

COVID-19 and negative oil prices: Does this mean oil is free now?

James L. Smith

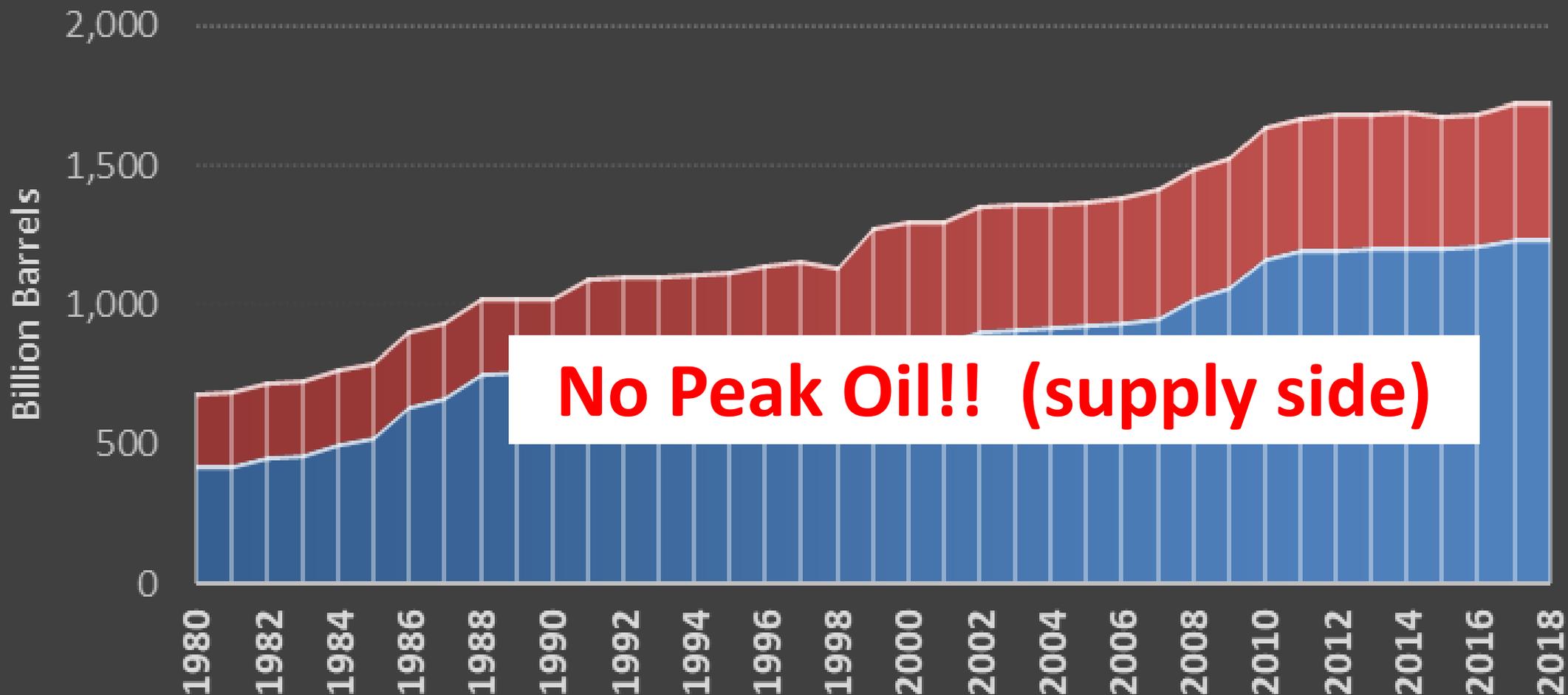
April 28, 2020

Center for Economic Sustainability and Entrepreneurial Finance

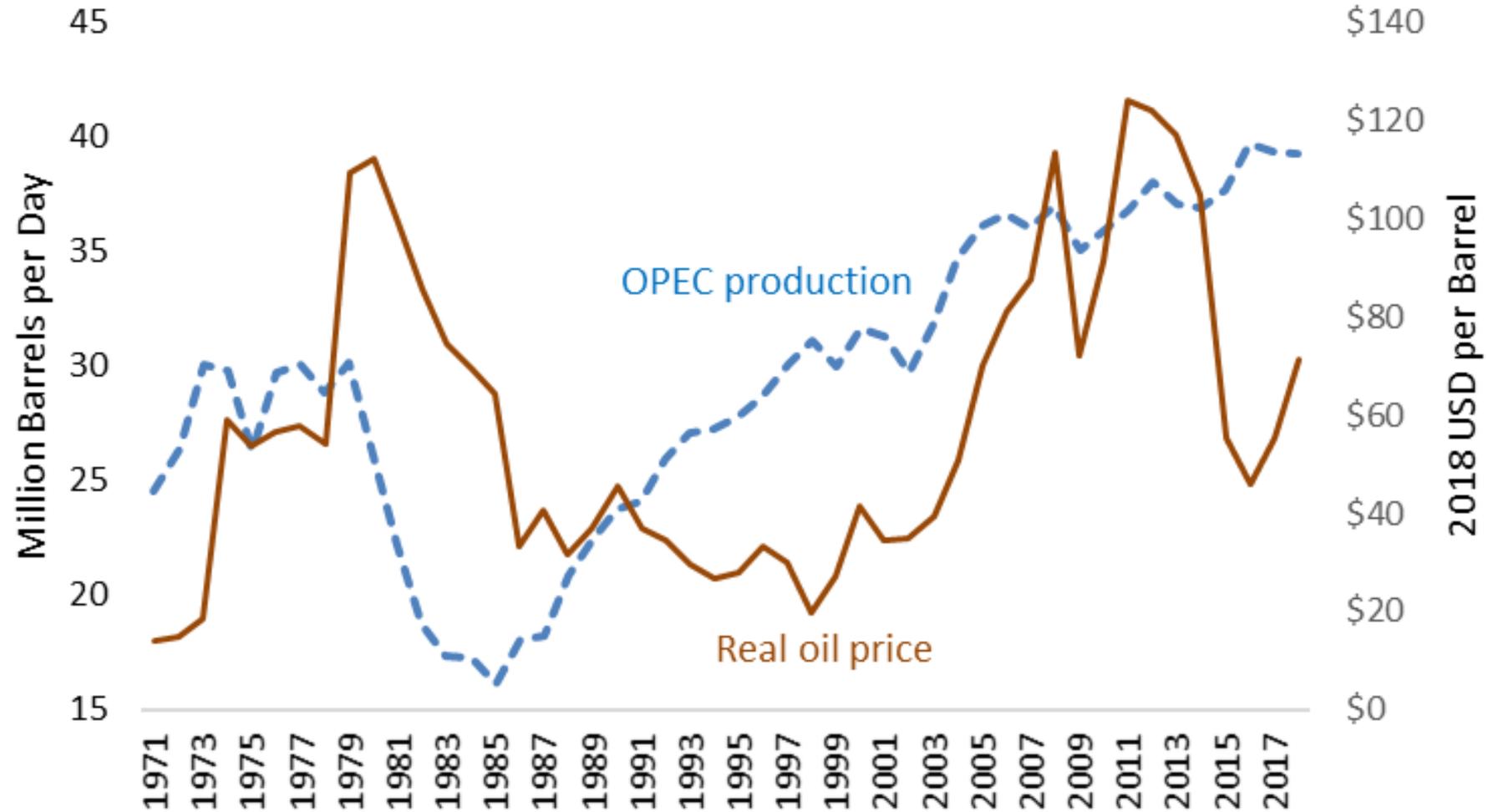
Hong Kong Polytechnic University

Global Crude Oil Reserves

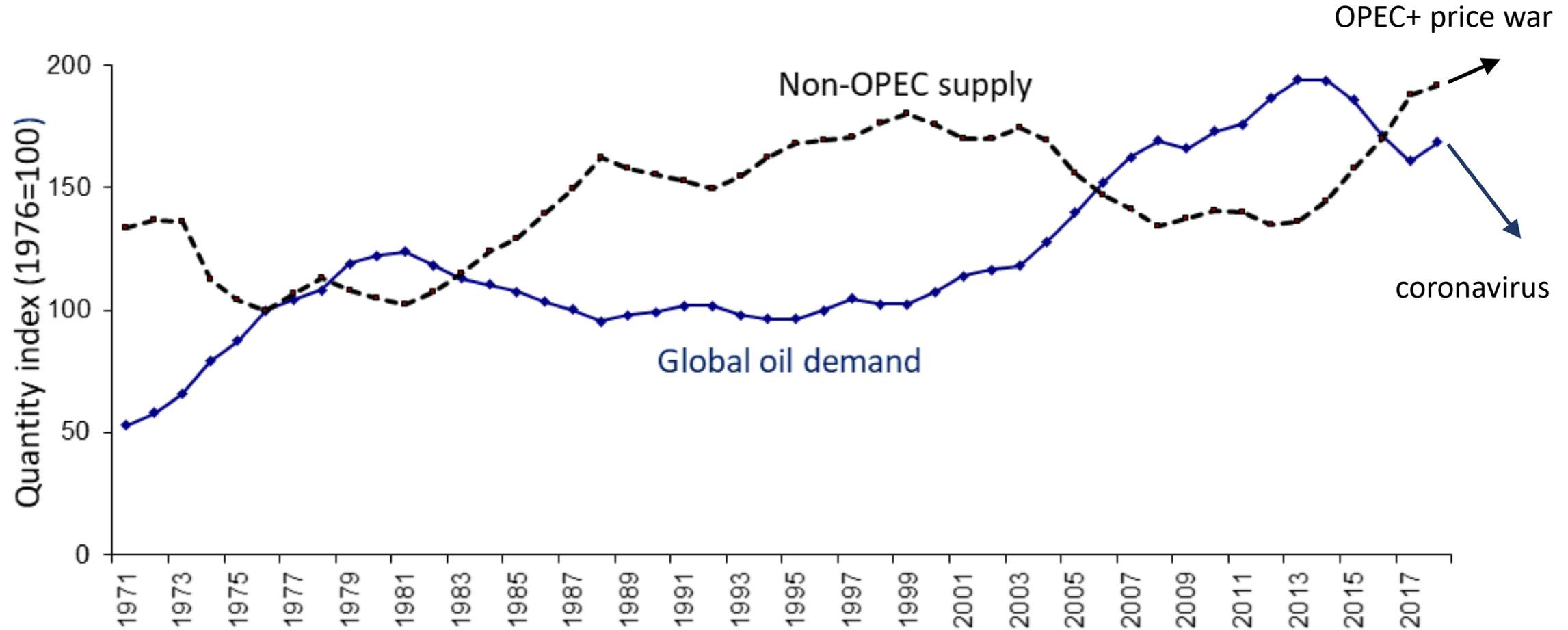
■ OPEC ■ Non-OPEC



Real Oil Price and OPEC Production



Estimated Shifts in Global Demand and Non-OPEC Supply

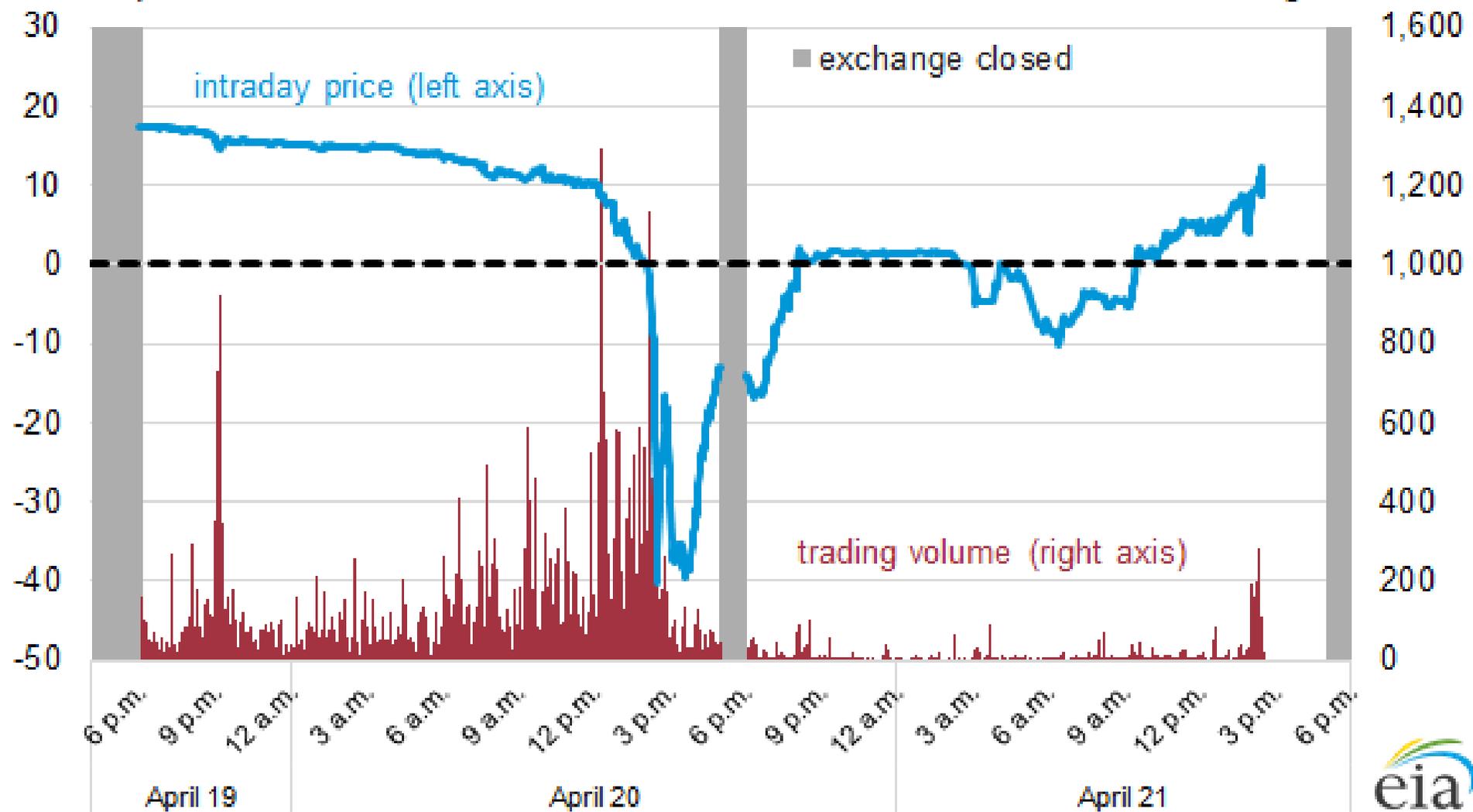


Source: *OPEC's Pursuit of Market Stability*, Pierru, Smith, and Almutairi, 2020

Figure 1. May 2020 West Texas Intermediate futures contract

dollars per barrel

trading volume



Source: U.S. Energy Information Administration based on data from CME Group and Bloomberg, L.P.



Why Did This Happen and What Does it Mean?

- Per the media:
 - Low Liquidity
 - Last Trading Day for the Contract
 - Full Storage
 - Hedged Production of US Shale Oil
- Per James Smith:
 - Coronavirus (demand destruction)
 - Full Storage
 - Saudi Tankers en route to US Gulf Coast
 - OPEC+ price war (Saudi Tankers en route to US Gulf Coast)

A Hong Kong Analogy

- This guy offers you a car, for free. It's a nice car.
- You consider the following:
 - Not much need for a car in Hong Kong, good subways, taxis & Uber
 - If you accept the car, you will have to rent a place to park it. Expensive in HK.
- The offer was tempting, but you turn it down. Car is liability, not asset.
- This guy will have to pay you to take the car (negative price).
- And don't think you should take it to resell it. You would have to pay the next person to accept it and relieve you of the parking expense.

A Hong Kong Analogy

- This guy offers you a car, for free. It's a nice car.
- You consider the following:
 - Not much need for a car in Hong Kong. Buses, taxis & Uber
 - If you accept the car, you will have to pay for parking. Expensive in HK.
- The offer was tempting, but you decided not to take it down. Car is liability, not asset.
- This guy will offer you to take the car (negative price).
- And don't think you should take it to resell it. You would have to pay the next person to accept it and relieve you of the parking expense.

The car is not free.

As Applied to Crude Oil

- Feb 14: OPEC+ price war leads Saudi to offer discounted oil to US Gulf Coast refiners. US Gulf Coast refiners seize the opportunity and buy a lot. (20 tankers)
- March 13: US declares national emergency, oil demand plummets.
- Refiners can't sell refined products, so they reduce operations. Instead of a drawdown of oil inventories, they fill up--unexpectedly.
- Where will the refiners put the oil arriving in those 20 Saudi tankers?
- Without storage, the oil will be left on board the tankers, having to pay the daily tanker rate for floating storage. (11% of fleet, currently)

As Applied to Crude Oil

- Feb 14: OPEC+ price war leads Saudi to ... US
Gulf Coast refiners. US ... and
buy ...
- Mar ... ts.
- Refin ... ad
of dr ...
- When ... on arriving in those 20 Saudi tankers?
- Without storage, the oil will be left on board the tankers, having to pay the daily tanker rate for floating storage. (11% of fleet, currently)

So, refiner is willing to pay someone, up to the cost of floating storage, to take the crude oil off their hands (negative price).

Applied to Crude Oil

Cost of floating storage (VLCC)

$$\begin{aligned} & \$300,000 \text{ per day} \times 30 \text{ days per month} \div 2,000,000 \text{ barrels} \\ & = \$4.50 \text{ per barrel per month.} \end{aligned}$$

as of March 18, 2020

cost of floating storage is 50% of their nameplate capacity

- Feb
- Gu
- bu
- Mar
- Refil
- of dr
- When
- Without storage, the oil will be left on board the tankers, having to pay the daily tanker rate for floating storage. (11% of fleet, currently)

Riddle:

- Q: If a positive price is the amount producers are paid to produce their oil, then what is a negative price?
- A: A negative price is the amount producers are paid to not produce their oil.

... or, the amount consumers are paid to consume the oil!

If any oil produced must be put in storage (due to lack of demand), the negative price should equal the marginal cost of storage.

Negative Prices and Hedging

- Much of US shale oil production is hedged.
 - One-third of North American oil production is hedged at \$52/barrel (IHS).
 - Hess hedged 80% of production at \$55/barrel.
 - Laredo Petroleum (Oklahoma) and SM Energy (Colorado) hedged at \$59 and \$58 per barrel.
 - Mexico is hedged at \$49/barrel
 - Cairn Energy (North Sea) is hedged at \$62/barrel (Brent).
 - Tullow Oil (Africa) is hedged at \$57/barrel.
- How do negative prices impact these hedgers? Will they shut in production or go ahead and produce at low wellhead prices?

Negative Prices and Hedging

- Much of US shale oil production is hedged
 - One-third of North American production is hedged
 - Hess hedged 100% of its production (Brent).

**Probably shut in production; the hedges pay off anyway.
Hedging position is relevant for bankruptcy analysis, but
irrelevant for market equilibrium price.**

107/barrel.

Will negative prices impact these hedgers? Will they shut in production or go ahead and produce at low wellhead prices?

Conclusion

- Yes, negative prices are uncommon.
- Uncommon because the economy usually produces goods that consumers want to purchase.
- And, demand shifts usually proceed slowly, giving producers time to shift supplies to match consumer demand.
- But, when “goods” become “bads,” we become willing to pay for their disposal.

Final Riddle:

- Q: What item in the global economy currently carries the largest negative price?
- A: The novel coronavirus!