EHSAN KHOMAN
Head of Emerging Markets Research – EMEA

DIFC Branch – Dubai
T: +971 (0)4 387 5033
E: ehsan.khoman@ae.mufg.jp

MUFG Bank, Ltd.
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2022 oil outlook: near-term moderation but get long the structural supply story

Overall assessment: After the best annual performance since 2016, we forecast near-term moderation in oil prices for the best part of 2022 driven by a pivot in the prevailing market deficit towards a surplus, albeit with elevated volatility given a confluence of risk factors. Strong non-OPEC+ supply growth, combined with a further easing in OPEC+ supply cuts, juxtaposed against a more normalised demand profile, will tip the market back into oversupply in H1 2022. However, our modelling estimates have market balances looking tighter going into the last quarter, and with it we hold conviction that Brent crude will find its way back into the USD80s/b by year-end. This is centred not just on a cyclical rotation back into a deficit but anchored on our broader thesis that oil markets remain structurally underinvested as the forces of ESG gain traction. This ultimately supports the long-end of the forward curve, and we see trading opportunities for long dated futures to move higher.

Oil demand: As economies reopen with individuals learning to live and embrace with an endemic COVID-19, the interaction of wealth accumulation, pent-up demand, pro-growth fiscal policies, still accommodative monetary stances from major developed market central banks, alongside progression on vaccination campaigns progressing and increasing mobility, will keep the underlying oil demand recovery robust in 2022.

Oil supply: Whilst the demand-side of the oil equation received most of the attention in 2021 given the pandemic and the vaccine-led recovery, we believe that more critical for 2022 is the outlook for supply, especially surrounding the call on OPEC+, which remains challenged, at best.

Oil prices: With the oil market remaining balanced on an annualised basis in 2022, low overall stock levels should keep prices firm, with our modelling estimates pointing to Brent and WTI crude averaging USD75/b and USD72/b, respectively, in 2022. On a quarterly basis, with our base case that the acutely tight market deficit will begin to ease from its peak in Q4 2021 (-1.8m b/d), narrowing sharply in Q1 2022 (-0.2m b/d) and thereafter pivoting into oversupply in Q2 2022 (0.6m b/d), we moderately turn tactically bearish on oil with a leg lower to USD75/b, USD72/b and USD70/b in Q1, Q2 and Q3 2022, respectively. Critically, our modelling estimates have balances looking tighter going into the last quarter, and with it we hold conviction that Brent will find its way back into the USD80s/b – ending 2022 at USD82/b. Succinctly put, any further slide in crude prices directly disincentivises supply, supporting our medium-term forecasts for renewed deficits, depleting inventories and sharply higher (and more volatile) oil prices – we believe a new structural bull oil market is emerging.

Risks: Six key risks for 2022: (1) US oil strategy to be more confrontational with OPEC+, heightening volatility; (ii) further COVID-19 strains and with it potential mobility restrictions; (iii) Iranian crude output increases against our base case of no return; (iv) capital discipline in US shale could ebb; (v) competition for market share within OPEC+ may break out; and (vi) capacity scarcity precipitously erodes.

Energy transition: There is little question that oil will have a lesser role in the energy system of the future. However, if policymakers' objectives of a large-scale buildout in green infrastructure are to be met, oil prices will need to significantly overshoot to the upside to provide the incentive for renewable investments to considerably rise.

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2022 oil outlook

OVERALL ASSESSMENT: NEAR-TERM MODERATION BUT GET LONG THE STRUCTURAL SUPPLY STORY

Near-term moderation in oil prices but we are tactically long further out owing to the structural supply story

After the best annual performance since 2016, we forecast near-term moderation in oil prices for the best part of 2022 driven by a pivot in the prevailing market deficit towards a surplus, albeit with elevated volatility given a confluence of risk factors. Strong non-OPEC+ supply growth, combined with a further easing in OPEC+ supply cuts, juxtaposed against a more normalised demand profile, will tip the market back into oversupply in H1 2022. However, our modelling estimates have market balances looking tighter going into the last quarter, and with it we hold conviction that Brent crude will find its way back into the USD80s/b by year-end. This is centred not just on a cyclical rotation back into a deficit but anchored on our broader thesis that oil markets remain structurally underinvested as the forces of ESG gain traction. This ultimately supports the long-end of the forward curve, and we see trading opportunities for long dated futures to move higher.

Overall balanced market in 2022 when examining annual figures

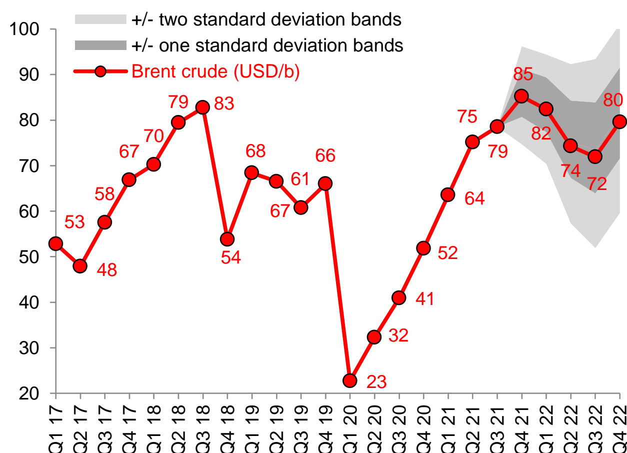
Global oil balances showed significant stock draws in 2021, beginning early in the year and accelerating in the summer. As it stands today, OECD commercial inventories are 8% below their five year averages. The outlook for 2022 assumes ~70-80 million barrels of SPR releases spread over December, January and February as well as a gradual OPEC+ ramp-up of monthly hikes (~0.2m b/d). Our reference case also applies a very low probability that a deal is reached with Iran in 2022. Consequently, our assumptions result in an overall balanced market in 2022 (-0.1m b/d) and crude inventories still below both the five year average.

The quarterly oil balances are for a mild surplus commencing in Q2 2022

Drilling down from our annual figures to our quarterly profile, we forecast the market pivoting towards a surplus only from Q2 2022. This is given the still tepid inelastic supply growth outside OPEC+ together with stern post-lockdown led demand growth in the first quarter, both of which will begin to reverse course from the second quarter. Such a trajectory has in fact been reflected in comments from senior OPEC ministers in recent weeks. OPEC secretary general Barkindo stated that “the surplus is already beginning in December”. Russia's deputy energy minister Pavel Sorokin said that “there is no deficit at the moment”. The UAE's energy minister Al Mazrouei stated that “we will have a surplus in the first quarter”. Our modelling analysis

A MODERATE OIL PRICE PROFILE FOR MOST OF 2022 BUT ENDING THE YEAR STRONGER ON ESG FORCES

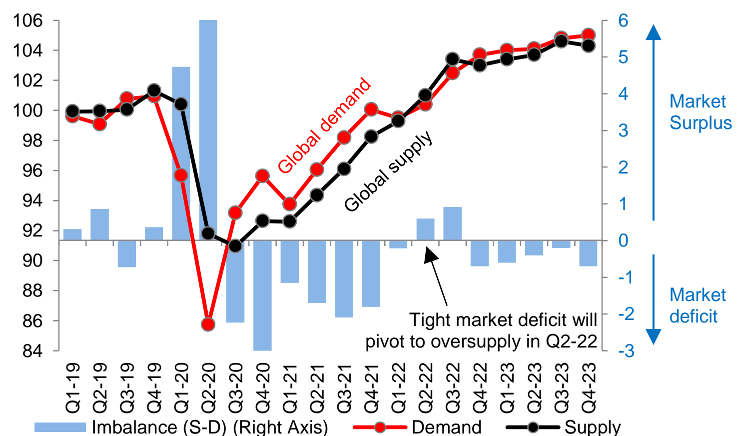
AVERAGE BRENT (USD/B) WITH ONE AND TWO STANDARD DEV. BANDS



Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

OIL'S TIGHT MARKET IS SET TO PIVOT TOWARDS OVERSUPPLY FROM Q2 2022 – BEARISH PRICE SIGNAL

GLOBAL OIL DEMAND, SUPPLY AND OVERALL BALANCE (M B/D)



Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

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concurs with this oversupply assessment, although our demand-supply estimates have the market pivoting towards a surplus only from Q2 2022 given still tepid inelastic supply growth outside OPEC+ together with stern post-lockdown led demand growth. Below we run through the our demand-supply modelling thesis.

OIL DEMAND: ONGOING RECOVERY REACHING PRE-VIRUS LEVELS

Oil demand rising from 95.3m b/d in 2021 to 100.7m b/d in 2022 (growth of 3.7m b/d)

As economies reopen with individuals learning to live and embrace with an endemic COVID-19, the interaction of wealth accumulation, pent-up demand, pro-growth fiscal policies, still accommodative monetary stances from major developed market central banks, alongside progression on vaccination campaigns progressing and increasing mobility, will keep the underlying oil demand recovery robust in 2022. With peak global GDP growth behind us, we expect oil demand growth to subside to more sustainable levels but still print at a benign 3.7m b/d in 2022 from 4.6m b/d in 2021. Critically, this will bring overall oil demand levels in 2022 (100.7m b/d) fully back to those experience pre-pandemic 2019 (100.1m b/d), as vaccination campaigns progress and mobility increases. Granted, jet demand is still lagging due to the current lack of international travel but as more countries reopen, we forecast jet fuel to recover from 4.4m b/d in 2021 to 6.0m b/d next year – albeit still below 2019 pre-virus levels of 7.2m b/d owing to the slow recovery of business travel.

Petrochemicals demand to break another record in 2022

Demand for petrochemicals (impacting LPG and naphtha demand) is expected to break another record in 2022. In the US, the USD1.25tn Infrastructure Investment and Jobs Act (IIJA) adopted by the Congress should boost demand for various products (in particular asphalt) over the next five years. We assume 0.5m b/d of additional demand over 2022-2026, which equates to a 90k b/d boost in 2022 alone. Global diesel demand should remain below 2019 levels in 2022, as while supported by a permanent shift to online shopping, the overhaul in China's transport sector – driven by extreme air pollution and a changing economic and industrial model – suggests diesel demand in the country could begin to plateau from H2 2022.

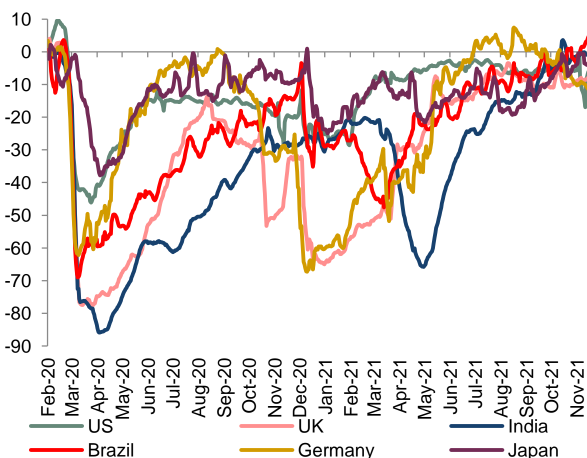
OIL SUPPLY: FRONT AND CENTRE OF ATTENTION IN 2022

Oil supply rising from 95.3m b/d in 2021 to 100.3m b/d in 2022 (growth of 4.9m b/d)

Beyond demand, much more crucial for 2022 remains the outlook for supply, both from OPEC and other producers. Given the large supply uncertainties next year, we breakdown our expectations for non-OPEC and OPEC separately. Overall, we forecast markedly higher supply growth next year of 4.9m b/d from 1.4m b/d in 2021.

MOST MAJOR DEVELOPED AND EMERGING MARKETS' MOBILITY LEVELS ARE BACK TO PRE-VIRUS TRENDS

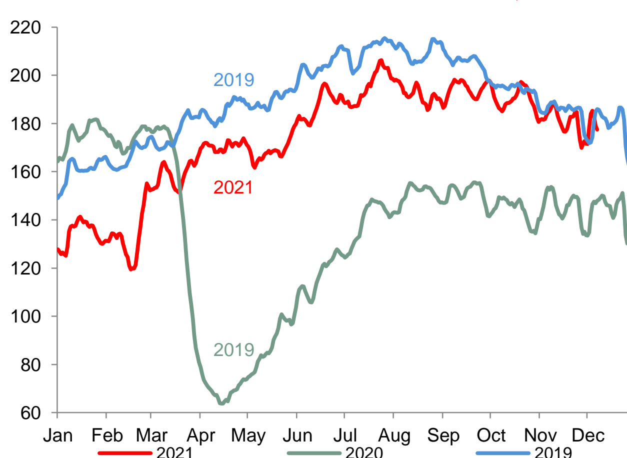
7 DAY MA GOOGLE RETAIL AND RECREATION INDEX



Source: Google, MUFG Research

AIR TRAVEL HAS REBOUNDED SHARPLY WITH CURRENT LEVELS HOVERING IN-LINE WITH PRE-VIRUS TRENDS

7 DAY MA OF NUMBER OF FLIGHTS GLOBALLY PER DAY (THOUSANDS)



Source: Flightradar24, MUFG Research

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As with oil demand, this will bring overall oil supply levels in 2022 (100.3m b/d) fully back to those experience pre-pandemic 2019 (100.5m b/d).

Non-OPEC supply rising from 63.0m b/d in 2021 to 66.0m b/d in 2022 (growth of 3.0m b/d)

We forecast most of the strong supply in 2022 to come from non-OPEC producers (growth of 3.0m b/d), wherein 1.0m b/d of growth will come from the US:

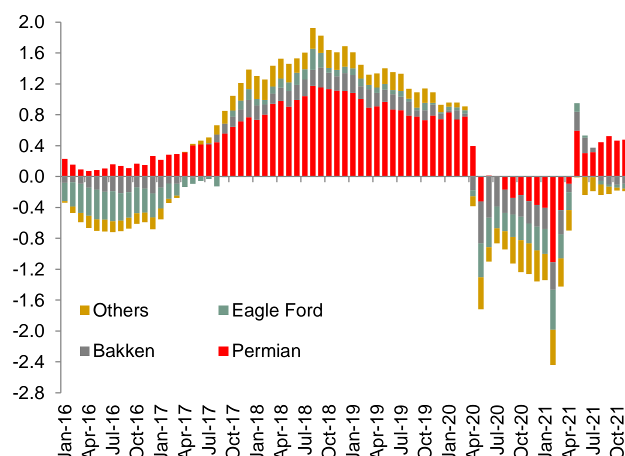
1. US (growth of 1.0m b/d in 2022). The last time oil consumption was this high, US shale drillers were pumping flat out with a battle for market share with OPEC+ producers, holding only a modest amount of production capacity in reserve. The situation is very different today. Unlike past cycles, when higher energy prices usually meant more capital spending, more exploration, more oil rigs and so more hydrocarbon extraction, the current benign energy market has been met with frugal capital budgeting. The reasons are many but largely boil down to policy constraints, intense pressure from shareholders to return cash and ESG mandates not rewarding carbon energy producers for growing. To put this into further context, the latest quarterly earnings season (Q3 2021) demonstrated once again that publicly-listed US shale players remain focused on "value over volume", maximising free-cash flow, paying down debt, returning cash to shareholders and improving operational efficiencies with far less priority given to growth (see here). This may not be true for private companies to the same extent, but we doubt this will be enough to drive production above 1m b/d in 2022. On net, after netting growth of just 0.1m b/d in 2021, the status-quo should change somewhat next year for US oil output with growth of 1.0m b/d in 2022, but its price elasticity is lower than we had expected.
2. Non-US (growth of 2.0m b/d in 2022). Conventional non-OPEC supply should just about recover to 2019 pre-virus levels though the outlook beyond 2022 is one of gradual decline owing to a lack of investment. Within the OPEC+ group, we see some further unwinding of supply curbs next year with the main contributor being Russia (0.9m b/d), while we see benign growth in a few non-OPEC+ non-US producers, notably Norway (0.5m b/d), Canada (0.3m b/d), Brazil (0.3m b/d), Guyana (0.1m b/d) and China (0.1m b/d).

OPEC supply rising from 32.4m b/d in 2021 to 34.2m b/d in 2022 (growth of 1.9m b/d)

OPEC supply will be challenged at best in 2022. With oil demand up 3.7m b/d next year, non-OPEC supply increasing 4.9m b/d and OPEC condensate/NGL likely to increase by a negligible 0.3m b/d, the call on OPEC crude rises to 1.7m b/d from 2021 to 2022. Relative to OPEC's plan to add 0.4m b/d to production each month

US SHALE'S ANNUALISED GROWTH IS BEGINNING TO PRINT BACK INTO POSITIVE TERRITORY

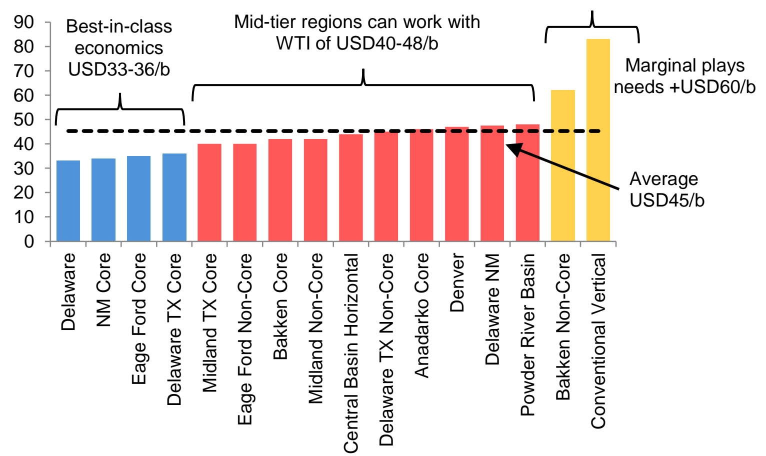
US SHALE OIL PRODUCTION (Y/Y GROWTH IN M B/D)



Source: Bloomberg, EIA, MUFG Research

CURRENT AND FUTURE NEAR-TERM WTI CRUDE PRICES ARE WELL ABOVE SHALE BREAKEVENS

US SHALE BREAKEVENS FOR NEW WELLS*



*Source: EIA, MUFG Research; *Breakevens include a 10% IRR*

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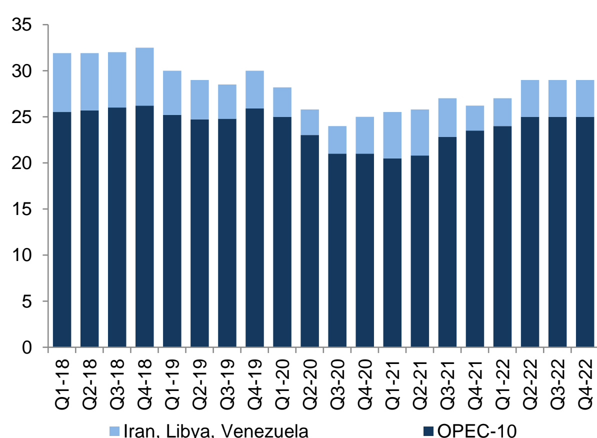
between now and September 2022, this is not a lot and the source of most of the apprehensions over a weakening oil market in 2022. However, we note four important factors:

1. OPEC will unlikely grow production by 0.4m b/d on a monthly basis. We estimate that OPEC-10 will add ~0.2m b/d month-on-month between January and mid-2022, slowing further thereafter.
2. Our estimate that OPEC will approximately grow production by only half the rate indicated the group's current strategy on 0.4m b/d in monthly hikes is centred on the crucial detail that it merely does not have the capacity to add its desired additional 0.4m b/d on a monthly basis. Nigeria, Angola and several smaller OPEC countries are already unable to meet their allocations, let alone their baselines – a fact verified by OPEC monthly production increases (~0.2m b/d) is already lagging relative to its agreed trajectory (0.4m b/d) back in July.
3. OPEC capacity constraints will become increasingly scare and concentrated in 2022. Estimates for spare capacity vary widely, with the IEA putting OPEC-10 spare capacity currently at 5.1m b/d whilst S&P Global Platts estimates it at 3.4m b/d. At face value, the current OPEC+ plan would leave 3.8m b/d of supply curbs in place at the start of January 2022, and by the time curbs are eased to ~2m b/d, we model that less than 2.5m b/d of spare capacity would remain. This would leave the global system increasingly susceptible to any supply shocks.
4. Finally, OPEC has little incentive to drive the market into oversupply. In the past, OPEC typically needed to make a trade-off – support oil prices for the short-term, or defend market share for the long-term, and these two objectives were almost always mutually exclusive. If OPEC supported oil prices via production cuts, chances were that new non-OPEC supply would be developed, which would then take market share away from OPEC. Visa versa, when OPEC decided to defend market share, it typically needed to produce more, driving prices down in the short term. However, this trade off seems to have changed fundamentally. The threat of peak oil, climate change, ESG and shareholder pressure over returns has meant that there has been little-to-no capex response to higher oil prices so far. Already, investment in oil and gas field development is running at a level of which the IEA says it is consistent with its "Net Zero by 2050" scenario. In that scenario, however, oil demand falls ~30% between now and 2030 – though

OPEC PRODUCTION WILL RISE IN 2022 BUT THE GROUP WILL EXERCISE CAUTION ON THE MAGNITUDE OF HIKES

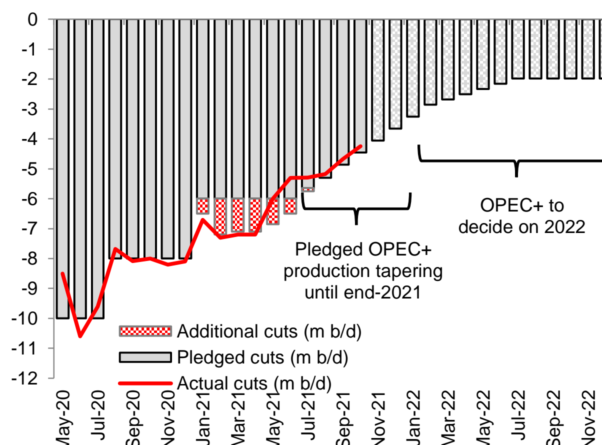
OPEC PRODUCTION, QUARTERLY (M B/D)



Source: Bloomberg, OPEC, MUFG Research

OPEC+ NEEDS DECIDES ON ITS 2022 STRATEGY – WE VIEW ~2M B/D OF CURBS STILL IN PLACE BY JULY 2022

OPEC+ PLEDGED AND ACTUAL OUTPUT CUTS SINCE MAY 2020 (M B/D)



Source: Bloomberg, OPEC, MUFG Research

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actual oil demand continues to rise. Given the continuing low level of non-OPEC investment, we suspect that OPEC will start to gain substantial market share after 2022. With that prospect in place, we suspect that OPEC will find it beneficial to manage its production one more year in 2022, rather than increase volumes to such a level that inventories will build and prices will fall again.

OIL PRICES: MODERATION IN MOST OF 2022 BUT HIGHER YEAR-END

Moderately bearish profile until Q4 2022

With the oil market remaining balanced on an annualised basis in 2022, low overall stock levels should keep prices firm, with our modelling estimates pointing to Brent and WTI crude averaging USD75/b and USD72/b, respectively, in 2022. On a quarterly basis, with our base case that the acutely tight market deficit will begin to ease from its peak in Q4 2021 (-1.8m b/d), narrowing sharply in Q1 2022 (-0.2m b/d) and thereafter pivoting into oversupply in Q2 2022 (0.6m b/d), we moderately turn tactically bearish on oil with a leg lower to USD75/b, USD72/b and USD70/b in Q1, Q2 and Q3 2022, respectively. Critically, our modelling estimates have balances looking tighter going into the last quarter, and with it we hold conviction that Brent will find its way back into the USD80s/b – ending 2022 at USD82/b.

Central oil thesis is that the market remain structurally underinvested – a new structural bull oil market is emerging

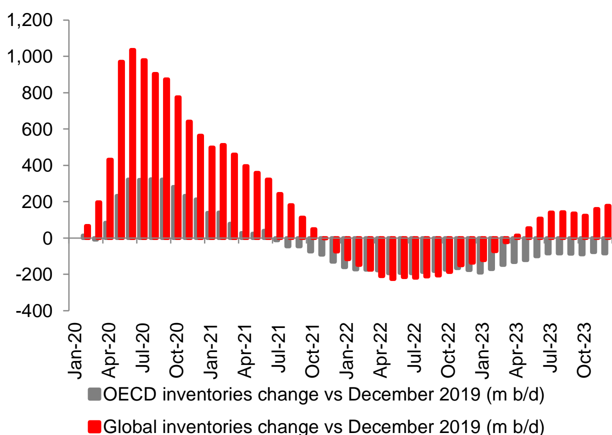
This is centred not just on a cyclical rotation back into a deficit but in fact anchored on our broader thesis that oil markets remain structurally underinvested. To put this into context, energy transition and ESG considerations after oil's golden era between 2010-14 has capped capital expenditures with inadequate production capacity to meet today's vaccine-led demand recovery (see here, here and here). This ultimately supports the long-end of the forward curve, and with the Brent forward curve in a strong backwardation, and the oil market likely to tip back into a deficit towards the end of 2022, we see a trading opportunity for long dated futures to move higher.

Whilst oil prices may not follow a linear line up, we remain structurally bullish on oil over the long-term

If policymakers' objectives of a large-scale buildout in green infrastructure are to be met, oil (and broader energy commodities) prices will need to significantly overshoot to the upside to provide the incentive for renewable investments to considerably rise. This is needed to compensate for the growing risks involved in long-cycle capex projects and the inherent complexities surrounding the energy transition. With this context in mind, our conviction is squarely centred on the premise that the less popular oil (and broader fossil fuels) become, the more they will cost, as crimping

STRUCTURALLY UNDERINVESTED OIL MARKET WITH LOW INVENTORIES SIGNALS A VOLATILITY VORTEX

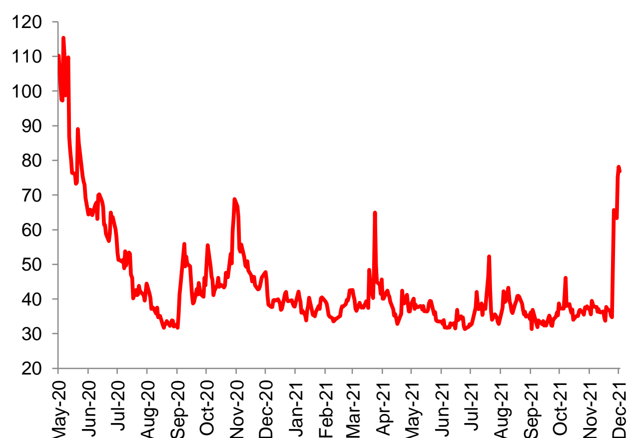
GLOBAL AND OECD OIL INVENTORIES VS DECEMBER 2019 (M B/D)



Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

OIL'S VOLATILTY HAS SURGED TO THE HIGHEST LEVEL SINCE MAY 2020 ON OPEC+ LEAVING THE DOOR OPEN

CBOE CRUDE OIL ETF VIX INDEX



Source: Bloomberg, MUFG Research

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supply without tackling demand (which will unlikely peak until the 2030s) will only cause oil prices to rise. However, we do not believe that oil prices will follow a linear line up, but instead occur in a series of ever-increasing spikes in the coming decade, given the push-and-pull dynamics between demand and supply. Succinctly put, any further slide in crude prices directly disincentivises supply, supporting our medium-term forecasts for renewed deficits, depleting inventories and sharply higher (and more volatile) oil prices – we believe a new structural bull oil market is emerging.

RISKS: VOLATILITY ABOUND

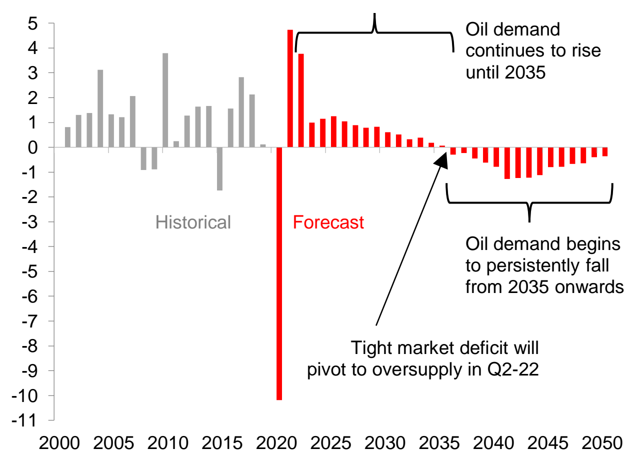
Six key risks for 2022

There are several key risks to our oil demand and supply balances which could not only impact our oil price forecasts but also add additional volatility to markets in 2022:

1. US oil strategy to be more confrontational with OPEC+. The US decision to go ahead with a major coordinated SPR release (see here) is a pivot from the Biden administration towards a more confrontational US stance that will cap cooperation with OPEC+, in our view. This signals a greater degree of geopolitical risk premium embedded into prices as we head into 2022, which we see contributing to higher volatility.
2. Further COVID19 strains and with it potential mobility restrictions. COVID-19 may have a greater impact on demand that we currently estimate. We currently expect that the recovery in oil demand continues with diminishing impact of COVID-19. This remains our base case but the emergence of the Omicron variant creates downside risk to our demand forecast.
3. Iranian crude production increases against our base case of no return in 2022. Our models do not assume any lifting of sanctions or increase in Iranian exports through 2022 given the still polarisation of positions. However, if this were to occur, it could potentially add more than 1m b/d to global supply, and it is unclear how willing OPEC+ would be to recalibrate supply.
4. Capital discipline in US shale could ebb. Our current assumptions for US production growth are shallower than those seen during the previous cyclical recovery of 2016-18. To a large extent, this reflects the expectation of ongoing capital discipline by publicly listed US shale companies. However, this discipline may cease if oil prices continue to go higher, which could create upside to our price forecasts.
5. Competition for market share within OPEC+ may break out. Our

WHILST WE ENVISAGE THE PACE OF OIL DEMAND TO SLOW, IT WILL UNLIKELY PEAK UNTIL 2035

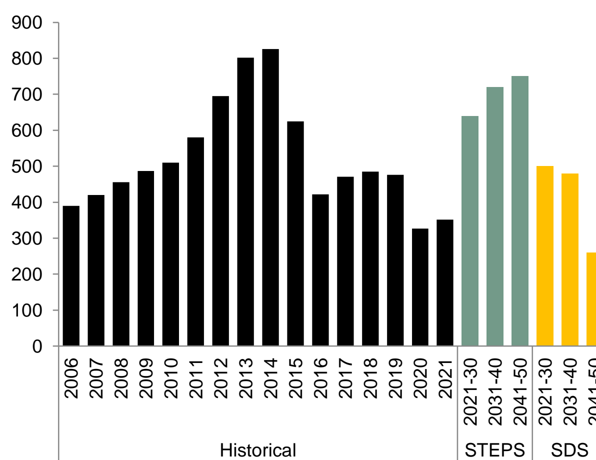
GLOBAL OIL DEMAND GROWTH (ANNUAL, M B/D)



Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

AN ORDERLY ENERGY TRANSITION REQUIRES LARGE ENERGY CAPEX INVESTMENT TO MEET HIGH OIL DEMAND

GLOBAL E&P UPSTREAM CAPEX SPENDING (USD BN)



Source: Bloomberg, IEA, MUFG Research

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expectations is that OPEC+ will gain substantial market share after 2022, and with that in mind, OPEC+ will continue to actively management the market in 2022. However, it is also conceivable that the threat of "peak oil demand" creates competition for market share not only between OPEC+ and non-OPEC, but also within OPEC+ itself. Put differently, if OPEC behaves differently from our current expectation, there could also be downside risk to our price forecasts.

6. Capacity scarcity precipitously erodes. Should OPEC+ maintain course, or indeed aggressively hike output by more than our expectations, spare capacity could increasingly become scare, concentrated and worryingly thin, and with it create significantly bullish price pressures.

ENERGY TRANSITION: HARDER ITS PUSHED THE MORE OIL UPSIDE

The harder energy transition is pushed, the higher and more volatile commodity prices will become in the coming years

There is no question that the growing imperative to decarbonise will have a larger impact as time goes on. The IEA's landmark net-zero roadmap unveiled in March 2021 triggered debate by positing a future with no investment in new fossil fuel supply. That would be fine if that fossil fuel line bending down was mirrored perfectly by a zero carbon energy line rising to eclipse it. Whilst there is nothing in the laws of physics that says the world needs to run on fossil fuels, the reality is the global system remains highly dependent on them. As the ambition behind "net zero" gains momentum, the suppliers of traditional energies are scaling back supply faster than demand is tailing off. With this, it is clear that there are indisputable challenges with the energy transition and the harder we push, the more expensive the campaign towards a greener carbon neutral state becomes. We view that there is an increasing risks that the journey could ultimately become disorderly with higher and more volatile commodities prices – less linear but instead occurring in a series of ever increase spikes – over the coming years. Put differently – in the 2000s, markets were bullish on commodity prices owing to demand from China. Now, the structural bullishness is because of increasing demand from green projects, and the green economy is the new China.

Oil price forecasts and ranges

MUFG AVERAGE OIL PRICE FORECASTS (USD PER BARREL), AS OF 08 DECEMBER 2021

USD/b			Average quarterly forecasts					Average annual forecasts	
	Spot	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	2021	2022
Brent	75.8	73.3	82.8	74.5	72.3	70.4	82.1	71.2	74.8
NYMEX WTI		70.5	79.8	70.9	68.5	68.5	79.7	68.6	71.3
Brent ranges	---	---	68.6 – 95.9	64.4 – 92.3	56.3 – 85.6	54.0 – 82.5	59.2 – 88.9	---	---
WTI ranges	---	---	65.6 – 88.3	60.3 – 87.7	53.0 – 79.5	51.9 – 76.8	56.7 – 85.4	---	---

Source: MUFG Research

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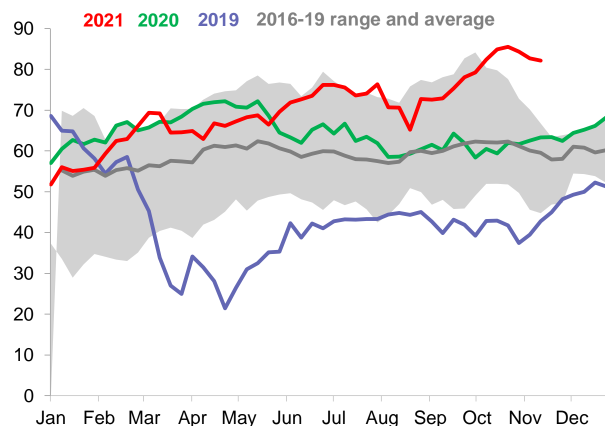
Core indicators – prices and market positioning

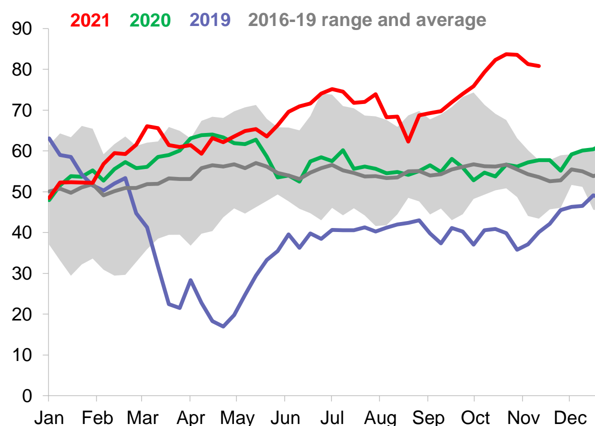
BRENT SPOT

USD/B



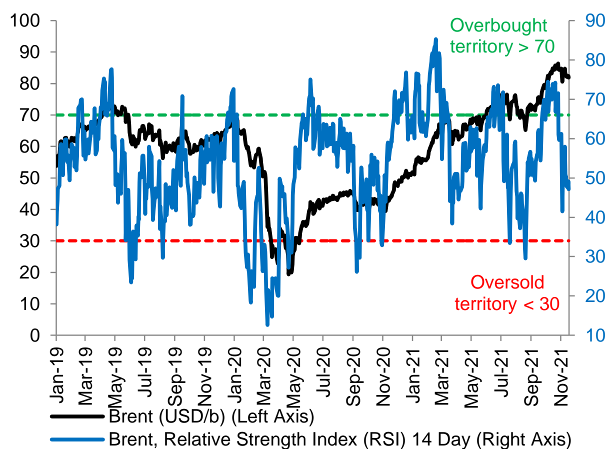
NYMEX WTI SPOT

USD/B



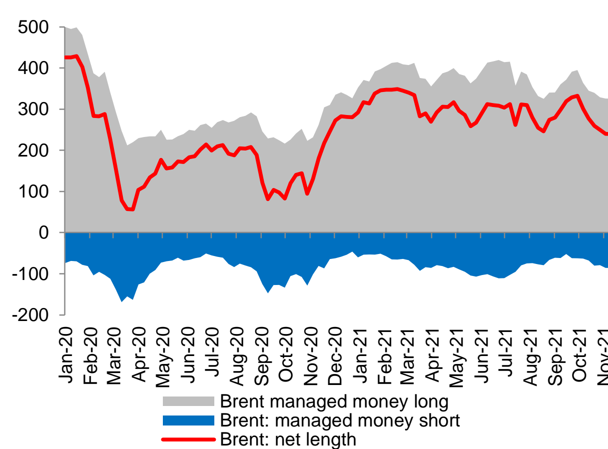
14 DAY RELATIVE STRENGTH INDEX (RSI) AND WTI

USD/B AND 0-100 INDEX (<30 = OVERSOLD; >70 = OVERBOUGHT)



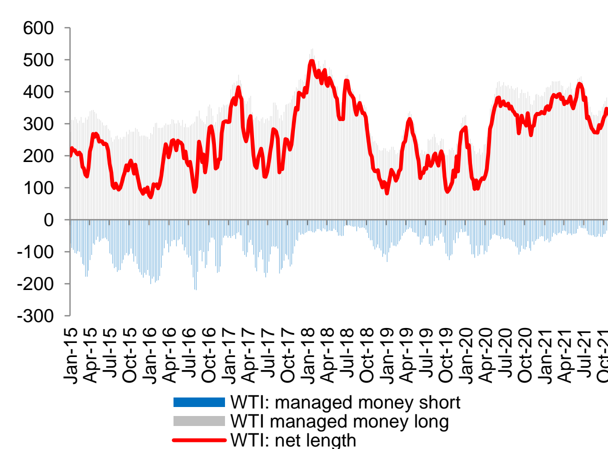
BRENT NET LENGTH MANAGED MONEY

CONTRACTS (THOUSANDS)



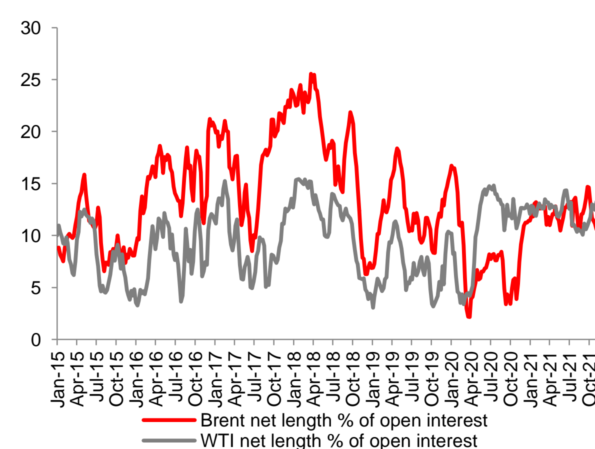
WTI NET LENGTH MANAGED MONEY

CONTRACTS (THOUSANDS)



NET LENGTH MANAGED MONEY / OPEN INTEREST

%

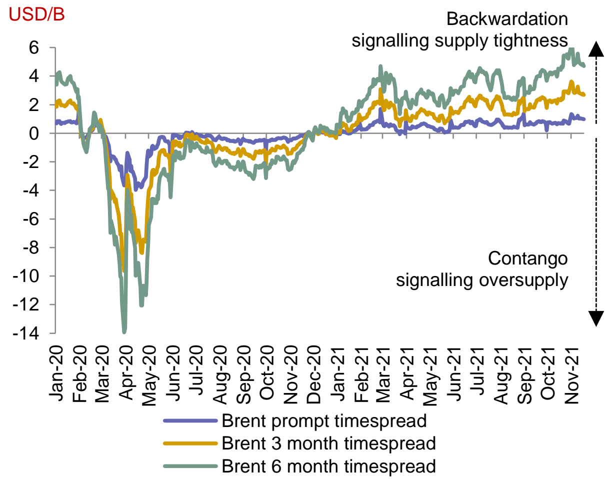


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

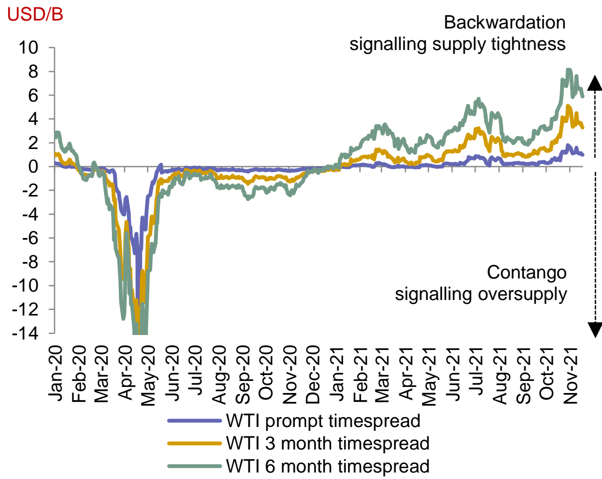
MUFG

Core indicators – timespreads and futures

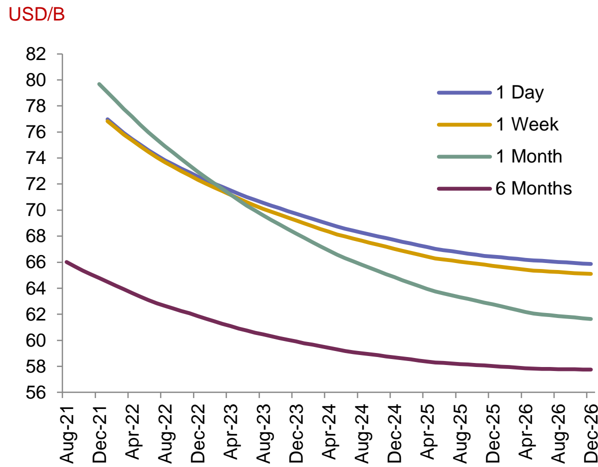
BRENT TIMESPREADS – FRONT, 3 A ND 6 MONTHS



WTI TIMESPREADS – FRONT, 3 AND 6 MONTHS



BRENT FUTURES CURVE



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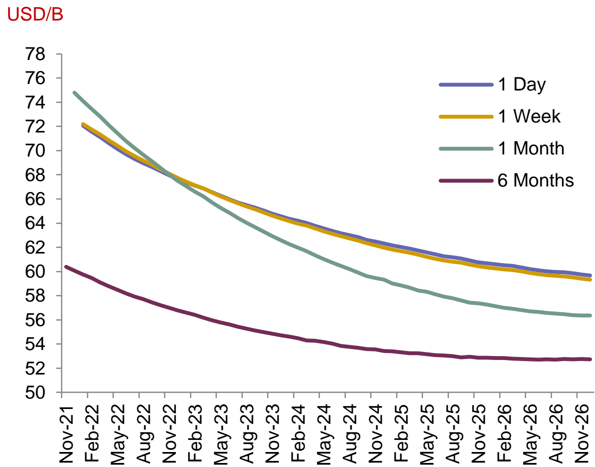
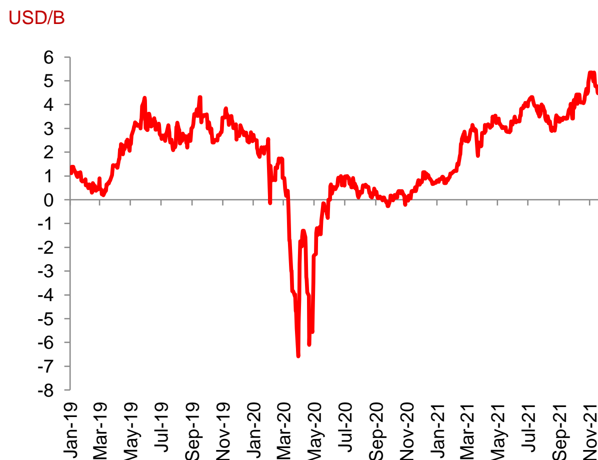
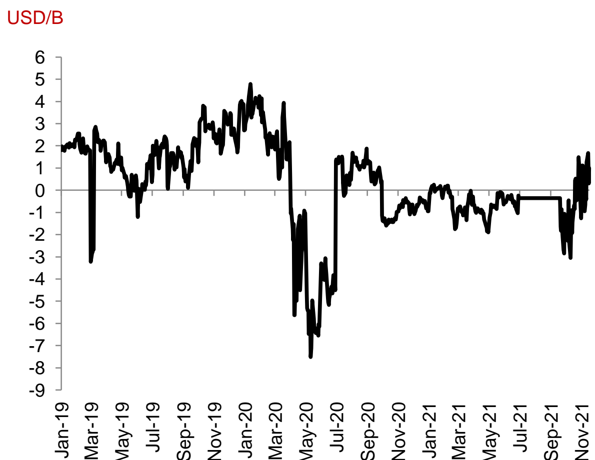


BRENT-DUBAI SPREAD



BRENT-MURBAN SPREAD

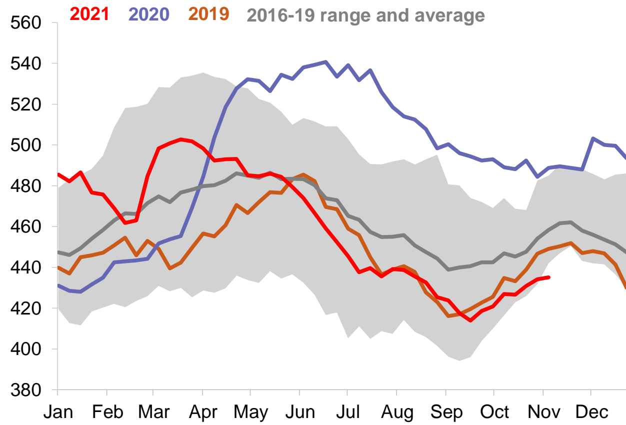


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

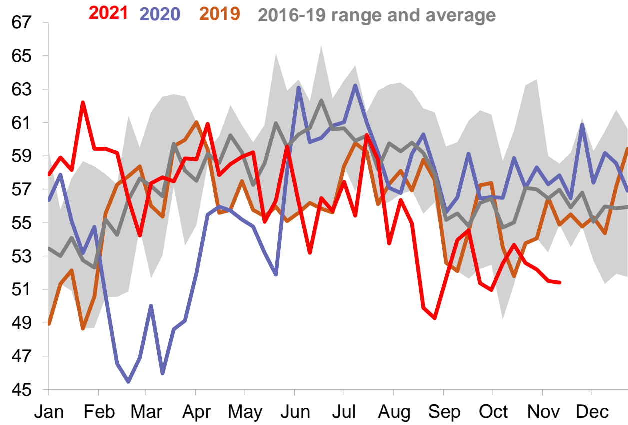
MUFG

Core indicators – inventories, storage and products

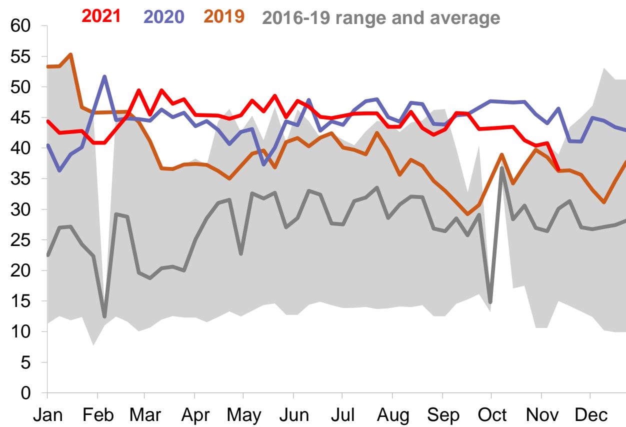
US CRUDE INVENTORIES
MILLION BARRELS



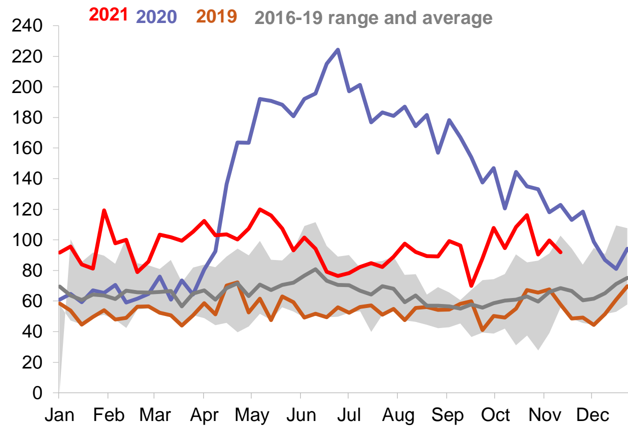
ARA CRUDE INVENTORIES
MILLION BARRELS



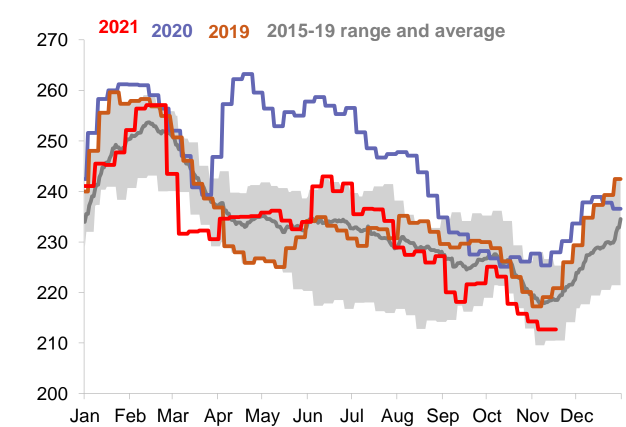
CHINA SHANDONG CRUDE INVENTORIES
MILLION BARRELS



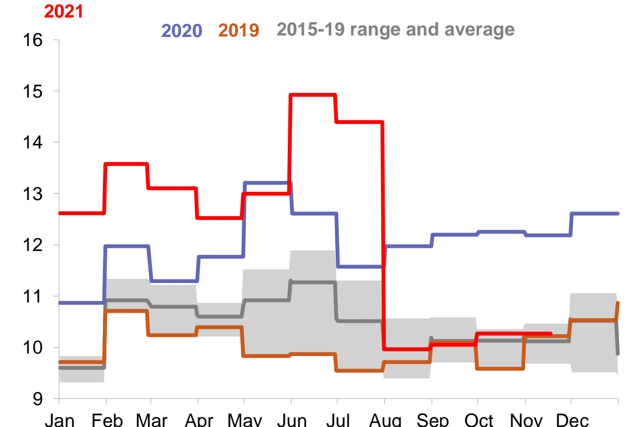
GLOBAL CRUDE FLOATING STORAGE
MILLION BARRELS



US GASOLINE INVENTORIES
MILLION BARRELS



JAPAN GASOLINE INVENTORIES
MILLION BARRELS



Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

Research

London:

MR DEREK HALPENNY
Head of Research, Global Markets EMEA & International Securities
E: derek.halpenny@uk.mufg.jp

MR LEE HARDMAN
Currency Analyst
E: lee.hardman@uk.mufg.jp

MS MOMOKO MIYACHI
Research Assistant
E: momoko.miyachi@uk.mufg.jp

Shanghai:

MR MARCO SUN
Chief Financial Markets Analyst
E: wu_wun@cn.mufg.jp

Hong Kong:

MS LIN LI
Head of Global Markets Research Asia
E: lin_li@hk.mufg.jp

Dubai:

MR EHSAN KHOMAN
Head of Emerging Markets Research – EMEA
E: ehsan.khoman@ae.mufg.jp

Tokyo

MR MINORI UCHIDA
Tokyo Head of Global Markets Research
E: minori_uchida@mufg.jp

MR TOSHIYUKI SUZUKI
Senior Market Economist
E: toshiyuki_4_suzuki@mufg.jp

MR TAKAHIRO SEKIDO
Chief Japan Strategist
E: takahiro_sekido@mufg.jp

MS SUMINO KAMEI
Senior Analyst
E: sumino_kamei@mufg.jp

MR TEPPEI INO
Senior Analyst
E: teppei_ino@mufg.jp

MR TOMOKI HIRAMATSU
Research Assistant
E: tomoki_hiramatsu@mufg.jp

Singapore:

MS SOOK MEI LEONG
Asean Head of Global Markets Research
E: leongsm@sg.mufg.jp

MS SOPHIA NG
Analyst
E: sophia_ng@sg.mufg.jp

Sao Paulo:

MR CARLOS PEDROSO
Senior Economist
E: cpedroso@br.mufg.jp

MR MAURICIO NAKAHODO
Economist
E: mnakahodo@br.mufg.jp

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