016, "Why the Unicorn Financing Market Just Became Dangerous… For All Involved," *Above the Crowd,* April 21.

38 Alex Sherman, 2019, "WeWork's $47 Billion Valuation Was Always a Fiction Created by SoftBank," *CNBC.com,* October 22.

Appendix

Data for the Sample of Exited Unicorn Firms

Number	Company	Year Founded	Unicorn Birth Date	Exit Type and Date: IPO	Exit Type and Date: Acquired	Exit Type and Date: Failed	Market Value at Exit ($ Bil)	Market Value at 3/1/2020 ($ Bil)	Total Funding ($ Mil)
1	10X Genomics	2012	Jan-19	Sep-19			3.7	7.8	198.5
2	Adyen	2006	Dec-14	Jun-18			7.1	23.7	266.0
3	AppDymics	2008	Jul-14		Mar-17		3.7		314.9
4	AppNexus	2007	Aug-14		Aug-18		1.6		523.3
5	Atlassian	2002	Apr-14	Dec-15			4.5	18.9	60.0
6	Auris Health	2007	Aug-17		Feb-19		3.4		782.6
7	Avito.ru (Avito)	2006	Feb-14		Dec-15		1.2		195.5
8	Babytree	2007	May-18	Apr-20			1.5	0.3	596.5
9	Beepi	2013	Aug-15			Feb-17	0.0		137.9
10	Beijing Lakala Billing Services	2005	Jun-15	Apr-19			2.0	10.0	182.8
11	Bill.com	2006	Apr-19	Dec-19			1.6	4.5	347.1
12	Bloom Energy	2001	Mar-09	Jul-18			1.6	0.8	826.0
13	Blue Apron	2012	Jun-15	Jun-17			1.9	0.0	206.8
14	Careem Networks	2012	Dec-16		Mar-19		3.1		771.7
15	Casper	2014	Mar-19	Feb-20			0.5	0.4	339.7
16	Cloudera	2008	Mar-14	Apr-17			2.0	2.6	1039.7
17	CloudFlare	2009	Dec-12	Sep-19			4.5	6.0	331.9
18	Coupa Software	2006	Aug-15	Oct-16			0.9	10.6	866.5
19	Credit Karma	2007	Sep-14		May-20		7.1		841.2
20	CrowdStrike	2011	May-17	Jun-19			6.8	12.8	481.0
21	Cylance	2012	Jun-16		Feb-19		1.4		298.1
22	Deem	1999	Sep-11		Jan-19		0.0		50.0
23	Delivery Hero	2011	Sep-14	Jun-17			5.0	15.3	735.3
24	Dianping	2003	Apr-11	Sep-18			50.4	113.2	8344.0
25	DocuSign	2003	Mar-14	Apr-18			4.4	16.5	552.4
26	Domo	2010	Apr-15	Jun-18			0.6	0.5	739.1
27	DouYu	2014	Nov-17	Jul-19			3.6	2.5	1127.9
28	Dropbox	2007	Oct-11	Mar-18			8.0	8.0	723.4
29	Duo Security	2010	Oct-17		Oct-18		2.4		119.0
30	Eleme	2008	Aug-15		Feb-18		9.5		3335.0
31	ESR Cayman	2016	Jul-17	Oct-19			6.5	7.5	306.0
32	Eventbrite	2006	Sep-17	Sep-18			1.8	1.6	274.1
33	FanDuel	2007	Jul-15		Jul-18		0.5		362.5
34	Farfetch	2008	Mar-15	Sep-18			5.8	3.7	304.5
35	Fiverr	2009	Aug-15	Jun-19			0.7	1.1	111.0
36	Flatiron Health	2012	Jan-16		Apr-18		1.9		328.0
37	Flipkart	2007	Aug-12		Aug-18		20.0		2851.0
38	Funding Circle	2009	Apr-15	Sep-18			1.9	0.4	368.0
39	Gilt Groupe	2012	May-11		Feb-16		0.3		327.0
40	Github	2008	Jul-15		Jun-18		7.5		350.5
41	Glassdoor	2007	Jun-16		May-18		1.2		201.5
42	Global Fashion Group	2011	Apr-15	Jun-19			1.1	0.3	566.7
43	Good Technology	1996	Apr-13		Sep-15		0.4		491.1

Appendix (cont.)

Data for the Sample of Exited Unicorn Firms

44	Health Catalyst	2008	Feb-19	Jul-19			0.9	1.1	289.2
45	Home24	2009	Jun-15	Jun-18			0.6	0.1	156.7
46	Infor	2002	Nov-16		Apr-20		13.0		4010.5
47	Jasper Technologies	2004	Apr-14		Mar-16		1.4		256.9
48	Jawbone	1999	Jul-11			Jul-17	0.0		992.1
49	Jet.com	2014	Nov-15		Sep-16		3.3		570.0
50	Jumia Technologies	2012	Feb-16	Apr-19			1.4	0.5	210.6
51	Kabam	2006	Oct-14		Dec-16		0.7		244.5
52	Kik Interactive	2009	Aug-15			Oct-19	0.0		115.8
53	Lazada	2012	Nov-14		Apr-16		3.1		4116.0
54	Legendary Entertainment	2005	Apr-11		Jan-16		3.5		1265.0
55	Liepin	2006	Jun-16		May-19		0.0		170.0
56	Looker	2012	Dec-18		Feb-20		2.6		280.5
57	Luckin Coffee	2017	Jun-18	May-19			4.1	9.9	750.0
58	Lyft	2012	Apr-14	Mar-19			20.8	11.1	2650.9
59	Medallia	2001	Jul-15	Jul-19			2.6	3.7	339.2
60	Meituan-Dianping	2010	Oct-15	Sep-18			48.3	74.4	8344.0
61	Mercari	2013	Mar-16	May-18			3.8	3.4	116.6
62	Mobike	2015	Jun-17		Apr-18		2.7		1993.0
63	Moderna	2010	Dec-14	Dec-18			7.6	11.1	1741.4
64	Mogu	2011	Jun-14	Dec-18			1.7	0.2	420.0
65	MongoDB	2007	Oct-13	Oct-17			1.2	9.0	411.4
66	MuleSoft	2006	May-15		May-18		6.5		259.3
67	NantHealth	2007	Jun-15	Jun-16			1.7	0.3	635.0
68	NIO	2014	Mar-17	Sep-18			6.4	4.3	2102.4
69	Nutanix	2009	Jan-14	Sep-16			2.3	4.9	318.0
70	One Medical Group	2007	Aug-18	Jan-20			1.8	2.4	531.5
71	PagerDuty	2009	Sep-18	Apr-19			1.8	1.6	173.6
72	Peloton	2012	May-17	Sep-19			8.1	7.9	994.4
73	Pinduoduo	2015	Jul-16	Jul-18			22.1	44.9	3334.0
74	Pinterest	2008	May-12	Apr-19			10.1	11.8	1467.5
75	Plaid Technologies	2012	Dec-18		Jan-20		5.3		309.3
76	Pluralsight	2004	Aug-14	May-18			0.9	2.4	192.5
77	Powa Technologies	2007	Nov-14			Feb-16	0.0		176.7
78	Pure Storage	2009	Aug-13	Oct-15			3.2	4.4	470.0
79	Qualtrics	2002	Sep-14		Jan-19		8.0		400.0
80	Qutoutiao	2016	Mar-18	Sep-18			2.0	1.2	372.0
81	Shanghai Henlius	2009	Jul-18	Sep-18			3.4	3.2	410.0
82	Shape Security	2011	Sep-19		Jan-20		1.0		183.0
83	Shazam	2002	Jan-15		Sep-18		0.4		110.0
84	ShopClues	2011	Jan-16		Oct-19		0.1		249.4
85	SimpliVity	2009	Mar-15		Jan-17		0.7		276.0
86	Skyscanner	2003	Jan-16		Nov-16		1.7		366.0
87	Slack Technologies	2009	Oct-14	Jun-19			20.9	15.4	1281.2
88	SmileDirectClub	2013	Oct-18	Sep-19			2.4	2.8	426.8

Appendix (cont.)

Data for the Sample of Exited Unicorn Firms

89	Snapchat	2012	Dec-13	Mar-17			19.7	20.8	4905.6
90	Sogou	2004	Aug-15	Nov-17			5.0	1.7	496.0
91	Souq.com	2005	Feb-16		Mar-17		0.6		390.0
92	SoYoung	2013	Sep-18	May-19			1.4	0.4	234.9
93	Spotify	2006	Jun-11	Jun-18			29.6	25.9	1572.6
94	Square	2009	Jun-11	Nov-15			3.0	37.2	390.5
95	SurveyMonkey	1999	Aug-15	Sep-18			1.5	2.5	694.0
96	Theranos	2003	Jun-14			Sep-18	0.0		2425.8
97	Tiger Brokers	2014	Jul-18	Mar-19			1.1	0.5	139.0
98	Tinder	2012	Aug-15	Nov-15			na	na	na
99	Twilio	2007	May-15	Jun-16			1.3	1.6	333.3
100	Uber	2009	Aug-13	May-19			75.2	57.7	16273.7
101	Vlocity	2014	Mar-19		Feb-20		1.3		162.8
102	Woowa Brothers	2010	Dec-18		Dec-19		4.0		449.5
103	Xiaomi	2010	Dec-11	Jul-18			49.2	39.9	1581.4
104	Yext	2006	Aug-15	Apr-17			0.9	1.8	115.8
105	ZhongAn Online	2013	Jun-15	Sep-17			11.2	6.2	934.0
106	Zoom Video Communications	2011	Jan-17	Apr-19			9.6	31.9	164.8
107	Zscaler	2008	Aug-15	Mar-18			1.9	7.0	173.2

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