Oil Boom to Follow Bust
Sooner (Russia) or Later (Delayed Peak Demand)

Bob McNally | National Association of Business Economists | March 21, 2022
Russia’s Invasion of Ukraine Threatens the Most Severe Oil Disruption in Modern History

Oil Disruptions, Spare Capacity, and Crude Prices

- Russia medium
- Russia heavy
- Russia light
- Disrupted Oil Supply
- Global Spare Capacity
- Crude Price - WTI (RHS)

Data: Rapidan Energy Group, EIA, BP, St. Louis Fed, US Senate

Russia disruption scenarios

VZ '02-'03/'15->, Iraq '03->, Nigeria '03 ->, Libya '10->, Iran '12-> and others

Gulf War I
Gulf War II
Abqaiq
Iran-Iraq War
Suez Canal
Six Day War
Iran Revolution
Arab Oil Embargo
Defining Feature of Today’s Oil Market: No Durable Swing Producer

That means oil prices will gyrate between recession and shut in

Annual Ranges of Monthly US Crude Oil Prices, 1859-2021

- Average of annual min-max price spreads within each era (right axis)
- Spread between maximum and minimum prices in a year (left axis)

- Boom Bust I
  - 1859-1863
  - 1867-1871
  - Spread: 53.3%

- Boom Bust II
  - 1885-1891
  - 1895-1899
  - Spread: 35.9%

- Boom Bust III
  - 1907-1911
  - 1915-1919
  - Spread: 35.5%

- Rockefeller Era
  - 1923-1927
  - 1931-1935
  - Spread: 24.9%

- Texas Era
  - 1939-1943
  - 1947-1951
  - Spread: 3.6%

- OPEC Era
  - 1977-1981
  - 1979-1981
  - Spread: 24.1%

Data Sources: Rapidan Energy Group, based on The Derrick, API, St. Louis Fed, EIA, and Bloomberg

Consensus Recently Adopted Peak Demand as Base Case...

Long-Term Global Demand

Source: Rapidan Energy Group, IEA, OPEC, BP, Equinor, ExxonMobil
Recent Consumer Trends and Outlook for Transportation

<table>
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<th>Consumer Vehicle Preferences</th>
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<td>EU</td>
<td>ICE Light Trucks</td>
<td>Strong*</td>
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<td>China</td>
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<tr>
<td>US</td>
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* Political will to impose transition costs TBD

Global SUV sales set another record in 2021, setting back efforts to reduce emissions

SUV Sales as a Percentage of Total Car Sales

Source: Rapidan Energy Group, IEA
US Gasoline Demand – Canary in the Coal Mine for the Peak Demand Consensus

Sales-Weighted Fuel Economy Ratings Compared to EPA Projected Fuel Economy Targets

Diverging EIA Forecasts for US Gasoline Demand

Source: Rapidan Energy Group, EPA, Bloomberg, NHSTA, UMTRI

Source: Rapidan Energy Group, EIA
If Peak Demand Consensus Proves Wrong, Buckle Up

Consensus View

- Supply Growth (mb/d) ~0.5
- Demand Growth (mb/d) ~0.7

Stable oil prices

Rapidan Energy Group’s View

- Supply Growth (mb/d) ~0.5
- Demand Growth (mb/d) ~1.4

Boom