TXOGA’s chartbook provides a vital reference for our members as well as those who are interested in understanding data which tell the story of what’s happening with the economy, oil and gas markets at the global, U.S. and Texas levels.

Key points for the week of June 19

- Although financial and commodity markets recently have been volatile due to uncertainties about the economy and monetary policies, high-frequency economic indicators currently offer encouraging signs of growth, including measured improvement in business conditions index as well as consumer sentiment; solid industrial production and employment gains; and normalization of corporate bond yield risk premia.

- Oil market fundamentals continued to tighten – Global and U.S. oil demand have remained strong, and regional 2023 oil supply estimates from EIA edged down. Notably, Texas has gained share among U.S. production.

- Global and U.S. natural gas markets have benefitted from strong historically supply, inventories and trade, but seasonal variation has continued to drive prices.

- Texas’ oil & natural gas industry direct employment (477,327 jobs) and total wages ($13.8 billion) rose by 8.3% y/y and 11.0% y/y, respectively in Q4 2022, the latest data from the Texas Workforce Commission and U.S. Bureau of Labor Statistics.
The headline is that production across Texas shale basins – the Eagle Ford and parts of the Permian, Haynesville, and Anadarko – has reached record highs in Q2 2023 despite drilling activity that has been more than 10% lower than it was when the production records were last set in late 2019 and early 2020.

TXOGA's modeling of Texas' oil and gas output by production area is consistent with the U.S. Energy Information Administration’s (EIA) Drilling Productivity Report (DPR) but offers additional insight into historical production changes.

We account for changes in drilling activity and rig productivity. Texas' productivity gains were apparent in 2018 through late 2020, as output grew strongly despite fewer rigs being employed. Productivity strengthened during the pandemic as producers were extremely selective in their geologic prospects and employed the most productive rigs and crews that were available through the downturn.

Since activity recovered starting in mid-2021, there has been less geologic selectivity and many new rigs and crews for an industry where learning-by-doing together matters, so Texas' rig productivity has fallen as of May 2023 by about 8% y/y, but remains 11% higher than it was in Dec. 2019 per EIA.

As a result of higher rig productivity but less drilling, Texas' production growth has moderated (to 7.0% per year) compared with 2018 to 2020 (9.1% per year).

With the downturn followed by slower recent production growth, legacy production from prior years represents a relatively a greater share of Texas’ total production. Since natural production decline rates diminish over time, this therefore means that Texas’ overall oil and natural gas has declined less rapidly. This is a subtle point but could lead some to underestimate Texas’ prospective oil and natural gas production.

Sources: EIA; Team analysis
As of mid-June, consumer sentiment rebounded to its strongest level in four months. The Univ. of Michigan survey of consumers has historically corresponded with the changes in U.S. consumer spending, which represents 68% of GDP. Sentiment has remained historically weak, but consumer spending has continued to grow slowly.

The large U.S. trade deficit has dragged on growth. The U.S. real trade deficit continued in Q1 2023 at an annualized rate of $1.24 trillion, which if sustained would represent the second largest annual deficit in 94 years on record.

Investment has decreased despite along with weak industrial production growth. Industrial production growth (0.3% y/y in Q2) and capacity utilization (79.6% in May) historically correspond with U.S. investment changes. Weak pub positive production growth could enable some recovery in investment.

Interest rates have risen, but the premium for low credit quality returned to its 2018-2019 levels. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. HY rates averaged 11.1% in 2018-2019 but 14.2% in the first half of June, 9.0% above the Fed Funds rate, which is a similar spread to 2018-2019.

Anemic conditions for growth. The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A quarterly average of the ADS index has improved from negative readings so far in 2023, which historically corresponds with slow but improved growth conditions.

Labor markets still solid. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose to 3.7% in May per BLS, while non-farm payrolls increased by 339,000, which is historically solid.
Led by resurgent emerging markets, global oil demand is expected to reach a record 102.7 mb/d in 2024 per EIA.

EIA’s oil production estimates of 1.5 mb/d in 2023 and 1.3 mb/d in 2024 are volumes needed to balance global markets in their view. U.S. assumed to be largest single contributor this year, but could be impeded by activity and productivity levels.

Under these assumptions, EIA projects a balanced global oil market in Q3 2023 and Brent crude oil prices over $80 per barrel.

Global oil market balance at-a-glance

- Global oil demand and GDP
- Global demand/supply & Brent prices (June 2023)
- Oil production by country/region

Sources: EIA; BLS
WTI crude oil price mean reversion analysis

Dollars per barrel (2023$)

Mean reversion analysis can be useful in assessing short-term market actions. The historical mean reversion target has risen and lined up with prices as of late May. Futures prices remain slightly backwardated, and confidence intervals based on past prices show the potential for greater upside than downside.

WTI crude prompt month futures prices

Dollars per barrel

Oil prices dipped below $70 per barrel in the second week of June but rebounded as the U.S. Federal Reserve held off on any rate hikes.

U.S. petroleum net exports (imports)

Million barrels per day, mb/d

Global demand for U.S. oil has remained solid. Petroleum net exports were 1.2 million barrels per day (mb/d) for the week ended June 9. In 2023 so far, there has only been one week (Feb. 3) with petroleum net imports, so 2023 has remained on track to set a U.S. export record.

U.S. petroleum demand

Million barrels per day (mb/d)

For the week ended June 9, U.S. petroleum demand of 20.5 mb/d rose by 3.6% y/y and stood in the top 30th percentile of its five-year range.

WTI crude prompt month futures slow stochastic

Index level

Oil price momentum shifted on June 15 – and reinforced the continued importance of monetary policy and consequently economic uncertainties for the oil market outlook.

U.S. ending stocks of crude oil (commercial & SPR)

Million barrels (mb)

Crude ending stocks rose by 6.0 mb for the week ended June 9 but remain down by 22.3 mb (2.7%) so far in Q2 2023.

sources: EIA; BLS; Team analysis
Natural gas prices rose to $2.33 per mmBtu for July 2023 delivery and were aligned with their mean reversion target. Historical variation has continued to show more potential upside than downside.

Natural gas prices at Henry Hub have remained relatively low but rose above $2.60 per mmBtu as of June 16, their highest since March 2023.

Although consumption through last winter was unseasonably low natural gas consumption has recently topped its five-year range with comparable nominal prices.
Lower prices have recently corresponded with less drilling activity in Texas.

Texas crude oil production, Jan. 2018 – May 2023
Million barrels per day (mb/d)

Following record high 5.86 mb/d of Texas crude oil production in Jan., production apparently slipped to 5.26 mb/d in Feb. per EIA. Based on weekly Texas drilling activity and U.S. production, however, TXOGA estimates that Texas crude oil prod. eclipsed 5.4 mb/d in Mar. and Apr..

Texas natural gas production
Billion cubic feet per day (bcf/d)

Texas natural gas production has remained near its record high levels.

U.S. and Texas crude oil production, Jan. 2018 – May 2023
Million barrels per day (mb/d)

Texas has driven over 60% of U.S. crude oil production growth since 2018 and (ytd through May 2023) and accounted for an increased share of total U.S. oil production.

Texas basin wellhead oil & natural gas production
Million barrels per day oil-equivalent

EIA’s drilling productivity report estimates that production across Texas shale basins -- Eagle Ford and parts of the Permian, Hayevesil, and Anadarko -- have set a record high in Q2 2023.

Rig productivity by basin – new per prod. per month
Thousand barrels per day oil-equivalent, kb/ doe

EIA-estimated rig productivity decreased by about 5% y/y in May 2023 across oil-producing basins but remained 17% higher than it was in Dec. 2019.

Texas drilling activity and WTI crude oil futures prices

Lower prices have recently corresponded with less drilling activity in Texas.
Texas' oil and natural gas industry employment and wages have risen solidly.

**Texas Oil & Gas Industry Employment Rose by +8.3% y/y**

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<thead>
<tr>
<th>Industry</th>
<th>Jobs 2021</th>
<th>Jobs 2022</th>
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<tbody>
<tr>
<td>Oil &amp; gas extraction</td>
<td>440,738</td>
<td>477,327</td>
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<td>Oil &amp; gas drilling</td>
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<td>Pipeline construction</td>
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**Texas Oil & Gas Industry Wages Rose by +11.0% y/y**

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<th>Billion 2021</th>
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<tr>
<td>Oil &amp; gas extraction</td>
<td>$12.4 B</td>
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* Other industry segments include petroleum and pet. product wholesalers, fuel dealers, lubricant mfg., asphalt mfg., industrial sand mining, nitrogenous fertilizer mfg., basic organic chem. mfg., plastics and resin mfg.

**Heatmap of employment changes by county**

Sources: BEA; BLS.
Texas’ energy consumption hinges on oil and natural gas

- **Oil & Gas Are Essential to Texas.** Since 2018, oil & natural gas supplied over 80% of the energy that powers Texas’ economy and enables Texans’ lives.

- **Texas Is The Heart of American Industry.** Nearly half of the primary energy consumed in Texas serves its industrial sector, which requires more than four times as much energy as California’s industrial sector.

- **The Largest Electricity Generating State.** Texas generates the most electricity of any U.S. state – and more than twice as much as Florida.

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**Texas oil and natural gas consumption vs. GDP, 2010-2023e**

- **Texas’ energy needs have continued to grow with its economy.** Since 2010, Texans have increased their consumption of petroleum and natural gas each by about 30%, supporting consumers, industry including electricity generation, and transportation.

- **Although Texas’ economy and petroleum consumption decreased during the 2020 pandemic, the state’s natural gas consumption rose and offset 90% of the decrease, which underscores the essentiality of oil and natural gas to the state’s economy.**

The Texas State Comptroller estimates GDP growth of 1.4% in 2023, which could correspond with record-high state consumption of oil and natural gas in 2023.

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**Texas Energy Consumption in 2019: 14165 Trillion BTU**

- **Texas is the largest electricity generating state.** Texas generates the most electricity of any U.S. state – and more than twice as much as Florida.

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**Sources:** EIA; BEA; LLNL