

2022

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BISON INTERESTS

Oil Market Fundamentals
March 2022

Who We Are: Chief Investment Officer

Bio &
Contact



Josh Young
Chief Investment Officer

Josh has built his career concentrating on deep value opportunities for investors. He has over 15 years of experience in investment management, 10 of which were focused on publicly-traded oil and gas securities. Josh became Chairman of the Board of RMP Energy in 2017. After refreshing the board and management team and rebranding the company (Iron Bridge Resources), it was bought out at a 78% premium in 2018. Josh is the author of numerous articles on oil & gas investments and the guest speaker at various energy industry conferences.

He graduated with honors from the University of Chicago with a degree in economics. Josh was a management consultant to Fortune 500 companies and private equity firms, and then an investment analyst at a private equity fund. Josh worked as an energy investment analyst for a multi-billion-dollar, single family office, which was nominated as Institutional Investor's Single Family Office of the Year in 2008.



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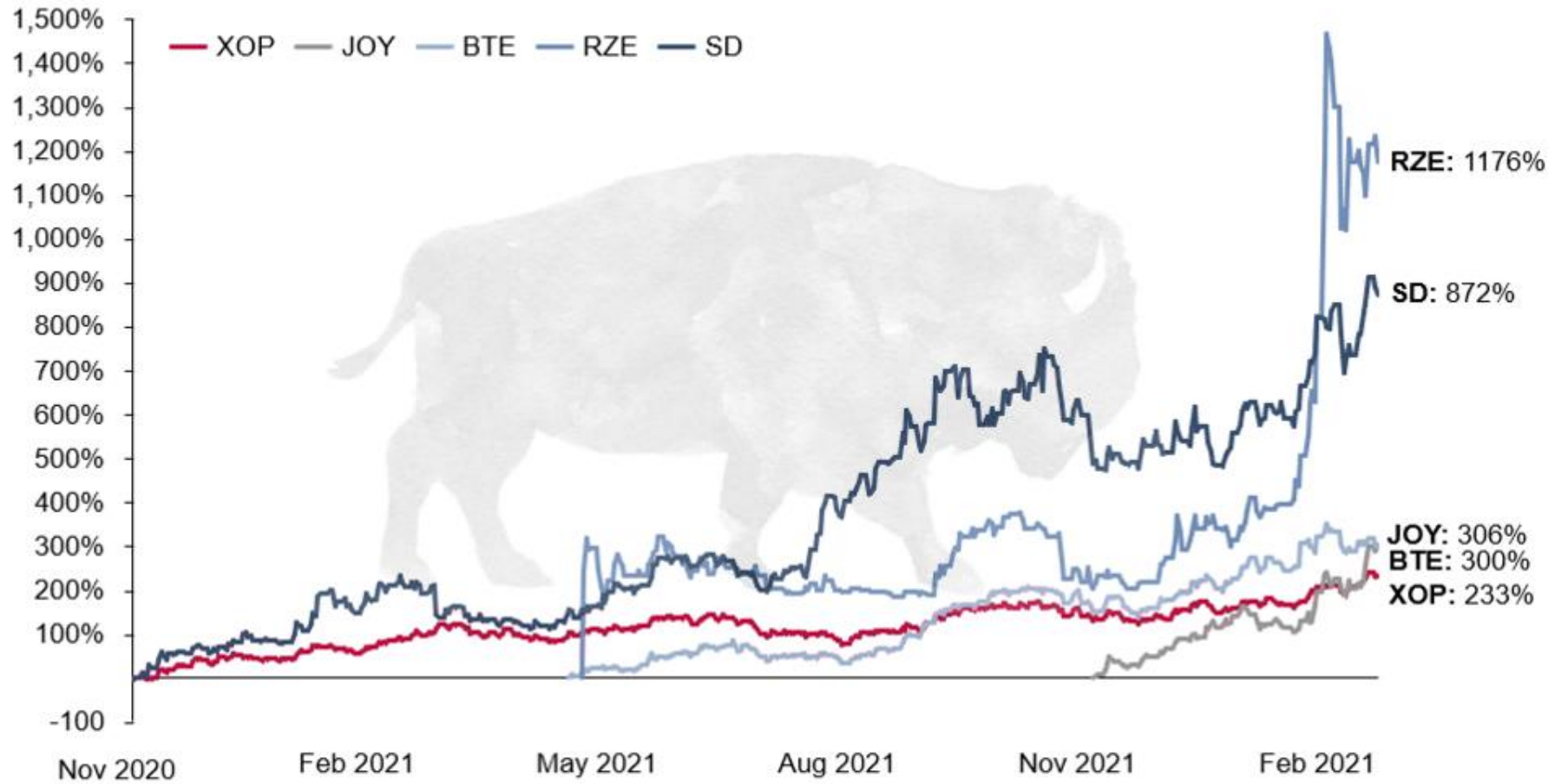
Performance is from stated period (earliest May 2015, Bison inception) to March 2022. These performance measures are illustrative and may not be indicative of actual or average performance achieved by clients.

About Bison



Bison Interests is a value-oriented long-only hedge fund with a track record of success, as indicated by the performance of certain portfolio holdings after public dissemination.

Return of Select Securities vs. XOP Since Public Dissemination, November 2020 – Present



Sources: Bison Interests analysis, investing.com

* March values as of 03/29.



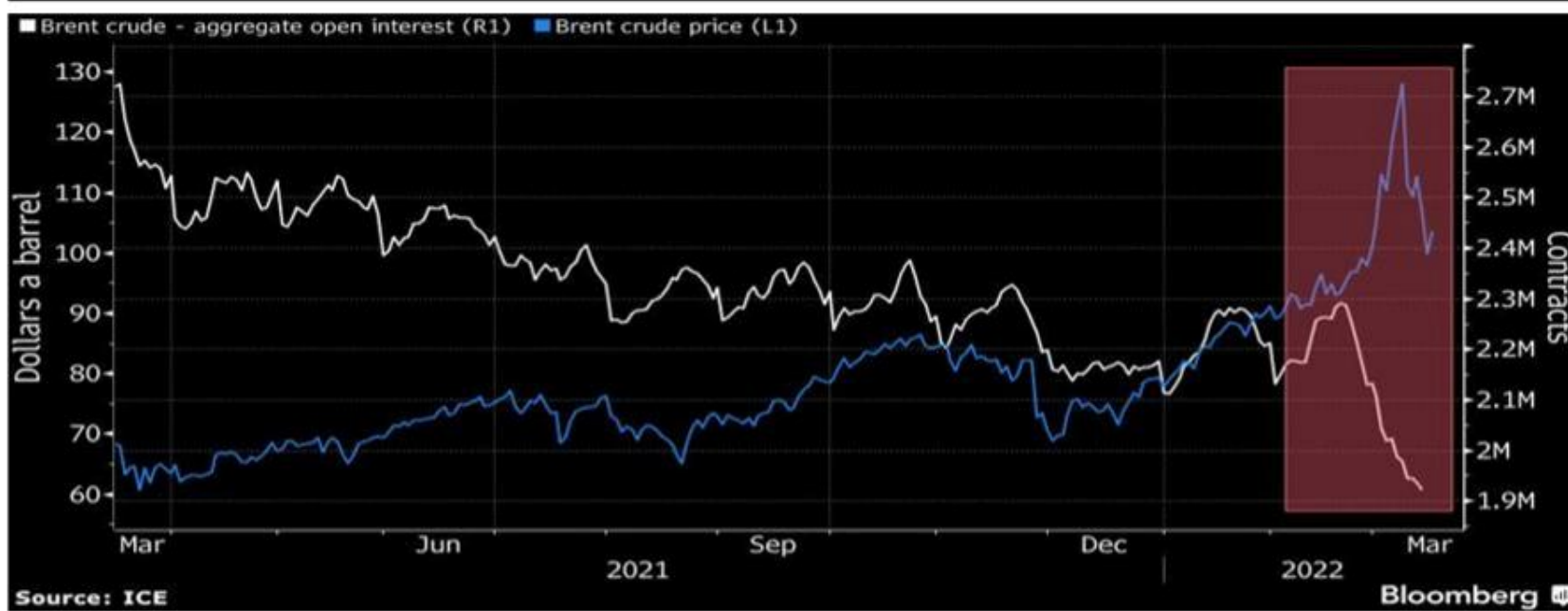
Open Interest in Oil Futures: Compellingly Low



The recent divergence between oil prices and futures contracts open interest is a bullish indicator of negative sentiment vs strong fundamentals and positive price momentum

- Commodity markets have been strained by rapid increases in various commodity prices, with institutions and physical trading firms facing margin calls.
- Additionally, this suggests that oil and gas likely remains underinvested in as a sector and mainstream interest remains low. Historically, investing in commodities in cyclical troughs, when public attention/interest is at lows, has proven a lucrative strategy. "Buy Low."
- Doing so allows an investor to buy securities at highly discounted valuations—and capture most of the upside—as capital flows into the sector and associated securities re-rate higher.

Open Interest on Brent Crude Futures Contracts vs. Price, 1 Year



Sources: Bison Interests analysis, Bloomberg



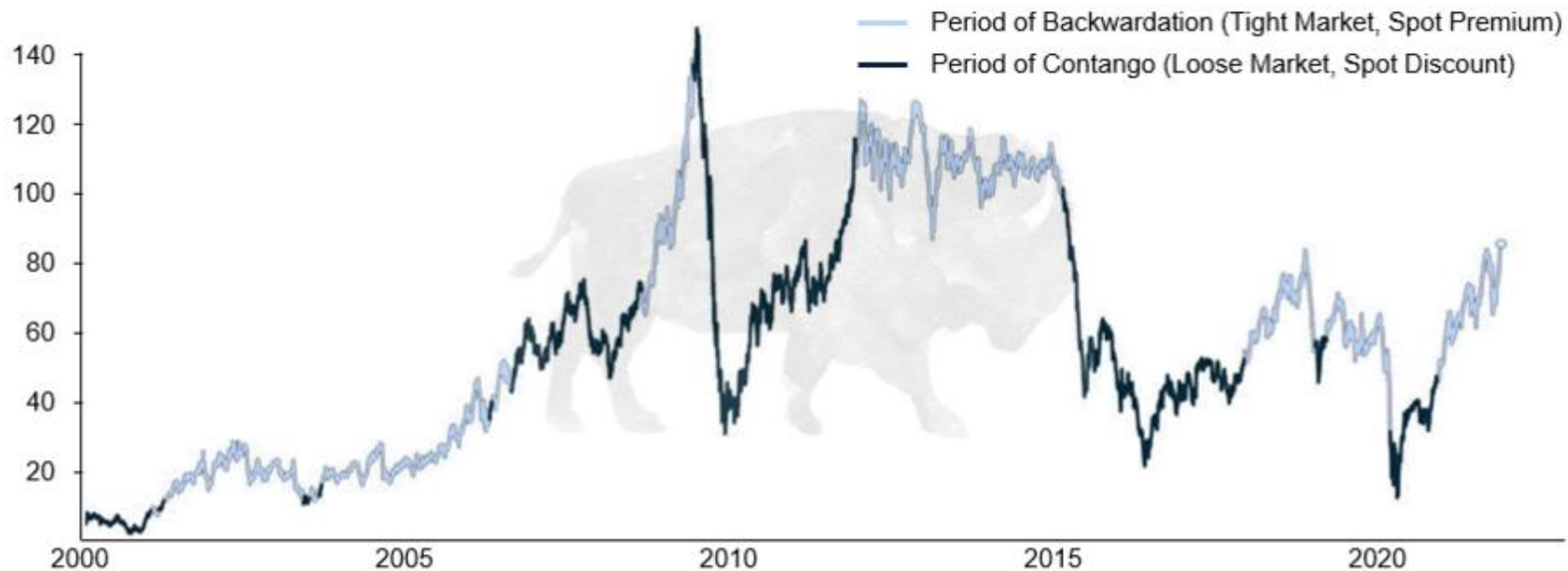
The Current Market Structure is Bullish



The oil futures market is currently in backwardation. Historically, the oil market has tended to be backwardated in rising price environments.

- When oil markets are backwardated, market participants are incentivized to sell oil today rather than to store it in inventory for delivery at a later date.
- This indicative of a tightly supplied market and has usually coincided with oil price rallies, and this is unsurprisingly consistent with many fundamental indicators (discussed later on).
- Historically, buying oil during periods of backwardation would have proven a successful strategy:

Brent Crude Price vs. Calendar Spread, 2000 — January 2022



Sources: Commodity Context, Bloomberg. Note: Backwardation/Contango based on 30-day MA of 12-month calendar spread.



Demand is Consistently Underestimated

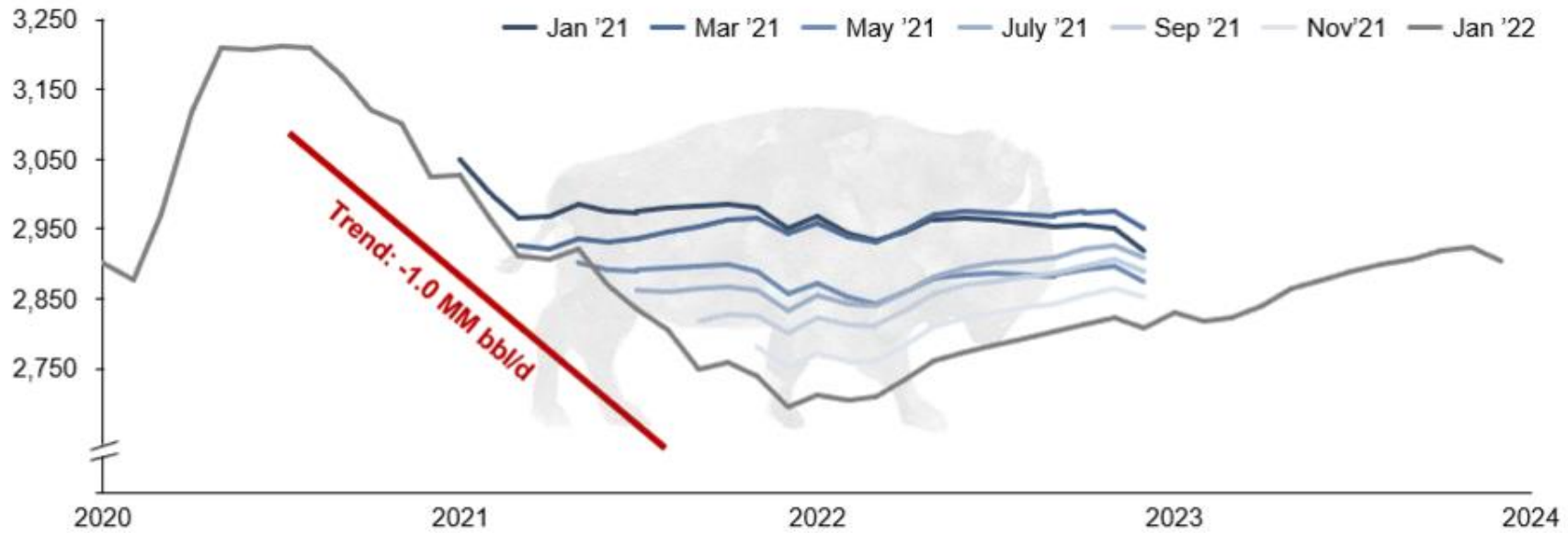


The consensus forecasts have been repeatedly wrong, and there's no reason to trust them this time around.

- Oil inventories continue to fall faster than consensus, indicating that supply/demand is consistently lower/higher than consensus, and that forecasts are consistently too bearish.
- This is actually bullish, and an indicator that general sentiment.
- This suggests that it's best to focus on the fundamentals (which are consistently improving) and give less importance to short-term forecasts.

Historical STEO Projections for OECD Commercial Inventories, 2020 — 2024

In MM barrels



Sources: Bison Interests analysis, EIA STEOs

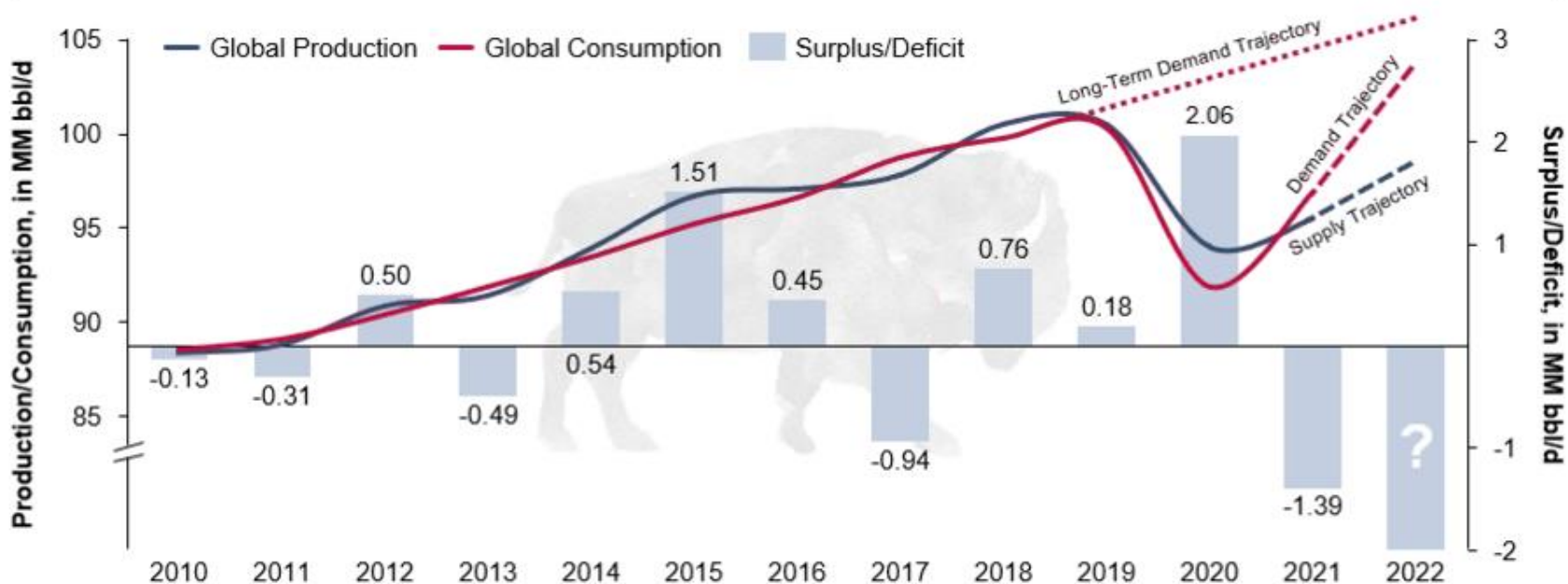
Demand is Recovering Faster than Supply



While oil demand has been recovering to its pre-pandemic long-term trend, there hasn't been enough supply recovery to meet it: deficits may worsen in 2022.

- Higher travel demand, soaring coal and gas prices and an improving quality of life in developing countries are leading oil demand to surprise to the upside.
- New supply is unlikely to come online fast enough to meet this rapidly growing demand due to problematic energy policy and ESG activism, which are reducing capital available to the industry.
- This coincides with an already dramatic reduction in investment following the 2014 oil crash at a time when an energy crisis is already well underway in Europe and Asia.

Global Oil Supply, Demand and Trajectories, 2010 — F2022



Sources: Bison Interests analysis, EIA



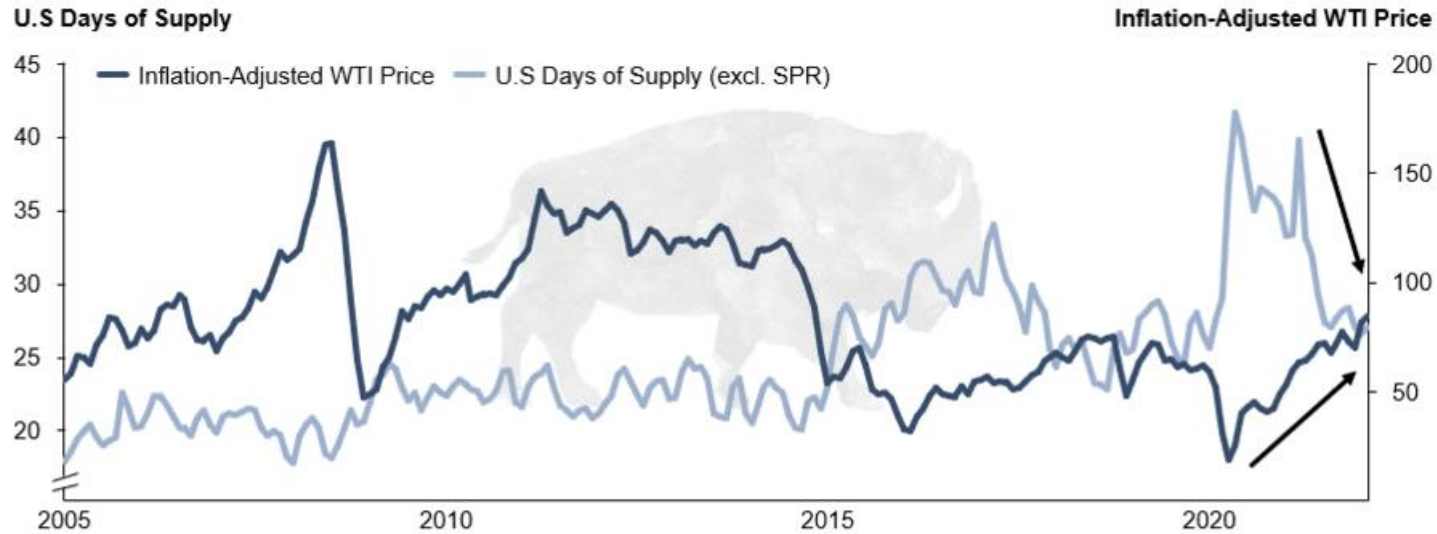
Oil Inventories are Running Low



Oil prices are likely headed higher as inventories are drawn down to meet higher-than-expected post-pandemic demand.

- OECD oil inventories are nearing historically low levels.
- As oil inventories deplete the risk of insufficient supply increases, which forces oil prices higher .
- Even with new drilling, it may take substantial time to bring new oil to market due to various bottlenecks along the supply chain.
- The broader challenge of an aging workforce is being magnified in the oil and gas industry by the numerous layoffs over the long recent downturn, making experienced and skilled labor scarce.

U.S Days of Supply of Crude Oil vs. Inflation Adjusted WTI Oil Price, 2005 — February 2022



Sources: Bison Interests analysis, EIA



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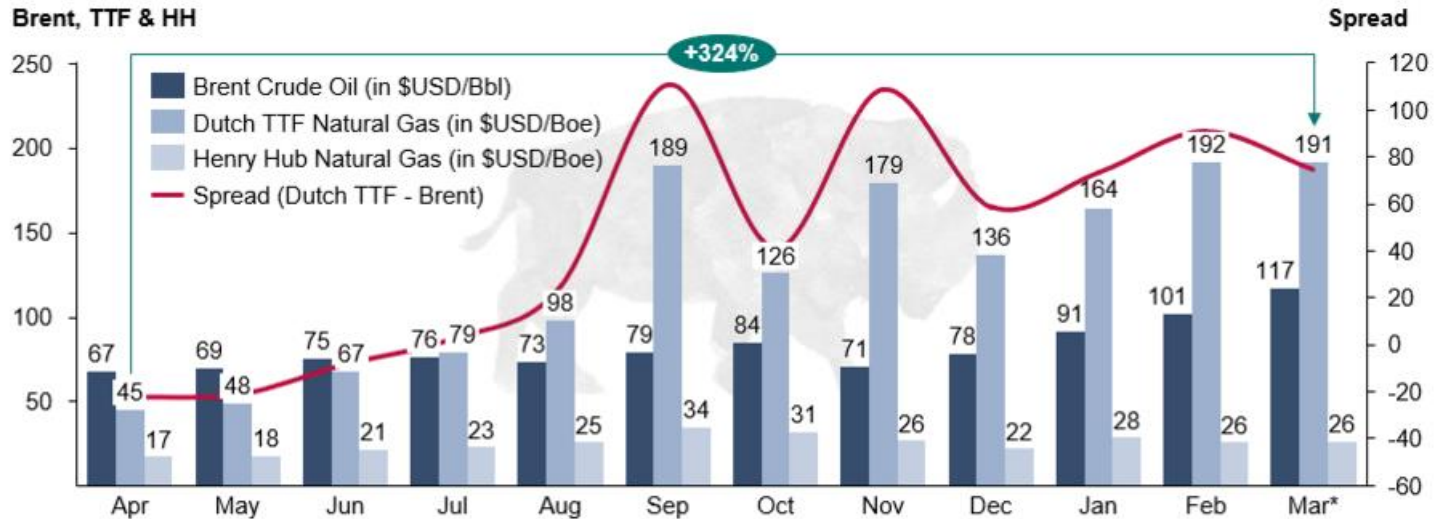
The Energy Crisis is Pressuring Oil Higher



Energy prices in Europe and Asia continue to rise, which is fuelling price inflation and causing critical shortages.

- The ongoing energy crisis is likely the culmination of years of underinvestment in reliable energy sources, as a part of a poorly implemented energy transition.
- Ironically, divestment and virtue signalling policymaking has intensified at this time, with natural gas prices in Europe sitting near \$190 / barrel of oil equivalent after briefly running higher than \$350!
- Natural gas is used to produce ammonia—a primary input for fertilizer used to grow crops—and so higher prices drive food inflation.
- Due to soaring coal and gas prices and shortages are utilities are instead burning oil for power generation, which is adding demand.

Monthly Dutch TTF Gas, Henry Hub Gas & Brent Crude Oil Prices in \$USD/Boe, 1 Year



Sources: Bison Interests analysis, investing.com

*Note: Feb values as of 03/21.



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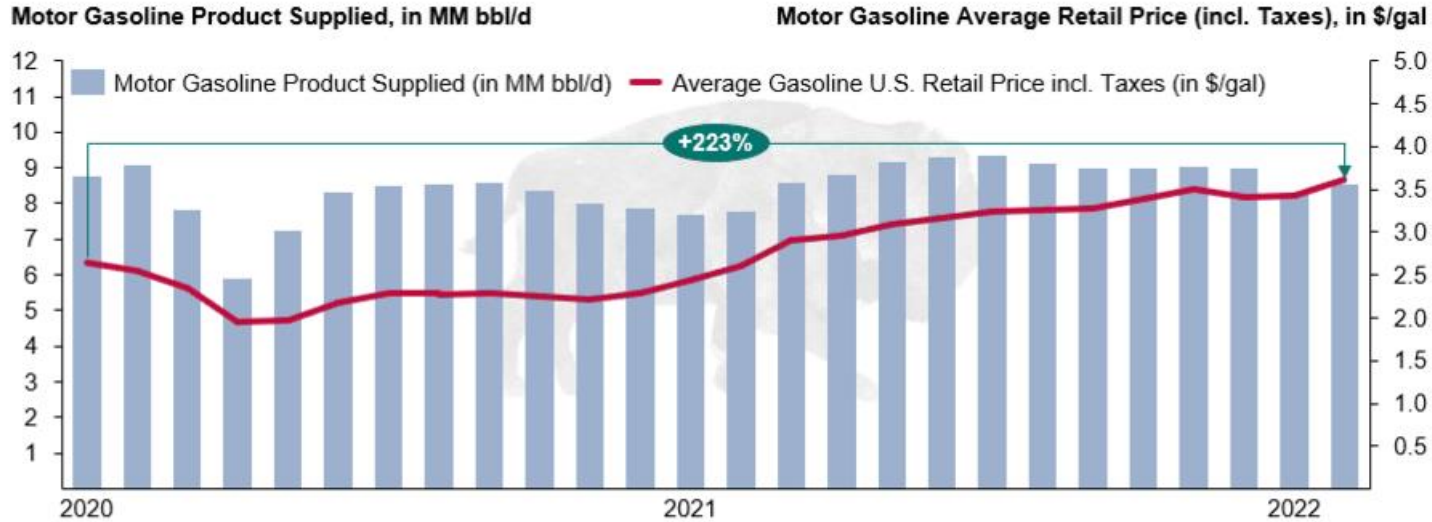
Gasoline Demand Rising With Oil Prices



Gasoline demand has been resilient despite rising prices, evidencing low price elasticity of demand

- Motor gasoline prices in the U.S are up 220% since January 2020, driven by years of under investment due to capital destruction in previous cycle highs and regulatory policy that discourages oil and gas exploration and production.
- While gasoline prices have been soaring demand remains strong, and gas prices remain cheap on an inflation-adjusted basis, suggesting that prices can rise materially before there is demand destruction. Additionally, this effect may be delayed by potential fuel subsidies from governments.
- Soaring gas prices are becoming a political pain point. Various governments are trying to coerce producers to produce more oil, but ironically, they're not facilitating it from a regulatory perspective and threatening additional taxes.

US. Gasoline Supplied (as a proxy for demand) vs. Gasoline Average Retail Price*, 2016 — February 2022



Sources: Bison Interests analysis, EIA

*Note: Includes taxes.



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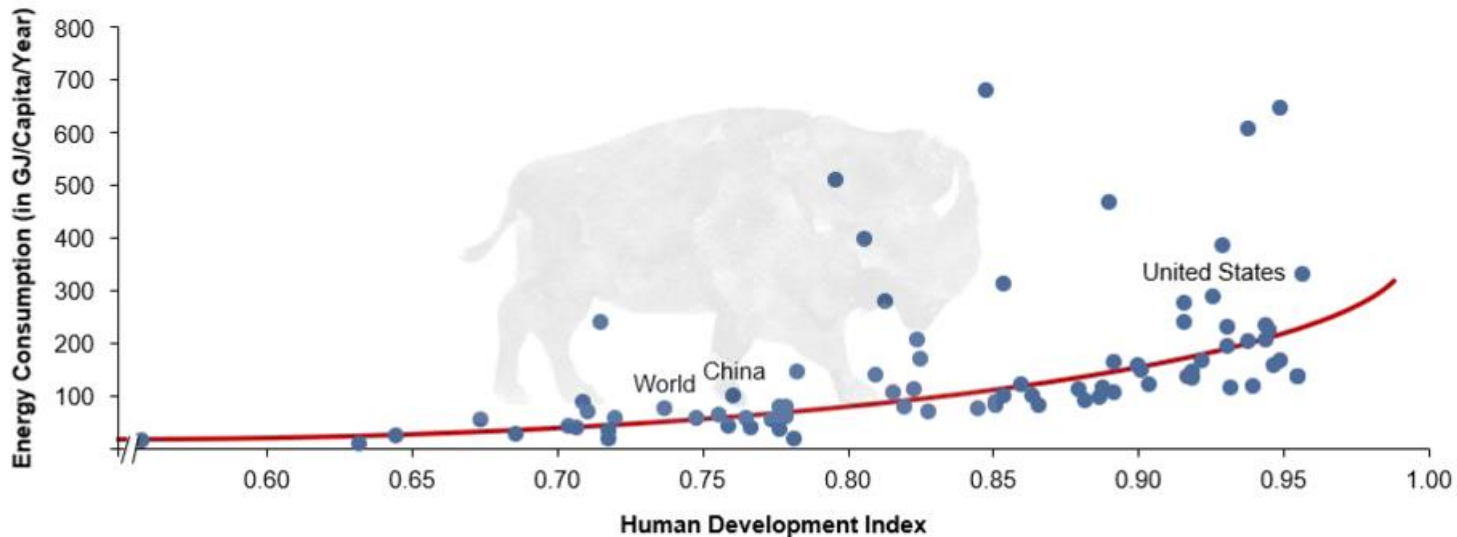
Reduced Poverty is Driving Demand



Economic and population growth in emerging and frontier market countries will likely be the most important and largest driver of rising oil demand over time.

- There is a clear non-linear relationship between energy consumption and quality of life. Improving living standards beget higher oil consumption and shift the energy mix away from traditional biomass and coal to higher quality sources such as natural gas and oil.
- Developing countries account for a majority of the world's population and future growth, but only make up a small proportion of energy consumption.
- People in developing countries are actively trying to increase their standard of living; therefore, small increases in per capita oil consumption could mean huge incremental demand over time.

Human Development Index vs. Energy Consumption per Capita, 2019



Sources: Bison Interests analysis, BP Statistical Review, United Nations



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Oil & Gas Equity Valuations Remain Low

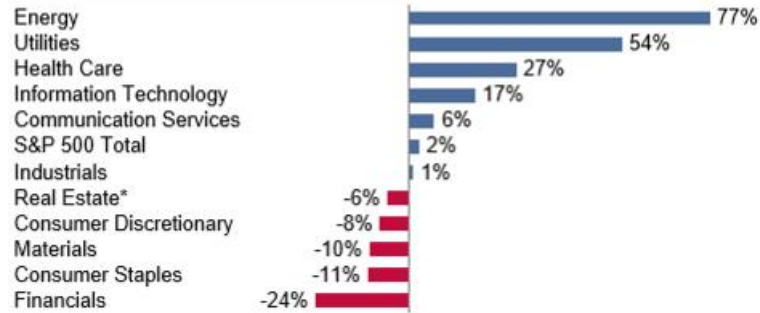


Energy is near record low % of the index and is being added back to the S&P 500, while the broader market continues to roll over.

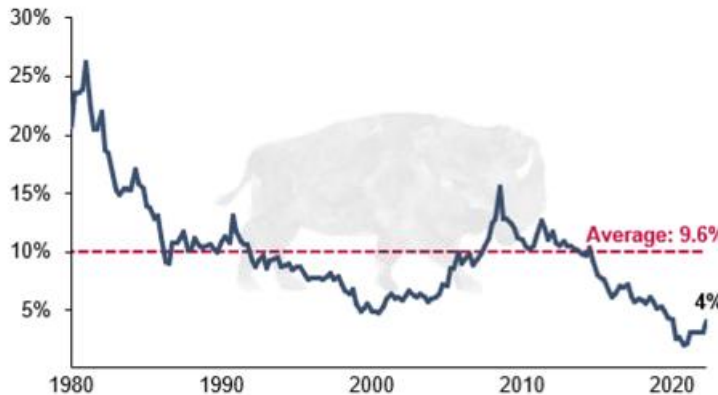
Implications

- There's huge upside if energy reverts to it's mean % of the index
- There's huge upside in O&G stocks in an inflationary environment
- Despite recent outperformance, O&G valuation multiples continue to get more attractive
- The crash in tech is likely to accelerate the rotation from growth to value stocks, especially as investors seek refuge in real assets and companies with strong cashflow

Quarterly Change in EPS by S&P Sector, Q3 2021

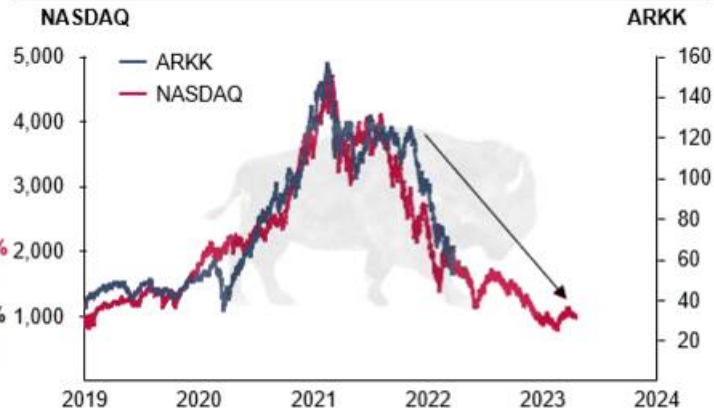


S&P 500 Energy Composition, 1990 — Present



Sources: Bison Interests analysis, Investing.com

ARKK (2019 – Present) vs. NASDAQ (1998 – 2002)



Sources: Bison Interests analysis, S&P Global



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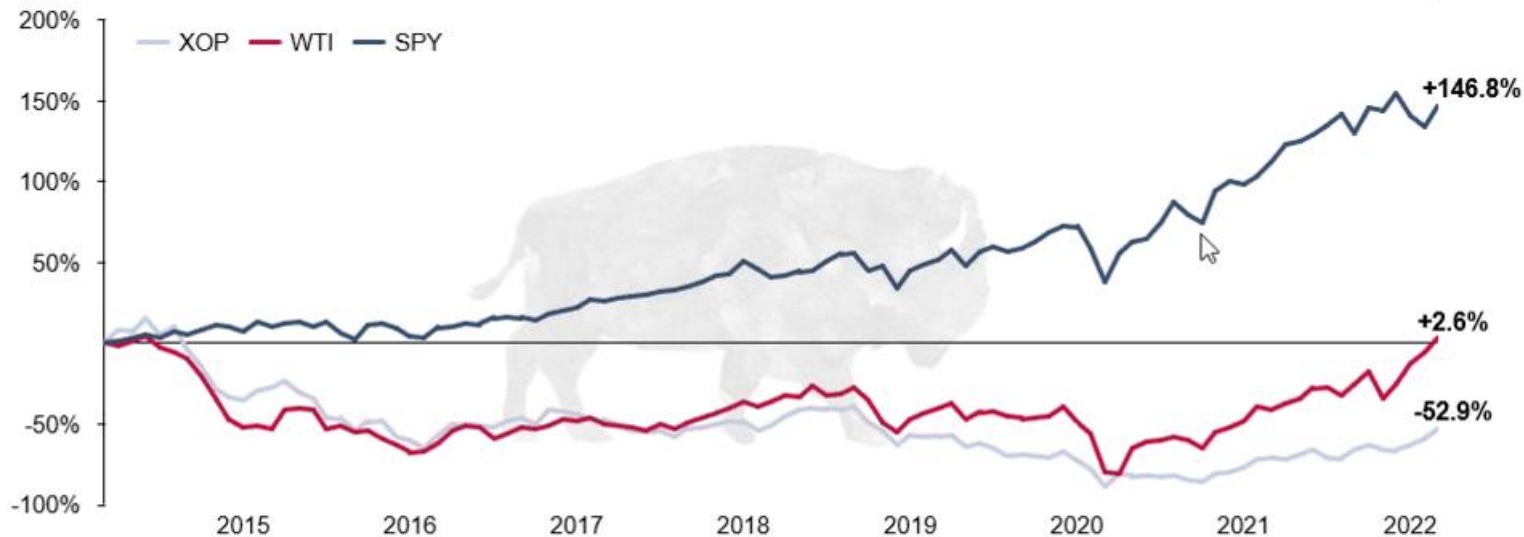
Material Upside Potential for Oil Equities



Oil equities have lagged other indices for some time now, despite rapidly improving fundamentals and higher oil prices.

- Oil stocks have materially lagged both oil prices and the broader market, at a time where the stock market has been booming.
- There's upside to oil stocks to if stocks as they catch up to oil prices.
- There's also a case that oil stocks can catch up to the broader market as fundamentals improve, and they benefit from multiple expansion.

XOP, WTI & SPY Absolute Performance, March 2014 – March 2022



Sources: Bison Interests analysis, investing.com

* March values as of 03/29.



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Underinvestment in Oil Field Services

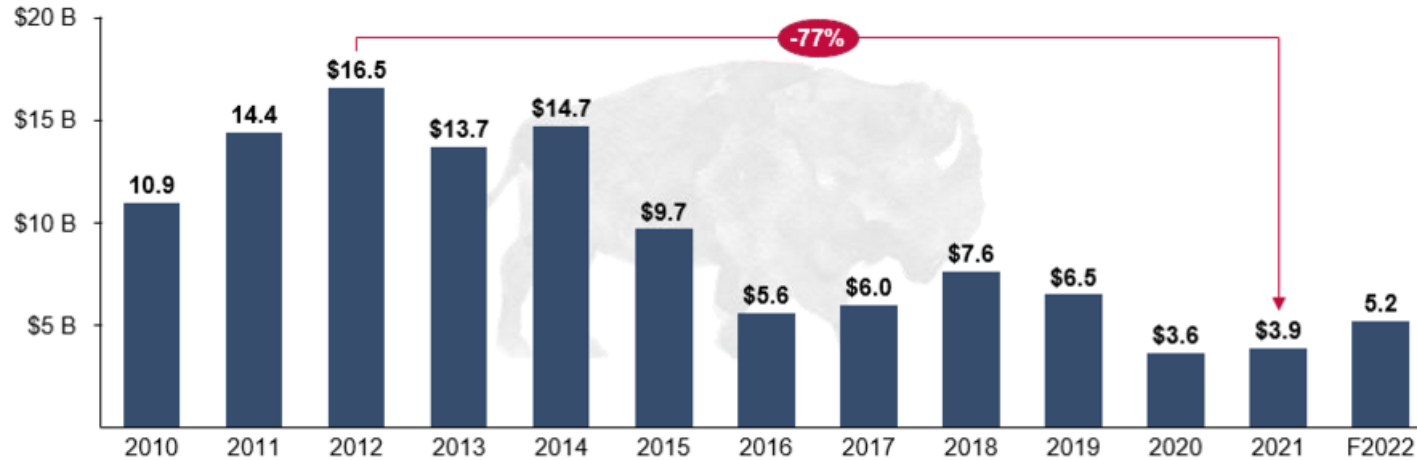


Significant historical underinvestment in oil field services (OFS) is likely to constrict oil production growth moving forward.

- Investment in OFS in the U.S is down 77% from its 2012 highs, and current investment is much lower than in previous cycle highs.
- Underinvestment across the oil field value chain has compounded for some time now, and is likely to impede on E&Ps' ability to grow future production even if they've shown a willingness to do so.
- E&P margins are likely to rise dramatically in this higher commodity price environment, but may be offset by oil field services cost inflation.
- OFS provider margins are likely to rise due to improved pricing power from reduced supply of equipment and skilled labour.

U.S Annual Oilfield Services & Equipment Investment, 2010 — F2022

Annual Capital Expenditures, in \$B



Sources: Bison Interests analysis, Bloomberg Intelligence



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Underinvestment in Oil Field Services

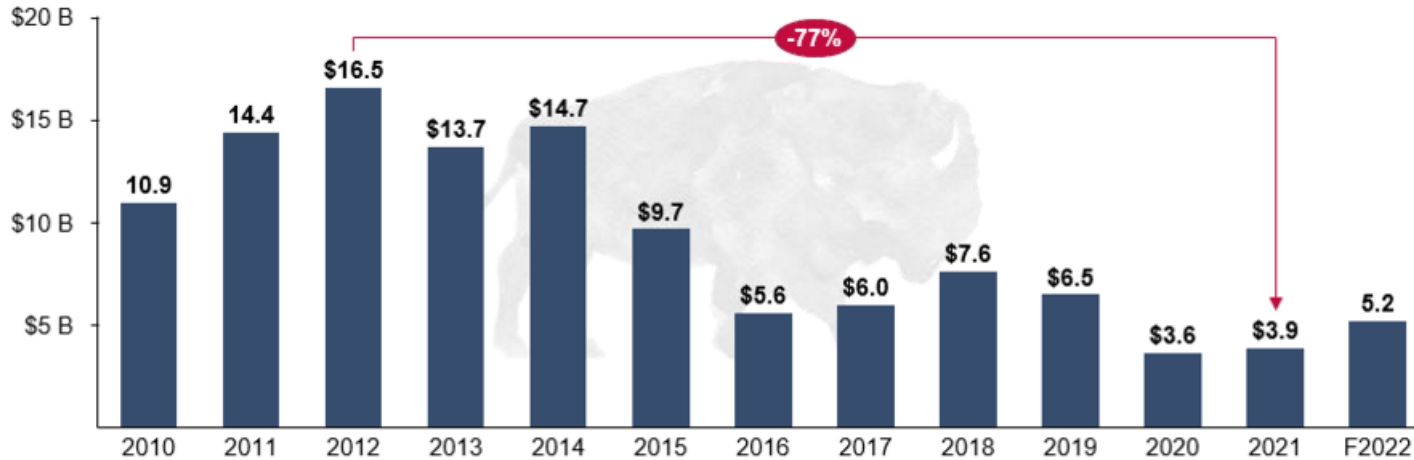


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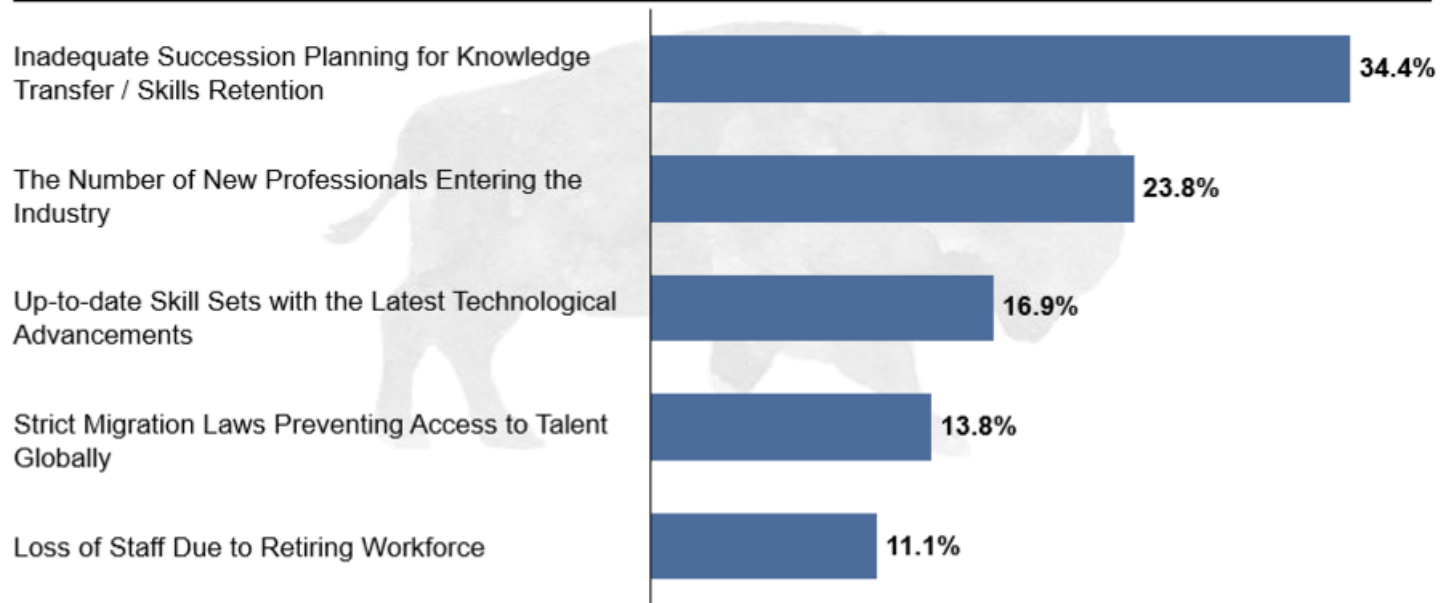
Severe Labor Shortages Constrain Supply



The industry has seen substantial labor turnover and there's a shortage of skilled an experienced workers.

- This comes after numerous rounds of layoffs in 2014 onwards and retirements from an aging workforce that can't return.
- This is likely to exacerbate the undersupply issue and hamper production growth in the future.
- Industry veterans are becoming increasingly hard to replace, particularly as the oil and gas industry falls out of favor with new college graduates:

Perceived Cause of Skills Shortages in the Oil & Gas Industry Survey, 2019



Sources: Bison Interests analysis, Oil and Gas Jobsearch Survey



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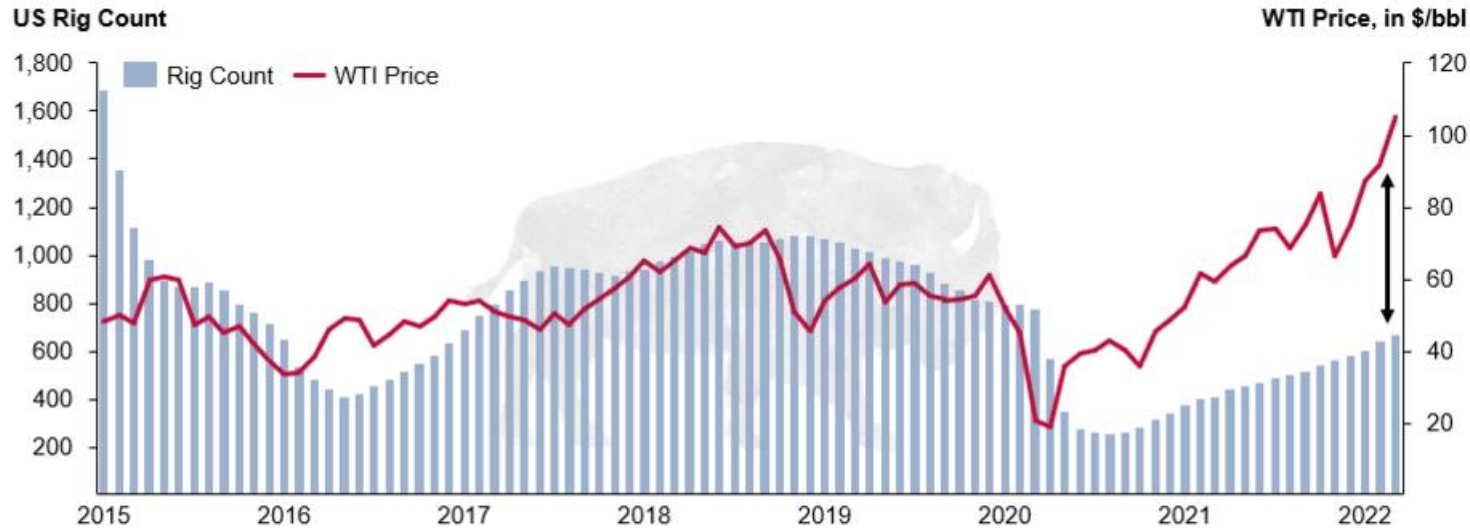
Insufficient US Drilling to Grow Production



Oil prices have recovered from 2020 lows, but the rig count has languished amid a lack of investment which has compounded for some time now.

- Drilling activity remains low versus both 2019 and pre-2014 oil crash levels, despite higher demand and rising prices, yet production has been flat.
- The US has been heavily depleting its DUC inventory to meet higher demand, and it isn't being replenished.
- Bison estimates that US will need to increase drilling substantially and quickly to keep production flat.
- This has meaningful implications for likely US production, as there is substantial lead time needed for rigs to be refurbished and/or re-activated, transported to the appropriate well pad and to then begin drilling.

US Total Rig Count vs. WTI Price, 2015 — March 2022



Sources: Bison Interests analysis, Baker Hughes, EIA, Investing.com

* March values as of 03/20.



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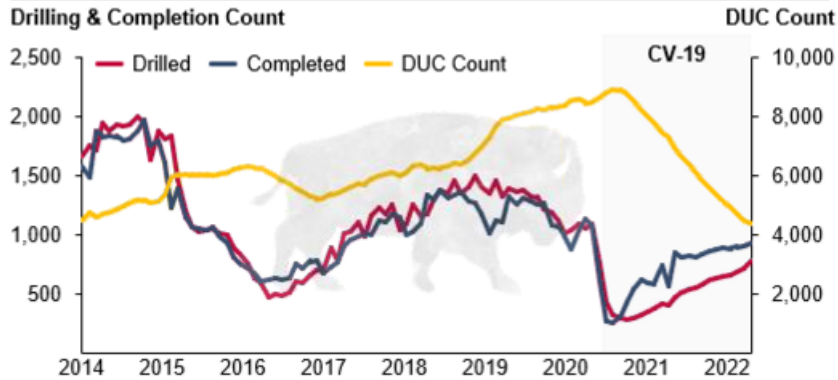
DUC Inventory is Being Rapidly Depleted



Absent substantially higher drilling activity, U.S production is likely to stagnate.

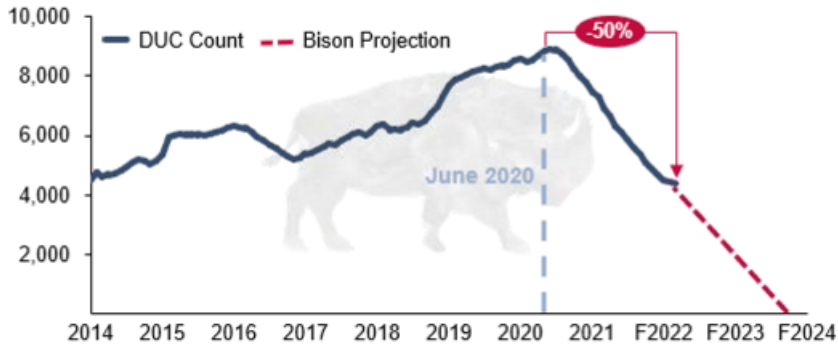
- Oil wells are built in two distinct phases: they are first drilled, using a rig, and then stimulated to production using a frac crew.
- DUC's are wells that have been drilled, but not yet completed. A steady inventory of DUC's is needed to maintain production.
- Since the pandemic, the industry has been compressing working capital capital and prioritizing well completions over new drilling, and DUC inventory has fallen dramatically.

Drilling and Completion Activity vs. DUC Count, 2014 – February 2022



Sources: Bison Interests analysis, EIA

U.S. Actual DUC Count & Predicted Trajectory, 2014 – F2024



Sources: Bison Interests analysis, EIA

- When capital is abundant, producers increase drilling relative to completions, and so DUC inventory rises.
- When it is scarce producers prioritize well completion over new drilling, allowing them to maintain production levels with less capital – so long as there are DUCs left to be completed.
- Bison estimates that the inventory of DUCs may reach dangerously low levels by late-2023.



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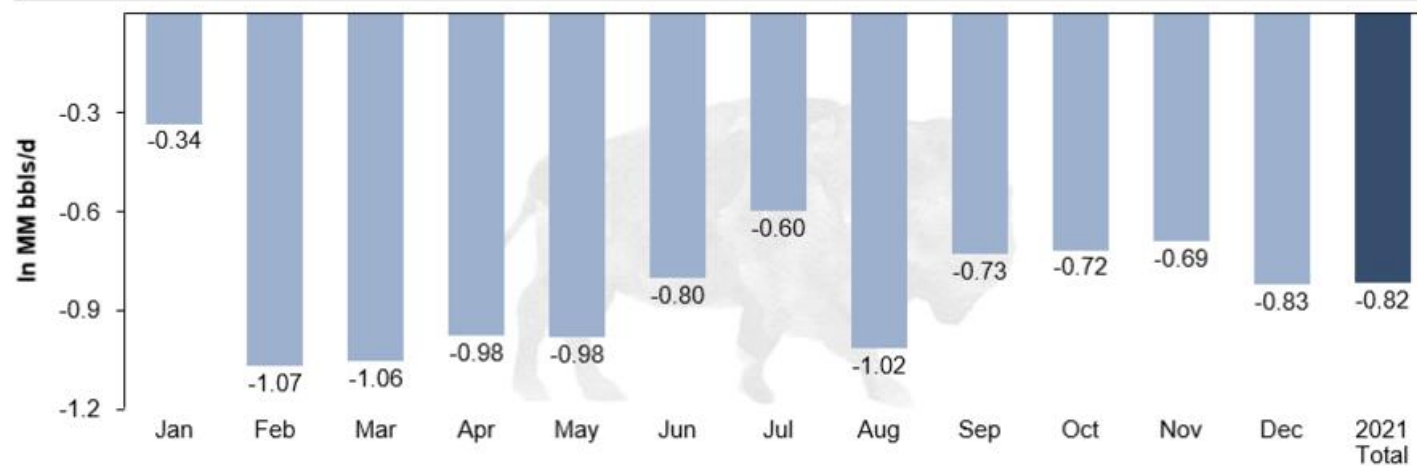
OPEC+ Won't Save the Market this Time



OPEC+ has less spare capacity than claimed after years of under-investment, and there's little chance it can quell rising prices.

- Bison made an early call that OPEC+ spare capacity is overstated by approximately 2MM bbl/d.
- Since then, OPEC+ has missed production for several consecutive months, most recently in December when OPEC+ missed its quota by 0.63MM bbl/d and was only able to increase production by 0.3MM bbl/d (25% below it's 0.4MM target).
- While OPEC+ smaller producers have historically been driving the underperformance, OPEC+ large producers, Russia and Saudi Arabia, have begun to miss targets as well.
- Based on this track record, it is likely that OPEC+ spare capacity is nearing it's upper bound and few new barrels can be brought to market without substantial investment (which can take time).

OPEC+ Deviation from Output Targets*, 2021



Sources: Bison Interests analysis, Bloomberg.
*Note: Excludes the OPEC exempt.



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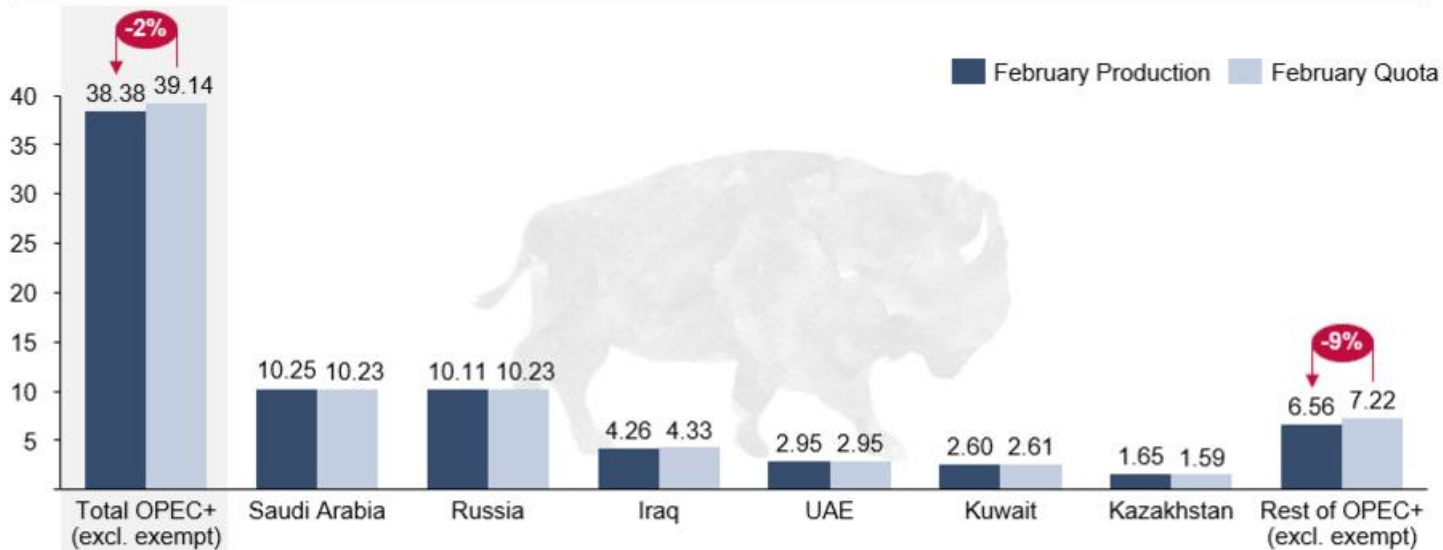
Spare Capacity is Less than Advertised



OPEC+ has a lot less spare capacity than claimed after years of under-investment.

- The OPEC+ has missed its production quota for several months now, most recently in December when it missed its quota by 0.63MM bbl/d
- OPEC+ smaller producers have been driving the underperformance, and an increasing number of them have been missing their quotas. In December, 14/19 members missed their quotas up from 12/19 in the previous month.
- Saudi Arabia, OPEC+ larger producers, has likely massively overstated its spare capacity. In December, it missed its quota for the first time.

February 2022 OPEC Production vs. Quota, in MM bbl/d



Sources: Bison Interests analysis, S&P Platts



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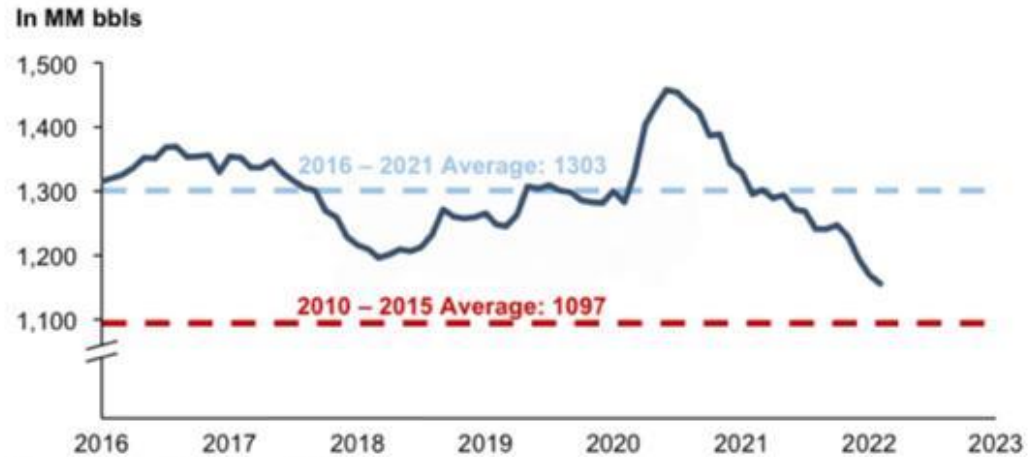
World Oil Inventories are Running Low



Oil prices are likely headed higher as we draw down inventories to meet higher-than-expected post-pandemic demand.

- Onshore stockpiles of crude oil and distillates continue to draw down and aren't being replenished, which increases the likelihood of an undersupplied market moving forward.
- U.S. inventories are headed towards the 2000—2015 average of 1.1 B bbls, a period in which oil prices were ~\$100/barrel. Note that \$100 oil in 2012 is equivalent to roughly ~\$120 today.

U.S Total Petroleum Closing Inventory, 2016 — 2021



Sources: Bison Interests analysis, EIA

- SPR releases and other global efforts to quell rising gasoline prices are unlikely to have any long-term effect on oil prices as rising demand continues to absorb available supply.
- This is bullish for oil prices as it leaves less oil in reserves in the case of a real emergency, and historically, these SPR releases have backfired.

WTI Price vs. Historical SPR Releases, 1983 – March 2022



Sources: Bison Interests analysis, Investing.com, CNN

*March Data as of 03/20

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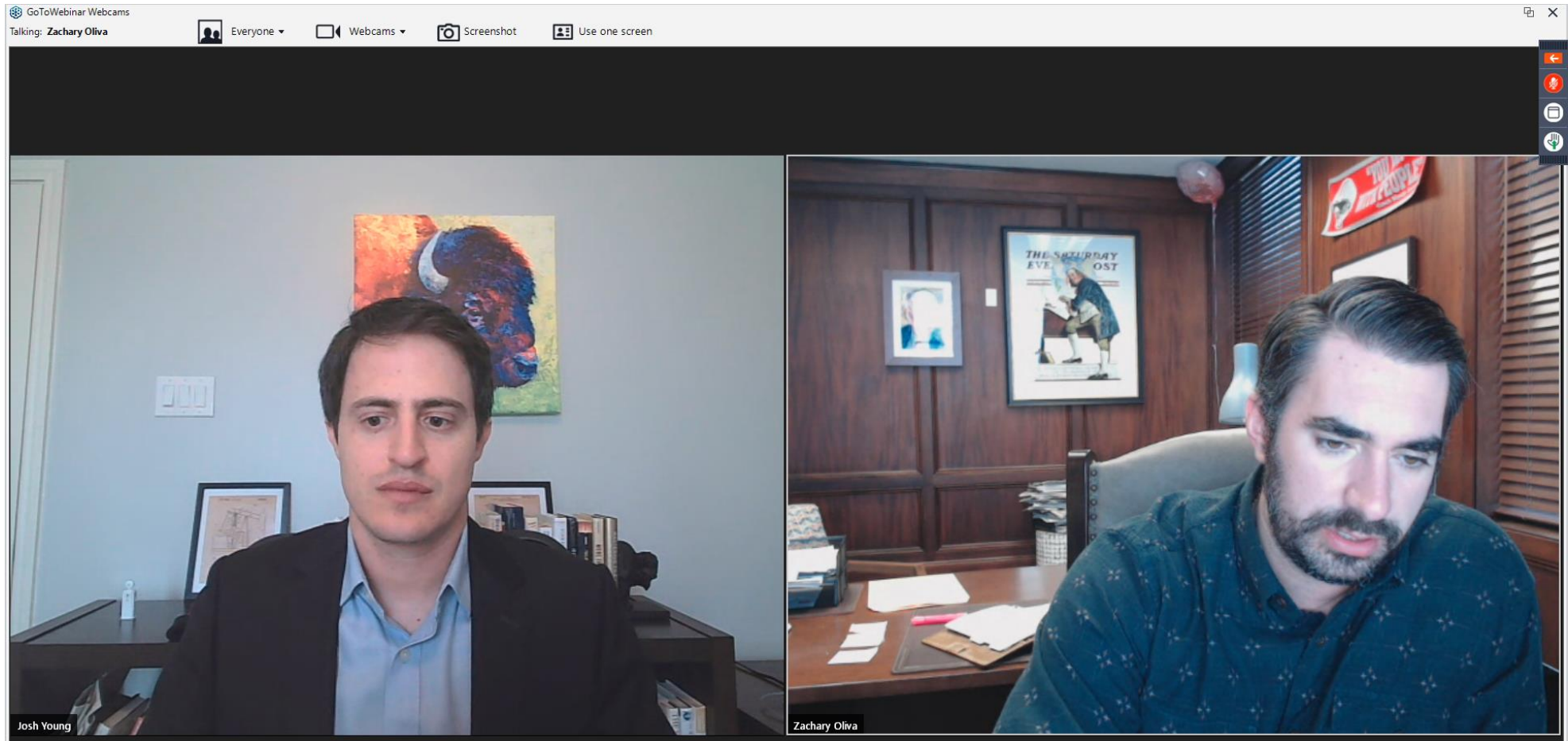


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For more information, questions, or inquires, please don't hesitate to reach out. Follow Bison Interests on Social Media for industry updates.

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Facebook	https://www.facebook.com/BisonInterests/





Q/A

1. Effect of China's lockdown for zero-covid – only short term, would not affect long term. Fewer lock down over time
2. Risk of economic recession on oil industry – so many calls on recessions were wrong, hard to say, recession is not a sure thing. We might have stagflation, than deflation. The more people say it, the more unlikely
3. Effects of Iran and Venisvala for oil bearish view – needs long time come out of sanction to ramp up production, initially, their own consumption might offset their production
4. When can E&P market to be balanced – need to be in the level of 2012 and 2014, needs muti-years, a lot of money, and a long time. Where the money comes from? Oil industry profit, less regulation, much and much much higher oil price, less tax. Institutional to change their view and direction and start to invest in oil. The current oil price is much higher than two years ago, but it can still be much much higher
5. Effects of shut-in oil from Russia – lots of conflicting reports here, current thesis does not base on this scenario. If to some extent there is interruption on Russian supply, just like US, we need long time for them to come back
6. Will US ban oil export? – no oil export ban. US policy is always pushing down gas price for political reasons, not pushing down oil. Gas and oil are different. US energy policy – gap price (gas price negative) down for the short term
7. OPEC had 600,000 per day in Q12022, but we see oil inventory down – OPEC is wrong on report, we saw them revise it many times. Not like years ago when OPEC had much more reserve capacity, they can drive down the oil price, now they do not have that capacity
8. Capital is still leaving the industry. Aggregate investment is still down. Endowment, pension funds, insurance companies are leaving
9. Transportation issue for gas and oil from Permian? Gas is almost full capacity. Infrustructure issue. Permission issue- there is big dislocation here, federal anti-oil policy
10. Oil price without covid? – 1% increase yearly
11. Proposed Windfall tax on oil companies? Risk in oil investment? – mostly tax the major oil producers. If to all producers. You will punish more for oil companies. these will be reflected on oil price, and drive up the oil price
12. US tech companies are almost like monopolies, they can raise price easily. Even though oil/gas companies contribute a lot for the US infrastructure, they cannot easily raise price
13. Is it good opportunity for private capital investment in oil companies? – yes, but very risky. Need lots of due diligent. High probability of being scammed, such as MKGP “permanent basement”. Very risky for individual, very difficult
14. How much relieve of Keystone pipeline? – policy restriction everywhere, hard to predict