



AUGUST 21, 2023



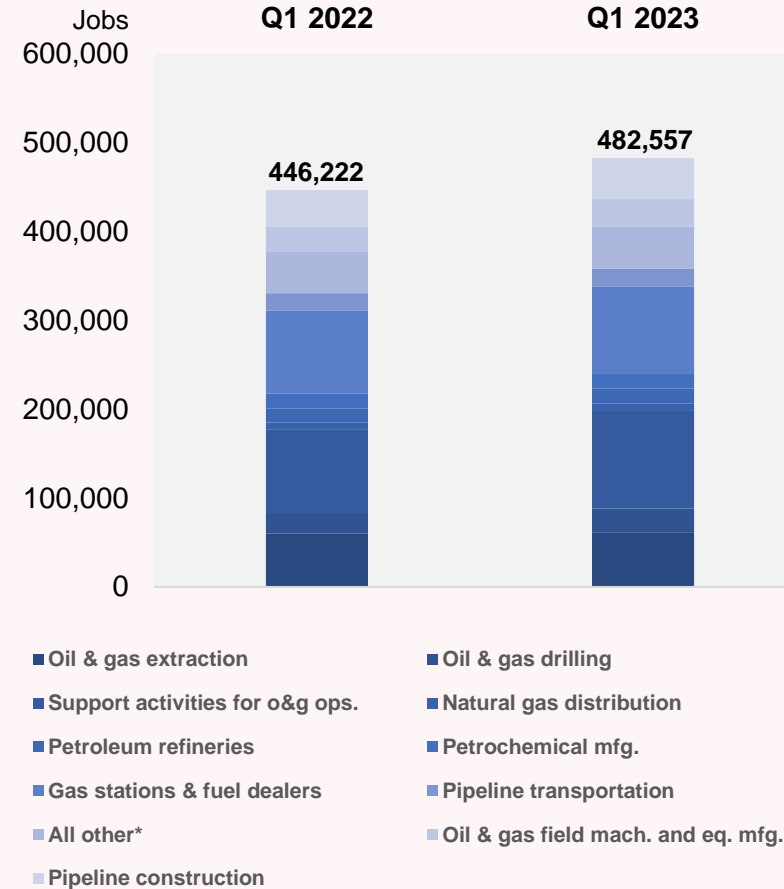
TXOGA's chartbook provides a vital reference for our members as well as those who are interested in understanding data which tell the story of what's happening with the economy, oil and gas markets at the global, U.S. and Texas levels.

Key points for the week of August 21, 2023

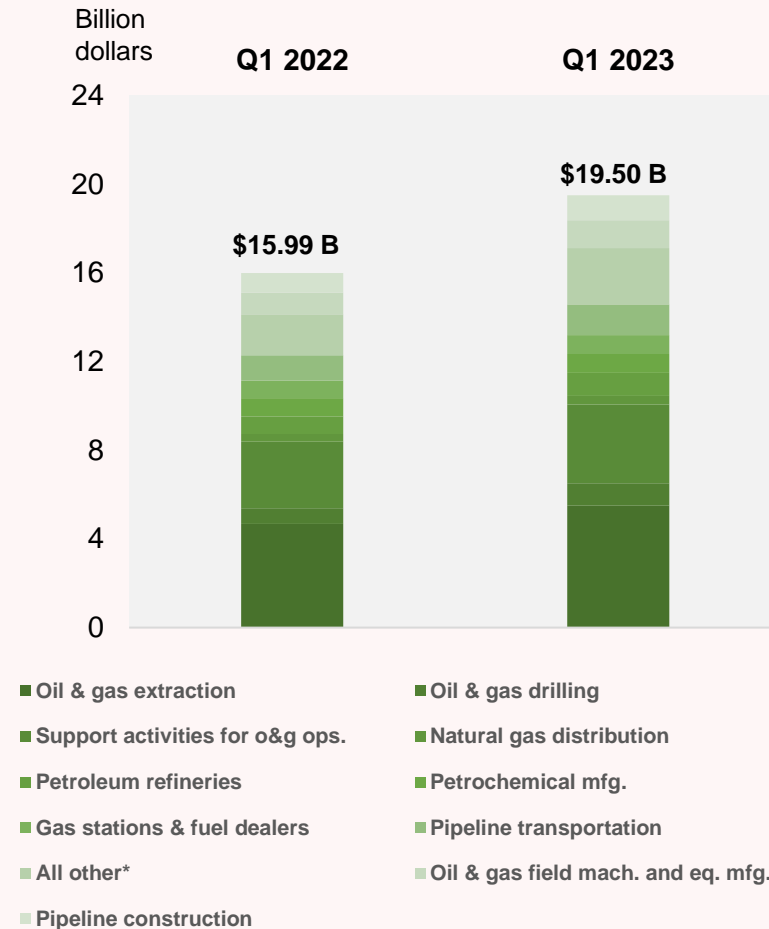
- **U.S. economic outlook improved.** Indications of prospective investment growth improved in July as industrial production expanded by 1.2% y/y and implied a capacity utilization rate increase of 0.7 percentage points to 79.3%. These readings, plus improvement in the Philadelphia Federal Reserve Bank's ADS business conditions index, showed support for GDP growth in Q3 2023.
- **Oil market fundamentals tightened, yet prices dropped.** Macro concerns for high interest rates and China's outlook appeared to influence global oil markets in which prices are established. However, U.S. data for the week ended August 11 showed that: 1) domestic petroleum demand rose to 21.6 million barrels per day (mb/d), which was in the top 10% versus its 5-year historical range; 2) net exports rose to 1.8 million barrels per day (mb/d) from 0.3 mb/d during the prior week; and 3) U.S. ending stocks of crude oil fell by 5.4 million barrels (mb) to their lowest for the month of August since 1985, per the U.S. Energy Information Administration ([EIA](#)).
- **Natural gas markets decreased.** Natural gas futures prices at Henry Hub for September delivery fell by 8.1% w/w to \$2.55 per million Btu on August 18 as storage levels remained near the top of their 5-year range and the rate of injections into storage rose for a third straight week despite strong domestic consumption and international exports.

TXOGA Chart of the Week: Texas' employment and wages for Q1 2023

Texas Oil & Gas Industry Employment Rose by +8.1% y/y



Texas Oil & Gas Industry Wages Rose by +22.0% y/y

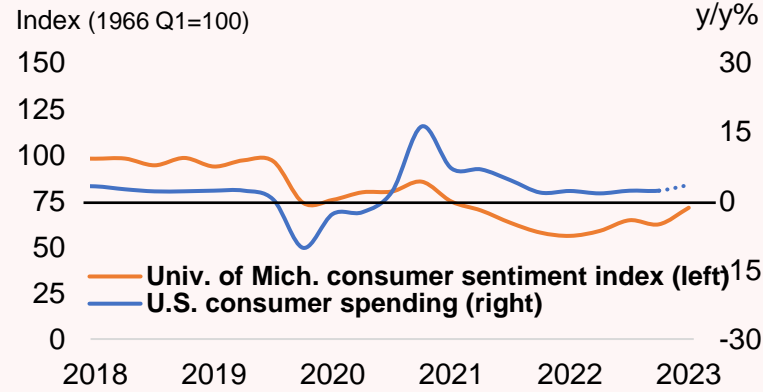


- Data from the U.S. [U.S. Census Bureau](#) and Texas Workforce Commission ([TWC](#)) show that Texas' oil and gas industry employment and total wages increased strongly in Q1 2023 compared with Q1 2022.
- Texas' oil & gas industry direct employment rose by 8.1% y/y to an average of 482,557 jobs in Q1 2023, which was the highest since Q1 2020.
- Texas' oil and gas industry total direct wages of \$19.50 billion in Q1 2023 increased by 22.0% y/y from \$15.99 billion in Q1 2022.
- Support activities for oil and gas operations led the job gains in adding 15,415 jobs, which was a 16.3% y/y increase, and paid \$3.54 billion in total wages (up by +29.2% y/y).
- Other leading industry segments with job gains included drilling oil and gas wells (+19.9% y/y), oil & gas pipeline construction (+11.9% y/y), and oil & gas machinery and equipment manufacturing (+9.3% y/y)

* 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.

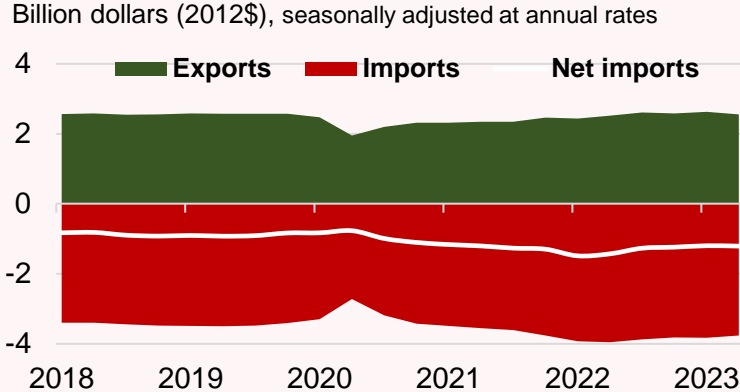
U.S. economic indicators

Consumer sentiment vs. spending



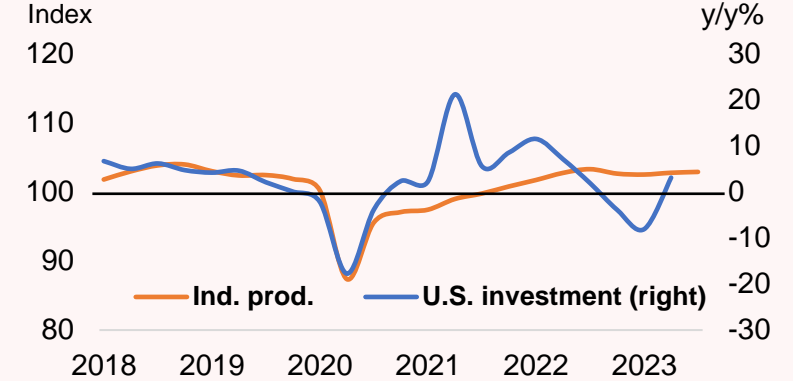
Consistent held steady. The Univ. of Michigan's survey of consumers has historically corresponded with changes in U.S. consumer spending, which represents 68% of GDP, and the index's preliminary August reading of 71.2 was near its July level, which was the highest since Oct. 2021.

Real net exports of goods and services



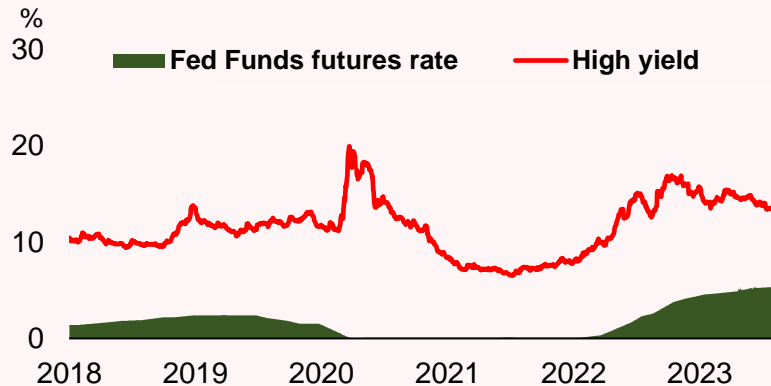
The U.S. trade deficit widened in Q2 2023. The U.S. real trade deficit ran at an annualized rate of \$1.21 trillion, up from a revised \$1.20 trillion in Q1. If sustained for the year, this represents the third straight year of trade deficits exceeding \$1.2 trillion.

Industrial production and investment growth



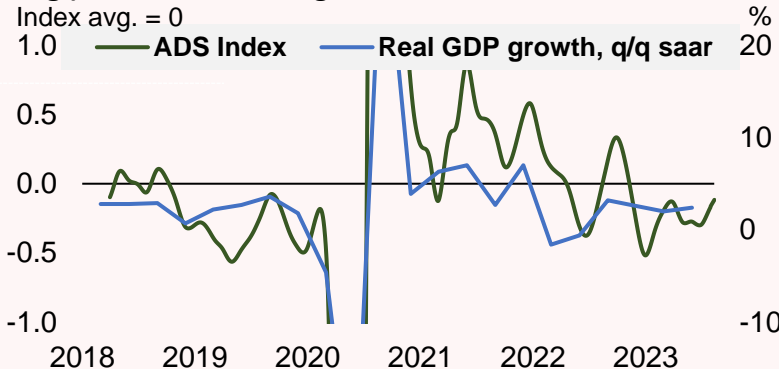
Industrial production and capacity utilization rose in July. Industrial production growth increased to 1.2% y/y in July along with a capacity utilization rate of 79.3%, which has historically corresponded with U.S. investment growth.

Fed Funds rate and CCC and lower corporate bond yields



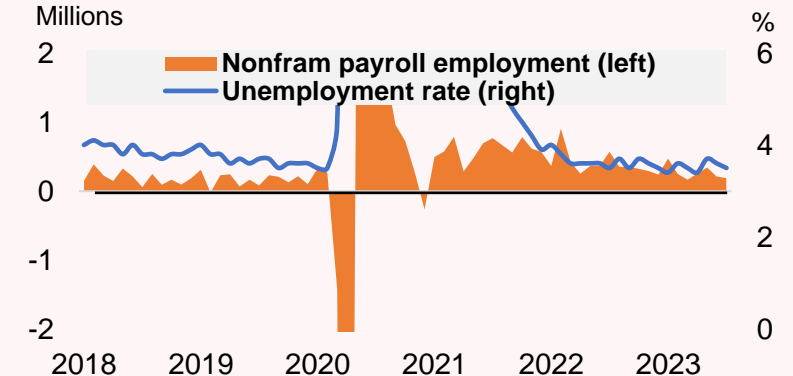
The premium for low credit quality rose. High yield (HY) rates reflect debt costs for firms with below-investment grade credit quality. HY rates rose by 19 basis points w/w to 13.65% on Aug. 17, while the Fed Funds futures rate held steady at 5.4%. The premium for low credit quality increased to 8.3% as of Aug. 17.

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



Improved 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 risen from negative readings so far in 2023 to near zero, which historically corresponds with slow growth conditions.

Nonfarm payroll employment & unemployment rate

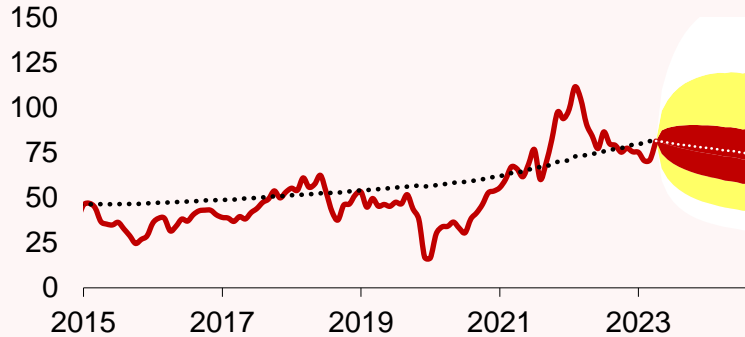


The unemployment fell in July, even as payroll growth slowed. The employment situation is a lagging indicator of GDP growth. The U.S. unemployment rate fell to 3.5% in July per BLS, while non-farm payrolls rose by 187,000, which was the lowest monthly increase since Dec. 2019.

U.S. oil market indicators

WTI crude oil price mean reversion analysis

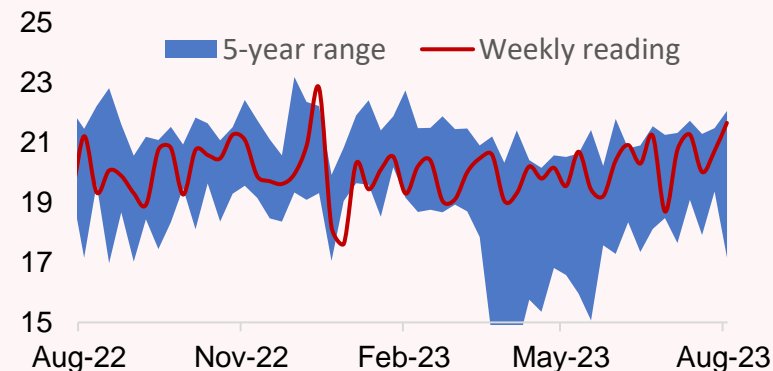
Dollars per barrel (2023\$)



Prices remained aligned with the MR historical target. Mean reversion analysis can be useful in to assess short-term market actions. Futures prices remain slightly backwardated, and confidence intervals based on past prices show the potential for greater upside than downside.

U.S. petroleum demand

Million barrels per day (mb/d)



Summer demand accelerated. U.S. petroleum demand, as measured by deliveries, of 21.6 mb/d for the week ended Aug. 11 neared the top of the 5-year range.

WTI crude prompt month futures prices

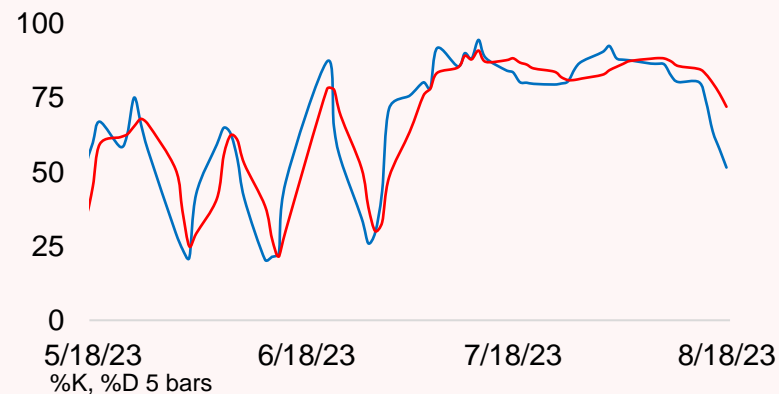
Dollars per barrel



WTI crude oil prices dipped below \$80 per barrel on Aug.16 but rebounded to \$81.58 on Aug. 18. Economic concerns for prolonged high U.S. interest rates as well as China's real estate market and economic outlook influenced oil markets this week.

WTI crude prompt month futures slow stochastic

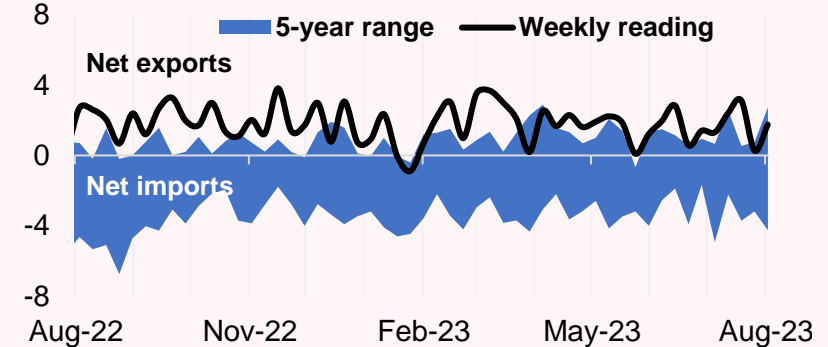
Index level



Oil price momentum weakened during the week ended Aug. 18.

U.S. petroleum net exports (imports)

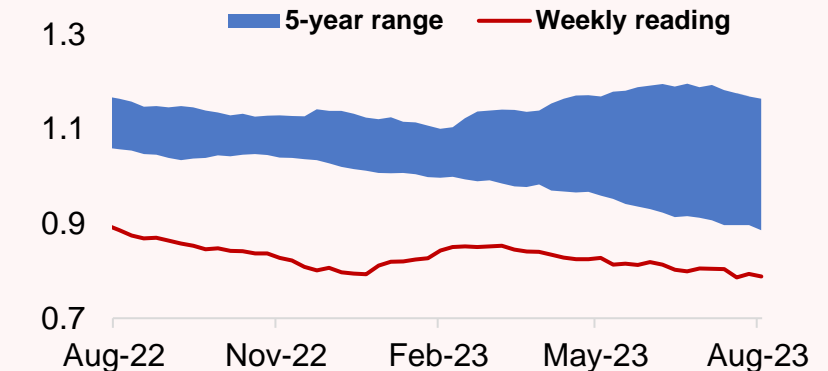
Million barrels per day, mb/d



U.S. oil exports lifted the petroleum trade surplus. The weekly U.S. petroleum trade balance increased to net exports of 1.8 million barrels per day (mb/d) from 0.3 mb/d for the prior week. The main driver of the change was an increase of 2.2 mb/d in weekly U.S. crude oil exports, partially offset by a 0.5 mb/d increase in crude oil imports.

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

Million barrels (mb)

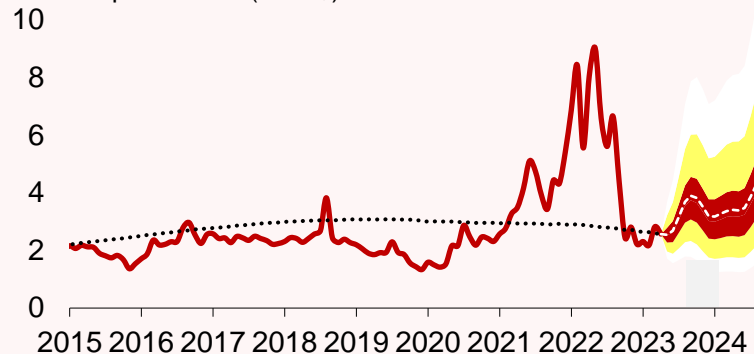


Inventories decreased. U.S. ending stocks of crude oil fell by 5.4 million barrels (mb) for the week ended Aug. 11, which reflected a 6.0 mb draw on commercial stocks that was partially offset by a 0.6 mb increase in the Strategic Petroleum Reserve (SPR).

U.S. natural gas market indicators

Natural gas price mean reversion analysis

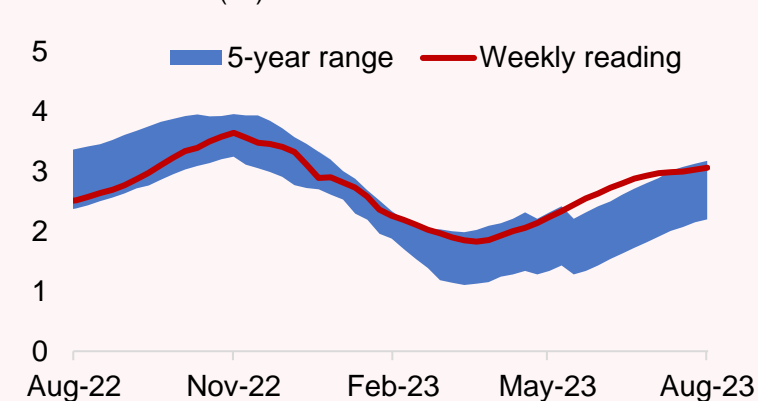
Dollars per mmBtu (2023\$)



Natural gas futures prices of \$2.55 per mmBtu for September 2023 delivery (rising to \$3.96 per mmBtu for Jan. 2024 delivery) were in line with their mean reversion target. Historical variation has continued to show more potential upside than downside.

U.S. weekly working gas storage

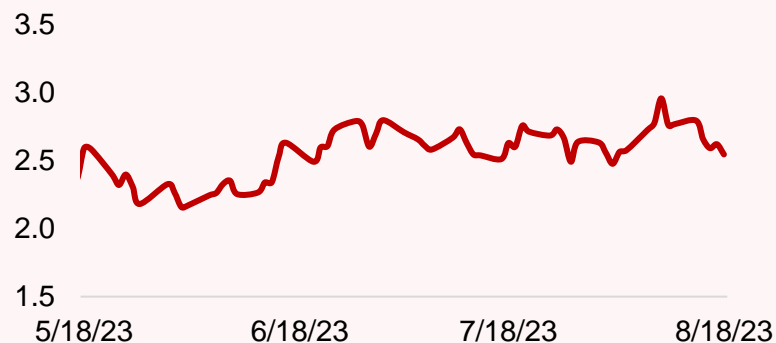
Trillion cubic feet (tcf)



Storage building rose. Working gas in underground storage (3.1 tcf as of Aug. 11) was near the top of its 5-year range, and the injection rate picked up for a 3rd straight week.

Natural gas prompt month futures prices

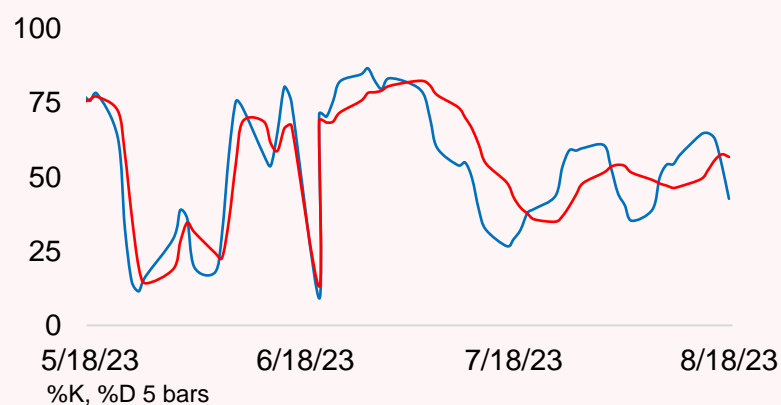
Dollars per million Btu



Natural gas futures prices at Henry Hub for September delivery fell by 8.1% w/w to \$2.55 per mmBtu as of August 18 as the rate of injections into working gas storage accelerated on top of storage levels that stood among the top 12% versus the 5-year range.

Natural gas futures slow stochastic

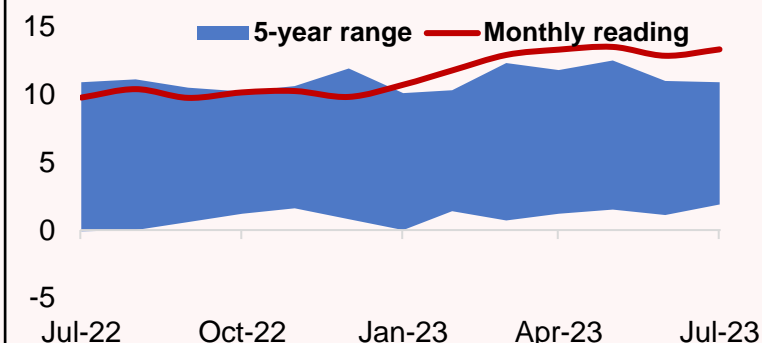
Index level



Although prices receded to \$2.55 per million Btu on Aug. 18, natural gas price momentum continued to show no definitive direction.

U.S. natural gas net exports

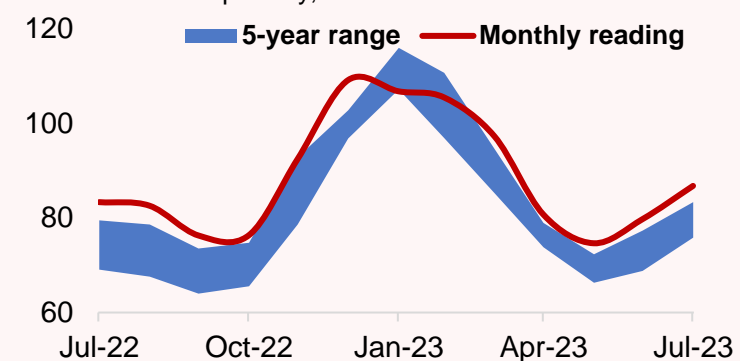
Billion cubic feet per day, bcf/d



Historically strong July. Although EIA revised its estimates downward for July, natural gas net exports of 13.3 bcf/d remained near the record-high of 13.5 bcf/d that was set in May 2023.

U.S. natural gas consumption

Billion cubic feet per day, bcf/d

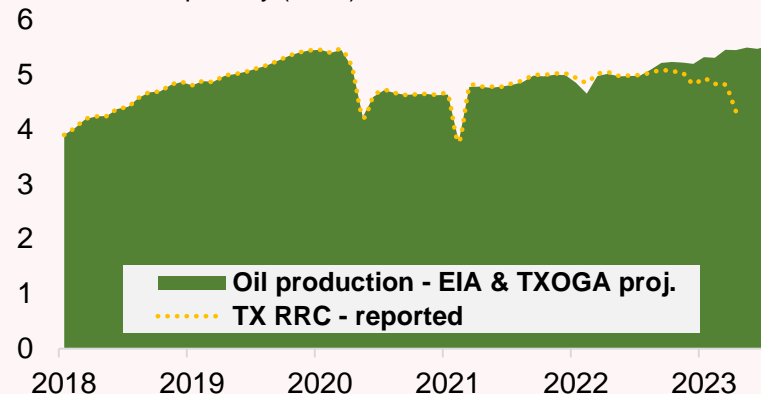


Strong consumption. Natural gas total consumption exceeded its five-year historical range each month since March 2023 and has provided 44.6% of U.S. electricity generation so far this summer.

Texas' oil and natural gas production

Texas crude oil production, Jan. 2018 – July 2023

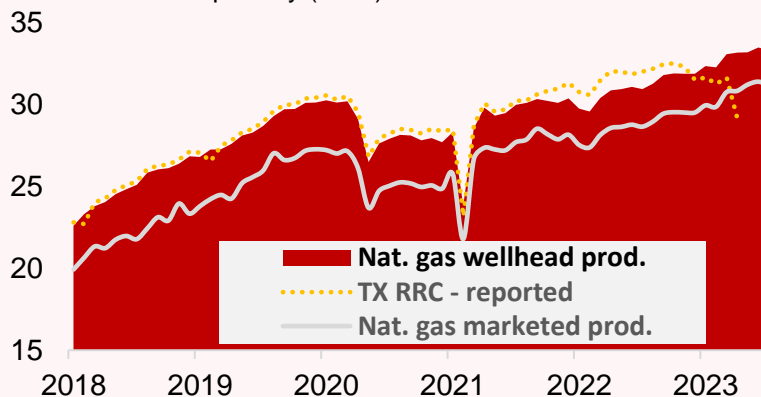
Million barrels per day (mb/d)



EIA reported record-high Texas oil production of 5.5 mb/d in May. Based on weekly Texas drilling activity and U.S. production, TXOGA estimates that Texas crude oil production edged up but remained at 5.5 mb/d in June and July.

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

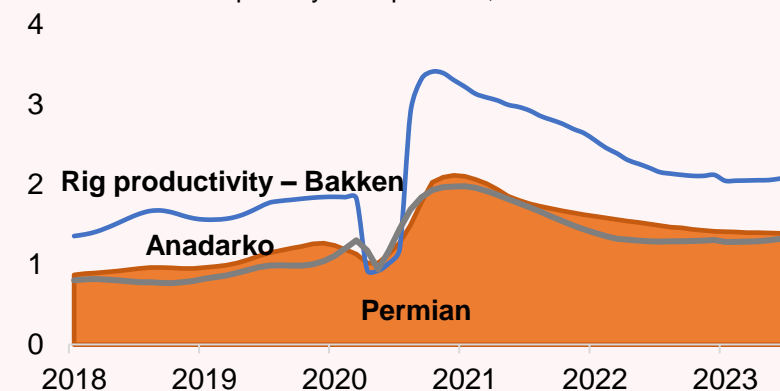
Billion cubic feet per day (bcf/d)



EIA reported record Texas' production in May of 33.2 bcf/d (gross withdrawals) and 31.2 bcf/d of marketed production. TXOGA estimates wellhead production rose as high as 33.5 bcf/d in June and slipped to 33.3 bcf/d in July.

Rig productivity by basin – new per prod. per month

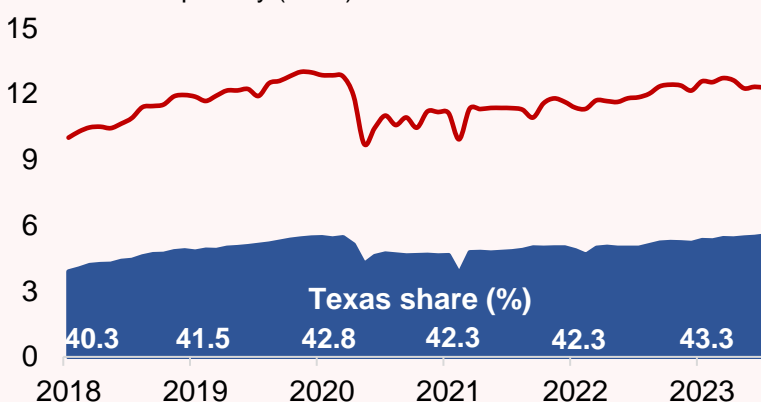
Thousand barrels per day oil-equivalent, kb/doe



EIA estimates that rig productivity FOR August 2023 has increased by 6.5% y/y in the Anadarko basin but decreased by 4.7% y/y in the Permian Basin. On average across oil-producing basins, productivity remains 18.9% above pre-pandemic levels from Dec. 2019.

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

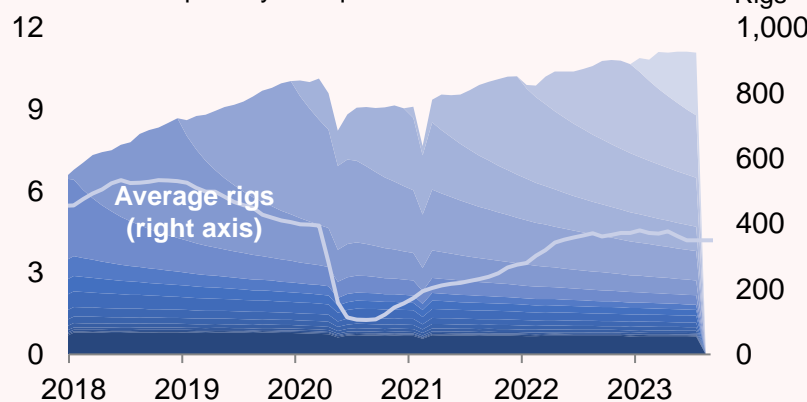
Million barrels per day (mb/d)



Through the first seven months of the year, Texas accounted for 43.3% of U.S. crude oil production. Based on TXOGA's projection that Texas production grew to 5.5 mb/d in July, the state may have accounted for all U.S. crude oil production growth so far in 2023.

Texas basin wellhead oil & natural gas production

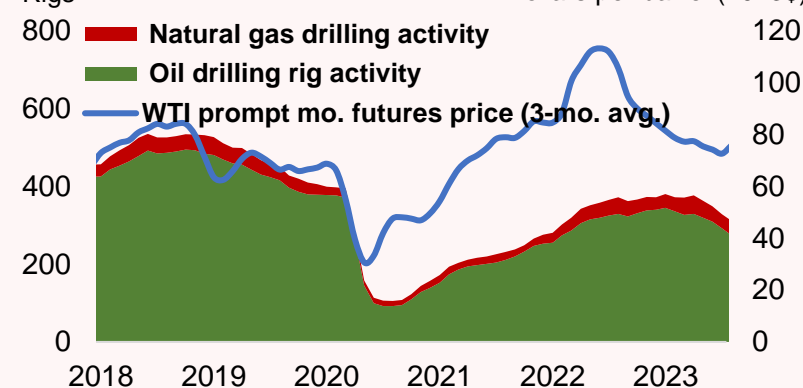
Million barrels per day oil-equivalent



EIA's drilling productivity report estimates that production across Texas shale basins -- Eagle Ford and parts of the Permian, Hayessville, and Anadarko -- reached a record high in June 2023 but slipped by 0.7% from record levels as of August 2023.

Texas drilling activity and WTI crude oil futures prices

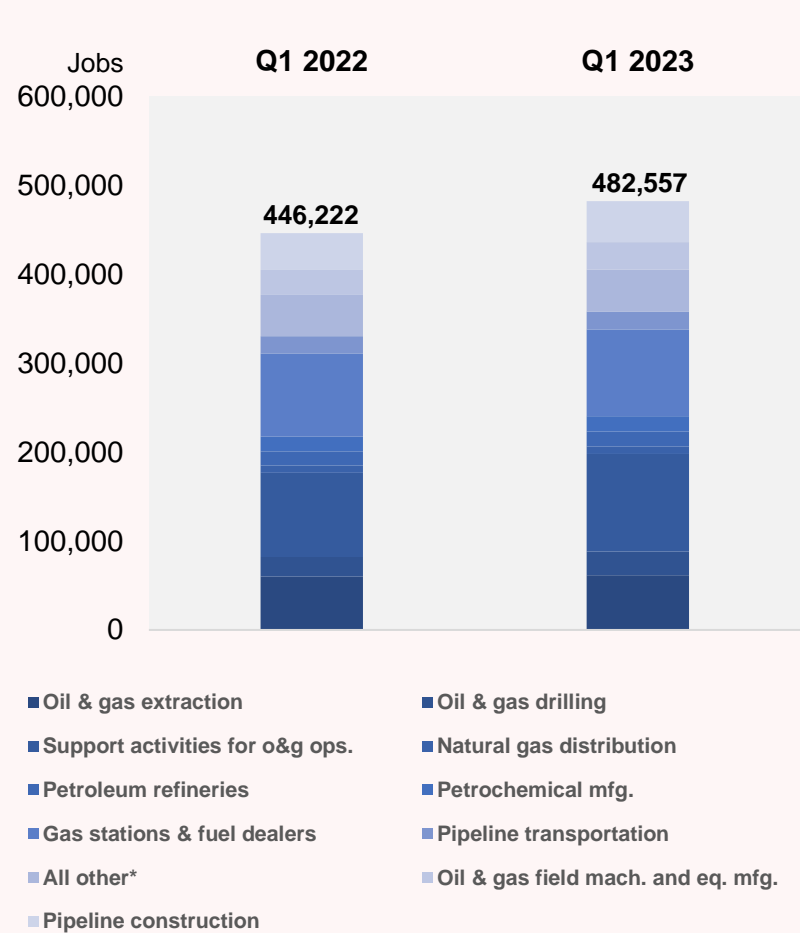
Rigs Dollars per barrel (2023\$)



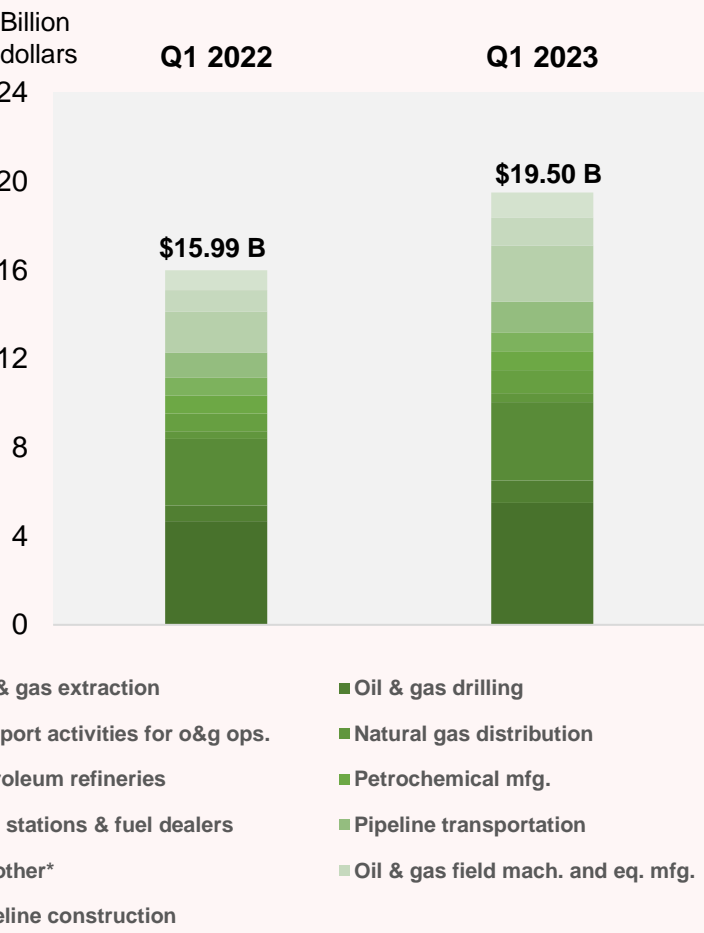
Texas' drilling rig activity decreased by 2 rigs for the week ended Aug. 11 per Baker Hughes -- and fell by 65 rigs or 17.2% since the end of April. Last week, Texas had 274 oil-directed rigs and 38 natural gas-directed rigs.

Texas' oil and natural gas industry employment and wages rose strongly

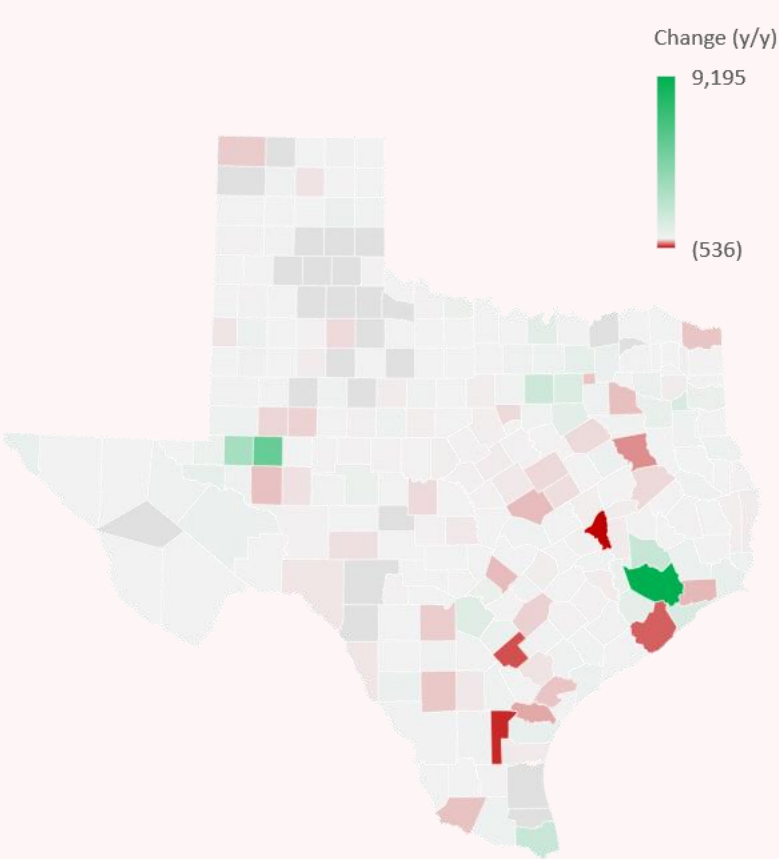
Texas Oil & Gas Industry Employment Rose by +8.1% y/y



Texas Oil & Gas Industry Wages Rose by +22.0% y/y



Heatmap of employment changes by county



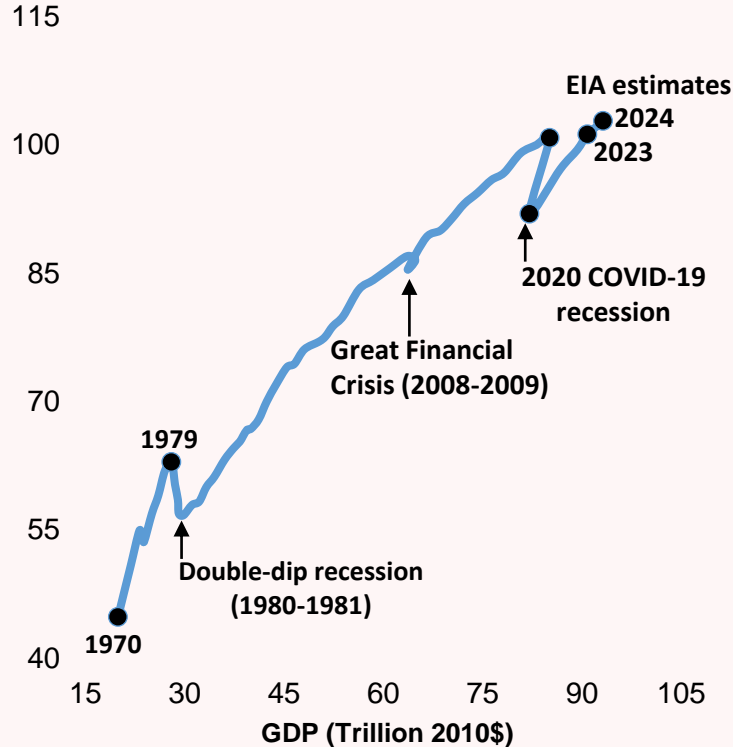
* Other industry segments include petroleum and pet. product wholesalers, fuel dealers, lubricant mfg., asphalt mfg., industrial sand mining, nitrogenous fertilizer mfg., basic organic chem. mfg., plastics and resin mfg.

Global oil market balance at-a-glance

- **August demand projections held steady.** Global oil demand is expected by EIA to reach a record 101.2 mb/d in 2023 and 102.8 mb/d in 2024.
- **EIA raised its oil production growth** projections by +0.1 mb/d to 1.4 mb/d in 2023 and +0.2 mb/d to 1.7 mb/d in 2024. These are volumes needed to balance global markets in their view. The U.S. is assumed to be largest single contributor this year
- **For global oil inventories, EIA revised its projections to show net stock draws through year-end 2023,** corresponding with Brent crude oil prices of \$84 per barrel in Q3, \$88 per barrel in Q4, and then easing in 2024 with a more balanced market in their view

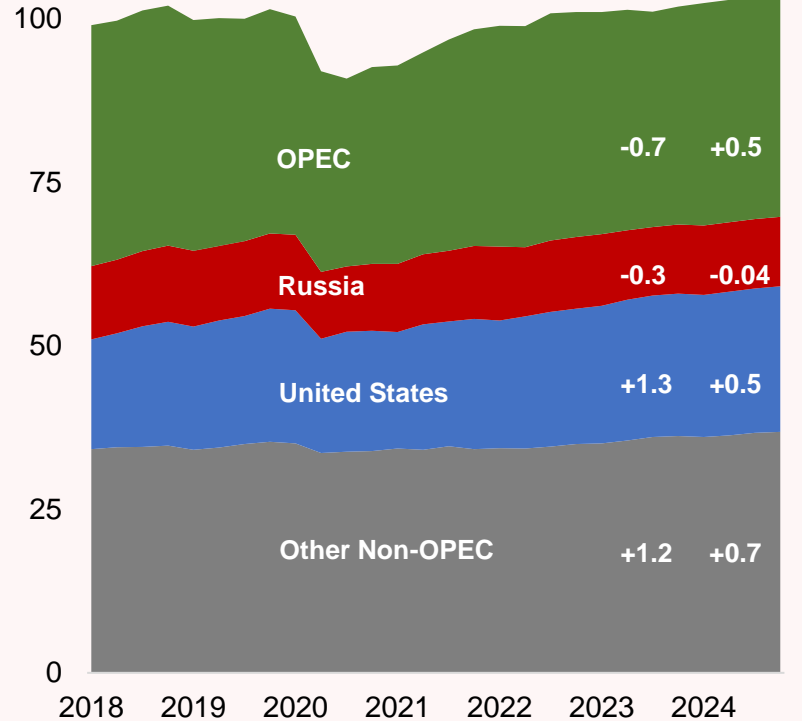
Global oil demand and GDP

Million barrels per day (mb/d)



Oil production by country/region

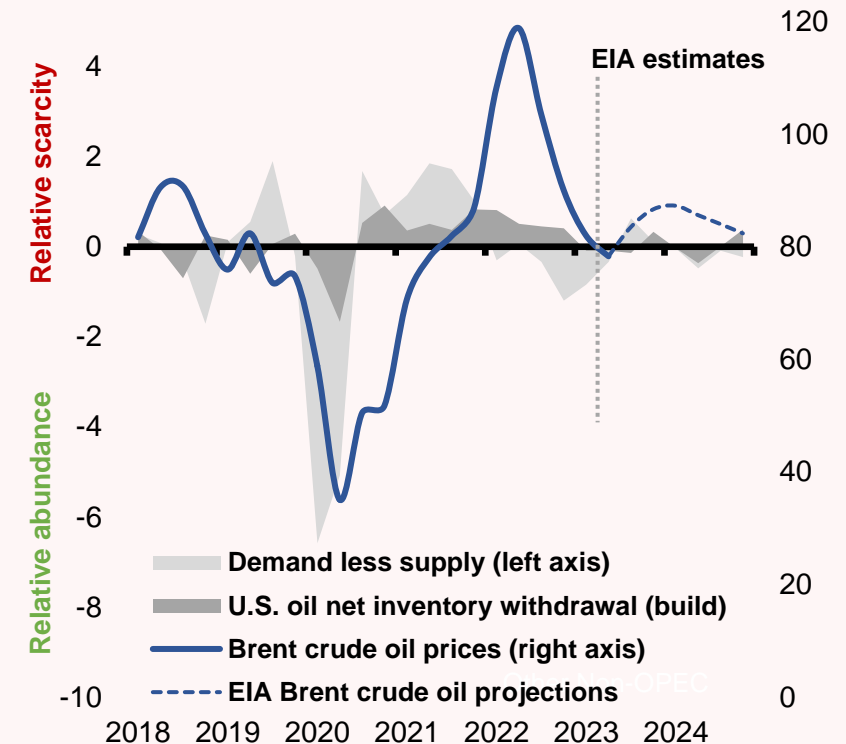
Million barrels per day, mb/d



Global demand/supply & Brent prices (July 2023)

Million barrels per day (mb/d)

2023\$/Bbl



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