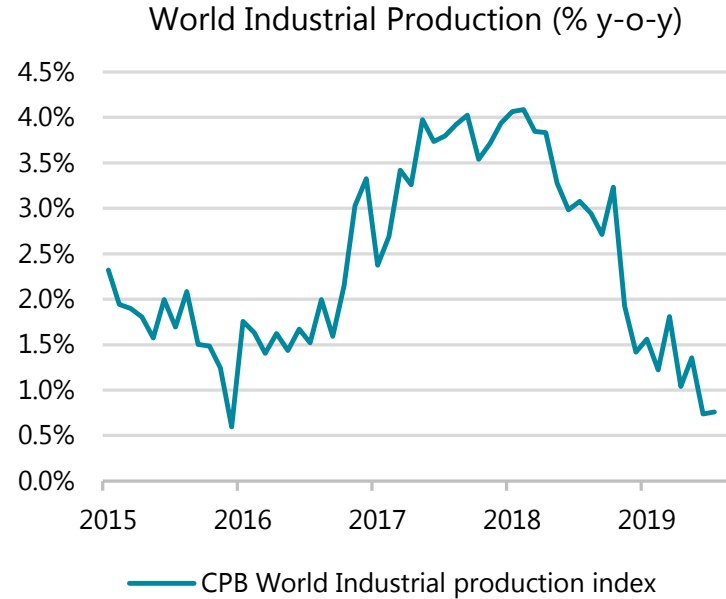
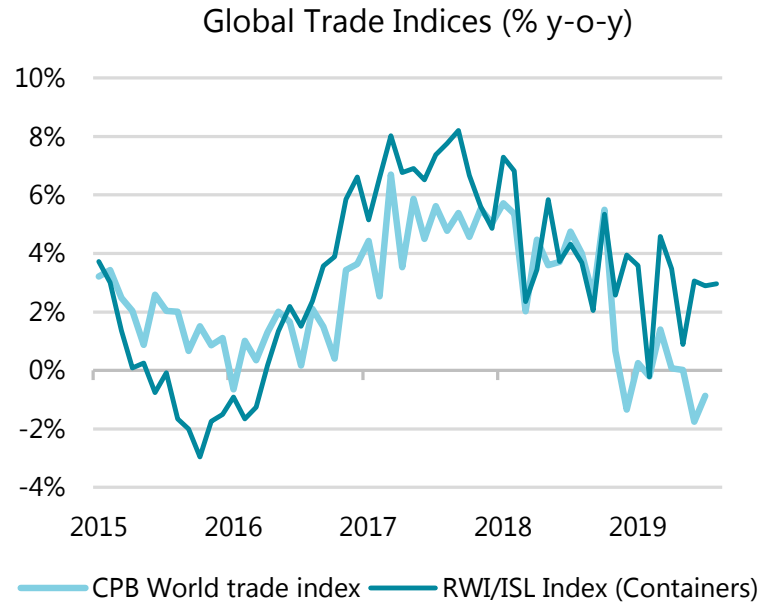


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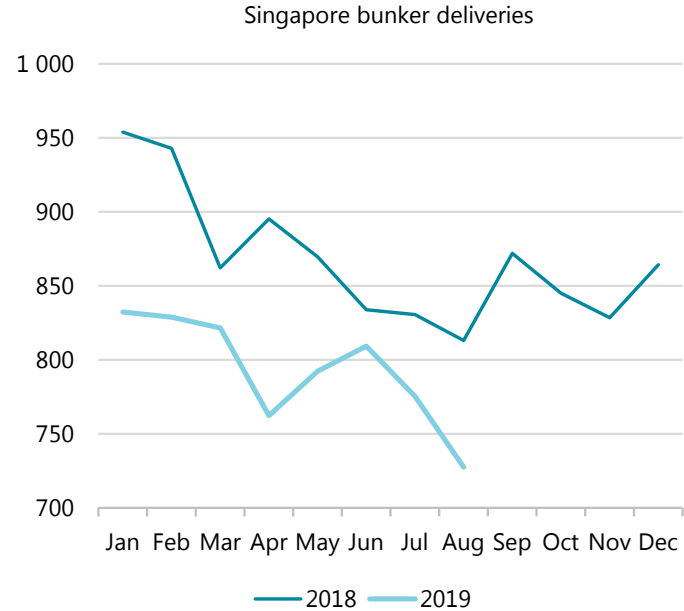
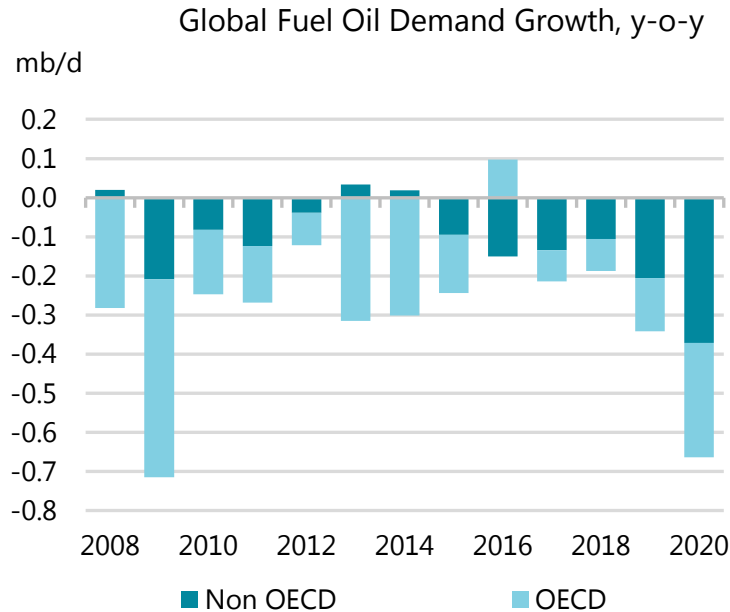
IMO 2020

The background: global economy is slowing



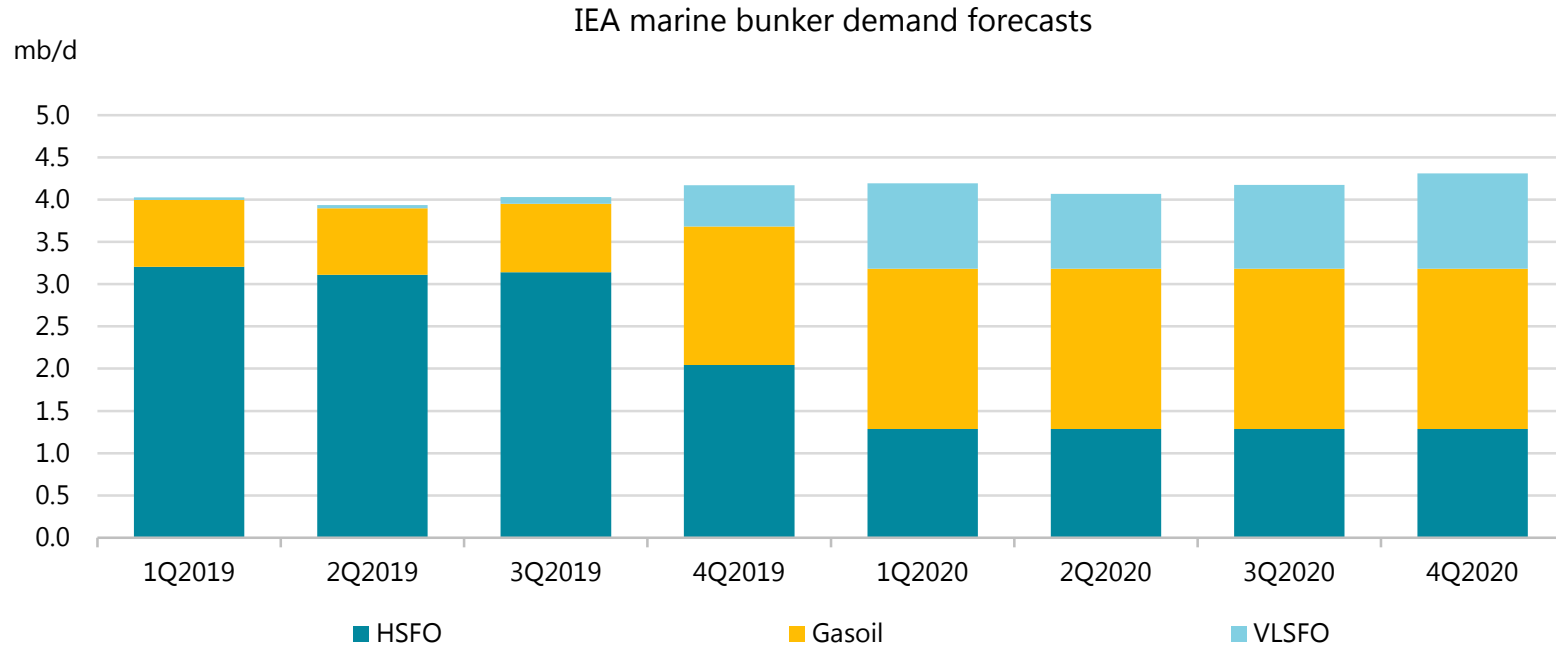
Bunker demand affected by deceleration in world industrial production and trade.

Fuel oil, bunker demand in freefall



Fuel oil demand to fall 340 kb/d y-o-y in 2019, largest annual fall since 2009.

IMO fuel switch under way



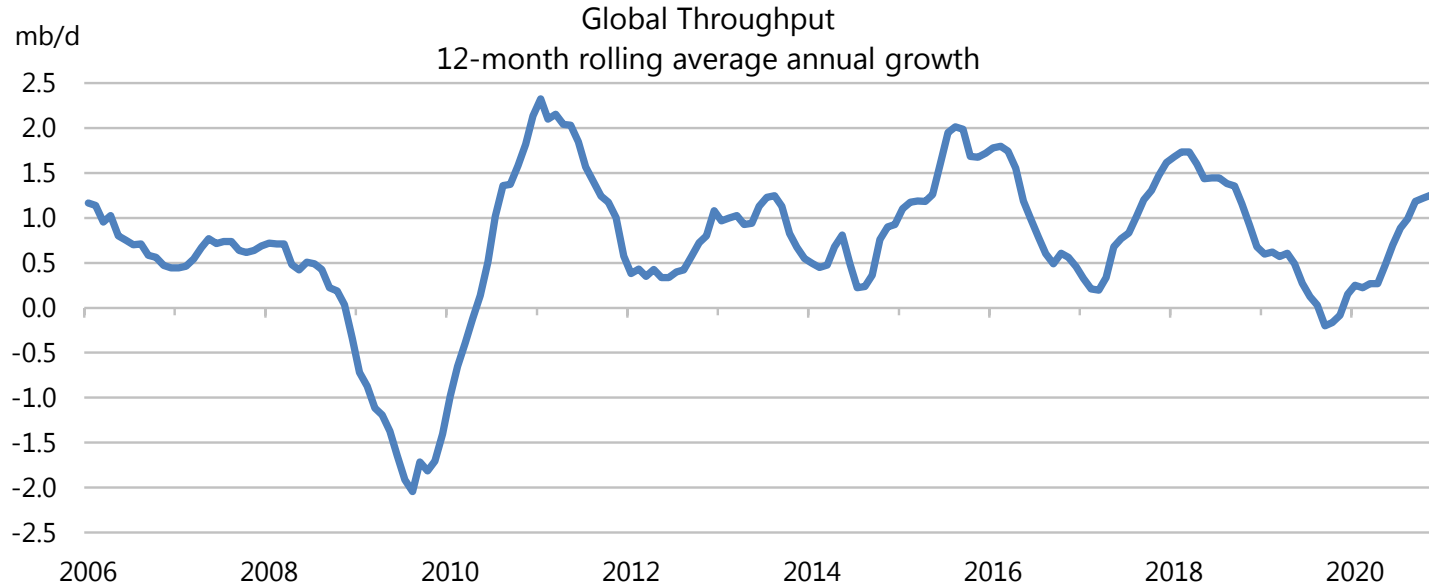
Switch starts in 4Q19, from a relatively low base.

VLSFO: what's in the name..

- Atmospheric residue (straight-run fuel oil), 0.5%
 - 2-3 mb/d produced globally from very low sulphur crude oils (US shale, Algeria, Nigerian grades)
 - but most of it locked in refinery processes to produce diesel, gasoline, etc.
- Desulphurised atmospheric residue (\approx 3.5 mb/d)
 - Currently used to pre-treat feedstock to upgrading units to produce premium transport fuels
- Blended from refinery feedstock streams
 - Vacuum gas oil (VGO), light cycle oil (LCO), upgrader "bottoms", etc
- Blended (after refinery gate) from gasoil and fuel oil
 - To blend down 3.5% fuel oil to new sulphur levels, a mix of 80% gasoil and 20% fuel oil is required
- Blended on the basis of crude oil (heavy sweet)

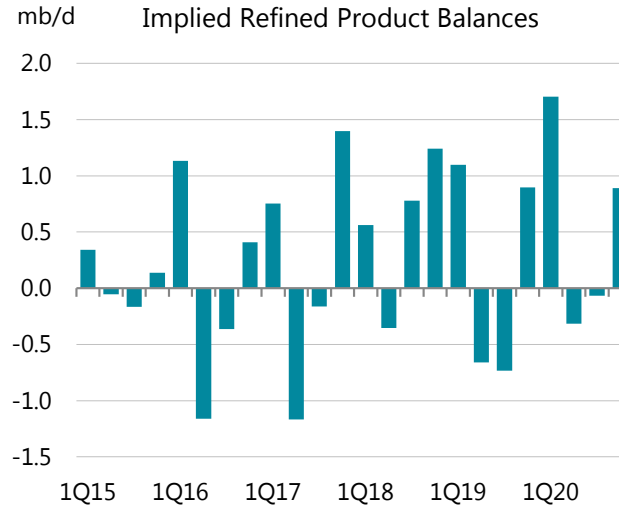
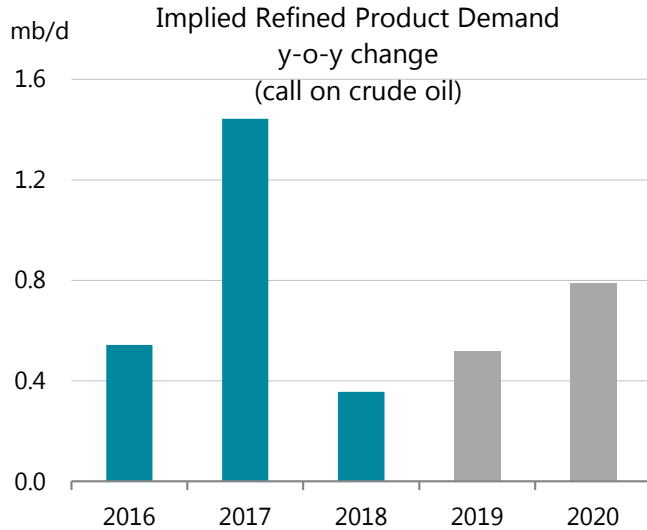
IMO compliant fuel production would generally require a *trade-off* (between bunkers and other transport fuels) unless total refinery production exceeds demand.

Refining activity cycle bottoming out



Refining activity is set to return to growth from 4Q19 onwards

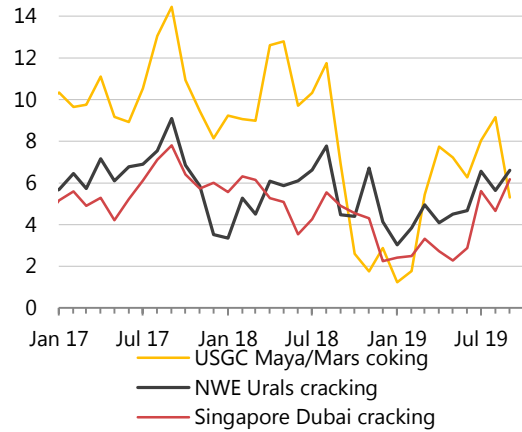
2020 refining activity grows faster than overall demand



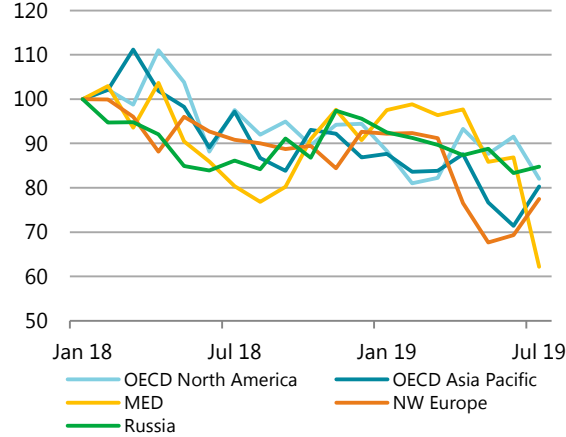
Refined product stock builds in 1Q20 help the market meet new bunker demand

Recent volatility in fuel pricing has been confusing

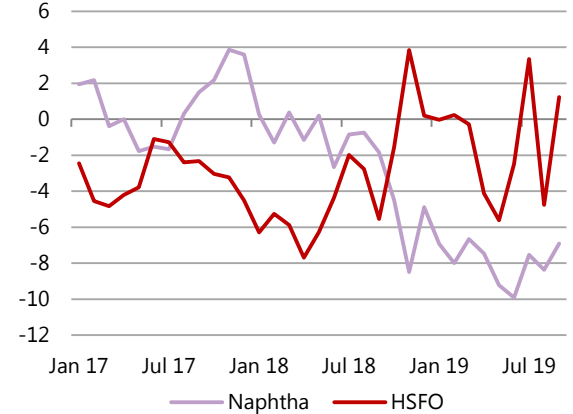
\$/bbl Regional Refining Margins Monthly



Fuel Oil Yields (indexed to Jan 2018)



\$/bbl Singapore Cracks to Dubai



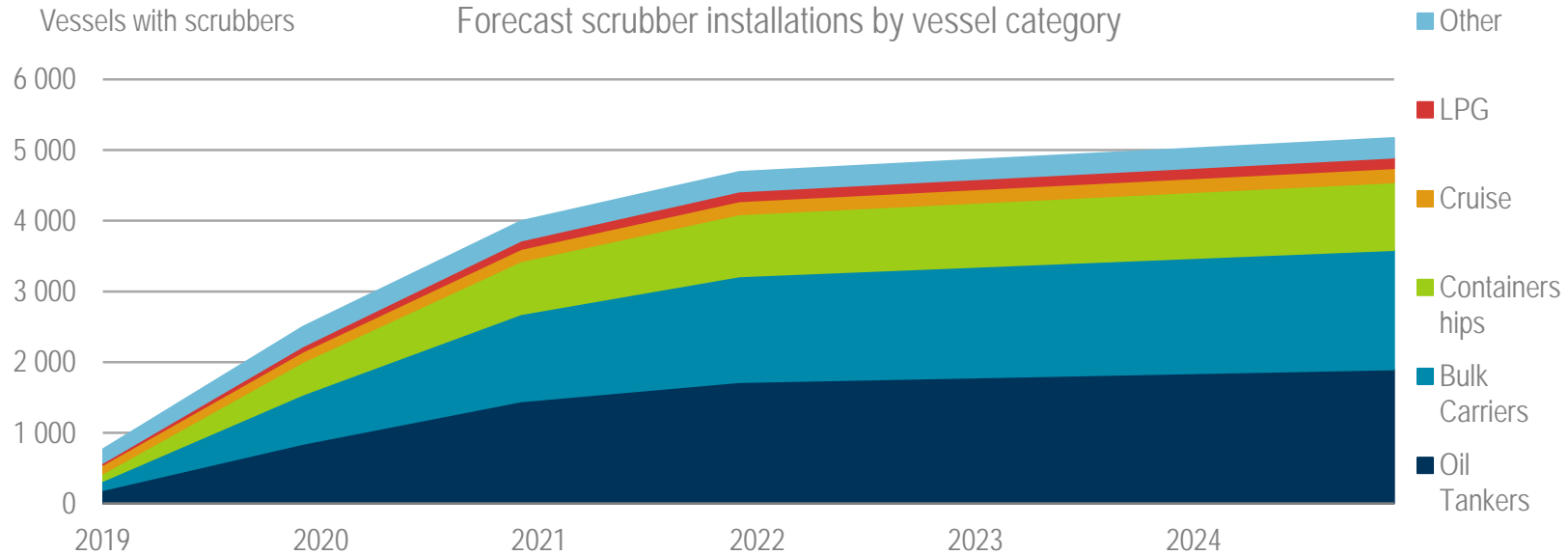
HSFO cracks and sour refining margins increased recently, but more due to on shrinking supply rather than robust demand

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IMO 2020

- Weakening Global economic environment
- Sharp decline in bunker demand in recent data
- Scrubbers ?
- Assumption for the IMO switch
- Global refining context ?
- Availability of low sulfur material ?
- Conclusion: need (and possibility) to monitor market conditions with data currently available ?

Scrubber installations rise rapidly in 2019-20



But investments slow markedly in 2021 as gasoil availability rises.