The Henry Fund
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North American Exploration & Production

February 8, 2024

Energy

Industry Rating **Market Weight**

Investment Thesis

We recommend a Market Weight rating for the North American exploration and production segment. Lower domestic demand will be met with marginally higher global demand. Oil prices may see marginal price increases that will support production and spur activity in the industry.

Drivers of Thesis

- Though China has been recovering slowly, in 2023 they have reclaimed their position as the largest importer of natural gas and now look to double their LNG storage by 2025. Coupled with increasing oil consumption throughout its recovery moving forward, we believe this to be a tailwind for activity in the E&P industry.
- We anticipate OPEC cuts will remain deep as they attempt to combat perceived excess supply and stabilize prices. Though OPEC prefers prices in the $80-$90 range, we do not forecast deeper cuts and anticipate WTI crude prices to decrease to $76 by end of year.
- Volatility in the Middle East, specifically within the Red Sea, has impacted many multinational energy companies. Global LNG trade had decreased 23% in December of 2023 and we believe trade will be hindered for the remainder of the year as a result of fear of escalations.

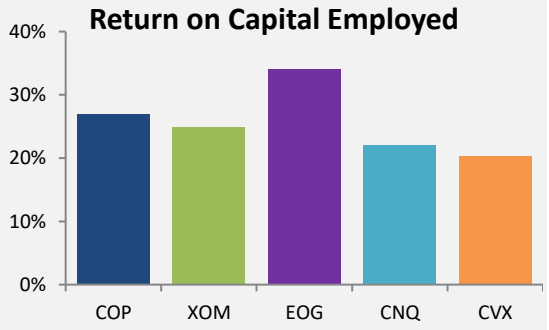
Risks to Thesis

- OPEC relationships may experience further turbulence in the wake of Angola's departure. OPEC is currently losing market share in global oil production and departing members may weaken their influence on oil price.
- US GDP growth is expected to slow to 1% in Q2 and Q3, if the US was to experience even slower economic activity and the federal reserve mistimes the interest rate cuts, decreased economic activity may hinder the sector.

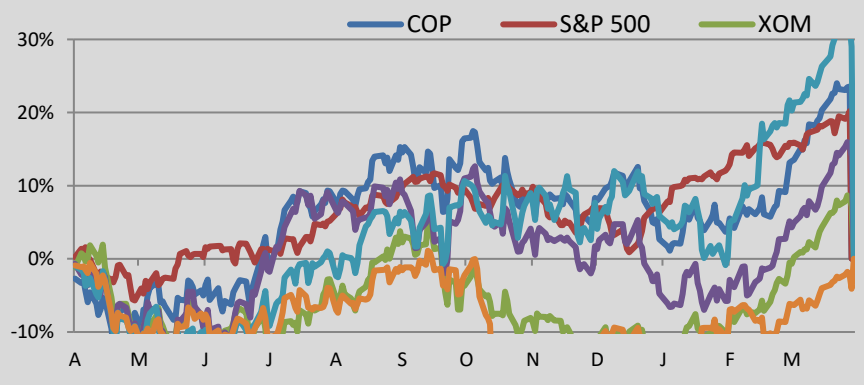
Industry Statistics

Market Cap (B)	
ExxonMobil	399.6
ConocoPhillips	137.8
Chevron	280.7
EOG Resources	70.5
Canadian Natural Res.	71.2
EV/EBITDA	
ExxonMobil	5.69
ConocoPhillips	5.46
Chevron	9.97
EOG Resources	4.76
Canadian Natural Res.	4.49
P/E	
ExxonMobil	11.7
ConocoPhillips	12.41
Chevron	13.56
EOG Resources	8.39
Canadian Natural Res.	12.63

Source: Factset



12 Month Performance

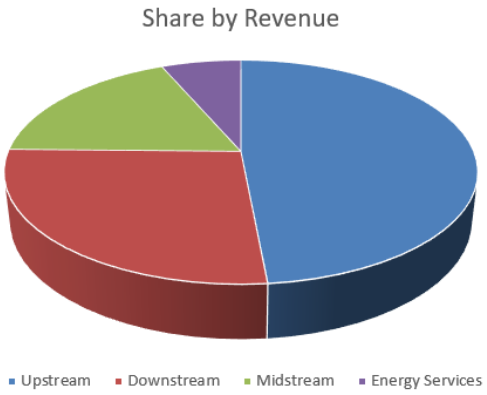


Industry Description

Tasked with finding hydrocarbon reservoirs, drilling oil wells and extracting these hydrocarbons, the exploration and production segment (E&P) of the oil and gas industry is the first link in the oil and gas value chain. Geological and seismic surveys are used to locate reservoirs and exploratory wells are used to verify the existence of these resources. This segment determines the supply of energy resources but many companies operate throughout the value chain.

INDUSTRY DESCRIPTION

The exploration and production segment of the oil and gas industry serves as the initial stage of energy production, whereby players in this segment search for and extract hydrocarbon deposits. 2023 granted US oil producers gains due to higher global market volatility. Innovation in hydraulic fracturing has supported US producer output in the space. The upstream segment (E&P) continues to maintain the largest share of the energy sector by revenue at 48.5% as well as by earnings before interest and tax (EBIT) margins at 38.1%[1]. The chart below illustrates a decomposition of the oil and gas segments by revenue using 2023 data:



Source: NetAdvantage

Upstream

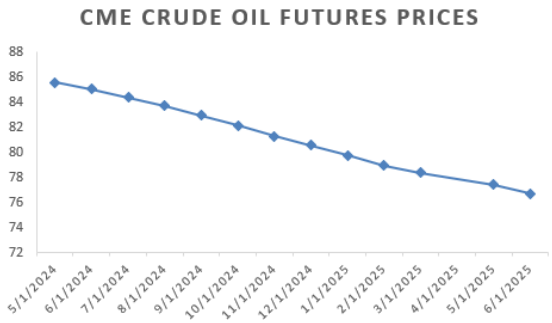
The upstream segment of the oil and gas industry is the first link in the oil and gas value chain that requires using sophisticated technology such as seismic surveys, gravity and magnetic surveys and satellite imagery to visualize subsurface rock formations and measure variations in the earths gravity and magnetic fields to identify possible hydrocarbon reserves. The industry is by nature technologically intensive given the goal of efficiently extracting the sought after resources. After areas of potential reserves have been identified though the various techniques implemented, producers begin drilling exploratory wells to test for the presence of oil and gas. If this proves to be successful, development wells are drilled to more efficiently extract the resources. Drilling can be both vertical and horizontal; vertical signifying straight down into the rock, and horizontal in the case that rock formations may be hard to access and require drilling at an angle. The drilling of wells is done using drilling rigs, these come in various forms depending on the nature of the drilling (i.e land-based, offshore or subsea drilling). Hydraulic Fracturing, or Fracking, has also developed the upstream segment, as it allows more efficient extraction of resources that were previously inaccessible by injecting a high-pressure fluid mixture into rocks deep beneath the earth's surface causing them to fracture. While this process has raised concerns due to it's contamination of ground water and potentially induced earthquakes through the seismic activity, it is economical and resource efficient. The largest players in the upstream segment are listed below, with ExxonMobil and Chevron being the largest US players in the segment:

Rank	Name	Market Cap (Billion)
1	ExxonMobil	399.6
2	Chevron	280.7
3	ConocoPhillips	137.8
4	Canadian Natural Resources	71.2
5	EOG Resources	70.5

Source: NetAdvantage

Midstream

The midstream segment of the oil and gas industry connects the upstream production segment to downstream facilities and consumers. Upon extraction, the raw resources are sent to oil-gas separation plants to separate the oil, natural gas and natural gas liquids. This is followed by transportation by means of pipelines, trucks, rails and or tankers to refineries and storage facilities. Each transportation method offers advantages; pipelines are capable of transporting large volumes and tankers allow movement across oceans enabling international trade. The storage of these products is necessary to maintain price stability. We see the impact of storage on crude oil prices when the crude oil futures curve shifts into contango. More recently the crude oil futures curve has been in backwardation, discouraging further storage as can be seen in the chart below:



Source: CME Group

As of December 1, 2023, crude oil inventories were at 445 million barrels, which amounts to 1% less than the 5-year average[2].

Below is the midstream segment market capitalization breakdown:

Rank	Name	Market Cap (Bln)
1	Enbridge	70.90
2	Enterprise Products Partners	57.8
3	Entergy Transfer LP	42
4	Kinder Morgan	42.3
5	Cheniere Energy	39.3

Source: NetAdvantage

Downstream

The final link in the oil and gas value chain, the downstream segment, is concerned with the refining, marketing and distributing of final products to end users. This segment is comprised of oil refineries, petrochemical plants, distribution networks and gas stations (retail outlets). It is the refineries that convert the products into usable resources such as gasoline, diesel and jet fuel. The resulting petroleum products can be categorized as light, medium and hard and each maintain their respective purposes. Below is the downstream segment market capitalization breakdown.

Rank	Name	Market Cap (Bln)
1	Philips 66	58.60
2	Marathon Petroleum	56.3
3	Valero Energy	44.3
4	PBF Energy	5.4
5	CVR Energy	3

Source: NetAdvantage

Equipment and Services

The equipment and services segment, or Oilfield Services and Equipment (OFSE), aid the exploration and production segment by supplying technology and services to support the extraction of oil and gas. They typically provide drilling rigs, fracking equipment and may offer services such as seismic testing. Companies in this segment may be large multinationals and they may be smaller local providers. They typically fall into four types of equipment and services businesses: offshore oil rigs, onshore oil rigs, drilling equipment and services. The largest US players in the OFSE space are Baker Hughes and Halliburton with market caps of $32.97 billion and $35.16 billion respectively[16].

Integrated Oils

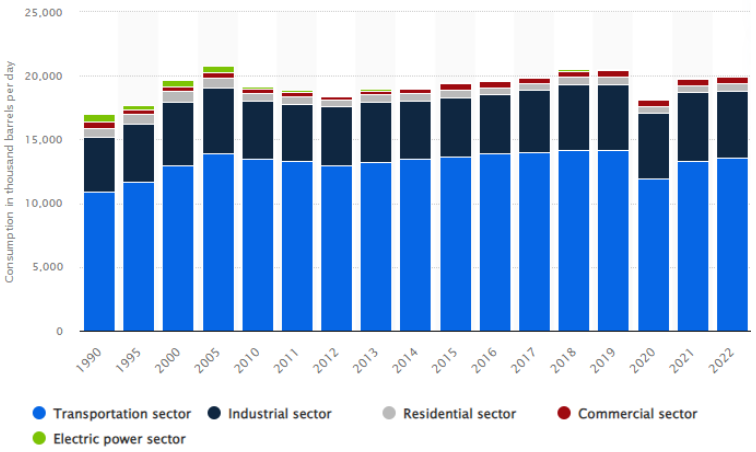
It is common for large firms to operate as "Integrated Oils" meaning they operate at both ends of the oil and gas value chain. Since companies in that operate as integrated oils are exposed to multiple different revenue streams, they are able to better weather volatile market conditions as the diversification of upstream and downstream may act as a hedge towards their profits. ExxonMobil and Chevron, are examples of integrated oils, differentiated by the large scale of their operations.

Product Segments

Oil

Transportation has always been the largest use case for oil in the United States, followed by industrial sector, residential sector and commercial sector. The distribution has been constant in past years as indicated by the following time-series histogram:

Oil Use by Sector



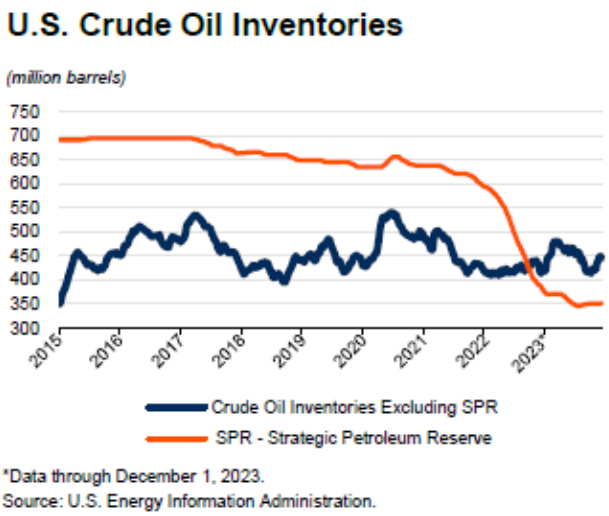
Source: Statista

Oil Supply

Though the US produced at a record breaking 13.2 mmb/d in the fourth quarter of 2023, the US oil supply growth looks to be relatively slow as indicated by the 21% year

over year drop in US onshore rig counts in October 2023 coinciding with a 11% drop in drilled-but-uncompleted wells[14]. The need for new wells has yet to gain traction as producers turn to existing drilled-but-uncompleted wells. This may in turn hinder US supply growth and potentially give rise to higher oil prices further in the future. We anticipate capital expenditures on drilling activities and new exploration projects will continue to be tempered by the uncertain economic environment in the US. If forecasted energy demand becomes optimistic, we anticipate increased capex.

Globally, oil supply has seen variability. Africa's largest oil producer, Nigeria, produced an average of 1.4mmb/d in November 2023, though it had a target of 1.75mmb/d due to a variety of operational and technical issues[19]. Libya's production has dropped from 1.3mmb/d in 2021 to 100,000b/d. Iran currently produces at 2.7mmb/d as a result of sanctions though they have the capacity to produce at 3.8mmb/d[19]. The Strategic Petroleum reserves also saw a large decrease in 2022 as 180 million barrels of oil were sold to lower gasoline prices after Russia's invasion of Ukraine, as can be seen below:



*Data through December 1, 2023.
Source: U.S. Energy Information Administration.

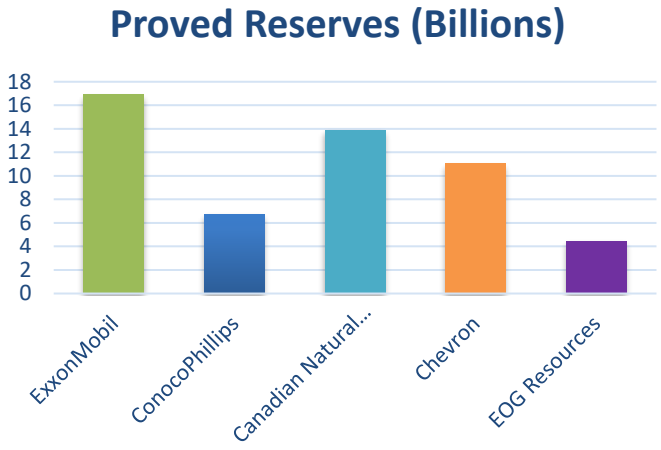
The Biden administration has bought back 32.3 million barrels of oil so far since the 2022 sales and we believe future buy backs will continue to be incremental so as to not remove supplies from the market and drive prices[19].

Oil Demand

The aftermath of the COVID-19 Pandemic resulted in increased demand coinciding with a recovering economy. Revenue increased at a CAGR of 6.3% to $604.8 billion in 2023 followed by a 14.7% drop that same year. Demand started to look increasingly subdued in the fourth quarter of 2023[2]. Following the announced OPEC cuts for oil in 2024, U.S. West Texas Intermediate failed to cross above $80[18], further insinuating demand is not as strong as previously expected. Nevertheless, the US Energy Information Administration (EIA) predicts global oil consumption to increase to 102.3mmb/d in 2024. Much of the demand for oil arises from the Asia-Pacific region and forecasts for China will be further examined throughout this report.

Proved Reserves

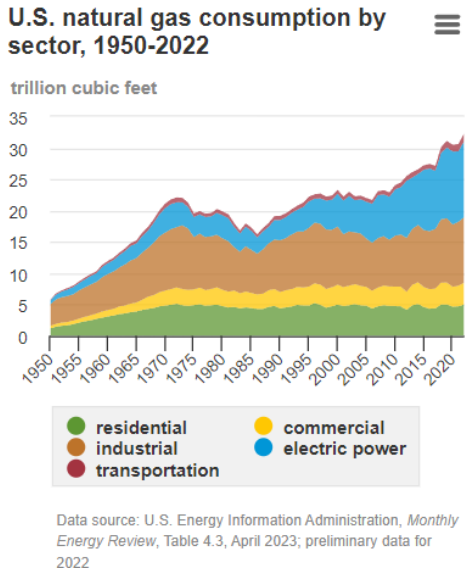
Proved reserves indicate the volume of resources that can be recovered in the current economic and operating conditions with reasonable certainty. Factors such as improved technologies, production of existing reserves, evaluations of existing fields and new discoveries can change reserve estimates. The proved reserves for the peers in the upstream segment are highlighted in the chart below:



Source: Factset

Natural Gas

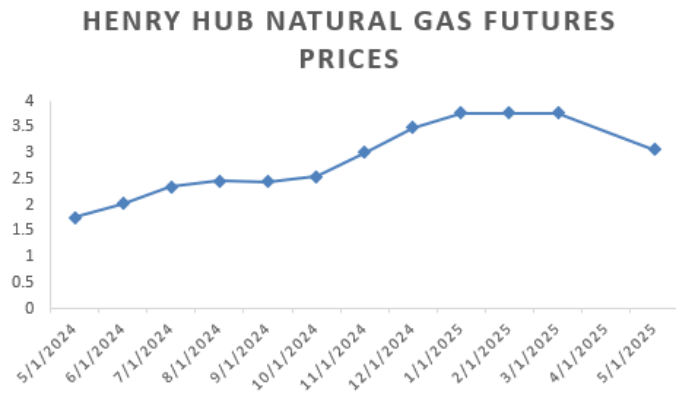
Releasing less carbon-dioxide, nitrogen oxides and sulfur dioxide, Natural Gas is utilized in a variety of applications as a result of it's efficiency and cleaner-burning in comparison to other fossil fuels. Residential and commercial use has been relatively constant in past decades; the electric power and industrial sectors however, have been increasingly utilizing the resource as indicated by the figure below:



Source: EIA

Natural Gas Supply

Following the tight supply of natural gas in 2021 as a result of the COVID-19 pandemic and the supply shocks as a result of the Russia-Ukraine war in 2022, the natural gas market headed towards a rebalancing in 2023. As a result, U.S. benchmark Henry Hub natural gas price declined around 62% in 2023 to $2.57 per million British thermal units (MMBtu) from the average annual price in the previous year[14]. Henry Hub futures prices from the CME group are depicted in the chart below:



Source: CME Group

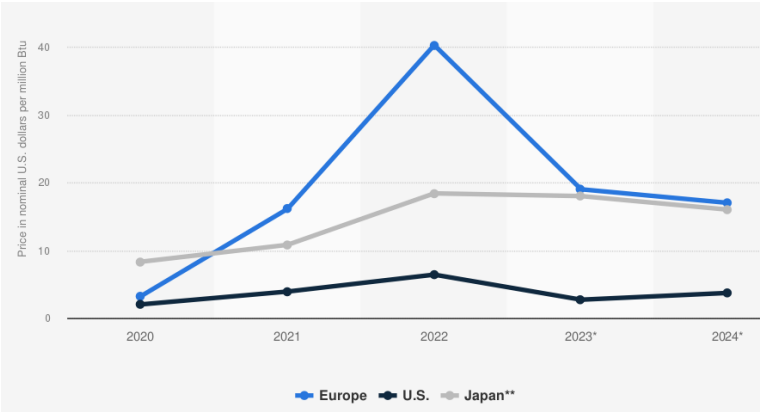
Nonetheless, industrial and power sectors in fast-growing economies are forecasted to garner growth in the natural gas market in 2024. It is key to note that US natural gas production was 13% higher than it's consumption in 2022 and the country has become the largest natural gas supplier to the rest of the world[19].

Natural Gas Demand

Global natural gas demand saw a 20bcm (4%) increase in 2023 and North America saw an increase of more than 10bcm in 2023[13]. While the primary sector behind demand growth globally was industry, it was power within the US. The residential and commercial sectors saw slight declines in demand that represent the milder winter. This phenomenon coincided with the largest volume of production the US has put forth at 1 065bcm[12]; the high output and shallow demand resulted in downward pressure on natural gas prices in 2023. The US was compensated for its mild winter when 118 billion cubic feet per day was consumed in January, amounting to the most to ever have been consumed in one month. Natural gas prices can be seen in the chart below.

Central and South America also saw a marginal decrease in natural gas demand in response to a milder southern hemisphere winter and healthy hydro availability in Brazil, though preliminary data point to demand trending upwards in the second half of 2023[19]. Asia Pacific gas demand was also observed to increase 2.5% in 2023 owing in large part to China and India given Japan and Korea saw decreases in demand. China's power and industrial sectors were large contributors to the increase in demand[2]; conversely Japan and Korea experienced lower electricity consumption and advancing nuclear availability that consequently lowered their respective demand.

Natural Gas Prices by Region



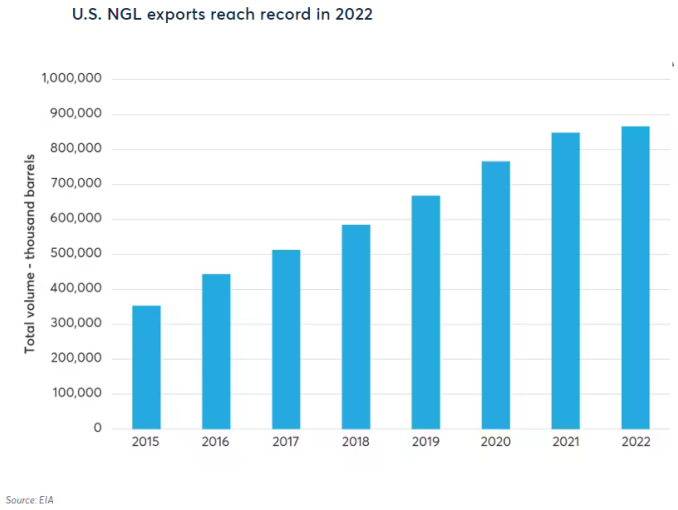
Source: Statista

Natural Gas Liquids

Not to be confused with liquid natural gas, natural gas liquids (NGLs) are separated from natural gas during natural gas processing. NGLs are utilized for residential and commercial heating and can be used both as feedstocks for petrochemical plants and blending agents for vehicle fuel. NGL includes ethane and propane which are also key ingredients in the creation of plastics.

Natural Gas Liquid Supply

The NGL market is estimated to have a CAGR of 6.47% on its path to grow by 19.62 billion to 2028. The US is a large player in this market, exporting 866 million barrels of NGLs in 2022; this represents a 3% increase over 2021 and over a 100% increase from 2015 levels[10].



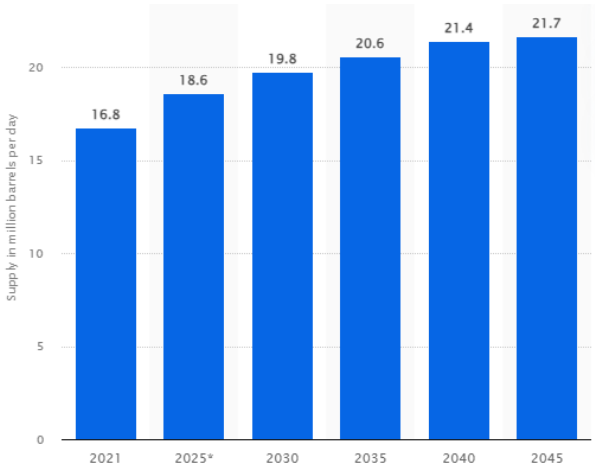
Source: EIA

The largest US exporters of NGL's are Enterprise Products, Targa Resources and Energy Transfer, having seen increased exports to markets like China and Europe[22].

Natural Gas Liquid Demand

A large part of NGL demand arises from increasing domestic and export demand for ethane and propane as petrochemical feedstock. The aforementioned demand for ethane to produce ethylene for consequential production of plastics, resins and industrial goods also contributes to demand. There also exists regulatory push for NGL usage; the government of Alberta, for example, has agreed to provide a grant that may amount to $1.8 billion through the Alberta Petrochemical Incentive Program (APIP) to Dow's petrochemical project - Path2Zero[19]. As more global entities move towards cleaner energy resources, NGLs are to experience growth as they offer cleaner manufacturing; this can be compared to the attractiveness of natural gas as opposed to coal in generating electricity. The chart below highlights the forecasted growth for NGLs over the next 20 years:

NGL Growth



Source: Statista

Bitumen

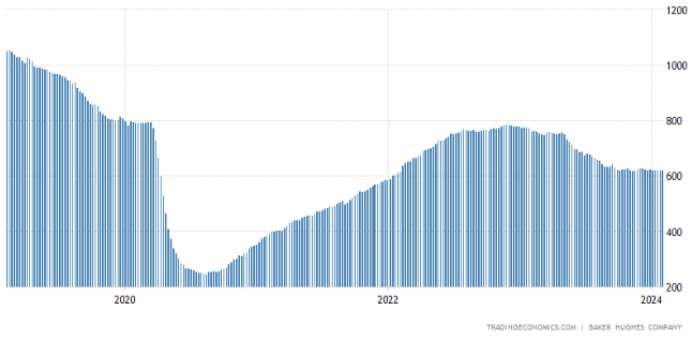
Bitumen is a dense, viscous, petroleum-based hydrocarbon produced through the distillation of crude oil. Its various uses depend on its quality and include road paving and roofing. There are 29 major tar-sand accumulations in the United States with key national bitumen resources in Alabama, Alaska, California, Kentucky, New Mexico, Oklahoma, Texas, Utah and Wyoming.

US Rig Counts

Global rig counts can serve as a proxy for the oil and gas industry's activity level, as it signifies the number of operational drilling rigs. A higher number represents increased exploration and production efforts and correlates highly to increased energy prices though with a lag period. The current rig count in the United States sits at 619 (crude oil rigs and 120 gas rigs) and is experiencing a relatively stable period following the decrease it experienced in 2023. This number is projected to slowly increase in 2024 in conjunction with our projections for higher energy prices. Higher energy price incentives are

necessary to justify the day rates associated with renting the rigs. The chart below illustrates the number of rigs in the US over the last 5 years.

US Rig Count

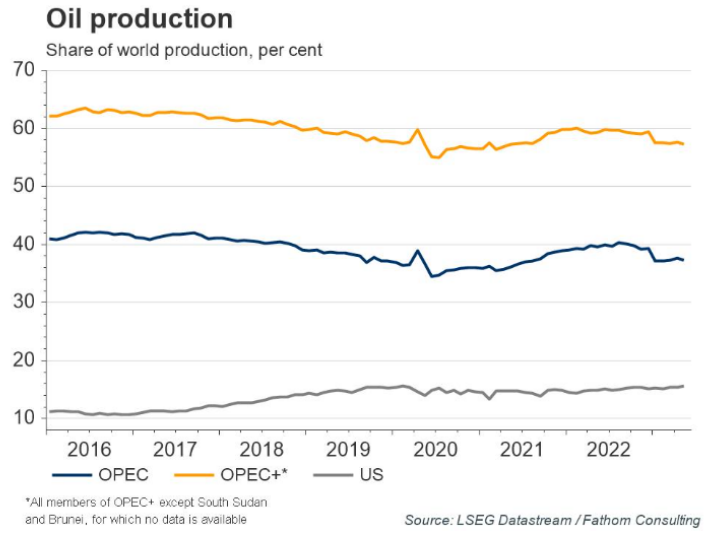


RECENT DEVELOPMENTS

OPEC

OPEC now maintains 12 member countries: Algeria, Republic of Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, and Venezuela. Angola announced its withdrawal from OPEC on January 1st 2024 as they disagreed with OPEC production quotas. In 2016 OPEC signed the Declaration of Cooperation (DoC) and began collaborating with 10 other countries to create OPEC+ that included Russia, one of the largest oil producers in the world. Towards the end of 2023, OPEC+ oil producers agreed to output cuts that totaled 2.2 million barrels per day (bpd) for 2024. This decision amongst OPEC+ members came as a result of their forecast of possible surpluses in the market. Cuts in January of 2024 were severe, down 410,000 bpd from the previous month (excluding Angola's contribution in the previous month). It is key to note the largest drop in production came from Libya, and not as a result of quotas, but rather political unrest leading to a shutdown of the Sharara oilfield which has a 300,000 bpd capacity. We believe such hindrances to production are to continue in Libya; political instability in the country have continued for 13 years and exacerbated by internal conflicts amongst militias and the influence of foreign backers on local factions. There are those who maintain optimism, Oil India is looking to return to Libya and restart drilling, having initially left as a result of the political instability. Stability would bring prices down, but it is not our anticipated outcome.

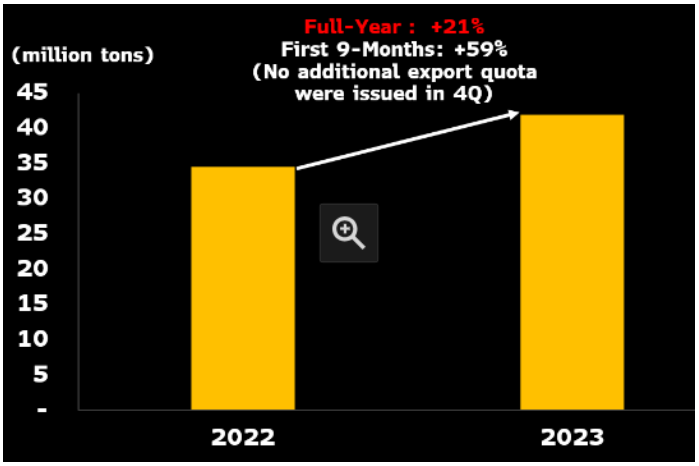
The International Energy Agency forecasts a slowdown in 2024 demand growth, which is in line for OPEC's forecast regarding increased supply in the market. For this reason, we believe cuts will remain deep in an effort to stabilize prices. Amid the cuts, it is key to note that the US has placed pressure on OPEC having reached a record high of 13.21 million bpd in 2023 whilst being profitable players. As such, we believe the cuts will only moderately increase prices over the year. The following chart indicates the share of oil production in the world and highlights the upward trend of the US in production percentage.



Though some OPEC countries leak additional supply beyond agreed upon quotas, if cuts remain as deep as we anticipate and non-OPEC supply is increasing, it may raise questions surrounding the contentment of OPEC participants and their agreement with the continuing and possibly harsher caps to production. Gabon, Equatorial Guinea and Republic of Congo have already left and rejoined OPEC in the last decade; in light of Angola's recent withdrawal, we believe this is crucial area that requires monitoring.

China

China's reopening has been slower than anticipated with muted manufacturing activity alongside the continuing property crisis. Though China regained its position as the worlds largest liquified natural gas importer in 2023 with an increase of 7%, exports of gasoline, diesel and jet fuel increased by 21% year over year. This is indicative of large inventories owing to weaker than expected demand. The chart below highlights their total fuel exports over the last two years.

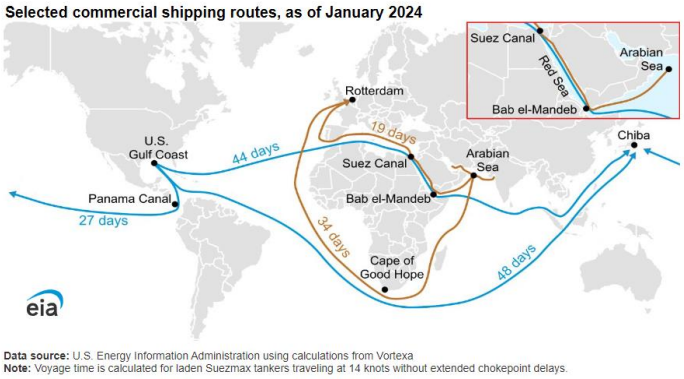


Source: Bloomberg

Crude oil imports are estimated to be 12% higher than in January of the previous year, though 2% lower than in 2022[2]; the sluggish increases highlights the slow recovery post COVID Zero. Natural gas consumption in China is expected to grow as they continue to expand natural gas storage capacity with a target to increase LNG storage capacity by over 100% to 55-60bcm by 2025[2]. Moreover, 2023 has seen continued natural gas pricing reforms such as the simplification of the gas transport tariff; this particular reform, effective January 2024, institutes four regional transport rates to replace the previous twenty.

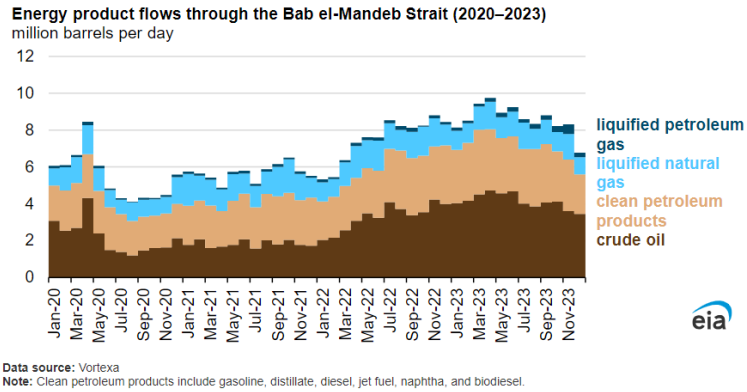
Red Sea

The Red Sea route accounts for 10-15% of world trade, including oil exports. In 2023, an estimated 10% of the word's seaborn oil trade and 8% of global liquified natural gas trade passed through this route[10].



Source: EIA

The geopolitical tensions in Gaza have now spilled over in other parts of the region, with Houthi Militants from Yemen responsible for attacks that have derailed trade through the Red Sea route by targeting the Bab el- Mandeb strait; The Bab el Mandeb Strait borders the Yemeni coast and connects the Red Sea to the Gulf of Aden. Many carriers have rerouted their path around the Cape of Good Hope in South Africa which has resulted in delays. Companies avoiding the Red Sea include Equinor, Euronav, QatarEnergy, Torm, Shell, and Reliance. There was an estimated 24% decrease in liquified natural gas traded in December of 2023 in comparison to the rest of the year. The table below highlights the quantity of energy products that went through the Bab el Mandeb Strait:



Source: EIA

Interestingly, these hindrances to the trade route have not had a material impact on price. Lower demand in countries such as China and Germany have offered a buffer that trumps the volatility in the red sea. The International Energy Agency forecasts increases in global oil demand to halve from 2.3 mbd in 2023 to 1.2mbd in 2024[13], which may mitigate the price premiums that arise from the Red Sea and Middle East conflicts. Nonetheless, we view the red sea restrictions to be short term in nature given their dependency on geopolitical volatility that we do not anticipate will endure.

INDUSTRY TRENDS

Mergers & Acquisitions

The industry has seen activity in the mergers and acquisition space in 2023 and that trend is likely to continue. As ExxonMobil looks to be the largest oil producer in the Permian Basin, they have agreed to acquire Pioneer Natural Resources for $64.5 billion[2]. This consolidation will double Exxonmobils Permian footprint and strengthen their upstream portfolio. ExxonMobil has also acquired Denbury Inc for $4.9 billion who specializes in developing stranded reserves from depleted reserves[20].

Chevron has also agreed to buy Hess for $60 billion having bought PDC Energy for $6.2 billion in August of 2023. Chevron's worldwide production sat at 3.15 million barrels of equivalent (boed) at third quarter of 2023 and increased to 3.4 boed in the fourth quarter with the inclusion of PDC Energy[2].

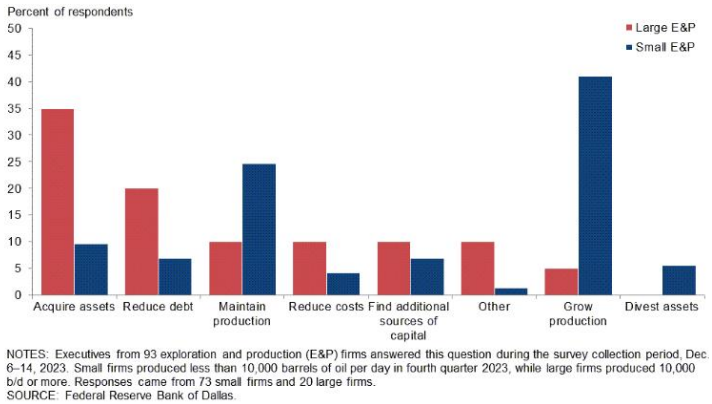
Another acquisition in the sector was Occidental Petroleum's planned acquisition of CrownRock for $12 billion creating further consolidation in the Permian Basin[2]. The US Federal Trade Commission has requested additional documentation requests from Occidental and CrownRock as they look to assess whether the merger breaches anti-trust regulations. If the Merger is to be approved, Occidental would become a bigger player than both Chevron and Hess combined in the US Shale industry. The table below aggregates recent deals:

Merger & Acquisition	Year	Dollar Value (B)
Chevron - Hess	2023	$60.00
ExxonMobil - Pioneer Natural Resources	2023	$59.50
Chevron - PDC Energy	2023	$6.20
Occidental - CrownRock	2023	$12.00
ExxonMobil - Denbury	2023	$4.90

Source: Reuters

Though 2024 may not see deals as large as Exxon-Pioneer and Chevron-Hess in magnitude, we believe continued consolidation in the industry is likely. Our prediction comes in the wake of APA Corporation announcing its purchase of Callon Petroleum Company who also operates in the Permian Basin. A survey regarding goals in 2024 sent to executives from exploration and production firms indicate most large E&P plan to acquire assets as indicated by the survey results below.

Exploration & Production Executives Survey



NOTES: Executives from 93 exploration and production (E&P) firms answered this question during the survey collection period, Dec. 6–14, 2023. Small firms produced less than 10,000 barrels of oil per day in fourth quarter 2023, while large firms produced 10,000 b/d or more. Responses came from 73 small firms and 20 large firms.
SOURCE: Federal Reserve Bank of Dallas.

Source: Dallas Fed Energy Survey

Capital Expenditures

Capital expenditures experienced strong growth in 2022 at a rate of 42.7% and consensus indicates 2023 to experience growth as around the 20.9% level[14]. The slightly more muted capex growth reflects economic concerns as upstream companies act conservatively given the volatility of recent years. Upstream producers are also able to leverage DUC's in order to keep capex low. The chart below highlights capex in the upstream segment with data until 2025 based on S&P Global Market Intelligence forecasts.

UPSTREAM'S CAPITAL EXPENDITURES

Source: NetAdvantage

Crude oil prices are often also leading indicators in the direction of capex for exploration and production firms. The first quarter of 2023 saw a 12% increase in capex despite lower oil prices resulting in a higher than normal capex/cash from operations ratio of 64%[10]. Given the lower crude oil prices in the last quarter of 2023, capex is likely to also have been muted. Highlighted below are the capital expenditures of upstream players with their respected capex growth:

Company	2024 Capital Expenditures (B)	% Growth
ExxonMobil	$24.00	-8.75%
ConocoPhillips	$11.25	0.45%
Chevron	$16.00	1.27%
EOG Resources	$6.00	-2.99%
Canadian Natural Res.	$5.42	10.41%

Source: FactSet

E&P Efficiency

US oil production has almost tripled in the last two decades owing much to advancements in technology and innovation in the sector. According to researchers at S&P Global Commodity Insights, the US has had a 10% increase in the amount of feet drilled per day over the last two years, indicating a 10% increase in drilling owing to increases in efficiency[15]. As artificial intelligence and machine learning as leveraged in the exploration and production industry, we can expect to see more gains owing to optimization and efficiency. The chart below highlights the gains in efficiency over the last decade.

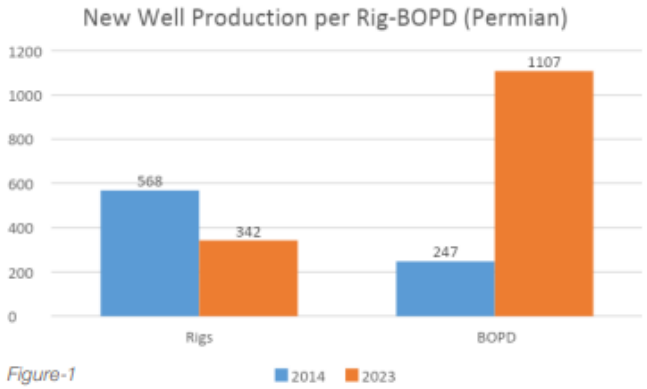


Figure-1

MARKETS AND COMPETITION

Degree of Competition

The US upstream sector is a increasingly consolidated sector with a few key players that are integrated oils – in that they operate both in both upstream and downstream segments. This dynamic offers integrated oils a natural hedge during oil price fluctuations which differentiates them from independent exploration and production firms.

Power of Buyers

It is the global market for crude oil and gas that dictates the prices of products rather than individual producers and customers. Buyers include refineries, distribution companies, national oil companies (NOCs), international oil companies (IOCs) and countries with large consumption needs. The agency available to buyers is in the quality of oil which is determined by global benchmarks such as Brent Blend, WTI and Dubai/Oman. Brent Blend is sourced from the North Sea and is the leading global price benchmark for Atlantic basin crude oils. WTI is used as a reference for oil prices in the Americas and is also known for its high quality, usually trading at a premium. Dubai/Oman are the benchmarks for the Asian market.

Power of Suppliers

The suppliers in this segment are large integrated oil and gas companies that operate throughout the entire oil and gas industry. Companies like Chevron, Shell, ExxonMobil and Saudi Aramco posses significant bargaining power due to their extensive involvement in the industry. Oil-rich countries who are OPEC members are also supported in number as they are able to assert influence together. It is key to note that oil-rich countries that lack technology such as Venezuela and Mexico maintain less bargaining power. In terms of suppliers to exploration and production firms, drillers and oilfield service companies have seldom had much bargaining power in the past. Beginning in 2022, however, exploration and production firms have started to spend more in the oil fields which decreased the need for oilfield services companies to offer concessions.

Threat of New Entrants & Substitutes

The threat for new entrants is low due to high capital requirements and the size of existing corporations who only grow more consolidated. While the FTC attempts to address the issue by ensuring antitrust regulations are met, the already large conglomerates will only get larger. Moreover, geopolitical obstacles in oil-rich countries act as a barrier as evidenced by Oil India's initial withdrawal from Libya.

In terms of substitutes, renewable energy is growing but has yet to impact demand for oil-based fuels largely driven by the transportation sector. In Texas, however, we see wind power as a rising threat as costs have dropped below natural gas; but even in such cases the energy sources have not matched the reliability of oil-based fuels.

Key Players

Key players in the exploration and production segment include integrated oils such as ExxonMobil, Chevron, ConocoPhillips, Canadian Natural Resources and EOG resources. Their respective market capitalizations and 2023 net income can be found in the table below:

Rank	Name	Market Cap (B)	Net Income (B)
1	ExxonMobil	$399.6	$36.0
2	Chevron	$280.7	$21.4
3	ConocoPhillips	$137.8	$11.0
4	Canadian Natural Resources	$71.2	$8.2
5	EOG Resources	$70.5	$7.6

Source: NetAdvantage

XOM - ExxonMobil

ExxonMobil operates a with a large exploration and production portfolio globally, especially within the Guyana-Suriname Basin, Permian Basin and offshore Brazil. In 2023, their production amounted to almost 3.8 billion barrels of equivalent per day. The company is heavily concentrated on technology and innovation and maintain a $1 billion commitment annually to developing lower-emission energy solutions.

CVX - Chevron

Chevron has operations in over 180 countries and possesses a diversified exploration and production portfolio that entails substantial deepwater assets and shale and tight resource plays. The company has a strong presence in the Permian Basin and continues to grow as indicated by their acquisition of PDC Energy and their agreement to acquire Hess. In 2021, Chevron allocated $3 Billion towards exploration into renewable energy and efforts to lower its carbon intensity.

COP - ConocoPhillips

ConocoPhillips is one of the world's largest independent exploration and production companies having produced 1.8 million boe in 2023. They maintain substantial operations in the Eagle Ford Shale, Bakken Formation, and the Alaska North Slope. Project Willow is one of their oil drilling projects in the North Slope of Alaska that has recently began construction and, based on 2023 Bureau of Land Management approvals, is set to create 150 oil wells.

CNQ - Canadian Natural Resources

Canadian Natural Resources is Canada's largest heavy crude oil producer with some of the worlds largest oil sands mining operations. Canadian Natural Resources' Horizon Oil Sands project is a key component of its operations and accounts for a large part of their capital expenditures.

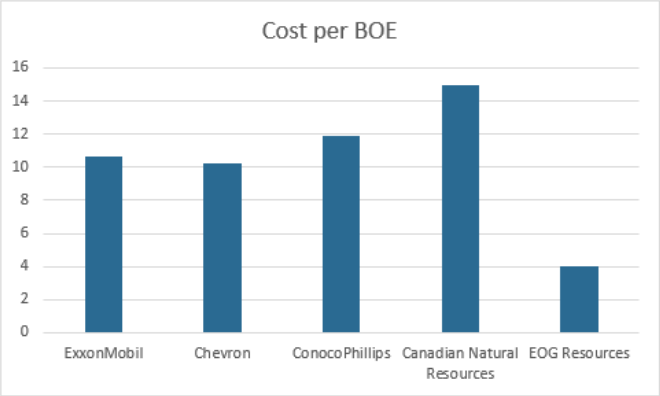
EOG - EOG Resources

EOG Resources is a large player in the US shale industry with operations focused in the Permian Basin, Eagle Ford Shale, Anadarko Basin and the Marcellus Shale. The company has seen efficiency gains through their use of precision targeting technology that has allowed it to reduce costs and improve hydrocarbon recovery rate.

Industry Operating Metrics

Cost per BOE

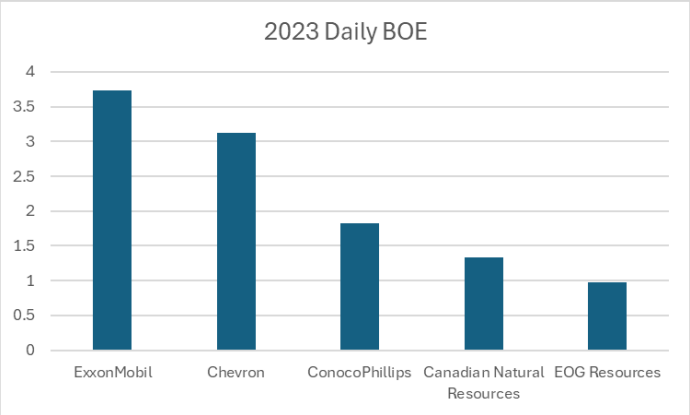
Cost per BOE is a key metric in assessing the cost effectiveness and efficiency of players in the upstream segment as it examines the average cost required to produce one barrel of oil equivalent. In the chart below, we observe EOG Resources to have the lowest cost per BOE which are due to efficiencies that lead to lower spending production but may also cause a ceiling for production volume. Technologies used to identify geological formations and subsequent extractions can dramatically reduce costs. ConocoPhillips and ExxonMobil also exhibit lower cost per BOE due to the scalability of their operations as large players.



Source: Factset

Daily BOE

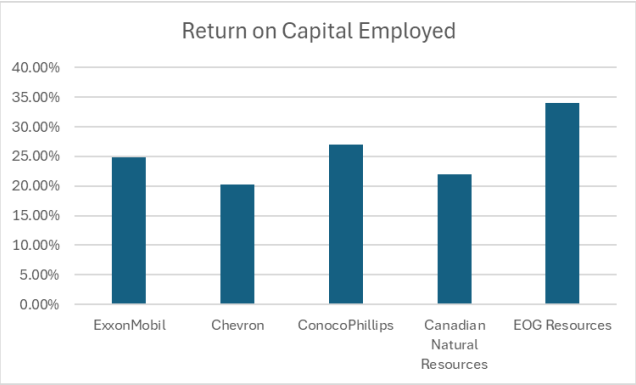
The daily barrels of oil equivalents (BOE) is a significant metric in the exploration and production segment reflecting a companies total hydrocarbon output, aggregating both oil and gas. As such, the metric can be used to asses the productivity and output of a company relative to its peers. In the graph below we can observe ExxonMobil to have the largest production capacity which can impact its market positioning and impact relative to others in the segment.



Source: Factset

Return on Capital Employed (ROCE)

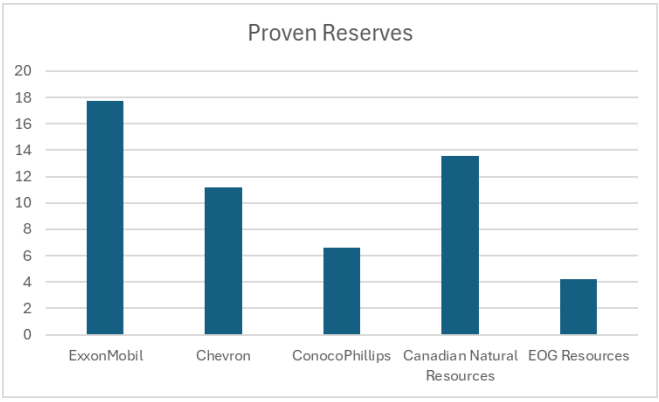
Another metric that examines efficiency in capital utilization is return on capital employed (ROCE) as it evaluates the returns generated from capital invested and is the ratio of net operating profit and capital employed. EOG exhibits the highest returns on capital employed which suggests efficient use of capital, previously foreshadowed by their low costs per BOE. EOG has focused its resources on optimizing their production, focusing on reducing costs rather than scaling production volume as a tradeoff exists give they are both capital intensive ventures. Moreover, EOG only develops wells that can earn at least a 30% direct after-tax rate of return at $40 crude oil and $2.50 natural gas[5]. Larger companies who are focused on acquiring assets and scaling their operations, such as Chevron and ExxonMobil, are less picky about well performance and more concerned with developing more wells so long as demand exists.



Source: Factset

Proved Reserves

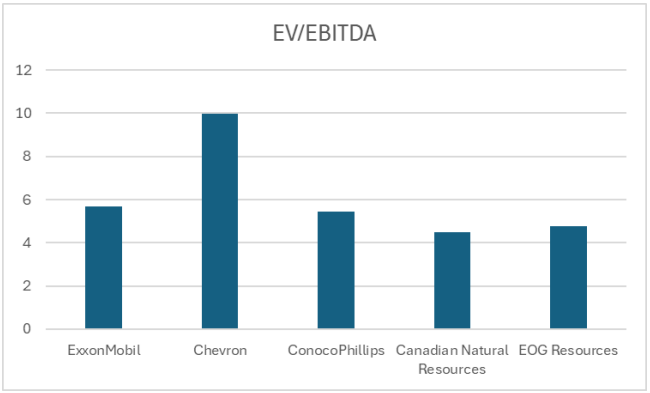
Proved reserves indicate the resources that a company has discovered and can gain access to with a high level of confidence in the current operating environment given technology and prices. The high proved reserves Canadian Natural Resources maintains at 13.587 billion boe is a testament to the significant presence of oil sands in Canada. Though we do not believe this large proved reserve number to be truly indicative of future potential given the complexity of oil sand resource extraction as mining and refining is far more expensive.



Source: Factset

EV/EBITDA

The enterprise value to EBITDA ratio is a great indicator of the value of a company in relation to its core earnings which is a good metric for capital intensive companies such as those in exploration and production. Chevron's relatively high EV/EBITDA may indicate a potential overvaluation, but we believe it is more likely that the market observes future growth potential. Chevron has been active in the M&A space and the market anticipates increases in future performance. Though EOG Resources does not currently have the same production volume nor production efficiencies, they have true potential as previously indicated by their high ROCE having done a lot with relatively very little.

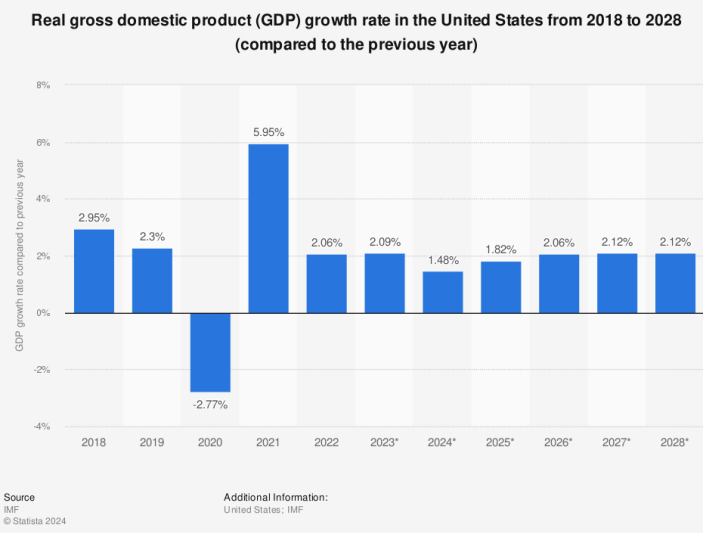


Source: Factset

ECONOMIC OUTLOOK

GDP Growth

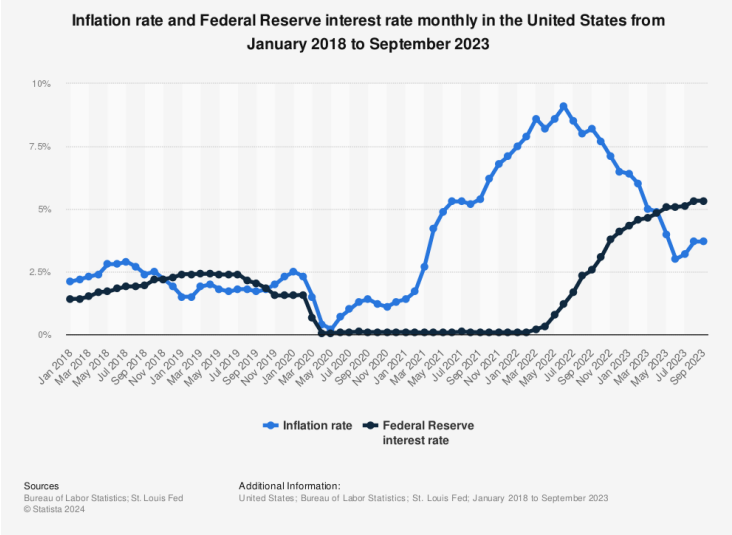
GDP growth (decline) can dramatically impact activity in the exploration and production sector. Increased economic activity consequently increases the demand for energy which can increase the price of oil thereby incentivizing further production. GDP growth is forecasted to slow to under 1% in Q2 and Q3 of 2024 which indicates slower production[9]. As a result, the Henry Fund forecasts a period of slow increases in capital expenditures over the next year as weak demand and healthy supply is not likely to encourage dramatically increased activity. Though GDP growth in the US is not expected to rise significantly in the coming years, as indicated in the chart below, we believe Asia Pacific activity that is slowly gaining momentum will have a significant impact on demand and continue to incentivize US energy producers.



Source: Statista

Interest Rate Cuts

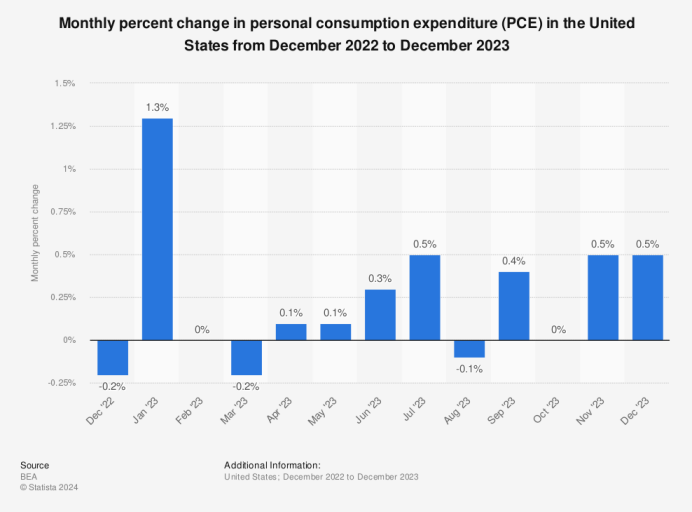
The market has expected up to six interest rate cuts going into 2024 which we believe was overly optimistic. Interest rate cuts would stimulate the economy and increase demand for energy thereby increasing activity in exploration and production. However, the economy has showed signs of resilience and growth; while the growth may be tempered, we believe this will be enough for the federal reserve to abstain from overly optimistic rate cuts. Inflation in the services sector is yet to show the improvements observed in goods, coupled with low unemployment at 3.7% this supports the higher for longer narrative[8]. We expect a target rate of 4.75% to 5% by the end of 2024 which translates to cautious increases in production volume on the part of exploration and production companies. Below is the federal reserve interest rate alongside the inflation rate over the last 5 years:



Source: Statista

Inflation

Inflation has a material impact on upstream activity, though the directionality of the impact depends on the nature of the inflation. If inflation has a disproportionate impact on materials and services over oil prices, production costs will increase and may hinder activity. However, if the inflationary impacts are to impact oil prices in similar or greater magnitude, we can expect greater activity in the industry. We believe inflation in materials and goods has eased and will eventually follow suit in services with the CPI inflation rate reaching 3.1% by the end of 2024; oil prices however are liable to be stickier due to geopolitical tensions. As a result, we believe inflationary impacts on E&P activity to be low in the coming year and the costs of materials and services will not hinder the undertaking of projects.



Source: Statista

CATALYSTS AND KEYS TO MONITOR

Though US energy demand may not prove to be significant in the coming year, global energy consumption and geopolitical trends highlight potential tailwinds for oil prices. We believe monitoring Asia Pacific consumption is vital to gaging global energy markets as China slowly recovers given its plans to double LNG storage capacity by 2025. Moreover, we believe volatility in the Middle East and Red Sea coupled with harsher OPEC cuts are also potential catalysts for oil prices. Monitoring OPEC+ relationships in the wake of Angola's departure may also give insight into future dynamics.

GDP growth, while anticipated to be muted, may accelerate with potentially more aggressive cuts this year leading to higher demand for energy resources. While we do not believe this to be the case, monitoring GDP and inflation levels will help guide our understanding of the federal reserve's inevitable influence on production.

Conclusion

Given the nuanced environment that exploration and production firms operate in with respect to uncertain demand and global volatilities, we advocate for companies with efficient operations and wide profit margins. While large companies can better capitalize on high demand for energy due to the scale of their production volumes, they may not be best suited for less optimistic outlooks. Companies that offer a low cost of production and a high return on capital are those that we believe will endure and thrive regardless of the directionality of the operating environment. ConocoPhillips and EOG Resources represent companies that we believe possess the aforementioned characteristics that will pave the way for healthy and sustainable performance.

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