Recessions and Midstream Energy: Reasons for Investor Optimism

Fears of a global recession are picking up among investors and macroeconomists alike. We are not recession prognosticators—they are incredibly difficult to predict and even the experts rarely agree on timing. Yet with recession concerns growing, we believe a look back at how energy has performed during past downturns can help investors prepare for the scenario of an imminent economic slowdown. In this paper, we explore what recessions have historically meant for energy fundamentals and energy equities—and why we see reasons for energy investor optimism during the next down cycle.

FUNDAMENTALS

We believe demand-supply fundamentals for U.S. hydrocarbons should remain supportive in the event of a mild recession, primarily due to the relatively modest demand impact historically during recessions, the supply-side issues we are seeing for many energy commodities today, and the ability of U.S. supply to compete at the low end of the global cost curve.

RELEVANT RECESSIONS HAD A MUTED AND TEMPORARY IMPACT ON ENERGY DEMAND

The most recent economic slowdown—the sharp and severe one ushered in by the COVID pandemic in 2020—is not the best historical model for gauging what a recession could mean for today's energy fundamentals and energy equities. Although that downside scenario does provide reasons for optimism about natural gas and natural gas liquids (NGLs) markets, it was an unconventional and extremely short-lived economic recession. Global economic activity essentially halted due to lockdowns, with the fast contraction followed by an unusually quick recovery.

We believe the slowdowns that provide the best context for determining how today's global economy and energy markets might react in the case of a mild recession are more conventional in nature and followed periods when unaffected crude demand was within approximately 30%, or roughly 30 million barrels per day (MMBPD), of 2019's 98 MMBPD level. We use 2019 as a crude oil demand baseline because that year's demand was unaffected by COVID. We believe we will eventually get back to or exceed those levels of global demand because air travel and lower demand from certain countries, like China, has yet to return to normal.

There have been three economic recessions over the last three decades that check these boxes, according to Federal Reserve Economic Data (FRED) back to 1990: a two-quarter recession from Q4 1990 to Q1 1991, a three-quarter recession from Q2 to Q4 2001, and a six-quarter recession (the Great Recession) from Q1 2008 to Q2 2009.[1] These periods provide the most relevant historical models for deciphering the potential impact of a recession today, in our view.

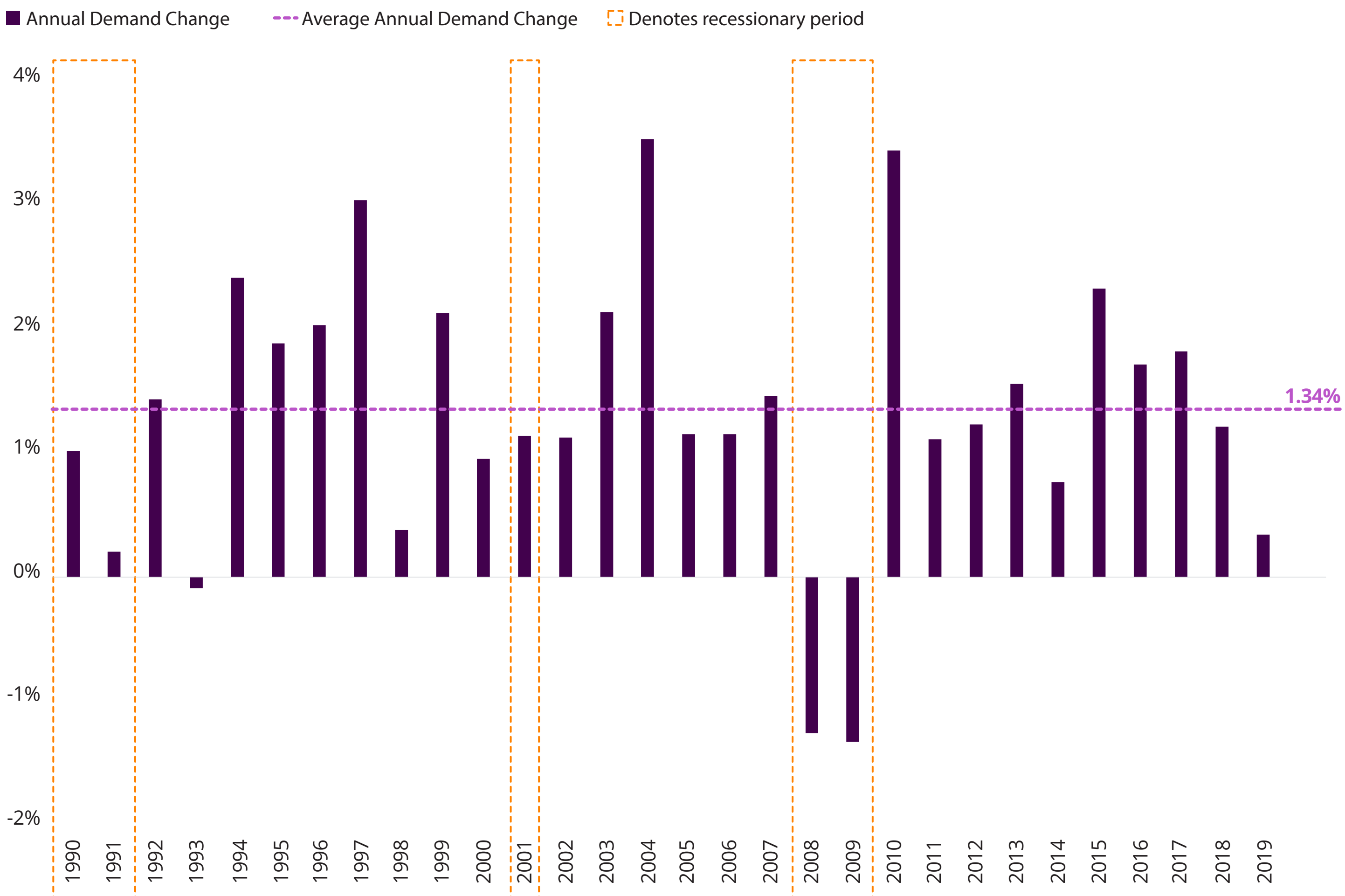
There have only been three years between 1990 and 2019 when crude oil demand declined—and one of those was a modest decline not during a recession, in 1993. Oil demand actually powered through the two-quarter 1990 recession and continued to increase throughout 1990, 1991 and 1992.

The Great Recession of 2008-2009, however, caused an accumulated 2.2 MMBPD, or 2.6% of global crude oil consumption, to come out of the market over a two-year period, with a 1.3% decline each year. This demand decline came on the heels of a 9% cumulative negative impact to U.S. gross domestic product (GDP) over that time period and represents the largest decline in oil demand since the early 1980s.

Yet the 2008-2009 demand decrease proved to be extremely short-lived. In 2010, the year immediately following the Great Recession, oil demand set a new global record and did not decline again on an annual basis until 2020. Despite these economic pullbacks, oil demand grew more than 1.0 MMBPD per year on average from 1990 to 2019.

OIL DEMAND HAS GROWN ON AVERAGE DESPITE ECONOMIC PULLBACKS

Annual Oil Demand Change (%; 1990-2019)



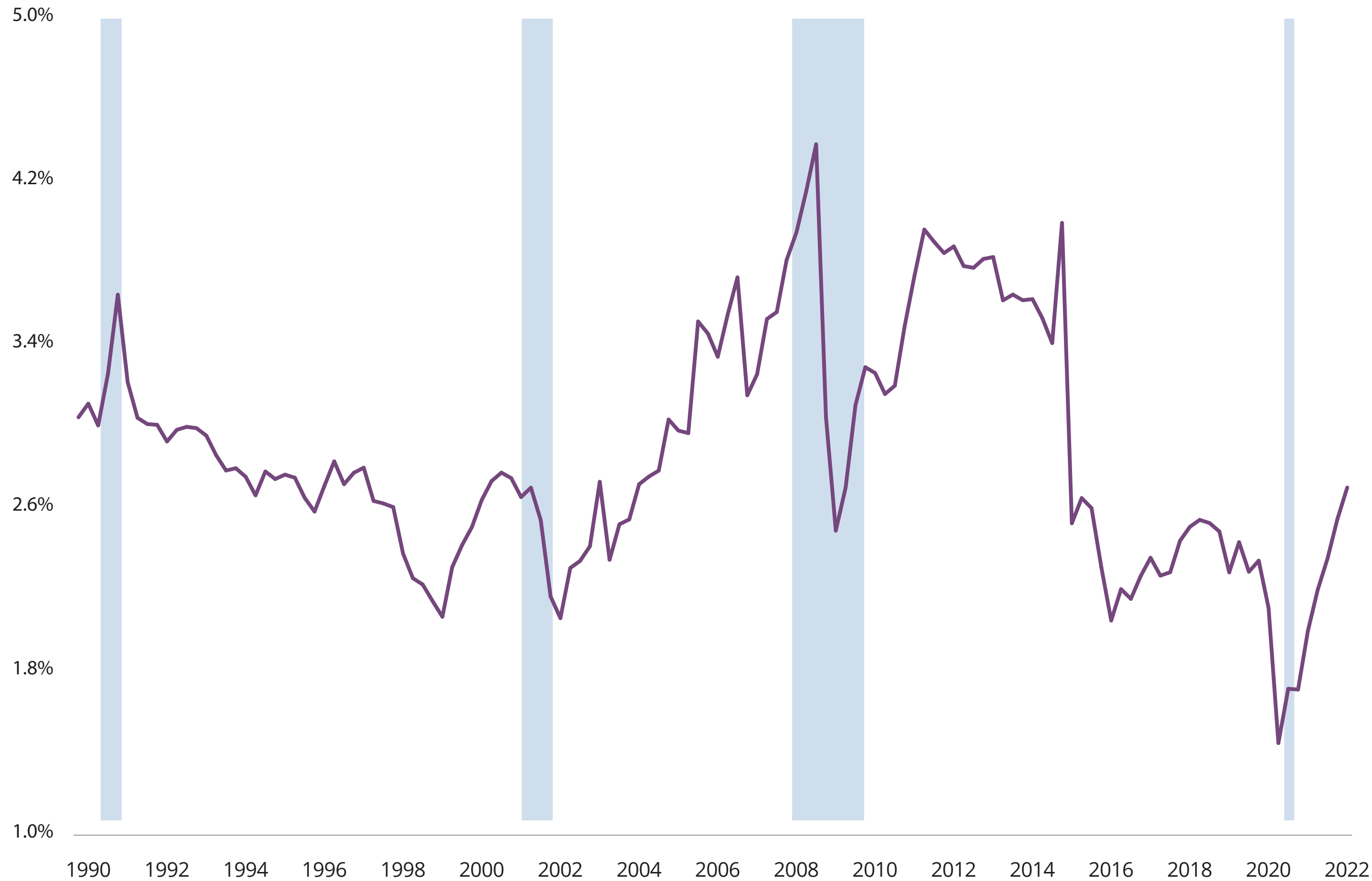
As of May 27, 2022. Source: bp's Statistical Review of World Energy July 2021, Federal Reserve Economic Data (FRED), Brookfield PSG.

It's also notable that the Great Recession-related demand decline was precipitated by high absolute prices that composed a historically large percentage of household spending. This dynamic is not in play today. Even with crude oil averaging $95 per barrel in the first quarter of 2022, gasoline and other energy goods still comprised only 2.7% of total personal consumption expenditures, according to FRED. This is 5% below the historical average of 2.9% dating back to the first quarter of 1990, 20% below the average 3.4% during the six quarters of the Great Recession, and a whopping 40% below the 4.4% Great Recession peak.[2]

Quite simply, Americans are spending less of their total personal consumption today on energy goods than they have, on average, over the last 30-plus years. So, unless crude and refined products prices were to increase materially from here, we believe that a modest and short-lived recession would create a more muted demand response than the approximate 2 MMBPD decline we saw in 2008-2009.

ENERGY IS A SMALLER PART OF CONSUMER SPENDING TODAY THAN DURING 2008-2009

Gasoline and Other Energy Goods As a Percentage of Personal Consumption Expenditures



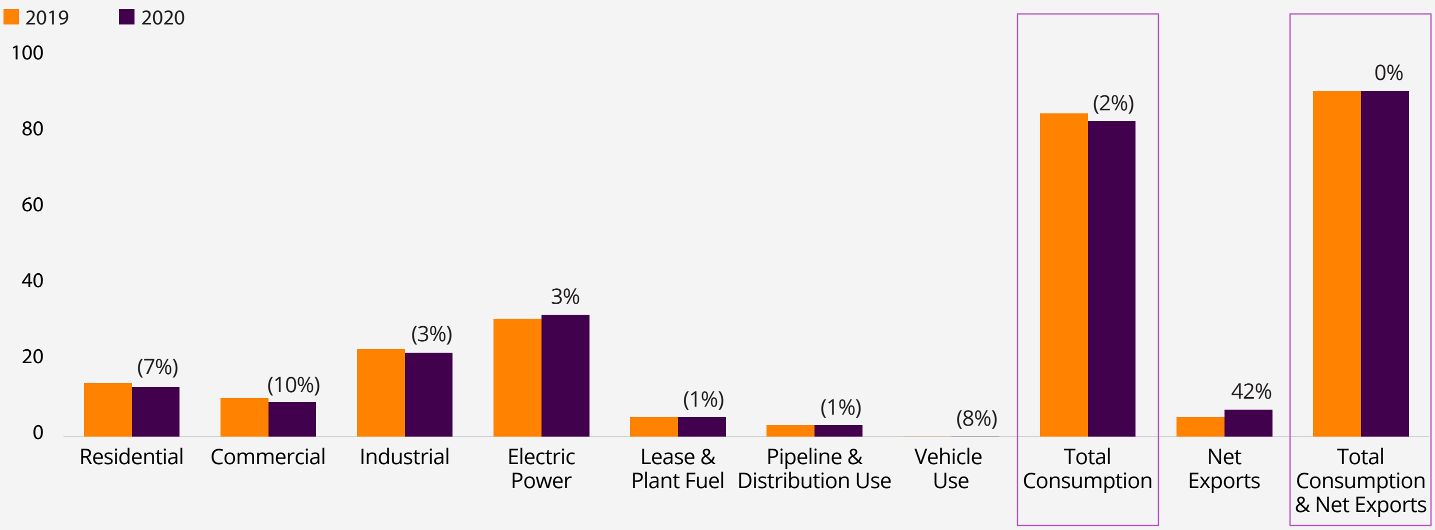
As of May 27, 2022. Source: Federal Reserve Economic Data (FRED), U.S. Bureau of Economic Analysis. Shaded areas indicate U.S. recessions. The purple line represents gasoline and other energy goods as a percentage of personal consumption expenditures. Personal consumption expenditures represent how much consumers spend.

A Deep Dive into Natural Gas Demand During the COVID-Related Recession

While the COVID-related downturn was an unusual recession, what happened to natural gas demand during that period does offer additional reasons for optimism about that market during a down cycle. Even though global and domestic economic activity largely ground to a halt for a significant part of 2020, total U.S. natural gas consumption and net exports were actually flat year over year, according to the Energy Information Administration (EIA). Total U.S. consumption declined by around 2 billion cubic feet per day (Bcf/d), or 2%, year over year, but that decline was offset by an increase in net exports, buoyed by new liquified natural gas (LNG) capacity that had come on line.

AN INCREASE IN NET EXPORTS OFFSET LOWER CONSUMPTION DURING COVID

U.S. Natural Gas Consumption and Net Exports (Bcf/d)



As of May 7, 2022. Source: U.S. Energy Information Administration (EIA) Short-Term Energy Outlook, Brookfield Energy Infrastructure (BEI). Figures with percent signs represent percent change from year to year.

Digging into 2020 U.S. consumption a bit further, cheap natural gas (prices averaged $2/thousand cubic feet (mcf) during 2020) drove higher demand in the power sector—the largest component of U.S. natural gas consumption—while demand in other major sectors was down. We think this dynamic makes intuitive sense: lower industrial and commercial demand due to reduced economic activity created excess supply and pressured prices, creating competitive fuel source pricing for the power sector (and hence, larger demand in the electric power stack). Thus, even though U.S. GDP declined by 35% from Q4 2019 to Q2 2020, undoubtedly the sharpest two-quarter decline since 1990, natural gas consumption and net exports were effectively unchanged.

SUPPLY-SIDE ISSUES MEAN MORE ENERGY DEMAND THAN SUPPLY

Serious supply-side issues complicate matters further for crude oil balances this economic cycle and are likely to support energy even in a recession scenario. These include the following:

- **The accumulated lack of global upstream investment.** The upstream industry's lack of spending has been well documented. The industry's spending remains well below what would be required through 2030 in even the International Energy Agency's (IEA) net-zero scenario, which is probably the most austere outlook for fossil fuel consumption being published today.
- **The lack of meaningful spare production capacity globally.** Aside from Iranian and Venezuelan barrels sidelined as a result of global sanctions, OPEC+ capacity today sits near a historical low at approximately two million barrels per day, according to industry analysts.

- **The uncertainty surrounding Russian oil and gas exports.** What happens with Russian barrels going forward remains a mystery, but industry analysts believe that we started seeing the impact of sanctions in May, and those impacts could accelerate toward year-end. According to the IEA, Russia exported approximately 8 MMBPD of crude oil and refined products to global markets and produced 11.3 MMBPD of crude oil as recently as January 2022, representing about 10% of global demand.[3] While potential outlets for these volumes exist in Asian markets, the threat of secondary sanctions to countries taking those barrels and the general disdain toward Russia by corporations and trading houses around the world threaten a permanent impairment for Russian production. Even if just 25% of Russian exports were shunned by global markets, that amount of supply being offline would still offset the amount of oil demand lost during the Great Recession.

These supply-side issues are present even as oil demand has not yet fully recovered from the COVID-related downturn, in our view. Lost demand from China's Zero-COVID policy and the slow return of air travel are just two examples of meaningful crude oil consumption that has yet to reappear post-COVID. If this demand comes back while global supplies remain constrained, the current imbalance between supply and demand could be exacerbated even further.

THERE IS GLOBAL DEMAND FOR U.S. PRODUCTION

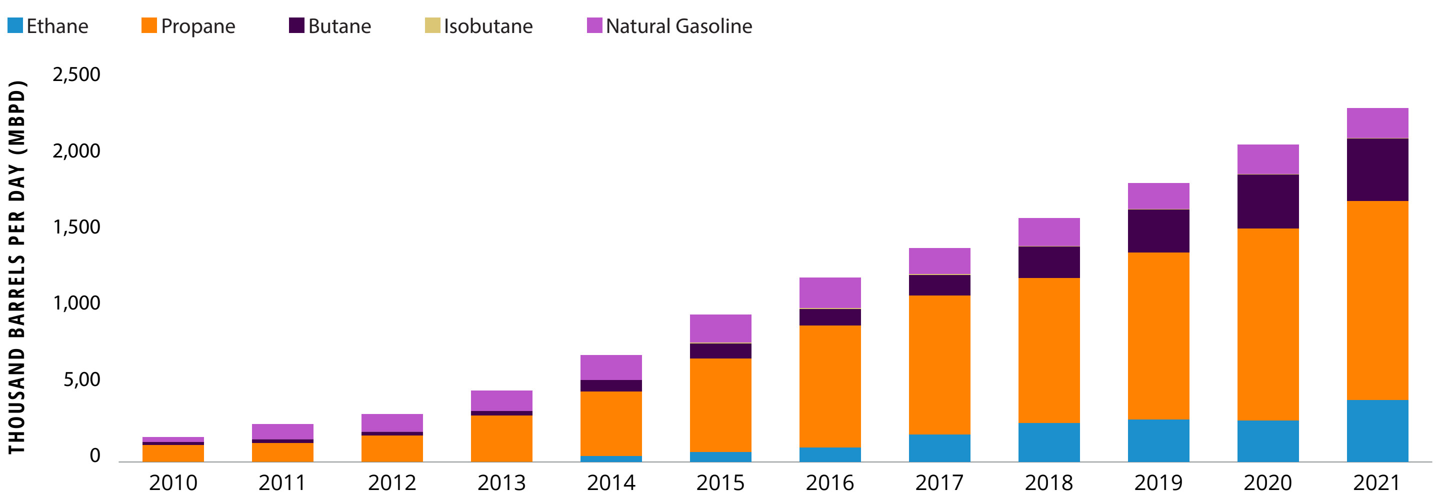
Given natural gas's increasing relevance for global economies (particularly Europe), we expect that gas demand should remain strong for the foreseeable future. The global LNG market remains a critical outlet for North American natural gas, so the health of power and heating markets around the world matter more today for U.S. natural gas supply-demand fundamentals than they did during prior recessions. In fact, approximately 15% of natural gas produced in the U.S. today ends up being exported, while during the Great Recession the U.S. was a significant net importer of natural gas.

Natural gas liquids are an often forgotten part of the midstream value chain, and they happen to be experiencing explosive growth globally as petrochemical feedstocks and as heating and cooking fuel for residential use. While global consumption data for NGLs are more difficult to obtain than data for crude oil and natural gas, domestic consumption of NGLs actually increased during the pandemic, led by strong demand for ethane in the petrochemical industry. Additionally, U.S. exports have increased every year since 2010, including 2020, increasing more than tenfold through 2021, according to data from the EIA.

Looking forward, the long-term outlook for NGL demand growth remains strong. Analysis from Bloomberg New Energy Finance (BNEF) shows petrochemical demand for liquefied petroleum gas (LPG) and ethane growing at a 2% compound annual growth rate from 2021 to 2050—and this excludes any growth from residential use.[4]

U.S. NATURAL GAS LIQUIDS EXPORTS HAVE INCREASED EVERY YEAR SINCE 2010

Total U.S. NGL Exports (MBPD)



As of May 27, 2022. Source: U.S. Energy Information Administration (EIA).

One final point on NGLs: For the better part of the shale boom, NGLs have been produced as a by product of crude oil production. Crude oil prices, rather than the prices of the individual components of the NGL barrel, drove the upstream production economics. As a result, U.S. NGLs have tended to remain at the lower end of the petrochemical supply cost curve, even during periods of extremely low crude oil prices when naphtha (a flammable liquid hydrocarbon mixture) competes as a feedstock. Thus, we expect that any incremental U.S. NGL production growth should be able to find a home in the global market in the event of a recession and push out higher-cost supply from other markets.

Furthermore, we expect that U.S. producers have largely been preparing budgets based on crude oil prices of $70-$80 per barrel—not $100—with the excess cash flow generated above those budgeted price levels either going to pay down debt or pay shareholders in the form of higher dividends or share repurchases. This dynamic is similar to what we are seeing in the midstream industry today. As a result, we believe a pullback of crude oil prices to the $70-$80 level in the event of a minor economic slowdown would not materially impact our current outlook on forward U.S. production.

EQUITIES

BALANCE SHEET STRENGTH, LOW VALUATIONS AND DIVIDEND YIELDS SUPPORT ENERGY EQUITIES TODAY

As for what a mild recession could mean for U.S. energy infrastructure equities, a recent Goldman Sachs analysis looked at median S&P 500 sector performance for periods up to 12 months before and after the five recessions since 1981, an even longer time frame than we examined. Notably, the energy sector's median returns were overwhelmingly positive on absolute and relative bases before a recession and within two percentage points of the broad S&P 500 Index even six months after a recession starts.

RECENT ENERGY SECTOR CHANGES COULD REWRITE THE SCRIPT FOR MIDSTREAM PERFORMANCE FROM HERE

	MEDIAN RETURN IN MONTHS AROUND RECESSION					
	BEFORE RECESSION STARTS			**AFTER** RECESSION STARTS		
5 RECESSIONS SINCE 1981	**12M**	**6M**	**3M**	**3M**	**6M**	**12M**
S&P 500	6%	2%	(3%)	(6%)	(5%)	0%
Sectors relative to S&P 500						
Energy	24 pp	5 pp	6 pp	(3) pp	(7) pp	(9) pp
Consumer Staples	9	10	2	7	8	17
Health Care	5	2	(0)	3	6	14
Utilities	5	7	5	(0)	4	(2)
Communication Services	3	1	2	3	2	(2)
Industrials	1	2	(2)	(4)	(2)	(6)
Materials	(2)	0	(0)	2	1	0
Consumer Discretionary	(5)	(4)	(1)	4	(2)	3
Financials	(6)	(2)	(5)	(6)	(4)	(1)
Information Technology	(8)	(2)	(5)	(2)	8	(4)
Real Estate	(12)	(7)	(5)	(9)	(12)	(6)
Long/short equity factors						
Growth (high vs. low)	9 pp	1 pp	3 pp	3 pp	(4) pp	(9) pp
Volatility (low vs. high)	8	7	3	2	2	3
Momentum (high vs. low)	2	0	0	0	9	0
Balance Sheet (Strong vs. weak)	2	3	4	9	4	3
Margins (high vs. low)	2	2	2	5	4	4
Returns (high vs. low)	1	0	1	8	7	3
Dividend Yield (high vs. low)	1	(0)	(1)	2	6	14
Valuation (low vs. high)	(4)	1	(3)	(2)	10	17
Size (small vs. large)	(7)	4	(4)	(2)	(3)	3

Source: Goldman Sachs Portfolio Strategy Research. "US Equity Views: The recession manual for US equities"; May 18, 2022. Emphasis (light purple highlights) added by PSG. "pp" = percentage points.

Although the Goldman Sachs' analysis shows energy as an underperformer 12 months after a recession starts, it also shows that balance sheet strength, low valuation and high dividend yield are key factors behind positive performance after a recession starts. We believe that the major changes the energy sector—and midstream in particular—has undergone recently with respect to these factors could rewrite the script for sector-level performance during the next recession.

- **Balance sheet strength.** More than 80% of the Alerian Midstream Energy Index (AMNA Index), the key industry benchmark, is investment grade. We also believe that another 10% of that benchmark could be considered for upgrades to investment grade by the end of 2023.
- **Low valuation.** The AMNA index-level enterprise value to earnings before interest, taxes, depreciation and amortization ratio (EV/EBITDA) and free cash flow yield are currently below averages since the index was created in 2018.
- **Dividend yield.** The AMNA index-level dividend yield is approximately 4% wider than the dividend yield of the S&P 500.[5]

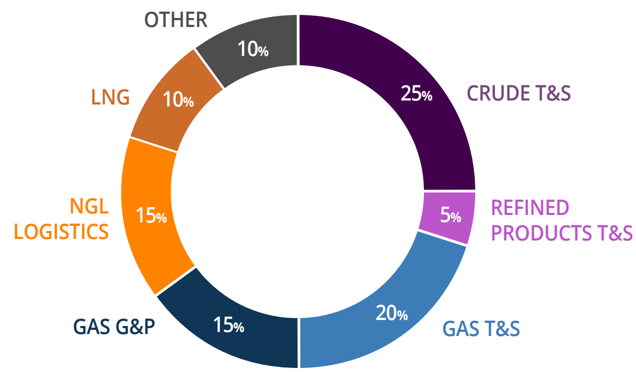
These three factors have shown meaningful positive return contribution during the recessions covered in the Goldman Sachs analysis. And they are characteristics of the midstream industry we are investing in today—a stark difference from past cycles.

MIDSTREAM CASH FLOWS TEND TO BE MORE STABLE THAN THOSE OF THE BROADER ENERGY SECTOR

It's also important to keep in mind that the energy component of the S&P 500 Index largely consists of supermajors, producers and refiners—there are currently only three midstream companies in the S&P 500. Cash flow for midstream companies has generally been much more stable during periods of significant price volatility than the cash flows of other parts of the energy business. This is due to the midstream industry's predominantly fee-based (instead of commodity price-based) cash flows and its diversity of cash flow sources across hydrocarbons (crude oil, natural gas and NGLs) and finished products.

MIDSTREAM COMPANIES HAVE DIVERSE SOURCES OF CASH FLOWS

Approximate 2022E AMNA Index Cash Flow Composition



As of June 2, 2022. Source: Company filings, Bloomberg, BEI estimates. Percentages are calculated as a percentage of the sum of underlying cash flow from index holdings. "T&S" = transportation and storage, "G&P" = gathering and processing. See disclosures for index definitions. It is not possible to invest directly in an index.

Closing Thoughts

With concerns growing that a recession could be on the horizon, we find there are reasons for optimism about energy fundamentals and energy equities. We believe supply-demand fundamentals for U.S. hydrocarbons should remain constructive for continued domestic growth, and the fundamental hits from past recessions have been neither industry-threatening nor permanent. Meanwhile, in our view, there are signs from factor-based performance analysis that energy equities, especially midstream energy equities, could weather a mild recession better today than they have in the past.

For investors worried about the next recession, we believe energy's constructive long-term fundamentals warrant maintaining an energy allocation through the next downturn. Yet we favor allocating that exposure to energy infrastructure rather than broader energy, given the midstream sector's more stable cash flows, and we prefer an active approach that can maintain broad exposure to the midstream value chain in order to mitigate potential impacts from a slowdown on any single part of the industry.

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INDEX DEFINITIONS

The Alerian Midstream Energy Index is a broad-based, capped, float-adjusted, capitalization-weighted index of North American energy infrastructure companies.

The S&P 500 Index is an equity index of 500 widely held, large-capitalization U.S. companies.

ENDNOTES

[1] Source: FRED Economic Data, St. Louis Fed. (https://fred.stlouisfed.org/series/JHDUSRGDPBR).

[2] Great Recession peak set in Q3 2008, according to FRED.

[3] Source: IEA, https://www.iea.org/topics/russia-s-war-on-ukraine.

[4] Source: "2020 Petrochemicals Feedstocks Demand Outlook," Bloomberg New Energy Finance, December 10, 2020.

[5] Source: Bloomberg, as of 5/27/22.

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