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> *"The only way to make sense out of change is to plunge into it, move with it, and join the dance."* ~ Alan Watts

President Trump and the Economy

(*Editor's Note: This article is an update to a previously published post-election version*).

We are amazed, though not completely surprised, by the Trump victory. On the Sunday prior to the election, when we saw that Mrs. Clinton was in Philadelphia both that Friday night with Katy Perry and then would be back again on Election Eve Monday with the President and First Lady, former President Bill Clinton, John Bon Jovi, and Bruce Springsteen, we said to a friend that the Clinton campaign must be deeply worried about losing Pennsylvania. They saw the need to get every vote possible out of core Philadelphia if they hoped to take Pennsylvania. And that no Ohio appearance took place in the days leading up to the election meant they had conceded Ohio. Ditto for Wisconsin.

In the last issue of *The Linneman Letter*, we wrote that you should be wary of pre-election predictions, as they were based on the historic voting behavior of non-die hard Republicans and non-die hard Democrats choosing between two basically likable candidates. We surmised that historical polling methods, which revolved around this group of voters choosing between two highly disliked candidates, were ill-suited to this election. Hence, we were not shocked that the polls were wrong by 400-600 basis points (bps).

It has been very interesting to watch key Republicans, who in many cases (including all living Republican Presidents and Presidential candidates, except Mr. Dole), very publicly refused to support Mr. Trump's candidacy, but are now working with him as the elected President of the United States. As Mr. Romney's post-election reaction demonstrates, it is a very different phone call when the President of the U.S. asks one to serve, versus a loose cannon candidate requesting campaign support. The prestige and power of the U.S. Presidency is immense and should not be underestimated.

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Eight years ago, America voted for President Obama for "change we can believe in." That is, they voted on a largely unknown and inexperienced Senator hoping for real change. Unfortunately, what they got was foretold by his selections of a very "establishment" Vice President Biden and Chief of Staff, Rahm Emmanuel. Thus, the past eight years witnessed the policies one would expect from a Chicago Democrat, tinged with a bit of community activist socialism (President Obama's true heart).

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In fact, President Obama, although personally popular, presided over the virtual collapse of the Democratic Party. When he entered office in 2009, there were 60 Democratic Senators; today there are 48. There were 257 Democratic U.S. Representatives; today there are 193 (one-third of which hail from just three states). There were 29 Democratic Governors, and 60% of state legislative bodies were controlled by Democrats; today there are 15 and 30%. And now they have lost the White House. Thus, the Democrat's redistribution and interventionist policies which reigned during the past eight years have gone down poorly with the electorate as a whole, though they have played very well in older urban areas and at universities.

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And now the electorate has effectively said that if a junior Senator will not or cannot change things, we will put someone in office with no political baggage or savvy. Only time will tell how this works.

It is now all about the advisors this fundamentally inexperienced President has chosen, whether he will listen to sound advice, and if he is able to build a "compromise consensus." Such a "compromise consensus" has not existed since early in President Clinton's second term, with the fleeting exception of immediately after 9/11. The raw truth is that Mr. Trump is not much less prepared for the job than a peanut farmer-turned-Georgia Governor, or the Governors of Arkansas and Texas, or handsome young junior Senators from Massachusetts and Illinois. In fact, almost no one is truly prepared for the job, as it is a pretty impossible job for which to prepare. The real key is how quickly and effectively they learn on the job, and whether they utilize the wisdom of those with topical expertise without falling prey to the agendas and petty jealousies of these experts.

It is ironic that a few days prior to the election, pundits and the media were preparing to attend the funeral of the Republican Party. Many suggested that the defeat would exceed that of Goldwater in 1964, and that the Republican Party might even cease to exist. Yet in a few weeks, the U.S. will have a Republican House, Senate, White House (though President-elect Trump is hardly a Republican by traditional metrics), and an overwhelming majority of state Governors, state legislative bodies, and state Attorney Generals. The Trump victory not only had "coattails," but was sweeping in its breadth. It also underscored the wisdom of the federalist structure created by the Founding Fathers. It is important to remember that the Electoral College was critical to the creation of the U.S., as most colonists feared that without it, the small states would be overwhelmed by voters in Philadelphia, New York, and Boston. Absent this federalist election structure, these colonies would have never joined together to create the U.S. Only a smattering of major urban counties were carried by Mrs. Clinton, with almost all other counties across the country carried by President-elect Trump.

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In Figure 1, counties that saw a majority of votes for Trump are red, while those with a majority who supported Clinton are blue. Based on this perspective,

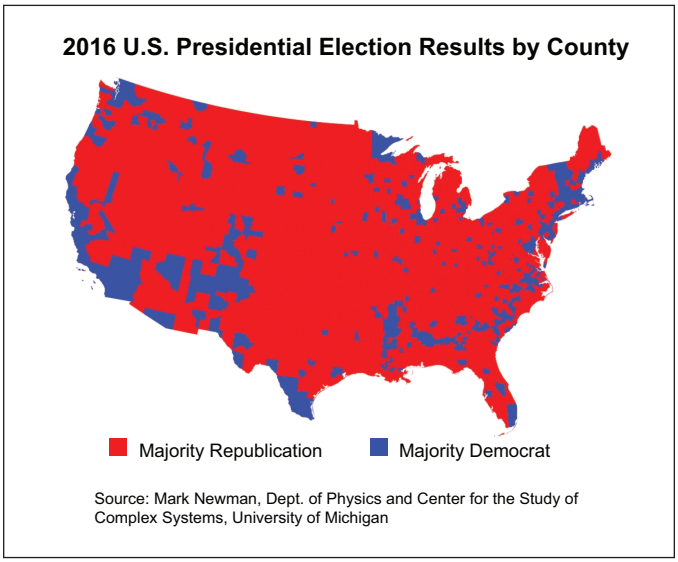

figure 1

one would conclude that of course Donald Trump won overwhelmingly, because just about the entire country is red. However, when taking the percentage of votes into consideration, the graphic becomes far more balanced between Republican and Democratic votes for President. In Figure 2, the same county data is shaded by the extent of the vote (e.g., 100% Trump is red, 100% Clinton is blue, with all others represented by gradations of purple). It shows the same general pattern, but reveals that it was not an "all or nothing" vote. That is, many in Middle America voted for Ms. Clinton, and many urbanites voted for Mr. Trump.

So now it is the Democratic Party which is in shambles after a primary that saw only a wildcat Bernie Sanders revolt against the crowned Democratic candidate. Shame on the Democrat leadership for not nurturing and putting forth a better candidate than Mrs. Clinton after having eight years to prepare.

The only candidate the Democrats put forth was a highly divisive, badly sullied, 69-year-old establishment figure (Governor's wife, First Lady, Senator, and Secretary of State; it does not get much more establishment), who nine years earlier, lost an "un-losable" election to President Obama. That loss was in spite of being "crowned" and having much more money and resources. This time, she almost lost an "un-losable" Democratic nomination to an unknown 75-year-old Socialist Independent with no money or organization. And now she has lost an "un-losable" election to Mr. Trump, in spite of the fact that she had a

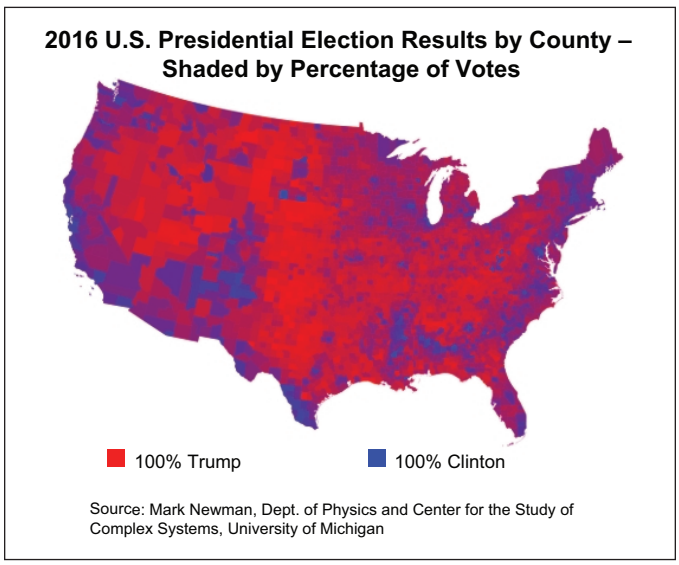

figure 2

superior organization, raised more than three times more money, had more than three times the number of TV advertisements, and that he was overtly not supported by many major Republican leaders and traditional Republican donors. Do you realize how bad a candidate you have to be to lose in such circumstances?! And yet the Democratic leadership put her up unopposed. This is because a decade ago, they fell in love with the idea of the first female President, and ignored a generation of potential candidates of all races and genders. Such incompetent leadership deserves to lose.

It is highly offensive when pundits say "Hispanics, women, blacks and college educated males did not vote for Mr. Trump." This is simply not true. While the majority of these groups did not vote for Trump, millions of good and honorable people in these categories went into voting booths, thought about their choice, and voted for Mr. Trump because they honestly believed it was the best course for their nation. Whether we agree with them or not is irrelevant. Their votes deserve respect, not criticism. Like each of us, they voted as citizens, not as racial or gender cut-outs. They are neither "idiots" nor "deplorables." They were fellow U.S. citizens exercising their right to vote. An estimated 42% of women voters, 29% of Latino voters, and 8% of African American voters cast their ballots for Mr. Trump. Had these millions of people not done so, he would not have been elected. It trivializes the integrity of these individuals to say "women, blacks, and Hispanics did not vote for Trump." They did, just as millions of non-college educated white males honorably voted for Ms. Clinton because they felt she was the best choice for their country.

The Republicans are now in charge, with a President who is neither a traditional Republican, nor policy savvy. It will be a roller coaster ride. Only time will tell whether Mr. Trump will select and listen to good advisors, and whether he can build an "effective compromise consensus." To date, he has selected people with high quality resumes, though to the dismay of those who voted against him, these people have massively different policy positions. But this is the familiar losers' lament amplified by a very liberal media. President-elect Trump is clearly a master salesman and has a proven background in negotiating, though in a very different context.

In terms of economic policies, the primary focus of the Republican Congress will be the repudiation of key elements of Obamacare. They will almost certainly

work with President-elect Trump to halt the vast regulatory overreach of the past 16 years, particularly in healthcare, finance and banking, labor relations, and energy/environment. President Trump and Congress will not undertake major tax reform, in spite of the desperate need for systematic reform after 30 years of neglect and "special case" changes. While there may be no decrease in the highest personal tax rate, notable reductions in other personal tax rates will occur, and there will be a modest reduction in capital gains taxation. We anticipate that the estate tax will be effectively lowered primarily by raising the minimum exemption level. Corporate tax rates will be slashed, and cash held abroad will be allowed to be brought home with only modest taxation.

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President-elect Trump will push for a review of all trade agreements and tariffs, but such agreements take years to negotiate and change. Expect minor changes and tariff tweaks accompanied by pronouncements of "radical changes." In terms of immigration policy, we hope that our borders remain open. We hope that a man who has had two immigrant wives understands the importance of immigrants to the vitality of the U.S. Again, we expect more rhetoric than action in this arena, though entry from the Middle East will unfortunately be made more difficult.

The U.S. will not strategically default on its debt, as Congress will block such behavior. However, federal spending (except for infrastructure) and regulation will be reined in by a President and key economic advisors who have never collected a government paycheck, but have experienced the bite of excessive regulations and paid taxes. The lack of traditional funding support of his candidacy importantly means that no President in our lifetime has entered the White House with less need to pay back "special interests." This alone is a reason for hope for productive change.

We doubt that a wall will be built and paid for by Mexico, though the President will tout concessions (real or imagined) which he will successfully negotiate with Mexico that "pay for" greatly increased border controls.

And needless to say, the tax treatment for real estate will not be worsened. We doubt that a wall will be built and paid for by Mexico, though the President will tout concessions (real or imagined) which he will successfully negotiate with Mexico that "pay for" greatly increased border controls.

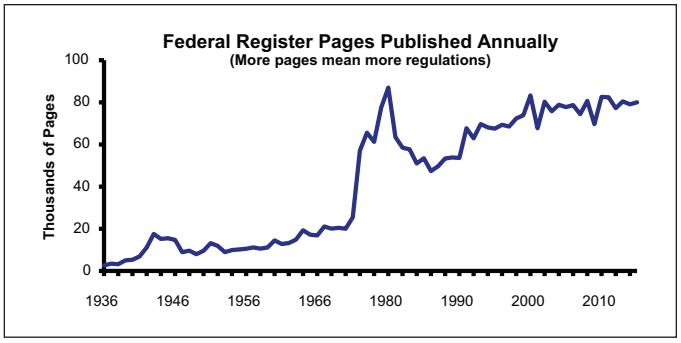

figure 3

We expect that Federal Reserve appointees will take on a very different hue than the group-think unorthodoxy which has prevailed the past 9 years. We hope they will be appointees who understand that artificially low rates do not stimulate the economy, but rather, distort capital flows, redistribute income, and reduce growth, as has been so vividly demonstrated for over 26 years in Japan and the last nine years in the U.S. and Europe. Long rates have risen by nearly 70 bps since the election, and contrary to Fed fears, the economy has done just fine. This is because rates closer to market rates better allocate capital.

A serious challenge facing the new President is that he is 70 years old and highly unpopular. These facts will encourage a Democratic minority, (especially the Warren-wing) to dig in as they regroup and reform, in an effort to make him a one-term President. And do not write off the Democrats, as political parties have displayed an amazing ability to reform. While this was a devastating defeat of historic proportions, remember that just four years after the disastrous Goldwater defeat in 1964 (when Republicans responded to a close defeat in 1960 by moving too far right), the Republicans retook the White House with the improbable election of President Richard Nixon. The question is whether

the Democrats repeat the McGovern mistake of 1972, when they moved too far left after a close defeat in 1968. In the meantime, we doubt that the coastal elites and university professors who said they would "move to Canada if Trump is elected" will do so, but if they do, go long on Toronto real estate.

What the post-election protesters hoped to achieve eludes us. We suspect that most of them were rightly appalled when prior to the election, Mr. Trump refused to unequivocally say that he would accept the result if he lost. To her everlasting credit, Ms. Clinton conceded honorably, noting that the rules of the election were well known and understood by all, and that she failed to achieve the requisite federalist victory, in spite of registering a much higher popular vote total. This may have been the greatest achievement for the advancement of the U.S. in her long career of public service. However, many of her subsequent comments have been far less noble.

In short, it is time for all of us: winners, losers and interested observers, to afford President-elect Trump the respect and dignity the office deserves. It is time for us to admit that disagreement does not mean that those who disagree are evil, corrupt, or sub-human. All any of us have are opinions which are the result of our experiences and environment, and none of us has a monopoly on truth. It is time for political leaders of all stripes to understand that it is the job of advisors not to compromise, while it is the job of politicians to arrange compromise among honestly contrasting views. If they are unwilling to compromise, they should not be politicians. A politician who is unwilling to compromise is as useless as a judge who declares all defendants guilty (or innocent). Legislators are paid compromisers. If they are unwilling to compromise, they should resign.

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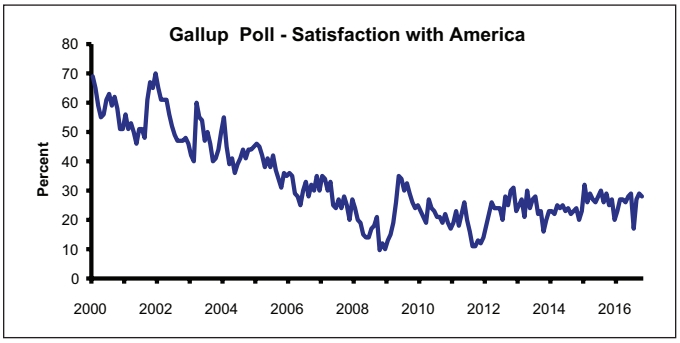

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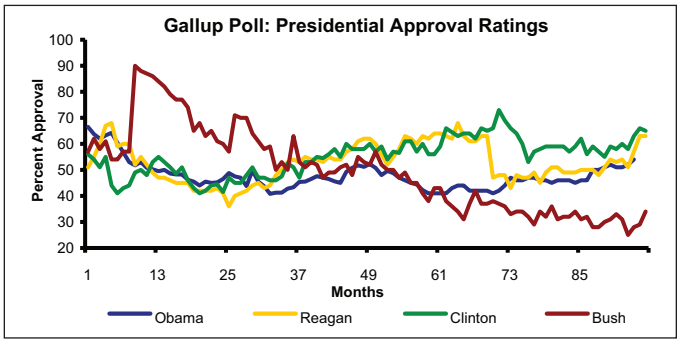

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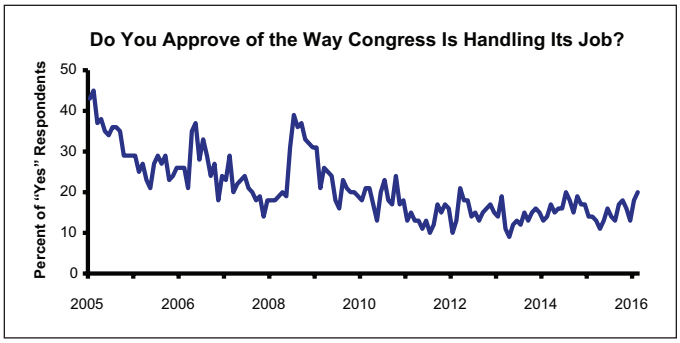

figure 6

Embrace the Trade Deficit

During the recent election we laughed (and cried) as candidates at all levels, and pundits on every channel proclaimed that the U.S. trade deficit is a major problem for the U.S. Not once did we hear someone explain why this is the case, or how U.S. citizens would be better off if we had a trade surplus. The simple fact is that the trade deficit is by definition, equal to our capital surplus. That is, our trade deficit does not reflect inferiority of our products or barriers to selling our goods abroad. Rather, it first and foremost is the result of the fact that the rest of the world sees us as the safest, most transparent, most legitimate, and most dynamic capital market in the world. And in order to invest in the U.S., foreigners must sell more to us than they buy from us, as they need the surplus to purchase our assets.

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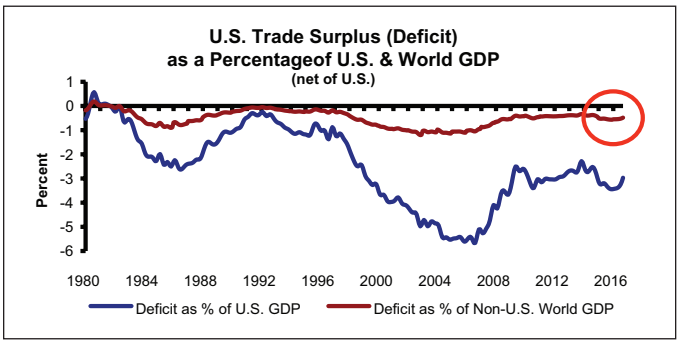

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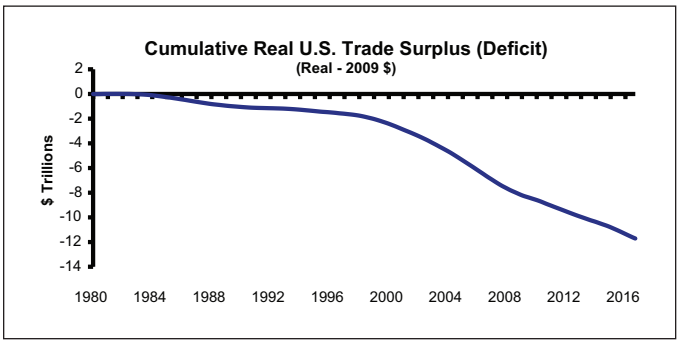

figure 8

Figure 7 illustrates the U.S. trade deficit, both as a percent of U.S. GDP and of World GDP (excluding the U.S.). The recent increase in the trade deficit reflects the world's increased desire to invest here, as the world has become a less secure place. The cumulative real U.S. trade deficit (from 1980) is $11.7 trillion, or 11% of non-U.S. GDP. This means that (in real terms), foreigners have brought nearly $12 trillion here for investments.

Our trade deficit exploits our most competitive "product": a globally superior capital market. If our capital market were as small, illiquid and corrupt as in many foreign countries, we would quickly have a trade surplus. And money would pour out of our assets, destroying our wealth in the process. Would this make us better off? Hardly! Our simple solution to this problem is to cease reporting our "trade deficit" and instead report our "capital surplus." Politicians and the media will find themselves hard-pressed to attack such a surplus.

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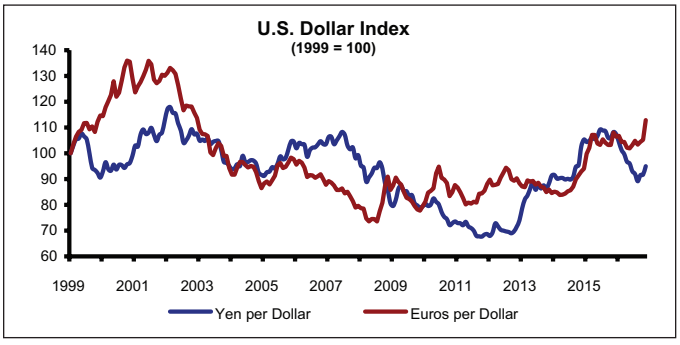

figure 9

Economy Watch: Key Indicators

We continue to carefully monitor the U.S. economic cycle, using both a wide variety of economic statistics, as well as qualitative "canaries in the coal mine." We are frequently asked, "What economic indicators do you use?" Of course, the answer is lots of them (several of which are highlighted below). In fact, we use economic data and business vignettes much as an impressionist painter uses brush strokes. That is, no single brush stroke means anything in terms of the image, and yet the composite of brush strokes yields a vivid impression of a complex reality.

Taken as a whole, our analyses suggest we are in the bottom of the sixth inning, with no recession expected until 2019. However, as in baseball, the remaining innings will not all be pure successes. There will be setbacks, but we expect that more good than bad will occur.

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In terms of the capital markets, we are in the 9th inning. That is, how much better can the capital markets get than when money is practically given away for free (and in some countries, borrowers are paid to borrow)? And while in the past quarter, 10-year Treasury yields have risen by 75 bps, long rates are still quite low by historical standards. The economy (GDP and employment) will continue to grow through 2018, and interest rates have hopefully begun to revert to norm. This will further improve the economy by reducing capital market distortions.

Why do we believe a recession will occur in 2019? Most simply, it is because prolonged growth breeds

Post-War Recoveries: First Glance Suggests the 9th Inning

	Average	Most Robust	Least Robust	Current*
Number of Months From Bottom To Peak	59	120	12	87
Unemployment Rate At Peak	4.9	2.6	7.4	4.9
Consumer Confidence Index At Peak	92	114	82	101
% Change From Bottom To Peak				
Real GDP	25	52	4	16
Employment (Total Nonfarm)	15	33	2	10
Industrial Production	32	75	5	19
Real Retail Sales	17	37	-1	21
Difference From Bottom To Peak (bps)				
Employment To Population Ratio	201	537	-27	13

*Note: * as of third quarter of 2016*

Post-War Recoveries: Second Look Suggests 6th Inning

	Average	Most Robust	Least Robust	Current*
Number of Months From Bottom To Peak	59	120	12	87
Unemployment Rate At Peak	4.9	2.6	7.4	4.9
Consumer Confidence Index At Peak	92	114	82	101
% Change From Peak To Peak				
Real GDP	23	52	2	11
Employment (Total Nonfarm)	12	30	1	5
Industrial Production	23	66	-1	-1
Real Retail Sales	14	32	-5	5
Difference From Peak To Peak (bps)				
Employment To Population Ratio	62	370	-157	-303

*Note: * as of third quarter of 2016*

figure 10

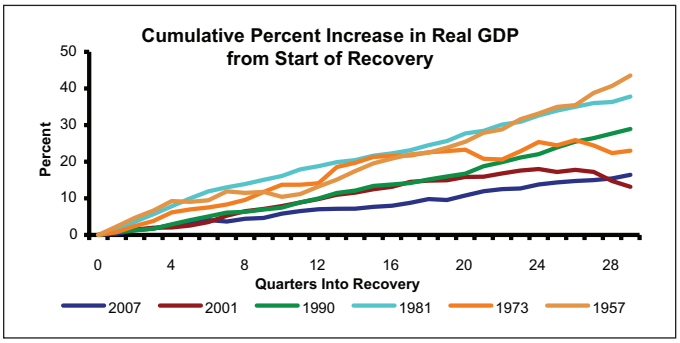


figure 11

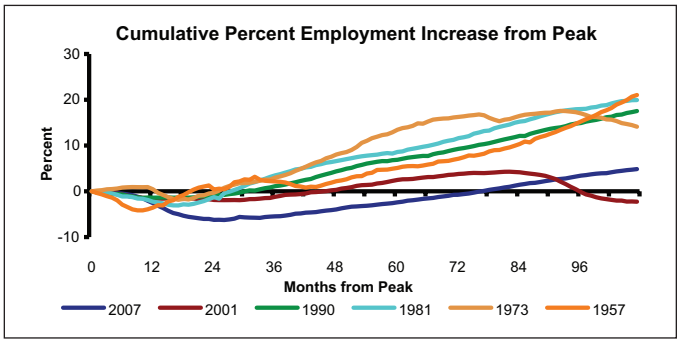


figure 12

On the Road to Recovery: Then vs. Now

	2009	2016	% Change
Real GDP ($ billions)	$15,856.3	$18,475.6	16.5
Real Per Capita GDP	$51,712.6	$56,997.0	10.2
Real Retail Sales ($ millions)	$330,019.6	$400,761.3	21.4
Real Median Home Price Index (FHFA)	192.1	234.7	22.2
Durable Industrial Output Index	77.9	106.5	36.8
Non-Durable Industrial Output Index	97.0	101.3	4.4
Real Per Capita HH Net Worth	$201,326.7	$275,906.0	37.0
Payroll Employment (000s)	131,450.3	145,128.0	10.4
Unemployment Rate (%)	9.3	4.6	-50.5
Conference Board Consumer Confidence Index	48.3	107.1	121.7
Median Weeks Unemployed	14.8	10.1	-31.9
Capacity Utilization Index	67.1	75.4	12.3
SA Auto & Light Truck Sales - Thousands	809.7	1,488.0	83.8
Median Home Price-to-Per Capita DPI	6.0	7.0	15.6
Profits After-Tax ($ billions)	$1,177.3	$1,553.3	31.9
Percent of Industries Adding Workers (LTM Avg)	29.4	55.0	86.8
Multifamily Starts (SAAR 000s)	99.0	259.0	161.6
Single-Family Starts (SAAR 000s)	425.7	828.0	94.5
Real Home Prices ($) (Census)	$240,027.3	$304,018.4	26.7
Real REIT Value Index	438.6	1,168.0	166.3
Real Private Real Estate Value Index	119.9	214.9	79.2
Real Average Office Rent PSF	$26.61	$25.58	-3.9
Office Vacancy (%)	13.7	11.6	-15.9
Real Median Multifamily Rent (Census)	$796.4	$835.1	4.9
Apartment Vacancy (%)	8.3	6.7	-18.9
Hotel Occupancy (%)	57.6	65.4	13.6
Real RevPAR	$59.43	$80.82	$35.99
Real Average Industrial Rent PSF	$6.62	$6.30	-4.7
Industrial Vacancy (%)	10.1	4.1	-59.6

**Quarterly data through 3Q16; latest monthly varies, Sept-Nov 2016.*
SAAR indicates seasonally-adjusted annual rates.
All dollars in real 2015 dollars.

figure 13

excess, and excesses sow the seeds for a recession. However, the only identifiable excess (though it's a whopper) is the bubble pricing of government debt due to artificially low interest rates. Oddly though, this excess has reduced — not increased — economic growth.

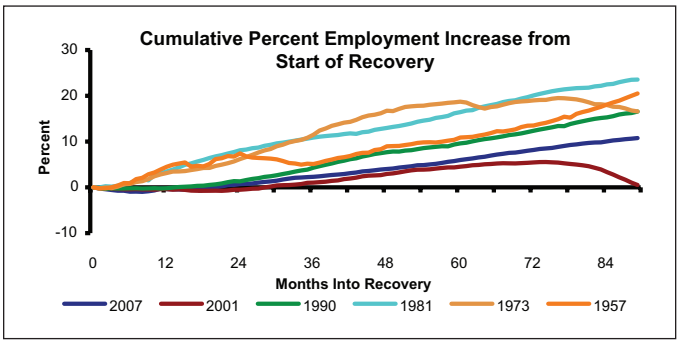
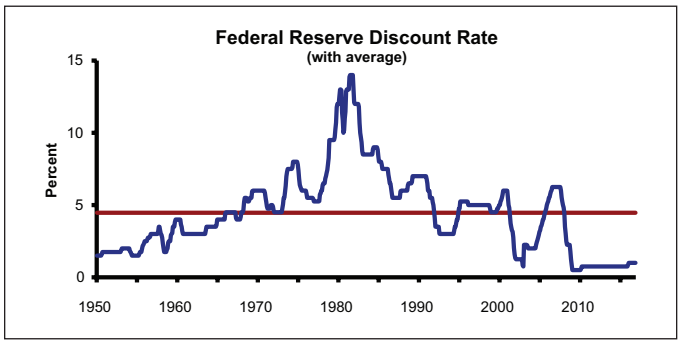


figure 14

On December 14th, the Fed raised the Federal Funds Rate by 25 bps. This is only the second rate hike since implementing its unprecedented almost nine-year run of monetary interventions. By increasing the interest rate at which banks are charged for overnight loans by 25 bps (to 0.75%), the Fed is signaling that they have increased confidence in the strength of the U.S. economy. The Fed indicated that it expects to implement three rate hikes in 2017, but such forecasts have been meaningless for the past eight years.

Beyond interest rates, we encourage readers to particularly watch the initial unemployment claim num-



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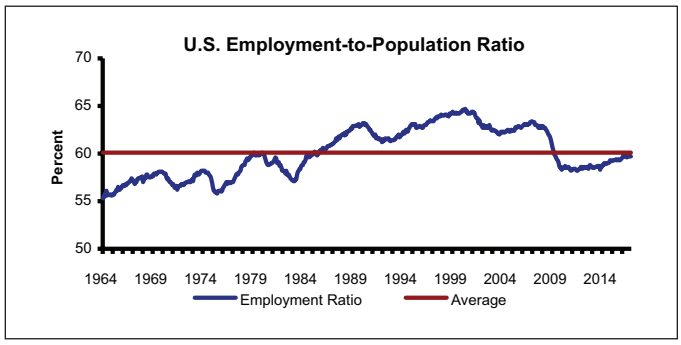

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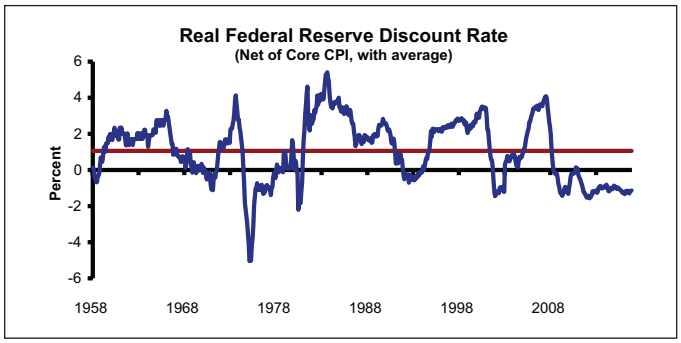

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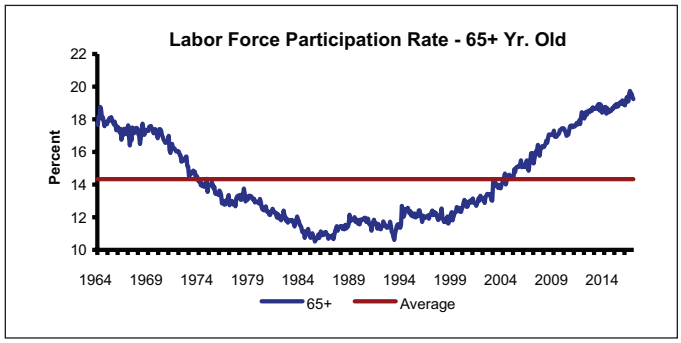


figure 19

bers. They are published weekly and contemporaneously (as opposed to most economic series which are months or quarters late), and are not based on a survey. Thus while there is noise in this series due to holidays, weather, etc., it is a timely glimpse into the state of the U.S. labor market. If this number is below 300,000, it suggests that the labor market is in pretty good shape. But if it rapidly moves upwards for 2-3 months, history suggests it is time to buckle up your chin strap.

The employment-to-working age population ratio is another key metric, which (at 60%) is now in line with trend after rising 200 bps over the past two years.

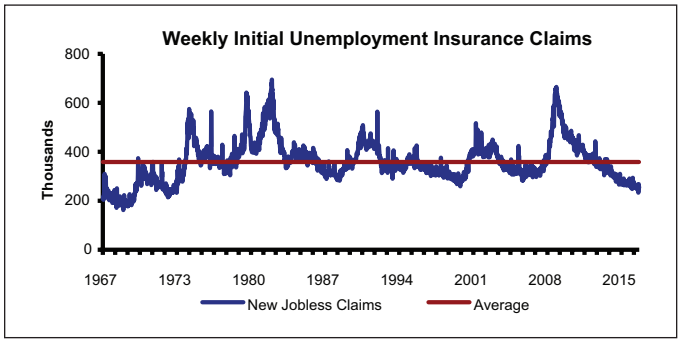


figure 17

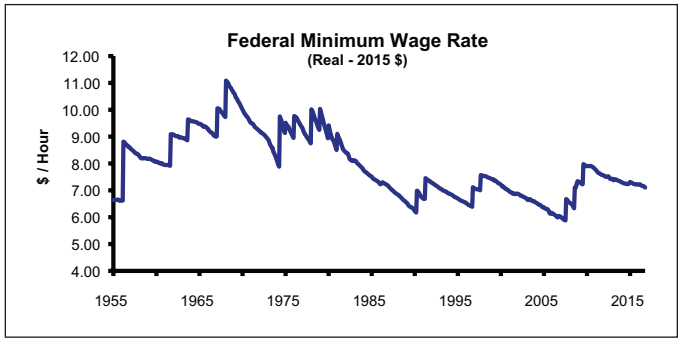


figure 20

We believe this ratio will increase modestly with an expected target of about 62% in 2018.

Youth unemployment has made a dramatic recovery from the depths of the recession. It is currently 1,440 bps below its recessionary peak, standing at 14.6%. It is critical that we do not deprive these young people of valuable work experience (including learning employment fundamentals like showing up on time, taking directions, handling money, and notifying employers of absences) by boosting the minimum wage. The value of their work experience is far more important to society than a few extra dollars a week.

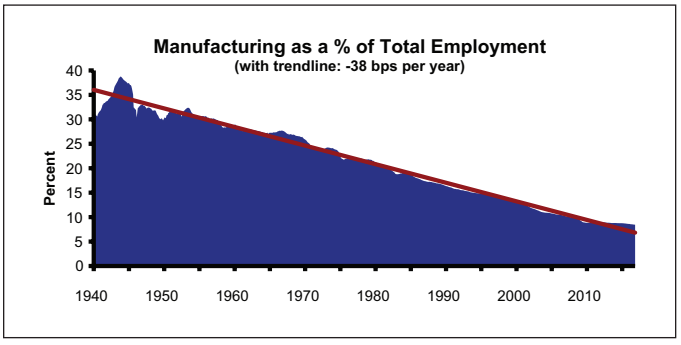
As of November 2016, manufacturing jobs, which have steadily decreased over the past seven decades, represented less than 8.5% of total U.S. employment. This compares to 31.4% at the beginning of 1940, and 38% at the height of WWII. The trend over the past 70+ years indicates an average decline of 38 bps per annum in the manufacturing employment share. Interestingly, today it is 165 bps above the long-term trend of 6.8%. Politicians appealing to blue collar workers and a hazy nostalgia bemoan the fact that U.S. manufacturing jobs are on the decline, blaming "unfair" foreign competition. But on an absolute basis, the 12.3 million manufacturing employees today is 2.3 million (23.5%) more than in 1940. In addition, manufacturing output is near its all-time high due to productivity improvements. In fact, industrial production today is 1,072% higher than in 1940, and 164% higher than in 1970 when smoke bellowed from factories in Cleveland, Pittsburgh, Youngstown, Flint, and Gary.

In the much hyped Carrier negotiations brokered by Mr. Trump and Mr. Pence, 800 manufacturing jobs that were planned to be moved to Mexico will remain in Indiana. However, 600 jobs from that plant will still move to Mexico, along with an additional 700 from a second plant. In return for keeping the 600 jobs on American soil, Carrier will receive more than $7 million in tax breaks. The irony (not surprising to most) is that rather than making Carrier "pay a damn tax," they struck a pro-business deal. Surprise! And while Mr. Trump engaged in a Twitter war with the union leader, Carrier quietly announced 5% pricing increases for residential and commercial HVAC units as of January 1, 2017.

The U.S. does high-skilled, high value-add manufacturing extremely well, but "commodity" manufacturing is not our comparative advantage.

This story was all about optics, rather than keeping jobs at home. Innovation and technology are eliminating manufacturing jobs around the globe. According to Carrier, not only are wage rates lower in Mexico, but absenteeism and turnover are also lower there. The truth is that ever fewer U.S. workers are motivated to take such jobs, and it shows in their productivity for lower-skilled manufacturing. Setting aside the fact that this deal embodies "crony capitalism" — brokered at the highest level of government, it is a poor use of taxpayer dollars to keep low-skilled manufacturing jobs at home. Displaced U.S. workers need to get the training and education to keep up with the service economy, and $11,600 per employee is a Band-Aid on a gaping wound. The U.S. does high-skilled, high value-add manufacturing extremely well, but "commodity" manufacturing is not our comparative advantage.

Meanwhile, service industry jobs have increased drastically on both a relative and absolute basis since the end of WWII. Service jobs represent 86.5% of all jobs today, versus 62% in 1940, and 56% during WWII. Not coincidentally, this is a mirror image of the manufacturing sector, with a long-term growth trend of 41 bps per year. Yet the current service sector share is 180 bps below the estimated long-term trend of 88.3%. There are a staggering 105 million (537%) more service jobs today than in 1940. To put this in perspective, over the same period, U.S. population grew by 192 million (145%) from 132 million in 1940, to 324 million today, so the service industry has grown 3.7 times more than the U.S. population. Think of the McKinsey consultants, hospital workers, D.C. lobbyists, Disney World employees, McDonald's workers, and Wal-Mart



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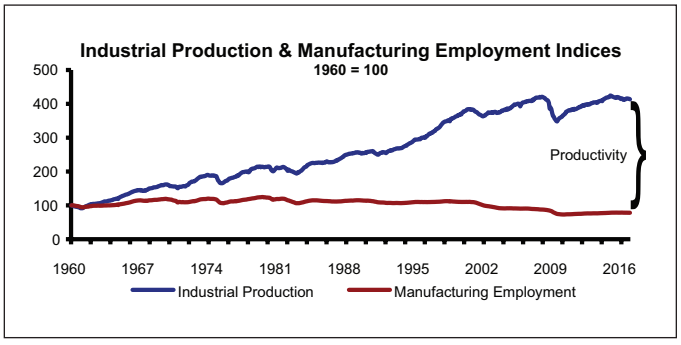

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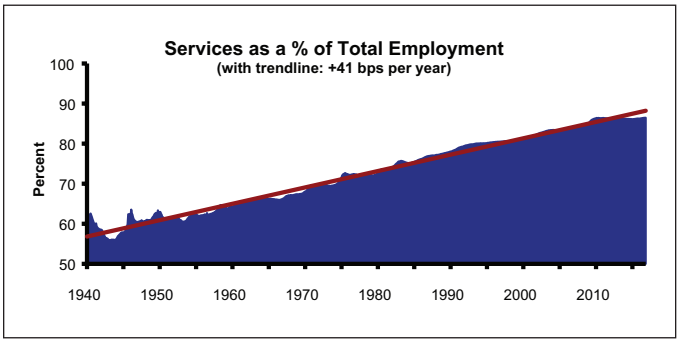

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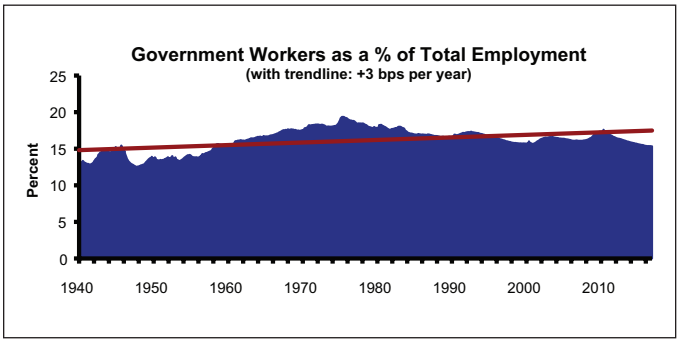


figure 24

greeters whose jobs never previously existed. And these are not "low quality" jobs, but rather jobs held by people with a diverse set of skills and interests. In fact, in the days of yore, the vast majority of these jobs would have been viewed as a step up from grim and dangerous manufacturing jobs.

The government employment share has remained relatively constant over time, currently standing at 15.3% of total employment, 215 bps below trend. The most notable phenomena about government employment is that 70 years ago, government employees received lower compensation and benefits relative to comparable private sector workers, while today, they receive 20-30% premiums over their private sector peers.

Lastly, the single-family housing sector continues its glacial recovery, remaining well below historic norms. Continued housing demand and production are a powerful tailwind which will prolong the recovery. It is not a coincidence that single-family housing starts are far below normal as interest rates are low. If rates were higher, down payments would be easier to accumulate and more homes would be purchased. Thus, low interest rates help existing homeowners who are re-financing, but hurt potential buyers who are struggling to save for a down payment. As interest rates rise in 2017 and 2018, low-risk savers will finally shed the de facto 100% tax on their savings.

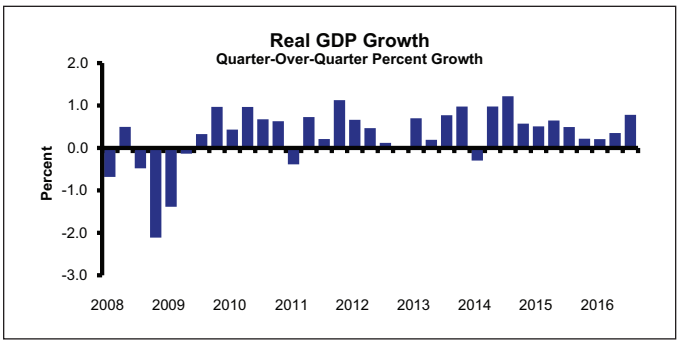
Canary Watch Box

Like miners who brought canaries into mine shafts to detect toxic gas levels, we are tracking what we believe are key early indicators which signal a peaking market. On a scale of one to five canaries, the "danger zone" rises as canaries die. Currently, most of our canaries are alive and chirping loudly, suggesting continued growth, though a few have passed on. We started with 40 canaries, and are down to 26. Two met their demise in the first quarter of 2016, we brought one back to life in the second quarter as commercial mortgage lenders showed surprising restraint, and made no changes in the third. Thus, the majority of canaries are still chirping, and the noxious fumes of greed are (mostly) still in check.

- Increase in payment-in-kind (PIK) financing
- Massive commercial mortgage growth
- Speculative real estate development boom
- First mortgage lending replaces mezzanine loans
- Mezzanine lending replaces equity
- Narrow spreads and rising LTVs
- Record buyout deals
- Empty space worth more than full space

Bet on Continued Growth

Despite finally putting the Presidential election and the ugliness of the campaign behind us, we are still in a window of economic policy uncertainty. This will dampen economic growth to some extent, though we expect 1-2% (annualized) real GDP growth in the fourth quarter of 2016. Employment grew by 636,000 in the third quarter, driving real annualized GDP growth by 3.5% over the same period. New weekly unemployment claims averaged just 259,000 over the last two quarters, well below the 300,000 threshold for labor market



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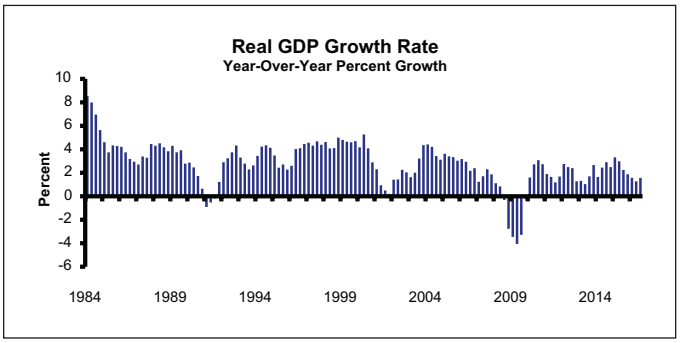

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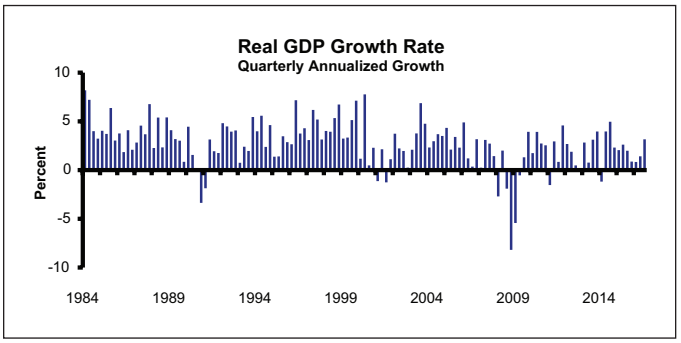

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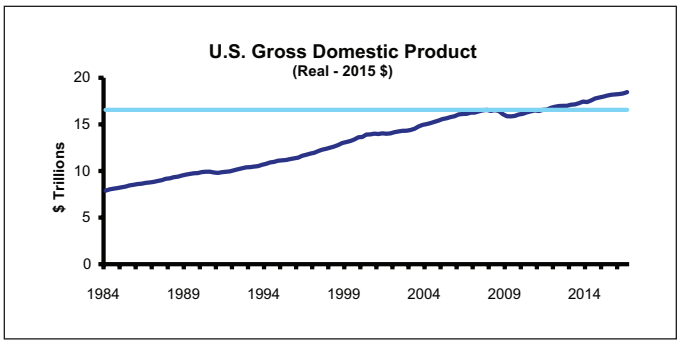

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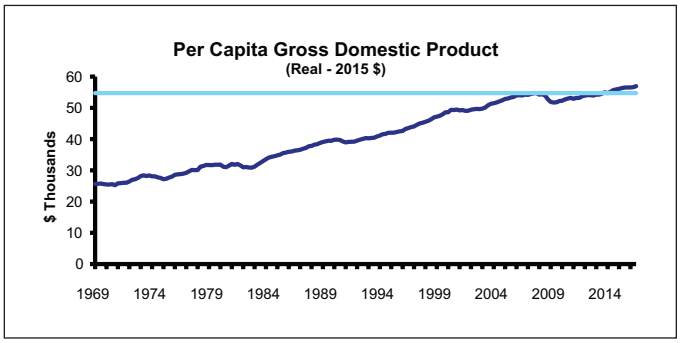

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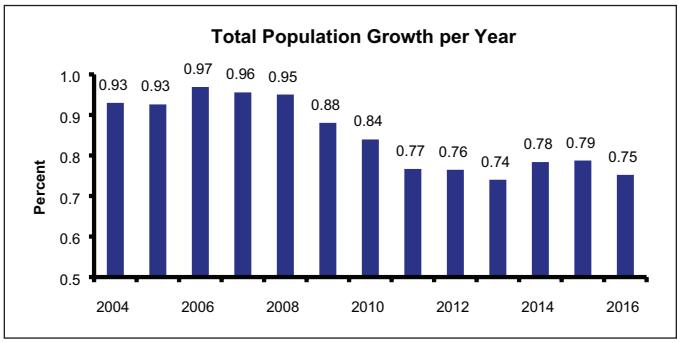
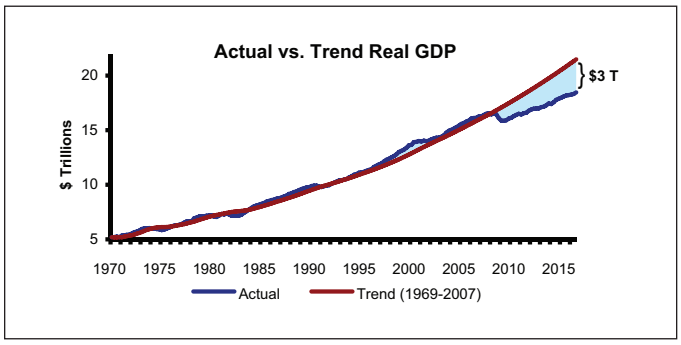


figure 30

strength, and consumer confidence remained about average. Third quarter GDP growth compares to 2.0% and 1.4% annualized growth in the third quarter of 2015 and the second quarter of 2016, respectively. Solid job creation and low new unemployment claims continue to indicate growth into the fourth quarter.

Trend Analysis. By the end of the third quarter of 2016, real GDP and per capita real GDP exceeded their pre-recession highs by 11.6% and 4.1%, respectively. Year-over-year real GDP growth of 1.7% through the third quarter of 2016 reflects 75 bps of growth from population increases (versus about 95 bps over the past 40 years) and only 95 bps from productivity growth (versus a norm of about 200 bps). The sluggish recovery of the housing market has resulted in a cumulative production shortfall of almost $1.4 trillion.

We are the richest large economy in the history of the world, even as we remain over $3 trillion (14%) below long-term trend GDP. This gap is a stunning cumulative shortfall of $9,341 per capita.



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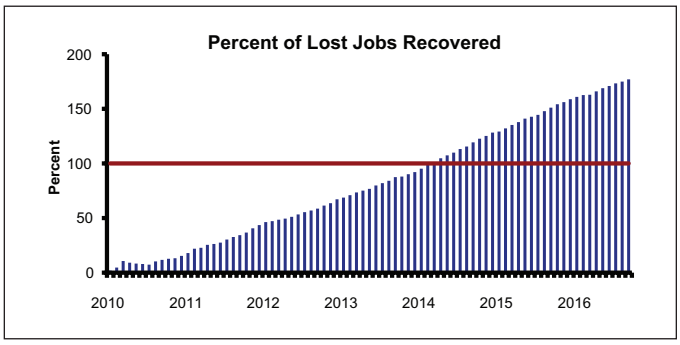

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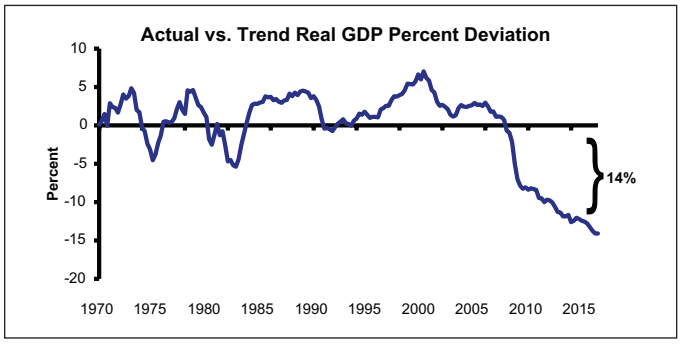

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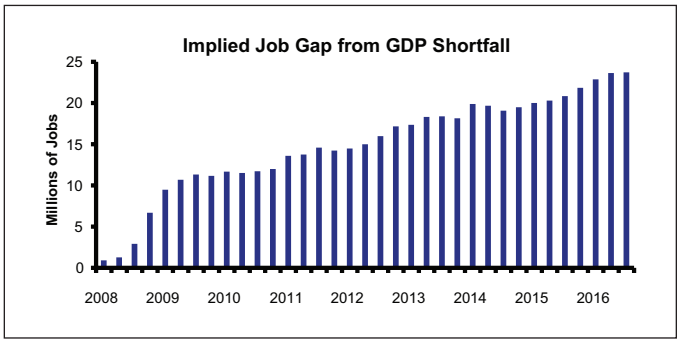


figure 34

We are the richest large economy in the history of the world, even as we remain over $3 trillion (14%) below long-term trend GDP. This gap is a stunning cumulative shortfall of $9,341 per capita. Real GDP and real GDP per capita remain 1.4 and 1.2 standard deviations below trend, respectively. About 39% of the gap relates to the under-production of single family housing over the last decade. The Fed's low interest rate policy has kept the recovery of this sector below trend.

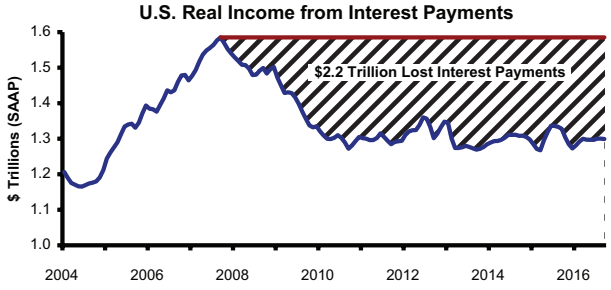
Over the 74 months since post-recession employment growth began, through November 2016, the U.S. has averaged 208,000 new jobs per month. Despite strong job growth in November (178,000), the economy remains nearly 19.2 million jobs (nearly one standard deviation) below trend, an employment gap about equal to all jobs in New York, New Jersey, and Pennsylvania. Labor market strength is seen in the fact that through October 2016 (latest available), 40 of the 43 MSAs we track have more jobs today than at their respective pre-recessionary peaks, versus 38 MSAs a year ago and 26 two years ago. Today, only Cleveland, Detroit, and Fairfield County have fewer jobs than when the Financial Crisis began, though the latter had previously regained all lost jobs, slipping below due to job losses in November. Meanwhile, the job gap between actual versus trend has declined by 271,000 since its peak in February 2014, but has risen since year-end 2015. Job growth totaled more than five million over the past 24 months through November 2016, while the U.S. added just under five million people. This is clearly an unsustainable job growth rate, and will slow as the economy continues to grow.

Single family housing production remains weak, even though it is up 5.3% year-over-year. The Fed's low interest rates are hampering the ability of households to accumulate required down payments, causing a 2.5 million-unit single family housing production shortfall since the start of 2002. And while auto sales are strong, the U.S. has produced about 7.1 million cars fewer than the historic norm over the past decade, down from the peak 10.2 million-car cumulative shortfall registered in 2013. We estimate that the housing sector shortfall amounts to nearly $1.4 trillion of pent-up activity, while that for autos is $345 billion. Thus, housing and autos represent 45.9% and 11.5% of the real GDP gap, respectively.

Through the third quarter of 2016, only real per capita household net worth, the unemployment rate,

Auto & Light Truck Produc tion Shortfall			
Average Value per Vehicle	$32,560		
Production Shortfall Since 2003	7,073,519	vehicles	
Multiplier	1.5		
Pent-up Production Value	**$345**	**billion**	
GDP Gap	$3,012	billion	
Pent-up Auto % of GDP Gap	**11.5%**		
Housing Production Shortfall			
Multifamily Shortfall (units)	950,859		
Multifamily Average Cost	$143,765		
MF Shortfall Value	$136.7	billion	
Multiplier	1.5		
	$205.1	billion	7% of GDP
Single Family Shortfall (units)	2,528,143		
Latest SF Average Cost (new)	310,263		
SF Shortfall Value	$784.4	billion	
Multiplier	1.5		
	$1,176.6	billion	39% of GDP
MF+SF Shortfall Value	$921	billion	
Multiplier	1.5		
Total Value of Pent-up Housing	**$1,382**	**billion**	
GDP Gap	$3,012	billion	
Pent-up Housing as % of GDP Gap	**45.9%**		

figure 35



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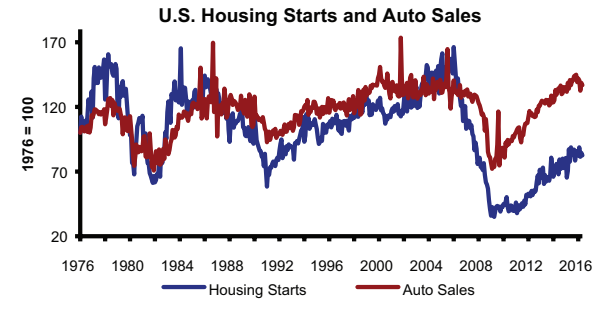

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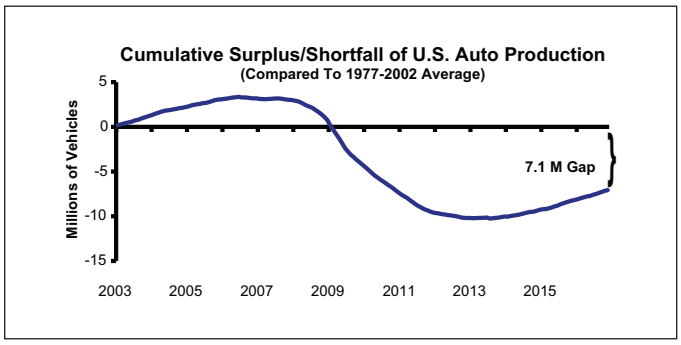


figure 38

median home prices-to-per capita disposable personal income, and real Census home prices are at or above their respective trends. Despite the above-trend performance of the Census Bureau's real Home Price Index, the real median home price index reported by the Federal Housing Finance Agency (FHFA) is still 0.68 standard deviations below trend (though improving). Multifamily housing starts took a huge hit and stood at an annualized rate of just 259,000 in November 2016 (5.4 standard deviations below norm). Other key economic metrics remain below their long-term norms, with corporate profits lagging trend by an astounding 7.2 standard deviations.

Employment. Through November 2016, the U.S. had nearly 6.7 million jobs above the pre-recession employment peak of 138.4 million. This employment peak of 144.6 million is 14.9 million jobs above the February 2010 recessionary low, but comes with a corresponding increase in population of nearly 21 million people since 2007.

The Payroll Survey shows an increase of almost 2.3 million jobs over the last 12 months, and 2.1 million jobs (annualized) based on the last three months through November 2016. Payroll employment increased by 208,000, 142,000, and 178,000 jobs in September, October, and November 2016, respectively.

On the Road to Recovery

	Pre-Recession Best	Recessionary Worst	Current*	% of Loss Recovered	Predicted Trend**	Difference From Trend	% Change Needed To Achieve Trend	Std. Dev. from Trend	Versus Trend
Real GDP ($ billions)	$16,559.0	$15,856.3	$18,475.6	372.7	$21,487.5	-$3,011.9	16.3	-1.35	lagging
Real Per Capita GDP	$54,728.5	$51,712.6	$56,997.0	175.2	$64,712.4	-$7,715.4	13.5	-1.20	lagging
Real Retail Sales ($ millions)	$383,045.2	$326,445.4	$400,761.3	131.3	$485,453.8	-$84,692.5	21.1	-1.42	lagging
Real Median Home Price Index (FHFA)	224.6	178.0	234.7	121.5	296.4	-61.7	26.3	-0.68	lagging
Durable Industrial Output Index	105.2	76.8	106.5	104.5	138.9	-32.4	30.4	-2.31	lagging
Non-Durable Industrial Output Index	113.1	96.9	101.3	27.2	123.7	-22.4	22.1	-0.96	lagging
Real Per Capita HH Net Worth	$259,818.7	$199,406.8	$275,906.0	126.6	$270,714.9	$5,191.2	0.0	0.15	**beating**
Payroll Employment (000s)	138,432.0	129,733.0	145,128.0	177.0	164,311.5	-19,183.5	13.2	-0.97	lagging
Unemployment Rate (%)	4.4	10.0	4.6	96.4	5.0	-0.4	0.0	-0.10	**beating**
Conference Board Consumer Confidence Index	111.9	25.3	107.1	94.4	115.4	-8.3	7.8	-0.21	lagging
Median Weeks Unemployed	7.5	25.2	10.1	85.3	8.8	1.3	-12.9	0.11	lagging
Capacity Utilization Index	81.0	66.7	75.4	60.8	80.4	-5.0	6.7	-3.56	lagging
SA Auto & Light Truck Sales - Thousands	1,464.4	751.9	1,488.0	103.3	1,563.6	-75.6	5.1	-0.26	lagging
Median Home Price-to-Per Capita DPI	7.8	5.6	7.0	64.6	6.0	1.0	0.0	2.45	**beating**
Profits After-Tax ($ billions)	$1,396.1	$879.4	$1,553.3	130.4	$1,909.5	-$356.3	22.9	-7.53	lagging
Percent of Industries Adding Workers (LTM Avg)	65.8	25.8	55.0	72.9	100.1	-45.1	82.0	-2.02	lagging
Multifamily Starts (SAAR 000s)	378.0	53.0	259.0	63.4	334.4	-75.4	29.1	-5.44	lagging
Single-Family Starts (SAAR 000s)	1,823.0	353.0	828.0	32.3	1,101.2	-273.2	33.0	-0.39	lagging
Real Home Prices ($) (Census)	$308,213.8	$221,931.3	$304,018.4	95.1	$298,221.1	$5,797.3	0.0	0.13	**beating**

**Quarterly data through 3Q16; latest monthly varies, Sept-Nov 2016. SAAR indicates seasonally-adjusted annual rates.*
*** Trend data based on historical data through 2007. All dollars in 2015 real dollars.*

figure 39

The trailing 12-month and annualized 3-month employment trends imply annual growth rates of 1.5% and 1.6%, respectively.

The private sector grew by nearly 15.6 million jobs over the last 81 months since February 2010, while the government sector had a net loss of 231,000 jobs during the same period. Meanwhile, the mining sector is down by 222,000 jobs from its September 2014 peak through November 2016, driven by the sharp decline in oil prices.

The Household Survey, from which the unemployment rate is derived, peaked in November 2007 at 146.6 million jobs, bottomed in December 2009 with nearly 8.6 million fewer jobs, and has since regained over 14 million jobs (162% of lost jobs) through November 2016. The Household Survey indicates that over the most recent three months through November, the economy grew by nearly 1.9 million jobs on an annualized basis. Over the 12 months through November, the Household Survey indicates a gain of about 2.6 million jobs.

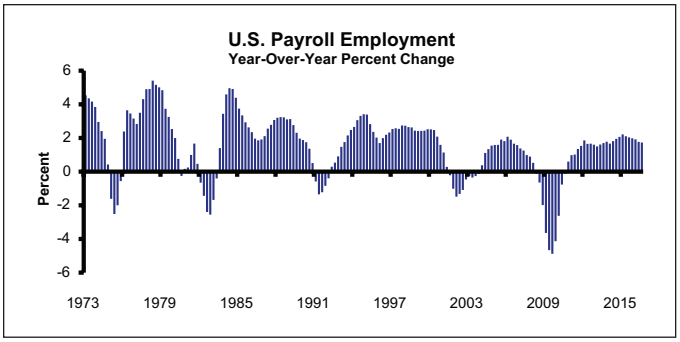


figure 40

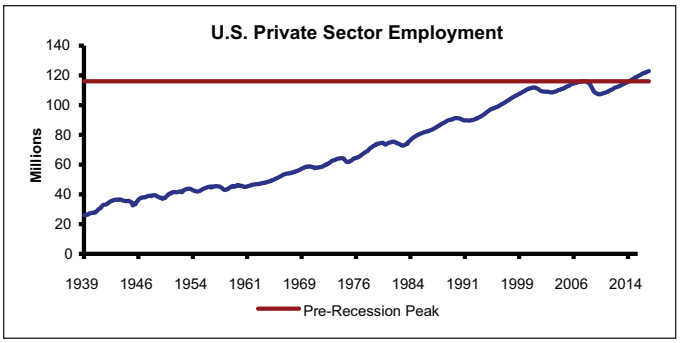
Recovery Snapshot - November 2016

(Employment in Thousands)

Pre-Recession Peak Employment	138,432
Current Employment	145,128
Percent of Jobs in Excess of Pre-Recession Peak	4.8%
Current Employment	145,128
Lowest Employment Level	129,733
Total Jobs Added From the Bottom	15,395
Peak Unemployment Rate	10.0%
Current Unemployment Rate	4.6%
Decline in the Unemployment Rate (bps)	540

Source: BLS, Linneman Associates

figure 41



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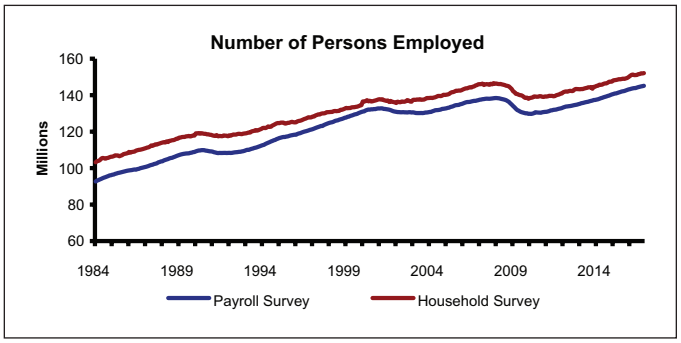

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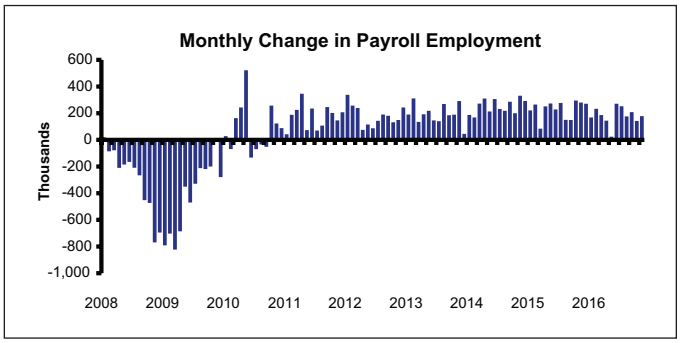

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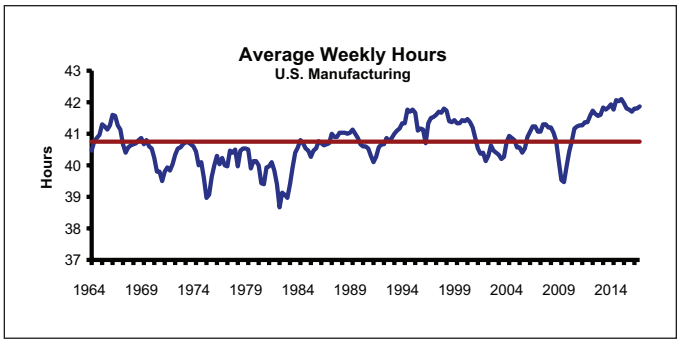
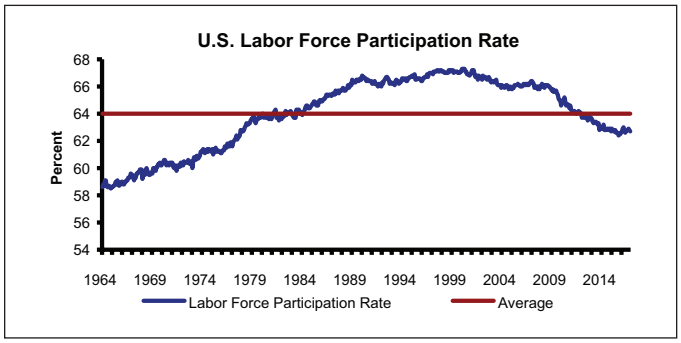


figure 45

Manufacturing workers put in an average of 41.9 hours per week during the third quarter of 2016. This was 1.2 hours above the 50-year average, but below the long-term high of 42.1 manufacturing hours per week.

The civilian employment-to-population ratio, which bottomed at 58.3% in October 2013, has since risen by 140 bps. While the current 59.7% rate is well below the pre-crisis high of 63.4%, it is in line with the 50-year average of 60.1%. Starting in the 1980s, as more women entered the workforce, the employment-to-population ratio saw a steady increase until the housing bust of the 1990. It then rose during the robust economy prior to the Financial Crisis, but much of today's lower ratio is due to the explosion of Millennials and their prolonged periods of education and training. However, those over 65 years of age continue to work, with 19.2% working in November 2016, versus a 50-year average of 14.3%. Many of the unemployed are people who took disability in the wake of the Crisis, while others are individuals who are unable to pass the drug and alcohol tests which are increasingly a requirement for new employment. Most of these individuals are "structurally" ill-suited to return to work.



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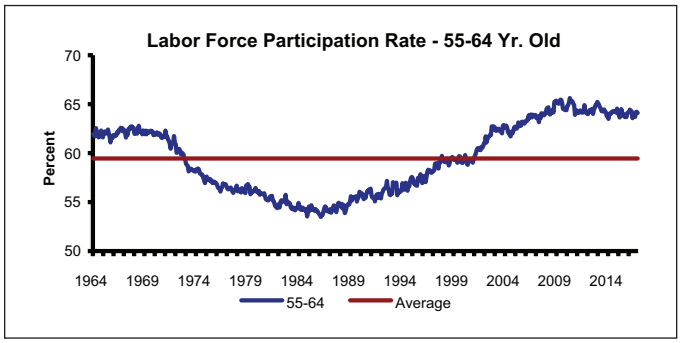

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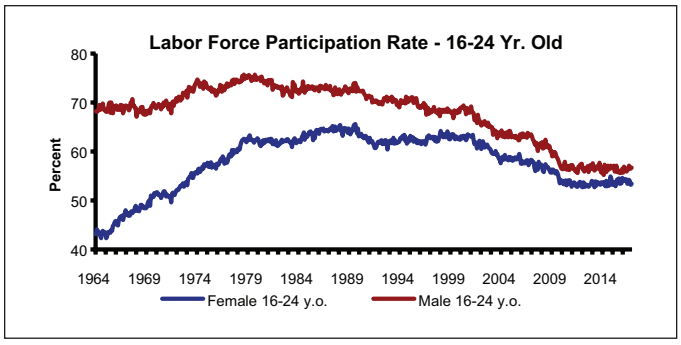


figure 48

In Figure 49, MSAs and MSA divisions are sorted by October 2016 unemployment rates (latest available), with those 5.5% and below categorized as "Hot," those between 5.6% and 7.0% categorized as "Solid," those between 7.1% and 9.0% categorized as "Weak," and those above 9.0% categorized as being in a "Severe Recession." In October 2016, all but 5 of our covered markets were categorized as Hot, led by Boston, Denver, Austin, Minneapolis, Dallas/Fort Worth, Nashville, San Francisco, and San Jose, all of which saw unemployment rates below 4%. Over the last quarter, New York City and Chicago dropped back into the "Solid" category as their unemployment rates rose above the "Hot" market threshold. They join Pittsburgh, the Inland Empire, and Las Vegas as the only markets with unemployment rates above 5.5%. None of the markets are considered Weak or Recessionary.

Comparing year-over-year changes in seasonally-adjusted MSA unemployment rates through October 2016, Boston (-160 bps); Los Angeles and Las Vegas (each -100 bps); Baltimore (-80 bps); and Raleigh-Durham, Miami, and Seattle (each -70 bps) saw the greatest improvements. Pittsburgh and Cleveland (each +100 bps); New York City (+80 bps); Houston and Philadelphia (each +50 bps); NY-North Jersey (+40 bps); Columbus and Chicago (each +20 bps); and Minneapolis, Kansas City, and West Palm Beach (each +10 bps) experienced increased unemployment rates over the last 12 months through October 2016, while the unemployment rates in Austin, Cincinnati, and Tampa were flat during the same period. The average year-over-year change across all covered markets was a decline of 20 bps in MSA unemployment rates.

Of the 44 markets we track, all but 3 have regained at least 100% of Payroll Survey jobs lost during the recession, led by Austin (956%), New York City (480%), Dallas-Fort Worth (429%), Washington, D.C. (395%),

Houston (402%), and Nashville (371%). In contrast, the lowest job recovery rates through October 2016 were in Cleveland (81%), Detroit (86%), Fairfield County (89%), Las Vegas (107%), and Phoenix (123%).

On an absolute basis, the markets that gained the most jobs over the 12 months through October 2016 include Dallas-Fort Worth (113,200 jobs), NY-NJ (109,700 of which NYC added 76,000), Atlanta (71,900), Seattle (71,800), and Los Angeles (70,100). The smallest absolute job gains over the last 12 months were in Fairfield County (which had a net decline of 3,000 jobs), Pittsburgh, Durham, West Palm Beach, Houston, Cleveland, Raleigh, Kansas City, Long Island, and Indianapolis, each of which created fewer than 15,000 new jobs over the last 12 months.

The MSAs that registered the largest year-over-year percentage gains in employment through October 2016 were Orlando (4%), Jacksonville (3.9%), Seattle (3.8%), Denver (3.5%), Fort Lauderdale (3.4%), and Dallas-Fort Worth and San Jose (each 3.3%). In contrast, Fairfield County (-0.1%), Pittsburgh (-0.3%), Houston (0.4%), Chicago (0.8%), and Long

Metropolitan Area Employment Growth
Employer Payroll Survey versus Household Survey

		Payroll Survey				Household Survey			
Jobs in Thousands	Unemp. Rate	Jobs Lost During Recession	Jobs Regained To Date*	% Regained Thru Prev. Month	Latest % Regained*	Jobs Lost During Recession	Jobs Regained To Date*	% Regained Thru Prev. Month	Latest % Regained*
U.S.	**4.6**	**8,699**	**15,395**	**175**	**177**	**8,582**	**14,072**	**162**	**164**
HOT									
Boston	2.8	103	294	288	286	78	270	357	348
Denver	3.2	76	271	348	355	64	241	366	374
Austin	3.3	24	231	948	956	10	251	2,657	2,629
Minneapolis	3.5	120	229	199	191	76	139	206	182
Dallas/Fort Worth	3.8	155	665	426	429	74	655	885	883
Nashville	3.9	53	197	372	371	46	180	397	391
San Francisco	3.9	164	423	251	257	108	467	425	432
San Jose	3.9	76	234	301	307	47	250	524	528
Washington, D.C.	4.0	72	283	401	395	72	311	403	430
Indianapolis	4.0	57	134	240	235	73	143	208	195
Orange County	4.0	176	238	137	135	180	198	109	110
Columbus	4.2	52	153	295	293	46	101	236	219
Raleigh	4.2	32	107	330	332	23	140	586	603
Long Island	4.3	55	108	199	197	92	72	84	78
Durham	4.3	15	35	236	234	16	41	239	251
Cincinnati	4.4	73	106	140	146	78	52	71	67
Seattle	4.4	134	323	238	241	75	264	338	353
Baltimore	4.5	72	146	206	201	57	128	216	225
Kansas City	4.5	59	101	169	172	43	145	334	340
Phoenix	4.5	241	295	122	123	135	276	194	205
Orlando	4.6	104	234	229	226	90	240	265	266
Ft. Lauderdale	4.6	90	134	148	149	142	146	101	102
Charlotte	4.7	114	219	178	192	75	266	338	354
St. Louis	4.7	82	112	132	136	111	175	154	158
San Diego	4.7	99	198	201	201	118	182	152	155
Tampa	4.8	142	199	133	140	126	278	217	221
Jacksonville	4.8	58	104	192	180	46	108	239	235
Fairfield County	4.8	30	26	98	89	21	25	123	115
West Palm Beach	5.0	71	103	141	146	64	130	201	204
Atlanta	5.0	207	424	201	205	233	384	160	165
Portland	5.0	82	184	222	224	56	185	318	329
Los Angeles	5.1	352	471	133	134	348	604	168	174
Detroit	5.3	314	269	86	86	282	198	69	70
Miami	5.3	93	168	183	180	129	191	143	149
Houston	5.3	121	486	398	402	48	525	1,101	1,095
Sacramento	5.3	100	127	128	127	67	115	168	173
Westchester County/N.NJ	5.4	429	995	218	232	275	580	212	211
Cleveland	5.4	93	75	82	81	80	15	23	19
Philadelphia	5.4	142	206	144	145	161	250	162	156
SOLID									
Las Vegas	5.5	134	144	109	107	83	151	181	182
New York City	5.9	138	664	478	480	149	351	230	235
Chicago	5.9	340	428	126	126	361	343	102	95
Pittsburgh	6.0	43	57	129	134	78	61	78	79
Inland Empire	6.0	150	244	164	163	146	365	247	250

** MSA Payroll and Household Survey data are seasonally-adjusted through October 2016.*
U.S. data is seasonally-adjusted through November 2016. Source: BLS, Linneman Associates.

figure 49

Island (1.0%) registered the smallest percentage gains over the same period.

After peaking in October 2009 at 10%, the U.S. unemployment rate dropped to 4.6% in November 2016, representing declines of 540 bps from the peak and 40 bps over the last 12 months. This is compared to the long-term average (1984-present) unemployment rate of 6.1%. As a point of reference, a 6% unemployment rate is generally viewed as the upper bound of a healthy job market, while 5% or lower indicates a strong labor market. Since the unemployment rate peaked, it has averaged a decline of about six bps per month. The

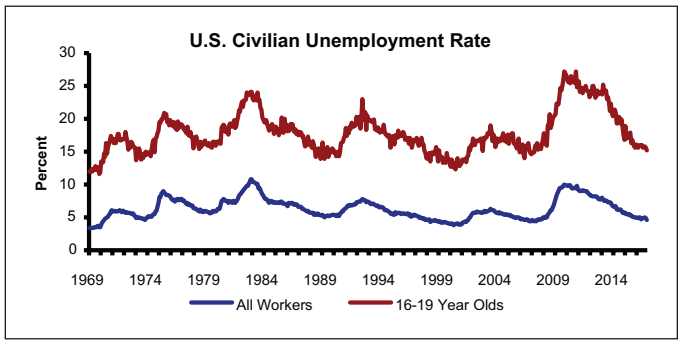


figure 51

Annual Change in Payroll Employment

Jobs in 000s	Oct-15	Oct-16	Change	% Change
Atlanta-Sandy Springs-Marietta, GA MSA	2,612.0	2,683.9	71.9	2.8%
Austin-Round Rock-San Marcos, TX MSA	974.1	995.3	21.2	2.2%
Baltimore-Towson, MD MSA	1,372.3	1,395.4	23.1	1.7%
Boston-Cambridge-Quincy, MA-NH Met NECTA	2,656.8	2,700.9	44.1	1.7%
Bridgeport-Stamford-Norwalk, CT Met NECTA	410.8	410.5	-0.3	-0.1%
Charlotte-Gastonia-Rock Hill, NC-SC MSA	1,121.6	1,149.5	27.9	2.5%
Chicago-Naperville-Elgin, IL-IN-WI	4,615.3	4,653.6	38.3	0.8%
Cincinnati-Middletown, OH-KY-IN MSA	1,064.1	1,085.0	20.9	2.0%
Cleveland-Elyria-Mentor, OH MSA	1,048.8	1,061.8	13.0	1.2%
Columbus, OH MSA	1,050.4	1,065.7	15.3	1.5%
Dallas-Fort Worth-Arlington, TX MSA	3,443.1	3,556.5	113.4	3.3%
Denver-Aurora-Broomfield, CO MSA	1,404.7	1,453.7	49.0	3.5%
Detroit-Warren-Livonia, MI MSA	1,940.3	1,983.2	42.9	2.2%
Durham-Chapel Hill, NC MSA	295.7	303.9	8.2	2.8%
Fort Lauderdale-Pompano Beach-Deerfield Beach, FL Met Div	808.1	835.9	27.8	3.4%
Houston-Sugar Land-Baytown, TX MSA	2,997.1	3,009.9	12.8	0.4%
Indianapolis-Carmel, IN MSA	1,022.4	1,036.6	14.2	1.4%
Jacksonville, FL MSA	654.6	680.1	25.5	3.9%
Kansas City, MO-KS MSA	1,045.3	1,058.8	13.5	1.3%
Las Vegas-Paradise, NV MSA	925.3	941.7	16.4	1.8%
Los Angeles-Long Beach-Glendale, CA Met Div	4,311.7	4,381.8	70.1	1.6%
Miami-Miami Beach-Kendall, FL Met Div	1,129.7	1,145.1	15.4	1.4%
Minneapolis-St. Paul-Bloomington, MN-WI MSA	1,936.7	1,962.8	26.1	1.3%
Nashville-Davidson-Murfreesboro-Franklin, TN MSA	923.7	945.4	21.7	2.3%
Nassau-Suffolk, NY Met Div	1,312.1	1,325.8	13.7	1.0%
New York City	4,254.5	4,330.5	76.0	1.8%
New York-White Plains-Wayne, NY-NJ Met Div	6,791.1	6,900.8	109.7	1.6%
Orlando-Kissimmee-Sanford, FL MSA	1,171.0	1,217.6	46.6	4.0%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA	2,839.5	2,887.1	47.6	1.7%
Phoenix-Mesa-Glendale, AZ MSA	1,938.3	1,979.7	41.4	2.1%
Pittsburgh, PA MSA	1,162.3	1,166.1	3.8	0.3%
Portland-Vancouver-Hillsboro, OR-WA MSA	1,121.9	1,154.4	32.5	2.9%
Raleigh-Cary, NC MSA	587.6	600.7	13.1	2.2%
Riverside-San Bernardino-Ontario, CA MSA	1,365.5	1,391.4	25.9	1.9%
Sacramento-Arden-Arcade-Roseville, CA MSA	924.3	950.7	26.4	2.9%
San Diego-Carlsbad-San Marcos, CA MSA	1,398.3	1,429.0	30.7	2.2%
San Francisco-Oakland-Fremont, CA MSA	2,282.5	2,341.8	59.3	2.6%
San Jose-Sunnyvale-Santa Clara, CA MSA	1,056.5	1,090.9	34.4	3.3%
Santa Ana-Anaheim-Irvine, CA Met Div	1,558.3	1,597.4	39.1	2.5%
Seattle-Tacoma-Bellevue, WA MSA	1,906.2	1,978.0	71.8	3.8%
St. Louis, MO-IL MSA	1,353.4	1,388.6	35.2	2.6%
Tampa-St. Petersburg-Clearwater, FL MSA	1,263.5	1,296.9	33.4	2.6%
Washington-Arlington-Alexandria, DC-VA-MD-WV MSA	2,601.2	2,667.4	66.2	2.5%
West Palm Beach-Boca Raton-Boynton Beach, FL Met Div	594.5	604.0	9.5	1.6%

Source: U.S. BLS, Linneman Associates

figure 50

most dramatic unemployment rate decline has occurred among those 16-19 years old. This rate has fallen by 1,440 bps since its peak in 2010, and is now only 150 bps above its pre-recession low of 13.1%.

A solid labor market continues with the median U.S. unemployment duration at 10.1 weeks in November 2016, well below the peak of 22.4 weeks in 2011, and steadily (if too slowly) moving closer to the 7.9-week low registered in 2008. Similarly, the average number of weeks unemployed in November was 26.3, down from both 27.9 a year earlier and 40.7 at the 2011 peak.

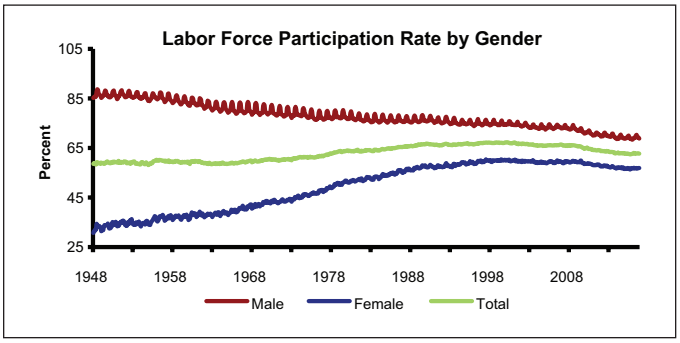


figure 52

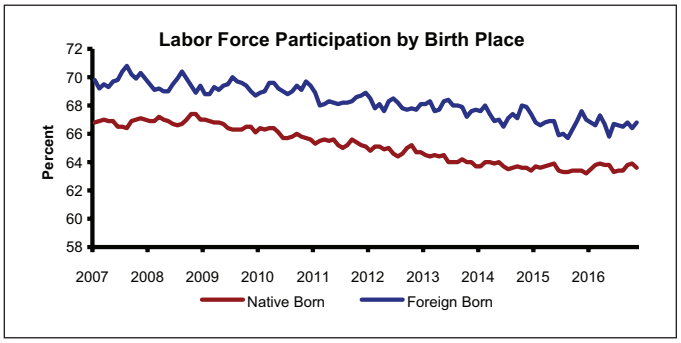
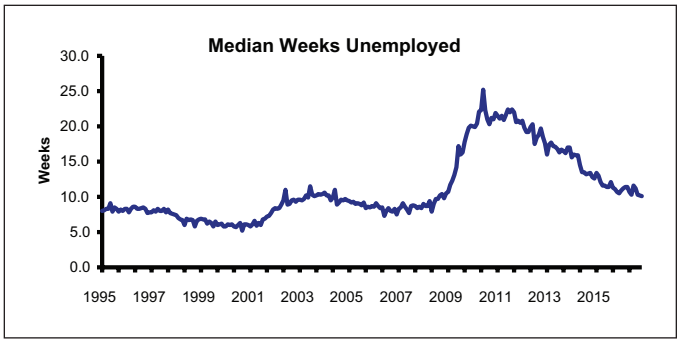


figure 53

Long-term unemployment, as measured by the percent of total unemployed who have been out of work for 27 weeks or more, is declining. It stood at 25.1% in November 2016, an 80-bp decline from the previous year, and 890 bps above the low of 16.2% in 2006, but well below the 45% registered in 2011. Meanwhile, the percentage of those experiencing "short-term unemployment" (i.e., fewer than five weeks) saw a slight increase over the last three months, and stood at 32.7% in November. This is in comparison to nearly 39% of total unemployed in 2006 and just 17.8% in 2010. After a steep decline from when the number of long-term unemployed outnumbered the short-term unemployed by nearly 2.5x, the current ratio of long-to-short term unemployment duration stood at 77% in November 2016. This is compared to the low of about 50% in 2005,

...long-term unemployed outnumbered the short-term unemployed by nearly 2.5x, the current ratio of long-to-short term unemployment duration stood at 77% in November 2016.



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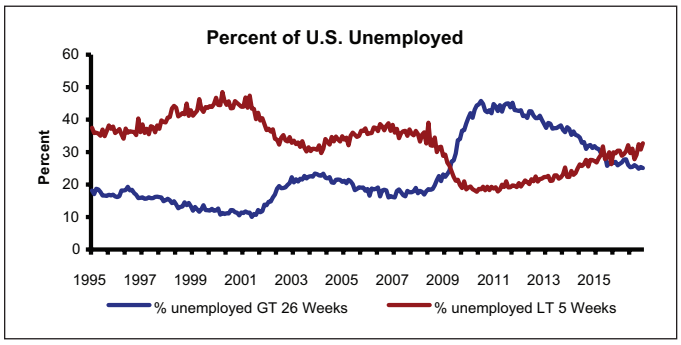


figure 55

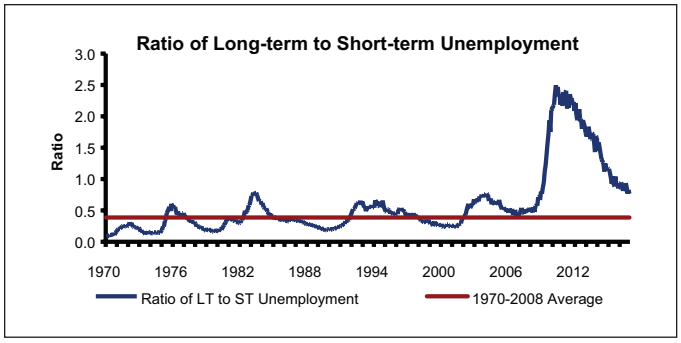


figure 56

when the long-term unemployed totaled half as many as the short-term unemployed.

The marginally attached labor force was up by 215,000 over the last 12 months, to 1.9 million in November 2016. The BLS defines the "marginally attached" as individuals who are not part of the labor force and are available and seeking work, having looked for a job in the last 12 months but not in the last four weeks. When marginally attached workers are included, the November 2016 unemployment rate jumps by 470 bps, from 4.6% to 9.3%. Of those who are marginally attached, 591,000 individuals were classified as "discouraged" in November, meaning that they did not look for work during that period, believing that no jobs were available. This number peaked at 1.3 million in 2010, and has been on a slow decline for the past six years. It is now back to the upper end of the historical norm. The balance of marginally attached workers who did not search for

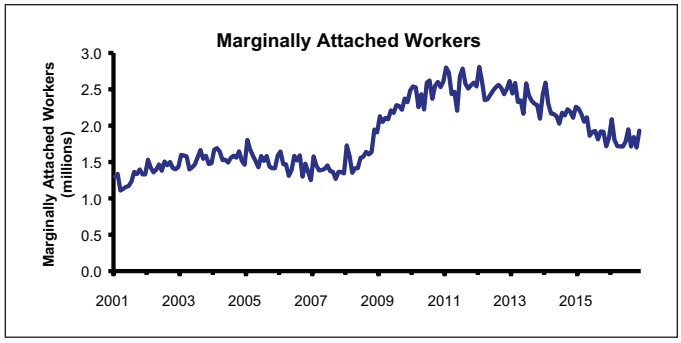


figure 57

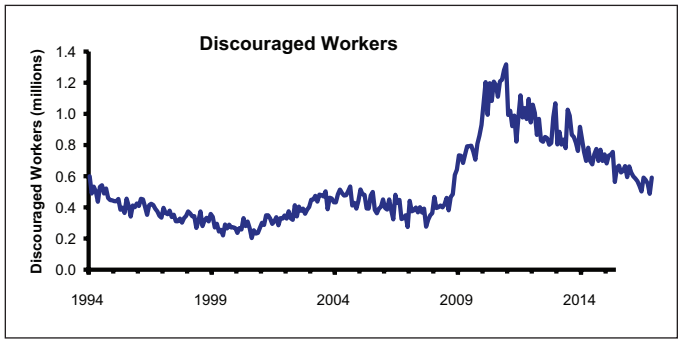


figure 58

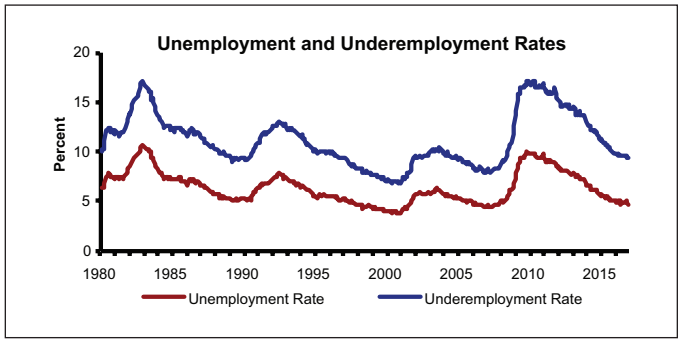


figure 59

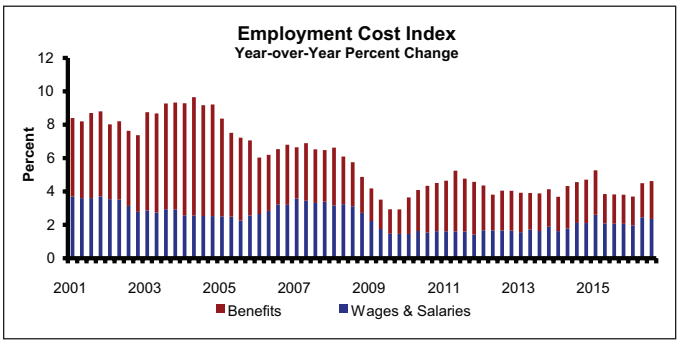


figure 60

work had other reasons, such as school or family obligations. There were nearly three million Temporary Help Service workers in November 2016, reflecting increases of 14,300 (0.5%) compared to the previous month and 56,100 (1.9%) over the last year.

Over the last 12 months through November 2016, the U.S. added over 2.25 million new jobs (1.6% growth). Going forward, we forecast 2.2 million new jobs in 2017 (1.5%), 2.4 million in 2018 (1.6%), 800,000 in 2019 (0.5%), and a loss of 800,000 (-0.5%) in 2020. We will see a diminution of job growth over the next 12-14 months but do not lose sight of the fact that we have been adding jobs at the rate of about 2.5 million per year as we came out of the downturn, and we are only adding about 2.5 million people annually to the overall population. A 1:1 ratio of new jobs to new population is not sustainable.

According to the Job Openings and Labor Turnover Survey, 53% of industries are adding workers on a 12-month moving average basis. This is in comparison to the long-term average of 55%, the pre-recession high of 66% in 2006, and the 2014 peak of 70%. About 60% of industries add employment in a red hot economy, and about 60% lose jobs in a recession.

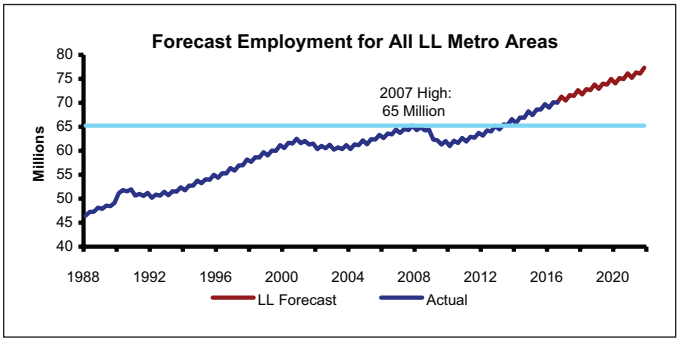


figure 61

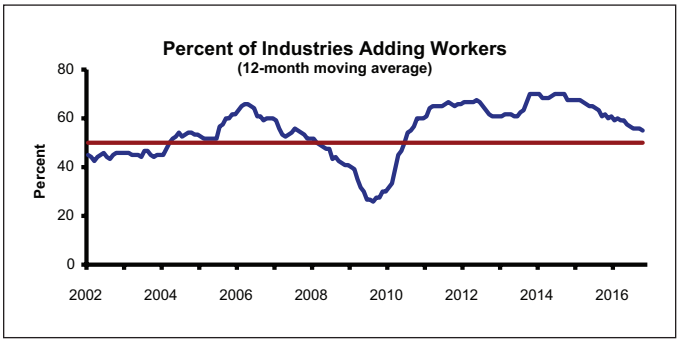


figure 62

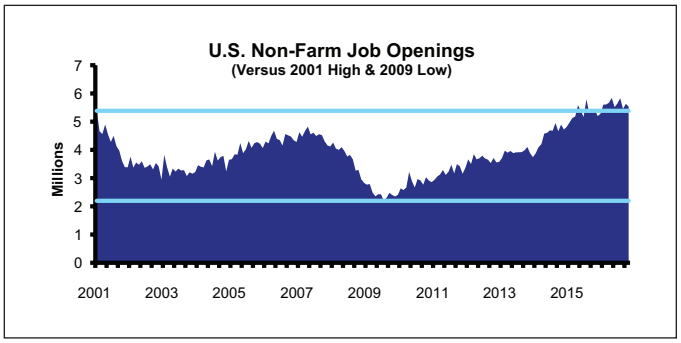


figure 63

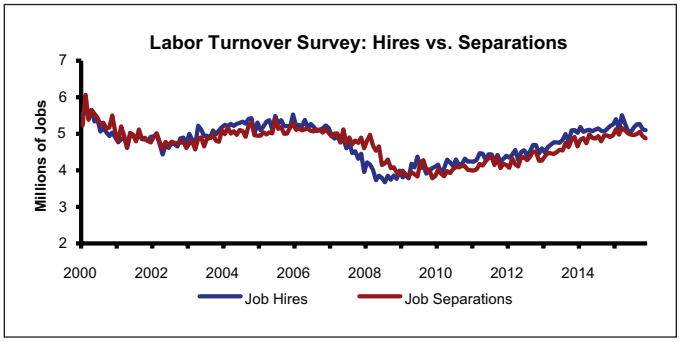


figure 64

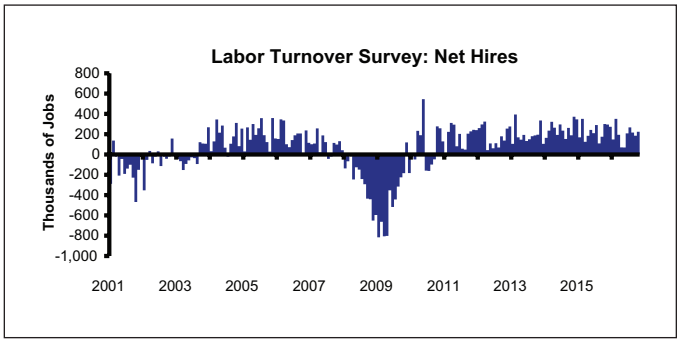


figure 65

Payroll Survey Employment (000s) - Sorted by Percent of Jobs Regained

Industry	Dec-07	Trough Date	Trough	Nov-16	Peak to Trough Change	Peak to Trough % Change	Trough to Present Change	Trough to Present % Change	% of Lost Jobs Regained
Education and health services	18,924	Dec-07	18,924	22,896	0	0.0%	3,972	21.0%	n/a
Leisure and hospitality	13,550	Feb-10	12,927	15,600	-623	-4.6%	2,673	20.7%	429.1%
Professional and business services	18,051	Aug-09	16,386	20,492	-1,665	-9.2%	4,106	25.1%	246.6%
Other services	5,516	Jun-10	5,315	5,722	-201	-3.6%	407	7.7%	202.5%
Trade; transportation; and utilities	26,714	Dec-09	24,473	27,424	-2,241	-8.4%	2,951	12.1%	131.7%
Financial activities	8,282	Jul-10	7,676	8,335	-606	-7.3%	659	8.6%	108.7%
Government	22,376	Jan-14	21,807	22,245	-569	-2.5%	438	2.0%	77.0%
Construction	7,490	Jan-11	5,427	6,704	-2,063	-27.5%	1,277	23.5%	61.9%
Manufacturing	13,746	Feb-10	11,453	12,260	-2,293	-16.7%	807	7.0%	35.2%
Information	3,024	Aug-11	2,633	2,768	-391	-12.9%	135	5.1%	34.5%
Natural resources and mining	740	Oct-09	661	682	-79	-10.7%	21	3.2%	26.6%

Source: BLS, Linneman Associates
** Government sector gained jobs during the recession, but lost jobs during the recovery.*

figure 66

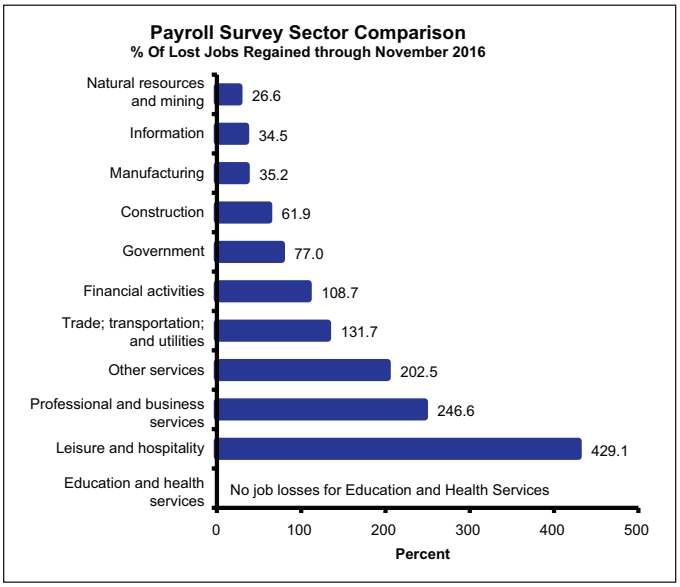


figure 67

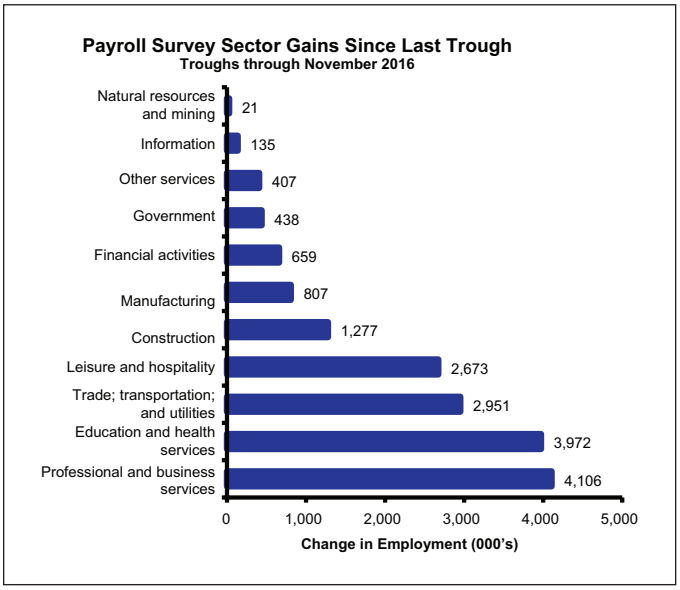


figure 68

Non-farm job openings are up by 149% from the 2009 low point, to more than 5.5 million in October 2016, a decline from the previous month, but still surpassing the peak in 2001.

Through November 2016, the greatest job gains since the trough are in professional and business services (4.1 million since August 2009) and education and health services (nearly four million since December 2007). The natural resources and mining sector peaked at over 900,000 jobs in 2014, but has since declined by 222,000 (24.6 %) from the peak through November 2016. All other major sectors continue to experience job gains. Aside from natural resources and mining, the manufacturing (35% of lost jobs regained), information (35%), construction (62%), and government (77%) sectors have experienced the slowest post-recession job growth.

Household Wealth and Income. In the third quarter of 2016, nominal U.S. household net worth (household total assets minus total liabilities) reached a high of $89.1 trillion, 31.5% above its pre-recession peak. After adjusting for inflation and population, the recovery of aggregate household net wealth in the U.S. is more muted. Aggregate real household net wealth as

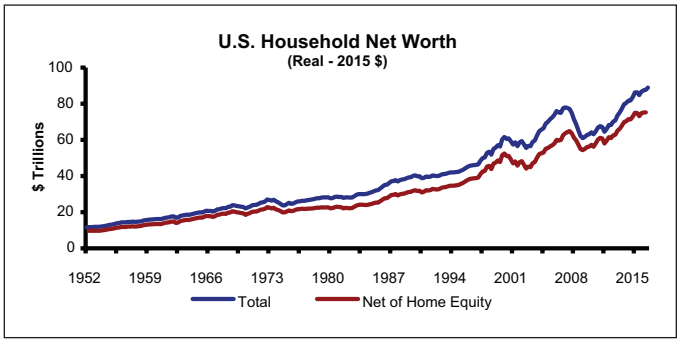


figure 69

of the third quarter of 2016 stood at $87.8 trillion (2015 dollars), 12.5% above its pre-recessionary peak.

Real U.S. household net wealth per capita rose 3.3% year-over-year through the third quarter of 2016, regaining a cumulative total of 120% of the $61,280 loss suffered during the recession, and is now almost exactly on trend. It had previously peaked at $260,000 in 2007 and bottomed at $199,000 in 2009.

Real wealth per household stands at $740,430, which is 5.1% above its 2007 peak and 57.4% above the 50-year average of $470,450. This is also in comparison to the 2009 trough of $543,000. If median wealth is down, but the average is up, it means that improvements in household wealth are very much skewed to the upper end of the wealth distribution. A simplified summary is that real household wealth is unchanged relative to prior to the recession for the bottom 30% income cohort (which had no wealth either then or now), while the top 30% is richer than ever, and the middle 40% is not yet back to pre-recession wealth levels.

The recovery in the net value of real home equity continues, rising by more than $6.4 trillion (100.8%) since the low in 2011. However, the latest figure remains

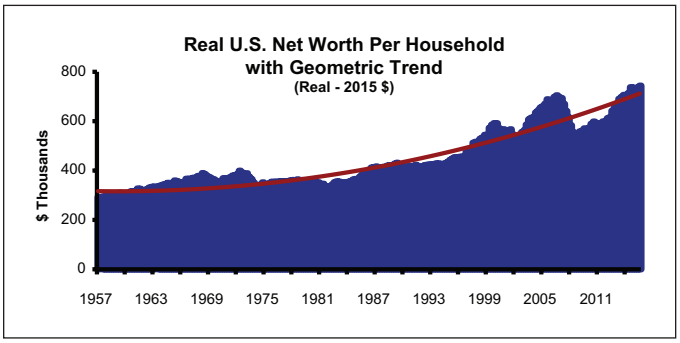


figure 70

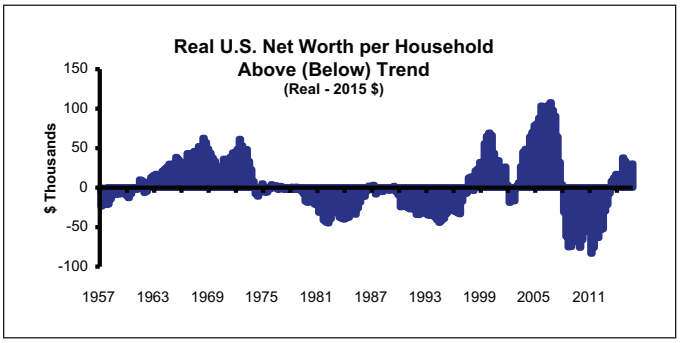


figure 71

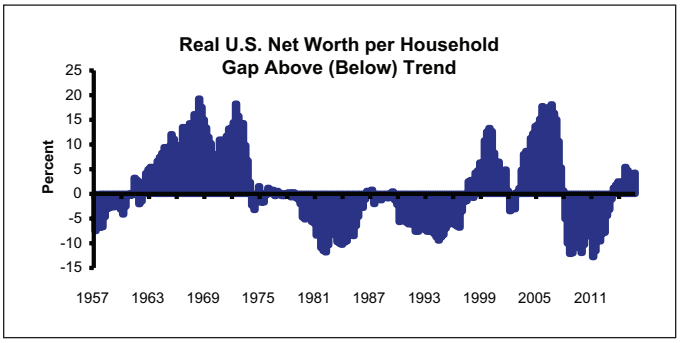
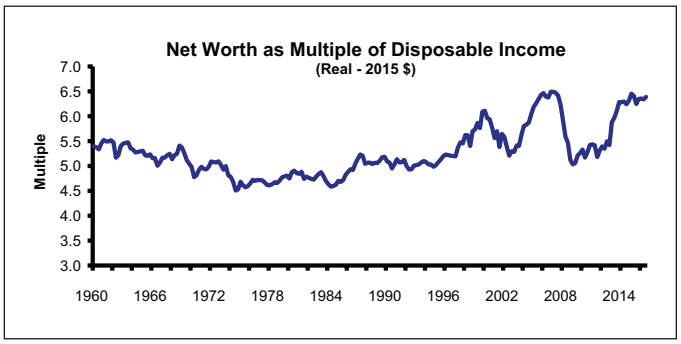


figure 72



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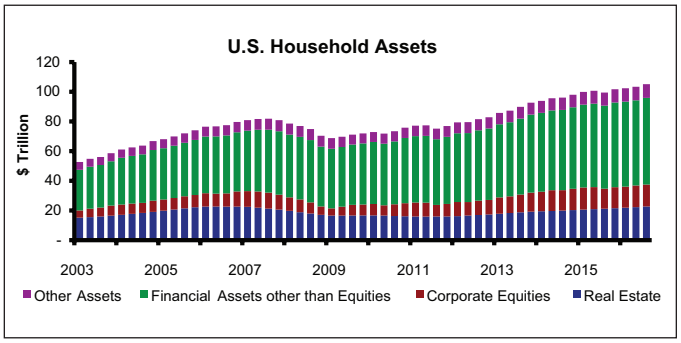


figure 74

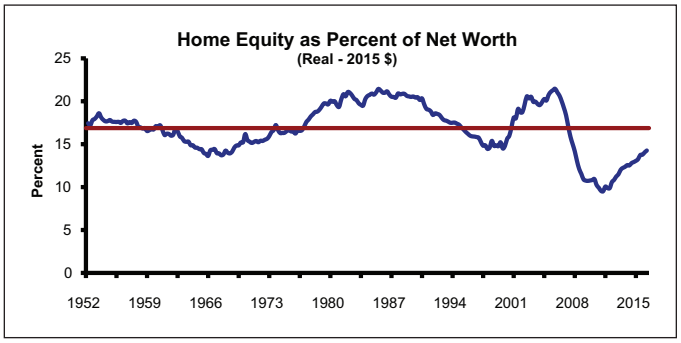
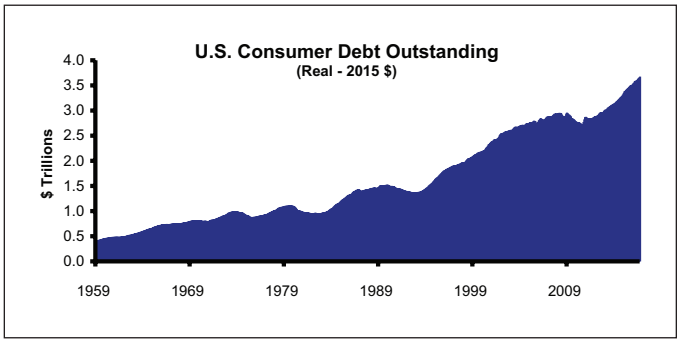


figure 75

$3.1 trillion (19.7%) below the nearly $16 trillion real home equity valuation on household balance sheets in 2006. The largest category of U.S. household assets is financial assets that are not equities, which stood at $58.4 trillion in the third quarter. Corporate equities on the household balance sheet stood at $14.7 trillion in the third quarter 2016, well above both the $4.9 trillion low of early 2009 and the $10.9 trillion peak in 2007.

Total household liabilities are on the rise, with home mortgages accounting for 65% of the total in the third quarter of 2016, compared to the 75% peak share in 2009. Home mortgages rose for the sixth consecutive quarter to end the third quarter at more than $9.7 trillion. Prior to the second half of 2015, home mortgages had been on a steady decline over the last eight years, from a high of nearly $10.7 trillion in 2008. Consumer credit as a percent of total household liabilities has steadily risen from 17.9% in 2007 to 24.8% today. This represents an increase of $1.2 trillion, from just below $2.5 trillion to $3.7 trillion today. Meanwhile, consumer installment credit as a percent of personal income is up to 45%, from 21% in 1960 and 30% in 1990.

Household debt as a percent of GDP has fallen from a peak of 92.5% in 2009 to 71.6% today, com-



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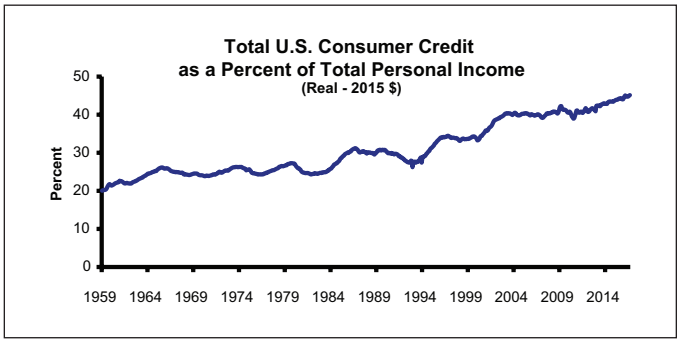

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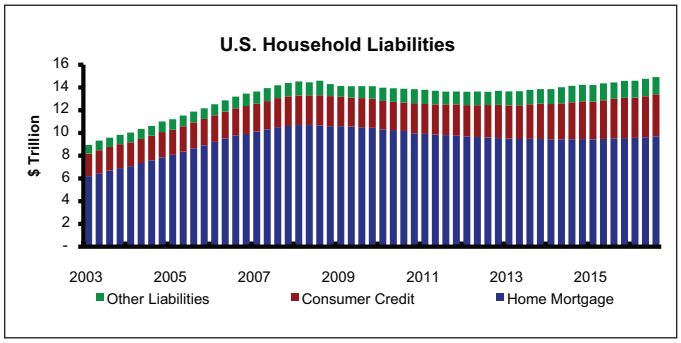

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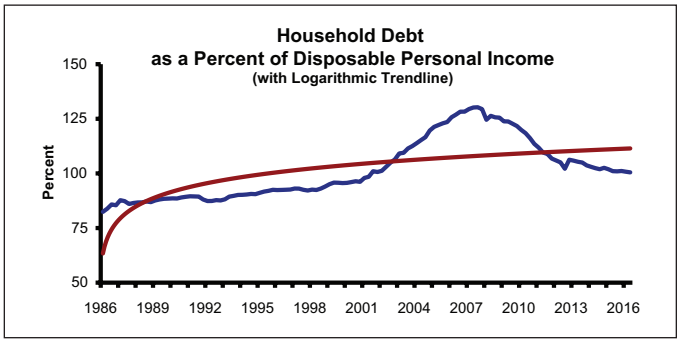


figure 80

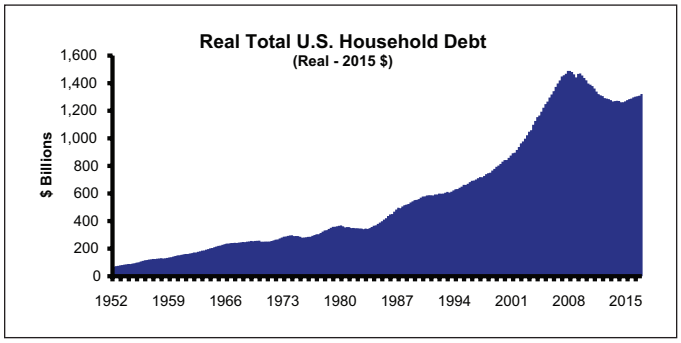
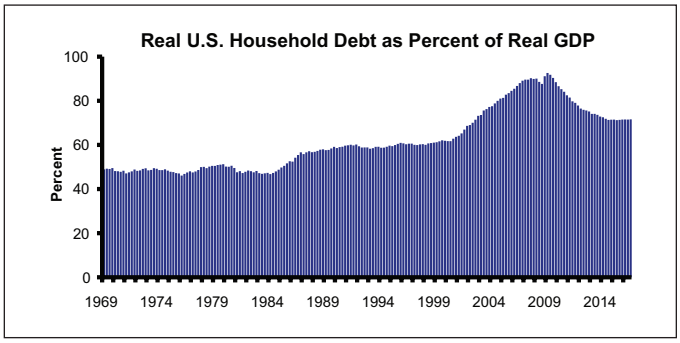


figure 77



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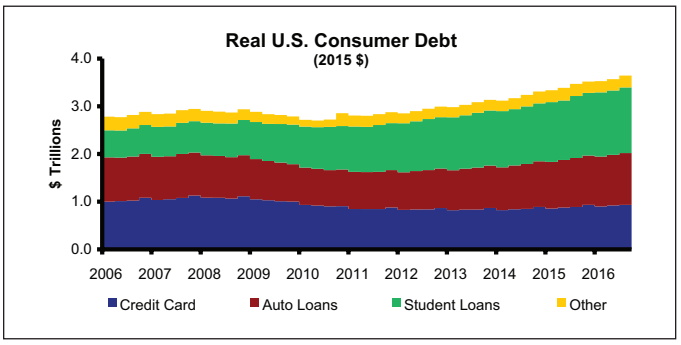


figure 82

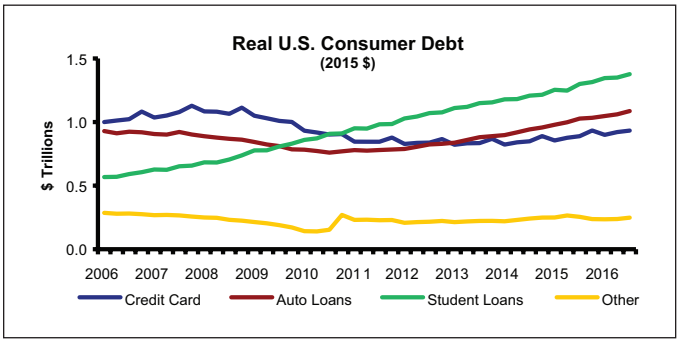
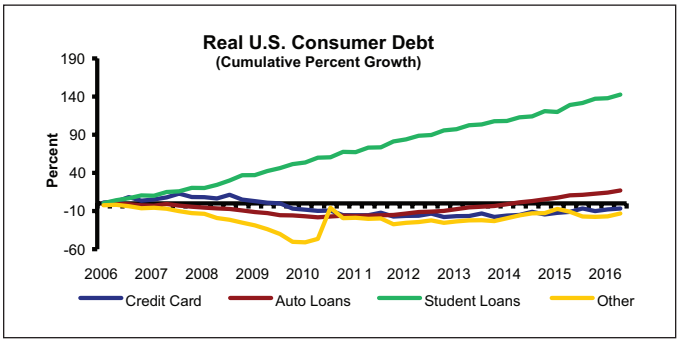


figure 83



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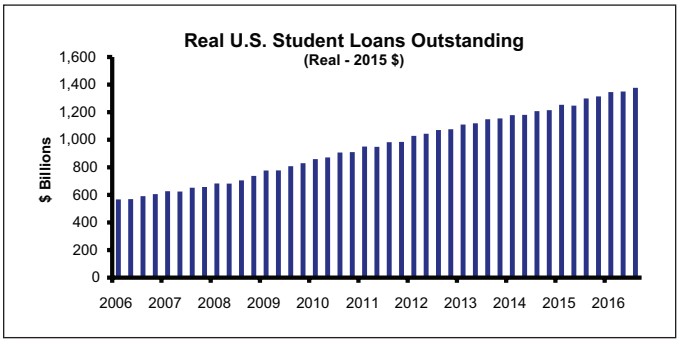

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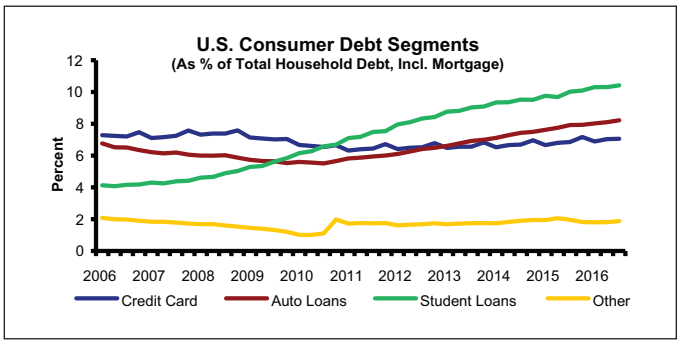

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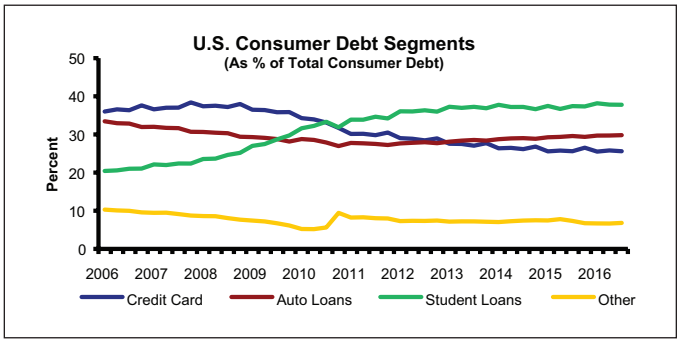


figure 87

pared to the long-term average (1969-present) of 62%. The composition of household debt has changed dramatically since 2006, with student loans rising from just 4.1% to 10.4% in the third quarter of 2016, while mortgage debt fell from 79.8% to 72.4%, and credit card debt fell slightly from 7.3% to 7.1%. Real student debt has risen to nearly $1.4 trillion in the third quarter of 2016, a 5.9% increase over the past year.

The household debt service ratio (DSR) is the ratio of total required household debt payments to total disposable personal income (DPI). Total DSR peaked in 2007 at 13.2% and stood at 10% in the second quarter of 2016 (latest available). The financial obligations ratio (FOR), which includes additional required minimum payments (e.g., rent) other than debt service, peaked at 18.1% in 2007, and stood at 15.4% in the second quarter of 2016. In 2008, consumer debt payments peaked at 6% of DPI, and mortgage payments accounted for 7.2% of DPI. In the second quarter of 2016, consumer debt payments (5.2%) account for a greater share of DPI than mortgage payments (4.5%). Thus, the consumer DSR declined by 80 bps since the peak, but the mortgage DSR declined by 270 bps over the same period through the second quarter of 2016.

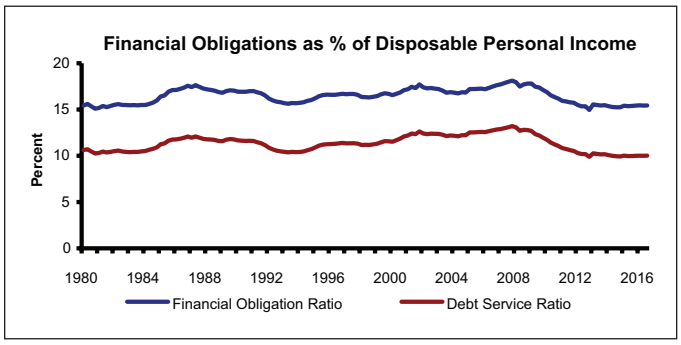


figure 88

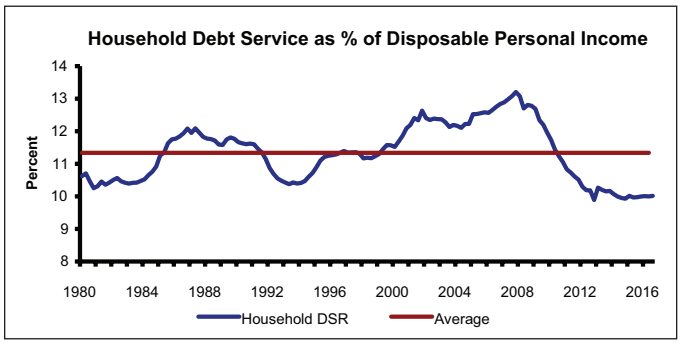


figure 89

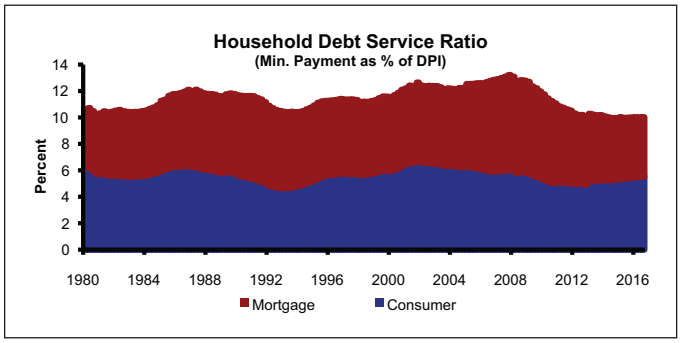


figure 90

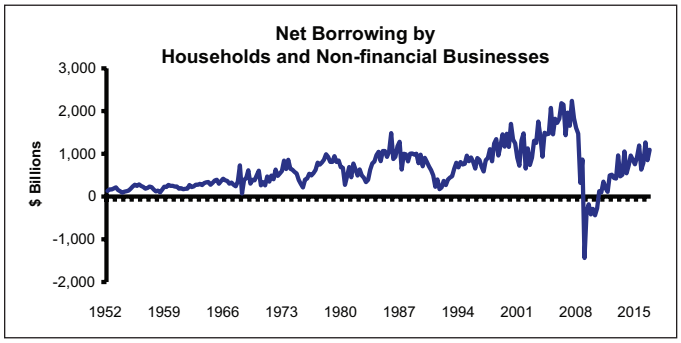


figure 91

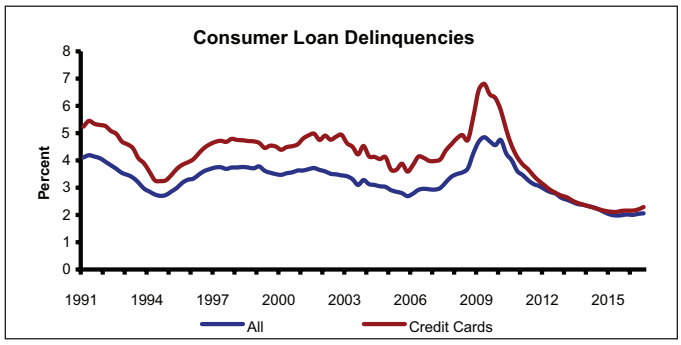


figure 92

After bottoming at 25.3 in 2009, the Conference Board Consumer Confidence Index rebounded over the last seven years, jumping to 107 in November 2016. The current level is more than 1,550 bps above both the historical average (1977-present) and where it stood last November. However, it is just shy of the 2007 pre-recession level of 111. The overall improvement since 2009 reflects sustained increases in net household wealth, continued job growth, and some relief from election uncertainty (regardless of political preference).

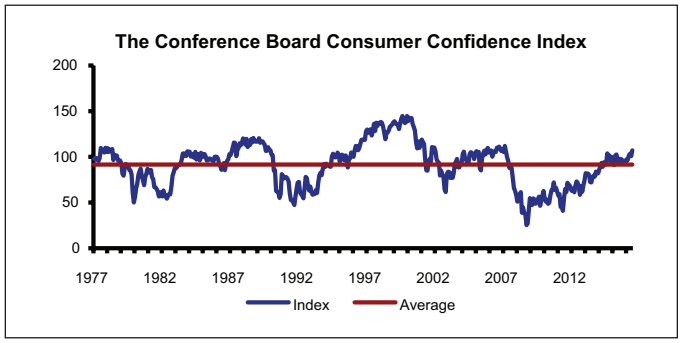


figure 93

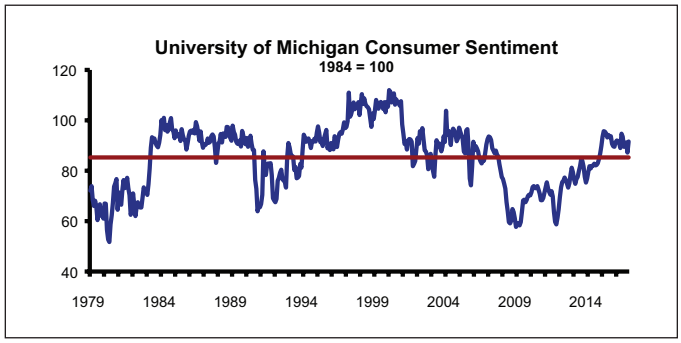


figure 94

The fact that consumer confidence is only modestly above its historical norm is a key indicator that the economy is still 2-3 years away from a recession, as recessions occur when people believe they cannot occur. Only after consumer confidence has been well above average for several years do hubris and exuberance set in, sowing the seeds of recession. Small business optimism jumped above the historical average in November, as small business owners displayed hope in the new administration.

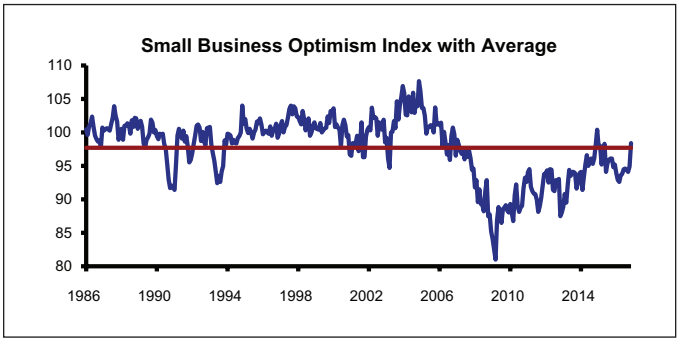


figure 95

The Economic Policy Uncertainty Index has a long-term average of 108 based on data from 1985 through today. It is based on three major components:

- The frequency of key words and phrases (e.g. uncertainty, economy, congress, legislation, etc.) in 10 major U.S. newspapers;
- The number of temporary federal tax provisions as reported by the Congressional Budget Office; and
- Examination of the Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters, and specifically the level of disagreement among forecasters.

The Index skyrocketed to 170 in November of 2016, no doubt due to election and interest rate uncertainty. With the election behind us and the equity markets clearly liking the Trump Presidency, we expect the Uncertainty Index to retreat a bit, but will remain above average for much of 2017.

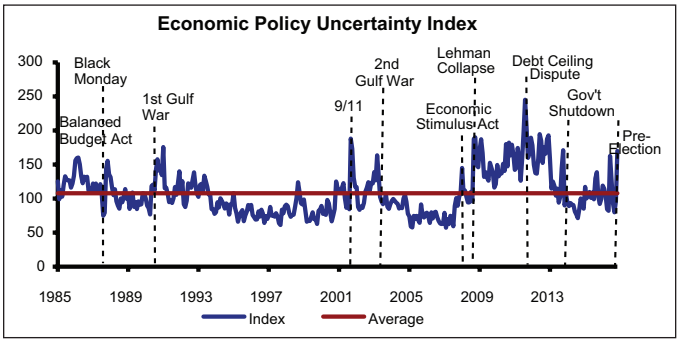


figure 96

Real median household income (2015 dollars) stood at $59,367 in the fourth quarter of 2015 (latest available). This represents increases of 11.2% versus the previous year and 21.3% versus the 2010 low of $49,160.

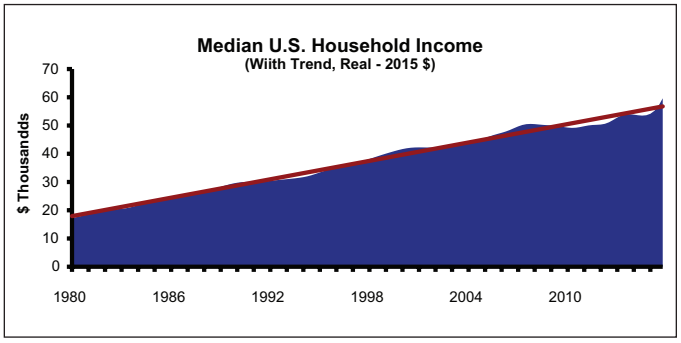


figure 97

The official personal savings rate stood at 6% as of October 2016, versus a historical peak of 12.7% in 1981 and a low of 1.9% in 2005. This recovery is particularly strong among highly educated, prime-age households, but weak among the young and the old, for whom simple savings accounts are their primary liquid assets.

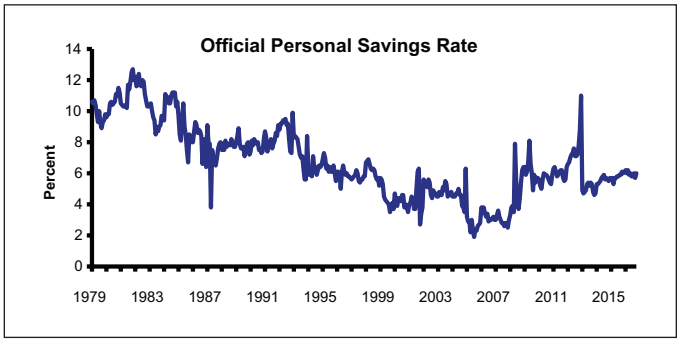


figure 98

At $1.3 trillion as of October 2016, real personal annual interest income is about $267 billion (16.8%) less than it was in 2007 ($2,400 per household per year), due to the Fed's tragically misguided attempt to stimulate the economy with low interest rates (in spite of evidence to the contrary). This is the case even though total outstanding debt is up by $5.5 trillion ($43,000 per

household since 2007). Without any legislative act, (or even debate) trillions of dollars have been expropriated from millions of citizens by government edict. This is a major reason why so many voters are in a sour mood. Real annual dividend income is up 0.3% year-over-year through October 2016, but is $28 billion (2.9%) below its 2008 high, with firms sitting on record cash cushions. At $4 trillion, checking deposits and currency levels are also at all-time highs and are $1.5 trillion above the 1952-2008 trend. Deploying this excess cash in activities with a 10% yield (instead of 0.75-1%), would generate about 1% additional GDP growth.

Real annual government social insurance income (i.e., unemployment compensation) is up by 2.3% or $60 billion year-over-year through October 2016, and 25.2% or $543 billion since the low point in mid-2008. Total real wage and salary compensation rose by 2.6% year-over-year through October 2016. Real disposable personal income per capita stood at $43,487 as of October 2016, surpassing the 2008 peak by 4.8%.

Interest Rates and Debt. On December 14, 2016, the Fed raised the Federal Funds interest rate target range by 25 bps, to 0.50%-0.75%, which is still absurdly low. On December 13, the effective Fed Funds rate (which is the rate banks are charged on overnight loans) was 0.4%, or about 210-260 bps below market-driven rates. The 10-year Treasury yield increased by 90 bps over the last three months, to 2.5% in December (prior to the Fed Funds rate hike). While this is an improvement, it is still 200-250 bps below market-driven rates, as the Fed continues its "we know best" capital interventions. We expect a 25-50-bp increase in the Fed Funds rate in the first half of 2017, with a less than 50-50 chance of a 50-bp increase. While this will help the economy by modestly reducing capital market distortions, it will not eliminate them.

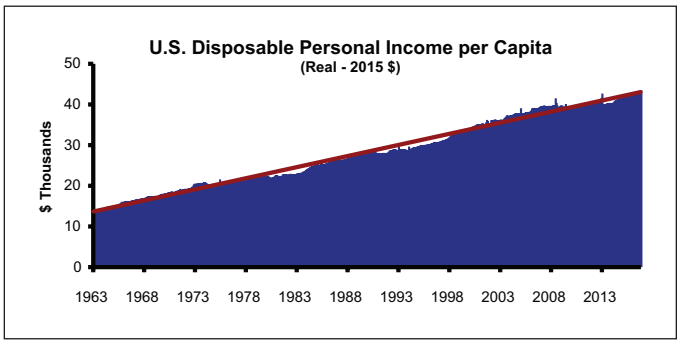


figure 101

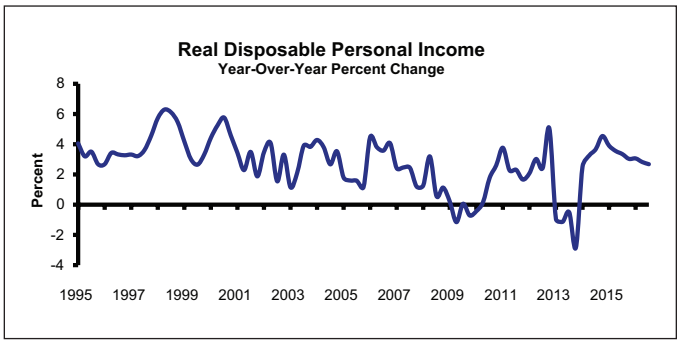
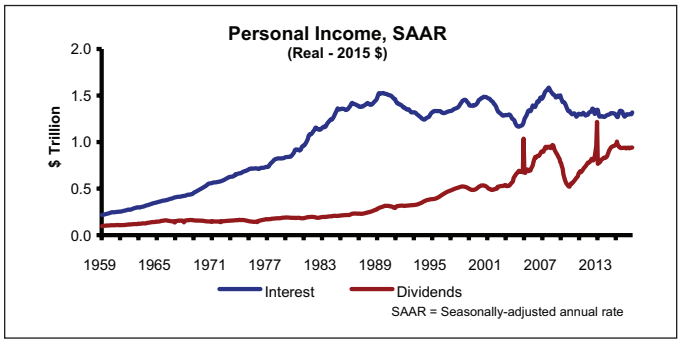


figure 102



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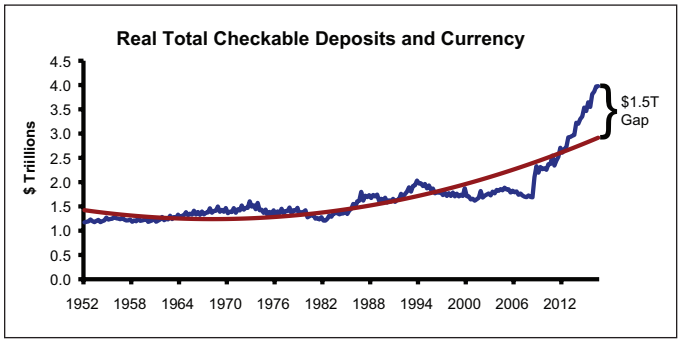

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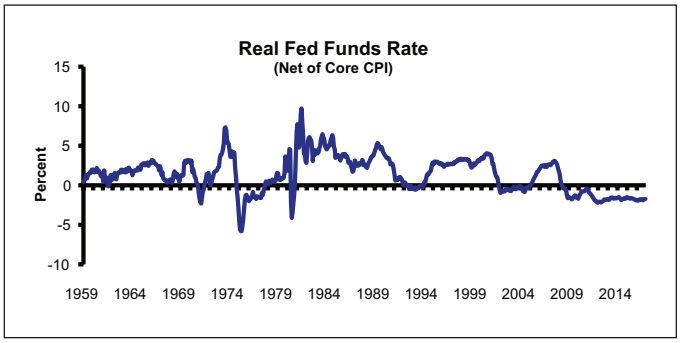


figure 103

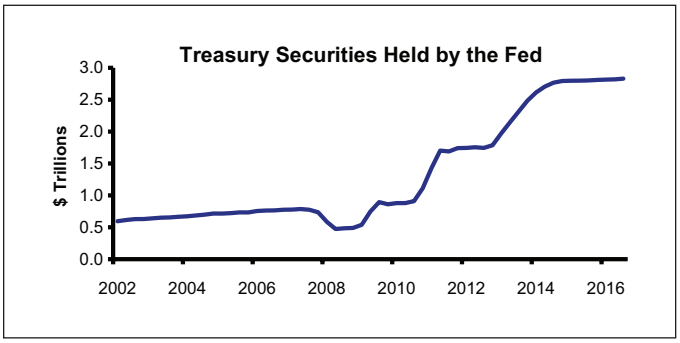


figure 104

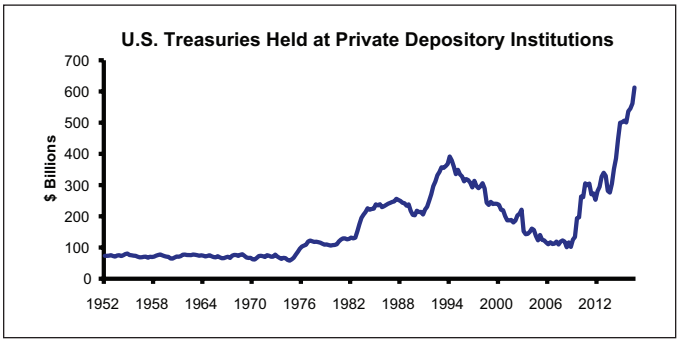
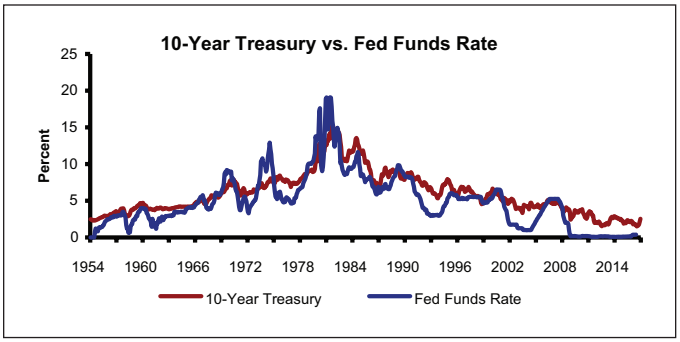


figure 105

Low interest rates have reduced growth both by reducing true entrepreneurial risk-taking and strangling the single family housing market. Low short-term interest rates have required people to save longer for the down payment on a home and also discouraged intergenerational transfers for down payments. And research clearly shows that having the requisite down payment is the key to buying a home — not a low monthly payment.

In October 2016, total monthly federal government interest payments stood at $23.4 billion. This is a stunning $659 million less than federal government



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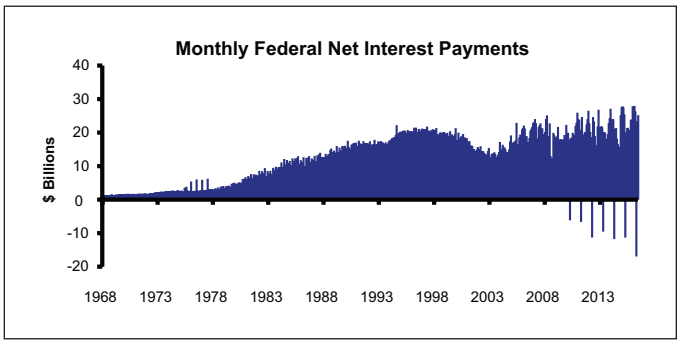


figure 107

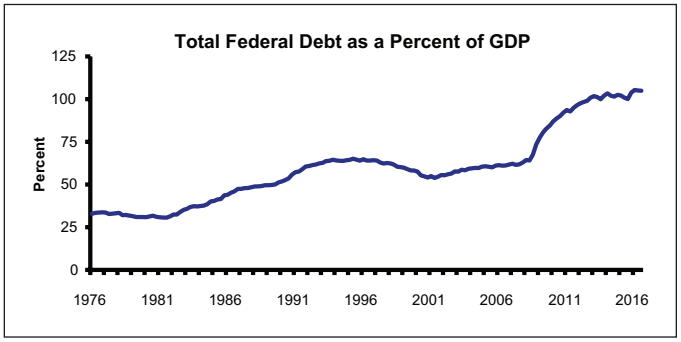


figure 108

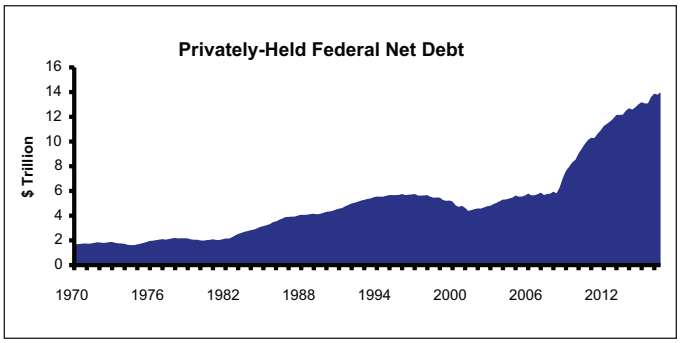


figure 109

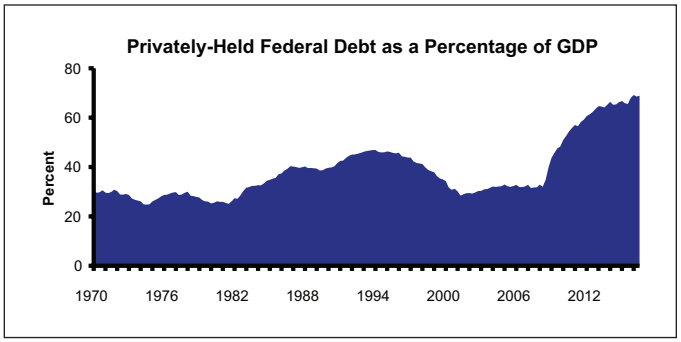


figure 110

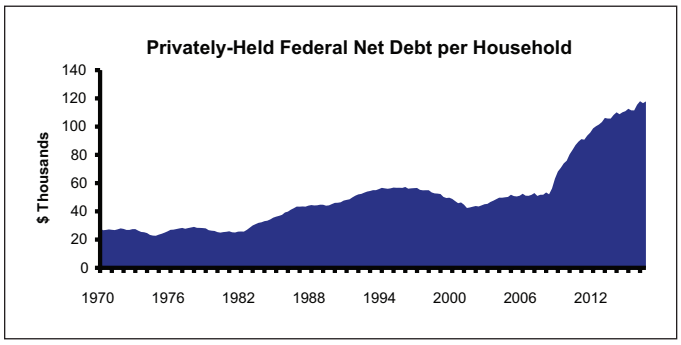


figure 111

interest payments in September 2008, despite an increase of nearly $8.4 trillion (78%) in total federal debt held by the public.

The real federal debt burden (2015 dollars) on U.S. citizens grew from $97,000 per household in September 2008, to $163,000 in September 2016, an increase of $65,000 per household. The ratio of the total debt burden per household relative to median income rose from 178% to 270% over the same period. Government debt increased over this period by $8.4 trillion, as total outstanding non-government debt fell by $2.5 trillion (5.2%). Effectively, federal government debt is squeezing out private debt, with capital being diverted from private uses to less productive governmental uses (primarily transfer payments). If this $8.4 trillion of increased Federal debt were a mere 200 bps more productive in private hands than when used by the government, it would have generated an additional $168 billion (0.9%) of real GDP growth annually. This is roughly the extent to which GDP growth has lagged trend over the past seven years.

Budget Deficit. In the third quarter of 2016, federal revenues and spending accounted for 17.1% and 21.1%

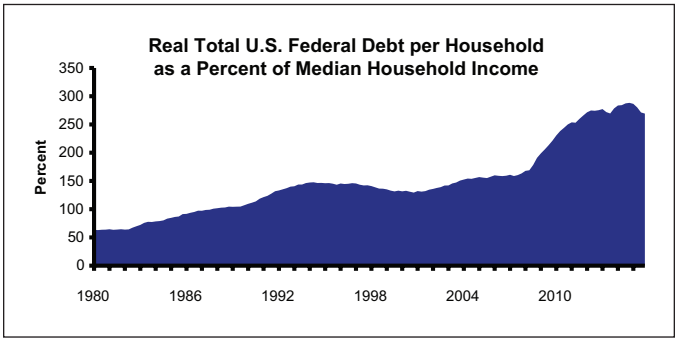
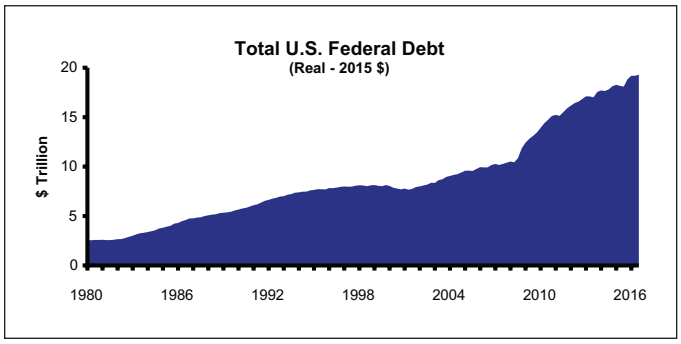


figure 114



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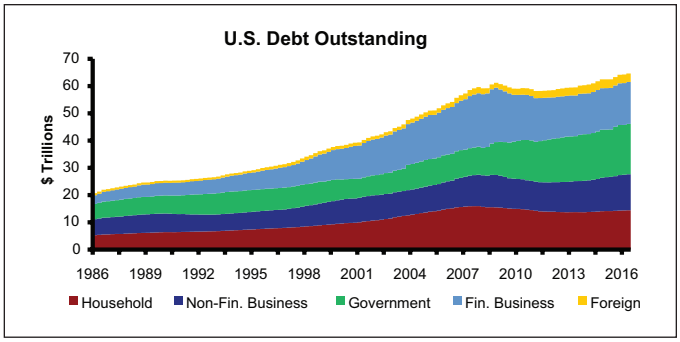

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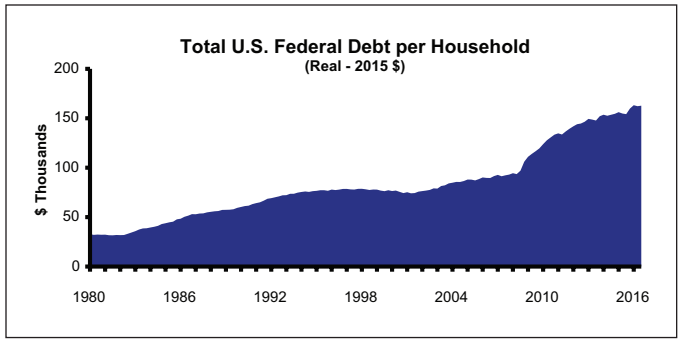

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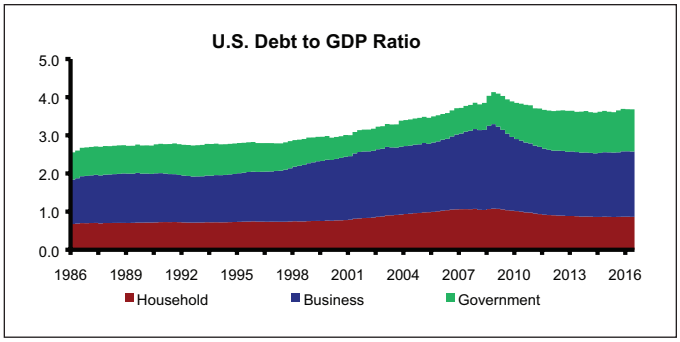

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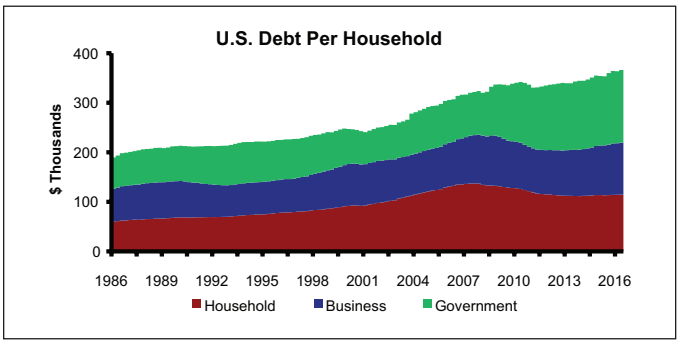

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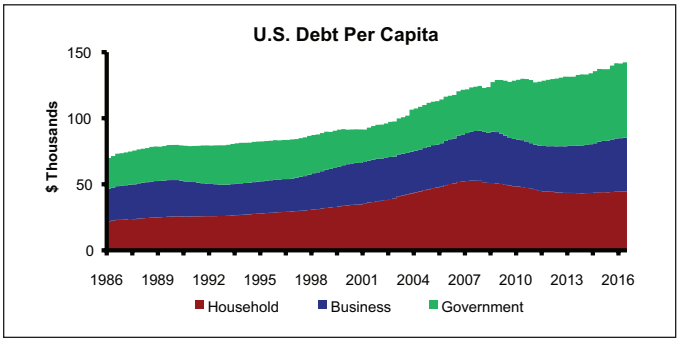

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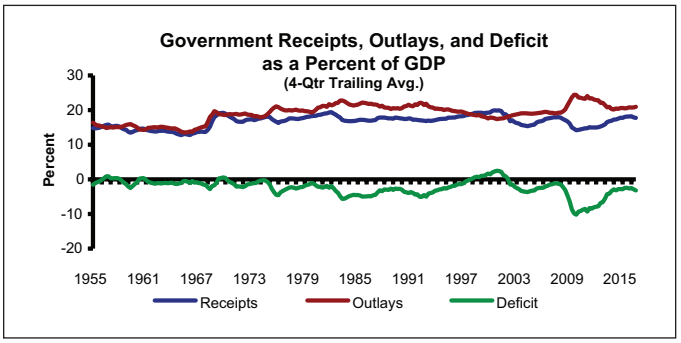

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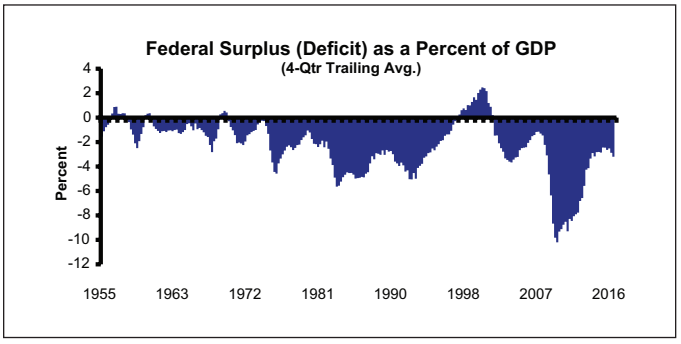

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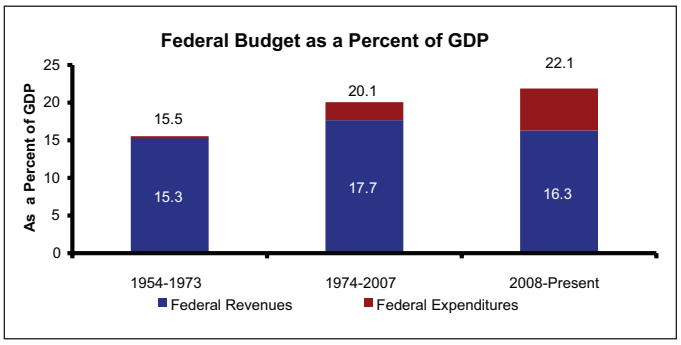

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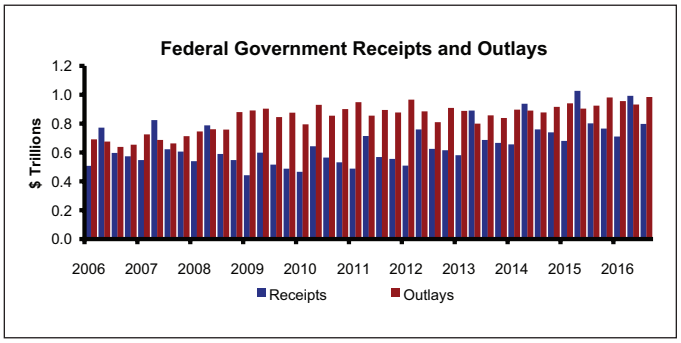
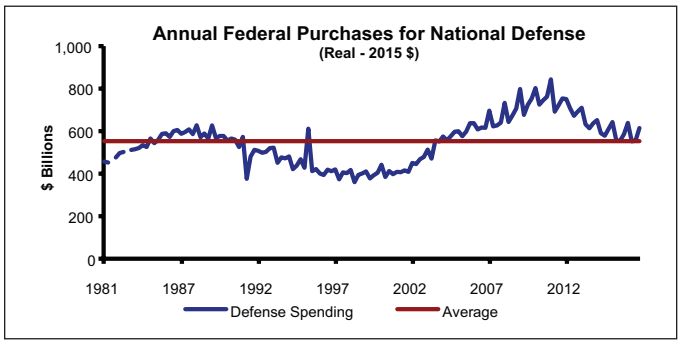


figure 122

of GDP, respectively, and resulted in a budget deficit of 4% of GDP. On a 4-quarter trailing basis, outlays outpaced receipts, resulting in a budget deficit of 3.2% of GDP. Since 2008, the U.S. has had an average annual budget deficit of 5.6% of GDP.

Real federal defense spending has fallen 27% since the 2010 peak, but remains slightly above its historical norm (since 1981) of $552 billion per year. Real annualized government defense spending stood at $615 billion through the third quarter of 2016, and accounts for approximately 3.3% of U.S. real GDP. The last time defense spending as a percent of GDP was at the current level was in 2001. Defense spending hit a 30-year peak in 2010 at $844 billion, or 5.1% of U.S. real GDP. By comparison, the lowest level of real government defense spending over the past 30 years was $360 billion in 1998, and the lowest level as a percent of GDP was just 2.9% in 2000, while the 30-year average is $551 billion per year, or 4.5% of U.S. real GDP. This means further cuts in federal spending will soon need to look more broadly than defense. The real challenge is cutting, or at least reducing, the rate of growth of transfer payments (so called entitlements). And this requires a level of political courage which has been absent over the past 20 years.



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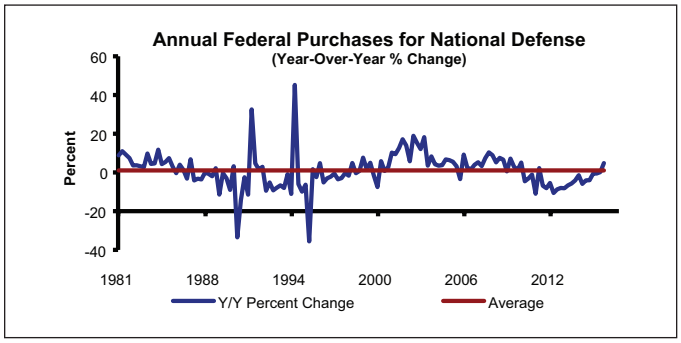

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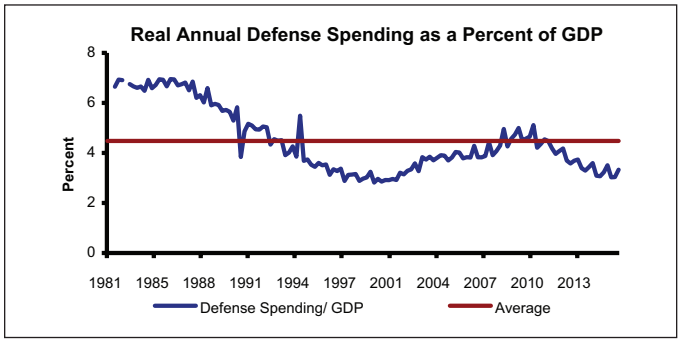
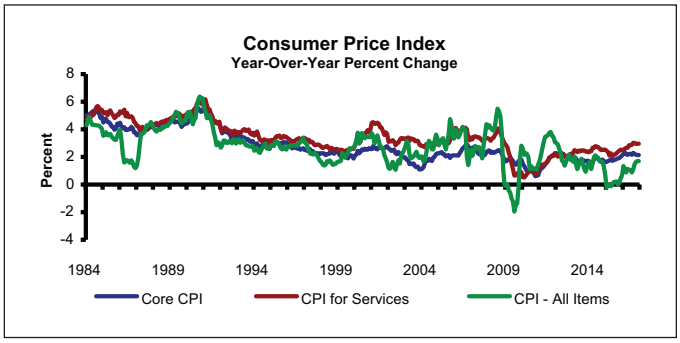


figure 125

Inflation. Economists make a lot of the fact that for the past 25 years, the survey of inflation expectations has exceeded Core CPI (which excludes food and energy prices) by 100-200 bps. They generally assert that this proves that people fail to accurately forecast inflation, underscoring their "irrationality." Of course, an alternative explanation is that for the past 25 years, Core CPI under-measures the actual erosion of purchasing power by 100-200 bps annually. This "you can't fool all of the people all of the time" interpretation is generally dismissed out of hand by economists, even though they quietly admit to fellow statistical geeks that there are many flaws in the calculation of Core CPI. Most notably, these flaws revolve around housing costs, quality disparities, and changing consumer patterns. And while studies 20-30 years ago suggested that Core CPI under-measured inflation by 50-100 bps, the persistent gap of expectations relative to Core CPI strongly suggests that this is no longer the case. Notable in this regard are the explosion in healthcare wage deductions and that service sector inflation has averaged 2.5% over the past five years.

The November 2016 year-over-year change in the consumer price index (CPI, all goods) was 1.7%, up from 0.4% one year ago but below the long-term average (since 1990) of 2.5%. Excluding food and energy prices, core CPI rose by 2.1% over the last 12 months through November 2016, versus 2.0% for the previous 12-month period and a long-term average of 2.4%. At current core inflation rates, we have a real short-term rate of -1.7% and a real 10-year yield of 0%. The increase in service prices over the trailing 12 months through November 2016 was 3.0%, hardly indicative of any deflationary threat for a service-driven U.S. economy, and broadly in line with consumer inflation expectations.



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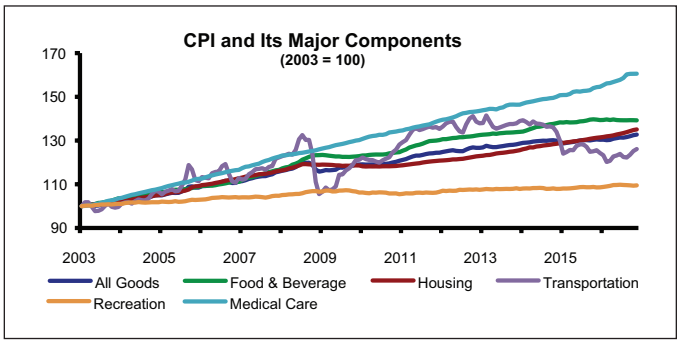

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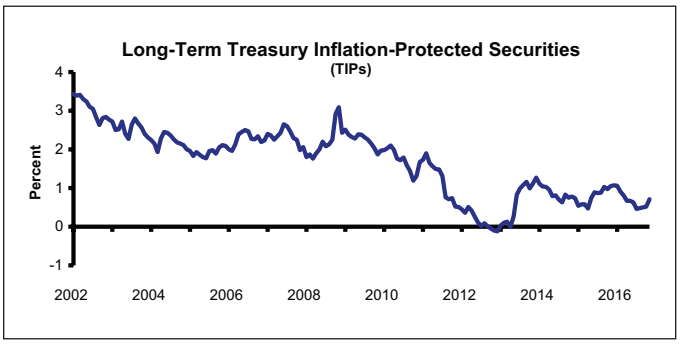


figure 128

CPI is rising, and any price declines (like oil and tech) have increased consumer welfare. At 0.71% in November 2016, the yield on Treasury Inflation-Protected Securities (TIPS) remains 175-225 bps too low.

Retail Sales. Real monthly retail sales (2015 dollars) peaked at $383 billion in late 2007, bottomed at $326 billion in March 2009, and have since risen to $401 billion as of November 2016, an increase of 23% from the bottom. Real monthly retail sales excluding autos increased by $40 billion (15%) from the recessionary low and are now greater than their pre-recessionary high of $298 billion. Real monthly electronic and mail order sales were more than $41 billion in October 2016 (latest available), accounting for 10.3% of total retail sales — a rate that has steadily increased from 1.8% in 1992.

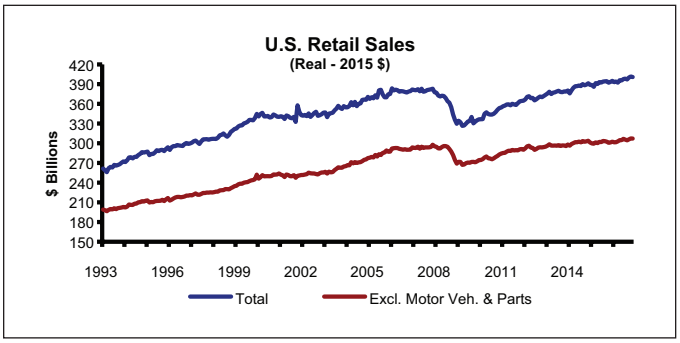
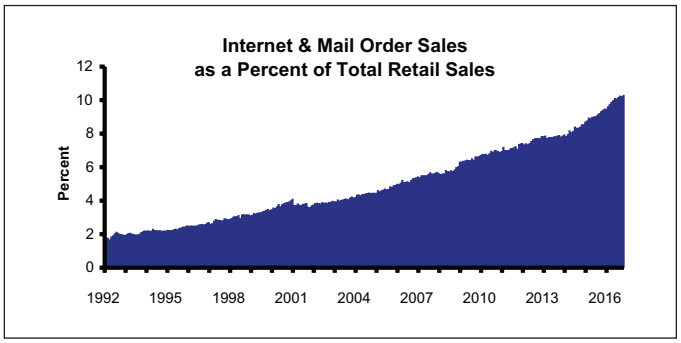


figure 129

Real retail sales are at an all-time high, yet are below the historical trend by 1.4 standard deviations. Internet sales have absorbed much of the growth in retail sales. The unofficial start of the holiday shopping season in the U.S. has shifted from Black Friday (the day after Thanksgiving), with an increasing number of stores and malls opening on Thanksgiving Day, and some offering "Black Friday" sales before Halloween. Steeply discounted door-buster deals entice eager shoppers to line up hours before stores open. While more people shopped over Thanksgiving weekend this year than in 2015, spending was down due to ever-earlier deep discount sales offered both in stores and online. Over the 2016 Thanksgiving weekend, average in-store sales per person declined to $289 from $300 in 2015.

The rise of online shopping over the holiday season continued. Comscore reported that desktop online Cyber Monday sales reached nearly $2.7 billion, a 17% percent gain over 2015. According to Adobe Digital Insights, mobile sales on Cyber Monday increased by 34% from 2015 (compared to a 25.7% increase from 2014 to 2015) and accounted for 31% of all sales on that day (compared to 27.6% in 2015). The National Retail Federation reported that 56% of smartphone owners and 53% of tablet owners used their devices to make purchases over Thanksgiving weekend. Black Friday smart phone purchases increased from 21% of online sales in 2015, to 29% in 2016. Comscore reported that desktop spending over the first 25 days of November increased by 12% over 2015. According to Comscore,



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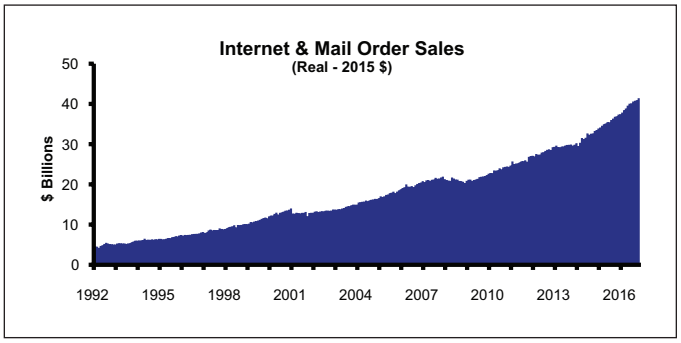


figure 131

desktop sales increased to $1.3 billion on Thanksgiving Day (17% growth year-over-year), $2 billion on Black Friday (19% year-over-year), and $2.7 billion on Cyber Monday (17% year-over-year).

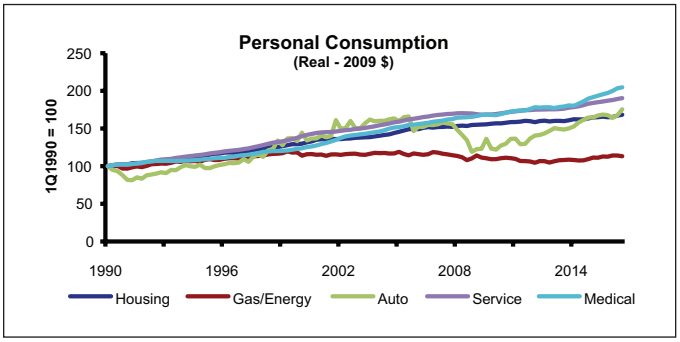
In the past, the media has interpreted strong Black Friday results as a promise of a healthy holiday shopping season overall. However, recent studies reveal that Black Friday sales results are largely uncorrelated with the strength of holiday season sales. In fact, if any correlation exists, it may now be negative. Retail trends such as earlier sales, e-commerce, and gift card purchases are extending the holiday shopping make it difficult to accurately analyze Thanksgiving weekend sales year-over-year. Regardless, the media hype surrounding the weekend increases each year.

Between March 2009 and November 2016, real monthly retail sales at restaurants and bars (30.2% growth) outpaced sales at health and personal care stores (18.9%), building materials and garden supply dealers (17.5%), furniture and home furnishing stores (15%), gas stations (7.2%), grocery and liquor stores (11.6%), and sporting goods and book and music stores (1.8%). In contrast, department stores (-28.6%) and electronics and appliance stores (-0.8%) saw declining sales between March 2009 and November 2016.

Positive growth from March 2009 through October 2016 (latest available) was seen in electronic (online) shopping and mail order (96.2%), clothing and shoe stores (13.9%), jewelry stores (12%), and warehouse clubs and superstores (9.1%).

Profits. Real after-tax corporate profits peaked at $1.7 trillion in the fourth quarter of 2014 and have since fallen by 7.9%, to less than $1.6 trillion due to strong labor markets and rising salaries. Because of the recent declines, after-tax profits are 7.2 standard deviations below trend as of the third quarter of 2016, and only about 12% higher than the pre-recessionary high. This reflects the drag on holding cash, rather than investing in the face of the negligible opportunity cost of cash, due to low rates. However, stock market values rose post-election, reflective of an expectation of a substantial boost in after-tax profits as corporate taxes are reduced.

Real after-tax profits as a percent of GDP stood at 8.5% in the third quarter of 2016, versus the long-term historical average (since 1980) of 6.9%. This ratio approached 10% in 2014, and is now reverting towards



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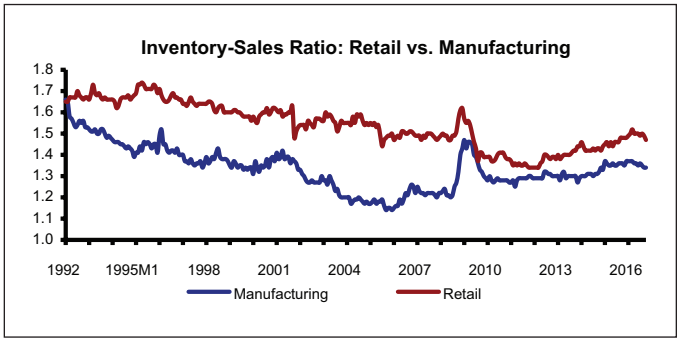

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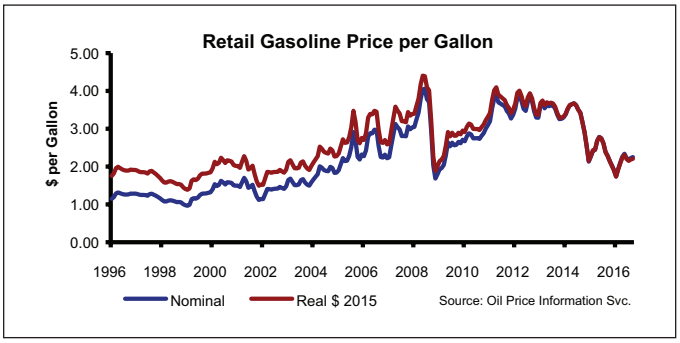

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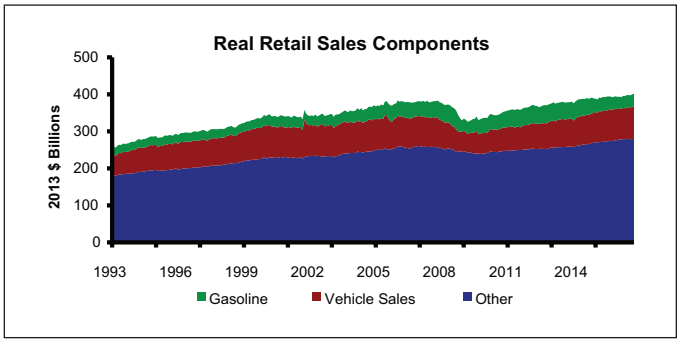

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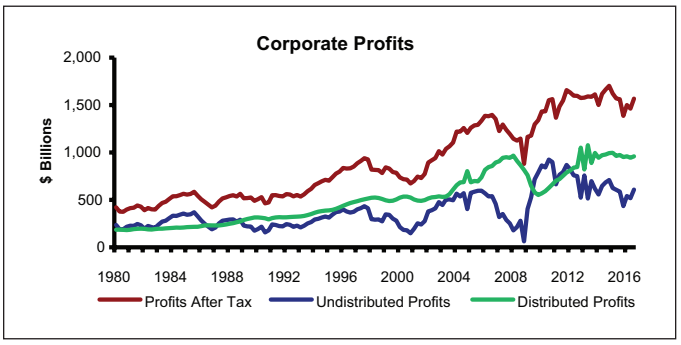

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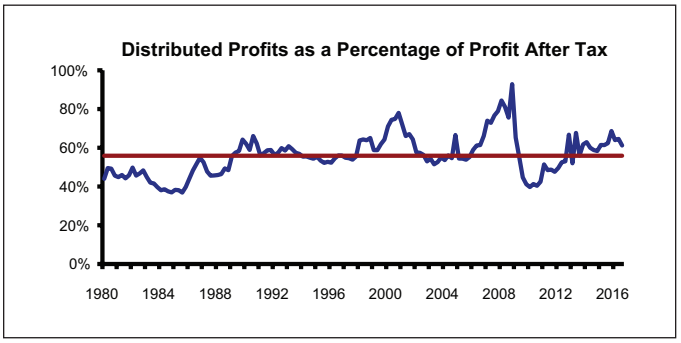

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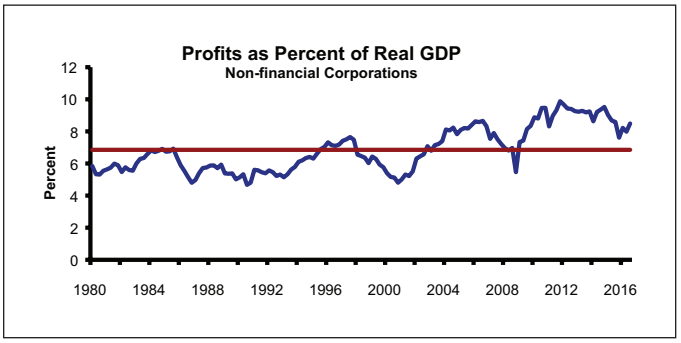

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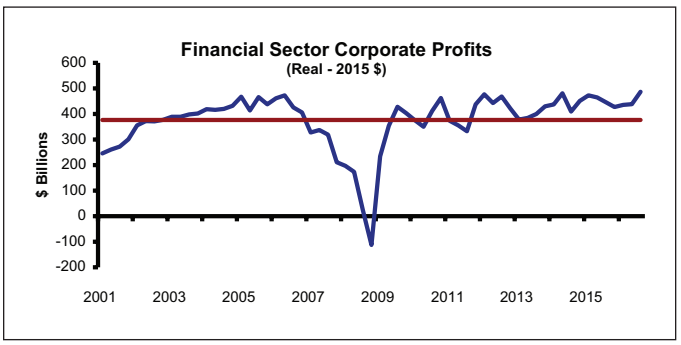


figure 139

its historical norm, contrary to the hysterical ravings of the likes of Pickety and Krugman. Meanwhile, average profit distributions over the trailing four quarters through the third quarter of 2016 reached 64%, versus 60% in 2013-2014, 55% in 2012, and just 44% in 2011. That is, the percentage of cash flow being distributed has increased significantly — a trend which will continue.

Industrial Production. The overall industrial production index stood at 103.9 in November 2016, just below the pre-recessionary high of 105.7 and gaining 19% from the June 2009 low of 87.4. Through November 2016, the durable industrial output level has recovered 105% of the volume lost during the recession, while the non-durable industrial output level is only 27% of the way back to pre-recession levels. Non-durable production is being held down by the complete collapse of the apparel and printing sectors, which will not rebound. Durable and non-durable production levels are well below trend, by 2.3 and one standard deviation, respectively.

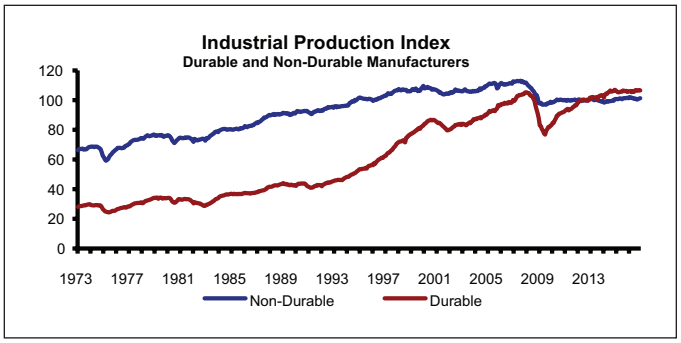
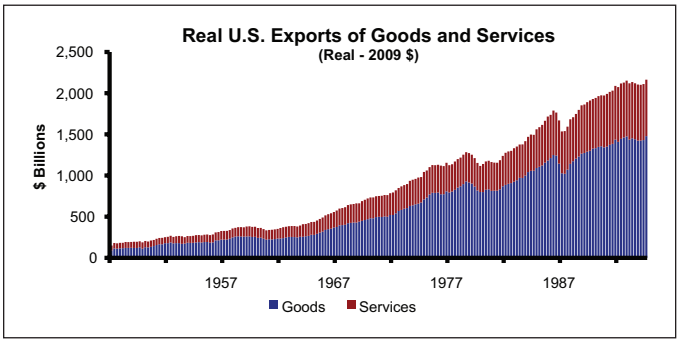


figure 140

U.S. real annualized exports edged up over the last year through the third quarter of 2016, standing at nearly $2.2 trillion in spite of a strong dollar. Exported goods increased by $37.6 billion (2.6%) over the last 12 months, while exported services increased by $6.1 billion (0.9%) over the same period. This is consistent with past industrial behavior, where research finds that a stronger dollar spurs U.S. exporters to reduce production costs in order to remain competitive.

Mining sector output remains 16.4% above its pre-recessionary peak through November 2016, though down 4.6% year-over-year, and 13.3% from its peak in 2014. The electric and gas utility industrial production index is just 7.6% below the 2007 high.



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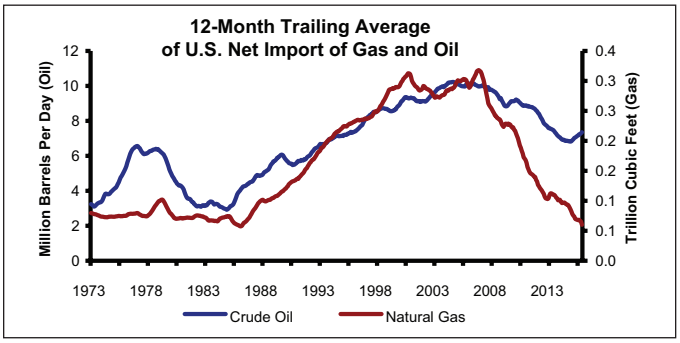

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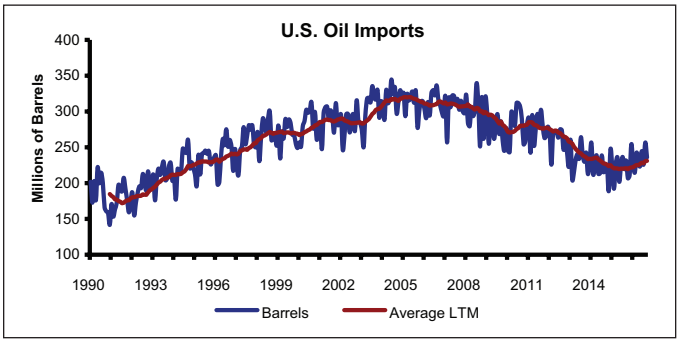

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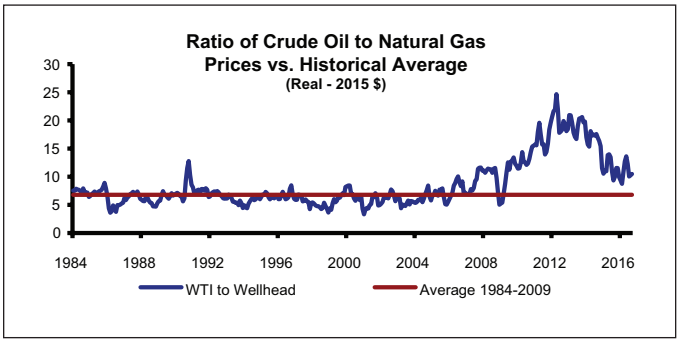

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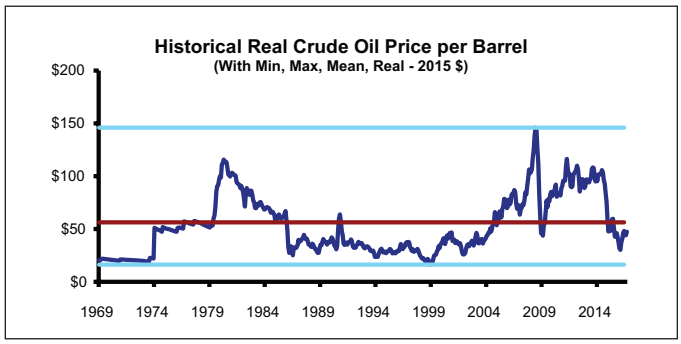

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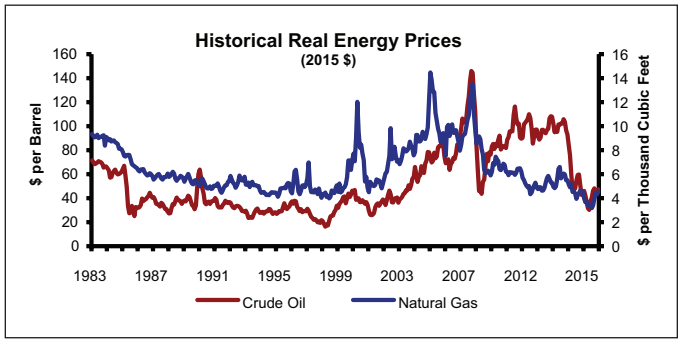

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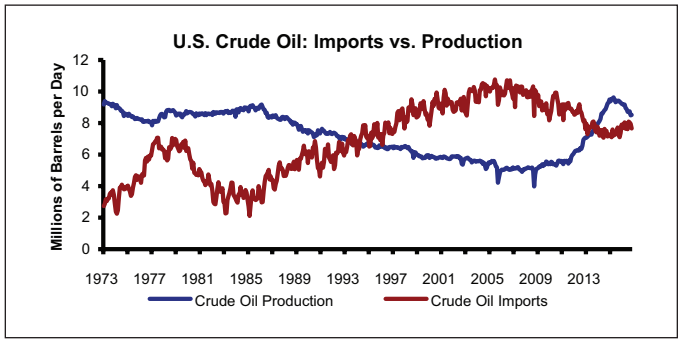

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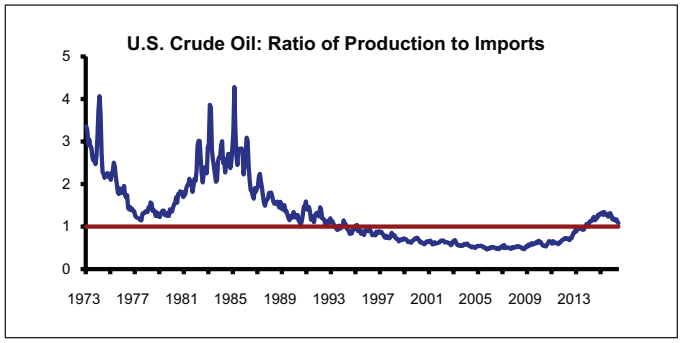

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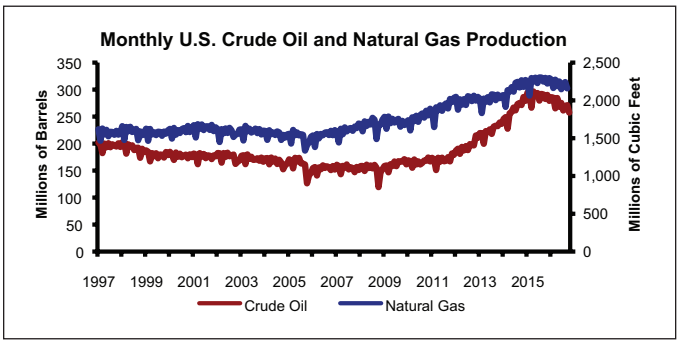

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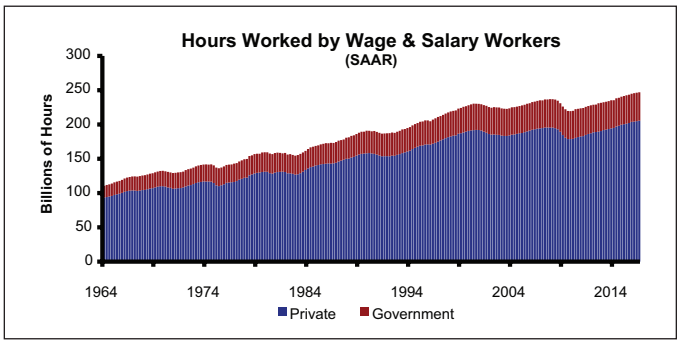


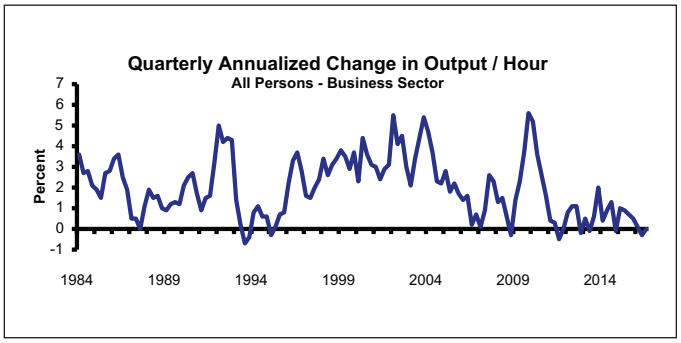
figure 151

After reaching $108 per barrel in 2013 (real 2015 dollars), West Texas Intermediate oil prices plunged precipitously to $30 per barrel in February 2016, rebounding to about $52 per barrel by mid-December 2016. From 1994 through the first quarter of 2009, the ratio of real crude oil prices to real natural gas prices (2015 dollars) averaged about 8x. It then rose dramatically to a peak of 43x in early 2012, and has fallen to 17x in December 2016.

U.S. natural gas production steadily rose from 2006-2015, while crude oil production notably increased beginning in 2009. Production of both commodities reversed course in 2015 and are modestly declining.

Defense and space-related equipment production is 13.3% below pre-recession levels, as defense spending retrenchment continues. In November 2016, consumer goods output underperformed its pre-recessionary high by just 2.6%, versus a 15.9% decline at the lowest point of the recession.

Computer output (including smart phones and tablet computers) is 30.2% above its pre-recession high, after a 16.7% decline during the recession. Due to strong iPhone 7 sales, we anticipate this sector to register solid near-term growth. The motor vehicle production index



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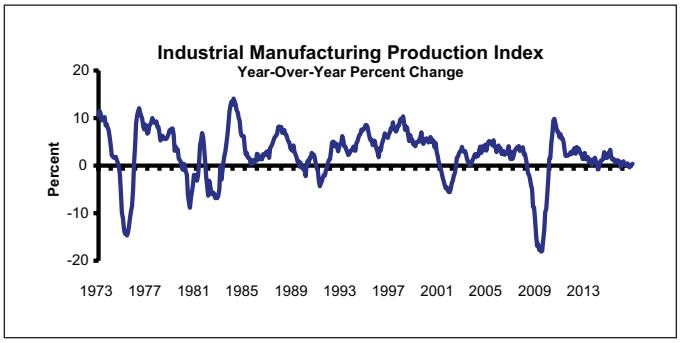

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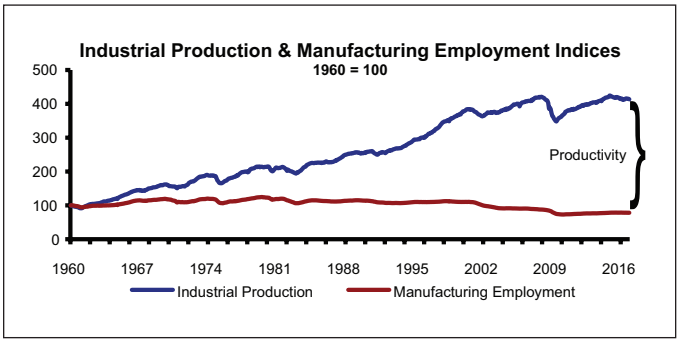

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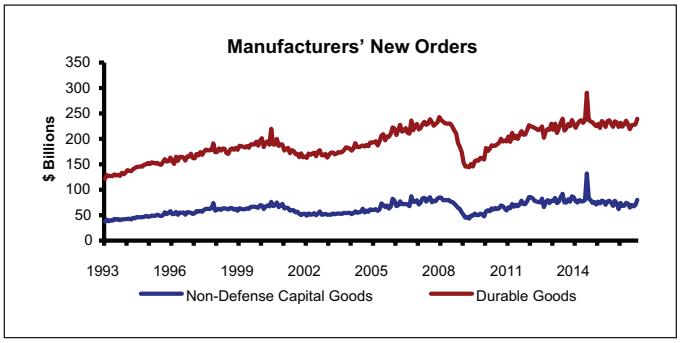

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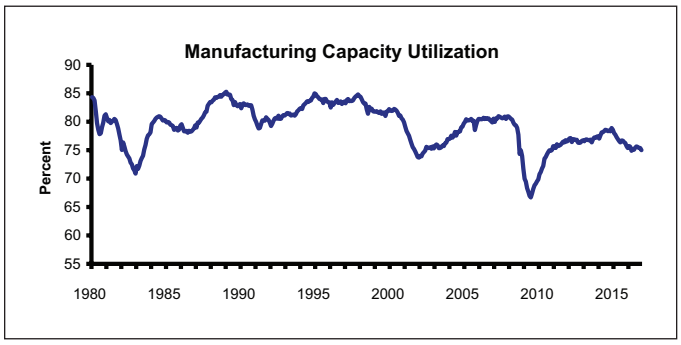

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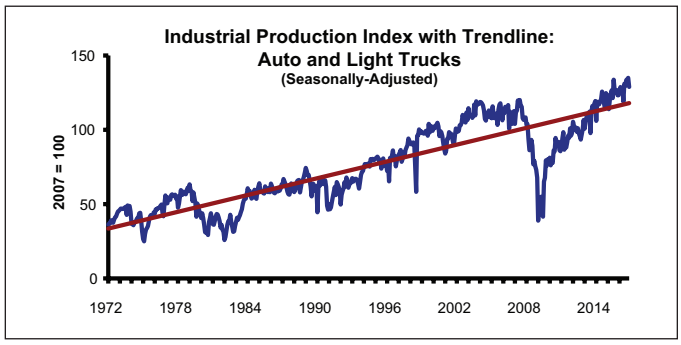
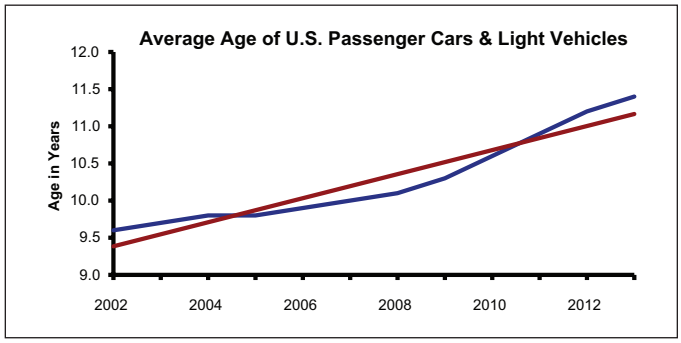


figure 156

is now 16.5% higher than its pre-recession high, after experiencing a 55.6% decline during the recession. Output of fabricated metals remains 14.2% below its pre-recession high, while the U.S. output of apparel remains a staggering 63.2% below its pre-recession high, with no sign of improvement for a sector that is in secular decline.

Auto Sector. Auto sales remain above historical norms and continue to make inroads into the recession induced pent-up demand. Real auto sales have historically (1992-2006) represented 6.9% of real GDP, versus just 4.1% in 2009, and stands at 5.6% in 2016. As of November 2016, U.S. auto and light truck sales stood at a robust 1.48 million units per month, though down slightly from 1.5 million at year-end 2015. The latest figure far outpaces the recessionary low of just 752,000 units sold in February 2009, and is above the 40-year historical average of 1.2 million units per month.

The seasonally adjusted production of automobiles and light trucks (on both a dollar-volume and unit basis) is above historical trend. The auto and light truck production index peaked at an all-time high of 134 in July 2015, but retreated to 129 in November 2016, versus the long-term (40+ years) average of 76. A comparable increase was also reflected on a unit basis, with July 2015 production reaching 12.5 million units, but then dropping to a seasonally adjusted annual rate of 11.7 million light cars and trucks in November 2016. Despite above-average production over the last year, the U.S. has under-produced about 7.1 million light trucks and cars on a cumulative basis since 2003. However, this cumulative shortfall is down by about 1.1 million units over the last year. This analysis is based on historical (1976-2002) average production levels of 10.6 million units per year. The average age of autos stood at a record high of 11.4 years in 2014, 1.5 years older than in 2006.



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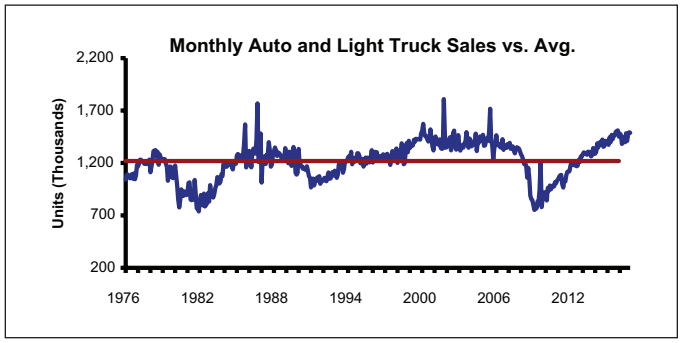

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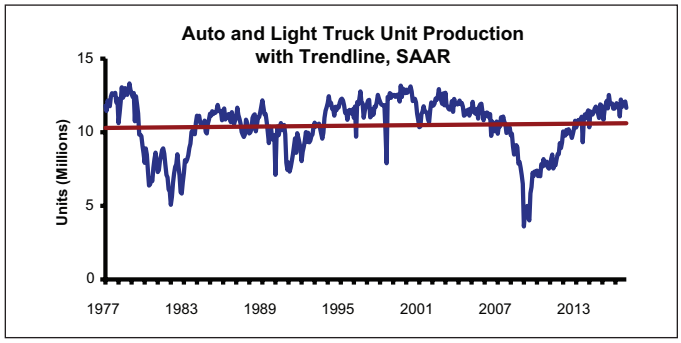

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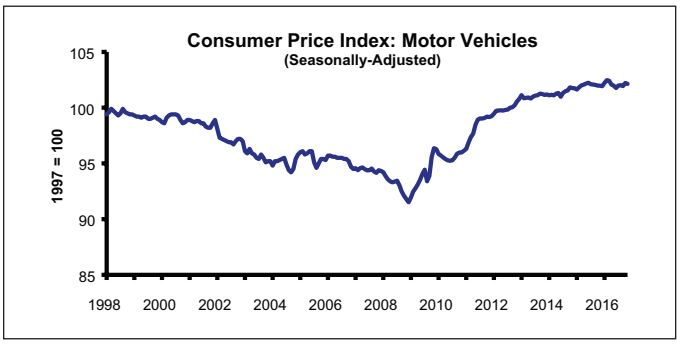

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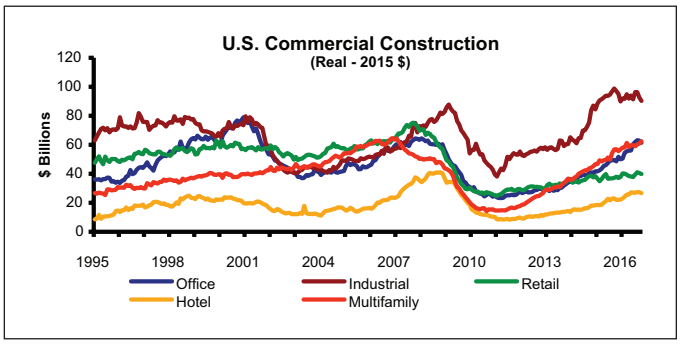
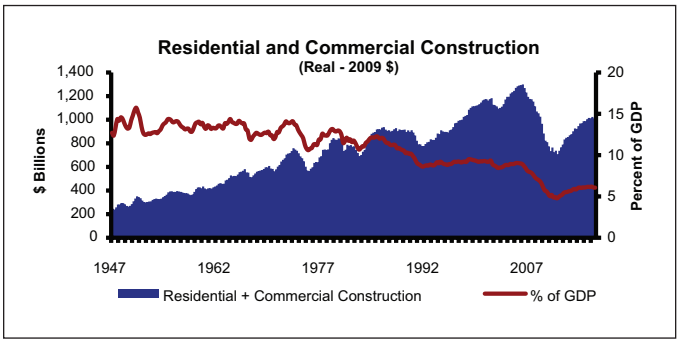


figure 163

IHS Automotive expects the average age of autos and light trucks in the U.S. to be flat in 2015, but to trend upwards to 11.7 years by 2019.

Construction. Seasonally-adjusted real annual office construction is up by nearly $12.8 billion (26%) year-over-year through October 2016, and is now 35% above its historic norm (1993-present). Real industrial construction (including warehouse and manufacturing facilities) is down by $6.8 billion or 7% year-over-year, still surpassing its historic norm by 41%. Real retail construction increased by about $1.9 billion (5%) over the last 12 months through October 2016, and remains 18% off of its norm, while lodging construction activity is up by more than $4.6 billion (21%), and is above its historical norm by 48%. Real multifamily construction spending grew by $5.5 billion (9.6%) year-over-year through October, and is now also 63% above its norm. *(Editor's note: Construction charts by sector can be found in the Sector Outlook articles beginning on page 74).*



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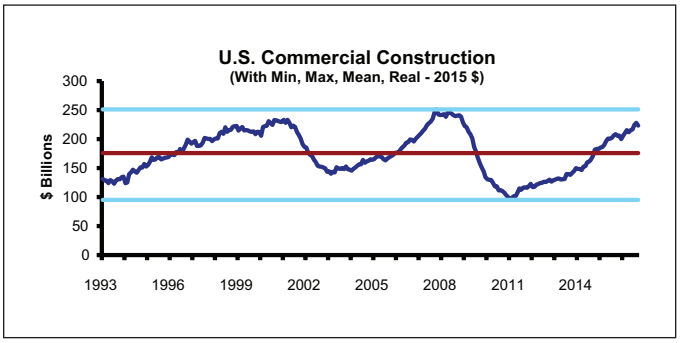


figure 162

> *"A major source of objection to a free economy is precisely that it... gives people what they want instead of what a particular group thinks they ought to want. Underlying most arguments against the free market is a lack of belief in freedom itself."* ~ Milton Friedman

Government Intervention and Unintended Repercussions

If you ever doubted that even small changes in regulatory policy notably impact behavior, take a look at the recently introduced SEC regulations for money market funds. Most simply stated, the new regulations require institutional funds which do not invest exclusively in government paper to quote net asset value (NAV) prices rather than the traditional price of $1.00 per share. This means not only that most money market funds now have their prices quoted to six or seven decimal points, but that the demand for government short-term paper increased relative to non-government paper, as funds adjusted their portfolio composition to achieve compliance. The regulation

took effect on October 14, 2016, and by early October, the holdings of government notes by money market funds had risen by $75 billion, while their holdings of non-government assets fell by $700 billion (roughly 50%) over the preceding months. As this occurred, not surprisingly, the spread between non-government bonds and Treasuries tripled from its long-term average of about 20 bps to 60 bps. That is, non-government short term paper is more expensive.

Even though the effective yield (2.9%) on investment grade corporate debt is below the 4.4% average, the spread relative to the 10-year Treasury is above average. In November 2016, the average AAA corporate bond yield was 72 bps higher than the 10-year Treasury yield and 26 bps above average. This is a clear distortion of capital markets, caused by Fed policy. Based on past economic cycles, we should have had below-normal investment grade spreads by this point in the recovery.

In comparison, junk bond spreads over the 10-year Treasury were 480 bps, or about 75 bps below average. This reflects distortions from Fed policies, as many high-end lenders have imposed absolute rate floors. This is but one small example of the impacts created by the many regulatory burdens placed on market participants over the past nine years, all while channeling capital to the government from private sector activities. And then people wonder why the U.S. economy is not running on all cylinders.

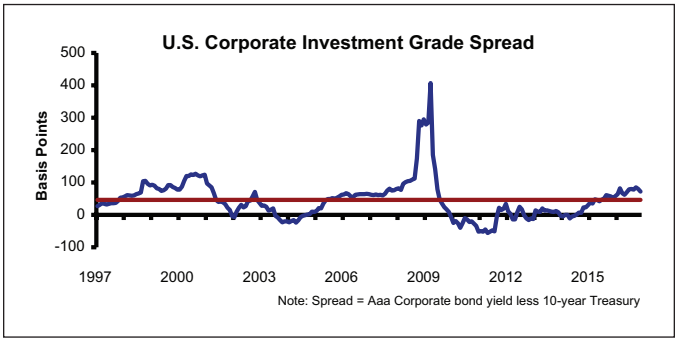


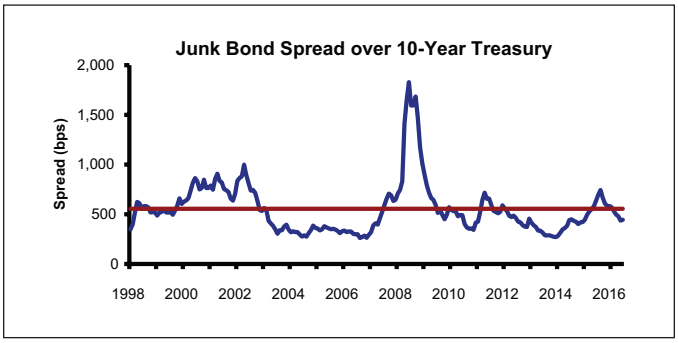
figure 164

As the European Central Bank (ECB) piles on quantitative easing (QE), European economies continue to languish due to excessive regulation, not the least of which is the euro (which is simply a politically imposed fixed exchange rate regulatory mechanism). Faced with growing criticism that QE in the U.S., Japan, and the EU have stimulated economic growth to the exact same degree to which it has also stimulated hair growth in those with male pattern baldness, QE apologists say that there is no conclusive evidence that QE does not work. While this burden shifting statement may technically be true, more importantly, there simply is no conclusive evidence it stimulates growth. But there is abundant evidence that QE distorts market behavior.

...there is abundant evidence that QE distorts market behavior. There is an equally complete absence of evidence that low interest rates stimulate economic growth.

There is an equally complete absence of evidence that low interest rates stimulate economic growth. Were this proposition true, Japan would have recorded the greatest growth in history for the past 26 years. Instead Japan has consistently registered almost zero (0.16% per annum) economic growth for 26 years. Similarly, growth in the U.S. and Europe would have been spectacular over the past eight years, rather than anemic, had low rates (or QE) stimulated growth.

Yet these obviously failed policies continue. And they are defended by the same people who continually



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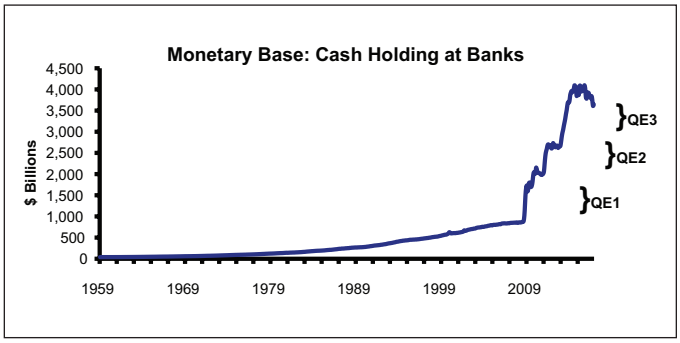

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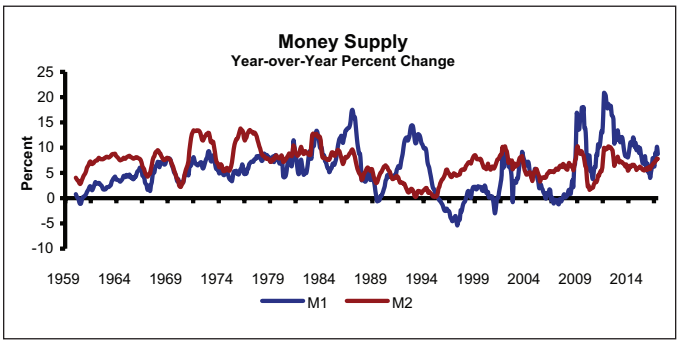

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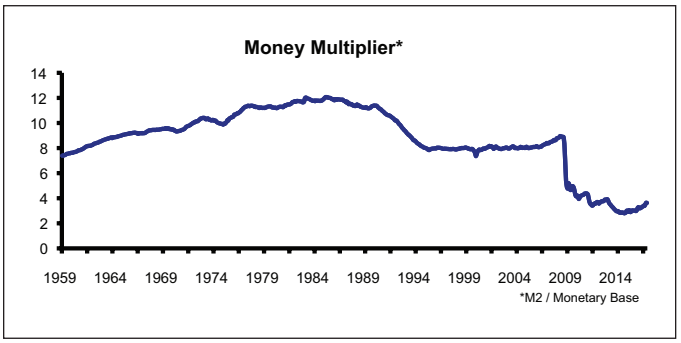

figure 168

assert that income inequality reduces economic growth, in spite of a conspicuous lack of evidence to support either assertion. In fact, the fastest growth in history has occurred in China over the past 30 years in the face of soaring income inequality.

A drug company seeking approval from the FDA arguing that their drug should be on the market simply because there is no conclusive evidence that it does not work would be laughed out of the regulatory hearing. This is particularly true if there were dangerous known side effects of the drug. And there certainly are dangerous known side effects of QE and near-zero interest rates, most notably the pricing distortion of assets favored by central banks and the de facto expropriation of interest income. These government policies have seriously distorted capital allocations, throwing sand in the machinery of economic growth while redistributing massive amounts of money.

Like WWI generals who continued to send their soldiers to the slaughter of machine guns and cannons, the world's central bankers subscribe to "zero rate" and QE group-think, ignoring both the failure of their policies to generate identifiable effects, as well as the success of hundreds of years of contrary monetary policy. It is as if LSD was an approved over-the-counter drug because we are not sure it does not help some people, even though many are temporarily and permanently harmed.

It is noteworthy that the central banks, including the Fed, not only consistently over-predicted economic growth, but they have also incorrectly predicted their own actions for the past eight years. Specifically, Fed member forecasts of future interest rates have all been wildly incorrect. That is, even they do not know what they are going to do! If interest rates were simply allowed to be determined by private buyers and sellers motivated by profit, instead of government officials uninterested in profits and all too interested in keeping rates low to allow deficit government spending, rates would be far more predictable. And more predictable interest rates at economically determined levels would promote economic activity. Instead we have had manipulated rates and rampant regulations, which have generated a recovery which is only 25-50% the strength of previous recoveries.

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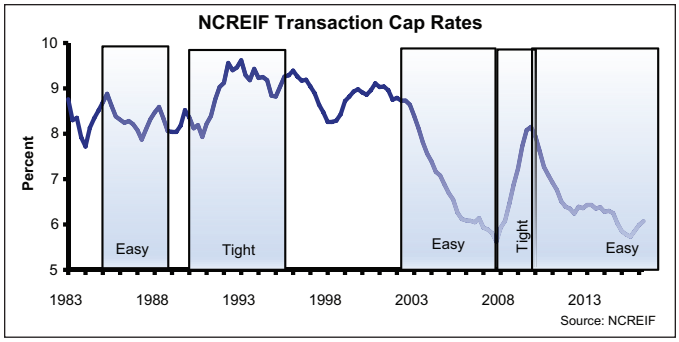
Both the Fed and the President's Council of Economic Advisors have for 9 years used their wonderful economic models to consistently predict that their marvelous monetary and fiscal policies would generate 35-100% greater economic growth than has actually occurred. Yet instead of questioning the relevance of their models and the efficacy of their policies, they continue with "more of the same" — all yielding the same hamstrung results.

One clear example of the distortions created by QE and the Fed's near-zero interest rate policy is that today's real estate investors are faced with low absolute cap rates, but wide cap rate spreads versus Treasury yields. Historically low cap rates scream, "caution, danger ahead", while wide cap rate spreads shout, "full-speed ahead." These contradictory investment signals are both

unprecedented and attributable to Fed policies. And they harm growth by raising uncertainty about how to invest. Imagine driving on an unfamiliar highway and seeing signs side-by-side with such contradictory messages. Should you speed up, slow down, or ignore them? At minimum, such contradictory signs would cause you to pause, only to find that drawing on your experience is useless as you have never before encountered this contradiction.



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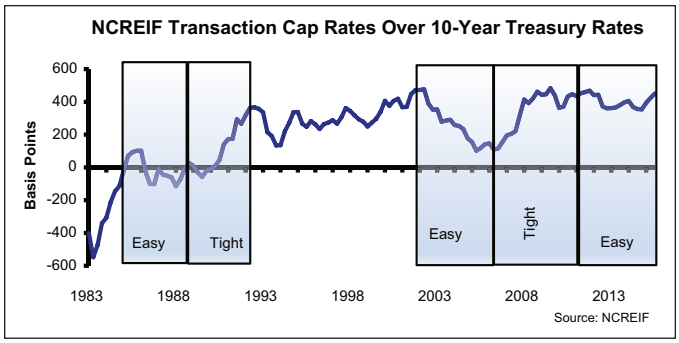
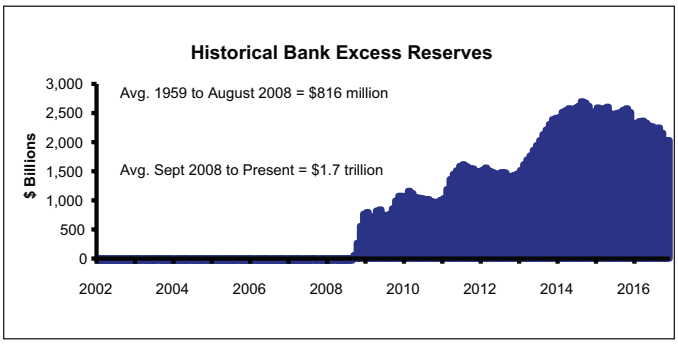


figure 170

There are several easy ways to see the drag on economic growth created by low interest rates. One is that the opportunity cost of holding cash (rather than investing) is basically zero. Thus, it is no surprise that as interest rates have fallen well below historic norms, cash holdings are more than $2 trillion above their long-term trend. Government actions — big and small — have consequences, and this is a $2 trillion consequence. If this excess cash had instead been placed into investments yielding just an 8% return on capital, it would be generating $160 billion in additional economic activity. That is, we are losing 90 bps of economic growth by policy-induced excessive cash holdings.



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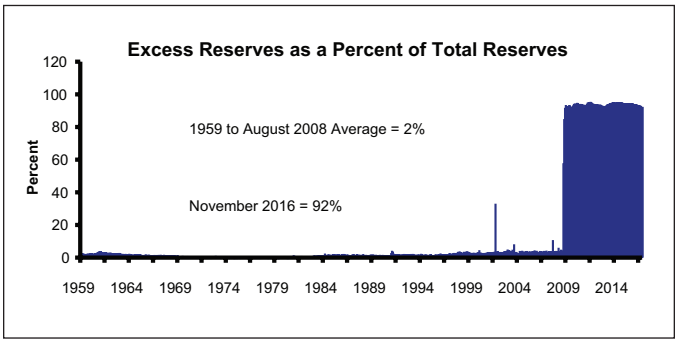
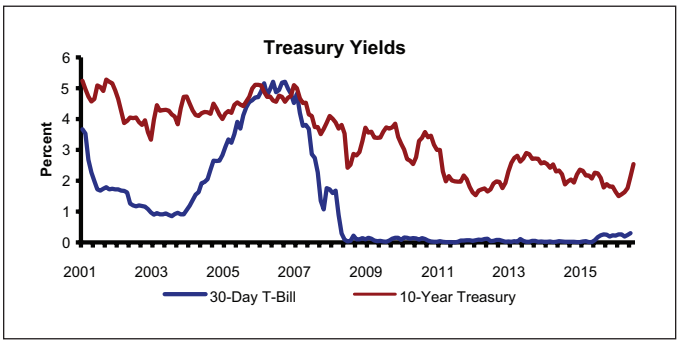


figure 172

Another visible distortion associated with artificially low interest rates is that money has been transferred from savers to borrowers. We estimate that since 2009, the Fed's low interest rate policies have deprived savers of at least $2.1 trillion. To put a face on this loss, think of the person who retired in 2009 and placed their middle class lifetime savings of $400,000 into 6-24-month bank CDs. After all, this is the typical way people invest. How much income have they received from their hard earned life savings over the last eight years? Due to Fed policy mandate, the answer is basically zero. They have suffered a de facto 99% tax on their savings income. Consider what would have happened if instead of the Fed reducing rates to zero for eight years, Congress had attempted to enact a 99% tax on short-term interest income and a 72% tax on longer-term interest income. And when asked for the rationale for such exorbitant tax rates on interest income, the supporting legislators answered, "to stimulate economic growth."

Do you seriously believe such an expropriative tax law would have ever been enacted, or that the legislators proposing such tax rates would have been re-elected? We do not think so. But that is exactly what the Fed has done and continues to do (along with central



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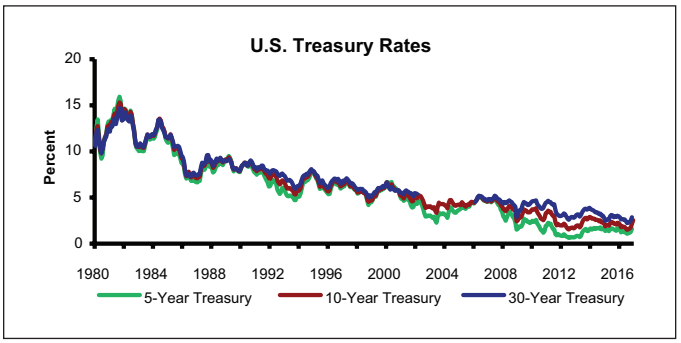

figure 174

bankers around the world) without any mandate to set tax rates. Bluntly stated, to date, the Fed has indirectly taxed away about $110,000 in short-term interest income from our hypothetical middle income retiree. And some of this expropriated income would have gone to support down payments by their children and grandchildren. It is not a surprise that if you tax a major source of single-family housing down payments at 72-99%, a lot fewer single-family homes are going to be purchased. If only 10% of the expropriated interest income was used for home mortgage down payments, it would support the purchases of about 200,000-400,000 single-family homes. The Fed's confiscatory interest income tax has tragically limited the recovery of the single-family sector, a sector which is a prime employer of Middle America.

The Fed's confiscatory interest income tax has tragically limited the recovery of the single-family sector, a sector which is a prime employer of Middle America.

Yet another unintended result of unprecedented activism by the Fed (and major central banks) is that massive QE purchases have resulted in staggering transfers to major banks. These transfers, which were decided by unelected central bankers, rather than via legislative bodies, are the largest transfer program in U.S. history. Literally trillions of dollars have been transferred by the Fed to money center banks without so much as a single legislative debate or vote.

We believe that it is not a coincidence that many decent middle class voters in the U.S. and other countries pursuing unprecedented monetary policies are disenchanted with the system. They do not understand what has caused their interest income to plunge to zero, restricted their job opportunities, and limited their access to homeownership, all while allowing banks that once teetered on the brink of existence to amass gigantic balance sheets. But they do know that it occurred and they had no "voice" in the process. When they complain to their elected representatives, the politicians say it is not their fault. So these voters are now reacting after eight years by saying, "I have never had such problems before, so throw all of the bums out!" Unfortunately, their

...middle class voters...do not understand what has caused their interest income to plunge to zero, restricted their job opportunities, and limited their access to homeownership, all while allowing banks that once teetered on the brink of existence to amass gigantic balance sheets.

10-Year Govt Bond Yields

	Dec. 2006	Sept. 2015	Jun. 2016	Sept. 2016	Dec. 2016
Switzerland	2.49%	-0.30%	-0.52%	-0.49%	-0.10%
Japan	1.65%	0.36%	-0.17%	-0.02%	0.02%
Germany	3.77%	0.77%	0.02%	0.00%	0.34%
France	3.81%	1.16%	0.40%	0.29%	0.75%
Ireland	3.76%	1.38%	0.74%	0.42%	0.89%
United Kingdom	3.82%	1.94%	1.21%	0.86%	1.35%
United States	**4.54%**	**2.29%**	**1.61%**	**1.67%**	**2.34%**
Spain	4.04%	2.12%	1.50%	1.06%	1.42%
Italy	4.70%	1.92%	1.45%	1.23%	1.88%
Poland	5.14%	2.94%	3.11%	2.84%	3.63%
Portugal	3.96%	2.70%	3.19%	3.12%	3.51%
China	3.06%	3.36%	3.02%	2.83%	3.09%
India	7.60%	7.75%	7.52%	7.05%	6.41%
Brazil	11.20%	5.66%	12.76%	12.16%	11.82%

Source: Bloomberg.com; Financial Times, Trading Economics.

figure 175

frustration — which has taken on some ugly manifestations in many countries — is the legitimate reaction of disenfranchised voters.

If the Fed and global central bankers had employed their historic policy framework of "short-term tweaks" rather than market dominance, a very different set of investment incentives would exist today, and there would be a very different set of market determined winners and losers. Middle America, especially most older households (and their beneficiaries), would have been big winners. Absent the ongoing extreme capital market distortions, capital would have flowed to those most capable of putting it to productive use, rather than sitting as excess cash and flowing to government coffers.

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The Taylor Rule is an empirical guideline based on historic evidence of what level of interest rates maximize growth while limiting inflation. While it is only a rule of thumb, it is reflective of historic U.S. patterns. As such, it is empirical rather than declaratory in nature, and while not perfect, it is directionally accurate. In fact, for four years, the Taylor Rule has indicated that interest rates should be 300-400 bps higher than current levels based on historical evidence. Yet central bankers continue to wing it, determined to demonstrate their diagnosis is correct — even as it kills the patient.

The Never-Ending Search for the Holy Grail of Bank Regulations

Bank regulators around the world continue their hopeless search for the Holy Grail of bank lending regulations. But they will never achieve this goal. This is because bank deposits are federally insured, and this insurance effectively eliminates depositor due diligence on banks. That is, banks are money managers who receive inflows, even when they invest very badly, as long as the federal government insures deposits. The result is that while banks are answerable to equity and debt capital providers, they are not answerable to their primary capital source: depositors. Add to this that the fractional reserve system allows banks to multiply their loans by roughly a factor of 7.5x. If your dominant capital source does no investment diligence, errors will be all too common, particularly if you can lend 7.5 times more than the money you have in your vault. It is for this reason that regulators attempt to regulate bank investment activities with risk weightings. The problem is that the combination of insured deposits and fractional reserves means that banks are money management firms with far too much money. Unfortunately, anything that regulators declare a "safe bank asset" in terms of risk-weighting will receive excessive bank capital, which in turn makes it risky. It is not just that bankers "game" the system, but more fundamentally that excessive capital flows into assets deemed "safe" by regulators, pushing pricing of these "safe" assets to the point where arbitrary static risk weightings do not accurately reflect the increased risk. The reverse is also the case, as bank assets that are declared as "high risk" will see declines in risk due to insufficient capital flows reducing their prices, resulting in a higher than warranted risk premium. This problem played out repeatedly prior to Basil risk weightings, and has now torched the first two Basil risk weightings. The only true solution is to eliminate federal deposit insurance and force those who want government repayment certainty to bid for government securities either directly or via pure government funds.

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Real Estate Capital Markets

The Linneman Real Estate Index (LREI) monitors the supply of real estate capital, as proxied by the aggregate flow of commercial real estate debt (the numerator), with the fundamental demand for space, as measured by nominal GDP (the denominator). Excluding the net real estate equity flows from the numerator modestly understates capital oversupply situations and overstates an undersupplied market. The LREI captures whether debt for commercial real estate is growing

more quickly or slowly than the economy. When the index is rising, it means that mortgage debt available for commercial real estate is rising more rapidly than the economy, and vice versa. The index is set to 100 with a base year of 1982, when the supply of real estate capital was roughly in balance with demand.

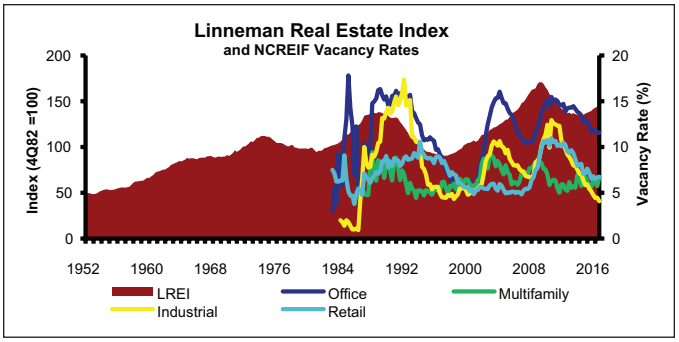

figure 176

The index rises when mortgage debt rises more rapidly than the economy grows ("easy money"), and declines when money is tight relative to economic growth. The LREI peaked at 171 in 2009, bottomed at 135 in 2013 as the Financial Crisis drove substantial deleveraging of commercial real estate, and increased over the last three years as banks loosened lending standards. The index increased to 145 in the third quarter of 2016, or by 3.7% year-over-year, indicating that a moderately "easy money" environment exists. However, lending for commercial real estate (other than multifamily), has tightened over the past several quarters.

We expect lending to continue to outstrip the growth of the economy, resulting in capital flows to real estate and strength in asset pricing for the next 2-3 years. But if you are planning to sell 3-4 years from now, you risk hitting the side of the mountain. When capital is being taken out of a capital intensive business, values go down far more than NOI goes down. If you are a long-term holder (10-30 years) and can see your way through the valleys, you will do quite well, but it will be a dangerous window for those with a 2-3-year investment horizon. So while, there is a lot of capital flowing, investors will have a difficult time exiting if the capital cycle reverses in 3-4 years.

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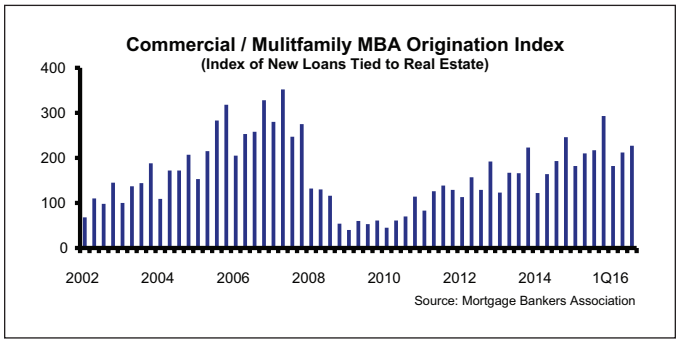
The bottom line is that the risk to investors has gone up notably in the last year or two, especially for short-term investors. Although the risk of a recession is no greater than it was a year or two ago, the supply pipeline of almost every product type in every market is up, with retail being the exception. That means, if there is a recession, not only will the downturn in demand hurt occupancy, but it will be in the face of a substantial pipeline of new product. In contrast, any drop in demand two years ago would have been alongside an essentially empty pipeline. As a result, the risk to NOI, values,



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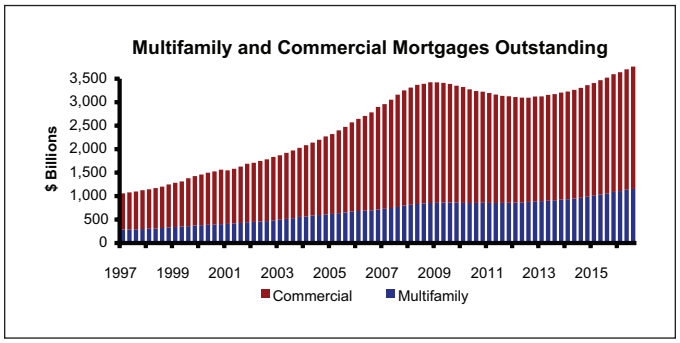

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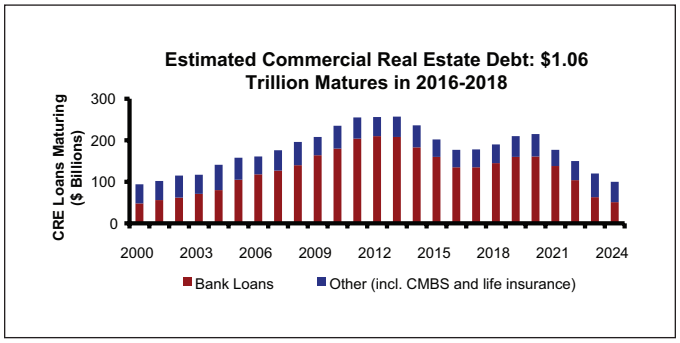


figure 179

and cash coverage have all increased significantly over the last two years, indicating that it is time to reduce financial leverage to offset this increased risk.

Commercial and industrial loans (primarily lines of credit to non-real estate businesses, secured by inventory and receivables) now exceed their previous highs, even adjusting for inflation. However, only companies with traditional collateral such as inventory and receivables are benefiting from the low interest rates. Many service and entrepreneurial firms, lack the asset base to support borrowing, meaning the increased lending to date has only benefited select firms.

Commercial and industrial bank lending standards were largely unchanged in the third quarter of 2016 based on the Federal Reserve's October 2016 survey of loan officers. Specifically, about 92.6% of the survey respondents indicated no changes in their lending standards to medium to large firms, while none "tightened considerably," 4.4% "tightened somewhat," 2.9% "eased somewhat," and none of the survey respondents "eased considerably," resulting in 1.5% tightening on net. Similarly, 92.5% of loan officers indicated no change in C&I lending standards to small firms (less than $50 million in annual sales), while 3% tightened somewhat and just 4.5% eased somewhat.

Bank loans as percent of potential bank lending capacity appear to have hit bottom, as seen in Figure 182. However, loan growth remains seriously restrained by the Fed's non-transparent stress tests using ever changing criteria. It is clearly bad social and economic policy to have binding non-transparent regulations with severe consequences. Such regulatory polices encourage extreme aversion to risk and excessive safety. Imagine if speed limits which are not posted or publicized, were ever-changing and were severely enforced. Just as citizens deserve to know the speeding rules by which they are expected to live, banks deserve to know the rules by which they are expected to do business.

Lending commensurate with the Fed's massive monetary injections over the past eight years has not occurred, as Fed stress tests have discouraged the very lending that quantitative easing (QE) was intended to spur. Nonetheless, banks are substantially increasing their C&I lending. Real outstanding C&I loans (2015 dollars) held by commercial banks have risen by 58.9% since their 2010 low, and by 16.8% versus the

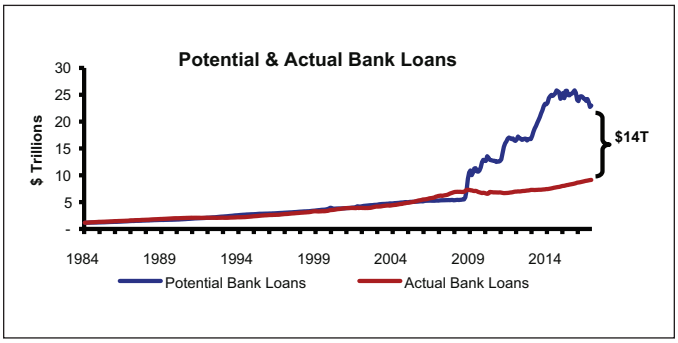


figure 181

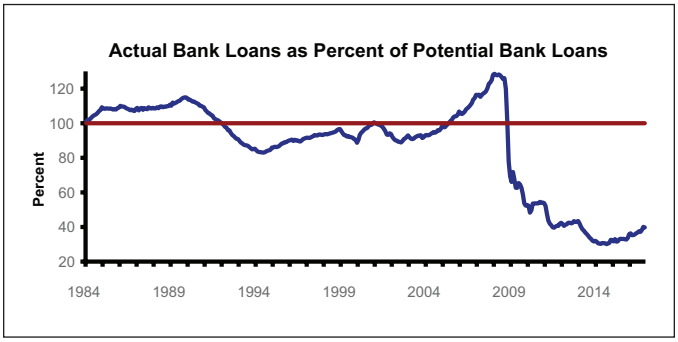


figure 182

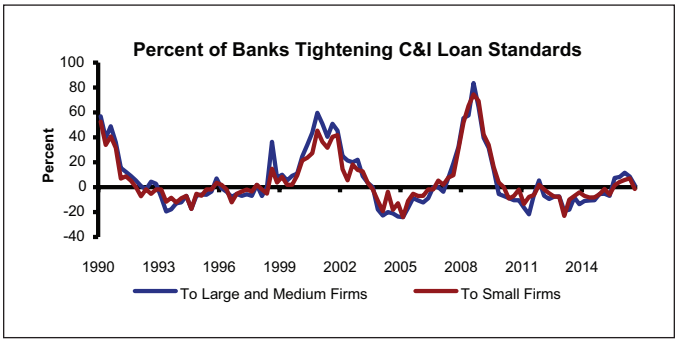
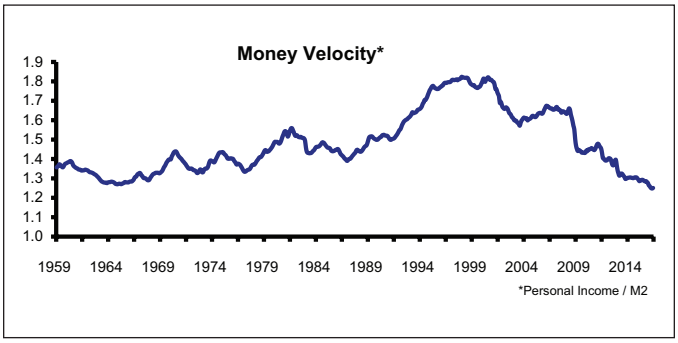


figure 180



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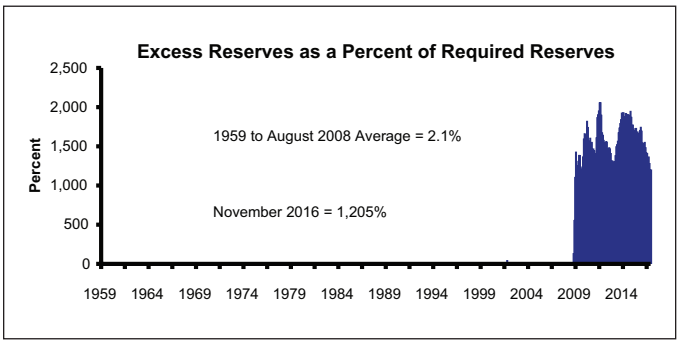
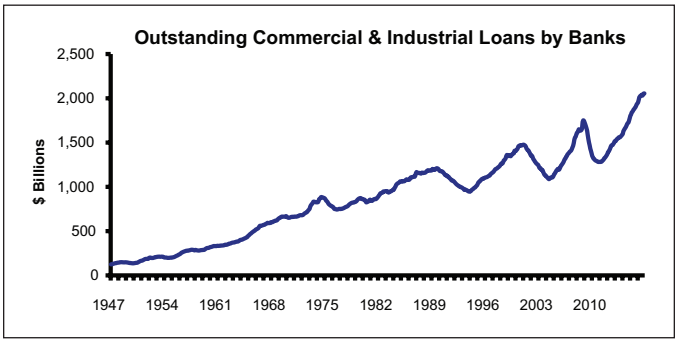


figure 184



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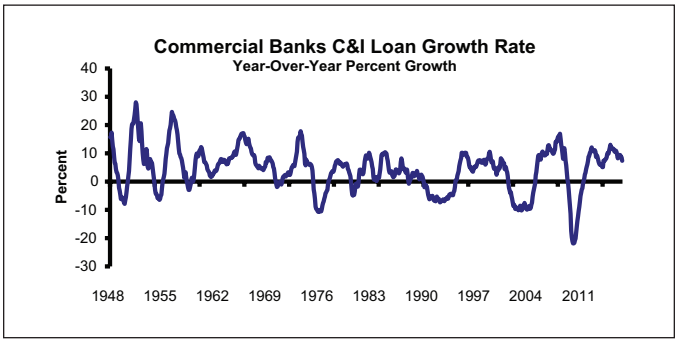

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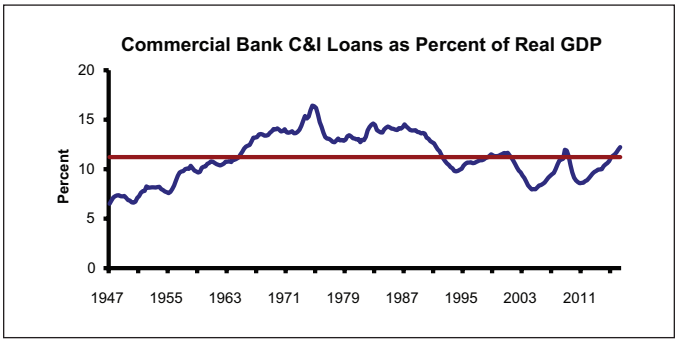
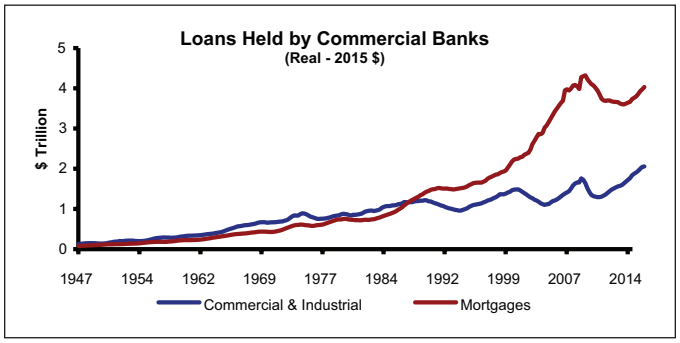


figure 187

pre-recession peak. They stood at over $2 trillion in the third quarter of 2016, up 7.8% year-over-year and reaching an all-time high in real terms. The long-term historical average (1947-present) ratio of C&I loans to GDP is 10.2%, but stood at 11% in the third quarter of 2016, just above its historical norm.

During the third quarter of 2016, real estate loans held by commercial banks edged up from the previous quarter and year, but are down from the 2009 high of $4.3 trillion (2015 dollars). Standing at just over $4 trillion in the third quarter of 2016, commercial bank



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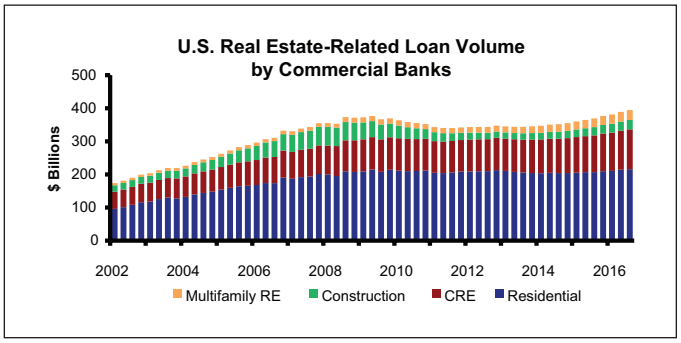

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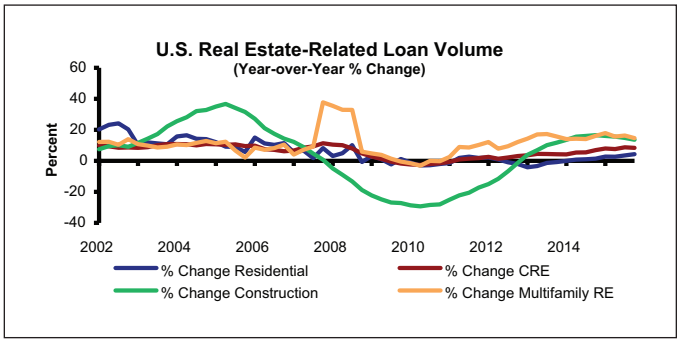
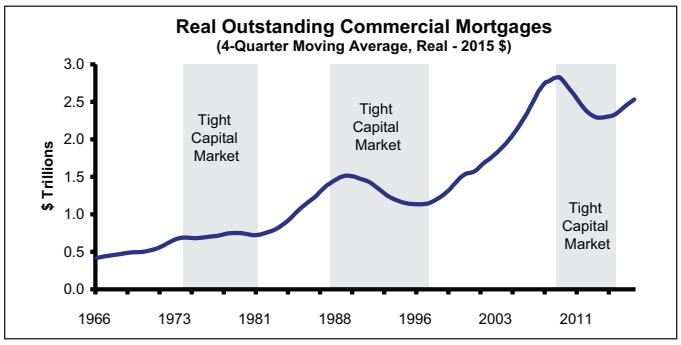


figure 190



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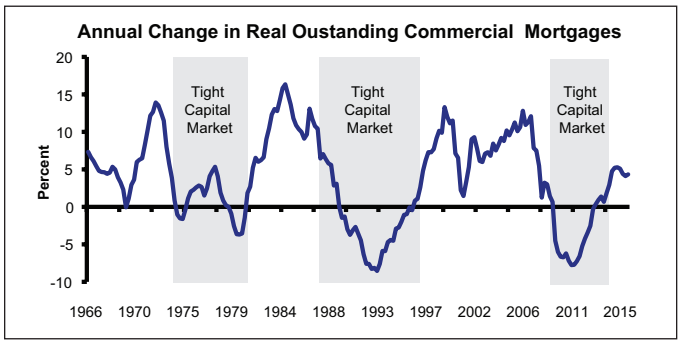
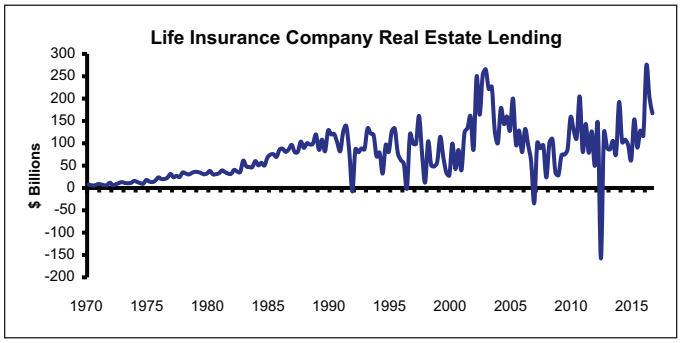


figure 192



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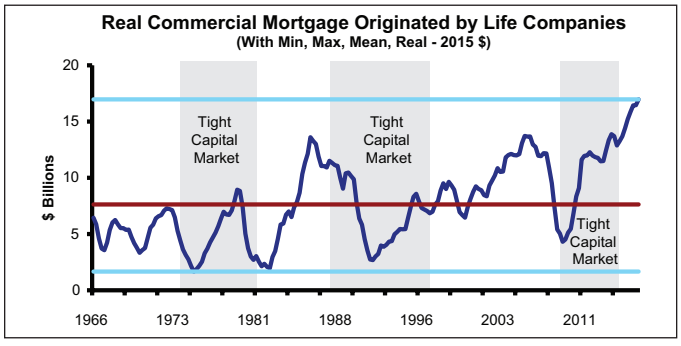


figure 194

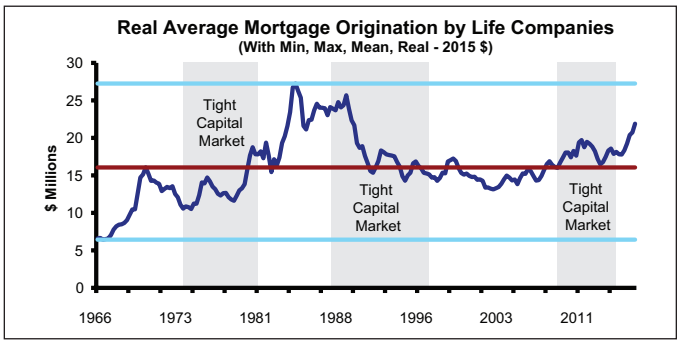
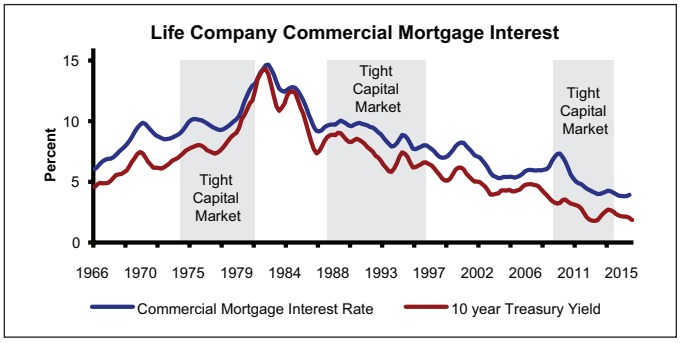


figure 195



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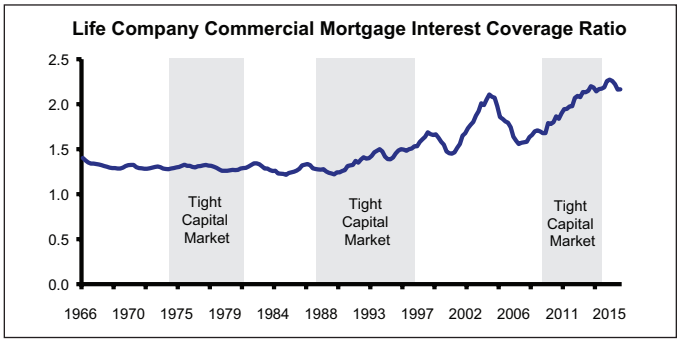

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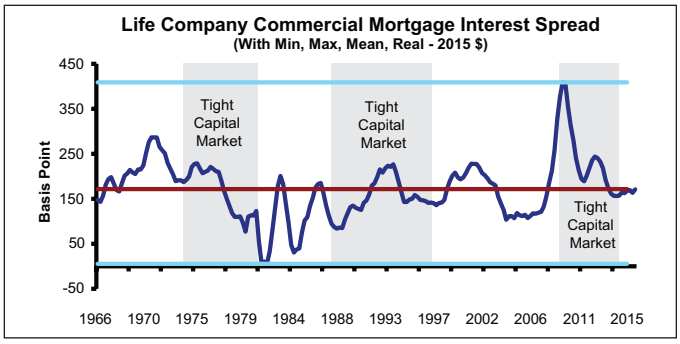

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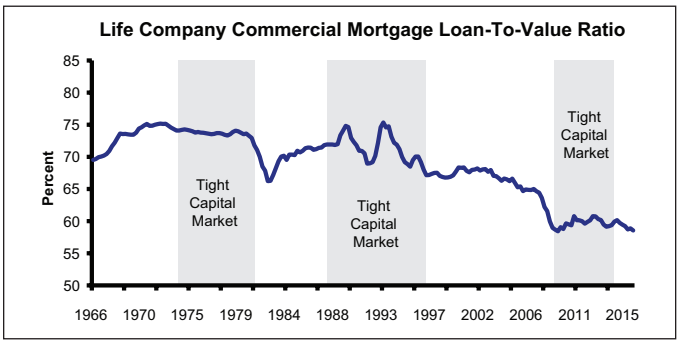

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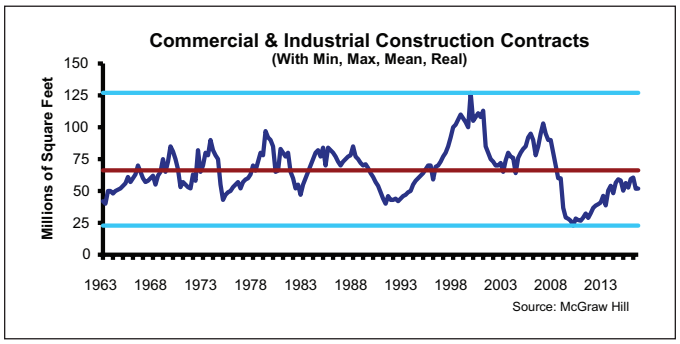

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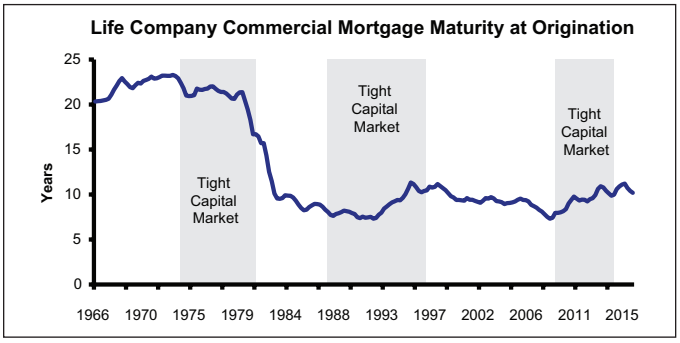

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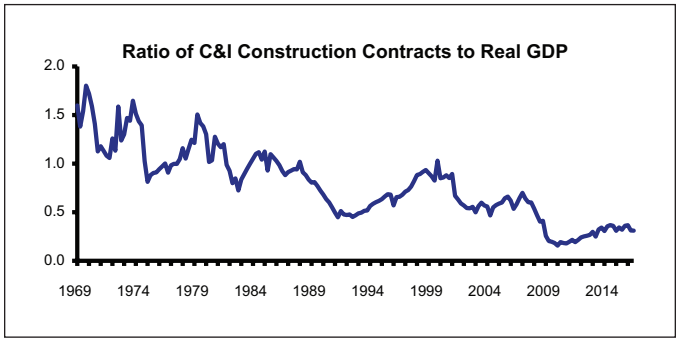


figure 202

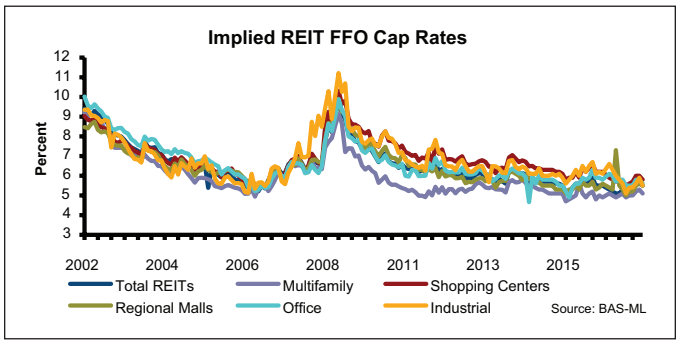
real estate loans have experienced a notable uptick after being relatively flat for several years after the Financial Crisis.

In comparison, real estate lending by life insurance companies tends to be much more volatile than commercial bank lending, as seen by a sharp spike in the first half of 2016. Life company commercial mortgage coverage ratios averaged 2.2x over the last four quarters through the third quarter of 2016, sitting just below the 2013 peak of 2.3x. Currently at 59%, life company commercial mortgage loan-to-value ratios have been on the decline since peaking at 75% in 1993.

Due to regulatory considerations in Basel III, construction lending is restrained, even in the strong multifamily sector. Year-to-date through September 2016, annualized commercial and industrial (C&I) construction contracts dropped by almost 10%, to about 615 million square feet, versus 656 million square feet in calendar-year 2015. This is compared to the 2010 low of 315 million square feet and the long-term average (1963-2001) of 795 million square feet per year. After rising, for the last five years, the ratio of C&I construction contracts to GDP has flattened and remains 60% below average.

Shadow banking has grown in the real estate sector over recent years. However, to a large extent the proliferation of shadow banks is simply filling the vacuum resulting from the demise (to avoid regulatory scrutiny) of GE Capital, which for nearly 3 decades was the go-to non-bank source for real estate capital. As regulatory restrictions on bank lending for land and development have proliferated, banks have retreated from these activities. The result is that non-bank banks have become the primary capital source for large swathes of real estate development.

REIT Implied Pricing. According to Bank of America/Merrill Lynch data, the average REIT implied cap rate peaked at 9.8% in February 2009 and has since fallen to 5.5% in December 2016, in line with the 2007 low of 5.2%. By sector, REIT implied cap rates hit recessionary highs of 9.9% for office properties, 9.1% for multifamily properties, 10.3% for shopping centers, 9.9% for regional malls, and 11.2% for industrial properties. From those respective highs through mid-December 2016, rates have fallen to 5.6% (-430 bps) for office properties, 5.1% (-400 bps) for multifamily properties, 5.8% (-450 bps) for shopping



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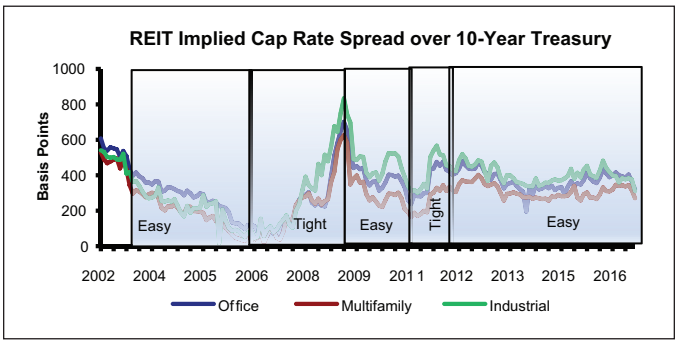


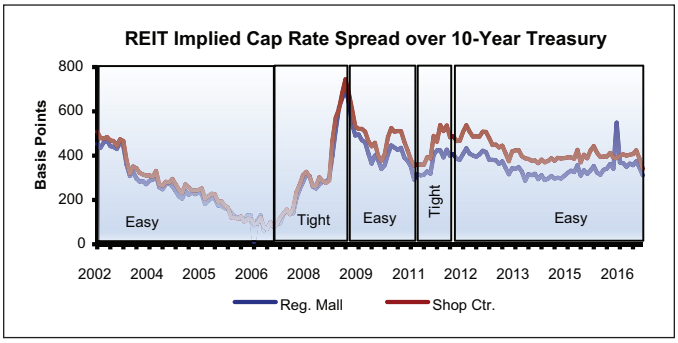
figure 204

centers, 5.5% (-440 bps) for regional malls, and 5.5% (-570 bps) for industrial properties.

REIT implied cap rate spreads over the 10-year Treasury peaked in February 2009 at 695 bps for overall REITs, 626 bps for multifamily, 745 bps for shopping centers, 703 bps for regional malls, 702 bps for office, and 835 bps for industrial. At that time, spreads were anywhere from 360-480 bps above long-term averages. By comparison, current cap rate spreads over the 10-year Treasury have significantly narrowed, and stood at 310 bps for overall REITs, 270 bps for multifamily, 340 bps for shopping centers, 310 for regional malls, 320 bps for office, and 310 bps for industrial in December 2016. In December 2016, the multifamily sector implied cap rate spread was in line with its historical average, while shopping center, regional mall, and office spreads were each about 10-20 bps below average, and industrial cap rate spreads were 50 bps below average.

Private Pricing. Prior to the Financial Crisis, real (2015 dollars) average transaction pricing peaked at $332 per square foot for office properties, $84 per square foot for industrial properties, and $217 per square foot for retail. Real multifamily values reached $132,000 per unit, while hotels traded at an average of $180,000 per key.

During the recession, real values dropped to 10-year lows for office ($145 per square foot), industrial ($48 per square foot), retail ($142 per square foot), multifamily ($81,000 per unit), and hotels ($64,000 per key). In October 2016, office properties averaged $283 per square foot, implying a recovery rate of 74% of the real value lost during the recession. Industrial and retail pricing stood at about $83 and $216 per square foot in October 2016, implying respective price recovery rates of 101% and 99%. Current retail pricing reflects



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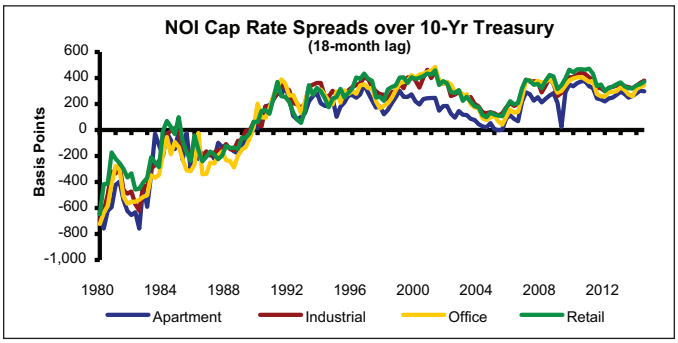
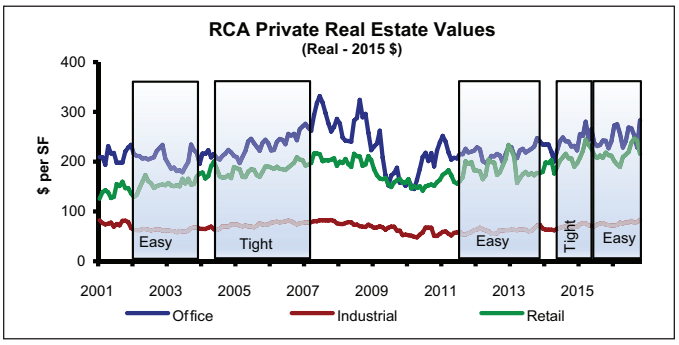


figure 206

a decline from $247 per square foot in August. Real multifamily pricing was $144,000 per unit, while hotels traded at an average of $126,000 per key in October. These levels reflect 117% and 59% price recovery rates relative to values lost during the recession, respectively. However, multifamily and hotel pricing had reached $162,000 per unit and $157,000 per key, respectively earlier in 2016, but have since reverted to current levels.

On a year-over-year basis, unit pricing growth was led by office (17%), followed by industrial (13%), and multifamily (12%), while the retail and hotel sectors



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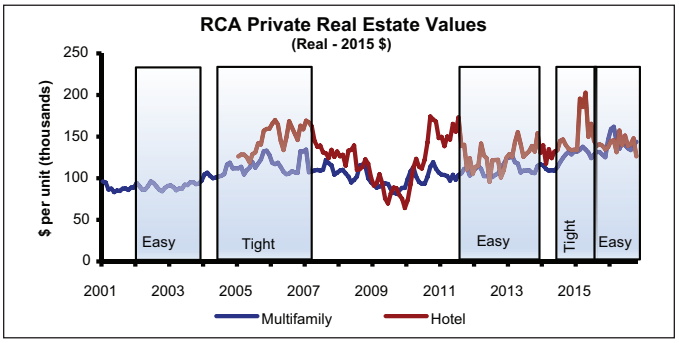


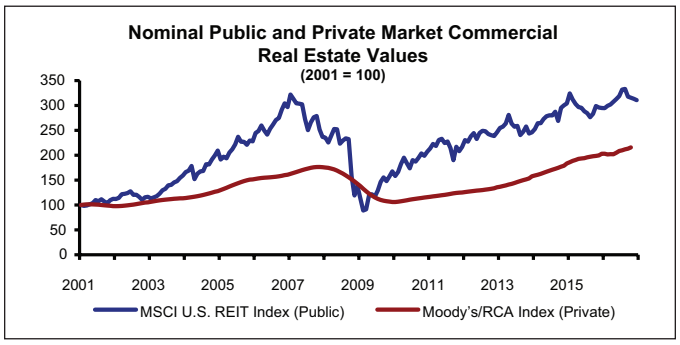
figure 208

saw respective year-over-year pricing declines of 1% and 9%.

The Morgan Stanley U.S. REIT Index bottomed at 326.9 in February 2009 and stood at 1,142 in December 2016, meaning that nominal values remain just 4% below the pre-recession peak of 1,183 in 2007. In real terms, market prices are about 18% below the previous peak for REITs, but 6% above the peak for private properties.

Research indicates that movements in REIT cap rates lead private cap rates by 12-18 months. In contrast, REIT prices reflect contemporaneous market conditions. The leading indicator aspect of REIT pricing means that private real estate owners should keep an eye on REIT pricing, in order to ascertain whether they are overpaying for real estate on Main Street. Over the past 18 months (June 2015 to December 2016), REIT implied cap rates declined by 30 bps for both the overall REIT universe and office REITs, 20 bps for regional malls, 60 bps for shopping centers, and 100 bps for industrial, while multifamily cap rates

...REIT cap rates lead private cap rates by 12-18 months.



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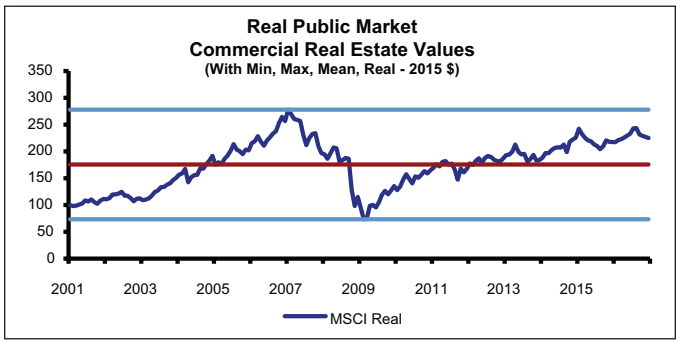

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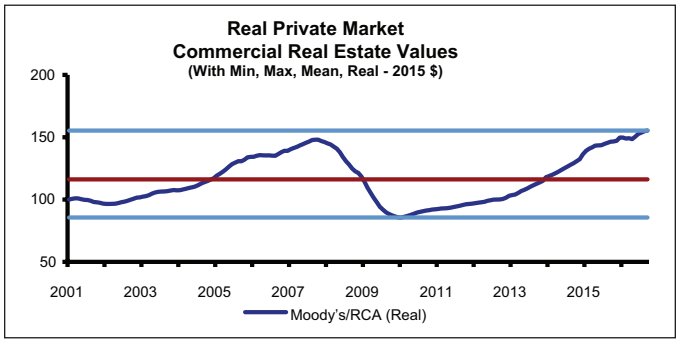

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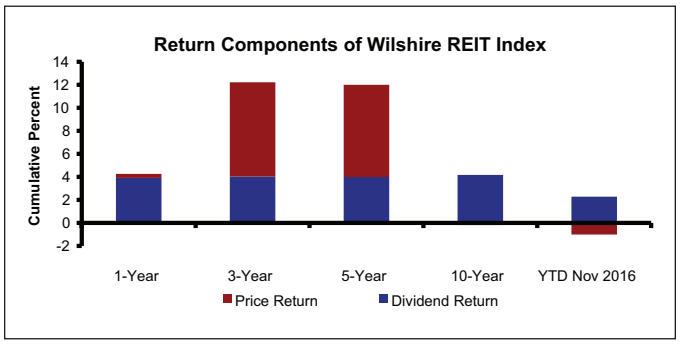

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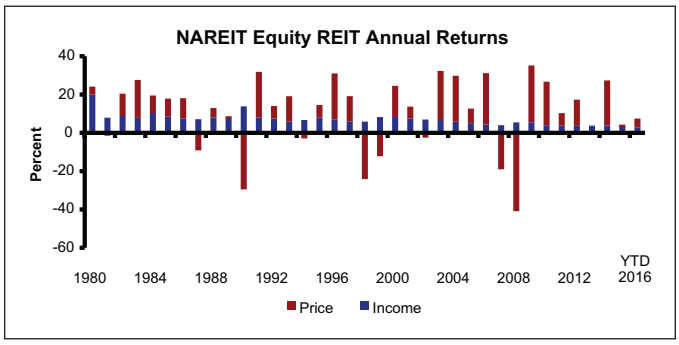

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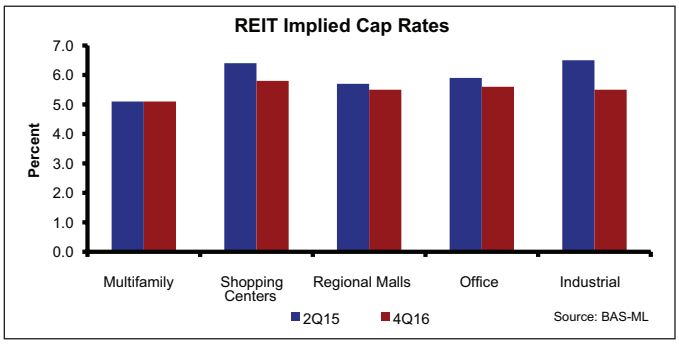

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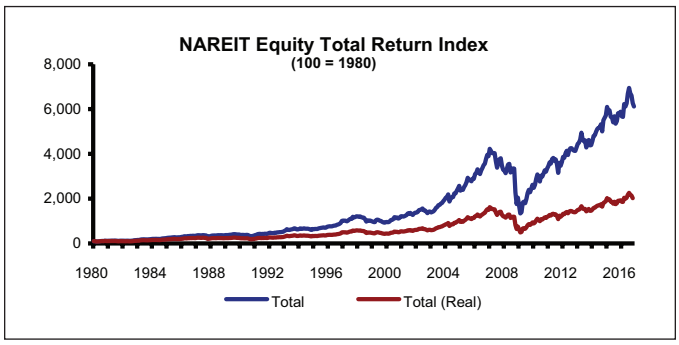

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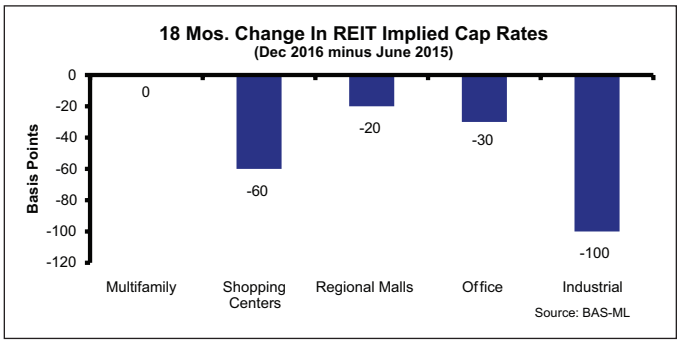

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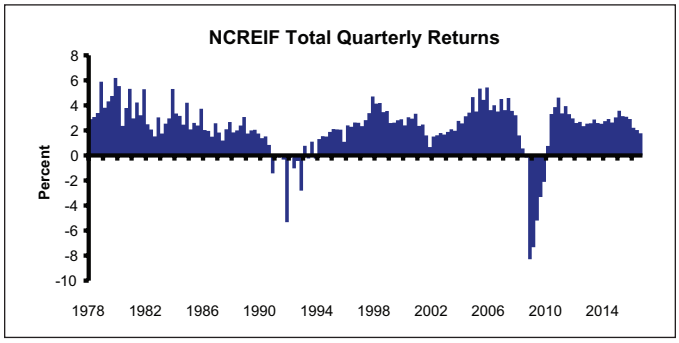
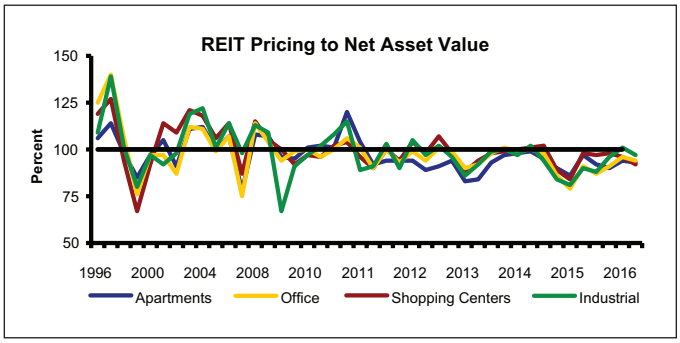


figure 215

were flat. These changes in REIT implied cap rates represent corresponding changes in asset values for office (+5.1%), regional malls (+3.5%), shopping centers (+9.3%), and industrial (+15.4%).

REIT price-to-net asset value (NAV) peaked at 110% in June 2011, with the highest ratio reflected in apartment sector pricing (120%). As of December 2016, price-to-NAV ratios were below their respective long-term averages for all REIT sectors. Price-to-NAV ratios stand at 93% for total (vs. long-term average of 98%), 93% for apartments (vs. 97%), 91% for shopping centers (vs. 100%), 88% for regional malls (vs. 96%), 94% for office (vs. 98%), 97% for industrial (vs. 99%), and 96% for self-storage (vs. 103%). Since REIT pricing is a leading indicator of private real estate pricing, price-to-NAV ratios below 100% are a signal that investors are concerned about current property market pricing.

In evaluating the relative value of REITs to other asset classes, we use a long-term "beta" of 0.6 for REITs. We use the 10-year moving average of CPI as our proxy for long-term inflation and hence, for long-term REIT dividend growth. Using these assumptions, a capital asset pricing model indicates that REITs are



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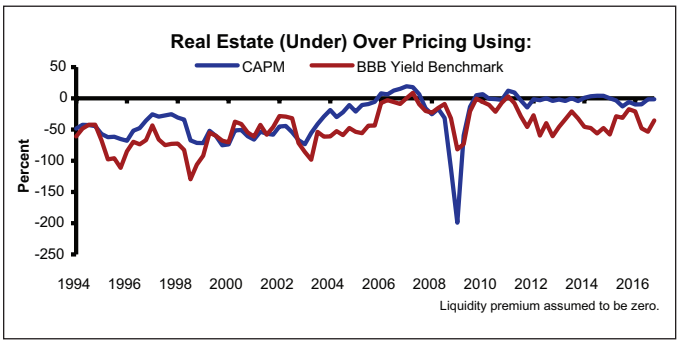

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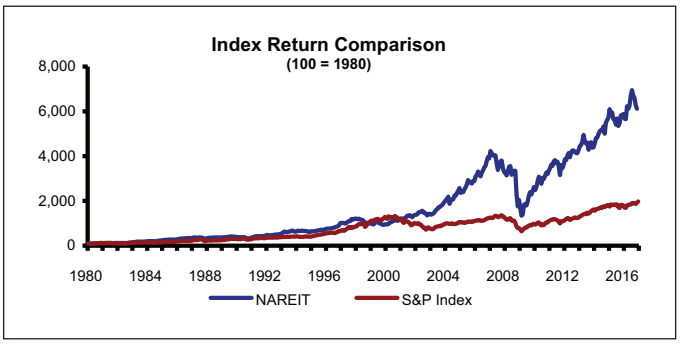

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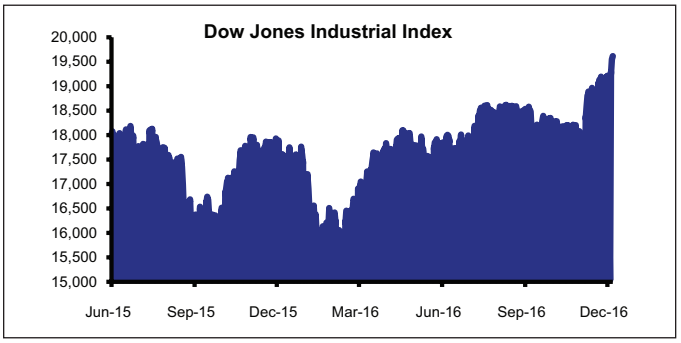
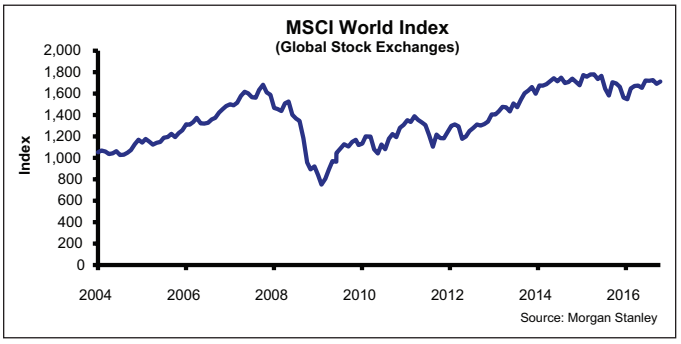


figure 221



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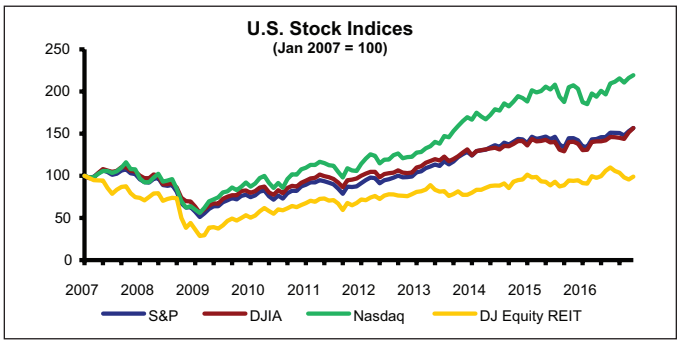

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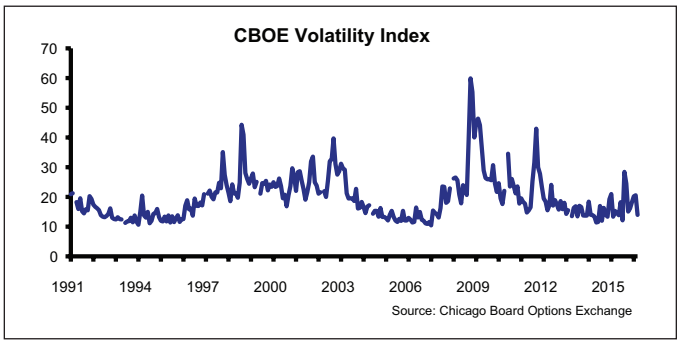


figure 224

fairly priced to slightly under-valued by just 1.5% (Figure 219) in mid-December 2016.

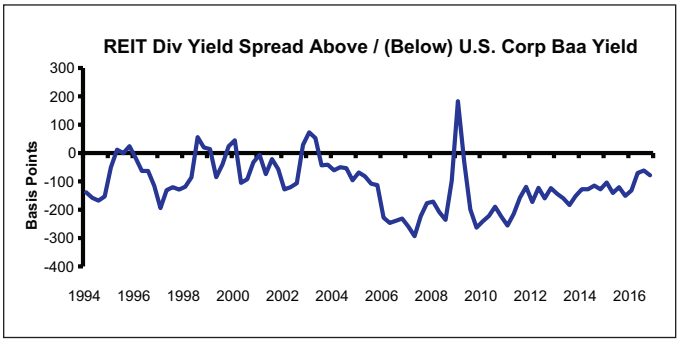
Comparing REIT dividend yields to BBB (Baa) bond yields indicates that REITs are significantly undervalued by 35% relative to other assets. This is in comparison to 17% and 53% undervalued in both the previous year and quarter, respectively. As of mid-December 2016, the REIT dividend yield was 82 bps below the average U.S. corporate Baa bond yield of 4.7%. This is in comparison to the historical spread (since 1993) of 109 bps below the Baa yield. Once again, however, Fed manipulation distorts this measure. REITs traded at an adjusted funds from operations (AFFO) multiple of 20.1x, versus the historical average of 16x.

U.S. CMBS originations slowed significantly in 2016. After closing $99.8 billion in 2014, $96.1 billion in 2015, only $69 billion closed on an annualized basis year-to-date through November 2016.

The wall of CMBS maturities through 2018 can be easily offset by increased bank lending. Over this time, an estimated $140 billion of CMBS are maturing, versus perhaps $130 billion of new CMBS issuance over the same period. This means there will be a gap of roughly $10 billion in net CMBS over the next 2.25

Real Estate (Under) Pricing as of December 8, 2016						
		Long-Term Annual Dividend Growth				
		1.50%	1.75%	2.00%	2.25%	2.50%
BETA	0.5	-6.7%	-14.6%	-23.7%	-34.4%	-47.1%
	0.6	7.9%	2.2%	-4.4%	-11.9%	-20.6%
	0.7	19.1%	14.6%	9.7%	4.1%	-2.2%
	0.8	27.8%	24.3%	20.4%	16.1%	11.3%

figure 225



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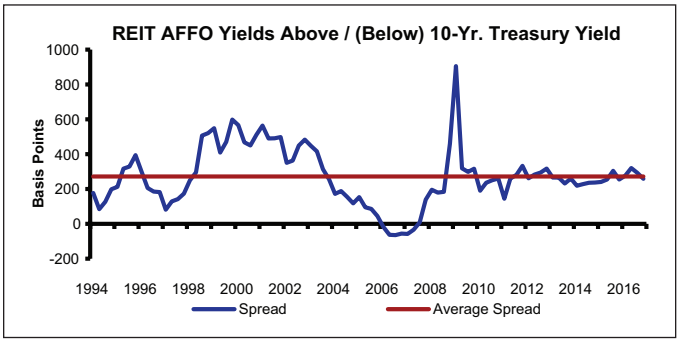
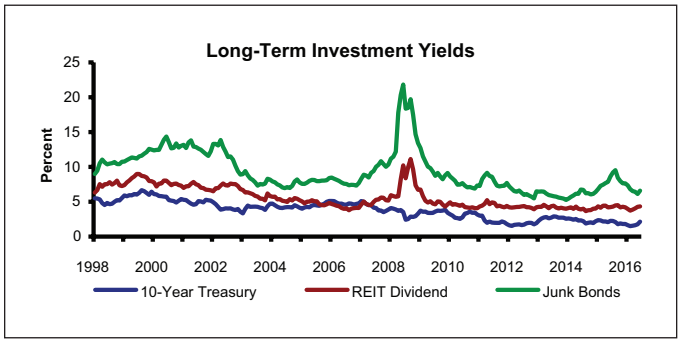


figure 227

years, but the annual amounts maturing only makes up 0.4-2.9% of total commercial and multifamily mortgage debt outstanding. As a benchmark, Citi and JP Morgan each have more than $300 billion of excess capital to lend, while the banking system as a whole has nearly $3 trillion of excess capital. If commercial real estate loans were to only receive 5% of this excess capital over the next two years, it represents $150 billion, which is 1,500% of the CMBS funding gap. On top of this, private equity funds currently have

...private equity funds currently have roughly $250 billion of equity dry powder, and foreign capital sources are roughly $2 trillion under-invested in U.S. real estate.



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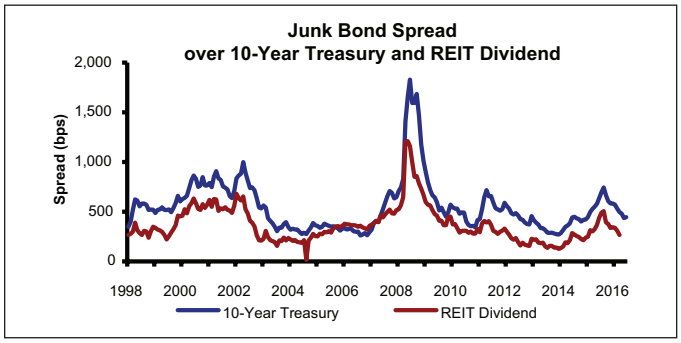

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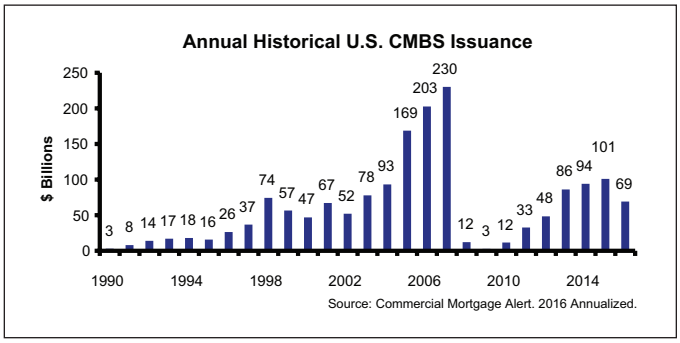

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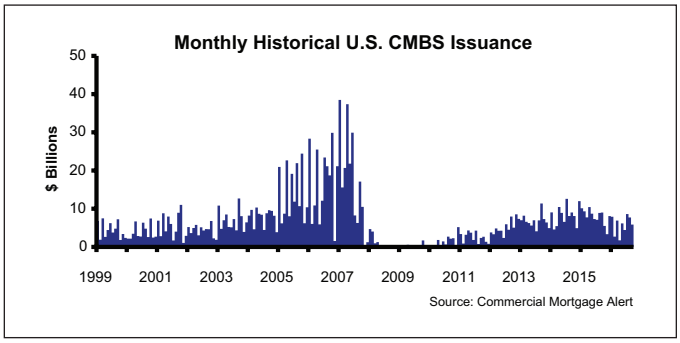

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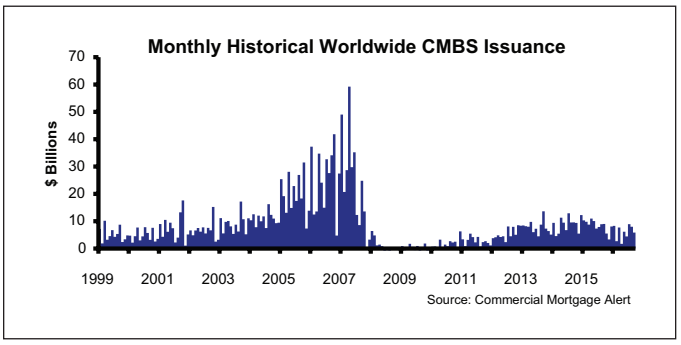

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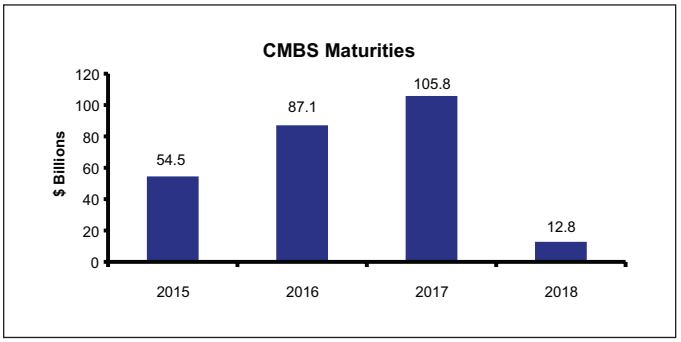

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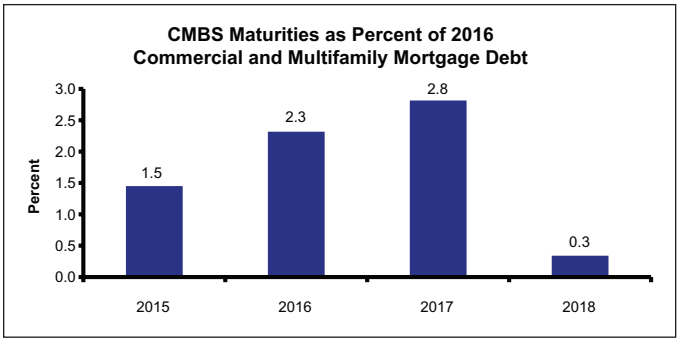

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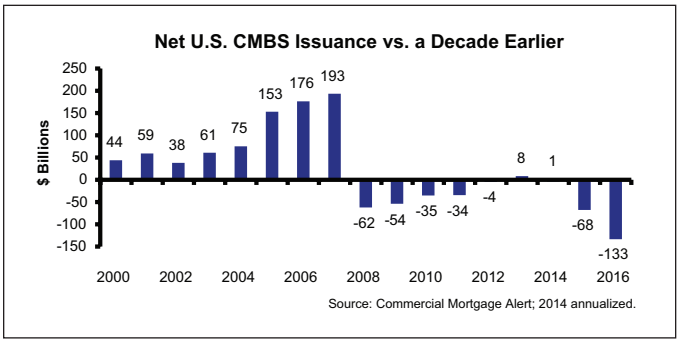

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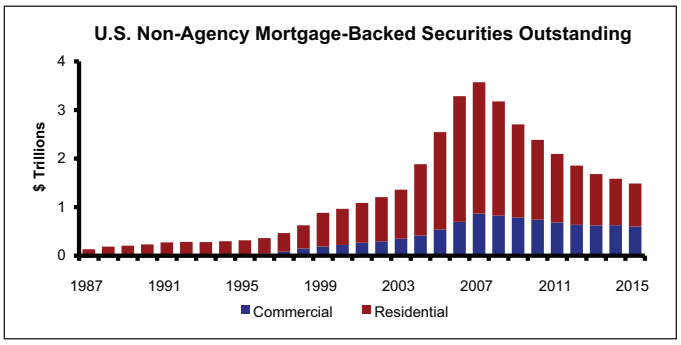

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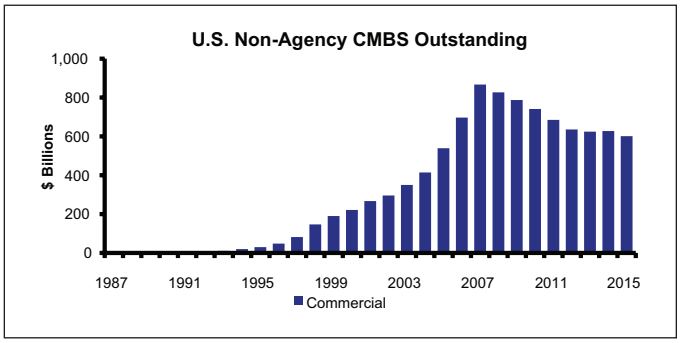

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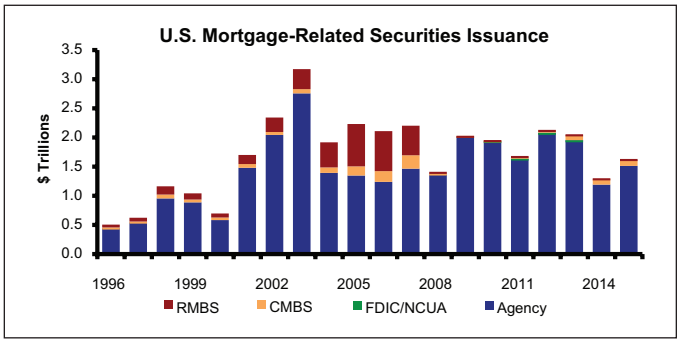

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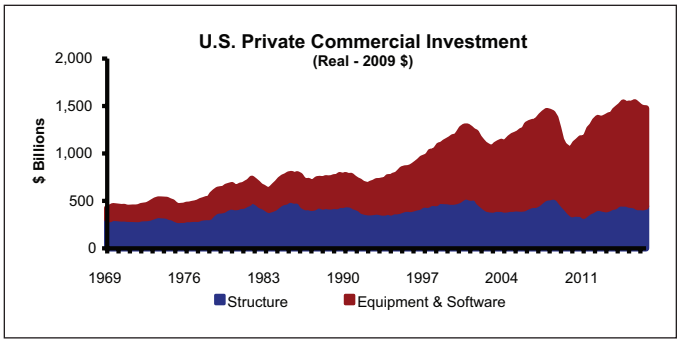


figure 239

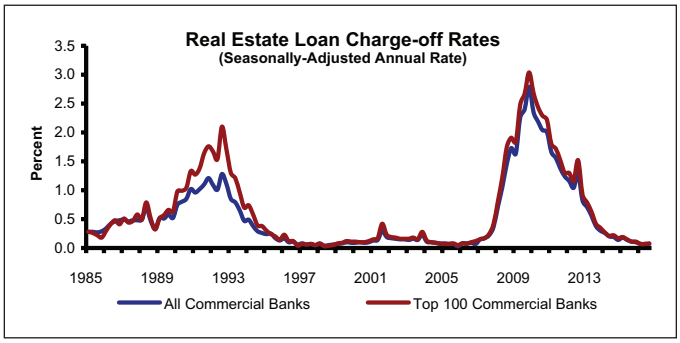
roughly $250 billion of equity dry powder, and foreign capital sources are roughly $2 trillion under-invested in U.S. real estate. Thus, there is plenty of capital available to fill the CMBS gap in aggregate. The problem is that most of this capital will focus on higher quality products in the 6 major U.S. markets, forsaking assets outside of this sweet-zone.

Private equity funds and institutional investors increasingly concentrate on assets with the highest liquidity, even if they are long-term holders. The result is cap rate compression in select markets and products, with the vast majority of U.S. properties relegated to largely localized capital sources. This has created a situation where moderately leveraged non-institutional properties offer high cash-on-cash yields to owners who are willing to forgo liquidity (or perceived liquidity). These investors can lock-in today's absurdly low (though rising) interest rates at cap rates which generate very attractive spreads. While these investors cannot expect to quickly sell their properties, the high cash flow yields combined with steady debt amortization provide a very attractive risk-adjusted return for investors who do not require liquidity.

Alternatively, investors who limit their focus to the institutional markets will have relatively attractive liquidity, but at the cost of much lower cash returns. For such investors, higher leverage is possible but at the cost of wiping out cash flow (particularly after realistic reserves for capital expenditures and leasing commissions) due to low cap rates.

At $487 billion, real annualized financial sector corporate profits rebounded in the third quarter of 2016, increasing by 11% and 9% quarter-over-quarter and year-over-year, respectively. Commercial bank charge-off rates for all real estate loans dropped to a negligible 0.07% in the third quarter, from a high of 2.8% in 2009, and back to pre-recession levels. Mortgage delinquency rates continue to decline as well. The Mortgage Bankers Association reported that second quarter 2016 (latest available) delinquency rates for commercial and multifamily loans declined over the last three months for CMBS issuers (-3 bps to 4.04%), Freddie Mac (-2 bps to .02%), and banks and thrifts (-7 bps to 0.66%), but increased for life companies (+5 bps to 0.11%) and Fannie Mae (+1 bps to 0.07%). According to Moody's Delinquency Tracker, CMBS delinquency rates are on the rise again. They peaked at 10.1% in July 2012, hit a low of 4.7% in March 2016, and stood to 5.7% in October 2016 after increasing for seven consecutive months. In comparison, the long-term average (2001-present) CMBS delinquency rate is 3.9%, so it is substantially above average, and rising.

Overall commercial mortgage delinquency rates peaked at 8.8% in the second quarter of 2010, but dropped precipitously to a 25-year low of 0.87% as of the third quarter of 2016, including a 29-bp decline over the last year. In comparison, at 4.3%, residential mortgage delinquency rates are also on a steep decline from the 2010 peak of 11.3%.



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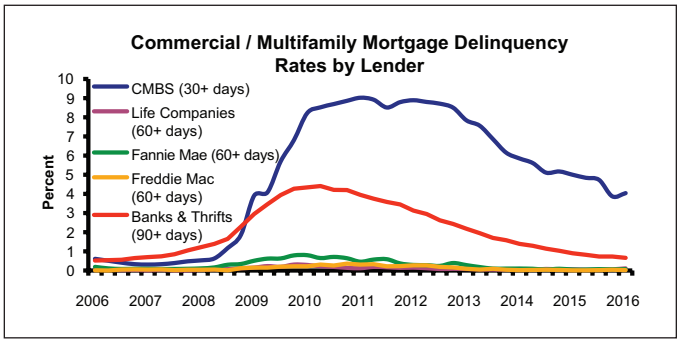

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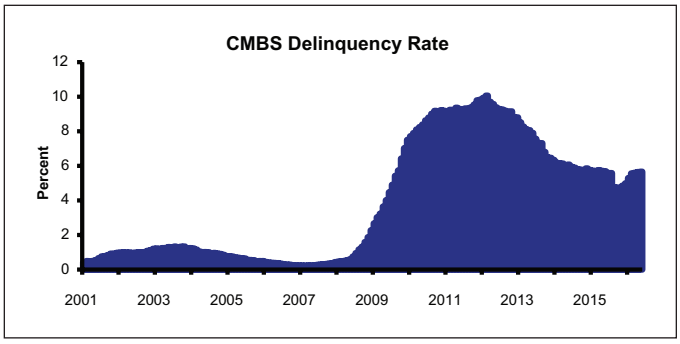

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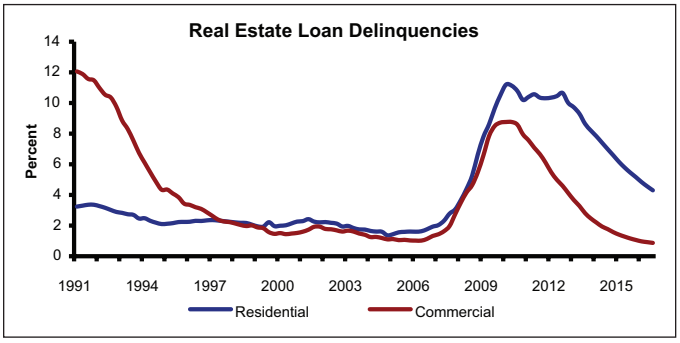

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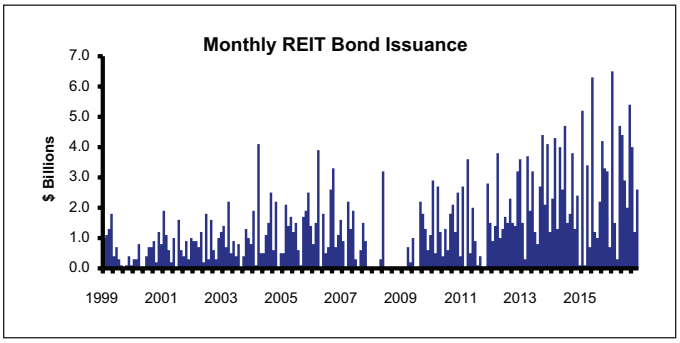

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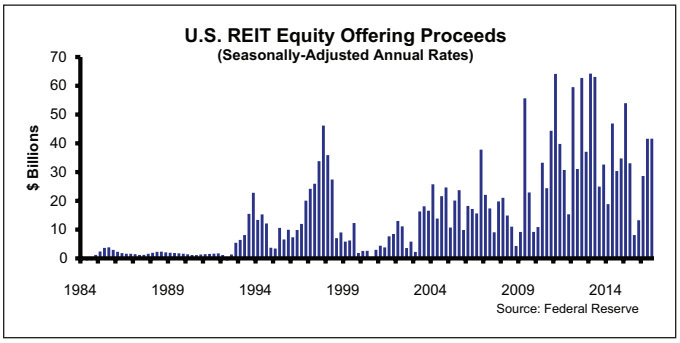

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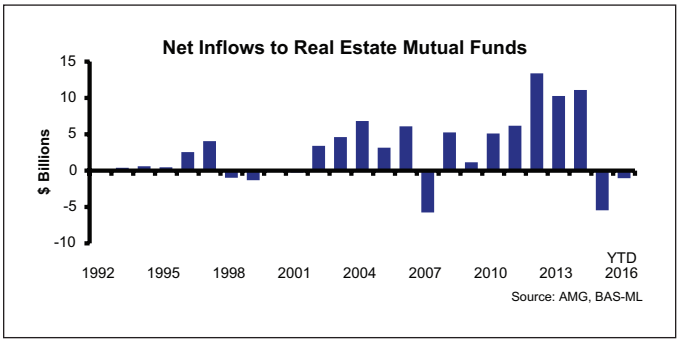


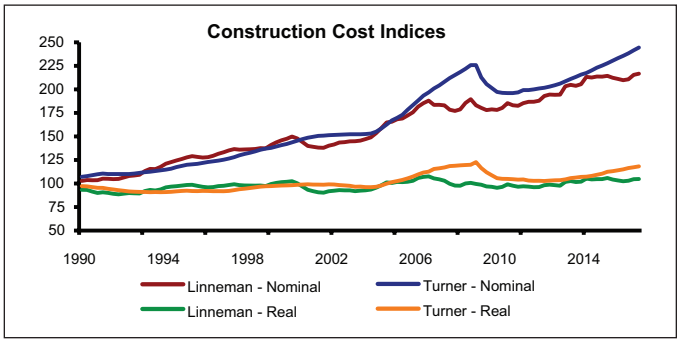
figure 246

During the trailing 12 months through November 2016, REITs raised $36.2 billion in unsecured bonds. This is about $5.3 billion (17.2%) more than issuance during the previous 12-month period. REIT equity offerings totaled $31.3 billion during the trailing four quarters through the third quarter of 2016, or 4% below the $32.5 billion raised during the prior four quarters.

Construction Cost Trends

The Linneman Construction Cost Index (LCCI) reflects a hypothetical building consisting of lumber (5%), concrete (5%), gypsum (10%), iron and steel (10%), labor (50%), and land (20%). We track the costs of these components (except land) using producer price indices from the U.S. Bureau of Labor Statistics. For land, we set the 1995 base value to 100 and assume that it has increased by CPI (all goods) over time. We add up all of the nominal values of the component indices to arrive at the nominal LCCI, which is converted to a real basis using CPI.

In comparison, the Turner Building Cost Index (TBCI), published by Turner Construction, tracks the overall cost of construction on a national basis, taking into account major cost categories such as "material



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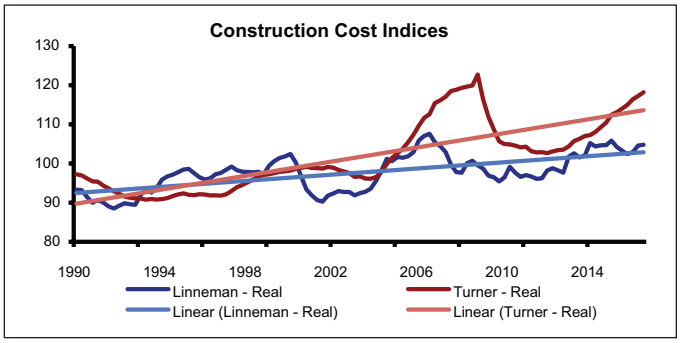


figure 248

prices, labor rates, productivity, and the competitive condition of the marketplace." As with the LCCI, we convert the TBCI to a real basis using CPI. Fitting a linear trend line to each series, both real Indexes are above their respective trends, but the Turner premium over trend is much greater.

Through the third quarter of 2016, on a real basis, the Turner Index (1.3%) has exhibited a significantly higher 20-year compounded annual growth rate compared to the LCCI (0.4%), with the differential widening over the last 10 years. The real LCCI increased by a total of 2.7% over the last three years and 1.0% year-over-year, but declined by 0.2% quarter-over-quarter.

In real terms, through the third quarter of 2016, the Turner Index, which experienced a higher spike in 2009, increased by 11.2% over the last three years, by 3.7% year-over-year, and by 0.8% quarter-over-quarter. The most notable increase in construction cost factors was due to the 4.3% price increase in lumber over the last year.

After five years of declining prices, iron and steel reversed course in the second quarter of 2016 and continued to increase with 1.6% quarterly growth in the third quarter. However, year-over-year (-0.5%) and 3-year (-14.2%) pricing of iron and steel continued to register declines. Gypsum, which has been on a steep ascent since 2007, saw a 0.9% decline in the third quarter. In contrast lumber, concrete, and labor costs all increased over the last quarter, year, and 3-year period.

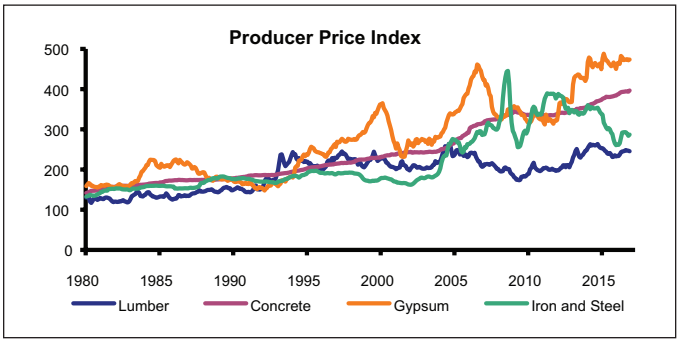


figure 249

Change in Cost Indices Through 3Q16

	Y/Y	Q/Q	Over 3 Yrs	20-Yr CAGR
LCCI (Nominal)	2.6%	0.6%	6.3%	2.5%
LCCI (Real)	1.5%	0.2%	3.2%	0.4%
Turner Index (Nominal)*	4.8%	1.2%	14.6%	3.4%
Turner Index (Real)*	3.7%	0.8%	11.2%	1.3%
Lumber	4.7%	1.2%	6.0%	0.5%
Concrete	3.4%	0.3%	11.7%	3.1%
Gypsum	3.1%	-0.9%	10.7%	3.3%
Iron & Steel	-0.6%	1.3%	-14.3%	2.1%
Labor (Benefits + Wages)	4.0%	2.9%	12.1%	2.9%
CPI (all items)	1.1%	0.4%	3.1%	2.1%

Source: Bureau of Labor Statistics, Linneman Associates, Turner Construction

figure 250

From 2008 through the third quarter of 2016, real construction costs have increased by 4.8% based on the Linneman Construction Cost Index, while the Turner Index declined by 3.7% over the same period. Monthly commercial construction is down by 10% since 2008, but residential construction spending (single family + multifamily) is up by 4%

Build versus Buy: An Oft Overlooked Insight

Developers frequently refer to their yield on development cost upon stabilization, relative to the cap rate for a comparable stabilized property as the "build to" versus "sell to" spread. This spread is effectively an indicator of the value-add of development, with developers typically seeking 150-200-bp spreads.

While this is an accurate intellectual guide to the value-add of development, it obscures a critical risk difference between building and buying. Specifically it obscures the fact that buying has much more front-loaded cash flows than does development. To see this, consider the highly simplified case of buying at a 5% yield (forever) versus developing to a flat 6.5% stabilized yield on cost. The likely cash flow (both unleveraged for clarity of exposition) is thus $5 on $100 starting in year one for the acquisition and continuing forever. The likely cash flow stream for the development is zero in the first two years, perhaps $2 on $100 in year three, $5.50 in year four, and $6.50 thereafter.

After five years, the acquirer has received $25, while the developer has received just $14. And even after ten years, the developer's cash received still lags that of the acquirer by $3.50 ($46.50 versus $50). In fact, in this Base case, cumulative cash flow equivalence (indicated by the red ovals) between the acquisition and development scenarios, does not occur until year 12. Thus, it is not until the thirteenth year that the developer's cash received finally overtakes that of the acquirer. That is, even with a 150-bp spread (which in this case is a 30% value creation margin), the acquirer has a superior cash return for almost a decade after the development is completed. And if the "build to" spread is only 100 bps on a 5% "buy to" cap rate, it is not until the seventeenth

year (a full 15 years after the development is completed) when development cash received exceeds cumulative cash from the acquisition. And note that these analyses ignore the fact that when cash receipts are expressed in present value terms, it takes even longer for development to break even versus acquisition. Of course, this reflects the fact that in the early years, the developer receives nothing while the acquirer is piling up cash. Discounting the acquirer's 15-year operating cash flows at 7% yields a net present value of $45.54, while discounting the developer's comparable cash flows at 8.5% yields just $38.22. That is, the value creation in today's dollars is driven by the higher yielding cash years of the acquisition far in the future.

When we describe this result to developers, most think it is some type of party trick. But it is not. It clearly reveals the greater risk of development not only due to zoning, design issues, and cost overruns, but also that the early cash flows received on acquisition greatly reduce risk by taking money off the table.

We also examined the two scenarios assuming a 2% cash flow growth per year upon stabilization. That is, the acquirer's cash flows grew by 2% per year starting in year 2 and continuing through year 15, while the developer's cash flows did not see such growth until years 6 through 15. In this 2% growth scenario, cumulative operating cash flows of the acquisition outperform those of development for all but the 15th year. In year 15, the development project cash flows barely surpass those of the acquisition model in a growing economy. That is, growing cash flows further handicap the cash flow competitiveness of development due to even greater proceeds from the acquisition in the early years.

Next, we examined both the Base and Growth scenarios with the added assumption of 70% leverage at an interest rate of 5% and 30-year amortization. Under the Base Case (no growth) with leverage, the cumulative net operating cash flows of the acquisition outpace the development cash flows through year 12, with development cash flows exceeding the acquisition thereafter. For example, development generates $10.70 in cumulative cash flow through year 15 versus $6.70 for the acquisition. However, the net present value of the cash flows remains significantly higher for the acquisition under the no-growth levered scenario.

Acquisition versus Development Operating Cash Flows - Base Case

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
ACQUISITION	-$100.00															
Annual Return		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Operating Cash Flow		**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**	**$5.00**
Cumulative OCF		*$5.00*	*$10.00*	*$15.00*	*$20.00*	*$25.00*	*$30.00*	*$35.00*	*$40.00*	*$45.00*	*$50.00*	*$55.00*	*$60.00*	*$65.00*	*$70.00*	*$75.00*
NPV of OCF @ 7%		**$45.54**														

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
DEVELOPMENT	-$100.00															
Annual Return		0.0%	0.0%	2.0%	5.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Operating Cash Flow		**$0.00**	**$0.00**	**$2.00**	**$5.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**	**$6.50**
Cumulative OCF		*$0.00*	*$0.00*	*$2.00*	*$7.50*	*$14.00*	*$20.50*	*$27.00*	*$33.50*	*$40.00*	*$46.50*	*$53.00*	*$59.50*	*$66.00*	*$72.50*	*$79.00*
NPV of OCF @ 8.5%		**$38.22**														

figure 251

Acquisition versus Development Operating Cash Flows - With 2% Annual CF Growth After Stabilization

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
ACQUISITION	-$100.00															
Annual Return		5.0%	5.1%	5.2%	5.3%	5.4%	5.5%	5.6%	5.7%	5.9%	6.0%	6.1%	6.2%	6.3%	6.5%	6.6%
Operating Cash Flow		**$5.00**	**$5.10**	**$5.20**	**$5.31**	**$5.41**	**$5.52**	**$5.63**	**$5.74**	**$5.86**	**$5.98**	**$6.09**	**$6.22**	**$6.34**	**$6.47**	**$6.60**
Cumulative OCF		*$5.00*	*$10.10*	*$15.30*	*$20.61*	*$26.02*	*$31.54*	*$37.17*	*$42.91*	*$48.77*	*$54.75*	*$60.84*	*$67.06*	*$73.40*	*$79.87*	*$86.47*
NPV of OCF @ 7%		**$51.22**														

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
DEVELOPMENT	-$100.00															
Annual Return		0.0%	0.0%	2.0%	5.5%	6.5%	6.6%	6.8%	6.9%	7.0%	7.2%	7.3%	7.5%	7.6%	7.8%	7.9%
Operating Cash Flow		**$0.00**	**$0.00**	**$2.00**	**$5.50**	**$6.50**	**$6.63**	**$6.76**	**$6.90**	**$7.04**	**$7.18**	**$7.32**	**$7.47**	**$7.62**	**$7.77**	**$7.92**
Cumulative OCF		*$0.00*	*$0.00*	*$2.00*	*$7.50*	*$14.00*	*$20.63*	*$27.39*	*$34.29*	*$41.33*	*$48.50*	*$55.82*	*$63.29*	*$70.91*	*$78.67*	*$86.60*
NPV of OCF @ 8.5%		**$41.12**														

figure 252

Lastly, under the Growth scenario with leverage, cumulative net operating cash flows generated by the acquisition again outpace the development for most of the investment period. Only in year 15 does development eke out a slight cash flow edge over the acquisition. Once again, the net present value of the net operating cash flows are significantly higher for acquisition when leverage is used in a growing economy. So in short, growth hurts development relative to acquisition, and leverage does not appear to offset this disadvantage.

Acquisition versus Development Operating Cash Flows - Base Case With 70% Debt @ 5% Interest & 30-Year Amortization

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
ACQUISITION	-$100.00															
Annual Return		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Operating Cash Flow		$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00
Principal		-$1.05	-$1.11	-$1.16	-$1.22	-$1.28	-$1.34	-$1.41	-$1.48	-$1.56	-$1.63	-$1.72	-$1.80	-$1.89	-$1.99	-$2.09
Interest		-$3.50	-$3.45	-$3.39	-$3.33	-$3.27	-$3.21	-$3.14	-$3.07	-$3.00	-$2.92	-$2.84	-$2.75	-$2.66	-$2.57	-$2.47
Principal & Interest		-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55
Net Operating CF		**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**	**$0.45**
Cumulative Net OCF		*$0.45*	*$0.89*	*$1.34*	*$1.79*	*$2.23*	*$2.68*	*$3.12*	*$3.57*	*$4.02*	*$4.46*	*$4.91*	*$5.36*	*$5.80*	*$6.25*	*$6.70*
NPV of Net OCF @ 7%	**$4.07**															

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
DEVELOPMENT	-$100.00															
Annual Return		0.0%	0.0%	2.0%	5.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Operating Cash Flow		$0.00	$0.00	$2.00	$5.50	$6.50	$6.50	$6.50	$6.50	$6.50	$6.50	$6.50	$6.50	$6.50	$6.50	$6.50
Principal		-$1.05	-$1.11	-$1.16	-$1.22	-$1.28	-$1.34	-$1.41	-$1.48	-$1.56	-$1.63	-$1.72	-$1.80	-$1.89	-$1.99	-$2.09
Interest		-$3.50	-$3.45	-$3.39	-$3.33	-$3.27	-$3.21	-$3.14	-$3.07	-$3.00	-$2.92	-$2.84	-$2.75	-$2.66	-$2.57	-$2.47
Principal & Interest		-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55
Net Operating CF		**-$4.55**	**-$4.55**	**-$2.55**	**$0.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**	**$1.95**
Cumulative Net OCF		*-$4.55*	*-$9.11*	*-$11.66*	*-$10.71*	*-$8.77*	*-$6.82*	*-$4.88*	*-$2.93*	*-$0.98*	*$0.96*	*$2.91*	*$4.86*	*$6.80*	*$8.75*	*$10.70*
NPV of Net OCF @ 8.5%	**$0.41**															

figure 253

Acquisition versus Development Operating Cash Flows - With 2% Annual CF Growth and 70% Debt @ 5% Interest & 30-Year Amortization

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
ACQUISITION	-$100.00															
Annual Return		5.0%	5.1%	5.2%	5.3%	5.4%	5.5%	5.6%	5.7%	5.9%	6.0%	6.1%	6.2%	6.3%	6.5%	6.6%
Operating Cash Flow		$5.00	$5.10	$5.20	$5.31	$5.41	$5.52	$5.63	$5.74	$5.86	$5.98	$6.09	$6.22	$6.34	$6.47	$6.60
Principal		-$1.05	-$1.11	-$1.16	-$1.22	-$1.28	-$1.34	-$1.41	-$1.48	-$1.56	-$1.63	-$1.72	-$1.80	-$1.89	-$1.99	-$2.09
Interest		-$3.50	-$3.45	-$3.39	-$3.33	-$3.27	-$3.21	-$3.14	-$3.07	-$3.00	-$2.92	-$2.84	-$2.75	-$2.66	-$2.57	-$2.47
Principal & Interest		-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55
Net Operating CF		**$0.45**	**$0.55**	**$0.65**	**$0.75**	**$0.86**	**$0.97**	**$1.08**	**$1.19**	**$1.30**	**$1.42**	**$1.54**	**$1.66**	**$1.79**	**$1.91**	**$2.04**
Cumulative Net OCF		*$0.45*	*$0.99*	*$1.64*	*$2.39*	*$3.25*	*$4.22*	*$5.30*	*$6.49*	*$7.79*	*$9.21*	*$10.75*	*$12.42*	*$14.20*	*$16.12*	*$18.16*
NPV of Net OCF @ 7%	**$9.75**															

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
DEVELOPMENT	-$100.00															
Annual Return		0.0%	0.0%	2.0%	5.5%	6.5%	6.6%	6.8%	6.9%	7.0%	7.2%	7.3%	7.5%	7.6%	7.8%	7.9%
Operating Cash Flow		$0.00	$0.00	$2.00	$5.50	$6.50	$6.63	$6.76	$6.90	$7.04	$7.18	$7.32	$7.47	$7.62	$7.77	$7.92
Principal		-$1.05	-$1.11	-$1.16	-$1.22	-$1.28	-$1.34	-$1.41	-$1.48	-$1.56	-$1.63	-$1.72	-$1.80	-$1.89	-$1.99	-$2.09
Interest		-$3.50	-$3.45	-$3.39	-$3.33	-$3.27	-$3.21	-$3.14	-$3.07	-$3.00	-$2.92	-$2.84	-$2.75	-$2.66	-$2.57	-$2.47
Principal & Interest		-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55	-$4.55
Net Operating CF		**-$4.55**	**-$4.55**	**-$2.55**	**$0.95**	**$1.95**	**$2.08**	**$2.21**	**$2.34**	**$2.48**	**$2.62**	**$2.77**	**$2.91**	**$3.06**	**$3.21**	**$3.37**
Cumulative Net OCF		*-$4.55*	*-$9.11*	*-$11.66*	*-$10.71*	*-$8.77*	*-$6.69*	*-$4.48*	*-$2.14*	*$0.34*	*$2.97*	*$5.73*	*$8.65*	*$11.71*	*$14.92*	*$18.29*
NPV of Net OCF @ 8.5%	**$3.31**															

figure 254

THE LINNEMAN LETTER
Volume 16, Issue 4 Winter 2016-2017

The Real Impact of Open Floorplans

In the last issue, we briefly touched on the potential problem of reduced worker productivity due to open office floor plans and other trends intended to increase team collaboration. We noted that a critical challenge facing the increased efficiency of office space utilization — primarily attributable to open floor plans and shared workspace — is that while such layouts enhance worker interaction, reduce real estate costs per employee, and of course, are trendy and "cool," studies of cognitive processing show that even minor distractions greatly reduce productivity. Notable examples of reduced cognitive productivity in the presence of distractions include texting or talking on the phone while walking or driving.

Over the past few years, open office floorplans have grown increasingly popular. First championed by the tech industry, open office floorplans have slowly found their way to more traditional industries. Proponents argue that these trendy new office layouts promote collaboration among employees and are cost-effective. However, the most important goal of an office space is to generate worker productivity, and studies of cognitive processes have shown that human nature does not allow us to be productive in an open floorplan environment. This has been proven over years of academic research on human behavior and on workplace environments.

...the most important goal of an office space is to generate worker productivity, and studies of cognitive processes have shown that human nature does not allow us to be productive in an open floorplan environment.

When workers are deprived of a private workspace, they are guaranteed that more unwanted and uncontrolled interruptions will occur. Since the 1970s, workers in open plan offices have reported more talking, more noise, and more distractions. This undoubtedly hurts productivity, as humans are simply not wired to fully concentrate on more than one task. In a study published by the National Institute of Health, scientists conducted an experiment in which they gave college students various activities to perform (texting, listening to music, making phone calls) while they crossed a street with traffic in a simulated environment. They found that college students listening to music or texting while attempting to cross the street were more likely to be hit by a vehicle. The simple act of reading and typing distracted the students enough that they were unable to refocus on activities critical to their physical safety such as judging traffic. The cognitive skills necessary to cross the street safely, including information processing and decision-making, were reduced by simple distractions. If people could not handle crossing the street (which we are taught how to do as children) without endangering their lives, we can only imagine how workers in an office fare as they try to complete complex tasks that require greater levels of information processing and decision-making. In fact, studies found that when tasks are more difficult, interruptions are more likely to produce an increase in decision-making time, and a decrease in decision accuracy.

...studies found that when tasks are more difficult, interruptions are more likely to produce an increase in decision-making time, and a decrease in decision accuracy.

Open office environments lead to more visual and auditory interaction with other employees — distractions that private cubicles and offices are designed to prevent. A 1990 study showed that simply maintaining eye contact with another person was disruptive to the performance of completing a task that involved visual processing. Participants in an experiment were asked to complete a task with auditory instructions while either closing their eyes, maintaining eye contact with someone, or maintaining contact with someone wearing dark glasses. Performance was most impaired when the participants had to make direct eye contact.

In 2014, studies found that both visual and auditory distractions proved disruptive, especially when workers were presented with a difficult task involving retrieval from long-term memory. While a private workspace does not guarantee freedom from distractions, open floorplans guarantee that distractions will occur and will result in productivity declines.

Research done on workplace interruptions has proven that distractions in the workplace have significant negative consequences for employees. A 2003 article published in the Academy of Management Review categorized workplace interruptions into four groups, in-

cluding intrusions and distractions. The study showed that intrusions, which are unscheduled interactions with others, take away from time that could be spent on critical tasks, which affects a worker's ability to achieve a goal and meet deadlines. Research also reveals that when workers are attempting to complete a particularly urgent task, an intrusion increases their time consciousness and adds to heightened feelings of pressure. In addition, a 2008 study found that just 20 minutes of interrupted performance led to workers having higher stress, frustration, workload, effort, and pressure. Interruptions also operate as distractions, which are defined by the Academy of Management study as disruptions in concentration generated by external stimuli. Unsurprisingly, although some people were less affected by distractions, distractions were found to make most people less focused and less interested in focusing. Distractions, like intrusions, can also lead to lost work time and significant declines in productivity.

...unscheduled interactions with others, take away from time that could be spent on critical tasks, which affects a worker's ability to achieve a goal and meet deadlines.

Distractions and interruptions in the workplace not only limit productivity, but also negatively impact workers' mental states. For example, researchers found that when people were exposed to distractions, they perceived their overall work experience more negatively, even if the interruptions had no effect on their specific performance. Unhappy and unproductive workers are hardly good for any company. A 1991 study from the Academy of Management Journal found that both job performance and job satisfaction decreased when workers were in "unshielded" environments, meaning the workplace was high density, had few enclosures, or had low distances between workers, which are all attributes of today's popular open floorplans. A 1980 study also published in the Academy of Management Journal noted that having architectural privacy, like the walls of a cubicle or office, is associated with psychological privacy. It noted that employees need to have job satisfaction. Psychological privacy was even linked to a greater sense of self-identity, and employees found that accessibility and social interaction was not hindered by architectural privacy.

...when people were exposed to distractions, they perceived their overall work experience more negatively, even if the interruptions had no effect on their specific performance.

It is clear that if companies value productivity, they will ultimately have to face up to human cognitive limitations and abandon the open floorplan fad. Any possible improvements in collaboration are negated by the loss in productivity and lower levels of worker performance. While articles denouncing open floorplan productivity have recently appeared in popular publications like Fortune and the New Yorker, the fad persists, as the Boston Consulting Group proudly announced their revised open office design in the New York's newly developed Hudson Yards neighborhood in 2016.

...while the new office layout may be trendy and save rent, it may be at the expense of reduced workplace productivity.

The bottom line is that research has clearly shown that distractions significantly reduce efficiency and increase the likelihood of serious mistakes and lapses in judgment. Thus, while the new office layout may be trendy and save rent, it may be at the expense of reduced workplace productivity. The modern office design will become a fad, as in the end, office space is about increasing worker productivity. Stated bluntly, saving $600-1,000 per employee a year in rent pales in the face of $10,000-100,000 of lost productivity per worker annually.

Housing Market Update

The combination of private residential construction and consumption spending on housing services averages 18% of GDP when including data since 1969, but only 16.9% since 1999. It stood at just 15.6% in the third quarter of 2016. Interestingly, the volatility in this metric is primarily driven by construction volume and less so by housing services. That is, since 1999, residential construction as a percent of GDP has fluctuated by as much as 370 bps, while housing services has exhibited a range of less than 100 bps between its highest and lowest share of GDP over that period.

The NAHB/Wells Fargo Housing Market Index (HMI), a homebuilder survey of market conditions, hit

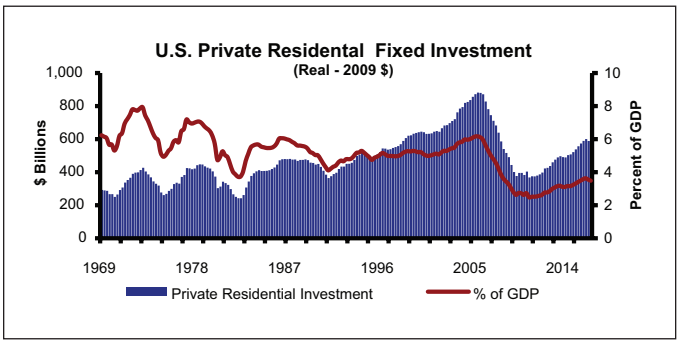


figure 255

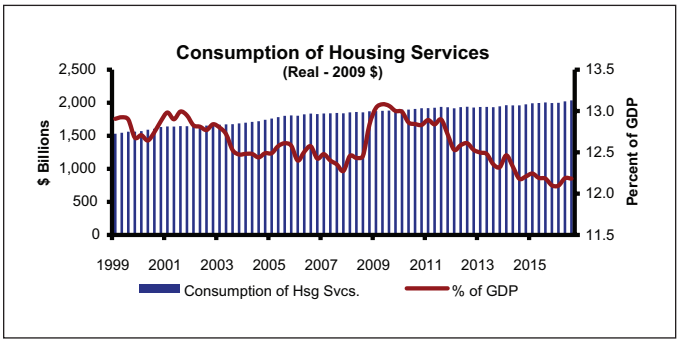


figure 256

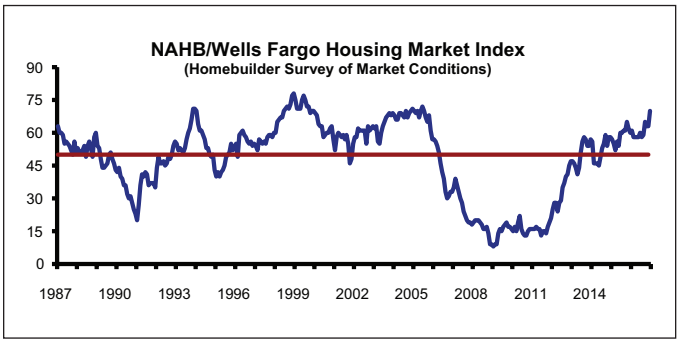
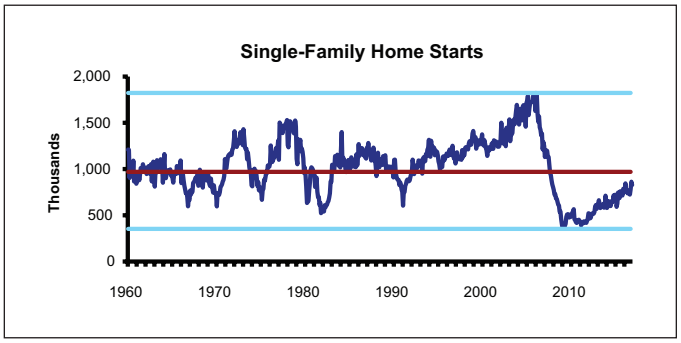


figure 257

registering over 400,000 units, and two months at about 250,000. In November 2016, annualized multifamily home starts dropped to 259,000, or 23% below their historical norm. This followed a strong performance (462,000 annualized starts) in October. Single family housing starts of 828,000 units per annum continue to lag the historical norm by 25%. Both sectors are well above their respective lows, but continue to register cumulative (since 2002) production shortfalls. The multifamily sector is slowly reducing this gap with (mostly) above-average production, ending November



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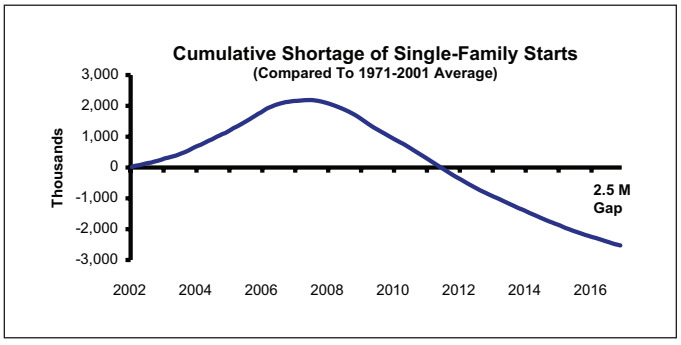
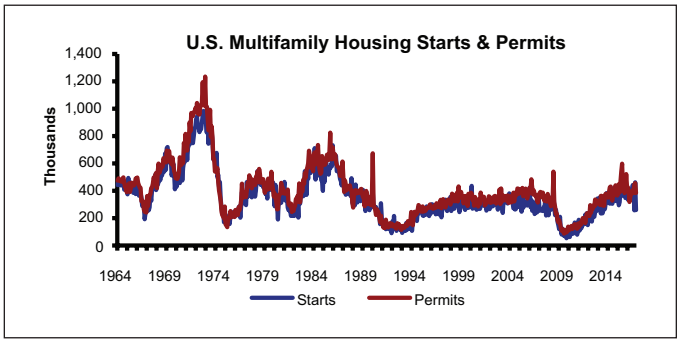


figure 259

a 25-year low of 9% in 2008, but stood at a respectable 63% as of November 2016, versus an average of 49% from 1985 through today. A reading greater than 50 indicates that there are more homebuilders with positive views on home sale market conditions than those who view the market negatively.

The severe declines in residential construction during the Great Recession more than offset the construction boom in the mid-2000s. Monthly annualized multifamily housing starts have taken an uneven path in the second half of 2016, with 4 months



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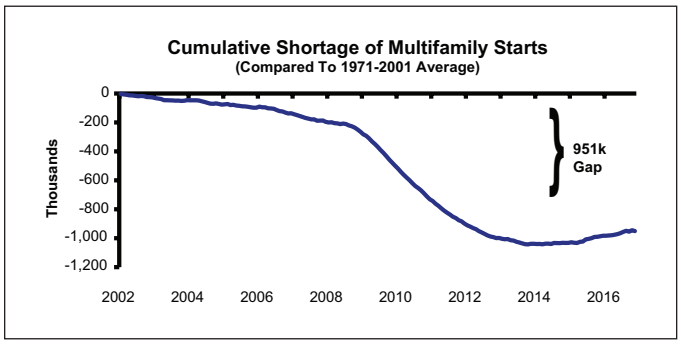


figure 261

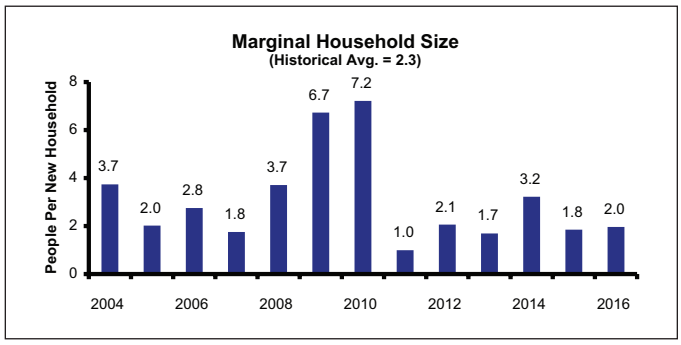


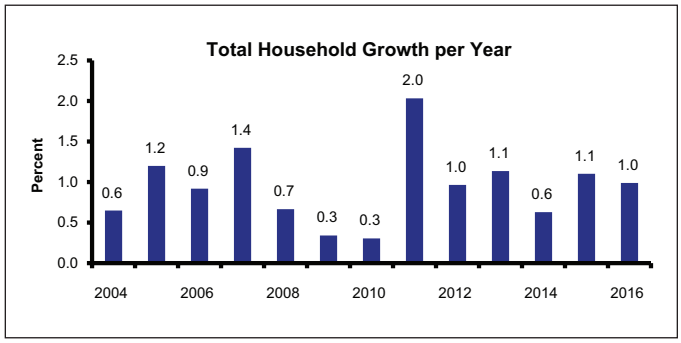
figure 262

2016 with a cumulative shortfall of 951,000 units, down from 987,000 a year earlier. In contrast, the single-family production shortfall is over 2.5 million units and growing, as starts remain about 275,000 units below their annual norm.

The "doubling up" of households during the Financial Crisis resulted in a peak of two million pent-up households by year-end 2010. These "missing" households were delayed in forming, but have finally been created after six years of catching up. As we anticipated, as consumers gained confidence in both the economy and their own financial situations, pent-up households were eventually formed. And living "with Mom" was not a new lifestyle choice, but rather a cold economic reality. In 2016, the U.S. population grew by over 2.4 million people and 1.2 million households, implying a marginal household size of two people per household, which is less than the historical norm of 2.3 people per household. Therefore, slightly more households were formed than expected, as has been the case for five out of the last six years, resulting in the eventual formation of all pent-up households. At year-end 2015, we estimated that 145,000 of the two million pent-up households were left. At year-end 2016, we have a net cumulative surplus of 49,000 more households than expected, based on historical norms. So the "live at home Millennials" turn out to be not so different after all.

...."missing" households were delayed in forming, but have finally been created after six years of catching up.

Excess vacant housing units (those above the historical average of vacant units) peaked in 2009 at 2.8 million, but stood at a mere 427,000 (415,000 single-family and 12,000 multifamily) in the third quarter of 2016. This is roughly 0.39% of the 135.7 million



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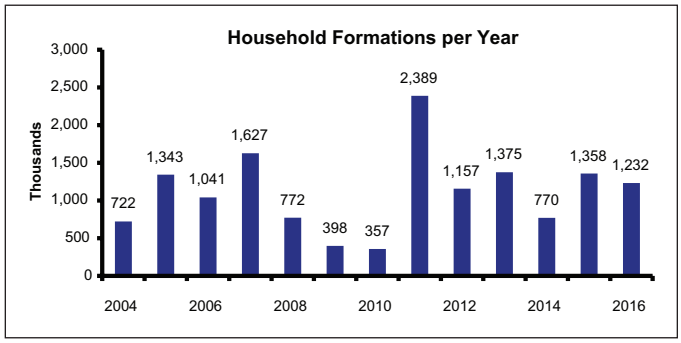

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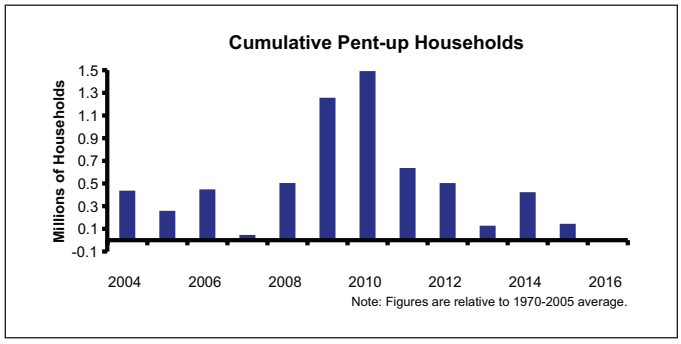

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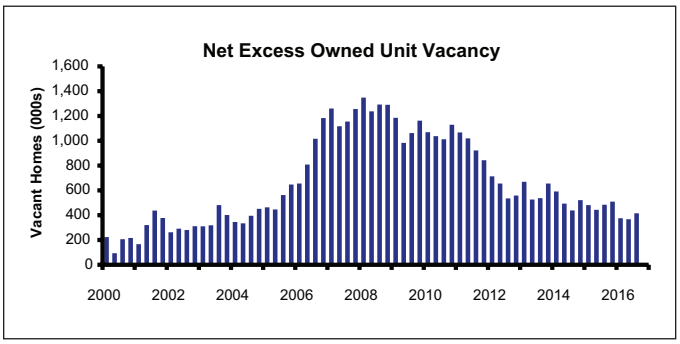
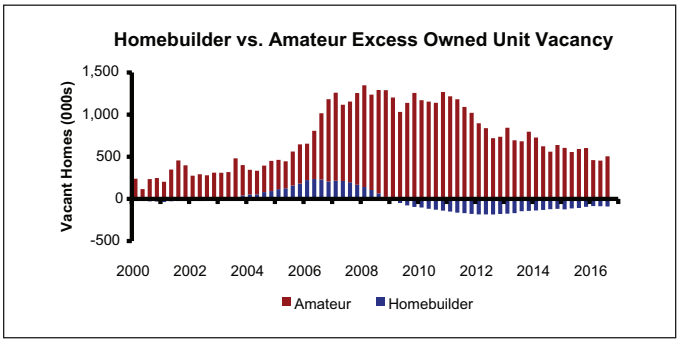


figure 266



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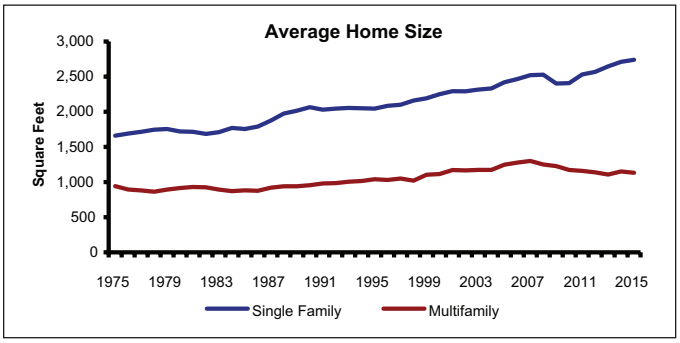

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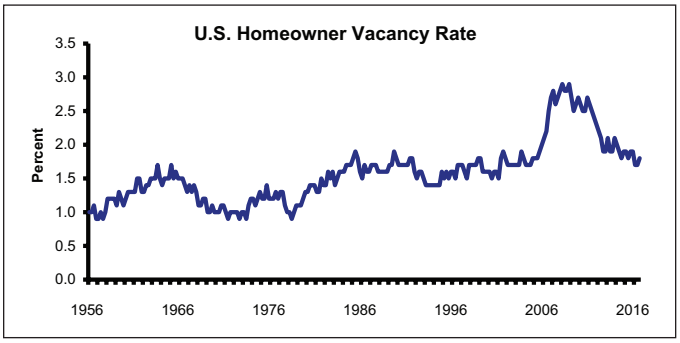


figure 269

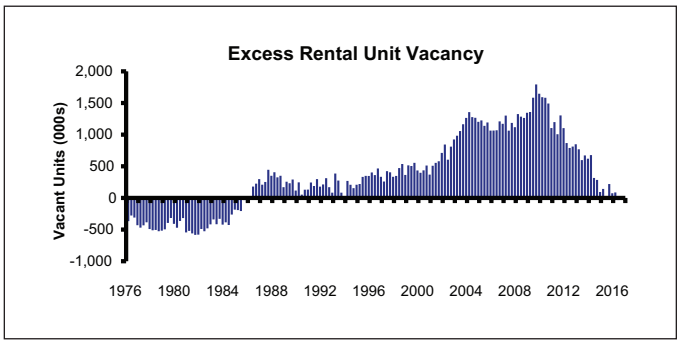
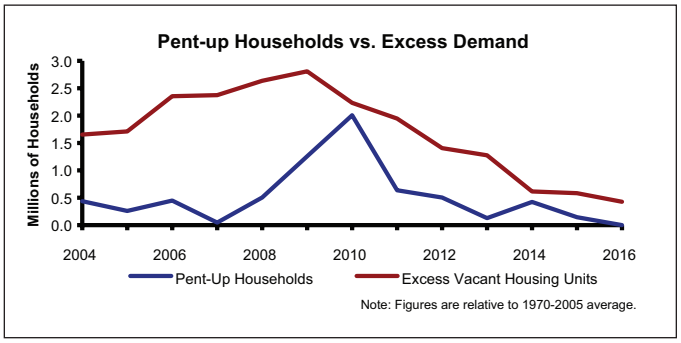


figure 270

housing units. Of the excess vacant single-family units, it should be noted that most are owned by speculative "amateurs," rather than builders, who still run lean on inventory and homes under construction.

As pent-up households formed, the U.S. rental vacancy rate fell below its historical norm. As the economy grows into 2019, with new supply lagging demand growth, we anticipate further value increases for both single-family and multifamily housing. This will be particularly true of single-family housing.

Over the past five years, population growth has been 20-25 bps per annum below norm, representing



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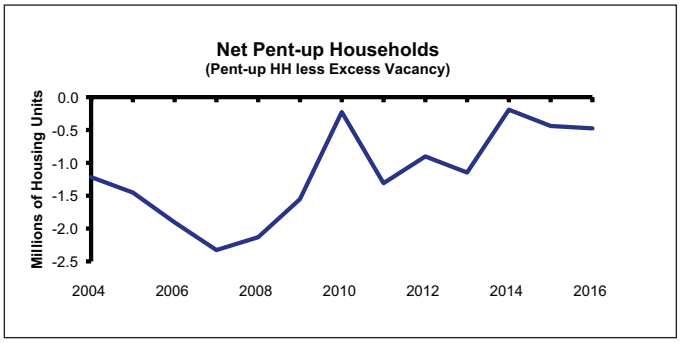

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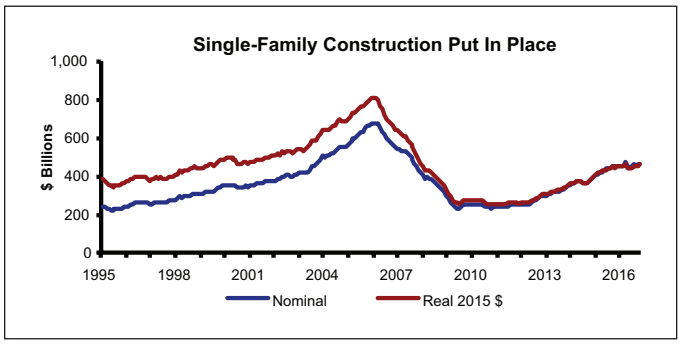

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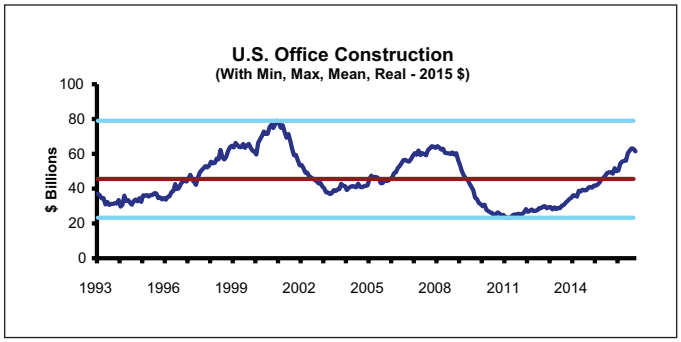

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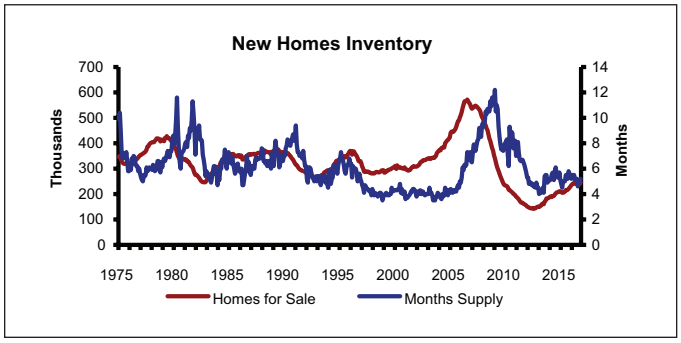


figure 275

about 3.7 million fewer people added to the population than normal. About half of this is due to reduced immigration (particularly illegal), with the remainder attributable to domestic sources. The lack of growth in the immigrant population is particularly sensitive to declining jobs in the construction sector, as few come to work here when there is a dearth of robust semi-skilled employment opportunities. As the housing sector crawls upward and commercial construction improves, the decline due to immigration will reverse. The decline in domestic population growth reflects fewer births among the smaller Baby Bust generation, many of whom delayed starting a family until their mid-30s and early forties. This will reverse over the coming decade, as (by modern standards) Millennials are only now in their early-childbearing years.

As job creation continues through 2020, we expect single-family and multifamily demand to require about 3.1 million and 1.6 million additional housing units, respectively. These projections are based on expected population growth, which we conservatively estimate will increase by about 2.5 million per year, or by 10.6 million people in total through 2020. Assuming the historical norm of 2.3 people per household and a 2-to-1 split between single-family and multifamily. Given that all pent-up households have now been created, we no longer adjust our forecast for that demand factor.

Our fundamental housing forecast in Figure 277 projects that new single-family home starts will ramp up to 820,000 in 2016, 950,000 in 2017, 1.1 million in 2018, and 1.3 million in each of 2019 and 2020. Given these assumptions, the existing surplus of vacant units, and new demand from population growth, will result in a steadily growing surplus of vacant units for the duration of the 5-year projection period.

Fundamental Demand Forecast Worksheet

	3Q16-2020	3Q to 4Q16	2017	2018	2019	2020
Pent-up Demand Release Schedule		*33%*	*33%*	*33%*	*0%*	*0%*
Pent-up Demand	-	-	-	-	-	-
Single-Family (50%)	-	-	-	-	-	-
Multifamily (50%)	-	-	-	-	-	-
Demand From Population Growth						
Total Population	10,625,000	625,000	2,500,000	2,500,000	2,500,000	2,500,000
Total Households (2.33 people/HH)	4,565,309	268,548	1,074,190	1,074,190	1,074,190	1,074,190
Single-Family (66%)	3,013,104	177,241	708,966	708,966	708,966	708,966
Multifamily (34%)	1,552,205	91,306	365,225	365,225	365,225	365,225
Total SF Demand	3,013,104	177,241	708,966	708,966	708,966	708,966
Total MF Demand	1,552,205	91,306	365,225	365,225	365,225	365,225

figure 276

Single-Family Home Fundamental Forecast

	2016	2017	2018	2019	2020
Supply					
Vacant (relevant beg. bal.)	1,353,000	1,654,428	1,529,141	1,553,854	1,778,567
+ New	820,000	950,000	1,100,000	1,300,000	1,300,000
- Destroyed (1)	(333,000)	(333,000)	(333,000)	(333,000)	(333,000)
= Total	1,840,000	2,271,428	2,296,141	2,520,854	2,745,567
Demand					
Primary (2)	177,241	708,966	708,966	708,966	708,966
+ Second Homes (3)	8,330	33,321	33,321	33,321	33,321
= Total	185,572	742,287	742,287	742,287	742,287
End of Period Vacant	1,654,428	1,529,141	1,553,854	1,778,567	2,003,280
Excess Vacancy(4)	486,328	351,537	364,434	574,250	784,067
% Change New Starts	3%	16%	16%	18%	0%

Source: Linneman Associates
(1) Two-thirds of 500,000 total units destroyed annually; 2/3 factor represents the proportion of destroyed units which are SF.
(2) Total Demand = Population growth HH formation: SF (66%), rental (34%) + Pent-up demand HH formation: SF (50%), rental (50%).
(3) Second home demand is 4.7% of primary demand.
(4) Excess vacant units above the historical (25-year) norm of 1.5%

figure 277

Multifamily Fundamental Forecast

	2016	2017	2018	2019	2020
Supply					
Vacant (relevant beg. balance)	3,216,000	3,378,027	3,326,136	3,294,244	3,262,353
+ New	420,000	480,000	500,000	500,000	500,000
- Destroyed (1)	(166,667)	(166,667)	(166,667)	(166,667)	(166,667)
= Total	3,469,333	3,691,360	3,659,469	3,627,578	3,595,686
Demand					
Primary (2)	91,306	365,225	365,225	365,225	365,225
+ Second Homes	0	0	0	0	0
= Total	91,306	365,225	365,225	365,225	365,225
End of Period Vacant	3,378,027	3,326,136	3,294,244	3,262,353	3,230,462
Excess Vacancy(3)	11,494	82,492	27,615	(27,262)	(82,139)
% Change New Starts		14%	4%	0%	0%

Source: Linneman Associates
(1) One-third of 500,000 total units destroyed annually; 1/3 factor represents the proportion of destroyed units which are MF
(2) Total Demand = Population growth HH formation: SF (66%), rental (34%) + Pent-up demand HH formation: SF (50%), rental (50%).
(3) Excess vacant units above the historical (25-year) norm of 6.9%

figure 278

Our fundamental forecast remains strong for the multifamily sector. In the third quarter of 2016, the multifamily market had just 12,000 excess vacant units (from a peak of 1.8 million). We expect the excess multifamily vacancies to be absorbed and to register a shortage, which will grow through 2020.

Our statistical forecast models (Figure 279) based on data through October 2016, also indicate sustained increases in both single-family and multifamily housing starts. Our projections are based on multiple forecast models, and are the average of conservative and aggressive scenarios. We forecast that seasonally-adjusted single-family housing starts will average annualized rates of 883,000 in 2017, 949,000 in 2018, and about one million in 2019. We expect that single-family starts will surpass one million homes in 2020.

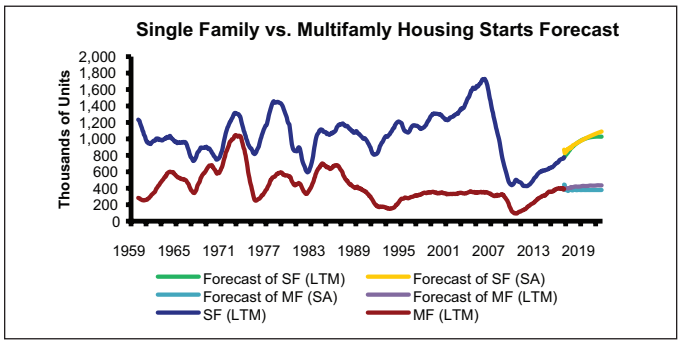


figure 279

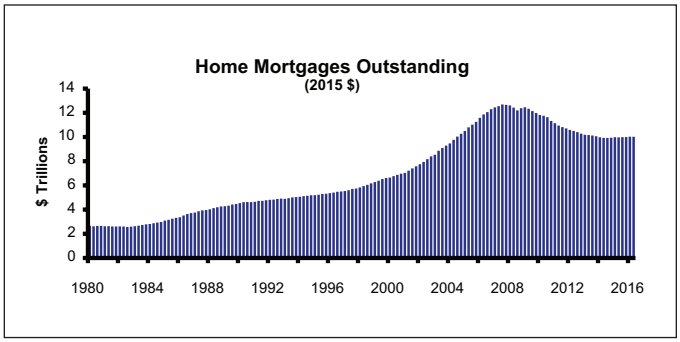


figure 281

Note that these projections are all below the historical norm of 1.1 million single-family home starts per year.

The multifamily statistical model forecasts 378,000 average annualized starts in 2017, which is well above the 40-year historical average of 355,000 multifamily housing starts per year. We expect annualized seasonally-adjusted multifamily starts to remain at that level through 2020.

Affordability. In the third quarter of 2016, the NAHB/Wells Fargo Housing Opportunity Index (HOI) indicated that families earning the national median income could afford to purchase 61.4% of all new and existing homes sold during the quarter, assuming the national median home price and weighted average interest rate over that period. The index jumped by 10 percentage points in 2009 and peaked at 77% in 2012. It subsequently declined through the third quarter of 2016, as the increase in home prices outstripped income growth. The current level reflects declines of 60 bps from the previous quarter and 80 bps over the last year.

Real total outstanding home mortgages were just under $10 trillion at the end of the third quarter of 2016. This is in comparison to the 2007 high of nearly $12.7 trillion and the long-term average (since 1980) of just under $7 trillion.

In November 2016, the average 30-year fixed mortgage rate was 3.68%, versus 3.94% one year earlier. The index of the real U.S. median home price-to-per capita disposable personal income is now 10% below the 50-year average (versus 9% below a year earlier), but is above trend, which has been on a long-term decline since 1963. The negative trend line reflects the declining importance of housing as a share of total expenditures (versus technology and leisure) over time.

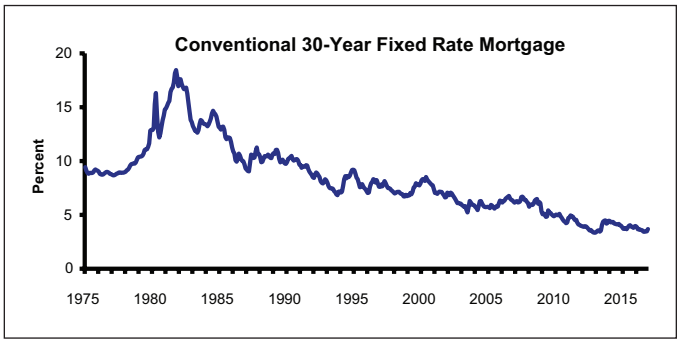


figure 282

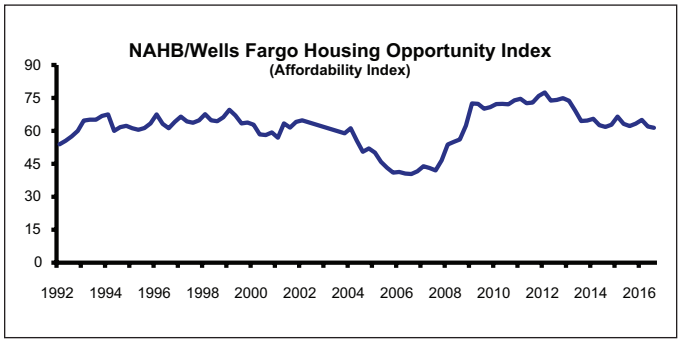


figure 280

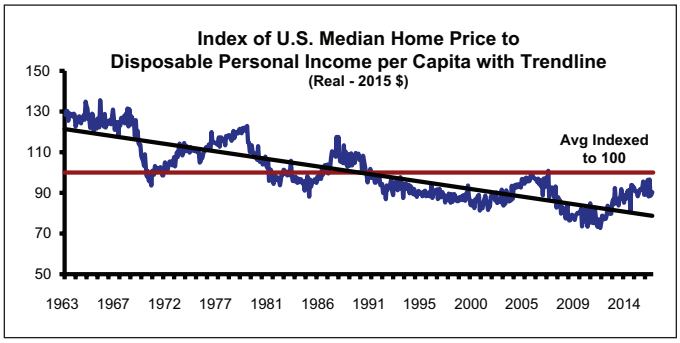


figure 283

Residential mortgage foreclosure rates continue to decline, both as a percentage of total inventory and as a percentage of loans entering the foreclosure process in a given quarter. The overall residential foreclosure rate (as a percentage of inventory) was 1.6% in the third quarter of 2016, compared to 4.6% in 2010. From their recessionary peaks to today, prime and subprime foreclosure rates fell from 3.7% to 0.9% and from 15.6% to 7.0%, respectively. The overall percentage of mortgage loans entering the foreclosure process in the third quarter of 2016 was down to 0.3%, from 1.4% in 2009. Delinquency rates have followed the same trend.

The real average single-family home loan amount peaked at about $270,000 (2015 dollars) in June 2006, before dropping to $217,000 in 2011. It subsequently reached a peak of $330,000 in June 2016, but reverted to $306,000 in October. This compares to the 40-year average of $187,000. Meanwhile, loan-to-value ratios reached 79.7% in October 2016, only 110 bps below the high seen in 1994, but 380 bps above the 40+ year historical average.

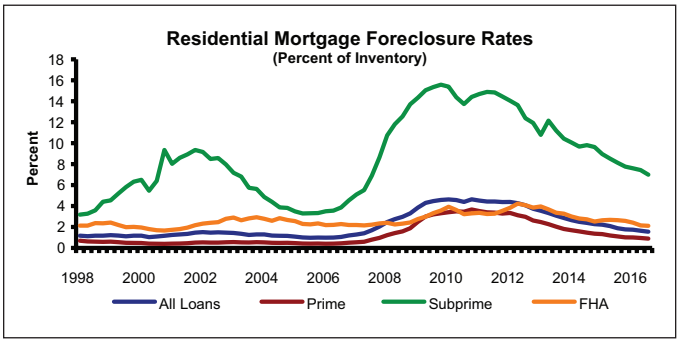


figure 284

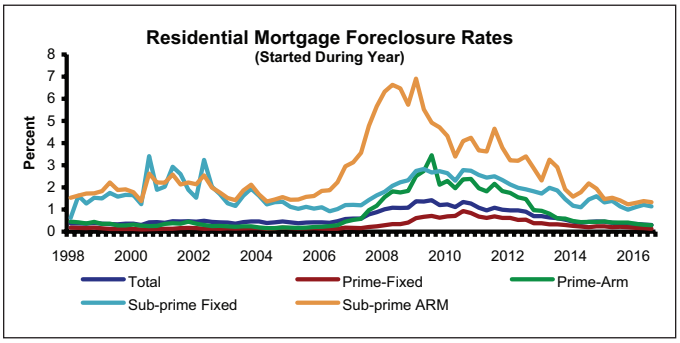


figure 285

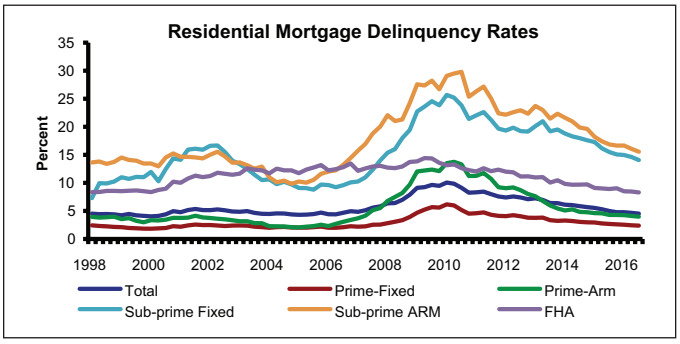
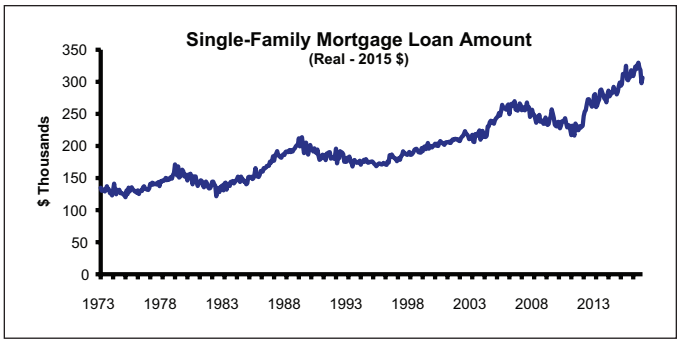


figure 286



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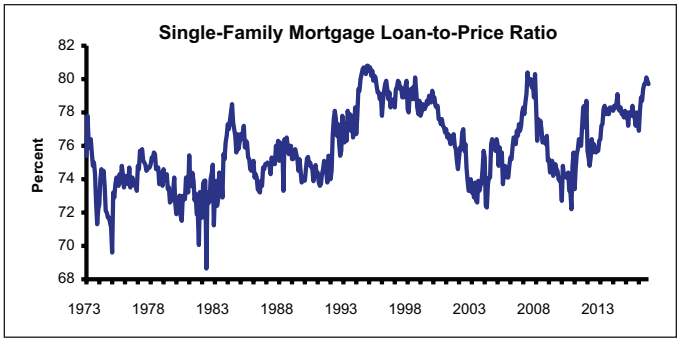


figure 288

Since peaking at 69.2% in 2004, the U.S. homeownership rate declined by 630 bps to a 30-year low of 62.9% in the second quarter of 2016, but regained 60 bps to end the third quarter at 63.5%. We believe that as households assemble the necessary down payments and confidence rebounds in the face of rising home prices, the ownership rate will reverse course and increase through 2018, particularly if the Fed continues to raise interest rates and allows "Grandma's" down payment assistance to kick in.

Home Prices. In October 2016, the median existing single-family nominal home price was $237,574, an

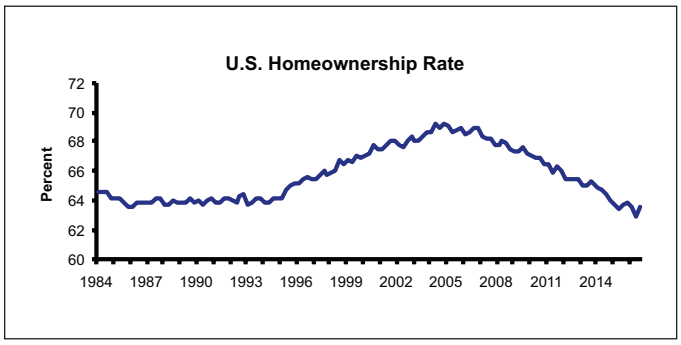


figure 289

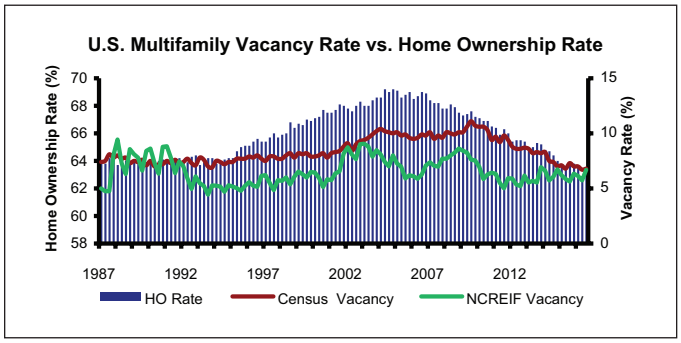


figure 290

increase of 67.3% from year-end 1999. If existing home values had simply kept pace with inflation (core CPI) since 1999, today's median home price would be $197,893. Thus, current nominal pricing is 20.1% above CPI-driven pricing. Given that over the long term, real home prices rise by almost 1% annually beyond CPI inflation due to quality improvement, today's price is on par with long-term trend. That is, home prices are in the comfort zone, and we expect them to continue to rise due to the fundamental underproduction of housing over the past decade.

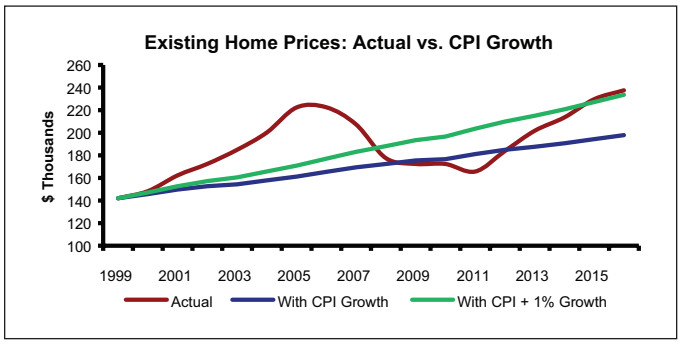


figure 291

We expect home prices to exceed the upper bound over the next three years because we are under-producing single family homes. We are adding more households than homes, and these households are experiencing increases in both income and wealth, pushing up demand faster than supply.

Through the third quarter of 2016, the three home price indices published by Case-Shiller, the National Association of Realtors (NAR), and the Federal Housing Finance Authority (FHFA) have all posted four years of solid year-over-year and quarter-over-quarter growth. We believe that home price appreciation will continue, though at a slower rate than in the last 18 months. In the third quarter of 2016, year-over-year growth by the Case-Shiller Index (5.2%) trailed both the FHFA index (6.1%) and the NAR index (5.4%). Quarterly home

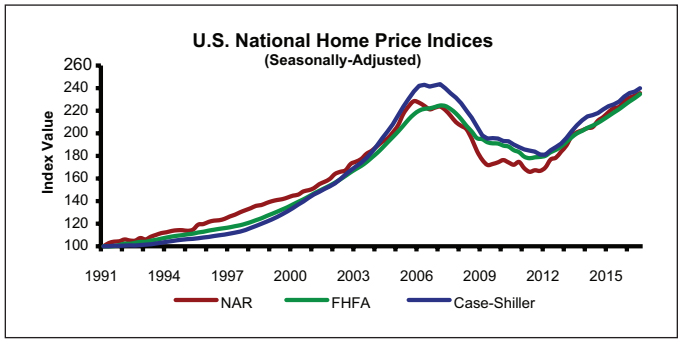


figure 292

U.S. Home Price Indices Growth Continues

	Case-Shiller		FHFA		NAR	
	Q/Q %	Y/Y %	Q/Q %	Y/Y %	Q/Q %	Y/Y %
1Q11	-1.1	-3.9	-2.2	-5.2	-3.2	-4.1
2Q11	-0.6	-4.3	-0.7	-5.5	-1.8	-4.8
3Q11	-0.5	-3.3	0.5	-3.4	0.8	-2.8
4Q11	-1.4	-3.5	0.2	-2.3	-0.3	-4.5
1Q12	-0.1	-2.5	0.5	0.4	1.8	0.4
2Q12	2.2	0.2	1.8	3.0	4.2	6.5
3Q12	1.5	2.2	1.2	3.7	0.9	6.6
4Q12	1.6	5.4	1.6	5.1	3.0	10.2
1Q13	2.6	8.2	2.1	6.8	2.9	11.5
2Q13	3.0	9.1	2.2	7.2	4.4	11.7
3Q13	2.6	10.3	1.8	7.8	1.7	12.6
4Q13	2.1	10.8	1.1	7.4	0.9	10.2
1Q14	1.6	9.8	1.3	6.5	1.0	8.2
2Q14	0.6	7.1	1.0	5.3	0.4	4.1
3Q14	0.8	5.2	1.2	4.7	2.8	5.1
4Q14	1.5	4.6	1.4	4.9	1.5	5.8
1Q15	1.3	4.2	1.4	5.1	2.0	6.9
2Q15	0.7	4.4	1.5	5.6	1.6	8.1
3Q15	1.1	4.6	1.4	5.8	0.5	5.8
4Q15	2.0	5.1	1.6	5.9	2.3	6.6
1Q16	1.4	5.2	1.5	6.0	1.3	5.9
2Q16	0.5	5.0	1.3	5.9	0.7	4.9
3Q16	1.3	5.2	1.5	6.1	1.0	5.4

Source: Case-Shiller, Federal Housing Finance Agency, National Association of Realtors, Linneman Associates

figure 293

price growth rates for the Case-Shiller, FHFA, and NAR indices were 1.3%, 1.5%, and 1.0%, respectively.

Improving fundamentals are also seen in the fact that all 25 top MSAs in the FHFA survey saw a sixth consecutive quarter of year-over-year home price increases through the third quarter of 2016. The MSAs averaged year-over-year growth of 6.7% through the third quarter of 2016, 20 bps higher than growth over the previous 12-month period. On a quarter-over-quarter basis, the FHFA seasonally-adjusted median MSA home price indices averaged a gain of 1.8%, which reflects significant improvement over the 1.1% increase in the previous quarter, but is comparable to the 1.7% increase in the same quarter a year ago.

Among the largest 25 MSAs, the greatest quarterly growth was seen in Miami (4.1%), Oakland (3.4%), Orange County (3.1%), Denver (2.9%), Philadelphia (2.7%), Atlanta (2.6%), Seattle (2.4%), Tampa (2.3%), Dallas (2.1%), and Warren, MI (1.9%). Only the New York-New Jersey and Cleveland metro areas saw value depreciation in the third quarter of 2016. On a year-over-year basis, all of the top 25 MSAs exhibited home price increases through the third quarter of 2016 with Seattle (12.1%), Miami (11.1%), Denver (11.1%), Tampa (10.7%), Oakland (10.5%), Dallas (9.9%), and Atlanta (9.1%) leading the way.

Through the third quarter of 2016, all 25 MSAs recorded home prices greater than their respective recessionary low points, gaining back an average of 46.3%. From the bottom, the greatest improvements were seen in Oakland, Phoenix, Denver, Riverside-San Bernardino, Miami, Seattle, Warren (MI), and Tampa, all of which have seen improvements of at least 60% compared to their respective home price troughs. Only the New York-New Jersey, Baltimore, and Cleveland metro area home price indices are less than 20% above their respective troughs through the third quarter of 2016.

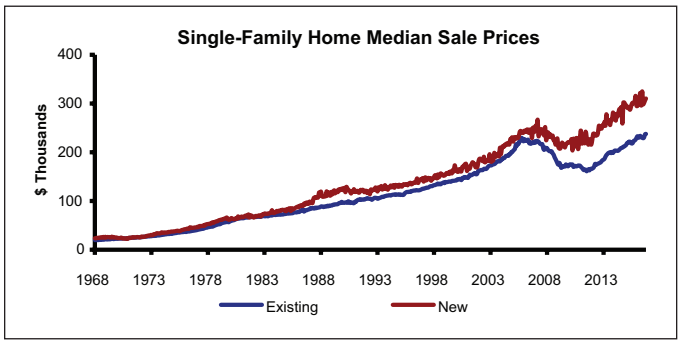
Residential renovations are a leading indicator of home sales volume, as existing homeowners often pursue deferred capital improvements while preparing to put their homes on the market. We calculate the ratio of residential renovations-to-GDP, setting the 1992-2005 average to 100 as a baseline level. The ratio has been below the historical average since the end of 2007, but is slowly creeping upward. As of the third quarter of 2016, the ratio of residential renovations-to-GDP index was about 5% below average, versus more than 23% in 2013. On a cumulative basis since 1993, the real renovations-to-real GDP ratio is 290% below the norm, versus 285% below one quarter earlier. In short, we are both under-producing and under maintaining our housing stock relative to historical standards. Shame on the Fed for "stealing" funds from savers, who would

FHFA Home Price Index Growth

		Q/Q % Change				Y/Y % Change			
	% Gain From Min.	4Q15	1Q16	2Q16	3Q16	4Q15	1Q16	2Q16	3Q16
U.S.	31.9	1.6	1.5	1.3	1.5	5.9	6.0	5.9	6.1
Atlanta-Sandy Springs-Marietta, GA	59.3	2.0	1.8	2.5	2.6	8.9	8.5	8.4	9.1
Baltimore-Towson, MD	15.0	0.5	-0.4	0.4	0.1	3.7	3.3	2.5	0.7
Chicago-Joliet-Naperville, IL (MSAD)	26.2	0.8	2.2	0.8	1.7	3.0	4.6	4.4	5.5
Cleveland-Elyria-Mentor, OH	19.6	1.1	1.5	0.2	-0.1	2.8	5.3	2.7	2.8
Dallas-Plano-Irving, TX (MSAD)	53.6	2.2	3.2	2.2	2.1	11.1	11.0	10.3	9.9
Denver-Aurora-Broomfield, CO	70.6	2.0	2.7	3.0	2.9	13.1	9.8	11.6	11.1
Newark, NJ-PA (MSAD)	15.5	0.0	2.2	-1.0	1.5	0.9	4.5	2.6	2.7
Houston-The Woodlands-Sugar Land, TX	59.8	1.3	-0.3	0.3	1.6	5.8	4.7	2.2	2.9
Los Angeles-Long Beach-Glendale, CA (MSAD)	56.9	3.0	2.0	1.0	1.4	8.3	8.2	7.8	7.5
Miami-Miami Beach-Kendall, FL (MSAD)	65.7	1.9	3.0	1.8	4.1	8.5	9.9	8.5	11.1
Minneapolis-St. Paul-Bloomington, MN-WI	36.1	1.8	2.1	0.6	1.1	6.5	7.2	5.8	5.7
Nassau-Suffolk, NY (MSAD)	14.9	-1.9	2.8	0.8	1.7	0.8	3.6	3.5	3.5
New York-Jersey City-White Plains, NY-NJ (MSAD)	13.3	1.0	0.4	0.9	-0.1	4.3	2.1	4.7	2.2
Oakland-Hayward-Berkeley, CA (MSAD)	90.8	3.3	2.0	1.3	3.4	12.3	9.9	9.6	10.5
Philadelphia, PA (MSAD)	24.2	0.3	2.6	2.7	2.7	1.9	4.7	2.9	8.5
Phoenix-Mesa-Glendale, AZ	83.3	2.2	2.1	1.1	1.8	9.7	10.1	9.0	7.5
Pittsburgh, PA	33.5	1.8	1.5	0.6	1.1	4.9	6.4	6.1	5.2
Riverside-San Bernardino-Ontario, CA	69.8	1.0	1.9	1.7	1.7	5.9	6.3	6.2	6.5
St. Louis, MO-IL	22.9	1.7	1.5	0.5	1.2	5.1	8.8	6.5	5.0
San Diego-Carlsbad-San Marcos, CA	52.6	2.4	3.5	0.7	1.2	7.4	9.9	8.0	8.0
Santa Ana-Anaheim-Irvine, CA (MSAD)	48.7	2.5	1.9	0.8	3.1	7.4	9.0	6.8	8.6
Seattle-Bellevue-Everett, WA (MSAD)	65.6	3.0	4.7	1.5	2.4	12.8	14.9	12.4	12.1
Tampa-St. Petersburg-Clearwater, FL	60.6	1.5	4.2	2.2	2.3	9.4	12.0	1.8	10.7
Warren-Troy-Farmington Hills, MI (MSAD)	62.1	2.0	1.3	1.7	1.9	6.5	6.4	6.1	7.2
Washington-Arlington-Alexandria, DC-VA-MD-WV (MSAD)	37.8	0.4	1.8	0.2	0.8	2.0	5.3	4.6	3.3
25 Market Average	**46.3**	**1.5**	**2.1**	**1.1**	**1.8**	**6.5**	**7.4**	**6.6**	**6.7**

Source: Federal Housing Finance Agency, Linneman Associates

figure 294



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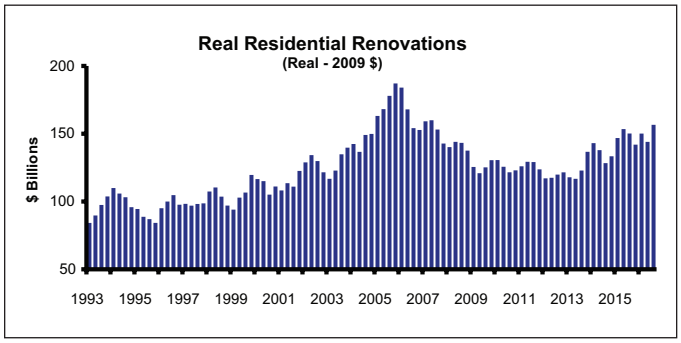

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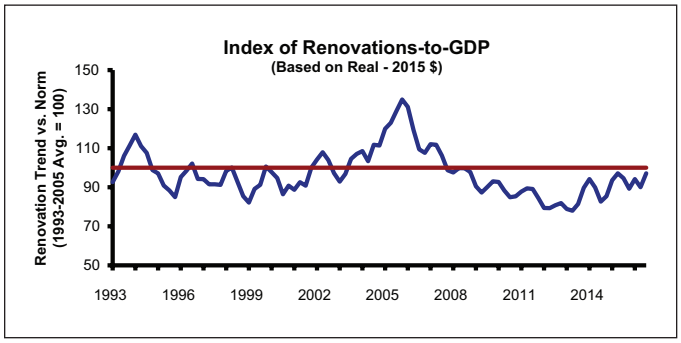

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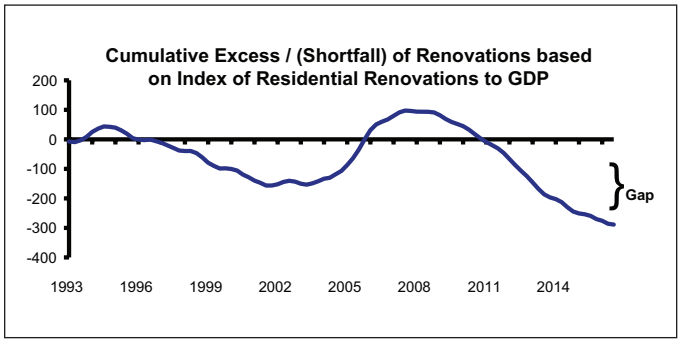
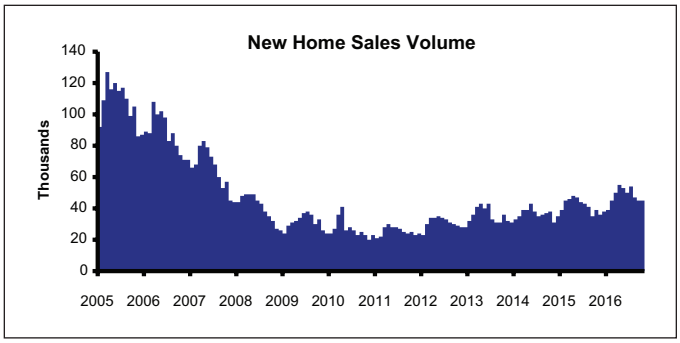


figure 298

have invested significantly more interest income in our housing stock.

New home sales volume jumped to 45,000 in October 2016, up by 15% compared to the previous year, while 446,000 existing home sales reflect a slight year-over-year increase of just 0.5%. Since 1999, new and existing home sales have averaged 60,000 and 441,000 sales per month, respectively.



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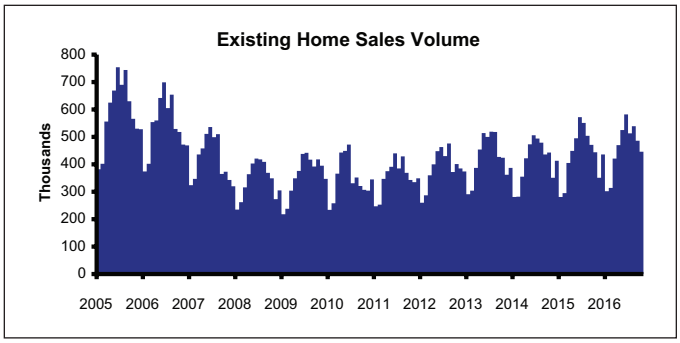


figure 300

Modi's Surprise Demonetization

On the evening of November 8, 2016, when all eyes were on the U.S. Presidential election, India's Prime Minister Modi announced that all 500 and 1,000 Rupee notes would no longer be legal tender as of midnight. These notes accounted for approximately 85% of all currency in circulation. While cash transactions are not intrinsically bad, the surprise move was designed to combat bad elements — both the black economy and corruption, which had resulted in perhaps 30% of these notes never seeing the light of day.

On one hand, the plan was masterful as the hoarders of illicit currency would simply be unable to successfully convert their holdings to new notes issued by the government, as there were restrictions placed

on the amount of old notes each citizen could convert. The move, combined with expected crackdowns on shell companies and real estate transactions, is widely expected to have a long-term positive impact, reducing the size of the informal economy (which is estimated to be 30%+ of GDP), reducing corruption, increasing tax collections, reducing the government's debt, and reducing inflation. To be clear, when we say there is a reduction of government debt, it is because the side benefit of currency — a liability of the government — being rendered useless is a de facto default, with a nicer name. And the reduction of inflation is a double-edged sword, as it is the result of reduced short-term demand.

But one must first make it to the long-term to realize these benefits! The short-term results have been abysmal, and many (including vocal Modi supporters) have wondered whether Modi, in trying to keep the demonetization secret, failed to include enough people in his planning process. Second, the country still operates 85% on a cash basis, and spending at all levels has slowed dramatically (cash is not all bad — it helps facilitate trade)! Retail spending was down 30-40% by some estimates in the first week, although the second week improved modestly for some (but not all). Moreover, lines at banks and ATMs stretched for hours, with the less fortunate and economically-disadvantaged hit the hardest (missing work, and not being able to send others as their proxies).

The lack of planning meant the Reserve Bank cannot print enough new bills to replace old ones being converted. Bear in mind that logistically, you need ten INR 100 notes for each INR 1,000 converted note. Anecdotal discussions indicate that the lack of cash supply is unlikely to improve until well into 2017, as the printing presses literally do not have the capacity to get the vaporized value back into print. In the meantime, we expect real pain and slower consumer spending.

GDP growth in fiscal year 2017 (ending March 31, 2017), will likely slow from an earlier projected 7%+ to 4% or less. While things are slowly improving and the government is taking steps to get much needed currency in the hands of the poor and rural populace, the second half of the fiscal year is still likely to exhibit near zero growth, decimating corporate earnings especially in agriculture, consumer products, real estate and financial services.

One observer noted that the sudden move was also designed to hurt the political opposition in the upcoming elections in the state of Uttar Pradesh (India's most populous state) where vote buying (with old-fashioned cash) is the historical norm. Making the opposition's stockpile of cash worthless immediately prior to the election may have seemed like good political calculus for Modi, but the immense short-term pain felt by the general populace may outweigh the political benefits. Only time will tell.

Office Market Outlook

The office sector was slow to recover from the extreme job losses of the Great Recession. For every one million new jobs created during the cyclical recoveries of the early 1990s and the 2000s, the national office vacancy rate declined by 60 bps and 73 bps, respectively. However, during the first four years of this recovery, there was only a 21-bp reduction in office vacancy per one million jobs. Between the third quarter of 2013 and the third quarter of 2014, the office market saw a promising 55-bp decline in the vacancy rate for every additional one million jobs. However, when we extend the data through the third quarter of 2016, the office vacancy rate has fallen by just 33 bps per one million workers from the third quarter of 2013. Specifically, from the third quarter of 2013 through the third quarter of 2016, the NCREIF (National Council of Real Estate Investment Fiduciaries) office vacancy rate declined by 260 bps to 11.6%, while employment grew by nearly eight million jobs. This in large part reflects less square footage per employee.

In the third quarter of 2016, Cushman and Wakefield's national office vacancy rate was 13.2%, 10 bps and 50 bps below the previous quarter and year, respectively. In comparison, NCREIF which tracks higher-quality institutional space, reported that the third-quarter office vacancy rate stood at 11.6%, four bps higher than the previous quarter, but 16 bps lower than the previous year. Both sources put U.S. office vacancy above the "natural rate" of roughly 10%.

In October 2016, real annualized U.S. office construction spending stood at $61.4 billion, 35% above the historical mean of $45.6 billion, and well above the historical low of $23.3 billion (2011). Although far below the historical high of $79.0 billion (2000), the current value reflects an upward trend in construction spending.

Estimated Costar data indicated that the real (2015 dollars) average office rent of $25.58 per square foot in the third quarter of 2016 was slightly above the 10-year average of $25.47. This rate is 9.3% below the 2008 high of $28.19 per square foot, but 9.4% above the 2013 low of $23.39.

Examining real 12-month rolling average sales volume, the office sector is the second-most active (after multifamily) in terms of real transaction volume, and today stands at 50% of its previous peak level. In October 2016, the sector registered $11.6 billion of real sales compared to a moving average peak of $23.0 billion per month. The rise in real office transaction levels rebounded 578% from its trough in early 2010 through October 2016, but decreased by 6.2% over the last year.

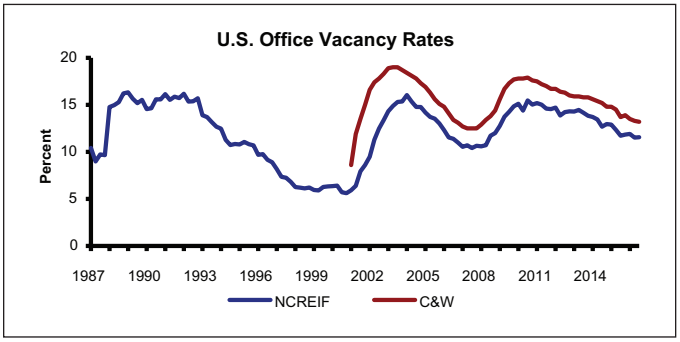
After dipping in early 2014, the average real office market transaction value was $283 per square foot in

Vacancy Versus Job Recovery

	Employment (000s)	Change (000s)	NCREIF Office Vacancy Rate %	Change (bps)	Decline in Vacancy Rate Per 1 Million Jobs Gained (bps)
4Q92	109,309		15.7		
4Q97	125,011	15,702	6.3	944	60
1Q04	130,921		16.0		
4Q97	138,310	7,389	10.7	539	73
3Q10	130,418		15.5		
3Q13	136,649	6,231	14.2	131	21
3Q13	136,649		14.2		
3Q16	144,605	7,956	11.6	260	33

Source: BLS, NCREIF, Linneman Associates.

figure 301



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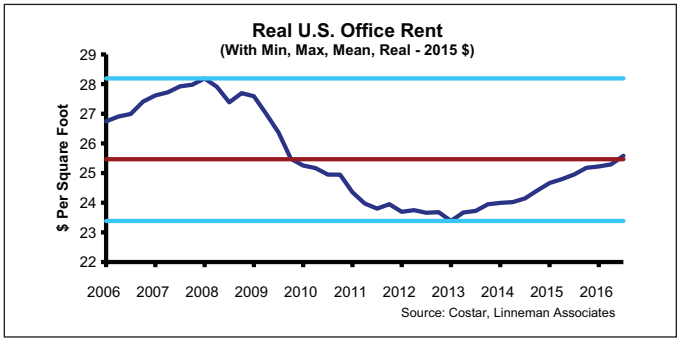

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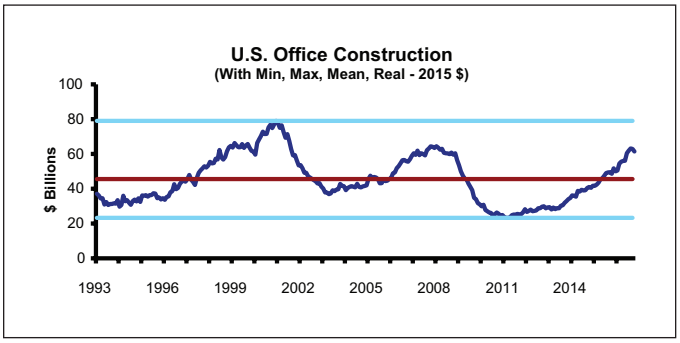

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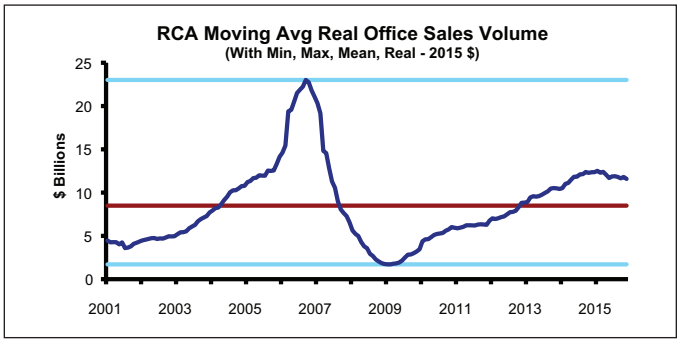

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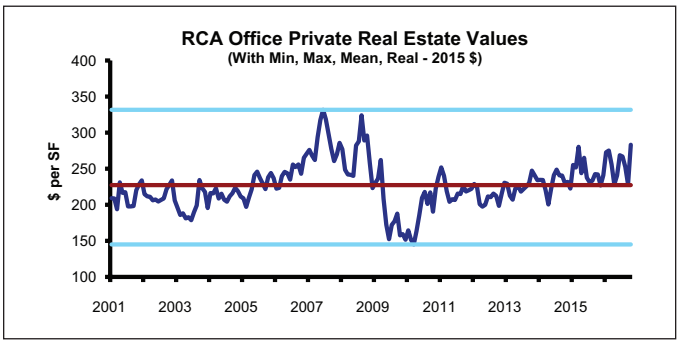

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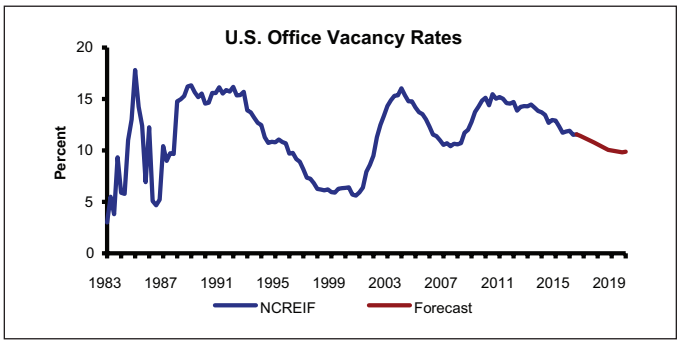


figure 308

Office Vacancy Rates - Base Case Pipeline

Market	3Q16	YE 2016 Est.	YE 2017 Est	YE 2018 Est	YE 2019 Est
Atlanta	16.2%	16.0%	15.3%	14.7%	13.9%
Austin	8.5%	8.3%	7.6%	6.0%	3.6%
Baltimore	14.6%	14.4%	13.9%	13.9%	14.1%
Boston	9.6%	9.4%	8.9%	8.6%	8.4%
Charleston	6.7%	6.2%	4.2%	2.8%	1.5%
Charlotte	8.1%	8.0%	7.5%	7.0%	6.6%
Chicago	14.9%	14.9%	14.8%	14.9%	14.9%
Cincinnati	20.6%	20.3%	19.4%	18.8%	18.4%
Cleveland	11.8%	11.4%	9.9%	8.7%	7.5%
Columbus	14.2%	14.2%	14.4%	14.9%	15.4%
Dallas	17.1%	16.8%	16.0%	15.7%	15.6%
Denver	11.3%	11.2%	11.2%	11.3%	11.4%
Detroit	17.8%	17.3%	15.3%	13.3%	11.2%
Fairfield County	20.7%	20.3%	19.2%	18.6%	18.3%
Fort Lauderdale	14.7%	13.9%	11.6%	10.1%	8.7%
Fort Worth	8.7%	8.5%	7.7%	7.0%	6.2%
Houston	16.8%	16.4%	15.2%	14.7%	14.2%
Indianapolis	15.6%	15.4%	14.6%	14.0%	13.4%
Inland Empire	13.7%	13.2%	11.2%	8.9%	6.5%
Long Island	16.6%	16.4%	15.7%	14.9%	14.3%
Los Angeles	14.6%	14.4%	13.9%	13.7%	13.6%
Memphis	20.4%	20.4%	20.5%	20.5%	20.6%
Miami	13.7%	13.7%	13.3%	13.2%	13.8%
Minneapolis	17.0%	16.5%	14.4%	12.5%	10.7%
Nashville	5.8%	6.5%	9.0%	11.3%	13.5%
New York City	9.0%	8.9%	8.5%	8.6%	9.0%
North & Central NJ	18.8%	18.3%	16.6%	15.0%	13.6%
Orange County	11.9%	11.5%	10.3%	9.5%	8.8%
Orlando	12.8%	12.1%	9.5%	7.4%	5.5%
Philadelphia	13.3%	13.1%	12.4%	12.2%	12.2%
Phoenix	18.2%	18.0%	17.3%	16.5%	15.5%
Portland	10.8%	10.6%	9.7%	8.8%	7.9%
Raleigh-Durham	9.7%	9.5%	8.9%	8.2%	7.6%
St. Louis	13.2%	12.8%	12.0%	11.7%	11.6%
San Diego	15.6%	15.3%	14.0%	12.9%	11.8%
San Francisco	7.2%	7.2%	7.1%	7.1%	7.1%
San Jose	8.4%	8.2%	7.7%	6.9%	5.6%
Seattle	9.5%	9.6%	9.8%	8.5%	5.5%
Tampa Bay	11.1%	10.6%	8.9%	7.3%	5.6%
Washington, D.C.	17.8%	17.6%	16.8%	16.2%	15.8%
Westchester County	20.9%	20.5%	19.3%	18.4%	17.7%
West Palm Beach	18.6%	18.0%	15.7%	13.6%	11.7%

Highlighted entries indicate market at supply-demand balance, or better.

** Inland Empire = Riverside/San Bernardino Metropolitan Area*

Note on Negative Vacancy: In order to calculate estimated vacancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show negative vacancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, negative vacancies cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of negative vacancy should be viewed as a strong excess demand indicator.

figure 307

October 2016, according to Real Capital Analytics. This is significantly below the 2007 peak of $332, but comfortably above the historical mean of $228 per square foot.

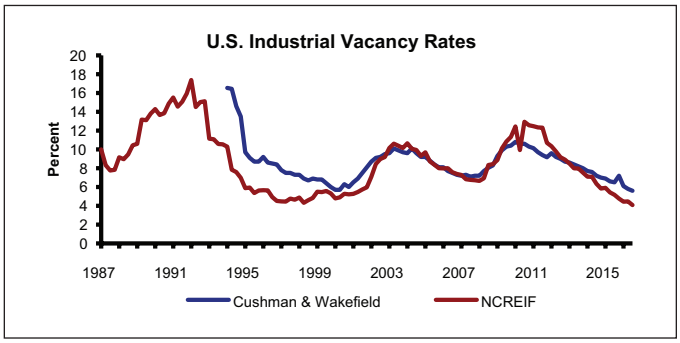
Sustained job growth is the most critical determinant of office demand growth. Linneman Associates examined the historical relationship between employment growth and commercial property vacancy rates, and determined that, over the long term, for every 100-bp (1%) increase in U.S. employment, the U.S. office vacancy rate declines by 43 bps. Thus, given our forecast of nearly 5.1 million new jobs through 2020 (467,000 in the last quarter of 2016; 2.2 million in 2017; 2.4 million in 2018, 800,000 in 2019; and a decline of 800,000 in 2020), we anticipate that the U.S. office vacancy rate will decline by approximately 150 bps in aggregate, or 35 bps per annum, through 2020.

In the third quarter of 2016, 23 of the 42 U.S. office markets we cover saw increasing vacancy rates, three remained flat, and 16 decreased. Inland Empire (+180 bps), Long Island (+150 bps), Indianapolis (+140 bps), Raleigh-Durham, Detroit, and Columbus (each +90 bps), and Orlando (+80 bps) saw the largest increases in vacancy rates, while Westchester County (-150 bps), Houston (-130 bps), Fairfield County, Charlotte, and Tampa Bay (each -110 bps), San Francisco (-80 bps), and San Jose (-70 bps) saw the greatest declines during the quarter. The highest vacancy rates at the end of the quarter were in Westchester County, Fairfield County, Cincinnati, Memphis, North & Central NJ, West Palm Beach, Phoenix, Detroit, and Washington D.C., while Nashville, Charleston, San Francisco, Charlotte, San Jose, Austin, Fort Worth, New York City, and Seattle displayed the lowest vacancy rates.

By year-end 2017, the weakest markets are expected to be Memphis, Cincinnati, Westchester County, Fairfield County, Phoenix, Washington, D.C., North & Central NJ, and Dallas. The top performers by year-end 2017 are expected to be Charleston, San Francisco, Charlotte, Austin, San Jose, Fort Worth, New York City, Raleigh-Durham, and Boston. Using a benchmark of 10% vacancy to proxy a relatively balanced market, only 11 were in balance in the third quarter of 2016. We expect Cleveland, Portland, Orlando, and Tampa Bay to come into balance by year-end 2017. Inland Empire and Orange will join the in-balance list at year-end 2018, while Nashville will fall out of balance that year.

Industrial Market Outlook

Cushman and Wakefield data indicate that the U.S. industrial vacancy rate decreased 20 bps during the third quarter of 2016 to 5.6%. This reflects a total inventory of about 14 billion square feet of industrial space nationwide. In comparison, NCREIF's U.S. industrial vacancy rate (primarily representing institutional-quality properties) saw an impressive 40-bp decline to 4.1% in the third quarter of 2016. The two data series generally move in the same direction, but they have exhibited some variation in magnitude over the years.



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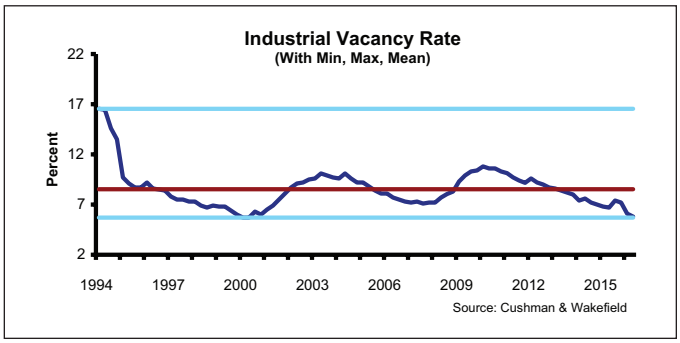
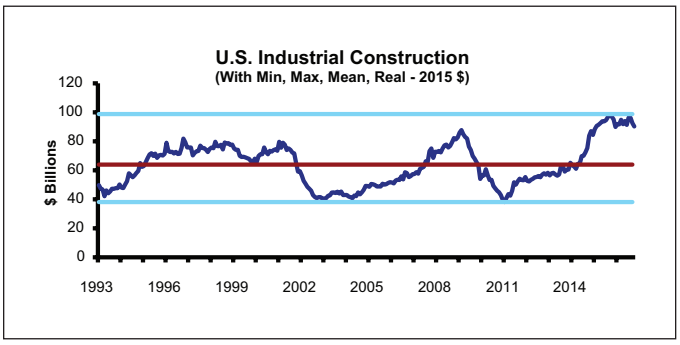


figure 310

In October 2016, real U.S. industrial construction spending stood at $90.3 billion, significantly above both the historical (since 1993) low of $38.1 billion (2011) and the long-term average of $63.9 billion. Most of this activity is driven by logistics providers that service and fulfill retail internet sales. The race to provide same-day and next-day delivery is driving dot-com (e.g., Amazon) and traditional (e.g., Target, Macy's) retailers alike to ramp up their distribution infrastructure. Improvements in supply chain technology have led to increased productivity, shorter delivery times, and increased demand for well-located distribution warehouses.



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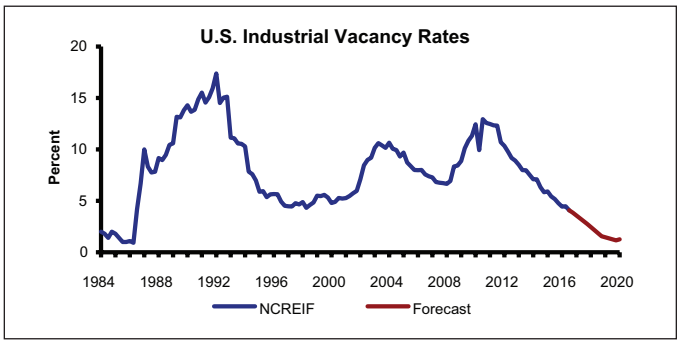

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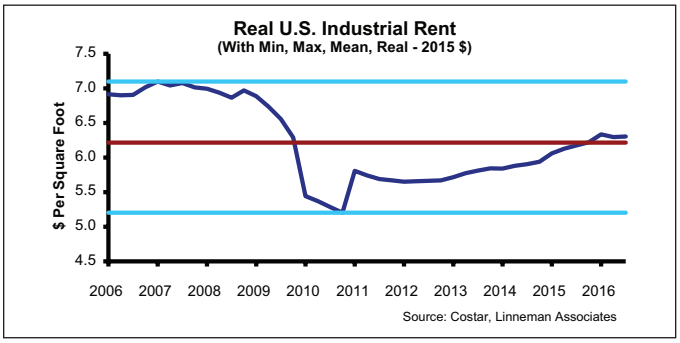

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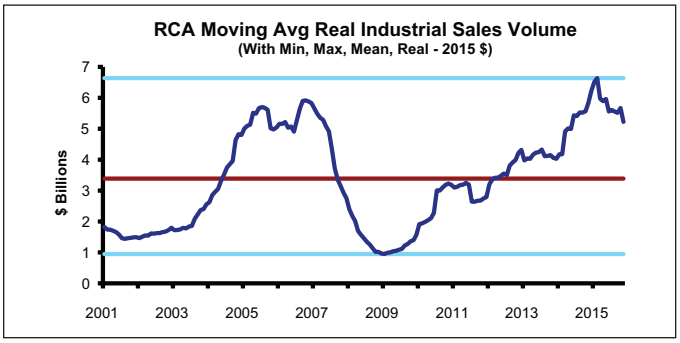

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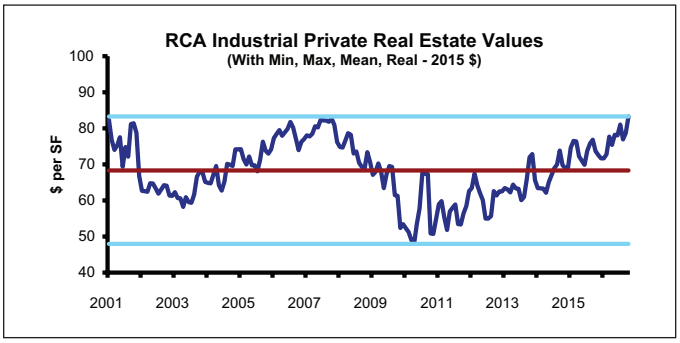


figure 314

Estimated real (2015 dollars) average industrial rent of $6.30 per square foot in the third quarter of 2016 is slightly above the 10-year average of $6.22. The current rate is 11.1% below the 2007 high of $7.10 per square foot, but 21.1% above the 2010 low of $5.20.

Rolling 12-month real monthly industrial sales transaction volumes stood at $5.2 billion in October 2016, or about 78% of the previous peak and up by 45% from the bottom. According to Real Capital Analytics, the real average value of industrial properties sold was $83 per square foot in October 2016, a new historical high, above the historical mean of $68 per square foot. The historical low of $48 occurred in 2010. Industrial market pricing has been robust since 2014.

Linneman Associates estimates that for every 100 bps of growth in U.S. employment, the industrial vacancy rate declines by 72 bps. Assuming that 5.1 million new jobs (3.5%) are added from the third quarter of 2016 through 2020, we estimate that the industrial vacancy rate will decline by 250 bps over the next four years, or by about 60 bps per year.

In the third quarter of 2016, six markets saw increased vacancy, one was flat, and 26 saw decreasing vacancy rates. The greatest improvements occurred in Seattle (-160 bps), Fort Lauderdale (-130 bps), Indianapolis (-120 bps), St. Louis (-90 bps), and Washington, D.C., Orlando, and Charlotte (each -70 bps). At the end of the third quarter of 2016, the highest vacancy rate was in Washington D.C. (10.3%), while the lowest was in Los Angeles (1.3%).

By year-end 2017, the strongest industrial markets are expected to be Los Angeles, Nashville, Detroit, Seattle, Charlotte, and San Francisco, while the weakest are expected to be Atlanta, Phoenix, Washington, D.C., Dallas-Ft. Worth, Minneapolis, Chicago, and St. Louis.

Using a 6% benchmark vacancy rate to proxy supply-demand balance for industrial markets, Charlotte, Cincinnati, Cleveland, Denver, Detroit, Fort Lauderdale, Indianapolis, Inland Empire, Las Vegas, Los Angeles, Miami, Nashville, North & Central NJ, Orlando, Philadelphia, Portland, San Diego, San Francisco, Seattle, and Tampa Bay were in balance at the end of the second quarter of 2016. We project that 22 markets will be in balance by year-end 2017, and 23 by year-end 2018, though Inland Empire and Miami are projected to fall out of balance by 2017 due to excessive new supply.

Multifamily Market Outlook

The Census Bureau's quarterly Housing Vacancy Survey indicates that the U.S. multifamily vacancy rate increased by 10 bps, to 6.8%, in the third quarter of 2016, but remains below the long-term average (since 1965) of 7.4%. The series peaked at 11.3% in the third quarter of 2009, but has since declined by about 450 bps. At 6.7%, NCREIF's multifamily vacancy rate jumped by nearly 100 bps during the third quarter of 2016 and 110 bps over the last year, but is still about 200 bps below the 2008 peak. On average, NCREIF vacancy rates (for institutional quality assets) have been about

Industrial Vacancy Rates - Base Case Pipeline

Market	3Q16	YE 2016 Est.	YE 2017 Est	YE 2018 Est	YE 2019 Est
Atlanta	8.6%	8.9%	10.3%	11.5%	12.6%
Austin	7.5%	7.2%	6.2%	5.1%	3.9%
Baltimore	7.0%	6.6%	5.3%	4.5%	4.1%
Charlotte	3.8%	3.3%	1.5%	-0.2%	-2.0%
Chicago	6.1%	6.3%	7.0%	7.7%	8.5%
Cincinnati	4.2%	3.9%	2.9%	2.4%	2.1%
Cleveland	4.9%	4.5%	3.0%	1.8%	0.7%
Columbus	5.9%	5.8%	5.3%	5.3%	5.2%
Dallas-Fort Worth	6.6%	6.8%	7.9%	9.2%	10.5%
Denver	3.9%	3.7%	3.4%	3.3%	3.2%
Detroit	4.0%	3.4%	1.3%	-0.9%	-3.2%
Fort Lauderdale	5.5%	4.8%	2.7%	1.6%	0.6%
Houston	6.7%	6.6%	5.9%	6.0%	6.1%
Indianapolis	3.7%	3.7%	3.6%	3.6%	3.7%
Inland Empire*	4.7%	5.1%	6.2%	7.2%	7.8%
Las Vegas	5.8%	5.5%	4.1%	2.6%	0.8%
Long Island	6.5%	6.4%	5.6%	4.9%	4.2%
Los Angeles	1.3%	1.1%	0.6%	0.4%	0.3%
Miami	4.4%	4.8%	6.3%	8.0%	10.2%
Minneapolis	8.4%	8.2%	7.5%	7.0%	6.6%
Nashville	3.3%	2.9%	1.3%	-0.2%	-1.7%
North & Central NJ	5.0%	4.7%	3.8%	3.1%	2.6%
Orlando	5.1%	4.7%	3.3%	2.4%	1.8%
Philadelphia	4.9%	4.8%	4.6%	4.8%	5.4%
Phoenix	9.3%	9.1%	8.2%	7.1%	5.9%
Portland	4.3%	4.1%	3.1%	2.2%	1.3%
St. Louis	6.4%	6.4%	6.8%	7.9%	9.1%
San Diego	5.1%	4.6%	2.7%	0.9%	-0.9%
San Francisco	3.9%	3.6%	2.4%	1.4%	0.3%
Seattle	3.8%	3.3%	1.4%	-0.5%	-2.3%
Tampa Bay	5.6%	5.2%	3.8%	2.6%	1.2%
Washington, D.C.	10.3%	9.9%	8.1%	6.5%	5.1%

Highlighted entries indicate market at supply-demand balance, or better.

** Inland Empire = Riverside/San Bernardino Metropolitan Area*

Note on Negative Vacancy: In order to calculate estimated vacancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show negative vacancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, negative vacancies cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of negative vacancy should be viewed as a strong excess demand indicator.

figure 316

100 bps below Census vacancy rates, reflective of the relatively higher vacancy rates among non-institutional properties.

Linneman Associates' research indicates that for every 100 bps of growth in U.S. employment, the multifamily vacancy rate declines by 26 bps. Assuming that 5.1 million new jobs (3.5%) are created through 2020, we estimate that the multifamily vacancy rate will decline by about 90 bps over the next four years. Interestingly, because the two series have converged within 10 bps, the respective vacancy rate forecasts are essentially the same.

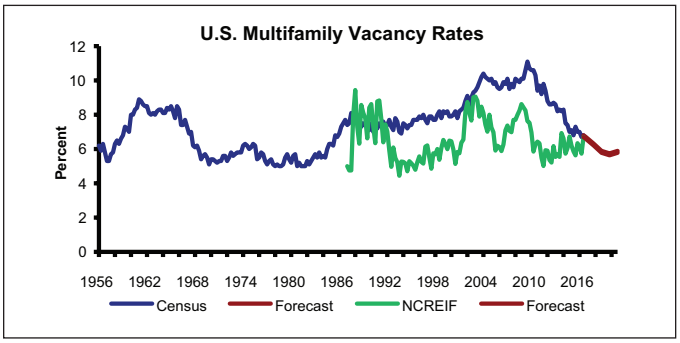


figure 317

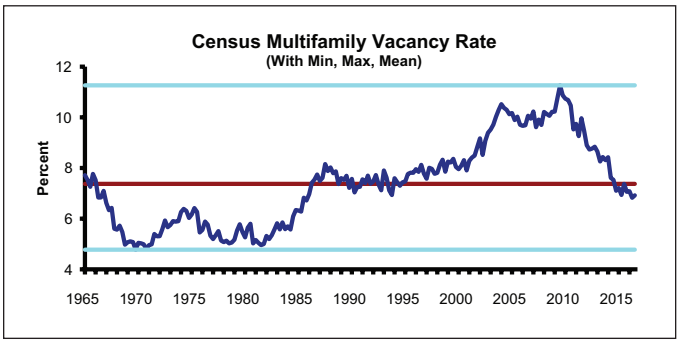


figure 318

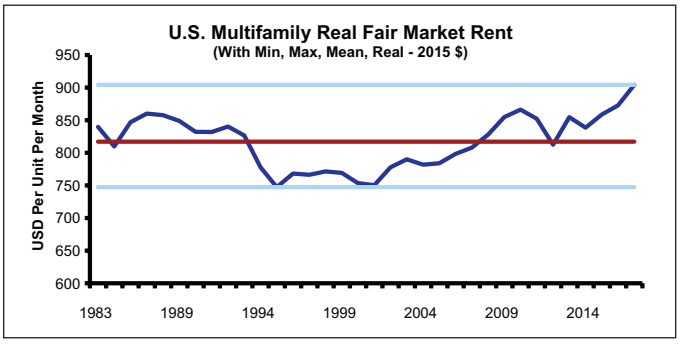
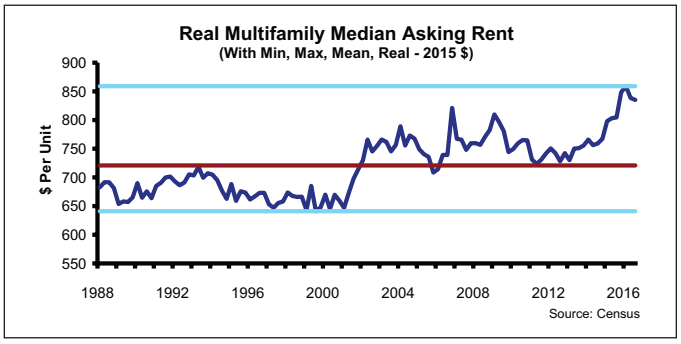


figure 319

Fair Market Rents (FMR), as published by the Department of Housing and Urban Development (HUD), indicate the 40th lowest percentile rent. That is, FMR is the dollar amount below which the lowest 40% of the standard-quality rental housing units are rented. In the U.S., the real average FMR is estimated to be $904 per unit in 2017, a new historical peak. It saw a trough of $747 in 1995 and a real long-term average (since 1983) of $817. Volatility, as measured by the range between the low and high values as a percent of the long-term average, is 19% for the nation, significantly lower than for most of the markets covered in this report.

Real median multifamily rent published by the Census tells a similar story. The long-term average (1988-present) real rent is about $720 per unit, while the third quarter 2016 rent stood at $835. The current level surpasses the 2006 high of $820 per unit, but marks a decline from the historical high of $859 per unit seen in the second quarter of 2016. The real low of $641 per unit occurred in 1999. Real median multifamily rents increased by 3.8% year-over-year through the third quarter of 2016. In comparison, real median rents grew by 6% in the previous 12-month period.

We expect effective apartment rents to continue to rise by approximately 3.5% over the coming year. While this is just below the latest annual increase of 3.8% through the third quarter of 2016, it is still well in excess of inflation, meaning real NOI growth occurs even as vacancy increases. We believe it will take until 2019 for NOI in most markets to lag inflation. In 2019, we expect that increased supply will meet a recessionary demand drop, combined with the dampening of demand as maturing Millennials shift from being renters to homebuyers. In addition, ever more households that had previously delayed ownership will finally have assembled the down payment necessary to purchase homes.



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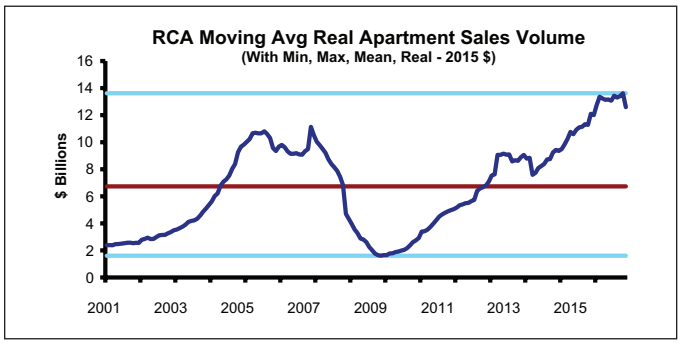


figure 321

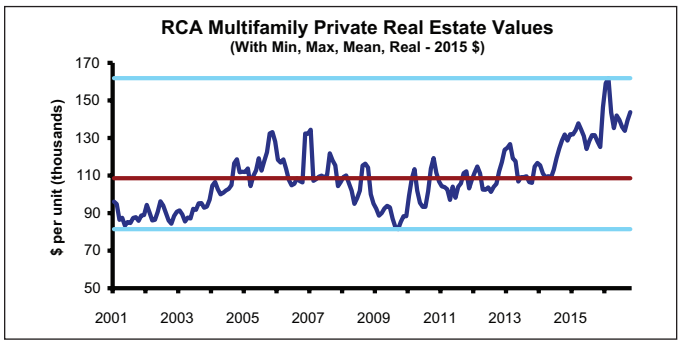
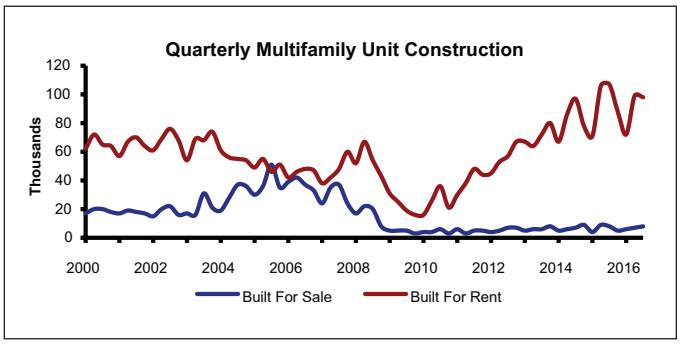


figure 322



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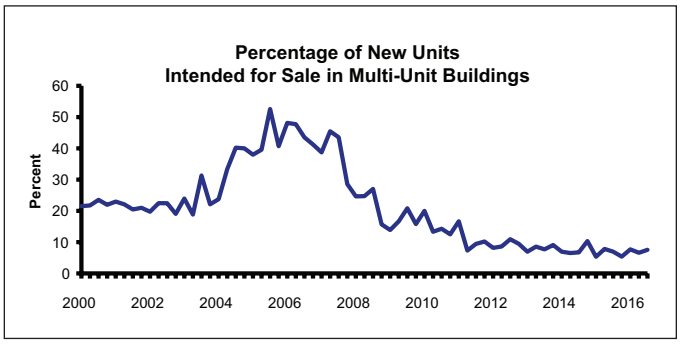

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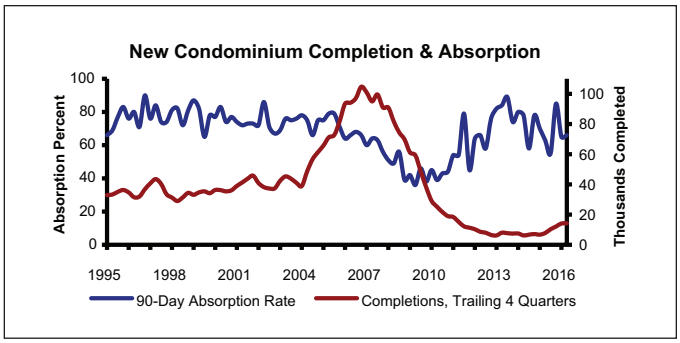


figure 325

Rolling 12-month multifamily sector real monthly sales transaction volumes stood at about $12.6 million in October 2016, or about 93% of the previous peak and up by 684% from the bottom. According to Real Capital Analytics, the real average multifamily sale price stood at $144,000 per unit in October 2016. This far surpasses the historical mean of $108,000, and is modestly above the pre-recession peak of $134,000, but reflects a decline from the February 2016 peak of $162,000 per unit.

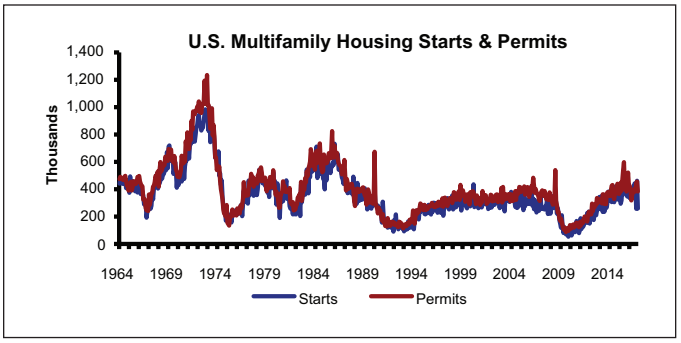
Multifamily units built with the intention of renting (versus condominiums) have increased significantly, from a low of 91,000 per year in 2009, to 357,000 over the last four quarters through the third quarter of 2016. Today, a stunning 92.4% of all multifamily units are being built as rentals, versus 2005, when rentals only accounted for just 48% of those units being built in a multifamily property. New condominium completions were down from 30,700 in the fourth quarter of 2006, to just 2,800 in the second quarter of 2016. The Census estimates that 66% of condos were absorbed within 90 days after completion in the second quarter of 2016. This is compared to the long-term (since 1993) average of 69%.

Multifamily starts (5+ units) hit a stunning low of 62,000 units (annualized) in February 2010 but regained ground and registered an annualized rate of 513,000 units in June 2015. We saw an uneven year in 2016, with October registering 462,000 annualized multifamily housing starts and November turning in just 259,000. These production levels are in comparison to the 25-year and 40-year averages of 334,000 and 355,000 units per year, respectively. We anticipate that multifamily home starts will be above average historical norms in 2017-2020. Over the next 2-3 years, lower vacancy rates, increased effective rents, and low cap

rates will spur development. The gap in construction since the Crisis has resulted in low vacancy rates.

In October 2016, real annualized U.S. multifamily construction spending stood at $62.4 billion, well above both the historical low of $14 billion (2010) and the historical mean of $38.3 billion. It has sharply risen over the last six years and is just short of the all-time high of $64.6 billion seen in 2006.

Through 2020, we expect multifamily demand to increase by 1.6 million units. The U.S. multifamily



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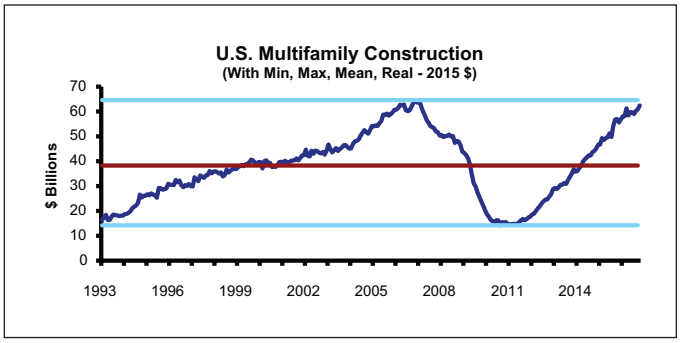


figure 328

Multifamily Vacancy Rates - Base Case Pipeline

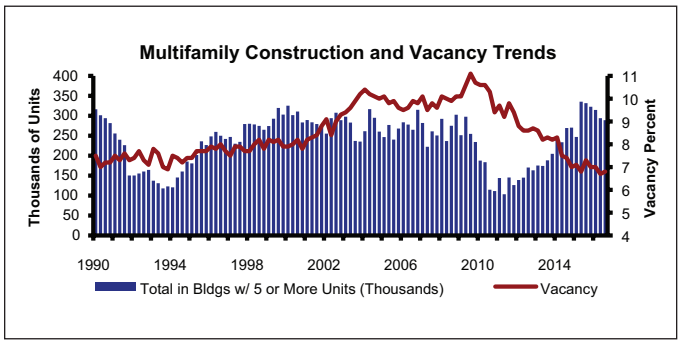
Market	2Q16	YE 2016 Est.	YE 2017 Est.	YE 2018 Est.	YE 2019 Est.
Atlanta	5.2%	5.4%	6.2%	6.8%	6.2%
Austin	4.3%	4.7%	5.3%	5.9%	4.9%
Baltimore	3.8%	2.7%	1.7%	0.7%	-0.8%
Boston	3.2%	3.4%	4.2%	5.3%	5.1%
Charlotte	3.9%	4.6%	5.9%	7.1%	6.7%
Chicago	3.7%	4.1%	4.9%	5.8%	5.9%
Cincinnati	4.0%	3.6%	3.3%	3.4%	3.0%
Cleveland	3.3%	2.8%	2.0%	1.5%	0.5%
Columbus	3.8%	3.8%	4.1%	4.6%	4.2%
Dallas-Fort Worth	4.5%	4.9%	6.3%	7.9%	7.7%
Denver	4.5%	4.4%	4.9%	5.6%	5.2%
Detroit	2.8%	1.9%	0.2%	-1.6%	-3.8%
Houston	5.8%	6.0%	6.1%	6.9%	6.8%
Indianapolis	5.1%	5.1%	5.2%	5.5%	4.9%
Inland Empire*	3.5%	2.9%	1.6%	0.1%	-2.1%
Los Angeles	2.8%	2.5%	2.2%	2.3%	1.9%
Miami	1.7%	3.1%	5.6%	8.1%	9.6%
Minneapolis	2.4%	1.6%	-0.1%	-1.6%	-3.5%
Nashville	3.6%	4.7%	6.8%	8.8%	8.8%
New York City	4.2%	3.9%	3.5%	3.6%	3.3%
Orange County	3.1%	3.1%	3.1%	3.6%	3.1%
Orlando	3.3%	3.2%	3.4%	4.1%	3.4%
Philadelphia	4.3%	4.6%	5.6%	7.0%	7.7%
Phoenix	4.4%	4.4%	4.5%	4.4%	3.2%
Portland	3.4%	3.8%	4.7%	5.5%	4.8%
St. Louis	5.2%	4.6%	4.1%	4.3%	4.2%
San Diego	3.0%	2.2%	0.7%	-0.7%	-2.5%
San Francisco	4.1%	4.3%	4.7%	5.3%	4.8%
San Jose	3.1%	2.9%	3.3%	4.0%	3.7%
Seattle	2.9%	2.9%	3.0%	3.1%	1.7%
Tampa Bay	3.6%	3.7%	4.1%	4.6%	3.9%
Washington, D.C.	4.0%	3.7%	3.0%	2.5%	1.4%

Highlighted entries indicate market at supply-demand balance, or better.

** Inland Empire = Riverside/San Bernardino Metropolitan Area*

Note on Negative Vacancy: In order to calculate estimated vacancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show negative vacancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, negative vacancies cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of negative vacancy should be viewed as a strong excess demand indicator.

figure 327



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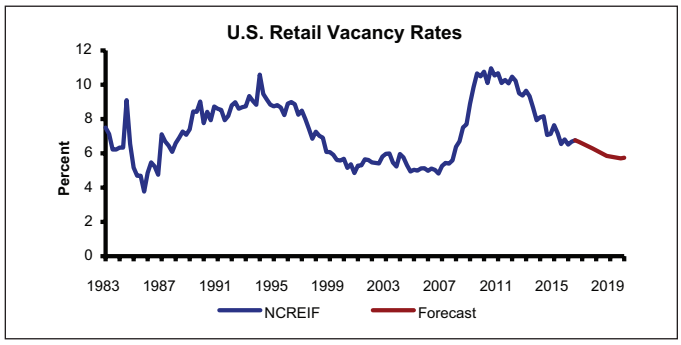
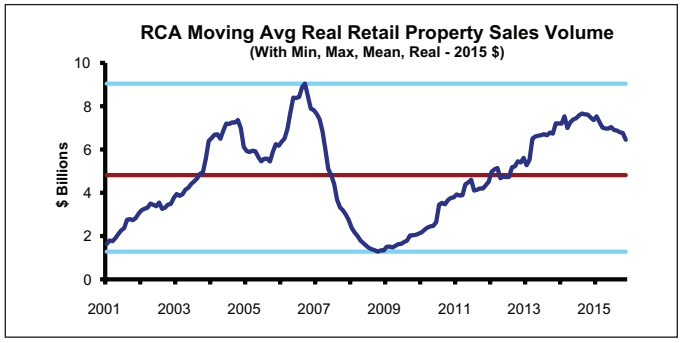


figure 330

vacancy rate (Census data) is just slightly above its 25-year (1976-2001) average of 6.9%, resulting in a modest surplus of available multifamily units versus the historical norm. With a projected 7% vacancy rate by year-end 2017, the market will generate an excess of 82,000 available units. However, our fundamental forecast projection indicates that this will revert back to a shortage in 2019-2020.

The highest vacancy rates for the second quarter of 2016 (latest available) were in Houston, Atlanta, St. Louis, Indianapolis, and Dallas-Fort Worth, while Miami, Minneapolis, Los Angeles, Detroit, and Seattle experienced the lowest rates. By year-end 2017, the weakest markets are expected to be Nashville, Dallas-Ft. Worth, Atlanta, Houston, and Charlotte, while Minneapolis, Detroit, San Diego, Inland Empire, and Baltimore will boast the lowest vacancy rates.

Using a 5% vacancy rate proxy for supply-demand balance, 28 of our 32 multifamily markets were in balance in the second quarter of 2016. By year-end 2016, all markets except Atlanta, Houston, and Indianapolis are expected to be in balance.



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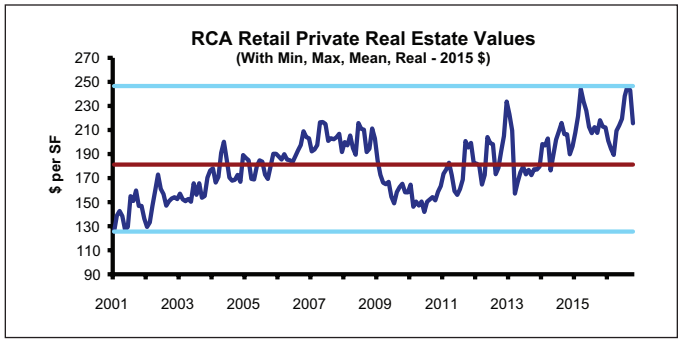


figure 332

Retail Market Outlook

At 6.8%, NCREIF's third-quarter 2016 retail vacancy rate registered a quarterly increase of 10 bps and an annual increase of 30 bps. The retail vacancy rate has been trending downward since peaking at 10.8% in 2010, only reversing its course over the recent quarters.

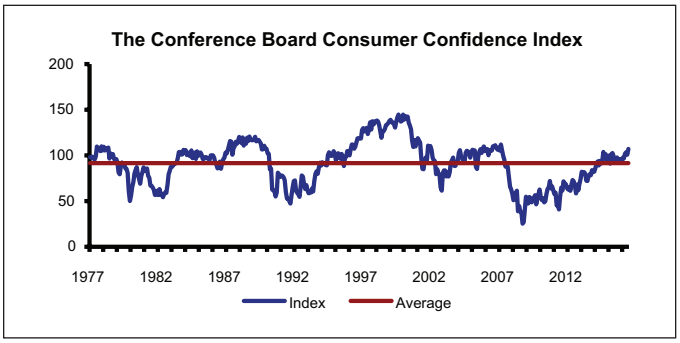
Linneman Associates' research indicates that for every 100 bps of growth in U.S. employment, the retail vacancy rate declines by 26 bps. Assuming that 5.1 million new jobs (3.5%) are created from the third quarter of 2016 through 2020, we estimate that the retail vacancy rate will decline by about 90 bps over the next four years.

Rolling 12-month real monthly retail property sales transaction volumes stood at $6.4 billion in October 2016, or about 71% of the previous peak and up by 402% from the bottom. Real Capital Analytics data indicate the October 2016 real average private transaction value for retail properties was $216 per square foot, a new historical high above the historical mean ($181). A low of $126 per square foot was seen in 2001.

The Conference Board Consumer Confidence Index has experienced significant volatility since bottoming at 25.3 in 2009, climbing in fits and starts and reaching a post-recession high of 103.8 in January 2015. The

October 2016 level of 98.6 is above the long-term historical average, but below the peak of 111.2 seen during the height of the economic boom in 2007. The University of Michigan Consumer Sentiment Index shows a similar pattern.

Real monthly retail sales (2015 dollars) peaked at $383 billion in November 2007, dropped to $326 billion in March 2009, and have since regained lost ground, ending November 2016 at $402 billion. Monthly annualized real retail construction declined steadily from its September 2007 peak of $75.3 billion, but has made a modest comeback since bottoming at $24.7 billion in early 2011. In October 2016, it stood at $39.9 billion, where it has generally been for the last



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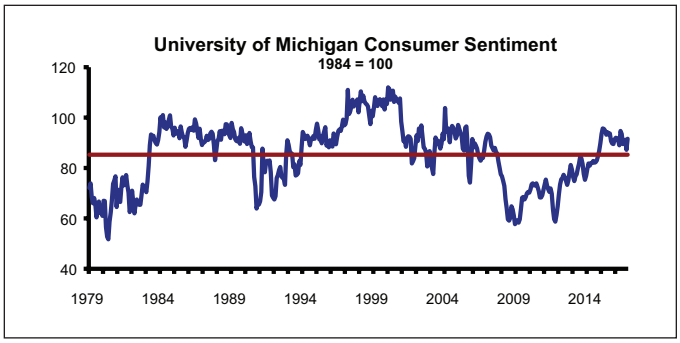

figure 335

Retail Vacancy Rates - Base Case Pipeline

Market	3Q16	YE 2016 Est.	YE 2017 Est.	YE 2018 Est	YE 2019 Est
Atlanta	8.9%	8.6%	7.5%	6.3%	5.1%
Austin	5.4%	4.8%	2.6%	0.2%	-2.2%
Boston	3.7%	3.2%	1.4%	-0.2%	-1.7%
Charlotte	6.6%	6.2%	4.6%	3.0%	1.4%
Chicago	10.7%	10.5%	9.8%	9.2%	8.6%
Cincinnati	9.6%	9.1%	7.5%	6.3%	5.3%
Cleveland	9.2%	8.8%	7.1%	5.8%	4.5%
Columbus	7.6%	7.1%	5.6%	4.4%	3.2%
Dallas-Fort Worth	7.7%	7.2%	5.6%	4.3%	3.0%
Denver	7.1%	6.6%	5.1%	3.8%	2.4%
Detroit	9.9%	9.4%	7.5%	5.5%	3.4%
Houston	6.8%	6.5%	5.3%	4.9%	4.6%
Indianapolis	7.4%	7.0%	5.6%	4.3%	3.1%
Los Angeles	5.1%	4.8%	4.0%	3.4%	2.8%
Miami	3.4%	3.6%	4.3%	5.2%	6.8%
Minneapolis	6.3%	5.7%	3.4%	1.2%	-0.8%
Nashville	9.4%	9.0%	7.7%	6.4%	5.2%
New York City	6.7%	6.3%	5.1%	4.4%	4.1%
Orlando	8.0%	7.2%	4.5%	2.3%	0.2%
Philadelphia	7.7%	7.5%	6.8%	6.6%	6.6%
Phoenix	11.2%	10.9%	9.8%	8.4%	6.9%
Portland	6.7%	6.2%	4.3%	2.3%	0.4%
St. Louis	9.4%	8.9%	7.5%	6.8%	6.3%
San Diego	5.7%	5.2%	3.1%	1.1%	-0.8%
San Francisco	4.7%	4.4%	3.1%	2.1%	1.0%
San Jose	5.5%	5.1%	4.2%	3.8%	3.4%
Seattle	6.2%	5.4%	2.2%	-1.0%	-4.2%
Tampa Bay	7.5%	7.0%	5.4%	3.8%	2.2%
Washington, D.C.	5.1%	4.7%	2.9%	1.2%	-0.3%

Highlighted entries indicate market at supply-demand balance, or better.

Note on Negative Vacancy: In order to calculate estimated vacancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show negative vacancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, negative vacancies cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of negative vacancy should be viewed as a strong excess demand indicator.

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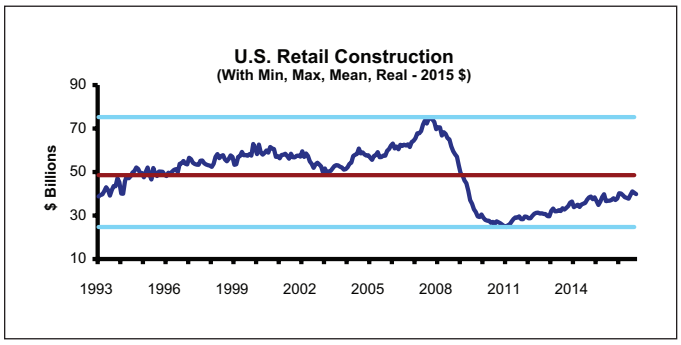


figure 336

six months, and is still below the historical average of $48.6 billion.

As of the third quarter of 2016, the lowest retail vacancy rates were in Miami (3.4%), Boston (3.7%), San Francisco (4.7%), Los Angeles and Washington, D.C. (each 5.1%), Austin (5.4%), and San Jose (5.5%). In contrast, the highest vacancy rates were found in Phoenix (11.2%), Chicago (10.7%), Detroit (9.9%), Cincinnati (9.6%), and Nashville and St. Louis (each 9.4%).

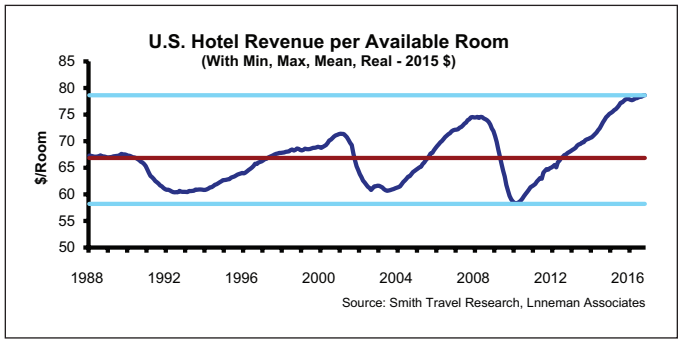
By 2017, all of our covered markets, except Miami, are projected to register decreasing vacancy rates compared to the third quarter of 2016. The greatest improvements over the next year are expected in Seattle, Orlando, Minneapolis, Austin, San Diego, and Detroit.

Using 8.5% vacancy as a benchmark for a balanced market, 21 of our 29 markets were in balance in the third quarter of 2016. All covered MSAs except Chicago and Phoenix are projected to be in balance by year-end 2017. Phoenix is expected to achieve market balance in 2018, while Chicago will be the lone retail market not in balance until 2019.

Hotel Market Outlook

Smith Travel Research reports that the 12-month rolling average U.S. hotel occupancy rate peaked in June of 2006 at 63.7%, and subsequently declined to 55% in late 2009. Most recently, after five years of steady increases, the national hotel occupancy rate stood at 65.4% as of October 2016. The real 12-month rolling average revenue per available room (RevPAR) ceased its 5-year ascent in 2008, peaking at $74.58 (2015 dollars) and subsequently bottoming at $58.21 in early 2010. Real RevPAR reached a new high of $78.63 in October 2016. This is compared to real RevPAR of $77.87 a year earlier and a long-term average (since 1988) of $66.84. The 12-month rolling U.S. average daily rate (ADR) stood at $123.53 per room in October 2016, versus $119.89 the previous year.

Linneman Associates' research indicates that for every 100 bps of growth in U.S. employment, the hotel occupancy rate increases by 52 bps. Assuming that 5.1 million new jobs (3.5%) are created from the third quarter of 2016 through 2020, we estimate that the hotel occupancy rate will increase by about 180 bps over that period.



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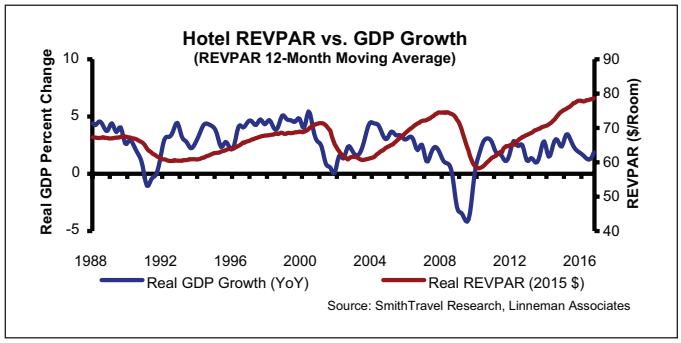

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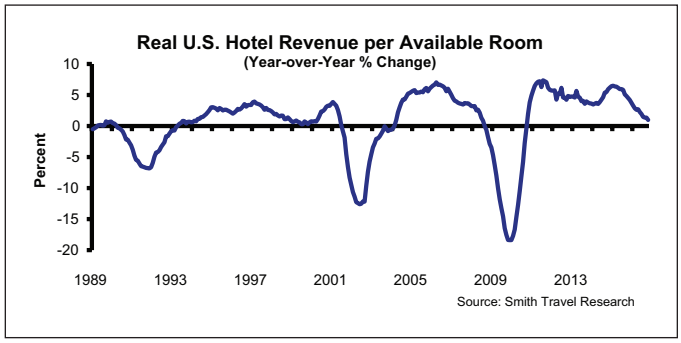

figure 339

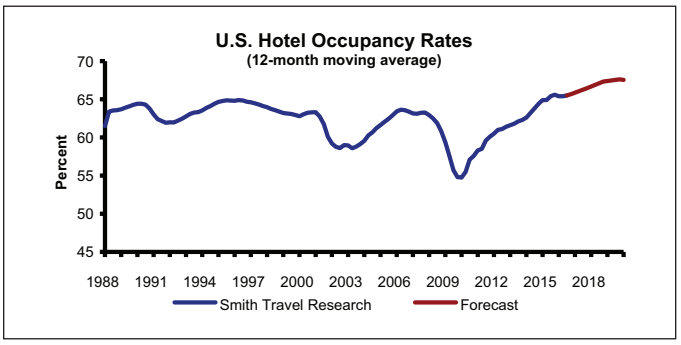

figure 340

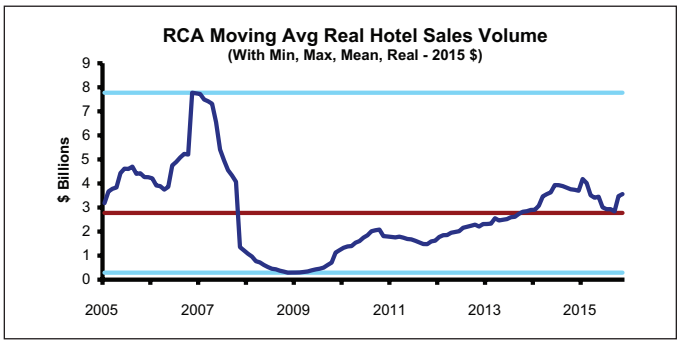

figure 342

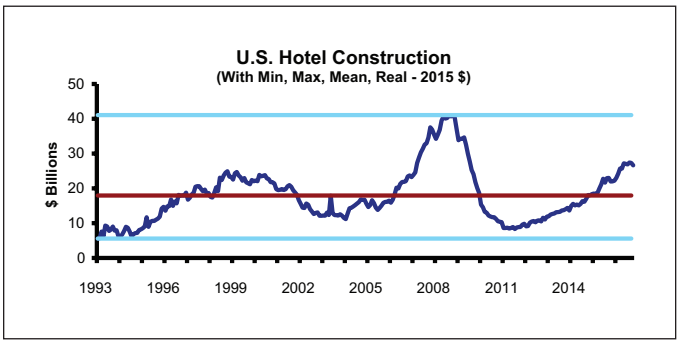

figure 341

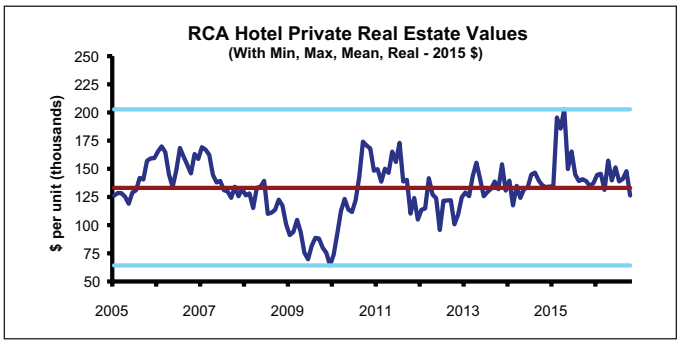

figure 343

As of October 2016, real annualized U.S. lodging construction spending stood at $26.6 billion, which is 48.3% above its historical average of $17.9 billion and about 48.3% of the 2008 high of $41 billion. Lodging construction has increased steadily since the 2011 low of $8.3 billion, but not as steeply as in the industrial and multifamily sectors.

Twelve-month rolling real monthly hotel property sales transaction volumes stood at $3.6 billion in October 2016, or about 46% of the previous peak and up by 1,122% from the bottom. According to Real Capital Analytics, the average hotel sale price in October 2016 stood at about $126,000 per room, surpassing the historical average value of $133,000 per room, as well as the all-time low of $64,000 per room (2009). Pricing peaked in April of 2015 at $157,000 per room, but has since moderated toward the long-term average.

U.S. hotel markets weakened saw mixed results in the third quarter of 2016, with about half of our covered markets experiencing declining occupancy rates compared to the previous quarter, and the other half increasing. Philadelphia (+112 bps), Las Vegas (+52 bps), San Diego (+46 bps), and Washington, D.C. (+37 bps) registered the greatest improvements. At the end of the third quarter of 2016, New York City, San Francisco, Los Angeles, Miami, San Diego, Seattle, and Orlando had the highest occupancy rates, while markets with the lowest occupancy included Houston, Detroit, St. Louis, Phoenix, Minneapolis, and Chicago.

By year-end 2017, five of the 23 MSAs in our survey are expected to have increasing occupancy rates compared to the third quarter of 2016, with Las Vegas (+184 bps) and Orlando (+165 bps) leading the pack. By year-end 2017, San Francisco, New York City, Los Angeles, Orlando, San Diego, and Las Vegas are expected to register the highest occupancy rates, while Houston, Detroit, St. Louis, Phoenix, Philadelphia, and Chicago are projected to be the worst performing markets.

Using a 70% occupancy rate to proxy market balance, only eight markets (Atlanta, Chicago, Detroit, Houston, Minneapolis, Philadelphia, Phoenix, and St. Louis) were not in balance in the third quarter of 2016.

Hotel Occupancy Rates - Base Case Pipeline

Market	YE 2016 Est.	YE 2017 Est.	YE 2018 Est.	YE 2019 Est.
Atlanta	69.6%	68.9%	68.3%	68.3%
Austin	71.8%	68.4%	65.6%	65.6%
Boston	74.4%	72.6%	70.7%	70.7%
Chicago	68.9%	67.9%	66.9%	66.9%
Dallas	71.5%	69.6%	67.6%	67.6%
Denver	73.3%	70.0%	66.9%	66.9%
Detroit	65.4%	64.2%	63.0%	63.0%
Houston	63.4%	61.0%	58.4%	58.4%
Las Vegas**	73.3%	74.8%	76.4%	76.4%
Los Angeles	80.5%	78.3%	76.0%	76.0%
Miami	76.3%	73.1%	70.0%	70.0%
Minneapolis	68.5%	68.8%	69.0%	69.0%
Nashville	73.4%	68.1%	63.7%	63.7%
New York City	84.3%	79.8%	75.6%	75.6%
Orlando	76.1%	77.4%	78.2%	78.2%
Philadelphia	68.8%	66.9%	64.8%	64.8%
Phoenix	67.1%	66.8%	66.6%	66.6%
St. Louis	66.0%	65.5%	64.6%	64.6%
San Diego	76.6%	76.7%	76.8%	76.8%
San Francisco	84.3%	83.8%	83.2%	83.2%
Seattle	75.2%	72.7%	70.5%	70.5%
Tampa Bay	71.6%	70.8%	70.0%	70.0%
Washington, D.C.	71.6%	71.7%	71.7%	71.7%

Highlighted entries indicate market at supply-demand balance, or better.
** Source: Smith Travel Research.*
*** LV sample accounts for less than 15% of LV market.*

figure 344

Seniors Housing and Care Market Outlook

All current and historical seniors housing market statistics are provided by the National Investment Center for the Seniors Housing and Care Industry (NIC) through its NIC MAP database. From this data, we generate our 5-year occupancy forecasts for independent living (IL) and assisted living (AL) for NIC's top 31 MSAs. Note that development pipelines used in our forecasting model only include those projects that are currently under construction and therefore, only account for new inventory within the next 18 months.

NIC MAP measures occupancy, revenue per occupied room (RevPOR), supply, demand, and other metrics by the following property types: majority independent living (IL); majority assisted living (AL); and majority nursing care (NC). At this time, we do not provide NC forecasts. The memory care segment and majority memory care properties are included under the majority AL property type. A majority IL property is any property that has a majority of IL units. Majority IL properties include freestanding IL, combination IL (such as IL/AL, IL/AL/Memory Care), and continuing care retirement communities (CCRC), which provide the entire continuum of care segments.

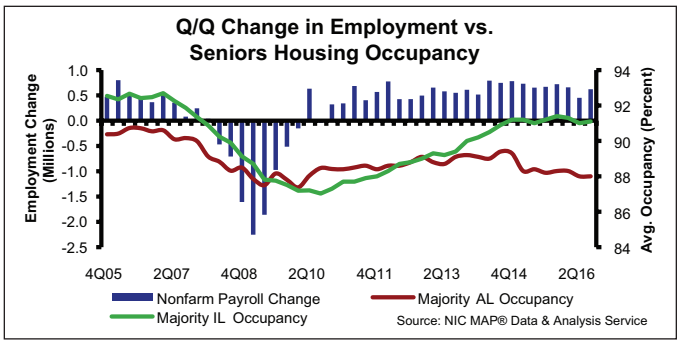

figure 345

In the third quarter of 2016, the U.S. occupancy rate for the independent living segment increased by 10 bps to 91.1%, while the assisted living occupancy rate was flat at 88.0%. As employment grows and housing markets improve, we expect to see modest but lagging improvements in the seniors housing sector.

Independent Living

During the third quarter of 2016, 18 of the 31 markets we cover experienced increasing occupancy rates in the independent living sector, compared to the previous quarter. Of the strengthening markets, Las

Vegas' occupancy rate increased the most during the quarter, by 337 bps, followed by Orlando (+192 bps) and Chicago (+107 bps). San Jose and Sacramento displayed the highest third-quarter 2016 occupancy rates at 95.9 and 95.7%, respectively. The lowest occupancy rates in the third quarter were in Houston (84.8%), Inland Empire (85.6%), Kansas City (87.8%), and San Antonio (88.3%).

By year-end 2017, 16 markets are expected to improve in comparison to the third quarter of 2016. San Diego (+277 bps) is projected to lead the pack, followed by Inland Empire (+252 bps), Cleveland (+221 bps), Minneapolis (+218 bps), and Portland (+185 bps). The highest occupancy rates at year-end 2017 are expected to be in San Jose (96.6%), Baltimore (95.8%), San Diego (95.0%), and Portland (94.7%). At year-end 2017, the lowest occupancy rates are expected to be in Houston (78.6%), Atlanta (80.1%), and Kansas City and San Antonio (each 81.9%). If we show 100%+ occupancy rates, it simply means that given the scheduled supply and expected demand, sufficient demand pressure exists to more than absorb all available space.

Using a 95% occupancy rate to proxy market balance, Sacramento and San Jose are in balance in the third quarter of 2016. By year-end 2018, Baltimore, Cleveland, Minneapolis, Portland, San Diego, San Jose, and Seattle are expected to break the balanced market threshold.

Assisted Living

During the third quarter of 2016, 19 of our 31 covered markets saw increasing occupancy rates in assisted living, compared to the previous quarter,

Independent Living Occupancy Rates - Base Case Pipeline

Market	YE 2016 Est.	YE 2017 Est.	YE 2018 Est.	YE 2019 Est.
Atlanta	87.8%	80.1%	75.7%	75.7%
Baltimore	95.0%	95.8%	96.4%	96.4%
Boston	93.0%	92.7%	92.6%	92.6%
Chicago	89.8%	88.5%	87.7%	87.7%
Cincinnati	91.4%	92.1%	92.5%	92.5%
Cleveland	92.7%	94.4%	95.9%	95.9%
Dallas	89.6%	88.7%	88.2%	88.2%
Denver	89.4%	86.7%	85.1%	85.1%
Detroit	92.3%	93.1%	94.4%	94.4%
Houston	83.4%	78.6%	75.2%	75.2%
Inland Empire	86.1%	88.2%	90.4%	90.4%
Kansas City	86.5%	81.9%	79.1%	79.1%
Las Vegas	92.9%	90.4%	89.4%	89.4%
Los Angeles	92.7%	92.8%	92.9%	92.9%
Miami	89.5%	88.0%	87.0%	87.0%
Minneapolis	93.2%	95.0%	96.7%	96.7%
New York City	91.6%	92.4%	93.0%	93.0%
Orlando	88.1%	85.2%	83.4%	83.4%
Philadelphia	91.7%	92.0%	92.1%	92.1%
Phoenix	88.5%	88.4%	88.9%	88.9%
Pittsburgh	93.7%	93.8%	93.9%	93.9%
Portland	93.3%	94.7%	96.4%	96.4%
Sacramento	94.5%	90.5%	88.1%	88.1%
St. Louis	92.4%	92.3%	91.9%	91.9%
San Antonio	86.8%	81.9%	79.0%	79.0%
San Diego	91.3%	93.5%	95.7%	95.7%
San Francisco	91.5%	91.6%	91.9%	91.9%
San Jose	96.2%	96.6%	96.9%	96.9%
Seattle	92.8%	93.9%	95.4%	95.4%
Tampa Bay	90.6%	91.4%	92.2%	92.2%
Washington, D.C.	93.4%	93.3%	93.6%	93.6%

Highlighted entries indicate market at supply-demand balance, or better.
**Source: The National Investment Center for the Seniors Housing & Care Industry*

Note on occupancy greater than 100%: In order to calculate estimated occupancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show 100%+ occupancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, 100%+ occupancy cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of 100%+ occupancy should be viewed as a strong excess demand indicator.

figure 346

including Philadelphia (+104 bps), St. Louis (+98 bps), Houston (+97 bps) San Antonio (+91 bps), and Vegas (+87 bps). In contrast, Kansas City (-177 bps), Detroit (-147 bps), Denver (-131 bps), Miami (-108 bps), and Cincinnati (-107 bps) showed the greatest occupancy declines during the quarter. By the end of the third quarter, San Jose (94.2%) boasted the highest occupancy rate, followed by Portland (92.7%). San Antonio, Dallas, Las Vegas, and Miami exhibited the lowest occupancy rates, at 75.6%, 79.8%, 83.0%, and 83.5%, respectively.

By year-end 2017, only three of the 31 MSAs we cover will see increasing occupancy rates compared to the third quarter of 2016 due to growing construction pipelines. The best performers are expected to be Baltimore (+265 bps), San Diego (+109 bps), and Portland (+49 bps). The highest occupancy rates at year-end 2017 are projected to be in San Jose (94.2%), Portland (93.2%), Baltimore (93.2%), and New York City (91.3%). Occupancy projections approaching or in excess of 100% indicate expected excess demand given existing inventory and assumed pipeline.

The lowest 2017 occupancy rates are expected to be in San Antonio (65.3%), Dallas (73.3%), Chicago (73.7%), and Kansas City (75.7%). Expected weakness in these markets is primarily driven by significant construction pipelines. The markets with the greatest number of units under construction as a percent of inventory include Atlanta (18.1%), Houston (12.8%), and San Antonio (11.7%). Cleveland, Inland Empire,

Assisted Living Occupancy Rates - Base Case Pipeline

Market	YE 2016 Est.	YE 2017 Est.	YE 2018 Est.	YE 2019 Est.
Atlanta	84.8%	81.7%	79.9%	79.9%
Baltimore	91.1%	93.2%	94.7%	94.7%
Boston	88.6%	85.7%	83.9%	83.9%
Chicago	82.2%	73.7%	68.5%	68.5%
Cincinnati	87.0%	85.7%	84.7%	84.7%
Cleveland	85.8%	83.5%	82.1%	82.1%
Dallas	78.5%	73.3%	70.2%	70.2%
Denver	84.4%	78.8%	75.3%	75.3%
Detroit	86.6%	78.7%	74.3%	74.3%
Houston	83.0%	81.4%	80.0%	80.0%
Inland Empire	87.6%	85.4%	84.5%	84.5%
Kansas City	82.0%	75.7%	71.8%	71.8%
Las Vegas	82.5%	80.9%	80.3%	80.3%
Los Angeles	91.2%	90.9%	90.7%	90.7%
Miami	82.2%	77.6%	74.5%	74.5%
Minneapolis	87.5%	84.0%	82.1%	82.1%
New York City	91.7%	91.3%	90.9%	90.9%
Orlando	87.2%	83.1%	80.6%	80.6%
Philadelphia	86.7%	86.3%	85.9%	85.9%
Phoenix	82.8%	77.0%	73.6%	73.6%
Pittsburgh	91.0%	90.5%	90.1%	90.1%
Portland	92.8%	93.2%	94.0%	94.0%
Sacramento	91.7%	89.1%	87.6%	87.6%
St. Louis	90.0%	82.6%	77.6%	77.6%
San Antonio	73.2%	65.3%	60.8%	60.8%
San Diego	89.3%	90.2%	91.3%	91.3%
San Francisco	90.2%	87.5%	85.9%	85.9%
San Jose	94.3%	94.2%	94.1%	94.1%
Seattle	87.8%	87.4%	87.8%	87.8%
Tampa Bay	87.9%	86.7%	86.2%	86.2%
Washington, D.C.	89.8%	84.5%	81.4%	81.4%

Highlighted entries indicate market at supply-demand balance, or better.

**Source: The National Investment Center for the Seniors Housing & Care Industry*

Note on occupancy greater than 100%: In order to calculate estimated occupancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show 100%+ occupancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, 100%+ occupancy cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of 100%+ occupancy should be viewed as a strong excess demand indicator.

figure 347

Pittsburgh, and San Diego do not have any units currently under construction.

Using a 95% occupancy rate to proxy market balance, no markets were in balance as of the third quarter of 2016, and none are expected to achieve balance through 2019.

Pipeline Sensitivity Analysis

Our vacancy rate forecasts are driven by three input factors: historical space usage (in each property sector) per worker; employment forecasts; and construction pipelines. Focusing on the construction assumption, we examine which markets have the greatest potential supply-side risk. For each property sector, we start with projected pipeline data from third-party sources and make adjustments based on our assessment of market conditions, to arrive at our "base case" assumptions in our vacancy and occupancy forecasting models. We also modify these assumptions to assess the relative level of exposure that each MSA has to its respective worst-case scenario construction pipeline. A summary of the base, moderate, and strong pipeline scenarios for each property sector is in Figure 348.

For each property sector, we examined which MSAs had the greatest vulnerability by calculating the change in projected vacancy or occupancy rates in 2017 between the base and strong cases. Summary results are in Figure 349. Within each sector, the green highlighting (go) indicates those markets with the lowest pipeline exposure, while the yellow highlighting (caution) indicates those markets with the greatest exposure from the strong pipeline scenario. Note that because vacancy rates are compared for the office, industrial, multifamily, and retail sectors lower numbers are more desirable, indicating minimal increases in vacancy. On the other hand, because occupancy rates are tracked for the hotel and seniors housing sectors, the "more negative" numbers are not desirable, as they indicate greater declines in occupancy. For the office, industrial, multifamily, and retail sectors, the table indicates by how many bps 2018 vacancy rates would increase from the base case if the strong case pipeline were to occur. Similarly, the table shows by how many bps hotel and seniors housing occupancy rates would decline relative to the base case, should the strong case pipeline materialize.

Within each property sector, the yellow highlighting indicates the 10 markets that have the greatest vulnerability to changes in pipeline assumptions, while the green highlighting indicates the 10 markets with the lowest pipeline risk. In the office sector, the greatest potential increase in vacancy rates would occur in Nashville, Seattle, Columbus, Dallas, and San Francisco, while Fairfield County, West Palm Beach, Westchester County, Tampa Bay, and Inland Empire have no pipeline risk (based on known conditions).

In the industrial sector, the greatest pipeline risks over the next two years are projected to be in Dallas-Fort Worth, Atlanta, Minneapolis, St. Louis, and Miami, while the most insulated will be Charlotte, Cleveland, Detroit, Washington, D.C., and San Diego. Of the multifamily markets, those with the greatest pipeline exposure include Dallas-Ft. Worth, Miami, Seattle, Charlotte, and Orlando. Baltimore, Los Angeles, Detroit, San Diego, and Cleveland have the smallest multifamily construction pipelines, and therefore, the least exposure to supply-side risk. Retail markets in Baltimore, Miami, San Jose, Nashville, and Houston have the greatest potential change in vacancy rates between the base and strong pipeline scenarios, while Boston, Columbus, Cincinnati, Seattle, and St. Louis have minimal pipeline exposure.

In the hotel sector, the markets with the greatest pipeline risk include Nashville, New York City, Austin, Seattle, and Denver. At the other end of the spectrum, Orlando, Phoenix, St. Louis, Washington, D.C., and Chicago limited downside from the worst-case pipelines scenarios.

In the seniors housing sector, our base case forecasting model includes only projects that are currently under construction and will therefore understate supply-side risks beyond two years. However, our moderate and strong pipeline scenarios for seniors housing assume that the pipelines grow through the duration of the 5-year projection period. As such, those markets with active near-term pipelines have the greatest occupancy differential between the base and strong cases. Those

Note to subscribers: The pipeline sensitivity analyses for each property sector can be found on the subscriber section of our website.

markets with no projects under construction register no pipeline risk, even for the strong case.

The IL markets that pose the greatest pipeline risk between the base and strong scenarios include Atlanta, Sacramento, Houston, San Antonio, and Orlando, while Pittsburgh, Inland Empire, Cleveland, and San Diego and Portland have lowest risk between scenarios. The AL markets with relatively high supply-side risk include Detroit, St. Louis, Chicago, San Antonio, and Washington, D.C. In contrast, the AL markets with the lowest pipeline risk as of the third quarter of 2016 are Baltimore, Pittsburgh, Los Angeles, San Diego, and Philadelphia.

Should the strong pipelines materialize, a number of markets that would achieve market balance by 2018 under the base case would no longer meet the threshold of a balanced market. The affected office markets would be New York City, Orange County, Portland, and Seattle. In the industrial sector, only Houston would fall out of balance in 2018 if the strong pipeline occurred. Multifamily markets that would fall out of favor if the strong pipeline occurred include Cincinnati, Columbus, New York City, Orange County, Orlando, Phoenix, St. Louis, San Jose, Seattle, and Tampa Bay. The relatively large number of affected markets indicates that multifamily developers are becoming increasingly confident about the strength of the market. Of the retail markets, only Phoenix would fall out of balance in 2018 due to the strong pipeline scenario. In the hotel sector, should the strong pipeline come to fruition, Boston, New York City, Seattle, Tampa Bay, and Washington, D.C. would fall out of balance compared to the base case. Of the IL seniors housing markets, Baltimore, San Jose, and Seattle would fall out of balance under the strong pipeline scenario, while no AL market would be affected.

Construction Pipeline Sensitivity Analysis

	Base Pipeline	Moderate Pipeline	Strong Pipeline
Office	75% of SF currently under construction, spread over 6 quarters, flat thereafter.	75% of SF currently under construction, spread over 6 quarters and increased by 5%/year for next 12 quarters; flat thereafter.	75% of SF currently under construction, spread over 6 quarters and increased by 10%/year for next 12 quarters; flat thereafter.
Industrial	100% of SF currently under construction, spread over 4 quarters, flat thereafter.	100% of SF currently under construction, spread over 4 quarters and increased by 5%/year for next 12 quarters; flat thereafter.	100% of SF currently under construction, spread over 4 quarters and increased by 10%/year for next 12 quarters; flat thereafter.
Multifamily	100% of units currently under construction, spread over 6 quarters, tapered by 50% in 2019, flat thereafter.	100% of units currently under construction, spread over 6 quarters, then 5% increase in 2017-2018, tapered by 25% in 2019, flat thereafter.	100% of units currently under construction, spread over 4 quarters and increased by 8%/year thereafter.
Retail	100% of SF currently under construction, spread over 6 quarters, flat thereafter.	100% of SF currently under construction, spread over 4 quarters and increased by 2%/year thereafter.	100% of SF currently under construction, spread over 4 quarters and increased by 4%/year thereafter.
Hotel	100% Under construction + breaking ground in next 12 months, spread over 12 quarters.	100% Under construction + breaking ground in next 12 months, spread over 10 quarters + 3% growth per year after 1st year	100% Under construction + breaking ground in next 12 months, spread over 8 quarters + 6% growth per year after 1st year
Independent Living	100% Under construction, spread over 6 quarters	100% Under construction, spread over 6 quarters + 3% growth per year after 1st year	100% Under construction, spread over 4 quarters + 6% growth per year after 1st year
Assisted Living	100% Under construction, spread over 8 quarters	100% Under construction, spread over 6 quarters + 3% growth per year after 1st year	100% Under construction, spread over 4 quarters + 6% growth per year after 1st year

figure 348

Strong vs. Base Case Construction Pipeline Sensitivity Analysis
Increase/(Decrease) In 2018 Vacancy/Occupancy Projections (bps)

	Office	Industrial	Multifamily	Retail	Hotel	Indep. Living	Assisted Living
Atlanta	105	43	288	75	-229	-893	-544
Austin	101	20	337	22	-504	n/a	n/a
Baltimore	147	11	95	n/a	n/a	-160	0
Boston	129	n/a	298	0	-341	-268	-522
Charleston	88	n/a	n/a	n/a	n/a	n/a	n/a
Charlotte	165	4	364	51	n/a	n/a	n/a
Chicago	79	22	199	10	-189	-264	-846
Cincinnati	56	11	165	1	n/a	-130	-353
Cleveland	20	5	125	13	n/a	0	-462
Columbus	177	18	214	1	n/a	n/a	n/a
Dallas	170	n/a	n/a	n/a	-398	-415	-738
Dallas-Fort Worth	n/a	48	406	87	n/a	n/a	n/a
Denver	162	20	248	12	-455	-486	-725
Detroit	17	5	105	47	-318	-197	-935
Fairfield County	0	n/a	n/a	n/a	n/a	n/a	n/a
Fort Lauderdale	50	15	n/a	n/a	n/a	n/a	n/a
Fort Worth	115	n/a	n/a	n/a	n/a	n/a	n/a
Houston	58	19	233	88	-379	-684	-407
Indianapolis	93	25	228	41	n/a	n/a	n/a
Inland Empire	0	n/a	n/a	n/a	n/a	0	-510
Kansas City	n/a	n/a	n/a	n/a	n/a	-580	-697
Las Vegas	n/a	16	n/a	n/a	-51	-571	-440
Long Island	33	6	n/a	n/a	n/a	n/a	n/a
Los Angeles	53	9	101	17	-337	-122	-162
Memphis	59	n/a	n/a	n/a	n/a	n/a	n/a
Miami	90	39	398	222	-432	-328	-613
Minneapolis	34	28	135	41	-196	-123	-670
Nashville	452	11	473	95	-619	n/a	n/a
New York City	156	n/a	183	78	-585	-133	-286
North & Central NJ	14	18	n/a	n/a	n/a	n/a	n/a
Orange County	80	n/a	255	n/a	n/a	n/a	n/a
Orlando	19	23	354	18	-132	-631	-724
Philadelphia	53	15	256	62	-301	-114	-192
Phoenix	76	9	197	41	-167	-207	-731
Pittsburgh	n/a	n/a	n/a	n/a	n/a	0	-87
Portland	133	20	338	65	n/a	-97	-234
Raleigh-Durham	153	n/a	n/a	n/a	n/a	n/a	n/a
Sacramento	n/a	n/a	n/a	n/a	n/a	-719	-562
St. Louis	54	28	126	6	-175	-211	-848
San Antonio	n/a	n/a	n/a	n/a	n/a	-670	-798
San Diego	90	6	108	25	-204	0	-170
San Francisco	165	8	243	53	-229	-197	-490
San Jose	84	n/a	261	123	n/a	-201	-279
Seattle	195	21	370	4	-503	-275	-400
Tampa Bay	0	7	258	14	-240	-129	-340
Washington, D.C.	130	5	190	52	-184	-293	-762
Westchester County	0	n/a	n/a	n/a	n/a	n/a	n/a
West Palm Beach	0	n/a	n/a	n/a	n/a	n/a	n/a

Legend:

10 MSAs with greatest pipeline exposure (greatest negative impact on vacancy/occupancy rates).
10 MSAs with smallest pipeline exposure (smallest negative impact on vacancy/occupancy rates).
n/a indicates no sector forecast for that MSA.

figure 349

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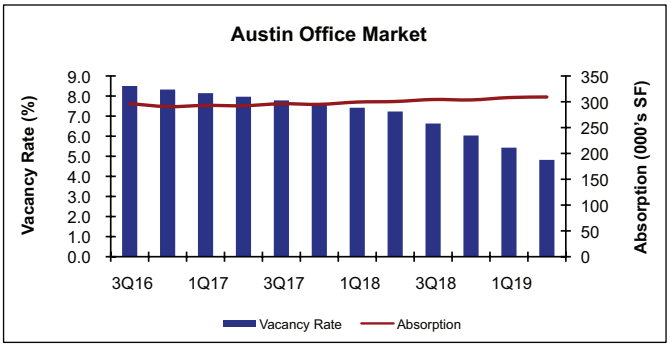
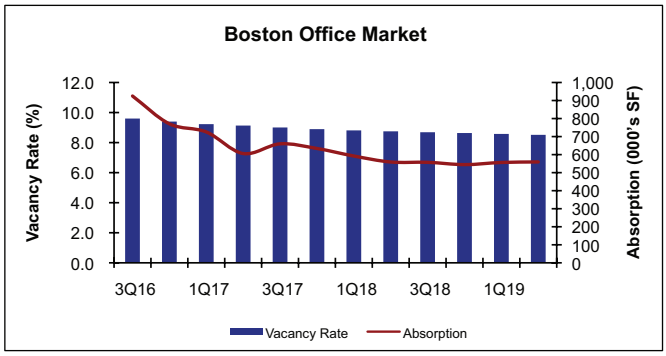
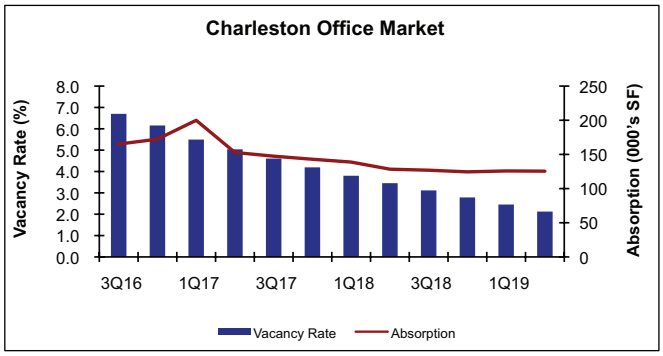
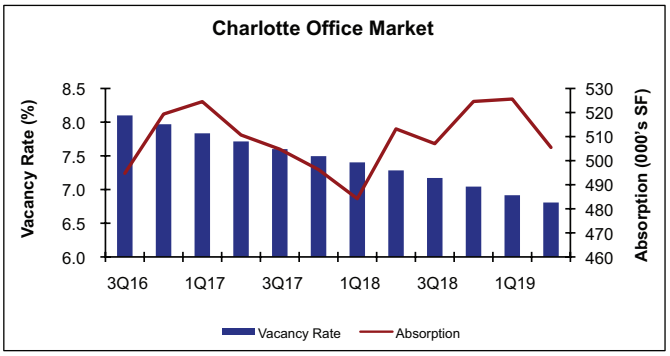
Office Market Vacancy and Absorption Projections

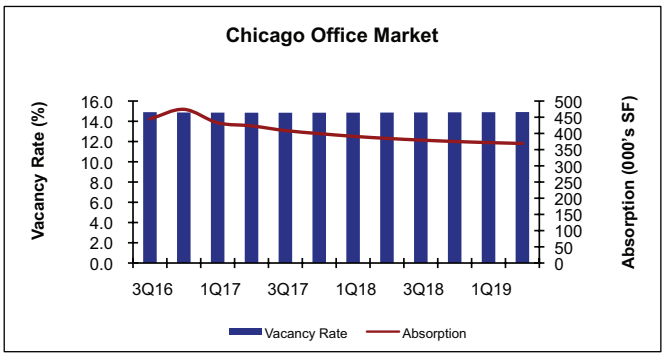
Notes on Negative Vacancy: In order to calculate estimated vacancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show negative vacancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, negative vacancies cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of negative vacancy should be viewed as a strong excess demand indicator.



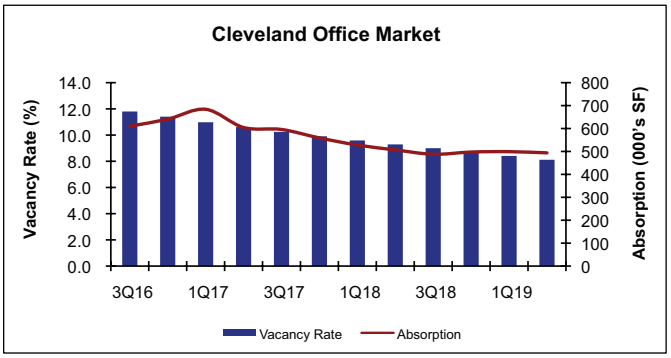


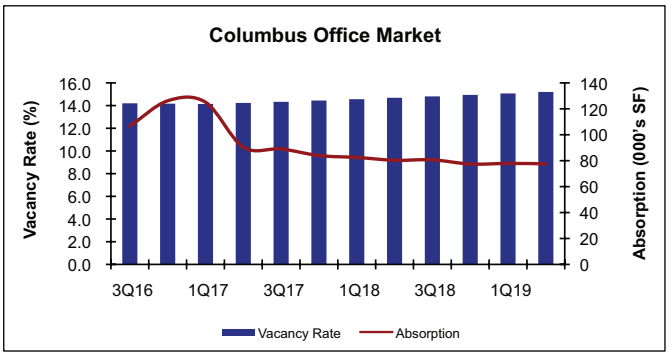


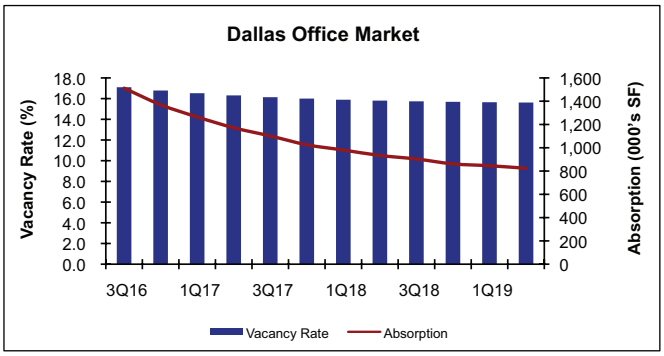


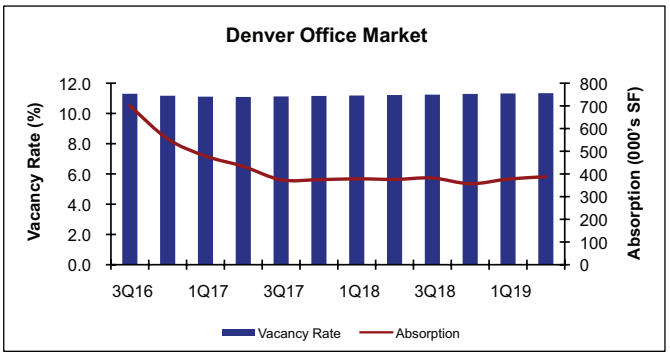


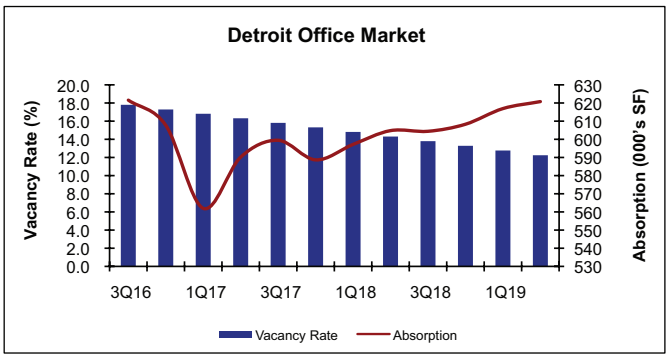
Office Market Vacancy and Absorption Projections (cont.)

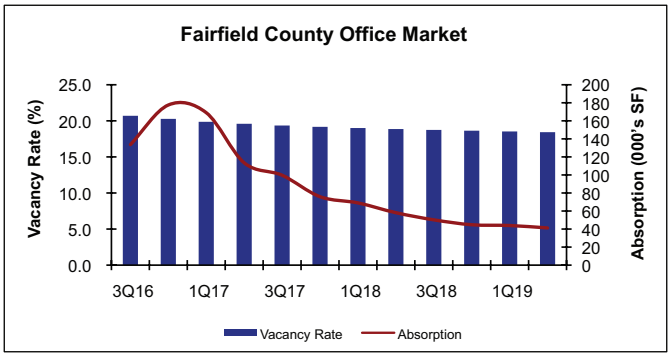


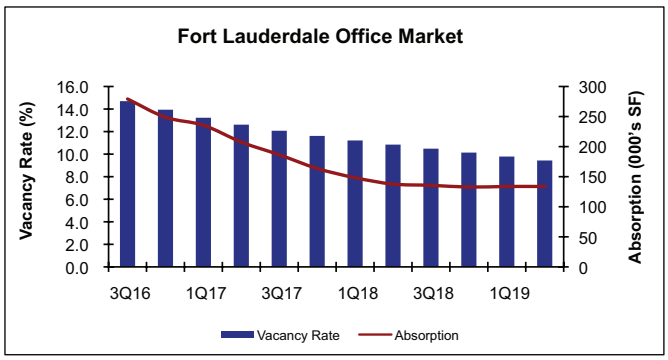


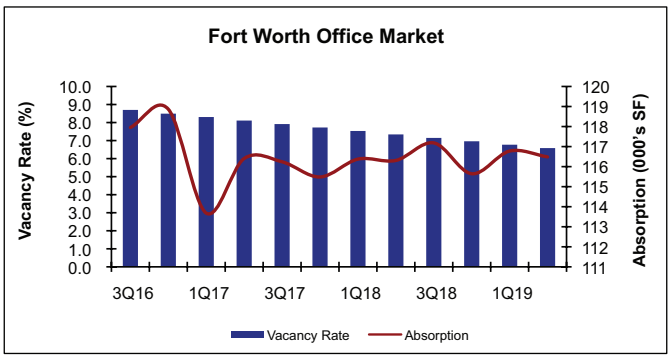




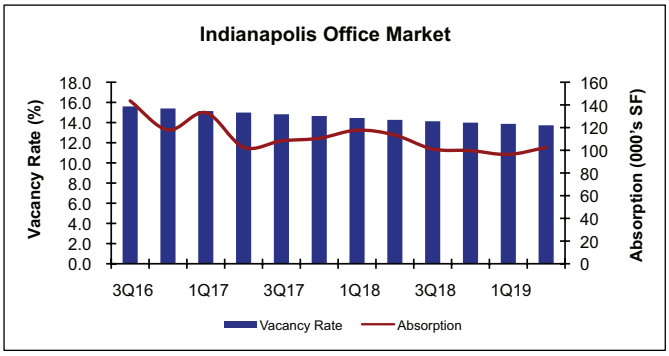


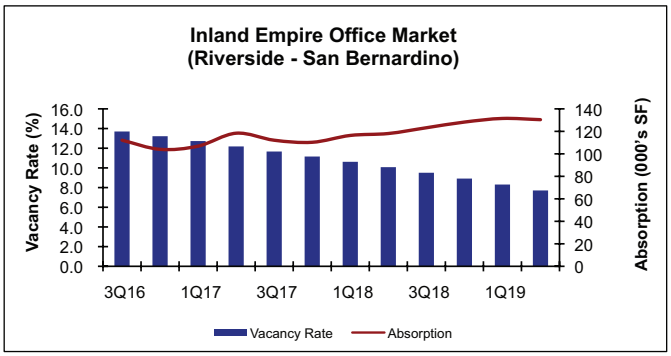


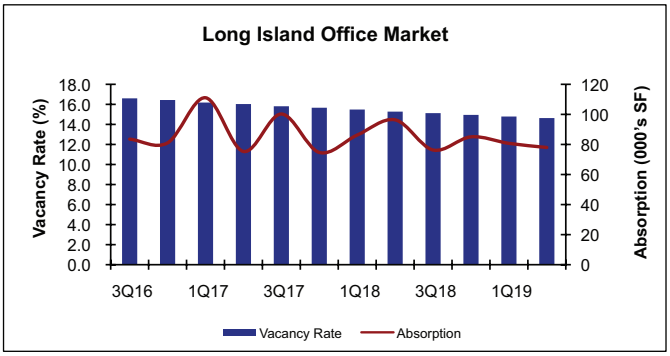


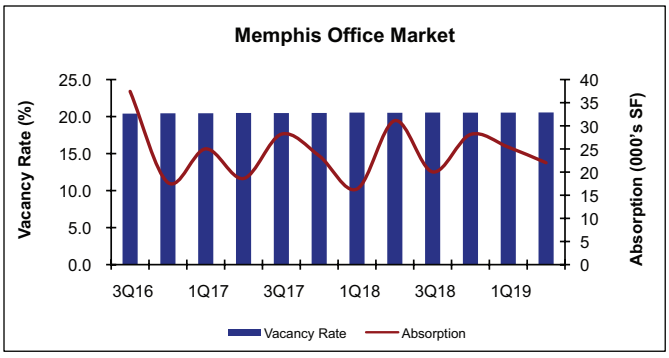


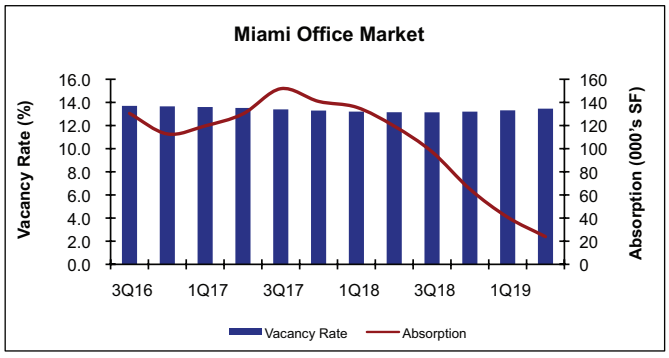
Office Market Vacancy and Absorption Projections (cont.)

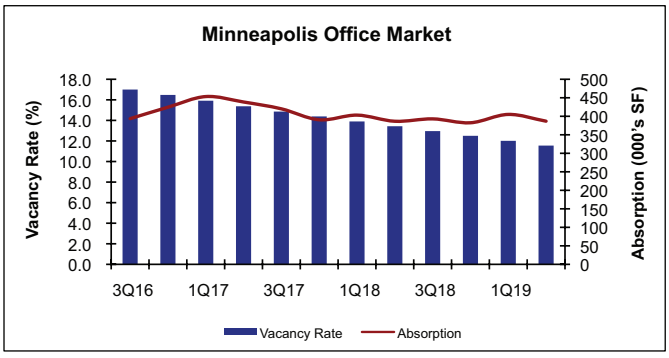












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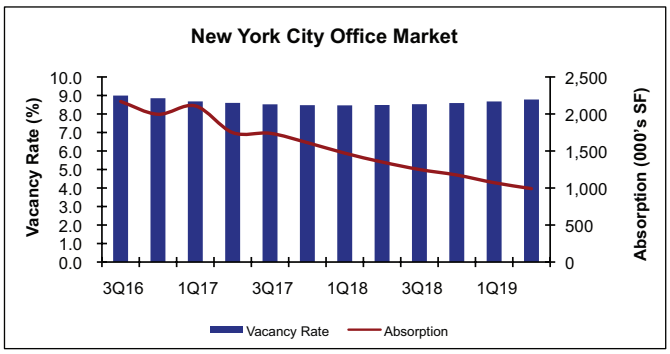

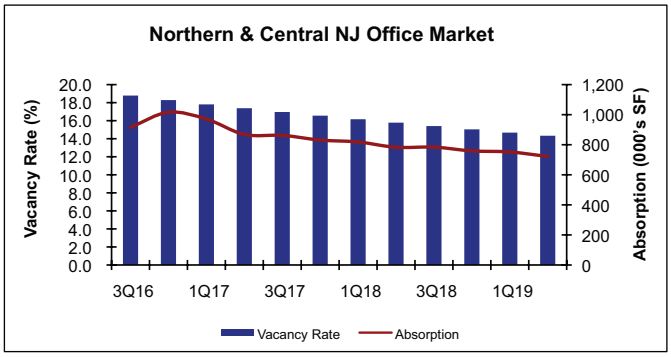

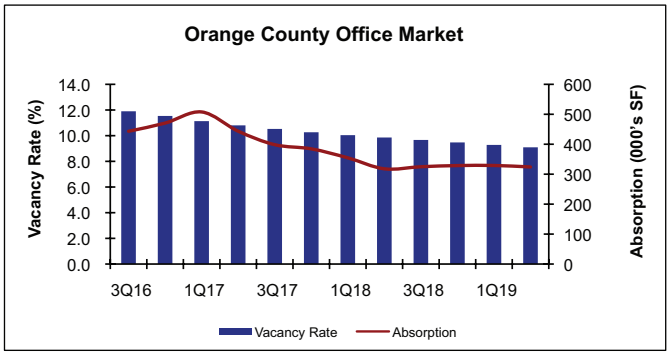

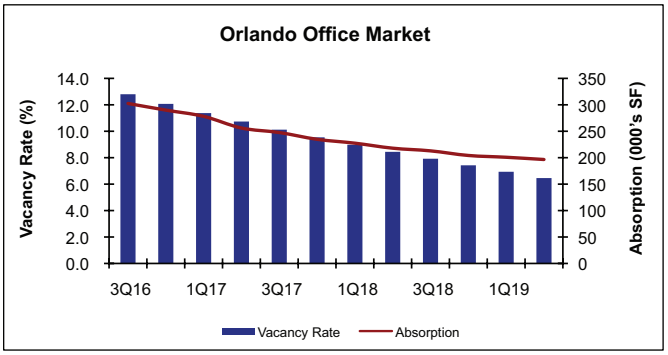

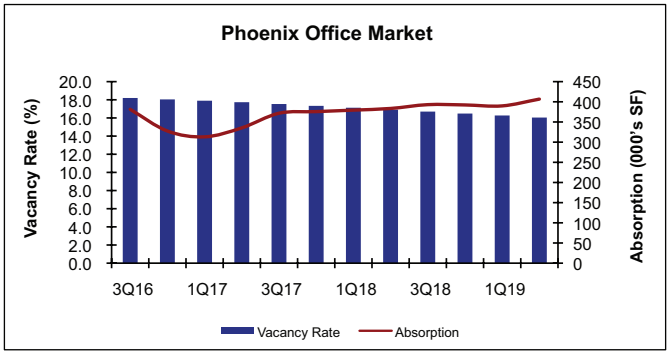

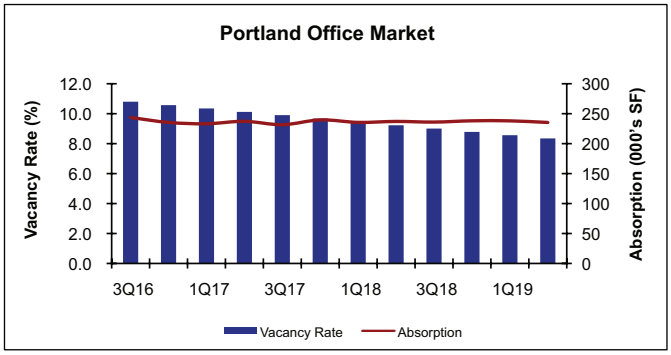

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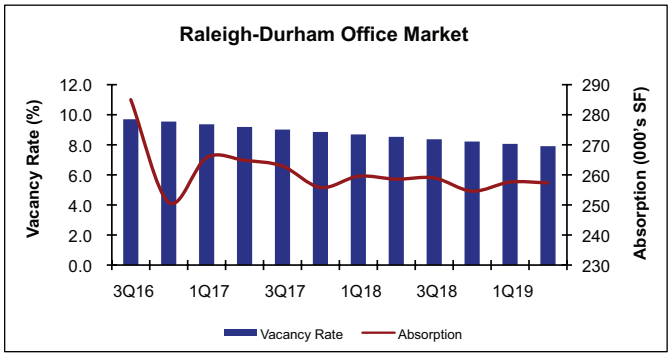

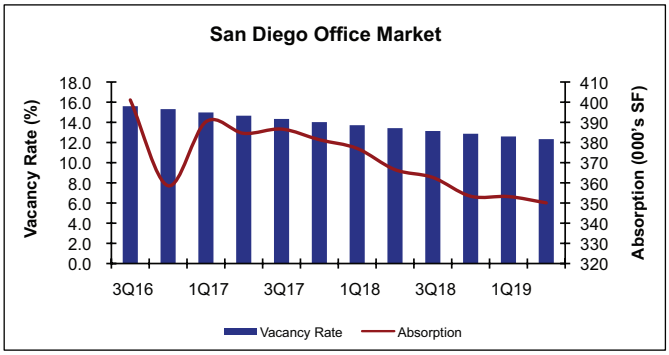

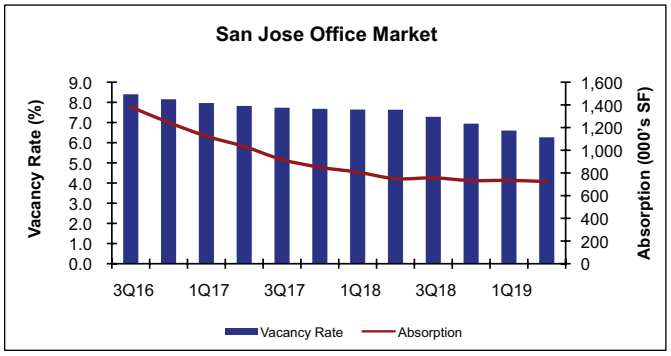

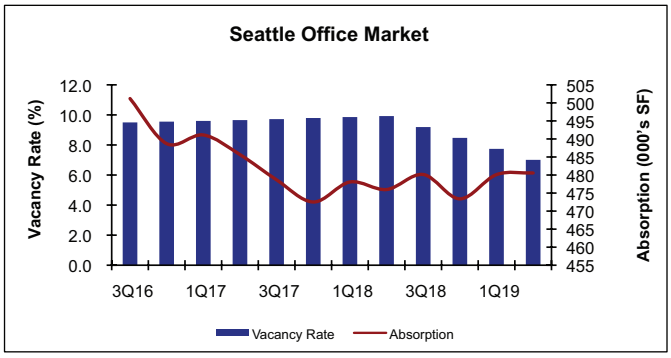

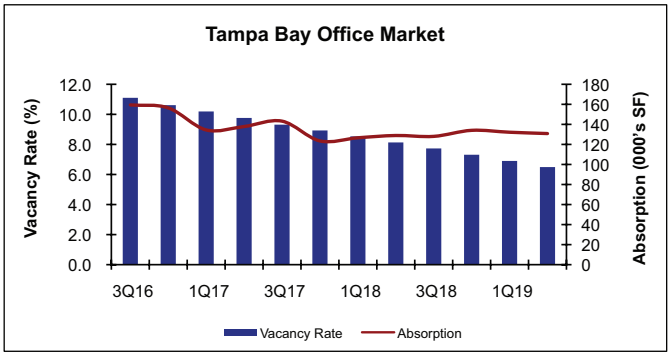

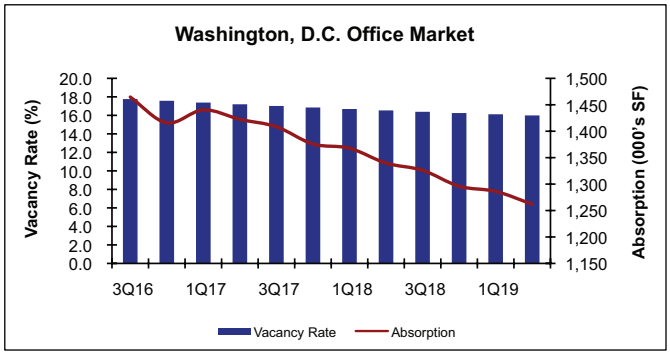

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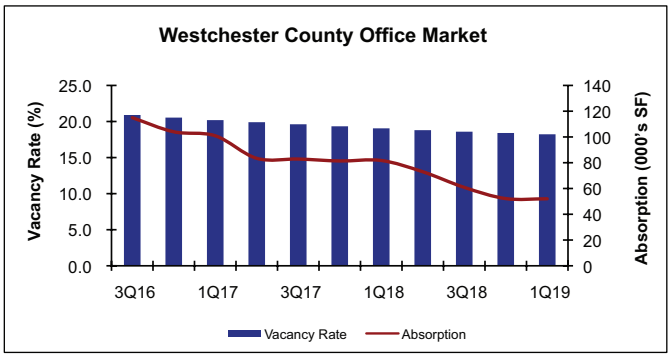

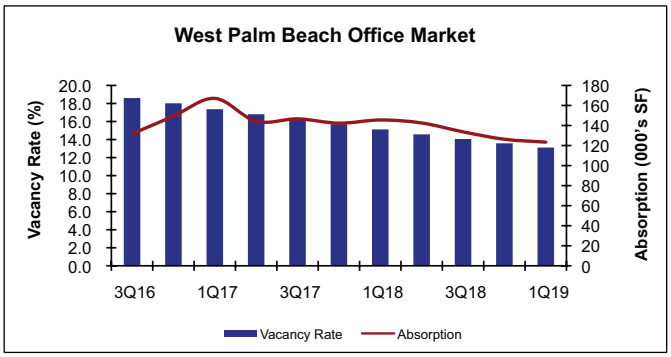

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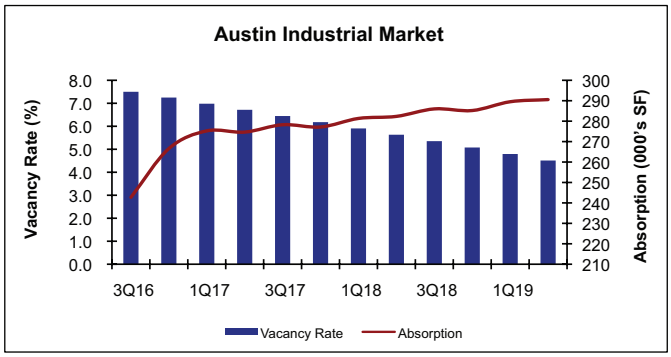
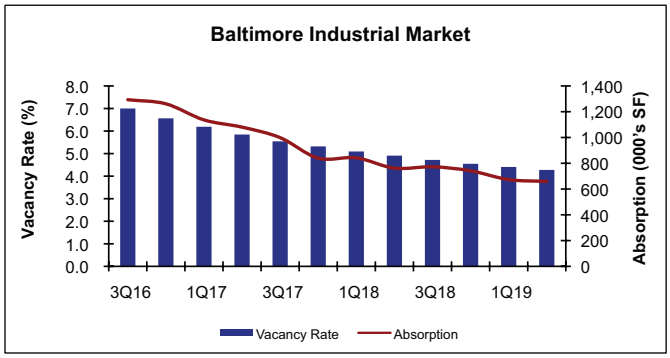
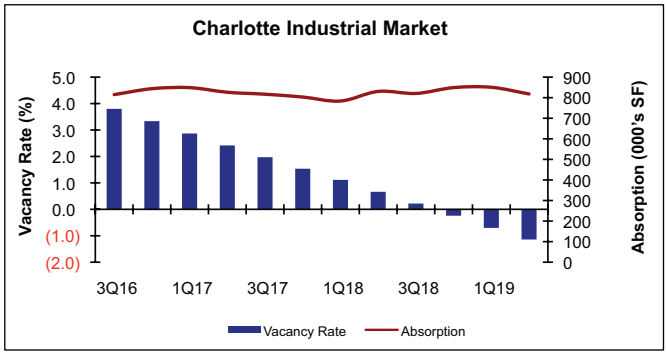
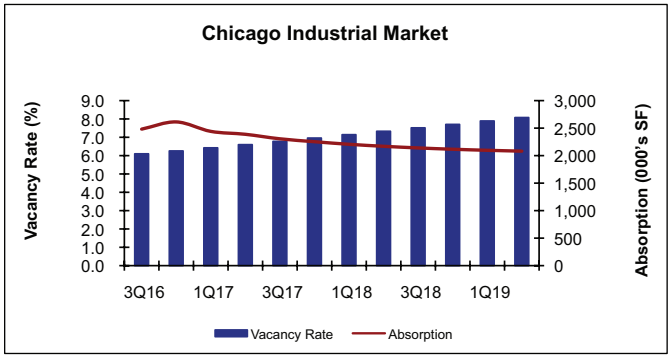
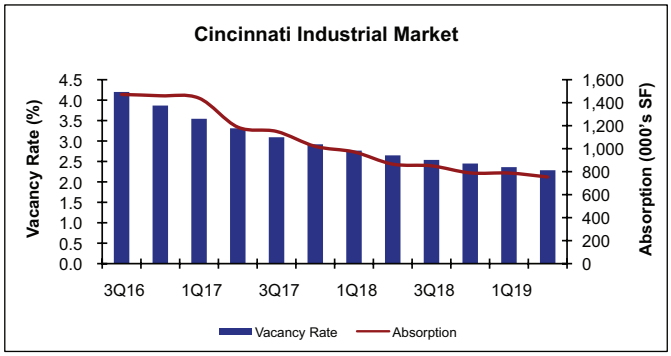
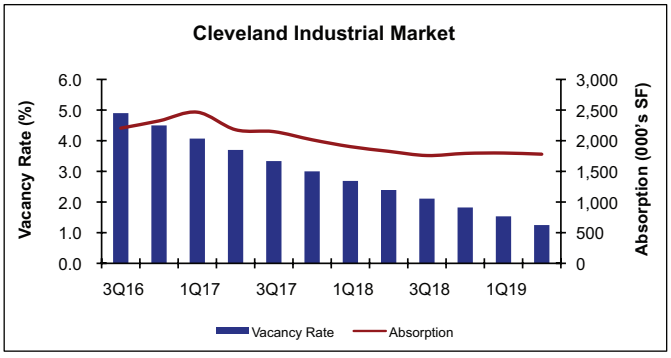


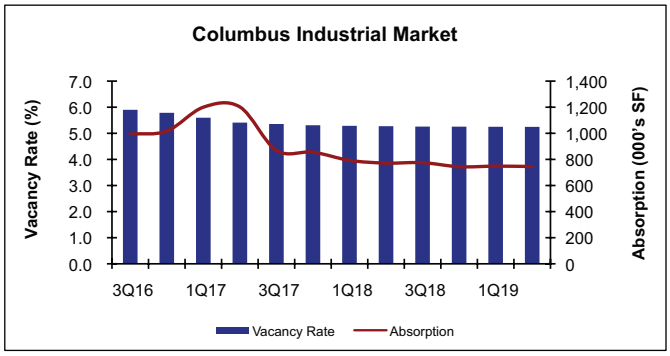




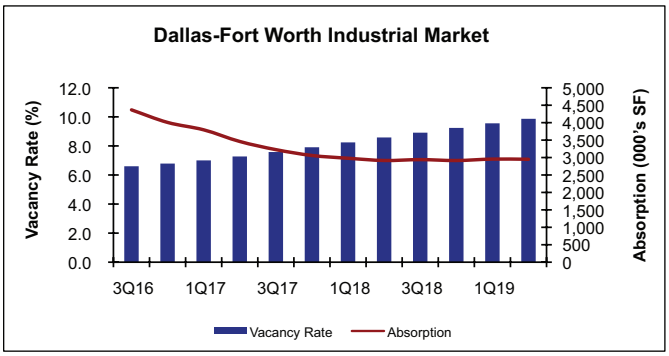


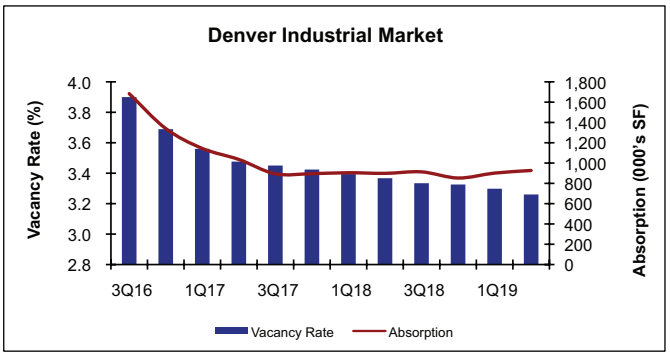


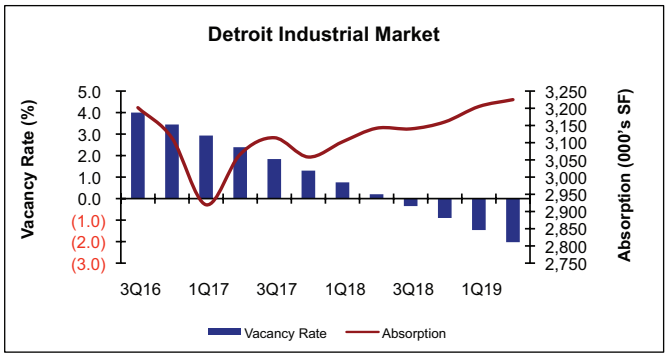


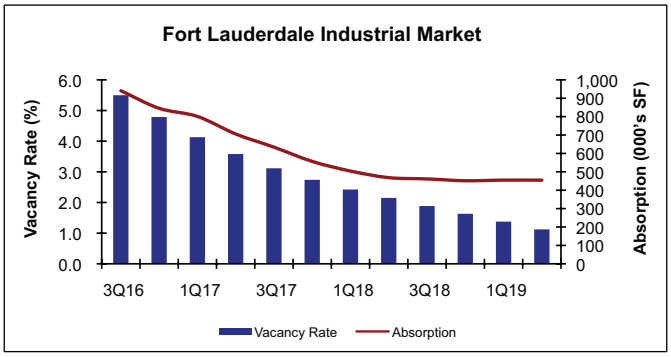


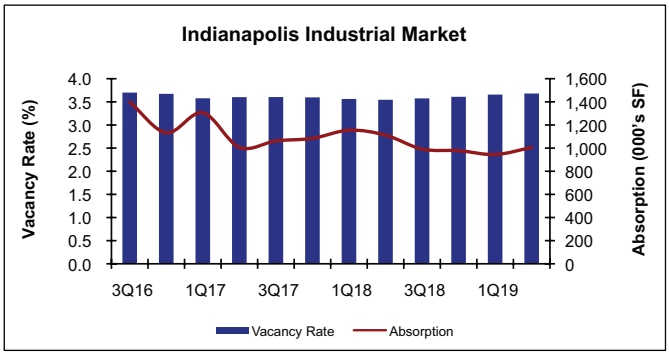
Industrial Market Vacancy and Absorption Projections (cont.)

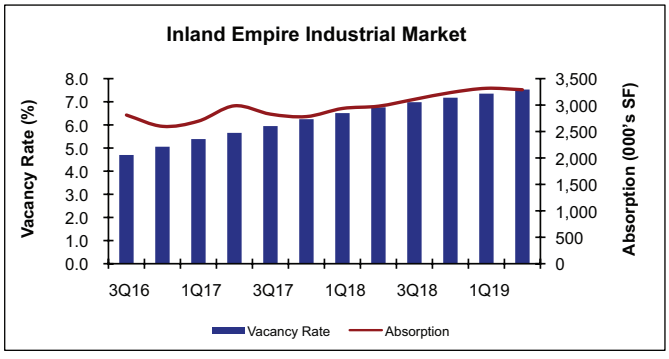


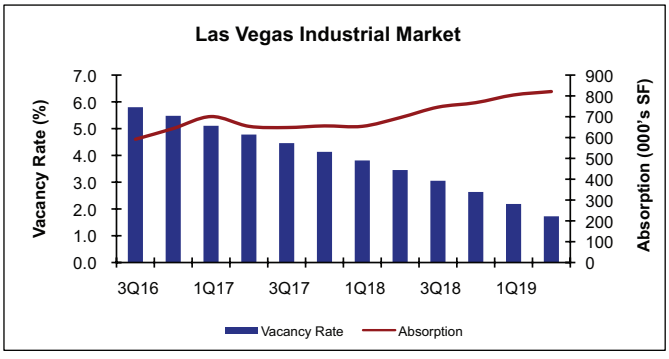












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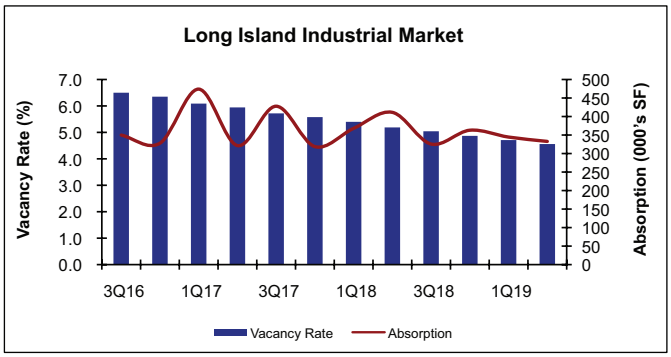

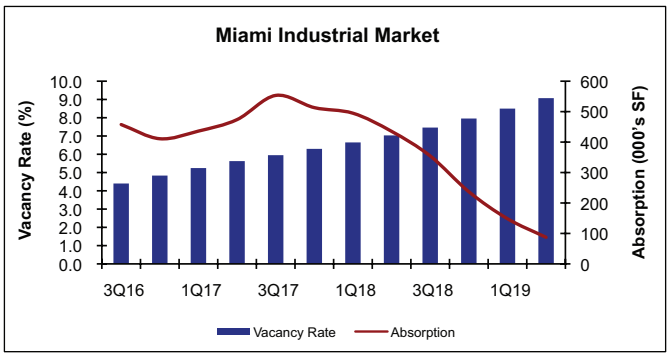

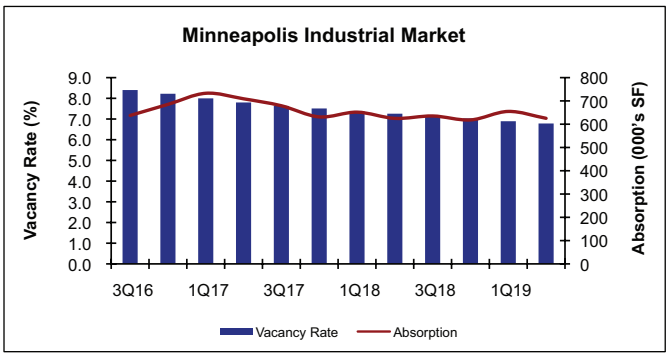

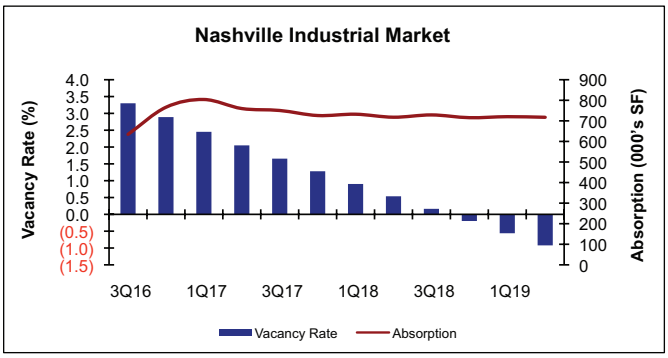

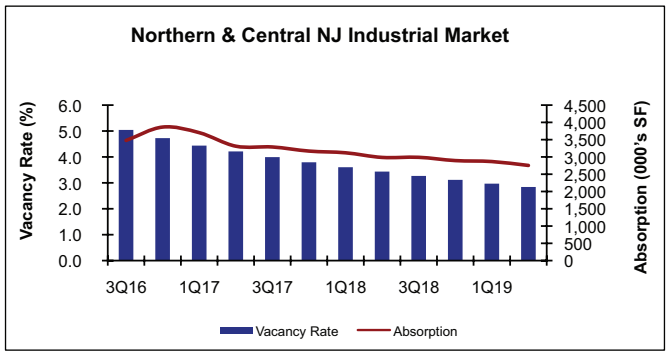

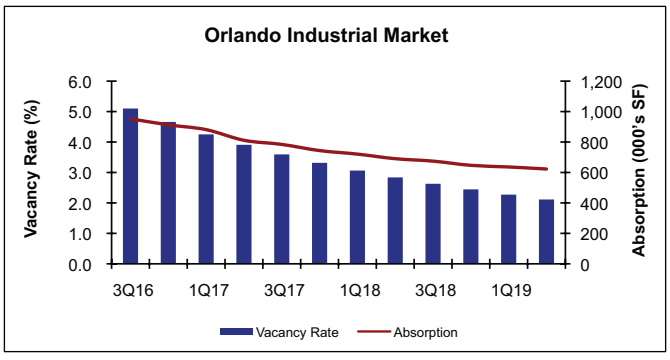

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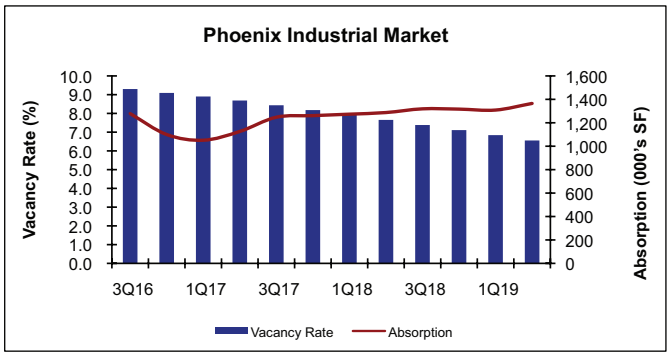

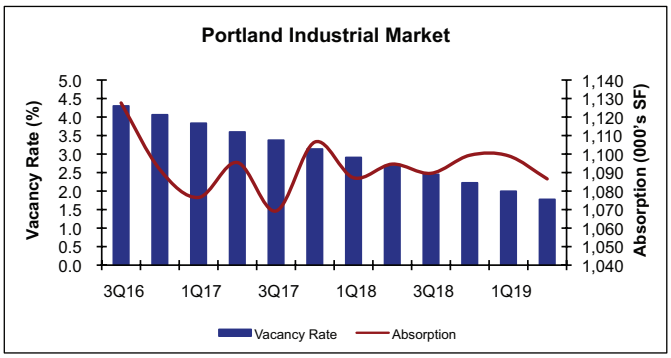

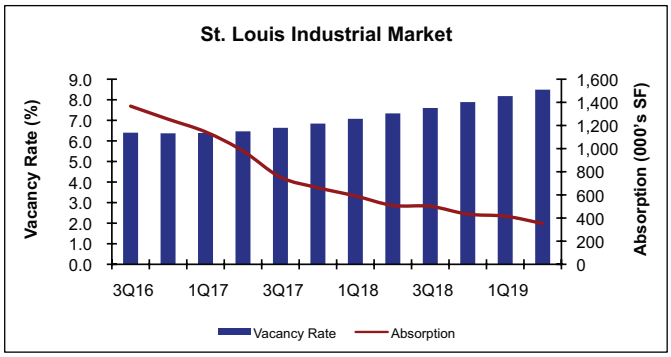

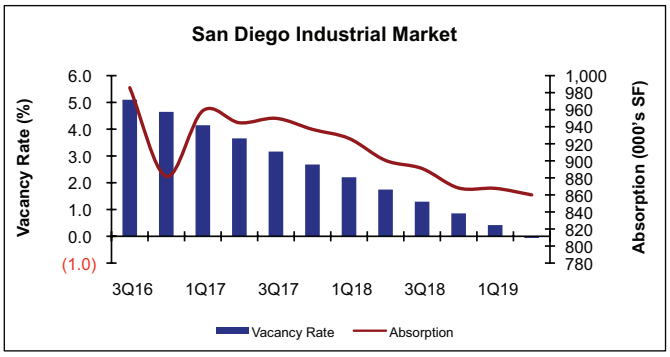

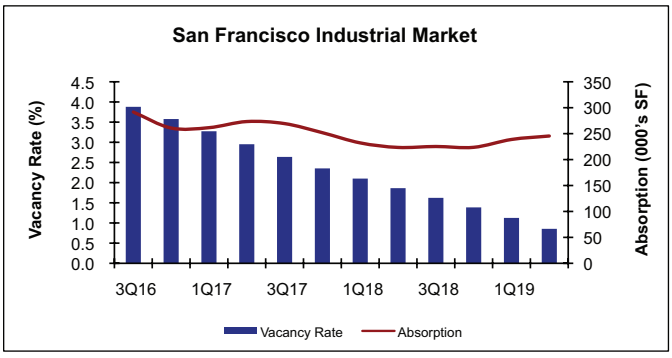

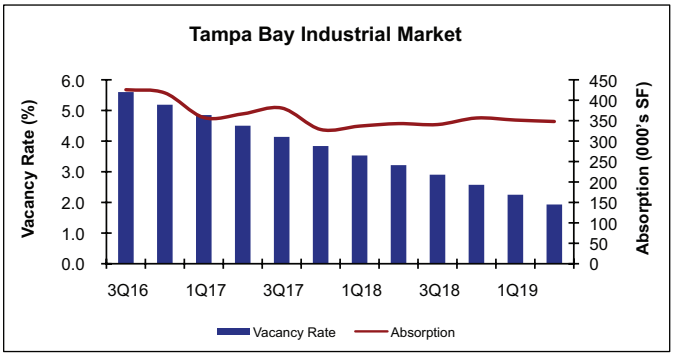

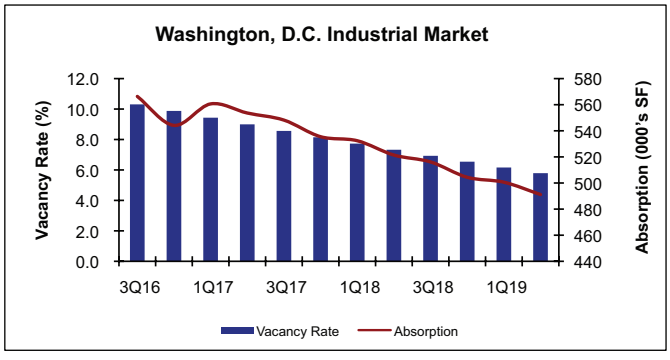

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Multifamily Market Vacancy and Absorption Projections

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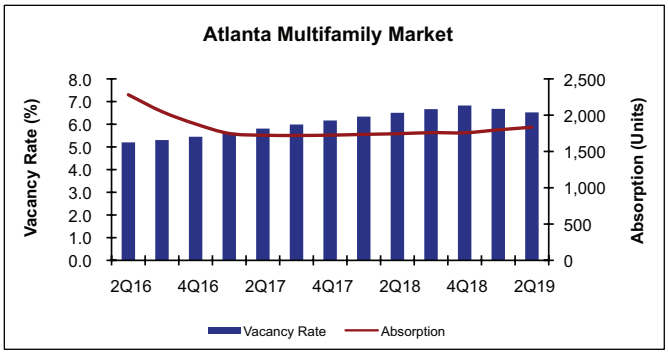
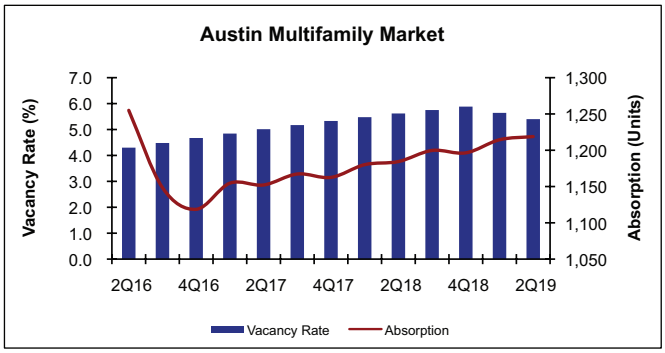
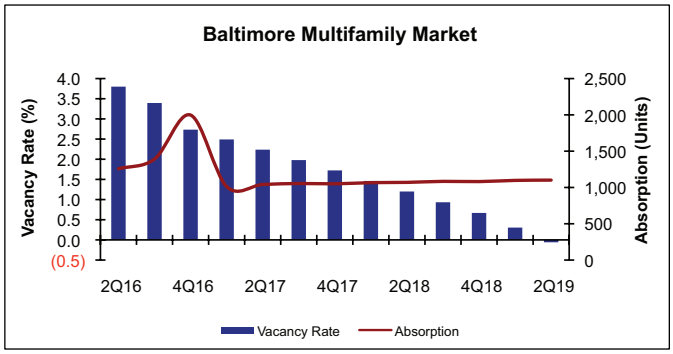
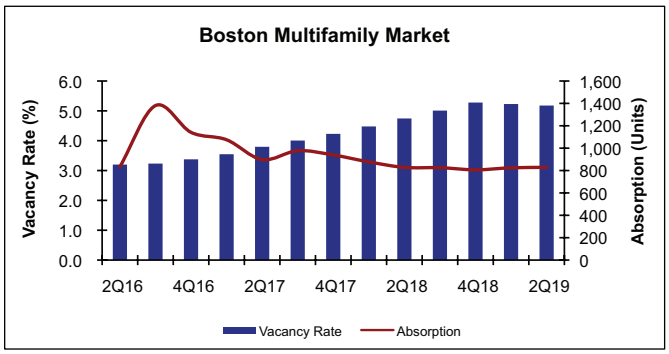
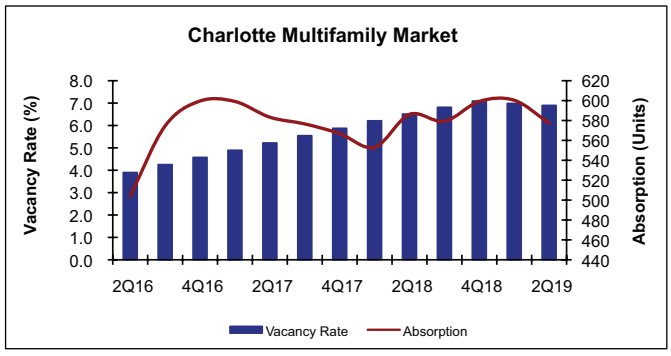
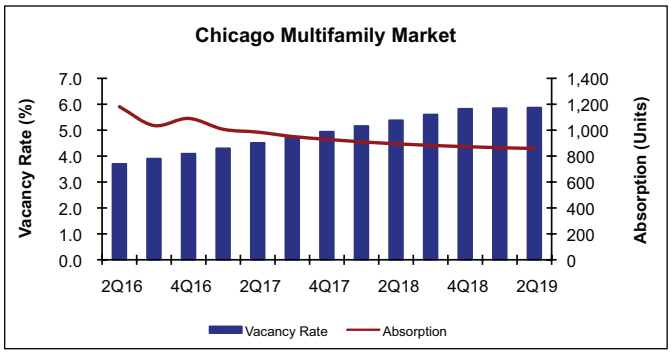


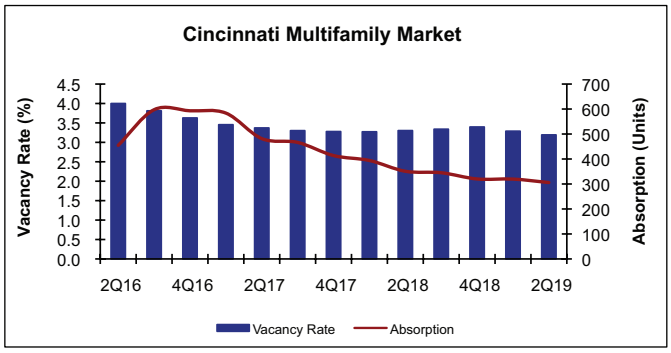


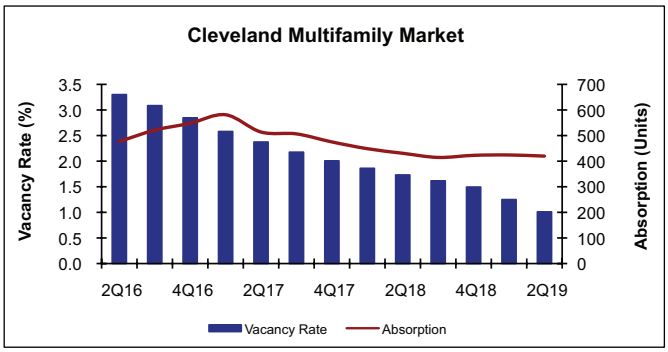




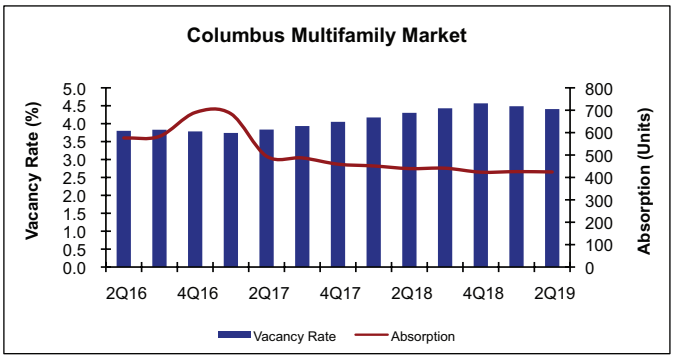


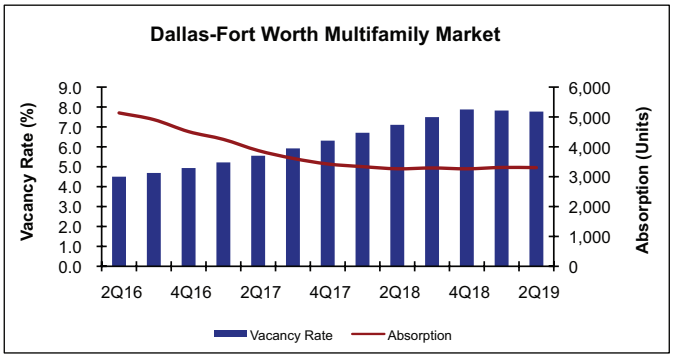


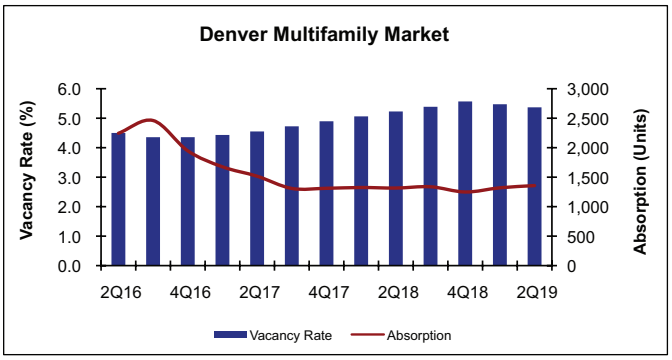


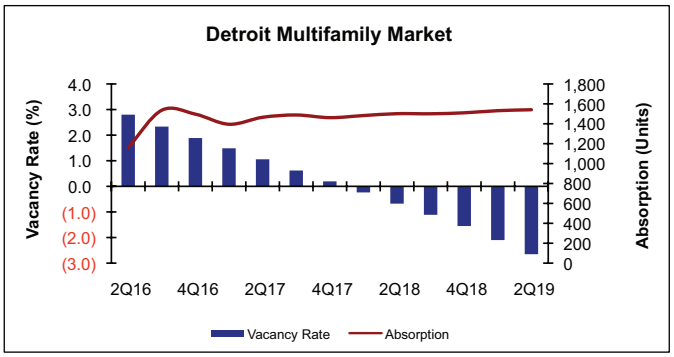


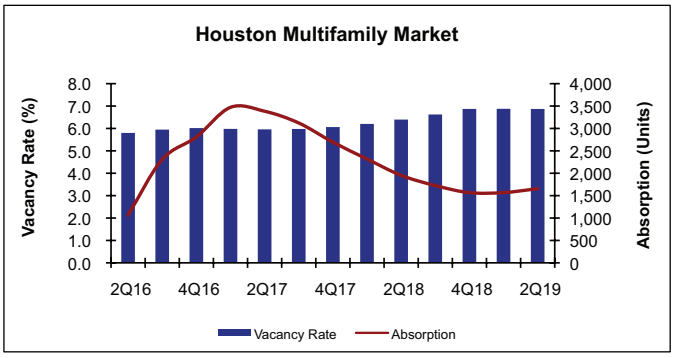
Multifamily Market Vacancy and Absorption Projections (cont.)

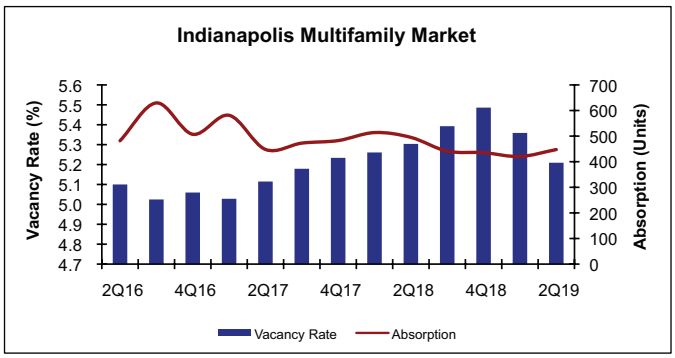


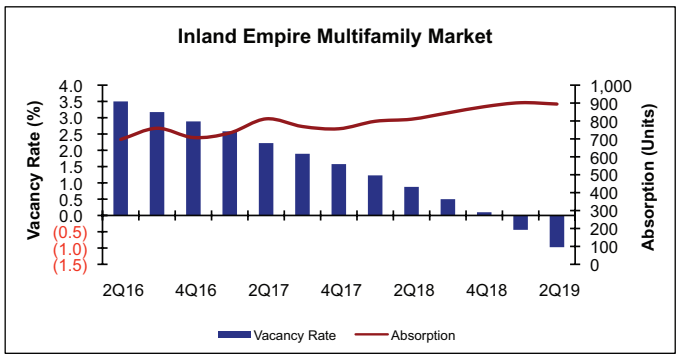


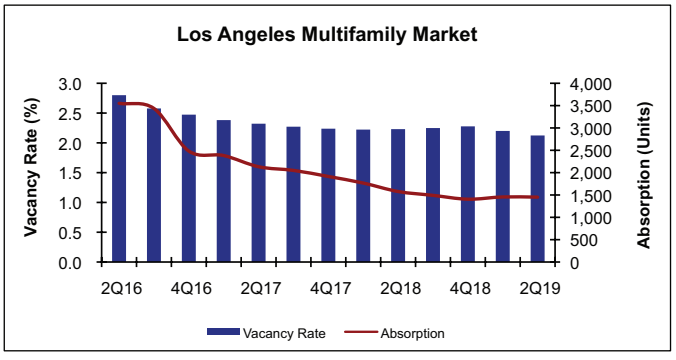




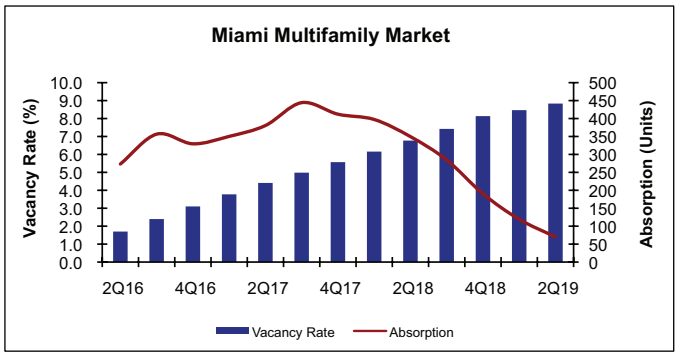


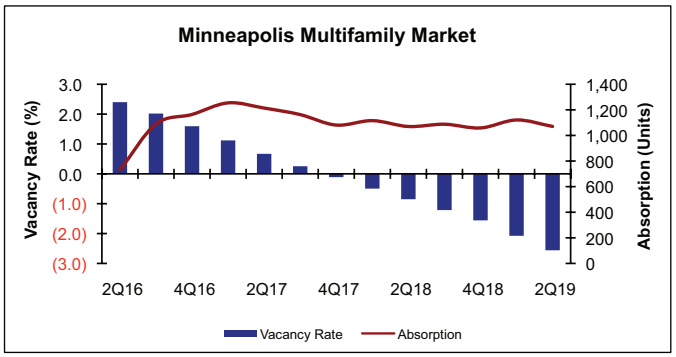


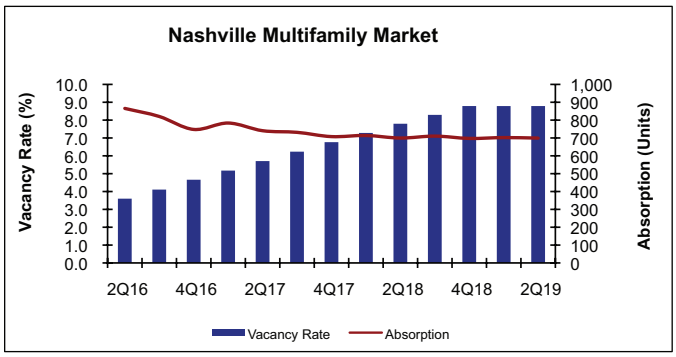


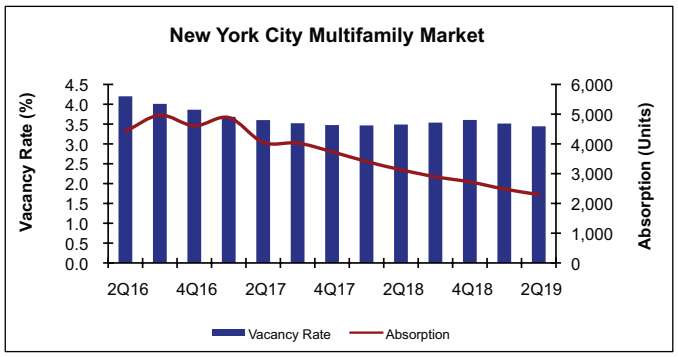


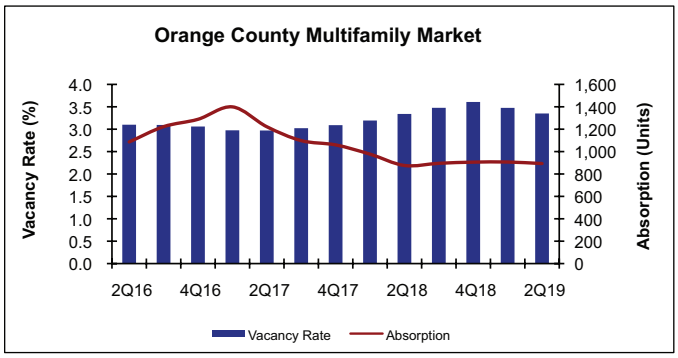
Multifamily Market Vacancy and Absorption Projections (cont.)

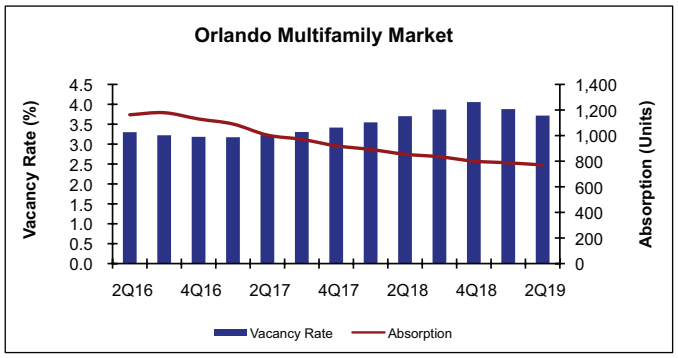


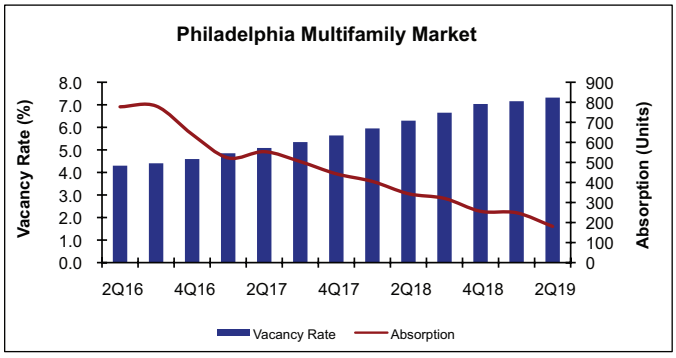


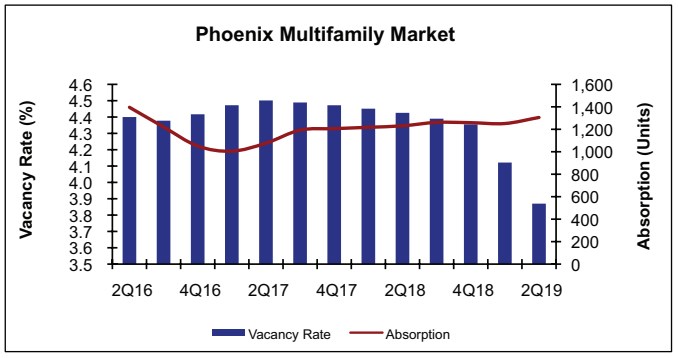












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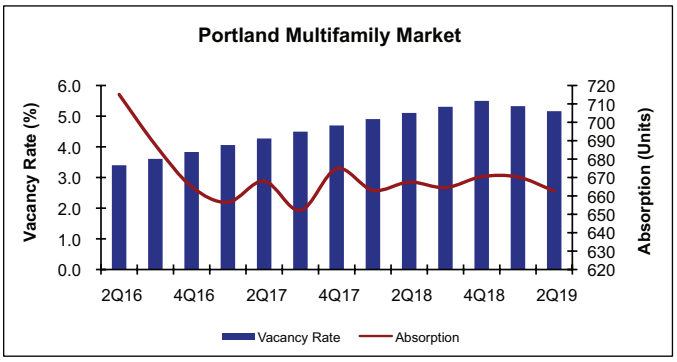

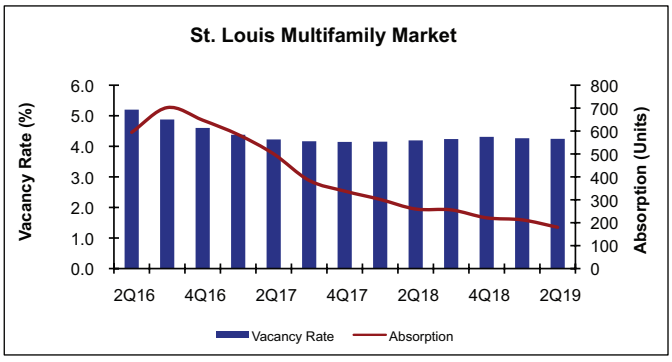

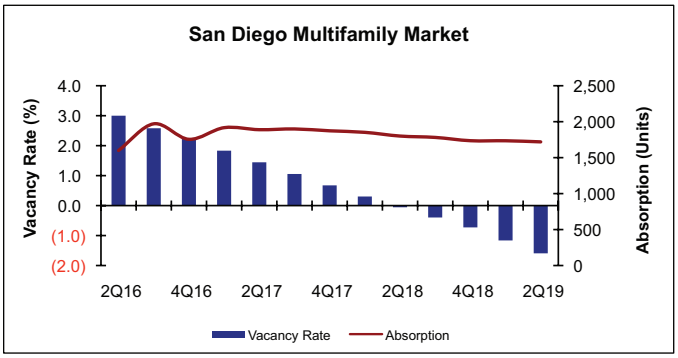

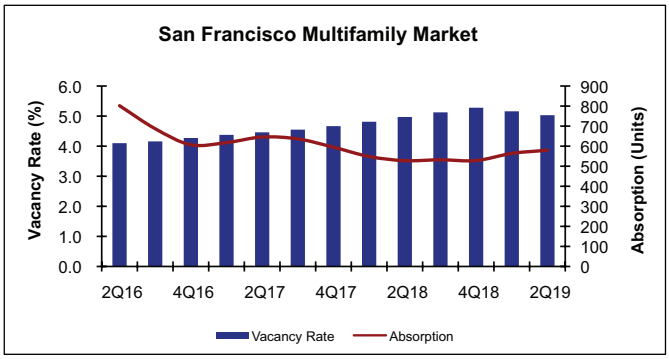

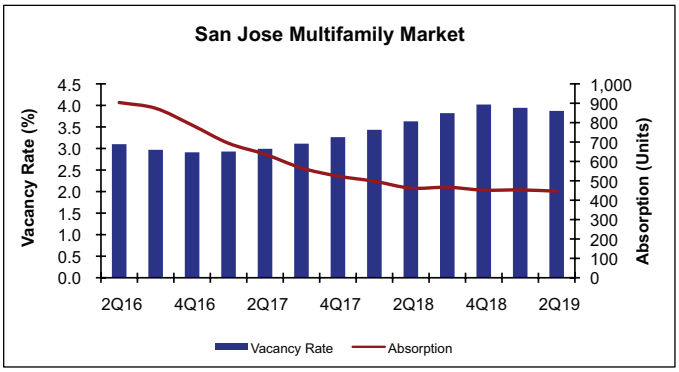

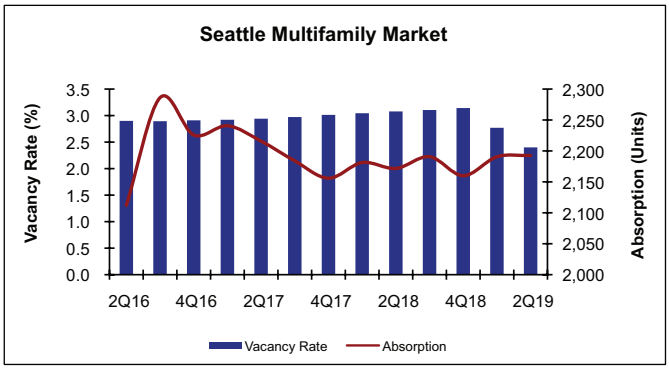

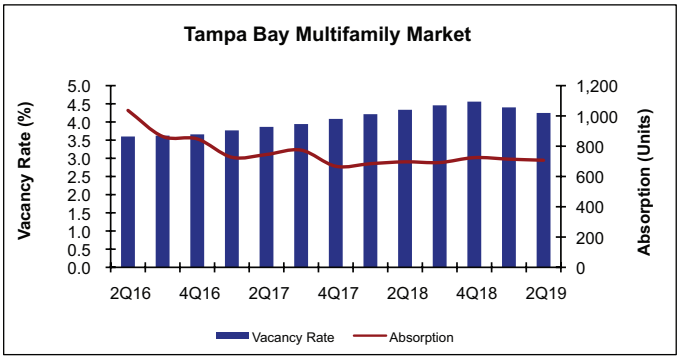

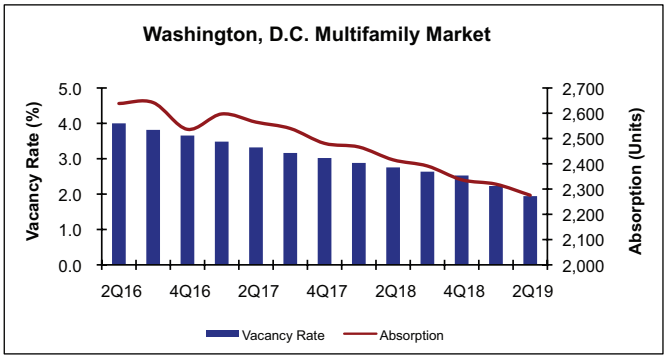

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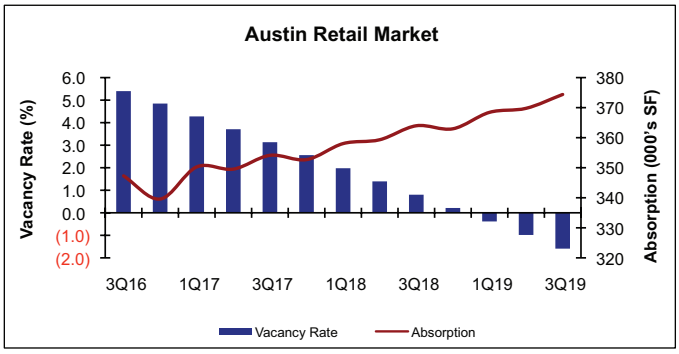

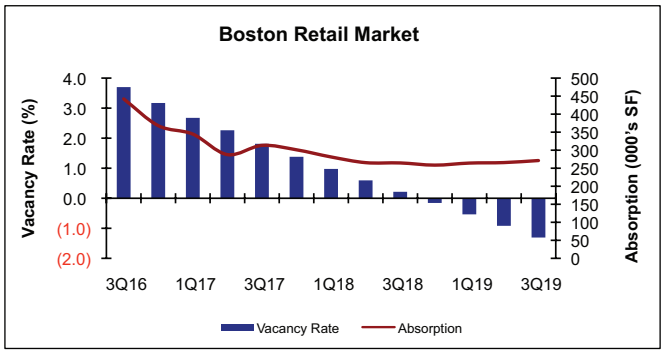

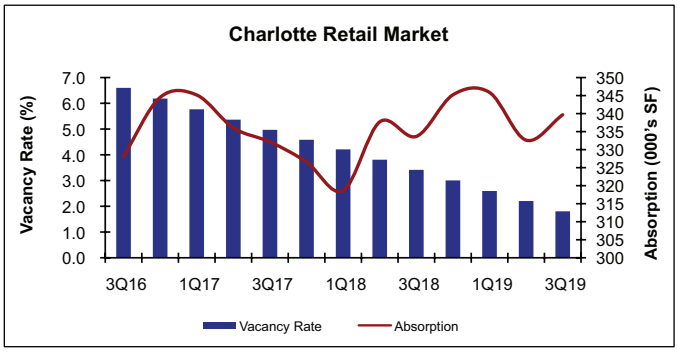

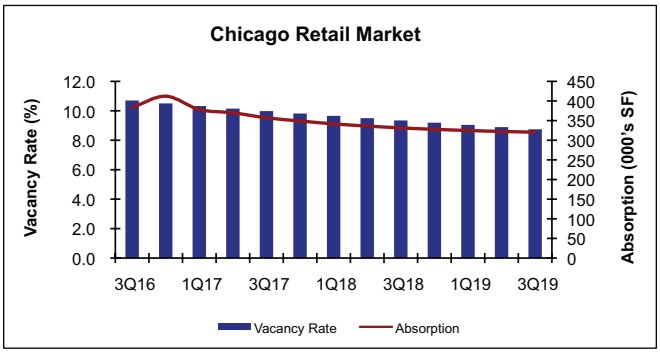

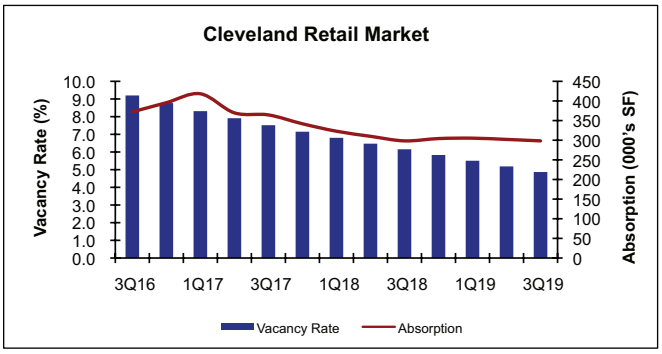

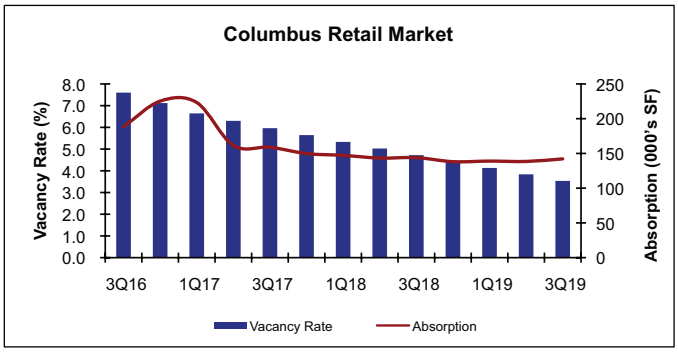

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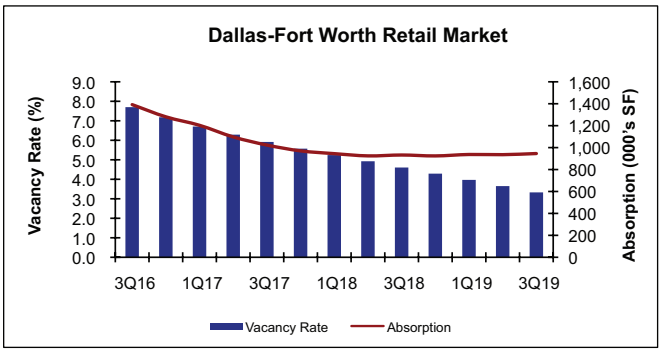
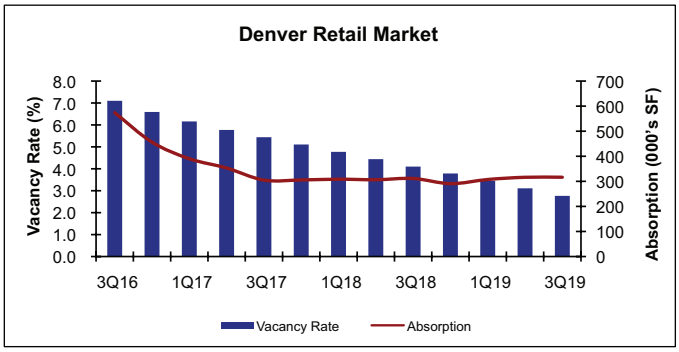
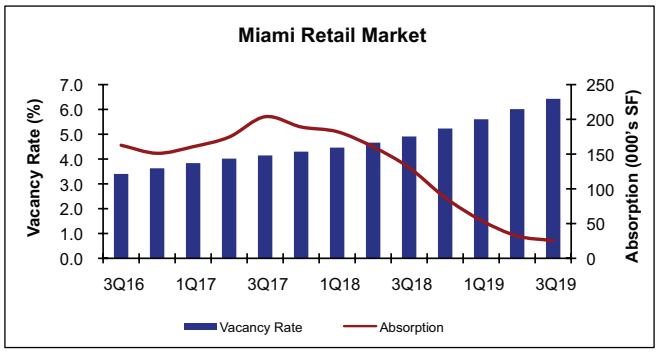
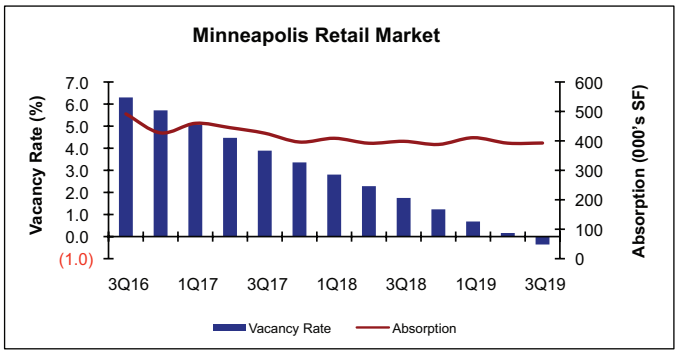
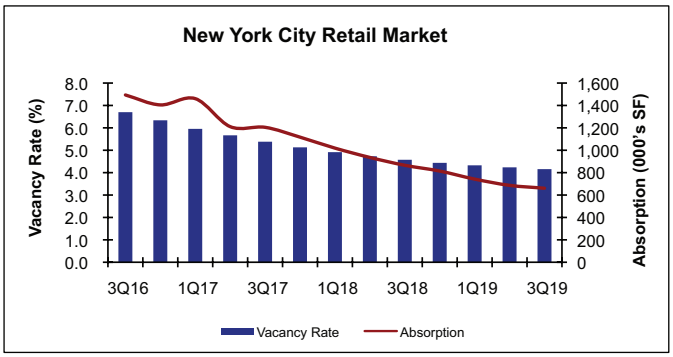


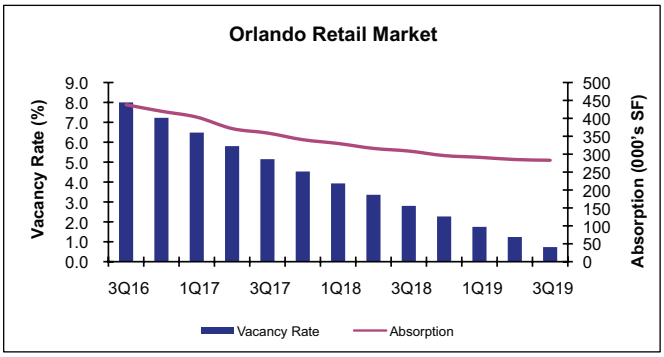


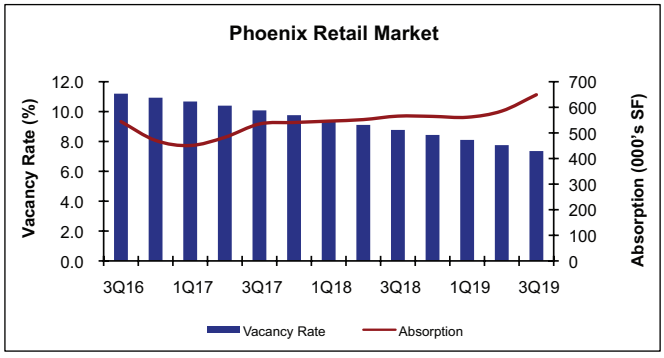


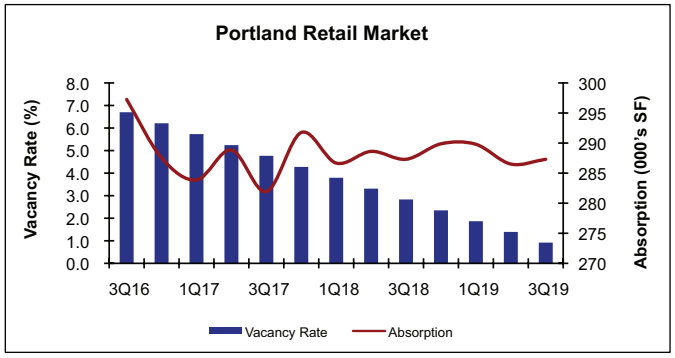


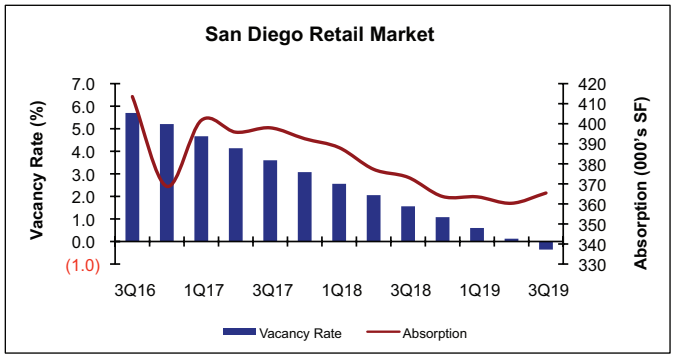
Retail Market Vacancy and Absorption Projection (cont.)



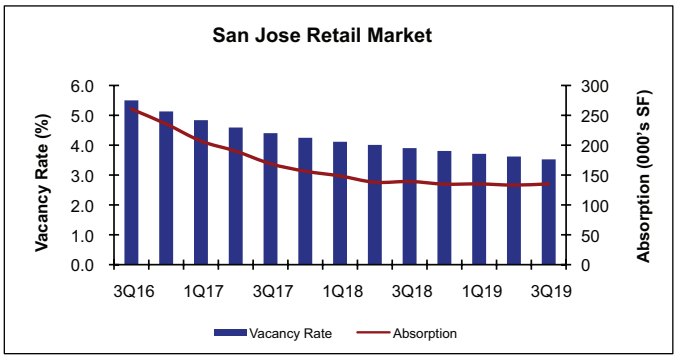


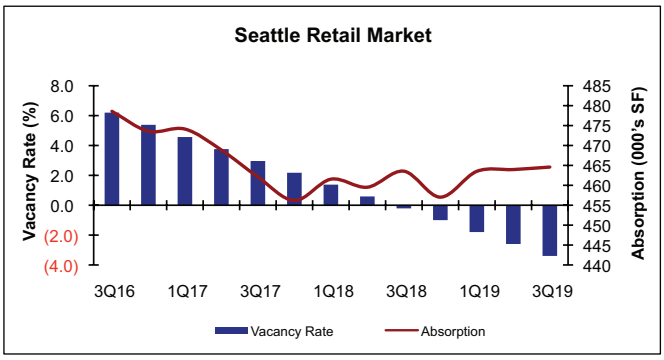


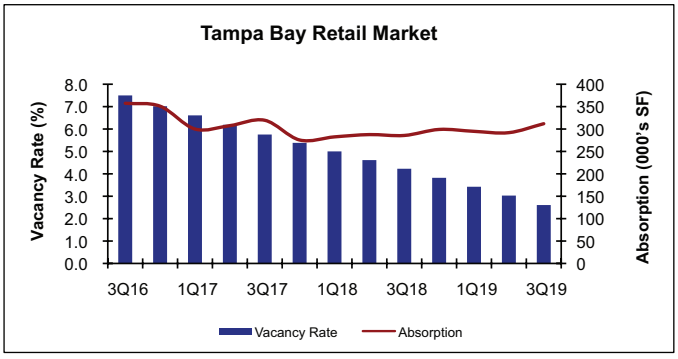


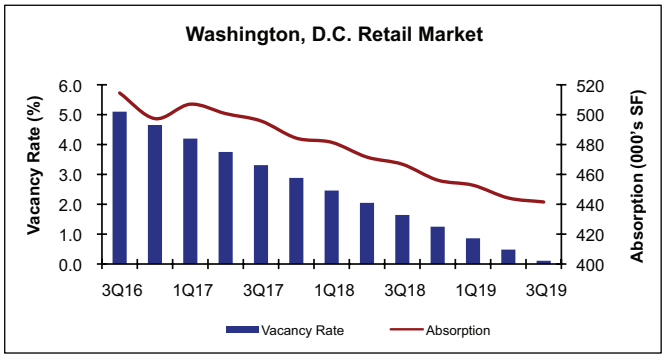


Retail Market Vacancy and Absorption Projection (cont.)









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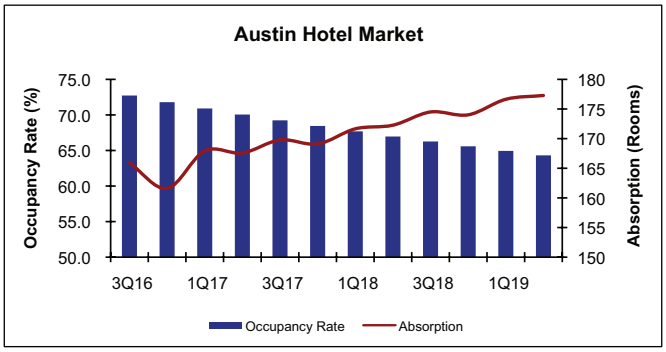
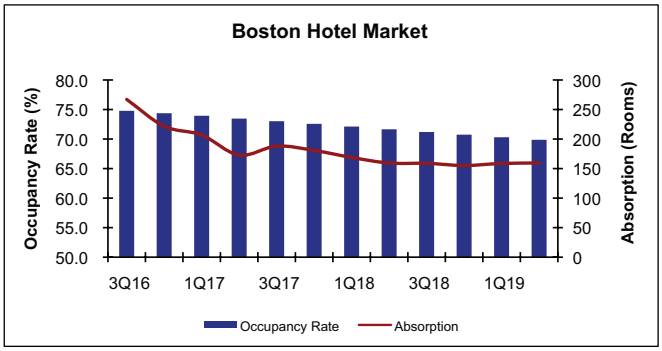
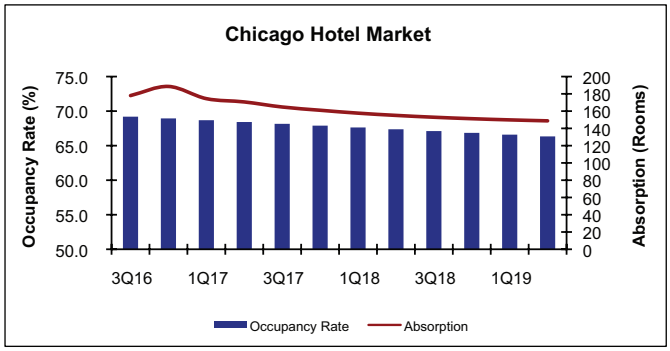
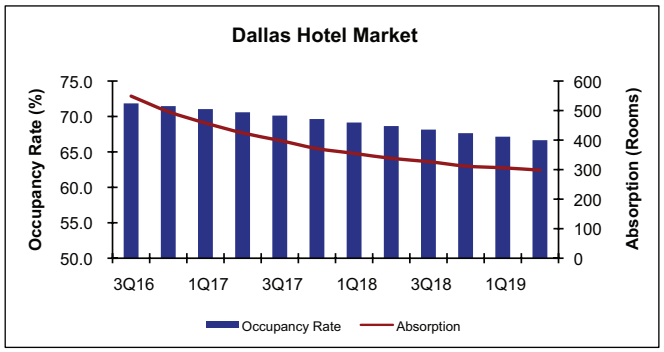
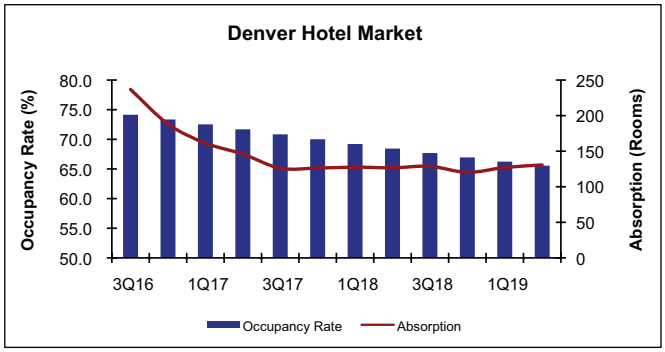
Hotel Market Occupancy and Absorption Projection

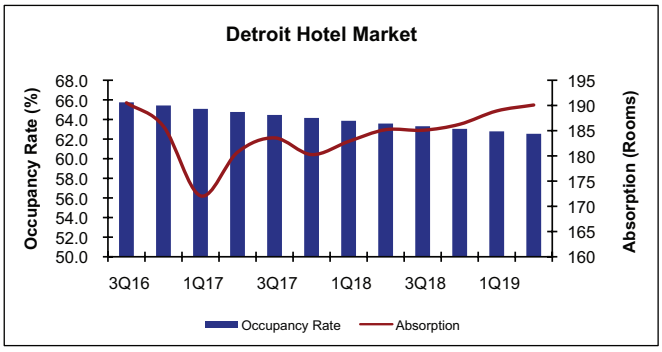












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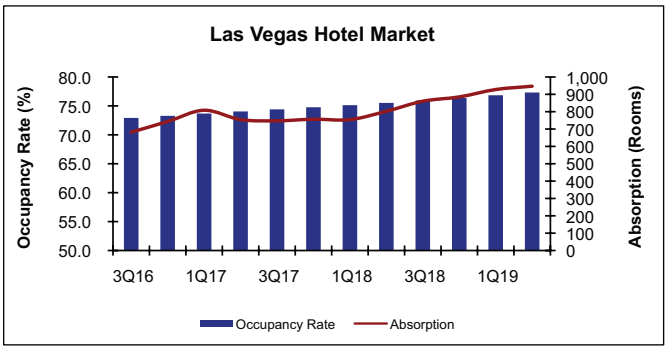
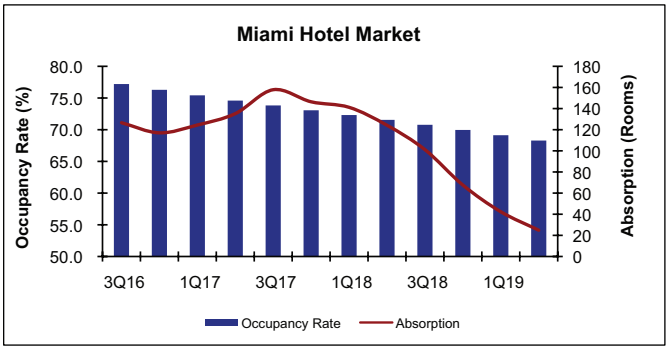
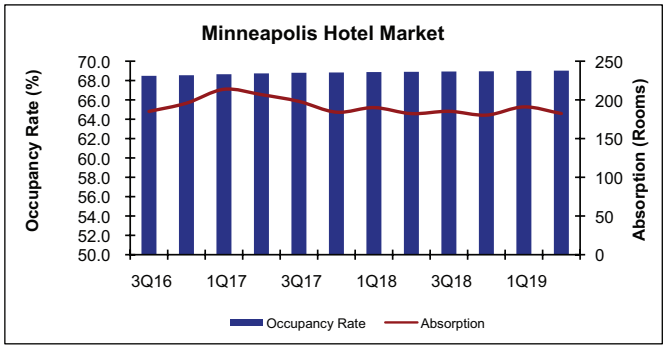
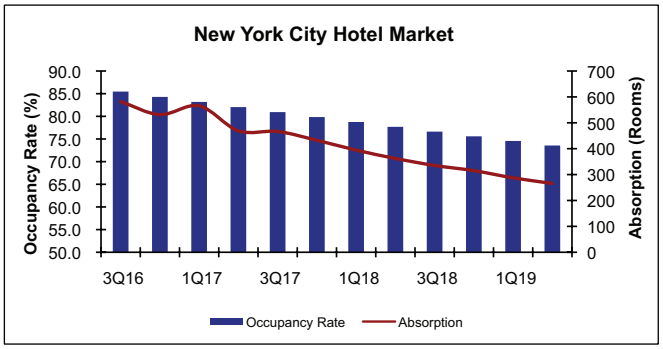
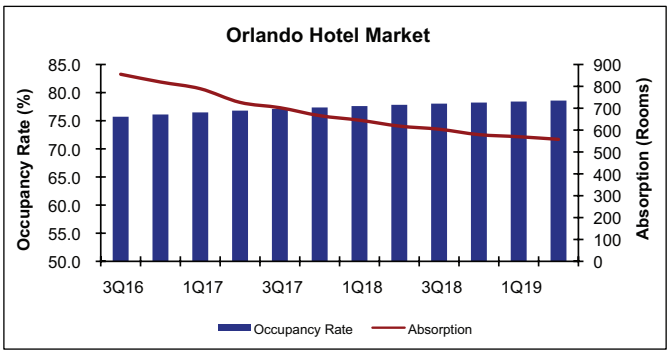


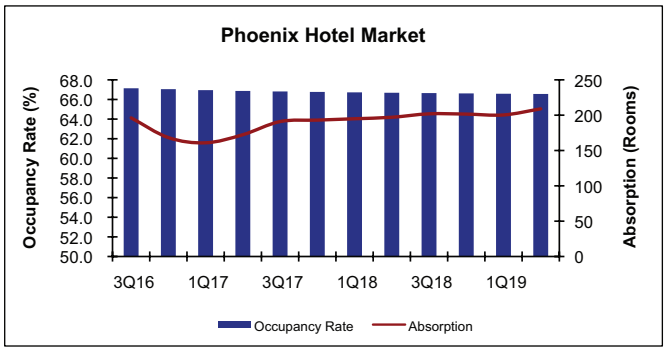


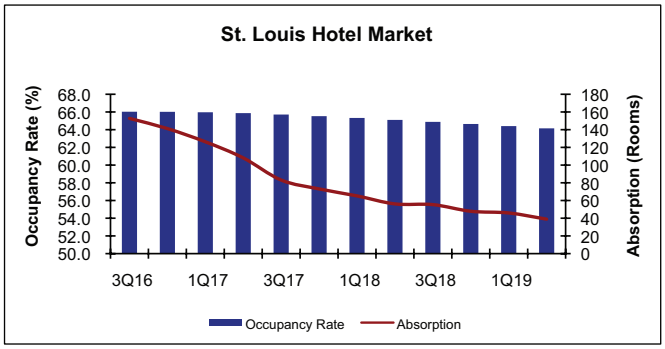


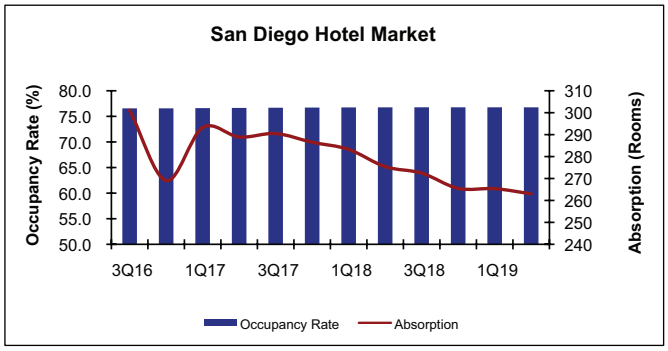


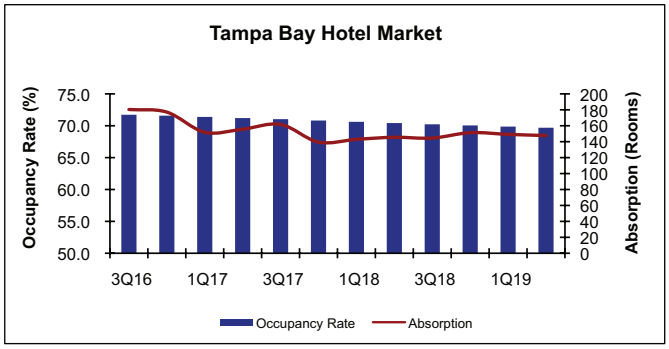


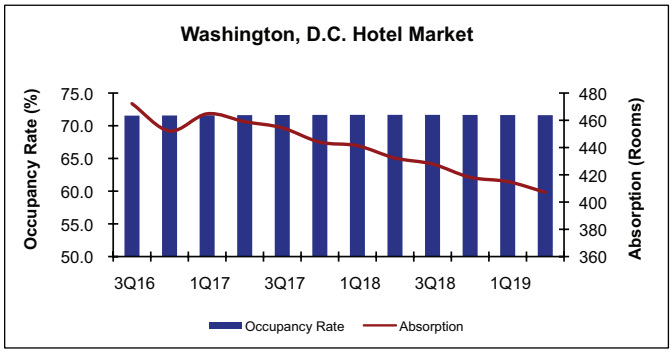
Hotel Market Occupancy and Absorption Projection (cont.)





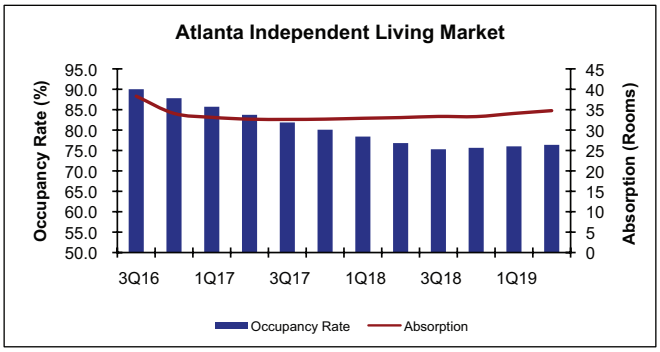


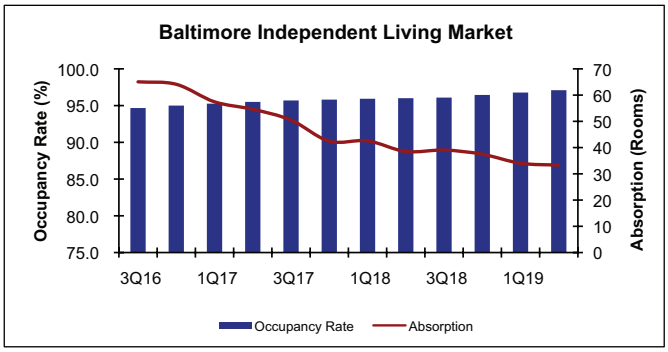


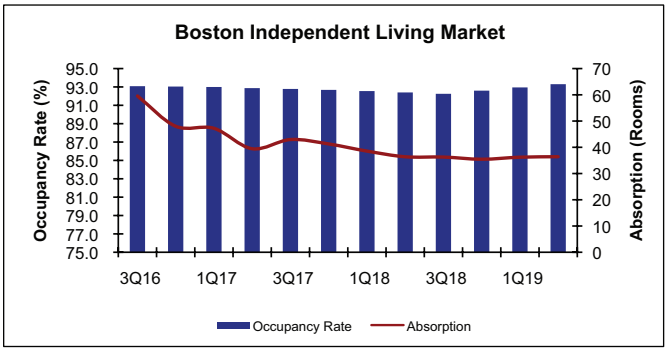


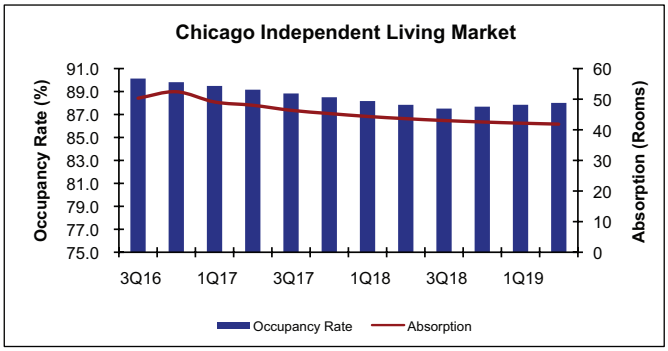
Independent Living Market Occupancy and Absorption Projections

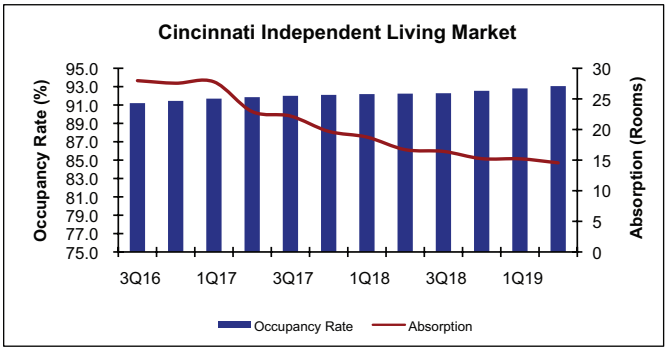
Note on occupancy greater than 100%: In order to calculate estimated occupancy rates, we adjust beginning inventory for new construction completions and compare that to net absorption (including sublease space). If we show 100%+ occupancy rates, it simply means that given the scheduled supply and growth in expected demand, sufficient demand pressure exists to more than absorb all available space. Of course, 100%+ occupancy cannot occur, as in the face of such demand pressure additional development will occur and rents will increase in order to dampen demand. Therefore, forecasts of 100%+ occupancy should be viewed as a strong excess demand indicator.

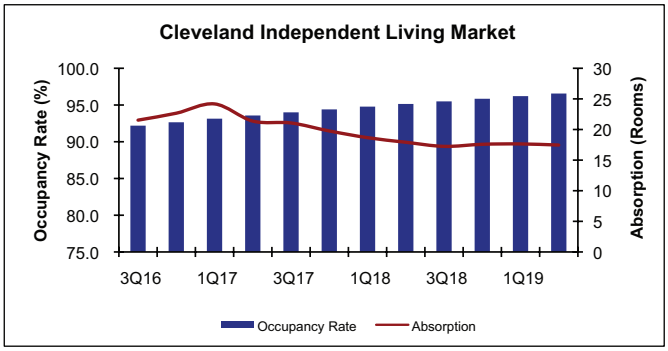


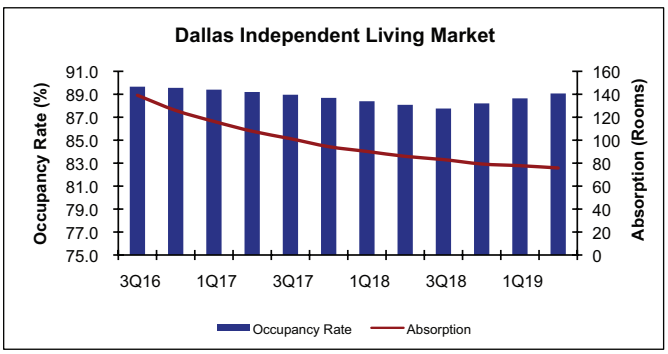


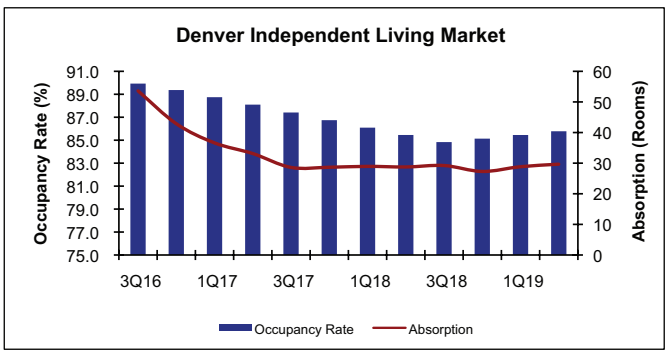




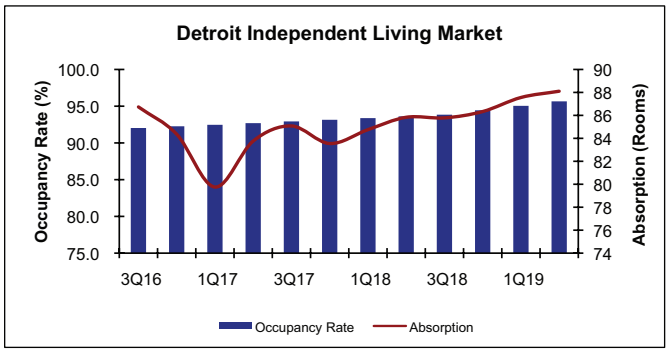


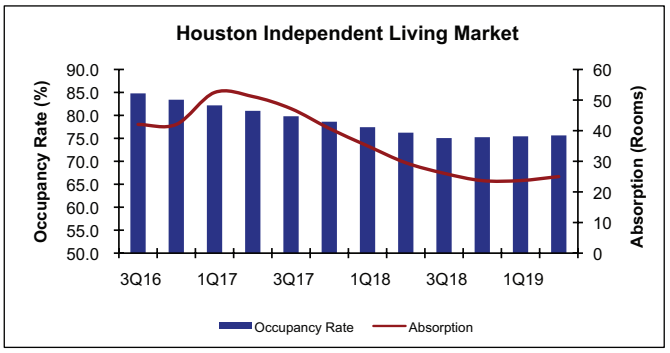


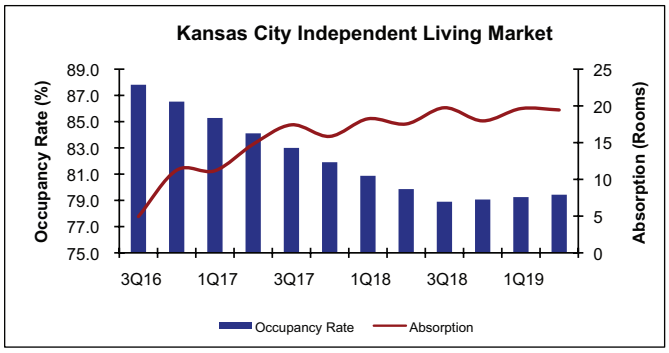


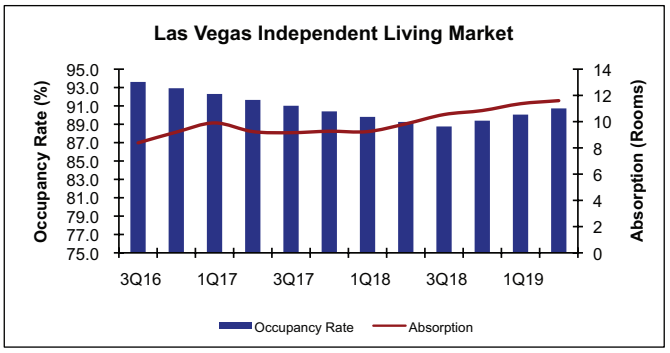


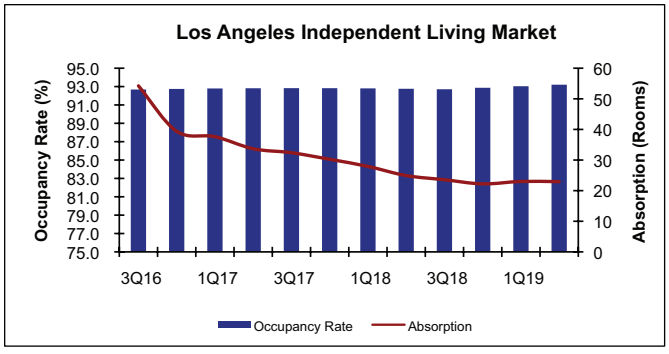
Independent Living Market Occupancy and Absorption Projections (cont.)

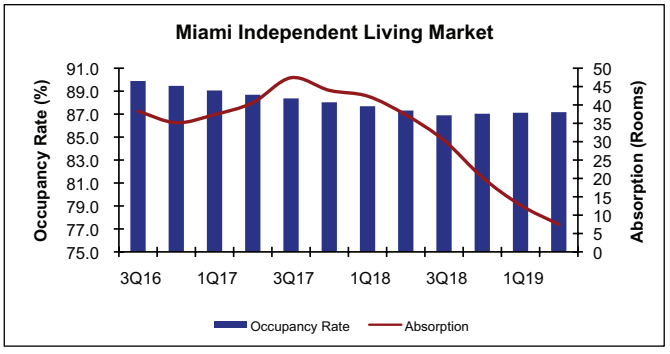


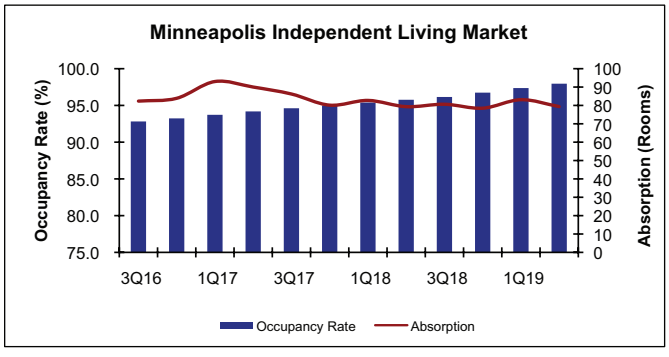


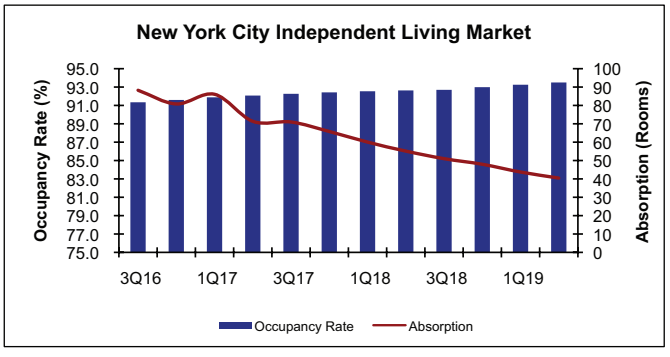




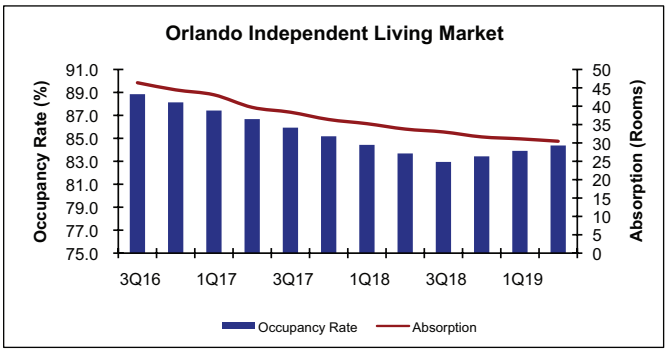


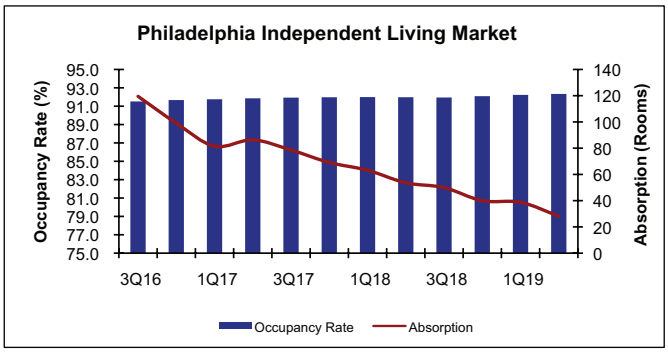


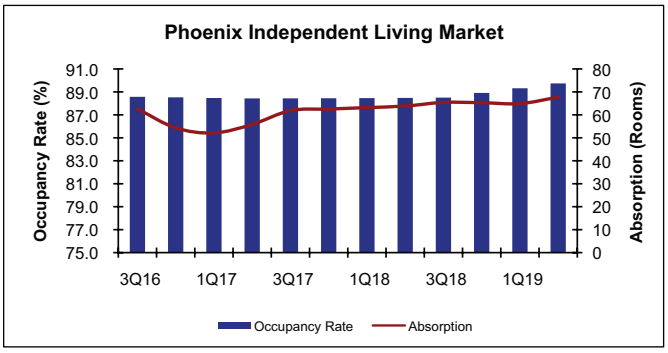


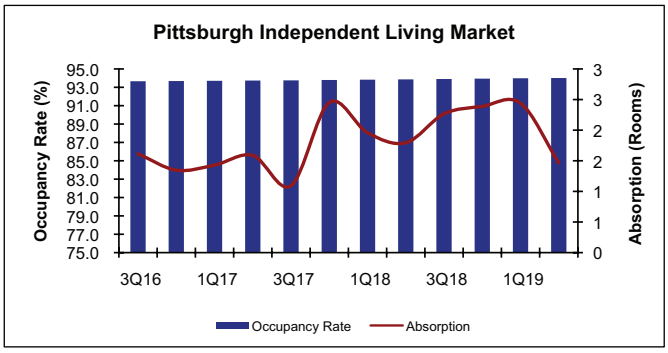


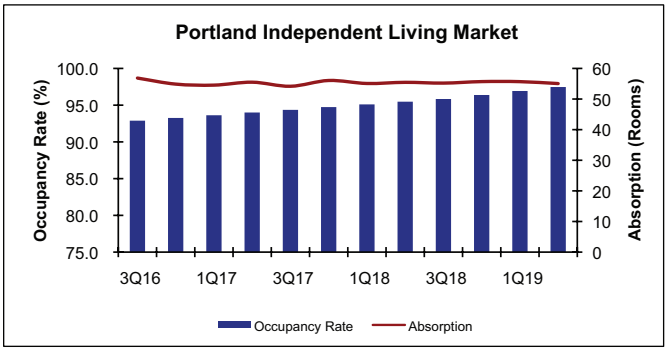
Independent Living Market Occupancy and Absorption Projections (cont.)

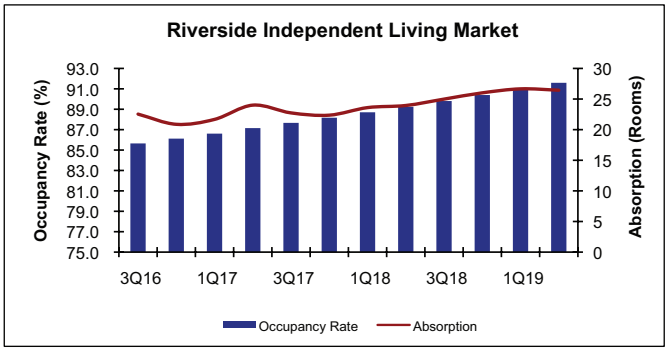


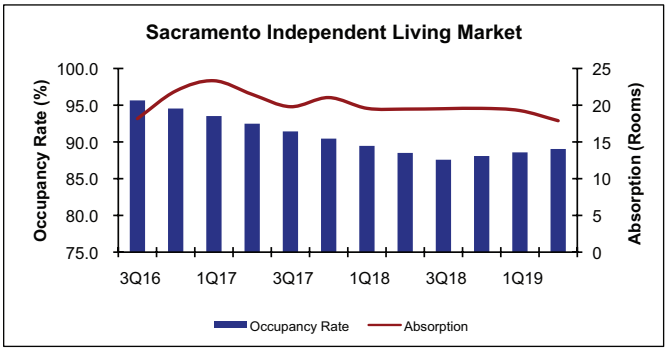


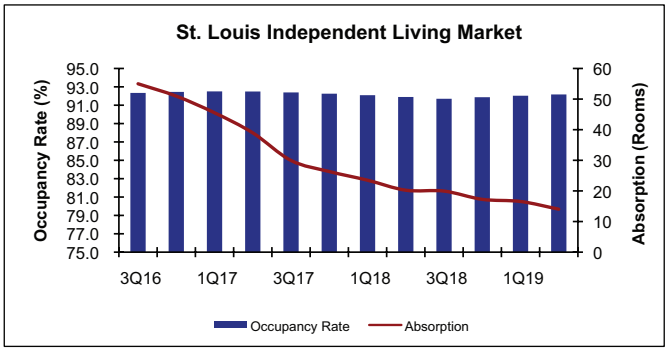




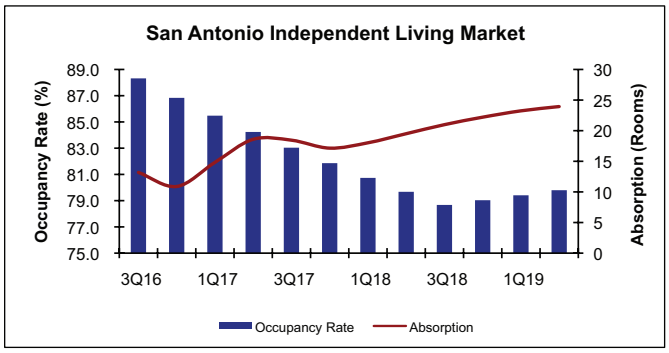


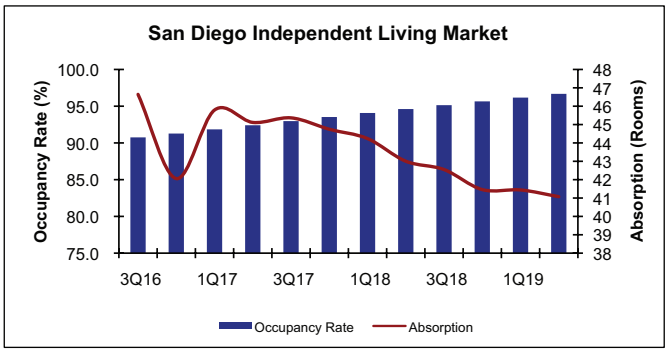


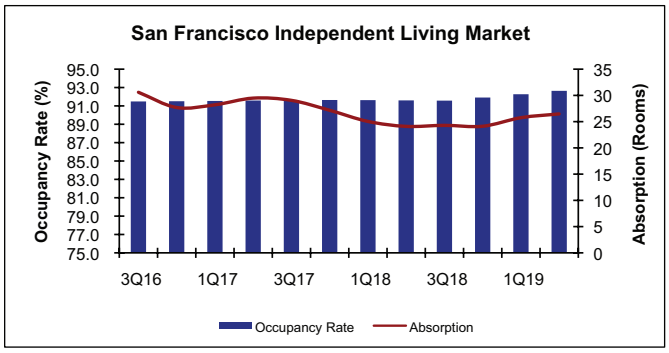


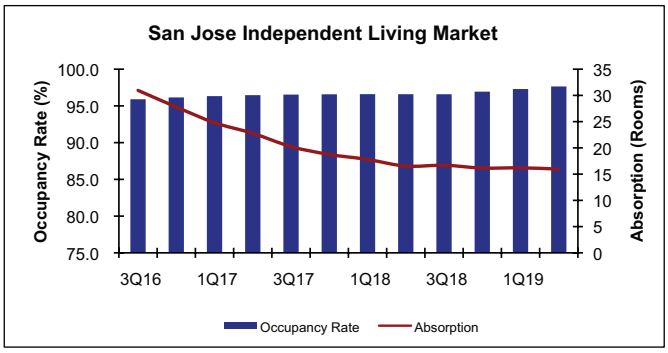


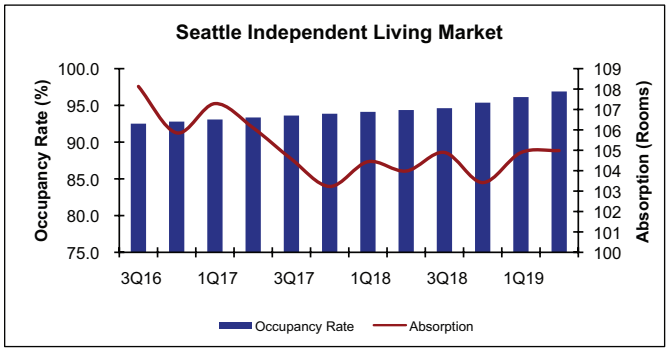
Independent Living Market Occupancy and Absorption Projections (cont.)

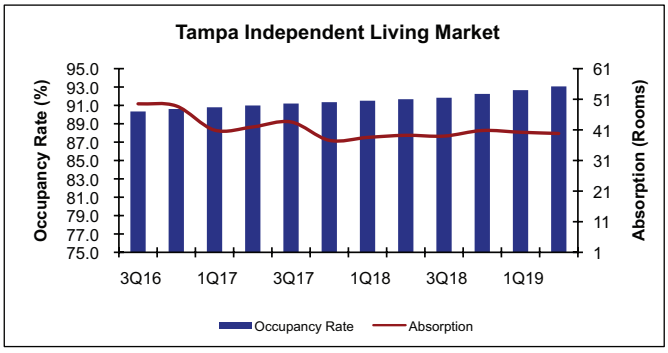


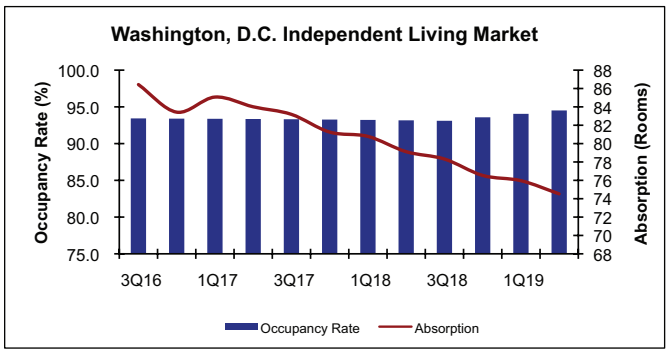












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Assisted Living Market Occupancy and Absorption Projections

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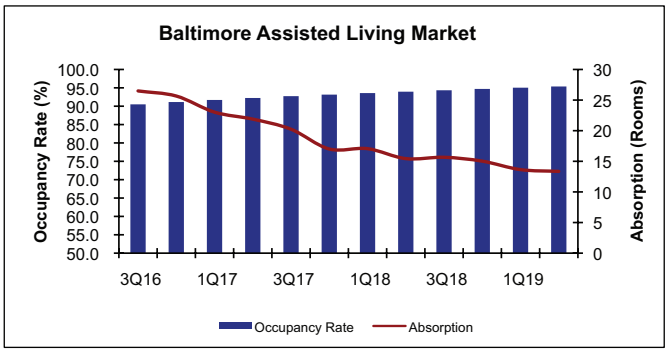
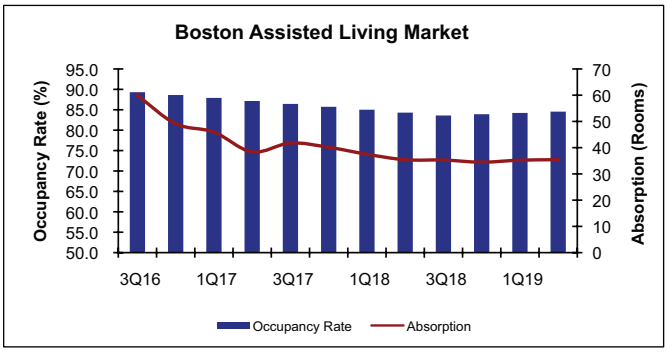
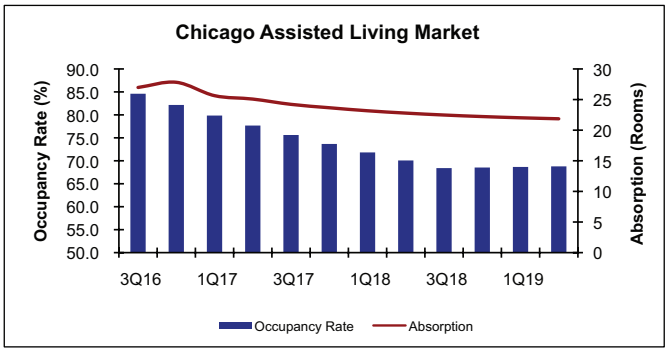
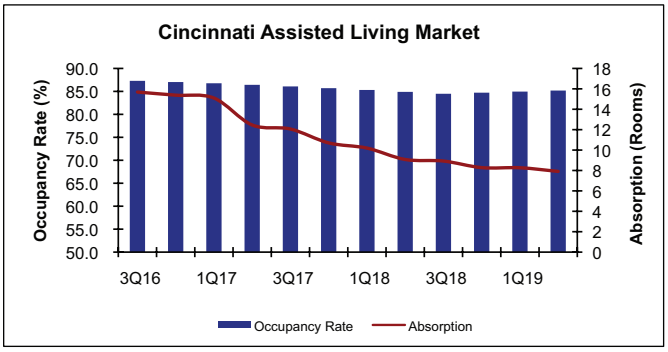
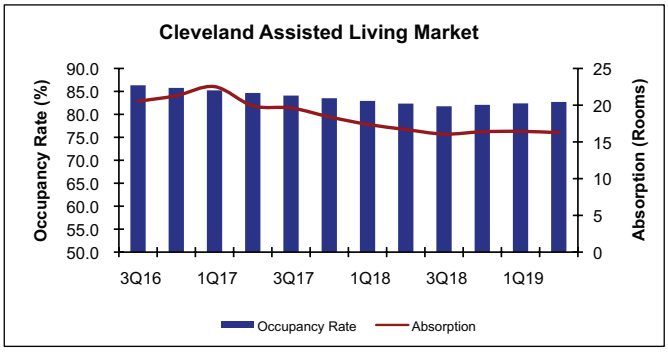
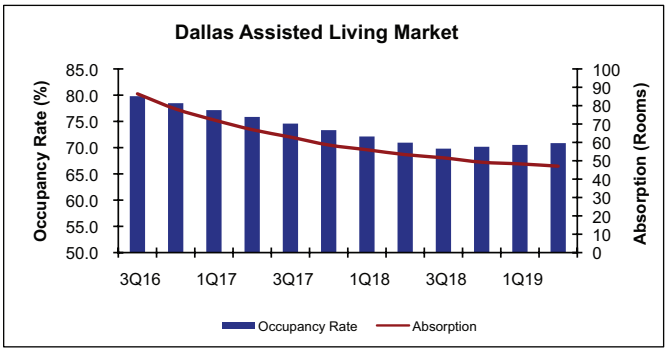


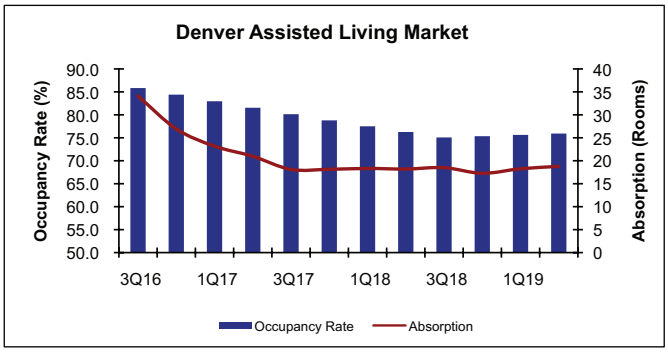




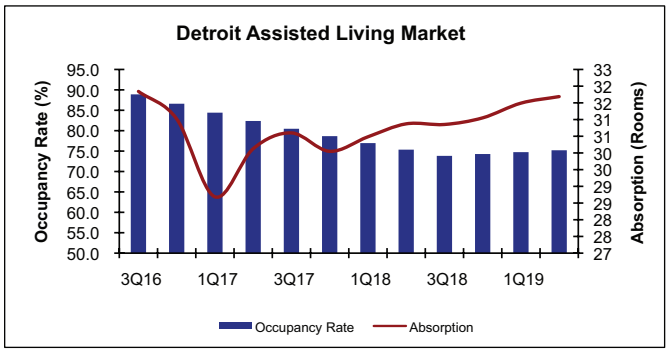


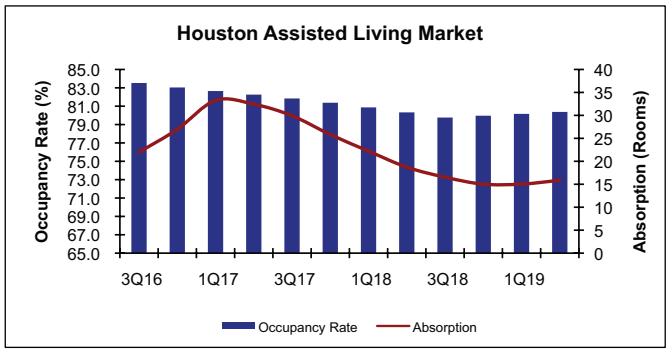


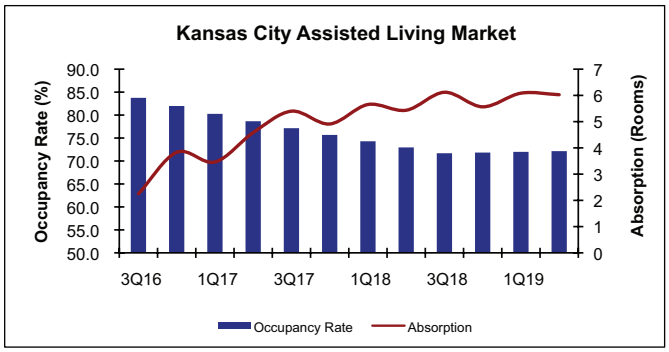


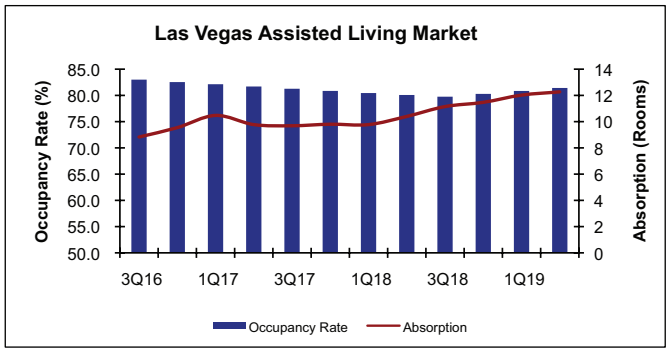


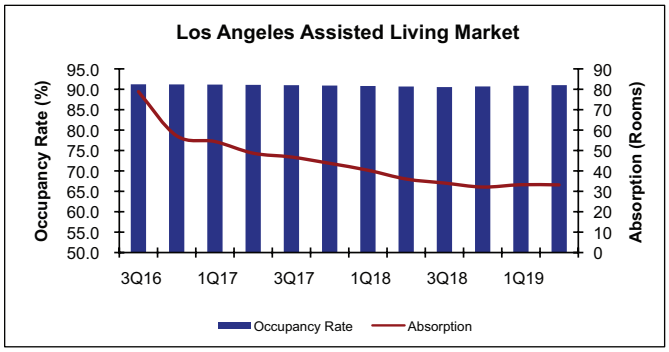
Assisted Living Market Occupancy and Absorption Projections (cont.)

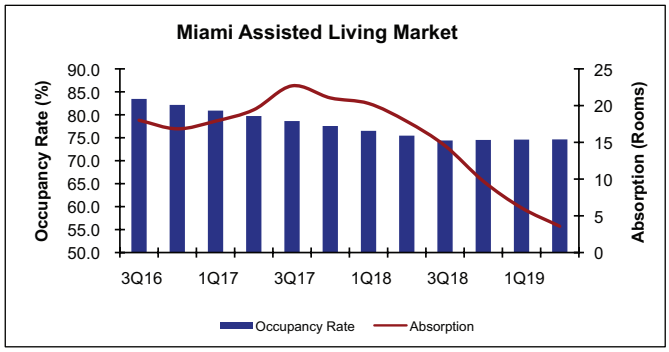


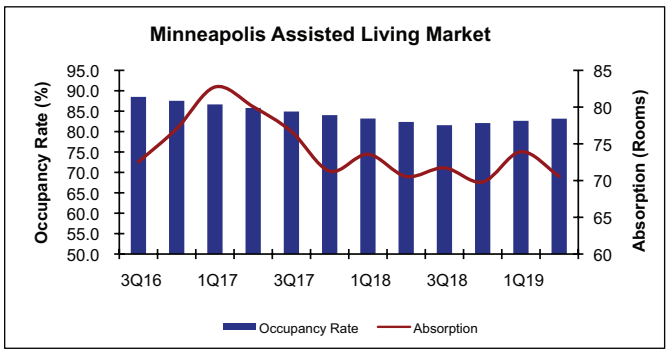


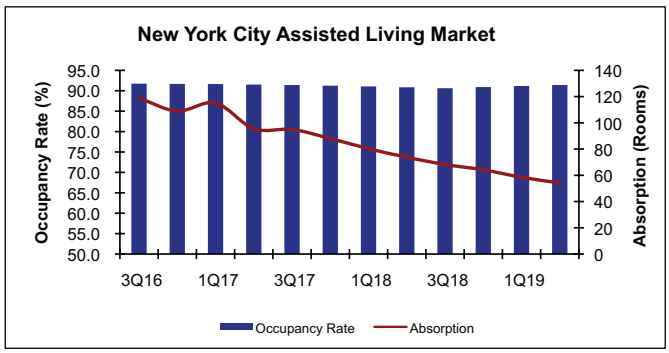




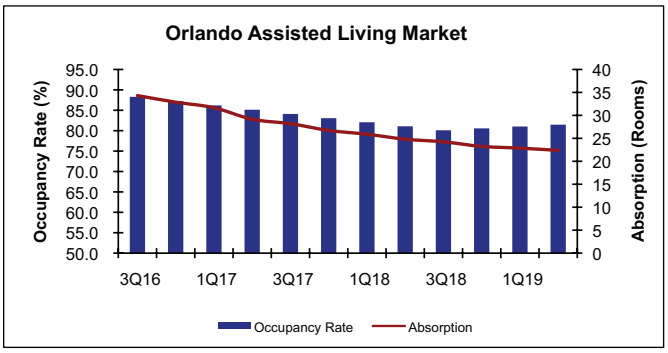


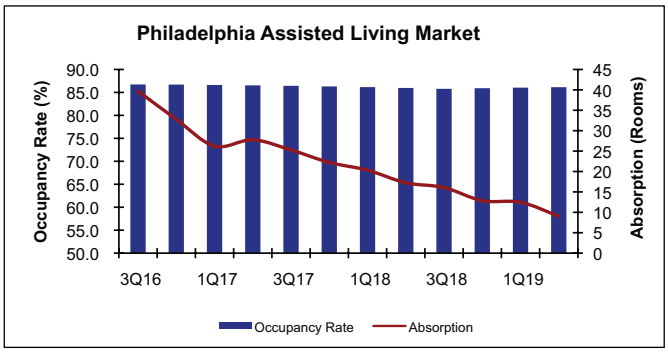


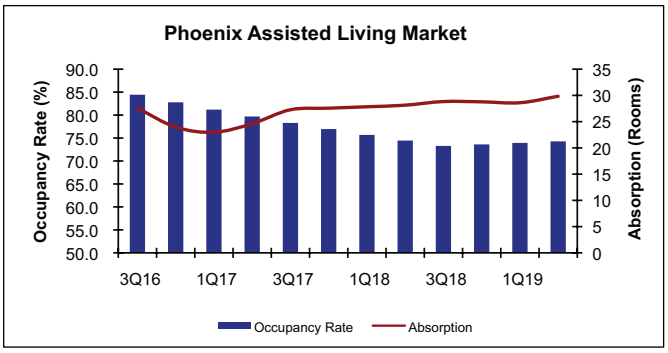


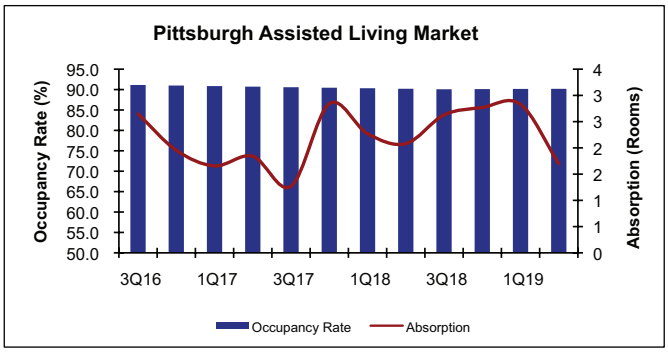


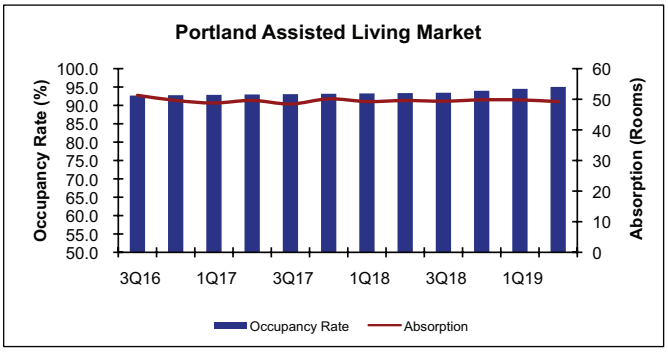
Assisted Living Market Occupancy and Absorption Projections (cont.)

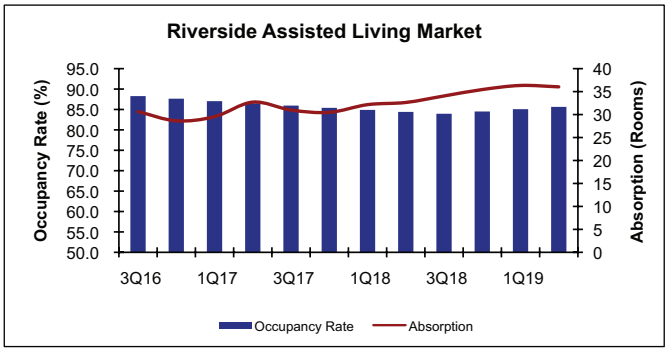


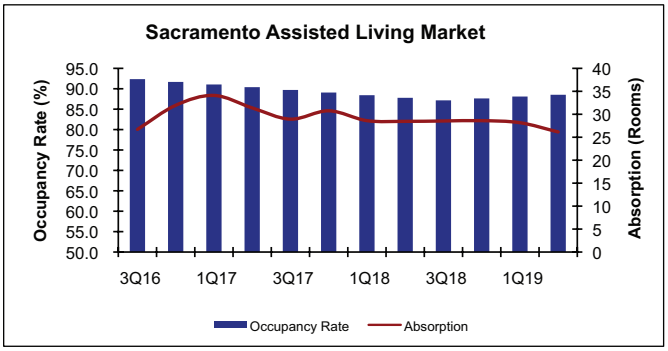


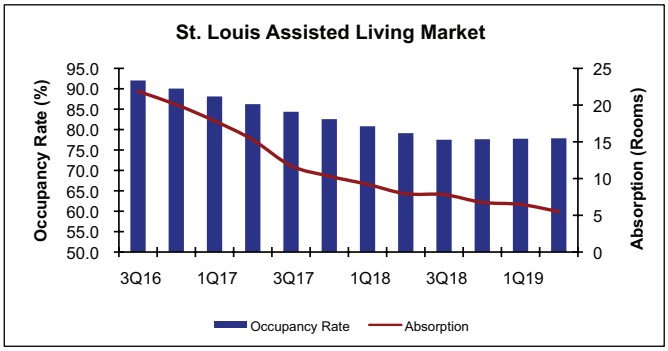




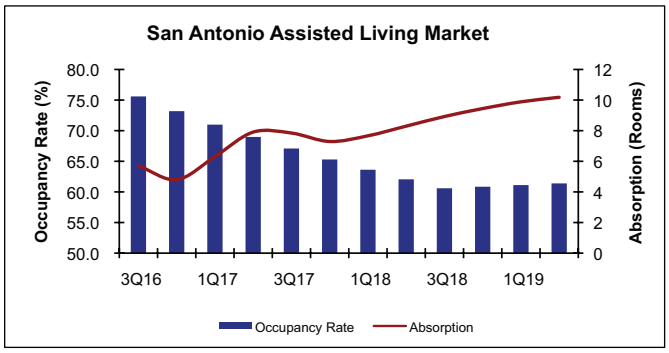


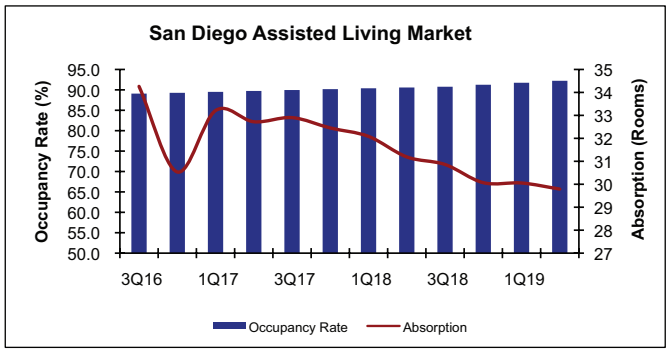


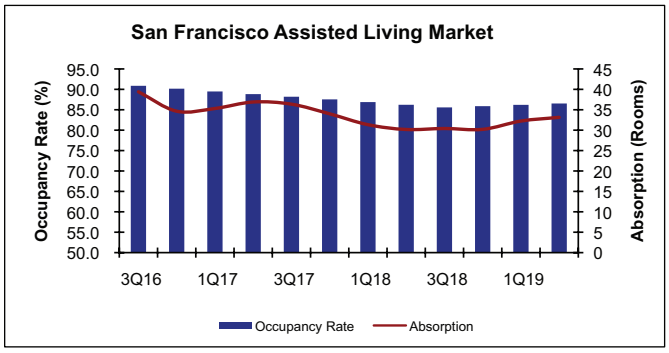


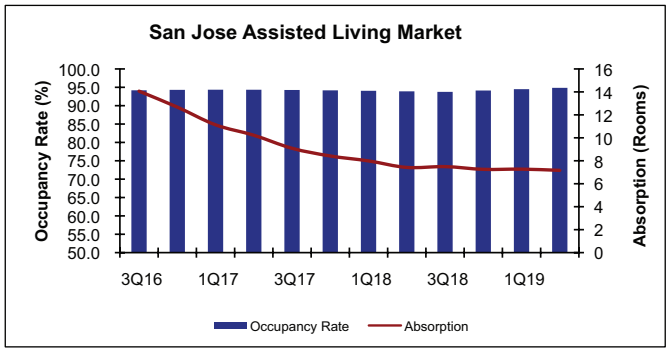


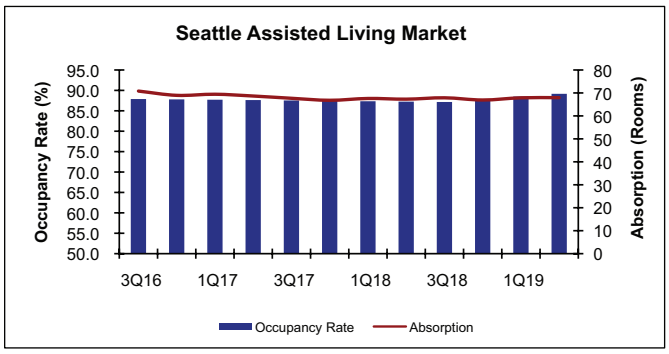
Assisted Living Market Occupancy and Absorption Projections (cont.)

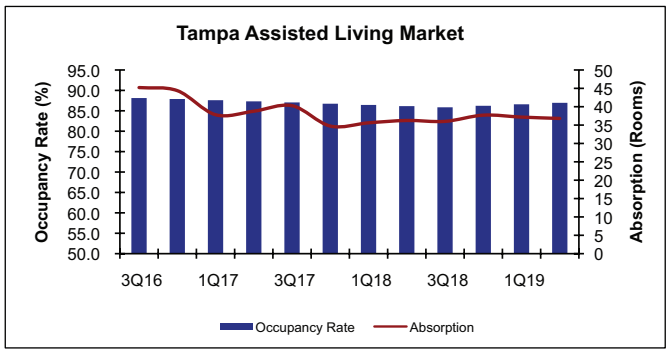


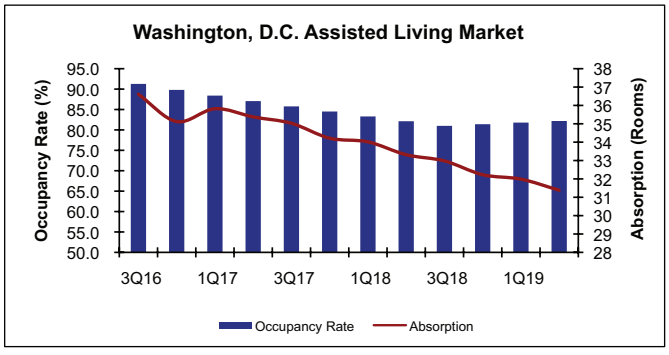












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Dr. Linneman, who holds both Masters and Doctorate degrees in economics from the University of Chicago, is the Principal of Linneman Associates. For over 30 years he has provided strategic and financial advice to leading corporations. Through Linneman Associates, he provides strategic and M&A analysis, market studies, and feasibility analysis to a number of leading U.S. and international companies. In addition, he serves as an advisor to and a board member of several public and private firms.

Dr. Linneman is the author of the leading real estate finance textbook, *Real Estate Finance and Investments: Risks and Opportunities*, now in its fourth edition. His teaching and research focuses on real estate and investment strategies, mergers and acquisitions, and international markets. He has published over 100 articles during his career. He is widely recognized as one of the leading strategic thinkers in the real estate industry.

He also served as the Albert Sussman Professor of Real Estate, Finance, and Business and Public Policy at the Wharton School of Business at the University of Pennsylvania until his retirement in 2011. A member of Wharton's faculty since 1979, he served as the founding chairman of Wharton's Real Estate Department and the Director of Wharton's Zell-Lurie Real Estate Center for 13 years. He is the founding co-editor of *The Wharton Real Estate Review*.

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