Amherst

2020 Market Outlook

Executive Summary

U.S. SINGLE FAMILY HOUSING

HOUSING WILL TAKE CUES FROM THE ECONOMY

- Home prices look fair versus fundamental values, supply is tight and demographics remain supportive
- We expect housing to take cues from the broader economy in the coming years
- Our base expectation is for ~3% annualized growth over the coming years

U.S. COMMERCIAL REAL ESTATE

SLOWING RENT GROWTH IS PRIMARY CONCERN

- Low interest rates have helped cap rates but majority of the price rise since 2010 is from NOI growth
- Price and rent growth remains positive but the pace has slowed especially in office and retail
- If rent growth slows further, then continued price increases could come under pressure
- Idiosyncratic events related to rent control laws, WeWork and the like are more likely to dominate the headlines than macro drivers

Source: Amherst as December 2019

Executive Summary

SECURITIZED PRODUCTS

STAY UP THE CAPITAL STACK

- The return on securitized credit does not adequately compensate for the leverage and idiosyncratic risks
- While there is no imminent trigger, the risks of a credit curve steepening event outweigh further flattening
- We see more value at the top of the capital stack in securitized credit products

SPECIAL TOPIC

WILL AI BE THE NEW PARADIGM IN REAL ESTATE INVESTING – A CASE STUDY

- High-level housing analysis misses the heterogeneity in the asset class; home-level analysis is noisy and untenable
- We use AI/ML techniques to create "the nine neighborhoods of America"
- These clusters have correlated within-cluster behavior and this can improve forecast accuracy

Source: Amherst as December 2019

U.S. SINGLE FAMILY HOUSING

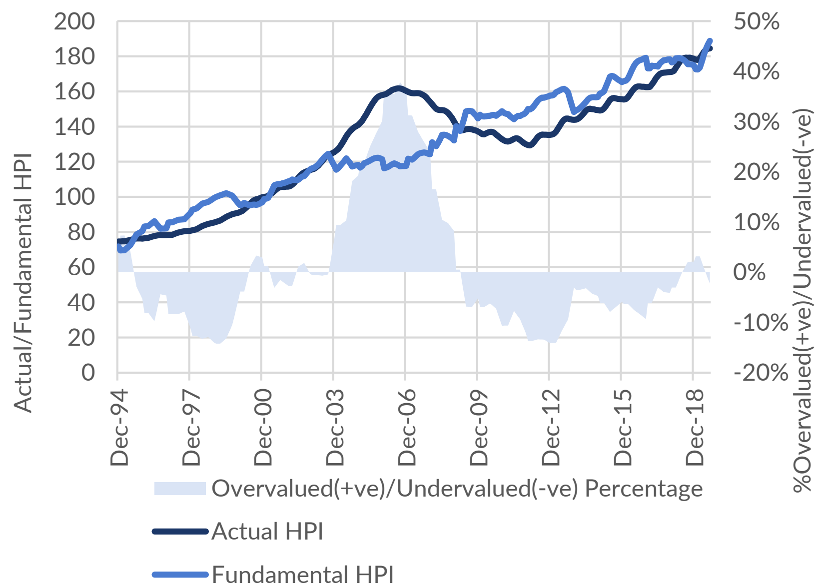
Housing Will Take Cues From The Economy

U.S. home prices growth has slowed to about 3%

- US single-family home prices grew 3.1% Y-o-Y in Sep 2019 based on the Amherst Home Price Index (HPI), slower than the 4.4% gain at YE 2018 and 5.3% at YE 2017. The CAGR over the last 20 years from 1999-now is about 3.8%
- The rise in home prices since 2014 has brought home prices in equilibrium with fundamentals, with lower rates helping to increase fundamental prices in the last 12 months
- Currently, prices nationally are marginally below fundamentals (by about 3%), bringing us to about 2002 levels and well below 2005-2007 when homes were on average 38% overvalued

AMHERST HOME PRICE INDEX Y/Y CHANGES (JAN '00 – SEP '19)

AMHERST HOME PRICE INDEX AND FUNDAMENTAL VALUE (DEC '94 - SEP '19)

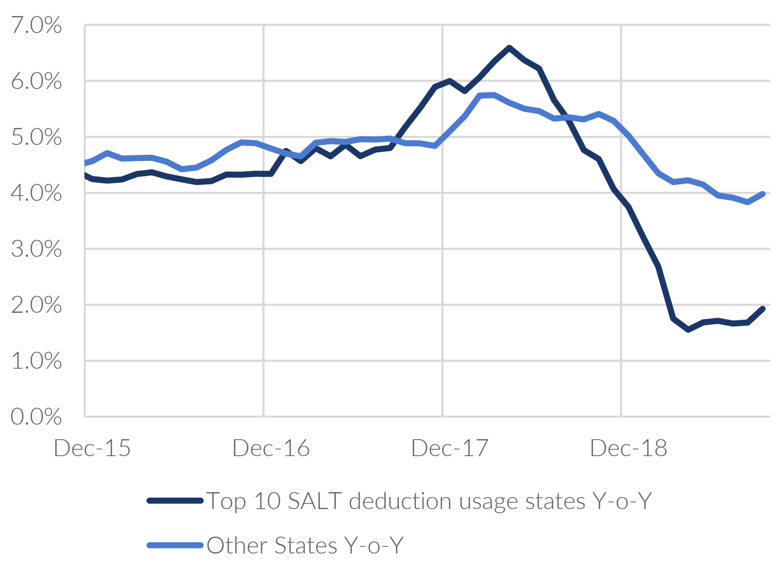


Source: Amherst as December 2019

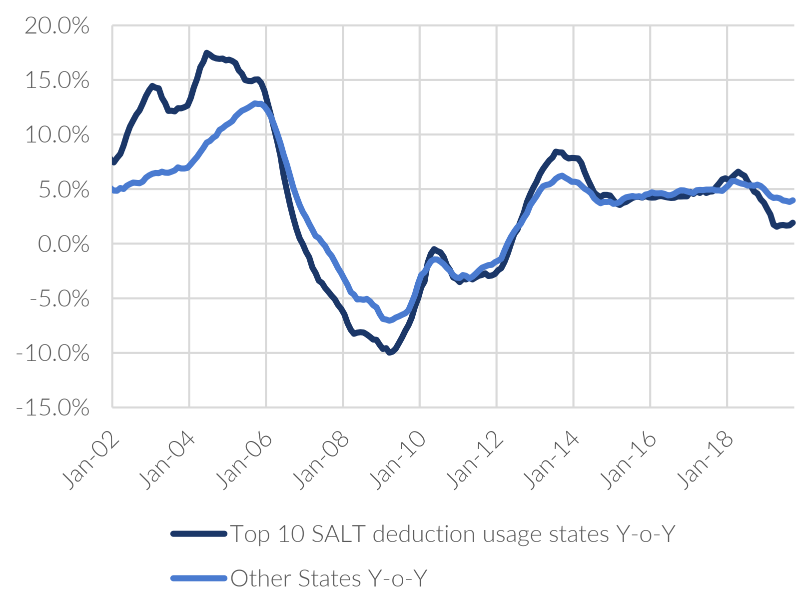
The SALT tax deduction cap was partly responsible for the drag on home price growth

- The Tax Cuts and Jobs Act of 2017 capped the State and Local Tax Deduction (SALT) at $10,000 and lowered the mortgage interest deduction limit from $1MM to $750K, making homeownership more expensive for some. The states most likely affected by this include: NY, CT, CA, NJ, and DC
- Through Q3 2019, the most SALT affected areas (top 10 states by average SALT taxes paid per filer) only grew at 1.9% annualized compared to 4.0% in other states. Areas less affected by SALT slowed from about 4.8% in Dec 2017 to about 4.0% in the most recent data. SALT states slowed from 6.0% in Dec 2017 to 1.9% in the most recent data
- The right chart shows that these areas have generally been more volatile than the rest going back the last 15-20 years. So some of the recent underperformance is possibly due to the higher beta nature of these areas, in addition to the one time re-pricing led by the increases in cost of ownership

AMHERST HOME PRICE INDEX Y/Y CHANGES (DEC '15 – SEP '19)



AMHERST HOME PRICE INDEX Y/Y CHANGES (JAN '02 – SEP '19)

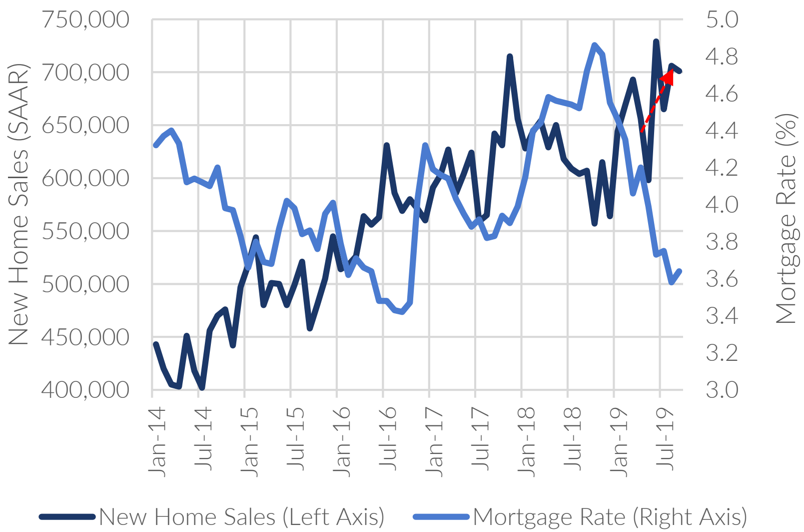


Source: We base SALT exposed states on the 10 highest use states of the State and Local Tax Deduction from Pew which are NY/CT/CA/NJ/DC/MA/MN/MD/OR/IL. https://www.pewtrusts.org/en/research-and-analysis/articles/2018/04/10/cap-on-the-state-and-local-tax-deduction-likely-to-affect-states-beyond-new-york-and-California, IRS data, Amherst as December 2019

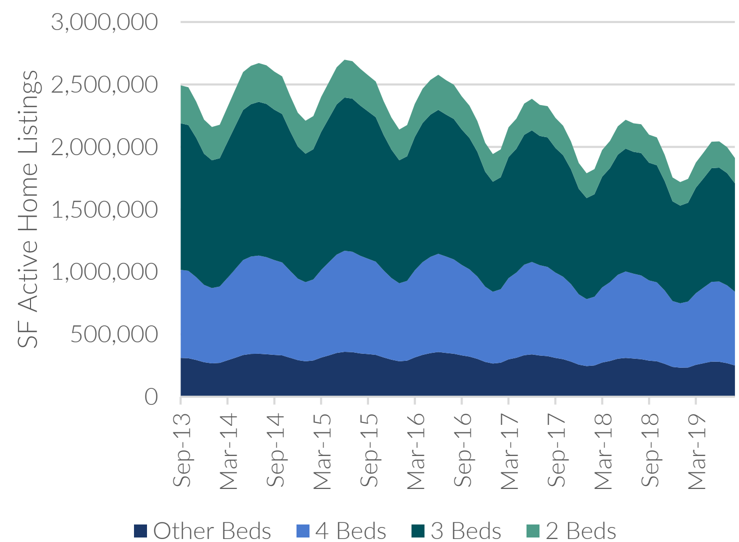
Affordability is less of a worry post the rate rally; and lack of supply is still a positive

- New home sales and starts have picked up starting in Fall 2018 as lower rates helped affordability
- Listed inventories have risen slightly for new homes sales but remained relatively low for existing home sales
- With the lower rates over the past 12 months, affordability is less of a worry than it was at this time last year
- Consensus estimates of rates also seem flat to lower from here over the next 12 months
- With the economy slowing slightly and home prices at fair levels overall, we expect national home prices to grow at a similar pace to the 2nd half of 2019, and forecast 2.9% growth in home price appreciation (HPA) next year and 3.0% annually over the next 3 years

NEW HOMES SALES ARE RISING AS MORTGAGE RATES FALL (JAN '14 – SEP '19)



BUT LOW INVENTORY CONTINUES TO SUPPORT PRICES (JAN '13 – SEP '19)

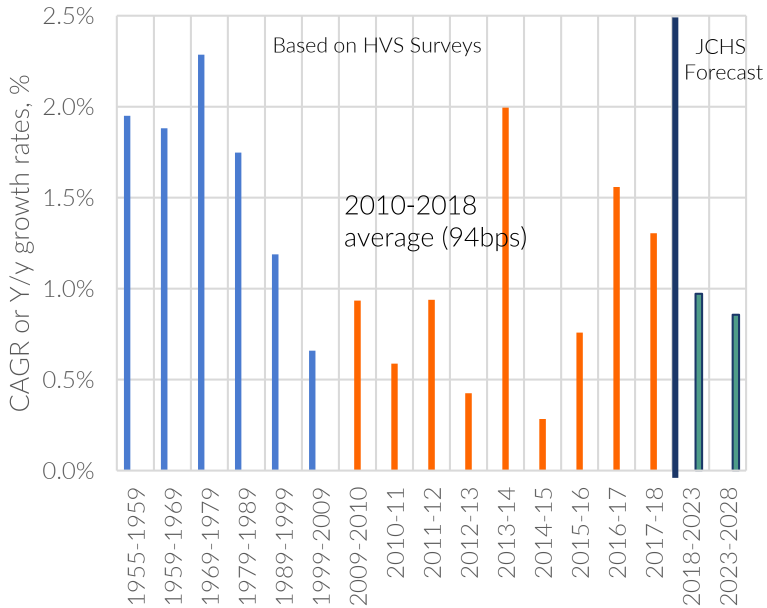


Source : Census Bureau, Freddie Mac U.S. Mortgage Market Survey 30Y Mortgage, Amherst as of November 2019 (2) MLS, Amherst as of December 2019

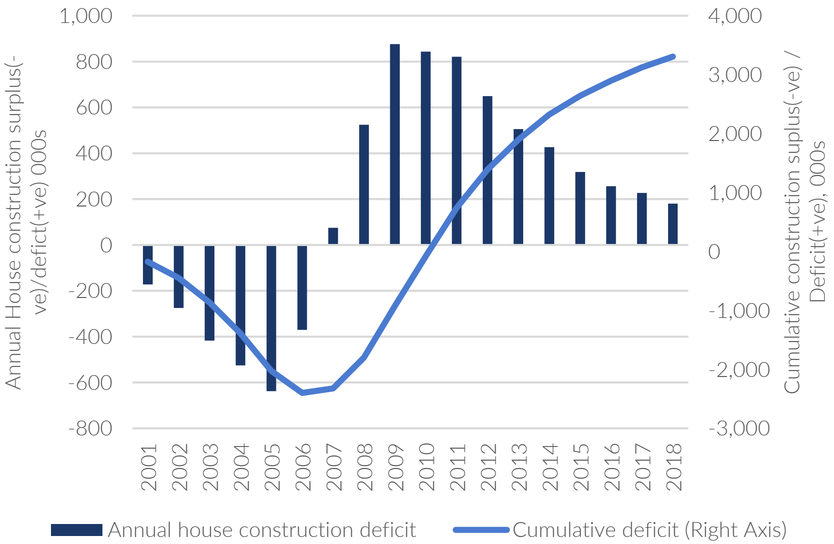
Construction has failed to keep up with household growth

- We believe population growth will continue to fuel housing demand, with households growth projected to increase at a faster rate through 2025 compared to 2010-2018 (94bps) as millennial household formation peaks
- Too few homes have been built after the crisis with an estimated deficit of nearly 3 million homes[2]

HOUSEHOLD GROWTH TO PICK UP[1]



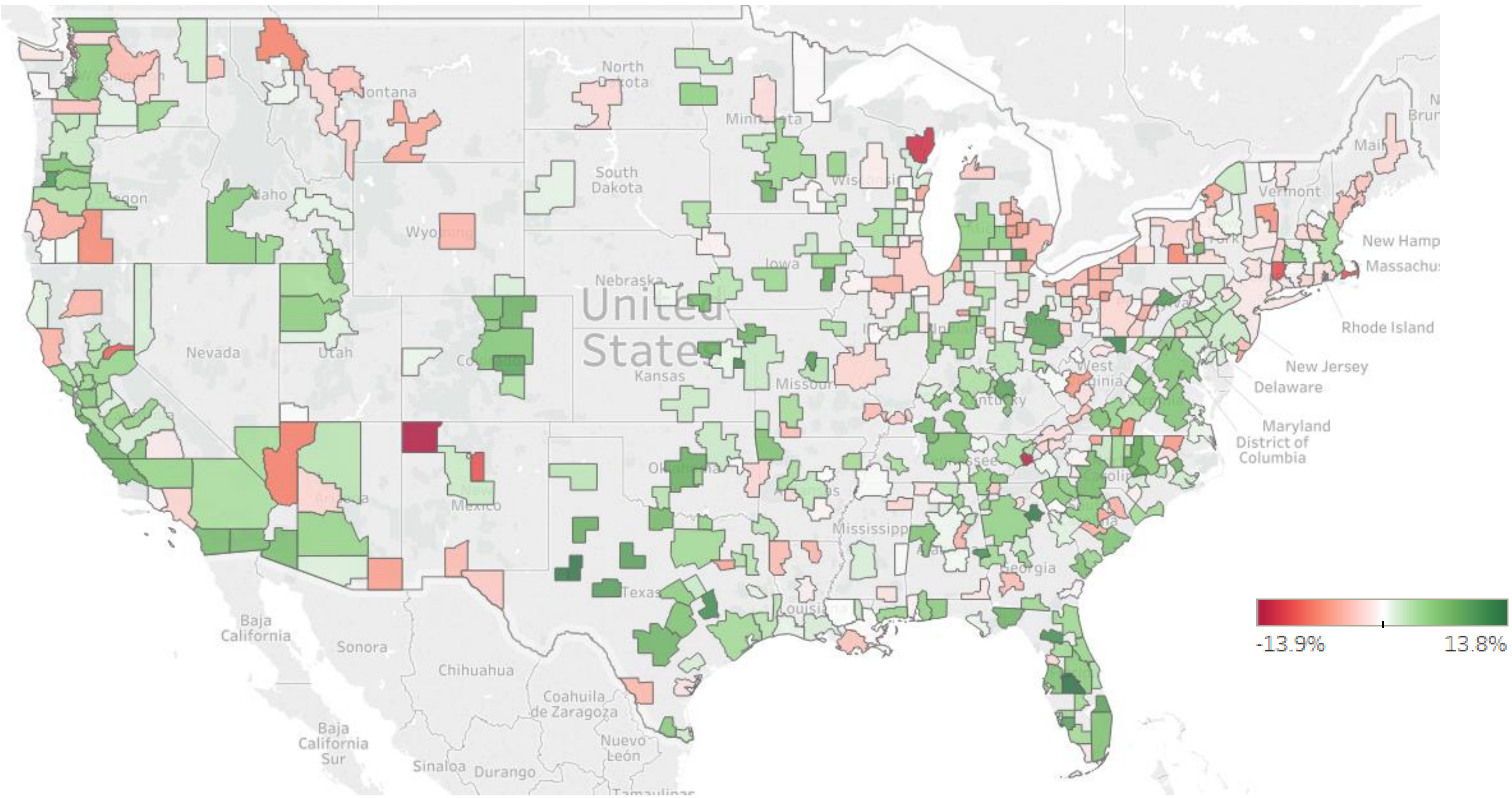
CONSTRUCTION DEFICIT POST-CRISIS SHOULD SUPPORT DEMAND[2]



Source: (1) 2018-2020 and 2020-2025 households estimated by using population estimates and assuming the household rate by age group remains at 2017 levels. Amherst Census Bureau as of November 2018 (2) Amherst tabulation of U.S. Census bureau data on U.S. Housing Units Starts as of November 2018. Note: Annual deficit is shown as the difference between homes constructed in the year vs the longer run average from 1960-2000.

Some areas have much higher housing deficits

- Colorado, North Carolina, Florida, Texas, California are some of the most supply-constrained states as % of stock
- On the flip side, homes are slightly oversupplied in parts of New Mexico, Northern New England, Upstate New York, Northeast Ohio, Illinois and Michigan



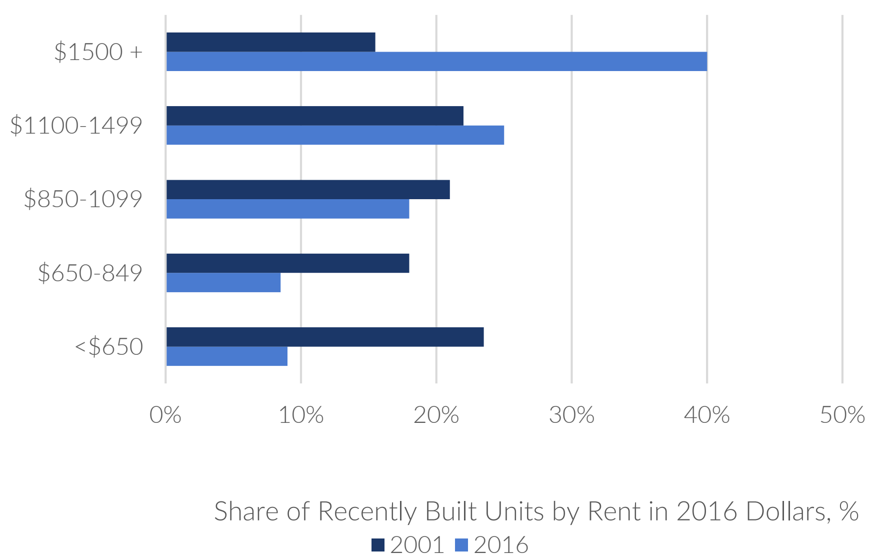
Source: Amherst estimates based on Census ACS data from 2005-2018 as of November 2019

Note: We estimate the underserved population based on the difference in population growth and growth in housing stock over the 2005 and 2018 period. We convert this to under-construction, using each MSAs average Population per housing unit ratio across the time period. Finally this number of homes is expressed as a percentage of the 2018 housing stock. Positive numbers show undersupply and negatives show oversupply

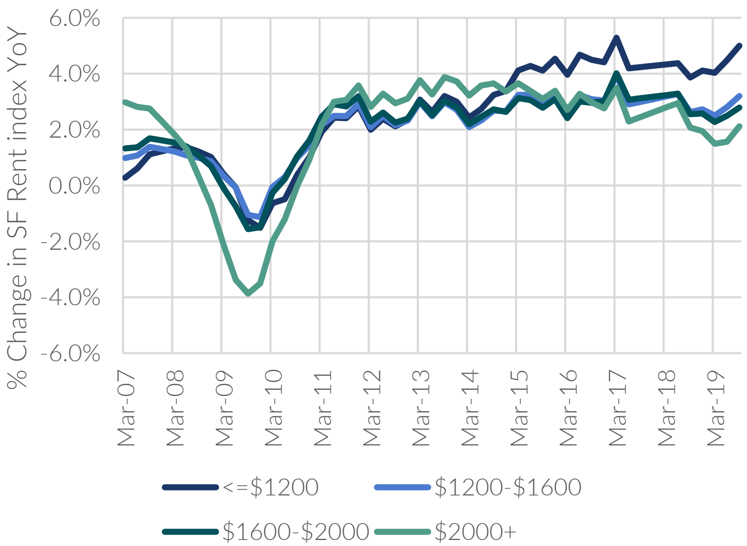
Most new builds have been at the higher end; supply limited at the lower end

- Construction has mostly been focused on higher end with 65% of new units from 2014-2016 having greater than $1100 of monthly housing costs. For units built in 1999-2001 the share was 37% (all housing costs are adjusted to 2016 dollars)
- While the high end was experiencing the strongest rent growth within SFR from 2011-2014, low end rent growth has been much stronger in the last 4 years

SHARE OF RECENTLY BUILT UNITS BY MONTHLY HOUSING COSTS



RENT GROWTH BY CURRENT RENT TIER (MAR '07 – SEP '19)



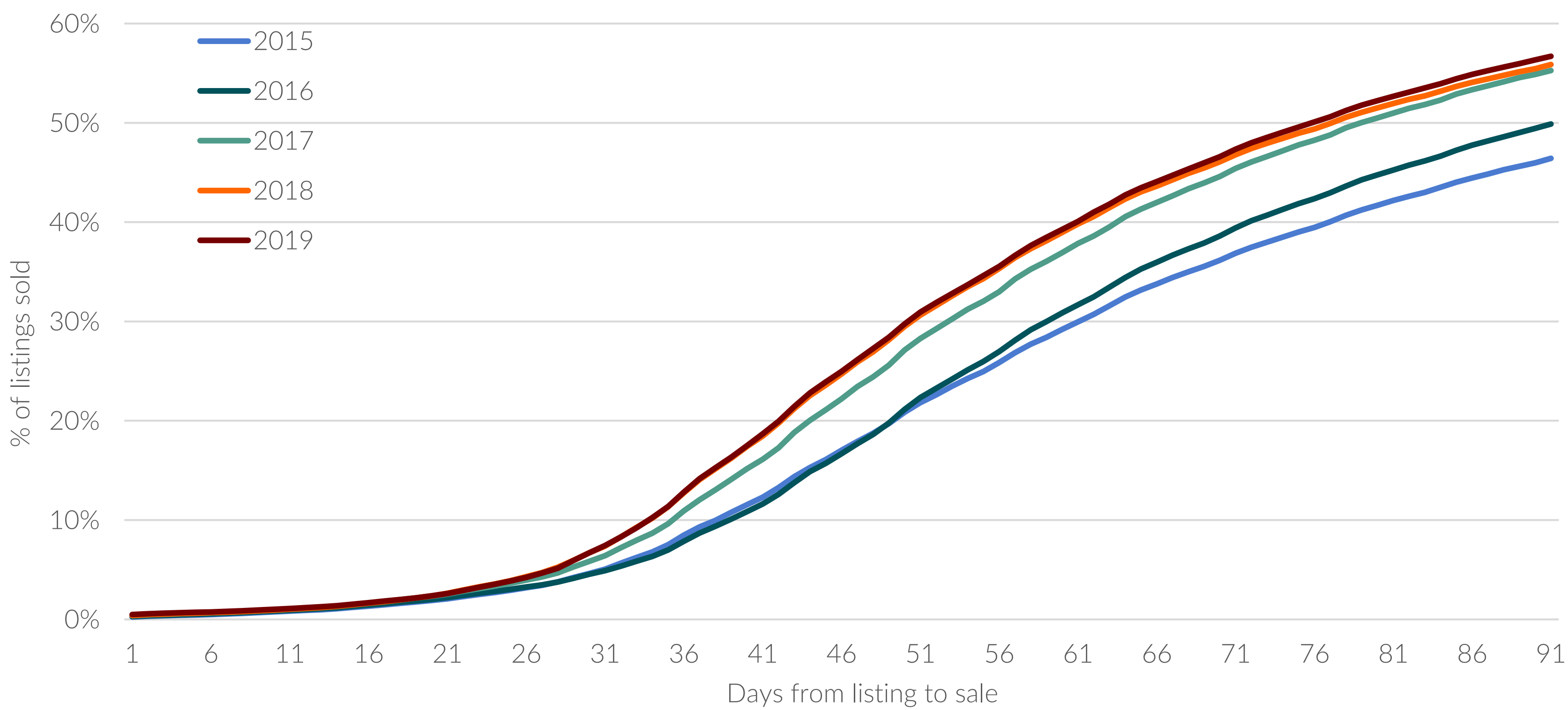
Notes: Recently built units in 2001 (2016) were built 1999-2001 (2014-2016). Monthly housing costs include rent and utilities and have been adjusted to 2016 dollars using the CPI-U All Items Less Shelter. Rental units exclude vacant units and units where no cash rent is paid.
Source: "AMERICA'S RENTAL HOUSING 2017" from the Joint Center for Housing Studies of Harvard University based on U.S. Census Bureau, 2001 and 2016 American Community Survey 1-Year Estimates.

Source: Amherst Rent Index as of December 2019

Leading indicators such as sales velocity remain strong

- We track how quickly listings sell using MLS data over equivalent time periods vs. the same listing dates for prior years
- This chart shows the percent of homes across the top 100 CBSAs listed in May–July that sold within 90 days after their listing date. In May–July 2019, about 56.7% of listings had sold within 90 days from their listing date compared to 56.3% in May–July 2018
- Sales velocity has ticked up in recent years with 2015-2016 90 day velocity at 45-50% while recent years have been closer to 55+%

SUMMER MONTHS SALES VELOCITY FOR TOP 100 CBSAS, MAY '19 TO JULY '19 LISTINGS

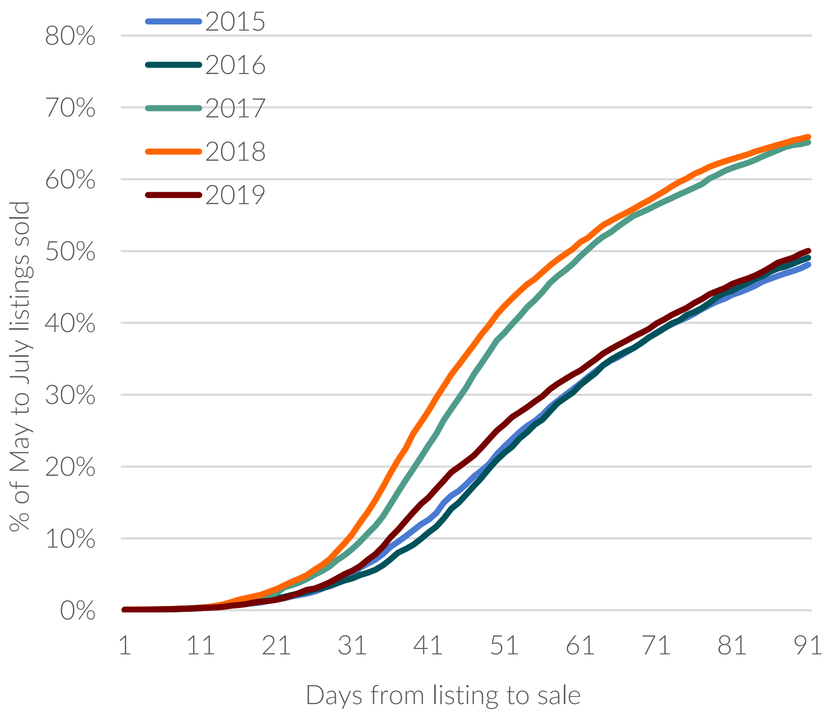


Source: MLS Data, Amherst as of November 2019

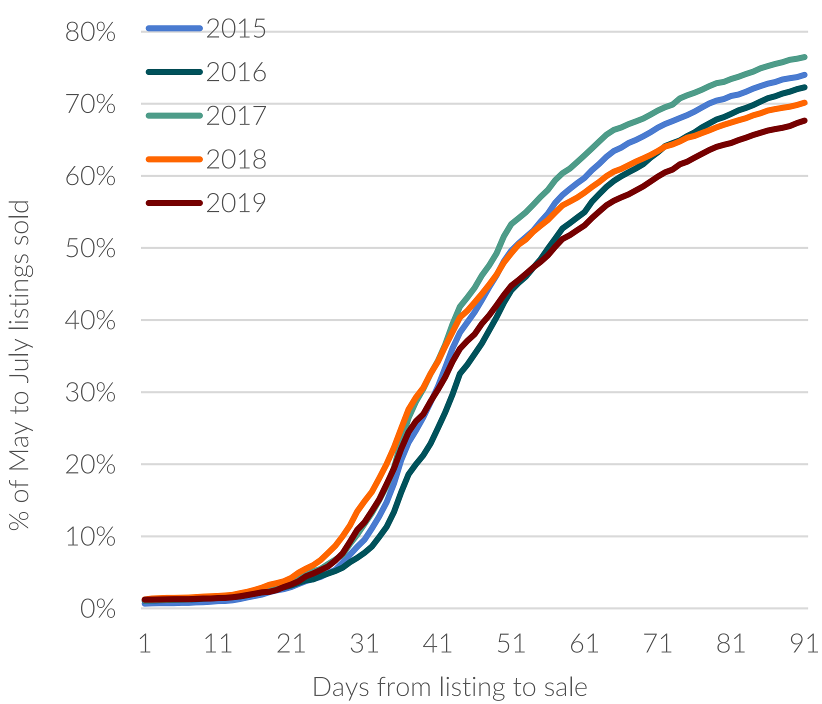
Certain "hot" markets have shown declines; a "normalization" of velocities

- In Las Vegas, 16% fewer homes have sold within 90 days of listing for May 2019 - July 2019 listings compared to at the same point after May 2018 - July 2018 listings. The decline brings the 90 day sales velocity down to 2015-2016 levels which is below the top 100 CBSA average
- In 2019, Denver has also slowed down by 9% from 2017 levels and by 2.5% from 2018 levels, but homes in Denver are still selling at a faster pace than top 100 CBSA average

SALES VELOCITY IN LAS VEGAS HAS DROPPED SHARPLY IN 2019 VS 2017-2018

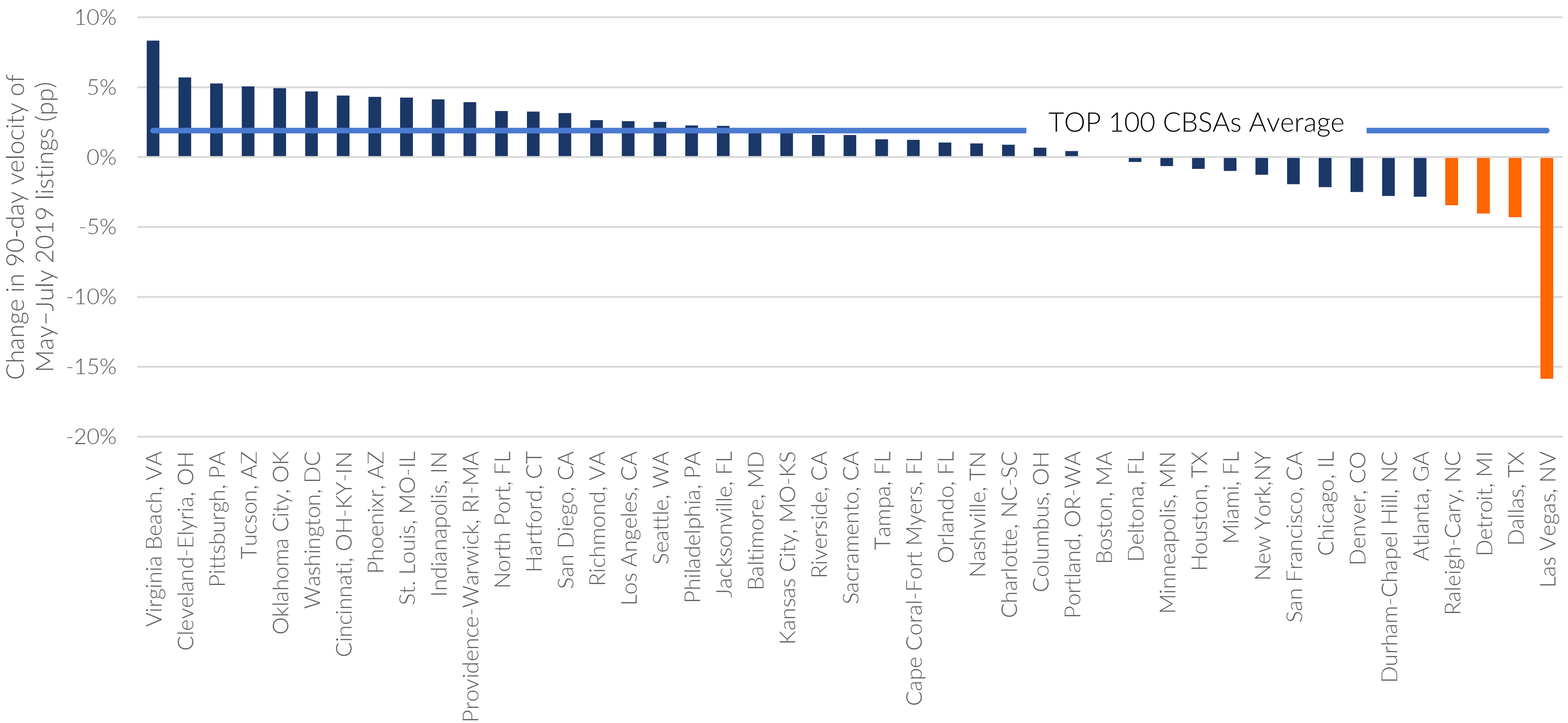


DENVER HAS SLOWED AS WELL



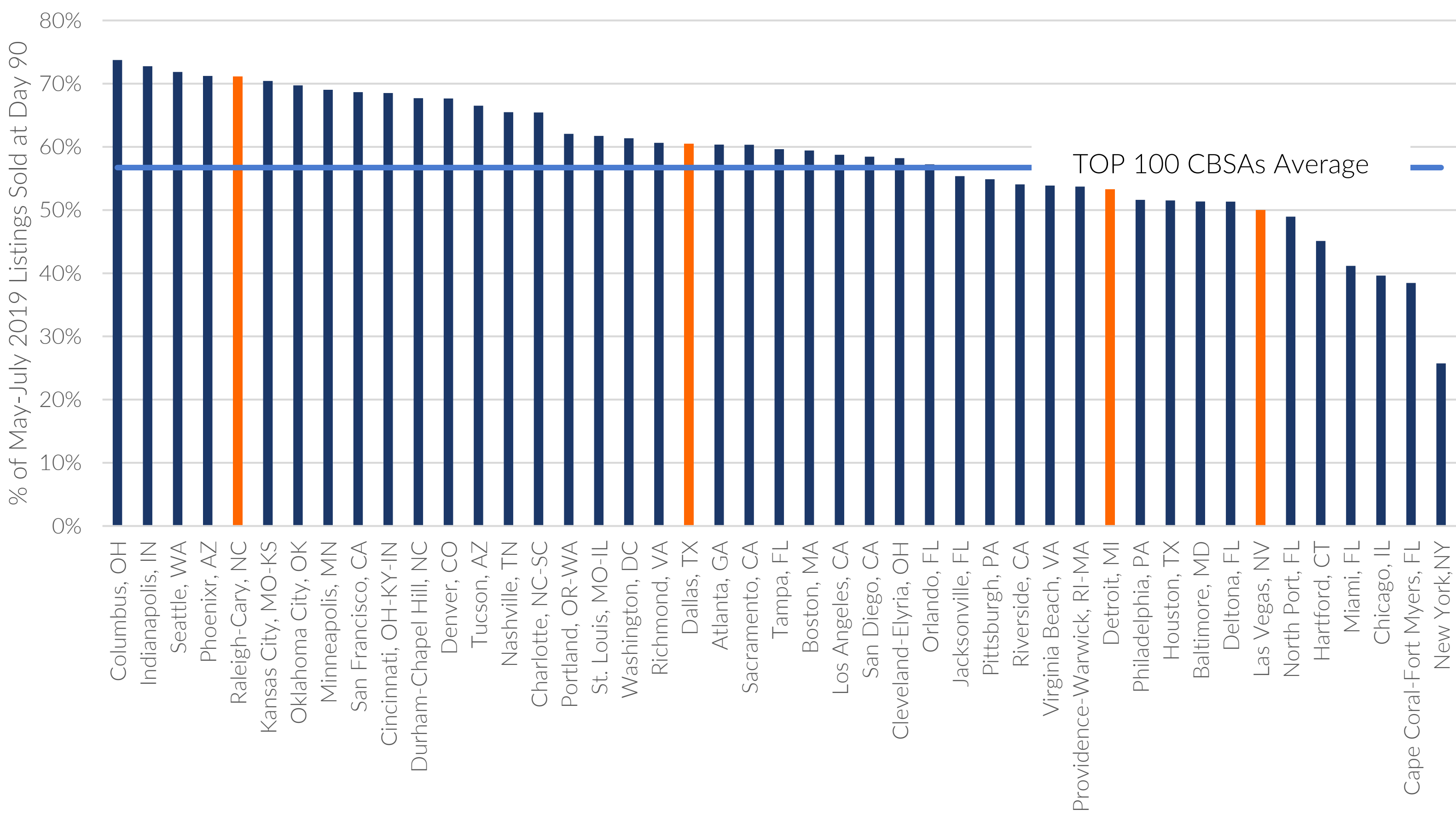
Source: MLS Data, Amherst as of November 2019

10000 feet view of changes in sales velocities in 2019 (May – July 2019)



Source: MLS Data, Amherst as of November 2019

More of a normalization from very high sales velocity - Dallas and Raleigh remain faster than the US as a whole

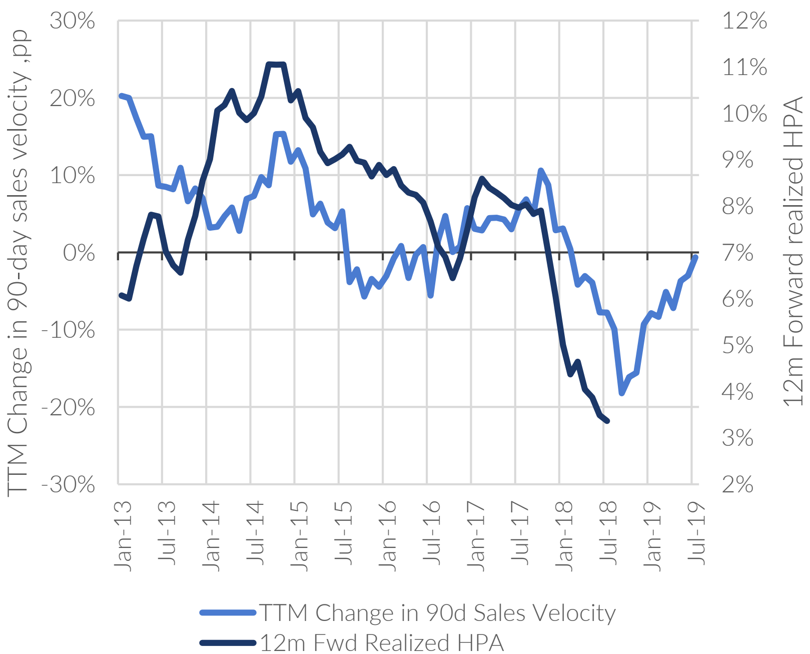


Source: MLS Data, Amherst as of November 2019

Falling sales velocity has historically been followed by weaker home price growth

- The observed change in sales velocity over the last 12 months has a positive correlation with realized HPA over the next 12 months
- Across CBSAs, if we look at instances where TTM 90-day velocity fell between 5 and 15%, average realized HPA was 3.4% vs 5.3% average over if velocity improved by 5-15%

FALLING VELOCITY PRECEDES SLOWER HOME PRICE APPRECIATION – DENVER (JAN '13 – JUL '19)



TTM CHANGE IN VELOCITY PREDICTS FORWARD HPA/CHANGE IN HPA (2013-2018)

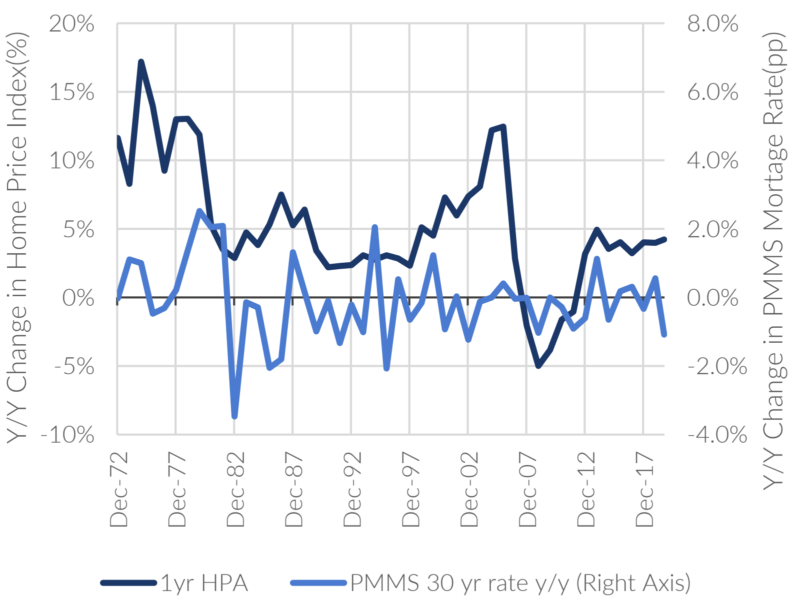
TTM Change in 90d Sales Velocity, pp	Avg. 12m Fwd Realized HPA	12m Fwd HPA vs Last 12m HPA
-25% to -15%	2.3%	-3.4%
-15% to -5%	3.4%	-2.0%
-5% to 0%	3.9%	-1.1%
0% to 5%	4.2%	-0.3%
5% to 15%	5.3%	0.2%
15% to 25%	7.3%	1.0%

Source: MLS Data, Amherst as of November 2019

Higher rates should not be a big concern

- In the last 47 years, (1972-2019) mortgage rates have risen yearly 38% of the times (with 7.1% average annual HPA) and fallen 63% of the time (with 4.1% annual HPA)
- None of the years with rising rates have seen negative HPA, and only 11% have seen less than 3% HPA and a less than a third of the years (6 out of 19) have seen below 5% HPA which is the period average.
- CRE cap rates also show similar trends, The risk free component of cap-rates rises with rates, but it is likely countered by NOI growth which is positively correlated to inflation/ nominal rates.

HPA AND CHANGES IN MORTGAGE RATES DEC 1972 - SEP 2019



RISING RATES NORMALLY ASSOCIATED WITH RISING HOME PRICES (DEC '72 – SEP'19)

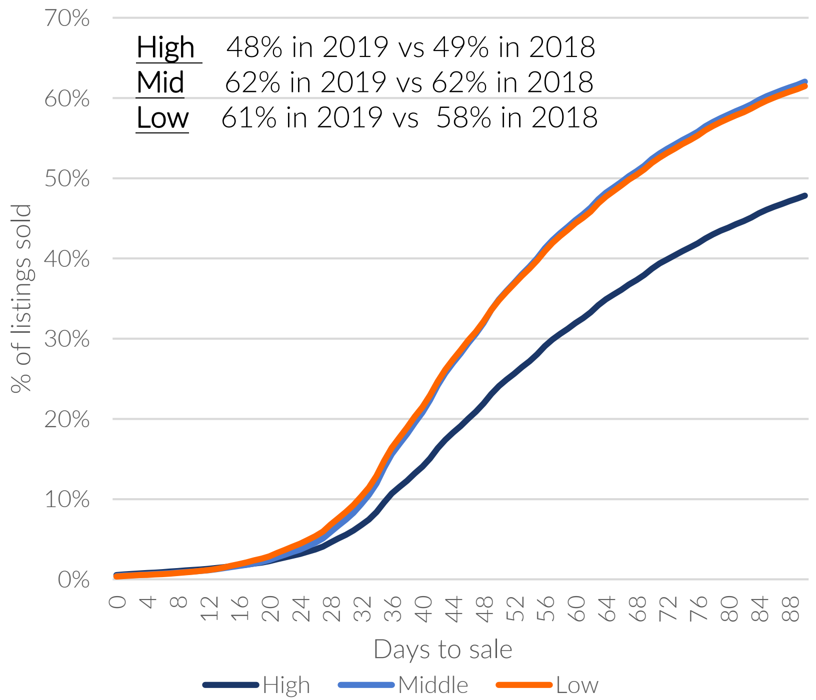
	Rising Rates	Falling Rates
% of Annual Obs. (1972 – 2019 Q3)	37.5%	62.5%
Average Y/Y HPA	7.1%	4.1%
% With Rising Home Prices	100.0%	83.3%
% With Falling Home Prices	0.0%	16.7%
% With HPA above 3%	88.9%	63.3%
% With HPA below 3%	11.1%	36.7%
% With HPA above 5%	55.6%	33.3%
% With HPA below 5%	44.4%	66.7%

Source : Freddie Mac U.S. Mortgage Market Survey 30Y Mortgage, Amherst as of November 2019

Lower tier has tighter supply than higher end

- Higher end homes tends to take longer to sell than low/mid tier homes
- Overall for the US, by 90 days after listing, about 48% of the high end listings, 62% of mid tier and 61% of low tier had sold
- The high-end of the market has the longest supply pipelines among price tiers across most markets

SALES VELOCITY BY PRICE TIERS LITTLE CHANGED VS. 2018



Source : Amherst as of November 2019 estimated from MLS Data

HIGHER END HAS MORE INVENTORY THAN OTHERS

	MONTHS SUPPLY BY PRICE TIER			
	LOW	MID	HIGH	ALL TIERS
All US	**4.0**	**4.1**	**5.7**	**4.8**
Atlanta	3.3	3.7	5.4	4.4
Riverside	4.3	4.1	4.9	4.4
Los Angeles	3.4	3.7	5.4	4.1
Houston	2.9	4.0	6.4	5.0
Phoenix	2.0	2.5	3.6	2.7
Washington	3.3	3.6	4.1	3.6
Dallas	3.0	3.7	5.3	4.3
Chicago	5.1	5.1	7.1	5.9
Tampa	2.8	3.4	4.5	3.7
Minneapolis	3.3	3.4	4.9	4.0
Denver	2.4	3.0	4.2	3.3
Baltimore	4.9	4.2	5.6	4.9
Charlotte	2.9	2.9	4.8	3.9
Seattle	2.6	3.7	3.8	3.4
St. Louis	4.6	3.2	4.5	4.1
Anaheim	2.9	3.2	5.6	4.0
Orlando	2.8	3.1	4.7	3.8
Fort Worth	2.7	2.9	4.6	3.6

Housing Outlook for 2020 - Not so 20/20

HOUSING WILL LIKELY TAKE CUES FROM JOB/INCOME GROWTH IN THE LOCAL ECONOMIES

- For the US overall, home prices have continued to rise at ~3% annually
- Demographics continue to point to strong household formation going forward even as supply remains tight in most markets
- The lower end has outperformed and with the supply shortage, remains likely to continue to do so as long as the cycle persists
- With home prices close to fair value, we expect housing to take cues from the broader economy and follow rather than lead the economy

SALT MARKETS ARE SHOWING SIGNS OF A SLOWDOWN

- SALT deduction affected markets only grew at ~2% annualized compared to ~4% in other areas. Overall the areas less-affected by SALT have slowed from about 5.5-6% in 2015-17 to just under 4% in recent data while areas more-affected by SALT have slowed from ~6-7% to ~2%
- These markets will likely continue to see the effects for some more time as more properties transact and get adjusted lower for the effects of the increased tax burden

FORECAST STEADY GROWTH

- With the economy slowing we expect national home prices to grow at a slower pace, and forecast 2.9% growth in home price appreciation (HPA) next year and 3.0% annually over the next three years.

Source: Amherst as December 2019

Amherst

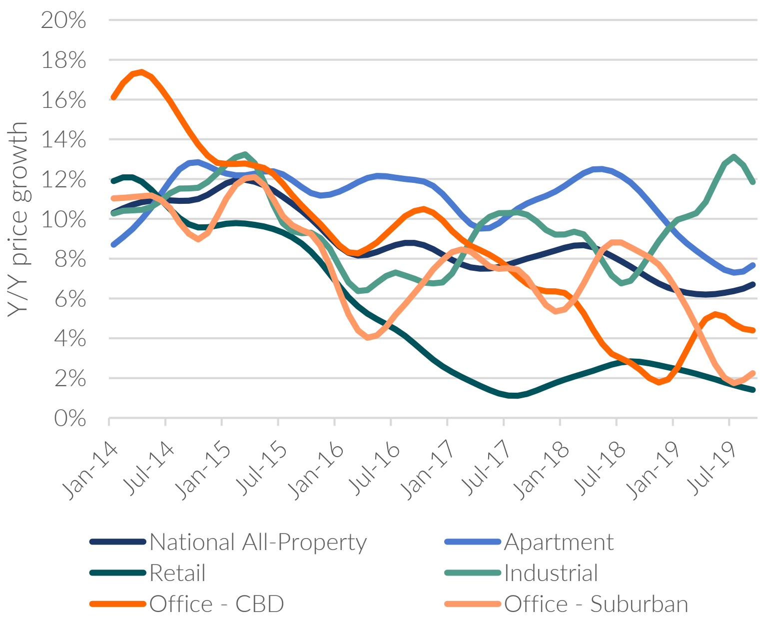
U.S. COMMERCIAL REAL ESTATE

Slowing Rent Growth Is the Primary Concern

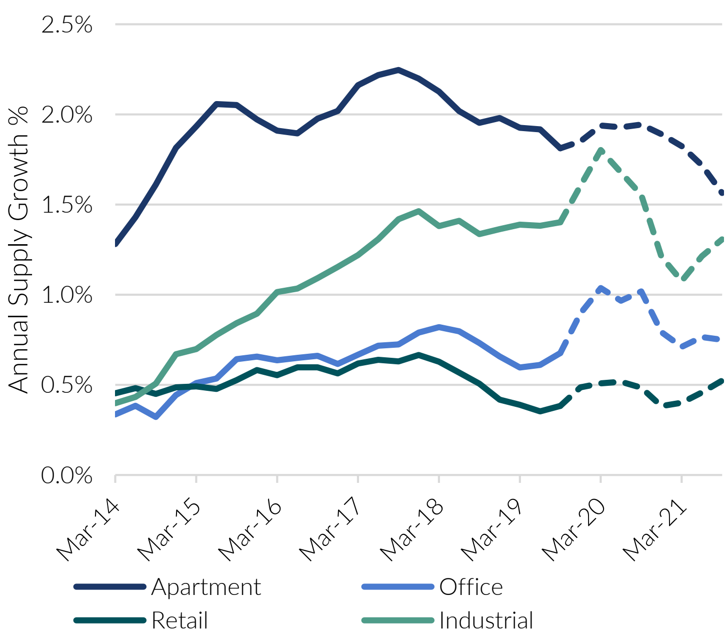
CRE price growth remains strong at 6.7% but is much slower in certain pockets

- Price growth has slowed to 6.7% in Sept 2019 from 7.3% in Sep 2018 and 11% y/y in 2014-2015
- After growing 8% in Sep 2018, suburban office has slowed to just a 2% growth rate in Sep 2019. Retail also continues to lag
- Industrial price growth remains strong and still above 10% annualized

PRICE GROWTH HAS SLOWED SINCE 2014 (JAN '14 – SEP '19)



NEW SUPPLY MAY INCREASE IN 2020 (JAN '14 – SEP '21)

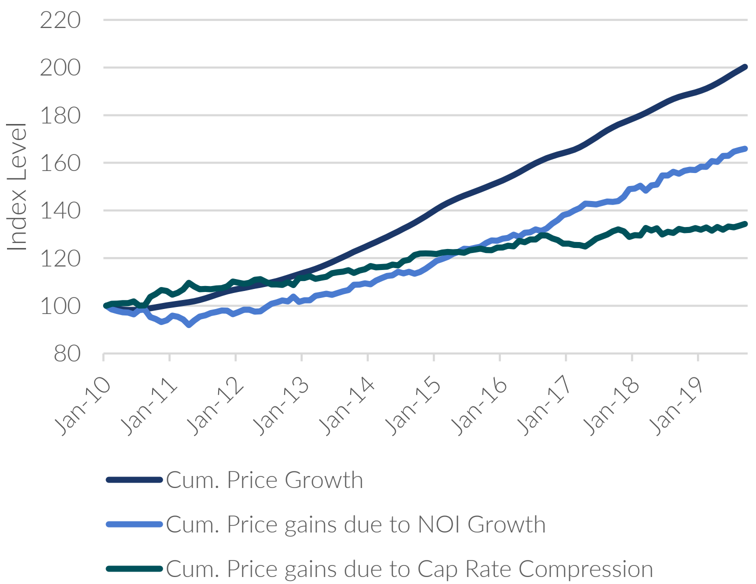


Source: (1) RCA as of November 2019. (2) Costar data from SEP '14 – SEP '20 as of November 2019.

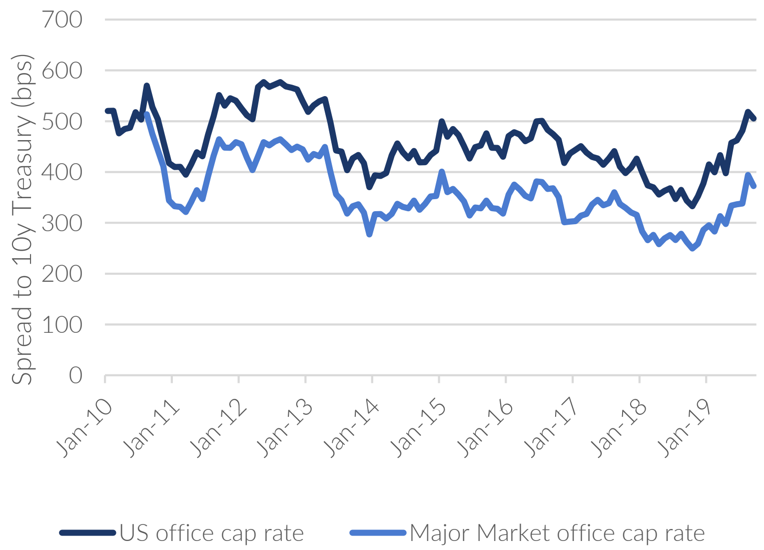
Cap rates are only responsible for 1/3 of price growth since 2010

- NOI growth is responsible for about 2/3 of the rally in prices since 2010 based on RCA price and cap rate indices
- The rally in Treasury bonds has increased CRE cap rate spreads to Treasuries. This helps reduce the pressure on prices due to tight cap rates, particularly if rates sell off
- If the benign rate environment reverses, slowing rent growth could lead to further slowdowns in price growth

CAP RATE COMPRESSION IS RESPONSIBLE FOR 1/3 OF PRICE GROWTH (JAN '10 – SEP '19)



2019 RATE RALLY HAS IMPROVED CAP RATE SPREADS (JAN '10 – SEP '19)

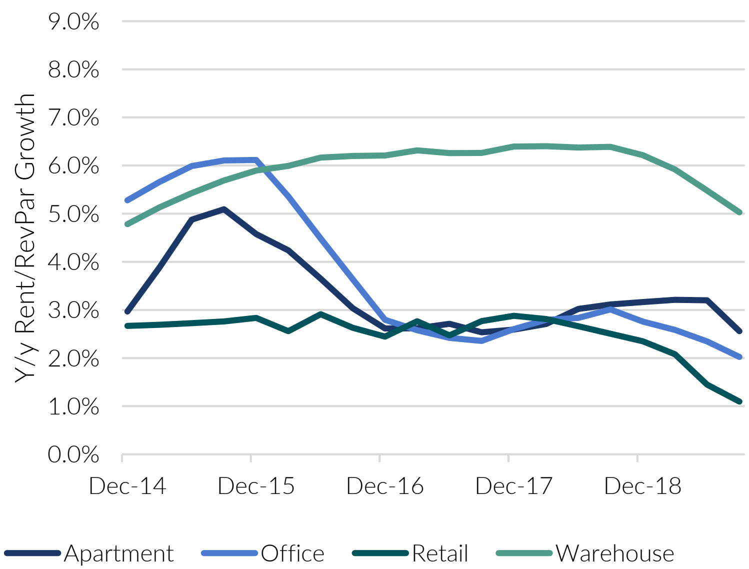


Source: (1) RCA as of November 2019. Major Markets include Boston, Chicago, Los Angeles, New York, San Francisco, and Washington, DC. (2) Costar as of November 2019.

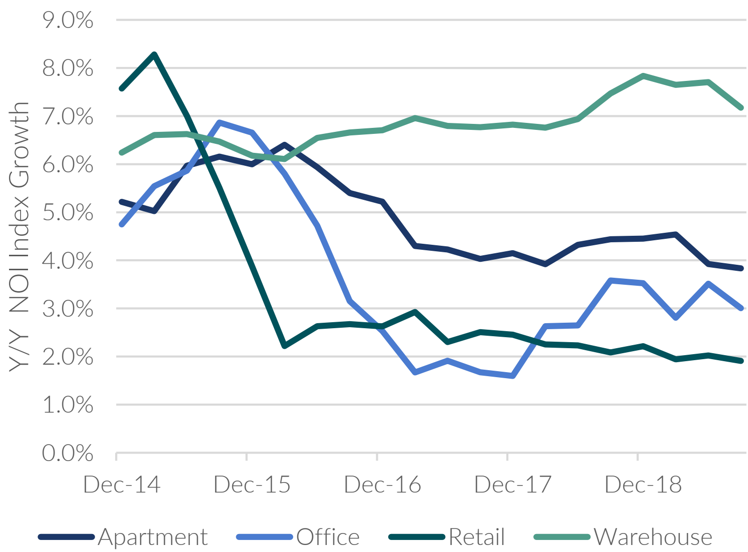
Rent growth is trending slower through 2019

- Rent growth has slowed in 2019, making it harder for income gains to offset any potential widening in cap rates
- NOI Growth has trended higher than rent growth, particularly for industrial and retail, but is typically more volatile than rent growth
- This trend may reverse if the economy were to slow, adding further pressure to prices

RENT GROWTH HAS SLOWED COMPARED TO 2014-2015
(DEC '14 – SEP '19)



NOI GROWTH GENERALLY HAS BEEN FASTER THAN RENT GROWTH
(DEC '14 – SEP '19)



Source:, Costar as of November 2019.

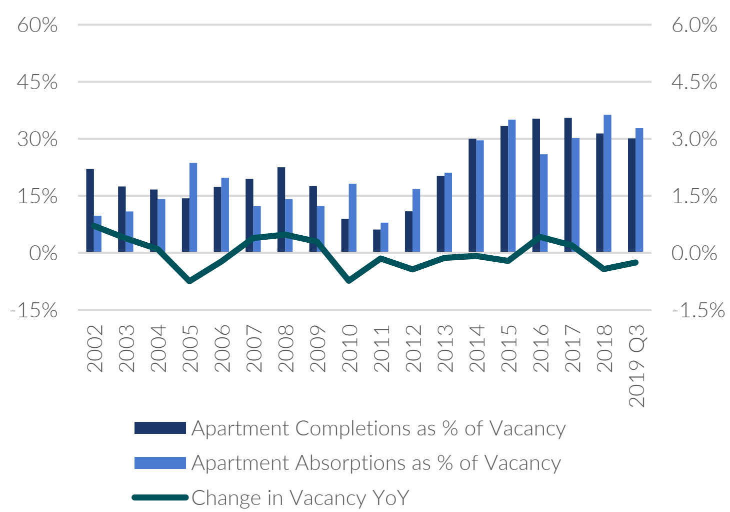
Apartment performance stabilizing, but with slower growth

- Apartments have benefited from a recovering economy, forced renters from the GFC, and demographic trends
- Rent growth has slowed to 2.6% in Q3 2019 but vacancies have improved to 5.7%, from 6.0% in Q3 2018
- Supply growth has slowed slightly in 2019

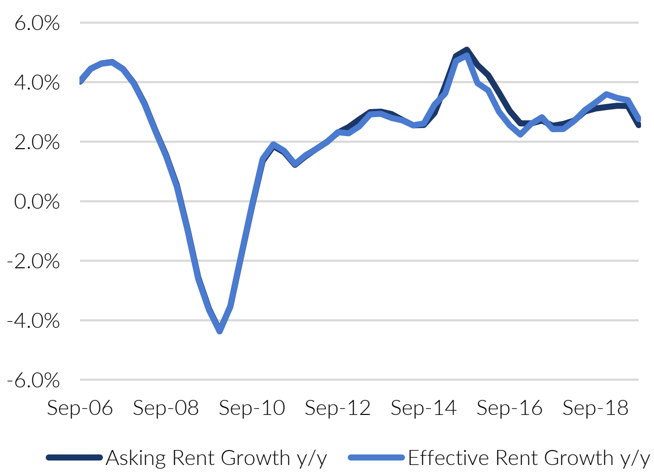
CURRENT CRE MARKET STATS AS OF Q3 2019

	Q3 2019 VALUE	Y/Y CHANGE IN VALUE
Rent Growth Annual	2.6%	-0.6%
Vacancy	5.7%	-0.3%
Completions % of Stock	1.8%	-0.1%
Absorptions % of Stock	2.0%	-0.2%
% of Stock Under Const.	3.9%	-0.1%

APARTMENT SUPPLY SLOWED IN 2018-19



RENT GROWTH HAS STABILIZED IN 2019 (SEP '06 – SEP '19)



Source: Costar as of November 2019.

Rent control laws expand, NYC stabilized apartments are most affected

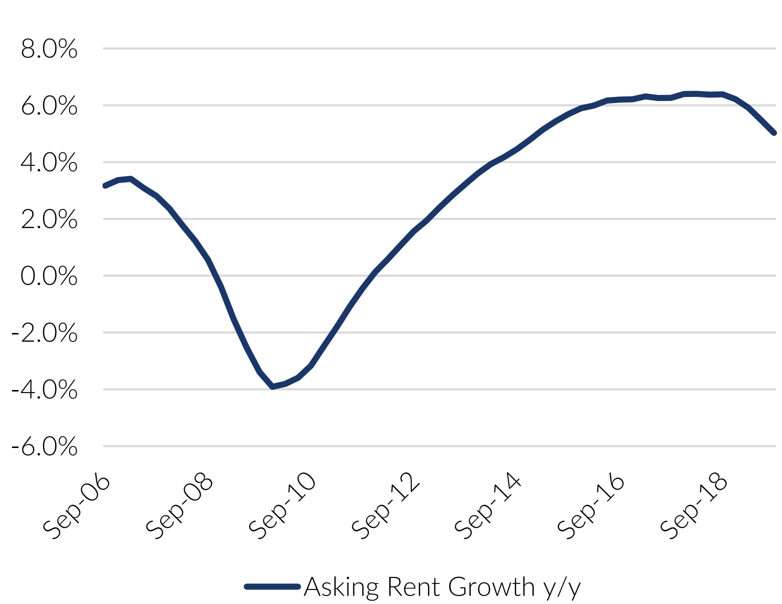
- New York state law strengthens New York City rent stabilization, catching some landlords off guard
  - Rent stabilization in New York City limits rent increases based on a board's determination (1.5% for a one year lease in 2019) and applies to 966k units or 44% of the rental stock. Another 13% of the stock has other forms of rent control such as public housing[1]
  - Historically, units could exit stabilization once the allowable rent exceeded a certain threshold ($2,774 p.m. in 2019). A typical strategy was to renovate vacant apartments which would increase the allowable rent to above the threshold and convert these units to market-rate.
  - The June 2019 law removed this option to exit stabilization and reduced ability to raise rents through renovation.
  - As a result, the sales market for rent stabilized apartments has been frozen. Recently, a 539 unit portfolio in Queens sold for $129.5mn, 38% below the $210mn asking price, at a 5% cap rate[2]
  - The new law is likely to lead to a one-time valuation lower for rent stabilized apartments, and may reduce incentives for landlords to invest and renovate these properties
- California and Oregon statewide rent control laws should not significantly affect markets with normal growth rates
  - Both states instituted rules that cap rent increases at inflation +5% (California) and inflation +7% (Oregon) annually, which only would affect booming markets, many of which are already slowing down in these states[3]
  - The laws do not impact new or recently built buildings and non-institutionally owned single-family(California)
  - Rules are tenant based, rather than unit based (allowing unlimited rent increases after a voluntary move-out)

Source: 1) "2019 Housing Supply Report", May 16, 2019 New York City Rent Guidelines Board. 2) "A&E Real Estate buys huge rent-stabilized portfolio at deep discount 11/19/2019 TheRealDeal.com.
3) https://www.oregonlive.com/business/2019/03/how-does-oregons-first-in-the-nation-rent-control-law-work-a-quick-guide.html, and
https://www.natlawreview.com/article/california-s-new-statewide-rent-control-what-you-need-to-know

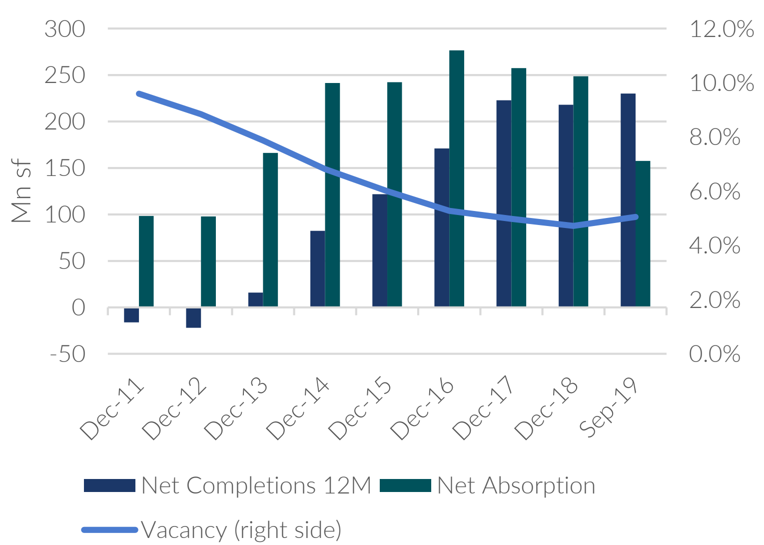
Industrial continues to benefit at retail's expense, although rent growth may be slower in 2020

- The industrial sector continues to post the strongest rent growth in CRE at 5% as of September 2019
- While growth is strong, it has slowed slightly from 6% rent growth in 2018, and vacancies have ticked up as increasing supply may finally be catching up with demand
- Industrial rent growth may continue to slow as under construction square feet remains at an all time high of 308mn sf as of Q3 19. However we still expect strong demand to support the sector as e-commerce continues to grow

INDUSTRIAL RENT GROWTH SLOWING SLIGHTLY (SEP '06 – SEP '19)



NEW CONSTRUCTION CATCHING UP TO DEMAND (DEC '11 – SEP '19)

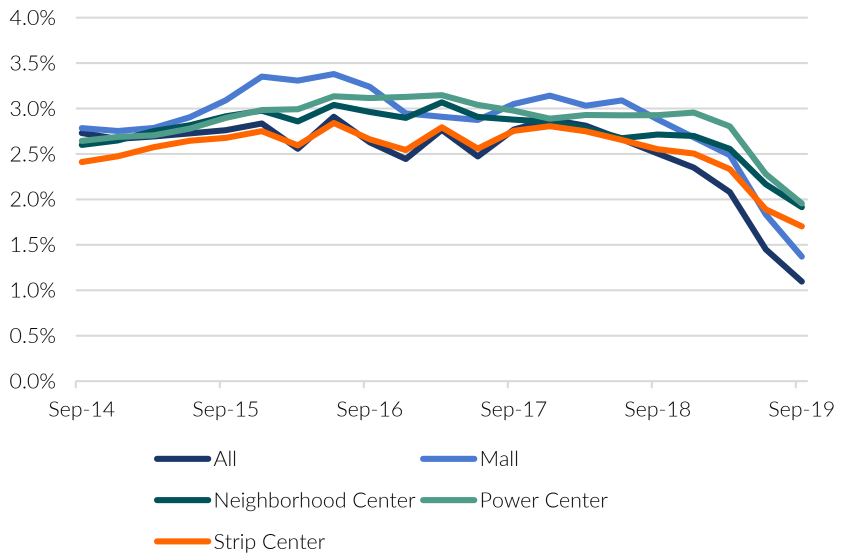


Source: Costar as of November 2019.

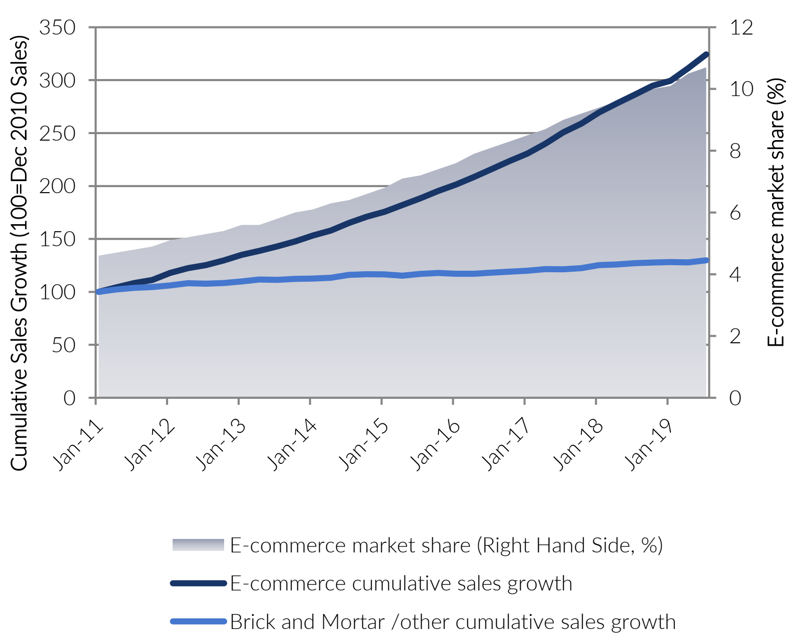
Retail fundamentals point to a sector still searching for the bottom

- Retail rent growth is slowing as many retailers struggle with e-commerce across retail property types, and is not limited to malls
- So far bankruptcies like Sears and Toys R Us have not pushed vacancies higher due to limited new construction and increasing physical presence of some online retailers
- Sears bankruptcy has not yet caused a wider selloff, but a liquidation could cause some contagion risk in B malls

RENT GROWTH SLOWING ACROSS RETAIL PROPERTY TYPES (SEP '14 – SEP '19)



E-COMMERCE CONTINUES TO GROW MARKET SHARE (APR '11 – JUL '18)

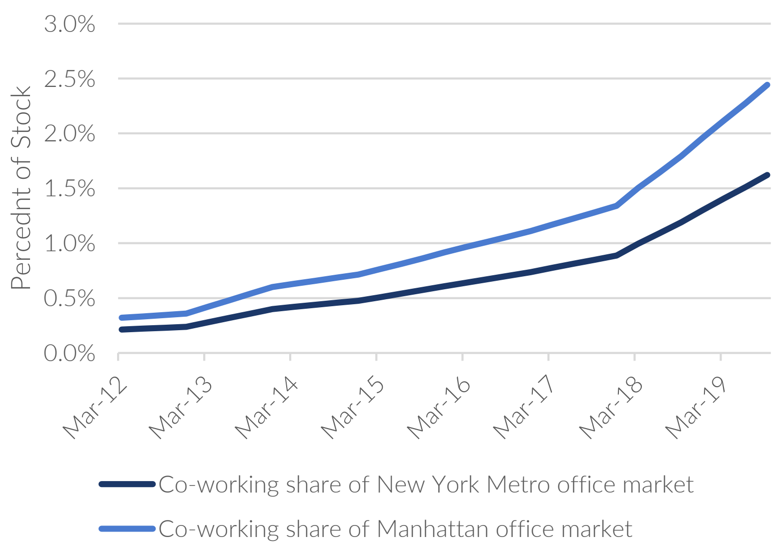


Source: (1) Costar as of November 2019. (2) US Census Bureau as of November 2019.

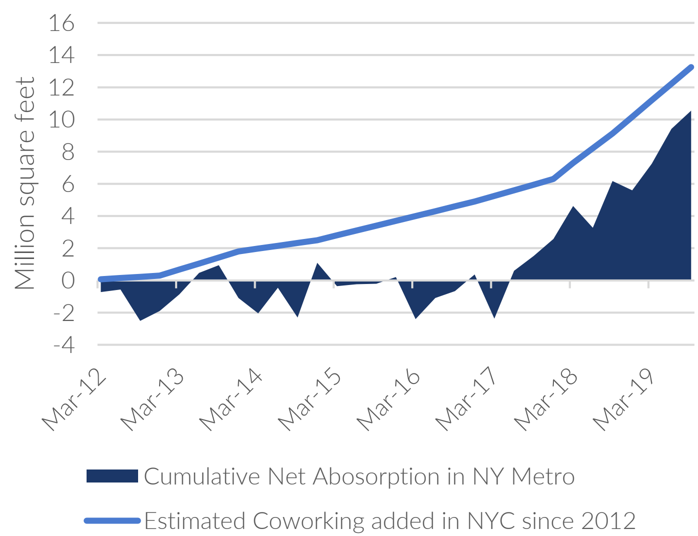
Slowing WeWork leaves Manhattan office exposed

- While co-working companies are a small share of the outstanding stock, they account for >100% of the net absorption in the NY office market since 2012. The withdrawal of the WeWork IPO has exposed the potential overgrowth in the flexible office space
- WeWork (80% of NYC flexible office) reported about 89% occupancy in their national product that has been online for 24+months, but that only represents 30% of their portfolio[1]
- Wework has already begun to discuss terminating 100 leases or 10-15% of their total leased area, which we estimate could be as large as 4mn square feet globally and nearly 1mn square feet in New York[2]
- Usage metrics on newly leased space by WeWork are not readily available by market and can have huge implications for the market if demand is not commensurate with the aggressive new leasing – the issue is large enough to affect the broader NYC office market

COWORKING IS A SMALL SHARE OF SPACE IN NYC (MAR '12 – SEP '19)



BUT CO-WORKING GROWTH EXCEEDS NET ABSORPTION SINCE 2012 (MAR '12 – SEP'19)

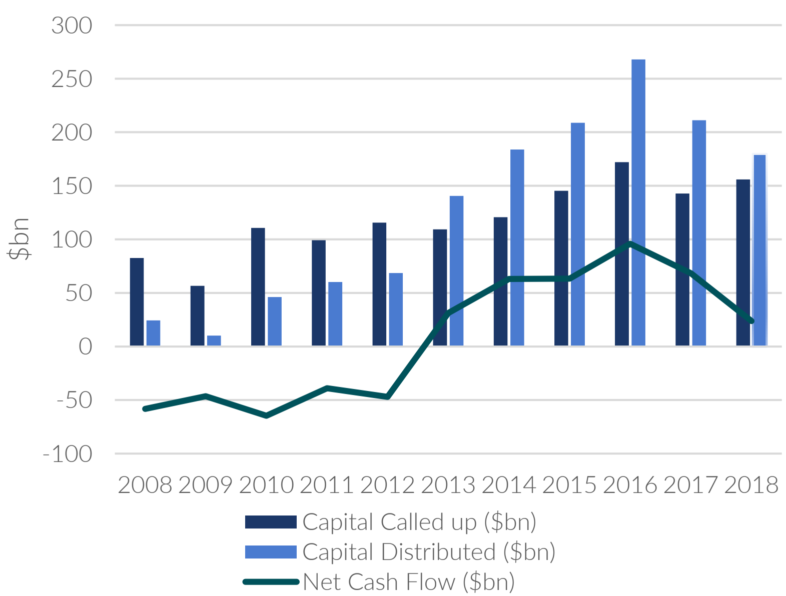


Source: Costar, CBRE as of November 2019. 1) We Company S-1 filing, August 2019. 2) https://therealdeal.com/2019/12/12/wework-tries-to-escape-leases-and-eviction/, December 13, 2019

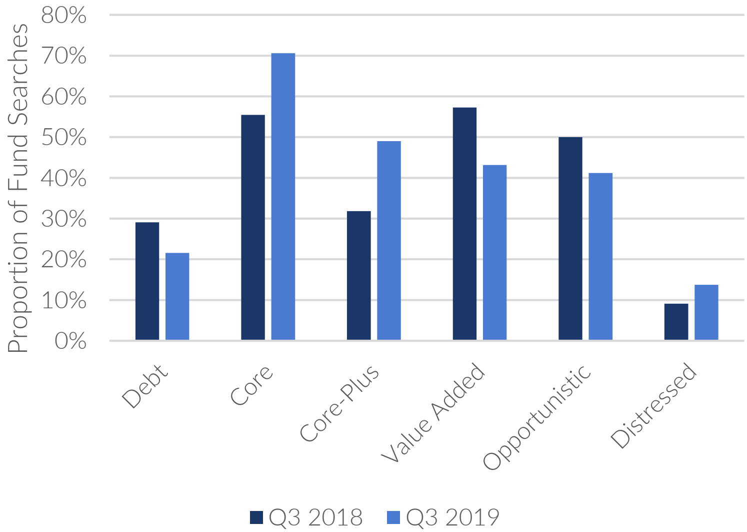
Some signs of CRE investors getting more cautious in 2020

- CRE private equity investors continued to have net distributions through 2018, which can often stimulate reinvestment
- CRE fund investors are getting slightly more conservative in 2020, investing more in Core and Core-plus funds with some investors increasing their interest in distressed funds to possibly catch a downturn

CRE FUND INVESTORS CONTINUE TO RECEIVE NET DISTRIBUTIONS



INTEREST IN CORE REAL ESTATE STRATEGIES IS GROWING



Source: Preqin as of November 2019.

Slowing rent growth is the primary concern

- Price and rent growth remains positive but has started to moderate in office and retail
- Lower rates have been supportive to cap rates but the vast majority of price increases since 2010 are from NOI growth
- If rent growth slows and affects NOI growth, then continued price increases could come under pressure

WeWork, retail, apartment rent regulations all bear watching

- The withdrawal of the WeWork IPO has exposed potential overgrowth in the flexible office space, particularly in Manhattan
- Retail weakness still continues to play out and has the potential to expand beyond malls
- NYC stabilized apartments are the most affected from rent control law changes but outside risk remains in other areas too

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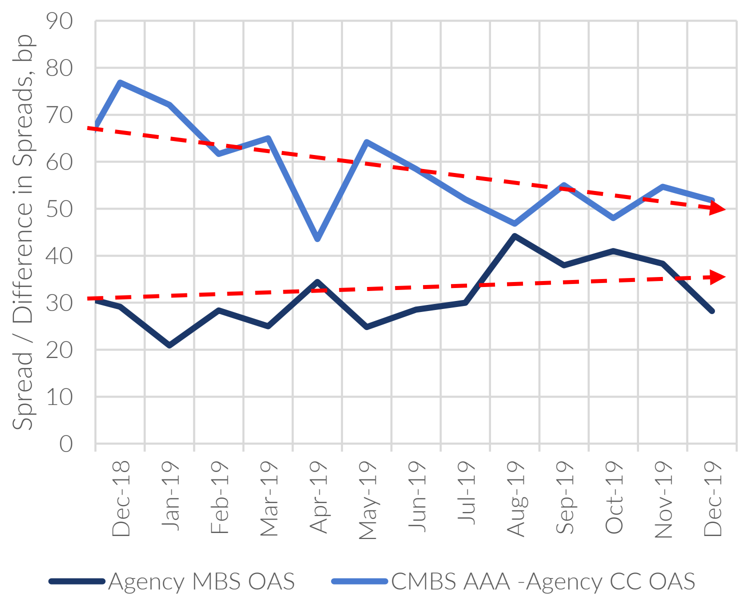
SECURITIZED PRODUCTS

Relative Value In Securitized Products

Déjà vu all over again?

- The "end-of-the-cycle" narrative continues to dominate investor concerns for probably the third year running now as valuations in most financial markets reach all time highs and compensation for taking incremental credit risk continues to decline
- As the Fed's balance sheet mortgage roll-off has continued, Agency MBS spreads have widened. While unguaranteed AAA spreads have also widened, the spread to agency MBS OAS has compressed by about 20 bps over the last year or so (left chart)
- The CMBS AAA to Agency MBS Spread is now around 52 bps which, while tighter than a year back, is still wider than the pre-crisis period where from 2002-2006 it averaged 30 bps
- Further down to credit spectrum the compensation to take more credit risk has dropped even more. CMBS conduits BBB-AAA tranche spread has fallen below 200 bps. Some SASB/ non-agency RMBS deals trade at as low as 100 bps between AAA and BBB levels

UNGUARANTEED CMBS 10Y AAA VS AGENCY MBS OAS LAST 1 YR



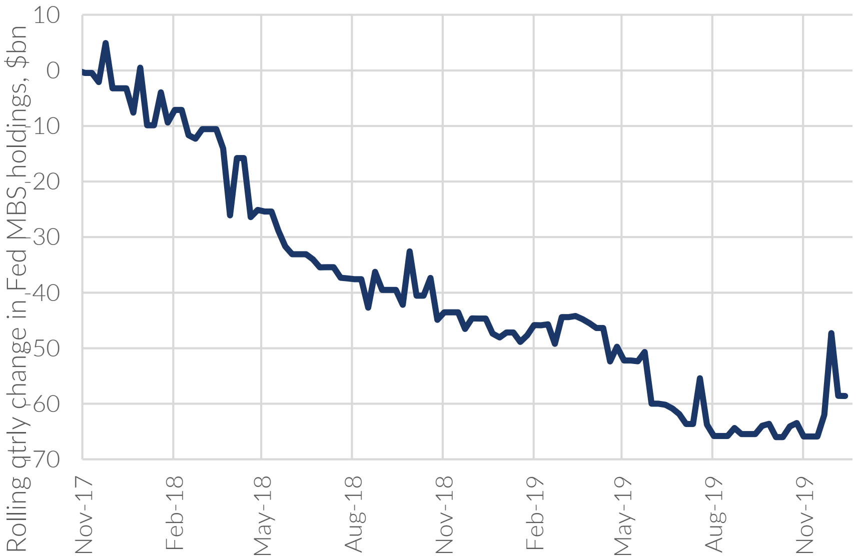
UNGUARANTEED CMBS 10Y AAA VS AGENCY MBS OAS LAST 18 YRS

Source: Dealer Marks, Amherst as of Jan 15 2019

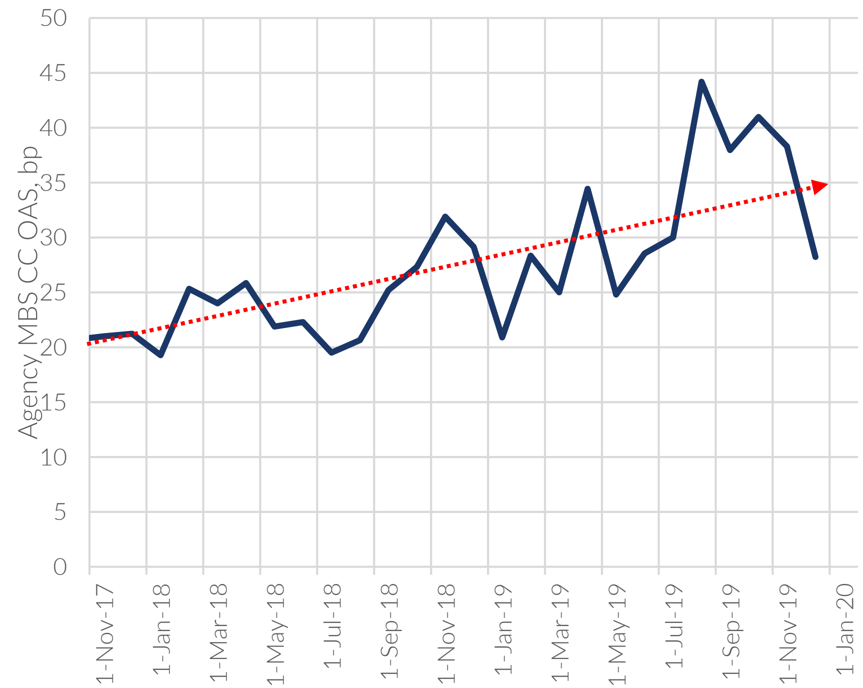
Fed MBS holdings have rolled-off faster in 2019, Agency MBS OAS has trickled wider

- The Federal Reserve tapering began in late 2017. In 2018, the first full year of the taper the Fed reduced its MBS holdings by ~$128bn. In 2019 the Fed reduced its holdings by a further $228bn
- As expected, this runoff has led to about a 10-15 bp widening in generic agency MBS OAS

FED MBS HOLDING ROLL-OFF HAS ACCELERATED IN 2019 (NOV '17 – JAN '20)[1...]



...AND AGENCY MBS SPREADS HAVE CONTINUED TO WIDEN (NOV '17 – JAN '20)[2]

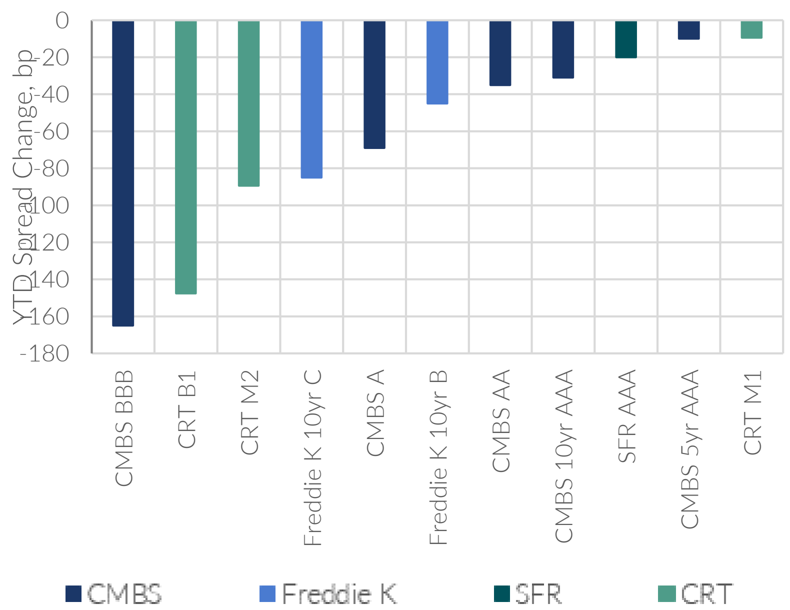


Source: (1) Federal Reserve, Amherst as of Jan 15 2019. (2) Source: Dealer Marks, Amherst as of Jan 15 2019

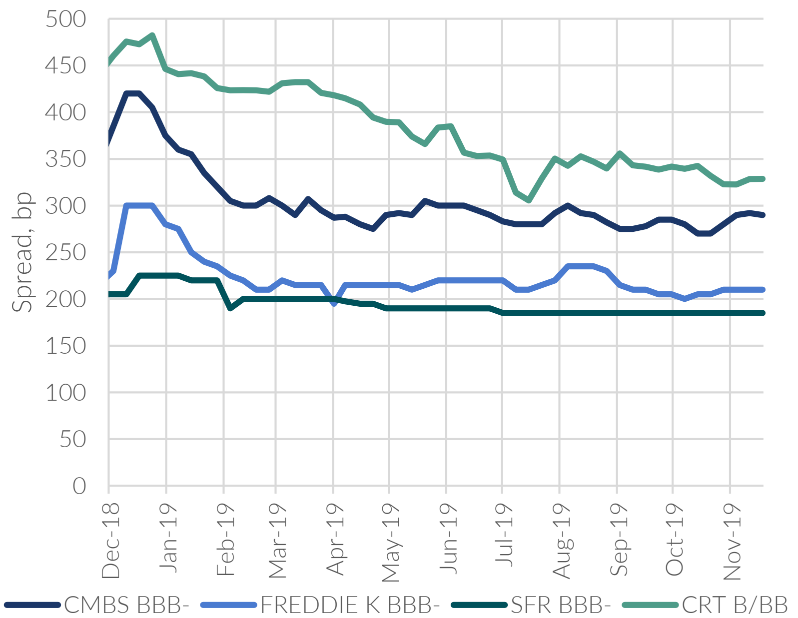
CMBS, SFR and CRT have all tightened to a point where the risk reward looks poor vs. higher rated securities

- CMBS BBBs and CRT B1/B2s have been the biggest outperformers in 2019, CRT M2s and Freddie-K C bonds have followed closely
- CRT spreads have tightened despite higher DTI and layered risk loans in more recent deals. CMBS collateral quality has been more stable
- Given this spread tightening relative to higher rated classes, we find that the compensation for taking credit risk beyond the AAA level is very limited and see relative value in out-of-index SASB CMBS /SFR AAAs on a risk adjusted basis

CMBS AND CRT SPREADS HAVE GENERALLY TIGHTENED VS YE 2018[1]



MORTGAGE CREDIT SPREADS CONTINUE TO COMPRESS[2]

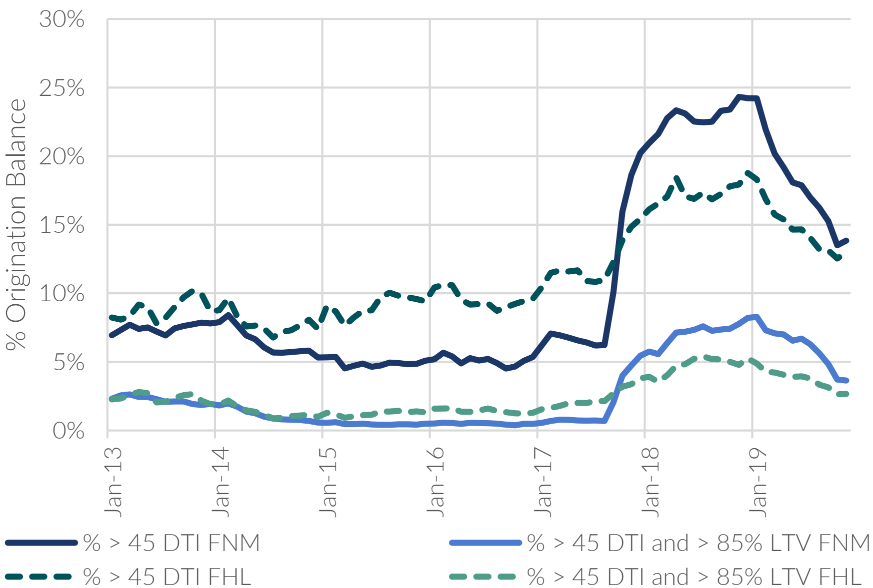


(1) JPM, Bank of America, Amherst as Jan 2020. (2) JPM, Bank of America, Amherst as of Jan 2020

CRT very exposed to idiosyncratic and systematic losses

- The CRT sector remains at much lower enhancement versus the higher risk/layered risk underlying loans that are now entering the system
- Recent CRT deals already are 15% >45 DTI loans and high LTV deals have 14% of the pool have high DTI and LTV >85
- While these have some mortgage insurance and losses may remain contained, the beta to housing overall is very high
- Based on origination trends, this risk is likely to continue to remain relatively high in 2020 issuance

HIGH DTI/LAYERED RISK LOANS (JAN '13 – NOV '19)



RECENT CRT DEALS ALREADY HAVE A LOT OF HIGH DTI LOANS

	STACR 2019-HQA4				
Bond Name	Attachment Point(%)	Detachment Point(%)	Spread	% > 45 DTI	% >45 DTI and 85% LTV
M1	3.25	4.5	77	16%	14%
M2	1.15	3.25	205		
B1	0.6	1.15	295		
B2	0.1	0.6	660		
	STACR 2019-DNA4				
Bond Name	Attachment Point(%)	Detachment Point(%)	Spread	% > 45 DTI	% >45 DTI and 85% LTV
M1	3	4	75	17%	0%
M2	1.1	3	210		
B1	0.6	1.1			
B2	0.1	0.6	775		

Sources: eMBS, Fannie Mae, Freddie Mac, Amherst as of December 2019.

What to Expect in 2020?

OVERVIEW

- The additional return in deep securitized credit does not adequately compensate for the leverage/idiosyncratic risks.
- While there is no imminent trigger, the risks for a credit curve steepening remain higher than for it to flatten further.
- We see more value in the top of the capital stack in securitized credit products

AGENCY MBS

- Valuations remain at relatively attractive levels post the taper driven widening. However, as the Fed's MBS taper continues, excess returns will likely remain muted on the additional supply, especially as the pay downs get invested into Treasuries

PRIVATE LABEL AAA (CMBS/RMBS)

- Private AAA spreads to agency MBS have compressed by 10-15 bps over the year and so on a relative value basis their attractiveness has diminished slightly
- However, AAAs from fundamentally sound sectors such as select SFR/SASB deals continue to offer value

PRIVATE LABEL MEZZANINE BONDS

- Compensation for credit risk is minimal and does not adequately compensate for the leverage/idiosyncratic risks in more securitized sectors. Residential credit also remains fully priced with very few opportunities across the board
- We believe the best opportunities for higher yields are in private transactions outside the securitized space in transitional CRE loans

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SPECIAL TOPIC

Will AI Be The New Paradigm In Real Estate Investing?

CASE STUDY:

SPLITTING US HOUSING INTO MORE HOMOGENEOUS CLUSTERS

THE PROBLEM:

- High level housing market analysis misses the inherent heterogeneity in the asset class
- Home by home analysis is prone to noise and therefore untenable at times

THE SOLUTION:

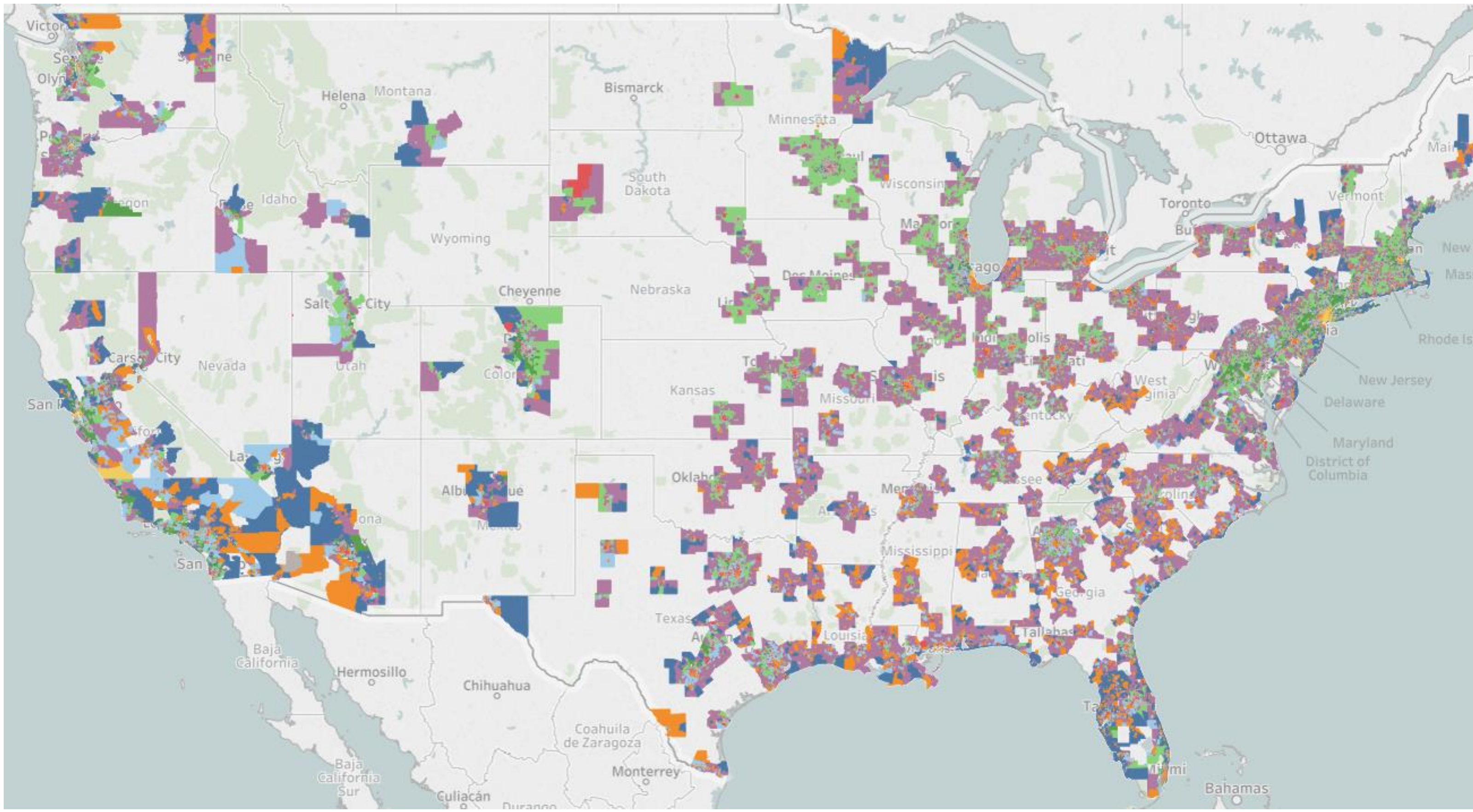
- Using artificial intelligence (AI) and machine learning (ML) techniques, the highly heterogeneous market can be broken into more homogeneous clusters such that each cluster looks, feels and behaves distinctly

WHY DO WE CARE?

- This allows us to more accurately classify and predict which cohorts of assets are likely to perform well over time

Source Amherst tabulation of ACS survey 5-year data at a census block group level

The nine neighborhoods of America



1 Student Housing	4 Working Class Families	7 Mid low income suburbia
2 Suburban/Inner City Lower Income	5 Retirees + Vacation Homes	8 Higher income suburbia
3 Transit Oriented Urban Areas	6 Younger Gentrifying near downtowns	9 Highly educated affluent

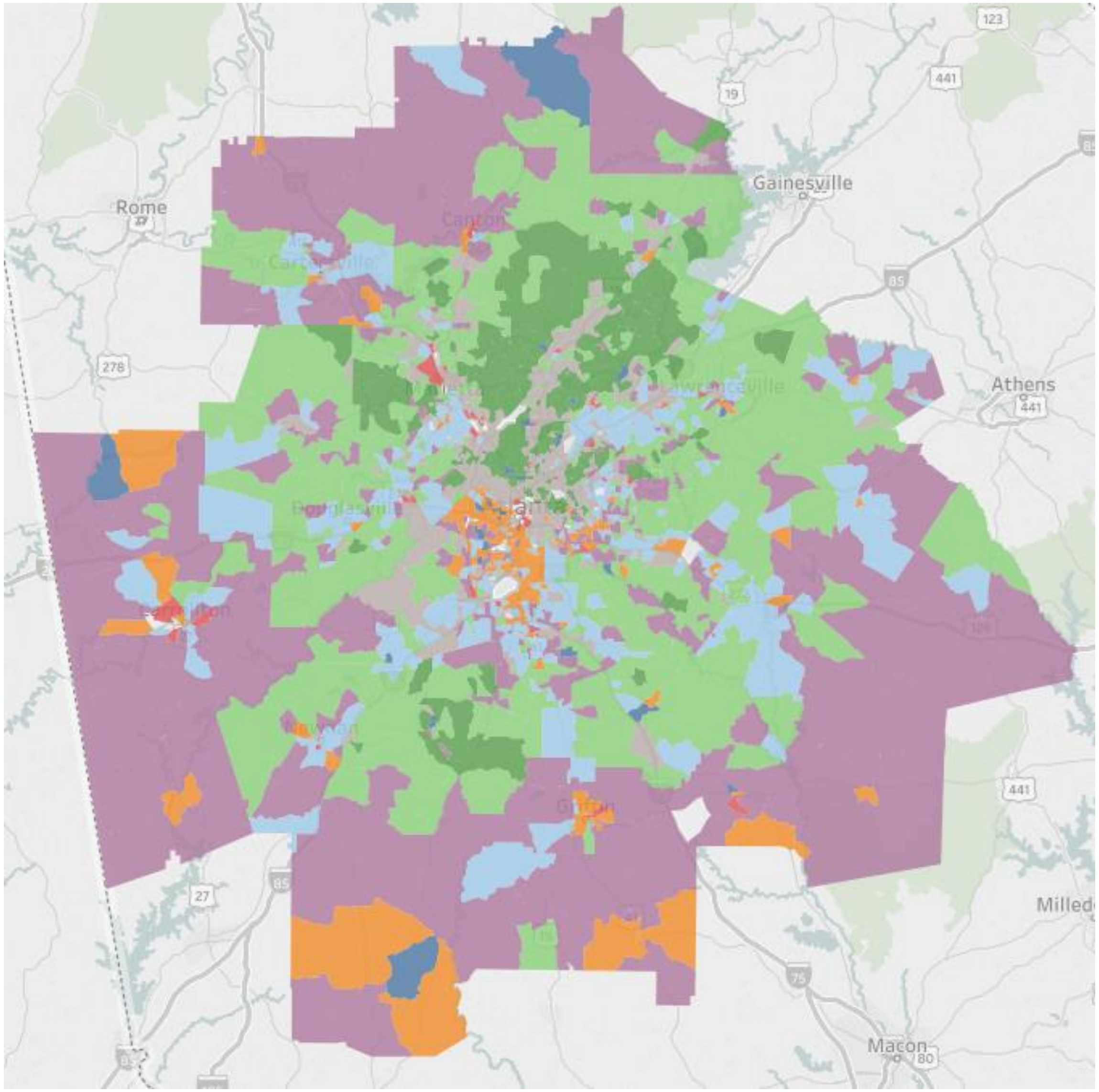
Geo-demographic clustering across the top 300 CBSAs in the country

- Cluster 1 – Student housing and some other lower income areas (2.8% of CBGs and 1.4% of SFD homes) Austin, OKC, Columbus
- Cluster 2 – Suburban /Inner City Lower Income (8.4% of CBGs and 6.6% of SFD Homes) Birmingham, Memphis, St Louis
- Cluster 3 – Transit Oriented Urban areas (4.9% of ABGs and 1.6% of SFD Homes) NYC, SFO, DC and Philly
- Cluster 4 – Working Class families with kids, most likely to carpool (13% of CBGs and 10.8% of SFD Homes) LA, Vegas, Phoenix
- Cluster 5 – Retirees, and vacation homes (28.1% vacant) (4.1% of CBGs and 5.1% of SFD Homes) mostly FL, NV, AZ, NM, CA
- Cluster 6 – Younger "gentrifying" near downtown (11.8% of CBGs and 9.1% of SFD Homes) Austin, Raleigh, Nashville, Minneapolis
- Cluster 7 – Mid-low income suburbia plus retirees (22.5% of CBGs and 25.1% of SFD Homes) Triad, Deltona, Palm Bay
- Cluster 8 – Higher income suburbia (21.5% of CBGs and 27.6% of SFD Homes) Minneapolis, Seattle, Philadelphia
- Cluster 9 – Highly educated affluent (11% of CBGs and 12.7% of SFD Homes) San Jose, San Francisco and Washington DC

			Age of Householder			
Sorted	Median Income	Pct College	< 25yr	65+yr	Commute mode - in a car alone	Size % SFD homes
Overall Mean	67,133	31.6%	3.4%	24.3%	75.4%	
Overall Stdev	36,533	21.1%	5.9%	13.1%	15.1%	
1	36,627	34.5%	25.8%	12.2%	70.7%	1.4%
2	28,636	11.1%	4.5%	24.1%	70.3%	6.6%
3	68,078	42.6%	3.4%	20.1%	26.4%	1.6%
4	45,667	13.8%	4.0%	15.6%	72.5%	10.8%
5	54,294	32.9%	1.2%	56.3%	77.1%	5.1%
6	61,109	42.1%	5.4%	16.2%	76.6%	9.1%
7	54,256	23.2%	2.4%	31.9%	82.7%	25.1%
8	83,248	34.5%	1.3%	21.0%	82.0%	27.6%
9	135,452	62.7%	0.5%	27.1%	75.5%	12.7%

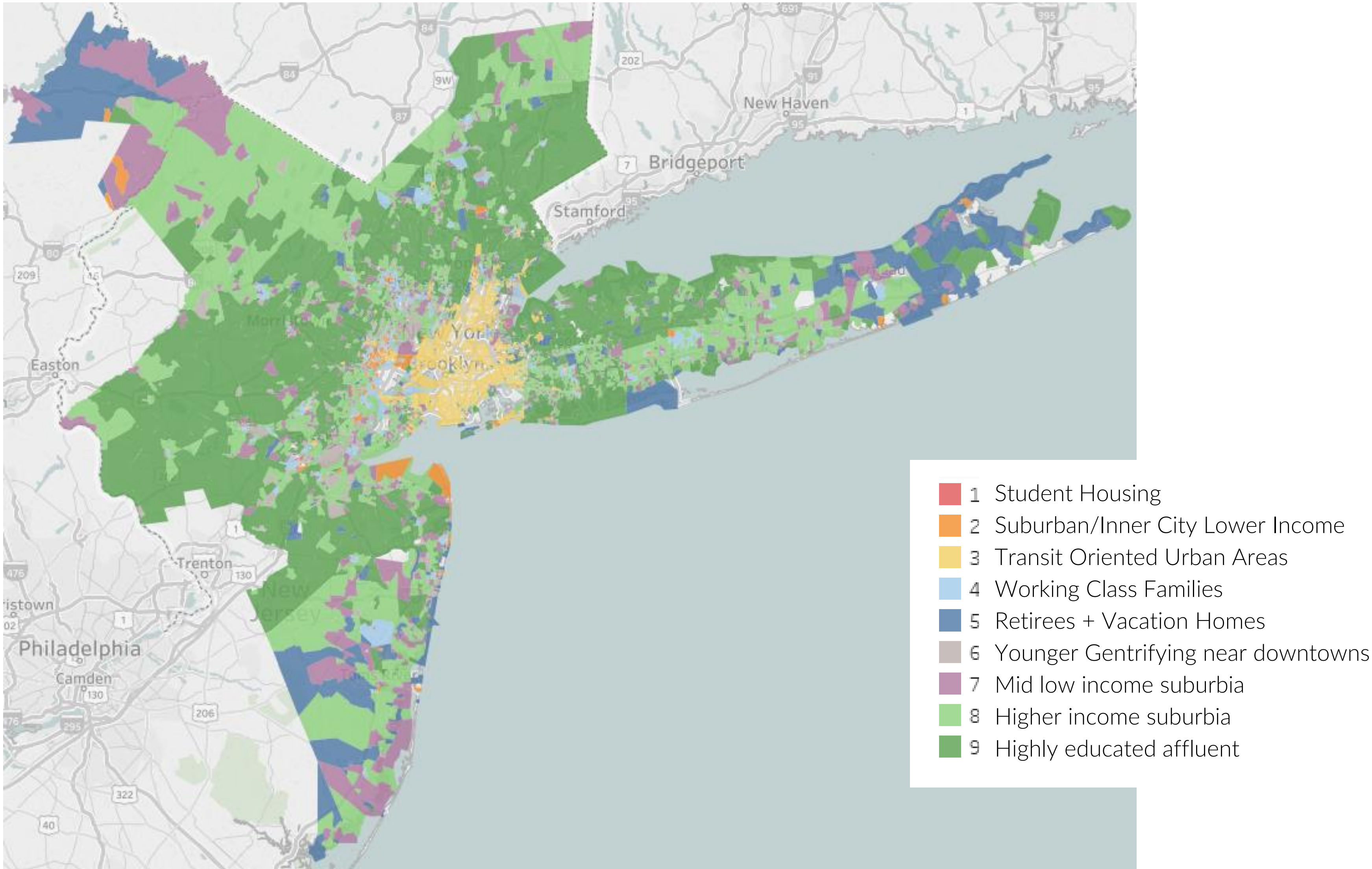
Source: Amherst as of December 2019

Atlanta as an example



- 1 Student Housing
- 2 Suburban/Inner City Lower Income
- 3 Transit Oriented Urban Areas
- 4 Working Class Families
- 5 Retirees + Vacation Homes
- 6 Younger Gentrifying near downtowns
- 7 Mid low income suburbia
- 8 Higher income suburbia
- 9 Highly educated affluent

New York as an example



Clusters help better understand and differentiate performance

- Clusters 1 (Student housing), 3 (Transit Oriented) and 5 (Retirees + vacation homes) are somewhat idiosyncratic and their behavior is driven more by area specific factors
- Among the rest, the lower end clusters have outperformed higher end in last 5 years but the relative performance is reversed in 2009-2014
- We see that the lower end clusters have generally outperformed by 2-2.5% over the last 5 years while the highest end underperformed by about 1%
- However, the lower end clusters underperformed in the prior five-year period (2009-2014) while the highest end slightly outperformed

HPA AND EXCESS HPA VS. CBSA AVERAGE BY CLUSTER

	5y HPA CAGR		5y Excess HPA vs CBSA	
Cluster Number	**2014-2019**	**2009-2014**	**2014-2019**	**2009-2014**
1 Student Housing	5.2%	0.5%	0.7%	-0.1%
2 Inner City/Suburban Low Income	7.6%	-3.7%	2.8%	-3.9%
3 Transit Oriented	7.1%	2.9%	2.0%	1.7%
4 Working Class Families	8.0%	-0.1%	2.6%	-1.4%
5 Retirees + Vacation Homes	3.8%	0.0%	-1.2%	0.0%
6 Gentrifying near Downtown	5.7%	1.1%	0.7%	0.2%
7 Mid low income suburbs	5.1%	-0.2%	0.7%	-0.4%
8 High income suburbs	5.0%	0.6%	0.4%	-0.1%
9 Highly educated affluent	4.0%	2.2%	-1.2%	0.5%

Source: Amherst as of November 2019. Notes: Based on average AVMs in the cluster on same set of homes

CASE STUDY:

BREAKING HOUSING INTO HOMOGENEOUS CLUSTERS

- Using automated clustering algorithms can help investors sort through large portfolios of homes in an efficient manner

- Clustering also allows us to make better predictions about future performance of these micro areas/neighborhoods based on how such areas have responded in the past to various economic stimuli

- These geo-demographic clusters respond differently to higher/lower interest rates, increases/contractions in overall availability of credit, and increases/decreases in job growth etc.

- Identifying "homogenous clusters of assets" can be combined with other constraints imposed by concentration/diversification requirements to arrive at the most optimal portfolio allocation strategies

The Amherst group of companies comprise of leading real estate investment and advisory firms with a long track record in helping our clients understand risks and opportunities through data-driven solutions for investing, trading and analysis. Our real estate expertise is grounded in distinctive intellectual capital, and differentiated data and analytic capabilities. Amherst is well-positioned to react nimbly and with scale to the evolving opportunities in the real estate capital markets.

As of September 30, 2019, the Amherst group of companies have over $16 billion of balance sheet assets and manage over $5.8 billion of real estate related investments for third parties and itself. Balance sheets assets are related to our affiliated broker-dealer.

ABOUT AMHERST HPI MODEL

Amherst home price index is generated and maintained by Amherst. The index tracks price changes of single-family detached properties in 90 core- based statistical areas (CBSA) and 50 states in the US. The index is published monthly and is based on the Case Shiller repeated sales methodology. Unlike HPI published by S&P Case Shiller Weiss, Corelogic and Federal Housing Finance Agency (FHFA), Amherst HPI is a distressed-free index which does not include price changes due to foreclosures, short-sales, bank repossession and REO resale. The repeated sales HPI rely on tracking price changes in transactions of the same house over time. For each arms-length and distressed- free home sale transaction, a search is conducted to find information regarding previous arms-length and distressed-free sales of the same house. If an earlier transaction is found, the two transactions are paired into a “sale pair.” Sale pairs are designed to track price changes over time for the same house, while holding the quality and size of each house constant. After sales pairs are formed, the index is calculated under a weighted least square framework, in which weights are based on price anomalies and time interval within pairs.

ABOUT AMHERST U.S. SFR RENT INDEX

Amherst Rent index is generated and maintained by Amherst. The index tracks rent price changes of single-family detached properties in 250 core- based statistical areas (CBSA) and 49 states in the US. The index is published quarterly and is based on the Case Shiller repeated sales methodology. The rent index relies on tracking rent price changes of the same house over time. For each lease, a search is conducted to find rent price from the previous lease of the same house. If an earlier lease is found, the two leases are paired into a “lease pair.” Lease pairs are designed to track rent price changes over time for the same house, while holding the quality and size of each house constant. After pairs are formed, the index is calculated under a weighted least square framework, in which weights are based on rent price anomalies and time interval within pairs. The index is based on re-leases on the same properties that are put on the market and therefore does not include any repeat leases which are renewals.

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The comments provided herein are a general market overview and do not constitute investment advice, are not predictive of any future market performance, are not provided as a sales or advertising communication, and do not represent an offer to sell or a solicitation of an offer to buy any security. Similarly, this information is not intended to provide specific advice, recommendations or projected returns of any particular product of Amherst Holdings, LLC ("Amherst") or its subsidiaries. These views are current as of the date of this communication and are subject to rapid change as economic and market conditions dictate. Though these views may be informed by information from sources that we believe to be accurate and reliable, we can make no representation as to the accuracy of such sources nor the completeness of such information. Past performance is no indication of future performance. Investments in mortgage related assets are speculative and involve special risks, and there can be no assurance that investment objectives will be realized or that suitable investments may be identified. Many factors affect performance including changes in market conditions and interest rates and in response to other economic, political, or financial developments. An investor could lose all or a substantial portion of his or her investment. No investment process is free of risk and there is no guarantee that the investment process described herein will be profitable. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment.

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