



January 29, 2024



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.

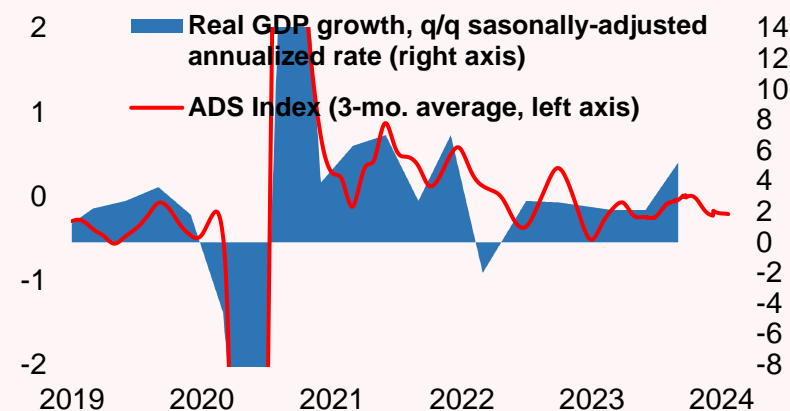
Key points for the week of January 29, 2024

- **U.S. economic strength confirmed.** The [Chart of the Week](#) details that the U.S. GDP report for Q4 2023 aligns with the economic indicator relationships tracked weekly in TXOGA's Chartbook. Indications of improved consumer sentiment and business conditions suggest continued solid growth in Q1 2024.
- **Oil prices rose with an improved economic outlook and tighter market fundamentals.** As highlighted in the [TXOGA Energy Economics Outlook](#) for Q4 2024, the potential for the U.S. and China to exceed low economic growth expectations has recently contributed strength to oil prices. The U.S. Energy Information Administration's (EIA) data for the weekly ended January 19 showed that U.S. crude oil stocks fell by 9.2 million barrels (mb) week-over-week (w/w) to the lowest 10% of the 5-year range, and U.S. petroleum net exports nearly doubled w/w to 3.6 million barrels per day (mb/d). Mean reversion analysis of oil prices continued to perform well and currently shows that futures prices rose to align with their historical mean.
- **U.S. natural gas prices remained historically low despite one of the largest weekly storage withdrawals on record.** Working gas in underground storage (2.9 trillion cubic feet (tcf) as of Jan. 19) fell by 10.2% w/w to the bottom 10% of its 5-year range. The decrease was among the top 2% of weekly storage withdrawals since 2010. Yet, real natural gas prices remained among the lowest 2% of daily prices for January since 1994. Futures prices for natural gas through June continued to be below their historical mean.

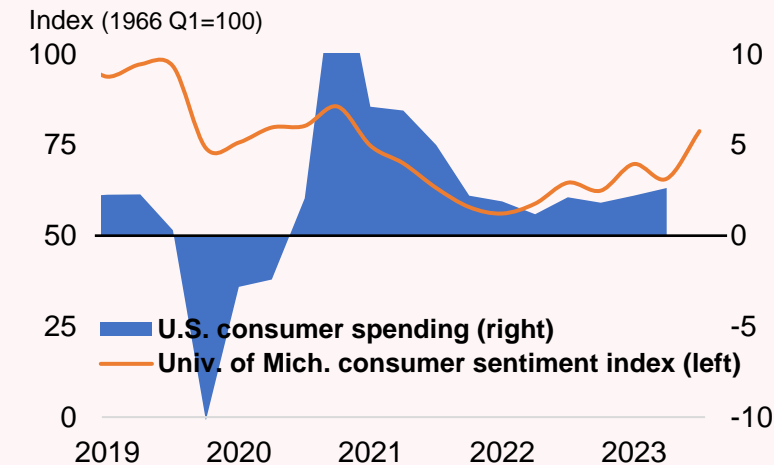
TXOGA Chart of the Week: U.S. GDP for Q4 2023 and Indicators for Q1 2024

- **Solid U.S. real GDP growth in Q4 2023**, as reported this week by the Bureau of Economic Analysis (BEA), was consistent with the economic indicator relationships that TXOGA's Chartbook monitors on a weekly basis.
- **By the numbers**, U.S. real GDP grew at an annualized pace of 3.3% in Q4 2023 per BEA, led by consumer spending that contributed 60% of the growth, while a narrower trade deficit and higher private investment each contributed about 10% to growth.
- **Estimated growth in Q1 2024.** The ADS business conditions index, published by the Philadelphia Fed. Res. Bank, has remained a leading indicator of GDP growth. A rolling 3-month average of the ADS index accurately reflected the increase in Q4 2023 real GDP and remains consistent with solid continued GDP growth so far in Q1 2024.
- **Improved consumer sentiment has historically corresponded with increased spending.** Consistent with its correlation with consumer sentiment, as measured by the University of Michigan's consumer sentiment index, consumer spending rose by 2.8% on an annualized basis and 2.6% y/y in Q4 2023. Consumer sentiment in January to date has risen to its highest levels since July 2021 and appears consistent with further spending increases and broader GDP growth in Q1 2024.

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

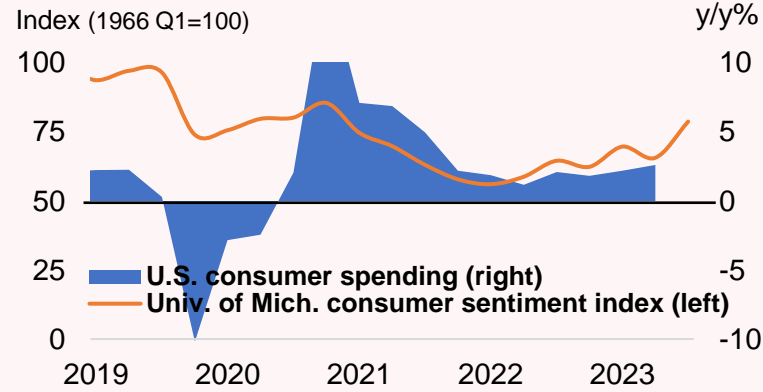


Consumer sentiment vs. spending



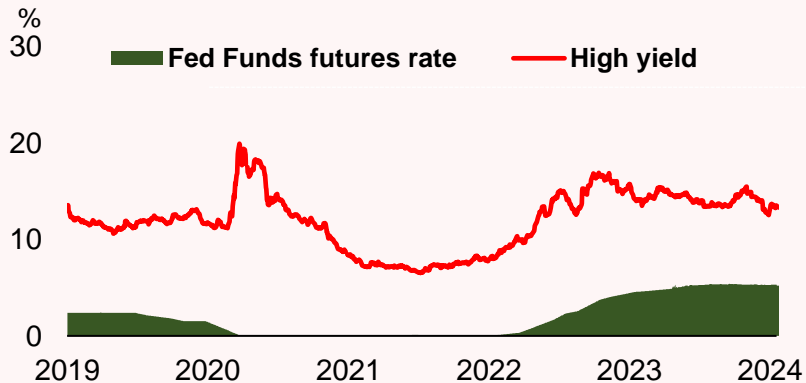
U.S. economic indicators

Consumer sentiment vs. spending



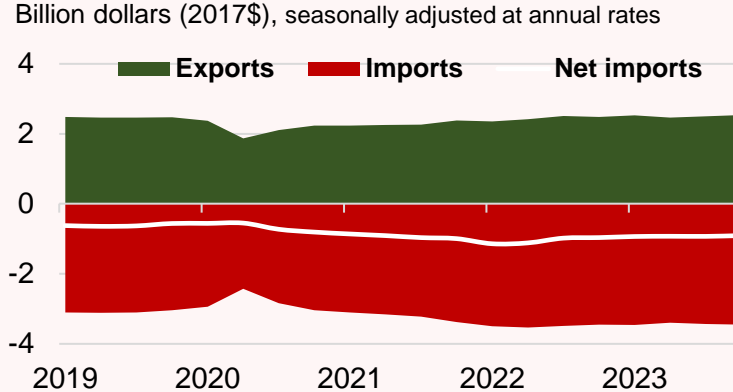
Consumer spending growth accelerated. Consistent with the historical correspondence with consumer sentiment, consumer spending rose by 2.6% y/y in Q4 2023. Continued improvement of consumer sentiment in January to the highest levels since July 2021, per the Univ. of Michigan consumer sentiment index, is consistent with further spending increases.

Fed Funds rate and CCC and lower corporate bond yields



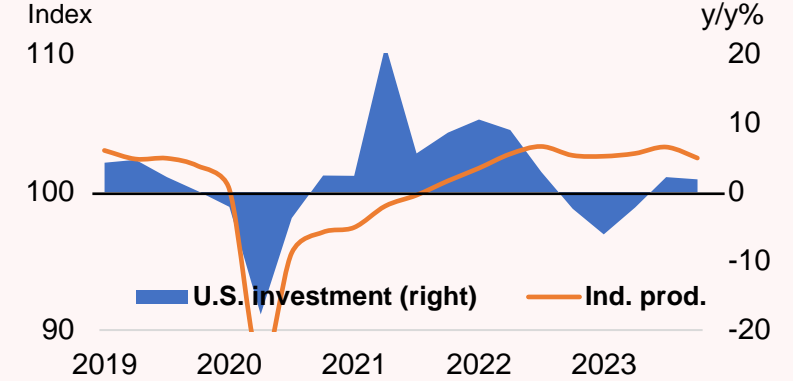
Bond premium for low credit quality remained stable. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. For the week ended Jan. 26, HY rates of 13.35% and the Fed Funds futures rate of 5.2% both fell by about 10 bps (0.1%) w/w.

Real net exports of goods and services



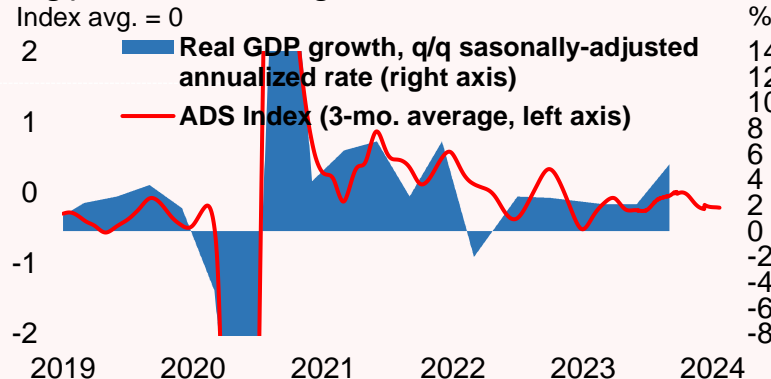
The U.S. trade deficit narrowed in Q4 2023. The U.S. real trade deficit ran at an annualized rate of \$908 billion in Q4 2023, down from \$931 billion in Q3 per the U.S. Bureau of Economic Analysis. On a nominal basis, the trade surplus for petroleum and products ran at annualized rate of \$16 billion in Q4 2023, down from \$29.1 billion in Q3.

Industrial production and investment growth



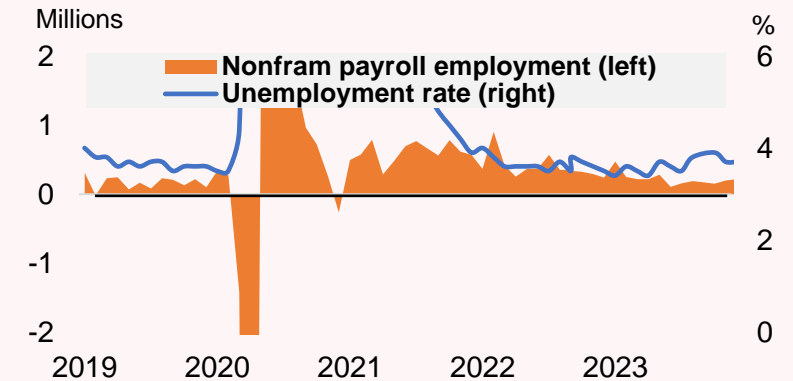
Investment growth continued in Q4 2023. Consistent with industrial production, economy-wide was revised up to 2.1% y/y for Q3 and rose by 1.8% y/y in Q4 per the Bureau of Economic Analysis. Industrial production has remained flat in recent months, and in December 2023 it rose by 0.1% m/m and 1.0% y/y.

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



Business conditions consistent with Q1 2024 real GDP growth. 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 accurately reflected the increase in Q4 2023 real GDP and remains consistent with continued GDP growth so far in Q1 2024.

Nonfarm payroll employment & unemployment rate

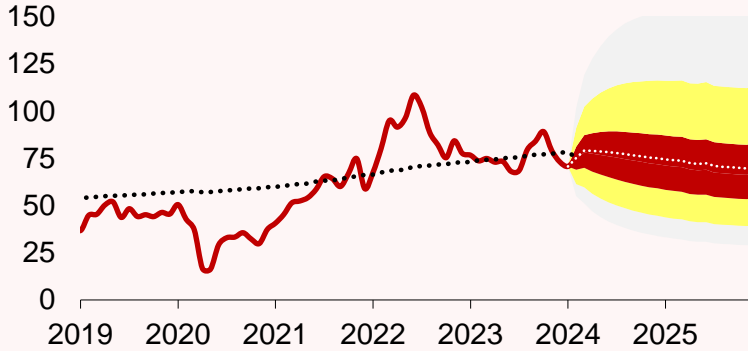


With a rebound in payroll increases, the unemployment rate fell in November. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate held steady at 3.7% in December per BLS, while non-farm payrolls rose by 216,000.

U.S. oil market indicators

WTI crude oil price mean reversion analysis

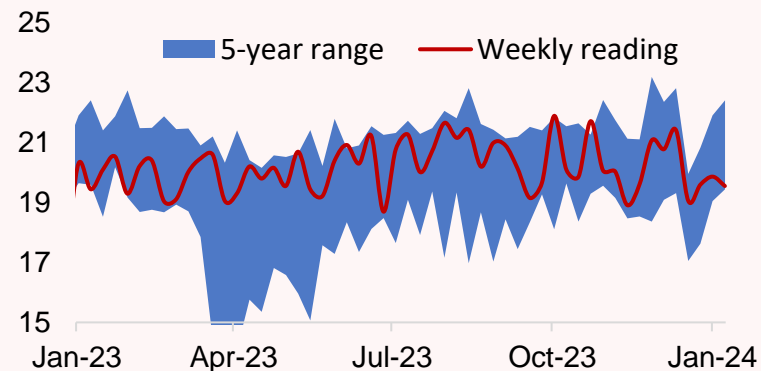
Dollars per barrel (2024\$)



Futures prices rose and aligned with the historical mean reversion target. A best-fit curve through historical prices (MR target) exceeded futures prices. The futures strip remained backwardated (that is, futures prices currently are lower than spot prices). Confidence intervals based on past prices show the potential for greater upside than downside.

U.S. petroleum demand

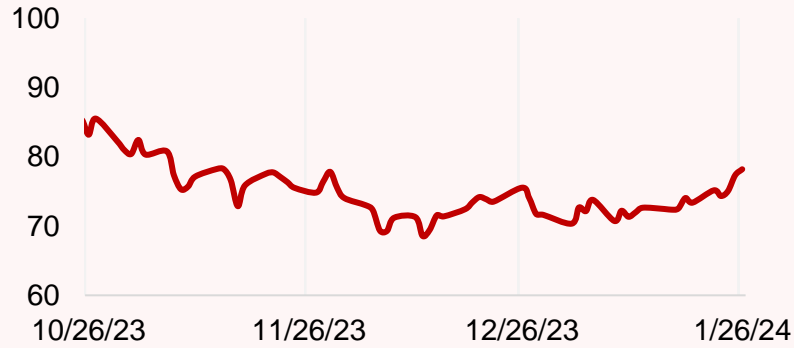
Million barrels per day (mb/d)



Petroleum demand decreased. U.S. petroleum demand, as measured by deliveries, fell by 0.3 mb/d w/w to 19.6 mb/d for the week ended Jan. 19 – and was lowered in part by winter storms across much of the U.S.

WTI crude prompt month futures prices

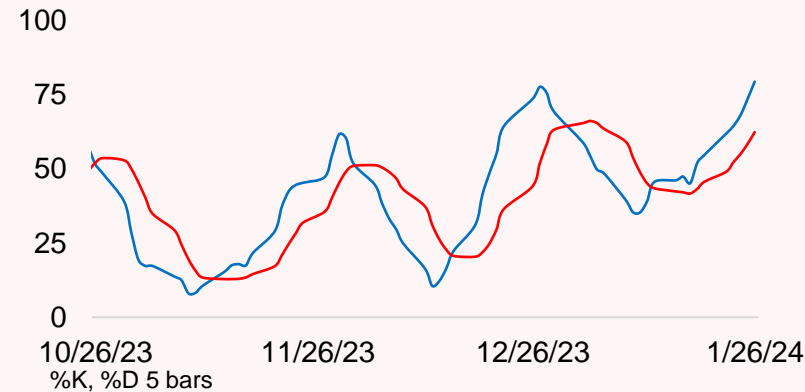
Dollars per barrel



WTI crude oil prices rose to above \$78 per barrel for the week ended Jan. 26 as market fundamentals tightened and Middle East geopolitics added uncertainties.

WTI crude prompt month futures slow stochastic

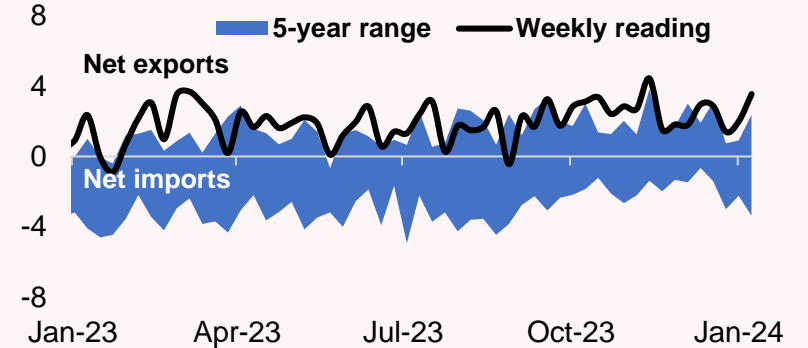
Index level



Price momentum strengthened for the week ended Jan. 26.

U.S. petroleum net exports (imports)

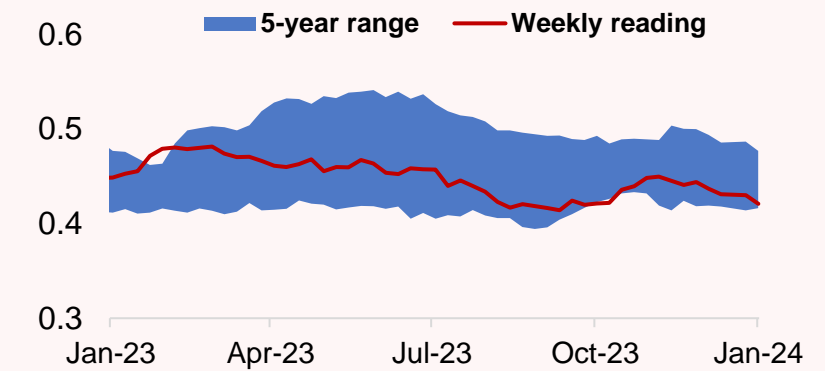
Million barrels per day, mb/d



Petroleum net exports rose. The U.S. was a petroleum net exporter of 3.5 mb/d for the week ended Jan. 19, up by 1.6 mb/d w/w and above the top of the 5-year range.

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

Million barrels (mb)

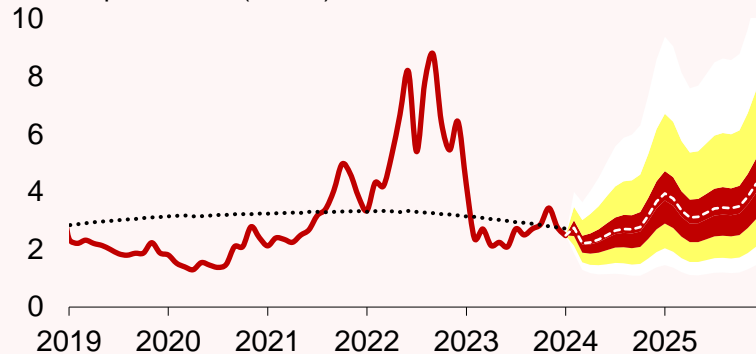


Inventories dropped. U.S. ending stocks of crude oil excluding the Strategic Petroleum Reserve (SPR) fell by 9.2 million barrels (mb) for the week ended Jan. 19 and to the lowest 10% within the 5-year range.

U.S. natural gas market indicators

Natural gas price mean reversion analysis

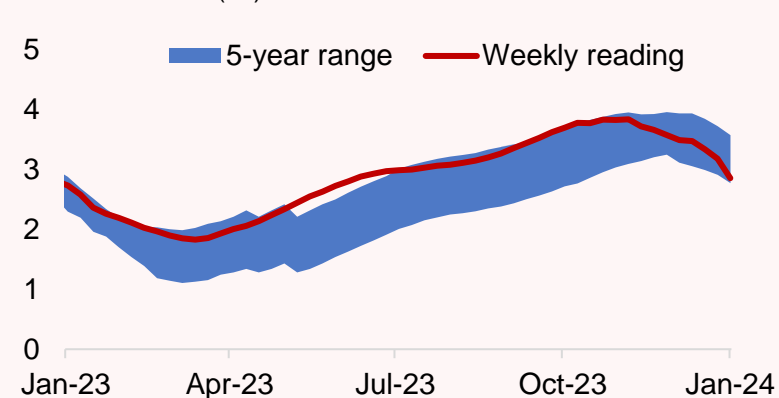
Dollars per mMBtu (2024\$)



Near-term natural gas futures prices remained below the historical mean reversion target. Natural gas futures prices through June remain below their historical mean. Futures prices rise progressively after March 2024. Confidence intervals based on past prices show the potential for greater upside than downside.

U.S. weekly working gas storage

Trillion cubic feet (tcf)



Storage dropped to seasonal lows. Working gas in underground storage (2.9 tcf as of Jan. 19) fell by 10.2% w/w to the bottom 10% of its 5-year range. This was in the top 2% of weekly storage withdrawals for all weeks since 2010.

Natural gas prompt month futures prices

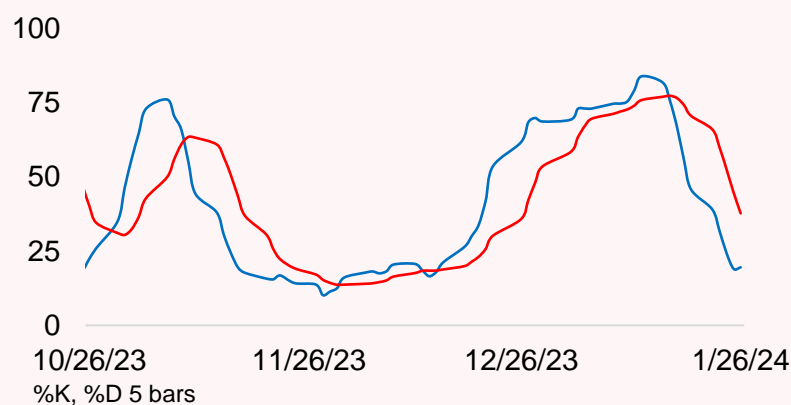
Dollars per million Btu



Natural gas prices at Henry Hub remained near \$2.70 per million Btu for the week ended Jan. 26 despite historically large storage withdrawals.

Natural gas futures slow stochastic

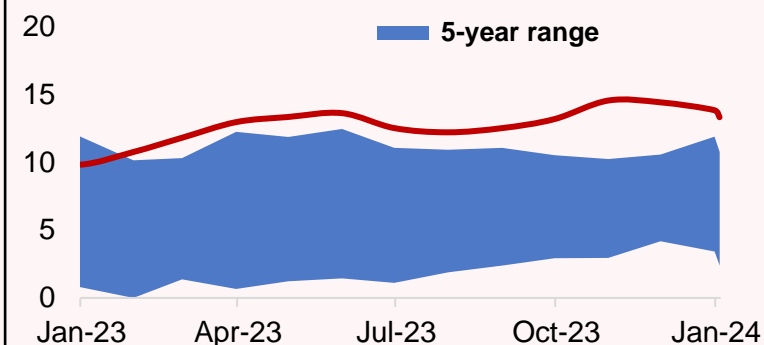
Index level



Natural gas price momentum weakened during the week ended Jan. 26.

U.S. natural gas net exports

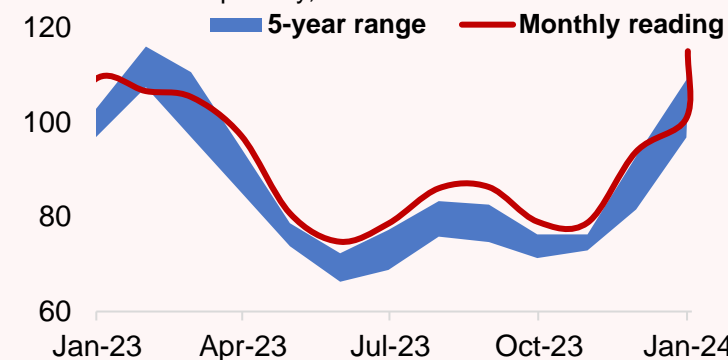
Billion cubic feet per day, bcf/d



Strong net exports have continued. U.S. natural gas net exports in January are estimated at 13.3 bcf/d, above the 5-year range, per the EIA.

U.S. natural gas consumption

Billion cubic feet per day, bcf/d

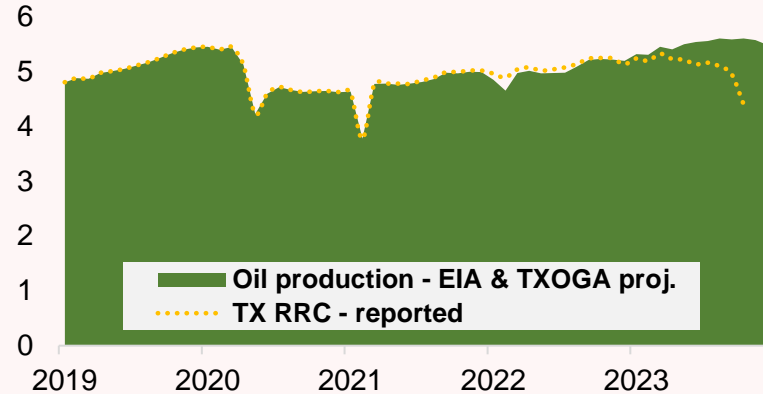


January consumption estimated by EIA to exceed its 5-yr. range. In its January projections, EIA estimated that natural gas consumption rose from the top third of its 5-year range in December to exceeding it so far in January.

Texas' oil and natural gas production

Texas crude oil production, Jan. 2019 – Dec. 2023

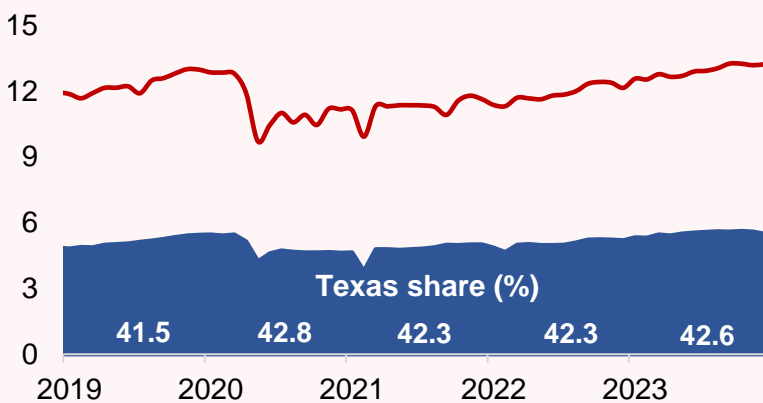
Million barrels per day (mb/d)



Strong production. Texas' oil production of 5.6 mb/d held steady in October per the EIA. TXOGA estimates that Texas crude oil production held at 5.6 mb/d in November and edged down to 5.5 mb/d in December.

U.S. and Texas crude oil production, Jan. 2019 – Dec. 2023

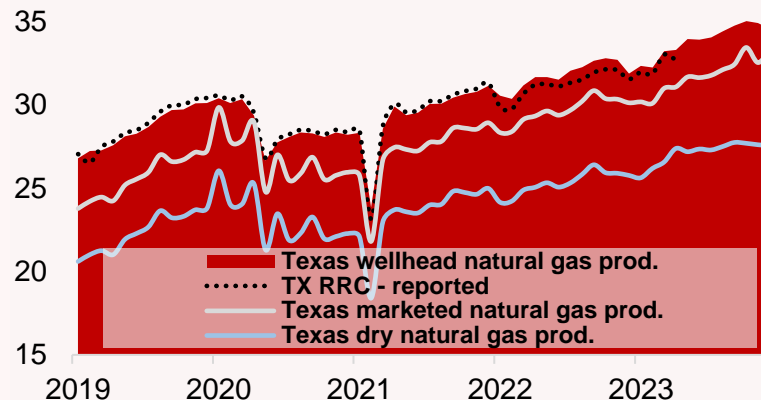
Million barrels per day (mb/d)



Texas' share rose. In 2023, Texas accounted for 42.6% of U.S. crude oil production by EIA and TXOGA's estimates, the highest share since 2020.

Texas natural gas production, Jan. 2019 – Dec. 2023

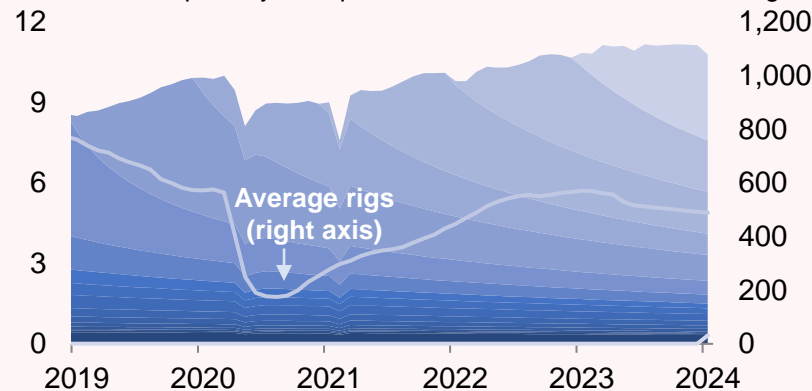
Billion cubic feet per day (bcf/d)



Record production in October. Texas' natural gas production set records for 35.0 bcf/d of gross withdrawals and 33.5 bcf/d of marketed production in October per EIA. TXOGA estimates that natural gas production eased through December to 34.6 bcf/d of gross withdrawals, 33.3 bcf/d of marketed production, and 27 bcf/d of dry gas production.

Texas shale basin wellhead oil & natural gas production

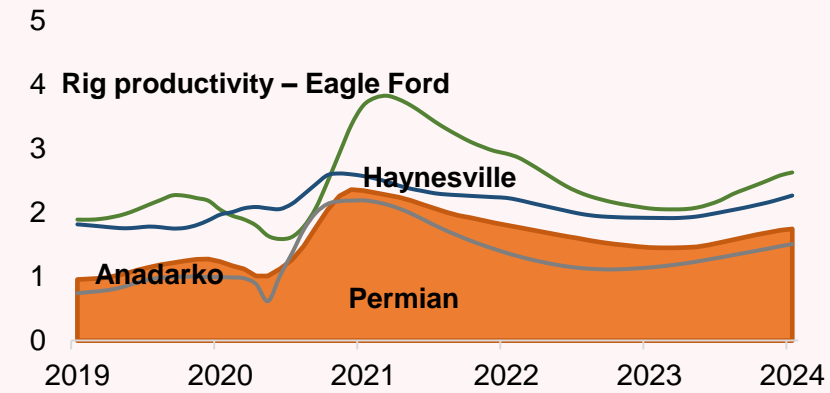
Million barrels per day oil-equivalent



EIA estimates Jan 2024 production growth across Texas shale basins has been mixed, with increases year-over-year in the Permian (+6.3% y/y) and Eagle Ford (+3.6% y/y) but decreases in the Haynesville (-0.2% y/y) and Anadarko (-1.2% y/y) regions.

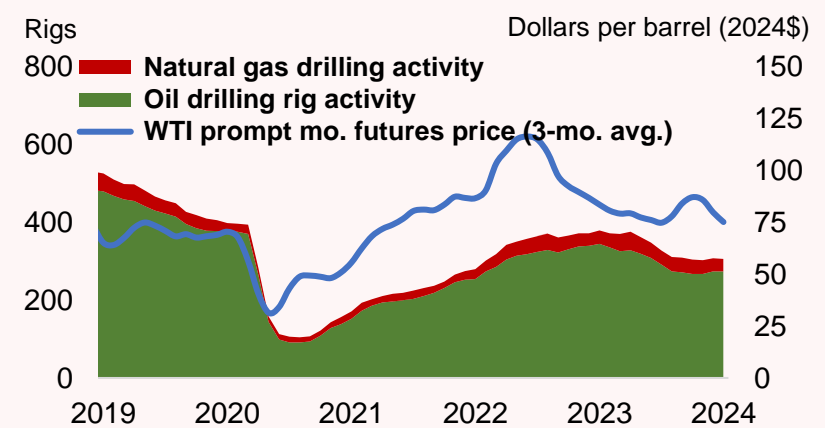
Texas rig productivity by basin – new monthly prod. per rig

Thousand barrels per day oil-equivalent, kb/dae



Strong productivity to start the year. EIA estimates of rig productivity for January 2024 show continued increases year-over-year across the major Texas basins, including the Anadarko (+32.0% y/y), Eagle Ford (+27.2% y/y), Haynesville (+18.3% y/y), and Permian (+20.0% y/y).

Texas drilling activity and WTI crude oil futures prices



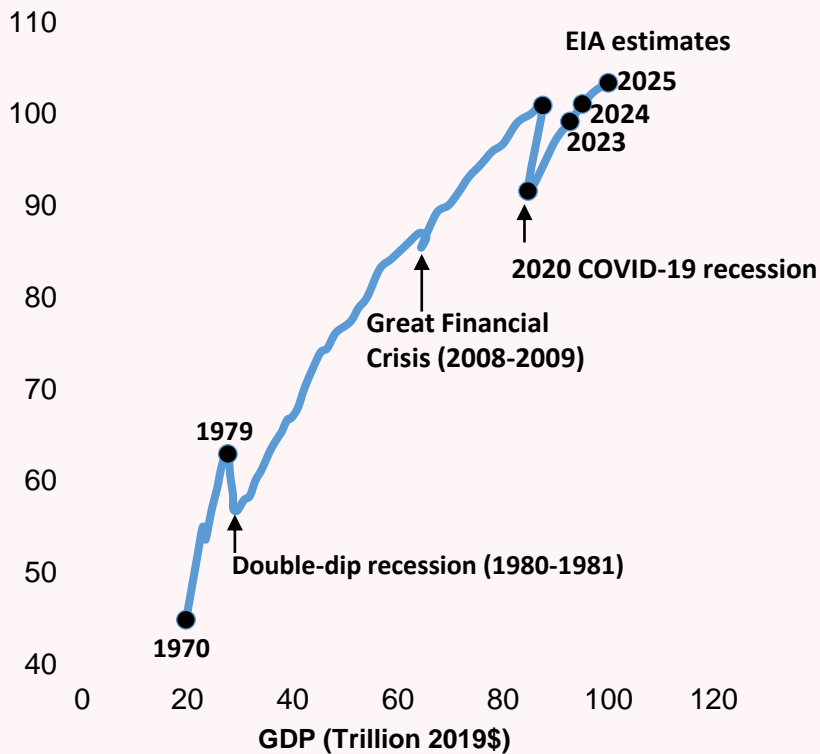
Texas' drilling rig activity decreased on net for the week ended Jan. 26 per Baker Hughes. Texas had 273 oil-directed rigs (up by 1 rig w/w) and 31 natural gas-directed rigs (down by 2 rigs w/w).

Global Oil Market Balance Projections to 2025 by EIA

- Record-high demand. Global oil demand is expected by the EIA rise from a record 101.1 mb/d in 2023 to 102.5 mb/d in 2024 and 103.7 mb/d in 2025.
- Supply shift. As global oil supply is projected to rise 2.2 mb/d by 2025, EIA expects the U.S. to supply about one-third of global production growth over the next two years, compared with over 60% in 2023.
- For oil inventories, the EIA projects global stock withdrawals with a deficit of 0.8 mb/d in Q1 2024, corresponding with Brent crude oil prices of \$82.50 in 2024, compared with \$82.40 per barrel currently.

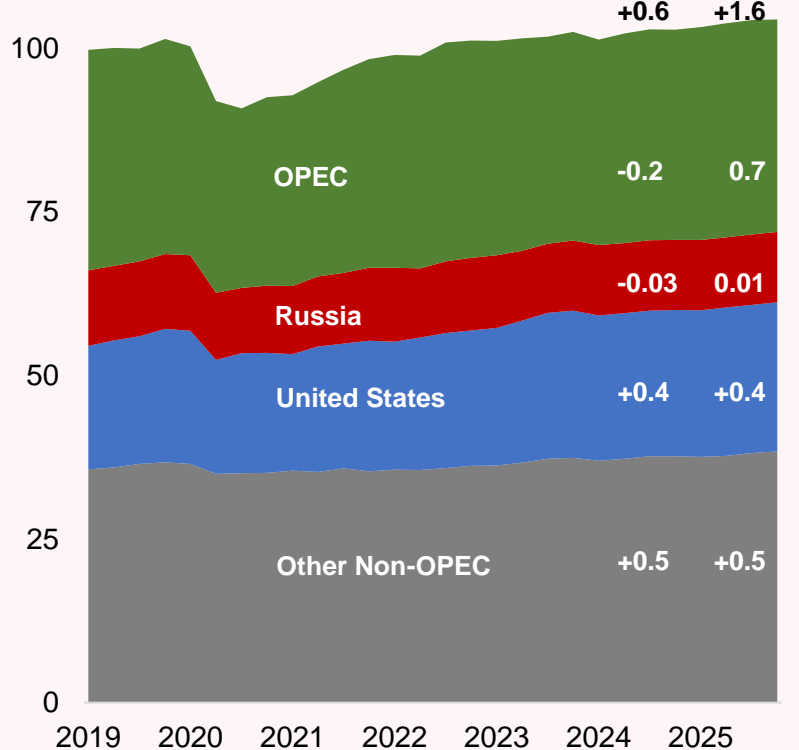
Global oil demand and GDP

Million barrels per day (mb/d)



Oil production by country/region

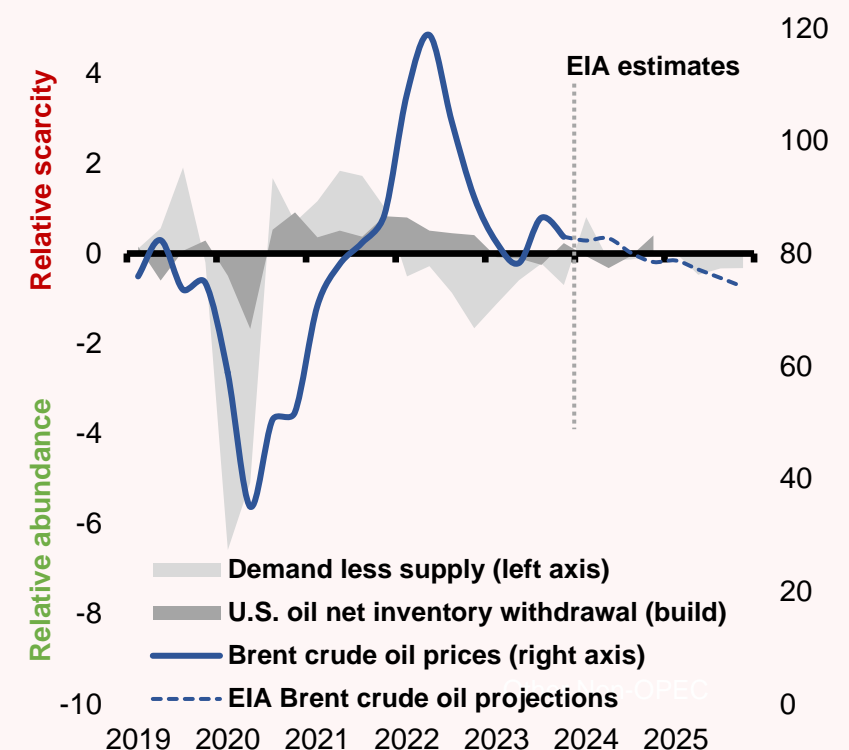
Million barrels per day, mb/d



Global demand/supply & Brent prices

Million barrels per day (mb/d)

2024\$/Bbl

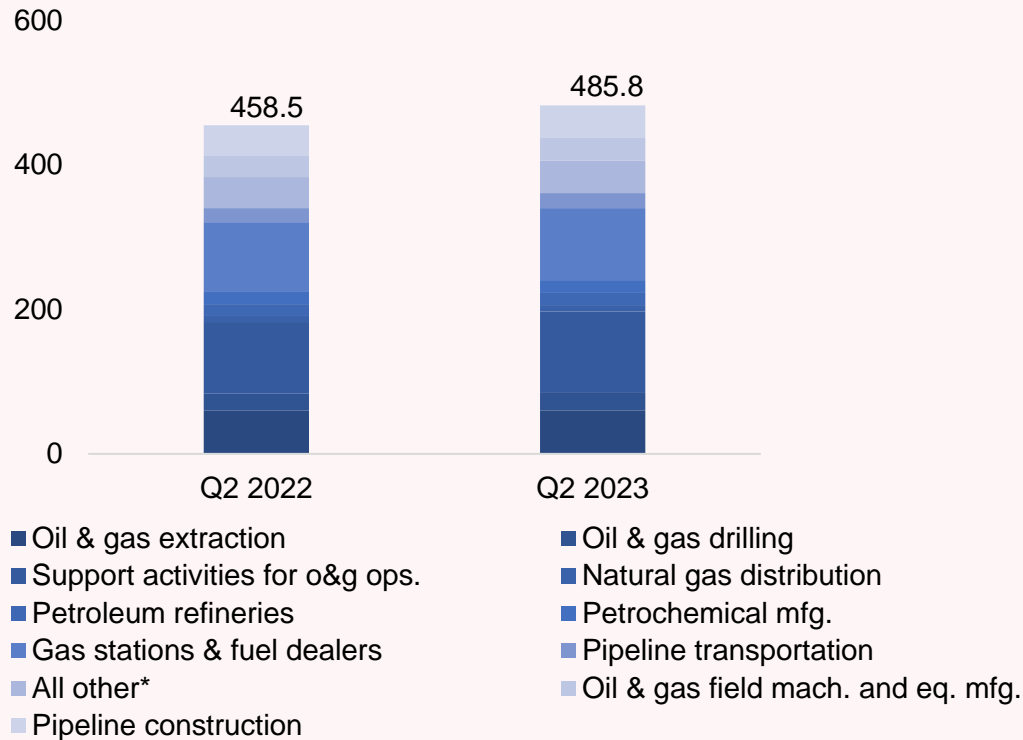


Texas' oil and natural gas industry's jobs and wages rose solidly

- ▶ 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

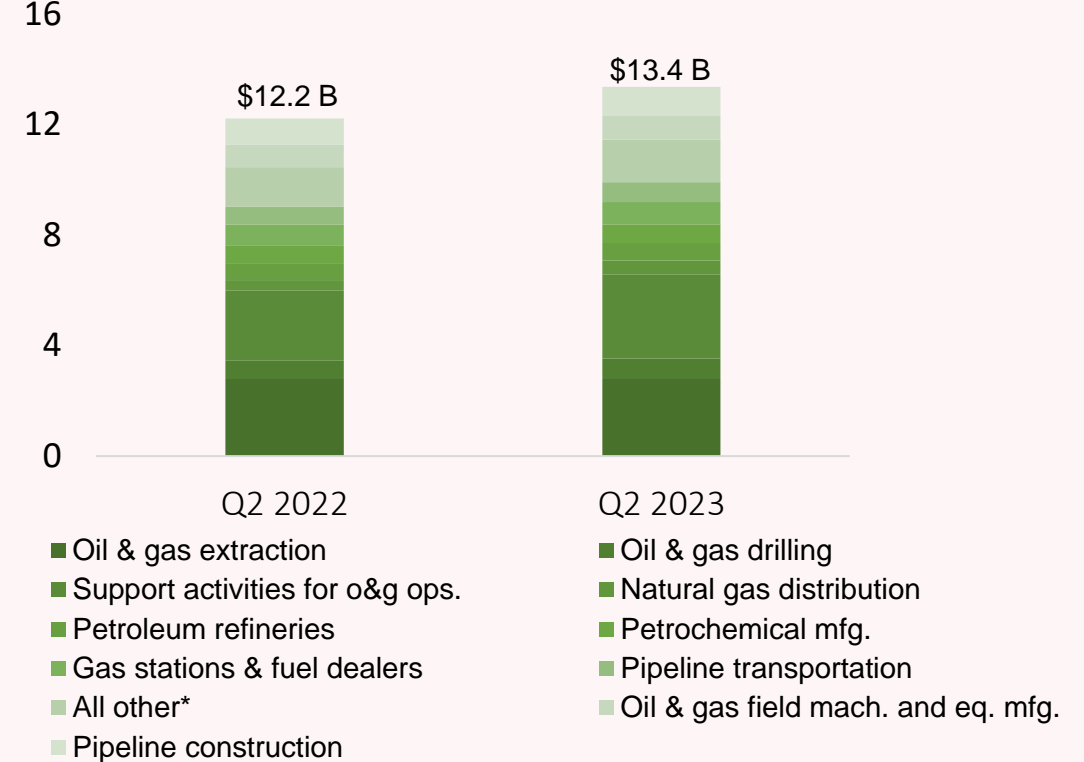
Texas Oil & Gas Industry Employment Rose by +6.0% y/y in Q2 2023

Thousand Jobs



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

Billion dollars



* 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.

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