Bubble Jeopardy 2.0

Leading Indicators that the Private Tech Market may be Topping

Summary

We're in a bubble for private companies, and the bubble is in trouble. MSUSA's Technology & REITs teams collaborated to come up with insights about today's technology market. We combed through 20 years of VC data and recent technology IPO and M&A data, and the trends are staggering. In 2015, VC investments reached the highest level since 2000, and recent tech IPOs have gone out at valuations below their last private rounds. This is unsustainable, and as capital becomes harder to come by, these could act as negative catalysts for the overall technology spending environment.

Key Points

Analysis of venture capital investment data makes us concerned, on the margin. We analyzed 20 years of VC investment data, and we came away more concerned: 1) VC investments in 2015 reached the highest level since 2000; 2) In the last tech bubble, we saw a sharp acceleration in investment growth in 1999, followed by a sharp deceleration in 2000, and then the bust. 2014 and 2015 venture investment growth appears to be following a similar pattern; 3) There is a significant concentration in Software and Biotech investments, accounting for nearly 60% of all investments in 2015.

Recent Tech IPO exits have come at discounts to private market valuations. We analyzed key technology hardware and software IPOs, and majority of the more recent high flying IPOs were completed at valuations below their last private round. Based on what we have seen with recent IPOs, most of the private companies are likely looking at a down round in their next capital raise. Such events could act as negative catalysts for the overall spending environment.

We expect Tech M&A activity to increase. With private company valuations coming down, we expect cash rich firms to be the biggest beneficiaries. We've seen an uptick in the number and value of Technology M&A transactions in 2014 and 2015, and we expect that trend to continue.

Bay Area real estate trends also point to frothiness from the Tech Bubble. We take some comfort from the fact that the pace of rent change lacks the hysteria of the circa 2000 time frame, and office rents remain below peak levels. However, we worry about what happens to REITs of all property types that are invested in the Bay Area, if/when the issue of a tech slowdown pivots from sentiment to reality.

Company	Symbol	Price (1/21)	Rating Prior	Rating Curr	PT
Apple Inc.	AAPL	$96.30	–	Buy	$120.00
Black Knight Financial Services	BKFS	$29.08	–	Neutral	$29.00
CA Technologies	CA	$26.17	–	Buy	$29.00
Citrix Systems, Inc	CTXS	$65.42	–	Neutral	$70.00
CommVault Systems	CVLT	$30.95	–	Buy	$36.00
Demandware, Inc.	DWRE	$43.33	–	Buy	$51.00
Hewlett-Packard Company	HPQ	$9.94	–	Neutral	$10.00
Hewlett Packard Enterprise Company.	HPE	$12.41	–	Neutral	$13.00
Hortonworks, Inc.	HDP	$10.19	–	Buy	$25.00
MicroStrategy Incorporated	MSTR	$150.22	–	Buy	$200.00
Qlik Technologies	QLIK	$25.83	–	Buy	$36.00
Red Hat, Inc.	RHT	$70.31	–	Buy	$88.00
Sabre Corporation	SABR	$24.99	–	Buy	$30.00
salesforce.com, inc.	CRM	$69.51	–	Buy	$90.00
ServiceNow, Inc.	NOW	$74.41	–	Buy	$90.00
Tableau Software, Inc.	DATA	$80.74	–	Neutral	$80.00
Teradata Corporation	TDC	$23.40	–	Neutral	$24.00
VMWare, Inc.	VMW	$49.58	–	Neutral	$52.00

Source: Bloomberg and Mizuho Securities USA

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2016 Tech Bubble Trouble

"I'm a very strong believer that peak cycles are a net negative for great entrepreneurs. The great entrepreneurs are relatively disadvantaged in these markets where so much capital is available. In a market where capital is hard to come by, they can still raise money. In these markets, they can raise a ton of money, but so can a lot of competitors that wouldn't be in business otherwise. So the playing field gets muddied by the excess capital sloshing around. That's why I speak out." -- December 2015, Bill Gurley of Benchmark Capital for Forbes Magazine

2016 clearly has investors on edge – YTD, the S&P 500, Dow and NASDAQ indicies are down 9%, 10% and 11%, respectively. In August 2015, the market had an approximate 10% correction on concerns of a slowing Chinese economy, and those concerns are surfacing again, coupled with record low oil prices and heightened discussion of a potential global recession. We're not debating whether or not this is a tech bubble. Based on the data, as we see it we are clearly in a tech bubble as it relates to private companies and valuations of some high growth vendors that have yet to prove profitability of their business models. In this report, we will show why we believe that 2016 will be the year that this bubble deflates, or corrects, but we're not expecting this tech bubble to burst like in 2000.

What's different this time around, unlike the previous tech bubble in 2000? 1) the cost of starting a company has come down, with cloud infrastructure, off-shoring, and lower storage and compute costs; 2) VCs are giving portfolio companies an opportunity to grow their businesses over a longer period of time; 3) companies are waiting longer to go public; 4) today's more successful public technology companies can demonstrate profitability and some can even generate tangible free-cash flow; and 5) many public market investors have started to invest in late stage private companies that has become another source of capital infusion raising valuations for late stage ventures. In fact, according to Industry Ventures, more than 50% of the more than 100 "Unicorns" (private companies with valuations of $1 billion or more) have investments by public market investors, and 9 of the 14 "Decacorns" (private companies with valuations over $10 billion) have institutional investors.

We've talked to a number of VCs and entrepreneurs over the past several weeks here in the Valley, as well as at the Consumer Electronic Show in Las Vegas, and the sentiment seems to be the most cautious we've heard over the past few years. One VCs told us that they are talking to their portfolio companies about focusing more on profitability and cash flows, and informed companies that they do not plan on funding "gross margin negative" business models.

In this report, we plan on showing:

- Clear evidence that tech companies are right-sizing their businesses as growth appears to be slowing;
- VC investments appear to have reached peak levels, and we're starting to see deceleration or declines in early and expansion stages of investments;
- A lack-luster Tech IPO market, with recent IPOs having priced at valuations below their last private round;
- Silicon Valley office rents have increased significantly over the past few years, but they are still well below the 2000 tech bubble period. That said, multi-family rent levels, especially in San Francisco, now exceeds rent levels from 2000.

Evidence the Tech Bubble is Deflating

In Exhibit 1 below, we compiled a list of recent events over the past 24 months that make us increasingly cautious about the tech environment. There has been increasing downsizing activity among public and private companies, which indicates to us that growth is slowing or business conditions are below what management teams had initially planned for. What we find interesting in the information below is that not only are legacy technology companies cutting back at this point, many of the new companies that were formed recently have also started pulling back. For instance, layoffs at HP are completely understandable as the company has found itself at the wrong end of the secular trends in the space. However, companies like Twitter that were formed only a few years ago and have products designed for social media interactions recently had to cut employees. Uber, which commands the highest valuation amongst Unicorns, also made recent targeted job cuts, although the extent of those cuts were very small at the company. We believe the bottom line is that while some companies have to realign their workforces as they are facing secular headwinds, other new companies are reducing their spending as their growth prospects seem to be weaker than earlier expectations. Overall, this trend combined with the slowdown led by the energy sector, could impact broader spending decisions by other industry segments as well.

Exhibit 1: Evidence of Tech Bubble Deflation

Date	Company	Bubble-ish Event
Jan-16	Zoosk	Dating site plans to lay off 1/3 of its workforce, or 40 people
Jan-16	Yahoo	Announces plan to lay off at least 10% of its work force
Jan-16	EMC	Plans layoffs ahead of a $67 billion acquisition by computing giant Dell
Jan-16	NXP Semiconductors	Decided to lay off 150-200 in Israel as it closes down operations there
Dec-15	Instacart	Laid off 12 full time recruiters
Dec-15	Pubmatic	Laid of 20% global staff in Dec and 8% in October, reduced workforce from 600-450
Dec-15	Turn	Laid off 57/400 employees as it dials down on SaaS services
Dec-15	Foodpanda	Laid off 15% or 300 employees in India, as it reduces operations in few cities
Dec-15	Uber	Cutting about 20 jobs in its policy and communications department
Nov-15	Jawbone	Laid off 60 or 15% of its staff
Nov-15	Gumroad	Laid off majority of staff
Nov-15	TinyOwl	Laid off 112 people
Nov-15	Dropbox	Looking to shed 40% of its SF office space in the China Basin area
Oct-15	Twitter	Laid off 8% of its workforce
Oct-15	Twitter	Abandoned 100K square foot office expansion in SF
Oct-15	Evernote	Laid off 47 people and closed 3 global offices
Oct-15	Snapchat	Shuts down its Snap Channel permanently and lays off team
Oct-15	Flipagram	Lays off 20% of staff in restructuring
Oct-15	LivingSocial	Lays off 200 or 20% of workforce
Oct-15	Zomato	Laid off 300 or 10% of staff
Sep-15	HP	Cuts 10 % of total workforce (Mainly HP Enterprise service group)
Sep-15	Groupon	Laid off 1100 people and is closing operations in seven countries
Sep-15	QualComm	Will lays off 1314 employees in San Diego after large drop in revenue and net income
Sep-15	Alibaba	Scaling back campus hiring by giving out 1407 offers, original goal 3000.
Jul-15	Microsoft	Cutting 7800 workers from phone business
Jul-15	QualComm	Will lay off 15% of its workforce
Jun-15	Intuit	Lays off 399 or 5% Employees in company realignment
May-15	NetApp	To Lay off 500 workers in restructuring
Apr-15	Rocket Fuel	Laid off 11% or 129 staff members as the company reported a Q1 net loss of 39.6mm
Feb-15	IBM	Massive layoff anticipated (up to 26% approx 100,000 of total workforce)
Jan-15	Good Technology	Lays of 100-140 out of 1000+ employees
Jan-15	Sony	Mobile division workforce will shrink by 30% by March 2016
Jan-15	Citrix	Will lay off 900 jobs due to restructuring
Nov-14	LivingSocial	Cuts 400 jobs
Aug-14	Cisco	Plans to cut 6000 or 8% employees
Jul-14	Microsoft	To lay off 18000 employees mainly from Nokia devices and services
Jun-14	Unify	Plans to cut half of 7700 employees to 3900, 50% of the reduction is from Central Europe
May-14	Fab.com	Suffered mass layoffs before getting acquired
May-14	SAP	Cutting job in restructuring program
May-14	HP	Will layoff 11000-16000 additional employees
Apr-14	Juniper Networks	Cutting 500 plus jobs or 6% of workforce as it backs out of application delivery controllers
Apr-14	Sprint	Large cuts in management and non management, including 1500 cuts in call center positions
Mar-14	NetApp	slashing 600 jobs in light of constrained IT spending
Feb-14	Dell	Cuts thousands of jobs
Feb-14	IBM	Cutting unspecified number of jobs
Jan-14	Intel	5% reduction in workforce

Source: Company reports, TechCrunch, Forbes, San Francisco Business Journal, WSJ, Re/Code

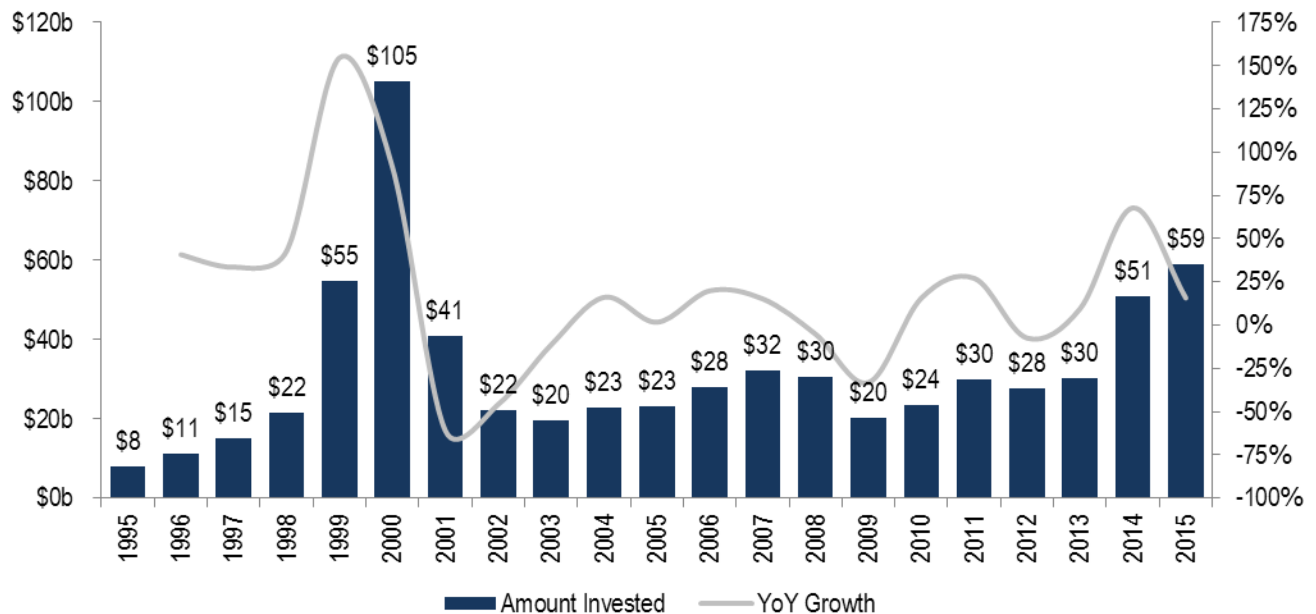
Venture Investments Could Be Reaching Peak Levels

1. 2015 is a Peak Year for VC Investments

Using data from PwC/NVCA MoneyTree™ Report based on data from Thomson Reuters, we analyzed VC investment patterns over the last 20 years. The biggest year for VC investment was 2000, where $105 billion plowed into private companies. 2015 marked the second highest year, with $59 billion invested, followed by 1999 with $55 billion and then 2014, with $51 billion invested.

What worries us is the quick acceleration and then deceleration in VC investment growth – in 2013, VC investments grew 9%, then accelerated to 68% in 2014, followed by a sharp deceleration in 2015, where investments grew 16%. In the last tech bubble, we saw multiple years of elevated growth in VC investments, followed by a sharp acceleration in 1999, a sharp deceleration in 2000, and then a bust in 2001. In the current bubble, we are starting to see a similar trend in investment growth. While we are not expecting a "bust", we do expect further deceleration in VC investment spending in 2016 and 2017.

Exhibit 2: VC Investments and YoY Growth Trends



Source: PriceWaterhouseCoopers/National Venture Capital Association MoneyTree™ Report, Thompson Reuters, and MSUSA

When we analyze VC investments by Industry, we find that Software now makes up 39% of total VC dollars, up from 24% in the Tech Bubble of 2000. Biotech makes up the second largest bucket at 19%, up from 12% last year. So why are we concerned about the heavy investments in Software and Biotech? We believe that it has become too easy for companies to get venture funding in the Software/Internet/Biotech sectors, thus significantly increasing competition. As a result, as VCs become more judicious with their investments, these companies will need to run their businesses for profitability and cash earnings, which could be challenging for many resulting in acceleration in layoffs or shutdowns, in our opinion.

Exhibit 3: VC Investment Market Share by Sector

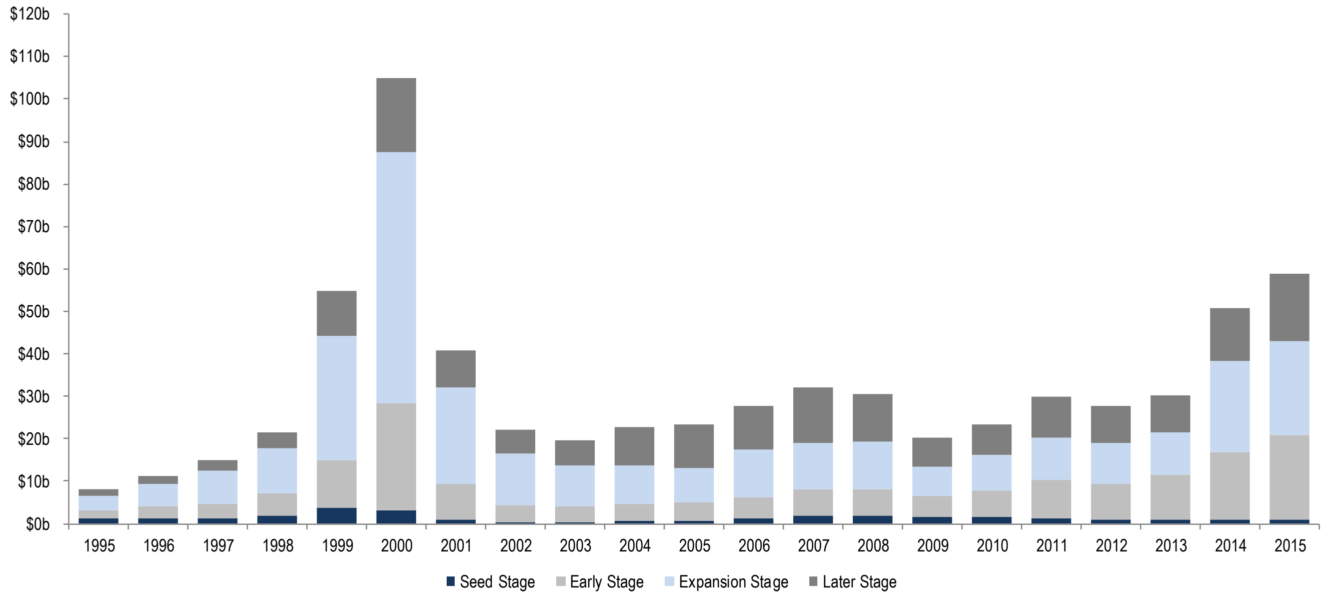
Sector	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Biotechnology	10%	11%	9%	7%	4%	4%	9%	15%	19%	19%	17%	18%	19%	17%	19%	17%	16%	15%	15%	12%	19%
Business Products and Services	2%	3%	3%	3%	5%	4%	3%	2%	3%	2%	2%	2%	2%	1%	1%	2%	1%	0%	0%	1%	1%
Computers and Peripherals	4%	3%	3%	2%	2%	1%	2%	2%	1%	2%	2%	1%	2%	1%	2%	1%	1%	1%	2%	3%	1%
Consumer Products and Services	7%	5%	5%	3%	5%	3%	2%	1%	1%	1%	2%	1%	1%	2%	2%	3%	5%	5%	4%	6%	7%
Electronics/Instrumentation	2%	2%	2%	1%	0%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%	1%	1%
Financial Services	2%	3%	3%	4%	4%	4%	3%	1%	2%	2%	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	3%
Healthcare Services	6%	7%	6%	4%	3%	1%	1%	2%	1%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%
Industrial/Energy	7%	4%	5%	6%	3%	3%	3%	4%	4%	4%	5%	7%	9%	15%	13%	14%	13%	11%	5%	5%	5%
IT Services	**2%**	**4%**	**4%**	**5%**	**8%**	**9%**	**6%**	**5%**	**4%**	**3%**	**4%**	**5%**	**6%**	**7%**	**6%**	**7%**	**9%**	**7%**	**7%**	**6%**	**8%**
Media and Entertainment	**12%**	**10%**	**7%**	**9%**	**13%**	**10%**	**6%**	**4%**	**3%**	**4%**	**5%**	**7%**	**7%**	**7%**	**8%**	**7%**	**8%**	**8%**	**10%**	**9%**	**7%**
Medical Devices and Equipment	8%	6%	7%	6%	3%	2%	5%	8%	8%	8%	9%	10%	11%	12%	13%	11%	10%	9%	7%	5%	4%
Networking and Equipment	**5%**	**6%**	**6%**	**7%**	**8%**	**11%**	**14%**	**12%**	**9%**	**7%**	**7%**	**4%**	**4%**	**3%**	**4%**	**2%**	**1%**	**1%**	**2%**	**1%**	**0%**
Other	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Retailing/Distribution	4%	2%	2%	3%	5%	3%	1%	1%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	2%
Semiconductors	**3%**	**3%**	**4%**	**3%**	**3%**	**4%**	**6%**	**7%**	**9%**	**10%**	**8%**	**8%**	**6%**	**5%**	**4%**	**5%**	**5%**	**3%**	**2%**	**2%**	**1%**
Software	**15%**	**21%**	**23%**	**22%**	**20%**	**24%**	**27%**	**25%**	**25%**	**25%**	**23%**	**20%**	**20%**	**20%**	**20%**	**22%**	**25%**	**31%**	**37%**	**42%**	**39%**
Telecommunications	12%	12%	10%	14%	14%	15%	12%	10%	8%	8%	9%	9%	7%	5%	3%	3%	2%	3%	2%	1%	1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: PriceWaterhouseCoopers/National Venture Capital Association MoneyTree™ Report, Thompson Reuters, and MSUSA

2. *Expansion Stage Investing is Slowing/Declining*

In addition to looking at total investment and growth, we believe that it is important to look at how the various investment stages are trending. In our opinion, one of the first indicators of a the bubble deflating is scarcity of Expansion stage investment dollars – this indicates to us that VCs are less likely to invest in businesses that are looking to grow and scale simply through funding. We believe that VCs are expecting their portfolio companies demonstrate more of a balance between growth and profitability.

Exhibit 4: VC Investments by Stage

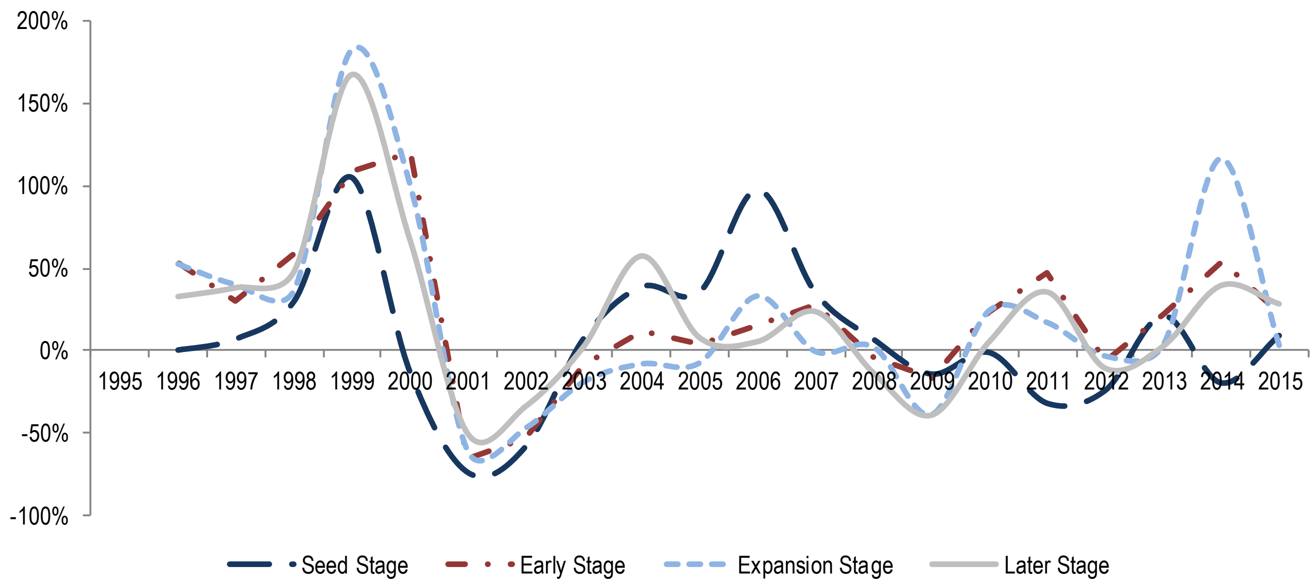


Source: PriceWaterhouseCoopers/National Venture Capital Association MoneyTree™ Report

During the Tech Bubble of 2000, Seed stage investing growth peaked at 105% in 1999, followed by a 13% decline in 2000. Expansion stage investment growth also peaked in 1999 at 183%. Early stage investment growth peaked in 2000 at 121%, and the bubble burst in 2001.

In 2015, the biggest change was the Expansion stage, which only grew 3%, down from 117% growth in 2014. Early stage investing decelerated from 55% growth in 2014 to 23% in 2015, and Later stage Invstment growth decelerated from 39% to 28%. **We believe that a clear sign of the bubble deflating is a slow down in Expansion stage investing, as companies must attempt to run their businesses profitably.**

Exhibit 5: VC Investment YoY Growth by Stage



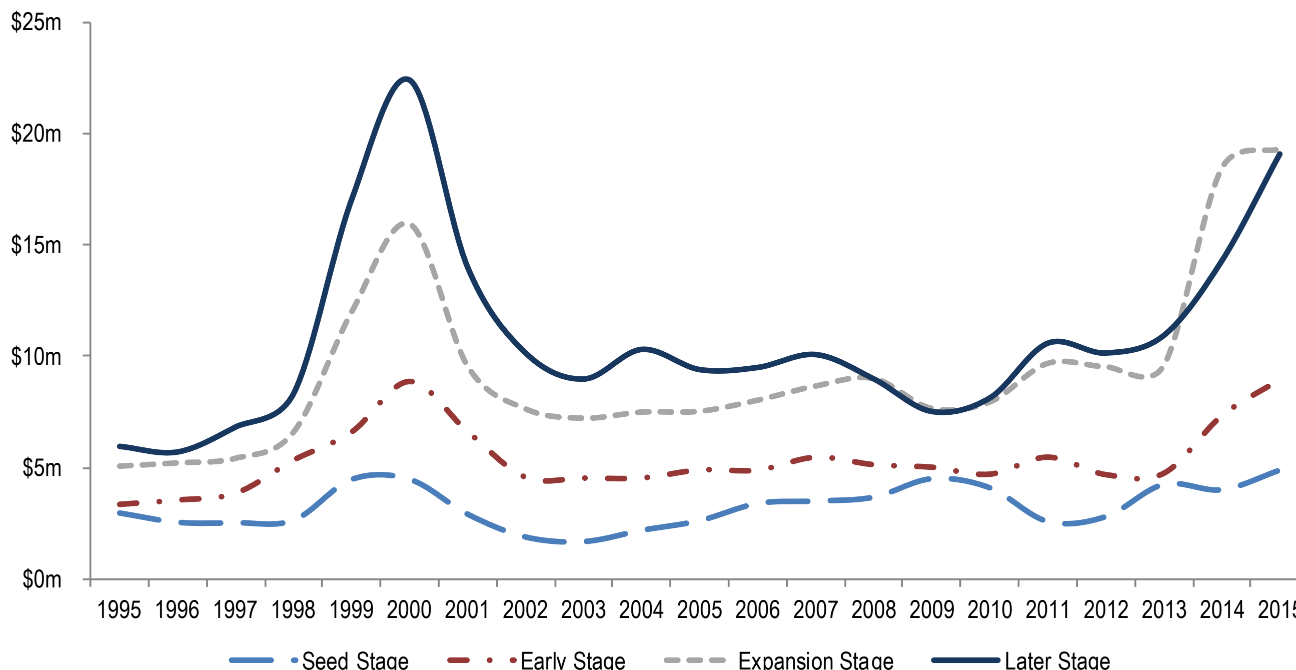
Source: PriceWaterhouseCoopers/National Venture Capital Association MoneyTree™ Report

3. *Average Investment per Deal per Stage are Peaking*

When we look at the average investment dollars per deal per stage, we find that they are reaching peak levels since the last tech bubble. Seed stage and Expansion stage investments per deal reached record highs in 2015, which makes us concerned. Early stage investments per deal in 2015 were comparable to those in 2000.

- **Seed stage** - Average investment per deal in 2013 was $4.2 million, and was flattish in 2014 at around $4.0 million. In 2015, these investments peaked to $4.9 million, ahead of the levels in 2000.
- **Early stage** - Average investment per deal peaked in 2015 at $9.0 million, up from $7.3 million in 2014. 2015 levels are comparable to 2000 levels.
- **Expansion stage** - Average investment per deal peaked in 2015 at $19.3 million, and this *exceeds* the 2000 Tech Bubble level, which was $15.3 million. 2014 and 2015 both exceeded 2000 levels, which in our view is unsustainable.
- **Late stage** - Average investment per deal peaked in 2015 at $19.1 million, which is below peak 2000 levels of $22.4 million.

Exhibit 6: Average VC Investment per Deal per Stage

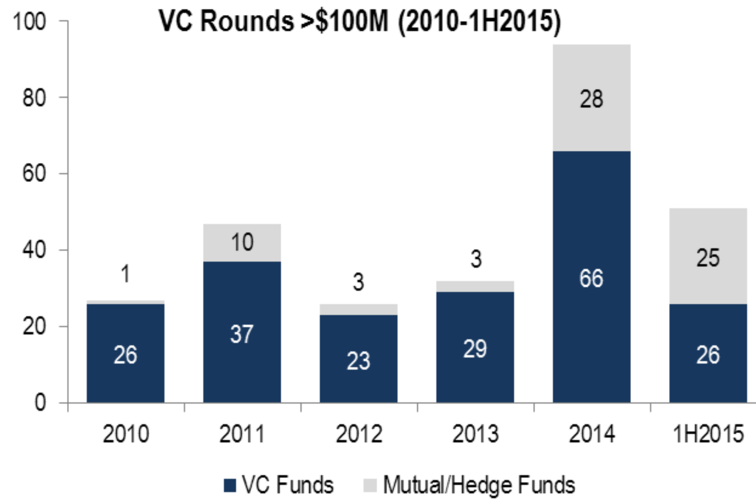


Source: PriceWaterhouseCoopers/National Venture Capital Association MoneyTree™ Report

Recent Venture Capital Exits via IPOs Generating Disappointing Returns

Given that there was significant capital with venture capital firms and many public equity funds were chasing later stage deals, valuations in the private markets had moved up significantly. Entry into the public market has been a reality check for many of them as institutional investors' appetite for hyper growth companies that are unlikely to reach profitability in the near-to-medium-term seems to be waning. In order to boost their returns, many institutional investors who normally invest in public equities had started taking positions in late stage private companies with hopes of averaging down their cost of acquisition. This additional source of capital likely resulted in driving valuations higher. As shown in the following chart, number of late stage private deals with participation of mutual funds or hedge funds jumped to 28 in 2014 from three each in two years prior to that and remained very high in the first three quarters of 2015.

Exhibit 7: Private Company Investments by Investor Type



Source: IndustryVentures

The public market investors in these deals usually expect an up-round during the IPO process resulting in greater returns versus purchasing their entire stake at the public offering. However, the IPO market does not appear to be as attractive an option in the current environment. As Exhibit 8 shows, several high-profile hardware and software companies have seen valuations deteriorate materially from their final private funding round to the initial public offering. We believe these dynamics could discourage public equity investors to participate in late stage rounds as they were open to such investments to improve their average cost of ownership of these companies once they went public. However, current dynamics are forcing them to write some of their investments down and public markets seem to be offering better entry points. We expect such compression in valuations to be net negative for capital availability for private companies, thus creating a ripple effect in tighter technology spending over the next couple of years.

Exhibit 8: Poor Returns for Recent IPOs

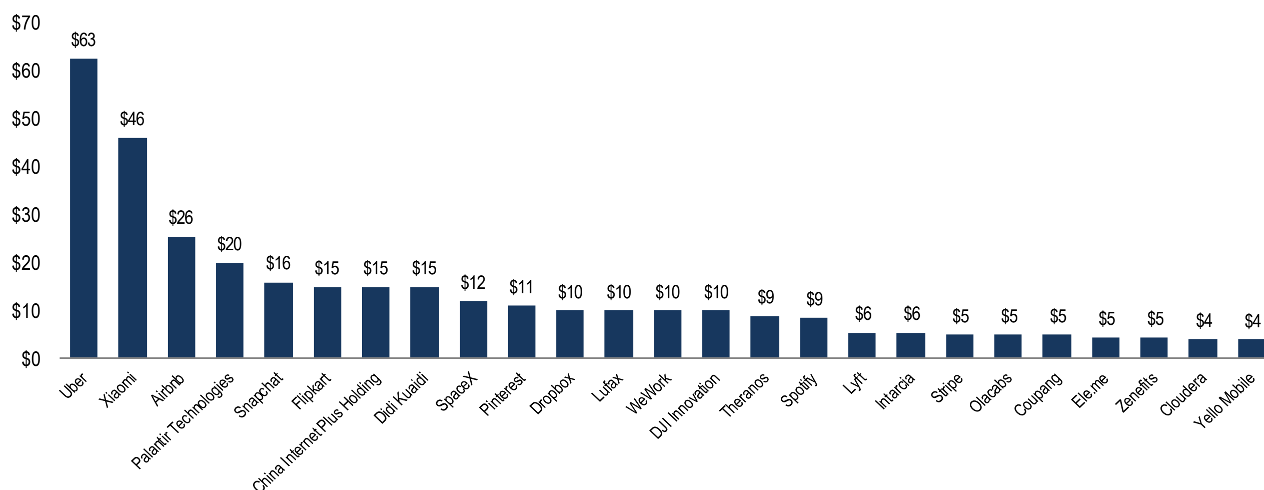
	Final Private Round			IPO			
Company	Date	Proceeds (mm)	Valuation (mm)	Date	Proceeds (mm)	Valuation (mm)	Exit Return
GoPro, Inc.	**Dec-12**	$200	$2250	**Jun-14**	$427	$2770	23%
New Relic, Inc.	**Apr-14**	$100	$1,200+	**Nov-14**	$115	$967	-19%
Hortonworks, Inc.	**Mar-14**	$100	$1,000+	**Dec-14**	$100	$659	-34%
Box, Inc.	**Jul-14**	$150	$2550	**Jan-15**	$175	$1670	-35%
Shopify, Inc.	**Dec-13**	$100	$1000+	**May-15**	$131	$968	-3%
MINDBODY, Inc.	**Feb-14**	$50	$450	**Jun-15**	$101	$448	0%
Pure Storage, Inc.	**Apr-14**	$225	$3000	**Oct-15**	$425	$3100	3%
Square, Inc.	**Oct-14**	$150	$6000	**Nov-15**	$243	$2900	-52%

Source: CrunchBase and Company data

The Unicorn Family Is Growing, But Are The Valuations Sustainable?

The privately funded Unicorns are becoming less and less rare and are now joining the once exclusive group in herds. According to Statista, at the beginning of 2014 there were only 42 private companies that were valued at $1 billion or higher. In the roughly two years since then, that number has grown over 250% to a current total of 150 companies. In the exhibit below we highlight the top 25 Unicorns.

Exhibit 9: Current Valuation of Top 25 Unicorns (billions)



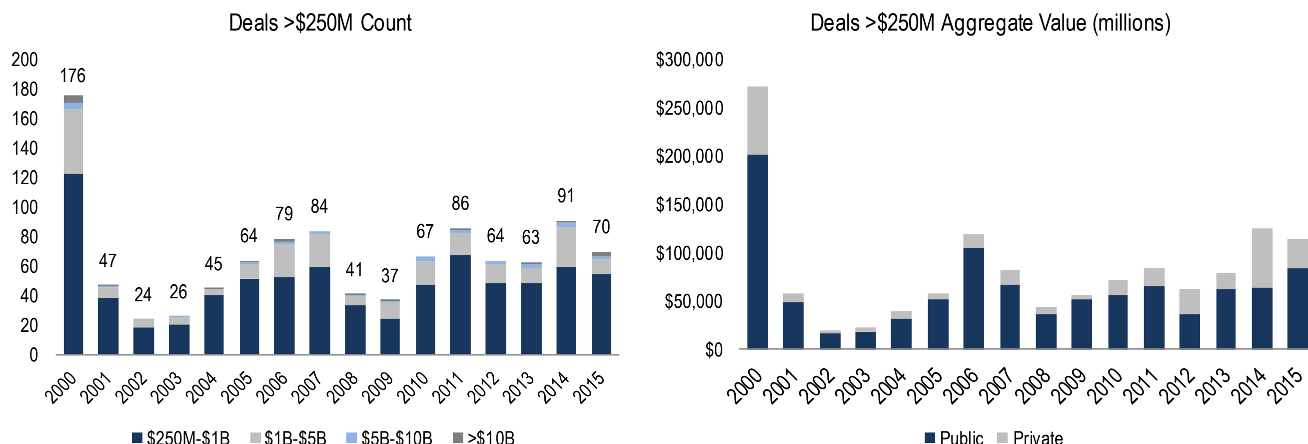
Source: Mizuho Securities USA, CB Insights

Currently, the top 25 Unicorns have a combined value of approximately $340 billion, with the top 10 accounting for approximately $240 billion, less than 10% shy of the equity valuation of Amazon ($258 billion). Uber, the highest valued of the Unicorns, is now a $63 billion company after its latest valuation round, a value significantly higher than the equity values of both General Motors ($45 billion) and Ford ($46 billion). Since these companies are private, we are not privy to their financials. However, given the dynamics in the space, we believe many of them are not generating any profit. Although they can theoretically deliver profits over time, it is hard to have greater confidence in the level of profit they can generate given the pace of changes in the space. We believe these high valuations are unlikely based on pure strength of their business models. It seems like they are a result of excessive capital (money private investors, public equity funds and high net worth individuals) chasing a few investments that have shown greater traction even though many of them have yet to exhibit their ability to generate sustainable profits. Any adjustment in their valuations could hurt spending by these companies that could negatively impact other sectors. For instance, based on the average recent IPO valuation versus the last private round, Uber could be valued 15-20% less than its last private round. While we understand Uber might have other factors that can justify a different valuation level, we feel comfortable in projecting that tighter capital environment is likely to result in a lower valuation.

Tech M&A Showing Private Growth

As we show in the exhibit below, 2015 saw another year of significant aggregate deal value for transactions greater than $250 million, with combined public and private sector deals having an aggregate total of ~$115 billion. While the number of M&A deals has been relatively stable for the past five years, we saw an increase in the total transaction value of completed deals. In 2014, the number of deals grew 44% while the aggregate deal value grew 56%. In 2015, the number of deals decreased 23% YoY, while aggregate value declined 8%. However, despite the higher aggregate values, we note that 2014-15 M&A value is still significantly below that in 2000 when there were 176 deals accounting for over $270 billion, as well as the "sweet spot" of tech M&A being in the $250 million to $1 billion range. This range has averaged around 56 deals per year for the last 5 years, well shy of the 123 transactions in this range in 2000.

Exhibit 10: Tech Sector M&A Trends



Source: Mizuho Securities USA, FactSet

What may be more noteworthy is the percentage dollar amount being spent in the private sector versus the public sector. Between 2000 and 2010, the percent of M&A spend done in the private sector was approximately 16%. From 2011 to 2015, this number doubled to 32%, and hit 48% in 2014, perhaps signaling increased valuations in the private sector, driving the overall value and number of these $1 billion Unicorns. As business slows down or investors' patience with lack of profitability wears, we think valuations may come down making them more attractive for potential buyers. We note that larger technology companies have significant amount of cash on their balance sheets and they might be willing to spend on purchasing high growth assets if they can move the needle for larger firms. Historically, many legacy technology companies have compensated their lack of investments in product innovation and slower growth by buying faster growth assets and scaling them to generate earnings growth. We would not be surprised if the pace of M&A increases as we move through the year, especially if valuations ratchet lower.

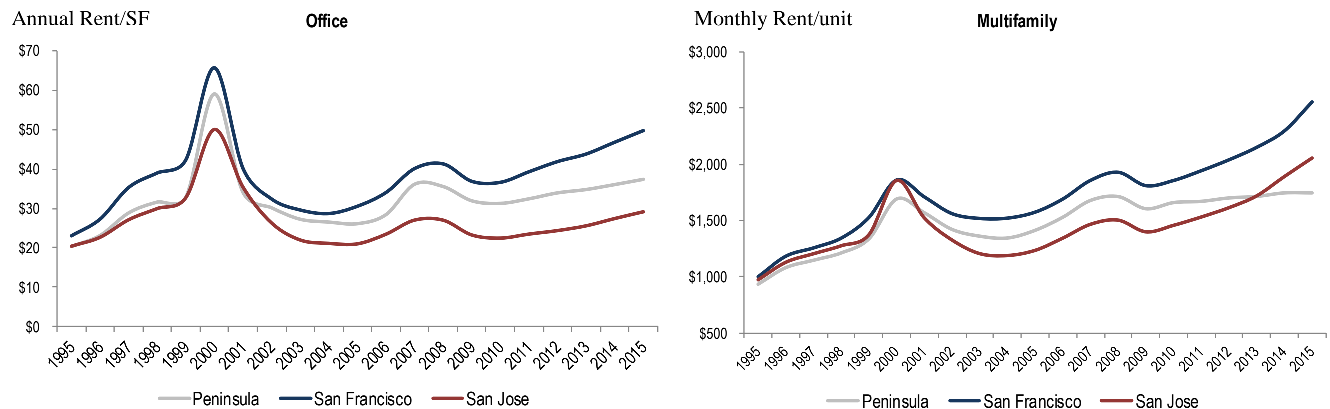
The Real Estate Perspective: Read-Throughs for the Current Tech Bubble

For the better part of a year, we have been decidedly cautious toward US real estate investment trusts (REITs) that are heavily leveraged to the technology sectors – primarily the San Francisco Bay Area. The thesis being that many of the issues identified in this report would, at a minimum, create an environment of negative sentiment. That is, stock performance would react first, in anticipation of fundamentals declining. As we show below in Exhibit 11, the move in office rents was more dramatic than multifamily 15 years ago, although it is interesting that both charts resemble the VC funding chart we show earlier in Exhibit 2. This time around, we take some comfort from the fact that pace of rent change lacks the hysteria of the circa 2000 timeframe, and office rents remain well below peak levels.

However, multifamily rents now exceed the 2000 peak condition (most notably in San Francisco), which may be an illustration of the lack of housing affordability in the Bay Area. We believe this has resulted in somewhat dysfunctional environment that has forced many young adults to scrap together living arrangements that can often be unconventional at best (in one extreme example, techies living in tents in the backyards of privately-owned residents). While the business of renting apartments in this type of environment may be a winning proposition in the present tense, we worry about the unintended consequences of a housing market that, overall, is behaving awkwardly.

Regardless, we think any meaningful indication that the private tech market is headed for a sustained downfall will impact tech-heavy REIT stocks in all property sectors, and in a negative way. The theory being that the future would become uncertain, causing investors to take a more cautious stance. Negative sentiment has already had an impact on some office REIT stocks even in the absence of any tangible slowdown in market rent growth. We worry about what happens next – if/when the issues pivot from sentiment to reality.

Exhibit 11: Bay Area Rental Rates



Source: Reis, Inc.

Price Target Calculation and Key Risks

Apple Inc.

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to FCF, and EV to operating earnings analysis. Our assumptions are based on comparables in the information technology hardware universe.

Based on an EV to FCF multiple of 8.0x our 2016 estimate, we come up with a share price of $125. For our EVe to forward 12-month operating earnings analysis, we have calculated a share price of $121 based on a ~10x multiple on our CY 2016 EPS estimate. Finally, our DCF assumes a discount rate of 12% and a terminal FCF multiple of 9.5x, suggesting fair value 12 months hence of $113. This implies a free cash flow perpetuity growth rate of about 1%. Given these inputs, we reach our 12-month price target of $120.

On the downside, the biggest risk to Apple's stock could result from the company's inability to keep innovating. The current management team is very capable of delivering on Steve Jobs's vision, however, the stock could be materially impacted if the company were to lose some key executives. Additionally, more than expected slowdown in iPhone sales could push the stock materially lower.

Black Knight Financial Services

Our price target is derived using EV to EBITDA analysis. Our assumptions are based on comparables in the financial software universe.

For our EV to forward 12-month EBITDA analysis, we have calculated a share price of $29 based on a 12x multiple on our CY 2016 EBITDA estimate.

Besides normal market related concerns, we think the company's stock could move materially higher if it can show signs of significant expansion of its TAM or accelerate cash flows from the current level. The company could also benefit from any pullback in high growth stocks. On the other side, any execution challenges given the company's recent IPO or continued strength in high growth stocks could result in underperformance. Any downturn in residential housing market could also have an adverse impact on the stock price.

CA Technologies

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, P/Earnings, and Enterprise Value (EV) to Revenue analysis. Our assumptions are based on comparables in the enterprise software universe.

Based on an EV to revenue multiple of 3.0x, we come up with a share price of $30. For our price to forward 12-month earnings analysis, we have calculated a share price of $31 based on a 13x multiple on our CY 2016 EPS estimate. Finally, our DCF assumes a discount rate of 9% and a terminal FCF multiple of 12.0x, suggesting fair value 12 months hence of $27. This implies a free cash flow perpetuity growth rate of about 0.3%. Given these inputs, we reach our 12-month price target of $29.

We believe that mainframe contracts will show their resilience irrespective of the environment but the enterprise solutions business is dependent on broader economic conditions. Additionally while operational issues in EMEA have been slowly improving, the macro environment could create additional execution challenges for the company. If current market volatility were to subside in the near-to-medium term, investors may once again favor growth over quality which could lead to underperformance of CA's stock relative to higher growth peers.

Citrix Systems, Inc

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to Revenue analysis and EV to Free Cash Flow (FCF) analysis. Our assumptions are based on comparables in the software universe.

Based on an EV to revenue multiple of 3x, we come up with a share price of $64. For our EV to forward 12-month FCF analysis, we have calculated a share price of $69 based on a 12x multiple on our CY 2016 FCF estimate. Finally, our DCF assumes a discount rate of 10% and a terminal FCF multiple of 12x, suggesting fair value 12 months hence of $77. This implies a free cash flow perpetuity growth rate of about 1.5%. Given these inputs, we reach our 12-month price target of $70.

We think if management were to grow its revenues in the near-term, it can offer greater margin leverage driving upside to the stock price. On the other hand, continued execution challenges can hurt the stock price negatively.

CommVault Systems

Our price target is derived using Enterprise Value (EV) to Revenue analysis. Our assumptions are based on comparables in the software universe.

Based on an EV to FY17 revenue multiple of 2.0x, we calculate a share price of $36.

On the downside, any execution misstep could cause the stock price to drop materially especially as its earnings multiple is significantly high versus its peers.

Demandware, Inc.

Our price target is derived using Enterprise Value (EV) to Sales analysis. Our assumptions are based on comparables in the enterprise software and SaaS universe. Based on an EV to sales multiple of 4.5x our FY16 sales estimate, we come up with a share price of $51.

We believe the biggest risks to our price target is from slowing topline growth due to potential customer losses, execution missteps and management's intention to invest rather than manage for near-term profitability. In addition, high multiple stocks are volatile and a market sell-off can be magnified in high-multiple names.

Hewlett-Packard Company

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to Revenue and EV to Free Cash Flow (FCF) analysis.

Our assumptions are based on comparables in the information technology universe. Based on an EV to Revenue multiple of 0.4x our 2016E, we come up with a share price of $9. For our EV to FCF analysis, we have calculated a share price of $9 based on a 8x multiple on our CY16 FCF estimate. Finally, our DCF assumes a discount rate of 12% and a terminal FCF multiple of 7.5x, suggesting fair value 12 months hence of $12. This implies a free cash flow perpetuity growth rate of about -1%. Given these inputs, we reach our 12-month price target of $10.

We believe the biggest risk to our Neutral rating comes from any significant improvements in PC and Printing end-market spending that can help drive HP Inc's growth beyond current expectations.

Hewlett Packard Enterprise Company.

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to EBITDA and EV to Free Cash Flow (FCF) analysis.

Our assumptions are based on comparables in the information technology universe. Based on an EV to EBITDA multiple of 5x our 2016E, we come up with a share price of $15. For our EV to FCF analysis, we have calculated a share price of $9 based on a 10x multiple on our FY16 FCF estimate. Finally, our DCF assumes a discount rate of 10% and a terminal FCF multiple of 11.0x, suggesting fair value 12 months hence of $15. This implies a free cash flow perpetuity growth rate of about 1%. Given these inputs, we reach our 12-month price target of $13.

We believe the biggest risk to our Neutral rating comes from any significant improvements in enterprise hardware/software spending and/or HPE market share gains that can help drive revenue growth beyond current expectations.

Hortonworks, Inc.

Our price target is based on average of 4x our 2016 and 2017 billings estimate. We believe it is reasonable to expect a 4x billings multiple for the stock due to significant market opportunity and strong growth rates. Note that our estimates, although revised for the recent earnings news, are not yet adjusted for the pending follow-on offering.

We think lack of profitability is a big concern for investors and could weigh on the stock if the market becomes difficult. HDP could also run out of cash by mid-2017 at the current pace if it does not raise more money through the announced follow-on offering. Additionally, the technology is still in the early days and needs to mature for broader adoption. Lastly, execution challenges and demand conditions could impact the stock materially.

MicroStrategy Incorporated

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Price to Earnings analysis and EV/Free Cash Flow (FCF). Our assumptions are based on comparables in the enterprise software universe.

Based on an Price to earnings multiple of 18x our FY16 estimate, we come up with a share price of $179. For our EV/FCF analysis, we have calculated a share price of $227 based on a 15.0x multiple on our FY 2016 FCF estimate. Finally, our DCF assumes a discount rate of 10% and a terminal FCF multiple of 11.0x, suggesting fair value 12

months hence of $194. This implies a free cash flow perpetuity growth rate of about 0.4%. Given these inputs, we reach our 12-month price target of $200.

We note that business intelligence market has a significant presence of embedded analytics solutions that do not require any additional spending by companies, making it tougher for stand-alone BI solutions such as MicroStrategy to compete. In terms of Usher, while the solution provides significant value to authentication customers, penetrating the market may prove challenging for MicroStrategy given its relative inexperience with authentication buyers and channel partners. We also note that the organization, as a whole, has undergone significant management changes through the restructuring. These changes could take time to yield results with respect to top-line growth as the sales organization stabilizes. Lastly, we believe a lack of liquidity in the stock as well as concentrated voting power held by CEO, Michael Saylor, could deter investors from getting interested in the name.

Qlik Technologies

Our Qlik price target is derived using an Enterprise Value (EV) to Revenue analysis. Our assumptions are based on our FY17 revenue estimate and an EV to revenue multiple of 4x. Given these inputs, we reach our 12-month price target of $36.

We believe the key risk to our Buy rating on QLIK is further deterioration in execution which could cause the stock to move lower despite low valuation.

Red Hat, Inc.

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to Billings analysis and EV/ Free Cash Flow (FCF). Our assumptions are based on comparables in the enterprise software universe.

Based on an EV to billings multiple of 6x our FY17 estimate, we come up with a share price of $91. Our multiple is based on RHT's historical multiple for one year out estimates. For our EV/FCF analysis, we have calculated a share price of $83 based on a 20.0x multiple on our FY 2017 FCF estimate. Finally, our DCF assumes a discount rate of 8% and a terminal FCF multiple of 17.0x, suggesting fair value 12 months hence of $90. This implies a free cash flow perpetuity growth rate of about 2%. Given these inputs, we reach our 12-month price target of $88.

Given that our Buy rating assumes continuation of strong execution by the management team and increasing traction of Red Hat’s new offerings, we believe any disruption in execution or shift in competitive dynamics could pose a risk to the stock performance especially as it is trading above its average historical valuation. The company’s solutions have been gaining traction in the cloud deployments which Microsoft is targeting with its Windows Azure operating system. We expect Microsoft to be a tough competitor in the field especially as the technology adoption moves to the mid markets. Additionally, the new areas targeted by Red Hat (middleware, virtualization and storage) have well entrenched competitors that will make it difficult for Red Hat to penetrate broader markets. However, the company has a large installed base of its operating system, which offers a significant opportunity for it to attach its new solutions. Lastly, the community of developers around its Linux operating system is materially larger than the community of developers around its middleware, virtualization and storage offerings. As such, the company will have to dedicate more

research and development resources to its new offerings, which might limit its ability to deliver margin expansion.

Sabre Corporation

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, P/E and Enterprise Value (EV) to EBITDA analysis.

Our assumptions are based on comparables in the information technology universe and online travel agencies. Based on an EV to EBITDA multiple of 10x our 2016E, we come up with a share price of $30. For our price to forward 12-month earnings analysis, we have calculated a share price of $30 based on a 22x multiple on our CY16 EPS estimate. Finally, our DCF assumes a discount rate of 8% and a terminal FCF multiple of 22.0x, suggesting fair value 12 months hence of $31. This implies a free cash flow perpetuity growth rate of about 3%. Given these inputs, we reach our 12-month price target of $30.

We believe the biggest risk to our Buy rating comes from any significant deterioration in the macro environment that can hurt the travel industry. Additionally, potential pricing pressures and market share losses can negatively impact the company's performance. The company generates strong cash flows from the travel network business but it occasionally loses customers or they prefer other providers in certain markets. As such, any share losses could impact its cash flow generation capabilities, which are key for our positive view. Sabre also operates in very fragmented markets in hospitality solutions space where its growth strategy could be challenged by tough competitors. Lastly, the company's airlines solutions business has long implementation cycles that can impact its growth rates.

salesforce.com, inc.

Price Target: Our $90 price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, EV/CFFO, and Enterprise Value (EV) to Bookings analysis. Our assumptions use CY17E estimates and are based on comparables in the enterprise software universe. Based on an EV to bookings multiple of 5.5x, we come up with a share price of $83. For our EV to operating cash flow analysis, we have calculated a share price of $91 based on a 30.0x multiple. Finally, our DCF assumes a discount rate of 9% and a terminal FCF multiple of 27.0x; based on these inputs, DCF analysis implies a price estimate of $95.

Key Risks: Risks to our price target include any missteps in execution, which could lead to margin compression and depressed cash flows. Also, given the company's track record of strong growth, expectations have had a tendency to move ahead of reality. Investors have come to expect strong performance and any disappointment could put pressure on the stock. As the largest pure-play SaaS company, CRM gets lumped in with high multiple cloud names, despite valuation that's more reasonable. As these names experience volatility, so too does CRM. The company could also be at risk of disruption by any of the emerging cloud solutions in the marketplace. We see this as unlikely at this point as the company is very focused on extending its market leadership.

ServiceNow, Inc.

Our price target of $90 is based on 7x our 2017 billings estimate of about $2.1 billion.

We believe the biggest risk to our positive thesis comes from execution missteps especially as the company is growing rapidly. Secondly, competition will become stiffer over the next couple of years.

Tableau Software, Inc.

Our Tableau price target is derived using an Enterprise Value (EV) to Revenue analysis. Our assumptions are based on our FY17 revenue estimate and an EV to revenue multiple of 5x. Given these inputs, we reach our 12-month price target of $80.

The major risk is offered by the company's high valuation. Any execution missteps can cause a significant drop in the stock price. Continued upside to estimates could offer tailwind to the stock price.

Teradata Corporation

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, P/Earnings, and Enterprise Value (EV) to Revenue analysis. Our assumptions are based on comparables in the software universe.

Based on an EV to revenue multiple of 1.5x, we come up with a share price of $25. For our price to forward 12-month earnings analysis, we have calculated a share price of $23 based on an 10x multiple on our CY 2016 EPS estimate. Finally, our DCF assumes a discount rate of 15% and a terminal FCF multiple of 7x, suggesting fair value 12 months hence of $24. This implies a free cash flow perpetuity growth rate of about 0.5%. Given these inputs, we reach our 12-month price target of $24.

If the company's large deals do not accelerate, its estimates could move down materially impacting the stock price. Also, the company could experience greater competition from enterprise application providers who are baking in increasing amount of analytics functionality in the base product. On the positive side, if business environment for large deals improve, the company could deliver upside to estimates driving the stock price materially higher. We plan to address the discrepancy between our rating and PT after quarterly results are released.

VMWare, Inc.

Our price target is derived using an equally weighted three-pronged valuation approach, which includes a DCF, Enterprise Value (EV) to Bookings analysis and EV to Free Cash Flow (FCF). Our assumptions are based on comparables in the information technology universe.

Based on an EV to 2016 bookings multiple of 3x, we come up with a share price of $52. For our EV to FCF analysis, we have calculated a share price of $50 based on a 10x multiple on our 2016 FCF estimate. Finally, our DCF assumes a discount rate of 12% and a terminal FCF multiple of 9x, suggesting fair value 12 months hence of $54. This implies a free cash flow perpetuity growth rate of 1%. Given these inputs, we reach our 12-month price target of $52.

Key risk to our thesis could come from stronger competition from Microsoft, whereby it can use its installed base to expand its footprint and create pricing pressure. VMware is also expanding into new areas with acquisitions that can raise the execution risk. On the upside, another bidder could emerge and offer to buy the entire company at a premium to current price.

Companies Mentioned (prices as of 1/21)
NetSuite Inc. (N- Neutral $70.21)

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(As of 1/21)	**% of coverage**	**IB service past 12 mo**
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