State of the U.S. Housing Market

ULI Housing Opportunity Conference

Ryan Davis, Director of Research and Client Services
Opportunity abounds due to the widespread housing shortage

U.S. Housing Supply Excess/Deficit
(relative to 1993+ average vacancy rates)

Source: Witten Advisors, U.S. Census Bureau
Since 2010, a strong economy has boosted household growth; more households formed than net housing finished.

Source: Witten Advisors
Nine years into recovery, U.S. housing starts not back to 1.3m units; rental apartments comprise outsized share of starts this cycle

Source: U.S. Census Bureau
Construction cost inflation measures at or near cyclical peaks
Total construction costs up 5%+ (sub costs up ~7% all-in)

Year-Year Growth

Residential Construction Average Hourly Earnings

Reed Total Construction Cost Index

Turner Total Construction Cost Index

NAHB Survey, July 2018:
How have total costs of subcontractors changed over the past 12 months?

Percent of Respondents

Source: BLS, Turner, Reed, NAHB
Construction execution still a challenge – for both residential and commercial builders

**Share of Homebuilders Reporting Shortage of Subcontractor Labor**

**Share of Commercial Contractors Reporting Difficulty Finding Skilled Workers**

Sources: NAHB, Dodge Data & Analytics

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Banks no longer tightening multifamily/construction debt …but borrower demand still muted (competition from non-bank lenders?)

Sources: Federal Reserve Board
Lower construction levels, limited inventory for sale, continued price appreciation *(though weakness appearing in new/high-end homes)*

**# Months Supply at Current Sales Rate**

**Year-over-Year Change in Median New Home Price**

Sources: NAR, U.S. Census Bureau
Higher prices + rising rates = surging house payments, owner housing becomes less affordable than usual

Sources: Calculated from Case-Shiller national home price series; Witten Advisors
Mortgage underwriting easing, yet borrower demand waning – suggests HO rate will hold or edge lower in late ’18 / early ’19

Source: Federal Reserve Bank
Homeownership rate flat in 3Q18, but up nearly 1½ points since mid-2016 (with the young-adult rate up almost 3 points, driven by early 30s)...
...which resulted in a small loss of renter households:

exiting 1- to 4-unit rentals

Source: U.S. Census Bureau
But, these move-outs have not boosted SFR vacancy rates…
…implying that fewer SFRs are available (i.e., rental homes are being sold)

Source: U.S. Census Bureau, Witten Advisors calculations
Total 5+ starts pulled back in 2017, then picked up in 2018; near the highest since the good old days of the 1980s

Source: U.S. Department of Commerce; Witten Advisors
Despite static and uncertainty in the economic headlines, 3Q18 move-ins topped deliveries by the widest margin since 2015.
Suburban lease-ups still outperforming new central-city deals

New Apartment Lease-Up vs. Completions: Central Cities

- % Leased after 90 Days (R)

- Annual New Completions (L)

- Long-Term Average % Leased after 90 Days

New Apartment Lease-Up vs. Completions: Suburbs

- % Leased after 90 Days (R)

- Annual New Completions (L)

- Long-Term Average % Leased after 90 Days

Source: U.S. Census Bureau
Rent premium for new units at all-time highs, even as Class B/C rent growth outperforming Class A

Spread in Monthly Rent between New Market-Rate Apartments and Existing Apartments

Source: U.S. Census Bureau, Witten Advisors calculations
Nationwide rent growth moderated from mid-'15 to early '18, then accelerated through late '18

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarterly Rent Growth, SA</th>
<th>Annual Rent Growth</th>
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<tbody>
<tr>
<td>1Q05</td>
<td>1%</td>
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<tr>
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<tr>
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<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>1Q08</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>1Q09</td>
<td>-3%</td>
<td>1%</td>
</tr>
<tr>
<td>1Q10</td>
<td>-5%</td>
<td>0%</td>
</tr>
<tr>
<td>1Q11</td>
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<td>1%</td>
</tr>
<tr>
<td>1Q18</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: Witten Advisors
Wage growth for young, educated, metro workers stronger than headlines suggest; low-wage positions now outperforming

2018’s investment total rose to a new all-time high of $173b
Total sales +12% from 2017, quarterly one-offs surged in 2H18
Why invest now? Since 1980, apartments have outperformed in a) recessions and b) early stages of recovery vis-à-vis CRE at large

### Annual Total Investment Return

<table>
<thead>
<tr>
<th></th>
<th>Apartments</th>
<th>All NCREIF</th>
<th>Apartment Excess Return</th>
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</thead>
<tbody>
<tr>
<td>1980-1982</td>
<td>16.0%</td>
<td>14.7%</td>
<td>1.3%</td>
</tr>
<tr>
<td>1991</td>
<td>-1.4%</td>
<td>-5.6%</td>
<td>4.2%</td>
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<tr>
<td>2001</td>
<td>9.4%</td>
<td>7.3%</td>
<td>2.1%</td>
</tr>
<tr>
<td>2008-2009</td>
<td>-12.4%</td>
<td>-11.7%</td>
<td>-0.8%</td>
</tr>
</tbody>
</table>

### Early Recovery Period

<table>
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</thead>
<tbody>
<tr>
<td>1983-1984</td>
<td>16.0%</td>
<td>13.5%</td>
<td>2.5%</td>
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<tr>
<td>1992-1994</td>
<td>7.5%</td>
<td>1.2%</td>
<td>6.3%</td>
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<tr>
<td>2002-2003</td>
<td>8.8%</td>
<td>7.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>2010-2011</td>
<td>16.8%</td>
<td>13.7%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>

Source: NCREIF
Demand Driver: Demographics

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Petra – Ancient source of prosperity

ProPEnsity To Rent Apartments – Modern source of apartment prosperity
This shift toward apartment renting actually spans not just the past 10 years, but multiple decades *(despite short-term ups and downs)*

Source: U.S. Census Bureau, Witten Advisors calculations
Americans are delaying marriage and childbirth…
and becoming more ethnically diverse

Women just aren’t that into the ‘marriageable male’ anymore, economists say

By Danielle Paquette
May 16

Share of Population Aged 15+

- Non-Hispanic Whites: 59%
- Minorities: 41%

Source: U.S. Census Bureau
Fastest-growing household types are a) formats other than married couples and b) minority ethnicities – both favor apartments

Married Couples' Share of Household Growth

Minority Share of Household Growth

Source: U.S. Census Bureau
Starts still expected to ease; little relief in new deliveries until 2021
(costs up faster than NOIs, capital stack slightly more expensive as rates rise, cap rates marginally higher)
Absorption tops supply in 2018, then eases with jobs through 2021
Completions reach cyclical peak this year, still elevated through 2020

Source: Witten Advisors
Half the nation’s markets should see 3%+ rent growth in 2019-2021

4%+ in 6: SoCal ex-LA, Sac, SLC, WPB  
3%+ in SF Bay, LV, Phx, some TX/SE/FL, Cinci

Average Rent Growth Forecast, 2019-2021

Source: Witten Advisors
Key Takeaways and Opportunities in Housing

Overall
• Shortage across all types
• For-sale a lesser role in this recovery, rentals much larger

Single-Family
• Rising interest rates decrease affordability
• Focus on building smaller, denser, homes a lower price points
• Single-family rentals a first step to ownership

Apartments
• Demand healthy due to both short- and long-term tailwinds
• Top-of-market underperforming due to lease-up competition, but modest supply relief ahead
• Rent growth outperforms but slows with job growth
• Local market performance varies considerably
Questions/Discussion
Remember the 2016 recession scare?

10-Year Treasury Rate

Sources: Federal Reserve
Monthly inverted yield curve: a good leading indicator of recession

![Graph showing monthly inverted yield curve and its relation to recessions](image-url)

- **Monthly Average (%)**
- **Treasury Yields and Recessions**
- **Spread**
- **Recession**
- **10-Year Treasury**
- **2-Year Treasury**

**Economy: Warning Signs**

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Economy

U.S. added ~300k jobs in January; annual pace rose to 2.8m
(payrolls gained momentum despite government shutdown, which did cause the UE rate to rise to 4%)

Source: U.S. Bureau of Labor Statistics