



ICE Brent vs. NYMEX WTI

Understanding the Differences

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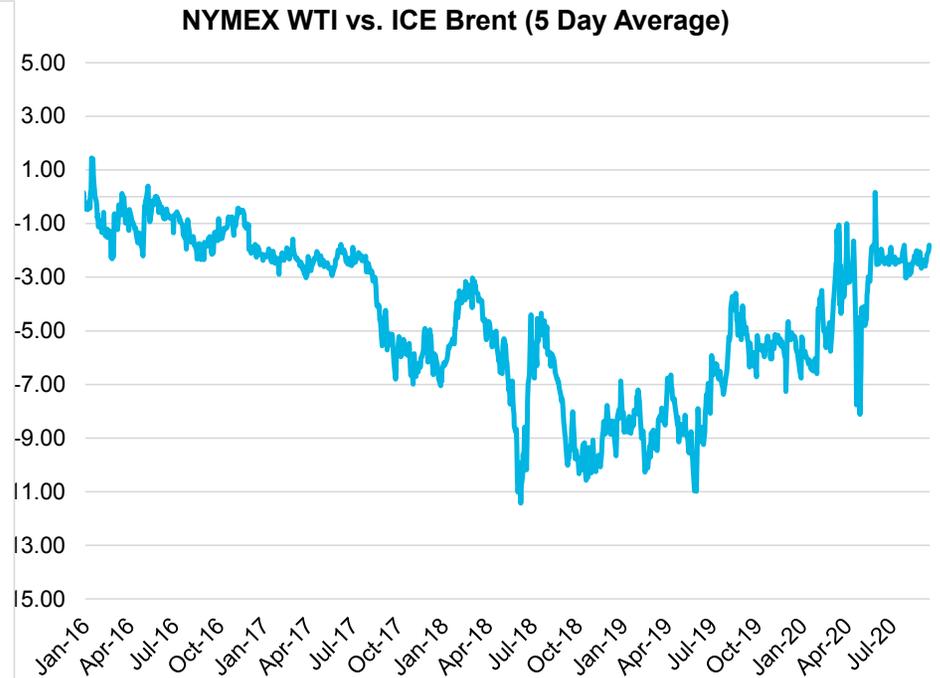
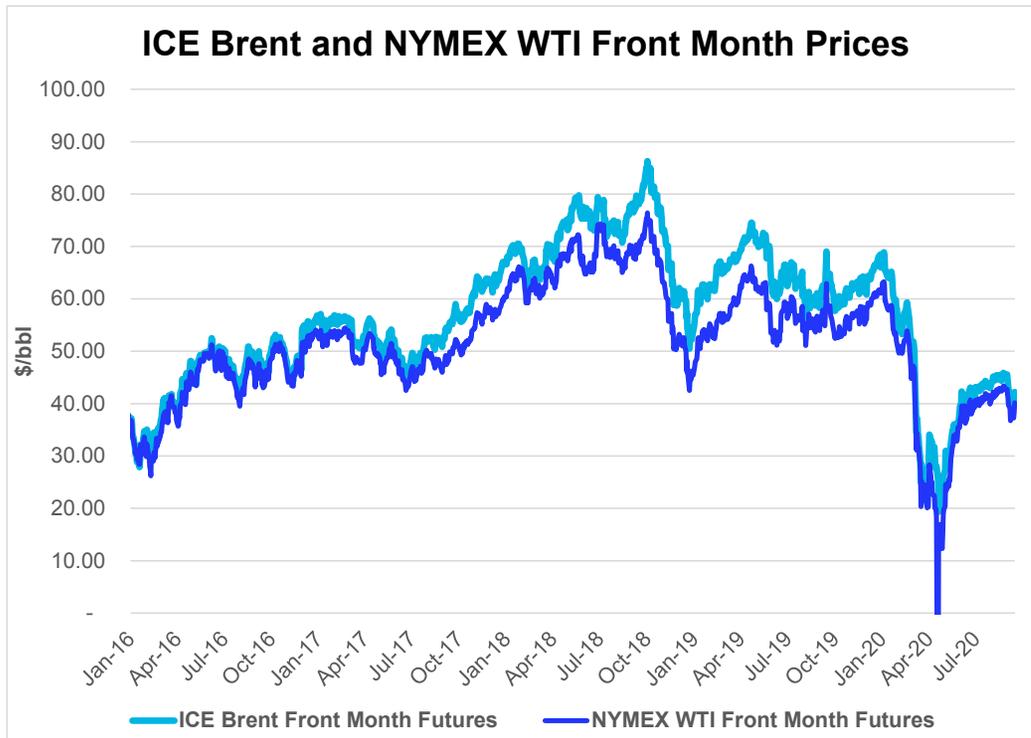


Transforming global markets

Today's topics

- What are the differences between ICE Brent and NYMEX WTI?
- For both crudes:
 - General information
 - How does the futures contract work?
 - What are the physical storage constraints?
- What are the market and price implications of these differences?
- US Gulf Coast

ICE Brent and NYMEX WTI Futures: Prices

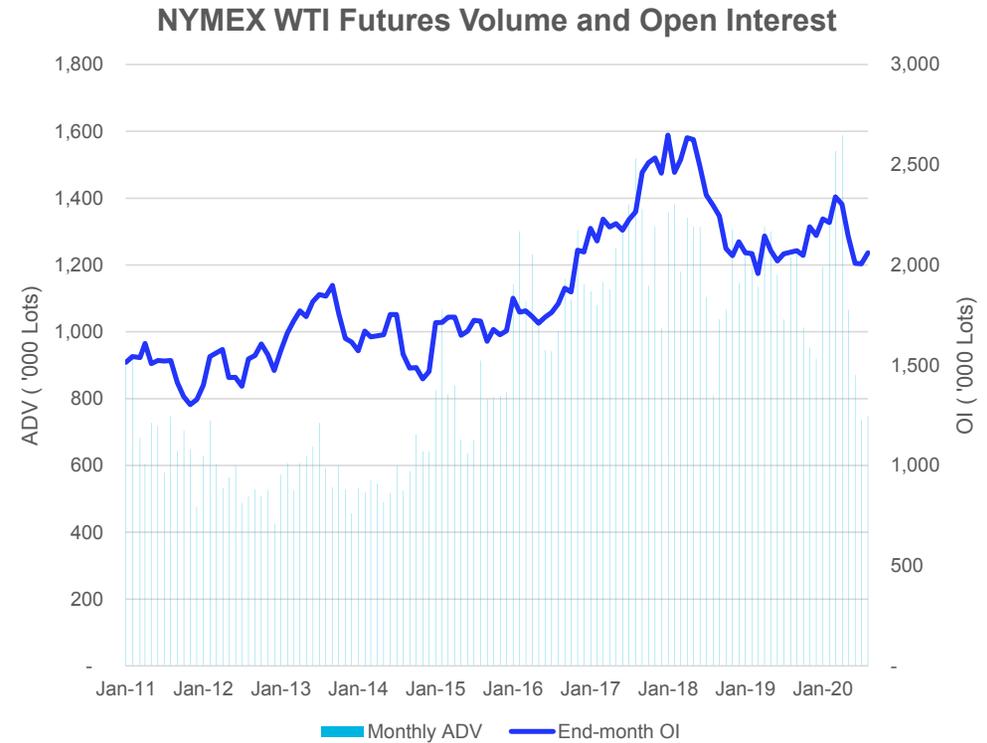
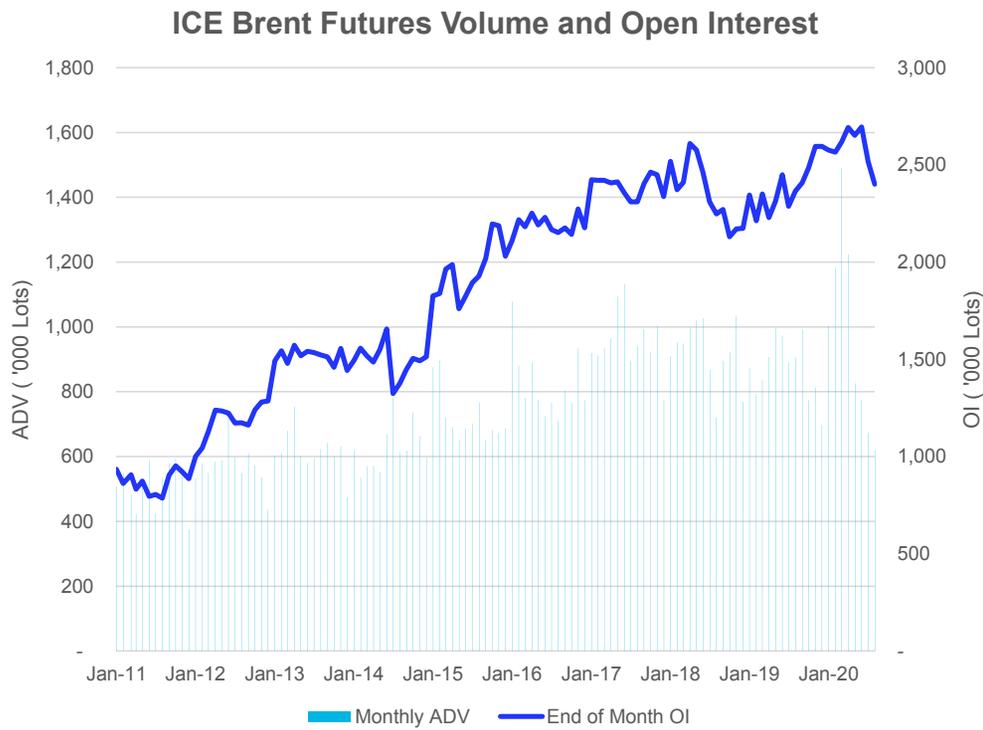


Source: ICE & CME

- April 20, 2020 closing prices: May NYMEX WTI -\$37.63, June ICE Brent \$25.57



ICE Brent and NYMEX WTI Futures: Volume and Open Interest



Source: ICE & CME



ICE Brent Crude

The global benchmark

About Brent crude

Waterborne and global

- A **basket of five crudes**, comprised of Brent, Forties, Oseberg, Ekofisk, and Troll (BFOET)
- Brent is a **waterborne** crude.
- It can be **shipped and stored globally**, either on land or in floating storage.
- Brent reflects **global oil market fundamentals** and the global economy.
- Over **75% of the world's traded (i.e., exported) crude** is priced relative to Brent.
- Brent has **much more flexibility** than WTI in terms of **logistics and storage**, so it is **less prone to negative pricing**.

Storage constraints for Brent

Greater logistics and storage flexibility relative to WTI.

Less prone to negative pricing.

- Global crude storage at end-April 2020 (onshore and floating)
 - Capacity 6.7 Billion bbls
 - Working capacity 5.0-5.7 Billion bbls
 - Crude stocks 4.6 Billion bbls (86% of working capacity)
 - Spare capacity remaining 750 Million bbls
- Floating storage at end-April 2020
 - Stored at sea 120-125 Million bbls
 - Available 130-155 Million bbls

How the ICE Brent futures contract works

The option – but not the obligation – to take physical delivery

- A deliverable contract based on Exchange for Physical (EFP) delivery, with an option to cash settle against the ICE Brent Index.
- Market participants have the option – but not the obligation – of taking physical delivery by using EFP mechanism (a swap of a futures position for a physical position) .
- On contract expiry, ICE Brent futures converges with the physical Brent market through the ICE Brent Index. The Index represents the average price of BFOET in the physical market in the relevant delivery month.
- The EFP mechanism, together with the ICE Brent Index, ensures that the futures market remains linked with the physical Brent market.
- **What's the bottom line?**

NYMEX WTI

The regional crude

About WTI crude

Landlocked and regional

- WTI (West Texas Intermediate) is a **landlocked** crude.
- WTI reflects oil market fundamentals in the **midcontinent region** of the US
- WTI has **logistics and storage constraints** at a very specific location: Cushing, Oklahoma
- **Limited pipeline capacity** to transport crude in and out of Cushing
- **Limited crude storage capacity** at Cushing

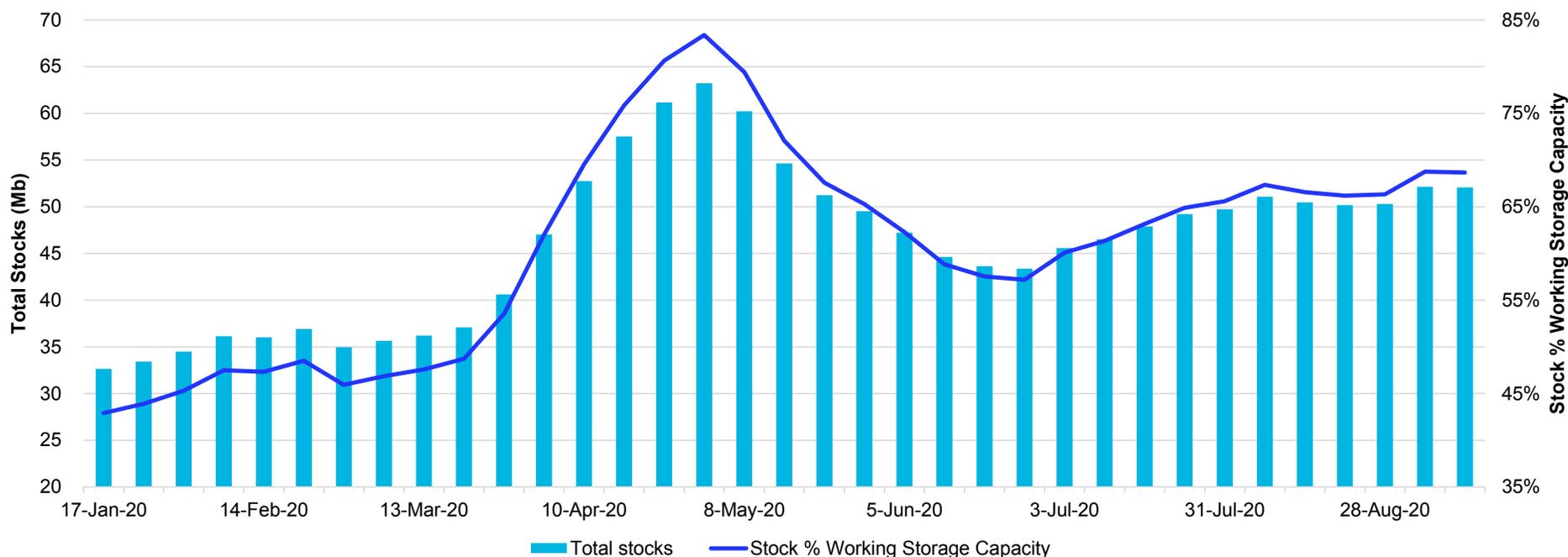
How the NYMEX WTI futures contract works

Physically deliverable at Cushing.

- Physically deliverable at Cushing.
- On contract expiry, a participant with an open long position must accept delivery of physical WTI crude. A participant with an open short position must make delivery of physical WTI crude.
- Contract expiry usually 3 business days prior to the 25th calendar day of the month before delivery (adjusted earlier if 25th is not a business day). Physical delivery made between first and last day of the delivery month.
- For example, the May 2020 contract expired on April 21, 2020. Physical delivery had to be made between May 1 and May 31, 2020.
- Relatively short time-frame between expiry and physical delivery can contribute to extreme price movements.

Storage Constraints for WTI: Cushing Stocks vs. % Working Storage Capacity

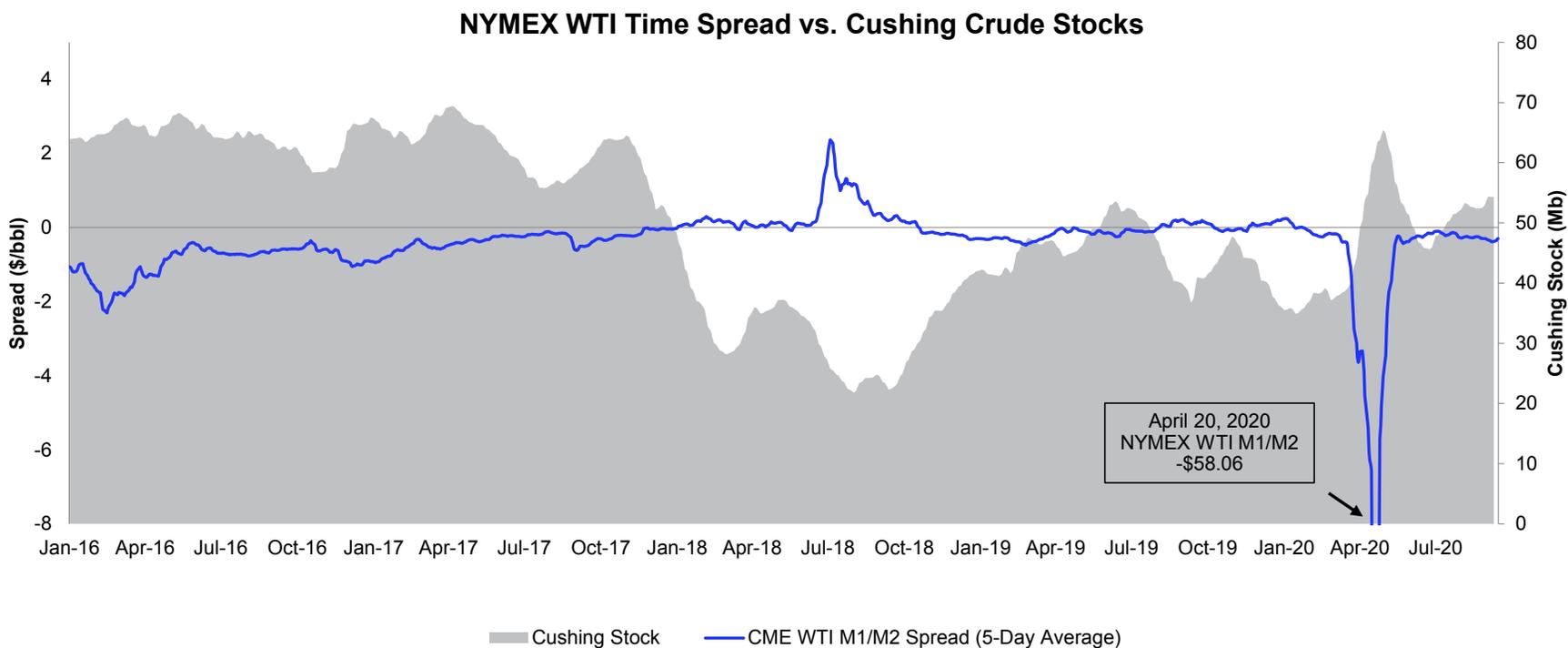
Cushing Crude Stocks and % Working Storage Capacity



Source: US Energy Information Administration

- Working storage capacity at Cushing is 75.8 Mb.
- At the recent peak on May 1, crude stocks were 63.2 Mb (after adjusting for pipeline fill). This was 83% of working capacity, leaving only 12.6 Mb spare. In addition, all spare capacity was reportedly leased, so none was available.

Storage Constraints for WTI: Cushing Stocks vs. Time Spreads



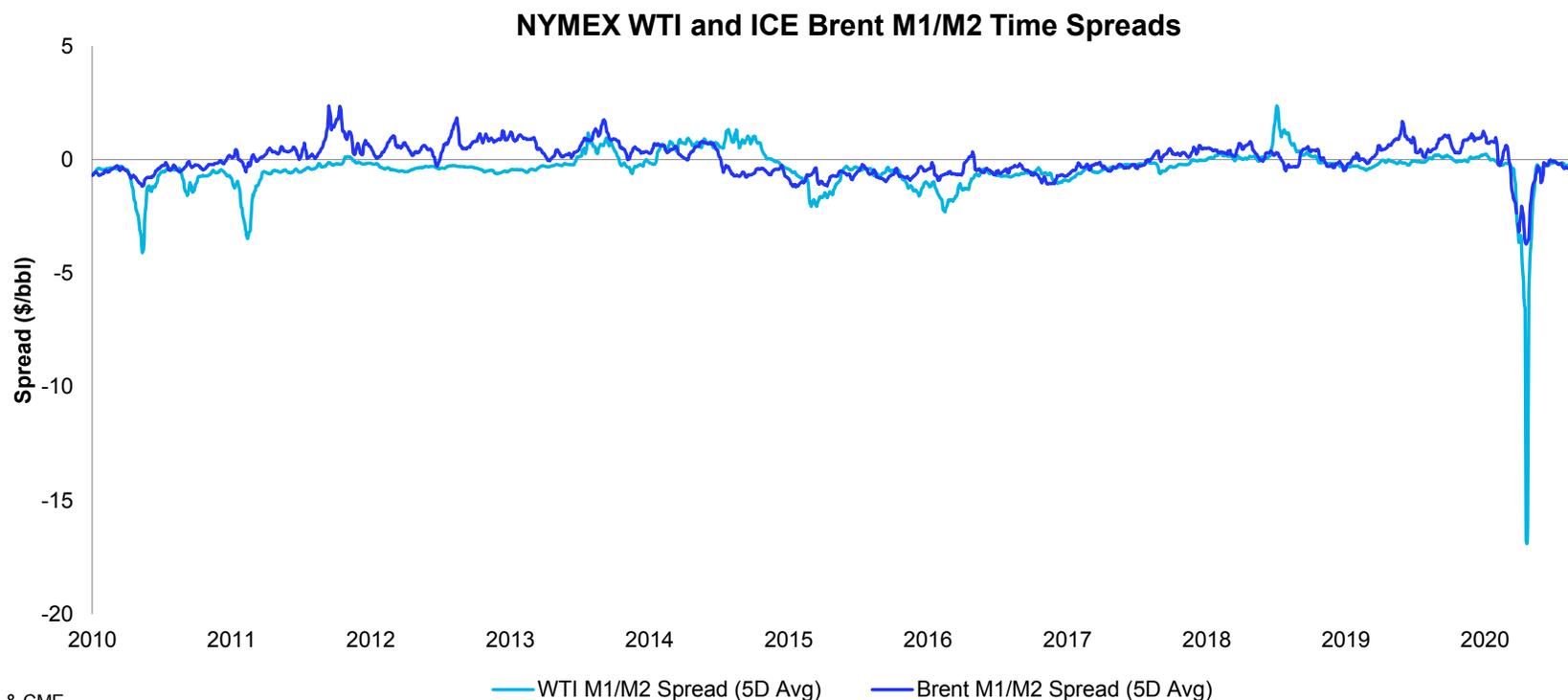
Source: US Energy Information Administration, CME

- WTI prices and time spreads are sensitive to constraints. This can magnify the impact of crude oversupply or shortage.
- Oversupply leads to stockbuilds. Higher inventories lead to steeper contango (spot discount vs. forward premium). This is a self-reinforcing cycle. The same holds for the reverse situation: crude shortage, stockdraws/lower inventories, and steeper backwardation.
- The same inverse relationship between inventories and prices/time spreads holds for Brent. However, compared to WTI, Brent has much more flexibility in terms of logistics and storage.

ICE Brent vs NYMEX WTI

Market & Price Implications of the Differences

ICE Brent M1-M2 vs. NYMEX WTI M1-M2 Time Spreads

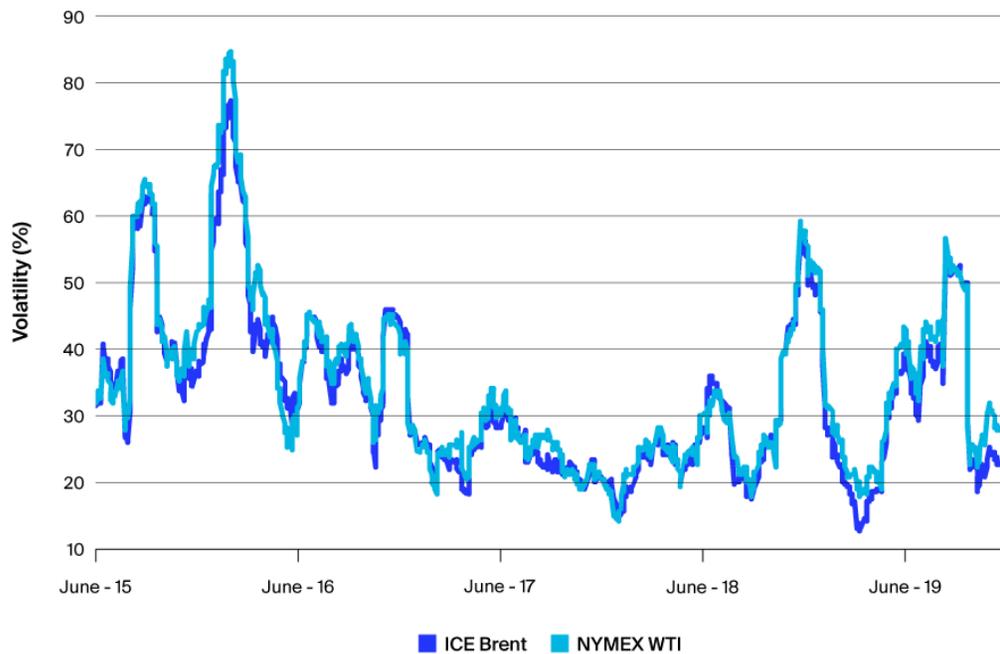


Source: ICE & CME

- Because Brent is global and doesn't have severe regional/local logistics and storage constraints like WTI, it is less subject to extreme price swings than WTI, particularly at the front of the forward curve. This can be seen in a comparison of Brent and WTI Month 1 – Month 2 time spreads.

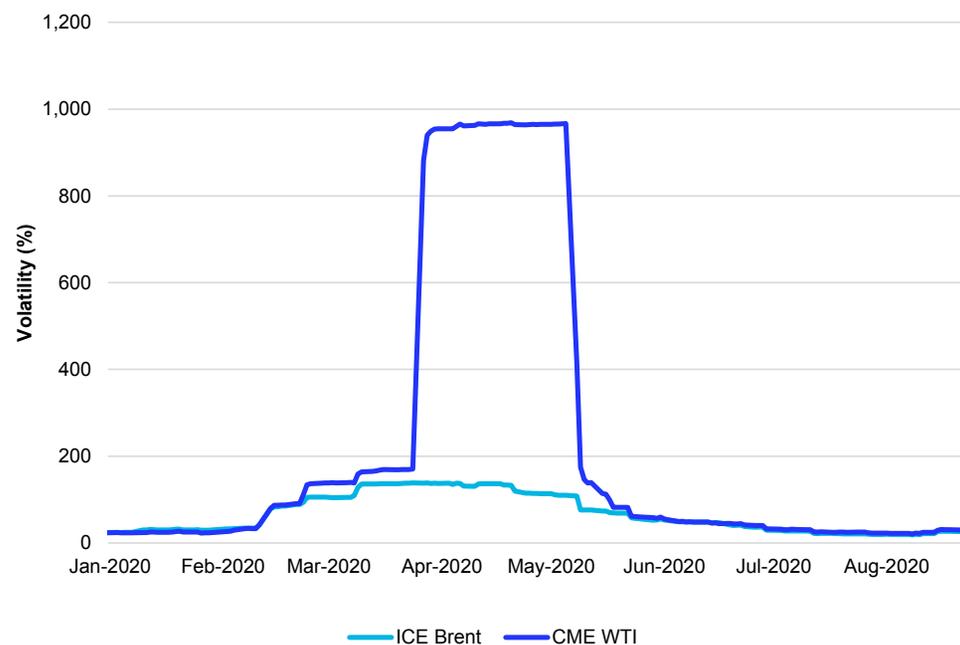
ICE Brent vs. NYMEX WTI Volatility

ICE Brent and NYMEX WTI Front Month Realized Volatility (30 Day) – June '15 to Dec '19



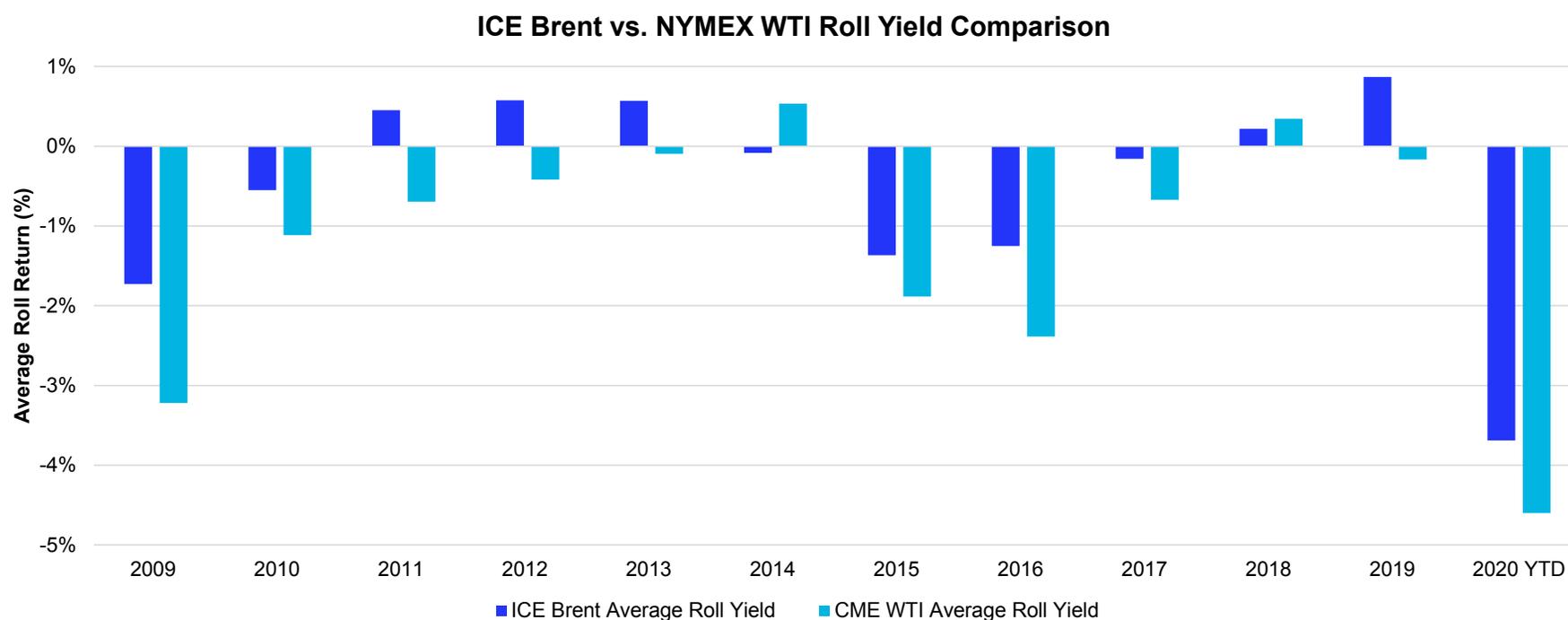
Source: ICE & CME

ICE Brent and NYMEX WTI Front Month Realized Volatility (30 Day) - Jan '20 onwards



- Directly driven by the less extreme price swings for Brent, the realized volatility for Brent is almost 3% lower than WTI. Over the full timeframe, Brent volatility was 36.3%, while WTI volatility was 39.1%. In 2019, Brent vol was 31.9%, while WTI vol was 34.9%.
- This is a material difference; lower vol can reduce costs for those managing risks (commercials) and for those taking risks (investors).

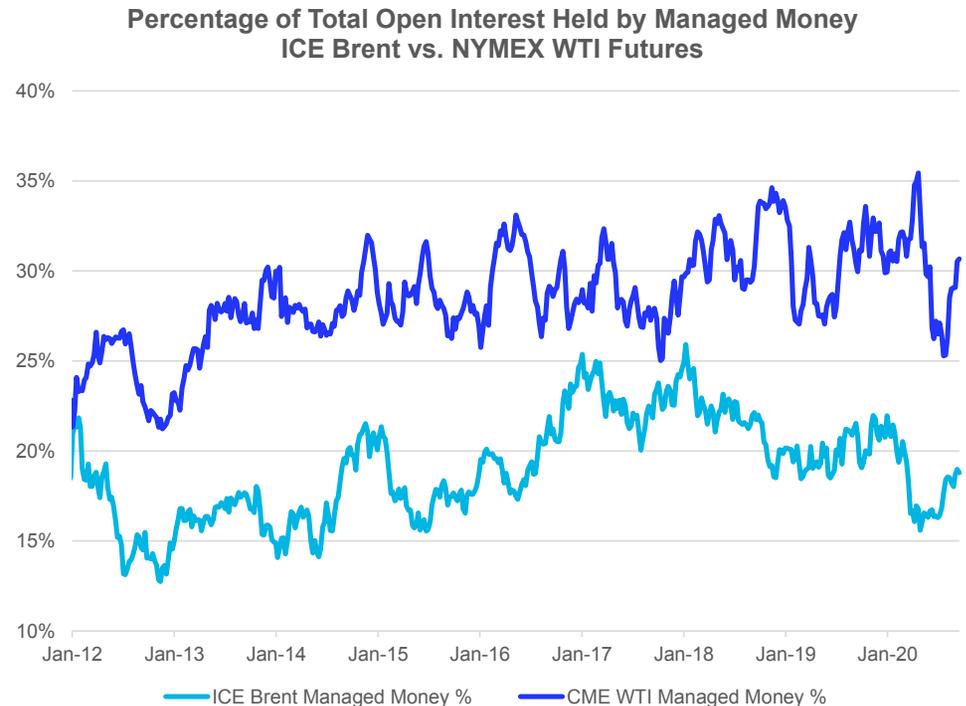
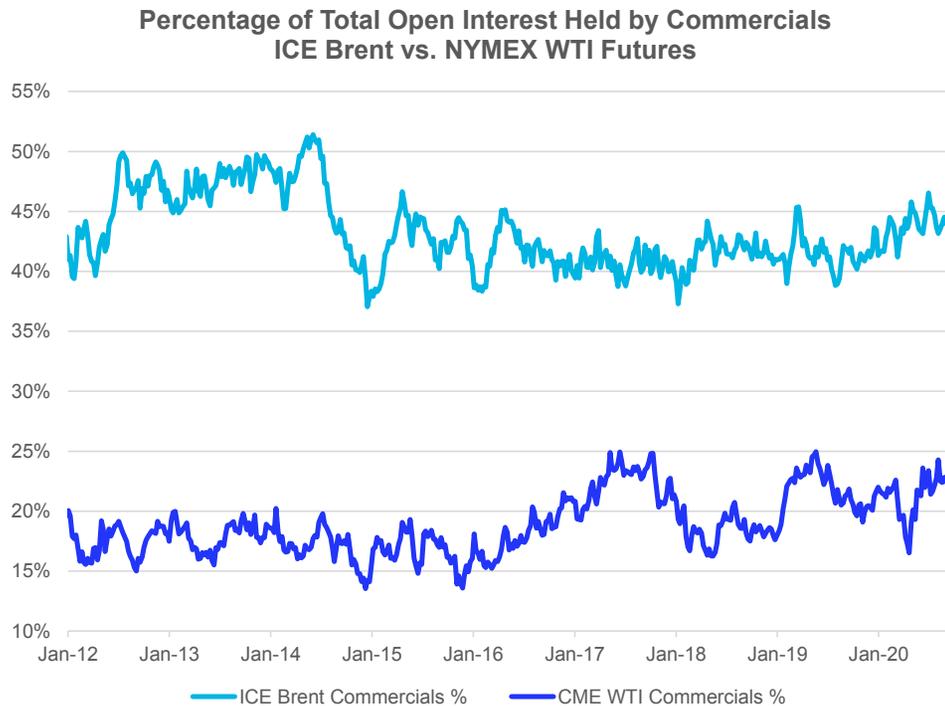
ICE Brent vs. NYMEX WTI Roll Yield Comparison



Source: ICE & CME

- Directly as a result of less extreme swings in time spreads for Brent, the roll yield return for Brent usually outperforms WTI.
- The roll yield return simply comes from buying the front-month, holding it until expiry, then selling it and buying the next front-month.
- The roll yield is positive in a tight “backwardated” market; it is negative in an oversupplied “contango” market.
- Every year since 2009, with only 2 exceptions, the roll yield for Brent was more positive or less negative. 2014? 2018?

ICE Brent vs. NYMEX WTI Comparison of Commercial and Managed Money Participation (% of Open Interest)



Source: ICE, CFTC

- Brent attracts a higher proportion of commercial participants (producers, refiners, consumers, physical traders). Goal: to manage risk.
- Brent has a lower proportion of non-commercial participants (managed money or investors). Goal: to take risk.
- Managed money or investor flows tend to exaggerate and add momentum to fundamentally driven price moves in both directions.



US Gulf Coast

Global Crude Benchmarks

Brent

Brent is the price barometer for up to two-thirds of global crude, with broad accessibility as its waterborne supply is easily transported around the world. ICE's Brent complex has expanded to more than 500 related hedging instruments, since the contract launched 30 years ago.

Dubai Platts

As the principal for the Middle Eastern and Asian crude oil markets, Platts Dubai futures provides critical price discovery and risk management.

ICE Permian WTI Futures (HOU) & Permian WTI Storage (HOS) Contracts

U.S. Shale Revolution

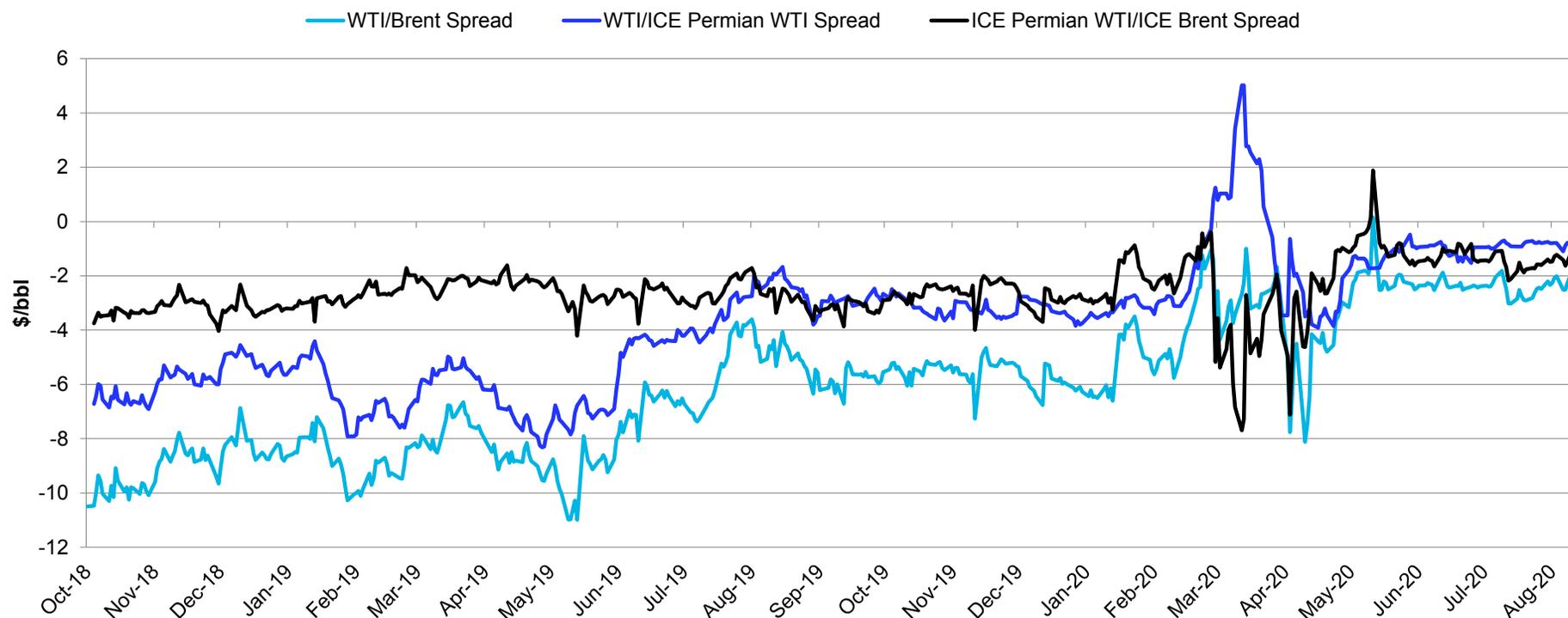
Permian WTI

Permian WTI futures contract brings a light sweet U.S. crude to the global market, with delivery and storage in Houston enabling efficient transportation to domestic and foreign buyers.

New Mexico
Permian Basin
BridgeTex & Longhorn Pipelines
Cushing
Oklahoma
Texas
Magellan East Houston

Key USGC crude price differentials drive exports and hedging

Key USGC Crude Relationships



Source: ICE & CME

- For US crude exports to Europe, the key is WTI priced at Houston (MEH) vs. Brent, not WTI Cushing. How to hedge/manage this risk?
- A) WTI Cushing vs. ICE Permian WTI (HOU)
- B) WTI Cushing vs. Brent
- C) ICE Permian WTI (HOU) vs. Brent
- Trader does A and B. The WTI Cushing legs cancel, and trader is left with C.

The USGC crude market is evolving

Consistently high crude quality and high levels of liquidity

- Traders are exposed to WTI where it meets the global waterborne market on the USGC.
 - Once WTI hits the water, it prices off Brent.
- Renewed interest from industry since negative pricing event in April. Active talks among market participants: producers, domestic refiners, exporters, importers, traders, PRAs, etc.
- The USGC market is evolving.
- Late June: Argus and Platts both started AGS (American Gulf Coast Select) assessments
- Early September: Magellan announced it will start accepting Permian crude from 3rd party pipelines (i.e., other than their Longhorn and BridgeTex pipelines) at MEH.
 - Magellan is setting up a strict quality certification program for other Permian-origin barrels.
- USGC crude market has a strong starting point, because of high crude volumes and high storage and dock capacity. Consistently high crude quality and high liquidity.

Summary and Conclusions

ICE Brent

- Waterborne. Reflects global oil market fundamentals. Over 75% of world's traded (i.e., exported) crude priced off Brent.
- Flexible logistics and storage. No obligation to take physical delivery.

NYMEX WTI

- Landlocked. Reflects regional oil market fundamentals in the US midcontinent.
- Logistics and storage constraints at Cushing. Physically deliverable.

What are the market and price implications of these differences?

- Brent is less subject to extreme price swings than WTI, especially at the front of the forward curve. Less prone to negative pricing,
- Brent realized volatility is almost 3% lower than WTI.
- The roll yield return for Brent usually outperforms WTI (either more positive or less negative).
- Brent has a higher proportion of commercial participants and a lower proportion of managed money participants than WTI. Managed money or investor flows tend to exaggerate and add momentum to fundamentally driven price moves in both directions.

US Gulf Coast

- The market is evolving. A strong starting point, due to consistently high crude quality and high levels of liquidity.

Contacts and resources

For more information on ICE Brent crude oil

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Questions