



**November 27, 2023**



**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.**

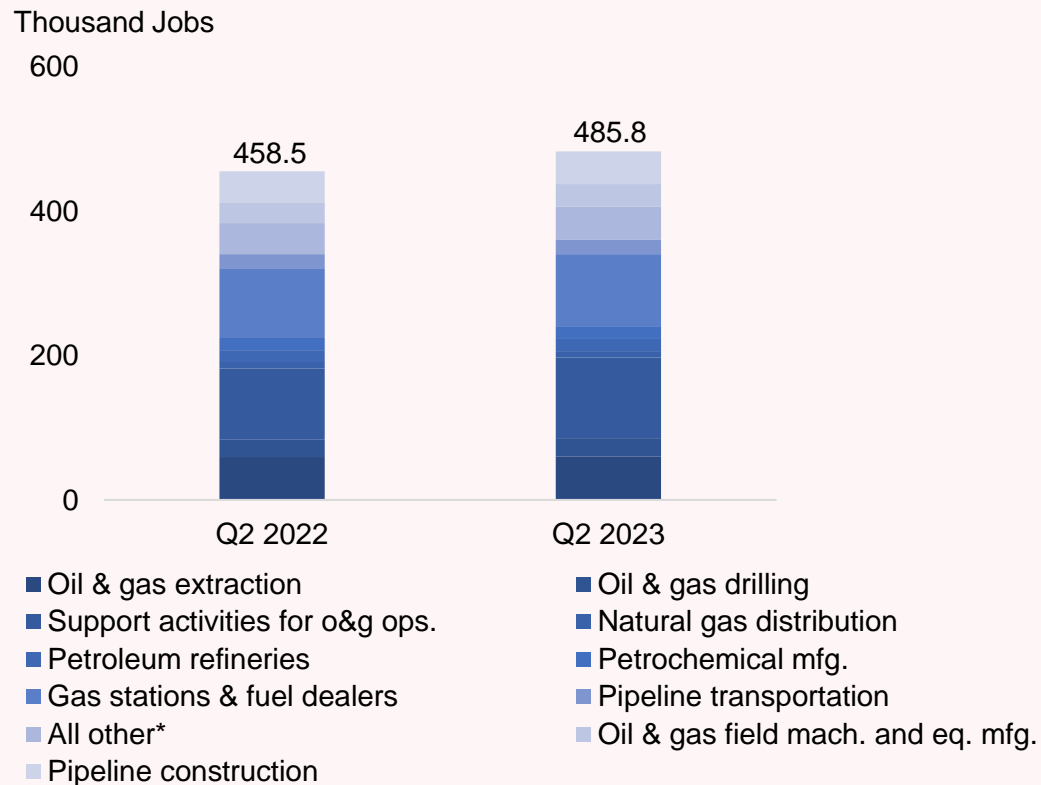
## **Key points for the week of November 24, 2023**

- ▶ **Mixed economic indicators.** The yield premium for lower-grade corporate bonds remained steady during the week ended November 24. According to the ADS Business Conditions Index from the Philadelphia Federal Reserve Bank, current business conditions weakened but suggest a continuation of U.S. GDP growth.
- ▶ **Weakened oil market dynamics.** Weekly data showed U.S. ending stocks of crude oil (excluding the Strategic Petroleum Reserve) rose by 8.7 million barrels for the week ended Nov. 17 despite strong petroleum exports and solid domestic demand.
- ▶ **U.S. natural gas prices fell despite record exports and strong consumption.** U.S. natural gas prices remained below \$3 per million Btu for the week ended November 24. With the latest price decreases, natural gas prices have fallen below their historical mean.
- ▶ **Texas oil and natural gas jobs and wages rose.** As highlighted in the [Chart of the Week](#), Texas' oil and natural gas industry employment rose by 6.0% y/y in Q2 2023 with over half of the job growth in upstream drilling, extraction and support services, per data from the U.S. Census Bureau and Texas Workforce Commission

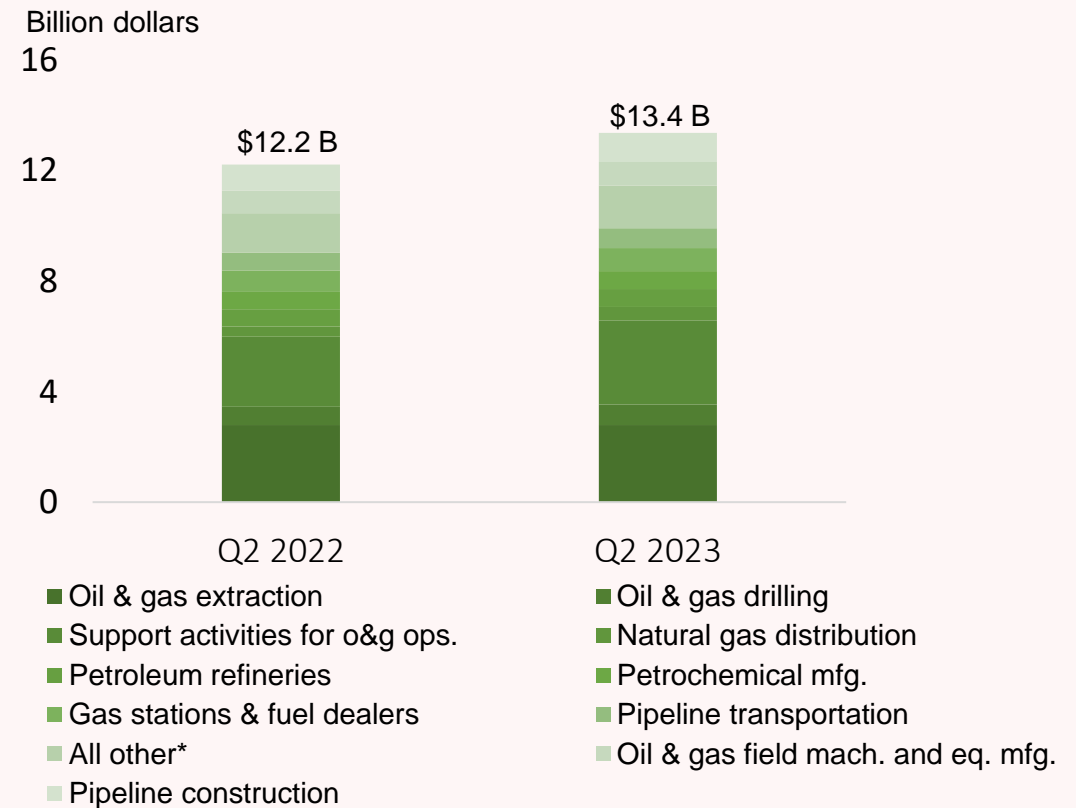
# TXOGA Chart of the Week: The Texas' oil and natural gas industry's jobs and wages rose solidly

- › Texas' oil and natural gas industry employment rose by 6.0% y/y in Q2 2023 with over half of the job growth in upstream drilling, extraction and support services, per data from the U.S. Census Bureau and Texas Workforce Commission
- › Industry wage growth of 9.3% y/y outpaced job growth of 6.0% y/y, which reflected wage escalation

**Texas Oil & Gas Industry Employment Rose by +6.0% y/y in Q2 2023**



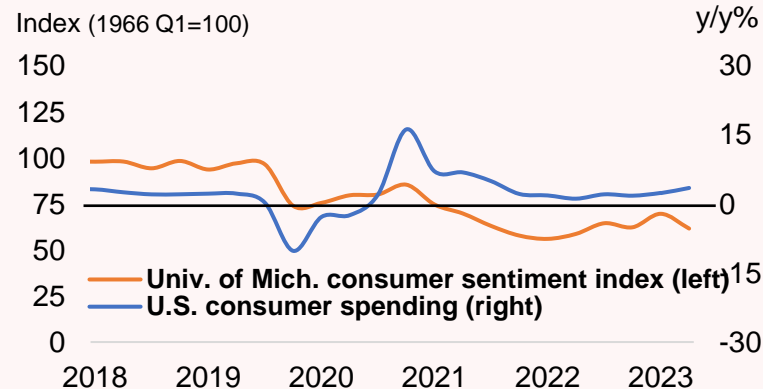
**Texas Oil & Gas Industry Quarterly Wages Rose by +9.3% y/y in Q2 2023**



\* 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.

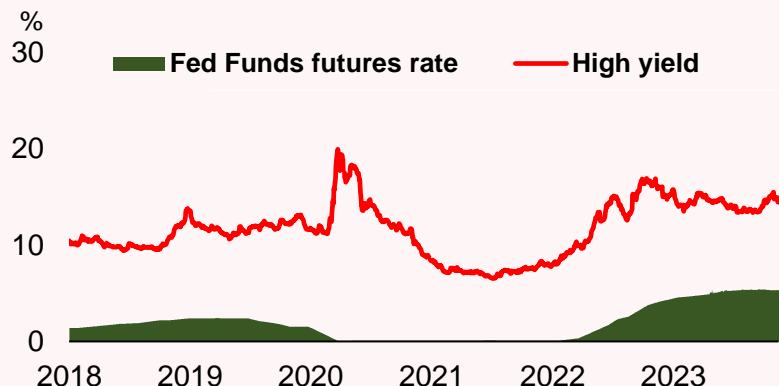
# U.S. economic indicators

## Consumer sentiment vs. spending



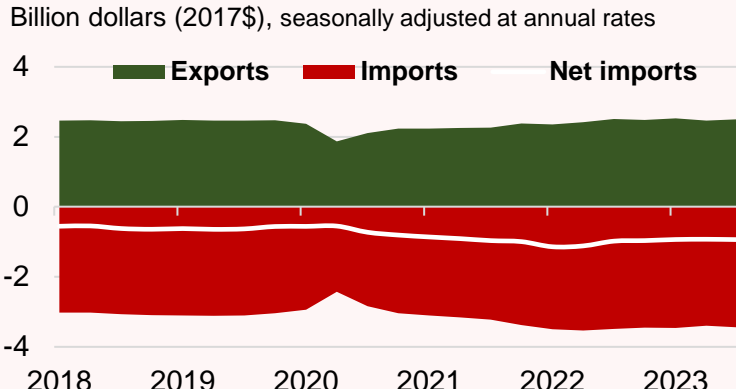
**Consumer sentiment weakened entering November.** In its initial reading for November, the Univ. of Michigan consumer sentiment index fell for a fourth straight month, mainly due to concerns about the negative effects of high interest rates. The index has nevertheless remained consistent with slow consumer spending growth.

## Fed Funds rate and CCC and lower corporate bond yields



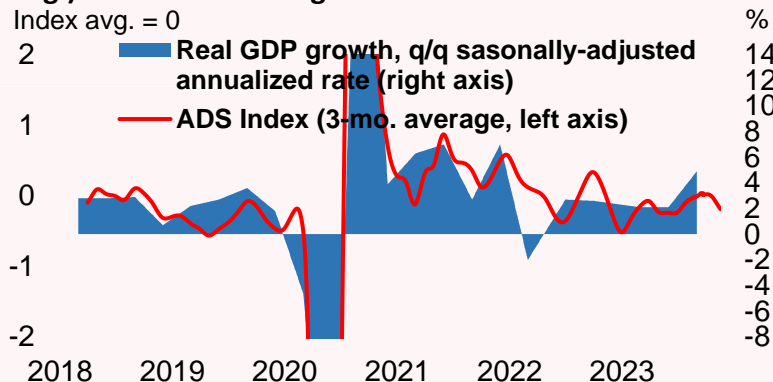
**Low credit quality premium stable.** High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. HY rates remained steady for the week ended Nov. 24 at 14.43%, while the Fed Funds futures held at 5.3%.

## Real net exports of goods and services



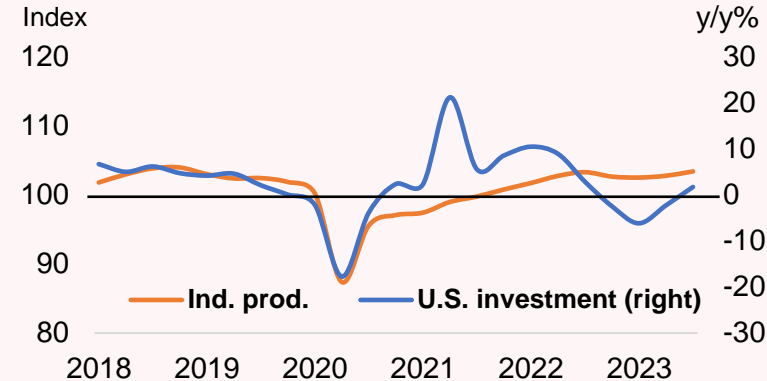
**The U.S. trade deficit widened in Q3 2023.** The U.S. real trade deficit ran at an annualized rate of \$938 billion in Q3 2023, per the U.S. Bureau of Economic Analysis. Petroleum and product exports of \$185 billion were partially offset by imports of \$167 billion for net surplus of \$18 billion for Q3 on an annualized basis, down \$25.4 billion in the same quarter a year ago.

## Aruoba-Diebold-Scotti Business Conditions Index (qtr. avg.) vs. U.S. real GDP growth



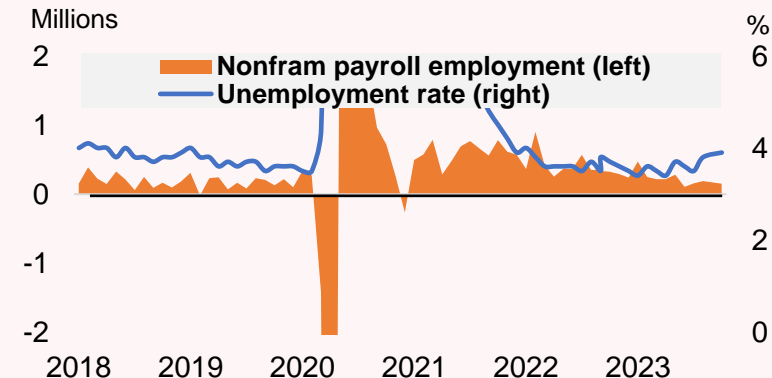
**Slower growth conditions.** The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, is a leading indicator of GDP growth. A rolling 3-month average of the ADS index has slipped but remained consistent with continued GDP growth.

## Industrial production and investment growth



**Investment resumed growth** of 1.8% y/y in Q3 2023 in the initial reading of Q3 2023 GDP by the Bureau of Economic Analysis. This growth was consistent with changes in industrial production, which grew by 0.1% y/y in Sep. along with a capacity utilization rate of 79.7%.

## Nonfarm payroll employment & unemployment rate

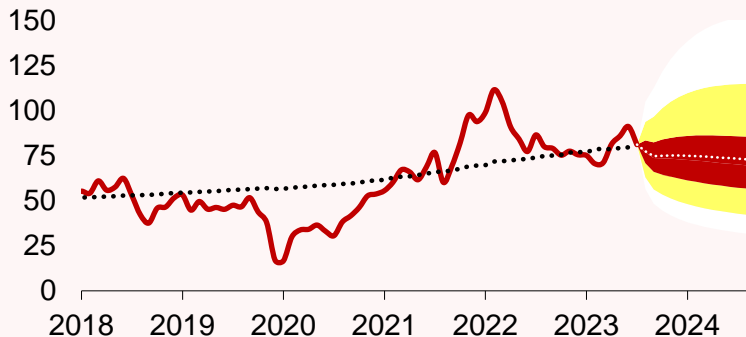


**With tepid payroll increases, the unemployment rate edged up in October.** The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate rose by 0.1% to 3.9% in October per BLS, while non-farm payrolls rose by 150,000, their lowest for the month of October.

# U.S. oil market indicators

## WTI crude oil price mean reversion analysis

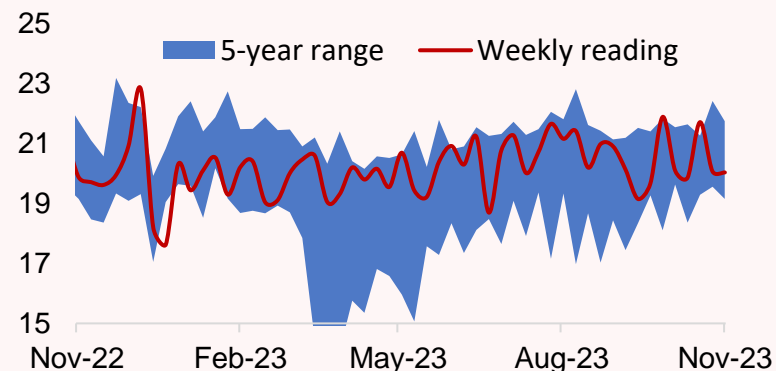
Dollars per barrel (2023\$)



**Futures prices have fallen below their historical mean.** Mean reversion analysis can be useful in to assess short-term market actions. As prices decreased the past two weeks, they aligned with the best-fit curve through historical prices (MR target). The futures price strip has remained below recent prices (backwardated). Confidence intervals based on past prices show the potential for greater upside than downside.

## U.S. petroleum demand

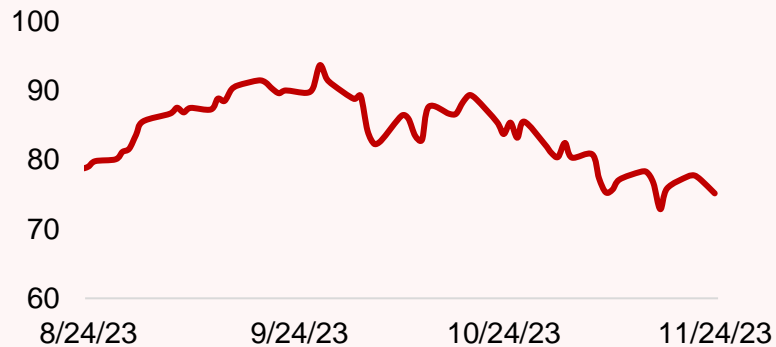
Million barrels per day (mb/d)



**Petroleum demand solid.** U.S. petroleum demand, as measured by deliveries, was 20.0 mb/d for the week ended Nov. 17 and remained in the middle of the five-year range.

## WTI crude prompt month futures prices

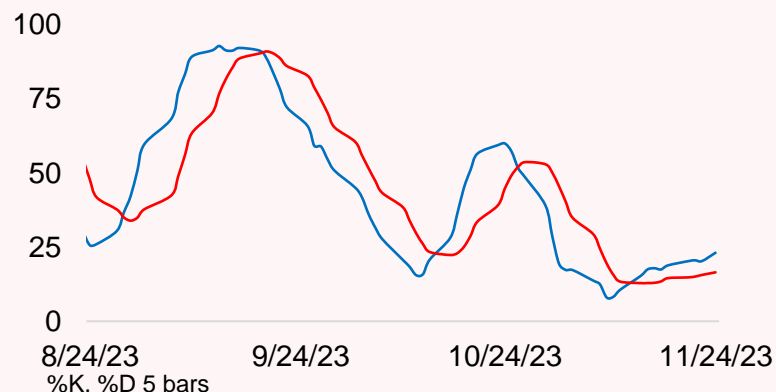
Dollars per barrel



WTI crude oil prices remained flat at \$75 per barrel per barrel for the week ended Nov. 24. despite market fundamentals remained solid.

## WTI crude prompt month futures slow stochastic

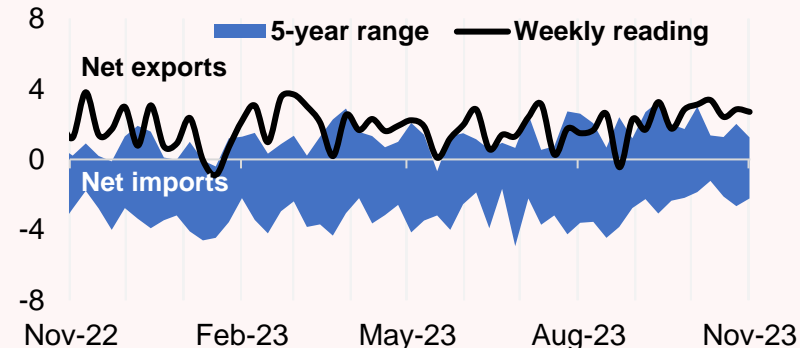
Index level



Price momentum remained positive during the week ended Nov. 24.

## U.S. petroleum net exports (imports)

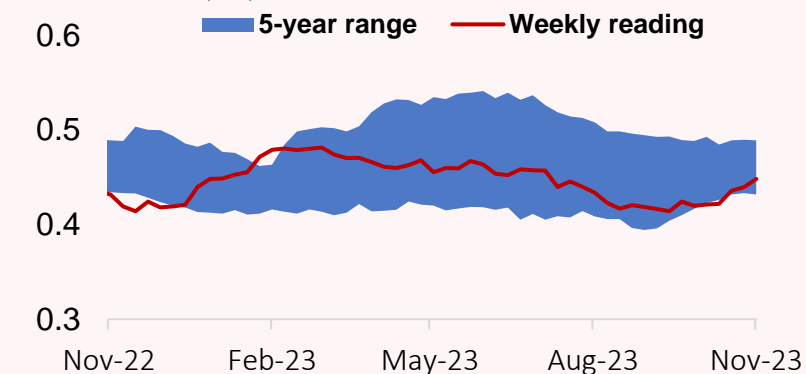
Million barrels per day, mb/d



**Strong petroleum net exports continued.** The U.S. was a petroleum net exporter of 2.7 mb/d for the week ended Nov. 17 and continued at a record pace for this time of the year.

## U.S. ending stocks of crude oil (excluding the SPR)

Million barrels (mb)

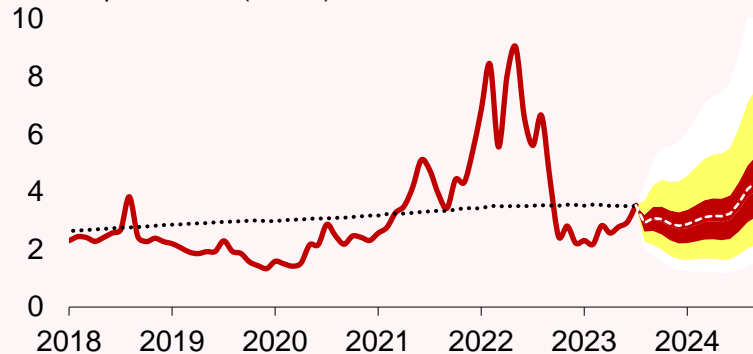


**Inventories rose for a 5<sup>th</sup> straight week.** U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) rose by 8.7 million barrels (mb) for the week ended Nov. 17, but remained in the bottom of third of the five-year range.

# U.S. natural gas market indicators

## Natural gas price mean reversion analysis

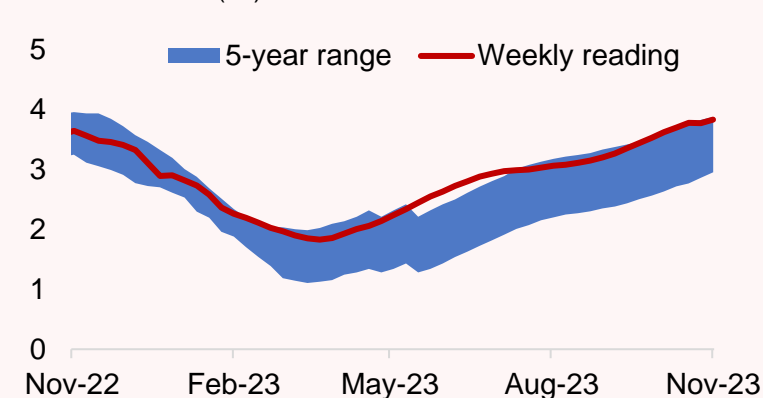
Dollars per mmBtu (2023\$)



Natural gas futures prices of \$2.86 per mmBtu for December 2023 delivery fell below their historical mean. Historical variation continued to show more potential upside than downside.

## U.S. weekly working gas storage

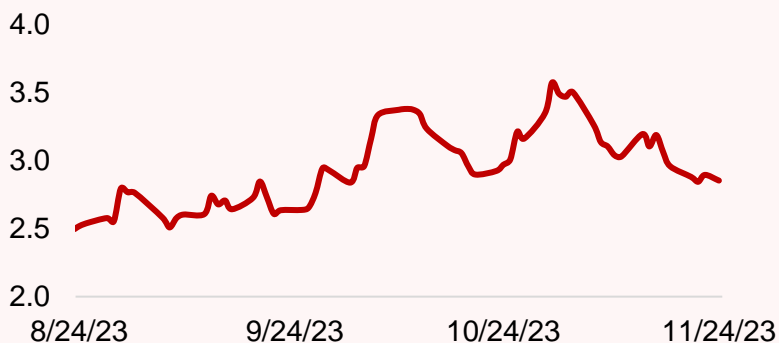
Trillion cubic feet (tcf)



**Storage remained near the top of its 5-year range.** Working gas in underground storage (3.83 tcf as of Nov. 10) rose by 0.7% per week over the past two weeks, and historically November has been a turning point toward storage withdrawals.

## Natural gas prompt month futures prices

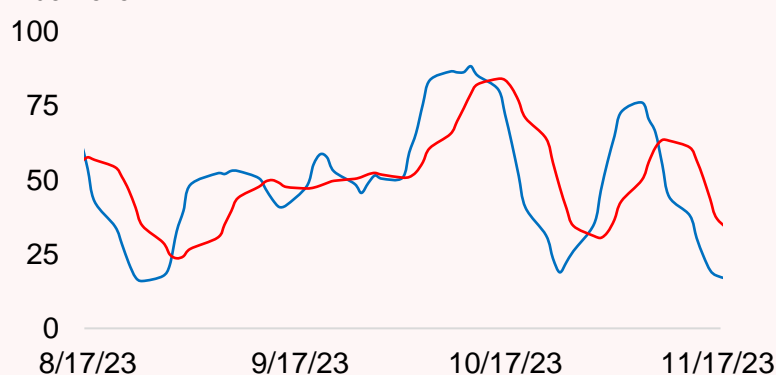
Dollars per million Btu



Natural gas prices at Henry Hub fell by 3.5% w/w to \$2.86 per million Btu for the week ended Nov. 24 and continued to reflect historically strong storage levels.

## Natural gas futures slow stochastic

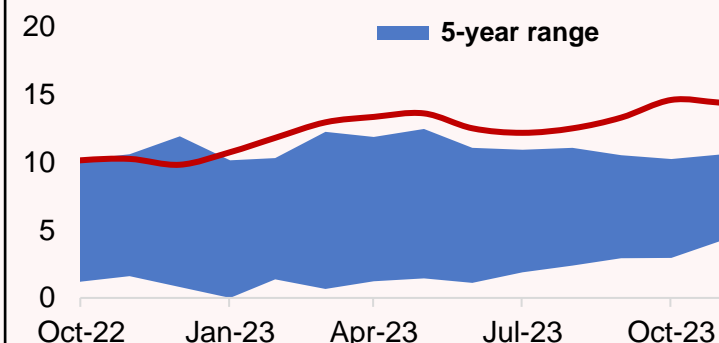
Index level



Natural gas price momentum decreased during the week ended Nov. 24, %K, %D 5 bars

## U.S. natural gas net exports

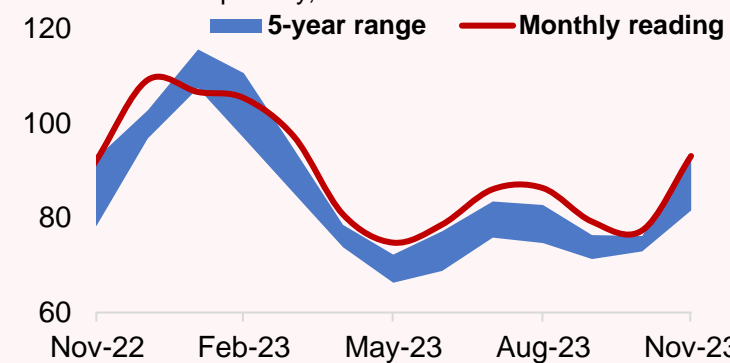
Billion cubic feet per day, bcf/d



**Record high net exports.** U.S. natural gas net exports are estimated to have reached 14.6 bcf/d in October and 14.4 bcf/d in November per EIA.

## U.S. natural gas consumption

Billion cubic feet per day, bcf/d

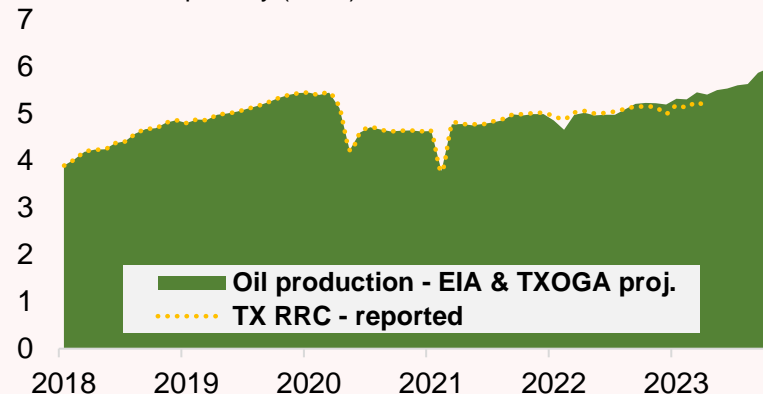


**Strong consumption continued.** Natural gas total consumption has remained at the top of its five-year historical range.

# Texas' oil and natural gas production

Texas crude oil production, Jan. 2018 – Oct. 2023

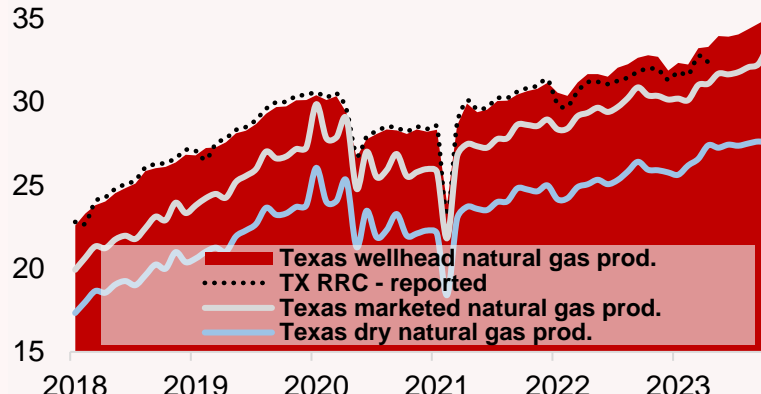
Million barrels per day (mb/d)



Record Texas oil production of 5.6 mb/d for August was reported last week by EIA. TXOGA estimates that Texas crude oil production climbed to 5.9 mb/d in September and 6.0 mb/d in October.

Texas natural gas production, Jan. 2018 – Oct. 2023

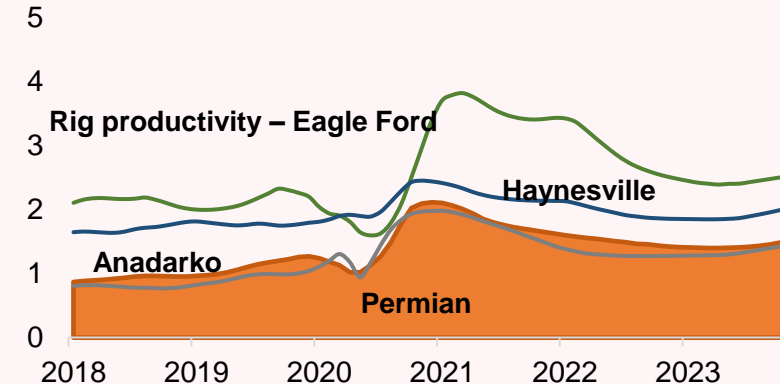
Billion cubic feet per day (bcf/d)



EIA reported for August that Texas' natural gas gross withdrawals (34.1 bcf/d) and marketed production (32.1 bcf/d) set new record highs. TXOGA estimates that in-state production has risen further to 35.0 bcf/d of gross production, including 33.5 bcf/d of marketed production, 27.6 dry gas production, and 3.3 mb/d of natural gas liquids (NGLs).

Texas rig productivity by basin – new monthly prod. per rig

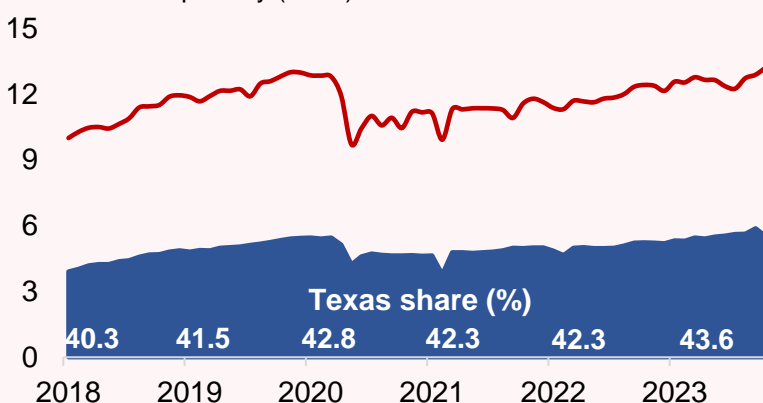
Thousand barrels per day oil-equivalent, kb/doe



EIA estimates of rig productivity for November 2023 show increases year-over-year across all of the major Texas basins, but the strongest productivity gains in the Anadarko (+13.5% y/y), Haynesville (+9.2% y/y), and Permian Basin (+6.2% y/y).

U.S. and Texas crude oil production, Jan. 2018 – Oct. 2023

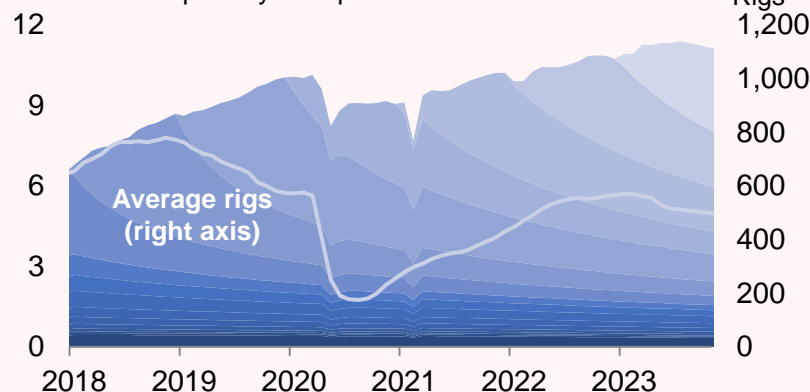
Million barrels per day (mb/d)



Through the first 10 months of the year, Texas accounted for 43.6% of U.S. crude oil production by EIA and TXOGA's estimates.

Texas shale basin wellhead oil & natural gas production

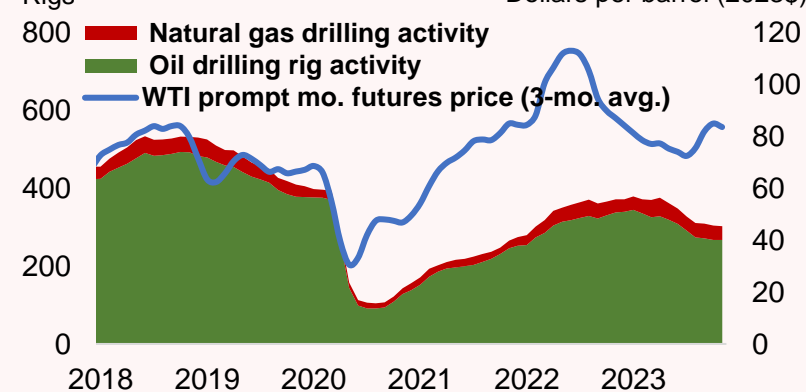
Million barrels per day oil-equivalent



EIA estimates Oct. 2023 production growth across Texas shale basins has been mixed, with strong increases year-over-year in the Eagle Ford and Permian, flat Haynesville production, and decreases in the Anadarko.

Texas drilling activity and WTI crude oil futures prices

Rigs (left axis), Dollars per barrel (2023\$) (right axis)



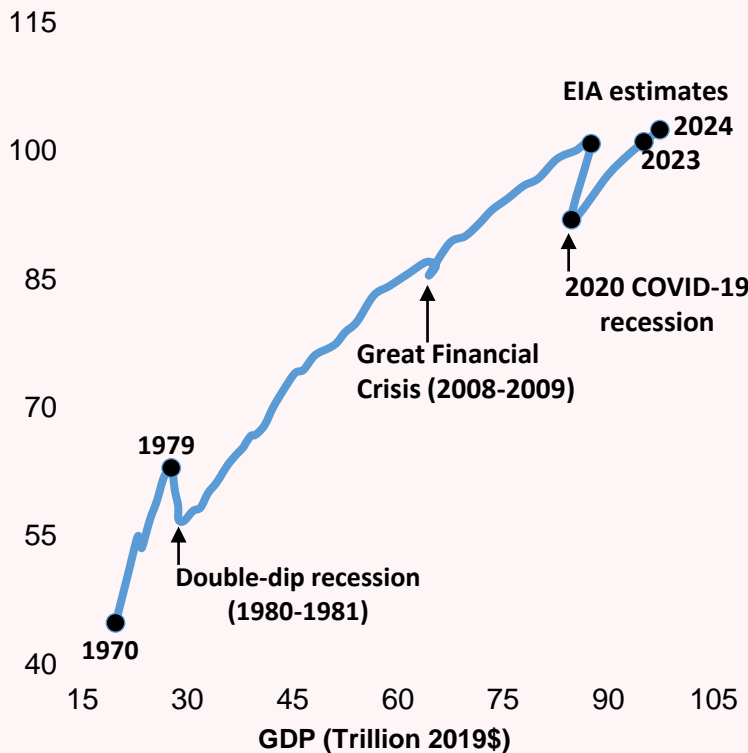
Texas' drilling rig activity rose for the week ended Nov. 24 per Baker Hughes. Texas had 269 oil-directed rigs (up by 1 rig w/w) and 34 natural gas-directed rigs (unchanged w/w).

# Global oil market balance at-a-glance: EIA estimates for November 2023 show a tight oil market and project Brent at \$93 per barrel in 2024

- **October demand projections for 2023 and 2024 slipped but remain at record levels.** Global oil demand is expected by EIA to reach a record 101.0 mb/d in 2023 and 102.4 mb/d in 2024.
- **EIA raised its 2024 oil production growth** projections by 0.2 mb/d in November. These are volumes needed to balance global markets in their view. The U.S. is assumed to be largest single contributor this year
- **For oil inventories, EIA shows U.S. stock withdrawals through year-end 2023,** corresponding with Brent crude oil prices of \$87 per barrel in Q4 and averaging \$93 per barrel in 2024

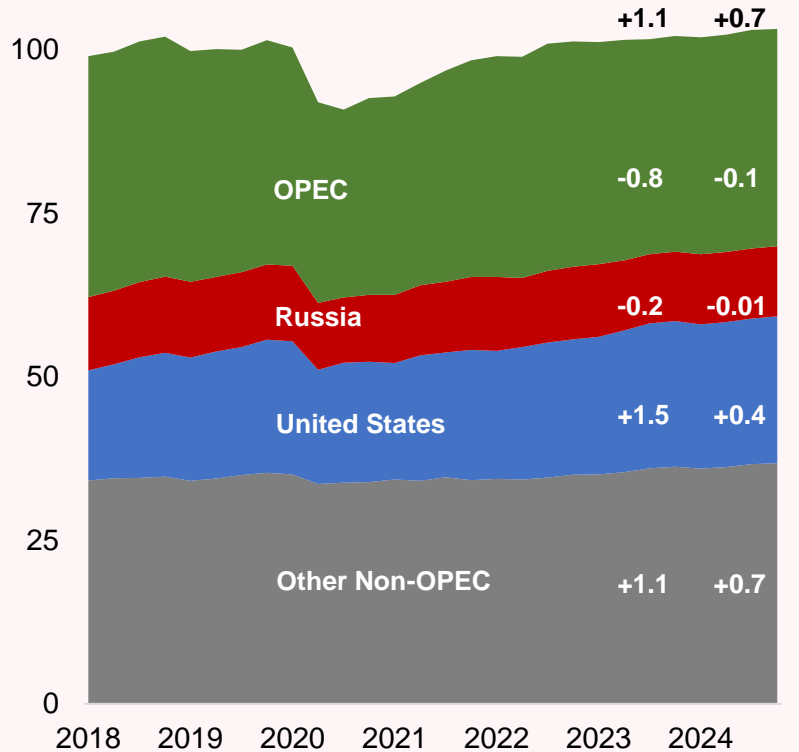
## Global oil demand and GDP

Million barrels per day (mb/d)



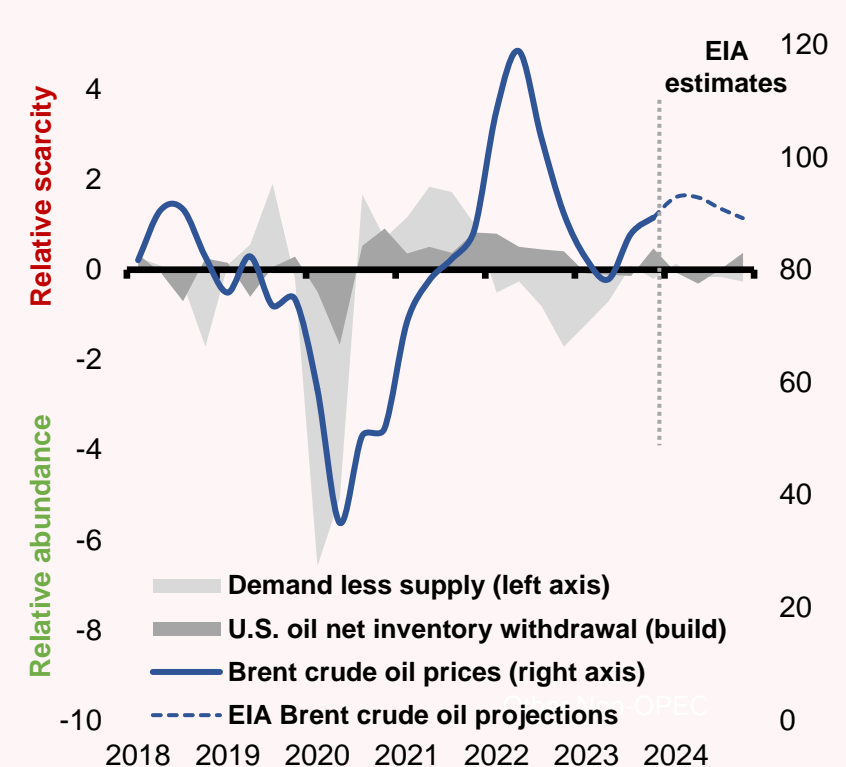
## Oil production by country/region

Million barrels per day, mb/d



## Global demand/supply & Brent prices

Million barrels per day (mb/d)





**R. Dean Foreman, Ph.D.**  
**dforeman@txoga.org**

