# **Exploration and Production**

#### Energy

#### **Investment Thesis**

We recommend a Market Weight rating for the Exploration and Production (E&P) industry over the next year. E&P has experienced a boost during the past year due to high energy prices; however, we feel that these prices may have reached a peak, limiting the potential for the same level of record profits.

#### **Drivers of Thesis**

- China's transportation and housing-related industrial sectors are showing signs of a strong recovery after being suppressed by Covid-19 lockdowns. The country is expected to increase world oil demand by two-millionbarrels per day in 2023. As the world's largest crude oil importer, this strong demand would outweigh impacts from a lower U.S demand.<sup>17</sup>
- The current conflict in Ukraine has put stress on crude oil and natural gas supply around the globe and increased the desire for energy security. Russia has cut pipeline deliveries to the European Union by more than half following its invasion of Ukraine.<sup>9</sup> Additionally, OPEC has stated they will be cutting oil output by over a million barrels per day lasting through 2023.
- Strong oil prices over the last year have provided a cushion for exploration and production companies to further exploration activities, which can be observed by the 39% increase in capital expenditures in 2022--the largest year-over-year gain in history. E&P companies also used high cash flows from elevated prices to deleverage and provide more shareholder value.

#### **Risks to Thesis**

- The potential for a recession poses a risk to the exploration and production industry due to decreased economic growth. The Fed is working to achieve a soft landing; however, there could still be a mild recession that would limit economic growth and oil consumption.
- Global GDP is expected to grow by 2.7% in 2022, which is a decrease from 3.2% in 2021. Slower economic growth could limit the overall demand for energy products over the next year, suppressing oil and natural gas prices.<sup>18</sup>



# RESEARCH lenryFund.Or

### April 14, 2023

Industry Rating			Mark	et Wei	ght
	Key It	ems			
Market Cap (I ConocoPhillip Exxon Mobil Chevron Corp EOG Resource Pioneer Natur Occidental Pe	<b>B)</b> s oration es ral Resources troleum			\$13 \$47 \$32 \$7 \$5 \$5	33.62 71.95 28.12 71.71 54.20 58.15
P/E (LTM) ConocoPhillip Exxon Mobil Chevron Corp EOG Resource Pioneer Natur Occidental Pe	s oration es ral Resources troleum				7.49 8.73 9.41 9.18 7.33 5.22
EV/EBITDA ConocoPhillip Exxon Mobil Chevron Corp EOG Resource Pioneer Natur Occidental Pe (Source: Facts	s oration es ral Resources troleum Get)				4.01 5.09 5.09 3.99 4.55 4.23
C	Capital Expendi	itures F	Y2022		
	\$18,407				
\$10,159	\$10,658	\$5,000	\$4,033	\$4,497	



The exploration and production industry locates and extracts oil and natural gas from the ground. Exploration consists of utilizing geological surveys such as subsoil testing and seismic imaging to locate potential sites for extraction. Once sites are identified, the drilling process begins. This process of extracting hydrocarbons from the ground will be referred to as "upstream" in contrast to "downstream", which entails refining the hydrocarbons into finished products.



# **Industry Overview**

The U.S. Exploration and Production industry is the largest segment of the energy sector by revenue. It makes up 47.2% of total energy sector revenue.<sup>1</sup> In 2022, energy companies have generated record profits due to elevated prices over the past year. However, the cost of production remains largely fixed for these firms. If the cost of production outweighs the market price, companies would not be able to stay in business.<sup>2</sup> While price is critical to these firms, volume is also important for exploration and production. However, other industry trends will continue to shape the supply and demand of oil and natural gas in the next year.

The following chart displays the futures curve prices from the CME group as of April 15<sup>th</sup>, 2023. The Henry Fund consensus estimate for oil prices next year is \$74 per barrel.

Ticker	2023	2024	2025	2026
Crude	\$ 71.42	\$ 74.94	\$ 69.98	\$ 65.99
NG	\$ 2.56	\$ 3.40	\$ 4.04	\$ 4.16
Source: CME	aroun			

Source: CME group

#### **Energy Industry Segments**

The energy industry is comprised of three segments: Upstream, Midstream, and Downstream. These segments comprise the complete supply chain from drilling to distribution. Additionally, Oil and Gas Equipment and Services, while not directly related to the supply chain, is another important component connected to the energy industry. These segments are described in the following sections.

# Upstream

The Upstream segment includes exploration and production and other operations that occur prior to the refining process. Companies in the Upstream segment benefit directly from high oil and gas prices. To find sites to drill, companies utilize geological surveys to determine potential locations for oil and gas extraction. There are a variety of ways to test these sites, including subsoil testing and seismic imaging. Once these sites are identified, drilling operations begin. However, these differ depending on if it is onshore or offshore. Onshore drilling occurs on land, typically with wells grouped on a field, while offshore drilling uses a single platform in ocean's seabed. Today, fracking is used in 90% of new U.S. oil wells. Fracking requires the use of high-pressure liquids to help extract oil or gas from rock formations. This method further expands the geological formations to extract gas beyond what is readily accessible from traditional drilling methods. This process allows exploration and production companies to maximize the volume from each well site.<sup>19</sup> The figure below summarize examples of companies that operate in the upstream segment.



Ticker	Market Cap(B)	Revenue	Net Income
COP	132.9	82,156	18,620
EOG	71.29	25,702	7,759
PXD	53.56	24,294	7,830
OXY	58.3	37,095	13,221

Source: FactSet

#### **Midstream**

Once the oil and gas has been extracted from the ground, it needs to be transported from the wells, stored, and moved to a location for distribution. Typically, transportation occurs in two ways, by pipeline and tanker. <sup>19</sup> Tankers are not only responsible for moving the oil and gas from wells to refiners, but also from other countries to the U.S. to make up for the difference between domestic supply and demand. Storage of these products is important to help maintain stable supply and demand. When prices are high, companies will not store as much compared to when prices are low. Oil and gas can both be stored in ground tanks, but natural gas can also be stored in depleted reservoirs. A very important storage facility is the U.S. Strategic Petroleum reseve<sup>19</sup>. This is the worlds largest supply of emergency crude oil with a maximum capacity of 714 million barrels and is designed to minimize the impact of supply disruptions.<sup>20</sup> The figure below summarizes examples of companies that operate in the midstream segment.

Market Cap(B)	Revenue	Net Income
29.86	22,387	1722
34.81	11,613	3,944
39.49	89,876	4,752
	Market Cap(B) 29.86 34.81 39.49	Market Cap(B) Revenue   29.86 22,387   34.81 11,613   39.49 89,876

Source: FactSet

#### Downstream

The last component of the energy supply chain is the Downstream segment, which refines, markets and distributes products to end users. Examples of companies that operate in the downstream segment are listed in the following table.

Ticker	Market Cap(B)	Revenue	Net Income
MPC	58.14	179,952	14,436
PSX	49.30	175,702	11,391
VLO	49.41	176,383	11,485

Source: FactSet

Once transported to a refinery, oil and gas is transformed into usable products, primarily for transportation fuels. Refineries operate continuously in order to continually convert crude oil and other liquids into these products as they are extracted and transported. The graphic below shows the number of gallons of each product created from a single 42-gallon barrel of crude oil.



The largest proportion is used to create motor gasoline followed by distillate, which includes both diesel fuel and fuel oils.<sup>5</sup> Marketing includes wholesale and distribution of these refined products through gasoline service stations for public consumers and directly to factories, powerplants and transportationrelated industries, and electrical providers.<sup>19</sup>



Source: EIA

# **Equipment and Services**

Equipment and Services is also an important component of the energy sector. Companies in this segment offer support throughout all steps in the supply chain by performing fluid handling, maintenance, geological surveying and other testing.<sup>2</sup>

Ticker	Market Cap(B)	Revenue	Net Income
SLB	73.69	28,091	3,441
LBRT	2.42	4,149	400
HAL	30.56	20,297	1,572
с <u>г</u> .,			

Source: FactSet

# **Fully Integrated**

Major companies in oil and gas are typically fully integrated, which means they operates in a mix of upstream, midstream and downstream segments. This gives it exposure to the entire energy supply chain.<sup>19</sup> These firms benefit from diversification and increased efficiency. Additionally, the balance between the upstream and downstream segments can help to act as a hedge against its profits in poor market conditions while still being exposed to upside when oil and gas prices are high. Companies that operate in this segment are shown in the chart below.

Ticker	Market Cap(B)	Revenue	Net Income
CV	328.1	236	36
хом	471.3	413.7	55.7
C			

Source: FactSet



# **Energy Product Segments**

### Oil

In the United States, oil consumption can be broken down into the following end-use sectors: Transportation, Commercial, Industrial, Electric power and Residential. Of these, most oil is utilized for transportation purposes.<sup>3</sup>

Source: EIA



#### World Oil Supply

Global oil supply has been increasing to meet the growing demand as countries reopen and economies began to expand after the pandemic. From November 2021 to November 2022 the reduction in drilled, but uncomplete wells (DCUs) fell by 8%. Over this period, more wells that were previously drilled, but not yet in production began to undergo the well completion process. High market prices encouraged exploration and production companies to increase production to benefit from the high prices. Since 2021, the world oil production has increased from 98.075 million barrels per day to 101.198 million barrels per day. <sup>3</sup> The CAGR from 2014-2021 for total world oil production was -0.66%. Companies that operate onshore rigs can respond more readily to market conditions since these rigs are easier to turn on and off than offshore rigs; however, it is not a simple process for either. In the graph below, total world oil production is shown in relation to the United States production. In 2021, the U.S contributed about 9.37% of the total world energy supply making it the 3<sup>rd</sup> largest producer behind Saudi Arabia (14.02%) and Russia (14.29%).3



Total World Oil Production (Thousand BBL/D)



Source: FactSet

#### World Oil Consumption

Slower, but positive economic expansion, is anticipated to support oil demand. From 2014-2022 the CAGR was 0.07%. Based on these averages we can see that demand is growing faster than production, which could cause crude oil prices to remain elevated. The graph below illustrates how total world oil consumption has changed over time. The Covid-19 pandemic caused a steep decline in demand; however, consumption has rebounded and is above pre-Covid levels. In 2020 the United States represented 19.77% of total consumption. Even if oil consumption in the United States was lower over the next year due to limited economic growth, demand from China is anticipated to increase, outweighing the impact from the United States. This increase in consumption could help prices remain elevated if there are constraints in supply due to global tensions or production cuts.<sup>17</sup>



Source: FactSet

#### Reserves

The number of proved reserves are important because they indicate the number of resources that can be recovered from a deposit with a reasonable level of certainty. <sup>2</sup> Each year this number can fluctuate due to a variety of factors such as new discoveries, appraisal of existing fields, production of existing reserves, changes in price and costs and new and improved



techniques and technologies.<sup>5</sup> This number has remained steady from 2021 and is projected to stay consistent into 2025.<sup>3</sup>



#### Bitumen

A low-grade crude oil, bitumen, is a semisolid, tar like mixture of hydrocarbons that is a combination of sand, bitumen, water, and clay. There are known oil sands in 23 countries with 73% of global estimated oil sands coming from Canada. The bitumen mining process occurs in one of two ways depending on how far it is located below the surface. If the deposits are less than 250 feet below the surface, they are mined and processed to extract the bitumen. Deposits further than 250 feet use steam or a solvent injection to help liquify the bitumen, enabling it to be extracted from the ground.<sup>21</sup>

## **Natural Gas**

Consumption of natural gas is broken up into the following end-use sectors: electric power, industrial, residential, commercial and transportation.



Source: EIA

#### **Natural Gas Supply**

In 2021 the U.S led worldwide natural gas production at 934.2 billion cubic meters, which is over 230 billion cubic meters above the production of runner up, Russia.<sup>4</sup> Over the period displayed in the chart below, the CAGR was 1.70%. Between the years of



2011-2019, 103 U.S. coal fired plants were converted or replaced by natural gas-fired plants, showing the push towards natural gas as a cleaner energy source as it emits 50% less  $CO_2$ . In 2005, coal comprised 50% of the total electricity generation in the United States, but as of 2019 was suppressed to 23%. At the same time, natural gas increased from just 19% to 38%.<sup>5</sup>

World Natural Gas Consumption (Billion Cubic Meters) 950



#### **World Natural Gas Consumption**

Natural gas consumption declined by 75 billion cubic meters in 2020 due to Covid-19 outbreaks and mild weather. In 2021, high prices hurt demand and are still subject to uncertainties regarding energy prices due to conflicts with Russia. <sup>4</sup> While electric vehicle adoption will hurt the oil industry, it will boost natural gas demand as electricity consumption increases. The Electric Power Research Institute estimates that these electric vehicles will increase the nation's overall use of electricity between 8% and 13% by 2030. Additionally, new power demand could develop from mandated for electric appliances rather than gas powered. While this demand may not all stem from natural gas usage, we believe that in the short term, renewable energy may not have the scale to meet current demand in addition to the rising demand stemming from electric vehicles. <sup>17</sup>

#### Reserves

Proved reserves for natural gas have experienced growth over the last 10 years. This is primarily due to technological advancements in natural gas exploration and production. These advancements such as horizontal drilling and fracking in shale, sandstone and carbonate allow companies to extract gas from areas that may have previously been too difficult.<sup>5</sup>



# Naturals Gas Liquids (NGLs)

NGLS are extracted from the natural gas production stream in natural gas processing plants. Examples of NGLs include products like butane, propane and ethane. Of these, ethane comprises the largest share of NGL field production as it is used to produce ethylene, which is necessary to produce plastics. Typically, as crude oil prices increase, NGL prices increase as well, which incentivizes further production of NGLs.<sup>5</sup>

#### World Natural Gas Liquids Supply

NGL supply is anticipated to be driven by production in the United States, which will account for over 50% of the 6.1 million barrel-per-day growth in global supply expected by 2028. The chart below shows the world NGL production expansion led by the U.S. in millions of barrels-per-day.<sup>22</sup>



Source: McKinsey

#### World Natural Gas Liquids Consumption

Ethane, which comprises the largest share of NGL field production is anticipated to drive growth in NGLs and outpace growth in all other U.S. petroleum product consumption over the next year. In 2023, consumption is expected to grow by 340,000 barrels per day because of its use as a petrochemical feedstock.

#### Reserves

High natural gas production more than offset the increase in natural gas consumption that occurred in the 2022-2023 heating season, leading to a 7-year record low for net withdrawals from natural gas reserves.<sup>5</sup>

# **Futures Curve**

The following futures curve shows the forecasted commodity prices as of April 14, 2022. These prices are based on what the market perceives the price will be at each expiration date. Changes in the slope of the futures can reveal anticipated



movements in future spot prices. When the current spot price is higher than the futures prices, it is said to be in backwardation. This can imply that the market is willing to pay more for physical oil than for futures contract. An upward sloping curve called contango occurs because of the storage costs, cost to carry and insurance costs associated with owning the commodity. Based on investors' expectations, the futures prices can fluctuate between being in contango or backwardation.<sup>25</sup>



Source: CME Group

# **Global Rig Counts**

Rig count refers to the number of portable, temporary structures that are used to dig into the ground on a well site. After the well is dug, the drilling rig leaves and is replaces by completion rig. Since the drilling rig is the first step of the process of extracting oil, it can serve as an indicator for future output. <sup>6</sup> In 2022, the number of rigs in the United States jumped from 475 in 2021 to 721 total rigs, which can further be split into 574 oil rigs and 147 gas rigs. Of these, about 98% are land rather than offshore rigs. The sharp increase in rigs signals a increase in future production and anticipation for continued high prices.



Source: Baker Hughes

# **RECENT DEVELOPMENTS**

The OPEC supply cuts, the current recession outlook, the Russia-Ukraine War, the reopening of China and Exxon Mobil's failed



search for oil in Brazil are all recent events impacting the exploration and production industry.

## OPEC

OPEC stands for Organization of the Petroleum Exporting Countries. It is comprised of 13 member countries: Algeria, Angola, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates and Venezuela. The mission of the Organization is to "ensure the stabilization of oil markets in order to secure an efficient economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital."<sup>14</sup>

Recently, Saudi Arabia and large OPEC producers announced new cuts of 1.2 million barrels per day that would go into effect in May and last until the end of the year. Additionally, Russia, who is a part of OPEC+ also agreed to cut oil production over the same horizon totaling a 1.6 million barrel per day reduction. Non-OPEC countries are forecasted to increase their output by roughly 1 million barrels per day, helping to decrease the impact of the announced cuts. The IEA anticipated a 400,000 barrel per day gap between supply and demand in the second quarter of this year. The Henry Fund recognizes that this shock will prop up prices in the short-term; however, we believe the cuts will be less than stated, and feel that slower economic growth could limit the deficit. Furthermore, this announcement could be in response to fears around the U.S. bank collapse to stabilize prices during a time of uncertainty.



Source: FactSet

# **Recession Outlook**

A recession would be a catastrophic threat to the oil and gas industry. The Henry Fund does not anticipate a severe or prolonged recession, if one were to occur. While monetary tightening was deemed necessary to control inflation, the World Bank cites "unexpectedly rapid and synchronous" global monetary policy tightening as the culprit to lower economic growth rates.<sup>7</sup>



# **Russia-Ukraine War**

One of the top global crude oil producers, Russia, makes up about 14% of the world's total supply of crude and condensate. Of the 10.5 million barrels of crude and condensate produced per day, 4.7 million barrels per day of crude are exported around the world, primarily to China and Europe. The continuation of this war into 2023 and beyond, limits supply and poses supply chain risks. Even after the war ends, there will be lasting impacts on oil trade with Russia. Currently, the U.S. and its allies have capped the sales price on Russian petroleum products. .<sup>8</sup> Furthermore, the European Union plans to ban refined petroleum imports from Russia.<sup>8</sup> Additionally, Russia has disrupted gas imports into Europe, cutting deliveries by over half. A milder winter and lower than anticipated demand kept reserves intact, easing the supply constraints. We believe that this could speed up the adoption of renewable energy in Europe in order to eliminate reliance on Europe in the long term.<sup>9</sup>

# **Exxon Mobil's Failed Search in Brazil**

After spending billions of dollars over three attempts, Exxon Mobil is abandoning its exploration activities in the deep waters off the coast of Brazil. This is a significant failure as Brazil was expected to be a major growth opportunity for the company. The failure to find commercially viable amounts of crude oil has led the company to transition efforts elsewhere. According to the Wall Street Journal, Brazil has become one of the few places large companies are willing to spend on exploration and production activities. This announcement, however, undermines the success experience by government-owned Petrobras in Brazil.

# The Re-opening of China

As China reopens after its COVID-19 lockdowns, energy consumption is expected to expand to 1.9 million barrels a day, which is an increase of 200,000 barrels per day. Furthermore, this put the total oil demand in 2023 to average 101.7 million barrels a day. China's transportation and housing-related heavy industry sectors are showing signs of strong recovery after being suppressed by Covid-19 lockdowns.<sup>9</sup>



## **INDUSTRY TRENDS**

The following section outlines current trends in the industry.

## **M&A Activity**

Because of current economic conditions, there is a possibility for more M&A deals with larger premiums to occur in 2023.<sup>1</sup> However, Q4 of 2022 saw a 17 year low of the number of oil and gas M&A. Yet, there is a promising outlook for mergers as companies search to secure inventory. <sup>16</sup> Over the course of the year, the aggregate transaction value was \$24 billion over 47 deals. The chart below illustrates the impact of strong cash flows as the number of deals with a transaction value of over \$100M went from zero in 2021 to three in Q1 of 2022. In 2021, the total transaction value increase by over 60% from the prior year and proceed to drop in 2022.<sup>3</sup> The Henry Fund anticipates that M&A activity will continue to remain elevated compared to 2020 due to the continuous need for companies to secure inventory.



# **Debt Reduction**

Record profits in 2022 allowed exploration and production companies to begin to deleverage while oil prices are high. As the deleveraging phase ends and companies feel they have strong balance sheets, we could see large buybacks in 2023.<sup>10</sup>

Ticker	D/E	Debt Rating
СОР	35.8%	A-
хом	24.1%	AA-
CVX	17.2%	AA-
EOG	24.0%	A-
PXD	25.6%	BBB
OXY	69.0%	BB+

Source: FactSet

# **Capital Expenditures**

Exploration and production companies are continuing to expand their property, plant and equipment. Large industry players have already stated that they expect to direct a large portion of



spending towards upstream development.<sup>11</sup> In the fourth quarter of 2021, capital expenditures totaled \$27.5 billion, which is the largest amount in any quarter since 2014. This represented a 60% increase from the third quarter of 2021. This level was still 10% below pre-pandemic capital expenditures.<sup>5</sup>





Source: FactSet

The graph below shows quarterly cash flow statement items for 42 U.S companies from 2016-2021. Typically, as cash from operations increase, so do capital expenditures. The Henry Fund anticipates this trend will continue over the next year, supported by the high prices from the prior year to reach pre-pandemic levels. With OPEC announcing yearlong supply cuts, non-OPEC oil and gas companies will have an incentive for capital expenditures to benefit from potential elevated prices and meet excess demand.

Cash Flow Statement Items for 42 U.S. oil companies (billions)





## **Methane Emissions**

Greenhouse gas emissions have become a global concern by both the public and government. Tracking and regulating these emissions has become a significant component of the oil and gas industry. Energy is one of the largest emitters of methane gas emissions second only to agriculture. Specifically, looking at world methane emissions from the energy sector alone, the majority stems from onshore oil venting. Venting is an intentional release of emissions for safety or operation requirement reasons. Fugitive emissions are caused by unintentional leakage from valves or poor sealing. Lastly, flaring is a practice to dispose of natural gas that cannot be used or



recovered economically. Methane is released into the air if complete combustion does not occur. The U.S. and the European Union have transitioned from the World Bank's Global Flaring Reduction Partnership and extended this initiative to also reduce methane emissions leading to the newly formed Global Flaring and Methane Reduction Partnership. In the U.S., the Inflation Reduction Act also implemented a charge on methane emitted by oil and gas companies, while simultaneously providing \$1.55 billion in financial and technical assistance to drive emission reduction within the industry.<sup>9</sup>

World Methane Emissions by Source





#### World Methane Emissions from Energy



Source: IEA



# MARKETS AND COMPETITION

# **Competition and Rivalry**

The exploration and production industry is dominated by a few large players who have a competitive advantage because of their fully integrated operations. The benefit of this arises from the natural hedge created by having a stake in all aspects of the production process. Competition will be driven by the number of proved reserves and things like access to mineral rights. <sup>1</sup>

# **Power of Buyers**

The oil and gas industry is directly impacted by global supply and demand forces, giving customers limited bargaining power. <sup>1</sup> These buyers are interested in the price and quality of the commodity.<sup>16</sup> There are three global benchmarks to determine the quality of oil:

- Brent
- West Texas Intermediate (WTI)
- Dubai/Oman

Brent crude oil is the most widely used crude oil benchmark. It includes light sweet crude that is produced in the North Sea. WTI is a light, sweet crude that is produced in the United States. It serves as the benchmark for other types of U.S. crude production as well as imported crude from Canada, Mexico and South America. Dubai/Oman crude is a medium and sour crude that is used as a benchmark for production in the Middle East.<sup>3</sup> Typically, light crude oil is priced higher because it requires less refining before it can be converted into usable products.<sup>3</sup>

# **Power of Suppliers**

Exploration and Production companies can increase capital spending. When this occurs, it requires the support of driller and oilfield service companies that act as the supplier to upstream companies. In the past, the service providers would offer concessions to keep business; however, this has recently changed due to large capital expenditures by E&P companies. <sup>1</sup> Fully integrated oil and gas companies have the strongest ability to influence energy prices because of their involvement throughout the supply chain.<sup>26</sup> Additionally, OPEC owns over 80% of the worlds proven oil reserves giving them power over global supply. OPEC stands for Organization of the Petroleum Exporting Countries. It is comprised of 13 member countries: Algeria, Angola, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates and Venezuela.<sup>14</sup>



# **Threat of New Entrants**

The threat of new entrants is low. Entering the exploration and production industry is very capital intensive, keeping the barrier to entry high for this industry as many firms cannot obtain proven reserves and sufficient PP&E.<sup>1</sup>

# **Threat of Substitutes**

Due to climate concerns, there has been a push towards renewable and clean energy sources. The European Commission has vowed to be carbon neutral by 2050, which would negatively impact fossil fuel demand. Yet, natural gas prices are rising in Europe due to green energy not being able to withstand the demands.<sup>9</sup> Still, while renewable energy may be the fastest growing, petroleum and natural gas will most likely remain the most-consumed source of energy in the United States through 2050.<sup>5</sup>

# **Key Players**

The following section analyzes key players in the U.S. oil and gas industry. While some of these firms operate beyond the upstream segment, a large portion of their revenue stems from exploration and production. Below is a chart of financial metrics used to compare the six companies identified.

Ticker	Price	Mkt Cap (M)	EV (M)	Yield (%)
COP	108.50	133,556.66	133,659.66	1.88
XOM	116.05	476,798.15	457,125.15	3.14
CVX	172.44	330,247.95	292,616.95	3.50
EOG	121.61	72,287.28	71,393.28	2.71
PXD	230.00	56,428.31	59,195.97	11.84
OXY	64.48	59,235.98	85,629.98	1.12

Source: FactSet

## **ConocoPhillips (COP)**

ConocoPhillips engages in production, transportation, and marketing of crude oil, bitumen, natural gas, liquefied natural gas, and natural gas liquids around the world. It focuses on conventional and tight oil reservoirs, shale gas, heavy oil, LNG, oil sands, and other production operations.<sup>12</sup> It is broken into 7 segments: Alaska; Lower 48; Canada; Europe Middle East and North Africa; Asia Pacific; Other International and Corporate and Other.<sup>13</sup>

#### Exxon Mobil (XOM)

Exxon Mobil Corporation is a fully integrated exploration and production company in Irving, Texas. Exxon Mobil trades and transports oil, natural gas and petroleum products both in the United States and internationally. As of December 31, 2021, it



had approximately 20,528 net operated wells with proved reserves. <sup>12</sup>

## **Chevron Corporation (CVX)**

Chevron Corporation functions in both the upstream and downstream segments. They also are involved in other segments such as cash management, debt financing, insurance operations, real estate and technology business making them a fully integrated operation. <sup>12</sup>

#### **EOG Resources (EOG)**

EOG Resources, Inc. explores for, develops, produces, and markets crude oil, and natural gas and natural gas liquids. Its principal producing areas are in New Mexico and Texas in the United States; and the Republic of Trinidad and Tobago. The company was formerly known as Enron Oil & Gas Company. EOG Resources, Inc. was incorporated in 1985 and is headquartered in Houston, Texas.<sup>12</sup>

#### **Pioneer Natural Resources (PXD)**

Pioneer Natural Resources Company operates as an independent oil and gas exploration and production Company in the United States. The company explores for, develops and produces oil, natural gas liquids (NGLs), and gas. It has operations in the Midland Basin in West Texas. Pioneer Natural Resources Company was founded in 1997 and is headquartered in Irving, Texas.<sup>12</sup>

#### **Occidental Petroleum Company (OXY)**

Occidental Petroleum Corporation engages in the acquisition, exploration, and development of oil and gas properties in the U.S., the Middle East, Africa, and Latin America. It operates through three segments: Oil and Gas, Chemical, and Midstream and Marketing. The company's Oil and Gas segment explores for, develops, and produces oil and condensate, natural gas liquids (NGLs), and natural gas. Occidental Petroleum Corporation was founded in 1920 and is headquartered in Houston, Texas.<sup>12</sup>

# **Operating Metrics**

The following section outlines important operating metrics for the exploration and production industry.

#### **Gross and Net Acreage**

One way to compare exploration and production companies is to evaluate the net acreage of the companies' control. Gross acres include all the land the company has access to whereas net acres only factors in the actual percentage of ownership in each



lease. This metric is important because it shows the land available for the companies to operate on; however, it does not actually serve as an indicator of any available oil and gas resources for the company. The company hopes this land will provide resources to extract and sell. Identifying where a company's gross and net acreage is located gives insights into the company's operating and geopolitical risks as well as profitability.<sup>2</sup>



#### Source: FactSet

Out of the selected key players, Exxon Mobil is the leader of acreage both in gross and net terms. This includes both on and offshore areas. However, Pioneer Natural Resources is the largest acreage holder in the Spraberry/Wolfcamp field in the Midland Basin.<sup>23</sup>

Source: FactSet



#### **Total Producing Wells**

Companies in the Exploration and Production industry can have minority or majority operating interest in wells. Gross refers to the number or wells a company has interest in, while net wells refer to a 100% stake across the fragments of ownership the company possesses. Exxon Mobil has 66,193 producing wells compared to Chevron's 49,973 wells as of Dec. 2021.

#### **Net Reserves**

Net reserves are the portion of gross reserves owned by the company. These reserves are based on estimated volume of oil and gas that can be economically obtained.<sup>5</sup> While total reserves are important for global supply, looking at an individual



company's reserves may give insights into their ability to continue operations in the current economic and operating conditions. Exxon Mobil again is the leader with the largest barrel oil equivalent net reserves.



#### Source: FactSet

#### **Reserve Replacement Ratio**

The reserve replacement ratio is an important metric showing a company's new reserves minus the amount of oil it produces. A reserve replacement ratio of greater than 100% indicates that the company can sustain its current production levels.

**Reserve Replacement Ratio** 



Source: FactSet

#### **Finding and Development Costs**

Finding and Development costs are an important operating metric for oil firms because it determines how sensitive they are to decreases in oil prices. This is calculated by the total amount of money used to find new sources of oil and gas divided by the additional reserves discovered.<sup>2</sup> Companies like Pioneer Natural Resources that have higher costs will be impacted more than Exxon Mobil when the price of oil decreases because they may not be able to break even from the high cost of exploration.



Finding & Development Costs Per BOE (Organic)



#### **Production Volume**

Looking at each company's production volume gives insights into their scale, which drives revenues and cash flows. In addition to what companies produce, they also use purchased commodities to meet their contractual obligations.





Source: FactSet

#### **ESG Rating**

Comparing oil and gas companies by ESG rating can give insights into the company's adoption of more sustainable environmental and social practices. This metric is important because it could impact investors' view of the company and shows how they are implementing important initiatives.

Company		ESG Rating	
Exxon Mobil (XOM)	43.5	Severe	
Chevron (CVX)	38.4	High	
ConocoPhillips (COP)	36.6	High	
Occidental Petroleum (OXY)	42.1 Severe		
EOG Resources (EOG)	36.2	High	
Pioneer Natural Resources (PXD)		High	

Source: Sustainalytics



# **ECONOMIC OUTLOOK**

Real GDP growth, treasury yield changes and interest rate changes are all factors that will continue to impact COP.

# GDP

In 2023, global GDP is anticipated to grow 2.5% and roughly 1% in the United States. <sup>14</sup> These forecasts are sensitive to inflation adjustments, the impacts of high sovereign debt, and the recent money tightening initiative by governments. The chart below shows the GDP growth rate and the consumption of oil growth rate track each other consistently. This emphasizes the significance of GDP growth in relation to the demand for oil as economies expand. On the supply side, the chart shows that responses to changes in demand often lag behind most likely due to the inability to easily halt output levels.<sup>14,18</sup>





# **Treasury Yields**

If a recession were to occur, we do not expect it to be severe or prolonged. However, a historical predictor of a recession has been the inverted yield curve, which we have been experiencing. The chart below which displays the current yield curve as of March 30<sup>th</sup>, 2023, shows that the short-term Treasuries currently have a higher yield that long-term Treasuries.<sup>24</sup> This implies that in the near-term investors expect interest rates to temporarily rise. Over the next year, we anticipate the yield curve inversion to return to normal, which would increase the 10Y Treasury Note yield. This is significant for the oil and gas industry as these companies are borrowing long-term in order to finance their capital expenditures.



Source: U.S. Department of the Treasury

# **Interest Rates**

The current Fed Funds rate is 4.75% – 5.00% with another meeting in early May. The Henry Fund team believes that will result in another 25-bps rate hike and could be the last of increases. While these rate hikes have been necessary to slow down the economy, if our rates remain higher that other countries, the US dollar will continue to strengthen in relation to other currencies. Since oil is traded in dollars, it makes crude more expensive and may reduce demand for oil. <sup>15</sup>

# INVESTMENT SUMMARY

In 2021, the Exploration and Production Sub-Industry experienced high prices relative to recent years. Moving forward it will be important to monitor the following:

- Tension between Russia and Ukraine and any sanctions that follow
- Evolving global GDP growth
- Likelihood of a recession
- OPEC production cuts

These factors will have significant implications for global energy supply and demand, driving commodity prices.

In summary, The Henry Fund has placed a **Market Weight** rating on the Exploration and production sub-industry to maintain some exposure to energy prices while also recognizing that oil prices may have reach a high last year, limiting upside.

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