Supply and Demand Set Gas Prices, Not Corporate Greed

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EXECUTIVE SUMMARY

Gas prices have increased over the past 18 months, hitting new records and contributing to the rapidly rising inflation that is making everything Americans buy more expensive. President Biden and others in Congress attribute the price hike largely to the Russian invasion of Ukraine and price gouging by oil and gas firms. These claims are not supported by the evidence.

KEY FINDINGS

- The price per gallon of gasoline increased from $2.34 in January 2021 to a peak of $5.11 in June 2022, the highest level on record. Gas prices remain elevated at over $4.50 per gallon in July.
- We estimate that the Russian invasion of Ukraine explains 30 percent of the increase in gasoline prices from January 2021 through June 2022. The remaining 70 percent of the increase is due to pre-existing price trends arising from suppressed supply of oil production and surging demand.
- U.S. oil production remains 9 percent below the pre-pandemic levels, ranking last in recovery out of the top ten oil producing countries.
- The policy choices and rhetoric of the Biden Administration have slowed recovery in the production of oil and diminished refinery capacity that has contributed to elevated gas prices.
- There is no evidence of oil and gas firms engaging in collusion or price gouging to raise prices during the current crisis. U.S. oil and gas producers, refiners, and retailers operate in competitive markets that preclude this possibility.
- Reducing unnecessary regulations and increasing policy certainty for domestic producers is the best way to lower gas prices for American consumers.

INTRODUCTION

Elevated gas prices are contributing to Americans' rising cost of living. The average retail price per gallon of gas in the U.S. surpassed $5.00 in June 2022, after hitting multiple new records in the preceding weeks and remains elevated above $4.50 in July.[1] President Biden claims that oil companies are taking advantage of American consumers and increasing profits by engaging in anti-competitive behavior.[2] In May 2022, in a party line vote, Democrats in the House of Representatives passed the *Consumer Fuel Price Gouging Prevention Act* (H.R. 7688), that would give the President the power to issue an emergency declaration, instructing the Federal Trade Commission (FTC) to place an upper limit on the price of gasoline.[3] President Biden and others have also claimed that high gas prices are due to the Russian invasion of Ukraine and underproduction by the Organization of Petroleum Exporting Countries (OPEC) and other countries, among other explanations.

In this report we evaluate the competing theories for why gas prices are high. We find that the Russian invasion of Ukraine explains 30 percent of the increase in gas prices between January 2021 and June 2022. The remaining 70 percent of the increase in gas prices is the result of a swift recovery in demand following the global economic rebound from the COVID-19 pandemic, combined with a slow recovery in global oil production. An especially sluggish return of U.S. domestic energy production—due in part to Biden Administration policies that have disincentivized, and in some cases, prohibited firms from increasing production—has contributed to the slow domestic production recovery. Contrary to frequent claims, there is no evidence that corporate price gouging (when firms take advantage of sudden spikes in demand to raise prices above competitive levels) or corporate

[1] U.S. gasoline and diesel retail prices. Accessed June 21, 2022. https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm; Aimee Picchi, "'Cruel Summer': Gas Could Hit $6.20 per Gallon Nationally by August, Analyst Predicts." CBS News (May 19, 2022), https://www.cbsnews.com/news/gas-prices-could-reach-6-a-gallon-by-summer-jpmorgan/.
[2] "Read Biden's Letter to the Federal Trade Commission." The New York Times. The New York Times, November 17, 2021. https://www.nytimes.com/interactive/2021/11/17/us/ftc-gas-prices.html.
[3] Matthew Daly and Kevin Freking, "Top Democrats Push for Federal Crackdown on Price Gouging." PBS. Public Broadcasting Service, April 28, 2022. https://www.pbs.org/newshour/politics/top-democrats-push-for-federal-crackdown-on-price-gouging; "Text - H.R.7688 - 117th Congress (2021-2022): Consumer Fuel Price Gouging Prevention Act." Accessed June 10, 2022. https://www.congress.gov/bill/117th-congress/house-bill/7688/text.

collusion have played an economically significant role in high gas prices.[4]

Instead of pursuing economically damaging policy proposals, such as price controls, that do not address the causes of suppressed oil and gas supply, Congress should work to create a policy environment that is less hostile to domestic energy production. Allowing expanded domestic supply is the best way policymakers can help lower gasoline prices for American consumers.

GAS PRICES WERE HIGH AND RISING LONG BEFORE THE RUSSIAN INVASION OF UKRAINE

In the year before the COVID-19 pandemic, U.S. retail gasoline prices fluctuated between $2.40 and $3.00 per gallon on average over all grades and formulations. Due to the pandemic's economic restrictions that reduced demand for gasoline, prices fell to a low of $1.90 per gallon in April 2020. Since then, Figure 1 shows the average price per gallon increased to $2.34 in January 2021, to over $4.00 in March 2022 and up to $5.11 on June 13th, 2022, the highest level on record.[5]

Figure 1 shows that prices began increasing more than a year before the Russian invasion of Ukraine—when almost 3 percent of global oil production was effectively removed from the global market due to Western sanctions on Russian oil.[6] The national average gas price was $2.34 at the beginning of January 2021. Prices accelerated and reached $3.62 per gallon the week before the Russian invasion began in February 2022.[7] Following the invasion, prices have increased by about $0.92 as of July 2022 to $4.60 per gallon, following a modest decline

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[4] Price Gouging State Statutes. Accessed June 10, 2022. https://www.ncsl.org/research/financial-services-and-commerce/price-gouging-state-statutes.aspx#:~:text=Price%20gouging%20refers%20to%20when,or%20other%20state%20of%20emergency.

[5] U.S. gasoline and diesel retail prices. Accessed June 21, 2022. https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm; Bill Chappell, "In 10 States, a Gallon of Gas Now Costs More than $5." NPR. NPR, June 6, 2022. https://www.npr.org/2022/06/06/1103318977/states-highest-gas-prices#:~:text=U.S.%20gas%20prices%20hit%20a,most%20recent%20data%20from%20AAA. The gas price presented is the average for all grades and all formulations.

[6] "The Russian Oil Supply Shock of 2022." Dallasfed.org. Accessed June 10, 2022. https://www.dallasfed.org/research/economics/2022/0322.aspx.

[7] "Weekly Retail Gasoline and Diesel Prices." Retail prices for regular gasoline. U.S. Energy Information Administration. Accessed June 10, 2022. https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm.

from peak levels in June.[8] This modest decline in oil and gasoline prices is a result of increased recession fears that were sparked by recent interest rate hikes.[9]

Figure 1. Estimated Effect of Russian Invasion on Retail Gasoline Prices, January 2019–July 2022

Source: EIA, Weekly Retail Gasoline and Diesel Prices; JEC Calculations.
Note: Gasoline in the figure refers to the average price for all grades, all formulations. The vertical lines corresponding to "COVID-19 Lockdown" and "Russian Invasion of Ukraine" correspond to the beginning of the two crises. The green line is the JEC forecasted value absent the Russian invasion of Ukraine.

We estimate the share of the gasoline price increase that is attributable to the Russian invasion. To do so, we assume that the entire price increase from the time of the invasion until the peak gasoline price in June—after netting out the pre-existing price trend and seasonality—is a result of the invasion. Of the observed $1.48 price increase between the start of the Russian invasion and the peak June price, $0.64 is due

[8] Using the most recent week's price data - the week of July 18, 2022.
[9] Rowena Edwards and Shadia Nasralla, "Oil Prices Slump as Stockpiles and Rate Hikes Stoke Demand Fears." Reuters. Thomson Reuters, July 21, 2022. https://www.reuters.com/business/energy/oil-prices-edge-lower-demand-concerns-outweigh-tight-supply-2022-07-21/.

to the pre-invasion price trend, accounting for seasonal price volatility.[10] Thus, the Russian invasion accounts for the remaining $0.84 of the price increase since February 2022, representing 30 percent of the $2.77 total gas price increase from January 2021 to June 2022. The remaining 70 percent is explained by two primary factors: (1) faster than expected recovery in global oil demand post-COVID, and (2) anemic production in the United States and other non-OPEC countries.

SLOW RECOVERY IN OIL PRODUCTION RESPONSIBLE FOR HIGH PRICES

Since gasoline is made from over 80 percent refined crude oil the market conditions of oil are the primary determinant of gasoline prices.[11] Between January 2021 and June 2022, the monthly price of oil increased by 120 percent, and increased nearly 600 percent from the pandemic low in April 2020.[12] The underlying cause of rising oil prices is suppressed supply of oil that has not kept up with rising demand.

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[10] Weekly Retail Gasoline and Diesel Prices." Retail prices for regular gasoline. U.S. Energy Information Administration. Accessed June 10, 2022; "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Gasoline price fluctuations - U.S. Energy Information Administration (EIA). Accessed June 10, 2022. https://www.eia.gov/energyexplained/gasoline/price-fluctuations.php. JEC Calculations. "We calculate the increase in prices due to the Russian invasion of Ukraine as the difference between the current price and the predicted price based on the pre-invasion trend and seasonal factors. We begin by creating a seasonally adjusted gas price series. We create the seasonal adjustment factors by regressing the natural logarithm of gas prices on a full set of monthly dummy variables (excluding January), using gasoline price data from 2000-2020. We then use the seasonal adjustment factors to create seasonally adjusted gasoline prices for each week from the first week of January 2021 through the week of February 21, 2022 (the week before the Russian invasion of Ukraine). We fit a linear trend to the seasonally adjusted gasoline prices over this time period, and using this trend, we predict the seasonally adjusted gasoline price as of the week of June 13, 2022. Finally, we predict the non-seasonally adjusted gasoline price as of the week of June 13, 2022 by subtracting the June seasonal factor. This results in a forecasted gasoline price of $4.24 in the week of June 13, 2022 if the Russian invasion of Ukraine had not occurred. The linear trend (with seasonal adjustments applied) is a justified approach given the shortfall in production compared to demand that continued following the Russian invasion of Ukraine. This imbalance would have led to higher prices, regardless of the exogenous shock caused by the invasion. Even without accounting for a linear trend and only applying the seasonal adjustment factor, the price would be estimated to be $4.12 in June 2022. In this case, the Russian invasion of Ukraine would account for 35 percent of the increase in prices from January 2021 to June 2022.

[11] The terms crude oil and oil will be used synonymously throughout this paper; "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Refining crude oil - the refining process - U.S. Energy Information Administration (EIA). Accessed June 10, 2022. https://www.eia.gov/energyexplained/oil-and-petroleum-products/refining-crude-oil-the-refining-process.php.

[12] "NYMEX Futures Prices" NYMEX Futures Prices for WTI Crude Oil. U.S. Energy Information Administration. Accessed June 10, 2022. JEC Calculations.

As shown in Figure 2, global petroleum product consumption in April 2020 fell to 86 percent of its January 2020 level, in conjunction with the COVID-19 economic shutdowns (approximately 80 percent of petroleum production is comprised of crude oil). The collapse in demand caused prices to fall and with it the incentive to maintain production, which fell to 87 percent of pre-pandemic levels in May 2020.[13] Over two years later in June 2022, global petroleum consumption recovered to 104 percent of its January 2020 level. The recovery in consumption has been driven by a return to near-normalcy in transportation and commerce as a result of re-opening the global economy following pandemic-era lockdowns.[14]

Oil production has not kept up with consumption. In June 2022 global petroleum production reached 99 percent of its pre-pandemic level, remaining persistently below consumption which has been above 100 percent of pre-pandemic levels since June 2021.[15] In twenty out of twenty-six months since May 2020, when demand began to recover from the pandemic collapse, petroleum consumption outpaced petroleum production. This has resulted in a cumulative deficit of almost 1 billion barrels of petroleum products worldwide since June 2020, representing 10 days of global consumption.[16] Suppressed supply in the face of rising demand has caused oil prices to rise.

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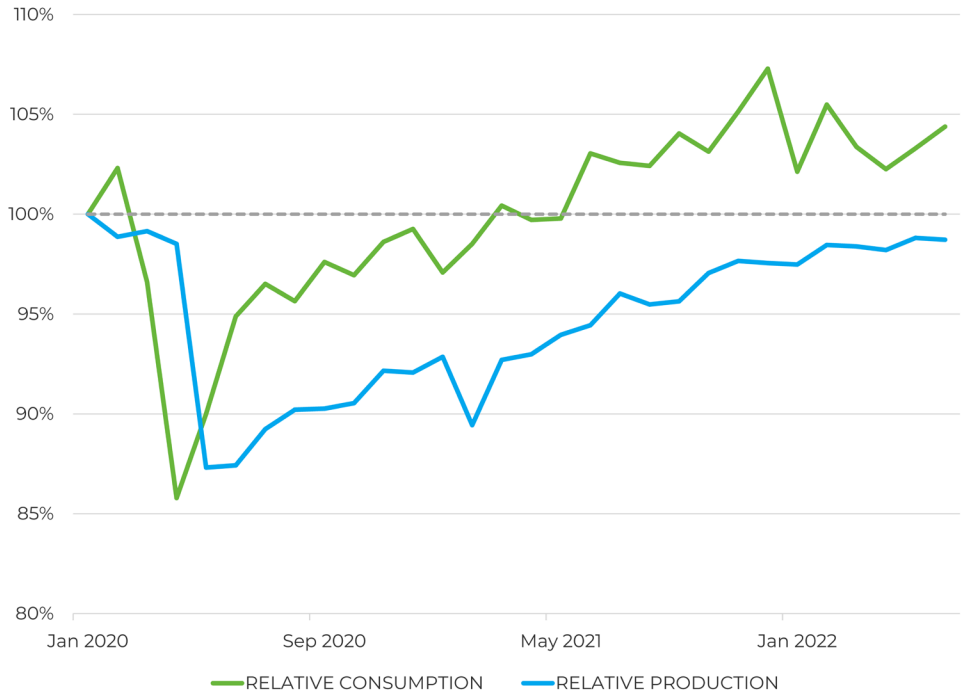
[13] "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Short-Term Energy Outlook - U.S. Energy Information Administration (EIA). Accessed June 10, 2022. https://www.eia.gov/outlooks/steo/report/global_oil.php. JEC Calculations. These statistics include all petroleum products, including NGPL (Natural Gas Pipeline), though do include explicit natural gas production. NGPL is included in these data as it is in the form of a liquid and measured in million barrels per day, whereas natural gas is measured in billions of cubic feet (bcf). NGPL makes up around 12 percent of the total volume of total petroleum production, with crude making up over 80 percent. The rest comes from "Other Liquids" and refinery processing gain. These statistics were used due to more recent data availability (available through April 2022) as opposed to the more limited data availability for crude oil alone and due to lack of crude oil only consumption data. Other statistics pointing to crude oil production in this paper include only crude oil, and exclude NGPL.

[14] "World Oil Demand 'Will Rebound to Pre-COVID Levels by End of 2022'." The Guardian (Guardian News and Media, June 11, 2021). https://www.theguardian.com/business/2021/jun/11/world-oil-demand-covid-opec-iea.

[15] "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Short-Term Energy Outlook - U.S. Energy Information Administration (EIA). Accessed June 10, 2022. https://www.eia.gov/outlooks/steo/report/global_oil.php. JEC Calculations. Consumption can temporarily outpace production because there exists a global reserve of oil to help smooth temporary shocks, but the recovery from COVID-19 has caused a significant draw-down in these reserves.

[16] "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Short-Term Energy Outlook - U.S. Energy Information Administration (EIA). Accessed June 10, 2022.

Figure 2. Global Petroleum Production and Consumption Compared to January 2020



Source: EIA, Short Term Energy Outlook, June 2022; JEC Calculations.
Note: Both the production and consumption series include all petroleum products, including NGPL (Natural Gas Plant Liquids), though does not include explicit natural gas production (a petroleum product). NGPL is included in these series because it is included in the total petroleum product production and consumption statistic, and cannot be easily removed. NGPL makes up around 12 percent of the volume of total petroleum production, with crude oil making up over 80 percent. The rest comes from "Other Liquids" and refinery processing gain.[17]

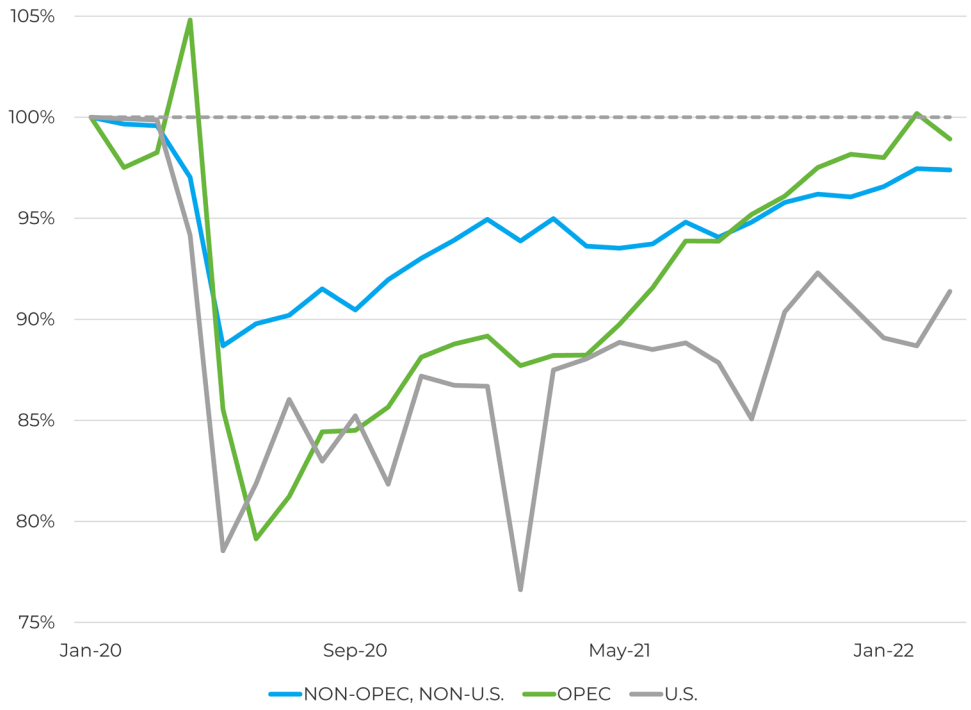
The stunted recovery of oil production has varied across countries, as shown in Figure 3. The figure shows oil production since January 2020 across three sets of countries: (1) OPEC countries—a group of 13 oil producing countries that control approximately 37 percent of global oil production and often coordinate together to influence global oil supply and prices, (2) non-OPEC countries excluding the United States, which produce 49 percent of global oil, and (3) the United States, which

https://www.eia.gov/outlooks/steo/report/global_oil.php. JEC Calculations. This calculation is made by subtracting the estimated total consumption of petroleum products from production for the time period from June 2020 to April 2022. Since there are no estimates of purely crude oil consumption, petroleum production data that includes NGPL is substituted. This will overstate crude oil consumption estimates.

[17] "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." International - U.S. Energy Information Administration (EIA). Accessed June 24, 2022. https://www.eia.gov/international/data/world/petroleum-and-other-liquids/monthly-petroleum-and-other-liquids-production. JEC Calculations.

produces the remaining 14 percent of global oil. By March 2022 (the most recent country-level crude oil data available), oil production recovered to 99 percent of pre-pandemic levels in OPEC countries, 97 percent in non-OPEC countries excluding the United States, and 91 percent in the United States. In fact, the United States' recovery in production is ranked 14th out of the top 15 producers who collectively make up 82 percent of global oil supply and ranks last out of the top 10.[18]

Figure 3. Crude Oil Production as Percent of January 2020 Level: United States, OPEC Countries, Non-OPEC Countries excluding United States



Source: EIA, International Petroleum and Other Liquids Production; JEC Calculations.
Note: Horizontal gray dashed line indicates the baseline crude oil production for each country or group of countries in January 2020.

The slow recovery in U.S. crude oil production relative to international peers is caused by two primary factors: (1) hesitation by firms to over-invest and prevent repeating the large losses that occurred following both the 2014/15 and 2020 oil price collapses, and (2) policy and rhetoric

[18] "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." International - U.S. Energy Information Administration (EIA). Accessed June 24, 2022. https://www.eia.gov/international/data/world/petroleum-and-other-liquids/monthly-petroleum-and-other-liquids-production. JEC Calculations.

from Congress and the Biden Administration that is discouraging investment.[19]

Prior to the collapse in oil prices that occurred in 2014/2015, between 2010 and 2014, annual domestic oil production increased more than 60 percent at a time when U.S. West Texas Intermediate (WTI) crude averaged around $90 per barrel.[20] In early 2015, prices dropped to an average monthly price of under $50 per barrel because of increased production by OPEC and the U.S. and weakening global demand.[21] As a result, the number of oil companies (producers and oil field services companies) that filed for bankruptcy in 2015 quadrupled over 2013 levels.[22] Following a similar price crash in 2020 due to the COVID-19 pandemic, the number of bankruptcy filings increased by 70 percent from 2019.[23] The risk of another large drop in prices is one of the primary reasons why firms are slow to expand operations.[24] The academic

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[19] Hossa Almutairi, Axel Pierru, and James L. Smith, "The Value of OPEC's Spare Capacity to the Oil Market and Global Economy." *OPEC Energy Review* 45, no. 1 (2021): 29–43. https://doi.org/10.1111/opec.12199; Tsvetana Paraskova, "Saudis, UAE: The World Has a Serious Energy Spare Capacity Problem." OilPrice.com, May 10, 2022. https://oilprice.com/Energy/Crude-Oil/Saudis-UAE-The-World-Has-A-Serious-Energy-Spare-Capacity-Problem.html; Elliott Gue, "United States Oil Fund: Falling Spare Capacity and $110 Oil (USO)." Seeking Alpha. Seeking Alpha, January 18, 2022. https://seekingalpha.com/article/4480033-united-states-oil-fund-uso-etf-falling-spare-capacity-and-110-oil. While OPEC may also be hesitant to over-invest, its full recovery in production may in part be due to its spare production capacity that allows it to more quickly adjust production to market conditions. The U.S., like most other countries, does not retain spare production capacity.

[20] Crude oil production. U.S. Energy Information Administration. Accessed June 21, 2022. https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm. JEC Calculations.

[21] NYMEX futures prices. U.S. Energy Information Administration. Accessed June 21, 2022. https://www.eia.gov/dnav/pet/pet_pri_fut_s1_m.htm; "What Triggered the Oil Price Plunge of 2014-2016 and Why It Failed to Deliver an Economic Impetus in Eight Charts." World Bank Blogs. Accessed June 13, 2022. https://blogs.worldbank.org/developmenttalk/what-triggered-oil-price-plunge-2014-2016-and-why-it-failed-deliver-economic-impetus-eight-charts. JEC Calculations.

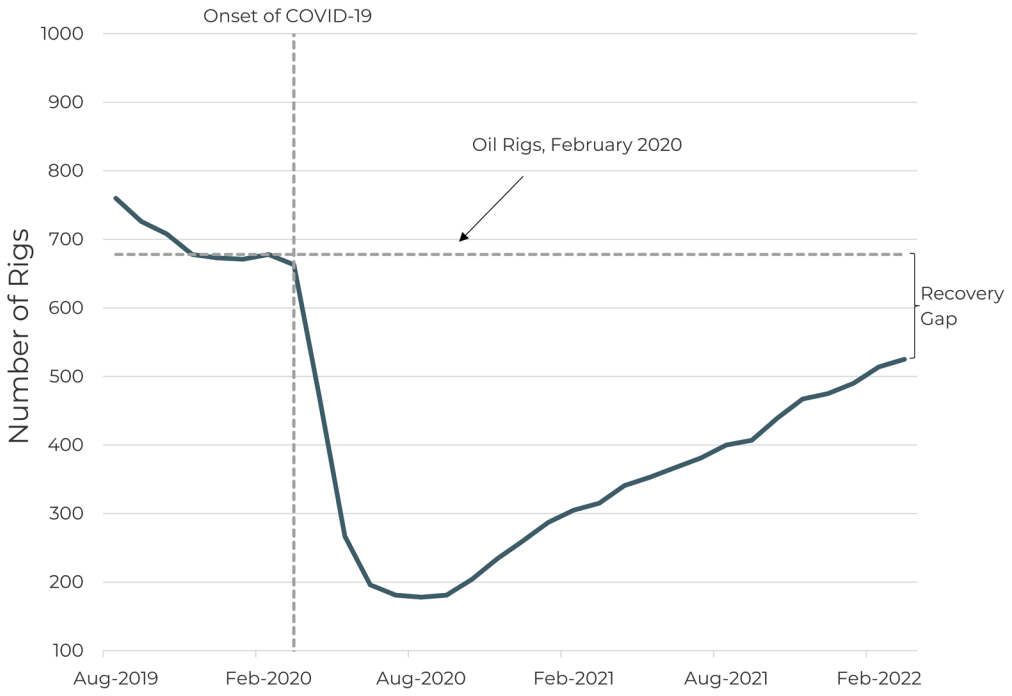
[22] Andrew Fawthrop, "Record Bankruptcy Debt across North America Oil and Gas in 2020." NS Energy, January 26, 2021. https://www.nsenergybusiness.com/features/oil-gas-bankruptcy-2020-north-america/. JEC Calculations.

[23] "Oil Patch Bankruptcy Monitor - Haynes and Boone." Haynes Boone. Accessed June 21, 2022. https://www.haynesboone.com/-/media/project/haynesboone/haynesboone/pdfs/energy_bankruptcy_reports/oil_patch_bankruptcy_monitor.pdf?rev=e57d3129b7504ea190df5d33dbacae44&hash=F461E4FE13446BE821B8AE9080C349E6; "Oilfield Services Bankruptcy Tracker - Haynes and Boone." Haynes and Boone. Accessed June 21, 2022. https://www.haynesboone.com/-/media/project/haynesboone/haynesboone/pdfs/energy_bankruptcy_reports/oilfield_services_bankruptcy_tracker.pdf?rev=19dc359b54ee483eb86fb2ebb914f149&hash=CBC6E95A60CD0F2E9B6EB732B473AAF1.

[24] Clifford Krauss, "Why U.S. Oil Companies Aren't Riding to Europe's Rescue." The New York Times, April 26, 2022. https://www.nytimes.com/2022/04/26/business/energy-environment/oil-us-europe-russia.html; Andy Uhler, "Oil Prices Are High. Why Aren't U.S. Oil Producers Drilling?" Marketplace,

literature finds that firms in the oil and gas industry are particularly sensitive to market uncertainty when making investment decisions, partly because increasing production takes more than turning on a spigot. It typically takes 6 months or more to implement drilling plans that increase production.[25] As shown in Figure 4, the quantity of U.S. crude rotary rigs (representative of the quantity of current investment in crude oil production) in operation dropped from nearly 700 rigs in February of 2020 to a low of less than 200 rigs in the months of June 2020 through September 2020. As demand and prices recovered, firms only slowly restarted operations, increasing rig counts to just over 500 rigs in March 2022, still almost 25 percent below pre-pandemic levels.[26]

Figure 4. Total U.S. Crude Oil Rigs in Operation, August 2019– March 2022



Source: EIA, Petroleum and Other Liquids, Crude Oil and Gas Drilling Activity.

July 6, 2021. https://www.marketplace.org/2021/07/06/oil-prices-are-high-so-why-arent-u-s-oil-producers-drilling/.

[25] Brittany Cronin, "Here Are 3 Reasons Why Big Oil Can't Just Drill More to Ease the Pain at the Gas Pump." NPR. NPR, March 19, 2022. https://www.npr.org/2022/03/19/1086925726/gas-prices-oil-crude-drilling#:~:text=%22The%20point%20from%20which%20you,months%20typically%2C%22%20she%252; Andy Uhler, "Domestic Oil Could Increase Supply, but It Won't Be Cheap - or Quick." Marketplace, March 9, 2022. https://www.marketplace.org/2022/03/09/domestic-oil-could-increase-supply-but-it-wont-be-cheap-or-quick/.

[26] Crude oil and natural gas drilling activity. U.S. Energy Information Administration. Accessed June 21, 2022. https://www.eia.gov/dnav/ng/ng_enr_drill_s1_m.htm. JEC Calculations.

Hesitancy to increase investment and more rapidly boost production is exacerbated by the Biden Administration's stated desire to completely transition away from oil and gas as a source of energy over the long-term, with goals of de-carbonizing all U.S. electricity production by 2035 and creating a net-zero emissions economy by 2050.[27] Firms face regulatory risks from burdensome government actions that can be just as costly as market price risks. During his first week in office, President Biden signed an executive order revoking the Keystone XL Pipeline, which would have transported hundreds of thousands of barrels of oil per day into the U.S., and pausing leases on federal lands and offshore waters.[28] Since then, the Administration has re-implemented a methane rule with an expected cost on the oil and gas industry of $10 billion over the next twelve years, reversed President Trump's executive order designed to accelerate the speed of permitting of crude oil and other energy infrastructure projects, and increased the oil production royalty rate on federal lands.[29] Recently, the Administration has rejected waivers from small oil refineries to reduce biofuel blending requirements and raised blending requirements for 2022, increasing the financial strain on these firms.[30] Several policy proposals in

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[27] Rebecca Beitsch, "Biden: 'I Would Transition from the Oil Industry." The Hill, October 23, 2020. https://thehill.com/policy/energy-environment/522397-biden-i-would-transition-from-the-oil-industry/; "FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies." The White House. The United States Government, April 21, 2021. https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/.

[28] "Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis." The White House. The United States Government, January 21, 2021. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/; "Executive Order on Tackling the Climate Crisis at Home and Abroad." The White House. The United States Government, January 27, 2021. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.

[29] Executive Order 13868 of April 10, 2019, Promoting Energy Infrastructure and Economic Growth." *Code of Federal Regulations*, title 3 (2019): 15495-15499; Dan Bosch, "EPA Proposes New Methane Regulations on Oil and Natural Gas Industries." AAF, December 10, 2021. https://www.americanactionforum.org/insight/epa-proposes-new-methane-regulations-on-oil-and-natural-gas-industries/; "Biden Increases Oil Royalty Rate and Scales Back Lease Sales on Federal Lands." NPR, April 16, 2022. https://www.npr.org/2022/04/16/1093195479/biden-federal-oil-leases-royalties.

[30] Stephanie Kelly and Jarrett Renshaw, "U.S. EPA Sets 2020-2022 Biofuel Blending Mandates, Denies Refiners Waivers." Reuters, June 3, 2022. https://www.reuters.com/markets/commodities/exclusive-us-epa-expected-issue-biofuel-blending-volumes-2022-below-proposed-2022-06-03/.

Congress are likely to exacerbate hesitancy among oil producers to invest in domestic production. For example, the *Big Oil Windfall Profits Tax Act* (H.R.7061), would impose additional taxes on producers for each barrel of oil in an attempt to tax oil and gas profits and the *Fossil Free Finance Act* (S.3167), would prohibit banks from financing fossil fuel energy projects. Some Senators have advocated for banning U.S. oil exports altogether.[31]

NO EVIDENCE OF PRICE MANIPULATION CAUSING HIGH GAS PRICES

Contrary to the supply and demand explanation, some argue that oil and gas firms are instead engaged in price-gouging. This is the theory motivating the *Consumer Fuel Price Gouging Prevention* Act, passed on a party line vote by Democrats in the House of Representatives.[32] They argue that oil companies are using market disruptions, caused by the pandemic recovery and the Russian invasion of Ukraine, to raise prices above competitive levels.[33] For this to be possible, a firm would need to be large and influential enough relative to the global market to set prices independently, or the industry would need to have a small number of firms that could collude to illegally set prices. Neither of these possibilities are likely at any stage of the supply chain, either at the production stage when crude oil is extracted from the earth, the refinery stage when it is chemically reconfigured into gasoline and

[31] Katy Stech Ferek, "Democrats Propose Tax on Large Oil Companies' Profits." The Wall Street Journal, March 14, 2022. https://www.wsj.com/livecoverage/russia-ukraine-latest-news-2022-03-11/card/democrats-propose-tax-on-large-oil-companies-profits-LGIlAAwuIUF2onWRFZZ1; "Senators Markey, Merkley, Wyden, and Sanders Reintroduce Legislation to Ban U.S. Oil Exports: U.S. Senator Ed Markey of Massachusetts." April 23, 2021. https://www.markey.senate.gov/news/press-releases/senators-markey-merkley-wyden-and-sanders-reintroduce-legislation-to-ban-us-oil-exports; "Senators Markey and Merkley Announce Legislation to Get Big Banks to Stop Financing Fossil Fuel Projects: U.S. Senator Ed Markey of Massachusetts." November 5, 2021. https://www.markey.senate.gov/news/press-releases/senators-markey-and-merkley-announce-legislation-to-get-big-banks-to-stop-financing-fossil-fuel-projects; The oil production royalty rate is a tax on oil production. Senators advocating for banning oil exports include: Markey (D-MA), Merkley (D-OR), Wyden (D-OR) and Sanders (D-VT).

[32] "H.R. 7688: Consumer Fuel Price Gouging Prevention Act -- House Vote #232 -- May 19, 2022." GovTrack.us. Accessed June 13, 2022. https://www.govtrack.us/congress/votes/117-2022/h232.

[33] "Making a Killing: Big Oil Reaps Record Profits Using Ukraine War as Pretext to Hike Gas Prices." Democracy Now! Accessed June 13, 2022. https://www.democracynow.org/2022/4/7/big_oil_reaps_record_profits_mckibben.

other petroleum products, or at the retail stage when it is sold to consumers at gas stations.[34]

Oil Producers

In 2021, oil comprised 54 percent of the final price of gasoline. Oil is traded on the global market, based on international supply and demand, meaning the price is similar across countries. Even though a country may produce a significant share of crude oil, a global market for that good means that any one country has relatively little influence on the domestic price. For the same reason, any one oil producing firm has no influence on the price of oil: they are what economists call "price takers" in the global oil market.[35] If a producer sets its price higher than the global market price, then buyers will switch to purchasing from lower price producers. Conceivably, if producers all agreed, they could temporarily increase the market price above the globally competitive level. However, the market for oil production is made up of enough firms across diverse countries that they are not reliably able to maintain collusive price setting. Even OPEC members often struggle to agree on output targets. An industry's ability to collude in this way, as measured by the Herfindahl-Hirschman Index (HHI), the most commonly used measure of market concentration in economics research, shows that the market concentration in the oil sector in the United States is one of the lowest in the world.[36] Individual firms in the United States thus have no way of systematically manipulating even domestic production, let

[34] "Crude Oil Extraction and Drilling Methods." CAPP. Accessed June 30, 2022. https://www.capp.ca/oil/extraction/; "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Gasoline explained - U.S. Energy Information Administration (EIA). Accessed June 30, 2022. https://www.eia.gov/energyexplained/gasoline/#:~:text=Gasoline%20is%20a%20fuel%20made,at%20retail%20gasoline%20fueling%20stations; Petroleum products are what is produced from the processing of crude oil and other liquids at refineries;
"U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Refining Crude Oil - the Refining Process - U.S. Energy Information Administration (EIA). Accessed June 30, 2022. https://www.eia.gov/energyexplained/oil-and-petroleum-products/refining-crude-oil-the-refining-process.php; "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Where our Gasoline Comes From - U.S. Energy Information Administration (EIA). Accessed June 30, 2022. https://www.eia.gov/energyexplained/gasoline/where-our-gasoline-comes-from.php#:~:text=Most%20gasoline%20moves%20from%20refineries,or%20commingling%2C%20of%20products%20occurs.

[35] Robert Rapier, "If Oil Companies Control Prices, Why Do They Ever Lose Money?" Forbes (Forbes Magazine, April 25, 2022), https://www.forbes.com/sites/rrapier/2022/04/24/if-oil-companies-control-prices-why-do-they-ever-lose-money/?sh=10164dacf9da.

[36] See Kartick Gupta, "Oil Price Shocks, Competition, and Oil & Gas Stock Returns — Global Evidence." *Energy Economics* 57 (2016): 140–53. https://doi.org/10.1016/j.eneco.2016.04.019.

alone manipulating global production, which is what would be required to increase prices above globally competitive levels.[37]

Refiners and Retailers

Refineries and retailers comprise 14 percent and 16 percent of the total cost of gasoline, respectively (in addition to oil production, the remaining 16 percent is attributable to taxes). Like oil producers, research largely indicates that there is not enough concentration amongst refineries or retailers to fix prices above normal, competitive levels.[38] This has been confirmed by studies that show mergers and acquisitions among refineries do not have an economically significant impact on retail or wholesale gasoline prices. Most studies find no economically significant impact, and a couple of studies find a small impact on prices of less than a few cents per gallon.[39] The effects of mergers or integration among gasoline retailers are similar—these actions do not lead to economically significant increases in prices in local markets for retail gasoline.[40] Additionally, there is no direct evidence from observing local station pricing behavior that retail gasoline firms collude to fix prices.[41]

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[37] Tejvan Pettinger. "Supernormal Profits." Economics Help, September 10, 2019, https://www.economicshelp.org/blog/3181/economics/supernormal-profits/.

[38] See Isabella Ruble, "The U.S. Crude Oil Refining Industry: Recent Developments, Upcoming Challenges and Prospects for Exports." *The Journal of Economic Asymmetries* 20 (2019). https://doi.org/10.1016/j.jeca.2019.e00132.

[39] For studies that find no impact, see: 1) John Simpson, and Christopher Taylor, "Do Gasoline Mergers Affect Consumer Prices? The Marathon Ashland Petroleum and Ultramar Diamond Shamrock Transaction." *The Journal of Law and Economics* 51, no. 1 (2008): 135–52. https://doi.org/10.1086/520004; 2) Daniel Hosken, Louis Silvia, and Christopher Taylor, "Does Concentration Matter? Measurement of Petroleum Merger Price Effects." *American Economic Review* 101, no. 3 (2011): 45–50. https://doi.org/10.1257/aer.101.3.45; and 3) Benjamin Hollinger, "The Impact on Product Prices of Mergers in the Petroleum Industry." *Southwestern Economic Review*, 2004. For studies that find an impact, though marginal see; 1) John A. Karikari, Godwin Agbara, Hashem Dezhbakhsh, and Barbara El-Osta, "The Impact of Mergers in U.S. Petroleum Industry on Wholesale Gasoline Prices." *Contemporary Economic Policy* 25, no. 1 (2007): 46–56. https://doi.org/10.1111/j.1465-7287.2006.00027.x; 2) "Energy markets: Effects of mergers and market concentration in the U.S. petroleum industry." Report to the ranking minority member, permanent subcommittee on investigations, Committee on Governmental Affairs, U.S. Senate § (2004).

[40] Vertical integration is when a company takes control of more than one stage of the production process to streamline operations; Adam Hayes, "What Is Vertical Integration?" Investopedia. Investopedia, February 8, 2022. https://www.investopedia.com/terms/v/verticalintegration.asp; Justine S. Hastings, "Vertical Relationships and Competition in Retail Gasoline Markets: An Empirical Evidence from Contract Changes in Southern California." The American Economic Review, 2004. https://doi.org/10.2139/ssrn.507082.

[41] See Daniel S. Hosken, Christopher T. Taylor, and Robert Stanton McMillan, "Retail Gasoline Pricing: What Do We Know?" U.S. Federal Trade Commission, Bureau of Economics, Working Paper No. 290, 2008. https://doi.org/10.2139/ssrn.990343.

Despite the historical evidence, some argue that it is still theoretically possible for refineries to manipulate gas prices by coordinating to restrict supply. They point to high profit margins over the last three months, also known as the crack-spread, or price spread between oil refinery inputs (crude oil) and outputs (gasoline, distillate, jet fuel, etc.) for oil refiners.[42] The crack-spread has nearly tripled between January 2022 and June 2022, and has contributed to some of the increase in prices.[43] The spike in the price of outputs can be explained by the recent increase in demand for gasoline following the economic recovery from the COVID-19 pandemic, and a short-term decrease in the number of refineries in operation as well as declines in refinery utilization due to the pandemic. Rather than the result of collusion to suppress supply and raise prices, the recent reductions in refinery capacity are better explained by inclement weather and firms shutting down or reducing the capacity utilized due to financial losses suffered during the COVID-19 pandemic.[44] Figure 5 shows the more than 5 percent reduction in available refinery capacity following the COVID-19 pandemic.[45]

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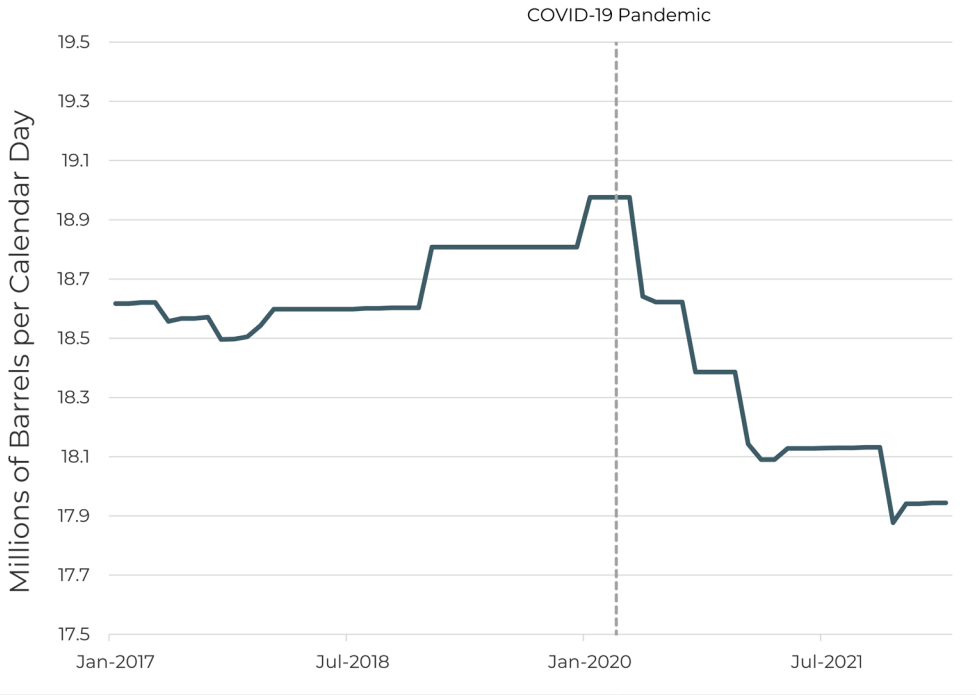
[42] Refiners margins are what is called the crack-spread, or the spread between the raw crude oil inputs and the refined outputs. "Introduction to Crack Spreads – CME Group." CME Group. Accessed June 13, 2022. https://www.cmegroup.com/education/articles-and-reports/introduction-to-crack-spreads.html.

[43] "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Short-Term Energy Outlook - U.S. Energy Information Administration (EIA). Accessed June 13, 2022. https://www.eia.gov/outlooks/steo/marketreview/petproducts.php. Margins for gasoline-crude spread are up 100 percent. The spread for diesel is up 200 percent.

[44] Refineries could restrict supply by running refineries at below capacity, by altering the output so that they produce less finalized gasoline, or by diverting from the United States to foreign markets. U.S. Federal Trade Commission. *Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases*, Spring 2006. https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-investigation-gasoline-price-manipulation-and-post-katrina-gasoline-price/060518publicgasolinepricesinvestigationreportfinal.pdf; Julianne Geiger, "U.S. Refinery Outages Are Another Headache for Biden." OilPrice.com, February 7, 2022. https://oilprice.com/Latest-Energy-News/World-News/US-Refinery-Outages-Are-Another-Headache-For-Biden.html.

[45] Erwin Seba, "U.S. Refining Capacity Shrinks 4.5% as Pandemic Shuts Plants." Reuters, June 25, 2021. https://www.reuters.com/business/energy/us-refining-capacity-shrinks-45-pandemic-shuts-plants-2021-06-25/; Ben Winck, "Here's Why Gas Is More Expensive than Ever Even Though Oil Prices Are Down." Business Insider (May 12, 2022). https://www.businessinsider.com/why-gas-prices-so-high-crude-oil-market-crack-spreads-2022-5;" Why Are so Many Oil Refineries Closing?" Solids Control, Industrial Waste & Produced Water Treatment Specialists, December 8, 2021. https://www.separo.com/separo-blog/why-are-oil-refineries-closing.

Figure 5. U.S. Operable Refinery Distillation Capacity, January 2017–April 2022



Source: EIA, Petroleum and Other Liquids, Refining and Processing.

The currently large crack spread is unlikely to be sustained. Refining is a competitive domestic market with an HHI far below the marker of a concentrated industry, and firms compete on the margins between inputs and outputs of locally priced goods.[46] The currently high crack spread should lead firms to increase capacity to take advantage of the higher profit potential. This is exactly what has been happening, with firms utilizing close to 95 percent of existing capacity to chase the short-term high margins, levels not seen since before the COVID-19 pandemic and rates far above the global average, which hovers around 80 percent utilization of capacity. The current rate is also significantly above average for U.S. utilization, which in the ten years prior to the pandemic was 89 percent.[47] Historically high capacity utilization is the

[46] "The Role of U.S. Refiners in the Global Market." American Fuel & Petrochemical Manufacturers, June 6, 2022. https://www.afpm.org/newsroom/blog/role-us-refiners-global-; See Isabella Ruble, "The U.S. Crude Oil Refining Industry: Recent Developments, Upcoming Challenges and Prospects for Exports." The Journal of Economic Asymmetries. Elsevier, September 26, 2019. https://www.sciencedirect.com/science/article/pii/S1703494919300714.

[47] Barbara J. Powell, "Promise of Profits Has US Fuel-Makers Shifting into a Higher Gear." Bloomberg, May 24, 2022. https://www.bloomberg.com/news/articles/2022-05-24/us-refineries-chase-summer-profits-with-gasoline-and-diesel-in-high-demand; "U.S. Total Weekly Inputs& Utilization." U.S. Energy and Information Administration. Accessed June 30, 2022.

opposite of what we should see if firms were colluding to reduce output. So long as policy does not inhibit increased investment (which has contributed to firms shutting down operations in the past), firms will continue to invest in output to seek profits, which will eventually lead to lower prices due to increased supply.[48]

The aftermath of Hurricane Katrina offers an instructive example. Following Hurricane Katrina in late August 2005, supply collapsed due to the shutdown of most crude oil production in the Gulf, which resulted in a massive reduction in refining capacity.[49] This led to similar allegations of price gouging, as gasoline prices spiked. Prices returned to normal levels by November 2005, and FTC economists found no evidence that refining nor retail firms engaged in price-gouging or price-manipulating behavior.[50] This analogous historical example shows that when faced with disruptions to refining capacity, high short-term firm profits are not the result of price-gouging, but instead act as a necessary market mechanism to incentivize quick reopening of closed refineries.[51]

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https://www.eia.gov/dnav/pet/pet_pnp_wiup_dcu_nus_w.htm; See Isabella Ruble, "The U.S. Crude Oil Refining Industry: Recent Developments, Upcoming Challenges and Prospects for Exports." The Journal of Economic Asymmetries (2019). JEC Calculations.

[48] See: Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases: A Commission Report to Congress, 2006.

[49] "Oil and Gas Disruption from Hurricanes Katrina and Rita." Congressional Research Service, April 6, 2006. https://www.everycrsreport.com/reports/RL33124.html#:~:text=Katrina%2C%20which%20made%20landfall%20on,as%20of%20late%20October%2C%202005.

[50] Price Gouging is defined by the U.S. Federal Trade Commission (FTC) as: "significant price increases, typically during periods of unusual market conditions." Price Manipulating Behavior is defined by the FTC as: "(1) all transactions and practices that are prohibited by the antitrust laws, including the Federal Trade Commission Act, and (2) all other transactions and practices, irrespective of their legality under the antitrust laws, that tend to increase prices relative to costs and to reduce output. Transactions and practices that violate the antitrust laws include anticompetitive mergers, acquisitions, and joint ventures, collusion among competitors to fix prices or output, and monopolization or attempts to monopolize." U.S. Federal Trade Commission. *Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases*, Spring 2006. https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-investigation-gasoline-price-manipulation-and-post-katrina-gasoline-price/060518publicgasolinepricesinvestigationreportfinal.pdf; "Petroleum & Other Liquids Data - U.S. Energy Information Administration (EIA)." Petroleum & Other Liquids Data - U.S. Energy Information Administration (EIA). Accessed June 24, 2022. JEC Calculations. https://www.eia.gov/petroleum/data.php.

[51] U.S. Federal Trade Commission. *Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases*, Spring 2006. https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-investigation-gasoline-price-manipulation-and-post-katrina-gasoline-price/060518publicgasolinepricesinvestigationreportfinal.pdf.

ROCKETS AND FEATHERS: WHY OIL AND GAS PRICES DO NOT ALWAYS MOVE TOGETHER

In a similar vein to the claims of price gouging and collusion among oil and gas firms, President Biden, and House Democrats during a House Energy and Commerce Committee hearing on high gas prices, have recently pointed to the asymmetry that arises between the price of oil and the price of gasoline when oil prices fall as evidence of price-setting power by refiners and retailers.[52] Increases in oil prices immediately translate to increases in gasoline prices, but when oil prices fall, it takes longer to translate into decreased gasoline prices. Figure 6 shows indexed values of crude oil futures prices and gasoline futures prices which measure the price agreed upon after delivery of the product (there is no high-frequency, daily retail gasoline data).[53] After largely moving in tandem as prices increased, between January 2022 and the end of February 2022 oil prices fell faster than gas prices.

The phenomenon of oil and retail gas prices moving together on the way up but not the way down is known as "rockets and feathers," a term originally coined by economist Robert Bacon. Bacon studied whether gas price declines lagged oil prices in the United Kingdom, following investigations that examined if the retail gasoline industry was colluding to keep prices elevated, finding some evidence that prices did fall slower than they rose.[54] A broad literature studies the existence and cause of the "rockets and feathers" phenomenon in various industries.

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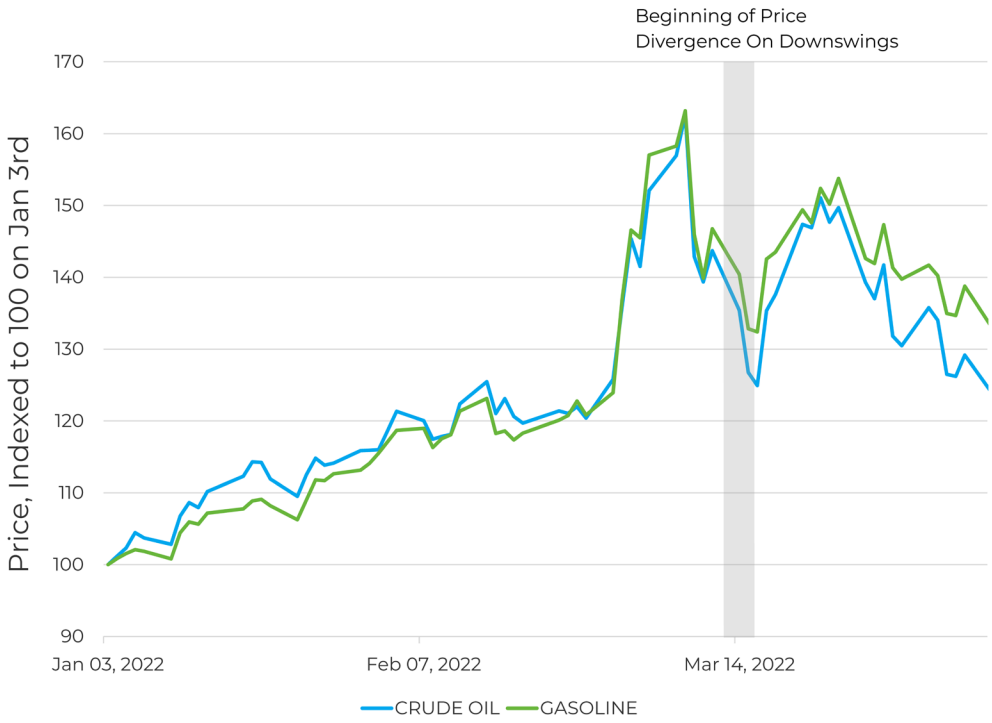
[52] Matthew Daly, "Watch: House Democrats Accuse Oil Companies of 'Rip off' on Gas Prices in Hearing." PBS. Public Broadcasting Service, April 6, 2022. https://www.pbs.org/newshour/politics/watch-live-oil-industry-executives-testify-on-high-gas-prices-in-house-energy-committee-hearing; Gouged at the Gas Station: Big Oil and America's Pain at the Pump. Energy and Commerce Committee, 2022. https://www.youtube.com/watch?v=XDv4gF1TGrk; "Read Biden's Letter to the Federal Trade Commission." The New York Times. The New York Times, November 17, 2021. https://www.nytimes.com/interactive/2021/11/17/us/ftc-gas-prices.html; https://twitter.com/potus/status/1504073842871963653

[53] Tao Wu and Andrew McCallum, "Do Oil Futures Prices Help Predict Future Oil Prices?" Federal Reserve Bank of San Francisco. Federal Reserve Bank of San Francisco, December 30, 2005. https://www.frbsf.org/economic-research/publications/economic-letter/2005/december/do-oil-futures-prices-help-predict-future-oil-prices/#:~:text=that%20performs%20best.-,Oil%20futures%20prices%20and%20spot%20oil%20prices,the%20future%20price%20of%20oil.

[54] Robert W Bacon, "Rockets and Feathers: The Asymmetric Speed of Adjustment of UK Retail Gasoline Prices to Cost Changes." *Energy Economics* 13, no. 3 (1991): 211–18. https://doi.org/10.1016/0140-9883(91)90022-r.

Figure 6. Indexed Crude Oil and Gasoline Prices, January 2022-April 2022



Source: EIA, Petroleum and Other Liquids, Prices; JEC Calculations.
Note: Displayed are Crude Oil (WTI Crude) and Gasoline (RBOB) futures prices. RBOB is "motor gasoline blending components intended for blending with oxygenates to produce finished reformulated gasoline," a good indicator of the price of retail gasoline.[55]

Research has tended to confirm the existence of the "rockets and feathers" phenomenon in the gasoline market, as well as other commodity markets.[56] The cause of the "rockets and feathers"

[55] "Petroleum & Other Liquids Data - U.S. Energy Information Administration (EIA)." Petroleum & Other Liquids Data - U.S. Energy Information Administration (EIA). Accessed June 24, 2022. https://www.eia.gov/petroleum/data.php. Data is indexed to prices for both goods on the first observation in January 2022. In this case, that day is Jan. 3, 2022.

[56] For supporting evidence see 1) Robert W. Bacon, "Rockets and Feathers: The Asymmetric Speed of Adjustment of UK Retail Gasoline Prices to Cost Changes." *Energy Economics* 13, no. 3 (1991): 211–18. https://doi.org/10.1016/0140-9883(91)90022-r; 2) Severin Borenstein, A. C. Cameron, and Richard Gilbert, "Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes?" *The Quarterly Journal of Economics* 112, no. 1 (1997): 305–39. https://doi.org/10.1162/003355397555118; 3) Nathan S. Balke, Stephen P. A. Brown, and Mine K. Yücel, "Crude Oil and Gasoline Prices: An Asymmetric Relationship?" Accessed June 13, 2022. https://www.researchgate.net/publication/5029960_Crude_Oil_and_Gasoline_Prices_An_Asymmetric_Relationship; 4) Jeremy A Verlinda, "Do Rockets Rise Faster and Feathers Fall Slower in an Atmosphere of Local Market Power? Evidence from the Retail Gasoline Market." *The Journal of Industrial Economics* 56, no. 3 (2008): 581–612. https://doi.org/10.1111/j.1467-6451.2008.00351.x; for opposing evidence see: Lance J. Bachmeier and James M. Griffin, "New Evidence on Asymmetric Gasoline Price Responses." *Review of Economics and Statistics* 85, no. 3 (2003): 772–76.

phenomenon is not as well understood, though a few possibilities have been identified. The most frequent explanation for oil and gas markets is that at the retail level, individuals are less likely to search for lower prices when they are falling as opposed to when they are rising. Consumers tend to more actively search for the lowest priced gasoline when prices are expected to rise as opposed to when prices are expected to fall. There is some evidence that, to a limited extent, this may allow retail gas stations to keep prices elevated for a longer time on the way down than on the way up.[57] However, there is no conclusive evidence that market structure or different levels of market concentration impact the existence or magnitude of the "rockets and "feathers" phenomenon in gasoline and other markets, suggesting that collusion or market power is not the underlying cause.[58] Other explanations for "rockets and "feathers" include markups that vary over the business cycle, inventory management, accounting practices, and refinery adjustment costs, or that when prices rise, firms take losses to stay competitive with other firms on the way up so on the way down they keep prices higher to make up their losses, though these explanations are less discussed among researchers.[59]

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https://doi.org/10.1162/003465303322369902; for other commodity markets: 1) Sam Peltzman, "Prices Rise Faster than They Fall." *Journal of Political Economy* 108, no. 3 (2000): 466–502. https://doi.org/10.1086/262126; 2) Shi Zheng, Douglas Miller, Zhigang Wang, and Satoshi Kai, "Meta-Evidence of Asymmetric Price Transmission in US Agricultural Markets." *Journal of the Faculty of Agriculture, Kyushu University* 53, no. 1 (2008): 349–56. https://doi.org/10.5109/10112; 3) Douglas J. Miller and Marvin L. Hayenga, "Price Cycles and Asymmetric Price Transmission in the U.S. Pork Market." *American Journal of Agricultural Economics* 83, no. 3 (2001): 551–62. https://doi.org/10.1111/0002-9092.00177.

[57] See: 1) "Gasoline Price Changes and the Petroleum Industry: An Update." Federal Trade Commission, September 2011. https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-bureau-economics-gasoline-price-changes-and-petroleum-industry-update/federal-trade-commission-bureau-economics-gasoline-price-changes-and-petroleum-industry.pdf; 2) Jeremy A. Verlinda, "Do Rockets Rise Faster and Feathers Fall Slower in an Atmosphere of Local Market Power? Evidence from the Retail Gasoline Market." *The Journal of Industrial Economics* 56, no. 3 (2008): 581–612. https://doi.org/10.1111/j.1467-6451.2008.00351.x; 3) Matthew S. Lewis, "Asymmetric Price Adjustment and Consumer Search: An Examination of the Retail Gasoline Market." *Journal of Economics & Management Strategy* 20, no. 2 (2011): 409–49. https://doi.org/10.1111/j.1530-9134.2011.00293.x; 4) Severin Borenstein, A. Colin Cameron, and Richard Gilbert. "Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes?" 1992. https://doi.org/10.3386/w4138.

[58] See: 1) Ronald Johnson, "Search Costs, Lags and Prices at the Pump." *Review of Industrial Organization* 20, no. 33-50 (2002); 2) Mariano Tappata "Rockets and Feathers: Understanding Asymmetric Pricing." *The RAND Journal of Economics* 40, no. 4 (2009): 673–87. https://doi.org/10.1111/j.1756-2171.2009.00084.x.

[59] See: Stephen P. A. Brown, and Mine Yücel, "Gasoline and Crude Oil Prices: Why the Asymmetry?" Dallas Federal Reserve. Accessed June 13, 2022. https://www.dallasfed.org/~/media/documents/research/efr/2000/efr0003b.pdf; 2) Jeff Lenard, "Do

Because the "rockets and feathers" phenomenon is observed across other markets (including highly competitive markets), it is unlikely that the primary cause of the asymmetry in the oil and gas market is collusive pricing strategy amongst local firms.[60] In addition, the economic effect of the rockets and feathers phenomenon is small. For example, assuming the price of gas starts at $4.50 per gallon, a 50-cent decline in the price per gallon of gasoline spread out over 10 weeks would cost the average consumer $7.50 more over the ten-week period than if the price of gasoline fell by 50 cents immediately. The additional cost of $7.50 represents just 2 percent of the approximately $350 in average total spending on gasoline over a 10-week period.[61]

CONCLUSION

Of the $2.77 increase in the price per gallon of gasoline between January 2021 and the peak gasoline price in June 2022, 30 percent is attributable to the Russian invasion of Ukraine, while the remaining 70 percent is explained by otherwise constrained supply in the face of high demand. The recovery of oil production in the United States lags other countries, contributing to the stunted global oil supply. Ongoing rhetoric and policy actions have made U.S. firms less willing to invest to increase oil production, especially after significant losses following the oil price collapses of 2014/2015 and 2020. Congressional Democrats and the Biden Administration have incorrectly diagnosed the cause of high prices, claiming that domestic oil and gas firms are colluding to raise prices on consumers. There is little evidence in the academic literature across numerous areas of study that oil and gas market concentration allows firms to keep prices artificially high for an extended period of time.

Gas Prices Come down Slower than They Rise?" NACS, March 16, 2022. https://www.convenience.org/Media/conveniencecorner/Do-Gas-Prices-Come-Down-Slower-Than-They-Rise.

[60] Douglas J. Miller and Marvin L. Hayenga, "Price Cycles and Asymmetric Price Transmission in the U.S. Pork Market." *American Journal of Agricultural Economics* 83, no. 3 (2001): 551–62. https://doi.org/10.1111/0002-9092.00177.

[61] Calculation based on estimates from Borenstein, Cameron and Gilbert 1992.
We apply estimation procedures for the increased price individuals pay for gas in periods of price declines as compared to price increases as described on page 22 of their report for 10-week consumption estimates. We use the most recent weekly average gasoline consumption statistic, 7.92 gallons per week, to approximate average consumption. This statistic comes from the following source: "Gasoline Consumption Per Capita in 2020 Was on Par with That in 1965." Green Car Congress, December 8, 2021. https://www.greencarcongress.com/2021/12/20211208-sivak.html#:~:text=Consumption%20per%20capita%20dropped%20from,again%20a%20drop%20of%2014%25.

To lower gas prices, policymakers should address the underlying cause—suppressed oil supply in the face of rising demand. Increasing policy certainty that reduces the regulatory risks of increased drilling and investment is the best way to promote increased domestic production and help to lower global prices. A stable and non-hostile policy environment for refiners would also assist in speeding up the process of increasing capacity, which will help to bring profit margins back to normal levels. More government intervention in the oil and gas sector, by increasing regulatory burdens, taxes, or other costs for firms, will only exacerbate hesitancy to invest in expanded production. The ultimate result would be even higher gasoline prices for American consumers.

Kole Nichols
Joint Economic Committee