Energy Key to Economic Growth, Productivity

Where there's energy, there's economic growth. The looming question, however, is whether a recession is on the horizon. Notable investors have raised concerns by betting against the economy, but according to the U.S. Energy Information Administration (EIA), global oil demand is on track to hit a record high in 2023 and again in 2024. One fundamental truth we've gleaned from analyzing the economy at the Texas, U.S. and global levels is this: economic activity hinges on energy, particularly oil and natural gas.

So, if oil and natural gas markets are thriving, what does that suggest about a potential recession? The Texas Oil & Gas Association's Energy and Economics Outlook for Q3 2023 delves into this issue.

Data this year have consistently reinforced reasons for economic optimism, showing a combination of strong demand and record exports of oil and natural gas, solid domestic production, and inventories that have held different implications for oil and natural gas.

Specifically, U.S. ending stocks of crude oil fell in August to their lowest level for the month since 1985, heightening concerns over OPEC+'s supply cuts. By contrast, natural gas storage levels have consistently been near five-year highs, showcasing an impressive productivity narrative.

Energy influences every economic sector. Strong oil and natural gas demand not only mirrors current GDP growth but, given the ripple effects of pricing and the lead time for production-driven investment, could also lead it.

Our reading of energy markets has been consistent: a robust energy sector indicates a thriving economy.

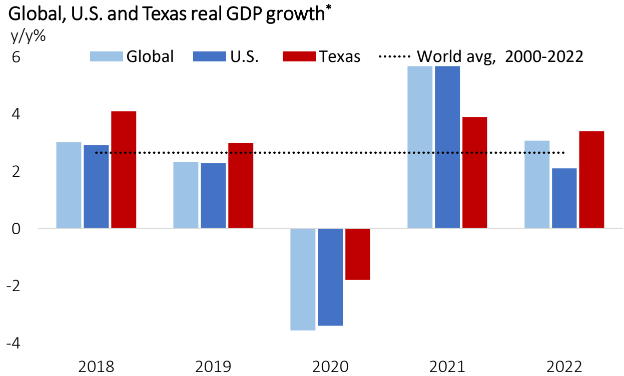
Where there's energy, there's economic growth—a fundamental tenet that should shape U.S. energy policy as global demand breaks records.

Let's dig into some of the details, starting with the economic growth.

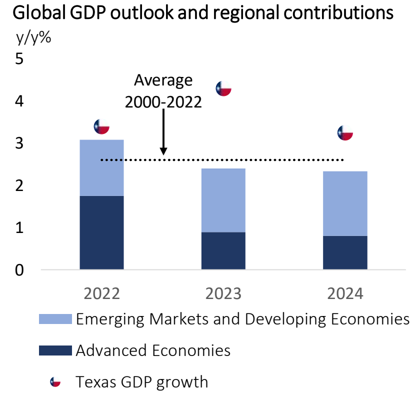
A "soft landing" in 2023 followed by steady growth in 2024 have become the IMF's main expectations

- The GDP growth outlook for the global, U.S. and Texas economies has broadly improved for this year – including large upward forecast revisions by the International Monetary Fund (IMF) – and fueled optimism for solid growth in 2024
- Texas GDP has outperformed analysts' forecasts so far in 2023, and TXOGA estimates Texas' GDP growth of 4.3% y/y in 2023 and 3.3% y/y in 2024

Global, U.S. and Texas real GDP growth*



Global GDP outlook and regional contributions



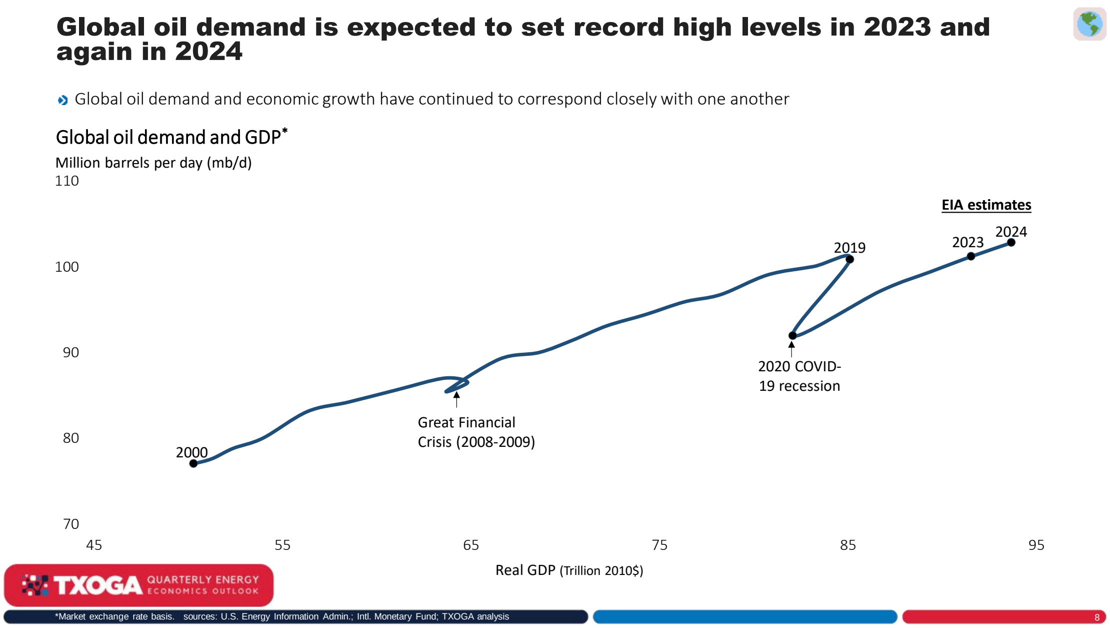
TXOGA QUARTERLY ENERGY ECONOMICS OUTLOOK

* Market exchange rate basis sources: IMF; U.S. Bureau of Economic Analysis; TXOGA analysis

Looking into the specifics, economies globally have surpassed recessionary predictions. The International Monetary Fund (IMF) and global central banks have adjusted their GDP growth projections upward. Now, deep into 2023, only an unforeseen event could drastically alter these forecasts. Texas, expected by analysts to see 0.9% growth this year, reported a 5.0% year-over-year (y/y) growth in Q1 according to the U.S. Bureau of Economic Analysis (BEA).

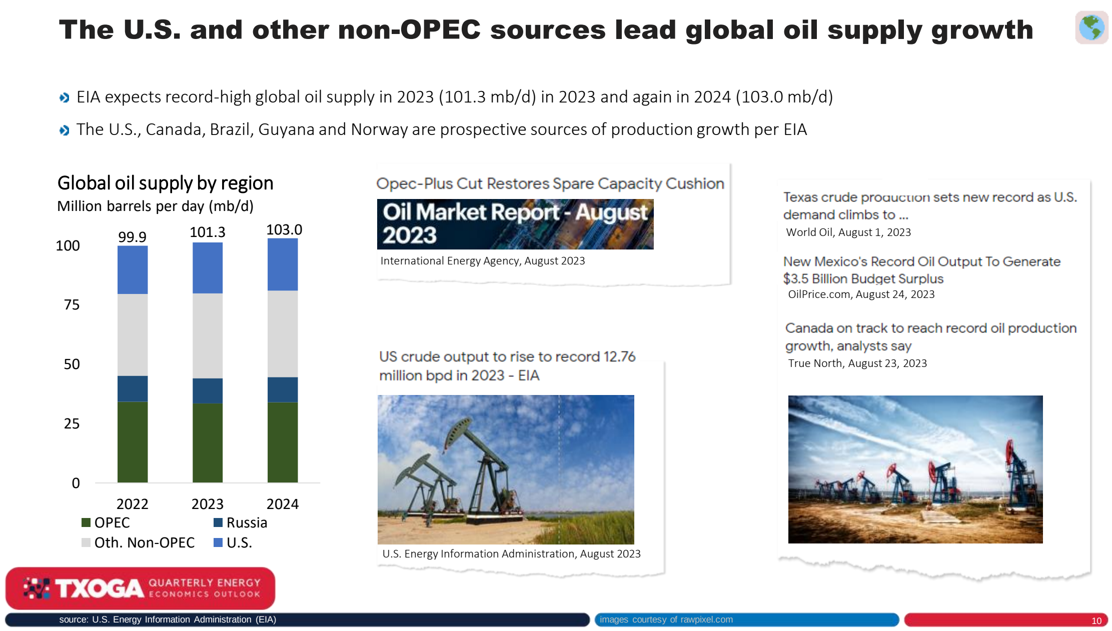
Current forecasts project global GDP growth at 2.4% y/y for 2023 and 2.3% y/y for 2024. If accurate, history suggests that increased energy—70% of which is oil and natural gas per EIA—will be in demand.

The correlation between GDP growth and oil and natural gas needs has been evident and consistent, even post-2020 pandemic.

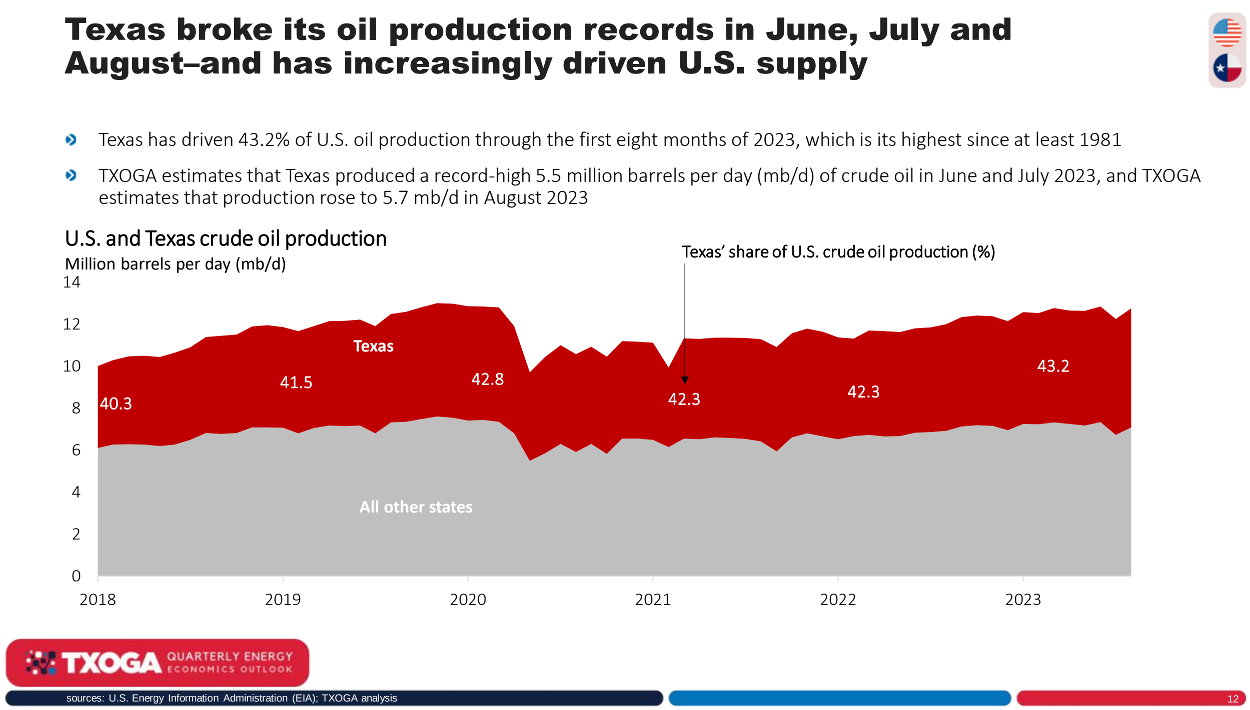


While news often magnifies growth fluctuations, it's important to remember that the world's primary energy needs are tied to its overall activity level. Given the natural decline in oil and natural gas production, consistent investments are crucial, even if demand growth plateaus. Notably, 2023 is predicted by the EIA to set records in both global economy size and oil requirements.

So, where will all this energy originate? The supply side is key.

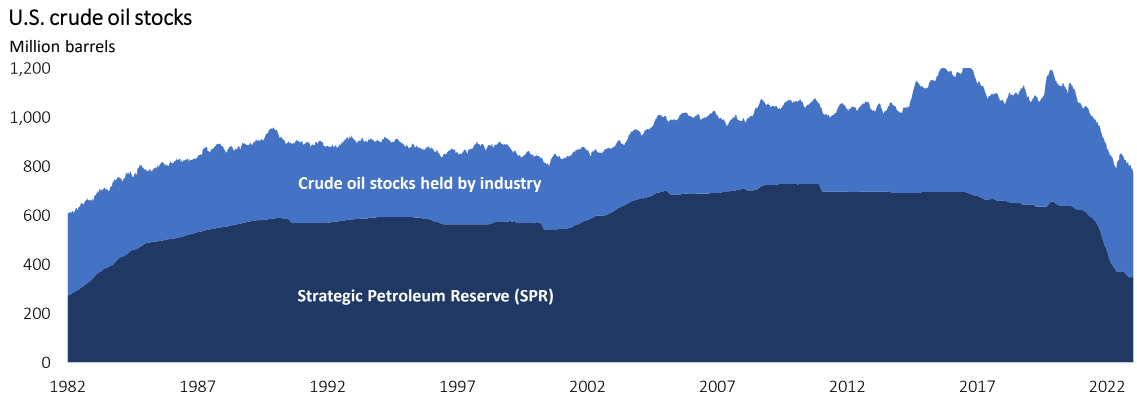


The U.S., alongside Canada, Brazil, Guyana, and Norway, is predicted to lead global oil supply growth, while OPEC+ has reduced its contributions. OPEC+'s spare production capacity could become essential in emergencies.



U.S. crude oil inventories have fallen to their lowest since 1985

- U.S. ending stocks of crude oil (excluding the SPR) equated to 25.4 days of supply per EIA as of August 25, 2023
- The largest change in U.S. crude oil stocks over the past year has been from sales of the SPR, which stands at half the level that was held in 2012 to 2017 despite some stock building so far in 2023



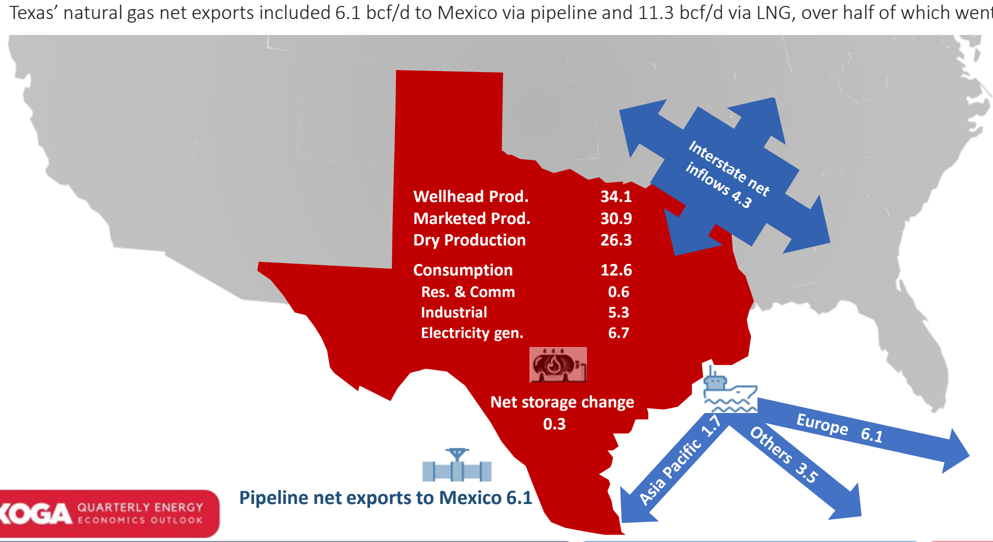
TXOGA QUARTERLY ENERGY ECONOMICS OUTLOOK

source: U.S. Energy Information Administration (EIA) 13

Texas stands out, leading the U.S. in oil supply growth and accounting for its highest share of U.S. production since at least 1981 based on data from EIA. The state has set several records in 2023: oil production, total oil supply, natural gas liquids (NGL) production, and refining usage of NGLs. With Texas responsible for a significant and increased share of U.S. oil output, it's notable that declining U.S. crude oil inventories are at their lowest for August since 1985.

Texas' natural gas flows in June 2023: About half of production was consumed in-state and on par with combined exports to Mexico and Europe

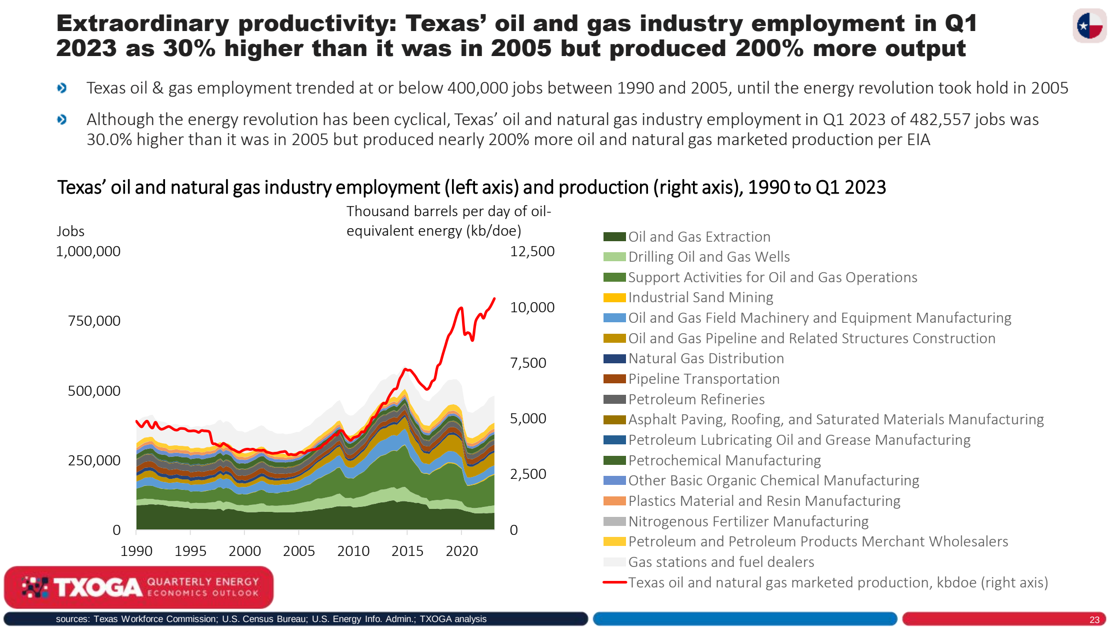
- TXOGA estimates that Texas produced 26.3 billion cubic feet per day (bcf/d) of dry natural gas in June, 12.6 bcf/d (48%) of which was consumed in-state and 0.3 bcf/d (1%) entered storage. Net inflows from other states added 4.3 bcf/d to supply
- Texas' natural gas net exports included 6.1 bcf/d to Mexico via pipeline and 11.3 bcf/d via LNG, over half of which went to Europe



TXOGA QUARTERLY ENERGY ECONOMICS OUTLOOK

sources: U.S. Energy Info. Admin.; U.S. International Trade Commission; TXOGA analysis 19

While Texas' natural gas production records mirror its oil achievements, there's a clear distinction: strong domestic natural gas storage levels. These levels have tempered prices, and with September 2023's delivery priced at $2.48 per mmBtu (rising to $3.87 for January 2024), natural gas offers a competitive advantage for several American industries, including refining, petrochemicals, fertilizer manufacturing, bakeries, refractories, electricity generation, and others.



Productivity shines in a historical context when comparing Texas' energy employment with its production. From 1990 to 1996, production and industry employment varied in tandem. From 1996 until the energy revolution began to take hold in Texas in 2005, employment held steady near 400,000, but production declined. Then, as the energy revolution accelerated after 2005, production grew exponentially while employment peaked at nearly 600,000 in late 2015.

Since 2015, Texas' production has continued to reach new record highs despite cyclical variation in employment. This is the essence of productivity: technology and innovations in the field, real-time learning and increased resource recoveries, process digitalization and automation. Texas' oil and natural gas sector, which employed over 482,000 people in Q1 2023, underscores the power of innovation and technology in amplifying efficiency.

In concluding TXOGA's Q3 2023 outlook, Texas' record-breaking oil and natural gas production is a testament to its abundant resources, favorable business environment, and unparalleled energy infrastructure. It's no wonder Texas is hailed as the global energy capital and a beacon of oil and natural gas innovation.