Today: Dominance Denied

By Philip K. Verleger, Jr.

How America's pursuit of energy domination destroyed the oil industry.

President Richard Nixon called on the United States to pursue energy independence in October 1973. Nixon's goal was achieved in November 2019, when the United States became, for a short time, a net exporter of oil. Two years earlier, the United States had become a net exporter of natural gas. Members of the Trump administration, inspired by forecasts of further increases in U.S. oil and natural gas production, announced that the United States would dominate the energy world. "Energy Dominance" became a theme of the White House.

The U.S. success, though, was short-lived. By the summer of 2020, the United States was once again a net importer of oil. It is likely to remain so for the foreseeable future.

The U.S. effort to dominate world energy markets was blocked by oil-exporting countries, which could produce oil for one-quarter to one-tenth of the United States' production cost. These countries used their cost advantage and size to frustrate the access of the far smaller, high-cost, and highly leveraged U.S. oil producers.

The oil price decline engineered in the spring of 2020 by nations with more abundant oil and gas reserves and substantial competitive advantages in costs will likely have detrimental long-term impacts for all OECD energy producers, not just the high-cost advocates of U.S. energy dominance. The long-run futures of multinational oil companies such as BP, Chevron, ExxonMobil, and others have likely been forever damaged by the hubris and greed of the independent oil companies that rushed pell-mell to boost U.S. production.

Philip K. Verleger, Jr., is president of PKVerleger LLC.

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220 I Street, N.E., Suite 200
Washington, D.C. 20002
Phone: 202-861-0791
Fax: 202-861-0790
www.international-economy.com
editor@international-economy.com

ENERGY INDEPENDENCE PREDICTED IN 2012

Eight years ago, I wrote an article for *TIE* titled, "The Amazing Tale of U.S. Energy Independence" (Spring 2012). *TIE* included an excellent sketch of Uncle Sam on steroids, bulked up by years at the gym. The piece began this way:

> *In little more than a decade, the United States will find itself as an energy exporter, and this amazing outcome will have happened by accident.*
>
> *The United States will then have low-cost energy supplies for decades.*

I predicted independence would be achieved by 2023. My timing was off. The U.S. Department of Energy reported in February 2020 that the United States became a net petroleum exporter in November 2019. We had already become a net exporter of natural gas in 2018.

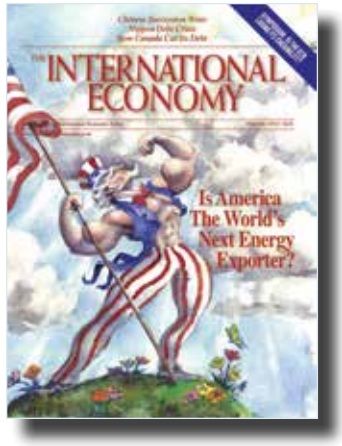
The breakthrough in oil and gas marked the achievement of the goal set by President Nixon following the November 1973 oil embargo. Nixon's objective was attained almost forty-six years to the date after his call for action.

However, as I wrote in 2012, accomplishment of the goal did not occur as his advisers predicted. The Nixon program was a high-cost, high-polluting plan involving massive expenditures on nuclear power and increased coal consumption. As envisioned in 1973, the success of Project Independence would have caused even higher emissions of harmful global warming gases. Of course, climate change was not a concern in 1973. Energy security was the issue of the day.

U.S. energy independence was reached instead via a low-cost path. This turn of events came about by luck, not planning, as the following developments transpired.

By the summer of 2020, the United States was once again a net importer of oil. It is likely to remain so for the foreseeable future.

- The United States reaped the benefits of abundant, cheap supplies of clean natural gas.
- Firms developing these resources took advantage of new financial instruments, created by Wall Street, that let them continue expanding even when prices collapsed. The new firms were also able to enter a business previously dominated by the oligopolistic energy behemoths.
- The United States benefited as well from dramatic increases in auto fuel economy, a change that came after the 2008 gasoline price surge and GM and Chrysler's subsequent bankruptcies.
- In addition, the United States was profiting from technological advances that made lower-cost shale oil production possible.



Philip Verleger's Spring 2012 TIE *cover article predicted independence would be achieved by 2023. His timing was off. The U.S. Department of Energy reported in February 2020 that the United States became a net petroleum exporter in November 2019.*

The key to achieving energy independence was fracking. This new technology delivered what might be called "the energy independence surprise."

FRACKING: THE DRIVING FORCE FOR INDEPENDENCE

Historically, the exploration and development of oil reserves have been capital-intensive processes. Costs are extraordinarily high, often in the billions. Worse, over time, almost every project seemed to get larger and more expensive, while the returns often appeared smaller.

Survival was seen to require bigger and bigger companies, according to the collective wisdom of industry officials and academics. Thus, a rush of mergers between large firms occurred in the last years of the 1990s. The wave began when BP acquired Amoco and then Arco. BP's actions were followed by several other mergers, culminating in the joining of Exxon and Mobil.

In 1998, Robert Corzine wrote the following:

> *In the world of the seven sisters it is marry or die. The merger talks between Exxon (market capitalization $175bn) and Mobil (market cap $60bn) suggest that nowadays $100bn is the minimum size for an oil major.*

Corzine explained that the need for size was tied to the high cost of building refineries, the need to spread risk over expensive projects, and the falling oil price. At the time of the mergers, the end of the last century, oil went for less than $20 per barrel, dropping at one time to $10.

The second reason for mergers offered by Corzine, the need to diversify, appears again and again in the literature. Investors put a premium on the amounts of oil produced by a company and its ability to develop new reserves. Such reserves, though, were more costly and more difficult to find. One repeatedly heard that "all the easy oil has been found." Mergers were seen as the solution.

Historian Daniel Yergin cited the ability of the merged companies to make better use of rapid developments in information technology. Twenty years on, the enormous gains from the technology sector have helped expand oil production in the world. These gains, though, were captured not by the multinational oil companies but by smaller firms, especially the independent frackers that cracked the problem of accessing tight oil and gas supplies in the United States.

Fracking's success came slowly. It began ten years after the mergers occurred. Russell Gold recounts the story of the first successful oil frack in *The Boom: How Fracking Ignited the American Energy Revolution and Changed the World* (2014): "The current Bakken boom [in South Dakota] began on September 7, 2008, the day the U.S. housing market crashed and a deep economic recession began."

Fracking's success came slowly.

U.S. crude oil output in September 2008 was 3.9 million barrels per day. Production from North Dakota was less than two hundred thousand barrels per day.

Twelve years later, U.S. production totaled 12.4 million barrels per day in February 2020, an increase of 8.5 million barrels per day. Output in North Dakota came to 1.4 million barrels per day. In short, U.S. output had risen fourfold. Production in North Dakota was six times higher. Seven million barrels per day of the 8.5-million-barrels-per-day increase in U.S. crude oil production came from the frackers' success.

Over roughly the same period, firms using the same technology to drill for natural gas had similar success. The output from U.S. fields rose from 19 trillion cubic feet in 2008 to 33 trillion cubic feet in 2019. The increase in production allowed the United States to export two trillion cubic feet of natural gas in 2019, whereas it had imported three trillion cubic feet in 2008.

The emergence of the United States as a significant natural gas exporter caused a major dislocation in investment plans for firms in the energy industry. At the turn of the century, several companies had announced plans to invest billions in plants to receive liquefied natural gas, plants that cost hundreds of millions each.

Most projects were canceled. By 2020 those, remaining had been converted to export U.S. natural gas, which U.S. Secretary of State Mike Pompeo has referred to as "freedom gas."

The energy independence achieved by the United States resulted directly from the success of smaller firms such as Brigham Exploration and Mitchell Energy, not the large multinationals formed two decades earlier. Fracking was, as the late Clayton Christensen noted, a "disruptive technology." The fracking technology was

Ignorant or Arrogant?

Individuals in the fracking industry believed world oil producers would always adjust production to accommodate the increased output of U.S. firms.

President Trump prevailed in getting oil exporters to cut output at the end of April 2020. Historian Daniel Yergin proclaimed that this was "Trump's greatest deal ever."

In fact, the agreement reached at the end of April 2020 by oil exporters and President Trump only sealed the death of much of the world's nonstate-owned oil and gas industry. In his naiveté, he signed the death certificates of much of the shareholder-owned industry.

The 2020 collapse in U.S. production demonstrated how dependent U.S. oil producers were on large, entrenched global oil suppliers. They rely utterly on oil-exporting nations to adjust their output in a way that allows the small U.S. producers to keep selling their oil on the world market. Yet the U.S. producers seem ignorant of this dependence or arrogantly confident regarding the market actions of OPEC+.

—P. Verleger

also a "fragile technology" because output required continuous investment—just as farmers must plant crops every year. In contrast, the traditional oil business involves significant investments at the outset, followed by an ongoing flow of production.

THE RISE OF OIL EXPORTS

The United States exported thirty-six thousand barrels per day in January 2009, the month Barack Obama became the forty-fourth president of the United States. Eleven years later, in January 2020, U.S. crude oil exports rose to 3.2 million barrels per day, a one-hundredfold increase.

U.S. product exports more than doubled from 1.9 million barrels per day in 2008 to 5.9 million barrels per day during President Obama's time in office. They rose another million barrels per day by January 2020.

In just eleven years, the United States became a significant player in the world oil market. Its world-scale refining industry was supplying significant product volumes to Latin America and Europe. Meanwhile, the United States had come to be the world's largest crude oil producer.

The U.S. rise as an energy exporter led many to brag of its energy dominance, a term coined by President Trump. The term was first used during a White House "energy week" in June 2017. In a speech inaugurating the event, the president touted the actions his administration would take to loosen regulations and promote energy exports. He then added the following:

> *Our country is blessed with extraordinary energy abundance, which we didn't know of, even five years ago and certainly ten years ago. We have nearly 100 years' worth of natural gas and more than 250 years' worth of clean, beautiful coal. We are a top producer of petroleum and the number-one producer of natural gas. We have so much more than we ever thought possible. We are really in the driving seat. And you know what? We don't want to let other countries take away our sovereignty and tell us what to do and how to do it. That's not going to happen. (Applause.)* ***With these incredible resources, my administration will seek not only American energy independence that we've been looking for so long, but American energy dominance*** *[emphasis added].*

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THE HIGH-COST FLAW

President Trump might have added that he understood that the U.S. industry required high oil prices to survive. On April 20, 2020, almost three years after he spoke of energy dominance, the benchmark crude for U.S. production, fell to $-37.63 per barrel. While no transactions in physical volumes have been reported at this price, had one occurred, the producer would have had to pay the "buyer" $37.63 to take its oil.

Through April and early May 2020, there were several occasions where producers had to pay buyers to take their oil. America's energy dominance was in tatters, at least temporarily.

U.S. oil production collapsed rapidly during the spring of 2020. Initially, the Energy Information Administration indicated that output had declined by between one and two million barrels per day. More informed organizations such as pipeline companies reported that production had decreased by between 3.5 and 4.5 million barrels per day.

The sharp price drop led to a very rapid contraction of the fracking firms that had helped double U.S. oil production. Their demise can be traced to several factors. Among these were

- The global Covid-19 pandemic;
- Pressures to cut fossil fuel use to address global warming;
- Flimsy business models that left companies and investors exposed to large oil price fluctuations; and
- A mistaken belief that fracking firms could expand output with impunity because the other oil exporters would offset these higher sales to maintain higher prices.

The last of these four assumptions was the most significant. Individuals in the industry believed world oil producers would always adjust production to accommodate the increased output of U.S. firms.

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The independent producers who had so successfully boosted production and lobbied for removing the export ban compounded their problems by failing to control costs. An "oil rush" mentality not that different from the California Gold Rush of 1849 took hold. (California's gold rush was made famous for the exorbitant prices merchants charged miners, prices that created firms such as Levi Strauss.)

U.S. Department of Commerce data provide a key measure of the oil rush mentality. In 2018, personal income per capita in Midland, Texas, the center of the Permian Basin drilling activity, reached $122,000 per year. Midland's pay was "higher than that of San Jose, San Francisco, Boston, or New York."

The seven or eight giant multinational companies formed just before the turn of the century have become innocent victims.

The surge in income in Midland began after 2000. In that year, the average income in Midland was about equal to the average per capita wage in Des Moines, Iowa, and 25 percent higher than in Sioux City, Iowa, a significant farming town. Eighteen years later, per capita income in Midland had increased 280 percent, while pay in the two Iowa towns had risen 70 percent. (Meanwhile, per capita income in San Francisco, the technology sector's hub, had doubled, and per capita income in the New York metropolitan area had gone up by 90 percent.)

By any financial measure, Midland, Texas, and the surrounding Permian Basin area experienced the twenty-first century equivalent of California's gold rush. The income increase, though, was not sustainable. The independents driving the fracking boom applied the wrong business model.

The energy independence achieved by the United States resulted directly from the success of smaller firms.

The model employed by the "frackers," as Gregory Zuckerman called them in his 2013 book *The Frackers: The Outrageous Inside Story of the New Billionaire Wildcatters,* followed the traditional industry practice where successful wells, of which there were few, yielded vast riches over a prolonged period, justifying large expenditures, especially at times of high prices. In this case, the approach was wrong because oil or gas production by fracking is radically different.

Fracked wells can be drilled very quickly at low cost. Conventional wells require many months or years to drill and equip before production starts. The speed with which fracked wells can be developed makes that process much less expensive.

There is a downside, though, to the low cost and rapidity with which fracked wells can be drilled and completed: the decline rate. Production from a fracked well drops very quickly, sometimes by 30 or 40 percent in the first year. In contrast, while traditional producers may spend several years and hundreds of millions to find and develop a new field, once completed, its wells will produce at or close to the initial rate for years.

The rapid decline rate of fracked well production requires producers to invest continuously in new wells. The process is like farming. Just as farmers must plant a new crop every year to maintain output, frackers must keep drilling new wells to maintain production.

The analogy to farming carries over to the costs of operations, wages, and per capita income. As in agriculture, success in fracking requires stringent cost controls. The frackers did not adopt such controls. In 2000, the average per capita income in Midland was 22 percent higher than in Sioux City, Iowa, our archetypical farming community. Eighteen years later, it was 177 percent higher.

The emergence of the United States as a significant natural gas exporter caused a major dislocation in investment plans for firms in the energy industry.

Lavish funding from Wall Street enabled the fracking firms to offer handsome wages to attract workers. These companies raised $206 billion in equity from Wall Street investors through public offerings between 1995 and 2008, while issuing a further $450 billion in debt. At the beginning of 2020, banks had extended or authorized credit for a further $53 billion according to data published by Seeking Alpha.

Data on the shale industry's private funding is more difficult to obtain. However, reporter Bethany McLean noted that

> *Private equity funds dedicated to natural resources raised nearly $70 billion of capital in 2015, according to SailingStone Capital Partners, an energy-focused investment firm, and over $100 billion in 2016. Today, 35 percent of all horizontal drilling (the industry's preferred terminology) is done by privately backed companies.*

The SailingStone figures imply private investors put $1.60 into the fracking business for every dollar invested by public investors. If this estimate is correct, then between $1.5 and $2 trillion have been put into fracking since 2000.

The independent oil firms employed the equity and debt to drill and drill and drill. Between 2007 and 2020, over 100,000 wells were drilled. Despite the funding or perhaps because of it, the industry reported negative cash flows in every year. Losses were recorded every year from 2010 to 2020 despite high prices. Cumulative cash-flow losses total $344 billion, according to Deloitte.

The industry's significant financial losses have led to growing pressures on independent companies to embrace cost discipline, cut drilling, and pay dividends to shareholders. McLean, the author of *Saudi America: The Truth About Fracking and How It's Changing the World* (2018), quoted short-selling hedge fund manager Jim Chanos in her *New York Times* opinion piece: "The industry has a very bad history of money going into it and never coming out."

Twenty-three months later, on August 1, 2020, it is clear that things have ended badly for the independent oil sector. Firms in the industry were already under increasing pressure before the Covid-19 virus collapsed consumption, which then led to the price war. Through 2019, the independent companies faced considerable pressure to reduce drilling, cut costs, and pay dividends. Shares in all fracking firms declined by between 30 percent and 60 percent.

As an example, Bloomberg's Liam Denning tells the story of Carrizo Oil & Gas. The company was active in two of the vital shale oil and gas provinces: Eagle Ford and the Permian. At the time of McLean's article, the company's shares traded for $24, and the company issued more stock at that price. Fourteen months later, in November 2019, the company was purchased by Callon Petroleum for $7.81 a share. Investors who purchased the new shares in August 2018 lost two-thirds of their money.

In 2020, the fracking industry has been starved for new capital. Drilling has cratered. Independent oil companies and drilling companies are filing for bankruptcy at an alarming rate.

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The law firm Haynes and Boone has tracked bankruptcies in the oil patch since 2015. They have recorded more than two hundred filings, with twenty-three occurring in the first two quarters of 2020. The total secured and unsecured debt amounts to $152 billion, $30 billion of which dates to 2020. Bankruptcies among oil service providers (the firms that drill and frack the wells) total almost $100 billion.

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The outlook for independent oil producers, then, is bleak today. The companies that briefly brought the nation energy independence look to be permanently sidelined absent a substantial oil price increase. Oil-exporting countries, presumably interested in adding to their global market share, are unlikely to cooperate. U.S. production will drop significantly, leaving the country again dependent on imported oil. U.S. energy dominance is dead.

DECIMATING THE MULTINATIONALS

The seven or eight giant multinational companies formed just before the turn of the century have become innocent victims of the United States' irrational pursuit of energy dominance. The price wars undertaken by Saudi Arabia and other low-cost traditional oil exporters such as Russia in 2014 and more recently in 2020 have decimated the finances of these firms.

The damage done by low prices leaves these firms weakened and probably unable to contribute significantly to the global warming battle. The annihilation of the multinationals may be the most significant world economic loss caused by the failed U.S. effort.

Royal Dutch Shell may provide the most vivid illustration of the problems caused by the two price declines. The company's share price (U.S. depository receipts) traded for $69 on the day before the November 2014 OPEC decision to begin the first price war of the twenty-first century. Five-and-a-half years later, shares can be purchased for $32.

Many factors play into the share price fall. The two price wars, both begun as retaliation against U.S. firms, clearly are key. The company's capital spending peaked in 2013 at almost $40 billion. In 2020 capital spending will be less than half that amount.

Shell responded to the 2020 collapse in oil prices by cutting its dividend for the first time since the end of World War II. The reduction was significant. The quarterly payout was lowered by almost two-thirds—from $0.47 per share to $0.16. Through other steps, the company saved nearly $30 billion while it asserted that these actions would allow it to "weather the crisis and prepare for the transition to low-carbon energy."

In June, Shell's CEO Ben van Beurden told Bloomberg that the company would be hamstrung if prices remained low:

> *If they do [remain low], then we have a permanently changed world, and you have to then reinvent the company much more structurally than what we're currently doing. At the moment, we're taking countermeasures; we're not reinventing the company. If there are less attractive investments available in oil and gas, then obviously the capital will be allocated elsewhere in favor of sectors that do bring good returns.*

Three other major European multinationals—BP, ENI, and Total—also cut back on capital expenditures. BP's response was the most extreme. The company wrote off $17.5 billion in assets, explaining that it had lowered its long-term price expectations for Brent to $55 per barrel. It also announced it would clarify to investors by September how it intended to "reinvent" the company. The reinvention would include less investment in oil and more in renewables.

The amount BP can invest in oil or renewables is unknown, though, given the firm's high debt and the need to pay dividends.

Two large U.S. multinationals, ExxonMobil and Chevron, have stayed focused on fossil fuels despite pressures to commit to funding in renewables. They, too, have been forced to cut investment.

Covid-19 contributed to the precarious financial circumstances confronting the largest multinational companies, firms already undermined by the price declines that began in 2014. Their diminished stature increased their vulnerability to price declines, just as an individual with prior medical conditions is more susceptible to Covid-19.

In short, the U.S. pursuit of energy domination has destroyed the oil industry. ◆