An Analysis of Oil Prices 2015-2025

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Brief Synopsis of Price Environments

2010-2014 Environment

- Average daily WTI price of $92/bbl
- Average daily Brent price of $102/bbl
- WTI had a $60 range over that time frame ($53.45 - $113.39)
- Brent range was $73 ($55.27-$128.14)
- On an annualized basis, prices of WTI and Brent increased 17% and 24% respectively.

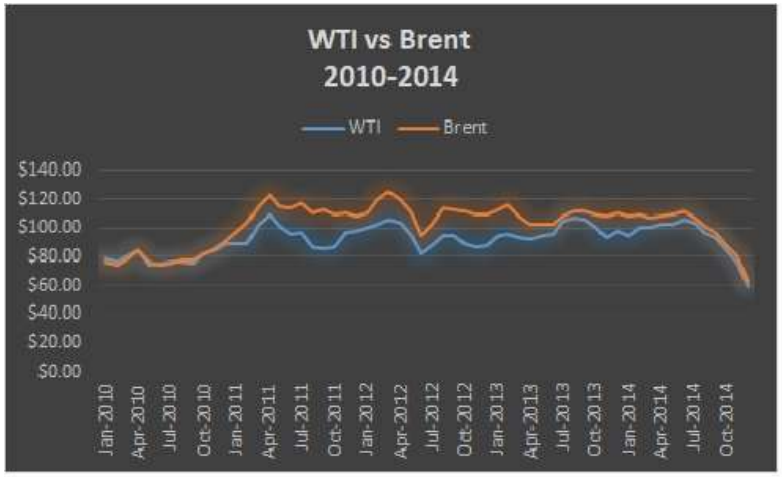
2015-2019 Environment

- Average daily WTI price of $52.96
- Average daily Brent price of $57.12
- WTI showed a $51 range ($26.19 - $77.41)
- Brent maintained a $60 range ($26.01 - $86.07)
- Still showed annual increases of 17% and 24%, but clearly over a lower range of prices.

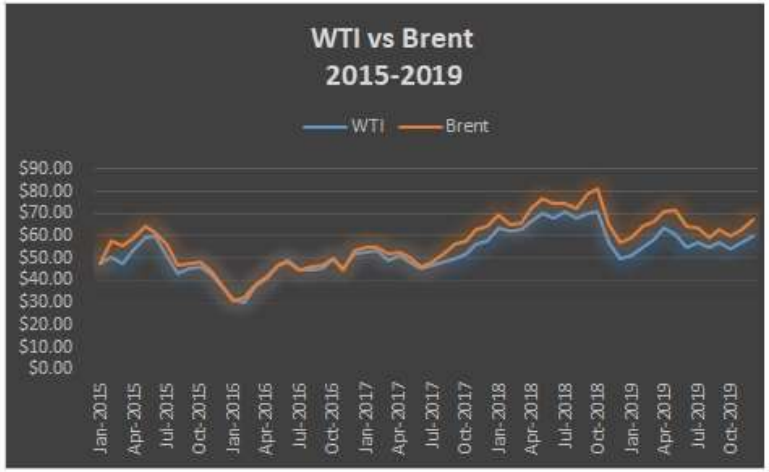
Source: Energy Information Administration

Oil Pricing Comparison

Oil Pricing 2010-2014



Oil Pricing 2015-2019

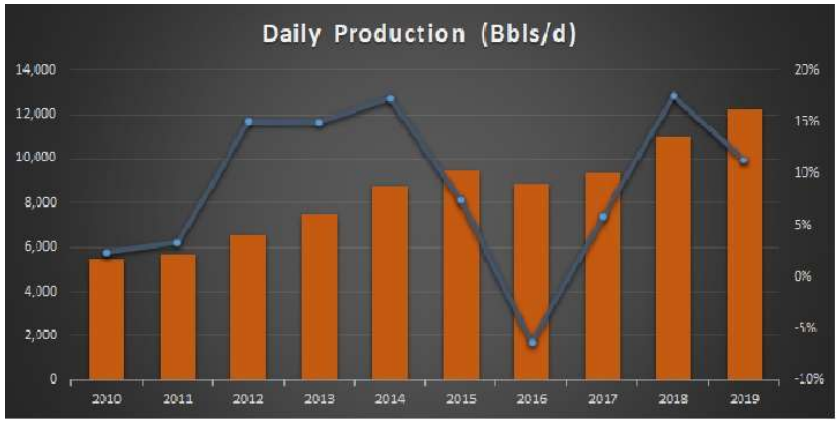


Source: Energy Information Administration

Additional Oil Price Considerations

- July 30th 2014 oil breaks below $100/bbl in WTI.
- July 22nd 2015 prices break below $50/bbl in WTI.
- Prices remained below $50/bbl for approximately 1 year, breaching the mark for 3 days in June of 2016.
- Prices ultimately reached $60 per bbl on December 29, 2017.
- This during a period of time, when models indicated that breakeven prices for oil companies were upwards of $50 per bbl.

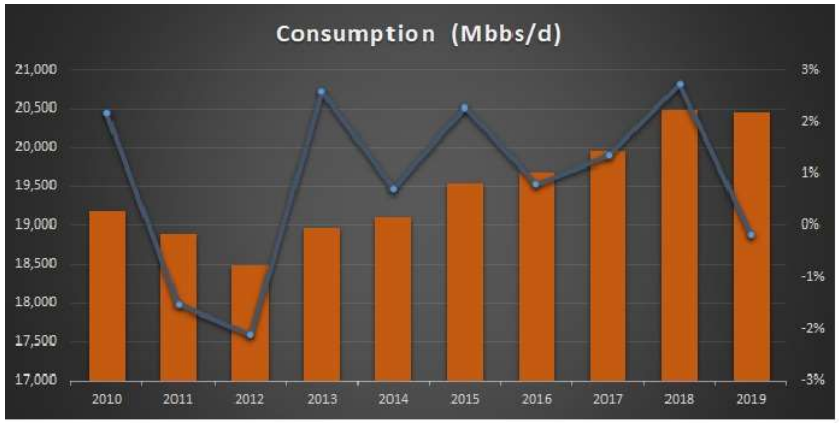
Production Pushes Higher



Source : Energy Information Administration

- 30% uptick in production between 2015-2019.
- 60% increase in the 5 year prior time period.
- 6% average increase year over year in the past 5 years.
- Growth in production simply put excess supply into the market.
- Recalibration in 2016 led to production increases moving forward.

Consumption Grows at a Slower Pace



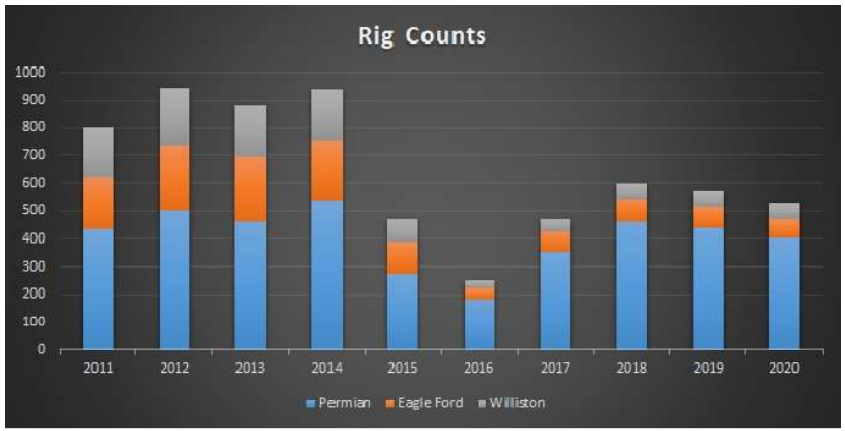
Source : Energy Information Administration

- 5% uptick in consumption of petroleum products between 2015-2019.
- Consumption in the prior 5 year period actually showed a decline of 0.5%.
- Average annual consumption growth of crude oil and petroleum products was 1% between 2015-2019.

Areas of growth

- Largest upticks in growth not surprisingly occurred across primary shale basin plays (i.e. Permian, Bakken, Eagle Ford).
- As such the increases in production were reflected most heavily in Texas, and North Dakota, as were the aforementioned declines in 2016.
- Interestingly, the data also showed a 188% increase in New Mexico production, though given the API gravity of the hydrocarbons (<40.1), I would venture that its more lease condensate.
- My expectations are that the bulk of future U.S. oil production will occur via Permian activity.

Rig Counts



Source: Baker Hughes Company

- Information reflected in Baker Hughes data shows the sharp decline of rigs into 2016.
- The current increase also reflects what will likely be a concentration of activity in the Permian, moving forward.
- Specifically, Permian's share of rigs has increased to 77% from 54%
- 90% of rigs from a directional basis are horizontal, from 74% in 2015.

OPEC Developments

- OPEC oil production of 27.84 Mmbbls/d has been reduced to levels not seen in close to 10 years.
- Its worth nothing that the decline meets levels that coincide with the 2009 financial crisis.
- The figure is also close to 500,000 bbls/d lower than January output.
- OPEC also recently revised expectations for world oil demand down, by 0.2 Mmbbls/d for 2019.
- OPEC reduced expectations for 2020 global demand downward by 0.23 Mmbbls/d as well.

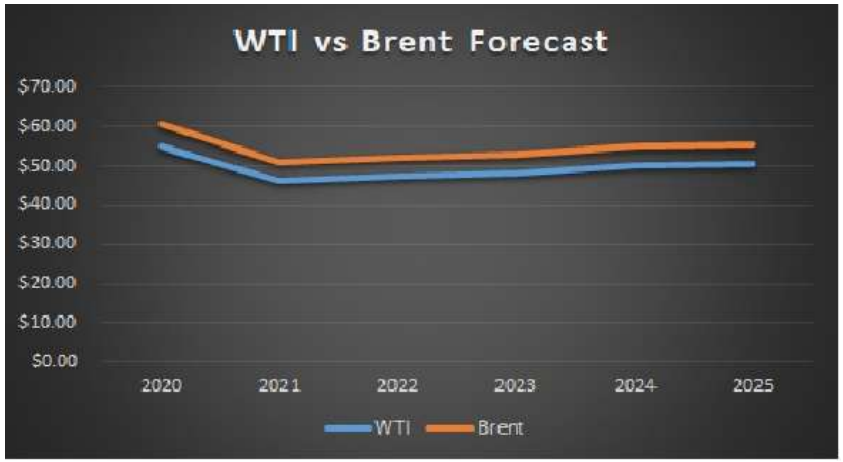
- Breakeven Prices
- Kuwait- $54.70
- Saudi Arabia - $83.60
- United Arab Emirates- $70
- Iraq- $60.30
- Libya- $99.70
- Iran $194.60

Source: OPEC Monthly Oil Market Report; Oilprice.com; International Monetary Fund Fiscal Breakeven Price Estimates

5 Year Evolution Summary

- The persistently low oil prices during the period of 2015-2019, was largely driven by increases in production that did not match demand.
- Much of the activity which led to the current condition occurred during the prior 5 year period, where we saw sharp upticks in production and drilling (specifically horizontal).
- Not surprisingly, we saw domestic increases in reserves and stocks across all PADD locations in the U.S. (with the exception of PADD 1).
- It appears that a push and pull exists between U.S. producers, and OPEC nations, as there is a wide range between average breakeven price points.

5 Year Forward Outlook for Prices



- Price forecast is largely being driven by the forward curve in both WTI and Brent Crude.
- As it stands, the curve is in backwardation, which I would argue is slightly bullish.
- Also included is the assumption of a $5/bbl spread between WTI and Brent, in line with what we've seen of late.

Factors That Could Impact Projections

- Stable production growth in the U.S. in conjunction with continued production declines by OPEC nations.
- Increased drilling efficiencies allowing domestic breakeven prices to fall.
- An increased push towards renewable fuels and/or regulatory hurdles placed on fossil fuel extraction.
- Global unrest and or conflict that disrupts oil supply.
- Reductions in demand due to pandemics (Covid-19 or otherwise).

Additional Considerations

- Reductions in U.S. GDP projections to 2.3% for 2019 and 1.9% for 2020.
- Reductions in growth expectations across the Eurozone, China, and Japan.
- Downward revisions in global oil demand to 100 Mmbbls/d.
- Declines in base metal pricing, specifically copper and steel, imply a potential slowing in global growth.
- Reduction in speculative long positions by hedge funds in NYMEX WTI and Brent by 16.7%.