

Pandemic and Price War: Early Energy Market Insights From the 2019-2020 Wuhan Coronavirus Outbreak



Gabriel Collins, “*Pandemic and Price War: Early Energy Market Insights From the 2019-2020 Wuhan Coronavirus Outbreak,*” China SignPost Research Presentation, 20 March 2020

*Note: These are working research findings that assess a fast-evolving situation and are subject to change. In the event of material developments, the author will post an updated version.**

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Executive Summary

- ▶ Movement in much of China remains restricted and now Italy, Spain, and France are on lockdown. So is Norway. More restrictions in other places are likely to follow.
- ▶ The coronavirus is likely the biggest global oil demand shock for China and other major industrial powers for the past 50 years, exceeding even the impact of the 2008 Global Financial Crisis. This risk is magnified by the fact that the massive 2009-2010 China stimulus measures, which drove an oil demand increase of approximately 1 million bpd, are likely not in the cards this time around.
- ▶ Oil use foregone during the lockdown period is most countries likely will not be recouped and it will likely take multiple quarters for demand to attain pre-pandemic levels. This is likely to be especially true for air travel, one of the most discretionary forms of consumer oil use. One potential offset could come through consumers eschewing planes and trains and using personal cars for a greater share of inter-city travel. Personal car use is generally significantly more oil-intensive per capita than flying on a plane.
- ▶ At the same time, Saudi Arabia has declared an oil price war on Russia and Moscow wants to suppress US shale. Russia can likely sustain the price war through the remainder of 2020 and I think the Saudis will blink first. That said, several tough quarters lie ahead.
- ▶ **Keep your heads up!** The economic restart and recovery will take time and feature fits and starts as supply chain kinks are worked out, but the underlying physical infrastructure remains intact and can be switched back on fairly quickly. In that respect, Covid-19 is very different than a natural disaster that physically disrupts and destroys key assets. Critical basic services such as water, gas, power, and internet services will likely remain available even if the infection burden gets much worse.
- ▶ **Pandemic disruptions are rooted in our natural human fear response—and in the fact that some proportion of the population may become sick and temporarily unable to function (or even suffer longer-term disability or death). The virus attacks our confidence and strains our institutions, but leaves physical assets untouched.**
- ▶ We will recover, but the architecture of our commercial intercourse and consumption patterns could be altered for some time. The near-term downturn will likely be deeper than what happened in 2008-2009. It's going to be volatile and challenging through 2020, and perhaps into the first quarter of 2021.

Commodity Markets Are Taking a Much Bigger Hit Than During SARS

Anecdotal Evidence

Bloomberg

Markets

Virus Hits Copper Trade as China Asks Chile to Defer Cargoes

By [Maria Elena Vizcaino](#)
February 5, 2020, 2:19 PM CST Updated on February 6, 2020, 8:45 AM CST

- ▶ Chilean miners asked to reschedule shipments on port closures
- ▶ Suppliers haven't reported any contract breaches yet: Cochilco

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China's copper buyers are asking Chilean miners to delay shipments due to port shutdowns, adding to tumult in global commodity trade in the wake of the coronavirus outbreak.

S&P Global Platts

Commodities Products & Services Methodology Market Insights Analytics

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China's CNOOC declares force majeure on LNG contracts amid coronavirus outbreak
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North American Crude Oil Summit, 3rd annual
- OIL | CRUDE OIL
OPEC+ committee recommends 600,000 b/d in new oil cuts, but Russia wants to wait

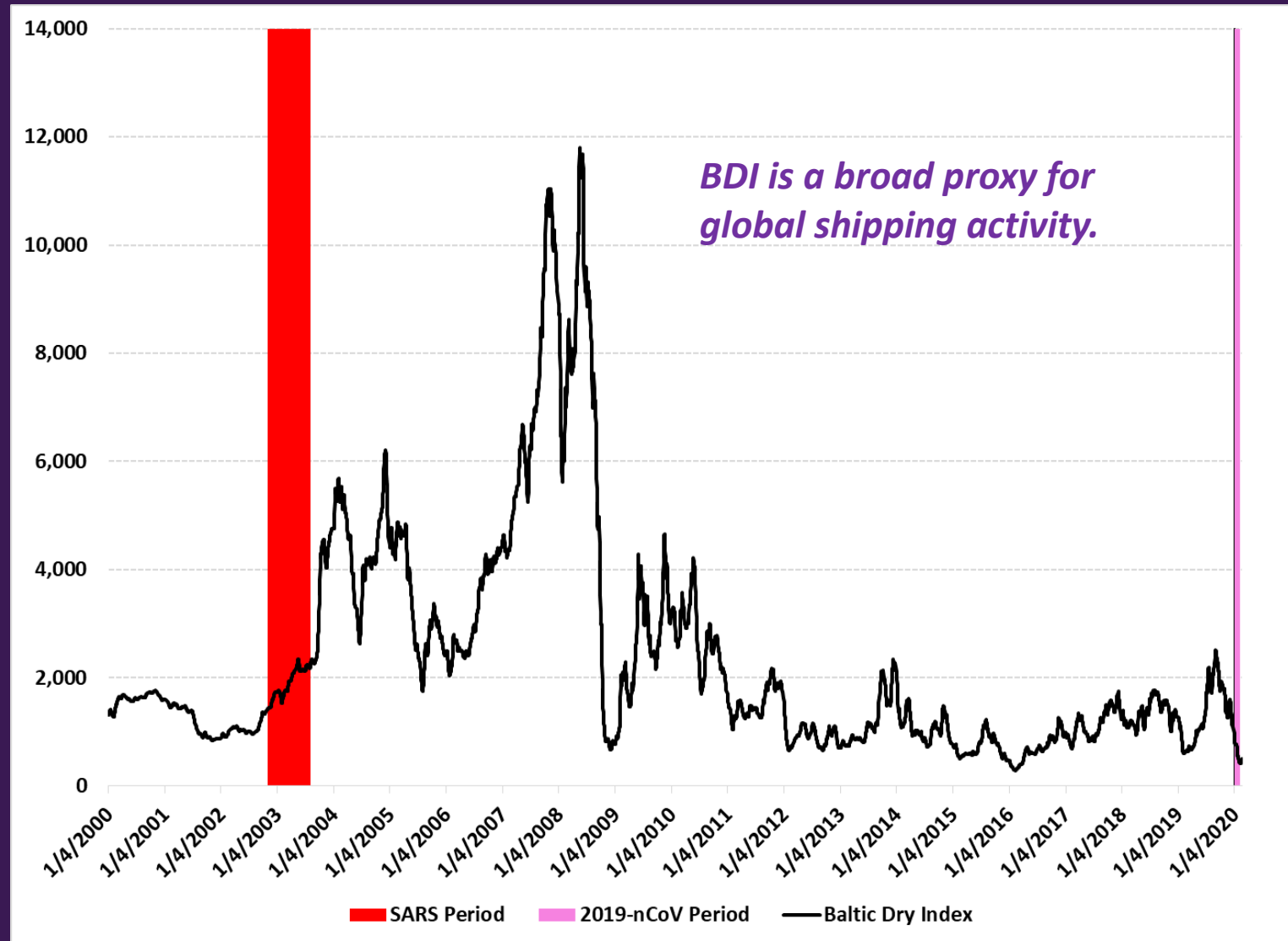
China's CNOOC declares force majeure on LNG contracts amid coronavirus outbreak

HIGHLIGHTS

- Shell, Tangguh hit by CNOOC's force majeure: sources
- Buyer has more than 20 mil mt/year in LNG SPAs
- Other Chinese LNG importers mulling force majeure option
- Platts JKM plunges to historic low of \$3.15/MMBtu Wednesday

Singapore — China's state-owned CNOOC has declared force majeure on LNG contracts, a source close to company said Thursday, as the country's largest LNG importer tackles disruptions in downstream markets in the wake of the coronavirus outbreak.

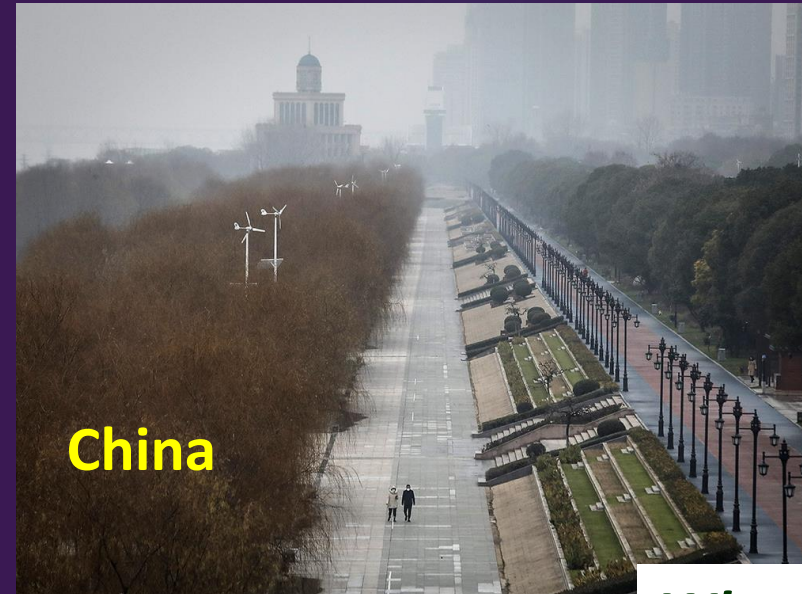
Systemic Evidence: Baltic Dry Index Takes Major Hit in Past Month



Source: Bloomberg, Author's Analysis

Wild Cards

- ▶ What will the breadth and duration of Covid-19's global spread be? How large will the resultant economic disruptions be and how long will they persist?
- ▶ China, Italy, Spain, France, and Norway have broadly locked down. Will other industrial states follow as pandemic deepens?
- ▶ Will we see broad quarantines/lockdowns in the US?
- ▶ Does China suffer re-infection as the outbreak spreads globally while Chinese policymakers simultaneously work to jump start the economy and re-establish connectivity with the outside world? The “double-barrel” impact.
- ▶ How long will the “fear impact” on consumer behavior endure once infections begin to wind down?
- ▶ Do consumers’ transport preferences shift in ways that may be more or less oil-intensive? For instance, greater reliance on personal cars increases oil intensity of movement whereas foregoing travel causes demand destruction.
- ▶ Does coronavirus + trade war + intensifying US-China conflict lead commercial operators to more decisively and permanently restructure global supply chains to reduce reliance on China?



China



Italy

What large industrial state will lock down next?

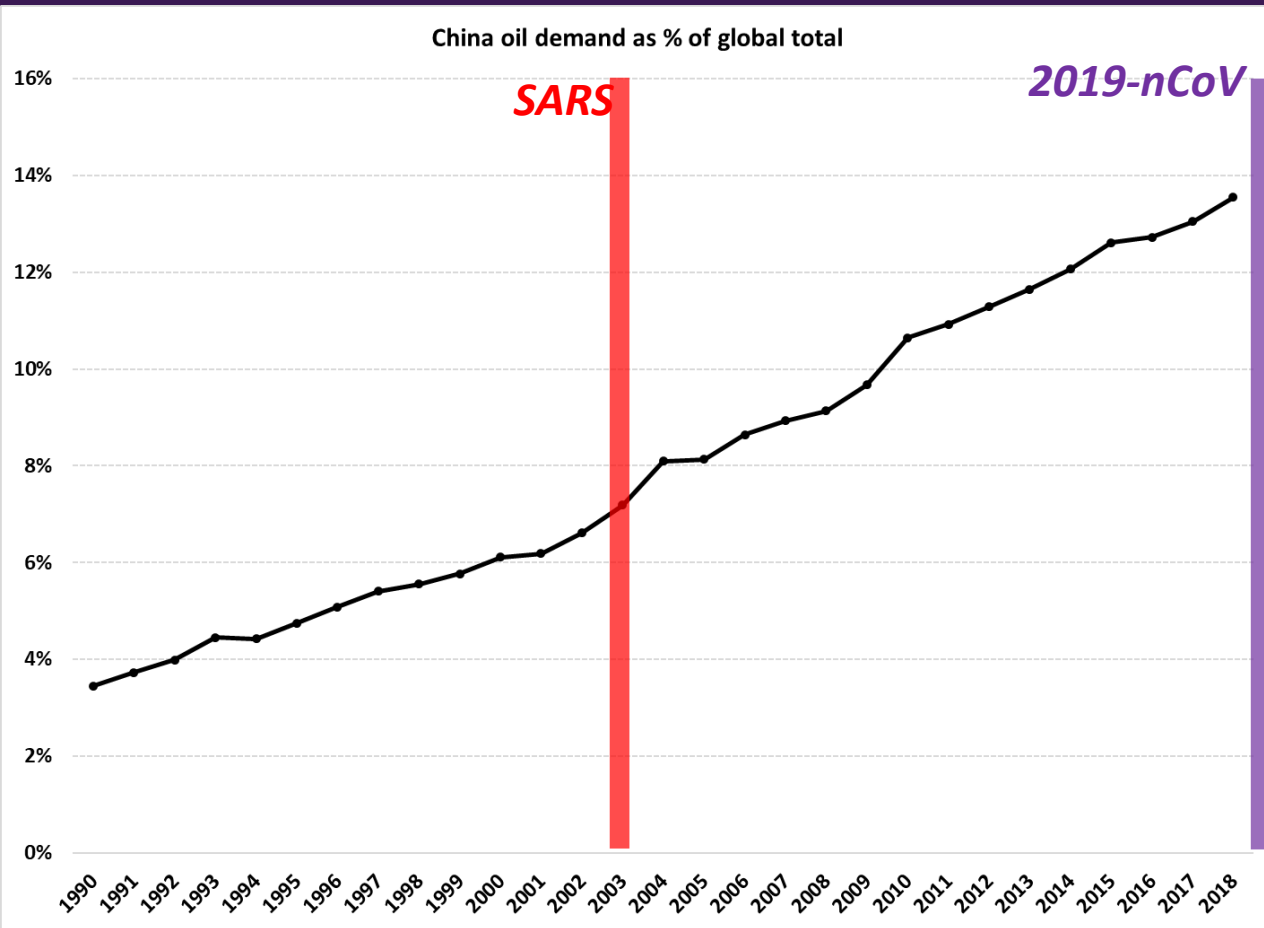
Source: Calgary Sun, WSJ

Oil & Refined Products Impacts

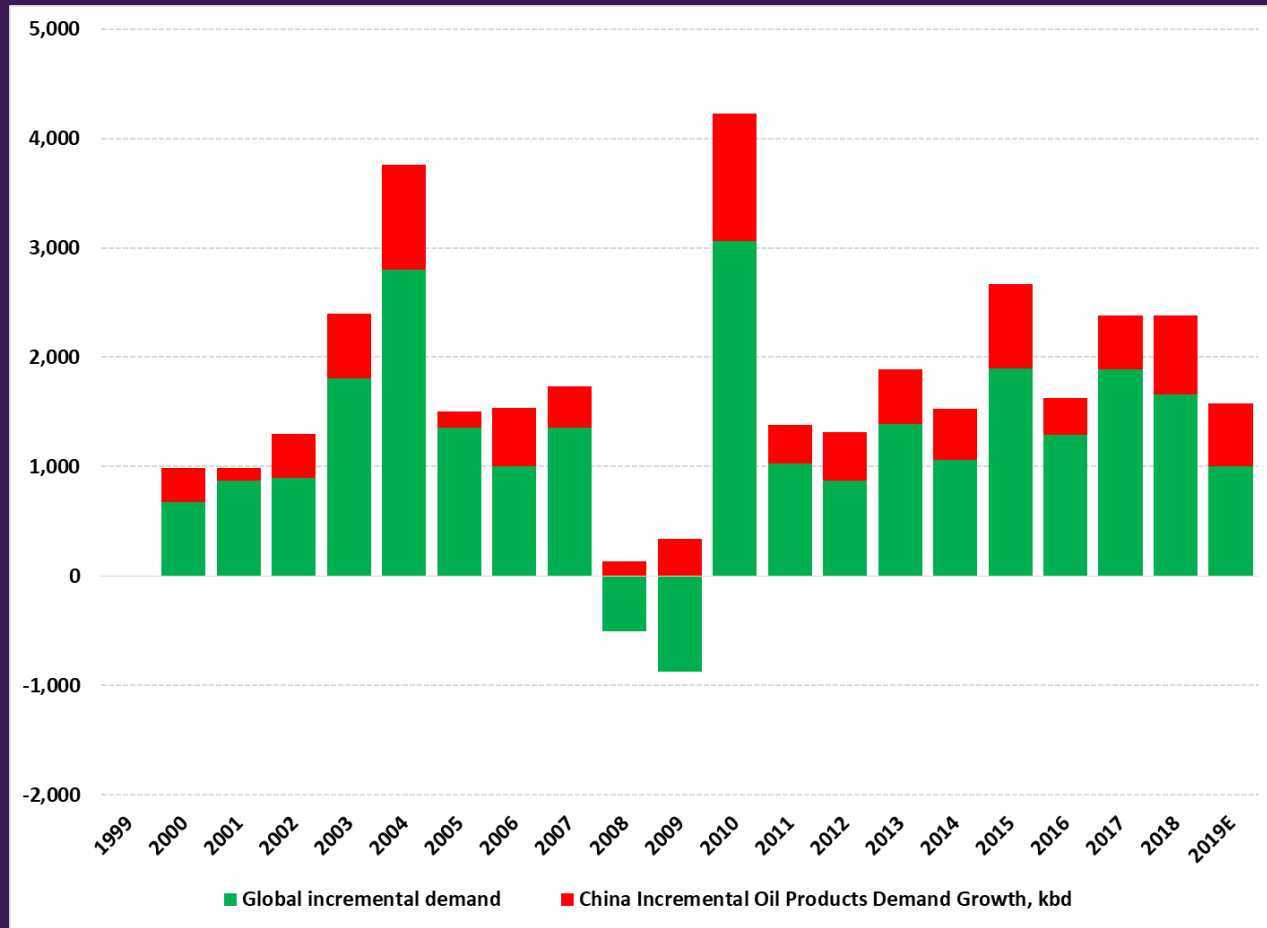
DEPENDING ON SPREAD AND GOVERNMENTAL + CONSUMER RESPONSES, THE NOVEL CORONAVIRUS COULD INDUCE THE BIGGEST CUMULATIVE GLOBAL DEMAND-SIDE OIL SHOCK SINCE THE 2008 GREAT FINANCIAL CRISIS.

Oil Demand Impacts: Part 1

China is Twice as Large a Proportion of Global Oil Demand as It Was During SARS Outbreak...



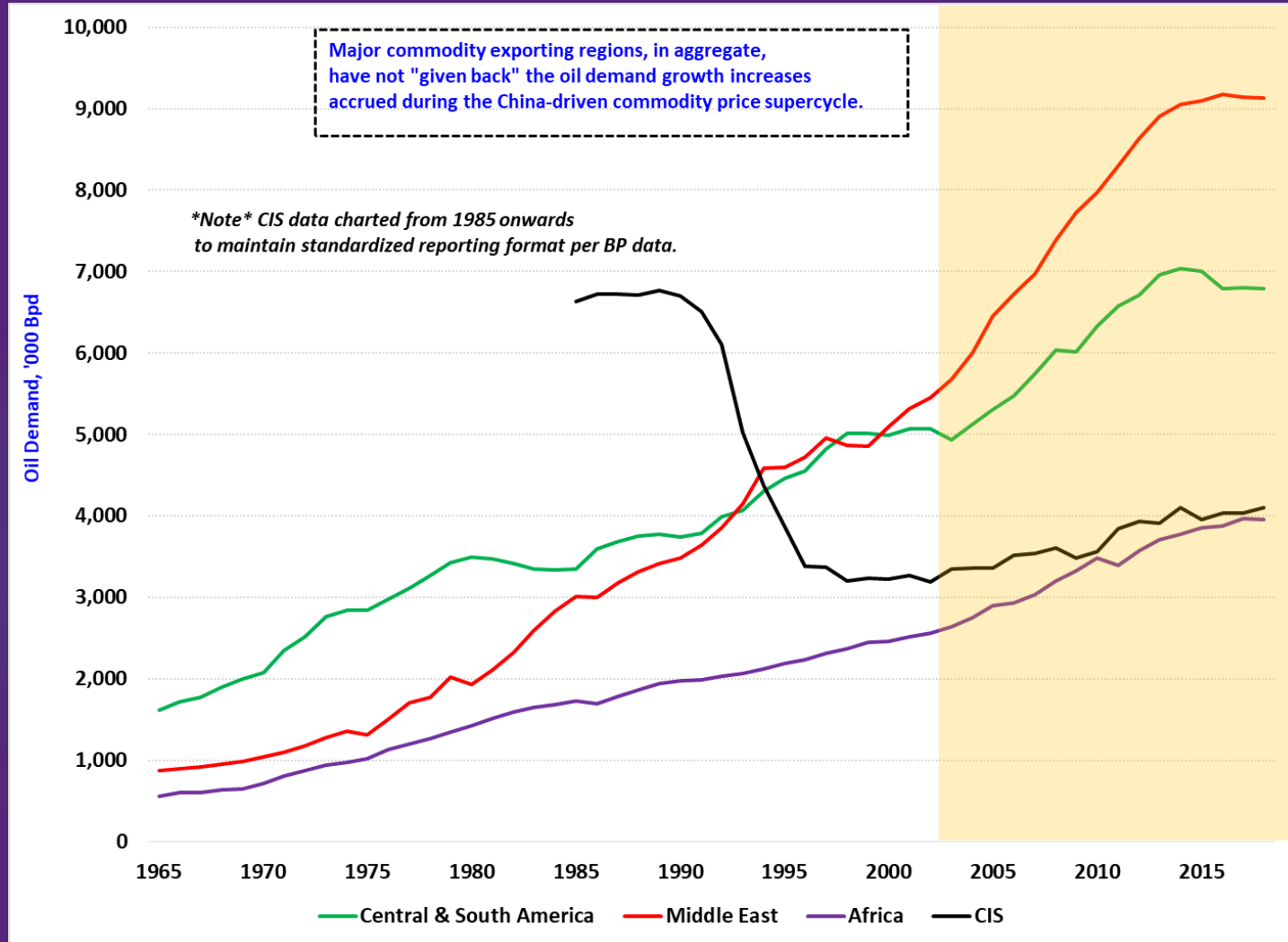
...And China Remains the Core Direct Driver of Incremental Oil Demand Growth



Source: BP Statistical Review of World Energy 2019, Author's Analysis

Oil Demand Impacts: Part 2

Key Emerging Markets' Oil Demand Growth Heavily Leveraged to China



- ▶ If China continues being afflicted by the coronavirus, what ailment, economically-speaking, might the commodity exporters of the world contract?
- ▶ In many years, the key secondary drivers of oil demand growth globally have been the commodity producing countries that most benefited from China's skyrocketing demand during the past 15 years. In this sense, China's boom had a "multiplier" effect on global oil demand growth.
- ▶ Indeed, this author's calculations indicate that between 2003 and 2014 (when oil prices crashed), China's own oil demand grew by about 5.4 million barrels per day. But the combined oil demand growth in Africa, Central and South America, the Former Soviet Union, and the Middle East (commodity exporting regions heavily leveraged to Chinese growth) clocked in at 7.3 million barrels per day—1.3 times China's own demand growth.

Source: Gabriel Collins, "What If China Ceases To Be The Global 'Oil Consumer of Last Resort?," China SignPost™ (洞察中国) 100 (13 November 2019),

<http://www.chinasignpost.com/2019/11/13/what-if-china-ceases-to-be-the-global-oil-consumer-of-last-resort/>

Fear-Driven Oil Demand Impacts: Global Level (middle distillate focus)

Middle Distillates Are Highly Trade-Leveraged

	2018	2019	2020F
LPG & Ethane	12,386	12,600	13,066
Naphtha	6,568	6,528	6,690
Motor Gasoline	26,175	26,488	26,562
Jet Fuel & Kero	7,865	8,014	8,215
Gas/Diesel Oil	28,487	29,054	30,079
Resid Fuel Oil	6,672	6,345	5,660
Other Products	11,185	11,281	11,248
Total	99,338	100,310	101,520
Middle Distillates as % of Total	40%	40%	41%

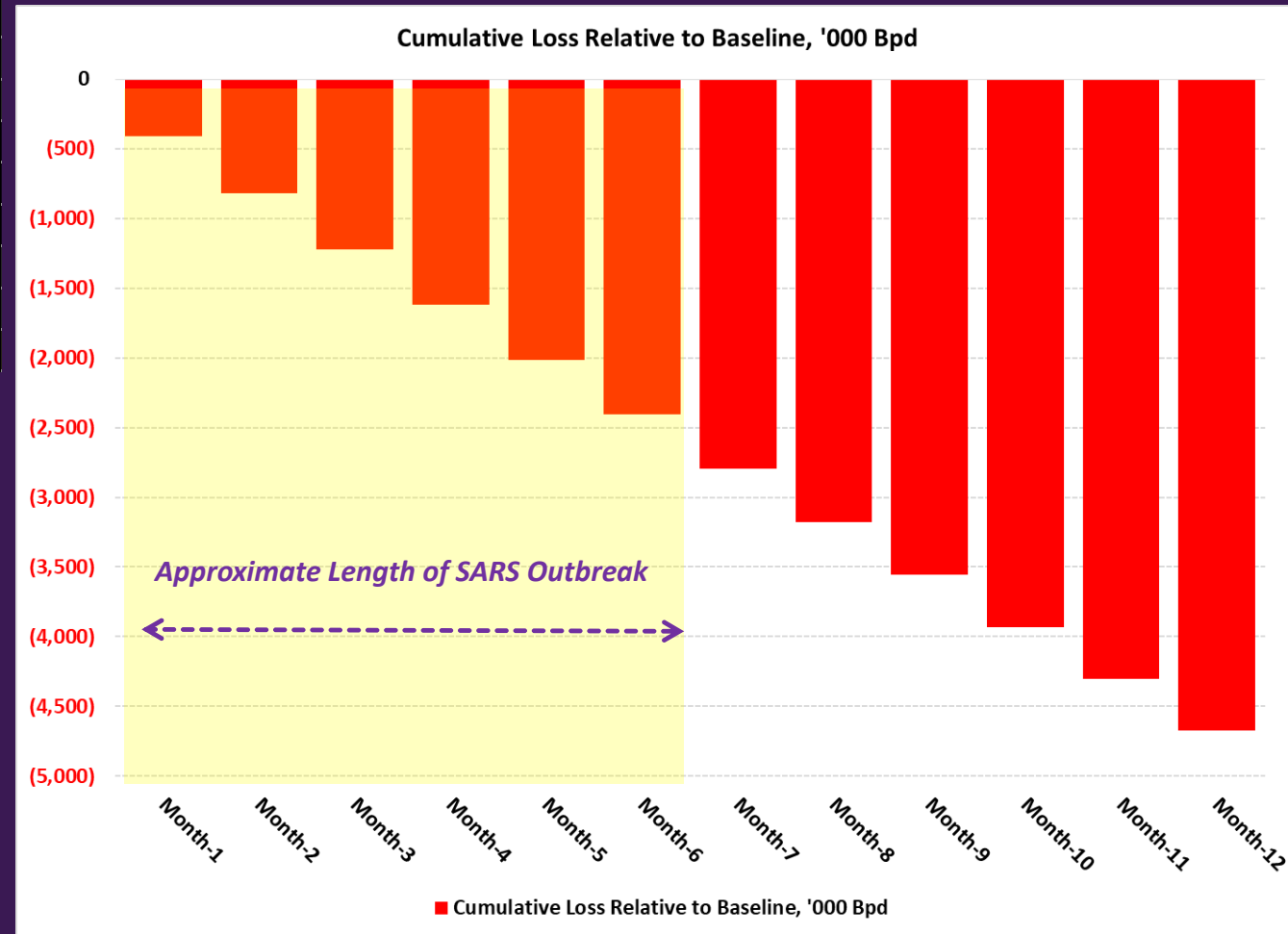
Source: IEA Oil Market Report, 15 November 2019

Note on possible error source: I estimate half of the residual fuel oil stream to be an “honorary middle distillate” because it powers ships and power generation.

Each cancelled Trans-Pacific flight represents about 1,400 bbl/d of lost jet fuel demand

If 2019-nCoV spreads at scale outside China or triggers additional lockdowns/avoidance behavior in China, OPEC will likely need to make sizable emergency cuts. US drilling levels likely to get hit hard if oil drops below \$45.

Losing 1% of Middle Distillate Demand per Month Could Seriously Depress Oil Market Within 1 Quarter's Time



Source: IEA Oil Market Report, 15 November 2019, Author's Analysis

Aviation Middle Distillate Demand Impacts Have Spread Beyond China: Severe Air Connectivity Cuts

- ▶ “The velocity and the severity of the decline is breathtaking...There is no question this is a severe recession for our industry and for us, and it’s a financial crisis.”—Gary Kelly, CEO, Southwest Airlines, 9 March 2020*

Coronavirus Drives Capacity Cuts at Major Airlines (Partial List as of 16 March 2020)

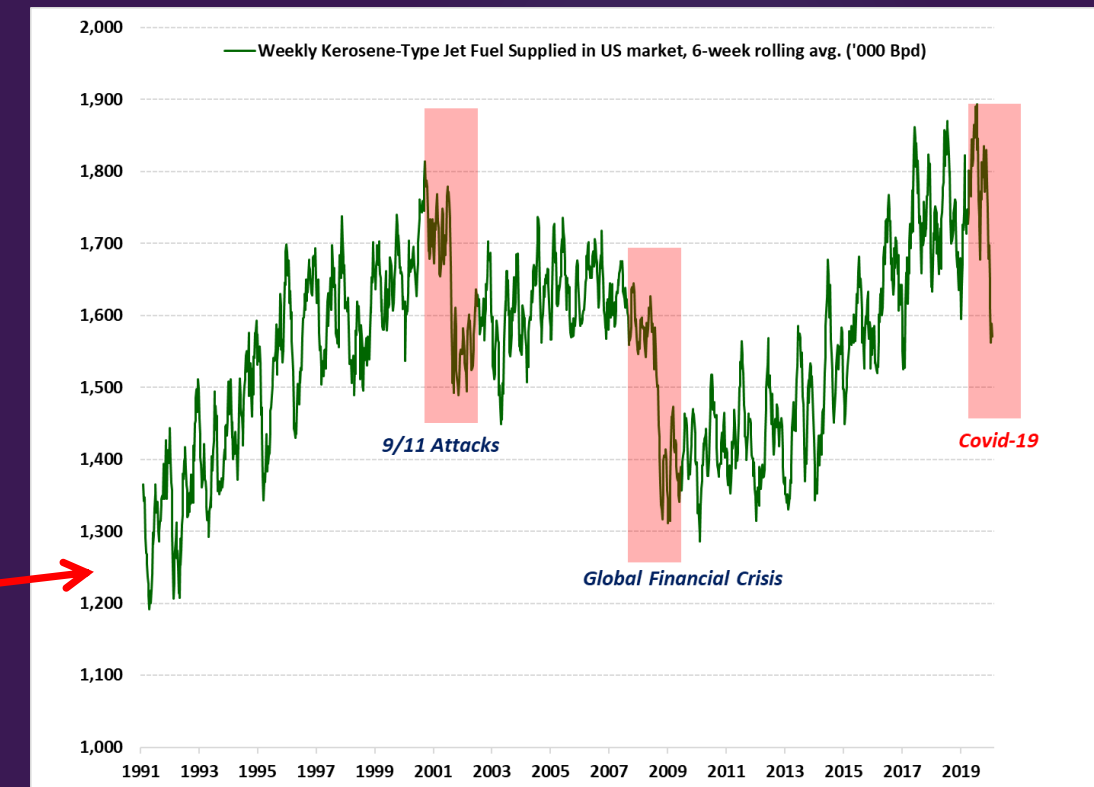
Carrier	International Capacity Change	Domestic Capacity Change	Comments
American Airlines	↓ -75.0%	↓ -20.0%	No Mainland China flights until late October, "months" of delay to HK and Singapore flights, cuts in flights to Europe and Latin America
Delta Air Lines	↓ -40.0%	↓ -40.0%	systemwide cuts
United Airlines	↓ -50.0%	↓ -50.0%	systemwide cuts
Qantas	↓ -25.0%	-	
Korean Air Lines	↓ -80.0%	-	
Lufthansa	↓ -25.0%		No flights to China till at least April 24

Source: Reuters, The Points Guy, Wall Street Journal, Yahoo Finance

Chart uses a 6-week rolling average to strip out noise and emphasize major event-driven fuel demand movements. The coronavirus move is already of similar magnitude as 9/11 and the 2008 Global Financial Crisis and will likely deepen as Europe flight ban shows up in the next two weeks of data.

*Alison Sider, “Airlines Trim Capacity Over Coronavirus Spread; Some Executives Take Pay Cuts,” The Wall Street Journal, 10 March 2020, <https://www.wsj.com/articles/southwest-ceo-to-cut-his-pay-by-10-as-coronavirus-chills-bookings-11583840287>

Impacts Already Showing Up in US Jet Fuel Data

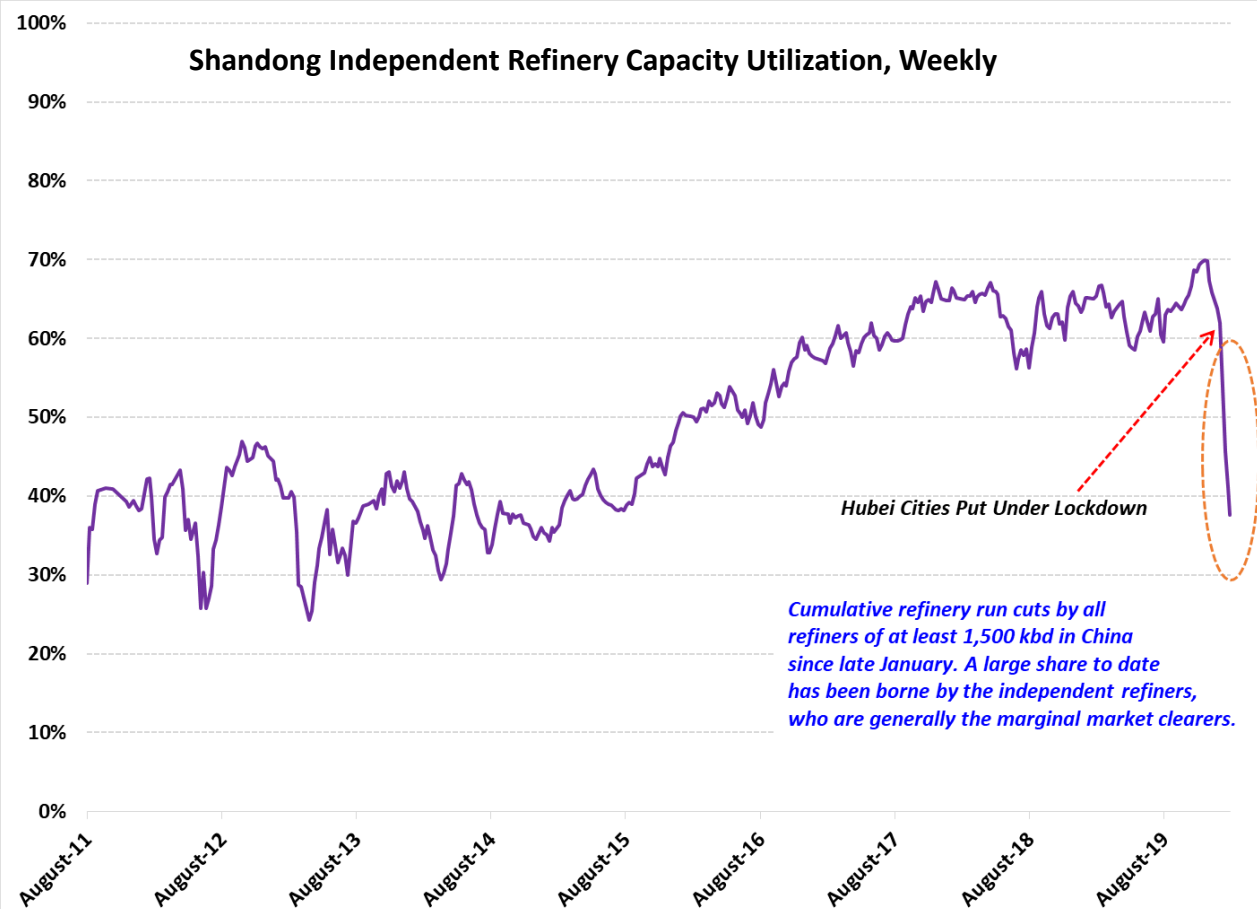


Source: EIA, Author's Analysis

What Does a Fear-Driven Oil Demand Impact Look Like in China?

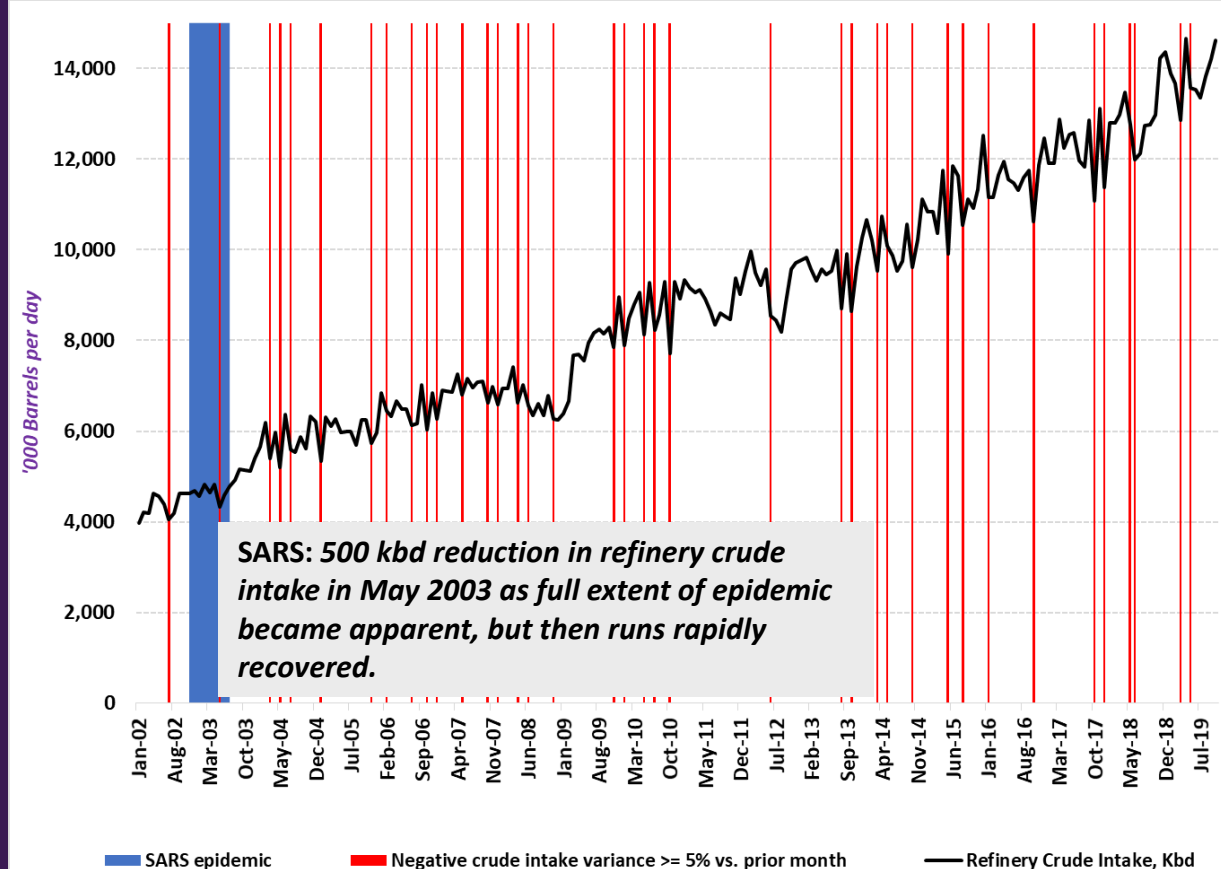
Solid demand data remain scarce, but supply-side responses of major refined product suppliers shed some light.

Early Days to Know True Extent of Coronavirus Impact... But Chinese Refineries Are Cutting Runs



Source: Shanghai Longzhong Information (via Bloomberg), Reuters

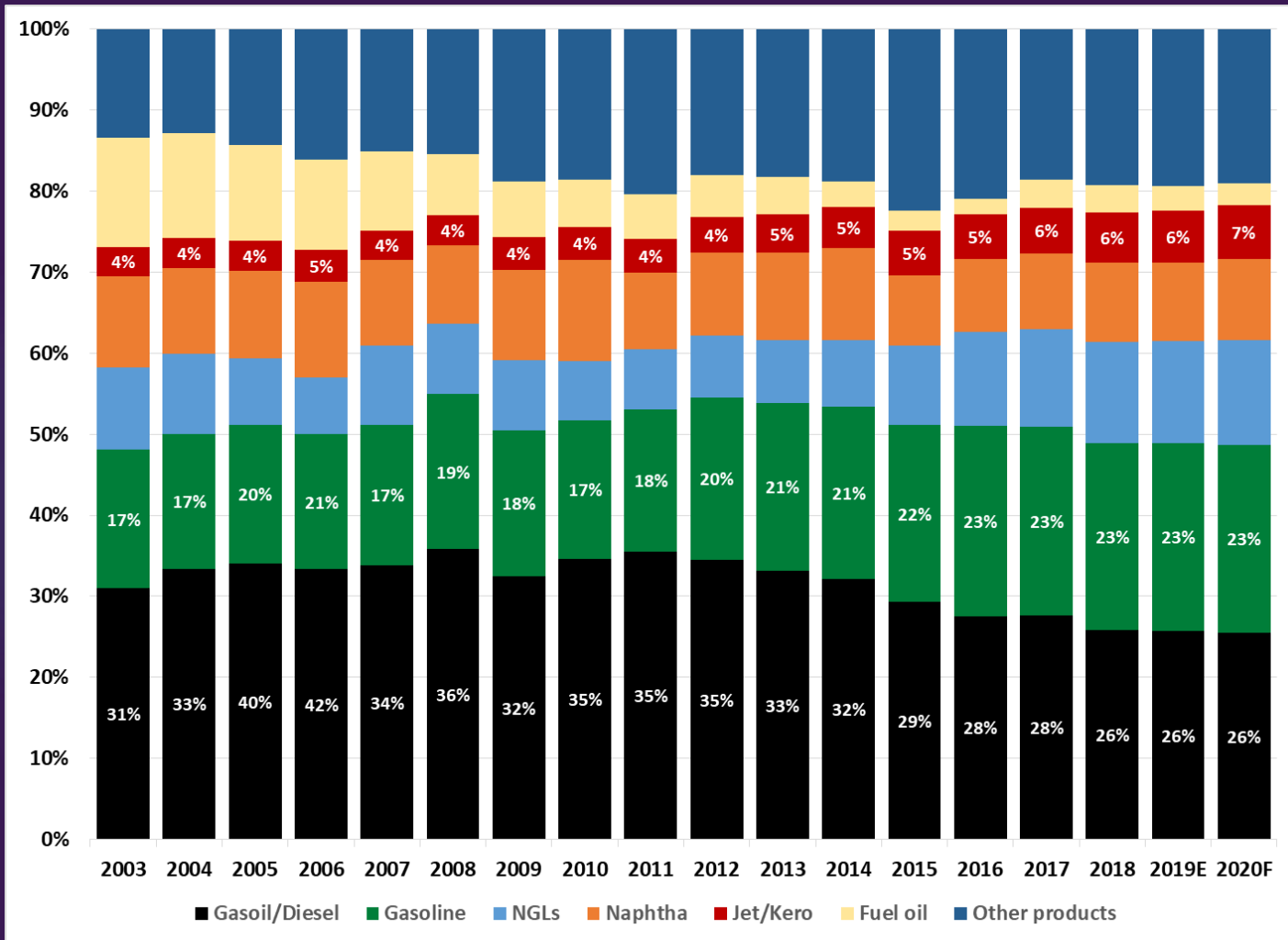
The SARS Epidemic Did Not Provoke Nearly as Robust a Supply-Side Response



Source: Joint Organisations Data Initiative, Author's Analysis

Don't Expect a Rapid Energy Demand "Snap Back" in China When Coronavirus Outbreak Wanes

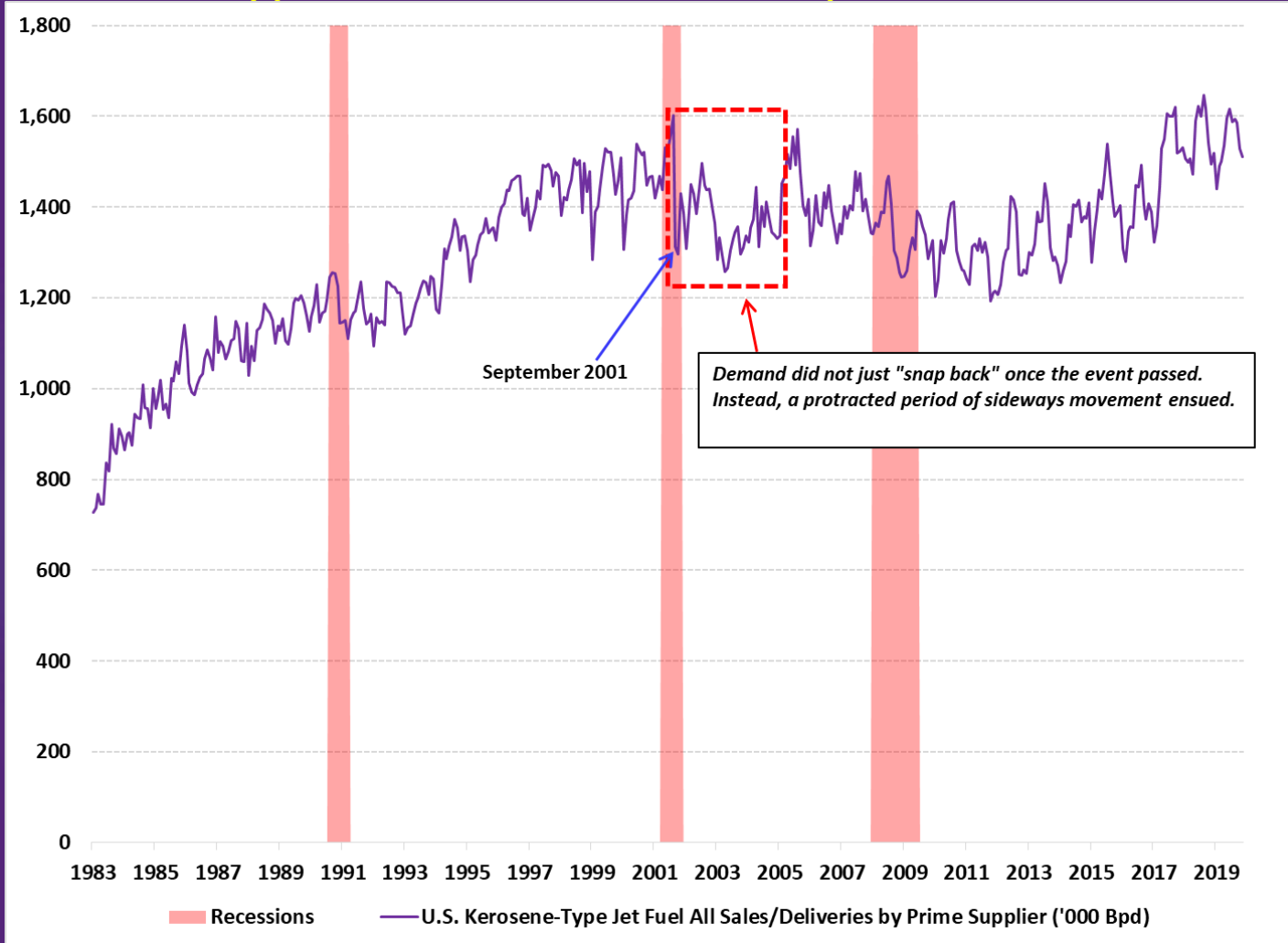
China Oil Products Demand, % Of Total by Sub-Product



- Transport-leveraged products—diesel, gasoline, and jet fuel—account for more than 45% of China's total oil consumption.
- Consumer transport-leveraged products—gasoline and jet fuel—account for 30% of oil use in China.
- Lockdowns matter—a lot. With a consumer population more numerous than any European country, and likely approaching that of the United States, under movement restrictions, demand for these transportation-focused commodities is taking a major hit.
- We don't know precisely how big the hit is yet, but for perspective Beijing and Shanghai alone consumed nearly 270 kbd of gasoline in 2017, and roughly as much diesel. (Local statistical bureaus, keywords “平均每天各种能源消费量.”). Those numbers are likely higher in 2019 and many Tier 1 and 2 cities in China could each account for 100 kbd of more of oil products consumption apiece.

Don't Expect a Rapid Consumer Energy Demand "Snap Back" Globally When Coronavirus Outbreak Wanes

U.S. Prime Supplier Jet Fuel Deliveries, '000 Bpd



Source: EIA, Author's Analysis

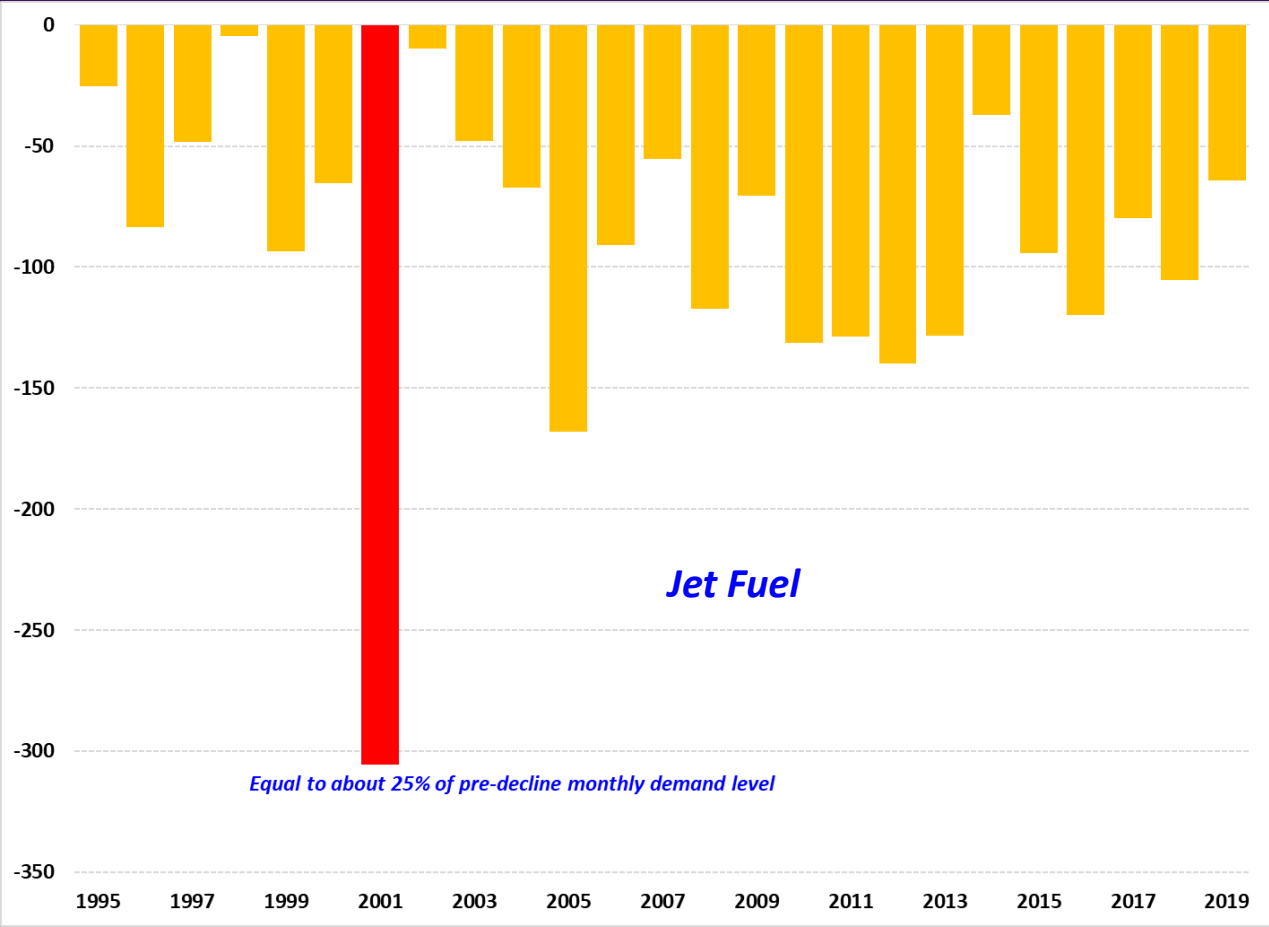
- The closest analogue to what is happening now with Covid-2019 was the 9/11 attacks and their aftermath.
- After 9/11: (1) the authorities imposed nationwide movement restrictions in response to an external shock and (2) fear lingered and helped depress air travel activity for a meaningful period of time following the tragedies.**
- But there are key differences. First, air traffic was only grounded for three days after 9/11.* China's lockdowns have been ongoing at material levels for nearly a month and have steadily expanded across the country. Second, China's lockdowns are affecting all transport activity, not just air travel. Other countries such as Italy and Norway are now also comprehensively restricting movement.

- * "Flights resume, but situation remains tense," CNN, 14 September 2001, <https://www.cnn.com/2001/TRAVEL/NEWS/09/13/faa.airports/>
- ** "Airline Travel Since 9/11," Bureau of Transportation Statistics, Issue Brief, Number 13, December 2005, https://www.bts.gov/archive/publications/special_reports_and_issue_briefs/issue_briefs/number_13/entire

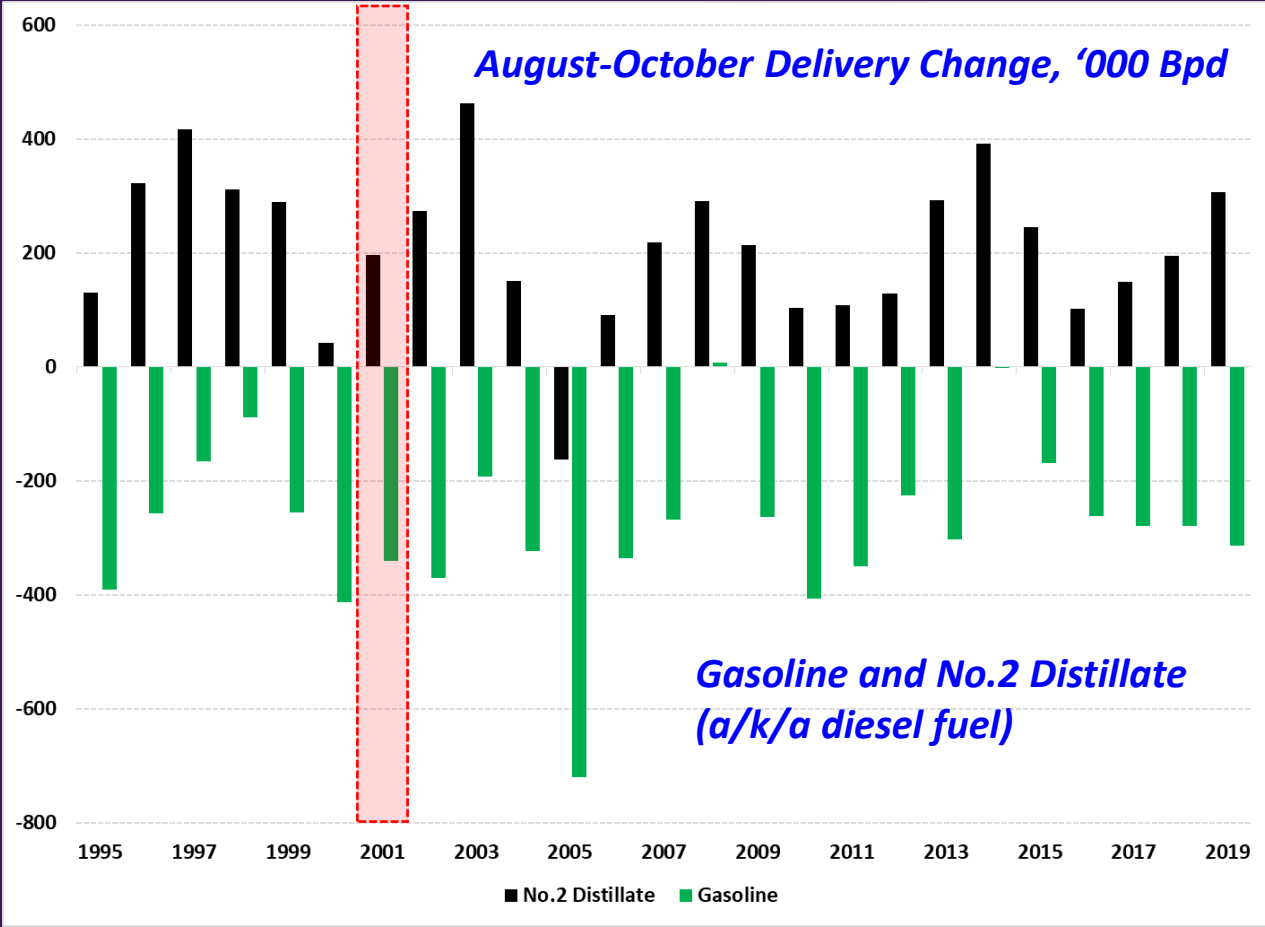
What Does a Fear-Driven Oil Demand Impact Look Like? 9/11 Analogy

9-11 Response Offers a Limited Historical Analogue For Oil Demand Impacts of a Fear-Driven Shutdown in a Major Industrial Power

Change in Jet Fuel Prime Supplier Deliveries Between August and October, '000 Bpd



Unlike jet fuel, US gasoline and diesel demand stayed within bounds of normal seasonality despite 9/11 attacks.



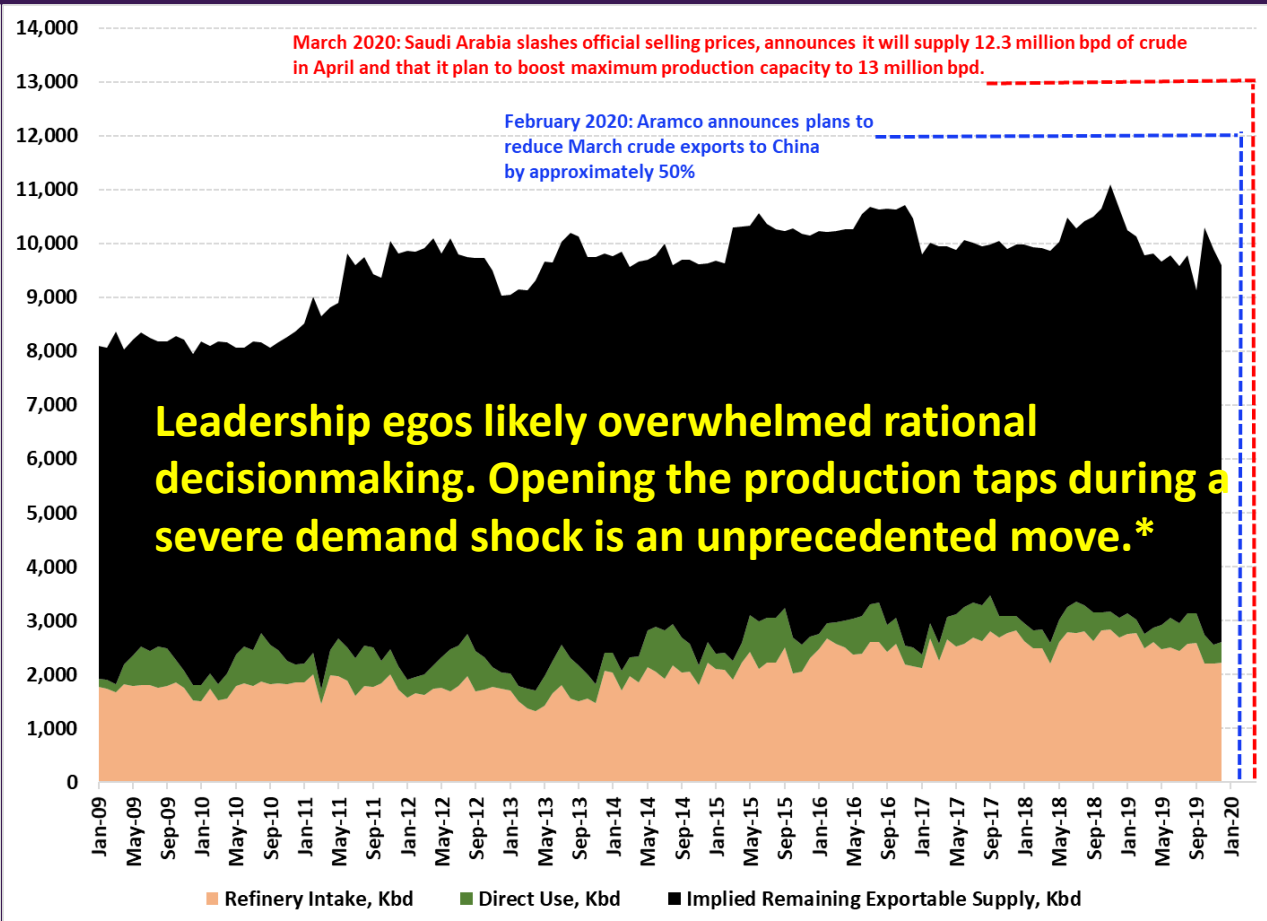
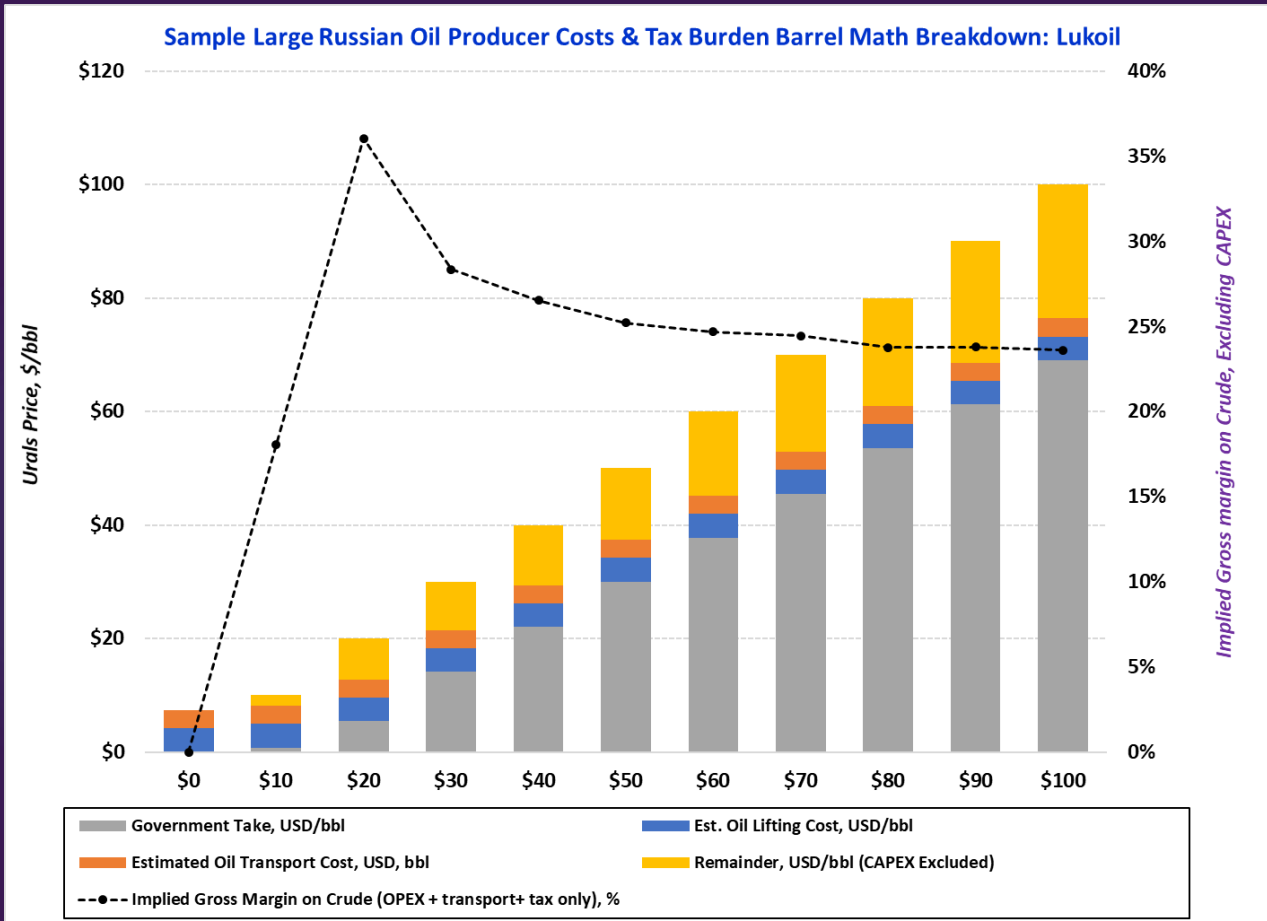
Source: EIA, Author's Analysis

Oil Price War 2020

Oil Price War: Political Egos, Russian Resilience, Saudi Social Breakevens, and US Oil Patch Fight For Survival Collide With the Covid-19 Virus

Russian Fiscal Policy Protects Producers When Prices Are Low

Saudi Policy Jump: "Cut" to "Flood" in Weeks ('000 Bpd)



Sources: Joint Organisations Data Initiative, Lukoil, Reuters, Transneft, X-Rate (RR/USD), Author's Estimates

*Private oil developers in Texas brought the East Texas Field online during the Great Depression, but by all accounts were not purposely doing so to punish other producers.

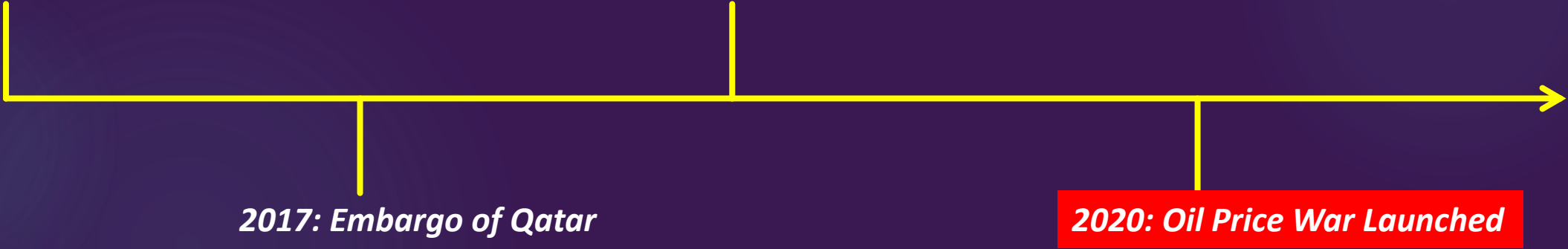
Price War Fits With Broader Recent Pattern of Saudi Arabia Taking Risks That Often Undermine Its Broader Strategic Interests

2015 Yemen War Begins

2018: Killing of Jamal Khashoggi

2017: Embargo of Qatar

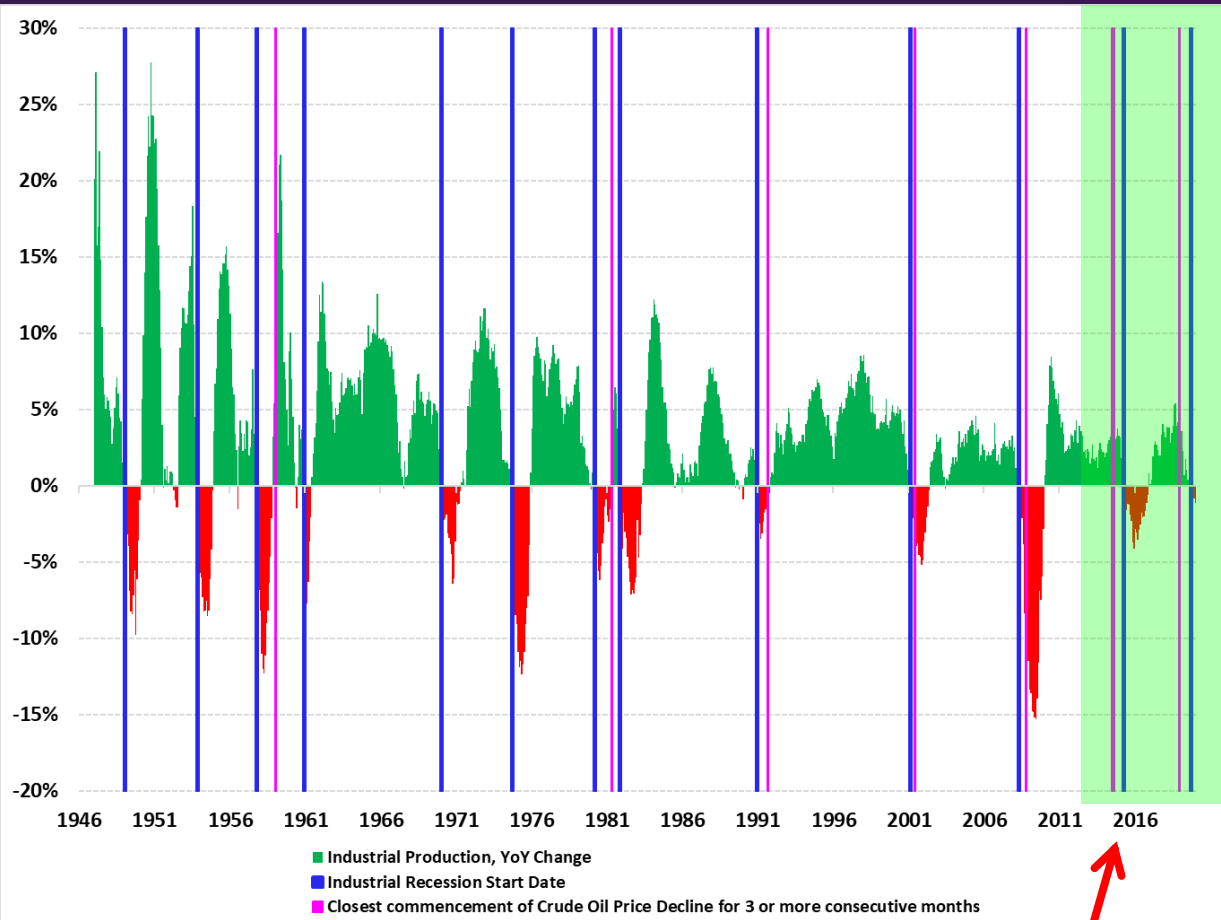
2020: Oil Price War Launched



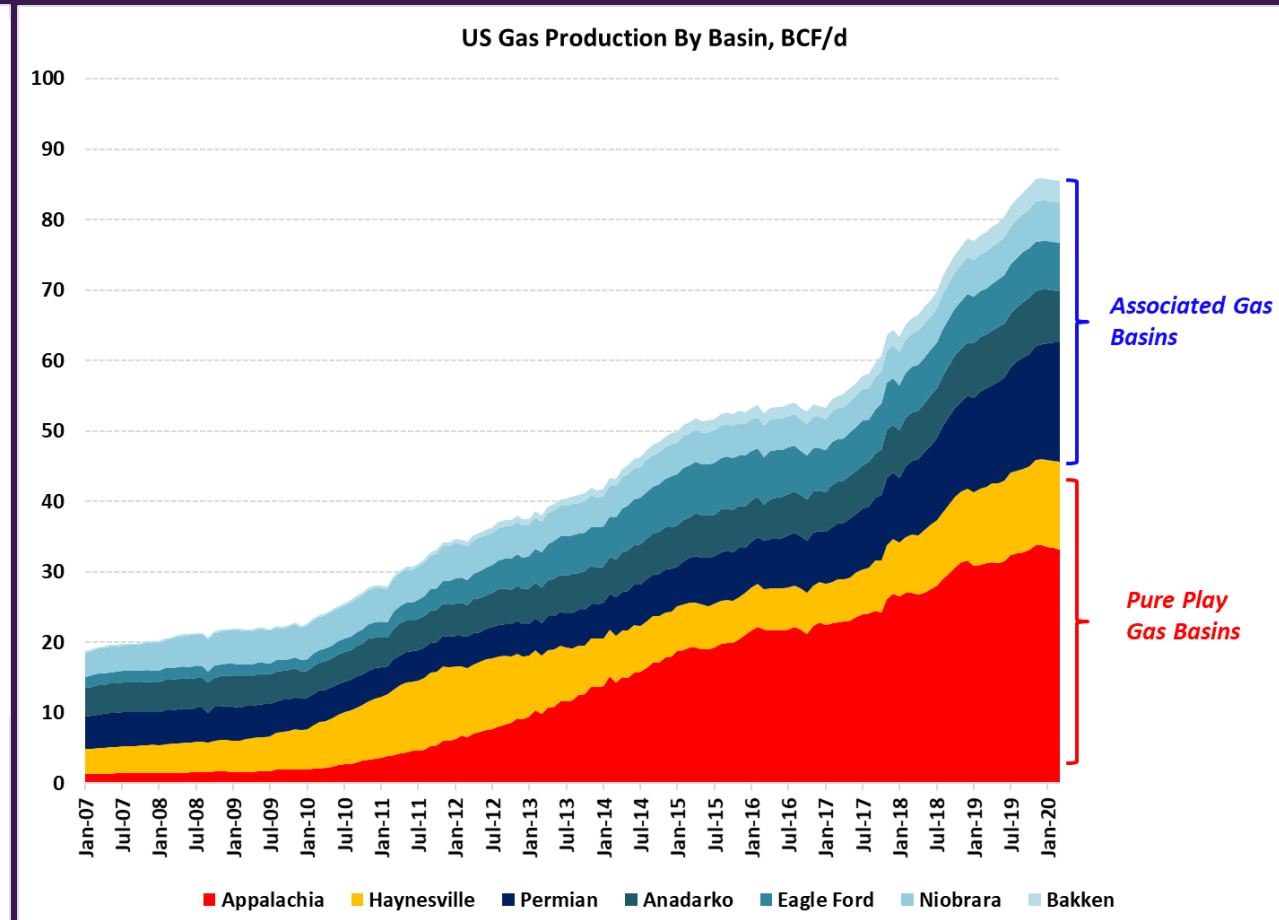
Unique US Dynamics

US Industrial Economy's Historical Relationship With Oil & Gas May Have Flipped (correlation, but not yet proven causality)

Throttling US Liquids Production Would Reduce Assoc. Gas Output and Likely Give Natgas a Supply-Side Price Boost



Source: Federal Reserve Bank of St. Louis, Author's Analysis

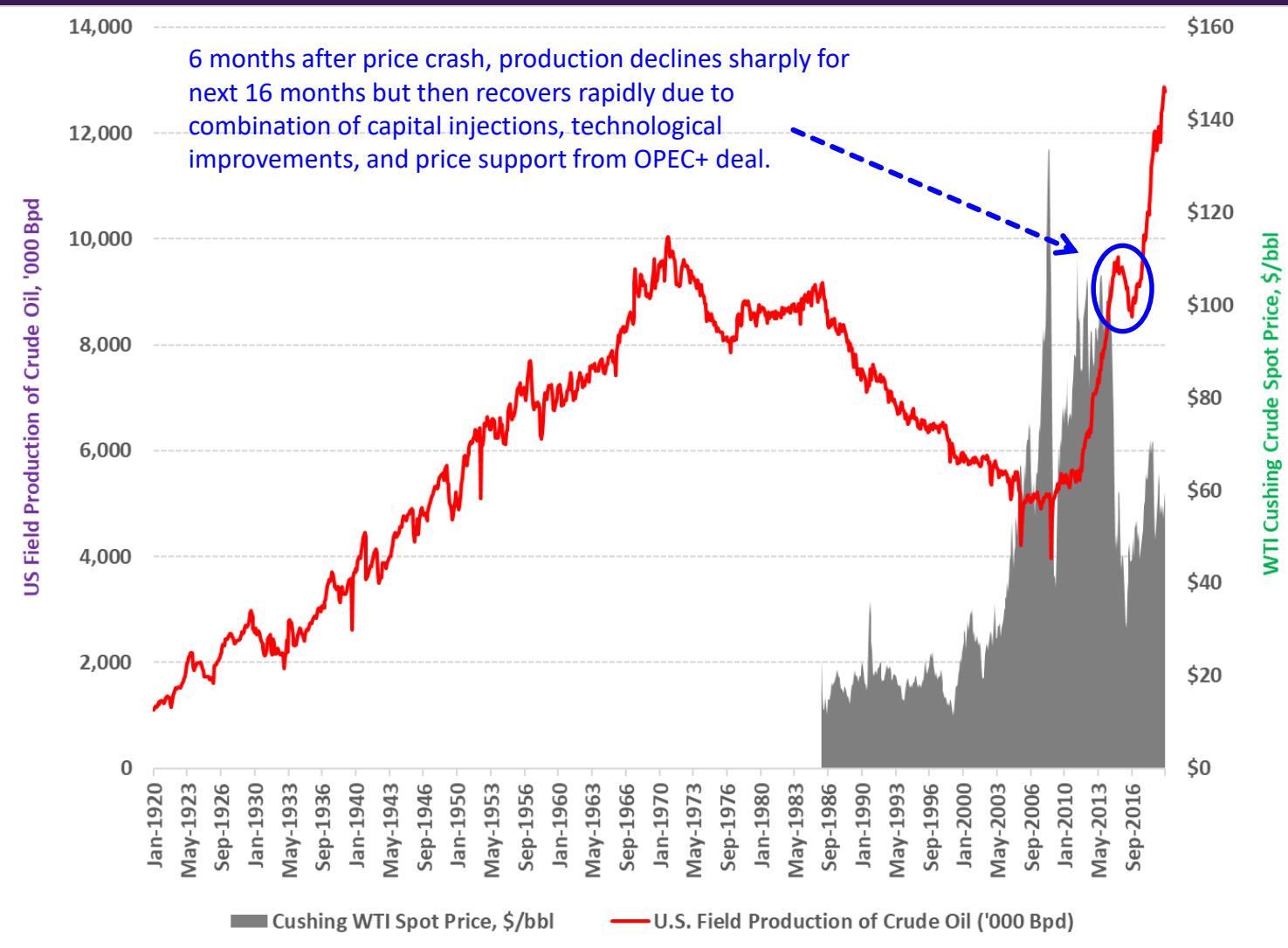


Source: EIA, Author's Analysis

Since the shale boom kicked off, oil prices have fallen before industrial recessions. This is major break from past 70 years.

US Oil Production Swings in Response to Price

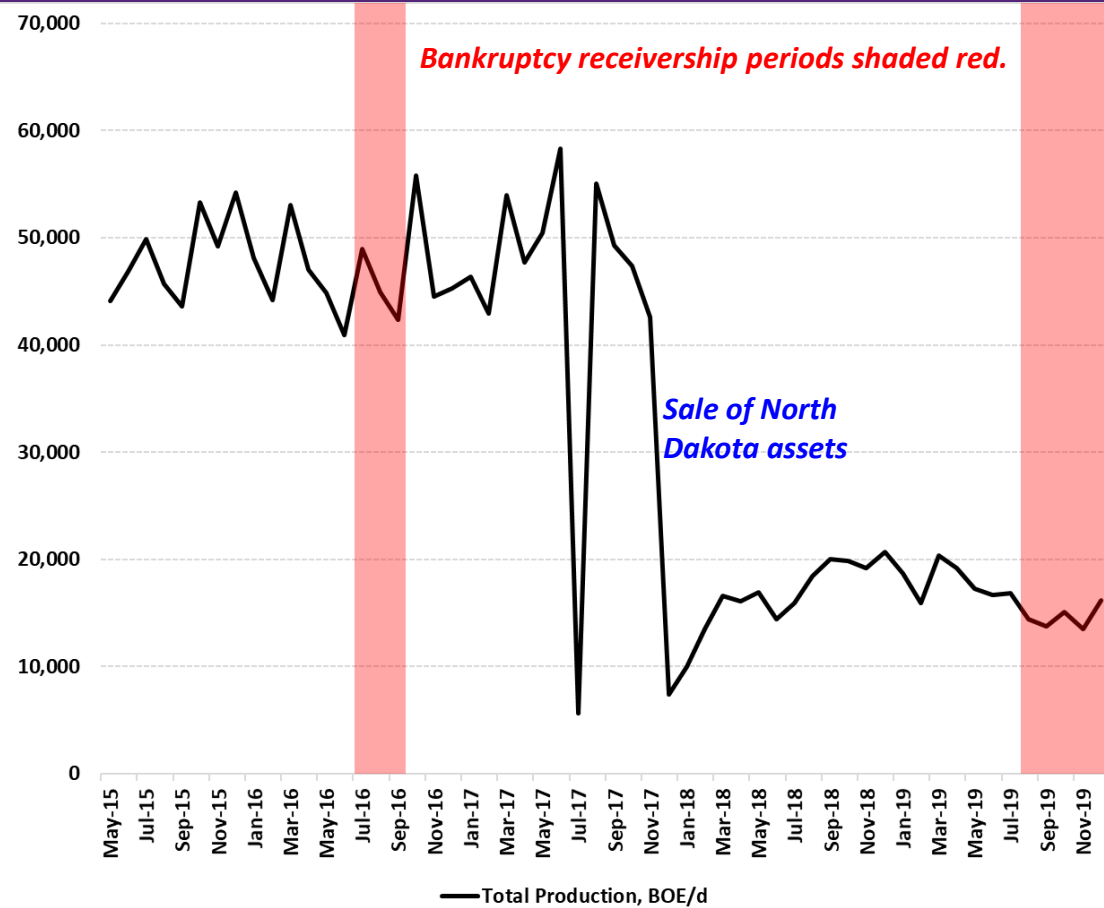
US Crude Production vs. WTI Spot Price



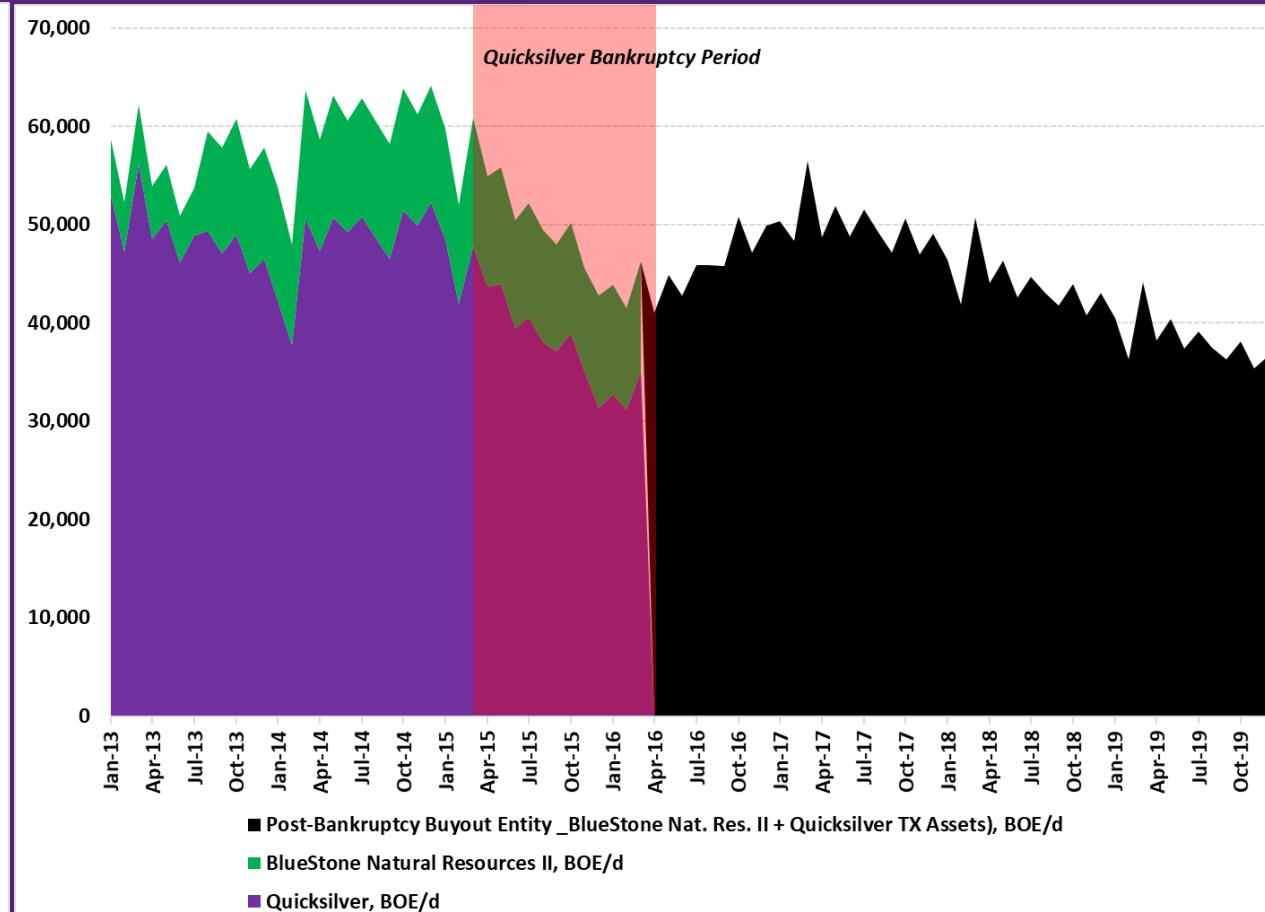
- Even if price declines take out individual companies, the assets, installed infrastructure, and underlying operational knowledge don't go away. Nor does the incentive to invest once capital holders see the potential for returns.
- The result? Price declines will temporarily suppress output, but price recovery renders resource economically accessible once again.
- The next price-driven output recovery will very likely come—although it may be a bit slower because investors will, at least for the first few quarters, demand value over volume.

Shale Bankruptcies Kill Debt and Management Jobs, Not Production

Halcon Resources Production Profile With 2 Bankruptcies



Quicksilver Resources Production Thru Bankruptcy and Sale



Sources: Haynes & Boone Oil Patch Bankruptcy Monitor, North Dakota DMR, Texas RRC, PACER, Author's Analysis

Could Current Price Crash Contribute to a Crude Supercycle Beginning in 2022-23?

Supply-Side

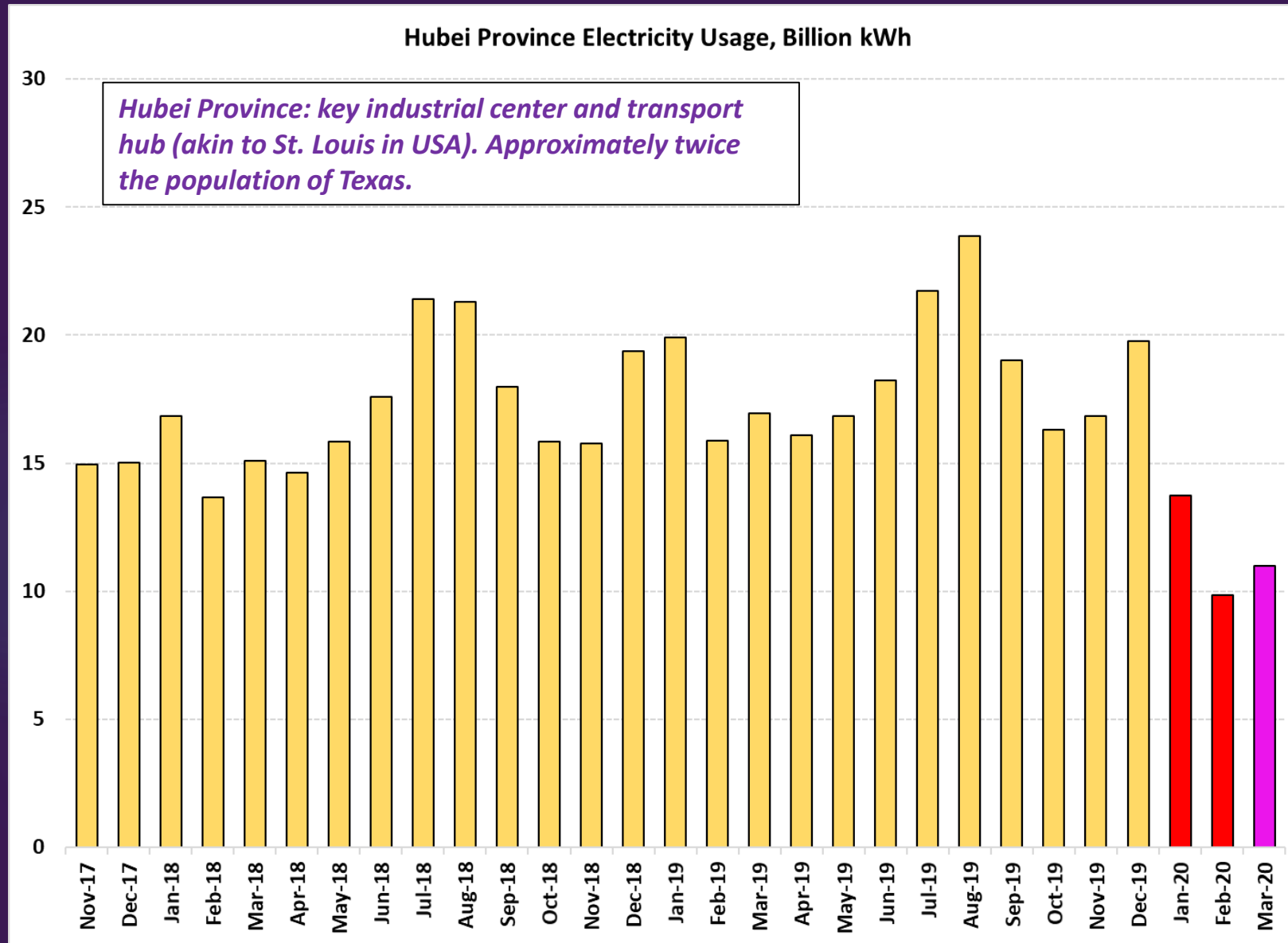
- ▶ Big Oil being increasingly pressured to invest in business lines other than black oil...
- ▶ ...Right as non-OPEC supply becomes more reliant on deepwater and onshore unconventional—both of which have higher decline rates.
- ▶ Services companies have already cut to the bone on pricing. E&Ps won't be able to get further bang for buck from keeping their on CAPEX budgets crimped and effectively forcing service sector to make up the difference through discounts.

Demand-Side

- ▶ Anti-carbon peer pressure forces publicly-listed oil supplies to change their investment patterns, but does not fundamentally shift underlying demand patterns. The world will still need oil in 2025—probably to the tune of at least 1.5 million incremental bpd beyond what we use now.
- ▶ The stage is being set for a collision in 2-3 years when the market begins to realize that EVs likely will not successfully scale in passenger vehicle markets and that they will be even less competitive in the aviation, shipping, and heavy land transport sectors. Oil will likely be more persistent than most analysts believe.

Power Impacts

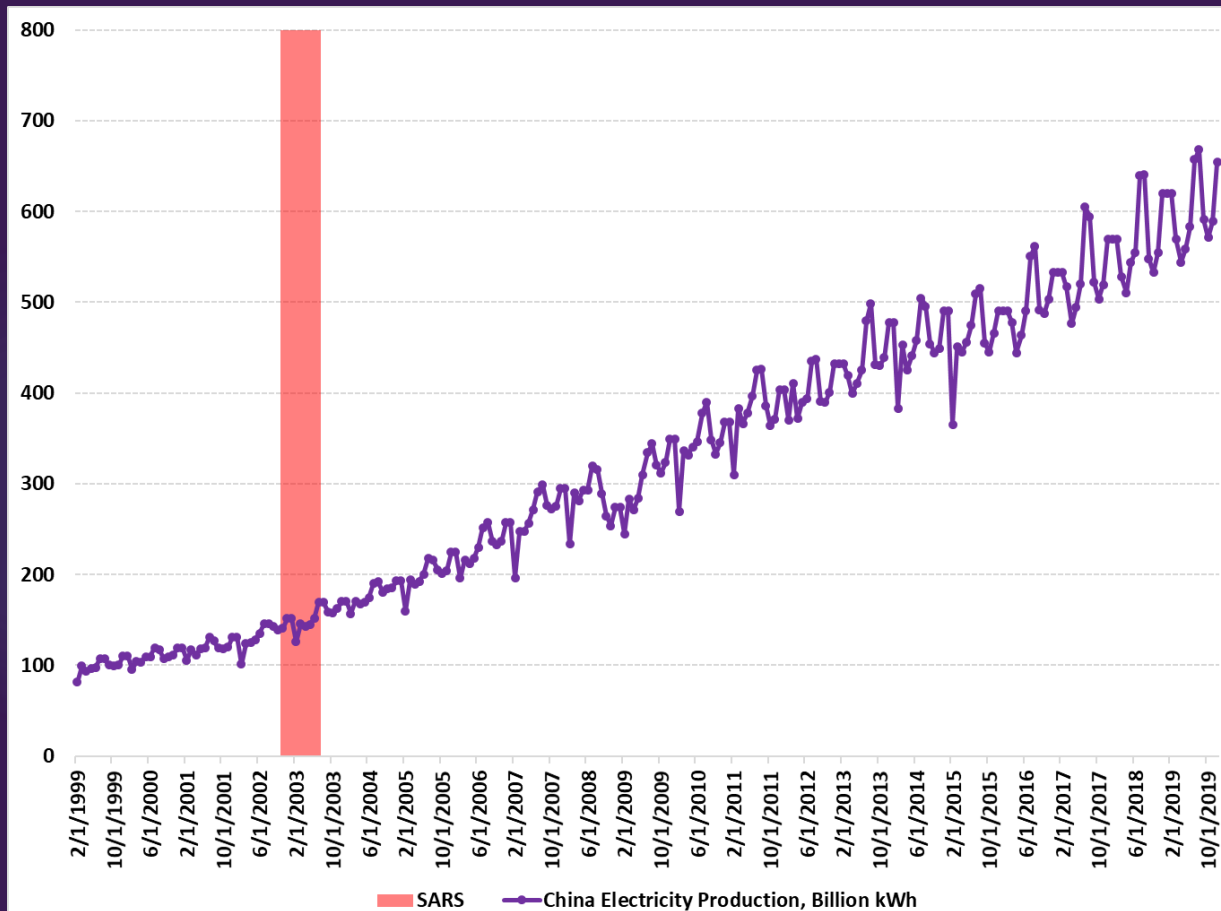
Electricity Demand in Hubei is Down Significantly



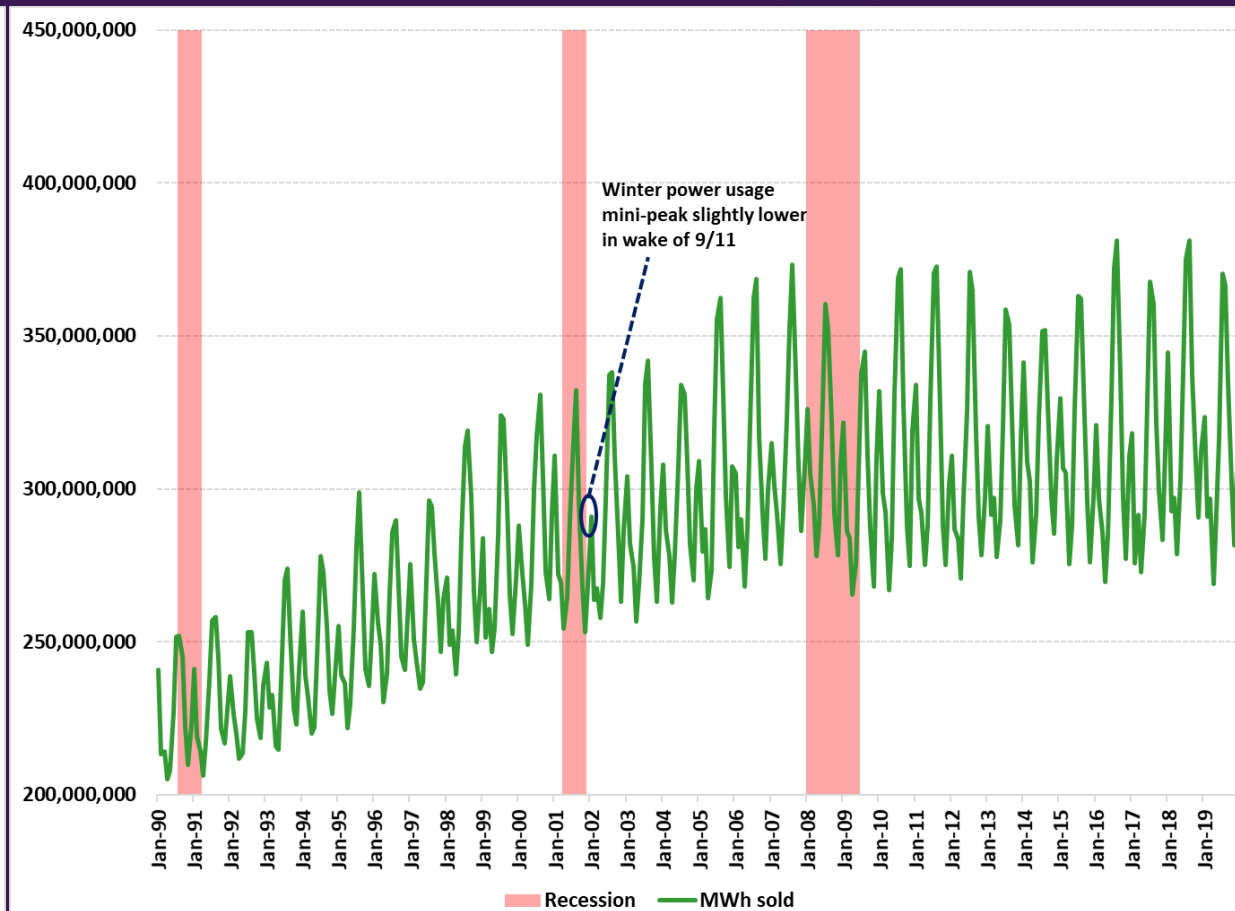
- Electricity use is a broad proxy for a range of industrial and personal activity. In a modern, industrialized society like China's, electricity consumption is akin to society's pulse, blood oxygen level, and blood sugar level all rolled into one.
- Electricity use in Hubei Province down nearly 40% year-on-year in Feb. 2020 and is on pace to decline 35% YoY in Mar. 2020.
- **City of Wuhan (Covid-19 ground zero) typically accounts for more than ¼ of Hubei's daily average provincial electricity usage.**
- In 2019, residential use accounted for about 20% of Hubei's electrical power consumption. The bulk of remaining use comes from a variety of industrial sectors, including chemicals and metallurgical enterprises.

Neither SARS (China 2003) Nor 9/11 (US 2001) Impacted Electricity Demand Like Coronavirus Has

The 2003 SARS Epidemic Did Not Materially Affect Electricity Demand in China...



...And Neither Did 9/11 in the United States in 2001

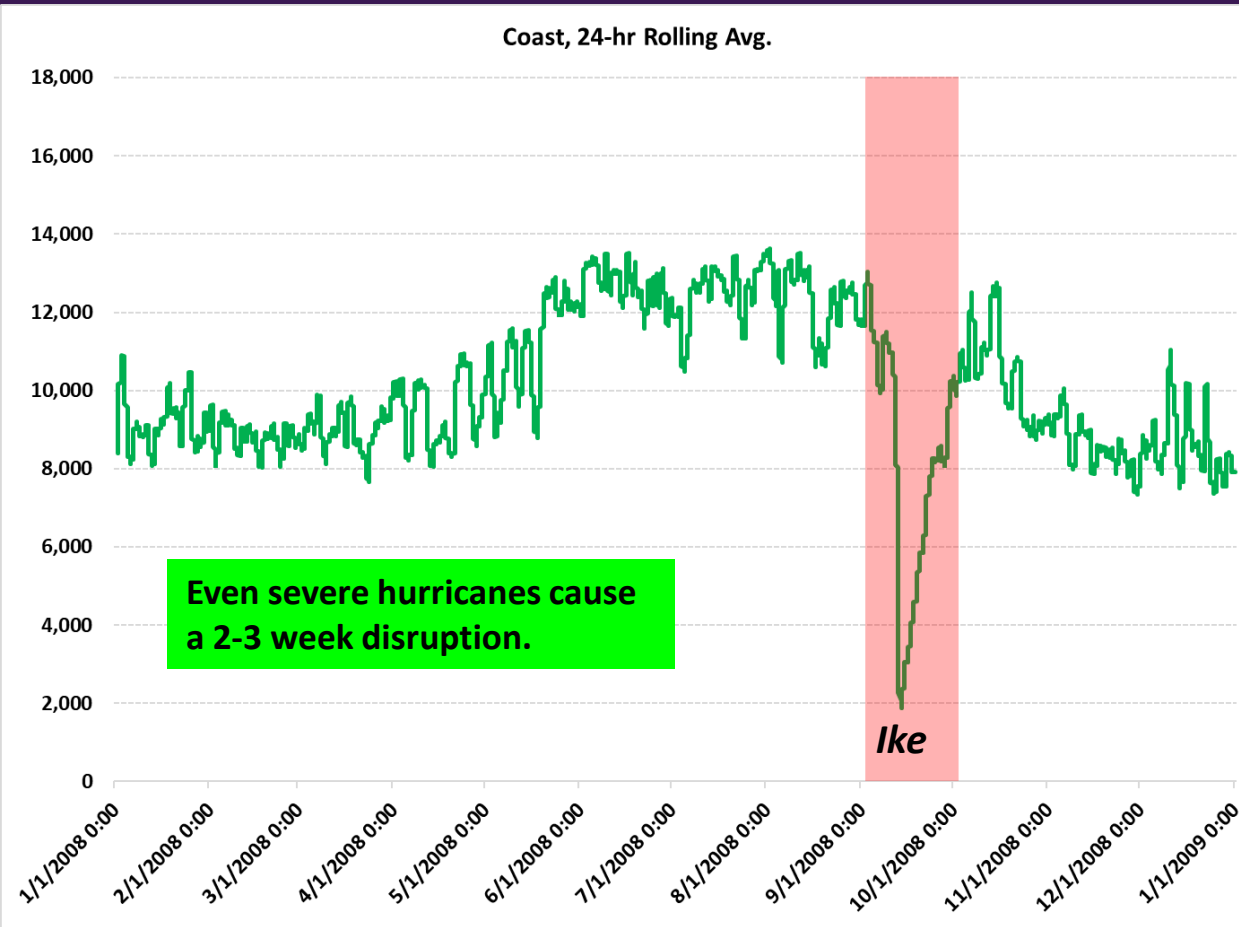


Source: National Bureau of Statistics (via Bloomberg)

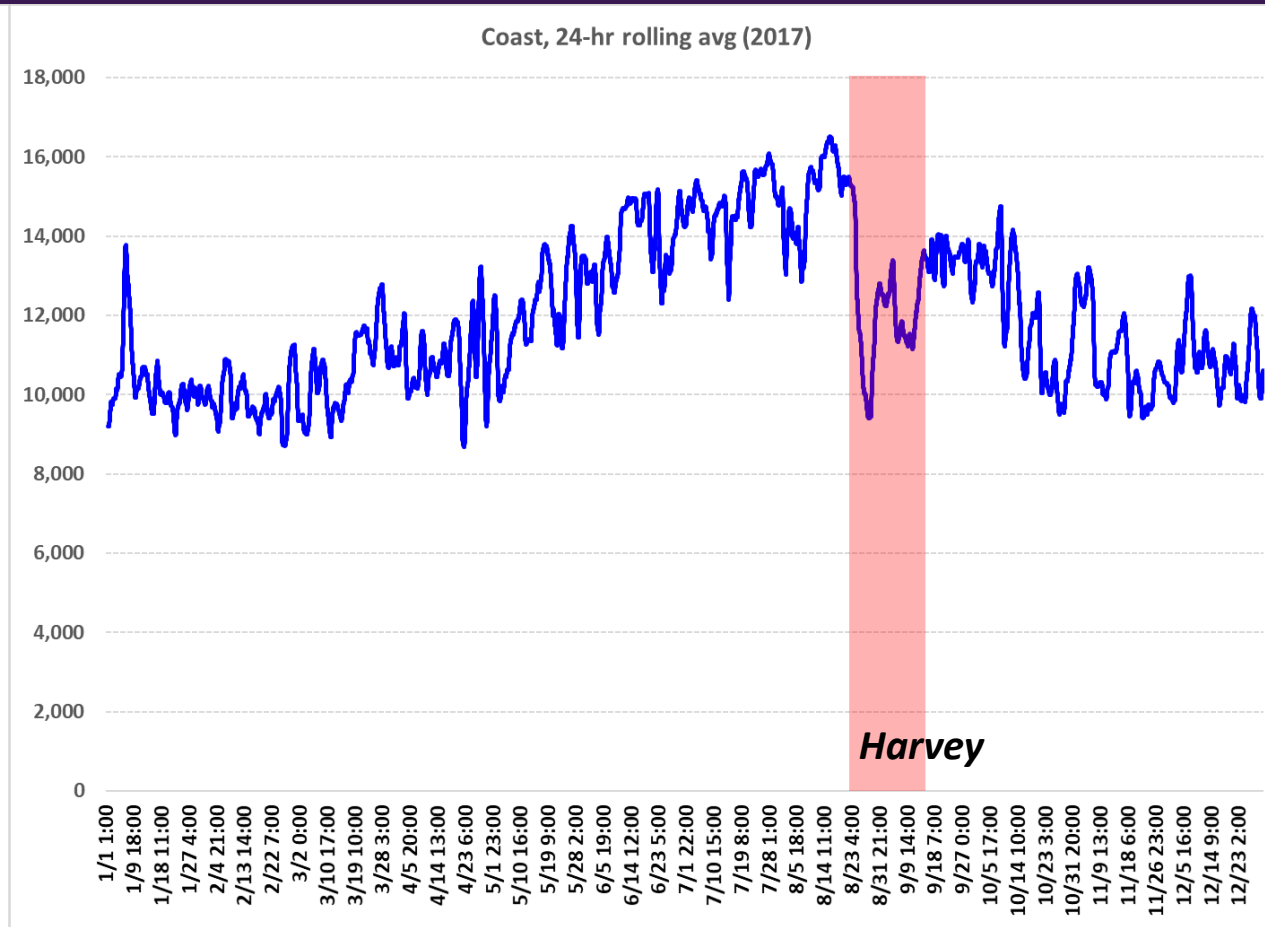
Source: EIA, Federal Reserve Bank of St. Louis (recessions), Author's Analysis

Covid-19 Power Demand Impact in Hubei Far More Severe Than Hurricanes' Impact on Electricity Use in Texas

2008 Average Hourly Load in ERCOT Coast Zone, MW (24-Hr Rolling Avg.)



2017 Average Hourly Load in ERCOT Coast Zone, MW (24-Hr Rolling Avg.)



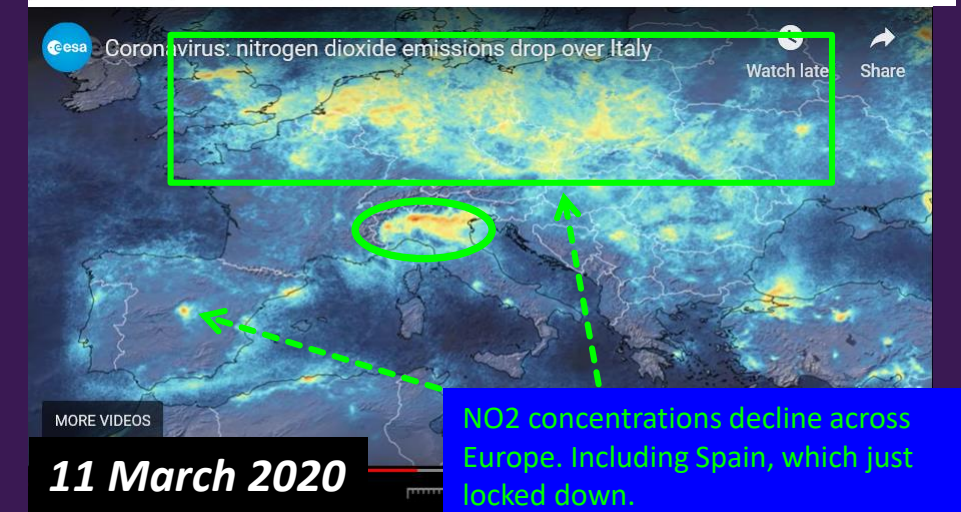
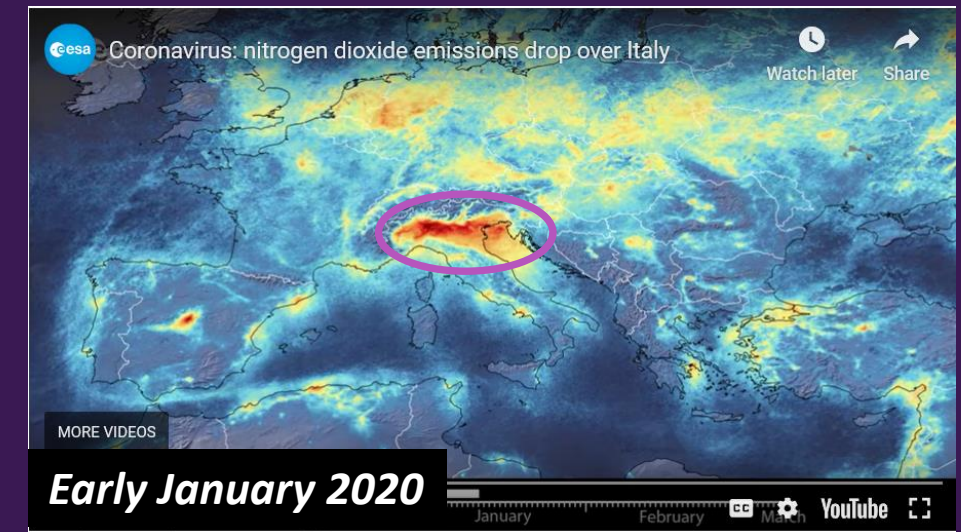
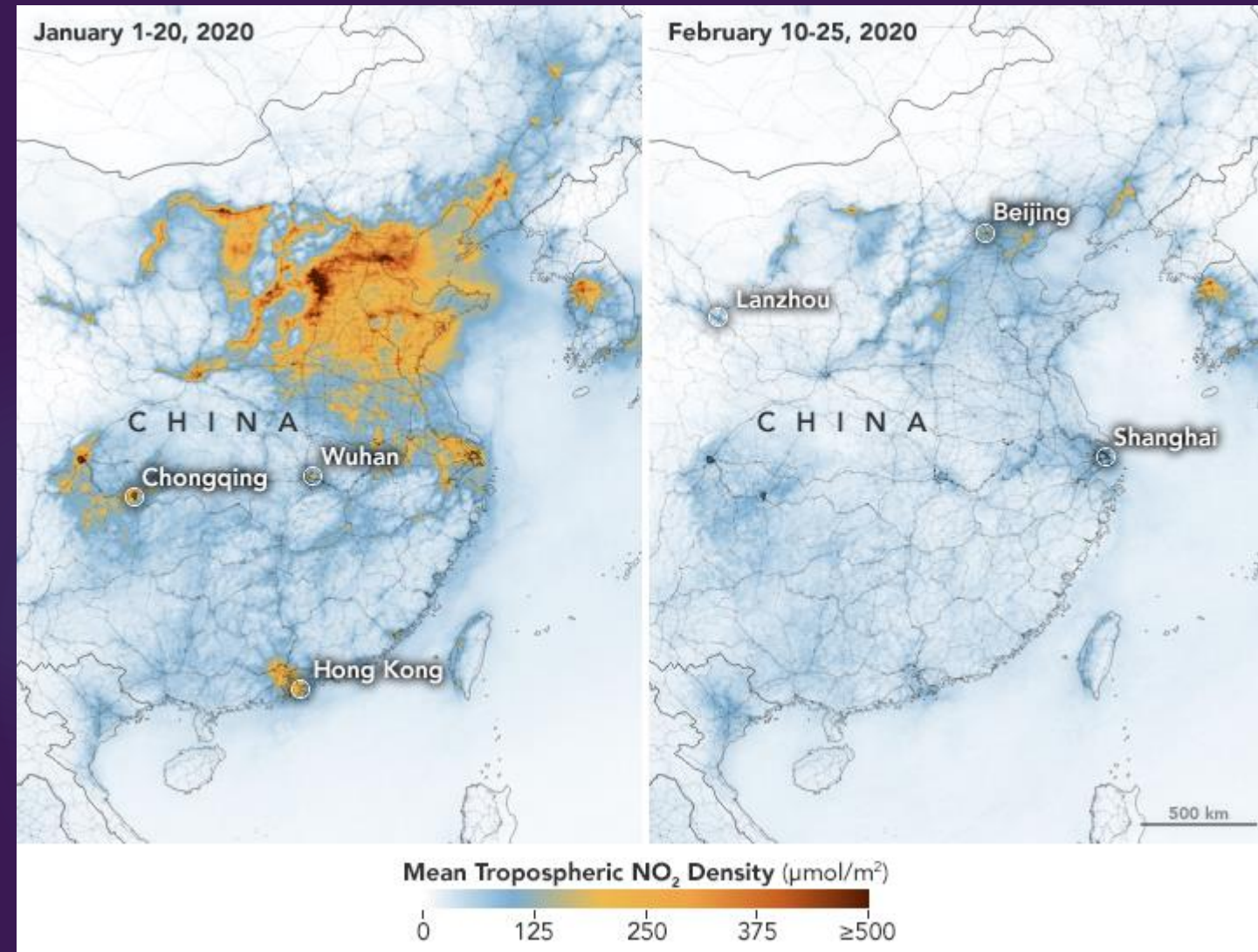
Source: ERCOT

Natural disasters' primary impact on energy demand typically lasts for weeks. Covid-19's primary impact will likely be measured in quarters.

Emissions & Environment

Covid-19's Profound Impacts on Energy Use Can Be Seen From Space

Nitrogen Dioxide Emissions Reflect Vehicle Use, Power Plant Operations, and Industrial Boilers/Heating



Source:

<https://earthobservatory.nasa.gov/blogs/earthmatters/2020/03/13/airborne-nitrogen-dioxide-decreases-over-italy/>

Source: <https://earthobservatory.nasa.gov/images/146362/airborne-nitrogen-dioxide-plummets-over-china>

Thank you!

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<https://www.linkedin.com/in/gabecollins/>

Additional Energy Security Research

- 1) Gabriel Collins, "What If China Ceases To Be The Global 'Oil Consumer of Last Resort?'" China SignPost™ (洞察中国) 100 (13 November 2019), <https://www.bakerinstitute.org/research/what-if-chinas-oil-demand-drops/>
- 2) Gabriel Collins, "Global Energy Security Implications of a US Strategic Pivot Away From The CENTCOM AOR," Baker Institute Working Presentation, 13 November 2019, Houston, TX, <https://www.bakerinstitute.org/research/global-energy-security-implications-potential-us-strategic-pivot-away-centom-aor/>
- 3) Gabriel Collins, "Shale is Not Forever: Why America Should Continue Protecting Gulf Oil and Gas Flows," The National Interest, 8 July 2019, <https://nationalinterest.org/blog/middle-east-watch/shale-not-forever-why-america-should-continue-protecting-gulf-oil-and-gas>
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