

Outlook for the Houston Economy: Less Growth and More Uncertainty

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Greater Heights

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Economic Forecast Luncheon

Less growth and more uncertainty

- The economy is beginning the year with increased uncertainty due to:
 - ✓ the fourth-quarter decline in oil prices;
 - ✓ trade uncertainty; and
 - ✓ volatility in financial markets.

Houston fundamentals going forward: oil and U.S. economy

- US expansion continues, but forecast remains for a deceleration with unwinding of fiscal stimulus.
- Growth expected to decline to 2.5 percent in 2019 and soften further to 1.8 percent in 2020.
- Strong domestic demand growth will support rising imports and contribute to widening of US current account deficit.

Houston fundamentals going forward: oil and U.S. economy

- Crude oil prices have been volatile since August, reflecting supply influences, including US policy on Iranian oil exports and, more recently, fears of softening global demand.
- As of early January, crude oil prices stood at around \$55 a barrel, and markets expected prices to remain broadly at that level over next 4–5 years.

Less growth and more uncertainty: rising risks

- Escalation of trade tensions and worsening of financial conditions are key sources of risk to the outlook.
 1. Higher trade uncertainty will further dampen investment and disrupt global supply chains.
 2. More serious tightening of financial conditions is particularly costly given high levels of private and public sector debt in countries.

Less growth and more uncertainty: rising risks

- Global expansion weakening and at a rate somewhat faster than expected.
- World Economic Outlook (WEO) projects global growth at 3.5 percent in 2019 and 3.6 percent in 2020, 0.2 and 0.1 percentage point below last October's projections.

Less growth and more uncertainty: rising risks

- China's growth slowdown could be faster than expected especially if trade tensions continue, and this can trigger abrupt sell-offs in financial and commodity markets as was the case in 2015–16.
- In Europe Brexit cliffhanger continues, and costly spillovers between sovereign and financial risk in Italy remain a threat.

Less growth and more uncertainty: recession?

- Expansions don't die of old age, but they get murdered because of:
 - (1) Financial imbalances
 - (2) Federal Reserve raising rates too fast.
- Currently no "Wile E. Coyote" moment

2018 U.S. Economy



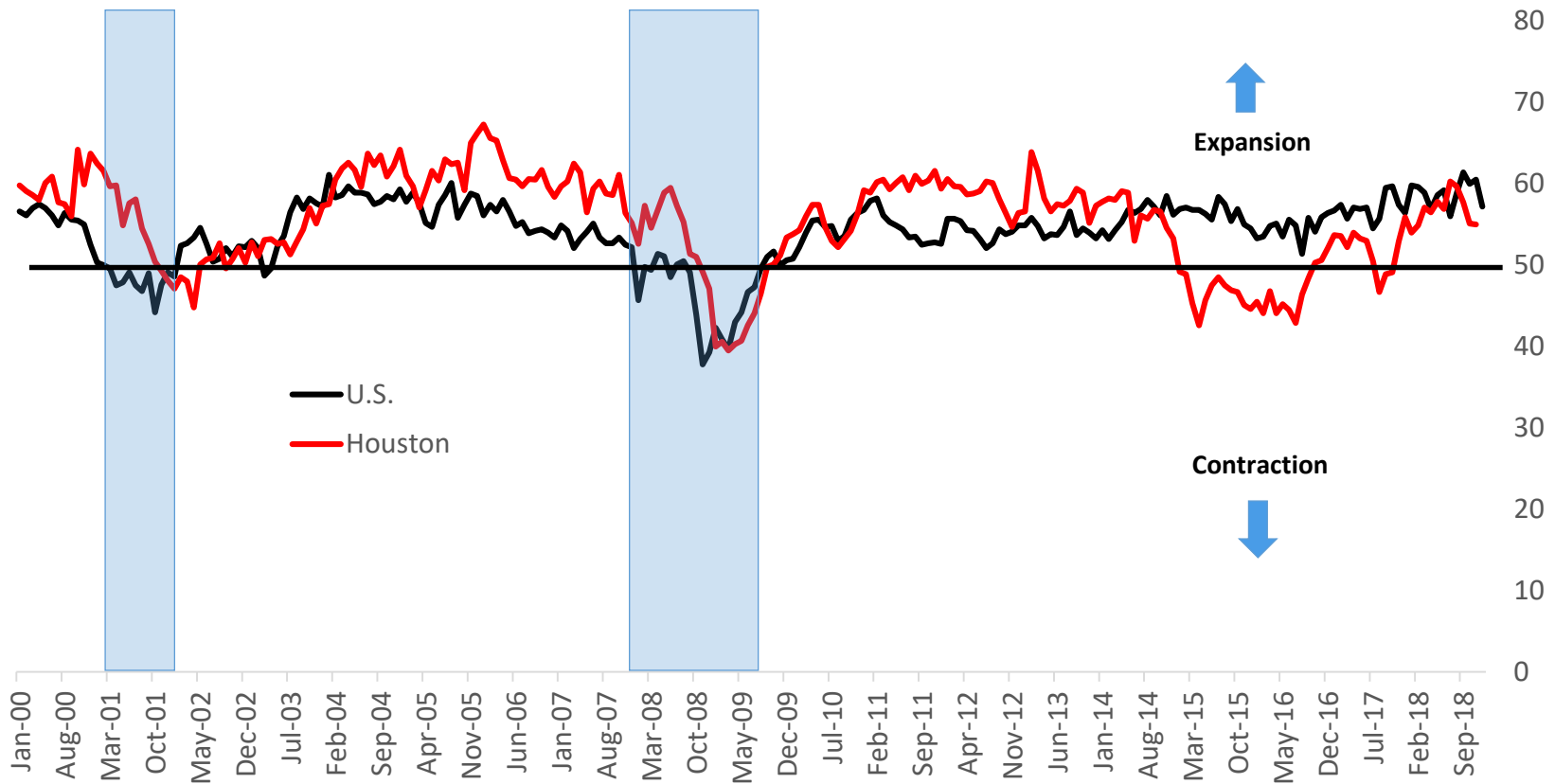
Not 2019 U.S. Economy, 2020?



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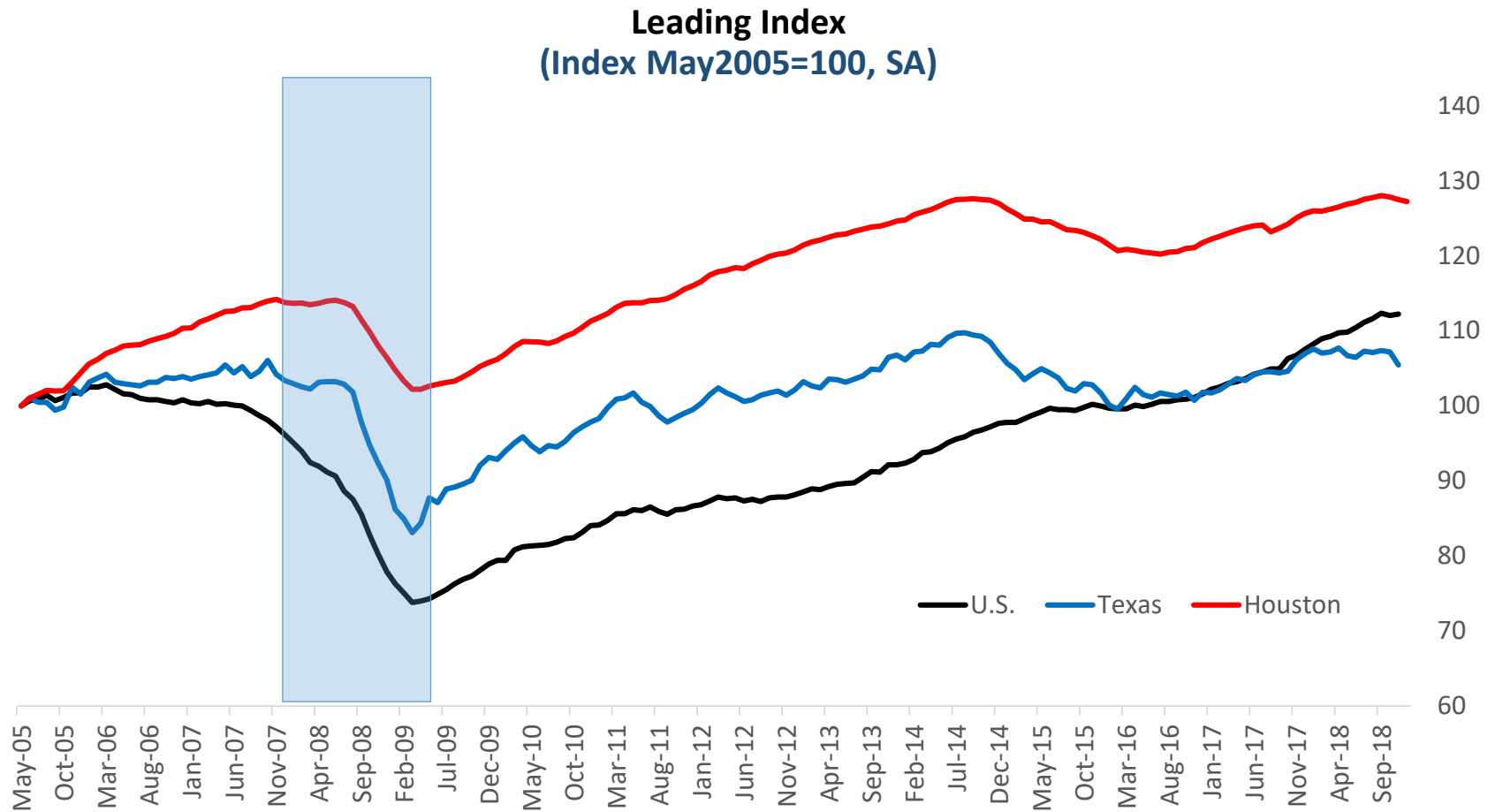
Outlook surveys for U.S. and Houston point toward growth slowdown

Institute for Supply Management (ISM) Composite Index
(>50= Increasing, SA)



Note: Seasonally adjusted. Shaded areas refer to U.S. recessions. Composite Index Manufacturing and Nonmanufacturing.
Sources: Institute for Supply Management.

Leading indicators also point toward slowdown



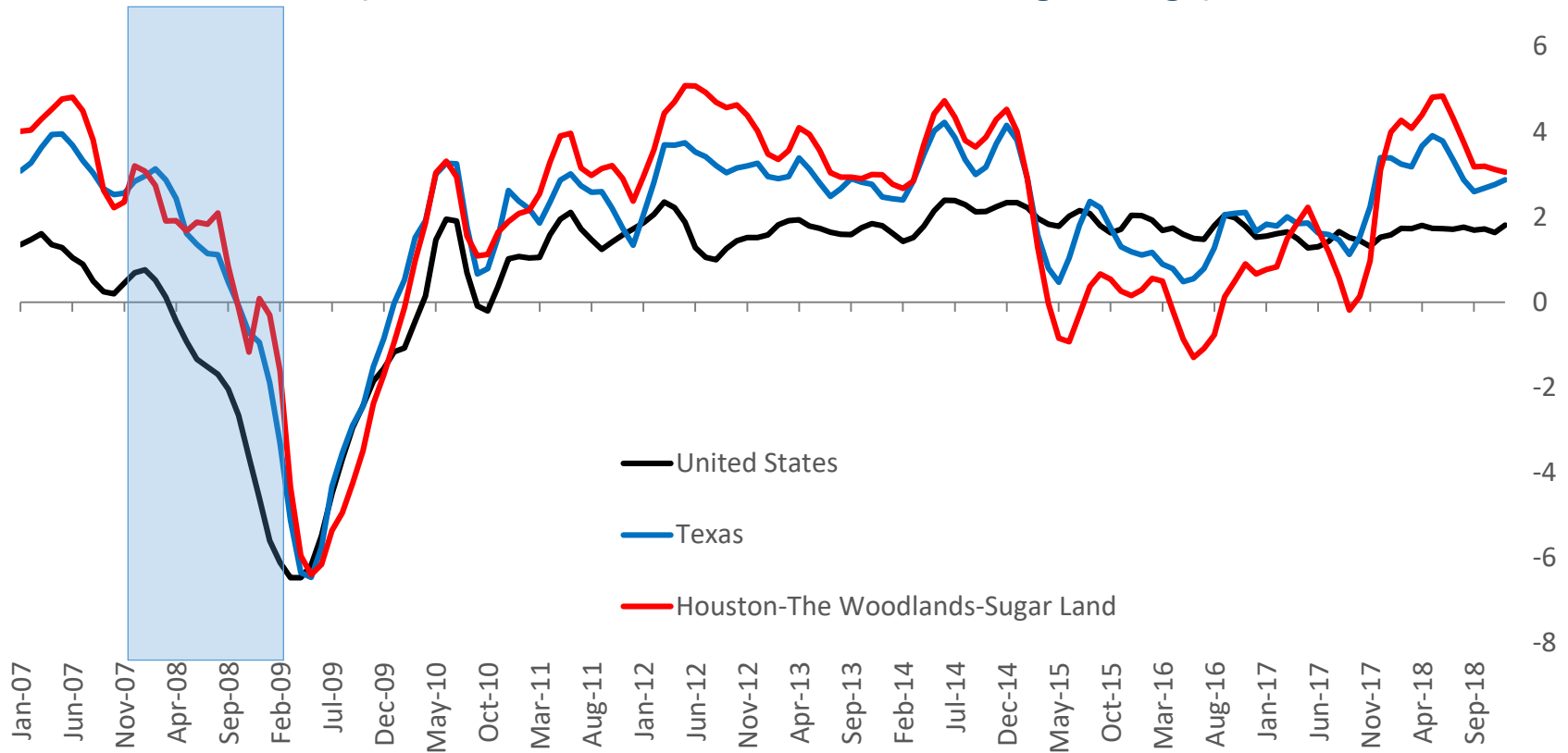
Note: Seasonally adjusted. Shaded areas refer to U.S. recessions.
Sources: Conference Board and Dallas Federal Reserve.

The decline in the Texas Leading index, suggest jobs will grow 1.1 percent this year statewide

- Based on forecast, 137,000 jobs will be added in the this year, and employment in December 2019 will be 12.8 million.
- Potential headwinds coming from a weakening in:
 - ✓ energy sector;
 - ✓ exports; and
 - ✓ overall earnings growth of Texas-based companies.

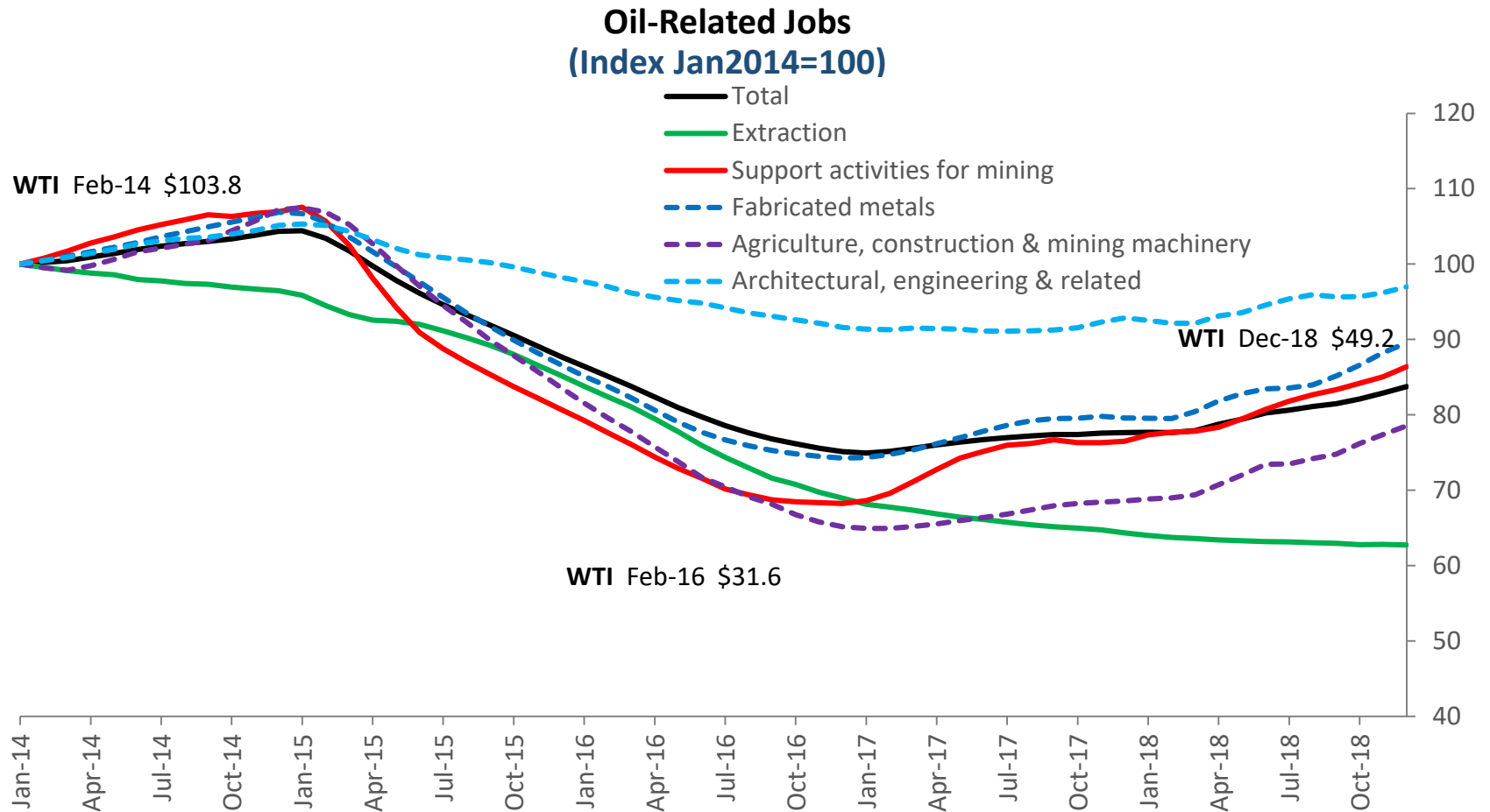
How about Houston? Employment growth slowed down at end of 2018

Total Nonfarm Employment Growth
(Month-over-Month Annualized Percentage Change)



Note: Seasonally Adjusted. Shaded area refers to recession. Three-month moving average.
Sources: Bureau of Economic Analysis and Bureau of Labor Statistics.

Houston oil jobs continued to recover but never came back completely



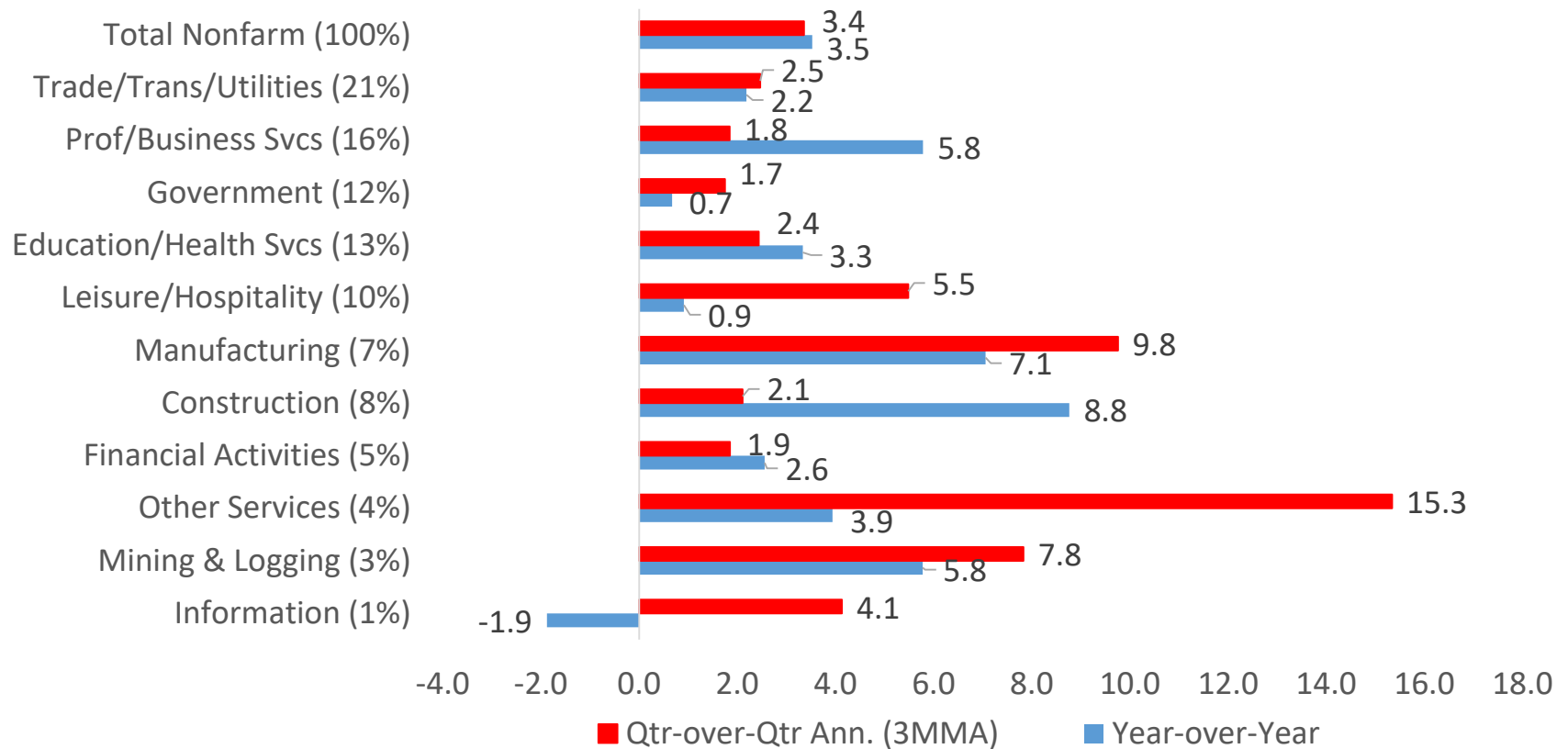
Note: Seasonally Adjusted. Three-month moving average.
Source: Bureau of Labor Statistics.

Houston oil jobs in the fracking era

- Houston is technological and engineering heart of oil industry
- Industry consolidation has favored Houston for decades
- Rigs are fewer, but much bigger and more intensively used
 - ✓ Need for Houston-based engineering, oil services, machinery and fabricated metals does not fall nearly as fast as number of rigs.

Oil related job gains spread to professional business services and manufacturing, accompanied by strong construction growth

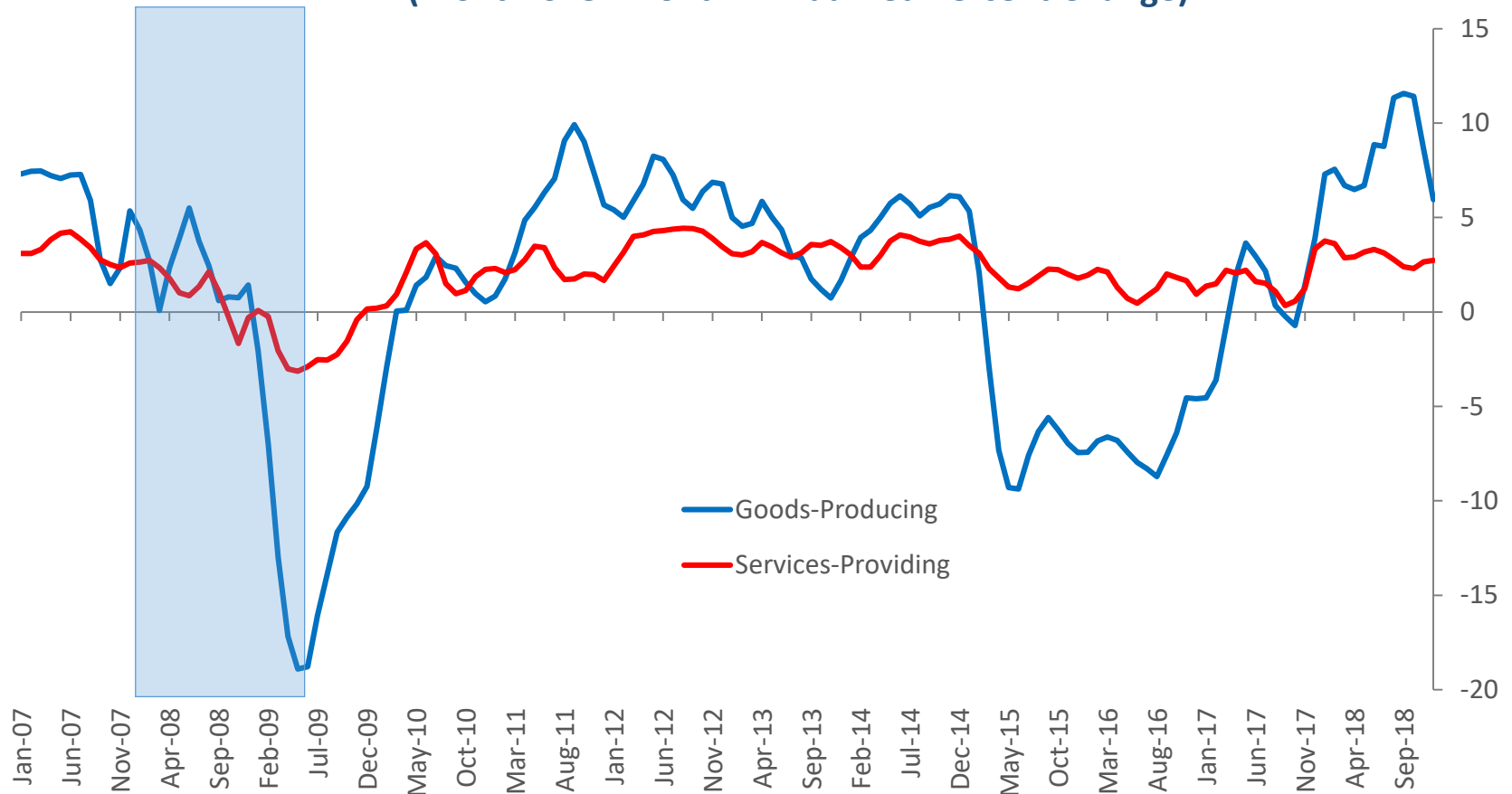
Employment by Sector
(Year-over-Year and Quarter-over-Quarter Annualized Percent)



Note: Seasonally adjusted.
Source: Bureau of Labor Statistics.

Stable energy prices supported growth in goods-producing sector

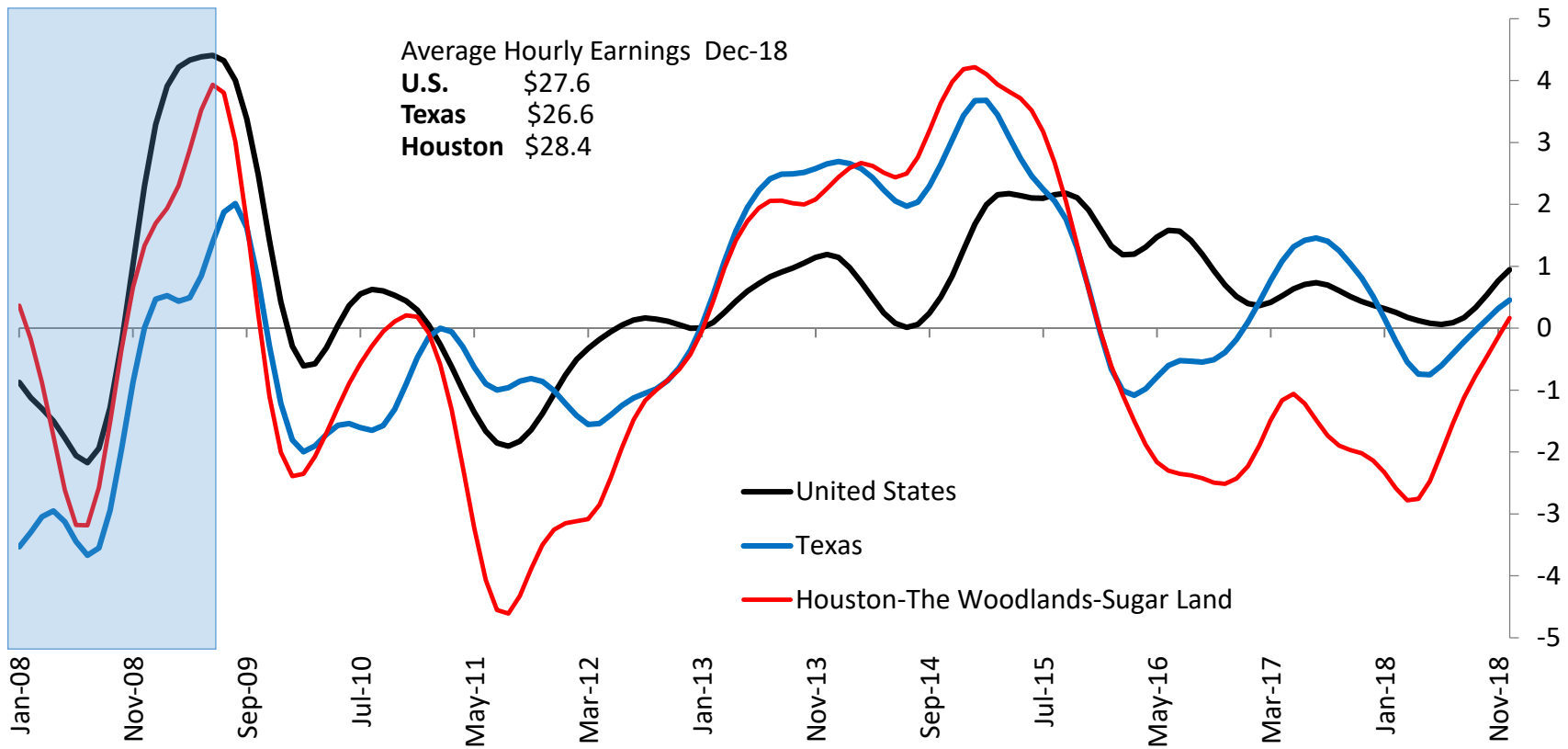
**Goods-Producing and Services-Providing Employment
(Month-over-Month Annualized Percent Change)**



Note: Seasonally Adjusted. Shaded area refers to US recession. Three-month moving average.
Sources: Bureau of Economic Analysis and Bureau of Labor Statistics.

Strong job growth pushed wage growth at end of the year

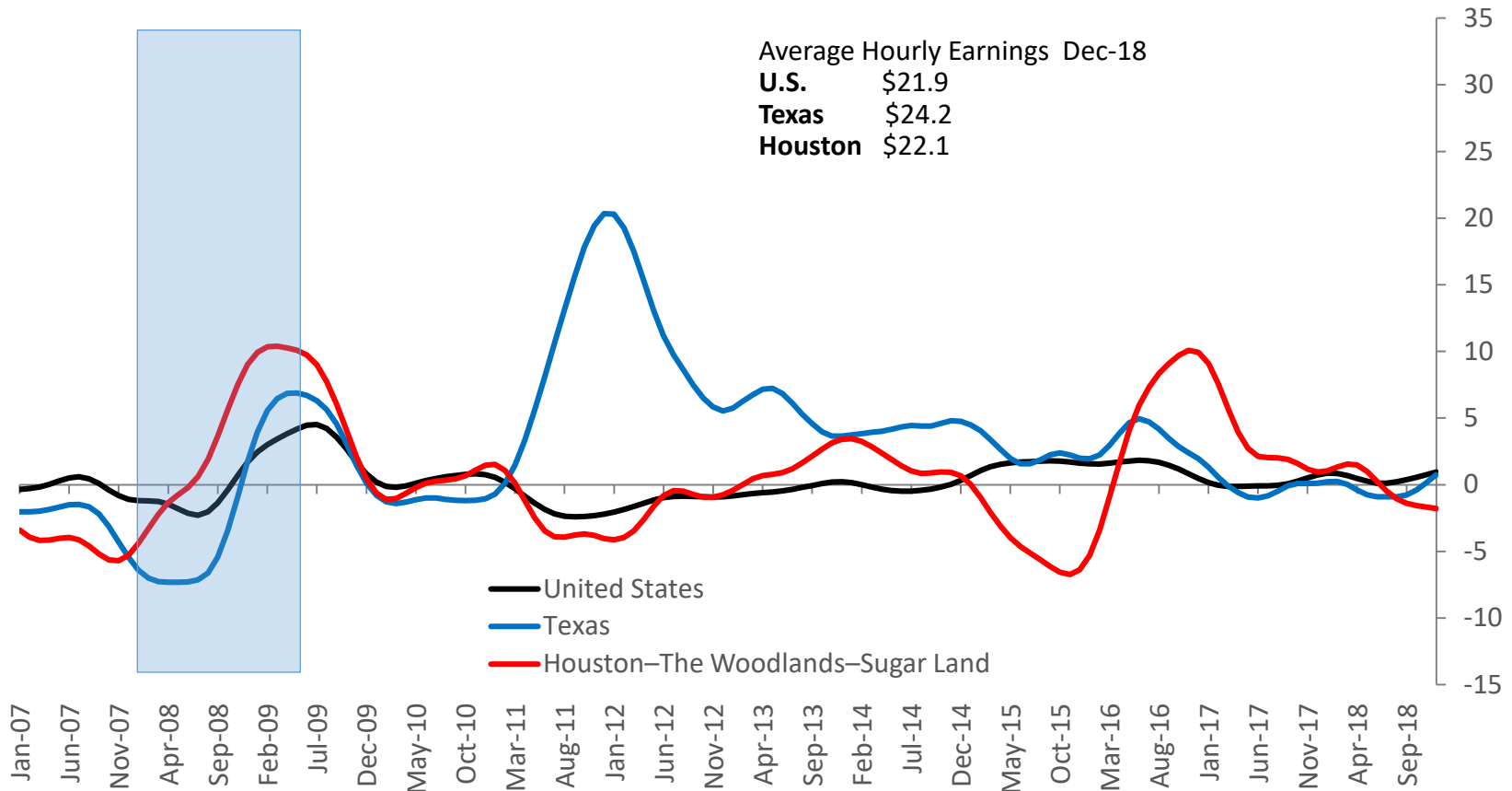
Average Hourly Earnings, All Employees: Total Private (Year-over-Year Percent Change)



Note: Seasonally adjusted and trend adjusted. Shaded region refers to US recession. Deflated with Consumer Price Index for all urban consumers: All items.
Source: Bureau of Labor Statistics.

Even with strong manufacturing job growth, wages declined at end 2018

**Manufacturing Average Hourly Earnings
(Year-over-Year Percent Change)**



Note: Seasonally adjusted and trend adjusted. Shaded region refers to US recession. Deflated with Consumer Price Index for all urban consumers: All items.
 Source: Bureau of Labor Statistics.

Houston going forward based on fundamentals

U.S. economy is still doing fine despite turmoil in markets.

- Slowing from around 2.9% 2018 growth to 2.5% 2019
- Growth was expected to peak in 2018 after effects of Tax Cuts and Jobs Act run out.
- Recent readings on consumer confidence and ISM manufacturing/non-manufacturing confirm return to moderate growth.
- The Federal Reserve remains on watch.
 - ✓ It is time to normalize monetary policy a decade after financial crisis.

Houston going forward based on fundamentals

Where are oil prices headed? Nothing inevitable about it ... it depends.

- Does OPEC gets its act back together on compliance, and 2019 sees oil back at \$60 average for year?
- Barring further weakening in China and world economy, if Iranian sanctions go in effect, OPEC/Saudi production will still be needed to replace it
- U.S. fracking production continues to climb
- Permian Basin pipeline constraints disappear in a matter of months

Houston going forward based on fundamentals

When are oil prices headed? Nothing inevitable about it ... it depends.

- When does rising U.S. production set up a clash with OPEC/Saudi/Russian market share?
 - ✓ OPEC has tried keeping oil price low and failed to break U.S. fracking; and tried keeping it high, only to see U.S. production soar
 - ✓ Are they now seeking a third way: Keeping price at a moderate \$50 per barrel? Can they perhaps slow U.S. production significantly?

Forecast job growth is moderate as oil prices stabilize or improve

(000 New Jobs, Q4/Q4)

By Scenario

Year	High	Medium	Low	20/60/20
2014	112.6	112.6	112.6	112.6
2015	9.2	9.2	9.2	9.2
2016	-2.3	-2.3	-2.3	-2.3
2017	27.9*	27.9*	27.9*	27.9*
2018	65.1	62.4	50.1	56.3
2019	78.4	67.4	50.6	56.5
2020	66.5	54.8	35.2	52.1
2021	78.5	67.1	46.0	63.3
2022	87.3	66.1	49.3	66.2
2023	89.9	68.5	53.1	67.9

*Excludes 27,800 temporary jobs in 2017Q4 driven by Hurricane Harvey.

Calculations of IRF, based on drilling scenarios above. Figures are Q4/Q4. The 2016 calculations include benchmark revisions of March 2018.

Sources: Institute for Regional Forecasting Bauer College of Business University of Houston.

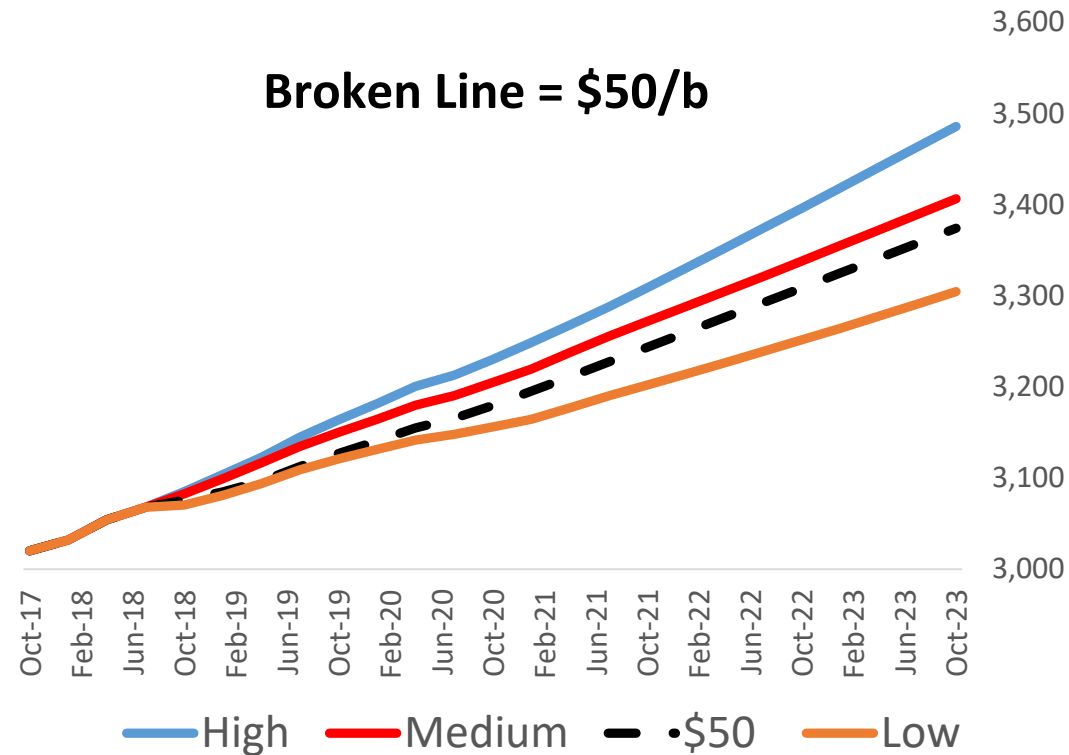


What if we get stuck at current \$50 per barrel going forward?

Houston Payroll Employment (000)

Year	Medium	\$50	Low
2014	112.6	112.6	112.6
2015	9.2	9.2	9.2
2016	-2.3	-2.3	-2.3
2017	27.9	27.9	27.9
2018	62.4	55.4	50.1
2019	67.4	51.1	50.6
2020	54.8	52.9	35.2
2021	67.1	63.9	46.0
2022	66.1	64.9	49.3
2023	68.5	65.5	53.1

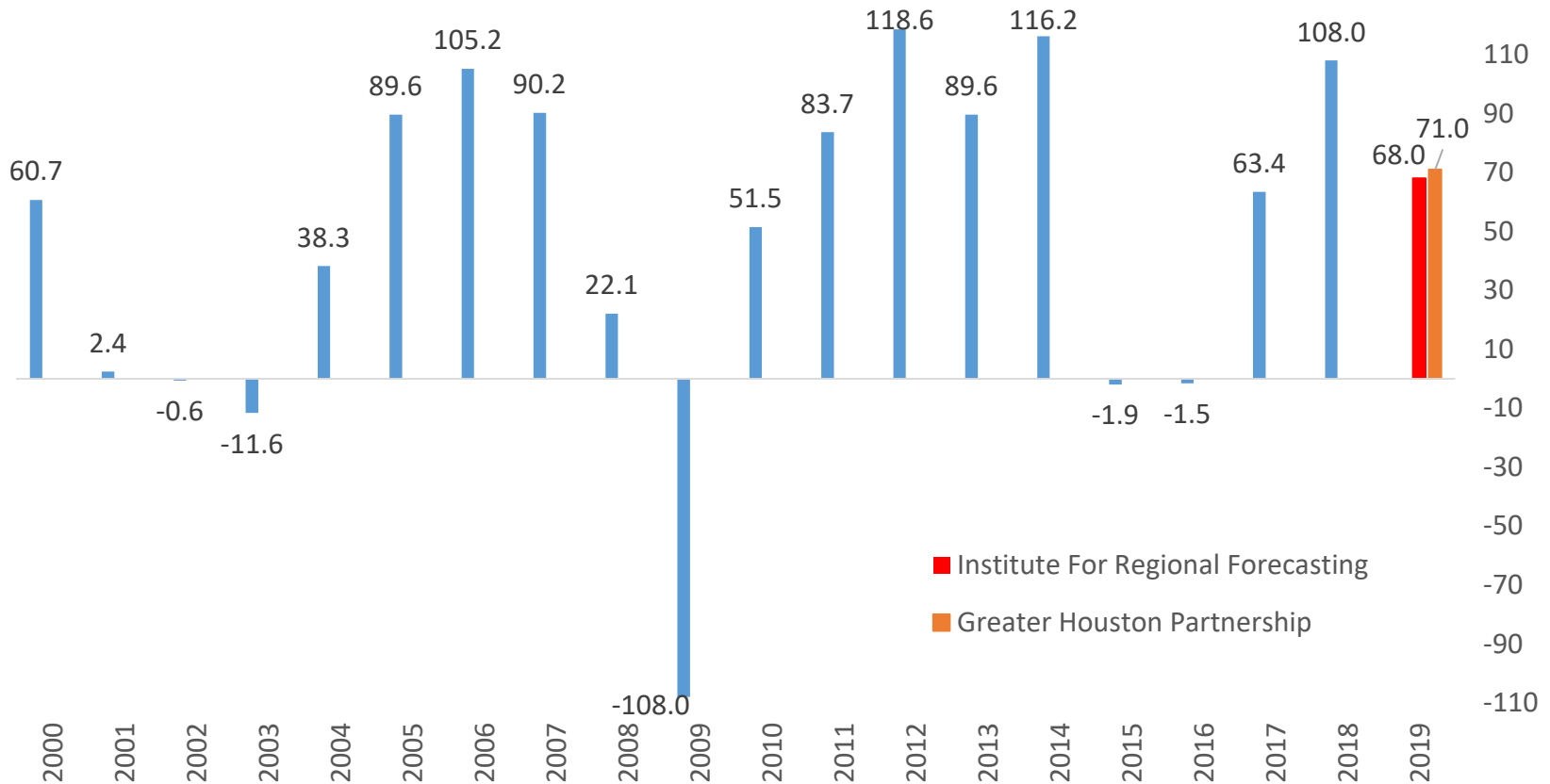
Annual New Jobs Houston (000)



Sources: Institute for Regional Forecasting Bauer College of Business University of Houston.

This forecast compared to others

Houston Nonfarm Employment Growth (Thousands Dec/Dec)

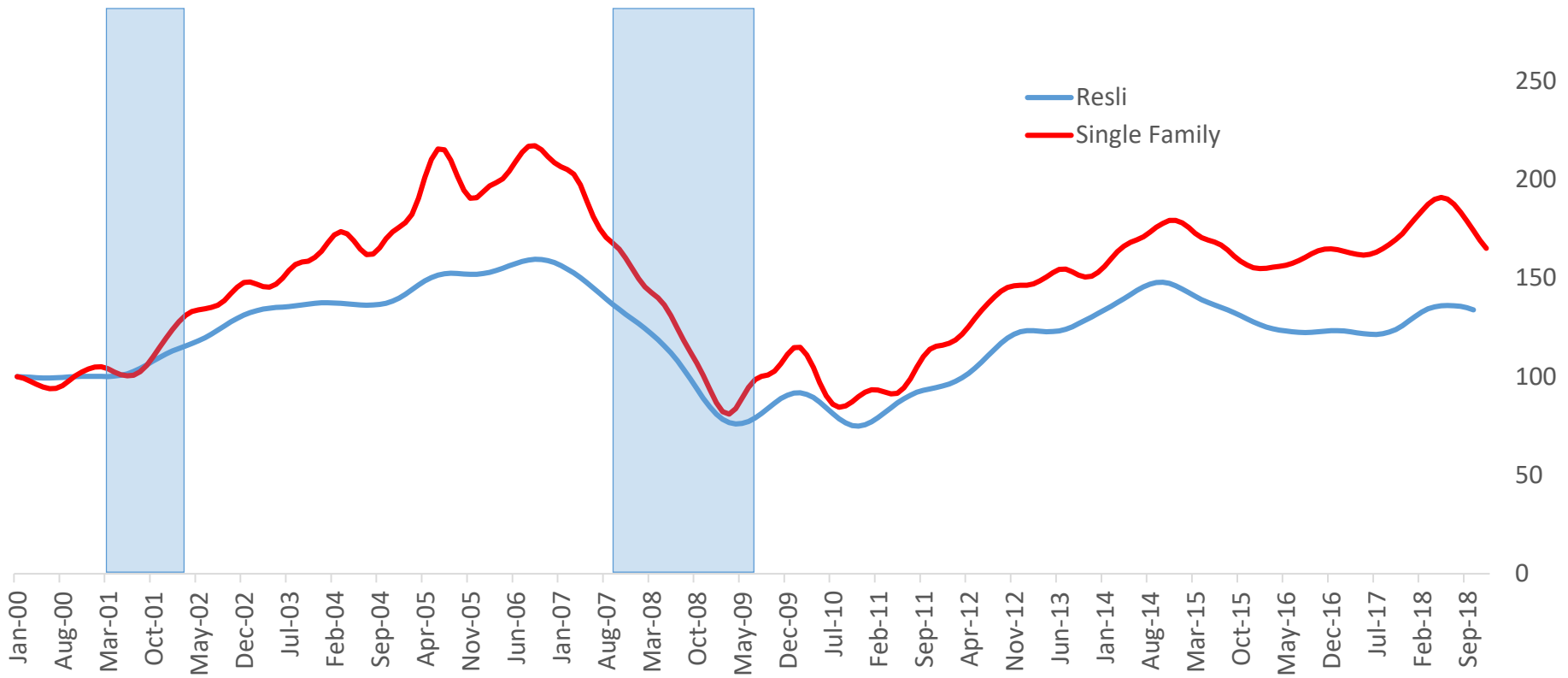


Sources: Bureau of Labor Statistics and Institute for Regional Forecasting Bauer College of Business University of Houston and Greater Houston Partnership



Residential construction slowed at end of 2018

Residential Construction Leading Index and Single Family Construction Values
(Index Jan2007=100)

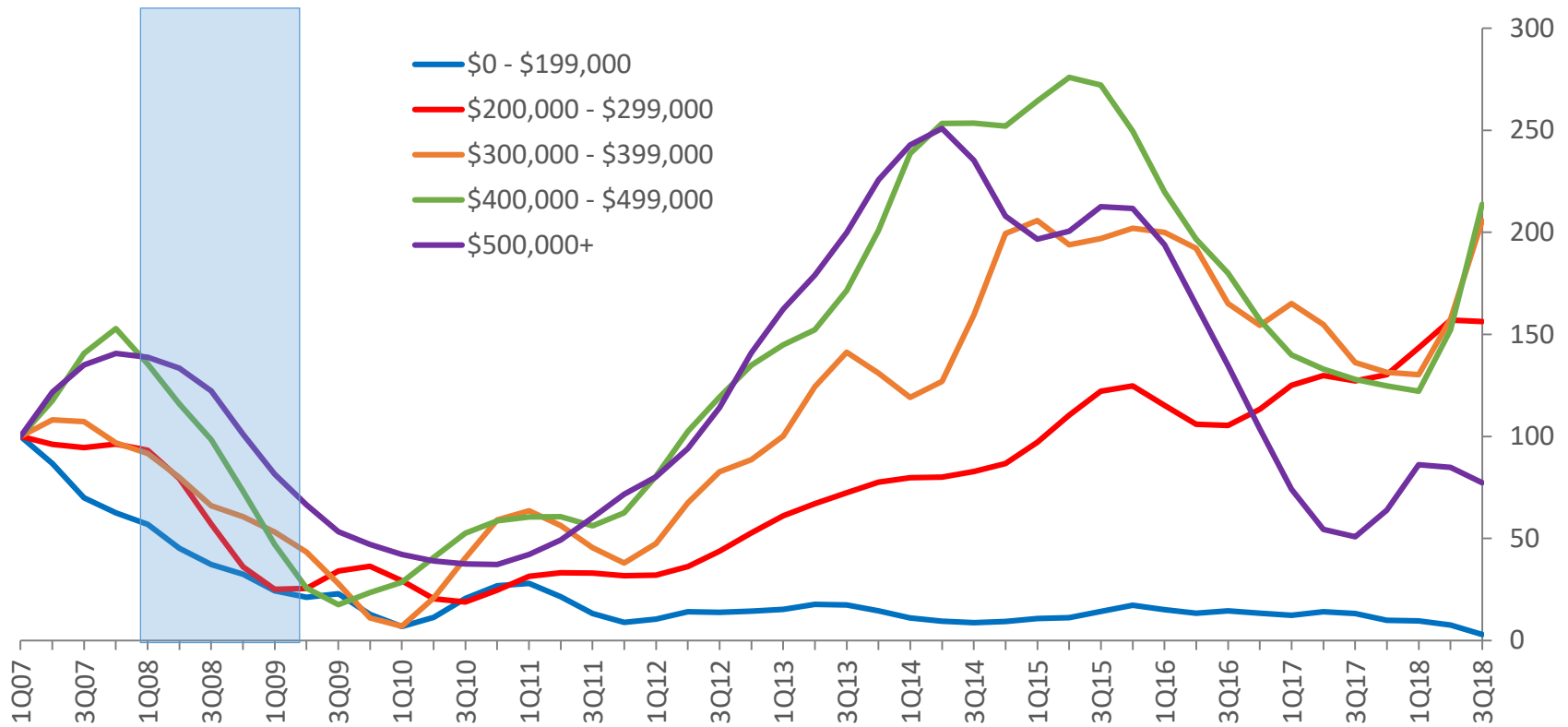


Note: Trend-Cycle Component. Shaded area refers to US recession
Source: U.S. Census Bureau and Real Estate Center at Texas A&M University



Supply of vacant developed lots increased with exception of homes with a sales price below \$200,000

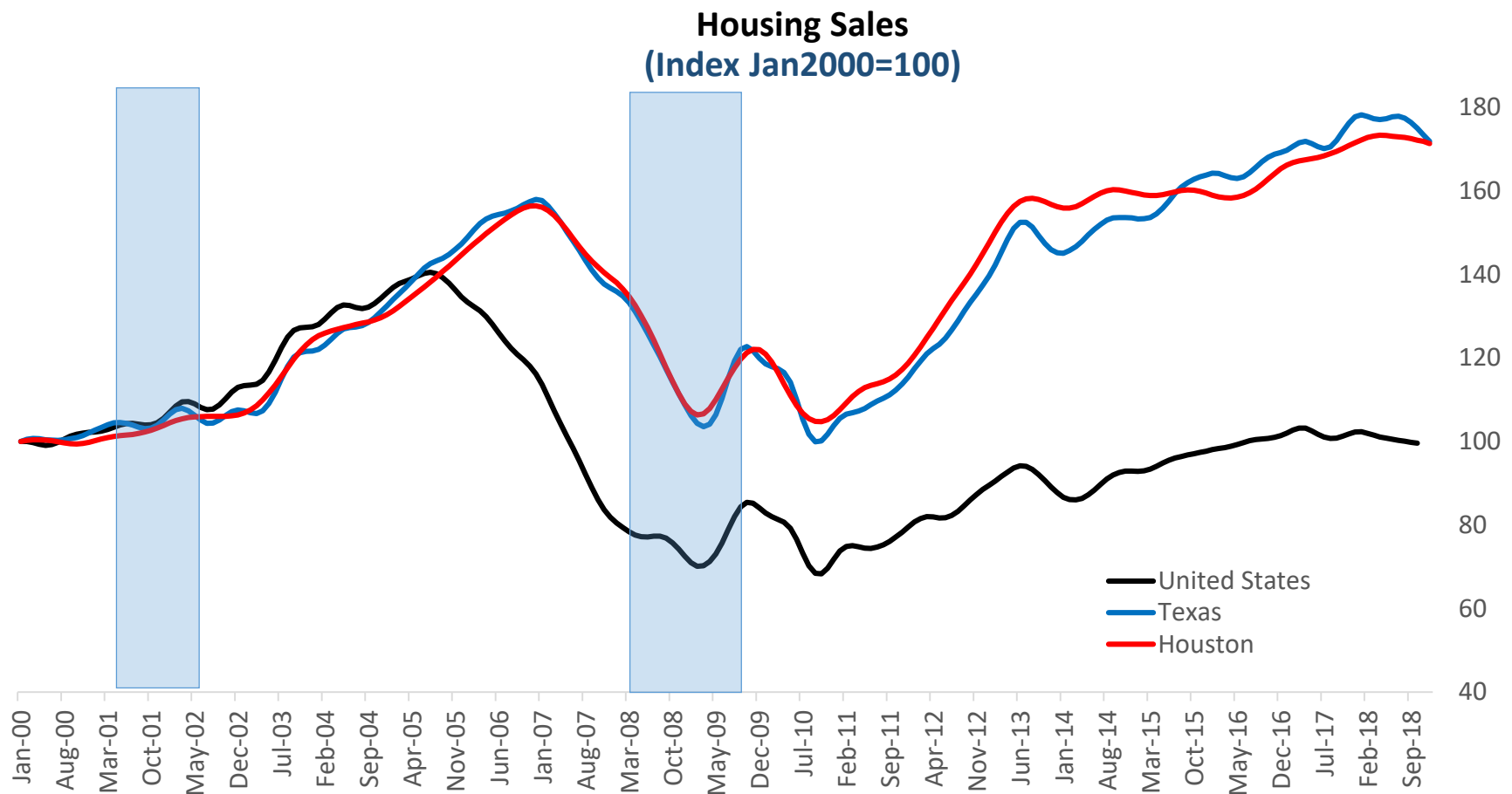
Vacant Developed Lot Supply
(Index Jan2007=100)



Note: Trend-Cycle Component. Shaded area refers to US recession
Source: Metrostudy.



Housing sales weakened at end of 2018, still a record year in sales

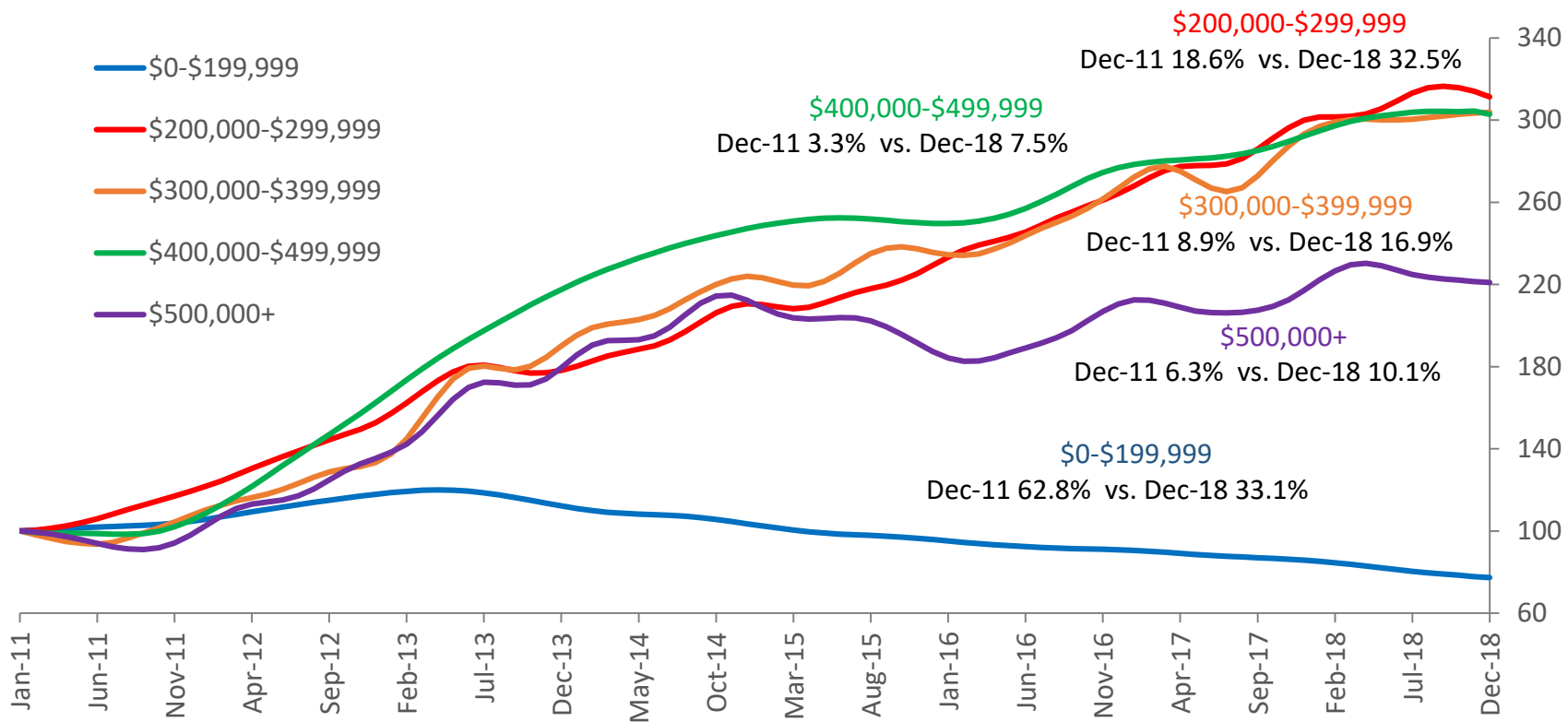


Note: Trend-Cycle Component. Shaded area refers to US recession. Sales for the United States include all existing homes and new single-family homes; new non-single-family homes are not included. Texas includes all existing and new homes.

Source: U.S. Census Bureau, National Association of Realtors, and Real Estate Center at Texas A&M University.

Housing sales slowed for all price cohorts

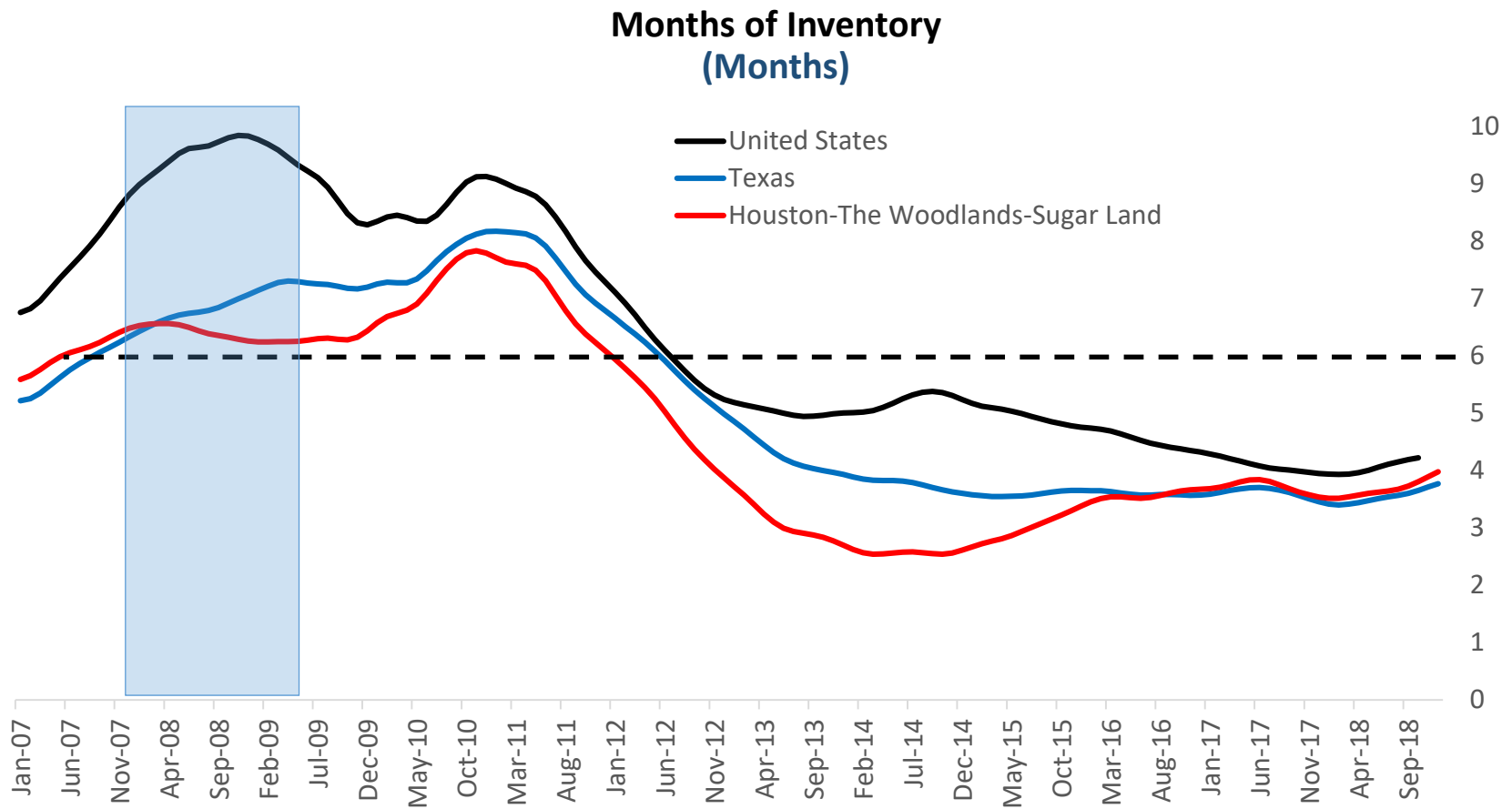
Housing Sales by Price Cohort
(Index Jan2000=100)



Note: Trend-Cycle Component. Includes existing and new homes.
Source: Real Estate Center at Texas A&M University.



Months of inventory seem to have reached a floor as demand softens

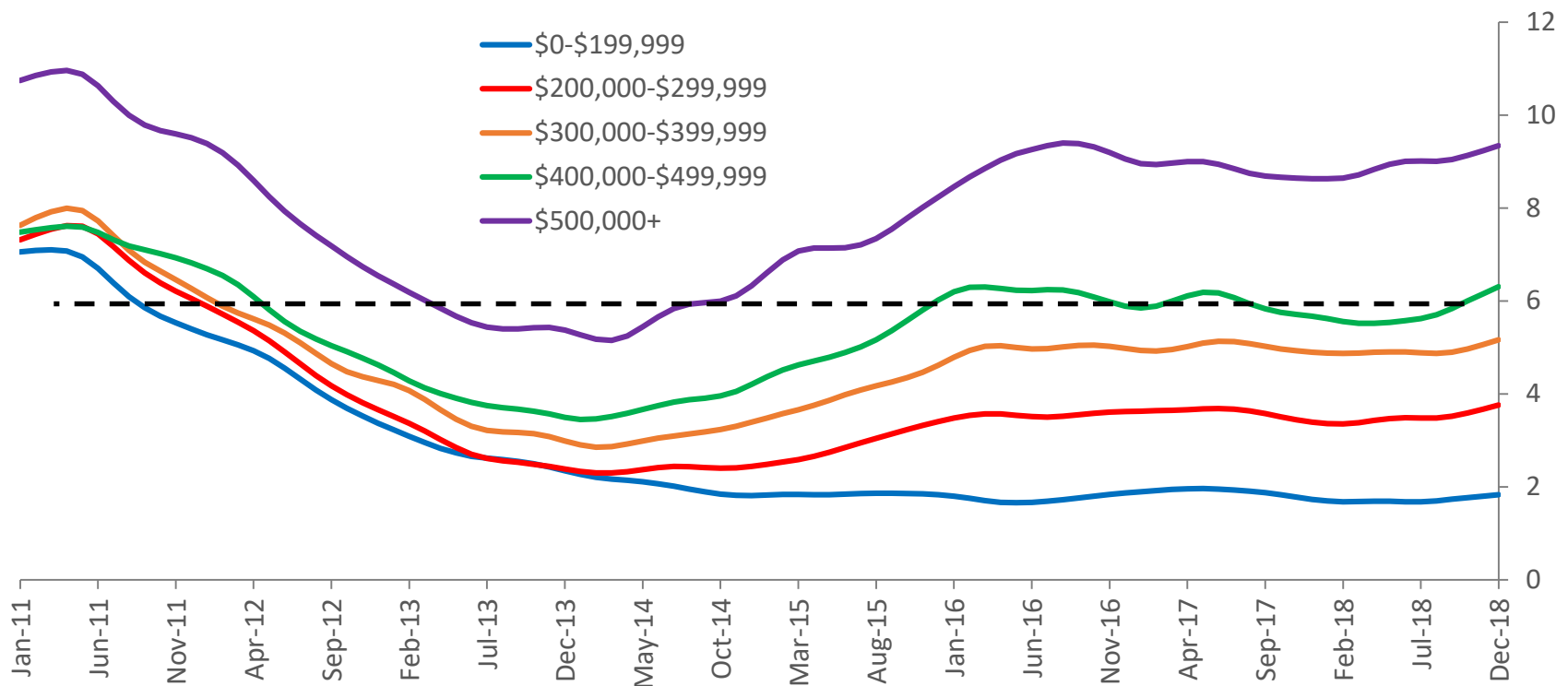


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Source: U.S. Census Bureau, National Association of Realtors, and Real Estate Center at Texas A&M University.

Months of inventory inched forward for all price cohorts

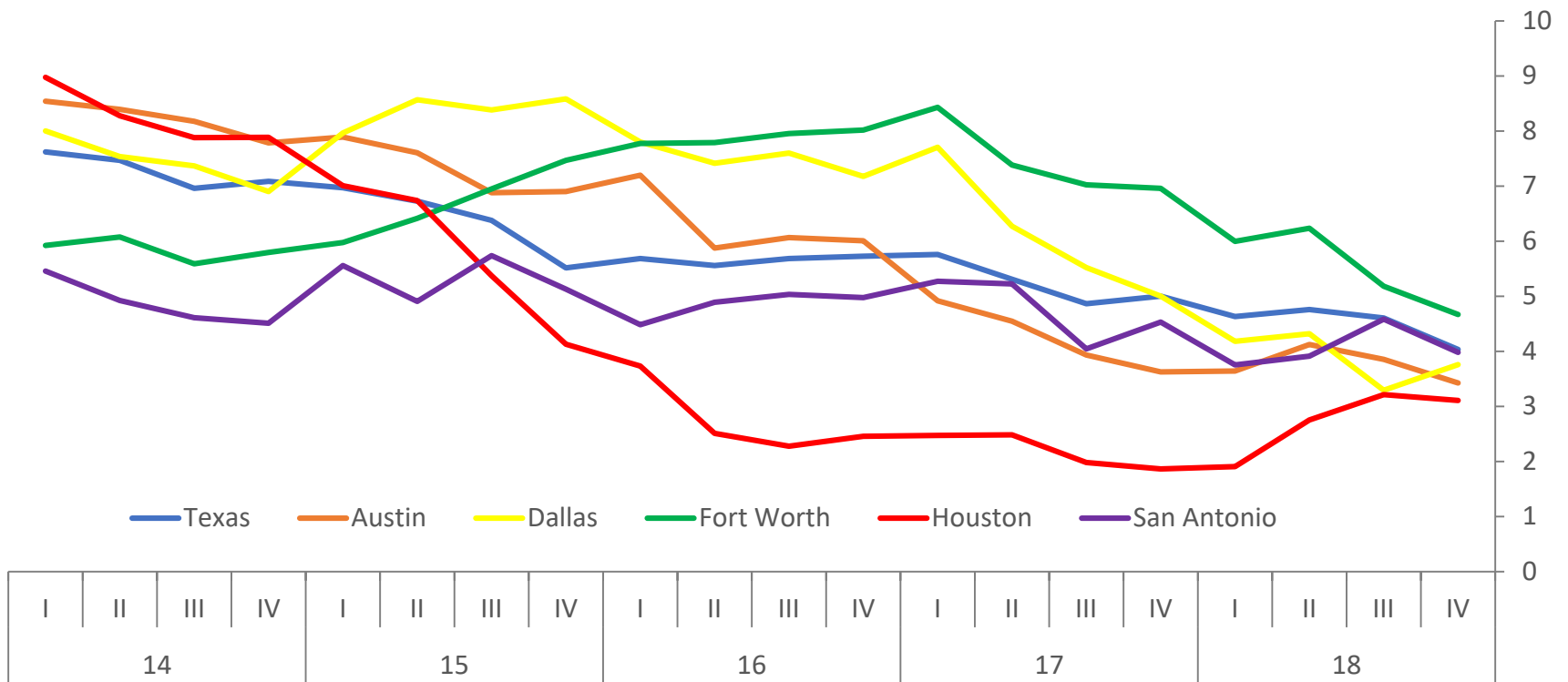
Months of Inventory by Price Cohort (Months)



Note: Trend-Cycle Component. Includes existing and new homes.
Source: Real Estate Center at Texas A&M University.

Recent pause in sales activity calmed home price appreciation

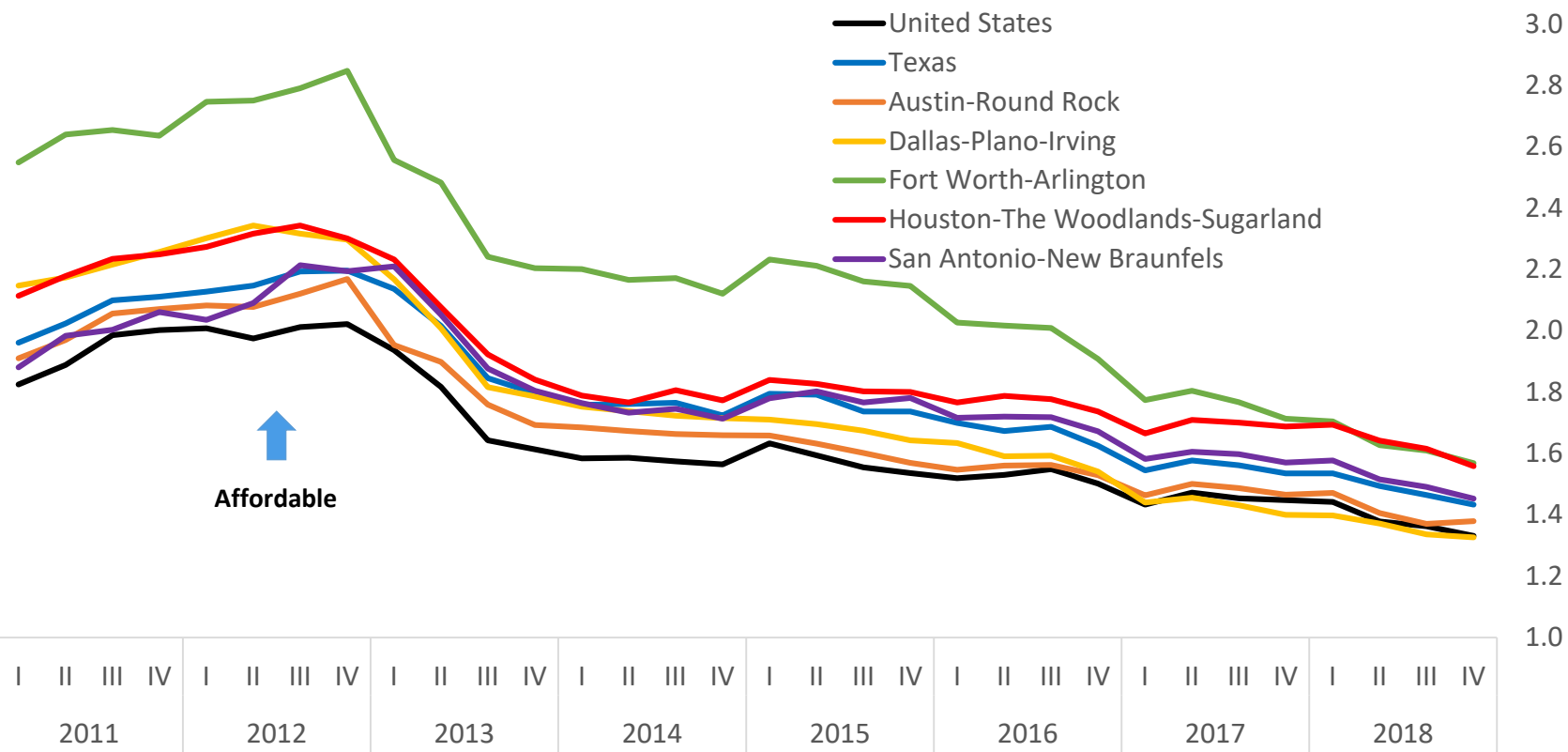
Real Estate Center Repeat Sales Housing Price Index
(Year-over-Year Percentage Change)



Note: The Repeat Sales Housing Price Index tracks real home price appreciation for residential single-family homes.
Source: Real Estate Center at Texas A&M University.

... but rising interest rates hindered affordability across state.

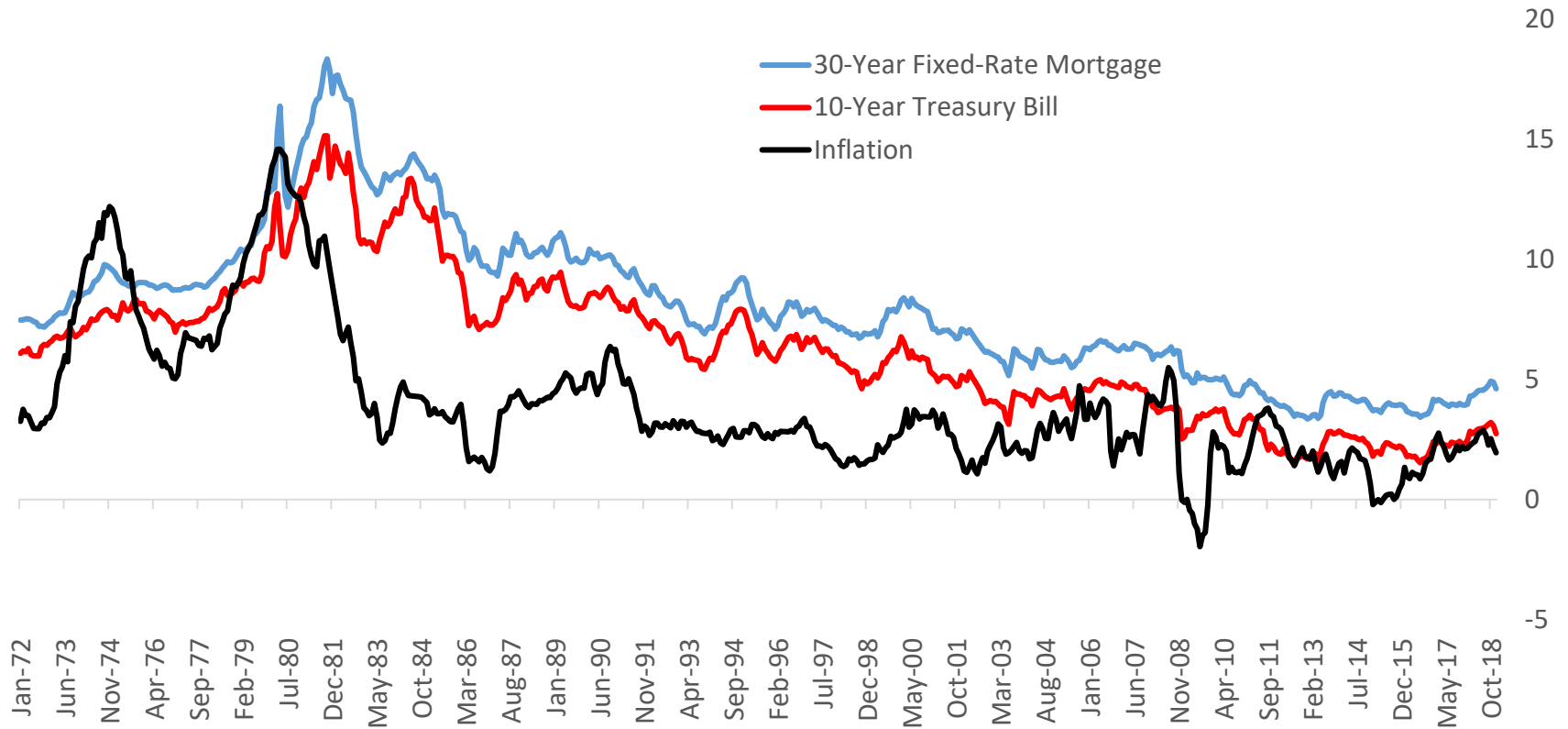
**Housing Affordability Index
(Index)**



Note: Seasonal Adjusted.
Source: Real Estate Center at Texas A&M University.

As inflation rises, so will nominal interest rates

**30-Year Mortgage Rate, 10-Year Bond Yield and Annual Inflation
(Percent)**



Note: Seasonally adjusted. CPI All Urban Consumers 1982-84=100.

Sources: Federal Home Loan Mortgage Corporation, Federal Reserve Board and Bureau of Labor Statistics

Mortgage rates and interest rates should increase

- Based on the work at the Dallas Fed, New York Fed and at the Federal Reserve Board,
 - ✓ Long-run real rate of interest is in a broad range around 0.50 to 0.75 percent,
or a nominal rate of roughly 2.50 to 2.75 percent.
 - ✓ Currently the Fed Funds rate at 2.40 percent.

In 2019, single-family housing sales projected to slowdown

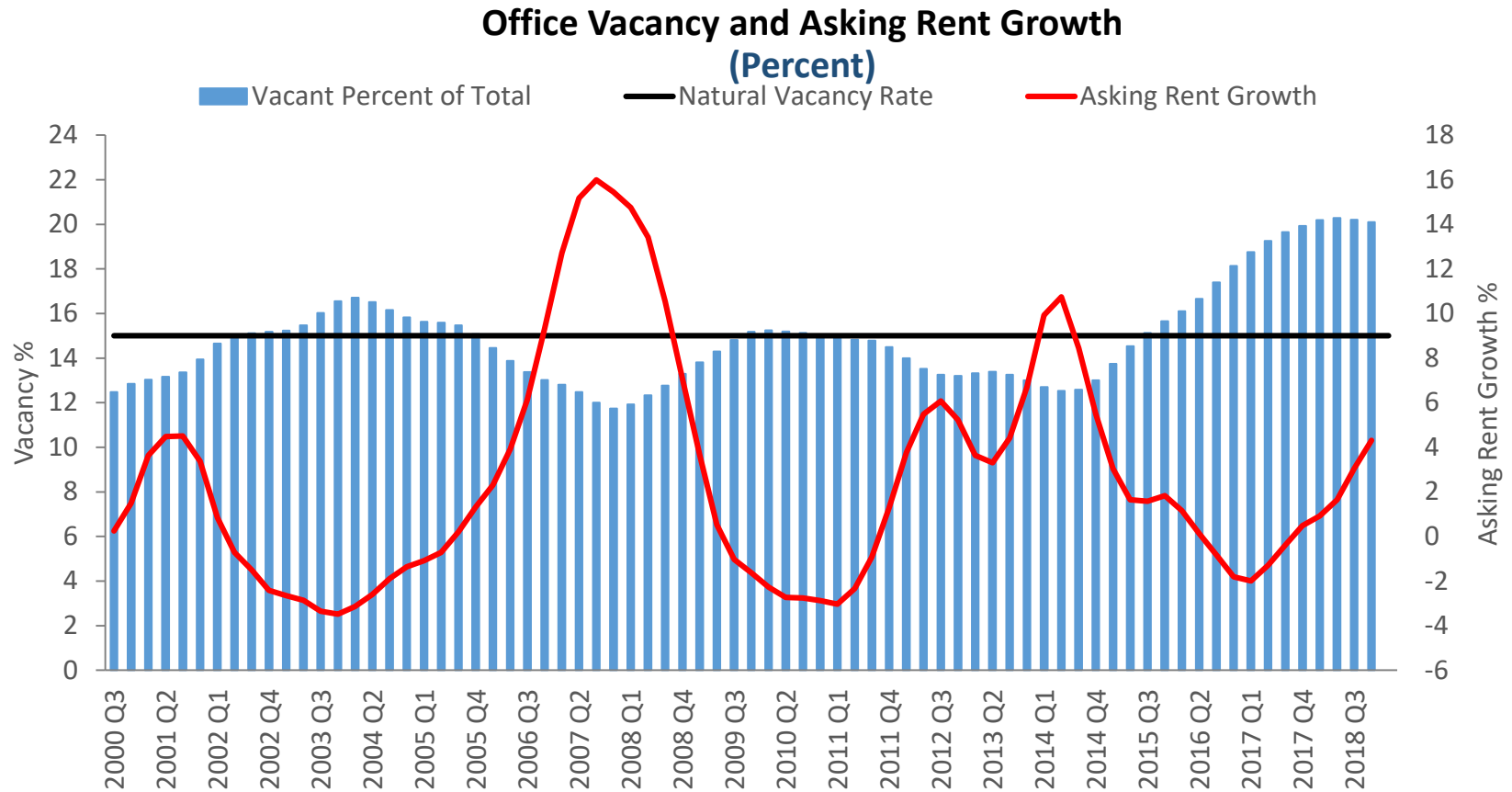
Single Family Forecast	2018 (%)	2019 (%)	2020(%)	1991-2018 (%)
Texas				
Housing Permits	5.7	2.1	1.0	5.4
Sales	1.8	0.9	3.4	4.6
Price per square foot	4.4	4.0	4.7	4.8
Houston				
Housing Permits	4.1	0.1	3.0	5.9
Sales	3.5	1.1	4.3	3.9
Price per square foot	3.1	4.6	5.1	5.3

Note: Estimated with October/December 2018 data. 2018 Housing Permits are forecasted.

Source: Real Estate Center at Texas A&M University

- Slowing economic and employment growth causing housing demand to soften.
- Price pressures projected to ease as housing demand weakens.
- Homebuilders stretch to increase production in entry and first move-up markets.

Office market seems to have reached bottom



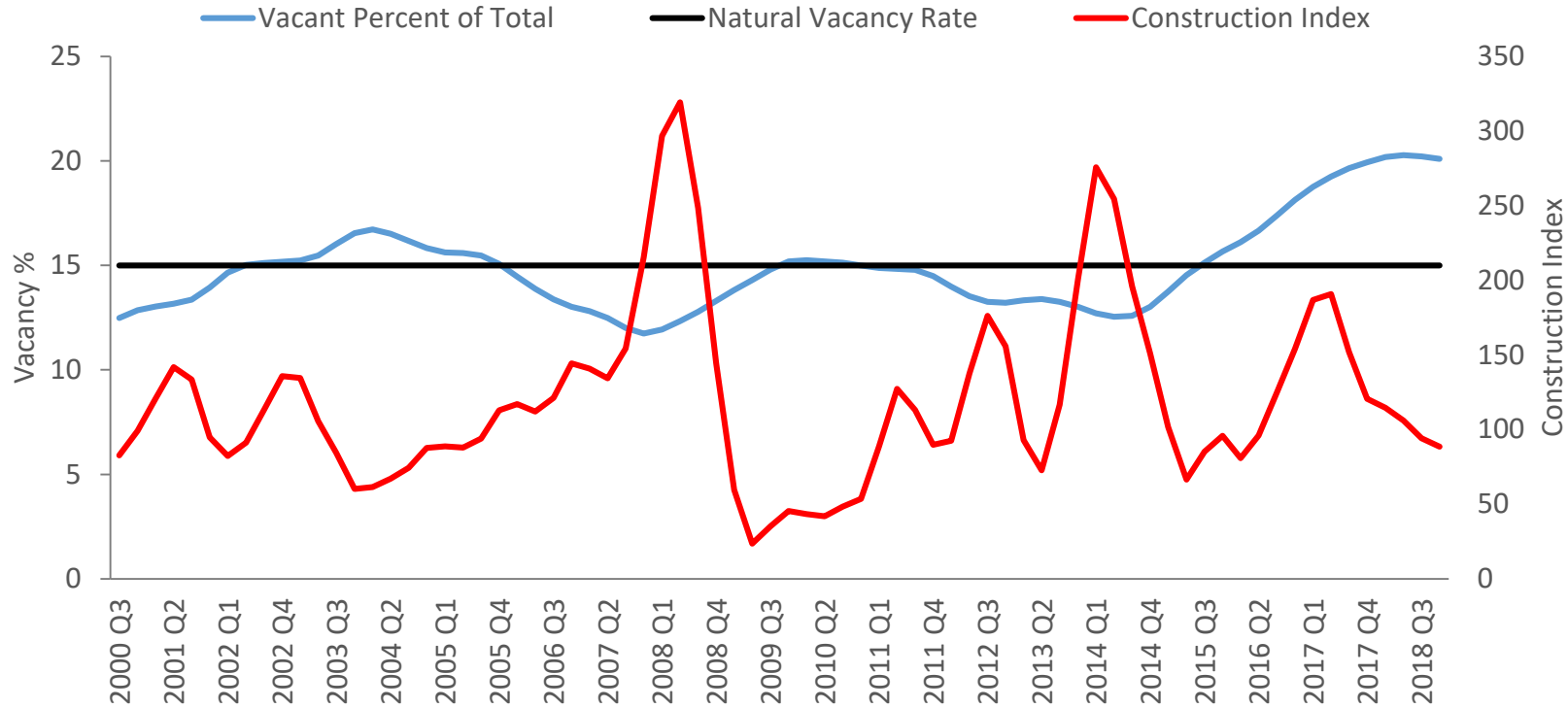
Note: Trend-Cycle Component.

Source: Costar and Real Estate Center at Texas A&M University.



New construction still on hold

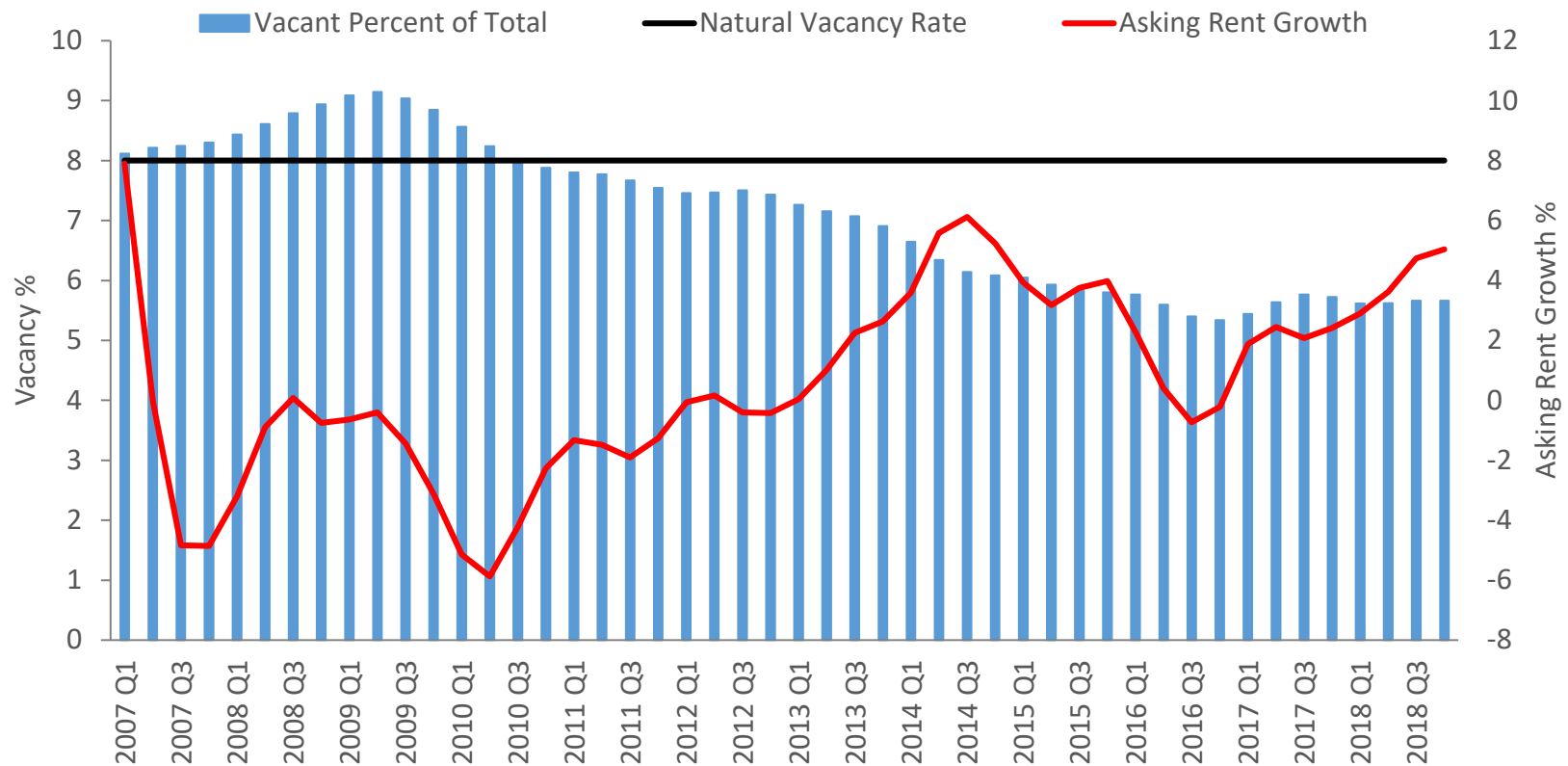
Office Vacancy and Construction Values
 (% , Index Jan2000Q3=100)



Note: Trend-Cycle Component. Inflation adjusted construction values.
 Source: Costar, Dodge Data and Analytics, and Real Estate Center at Texas A&M University.

Retail rents continue to register positive growth

Retail Vacancy and Asking Rent Growth (Percent)

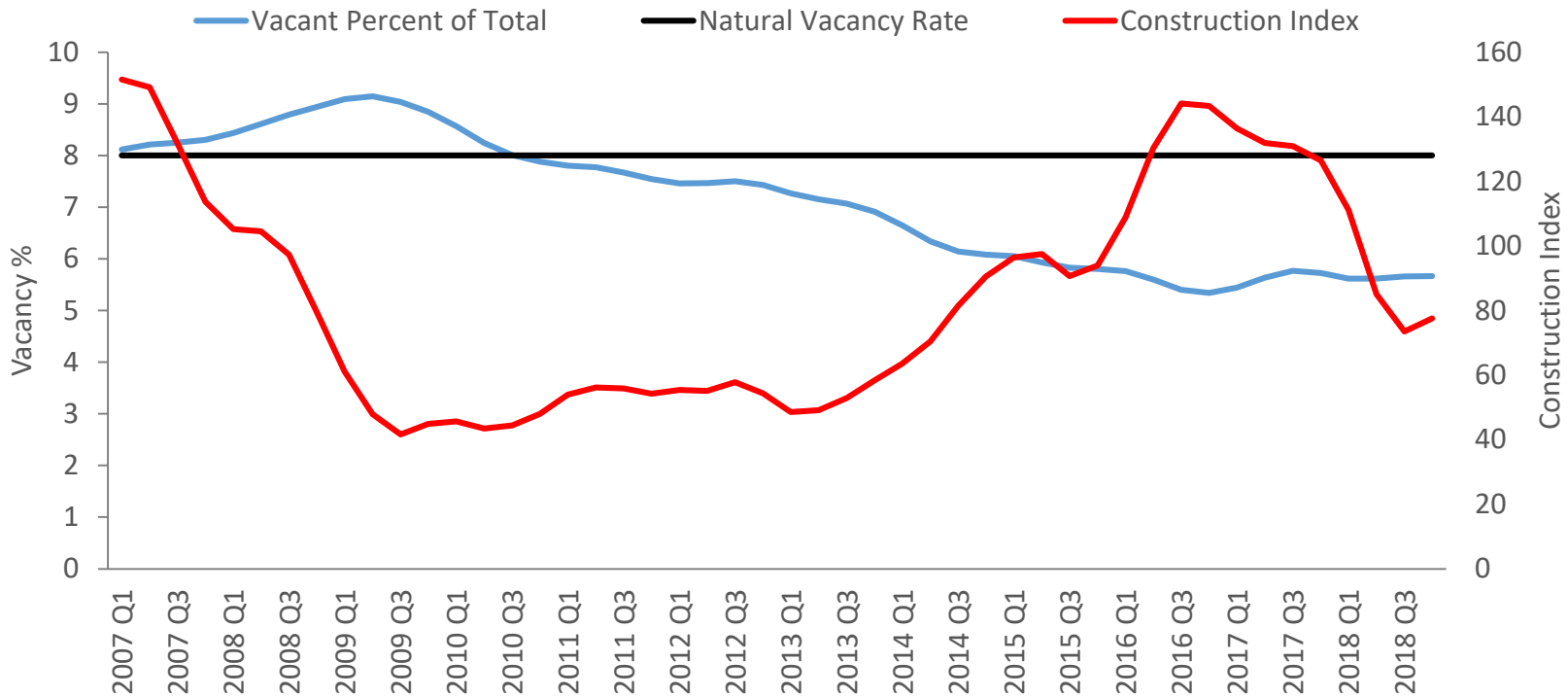


Note: Trend-Cycle Component.

Source: Costar and Real Estate Center at Texas A&M University.

New construction grew at end of 2018

Retail Vacancy and Construction Values
(%, Index Jan2000Q3=100)



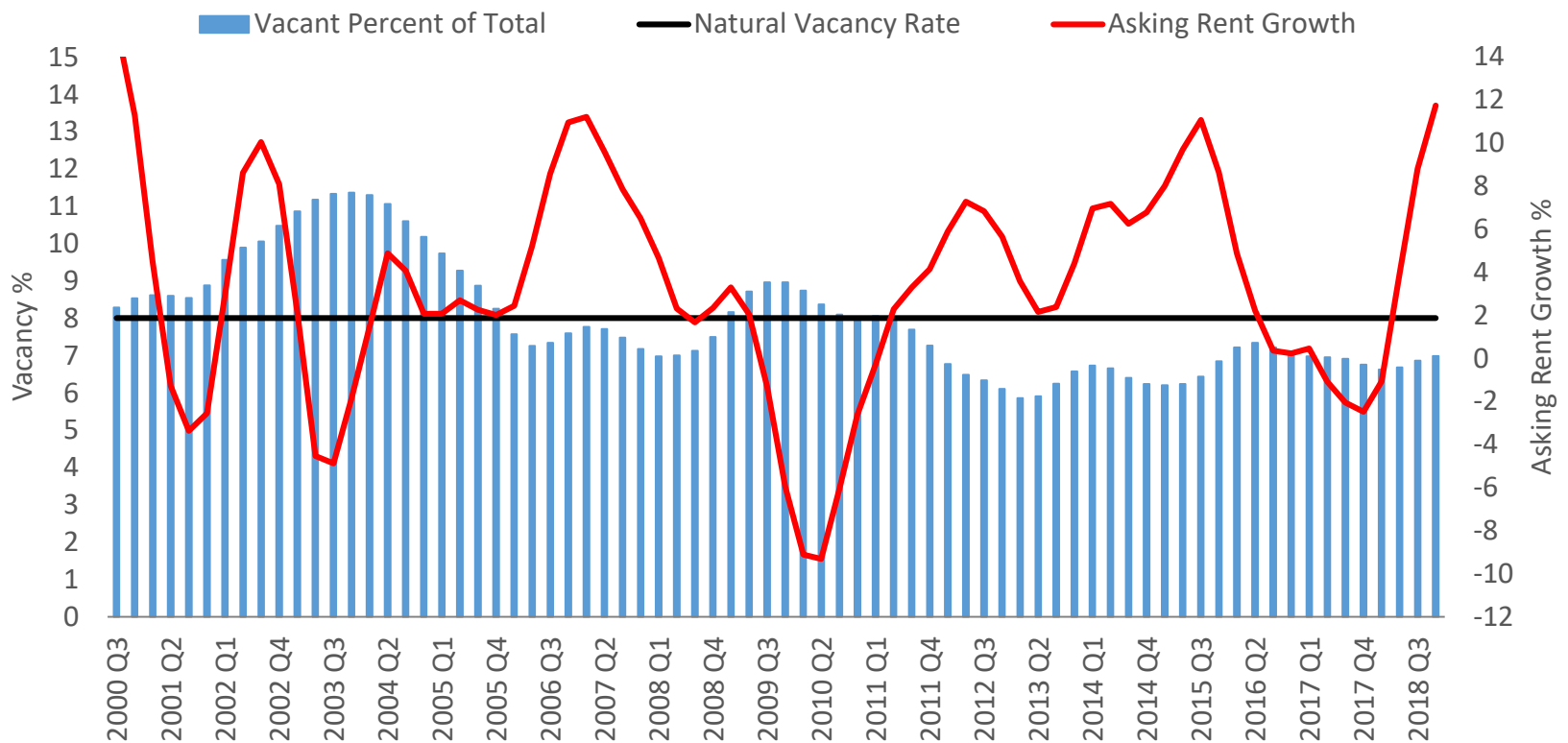
Note: Trend-Cycle Component. Inflation adjusted construction values.

Source: Costar, Dodge Data and Analytics, and Real Estate Center at Texas A&M University.



Rapid warehouse rent growth continues

Warehouse Vacancy and Asking Rent Growth (Percent)



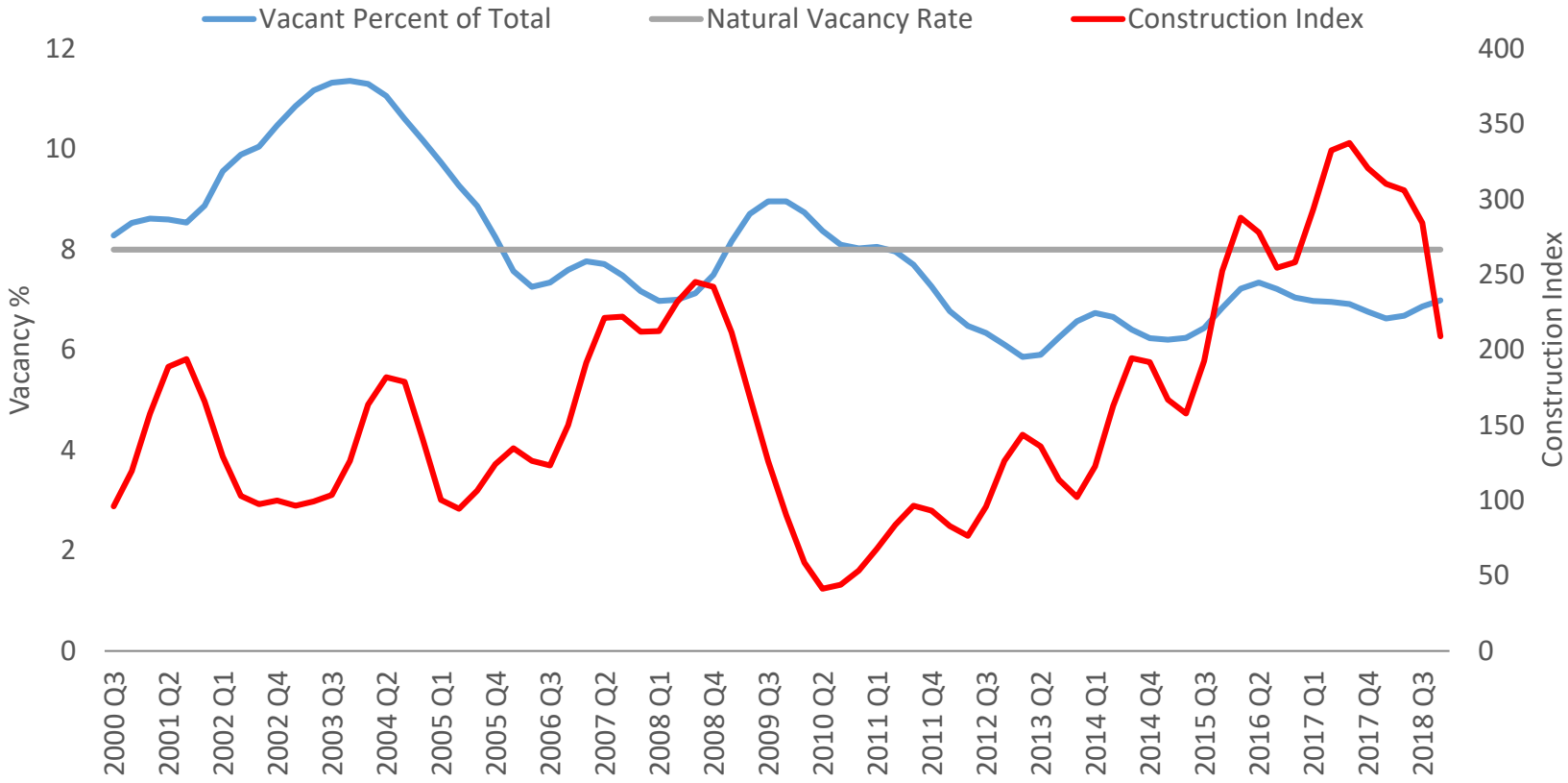
Note: Trend-Cycle Component.

Source: Costar and Real Estate Center at Texas A&M University.



New construction continues

Warehouse Vacancy and Construction Values
 (% , Index Jan2000Q3=100)



Note: Trend-Cycle Component. Inflation adjusted construction values.
 Source: Costar, Dodge Data and Analytics, and Real Estate Center at Texas A&M University.

In 2019, outlook for commercial real estate is positive

Projected Overall Vacancy Rates and Asking Rents							
Property Type	Natural Vacancy Rate	Vacancy Rates (%)			Asking Rents (y-o-y %)		
		2017	2018	2019	2017	2018	2019
Office	14.0	19.5	20.1	20.2	-0.8	2.4	2.5
Retail	7.0	5.7	5.6	5.7	2.6	4.2	3.7
Warehouse	8.0	6.9	6.8	6.6	-0.6	5.2	2.9

Note: Annual numbers represent the four-quarter average of the seasonally adjusted data. Rent growth is nominally estimated from the previous year's average.

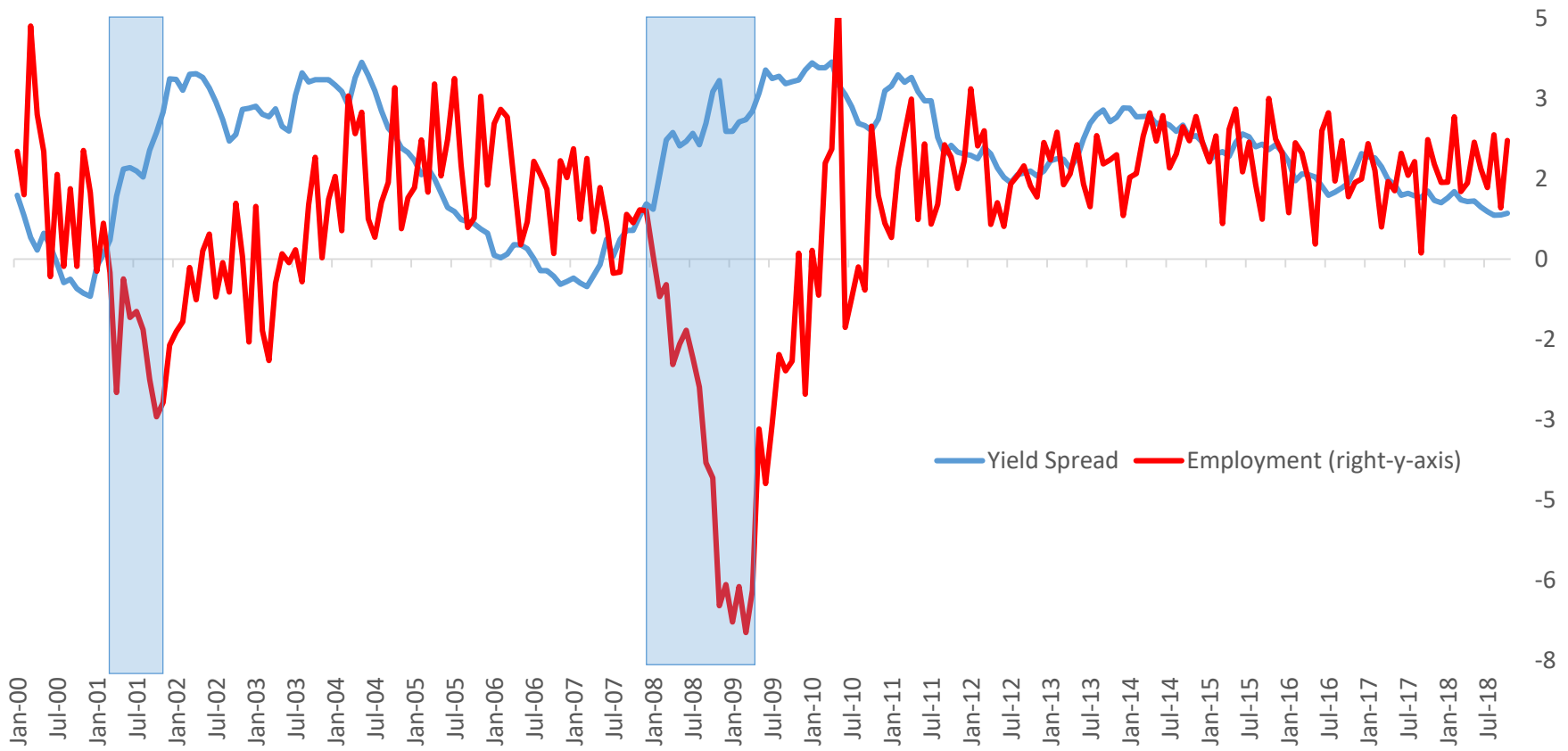
Source: CoStar and the Real Estate Center at Texas A&M University

Summary: slower growth and more uncertainty

- Economy still doing fine.
- In 2019, it will be slowing but still registering positive growth.
- Housing market will grow in 2019.
- Office market seems to have reached bottom, while retail and warehouse will continue to register strong growth.
- Energy and trade uncertainty will create headwinds.
- No recession is expected in 2019, How about 2020?

If yield curve inverts in 2019, raises probability of recession in 2020

**Yield Curve Spread and Nonfarm Employment Growth
(Percent)**



Note: Seasonal Adjustment. Shaded regions refer to US recessions.

Sources: Author's Calculations, based on data from Harvey Analytics and the National Bureau of Economic Research.

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www.recenter.tamu.edu

