2019 U.S. Housing Market Outlook
Pretium’s 2019 Housing Market Outlook

We expect structural imbalances in the U.S. housing market will continue, leading to further tightening of fundamentals and higher shelter costs

- The most important issue in the housing market remains a persistent underbuilding of housing combined with accelerating demand for shelter.
- In 2018, housing demand exceeded supply by more than 400,000 units.¹ We forecast that the U.S. will continue to underproduce housing by ~200,000 units in both 2019 and 2020, and vacancy rates should fall ~15bps each year.
- Housing availability is tight, with the vacancy rate of for-sale and for-rent housing at 3.2%, the lowest level since 1984.²
- Constrained availability and further increases to replacement costs (labor, materials, land, and soft costs) should place upward pressure on rental rates and home prices.
- Higher mortgage rates negatively impacted homebuyer affordability, which we expect will drive incremental demand for rental housing going forward.

Demand to remain elevated on the heels of a healthy economy and supported by demographic tailwinds, while the growth in new supply begins to stall

- During the first three quarters of 2018, the U.S. added 1.48mn households relative to the same period in 2017, the fastest pace since 2015.³
- We expect above-average housing demand over the medium-term. The positive outlook for household formations is supported by a strong labor market and historic demographic shifts, including the ageing of the Millennial generation, which should sustain ~1.2-1.3mn household formations per annum going forward.⁴
- Single-family and multifamily housing starts added ~1.0mn new housing units in 2018 net of units lost to obsolescence. Starts are plateauing, with consensus forecasting starts to increase by 10,000 in 2019 and another 20,000 in 2020.⁵

Weaker homebuyer affordability will impact for-sale housing but should support incremental renter demand

- Mortgage rates averaged 4.54% in 2018, 55bps higher than in 2017.⁶ Higher rates were a headwind to transaction activity.
- The median-income buyer of a median-priced home spent 37% of their income on mortgage, principal, insurance, and tax payments in 4Q’18, in-line with an average of 38% since 1985, but well above the 32% average over the last five years.⁷
- We expect that a decline in homebuyer affordability, coupled with strong household formations, should support demand for rental assets including single-family rentals and multifamily apartments.

Within U.S. real estate, we believe the single-family rental (“SFR”) sector is well positioned to capitalize on the underbuilding of shelter and decline in affordability, capturing demand and driving further margin expansion

- We believe residential real estate is well positioned to capture the secular increase in housing demand with less risk from technological disruption or shift in consumer preference.
- Young families should continue to seek the amenities of single-family housing, with more choosing to rent given affordability headwinds and constraints on mortgage credit availability.
- Institutionally-managed SFR has the potential to drive above-average net operating income (“NOI”) growth over the next several years, coupling growing demand with revenue-generating and cost-saving technologies that should result in continued margin expansion.

¹ U.S. Census Bureau, Housing Vacancies and Homeownership Report, Table 3, as of 3Q’18.
² U.S. Census Bureau, Housing Vacancies and Homeownership Report, Table 2, as of 3Q’18.
⁶ Freddie Mac, 30-Year Fixed Rate Mortgage, retrieved from FRED, Federal Reserve Bank of St. Louis, January 10, 2019.
⁷ Pretium calculation using Moody’s income data, U.S. Census and NAR existing home price data, Fannie Mae 30Yr Mortgage rates, FHA mortgage insurance premiums, as of December 27, 2018.
Section I: 2019 Economic Outlook

Healthy Economic Growth in 2018 Expected to Continue Through 2019

The U.S. economy is performing well, supported by healthy job growth, corporate tax reform, and elevated consumer and business confidence. We continue to see the U.S. economy as mid- to late-cycle, but not late-cycle given the healthy and, in many cases, accelerating growth in key metrics:

- Real GDP grew 3.0% in the third quarter on a year-over-year basis (and 4.1% Q/Q annualized), an acceleration from 2.4% Y/Y growth in 2017 and 1.6% in 2016.\(^8\) Consensus estimates from Wall Street economists forecast real GDP growth of 2.5% for 2019, and 1.8% for 2020.\(^9\)
- Non-farm employment grew 1.8% Y/Y in December, with the U.S. creating an average of 220k jobs per month during 2018, an acceleration from the 180k pace in 2017.\(^10\)
- Unemployment fell from 4.1% at the end of 2017 to 3.9% in December 2018. Wall Street economists forecast unemployment to compress further to 3.6% by year-end 2019.\(^11\)
- Tightening labor markets led to improving wage growth and increased labor participation. Average hourly earnings increased 3.3% Y/Y in December,\(^12\) while the Employment Cost Index rose 2.8% Y/Y in 3Q’18, the fastest pace since 2008.\(^13\)
- Consumer confidence reached its highest post-crisis levels in 2018, with the University of Michigan Consumer Sentiment Index reaching its highest levels since 2001 in early 2018.\(^14\)
- Business activity was positive. Purchasing Managers’ Indices (“PMIs”) for services and manufacturing averaged 55 (index level above 50 indicates improving conditions) for full year 2018 and confidence measures such as the NFIB Small Business Optimism Index were at above-average levels. Capex spending grew 8% Y/Y.\(^15\)

![Exhibit 1: Healthy Labor Markets Supporting Cycle High Wage Growth](image_url)


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\(^8\) Bureau of Economic Analysis, Gross Domestic Product, 3Q’18.
\(^12\) U.S. Bureau of Labor Statistics, Average Hourly Earnings of Production and Nonsupervisory Employees: Total Private, through December 2018.
\(^14\) University of Michigan, University of Michigan: Consumer Sentiment, data through November 2018.
\(^15\) Markit Service PMI and Manufacturing PMI, data through December 2018, retrieved from Bloomberg on January 4, 2019. NFIB Research Foundation, Small Business Optimism Index, through December 2018. Bureau of Economic Analysis, 3Q’18 data on gross private domestic investment.
Employment an Important Driver of Housing Demand

A healthy economic backdrop is important to our constructive outlook for housing demand and pricing power. Employment growth is a key driver (along with population growth, consumer confidence, and housing availability) of household formations, as illustrated by Exhibit 2 below. Further, housing is pro-cyclical, and economic growth (e.g., GDP, employment, wages, labor force participation) has historically translated into improving asset values.16

Exhibit 2: Household Formations and Employment Growth are Closely Linked

While household formations have rebounded, we estimate pent-up demand includes nearly 5mn “missing” households, particularly among younger cohorts as more young adults are living at home. As shown below on the left, there has been a sharp increase in young adults living at home; from 2003 to 2017, the percentage of 18- to 34-year-olds living at home increased from 27% to 31%, an increase of over 3mn people.17 Deferred household formations are reflected in lower headship rates / deferred household formation relative to expected housing demand.

Better employment and wage growth for these cohorts may encourage a decline in young people living at home and, therefore, additional household formations. Employment of 25- to 34-year-olds increased by more than 5.8mn since 2010, or ~31% of all net employment growth. Year-over-year 25- to 34-year-old employment rose 3.1%, 100bps faster than general employment growth.18

Note, projections from Harvard’s Joint Center for Housing Studies (“JCHS”) for 1.22mn household formations per annum through 2028 assume no change to headship rates. Therefore, a return of these missing households would be additive to their estimates.19

Exhibit 3: Pent-Up Demand Led by Under 35 Cohorts Who Increasingly Live at Home


17 U.S. Census Bureau, Table AD-1. Young Adults, 18-34 Years Old, Living At Home: 1960 to Present, November 16, 2017.
18 U.S. Bureau of Labor Statistics, Employment Level: 25 to 34 years, Civilian Employment Level, as of December 2018.
Bond Yields: 2018 Increase Moderated in 4Q, but Risks to Upside in 2019

The risk-free rate curve increased and flattened in 2018, as the market responded to tighter monetary policy, but also priced in more concern about sharply lower growth in the medium-term.

- On the short end, the Federal Reserve raised overnight rates four times in 2018 to 2.25%-2.50%, with their latest forecast expecting two additional rate increases in 2019. That said, in January 2019, Federal Reserve Chairman Powell attempted to calm market concerns of the Fed moving too fast with policy normalization, noting monetary policy is not a “pre-set” course, with the Fed monitoring economic data and financial conditions closely.

- On the longer-end, 10Yr Treasuries increased by 30bps to 2.7% at year-end, but were as high as 3.3% in October before retreating on global growth concerns. The yield curve, therefore, flattened significantly with the spread between the 2Yr Treasury and 10Yr Treasury just 20bps at year-end from 52bps at the end of 2017.20

Our outlook for rates in 2019 is for higher rates across the curve.

- On the short end, while the Federal Reserve has made it clear it intends to be patient with the pace of further rate hikes, we believe they will raise rates one or two times in 2H 2019 due to the strength of the labor market and inflationary pressures from tariff policy.

- On the long-end, we believe the combination of the Fed balance sheet runoff (i.e. quantitative tightening or “QT”), additional Treasury supply to satisfy the increasing funding needs of the U.S. government and net issuance from U.S. corporates will pressure yields and spreads for long-dated fixed income.

Exhibit 4: Net Annual Change in Combined Federal Reserve, European Central Bank, and Bank of Japan Balance Sheets


Source: Bloomberg, priced on January 10, 2019.

Source: Goldman Sachs estimates, from the ERWIN forecast database, accessed on January 10, 2019.

Mortgage Rates Increased ~55bps Y/Y, Impacting Affordability and Home Sales

Since the beginning of 2018, 30-year fixed mortgage rates rose sharply, ending the year at 4.55% with the rate averaging ~55bps higher during the year than in 2017. This increase came after a 30bp increase in mortgage rates in both 2016 and 2017. Rising rates, coupled with a level of HPA above nominal income growth, are significantly impacting affordability.\(^\text{21}\)

However, as shown in Exhibit 6 below, mortgage rates have recently eased as markets have altered their views on the outlook for economic growth and future Federal Reserve rate hikes. A gentler increase in rates, as opposed to the late-2018 spike, could benefit the housing market in 2019.

Exhibit 6: 30-Year Mortgage Rates Up from Historic Lows

![Graph showing 30-year mortgage rates up from historic lows](image)

Source: Freddie Mac, 30-Year Fixed Rate Mortgage Average, retrieved from FRED, Federal Reserve Bank of St. Louis; December 27, 2018.

Higher rates negatively impacted homebuyer affordability, which is now back to pre-crisis levels after having been much more affordable post-crisis due to low mortgage rates and depressed home values. One way to show affordability is to estimate median home payment-to-income ratios over time. In 4Q'18 this index showed that the median U.S. family buying a median-priced home would spend 37% of its income on home payments, in line with the 38% average since 1985 and well above the 32% average over the past five years.\(^\text{22}\)

Housing payments have increased rapidly on the back of higher rates and rising home prices. The implied monthly mortgage and insurance payment in 4Q'18 was 13% higher than in 4Q'17, and 19% higher than in 4Q'16.\(^\text{23}\)

Exhibit 7: Affordability at Long-Term Average with Median New Purchase Home Payments Up ~13% Y/Y

![Graph showing affordability at long-term average](image)

Source: Pretium calculation using Moody’s income data, U.S. Census and NAR existing home price data, Fannie Mae 30Yr Mortgage rates, FHA mortgage insurance premiums, as of December 27, 2018.

\(^{21}\) Freddie Mac, 30-Year Fixed Rate Mortgage, retrieved from FRED, Federal Reserve Bank of St. Louis; December 27, 2018.

\(^{22}\) Pretium calculation using Moody’s income data, U.S. Census and NAR existing home price data, Fannie Mae 30Yr Mortgage rates, FHA mortgage insurance premiums, and the forward treasury curve from Bloomberg as of January 10, 2019. For all periods, calculation assumes a 96.5% LTV FHA loan with 85bps of mortgage insurance, taxes equal to 1.2% of home value, insurance equal to 50bps of home value, and HOA fees of 15bps of home value.

\(^{23}\) Freddie Mac 30-Year Fixed Rate Mortgage Average. Data sourced from St. Louis Fed FRED system on December 27, 2018.
Affordability Headwinds Positive for Rental Outlook

We believe that weaker new homebuyer affordability at a time of strong household formations will increase rental demand as households, on the margin, find home buying less affordable and have less inventory from which to choose. We expect single-family rental demand will increase and length of stay should increase.

- SFR is one-third of the rental market and should therefore benefit as more households rent. Further, single-family detached homes share many of the amenities of for-sale, entry-level housing which are attractive to residents, especially those with children (access to schools, more square footage inside and outside of the home).

- It is important to emphasize that SFR has historically represented a large share of rentals and overall housing. Since 1970, single-family rentals have comprised, on average, ~11.5% of U.S. housing and ~33% of rental housing.24

- In a recent report, John Burns Real Estate Consulting emphasized the positive SFR demand impact of worsening affordability, “Worsening affordability should keep SFR tenants in place longer, as an increasing amount will not be able to qualify for a mortgage as rates and home values rise.”25

We do not expect higher rates to materially impact positive trends in household formations. Economic growth, coupled with the ageing of the Millennial generation, is likely to produce significant housing demand as these younger cohorts age into their early- to late-30s over the next decade.

- Interestingly, to date, younger cohorts have not driven the positive trends in household formation. According to Morgan Stanley, “25- to 29-year-olds have not formed households this slowly in 55 years. For 30- to 34-year-olds, headship rates are at 46-year lows.”26

In our view, the homeownership rate is unlikely to move higher in the coming years, which should add to incremental rental demand.

- We expect that constrained mortgage credit availability and weak affordability will lead more households to rent, even before considering any potential change in homebuyer preference due to generational attitudes, weaker young adult balance sheets, etc.

- Interestingly, a recent Urban Institute report points to evidence of a shift in housing preference among Millennials not explained by changing family dynamics or credit conditions. For example, homeownership for 25- to 34-year-old married couples with children was 56.6% in 2015, down ~900bps from 2005 and 540bps from 1990 levels.27

Exhibit 8: Single-Family Rentals as a Percent of U.S. Housing (left) and Rentals (right)

Source: U.S. Census Bureau. For 1970-1995 data, we use the American Housing Survey data. For 2000 and 2010 we use the Decennial Census. For 2005, 2015, and 2017 we use the American Community Survey 1 Year Survey. Any error in combining these various data series is ours.

24 U.S. Census Bureau. For 1970-1995 data, we use the American Housing Survey data. For 2000 and 2010 we use the Decennial Census. For 2005, 2015, and 2017 we use the American Community Survey 1-Year Survey.


27 Urban Institute, “Millennial Homeownership, Why Is It So Low, and How Can We Increase It?” July 2018.
Limited Inventory and Affordability Concerns Slowing Pace of Home Sales

Rising rates and deteriorating affordability are slowing activity in a housing market that is coming off of record low for-sale inventory levels.

In December, the monthly volume of existing home sales fell 10.3% from last year, the biggest Y/Y decline since 2011. However, for the year, the average rate of existing homes sales fell a more modest 3.5% compared to the average rate in 2017.28

Deterioration in affordability due to higher mortgage rates has slowed existing home sales further, but so have low inventory levels, which averaged 4.2 months’ supply in 2H’18. Inventory levels reached a low of 1.3mn in December 2017 with only 3.1 months of supply.

Morgan Stanley’s housing research team noted that “decreased affordability is weighing on transaction volumes...While we believe affordability to be the chief culprit, the lack of supply is not helping matters... We expect these pressures to remain in 2019.”29 While sales were down Y/Y, the pace is generally in-line with long-term historical averages at 4.4% of U.S. housing stock.30

Exhibit 9: Existing Home Sales, Absolute (left) and as Percent of Housing Stock (right)


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28 National Association of Realtors, Existing Home Sales, December 2018.
30 U.S. Census Bureau and National Association of Realtors, Existing Homes Sales report, through December 2018.
Rising rates are also putting new home sales and pricing under pressure as the price gap between new and existing homes narrows.

During this housing cycle, median new home sales prices accelerated more quickly than existing home sales prices. By 2014, the median sales price of a new home was 34% higher than the median existing home compared to an average new home premium of 18% from 1980 to 2006.31

Due to growing inventory and builder emphasis on smaller homes, the median sales price of new homes stayed flat in 2018. On the other hand, the median sales price of existing homes increased ~5% Y/Y due to tight inventory levels.

As shown on the right below, this dynamic has narrowed the gap between new and existing median sales prices to 24%, the smallest since 2009.32 We expect the gap to narrow further given the scarcity of existing homes for sale and deteriorating trends in the new home market.

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31 U.S. Census Bureau, Median Sales Price of Houses, as of November 2018; U.S. Census Bureau and U.S. Department of Housing and Development, Median Sales Price for New Houses Sold, as of October 2018.

32 Ibid.

Home Price Appreciation Decelerated in 2018, but Remains Elevated

Housing values continued to rise at an above-inflation pace in 2018 due to steady demand growth, rising input costs, and below average inventory levels. CoreLogic estimates that home prices grew 5.1% Y/Y through November 2018, down from a peak rate of 6.6% in March.

HPA growth decelerated from a recent peak in early 2018 as deteriorating affordability provided a headwind to buyers. Although the slowdown has been nationwide, higher-price point markets and those with the fastest HPA have been most adversely impacted. The most significant deceleration in HPA occurred in previously fast-growing markets facing affordability issues including Seattle and several California markets.  

Exhibit 12: Home Price Appreciation Has Decelerated Nationally

Source: CoreLogic Home Price Index, Single-Family Combined Tier, as of November 2018. "Pretium Markets” include Atlanta, Charlotte, Dallas, Houston, Indianapolis, Jacksonville, Las Vegas, Memphis, Miami, Nashville, Orlando, Phoenix, Raleigh-Durham, and Tampa-St. Petersburg.

Post-crisis, lower-priced homes have outperformed higher-priced homes. According to CoreLogic, since 2010 the highest-priced tier of homes has appreciated a cumulative 40%, while the lowest-priced tier of homes has appreciated over 76%. Although HPA slowed down for all price tiers in 2018, low-priced homes are still outperforming high-priced homes by over 3%, down from over 4% in early 2017.

Exhibit 13: Lower Price Points Still Outperforming due to Tighter Inventory Levels

Source: CoreLogic Home Price Index, Single-Family Combined Tier, as of November 2018.

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33 CoreLogic Home Price Index, Single-Family Combined Tier, as of November 2018.
34 CoreLogic Home Price Index, Single-Family Combined Tier, as of November 2018. The four price tiers are based on the median sale price and are as follows: homes priced at 75 percent or less of the median (low price), homes priced between 75 and 100 percent of the median (low-to-middle price), homes priced between 100 and 125 percent of the median (middle-to-moderate price) and homes priced greater than 125 percent of the median (high price).
U.S. Home Prices ~6% Above Prior Peak on a Nominal Basis

U.S. home prices have appreciated since 2012 and are now ~5.8% above the prior peak on a nominal basis. Adjusted for inflation, home prices are 14% below the prior peak. Further, it is important to recognize the pace and reasons why home prices appreciated this cycle compared to the last cycle.

- In the last housing cycle, U.S. home prices increased by 9.4% in 2002, 10.8% in 2003, 15.7% in 2004, and 15.3% in 2005 before flattening in 2006 and starting their decline in 2007. This pace of appreciation was well above household income growth and, arguably, fueled by loose credit and speculation more than fundamentals.

- In this cycle, price gains have been more measured, with national HPA of 5.0% in 2014, 5.7% in 2015, 5.6% in 2016, and 6.2% in 2017. This pace is more consistent with both strong fundamental demand and income growth, and the rising costs of new home construction due to land, labor, materials, and regulatory costs.

- According to Zelman & Associates, homebuilder labor and materials inflation has accelerated from +3.8% Y/Y in 2017, to +4.9% Y/Y from November 2017 to November 2018. To offset cost inflation, new home prices appreciated 7.3% in 2017 and 8.6% from January 2018 through November 2018.

- Evercore- ISI’s homebuilding research summarized this dynamic as, “Unlike the rampant speculative buying that marked the last housing bubble, today’s demand is far more need-based, driven by significant pent-up demand for household formations that is now being released.”

Exhibit 14: CoreLogic Nominal Home Price Index

Exhibit 15: CoreLogic Home Price Index, Adjusted for Inflation

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35 CoreLogic National HPI, updated through November 2018. Index deflated using U.S. Bureau of Economic Analysis, Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index), downloaded from the St. Louis FRED data system on January 9, 2018.

36 CoreLogic National HPI, through November 2018.

37 CoreLogic National HPI, through November 2018.


Rates and Their Impact on HPA

Earlier we discussed the rise in mortgage rates during 2018 and the prospect for higher rates. Historically, home prices have exhibited little correlation with mortgage rates. Other parts of the housing market, including starts and new/existing home sales, exhibit higher negative correlations to rates than home prices.

In March 2018, we reported on the low, long-term correlations between home prices and interest rates, mortgage rates, and financial assets (please contact us for a copy of the report). Below we update our previous analysis, but retain our earlier conclusions, including:

- Historically, residential real estate prices have exhibited little correlation with either 10Yr Treasury yields or 30Yr mortgage rates (~0.20 for each over the past 40 years).40
- While higher rates initially impact affordability, more robust economic growth and consumer confidence support household formations and housing demand. In fact, home prices have a much higher correlation with GDP and employment growth over time than with rates.41

Over the next five years, we expect HPA to continue to increase at an above-inflation pace due to strong fundamentals and rising replacement costs, but we will closely monitor mortgage rates given that affordability recently rose to long-run averages and continued deterioration in affordability may impact housing activity more than historical correlations suggest.

Exhibit 16: Year-Over-Year Change in 30Yr Mortgage Rates and FHFA Home Price Index, 1976-2018


40 Freddie Mac, 30-Year Fixed Rate Mortgage. U.S. Federal Housing Finance Agency, All-Transactions House Price Index for the United States, as of 3Q'18.
41 Correlation analysis of Freddie Mac 30 Year Mortgage Rate, 10 Year Treasury Rates, Nominal GDP, and Non-Farm Employment from 1975-2017. All data sourced from St. Louis Fed FRED data system through 3Q'18.
Section II: Supply and Demand Fundamentals and the Housing Cycle

Demand Trends: 2018 Healthy, With Positive Tailwinds

During the first three quarters of 2018, the U.S. created 1.48mn new households on a year-over-year basis. This is the strongest pace of household formations since 2005.42

Constructive demographics and positive Millennial employment and wage growth trends should combine for a healthy pace of household formations going forward. For example, Harvard’s JCHS expects household formations to average 1.22mn per annum through 2028, while Morgan Stanley expects household formations of 1.3mn per annum over the next five years.43

Exhibit 17: Annual Household Formations with Harvard's JCHS Forecasts


Population Shifts a Long-Term Driver of Household Formations

An important structural support for household formation forecasts is the robust population shift occurring in the young adult age cohorts. There are more than 65mn Americans between the ages of 20 and 34 entering their prime household forming years, providing a demographic underpinning the above-average housing demand forecasts noted above.44

As the propensity to live in single-family housing increases as people age into their 30s and 40s, this cohort should contribute significantly to growing demand for single-family housing, both owner- and renter-occupied.45

Exhibit 18: Population Shifts Support Return to Above-Average Household Formation Growth


42 U.S. Census Bureau, Housing Vacancies and Homeownership Report, as of 3Q'18.
44Population from U.S. Census, Population Estimates by Age and Sex, 2017 annual data.
Long Term, Demographics Support Single-Family Housing Demand

Moody’s Analytics forecasts that from 2018 to 2035 the 35- to 44-year-old cohort will increase by 10.8mn people or 23%, compared to a 14.5% growth rate for the U.S. population overall.\footnote{U.S. Census Bureau and Moody’s Analytics Forecasts, updated on January 10, 2019.}

In our view, significant growth in the 35- to 44-year-old cohort over the next two decades will support single-family housing demand, with this cohort more likely to form families and need the amenities of single-family housing (access to schools, larger living spaces, safer neighborhoods) than younger cohorts.

Exhibit 19: Total Population, 35 to 44 Years Old (000s)  
Exhibit 20: Annual Population Growth Rate

The U.S. housing market and economy should continue to benefit from favorable demographics for decades. Generation Z (born from 1997 to 2012) will follow the Millennials, and per U.S. Census Bureau forecasts, Generation Z is expected to overtake the Millennials in 2035 and reach a peak population of ~78mn, above the Millennial peak of ~75mn.\footnote{U.S. Census Bureau, Projected Population by Single Year of Age, Sex, Race, and Hispanic Origin for the United States: 2016 to 2060, September 2018. United Nations Population Division, World Population Prospects: The 2017 Revision, June 2017.}

Importantly, the U.S. is one of the few developed countries with long-term growth in the working age population. As shown below on the right, in contrast to other developed economies, the U.S. economy will benefit from a demographic dividend as working age population growth accelerates after 2020 due to the growth of the Millennials and Generation Z. On the other hand, the working age population in G-10 countries will begin to shrink around 2020, on average.\footnote{United Nations Population Division, World Population Prospects: The 2017 Revision, June 2017.}

Exhibit 21: Gen Z Will Overtake the Millennials  
Exhibit 22: Working Age Population Growth (20 to 64)

Residential Assets in Sun Belt Markets Supported by Stronger Population Growth

Although long-term demographic trends support U.S. population growth and household formations, several parts of the U.S. are larger beneficiaries of the demographic trends discussed above than others. For example, the metro areas of Chicago, New York, and Los Angeles, combined, lost over 150k net residents due to migration in 2017 alone. On the other hand, as shown below in Exhibit 23, Sun Belt markets such as Dallas, Houston, Miami, and Phoenix have been large beneficiaries of in-migration over the past several years.49

Going forward, we expect fast-growing Sun Belt markets to continue to attract additional in-migration and to grow above the national average, benefiting local housing markets.

Exhibit 23: Net Domestic and International Migration by Metro Area (2010-2017)


As often cited in the media, coastal markets like Seattle, San Francisco, and Boston have succeeded in attracting a healthy number of young adults. However, as shown in Exhibit 24 below, Sun Belt markets, such as Orlando, have experienced population growth among 25- to 35-year-olds comparable to, or faster than, coastal markets due to robust employment growth and more affordable housing markets.50


Source: U.S. Census Bureau, Population Estimates. Retrieved from Moody’s Analytics, as of October 2018. Comparison includes 40 metro areas with populations over 1.5mn.


Supply: Housing Construction Has Stalled Well Below “Normal” Levels

From January through November 2018, new housing starts averaged 1.26mn at a seasonally adjusted annual rate, up from 1.21mn in 2017 and 1.18mn in 2016. This compares to housing starts from 1980 to 2006 which averaged over 1.5mn units annually. Although new home construction has picked up, it remains well below “normal” levels and appears to already be plateauing as builders respond to weaker homebuyer affordability.

Looking forward, expectations for housing starts have decreased with consensus forecasting housing starts of 1.27mn in 2019 and 1.29mn in 2020, which would equate to growth of less than 1% and less than 2%, respectively.51

Exhibit 25: Single-Family and Multifamily Housing Starts Have Totaled 1.26mn in 2018, up from 1.21mn in 2017


From January through November, single-family starts are up 3.2% in 2018, compared to 8.5% growth last year. On the other hand, multifamily starts have been at historically elevated levels since 2014 and grew by 7.5% during the first 11 months of 2018 following a contraction of nearly 10% in 2017.52

Exhibit 26: Monthly Starts Figures Point to a Slowing Construction Market


**Slowing Homebuilding Market Worsens Shortage of Entry-Level Housing**

During this cycle, homebuilders have focused on producing larger, more expensive homes compared to what builders offered pre-recession. The main reasons for this are higher fixed costs that necessitate building higher-priced homes to achieve profitability. Post-crash builders are also focused on move-up and more affluent buyers who are more easily able to obtain mortgages.53

Recently, homebuilders have pursued more entry-level housing projects (due to the strong demand for lower-cost homes) causing the median new home sales price to remain flat in 2018. However, in 2017 (latest data available), builders completed only 391k homes under 2,400 square feet or less than 50% of all new homes. In comparison, between 2005 and 2007, the U.S. built over 930k such units each year, or about 57% of all new homes.54

We estimate that this number increased to ~410k in 201855, but a slower single-family construction market going forward will further limit the supply of affordable new homes.

**Net, there are fewer starter / entry-level homes – today and over the past decade – being produced for a growing pool of ageing Millennials who are moving through life events (marriage, children, etc.) and now need more space to raise their families.**

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**Exhibit 27: Single-Family Housing Completions for Units Below 2,400 Square Feet**

![Graph showing single-family housing completions for units below 2,400 square feet from 1990 to 2016.](source)


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55 Please note, the U.S. Census Bureau is scheduled to release updated annual data for 2018 in June 2019.
**Housing Vacancy Rates Continue to Compress**

Per the U.S. Census Bureau, vacancy rates of for-sale and for-rent housing during the first three quarters of 2018 averaged 3.2%, down 20bps from the same period last year, and remained at the lowest level since the early 1980s. This contraction is the result of several years of underbuilding new supply relative to underlying housing demand.\(^{56}\)

Rental vacancy rates sat at 7.1% during 3Q’18, after temporarily spiking to 7.5% last year. As shown below on the right, the spike in rental vacancy rates was due to weakness and oversupply in the multifamily (5+ unit) market. On the other hand, SFR vacancy rates continued to grind lower, sitting at 5.9% in 3Q’18, down 30bps Y/Y.\(^{57}\)

**Exhibit 28: Total Housing Vacancy Rates are at Tightest Levels Since 1985 and SFR Vacancy Rates Grind Lower**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Vacancy Rate (for rent and for sale)</th>
<th>Rental Vacancy Rates</th>
</tr>
</thead>
<tbody>
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<td>1988</td>
<td>3.5%</td>
<td>14%</td>
</tr>
<tr>
<td>1989</td>
<td>3.4%</td>
<td>13%</td>
</tr>
<tr>
<td>1990</td>
<td>3.3%</td>
<td>12%</td>
</tr>
<tr>
<td>1991</td>
<td>3.2%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Historical Average</td>
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</tr>
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<td>3.0%</td>
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</tr>
<tr>
<td>1994</td>
<td>2.9%</td>
<td></td>
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<td>1996</td>
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<td>2009</td>
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<tr>
<td>2011</td>
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<td>2016</td>
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<tr>
<td>2017</td>
<td>0.6%</td>
<td></td>
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<tr>
<td>2018</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>0.4%</td>
<td></td>
</tr>
</tbody>
</table>


**High occupancy rates in the national multifamily market confirm the tight U.S. Census vacancy data.** According to Axiometrics, occupancy rates for Class B multifamily (defined as the median priced units in a market) were 95.8% in 3Q’18, up 50bps Y/Y. Class A and Class C occupancy rates were also ~95-96%, each up 50-60bps from a year ago.\(^{58}\)

**Exhibit 29: Multifamily Occupancy Rates by Class**

<table>
<thead>
<tr>
<th>Year</th>
<th>Class A Multifamily</th>
<th>Class B Multifamily</th>
<th>Class C Multifamily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-03</td>
<td>97.0%</td>
<td>95.0%</td>
<td>94.0%</td>
</tr>
<tr>
<td>Dec-04</td>
<td>96.9%</td>
<td>95.0%</td>
<td>93.8%</td>
</tr>
<tr>
<td>Dec-05</td>
<td>96.3%</td>
<td>94.9%</td>
<td>93.6%</td>
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<tr>
<td>Dec-06</td>
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<td>94.8%</td>
<td>93.4%</td>
</tr>
<tr>
<td>Dec-07</td>
<td>96.0%</td>
<td>94.6%</td>
<td>93.2%</td>
</tr>
<tr>
<td>Dec-08</td>
<td>95.8%</td>
<td>94.4%</td>
<td>93.0%</td>
</tr>
<tr>
<td>Dec-09</td>
<td>95.6%</td>
<td>94.2%</td>
<td>92.8%</td>
</tr>
<tr>
<td>Dec-10</td>
<td>95.4%</td>
<td>94.0%</td>
<td>92.6%</td>
</tr>
<tr>
<td>Dec-11</td>
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<td>93.8%</td>
<td>92.4%</td>
</tr>
<tr>
<td>Dec-12</td>
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<td>92.2%</td>
</tr>
<tr>
<td>Dec-13</td>
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<td>93.4%</td>
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<td>Dec-14</td>
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</tr>
<tr>
<td>Dec-15</td>
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<td>Dec-16</td>
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<tr>
<td>Dec-17</td>
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<td>91.2%</td>
</tr>
<tr>
<td>Dec-18</td>
<td>93.8%</td>
<td>92.4%</td>
<td>91.0%</td>
</tr>
</tbody>
</table>

Source: Axiometrics, data as of 3Q’18.

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\(^{57}\) U.S. Census Bureau, Table 3. Rental Vacancy Rates by Units in Structure: 1968 to Present, Current Population Survey/Housing Vacancy Survey, through 3Q’18.

\(^{58}\) Axiometrics, data as of 3Q’18.
Further Compression in Vacancy Rates Likely with U.S. Still Underbuilding Housing

Freddie Mac estimates the cumulative supply / demand deficit for vacant and available homes. Since 2008, demand for shelter in the U.S. has far outpaced new housing supply resulting in a deficit in housing production versus household formations, especially for rental housing (green bars).\(^{59}\)

Exhibit 30: Freddie Mac Estimates the U.S. Has a Cumulative Undersupply of 800,000 Housing Units

[Graph showing vacancy rates from 2000 to 2018]

Source: Freddie Mac, Investor Presentation, November 2018.

Harvard’s JCHS recently revised its outlook for medium-to-longer term demand growth, and now forecasts 1.22mn household formations per annum through 2028. If Harvard’s JCHS demand forecast proves to be correct, then the U.S. housing industry needs to build ~1.6mn units of new housing to keep pace with incremental demand and to replace obsolete units.\(^{60}\)

With housing construction already slowing and consensus forecasts expecting single-family and multifamily housing starts to increase only slightly to 1.27mn and 1.29mn in 2019 and 2020, respectively, the U.S. housing deficit is unlikely to disappear soon.\(^{61}\)

Exhibit 31: Net Deficit in U.S. Housing Supply

[Bar chart showing deficit in housing supply]


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\(^{59}\) Freddie Mac, Investor Presentation, August 2018.


Less Availability Supports Rental Rent Growth

As illustrated below, Axiometrics reports that for the past five years multifamily rental rates have increased by over 4% per annum with Class B rents performing best, rising 4.4% per year. Longer-term, Axiometrics expects multifamily rents will see a +2.7% CAGR from 4Q’18 through 2023.  

Exhibit 32: Multifamily Class C Rents Have Been a Top Performer Recently

Source: Axiometrics, data as of 3Q’18.

Strong Fundamentals Support Above-Average Near-Term NOI Growth for Residential Assets

While the commercial real estate sector is widely considered late cycle (especially in demand-challenged retail subsectors), the outlook for residential remains positive. As shown below in Exhibit 33, Green Street Advisors expects manufactured housing, SFR, and apartment REITs to experience strong NOI growth through 2022.

Single-family rentals are expected to post among the strongest NOI growth in the REIT space. The industry enjoys dual tailwinds from a positive fundamental housing backdrop, and a continued opportunity to lower controllable expenses. We expect the growth in both single-family rental revenue and NOI will continue over the medium term, with an opportunity for institutional owners to lower operating expenses through best practices and investments in technology.

Although multifamily NOI growth has slowed from recent highs due to supply pressures in coastal markets, apartment REITs should also benefit from the underlying demand for rental housing.

Exhibit 33: Green Street Advisors Same-Store NOI Growth Outlook Forecasts for REIT Sectors (2019-2022)


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62 Axiometrics effective rent growth forecasts, as of 3Q’18.

Section III: Homeownership and Mortgage Credit

Homeownership Rates Inch Higher

The homeownership rate was 64.4% in 3Q’18, up 50bps Y/Y. Homeownership has stabilized after more than ten years of declines from the 2004 peak of 69%. For historical context, the current reading is in-line with the long-run average homeownership rate since 1965 of ~65.3%.64

As shown in the two charts below, households with incomes below the median and under-35 and 35- to-44-year-old households have driven the recent increase in the homeownership rate. These cohorts should have substantial overlap as younger households are likely to make less than the median income.

While the homeownership rate for households making more than the median income has risen only 40bps from its recent low, it has risen 250bps for households below the median. In addition, the under-35 and the 35- to 44-year-old age cohorts have increased their homeownership rates by 270bps and 150bps, respectively, from their recent lows. However, their homeownership rates remain well below prior peak levels, having fallen by 680bps and 1,060bps, respectively.65

Given the recent adverse move in affordability, we expect that younger and below-median income households will face additional obstacles to homeownership, which should slow or pause the rise in the homeownership rate.

Exhibit 34: Recent Rise in Homeownership Rates Led by Younger Households with Incomes Below Median

![Homeownership Rate by Household Income and Age](image)


Mortgage Credit Remains Tight Despite Some Loosening on the Margin

Loose lending standards in the last cycle encouraged record-high homeownership rates and encouraged riskier borrowers (and borrowers in general) to leverage their homes with considerable debt.

In this cycle, mortgage credit availability has been constrained across lending channels, with average FICO scores on new purchase loans 50 points higher on FHA loans and 20-30 points higher on Fannie / Freddie loans.66 The chart in Exhibit 35 from the Urban Institute illustrates that the mortgage market is taking about half as much default risk on new loans today as it took from 2005-07, primarily by eliminating riskier loan products (Alt-A, subprime, etc.). According to the Urban Institute, “If the current default risk was doubled across all channels, risk would still be well within the pre-crisis standard of 12.5 percent from 2001 to 2003 for the whole mortgage market.”67

We believe that more conservative lending standards this cycle will constrain a further rebound in homeownership while also resulting in a more stable housing market, with fewer mortgage delinquencies and defaults in the next cycle.

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67 Urban Institute, Housing Credit Availability Index, Q2’18. https://www.urban.org/policy-centers/housing-finance-policy-center/projects/housing-credit-availability-index.
Recent Trends in Mortgage Availability – Debt-to-Income ("DTI") Ratios Increasing, FICOs Flat

Marginal improvements to credit availability continue within both conventional (Fannie Mae and Freddie Mac) and Ginnie Mae (FHA/VA) mortgages, primarily through higher DTI ratios.

- Through December 2018, the trailing 12-month FICO for conventional loans was 750, unchanged from the 2017 average and only one point below the 2016 average.
- Similarly, for Ginnie Mae loans, the average FICO on a trailing 12-month basis was 691, only two points below the 2017 average and three points below the 2016 average.

As affordability has become more constrained, mortgage credit underwriting has loosened through less stringent DTI ratio requirements for borrowers. The DTIs capture both the monthly mortgage payment as well as any fixed charges from other debt (interest and amortization).

- For conventional loans, the average DTI in 2018 was 36.9%, up from 35.4% in 2017 and 34.6% in 2016.
- For Ginnie Mae loans, the average DTI in 2018 is a meaningful 43.0%, up from 41.9% in 2017 and 40.8% in 2016.
U.S. Consumers Deleveraged Their Homes This Cycle

There is far less leverage in the U.S. housing system today and, therefore, we expect far less credit-induced stress in the housing system when the next downturn occurs.

From 2008 to 2018, U.S. consumers increased their total debt burden, but that has come primarily from higher student and auto debt. In 2018, consumers had $500bn less mortgage debt than a decade earlier.69

- In 3Q’08, U.S. consumers held $9.99tn of mortgages and home equity lines of credit (“HELOC”), equivalent to ~$89k of housing debt per household.
- In 3Q’18, U.S. consumers held $9.56tn of mortgages and home equity lines of credit, equivalent to ~$79k of housing debt per household – a decrease of $10k per household over the last decade.

Exhibit 37: U.S. Consumer Debt Shows Increasing Share of Non-Mortgage Debt

As shown below, as a percent of GDP, household sector debt has decreased meaningfully, resulting in healthier household balance sheets. We believe a less leveraged housing market provides less downside risk to home values in a recessionary environment.

Exhibit 38: U.S. Household Debt to GDP Has Fallen Substantially, but Corporates Have Become More Indebted

Further, after a decade of low interest rates, many borrowers have locked in lower rates and improved their debt coverage ratios. Currently, mortgage service amounts to ~4.2% of disposable income on average, down from 7.2% in 2007, and a long-run average of ~5.6%.  

Exhibit 39: Household Financial Obligations and Mortgage Debt Payments Have Declined Since the Financial Crisis

Healthier consumer balance sheets, stricter underwriting standards, low mortgage rates, and robust rates of HPA have also caused mortgage delinquency rates to fall below the long-term historical average of 5.3% since 1980. During the first three quarters of 2018, delinquency rates have averaged 4.5%, evidence of the general health of the mortgage market. In our view, low delinquency rates are further evidence of a healthy housing market with less downside risk to home prices should the economy soften.

Exhibit 40: Mortgage Delinquency Rates Have Fallen Below the Long-Term Historical Average

Source: Board of Governors of the Federal Reserve System, Household Debt Service and Financial Obligations Ratios, as of Q3’18.

Source: Mortgage Bankers Association, Delinquencies as % of Total Loans, Seasonally Adjusted, as of September 2018.

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70 Board of Governors of the Federal Reserve System, Household Debt Service and Financial Obligations Ratios, as of Q3’18.
71 Mortgage Bankers Association, Delinquencies As % of Total Loans, Seasonally Adjusted, as of September 2018.
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For questions or comments on this report, please contact:

George Auerbach
Managing Director – Research & Strategy
gauerbach@pretiumpartnersllc.com

Piotr Kopacz
Associate – Research & Strategy
pkopacz@pretiumpartnersllc.com