The Houston Economy

Jesse Thompson
Regional Business Economist
The Federal Reserve Bank of Dallas, Houston Branch
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Drilling activity collapses

2015: Houston Plateaus
2016: Houston Loses a Few Jobs

Metro Down 14K+ Jobs ytd in August

U.S. (ex Texas)
Texas (ex Houston)

Oil prices stop falling in Q1:2016.

Employment

<table>
<thead>
<tr>
<th>Industry</th>
<th>Sept. to Dec.</th>
<th>Dec.15 to Dec.16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>Trade, transp &amp; utilities (20%)</td>
<td>1.9</td>
<td>-0.4</td>
</tr>
<tr>
<td>Professional &amp; business svc (16%)</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Government (13%)</td>
<td>-1.4</td>
<td>2.9</td>
</tr>
<tr>
<td>Education &amp; health services (13%)</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>Leisure &amp; hospitality (10%)</td>
<td></td>
<td>3.1</td>
</tr>
<tr>
<td>Manufacturing (7%)</td>
<td></td>
<td>3.6</td>
</tr>
<tr>
<td>Construction (7%)</td>
<td>-4.7</td>
<td>-2.5</td>
</tr>
<tr>
<td>Financial activities (5%)</td>
<td>-2.6</td>
<td>-2.6</td>
</tr>
<tr>
<td>Other services (4%)</td>
<td>-6.6</td>
<td>-0.5</td>
</tr>
<tr>
<td>Mining &amp; logging (3%)</td>
<td>-8.3</td>
<td>-4.4</td>
</tr>
</tbody>
</table>

NOTES: Data show seasonally adjusted and annualized percentage employment growth by industry supersector. Numbers in parentheses represent share of total employment and may not sum to 100 due to rounding. SOURCES: Bureau of Labor Statistics; adjustments by the Dallas Fed.
Real Retail Sales & Wages

Real Wages Paid & Retail Sales Down From 2014

Billions of 2016:Q1 dollars

Oil & Gas Extraction
Oil & Gas Extraction

U.S. Rig Counts and Houston Employment

Index, June 2014=105.79

Thousands of jobs

NOTE: Rig count and crude production seasonally adjusted. Rig count and nominal oil price indexed to June 2014.

Mining-related jobs: Total
75,000 Jobs lost since 2014.
Oil and Gas Jobs

Selected Mining-Related Job Losses Slowing

Note: data are three-month annualized percent changes.
SOURCE: Bureau of Labor statistics; Seasonal and other adjustments by the Dallas Fed.
Survey: Need WTI ~$50 to drill

In the top two areas in which your firm is active:
What WTI oil price does your firm need to profitably drill a new well?

[Bar chart showing various regions with their respective WTI prices needed for profitably drilling new wells.]

WTI: $53, ytd 2017

NOTES: Line depicts the mean and bars depict the range of responses. Sixty-three exploration and production firms answered this question. Other U.S. includes Bakken, Kansas and Gulf of Mexico, among other responses. SOURCE: Federal Reserve Bank of Dallas.
Oil & Gas Extraction

**Gas Basin Drilling Up**
- Marcellus (blue)
- Utica (light blue)
- Haynesville (light grey)

**Permian Drives Rig Recovery**
- Permian (red)
- Eagle Ford (dark red)
- Williston (pink)
- DJ-Niobrara (light red)

SOURCE: Baker Hughes
Total OECD Petroleum inventories projected to stay elevated

Source: Energy Information Administration.
Inventories

U.S. crude inventories erode, product inventories surge.

Note: dashed lines are seasonally adjusted. Numbers are for week ending November 25th.

SOURCE: EIA
Refining & Petrochemicals
Refining

Note: data are seasonally adjusted, centered three-month moving-averages.
Downstream Advantage

Downstream construction in Houston falls off in 2017 & 2018.

Value of projects delivered
Number of projects delivered

$55 Billion in capital Investments announced in Houston-area alone.

Note: Data are value of construction projects delivered.
Punchline

2015 & 2016:
Upstream Jobs **Down**
Downstream-Related Jobs **Up**

2017:
Upstream Jobs **Up**
Downstream-Related Jobs **Down**

Houston Region Job Growth **Could be anemic into 2018**
International Trade
Value of Trade Falls With Oil and Strong Dollar

NOTE: Data displayed are centered three-month moving averages, seasonally adjusted where appropriate.
Houston International Trade

Value of Trade Falls While Volumes Stay Stable

Value of Trade

Vessel Weight

Health Employment Growth

NOTES: Data show seasonally adjusted and annualized percentage employment growth. Numbers in parentheses represent share of total health employment and may not sum to 100 due to rounding.

Construction & Real Estate
Construction & Real Estate

Construction Employment Falls.

Sept.16 to Dec. 16
Dec.15 to Dec.16
Average since 2000

Percent*

-2.5  -2.6  -1.0  -2.7  7.8  -6.4  -6.9  -1.1  -0.8  -0.3

Total construction  Construction of buildings  Heavy & civil construction  Specialty trades  Real estate & leasing

NOTE: Real estate and leasing is not a subsector of construction.
Houston Home Sales

Tight Market Pushes Up Prices

Index Jan2000=100

*per the 12mma of payroll employment
Note: Seasonally adjusted
SOURCE: Houston Association of Realtors. Author's calculations.
Houston Home Sales

Multi-family pulls down total housing permits filed

Total
1-Family Units
Outlook
NOTE: Employment growth is a three-month percent change.

Outlook

Total Number of Job Advertisements Slipping

NOTE: Job ad data are a statistically optimized weighted moving averages, shifted forward two months.
Outlook

Major Leading Indexes paint improved, modest picture

NOTES: July Texas Leading Index data point is an estimate.
Looking Ahead
Looking Ahead

Forecast:
Dec-2015 to Dec-2016

**Houston Job Growth***:
-0.1% in 2016
0.5 to 1.5% in 2017

**Texas Job Growth**: 1.5-2.5% in 2017