

U.S. TECH-TWENTY: MEASURING OFFICE MARKET IMPACT

AUGUST 2014



EXECUTIVE SUMMARY

The booming high-tech sector has been one of the major drivers in the U.S. office market recovery, with the industry responsible for one-fourth of all new office-using jobs created in the U.S. between 2009 and May 2014.

High-tech was also the top industry leasing office space in the U.S., accounting for 20% of major leasing activity thus far in 2014, up from 14% in 2013.

San Francisco topped the U.S. Tech-Twenty Office Markets list for the third straight year. Over the past two years, San Francisco's high-tech job base has grown by 51%, while average asking rents have climbed 35%.

Between 2011 and 2013, 10 Tech-Twenty markets grew their high-tech job base by more than 10%, including Austin (34%), San Francisco Peninsula (30%) and New York (23%).

Eight of the Tech-Twenty markets posted double-digit rent growth over the past two years, led by the Bay Area markets—San Francisco (35%), Silicon Valley (21%) and San Francisco Peninsula (19%)—Manhattan (17%) and San Diego (15%).

The top high-tech submarkets for office rent growth over the past two years were Redwood City in San Francisco Peninsula (30%), Midtown South in Manhattan (29%) and River North in Chicago (26%).

Because of the strength of these high-tech submarkets, the average office rent aggregate of the Tech-Twenty submarkets was 18% higher than the Tech-Twenty overall markets.

From an investor's perspective, San Diego, Portland, and Orange County offer the greatest potential. These markets are also attractive to occupiers, although Raleigh-Durham offers the best combination of low office rents and a growing high-tech labor pool.

At the heart of high-tech's growth is strong demand for products and services from consumers. As long as high-tech companies align themselves with this demand, the unrealistic growth and valuation expectations that defined the dot-com bubble should be avoided.

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HIGH-TECH HAS EMERGED AS THE MOST INFLUENTIAL INDUSTRY ON THE U.S. OFFICE MARKET.

Software development, mobile and social media technologies, and information product and services companies are driving innovation and new job creation across the country—and collectively have leased more large blocks of office space than any other industry in the past year and a half.

The high-tech industry has expanded its job base at a healthy pace and become one of the primary driving factors in the recovery of the U.S. office market. The outsized growth within the software/services sector of the high-tech industry has been responsible for one out of every four new office-using jobs created in the U.S. between 2009 and May 2014. That equates to more than half a million new high-tech software/services jobs, an incredible 24.2% increase. This growth rate compares to 5.5% for total U.S. non-farm jobs and 8.0% for all U.S. office-using jobs over the same four-and-a-half-year period.

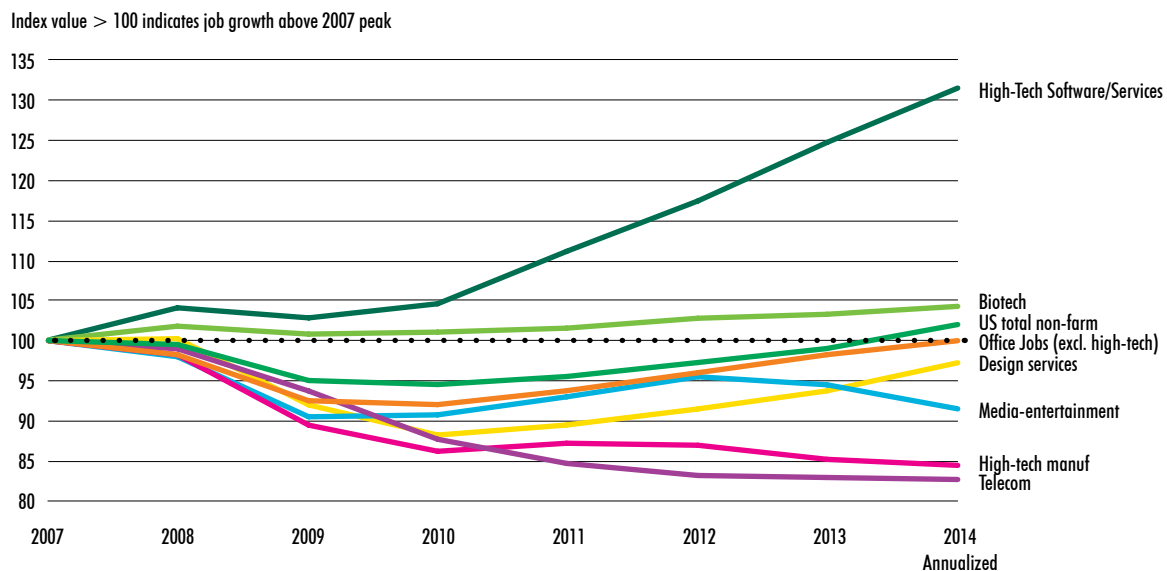
Leasing activity is further confirmation of the high-tech industry's strong influence on the U.S. office market. High-tech companies accounted for 20%

of major leasing activity¹ by square footage through the first half of 2014. The second place industry was financial services, at 12%. For all of 2013, high-tech accounted for 14% of major leasing activity, with financial services remaining at 12%.

Notably, the high-tech industry is expanding at a much faster pace than many of its peers within the creative industries (Figure 1). High-tech software/services jobs grew at a 5.6% annualized rate through May 2014, virtually on par with the 6.1% growth rate seen between 2012 and 2013. By contrast, the media and entertainment industry, which has become more connected to high-tech of late, contracted by 3.3% through mid-2014. The decline came from fewer jobs in the motion picture and video production sector, which was partially offset by growth in the advertising sector, a favorite source of monetization for high-tech companies.

The “Tech-Twenty Office Markets”—large U.S. cities with a high concentration of high-tech software/services jobs—experienced strong job growth from 2011 to 2013, with 11 of the 20 markets recording a higher rate of growth compared to the 2010 to 2012 period (Figure 2). Nine markets experienced a slower, but positive growth rate in the current two-year period (2011 to 2013) versus the prior two-year period (2010 to 2012), reflecting high growth in 2012 rather than weakness in 2013.

Figure 1: U.S. Job Growth for High-Tech and Creative Industries



Source: U.S. Bureau of Labor Statistics and CBRE Research, July 2014.

¹ Major leasing activity reflects the 25 largest lease transactions within 57 U.S. markets.

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Eight of these nine markets grew jobs by more than 10%, led by San Francisco with 51.1% high-tech software/services job growth between 2011 and 2013 (Figure 2). Austin, Silicon Valley, and Salt Lake City saw the largest growth rate increases. In terms of total numbers of jobs created, Silicon Valley, Seattle and San Francisco were the top three markets.

The cities that possessed both a 20% or greater concentration of high-tech software/services to office-using jobs and a 50% or greater concentration of new high-tech software/services jobs to new office-using jobs experienced strong rent growth. The Bay Area markets—San Francisco, Silicon Valley and San Francisco Peninsula—have these attributes, and not surprisingly posted the highest two-year rent growth numbers, at 34.6%, 21.4% and 19.3%, respectively (Figure 2). Seattle also had both these attributes, but posted a comparatively modest rent growth of 7.2% due to a few large high-tech firms dominating market activity and a better supply-demand balance.

Within the Tech-Twenty markets, the primary tech-centric submarkets also experienced strong rent growth, with eight of the 20 top tech submarkets experiencing two-year rent gains of over 20% (Figure 3.2). The two clear leaders were Redwood City in San Francisco Peninsula, at 29.6%, and Midtown South in Manhattan, at 29.3%. Seven submarkets grew net absorption by more than 5% in the past two years, led by Mountain View in Silicon Valley, at 14.3%, and Hillsboro in Portland, at 11.4% (Figure 3.4).

Figure 2: High-Tech Software/Services Job and Office Rent Growth, Past Two Years

High-Tech Software/Services Job Growth (Ranked by growth rate, 2011 to 2013)

Rank	Market	GROWTH RATE		NEW TECH JOBS	
		Current Period 2011-2013	Prior Period 2010-2012	New Jobs 2011-2013	As % New Office Jobs 2011-2013
1	San Francisco	51.1%	61.1%	15,922	56.1%
2	Austin	34.2%	29.8%	8,187	32.5%
3	San Francisco Peninsula	30.1%	28.5%	8,398	56.8%
4	New York (Manhattan)	22.6%	26.9%	14,008	41.0%
5	Silicon Valley	19.9%	17.5%	17,761	54.2%
6	Chicago	19.3%	19.7%	11,795	22.0%
7	Seattle	16.9%	15.1%	16,072	84.9%
8	Raleigh-Durham	16.8%	19.1%	4,126	26.6%
9	Boston	15.7%	15.0%	13,185	49.6%
10	Salt Lake City	15.7%	11.4%	5,092	20.8%
11	Denver	13.3%	16.1%	6,536	22.4%
12	Portland	12.6%	12.2%	2,562	11.7%
13	Los Angeles	11.7%	12.4%	6,204	11.1%
14	Atlanta	10.7%	14.9%	6,203	16.8%
15	Baltimore	10.0%	12.1%	2,806	12.4%
16	Orange County	9.3%	5.8%	2,401	9.3%
17	Philadelphia	4.0%	3.0%	1,425	18.3%
18	San Diego	3.9%	3.6%	1,001	6.8%
19	Pittsburgh	2.2%	-0.8%	288	2.8%
20	Washington, D.C.	0.8%	5.3%	1,115	10.5%

Office Market Rent Growth

(Ranked by growth rate, Q2 2012 to Q2 2014)

Rank	Market	GROWTH RATE	
		Current Period Q2 2012-Q2 2014	Prior Period Q2 2011-Q2 2013
1	San Francisco	34.6%	51.7%
2	Silicon Valley	21.4%	21.7%
3	San Francisco Peninsula	19.3%	25.1%
4	New York (Manhattan)	17.5%	17.7%
5	San Diego	15.0%	1.2%
6	Denver	12.7%	10.3%
7	Austin	12.2%	11.9%
8	Boston	11.2%	-0.8%
9	Los Angeles	9.5%	6.7%
10	Seattle	7.2%	4.1%
11	Portland	6.1%	3.3%
12	Orange County	5.2%	-1.5%
13	Salt Lake City	4.1%	3.1%
14	Baltimore	3.7%	10.1%
15	Washington, D.C.	3.6%	2.3%
16	Chicago	3.5%	2.9%
17	Atlanta	3.3%	1.7%
18	Philadelphia	2.2%	1.0%
19	Pittsburgh	1.8%	-4.8%
20	Raleigh-Durham	-0.3%	-3.1%

Source: U.S. Bureau of Labor Statistics and CBRE Research, July 2014.

Figure 3: Office Market Performance Factors, Two-Year Growth Trend - Q2 2012 to Q2 2014

Figure 3.1: Rent Growth - Overall Market

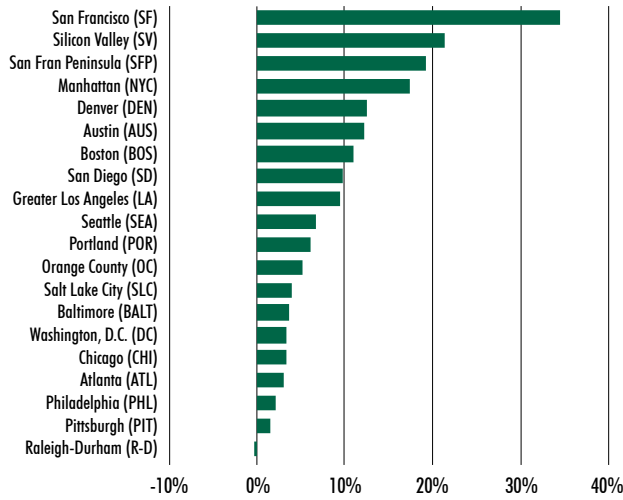


Figure 3.2: Rent Growth - Top Tech Submarket

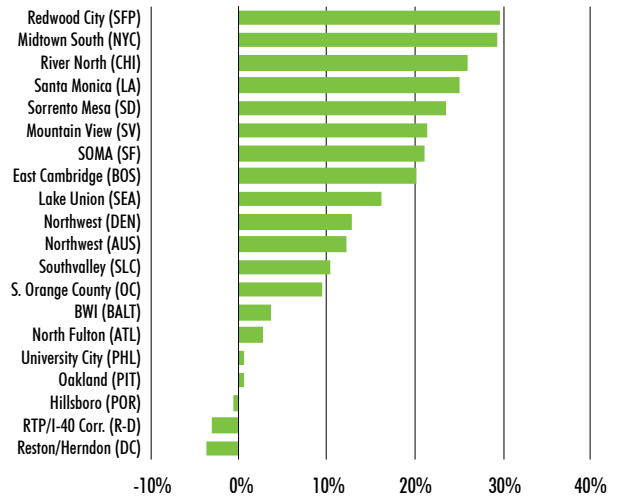


Figure 3.3: Net Absorption Growth* - Overall Market

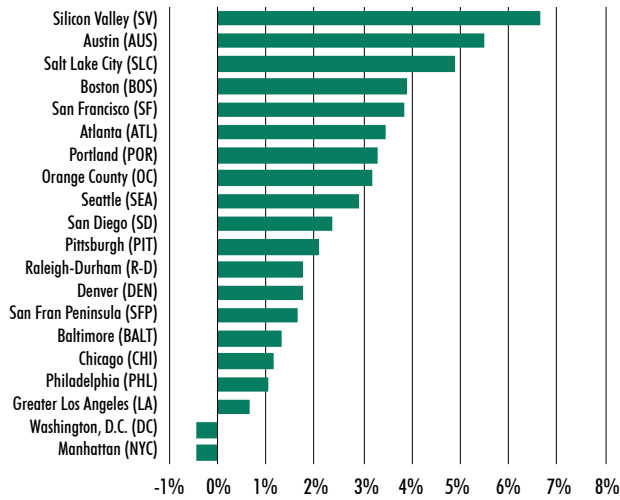


Figure 3.4: Net Absorption Growth* - Top Tech Submarket

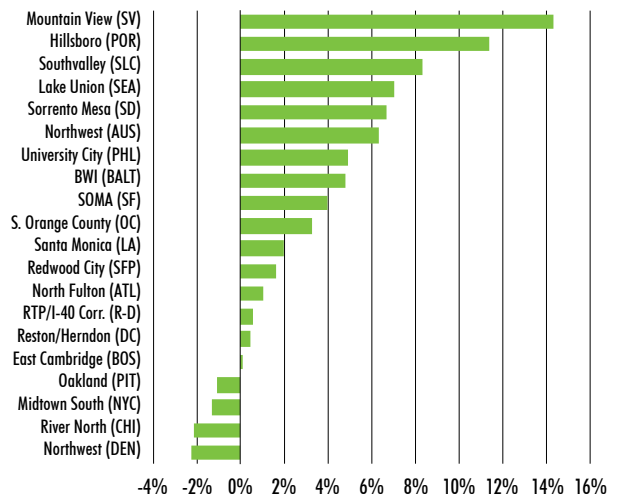


Figure 3.5: Occupancy Rate Growth** - Overall Market

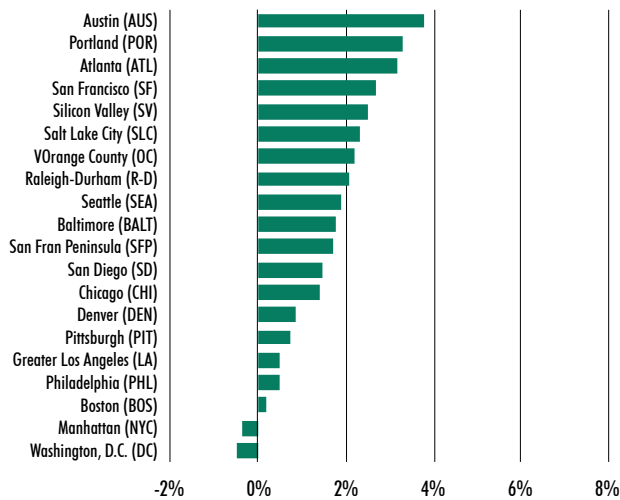
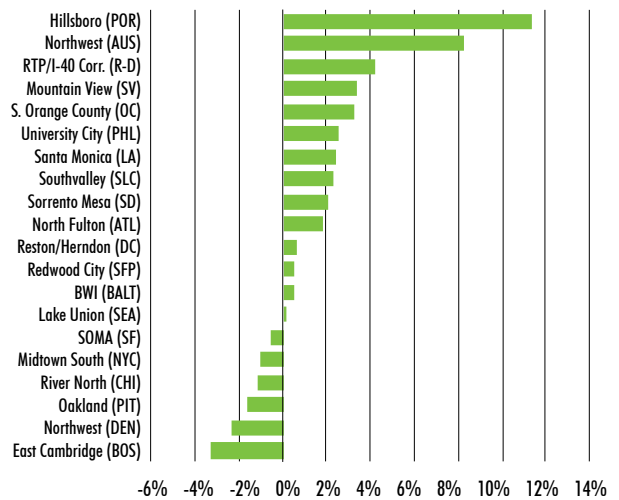


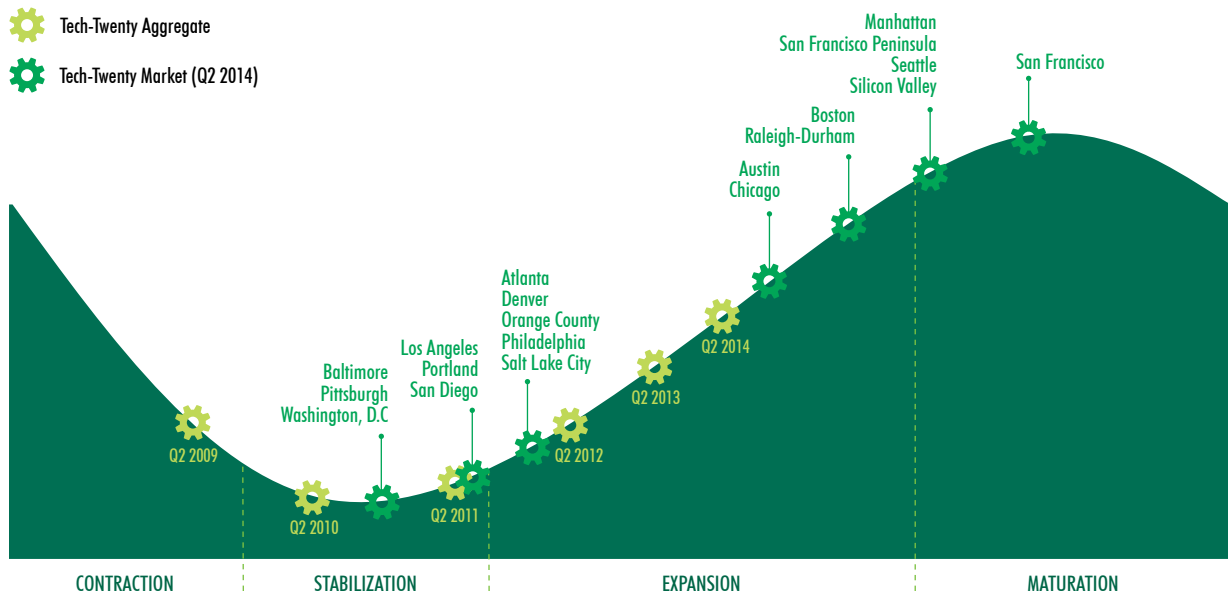
Figure 3.6: Occupancy Rate Growth** - Top Tech Submarket



* Two-year total (Q3 2012 to Q2 2014) as a % of net rentable area or building stock
 ** Percentage point reduction in vacancy rate
 Source: CBRE Research, Q2 2014.

SPREADING MARKET CYCLE AND MARKET POWER POSITIONING

Figure 4: Tech-Twenty Office Market Cycle, Q2 2014



OFFICE MARKET CYCLE PHASE CHARACTERIZATION

Contraction: Vacancy increasing, rents declining, and excess new supply additions.

Stabilization: Vacancy increasing or decreasing slowly, rents still declining or stable, and limited or no new supply additions.

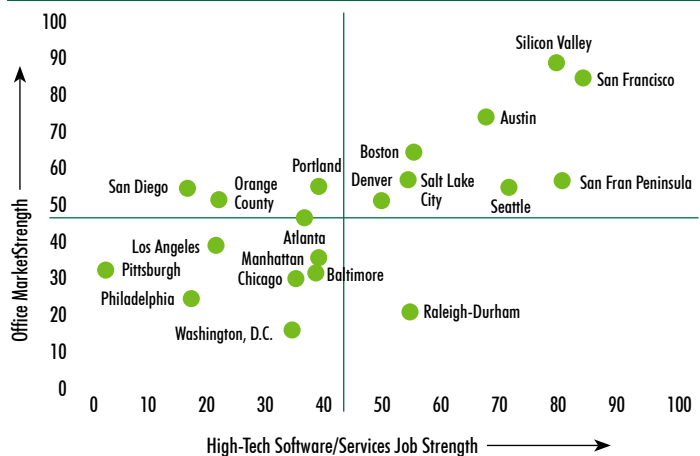
Expansion: Vacancy declining, rents rising at faster pace, and new supply additions underway or on the horizon.

Maturation: Vacancy stable with moderate increase/decrease, rents increasing at slower pace, and increased new supply additions.

Source: CBRE Research, Q2 2014.

The Tech-Twenty markets continued to spread out along the office market cycle curve (Figure 4). The connection between the strength of high-tech job growth and positioning on the office market cycle are highly correlated. The 20-market aggregate proceeded at a steady rate through the expansion phase, with nine markets outperforming the 2014 aggregate and 11 markets lagging in various stages of stabilization and early expansion. San Francisco was once again the top-performing market while Boston and Orange County experienced the greatest year-over-year movement forward along the curve. Washington, D.C., and Baltimore have been restrained by federal government fiscal policy, which is tied to high-tech business activity in the region.

Figure 5: Tech-Twenty Market Power Diagram



Source: CBRE Research, Q2 2014 and Bureau of Labor Statistics, July 2014.

Tech-Twenty Market Power Diagram measures the relative strength of the Tech-Twenty office markets on a scale of 0 to 100. High-tech software/services job strength includes high-tech software/services job growth over the past two years and their current concentration within office-using job categories. Office market strength includes rent and net absorption growth over the past two years. The quadrant lines represent the 20-market aggregate average for each strength measure.

The Tech-Twenty Market Power Diagram measures the strength of each of the Tech-Twenty markets based on high-tech software/services job strength relative to office market strength (Figure 5). The four-quadrant diagram identifies those markets that can be considered growth leaders, as well as those that are emerging markets or have high potential. Eight markets were in the growth leaders quadrant, with Silicon Valley and Boston showing significant movement in their relative office market strength. Not surprisingly, San Francisco and Silicon Valley stood out in the greatest strength quadrant, with Austin in the third position. Raleigh-Durham was the only market in the high-potential quadrant, representing a unique opportunity for occupiers and investors. Orange County increased in office market strength and moved into the emerging markets category, occupying that space with San Diego and Portland.

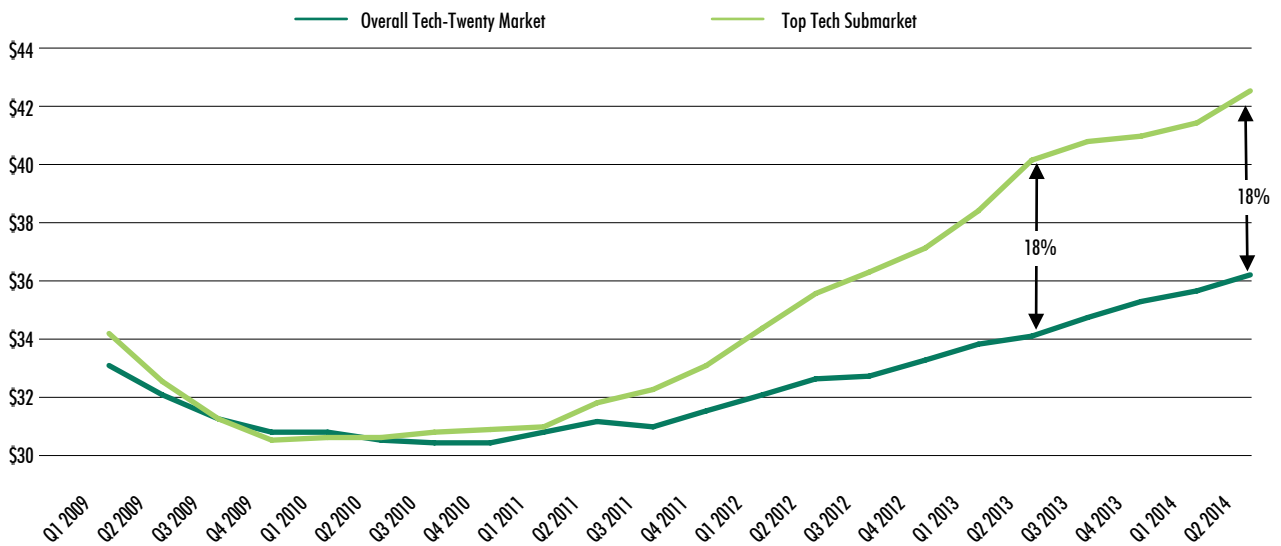
KEY TECH SUBMARKETS FACE SUPPLY SHORTAGES

Submarkets matter when it comes to choosing where to locate and can heavily influence the growth pattern within each of the Tech-Twenty markets. Within these preferred submarkets, which in many cases are the neighborhoods of choice among millennials and high-tech companies, vacant space has become increasingly scarce—12 tech submarkets ended Q2 2014 with vacancy rates under 10%, including Mountain View in Silicon Valley (2.8%), Oakland in Pittsburgh (3.9%) and SOMA in San Francisco (4.9%). As a result, nearby submarkets may see increased high-tech industry leasing activity.

THE TOP 20 SUBMARKETS COMMANDED, ON AVERAGE, AN 18% PREMIUM OVER MARKET-WIDE TOTALS

Rent premiums in top tech-oriented submarkets have been on the rise since early 2011. As of Q2 2014, the top 20 submarkets commanded, on average, an 18% premium over market-wide totals (Figure 6). This difference has held constant over the past year, indicating that this is a lasting trend rather than a one-time spike. Three submarkets posted rent premiums of over 70% in their top tech submarkets: Santa Monica in Los Angeles (78%), East Cambridge in Boston (75%), and Mountain View in Silicon Valley (70%). Interestingly, a handful of top tech submarkets have rents below their market average, including Reston/Herndon in Washington, D.C., and Hillsboro in Portland, highlighting potential for further rent growth.

Figure 6: Tech-Twenty Aggregate - Annual Average Asking Rent



Source: CBRE Research, Q2 2014.

HIGH-TECH INDUSTRY OUTLOOK

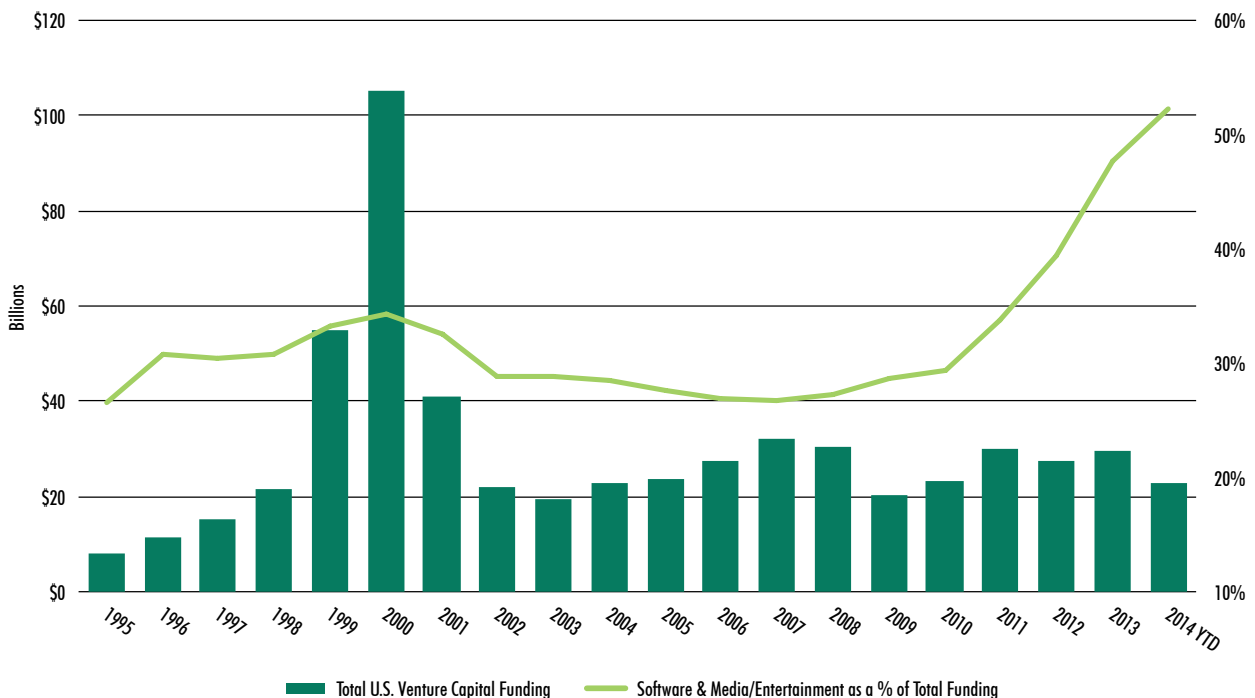
The U.S. economy and office market continues to grow at a quickening yet still measured pace. Total U.S. office-using jobs (excluding high-tech) only returned to their 2007 peak in April of this year, and grew at an annualized rate of 2% over the past year. With an annual growth rate that nearly triples that of other office-using industries, the high-tech industry is expected to continue to be a boon to U.S. job creation, and Tech-Twenty markets will strongly benefit from this trend.

While our two-year outlook foresees continued favorable economic and job creation conditions at the national level and continued outperformance by the high-tech industry, high-tech's torrid pace of expansion raises concern in some circles that a slowdown or downturn should be expected as part of the normal business cycle. Such an event would likely have greater impact on those markets most heavily dependent on the high-tech industry.

High-tech's rapid expansion has been fueled largely by venture capital (VC) funding, which enables companies to quickly scale their operations by adding talent and increasing their office footprints. VC funding has been strong in recent years, maintaining an annual average of \$26 billion in the past five years, according to data from Thompson Reuters for the PricewaterhouseCoopers/National Venture Capital Association MoneyTree Report. Funding is set to surpass this average in 2014, with \$23 billion invested in the first half of the year alone. Notably, over half of funds distributed in 2014 have gone to companies within either the software or media and entertainment industry. Since 2010, the percentage of VC funds distributed between these two industries has exploded (Figure 7), easily surpassing dot-com-era levels. Such a high concentration has induced many real estate investors to follow the VC money as part of their overall investment strategy.

Such heightened levels of funding have raised concern regarding the over-valuation of tech companies. Federal Reserve Chair Janet Yellen recently stated that valuation metrics were "substantially stretched," particularly for small companies in the social media and bio-tech industries. Average company valuations, as measured by the Shiller S&P 500 Cyclically Adjusted Price-Earnings Ratio (CAPE Ratio), have been on the rise since the end of the

Figure 7: U.S. Venture Capital Funding for Software & Media/Entertainment Sector



Source: PwC Moneytree and CBRE Research, July 2014.

HIGH-TECH INDUSTRY OUTLOOK

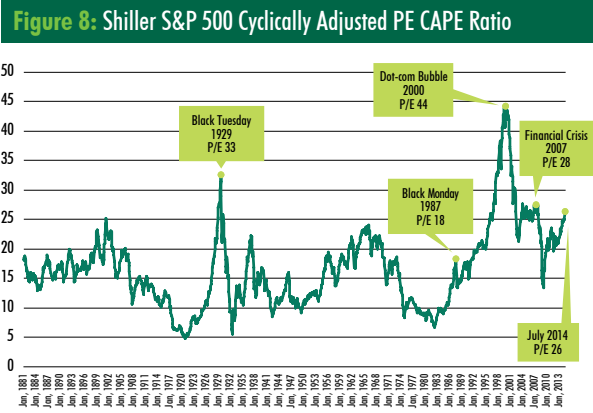
recession and are quickly approaching levels last seen before the financial crisis (Figure 8).

Though this metric is not specific to the high-tech industry, CAPE ratios that significantly surpass historical averages can be a warning sign that stocks may be overpriced, and some high-tech companies have valuations well above market averages. Furthermore, many high-tech firms are increasingly aiming for acquisition by larger and usually public companies more concerned about innovation and talent acquisition than a potentially inflated valuation.

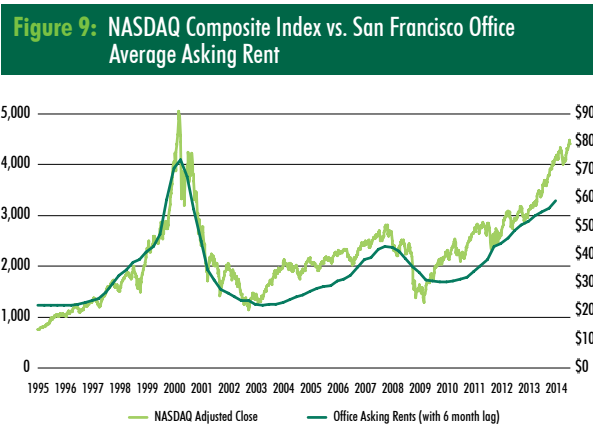
An important question to be raised is how high-tech company valuations will affect the commercial real estate landscape. In the San Francisco office market, asking rents (with a six-month lag) have closely tracked the movements of the NASDAQ Composite Index for the past 20 years (Figure 9). If this trend holds true, as the NASDAQ climbs towards previous highs, office rents will likely spike, similar to what occurred when the NASDAQ passed 5,000 during the dot-com era. This correlation illustrates that performance in the high-tech industry in markets with a strong concentration of high-tech jobs can have far reaching effects for both landlords and tenants of office space.

Looking forward, the high-tech industry—and correspondingly the Tech-Twenty markets—should continue to expand in the near term. At the heart of high-tech company growth and rising valuations is strong demand from consumers for high-tech products and services. The Index of Consumer Technology Expectations, which measures anticipated spending on technology, continues to trend upward (Figure 10), an indication of society’s almost insatiable appetite for new technology.

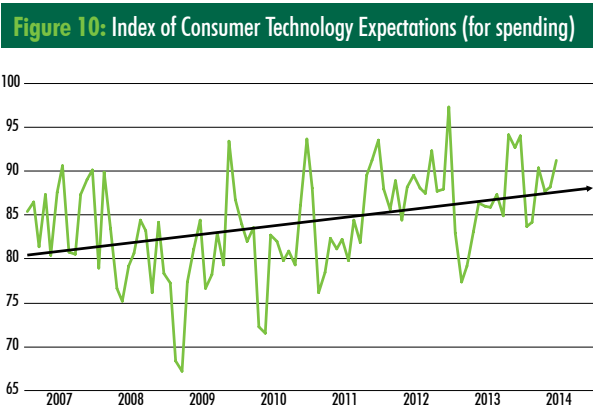
This strong demand by consumers for high-tech products and services should continue to propel high-tech companies—and the office markets they are concentrated in. However, it is important for high-tech companies and commercial real estate investors to align themselves with actual demand trends rather than the exuberance that is prevalent in parts of the high-tech industry. Doing so will help avoid the overenthusiasm that led to the unrealistic growth and valuation expectations that caused the last tech bubble.



Source: Shiller PE Ratio, July 2014.



Source: NASDAQ Index and CBRE Research, July 2014.



Source: Consumer Electronics Association, July 2014.

APPENDIX: TECH-TWENTY EMPLOYMENT CATEGORIES



Bio-Tech includes scientific research and development services, medical equipment and supplies, pharmaceuticals and medicines, and medical and diagnostic laboratories.



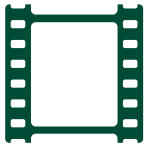
Design Services includes architectural and engineering services, and specialized design services.



High-Tech Manufacturing includes computer and electronic products, electrical equipment, and other electrical equipment and components.



High-Tech Services includes computer systems design and related services, software publishers, data processing, hosting and related services, electronic shopping and electronic auctions, and Internet publishing and broadcasting and web search portals.



Media-Entertainment includes motion picture and video production, and advertising and related services.



Office-Using Jobs includes professional and business services, financial activities, and information.



Telecom includes telecommunications.

Data sources used in this report include industry employment data from the U.S. Bureau of Labor Statistics, the PriceWaterhouseCoopers/National Venture Capital Association Moneytree Report, the Shiller S&P 500 Cyclically Adjusted PE Ratio (CAPE Ratio), NASDAQ Index, Consumer Electronics Association and CBRE Research.

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If you would like to see the individual summaries for the 20 local markets please click [here](#).

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