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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Can a strong USD derail the commodity bull cycle?

Global commodities: Beyond rising nominal rates, the other current dominant global macro theme has been the USD strength, reflecting increased hawkishness by the Fed, relative weakness in Europe and China and global risk-off on the back of recession fears boosting the USD's role as a safe haven asset. The breakdown in commodity-USD correlations can be explained by rising global inflation expectations, a diverging volatility profile between FX and commodities, a strong trade-weighted CNY and extreme idiosyncratic tightness in commodities. Currently, USD strength has had little discernible impact on broad commodity performance with the correlation to FX visibly low. This is in line with our thesis that tight commodity markets (energy and grains) tend to display greater immunity to USD strength (see here).

Energy: Soaring refining margins are underscoring tight oil products markets, signalling that refined oil products such as diesel and gasoline – i.e. what the economy and end-consumers are exposed to – are far more expensive than merely looking at crude prices would suggest. Meanwhile, European gas prices have whipsawed on the continents Russian Rouble payments dilemma.

Base metals: Aluminium, copper, nickel and zinc all remain caught in the bearish crosswinds of COVID apprehensions, largely unimpeded Russian exports, a surging USD and a broad risk-off move in macro assets over recent weeks.

Precious metals: Gold and silver have moved lower in line with USD strength. For PGMs, Chinese demand concerns outweigh the geopolitical supply risk premium.

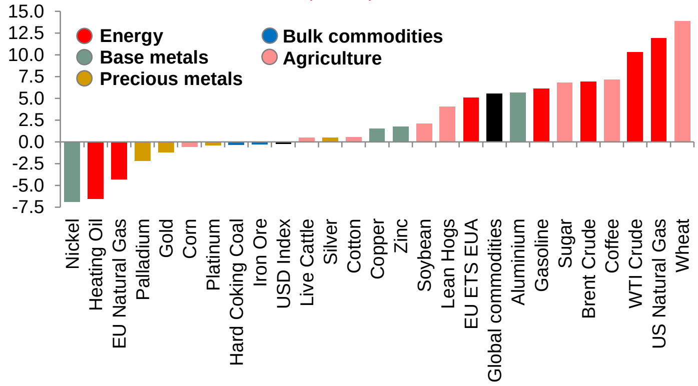
Bulk commodities: Iron ore is under pressure as Chinese lockdowns highlights a weak outlook for steel demand. Meanwhile, Europe is grabbling with coal scarcity.

Agriculture: Food prices have reached new record highs with grain prices sharply higher driven by the war, inclement weather, high input (energy and fertiliser) costs, shipping delays and labour shortages. Hoarding is becoming widespread (see here)

Core indicators: Price performance and forecasts, flows, market positioning, timespreads, futures, inventories, storage and products performance covered below.

WEEKLY COMMODITIES PERFORMANCE: SCARCITY BOOSTS DIVERSIFICATION

BLOOMBERG COMMODITY INDEX (BCOM) RETURNS, WEEK-ON-WEEK TO 18 MAY 2022 (%)



While balanced portfolios are having a tough time digesting the surge in bond yields, commodities remain a welcome source of diversification in multi-asset portfolios amid low correlations and stable risk-adjusted returns – supply scarcity will keep commodity markets tight and returns well-diversified

Source: Bloomberg, MUFG Research

GLOBAL COMMODITIES (5.6% W/W; 31.1% YTD)

A strong USD has historically had a direct negative impact on commodity prices

Beyond rising nominal rates, the other current dominant global macro theme has been the USD strength, reflecting increased hawkishness by the Fed, relative weakness in Europe and China and global risk-off on the back of recession fears boosting the USD's role as a safe haven asset. A strong USD has historically had a direct negative impact on commodity prices as the vast bulk of commodity consumers and producers are located outside of the US. It can also be correlated to commodities because it reflects recession fears and can itself lead to a global growth slowdown due to a tightening in global financial conditions.

We do not view a stronger USD as a risk for commodity performance as the link is justifiably weak

In the same way that we have catalogued commodity performance remaining undeterred from higher nominal or real rates (see here), we do not view a stronger USD as a risk for commodity performance as the link is justifiably weak. The breakdown in commodity-USD correlations can be explained by rising global inflation expectations, a diverging volatility profile between FX and commodities, a strong trade-weighted CNY and extreme idiosyncratic tightness in commodities.

USD strength has had little discernible impact on broad commodity performance with the correlation to FX visibly low

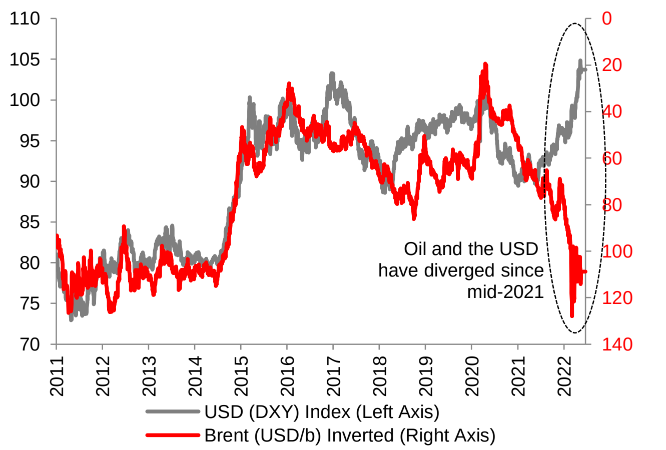
Critically, USD strength has had little discernible impact on broad commodity performance with the correlation to FX visibly low at the current juncture. This is in line with our thesis that tight commodity markets (persistent deficits, low inventories and low spare capacity) tend to display greater immunity to USD strength (see here). Conversely, commodities with looser fundamentals tend to be more driven by macro conditions and hence the USD, than those with a strong a micro conviction.

Near-term USD strength signals a continued divergence within the commodity complex with tight commodities offering safety

Looking ahead, our FX analysts see few reasons for the USD to reverse course as recession and inflation fears strengthen. This signals that the divergence within the commodity complex will continue. The evidence points to a sectoral divergence between tight commodities that are trading in marked backwardation and those with relatively loose timespreads – with the former group displaying a lower correlation and the latter relatively higher correlation to the USD. In particular, energy and grains which have the steepest backwardation, thus signalling strong physical tightness, have remained resilient to USD strength while base metals, where timespreads have loosened lately, display a strong negative correlation to the USD. Over the medium-term, we believe that base metals will outperform as China emerges from lockdowns and stimulus measures gain traction. With a reversal in USD appreciation likely once US inflation normalises, a weaker USD alongside a rebound of growth in China should also finally unlock precious metals, notably gold, to break out higher.

OIL PRICES AND THE USD ARE INTERTWINED BUT IT IS NOT ALWAYS CLEAR WHICH ONE IS DRIVING THE OTHER

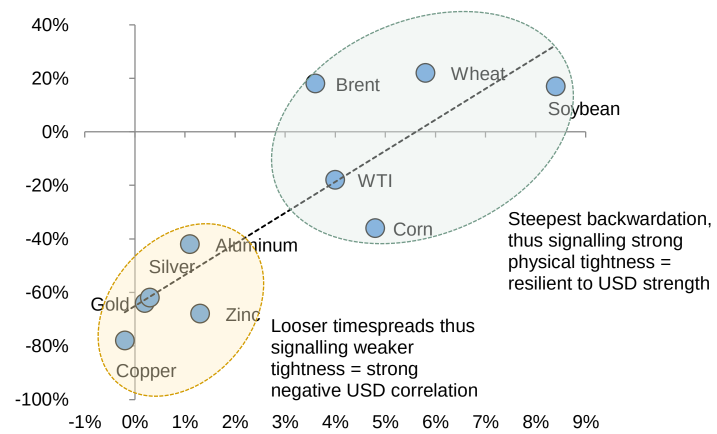
BROAD USD (DXY) INDEX VS. BRENT CRUDE (USD/B, INVERTED)



Source: Bloomberg, MUFG Research

INDIVIDUAL COMMODITIES CORRELATION TO THE USD IS CLOSELY RELATED TO THE RELATIVE TIGHTNESS

COMMODITIES AND USD CORRELATION VS HISTORICAL TIMESPREADS



Source: Bloomberg, MUFG Research

ENERGY (9.2% W/W; 72.7% YTD)

Crude oil

Oil is pushing higher as US product markets tightens and China hopes

Oil prices have advanced on further signs of tightness in key US product markets and expectations that China may be moving closer to easing its stern COVID lockdowns that have sapped crude demand. With oil prices now hovering close to their highest level since March, we remain resolute prices are marching closer to price-induced demand destruction necessary to reduce consumption. We believe maximum pain thresholds will be reached in the third quarter with a corresponding Brent average price above USD140/b – levels that ultimately could bring to jolt corporate activity, squeeze private consumption and begin to ease the market's severe tightness.

Exacerbated by the war in Ukraine, soaring refining margins are underscoring extremely tight oil products markets

Global oil refining margins have risen significantly to unprecedented levels in recent weeks across all regions and almost all products in the wake of the war in Ukraine. Severe tightness in the global refining system means that refined oil products such as diesel and gasoline – i.e. what the economy and end-consumers are exposed to – are far more expensive than merely looking at crude prices would suggest. In effect, the real economy is suffering a much stronger energy inflation shock, which matters profoundly for global central banks in their bid to rein in elevated price rises.

The blowout in the indicative 3-2-1 crack spread accentuates that energy inflation is far stronger than it appears

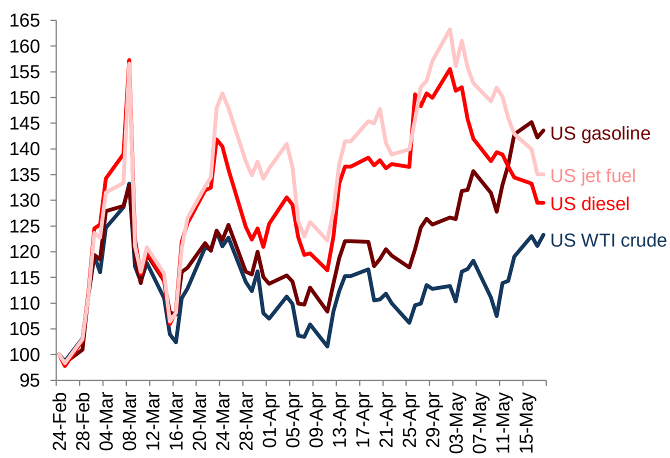
The blowout in the indicative 3-2-1 crack spread (the assumption that for every three barrels of WTI crude a refinery processes, it makes two barrels of gasoline and one barrel of diesel – representative for an average refinery and is a gross figure out of which refiners pay for labour and the cost of capital) accentuates that energy inflation is far stronger than it appears. Over the last decade the crack spread has averaged ~USD20/b. Currently the margin has catapulted north of USD50/b, with crack margins for diesel and other petroleum products surging much higher.

Several key reasons behind the surge in refining margins

There are several reasons for the flare-up in refining margins. First, demand (especially for diesel) has rebound robustly, depleting global inventories. For instance, in the US East Coast, diesel stocks have fallen to the lowest on record. Second, strategic petroleum reserve (SPR) releases has helped to put a cap on WTI prices, but it has not addressed the tightness in refined products. Third, refining capacity has declined where it matters for the market now, and the plants that are operating are grappling to process enough crude to meet the demand for fuel. Fourth, sanctions and self-sanctioning of Russia oil is exacerbating the pressure on margins. Russia is a titan exporter not sure of crude, but also of diesel and semi-

REFINED OIL PRODUCTS HAVE SURGED PAST CRUDE OIL SINCE THE START OF THE WAR IN UKRAINE

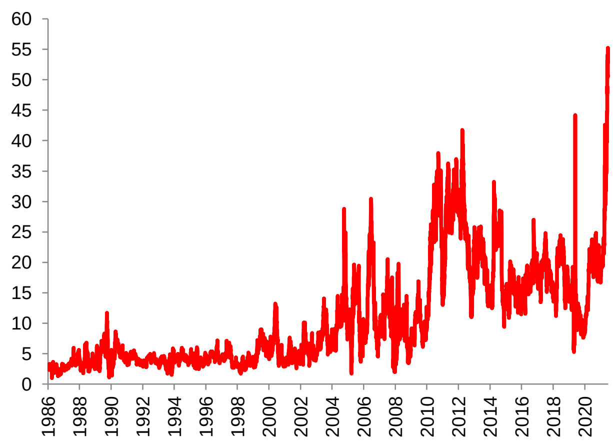
WTI CRUDE (USD/B) VS GASOLINE, DIESEL AND JET FUEL (USD/GALLON)



Source: Bloomberg, MUFG Research

SOARING REFINING MARGINS ARE UNDERSCORING EXTREMELY TIGHT OIL PRODUCTS MARKETS

WTI CRUDE 3-2-1 CRACK SPREAD (USD/B)



Source: Bloomberg, MUFG Research

processed oil that European (and US pre-sanctions) refiners turned into fuel. This flow has now dried. Moreover, Europe in particular not only needs to find extra crude to produce the diesel and other fuels it's not importing from Russia, but critically, it also needs the refining capacity to do so.

US gasoline inventories are now below the low end of their five year range

At a time when US gasoline inventories should be building ahead of the driving season, inventories instead have declined for most of this year. These are now below the low end of their five year range. Gasoline demand should only increase over the coming months and, in the absence of a pick-up in refinery runs, the gasoline market is likely to continue to tighten. The tighter gasoline market appears to have also contributed to a narrowing in the WTI-Brent discount, given the need for higher US refinery runs, which should be supportive for US crude demand.

Q2 2022 should be the peak for margins

Looking ahead, this quarter should be the peak for margins as refineries return from spring maintenance, but the dislocations caused by the war in Ukraine are unlikely to ebb entirely in the near term. Russian crude oil and diesel exports could fall further following the entry into force of EU sanctions on 15 May. In addition, the EU (or least certain EU countries) could decide to phase out imports of Russian oil and oil products by end-2022. On a six month view, the real downside risk to refining margins is lower oil demand, caused by price-induced demand destruction – the ultimately solver in a market devoid of inventory buffers and supply elasticity (see here). From 2023 we expect refining capacity additions in Asia and the Middle East to ease the tightness in the refined products market, helping to normalise refining margins.

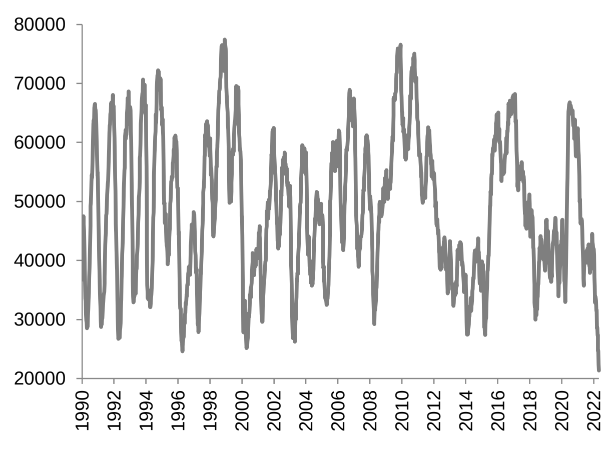
Natural gas

US natural gas spikes to the highest level since 2008 with elevated volatility set to become entrenched

European natural gas (TTF) prices have whipsawed as the continent's Russian Rouble (RUB) payments dilemma lingers on. The European Union stated on 17 May that companies would violate sanctions by opening bank accounts in RUB to purchase Russian supplies, as per Russia's request. However, the European Union has issued two sets of guidance on the matter so far – both of which leave room for interpretation (see here). Italy's Eni has publicly stated that it's opening a RUB account to keep the gas flowing, and other entities expect to find a way to continue purchases. Meanwhile, Germany's Uniper said it will pay for gas in Euros (EUR) which will ensure "timely fulfilment of the contract" on the company's part, but remains in "close exchange" with the German government on the payment.

US EAST COAST DISTILLATE (DIESEL AND HEATING OIL) INVENTORIES HAVE PLUNGED TO RECORD LOWS

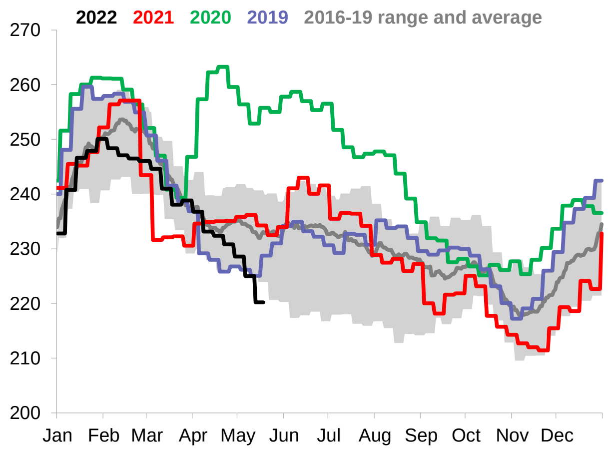
US EAST COAST DISTILLATE FUEL INVENTORIES (THOUSANDS BARRELS)



Source: Bloomberg, MUFG Research

US GASOLINE INVENTORIES ARE HOVERING AT THE EDGE OF THEIR FIVE YEAR AVERAGE

US GASOLINE INVENTORIES (M BARRELS)



Source: Bloomberg, MUFG Research

Russia has to date halted gas flows to Poland and Bulgaria

To date, Russia' Gazprom has halted gas deliveries to Poland and Bulgaria starting 27 April, citing their refusal to pay in RUB (see here). Both countries had previously said they would let their respective 10.2Bcm and 2.9Bcm contracts with Gazprom expire at year-end 2022, and their payments were due before those of other EU customers. Gazprom's decision to shut gas supply to Poland and Bulgaria in itself does not significantly affect Europe's gas balances as:

1. The move essentially brings forward an expected outcome by eight months.
2. Physical flows to other European countries are not significantly affected, at least so far. Germany imports Russian gas primarily through the Nord Stream 1 pipeline, which bypasses Poland, while volumes through the Yamal pipeline that goes through Belarus and Poland have already fallen to minimal levels. Bulgaria is a transit country for Russian gas going to Greece and Serbia. So far, deliveries to Serbia via Bulgaria are reportedly unaffected.

US Henry Hub prices remain supportive (for now)

Meanwhile, US natural gas prices remain elevated, recently reaching levels unseen since 2008 with an intraday high of USD9/MMBtu on 3 May, before moving back to current levels ~USD8/MMBtu. We believe tighter fundamentals were behind the first part of the rally, mainly driven by colder weather in April. However, the more recent volatility in the market has likely been mainly driven by positioning, with our storage outlook very little changed in recent weeks. We still believe that Summer 2022 will be the tightest season of the next couple of years owing to low end of summer storage expectations, and slow production growth since the start of the year. Accordingly, we believe that US gas prices have likely overshot and are having to look for fair value and we maintain our USD5.3/MMBtu average forecast for 2022.

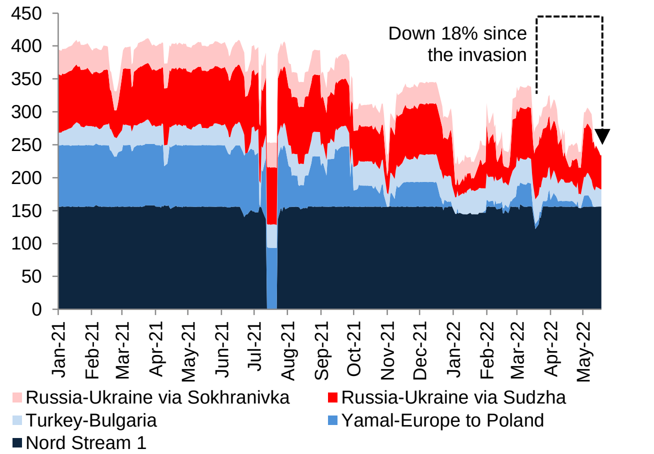
Carbon markets

EU could sell carbon permits from the Market Stability Reserve to pay for the exit from Russian gas

The EU is preparing to auction off EUR20bn Emissions Trading Scheme (ETS) certificates with the funds expected to be used to finance EU's exit from Russian energy, according to reports. The European Commission is reportedly planning to invest ~EUR200bn in alternative supplies and new infrastructure by 2030. The proposed plans would involve selling between 200-250m ETS certificates from the Market Stability Reserve (MSR). On net, whilst unconfirmed (for now), the potential for allowances to be released from the MSR would be a short term negative, in our

RUSSIAN GAS SHIPMENTS TO EUROPE THROUGH KEY ROUTES ARE DOWN 18% SINCE INVASION AND AT RISK

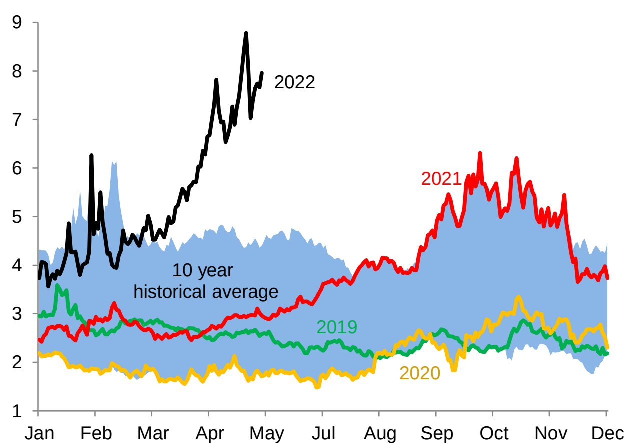
RUSSIAN PIPED NATURAL GAS SUPPLY TO EUROPE (MMBTU/D)



Source: Bloomberg, MUFG Research

US GAS PRICES ARE ON A TEAR WITH LEVELS HOVERING CLOSE TO 14 YEAR HIGHS

US HENRY HUB (USD/MMBTU), 10 YEAR AVG BAND & 2019-22 PROFILES



Source: Bloomberg, MUFG Research

view, as the addition of allowances from the MSR would delay the tightness we envisage in the market. Further details we published in the second instalment of the EU's RePowerEU plan on 18 May aimed at reducing Russian dependence (see here).

BASE METALS (0.6% W/W; 4.6% YTD)

Aluminium

Cyclical headwinds in aluminium does not change the structural story

Over the past few weeks, aluminium has corrected sharply lower. We however envisage the market entering a phase of greater price stability with high input costs providing a floor to prices from here. At the current aluminium price, close to 1.5/MT of smelting capacity is now in a loss making position, according to our estimates. The majority of this incremental at risk capacity is in Europe where energy inflation remains the most acute cost inflator, as we expect upside pressures on European gas (TTF) prices to remain acute near-term. LME aluminium stocks continue to fall, now standing at just over 500/KT – lowest level since 2005, which leaves little buffer in case of further smelter cuts. More broadly, aluminium's cyclical headwinds do not change the structural story. That is, structural fundamentals remain intact – the underlying playbook for ongoing outperformance in aluminium is clear as their role in the decarbonisation process is central (and unprepared). Greening the economy will support a surge in aluminium (and broader base metals) demand but sticky inadequate supply widens deficits, inducing a multi-year supercycle (see here).

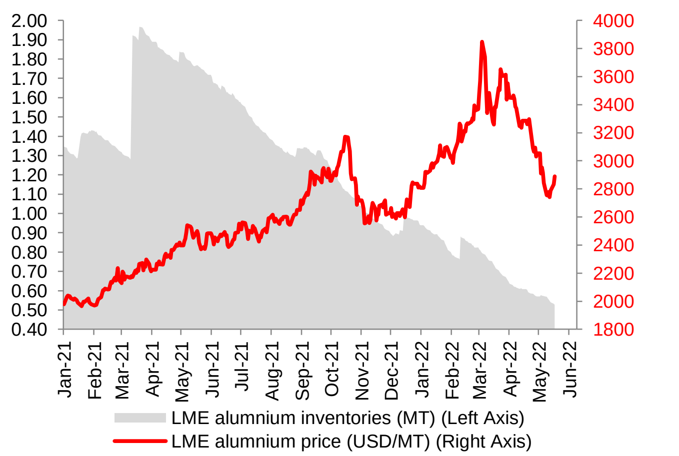
Nickel

Nickel's bull market is here

At the start of the year, nickel's place within green metals was as a key competitor in the race for mineral dominance of energy storage. Currently, it sits at the intersection of Europe's push for decarbonisation and energy independence. At the heart of Europe's strategy lies its desire to rapidly electrify its transportation sector – a source of 20% of its emissions and ~2m b/d of Russian oil imports. With Europe's domestic EV sector already favouring nickel-based batteries, nickel is set to benefit the most from politically motivated demand accelerating already rapid growth in nickel battery use. With this – and unlike aluminium and copper which both face green demand driven supercycles in the coming years – we believe that the extreme tightness and rapidly rising prices in the nickel market are already here. Even with the most

ALUMINIUM PRICES HAVE EASED BACK BUT THE DRAIN ON INVENTORIES IS SEVERE – PATH TO SCARCITY

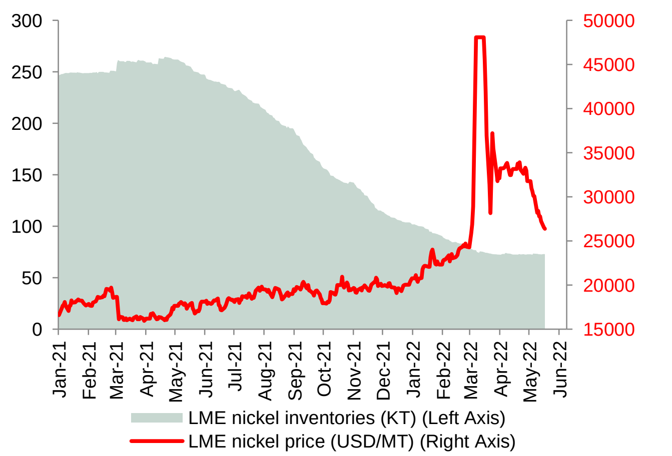
ALUMINIUM PRICE (USD/MT) AND INVENTORIES (MT, THOUSANDS)



Source: Bloomberg, LME, MUFG Research

NICKEL INVENTORIES HAVE SHARPLY FALLEN WITH PRICES FINDING A NEW NROMAL PATH POST-SQUEEZE

NICKEL PRICE (USD/MT) AND INVENTORIES (MT, THOUSANDS)



Source: Bloomberg, LME, MUFG Research

practical short-cycle supply solution, the battery grade nickel market will continue to experience extreme tightness this year, in our view. Accelerated by Russia supply risk and some positioning extremes, prices moved rapidly higher early in the year. However, with inventories already at low levels, the time frame for resolution suggests that a near depletion in class 1 stock is likely to occur over the next few quarters before an eventual softening turn. In the medium term, we forecast the market turning to surplus as supply growth outpaces demand. With this, we have recently lifted our price forecast trajectory but we still expect the price easing into year-end (MUFG average Q4 2022 forecast USD26,000/MT).

Copper

Supply disruptions remain unresolved and are the basis of our bullish copper stance

Whilst copper lacks the same degree of cost curve support as aluminium, it is the metal with the most advanced state of tightening from a fundamentals basis. Onshore copper stocks have nearly halved from the first quarter of 2022 peak, drawing on a sustained basis through the Chinese lockdowns. Such is the tightness in China currently for cathode that the import arbitrage has been open on a sustained basis from early May. The move lower in price will have only exacerbated these supply constraints and offered some demand stimulation. As we move towards an environment again of stronger China imports and falling LME copper inventories, this should offer a stronger offset to the macro pressures on the copper price. We continue to see copper prices as substantially underpriced given persistent tightening micro trends in China even through lockdowns. Such supply disruptions is the premise of our bullish conviction (MUFG average Q4 2022 forecast USD11,900/MT).

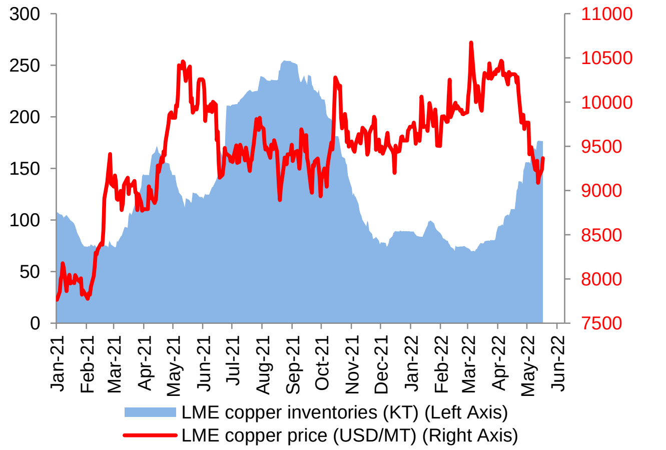
Zinc

Higher power prices continue to hinder smelters

Zinc fundamentals remain exceedingly tight. The war in Ukraine has resulted in higher fuel and power prices, which has led to the closure of smelters. This has caused tightness in the smelter market, resulting in an increase in treatment charges to USD240/MT for 2022 from USD159/MT in 2021. From 2023 onwards we expect the deficit to decrease as smelter capacity is restored (as energy costs normalise) and the market should remain relatively tight over the next five years, reaching a surplus in 2024. On net, we maintain our bullish forecasts though expect a slight pullback given prices appear to have overshot fundamentals somewhat (MUFG average Q2 2022 forecast USD4,100/MT).

COPPER INVENTORIES ARE IN A STATE OF ACUTE DEPLETION WITH UPSIDE PRICE RISKS IMMENSE

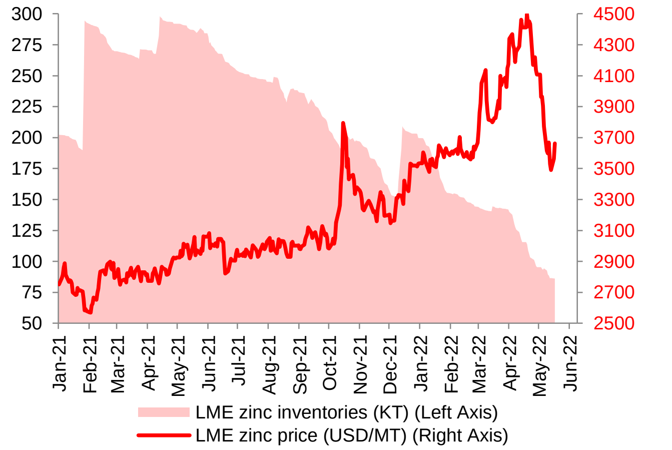
COPPER PRICE (USD/MT) AND INVENTORIES (MT, MILLIONS)



Source: Bloomberg, LME, MUFG Research

ZINC INVENTORIES HAVE BEEN LOW THROUGHOUT THE PANDEMIC WITH PRICES SIGNIFICANTLY RISING

ZINC PRICE (USD/MT) AND INVENTORIES (MT, MILLIONS)



Source: Bloomberg, LME, MUFG Research

PRECIOUS METALS (-0.4% W/W; -1.7% YTD)

Gold

Gold has fallen further with the USD extending its rally

Gold has moved lower in line with the broad-based USD strength and with particular strong correlation against the CNY. Historically, while gold tends to disconnect from real rates during the Fed hiking periods the relationship with USD is more persistent. Since the vast bulk of gold is produced and consumed outside of the US, broad-based USD appreciation should lead to a similar depreciation in gold, all things equal. Near term, the impact of the USD may be even larger due to repositioning of gold speculative positions which are very sensitive to USD momentum. This means that further USD upside could continue to put near-term pressure on gold.

Three core bullish gold drivers in the months ahead

Looking ahead, we reiterate our call that gold is facing the most bullish backdrop in 10 years, as (i) investment; (ii) central bank and (iii) consumer demand appear set to simultaneously thrive – the last time these three forces came together in 2010-11, gold rallied ~70%. First, we are already seeing strong momentum in gold ETF demand, which should build further as US growth slows. Second, we also expect gold central bank demand to pick up in the second half of the year, after the RUB stabilises, as Russia should have meaningful liquidity to ramp up its gold purchases Third, Asian consumer demand was very strong in H2 2021, and should only get stronger in our view, on greater wealth and a lack of investment option. We believe that gold prices will now accelerate from current levels (MUFG average Q4 2022 forecast USD2,250/oz).

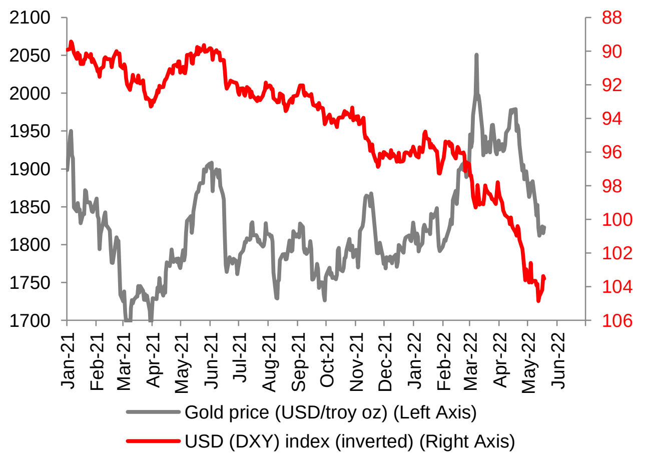
Silver

Silver rallied on Ukraine invasion, higher gold and inflation but then retreated on Fed rate hikes and robust USD

Silver gained earlier this year on gold strength, geopolitical risks following the war in Ukraine and higher inflation. The withdrawal of monetary and fiscal stimulus, notably Fed rate hikes, subsequently erased those gains. Physical demand increases may play a crucial role in supporting silver prices going forward. Silver is a key component in a wide variety of industrial processes. Industrial demand is up and may rise further – despite the slowing world economy – for the next several years. Strong coin and bar demand in 2021 may not be sustained at the same pace in 2022, but inflation scares support this source of demand. Jewellery demand is rising, buoyed by increasing income and pent-up demand and may stay firm. From a supply perspective, global silver output is on a broad upward trajectory, and we expect it to

GOLD HAS FALLEN TO A TWO MONTH LOW ON A SURGING USD ON THE FED'S HAWKISH STANCE

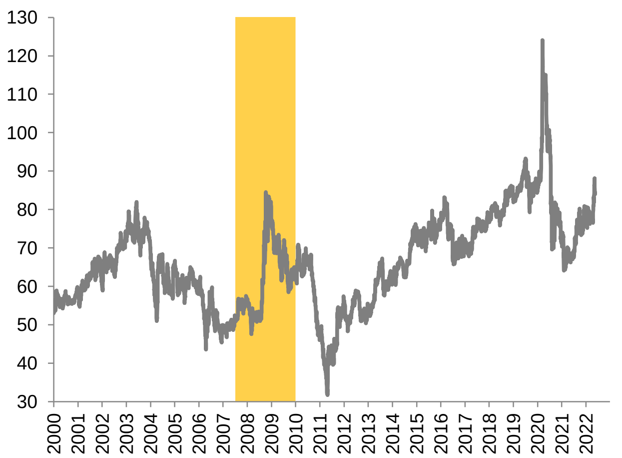
GOLD PRICE (USD/OZ) VS US USD BROAD (DXY) INDEX



Source: Bloomberg, MUFG Research

THE GOLD-TO-SILVER RATIO HAS BREACHED 2008-09 GFC LEVELS – TESTAMENT OF MARKET'S SKITTISHNESS

GOLD-TO-SILVER CROSS RATIO



Source: Bloomberg, MUFG Research

surpass pre-COVID levels this year. Going forward, we believe silver is set to slightly outperform gold on stronger industrial demand and will gain more broadly on the rotation towards precious metals as a defensive asset during a stagflationary environment (MUFG average Q4 2022 forecast USD30/oz).

Platinum and palladium

Palladium and platinum have weakened as the prospect of higher rates has undercut prices

For platinum group metals (PGM), both platinum and palladium have weakened as the prospect of higher rates has undercut prices. Russia's contribution to global mined/total (including recycling) supply stands at 37/24% for palladium and 10/8% for platinum. Whilst current sanctions are not directly impacting Russian metals and bulks exports the likelihood of disruption/ disassociation from Russian commodities has arguably grown. For PGMs we see a meaningful possibility that Russian metal finds alternative routes to market via countries that are willing to accept delivery. The demand base is geographically diverse, and it is not logistically difficult to reroute PGMs – they are delivered via air and thus face less seaborne disruptions (given the challenges to Black Sea and Baltic Shipping). Thus, the direct flows of these metals has not been explicitly disrupted (unless through self-sanctioning due to moral obligations or reputational repercussions). However, this may take time – depending both on current contractual commitments and the ability to fabricate the metal (primarily into auto catalysts) within new supply chain routing.

PGMs have been immune from explicit sanctions but LPPM have taken action on two government-owned Russian refiners

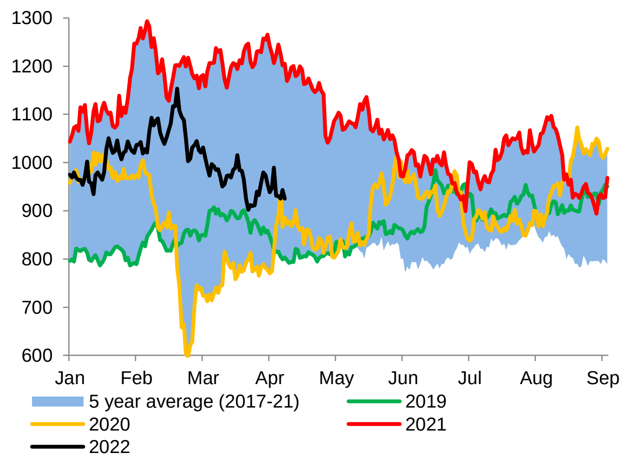
On sanctions specific to PGMs, Importantly, on 8 April 2022 the London Platinum & Palladium Market (LPPM) suspended two government-owned Russian refiners from the LPPM's Platinum and Palladium Good Delivery and Sponge Accreditation lists (Gulidov Krasnoyarsk Non-Ferrous Metals Plant "Krastsvetmet" and Prioksky Plant of Non-Ferrous Metals "Prioksky"). This was followed by the CME Group/NYMEX who suspended the approved status for the two refineries for warranting and delivery of certain platinum and palladium brands. Following this news, the palladium price jumped as concerns emerged regarding potential shortages. These concerns were exacerbated by the recent sharp rally in the nickel market, which, among other factors, was driven by non-zero probability of shipment disruptions from Russia. In our view, the ban on Russian refineries should have limited fundamental impact on the market and nickel-type short covering in palladium is unlikely due to low futures positioning and lack of market tightness.

China's role is critical for PGMs

The role of China (and to a lesser extent India) will be critical to the remapping of

PLATINUM'S OUTLOOK REMAINS CONSTRUCTIVE ON A STEADY BALANCING PATH WITH UPSIDE SUPPLY RISKS

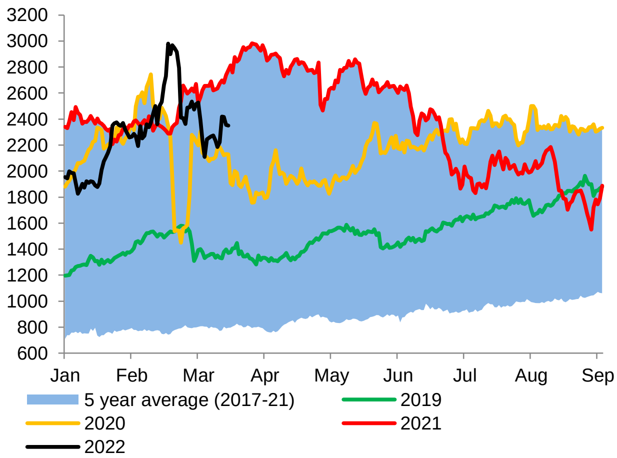
PLATINUM SPOT PRICE (USD/MT)



Source: Bloomberg, MUFG Research

PALLADIUM HAS LARGE UPSIDE RISKS – ULTIMATE GEOPOLITICAL HEDGE – RUSSIA IS THE TOP PRODUCER

PALLADIUM SPOT PRICE (USD/MT)



Source: Bloomberg, MUFG Research

PGMs (should self-sanctioning broaden in this space – which has yet to materially occur with negligible disruptions in PGM flows). Though, China's demand for Russian commodities does not fully line up with its own supply which will complicate the part re-mapping of the global commodities landscape in the quarters ahead (see here). Finally from a pricing perspective, whilst supply side risk remains unclear, though well flagged, we see building risk to auto demand and arising from increased platinum for palladium substitution. We continue to forecast a deficit market over the 2022-24 time period - the tight starting position providing an underpin. We forecast USD2,931/oz for 2022, with a peak in Q4 2022 at USD3,360/oz

The role of PGMs in the energy transition is moving front of mind

More broadly, the implications of rising PGMs on the energy transition continues to gain traction – given they are a critical conduit for greening the global economy. The energy transition holds an important paradox for PGMs. On one hand expectations of rising electric vehicle (EV) penetration pose an existential risk to the primary source of PGM demand (autocatalytic emission control in internal combustion engines [ICE]). However, on the other hand tightening auto emission standards are driving up near-term PGM demand, and PGMs are key metals in the hydrogen economy – a key enabler of decarbonisation. Clearly, rapid changes to the price of many commodities has a material impact on economics across the technology spectrum (i.e. rising oil/ gasoline for ICE, rising nickel/lithium for EVs) which may drive long lasting consequences for the pace of the energy transition in our view. However, it is likely too early to say quite what impact this may have as yet.

BULK COMMODITIES (-0.3% W/W; 32.2% YTD)

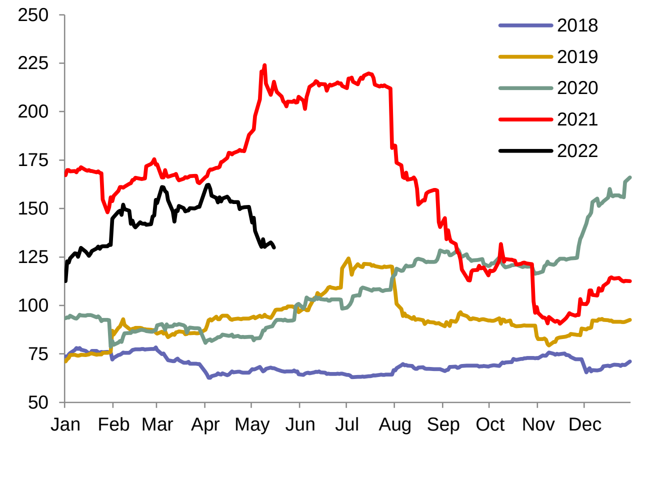
Iron ore

Iron ore remains under pressure as fresh COVID outbreaks in China as well as more gloom for the property sector highlight a precarious outlook for steel demand

Iron ore prices continue to grind lower towards USD120/MT owing to China's stern measures to beat back its COVID challenge. We view iron ore as possessing obvious incremental downside risk on current dynamics. This reflects several factors. First, the global seaborne iron ore balance is set to soften materially into the second half of the year versus first half. Second, we see less leverage for steel (and iron ore) to China's recovery path over the rest of the year. There is a clear shift toward lower steel intensity in the type of infrastructure projects being accelerated so far this year.

IRON ORE PRICES HAVE STARED ROBUSTLY IN 2022 BUT NOW SUFFERING FROM IRRATIONAL EXUBERANCE

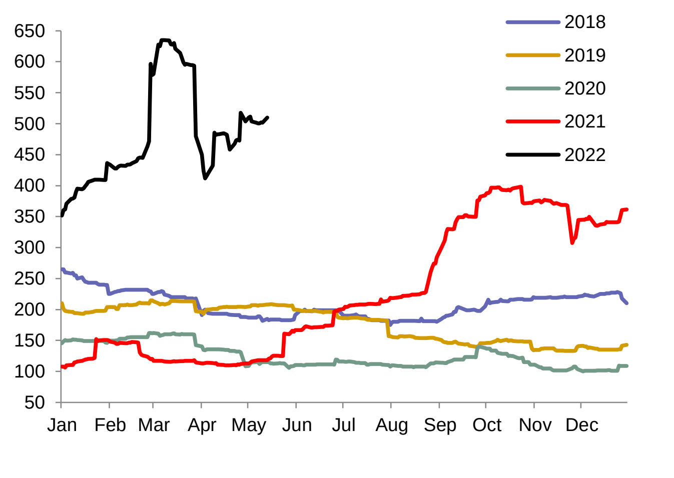
IRON ORE SPOT PRICE (USD/MT)



Source: Bloomberg, MUFG Research

COAL PRICES HAVE BOUNCED BACK AS RUSSIAN IMPORT BANS ARE EXACERBATING MARKET TIGHTNESS

HARD COKING COAL SPOT PRICE (USD/MT)



Source: Bloomberg, MUFG Research

Moreover, the property sector downturn continues, which is particularly acute in terms of new project activity. This is a particular negative to China's steel demand given nearly a third of onshore consumption is tied to this part of the property cycle. Third, prices still remain close to 30% above the top end of the cost curve and close to 40% above the price low set in November last year. Finally, there also remain significant risks of China policy intervention both directly in terms of the iron ore market (via bouts of positioning liquidation) and with regard to capping steel production (and in turn iron ore demand). From a pricing perspective, we expect limited room for upside price risks (MUFG average Q4 2022 forecast USD115/MT).

Coal

Coal markets are in a state of flux with Europe's unprecedented challenge to replace ~50/MT of Russian thermal coal

The coal market continues to remain in a state of flux with an unprecedented challenge to remap trade flows as Europe seeks to replace ~50/MT of Russian thermal coal. Time is against Europe with the continent endeavouring to phase out Russian coal by August 2022. Whilst the US, Colombia and South Africa have been earmarked as supply sources that could compensate for lost Russian coal, we do not expect these countries to be about to supply as much as ~50/MT that Europe needs. The US is normally a swing exporter and whilst a price differential north of USD200/MT makes it attractive for more Appalachian coal to find its way to Europe, US exports are held back by labour shortages and logistical challenges. For its part, we believe Russia will find it challenging to shift considerable volumes to the East, predominantly China. All told, this development is set to leave the already severely undersupplied seaborne coal market even tighter for a longer duration. Given prices are already at elevated levels, we expect some demand destruction from Asian markets in the months ahead. All told, we continue to expect a supply crunch with an aggravation in global imbalances and anticipate these dynamics to leave a tighter market and further near-term price volatility but our forecasts point to prices trending lower for the remainder of the year as trade flows adjust and some Asian price-sensitive demand destruction takes place to rebalance the market.

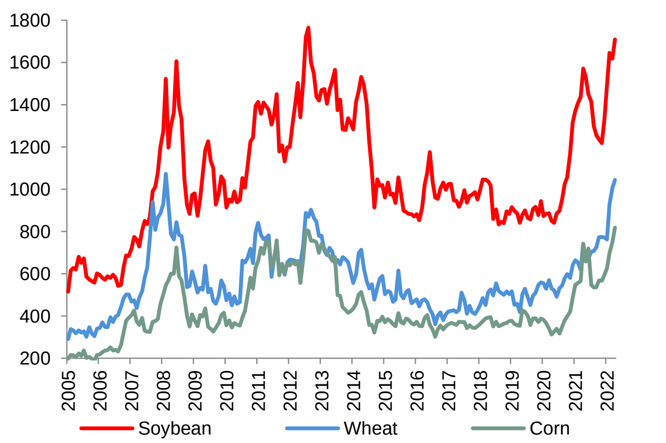
AGRICULTURE (7.1% W/W; 29.8% YTD)

Food prices have reached new record highs, in nominal and real terms

Global food prices are rising, with many product prices now at all-time highs. Although agricultural prices have been rising throughout the pandemic – in line with

RUSSIAN PHYSCIAL DECOUPLING, MOUNTING INPUT COSTS AND HOARDING IS SEEING GRAIN PRICES SOAR

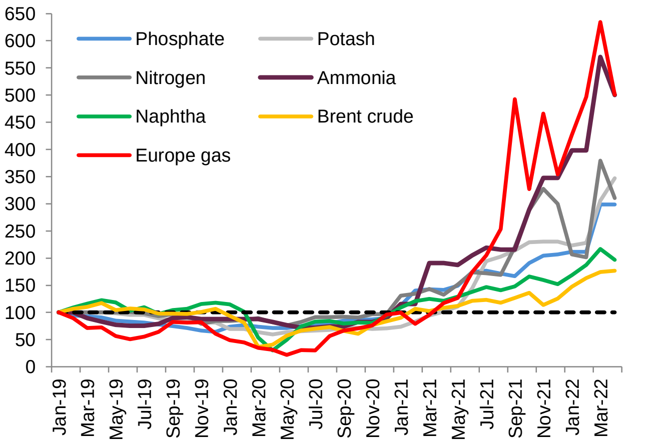
SOYBEAN, WHEAT AND CORN PRICES (USD/BUSHELS)



Source: Bloomberg, MUFG Research

FERTILISER SHORTAGES ON THE HORIZON DUE TO THE WAR, STOKING FURTHER INFLATIONARY PRESSURES

FERTILISER PRICES, OIL AND EUROPE GAS (REBASED 100 = JAN 2020)



Source: Bloomberg, MUFG Research

other commodities – recent events have caused further significant supply disruptions and seen an acceleration in the price upswing. A key shock has been the war in Ukraine, which has had a first order impact on food supply, particularly of grains and fertilisers. The ongoing conflict is also further disrupting planting, which is likely to constrain supply for longer. A sharp rise in the price of fertilisers – of which Russia is the world's largest exporter – is likely to affect agricultural yields elsewhere during the coming season. Agricultural production has also been impacted by the effect of the pandemic on available labour supply and disruption and cost increases for shipping. Unfavourable weather is also contributing, with a second consecutive season of the La Niña weather pattern playing a role.

Hoarding is becoming widespread

Another disruptive effect is through increased food protectionism and hoarding behaviour (see here), with some metrics suggesting this is now at similar levels to that seen in 2007-08. The challenge here is that these policy moves can have non-linear effects, forcing prices markedly higher, as they did for some products in 2007-08. Recent estimates from the USDA show a markdown in expected production and inventories of wheat and corn in 2022-23, as a result of these disruptions.

Policymakers are grappling with elevated food prices

Policymakers in many EMs face growing challenges in managing food security, which could flow over into geopolitical volatility in unpredictable ways. There is upside risk to inflation, particularly in emerging economies, which reduces household disposable incomes. These challenges also complicate policy choices for central banks globally.

Commodity prices – performance

				2021	2022				Change %						
	Commodity	**Ticker**	**Unit**	**31-Dec**	**27-Apr**	**04-May**	**11-May**	**18-May**	**Week**	**1 MTD**	**3 MTD**	**YTD**	**1 Year**	**3 Years**	**5 years**
1	Bloomberg BCOM Total Returns	BCOMTR Index	Index	211.80	274.37	275.11	266.60	277.28	4.01	0.15	16.29	30.94	39.44	65.60	64.00
2	Bloomberg BCOM Spot Index	BCOMSP Index	Index	502.25	642.44	644.06	623.85	658.49	5.55	1.56	16.97	31.11	37.60	93.04	100.18
3	Energy	BCOMENSP Index	Index	368.86	574.52	609.04	583.49	637.13	9.19	7.00	43.99	72.73	96.51	109.99	145.28
4	US Natural Gas	NG1 Comdty	USD/MMBtu	3.73	6.85	7.95	7.39	8.26	11.90	14.76	87.61	122.87	176.00	215.96	161.25
5	EU Natural Gas	TZT1 Comdty	EUR/MMBtu	3.73	103.21	99.43	98.80	94.54	-4.31	-4.94	28.17	34.40	281.03	635.36	501.31
6	WTI Crude	CL1 Comdty	USD/b	75.21	101.70	102.41	99.76	110.01	10.27	5.17	20.90	46.39	68.12	75.43	123.10
7	Brent Crude	CO1 Comdty	USD/b	77.78	104.99	104.97	102.46	109.56	6.93	0.27	17.20	40.95	59.55	51.82	108.78
8	Gasoline	HO1 Comdty	USD/lb	222.85	333.88	350.12	354.15	375.82	6.12	8.76	41.45	69.45	74.75	84.45	135.09
9	EU ETS EUA	MO1 Comdty	USD/gal	80.22	82.35	87.78	86.93	91.33	5.06	0.27	-5.37	5.05	59.24	238.03	1670.38
10	Metals	BCOMIN Index	Index	172.89	202.22	191.77	180.00	179.90	-0.06	-9.71	-4.26	3.68	10.96	57.49	63.20
11	Industrial Metals Index	BCOMINSP Index	Index	303.57	354.71	336.39	315.74	317.63	0.60	-8.78	-3.16	4.63	12.13	65.55	76.87
12	Copper	HG1 Comdty	USD/lb	9,721	9,860	9,410	9,229	9,366	1.49	-4.13	-5.67	-3.65	-9.71	54.66	66.95
13	Aluminium	LA1 Comdty	USD/MT	2,803	3,047	2,884	2,723	2,877	5.64	-5.22	-12.33	2.64	16.46	58.16	49.90
14	Zinc	ZNC1 Comdty	USD/MT	3,580	4,218	3,984	3,609	3,670	1.71	-11.37	1.40	2.52	22.59	37.59	43.72
15	Nickel	LN1 Comdty	USD/MT	20,874	33,072	30,919	28,319	26,352	-6.95	-16.99	9.03	26.25	47.34	119.16	187.00
16	Precious Metals Index	BCOMPRSP Index	Index	530.97	549.40	536.88	524.10	521.85	-0.43	-4.81	-5.28	-1.72	-7.52	44.76	42.02
17	Gold	GC1 Comdty	USD/t oz	1,829	1,901.40	1,870.60	1,841.00	1,818.50	-1.22	-4.85	-4.20	-0.53	-2.63	42.58	45.19
18	Silver	SI1 Comdty	USD/t oz	23.35	23.54	22.62	21.39	21.50	0.51	-6.68	-10.39	-7.93	-24.07	49.85	29.35
19	Platinum	PL1 Comdty	USD/t oz	964.40	911.90	958.60	947.20	943.40	-0.40	-1.66	-14.19	-4.19	-24.59	12.64	-1.37
20	Palladium	PA1 Comdty	USD/t oz	1,912	2,179	2,238	2,044	1,999	-2.19	-13.29	-14.43	4.62	-31.09	53.20	161.35
21	Bulk Commodities	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	Hard Coking Coal	XW1 Comdty	USD/MT	341.76	467.67	522.00	503.33	501.50	-0.36	7.94	17.38	49.23	331.58	144.60	194.80
23	Iron Ore	SCO1 Comdty	USD/MT	112.50	150.39	143.56	130.27	129.92	-0.27	-14.11	-7.70	15.11	-38.97	32.52	108.40
24	Agriculture	BCOMAG Index	Index	60.79	76.70	75.19	74.37	77.77	4.57	1.13	15.73	28.00	32.16	103.48	52.19
25	Agriculture Index	BCOMAGSP Index	Index	406.67	508.27	498.26	492.85	527.72	7.07	3.49	17.65	29.76	31.65	126.91	105.20
26	Grain Index	BCOMGRSP Index	Index	293.87	392.92	381.83	382.48	414.44	8.36	6.04	26.28	41.03	33.52	130.95	127.39
27	Soybean	S 1 Comdty	USD/bu	1,328.75	1,705	1,659	1,630	1,664	2.07	-2.56	3.93	25.27	5.73	102.56	76.18
28	Wheat	W 1 Comdty	USD/bu	770.75	1,083.25	1,033.75	1,083.25	1,233.50	13.87	17.75	54.20	59.46	76.07	164.30	188.67
29	Corn	C 1 Comdty	USD/bu	593.25	803.25	800.75	786.50	781.75	-0.60	-4.55	19.37	31.65	18.65	103.78	113.39
30	Soft Index	BCOMOSSP Index	Index	394.34	410.44	416.25	400.91	433.13	8.04	3.05	6.97	9.84	43.00	118.63	59.91
31	Cotton	CT1 Comdty	USD/lb	112.60	142.53	153.33	142.94	143.72	0.55	-5.74	16.74	27.51	70.91	117.58	81.20
32	Coffee	KC1 Comdty	USD/lb	226.10	221.40	218.20	204.00	218.60	7.16	2.54	-9.26	0.93	57.38	161.25	72.62
33	Sugar	SB1 Comdty	USD/lb	18.88	18.99	18.62	18.54	19.80	6.80	2.22	8.68	4.77	14.93	71.26	23.39
34	Livestock Index	BCOMLISP Index	Index	196.83	216.44	208.60	206.40	211.13	2.29	0.89	-5.86	7.27	5.98	18.52	19.90
35	Live Cattle	LC1 Comdty	USD/lb	138.90	140.00	135.33	132.40	133.00	0.45	-7.12	-7.99	-5.11	12.89	18.45	7.22
36	Lean Hogs	LH1 Comdty	USD/lb	81.48	105.20	99.78	101.08	105.15	4.03	3.54	-4.50	28.23	-5.58	13.10	32.00
37	USD Index	DXY Index	Index	95.67	102.30	103.47	103.92	103.67	-0.24	0.73	7.98	8.40	15.55	5.83	5.96

Source: Bloomberg, MUFG Research

Commodity prices – quarterly and annual forecasts

	Commodity	Ticker	Unit	18-May	Quarter Averages							Annuals			
				Spot	Q1-22	Q2-22	Q3-22	Q4-22	Q1-23	Q2-23	Q3-23	2021	2022	2023	2024
1	Energy														
2	US Natural Gas	NGA Comdty	USD/MMBtu	8.26	4.58	7.10	4.50	5.10	5.30	4.00	4.10	3.72	5.32	4.62	3.96
3	EU Natural Gas	TZTA Comdty	EUR/MWh	94.54	96.50	96.00	104.00	88.00	117.00	76.00	72.00	29.13	119.74	71.80	60.00
4	EU ETS EUA	MOA Comdty	EUR/MT	91.33	95.93	135.91	102.50	144.60	138.00	95.00	89.00	53.46	80.97	91.00	98.00
5	WTI Crude	CLA Comdty	USD/b	110.01	94.77	119.60	136.00	108.00	106.00	95.00	98.00	68.00	114.59	102.25	95.20
6	Brent Crude	COA Comdty	USD/b	109.56	97.90	124.60	141.00	112.00	110.00	98.50	102.00	70.85	118.88	106.13	98.40
7															
8	Copper	LMCADS03 Comdty	USD/lb	9,366	9,974	10,780	11,360	11,900	12,150	12,250	12,400	9,292	11,003	12,310	11,500
9	Aluminium	LMAHDS03 Comdty	USD/MT	2,877	3,254	3,700	3,780	3,800	3,910	4,000	3,950	2,477	3,633	3,980	3,700
10	Zinc	LMZSDS03 Comdty	USD/MT	3,670	3,727	4,100	3,950	3,650	3,700	3,750	3,780	3,016	3,857	3,760	3,900
11	Nickel	LMNIDS03 Comdty	USD/MT	26,352	28,302	29,500	28,000	26,000	27,500	27,000	29,000	18,457	27,951	27,900	26,500
12	Precious Metals														
13	Gold	XAU Comdty	USD/t oz	1,819	1,879	2,030	2,115	2,250	2,280	2,060	2,030	1,799	2,068	2,090	1,900
14	Silver	XAG Comdty	USD/t oz	21.50	24.11	26.60	27.50	29.00	30.00	28.00	27.60	25.16	26.80	28.20	26.95
15	Platinum	XPT Comdty	USD/t oz	943.40	1,030.00	1,140	1,180	1,215	1,250	1,190	1,120	1,089	1,141	1,175	1,210
16	Palladium	XPD Comdty	USD/t oz	1,999	2,315	2,900	3,150	3,360	3,250	3,200	3,290	2,391	2,931	3,255	3,100
17															
18	Hard Coking Coal	IACA Comdty	USD/MT	501.50	433.98	506.00	470.00	410.00	405.00	380.00	390.00	188.50	455.00	380.00	350.00
19	Iron Ore	SCOA Comdty	USD/MT	129.92	141.15	158.00	140.00	115.00	95.00	90.00	80.00	159.83	138.54	86.50	97.00
20															
21	Soybean	BOA Comdty	USD/bu	1,664	1,559	1,740	1,590	1,550	1,520	1,500	1,475	1,375	1,610	1,505	1,460
22	Wheat	W A Comdty	USD/bu	1,234	913.80	1,240	1,215	1,195	980.00	920.00	850.00	683.47	1,141	910.00	880.00
23	Corn	C A Comdty	USD/bu	781.75	671.65	850.00	820.00	780.00	730.00	680.00	670.00	581.69	780.41	695.00	650.00
24	Cotton	CTA Comdty	USD/lb	143.72	123.43	129.00	124.00	118.00	102.00	98.00	104.00	93.43	123.61	104.00	98.00
25	Coffee	DFA Comdty	USD/lb	228.20	234.84	232.00	215.00	225.00	230.00	220.00	200.00	168.75	226.71	215.00	210.00
26	Sugar	SBA Comdty	USD/lb	20.00	18.61	19.20	18.60	18.50	18.30	19.00	18.40	17.86	18.73	18.50	17.80

Source: Bloomberg, MUFG Research

Commodity prices – 6-12 month forward outlook, vs. spot/nearby forwards

		Bullish	Neutral-to-bullish	Neutral	Neutral-to-bearish	Bearish
1	Energy	EU natural gas, Brent, WTI	US natural gas	---	---	
2	Base Metals	Aluminium, Copper, Nickel	Zinc	---	---	---
3	Precious Metals	Platinum, Palladium	Gold, Silver	---	---	---
4	Bulk Commodities	Hard Coking Coal	---	Iron ore		---
5	Agriculture	Soybean, Wheat, Corn	---	---	Cotton	Coffee, Sugar

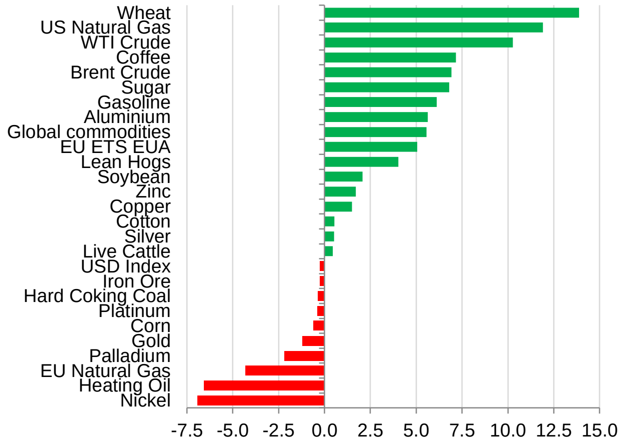
Source: Bloomberg, MUFG Research

MUFG

Core indicators – commodities flows and returns

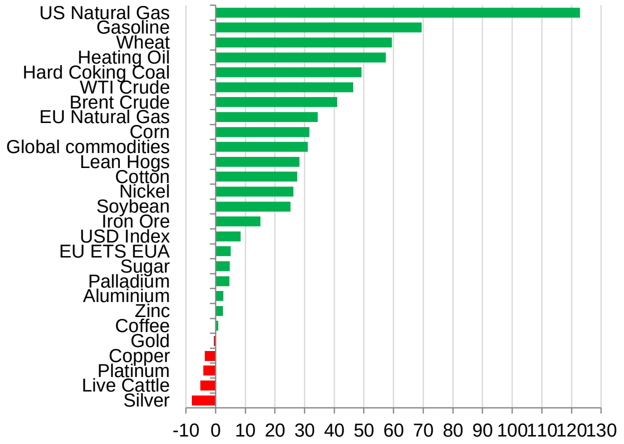
COMMODITIES MARKET PRICE RETURNS

WEEK ENDING 18 MAY 2022 (% W/W)



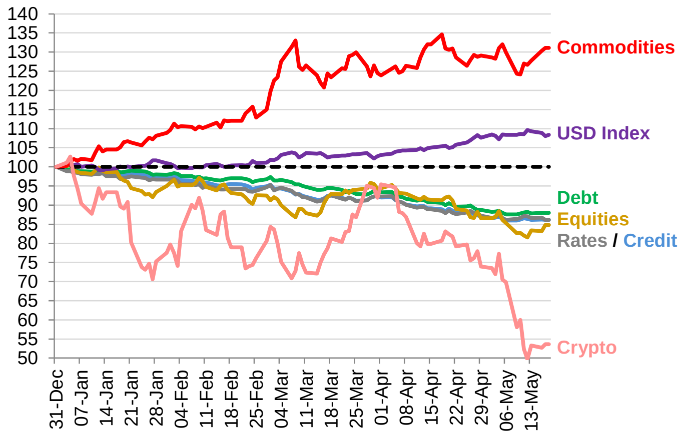
COMMODITIES MARKET PRICE RETURNS

YEAR-TO-DATE 2022 (%)



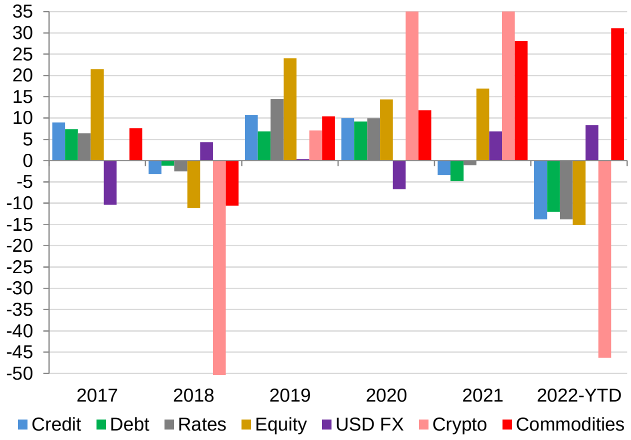
USD-DENOMINATED GLOBAL ASSET MARKET RETURNS

REBASED 1 JANUARY 2022 = 100



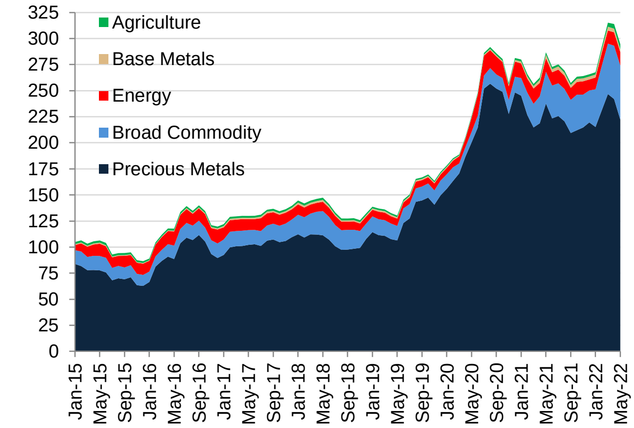
USD-DENOMINATED GLOBALL ASSET MARKET RETURNS

ANNUALISED PERFORMANCE (%)



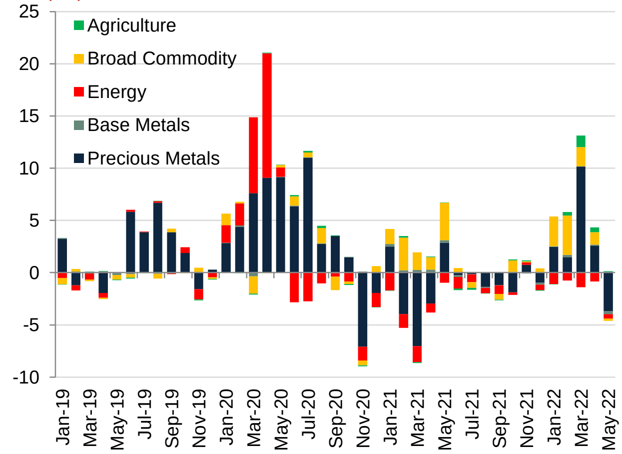
COMMODITIES ETF COMBINED CUMULATIVE AUM

USD (BN)



COMMODITIES ETF COMBINED CUMULATIVE FUND FLOWS

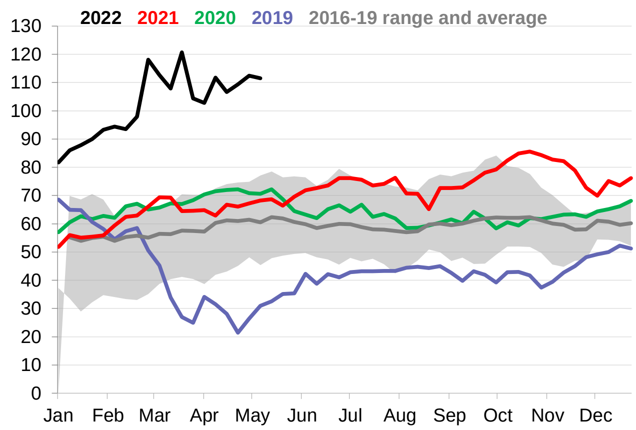
USD (BN)



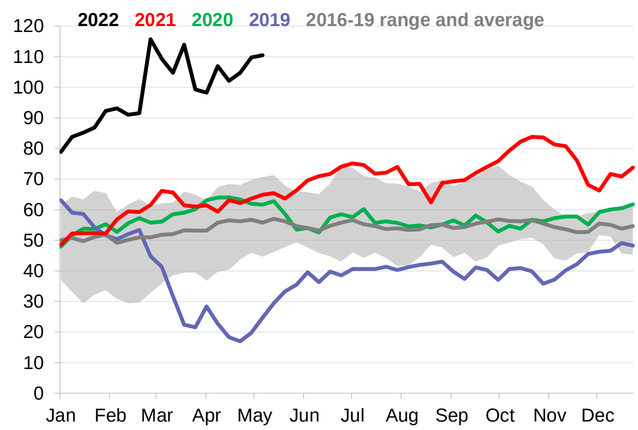
Source: Bloomberg, MUFG Research

Core indicators – prices

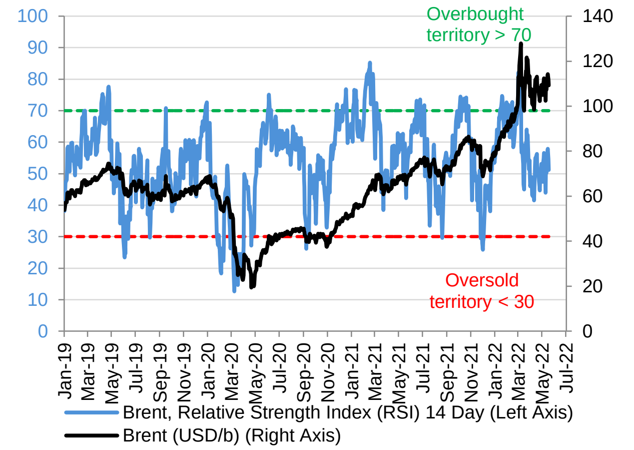
BRENT SPOT
USD/B



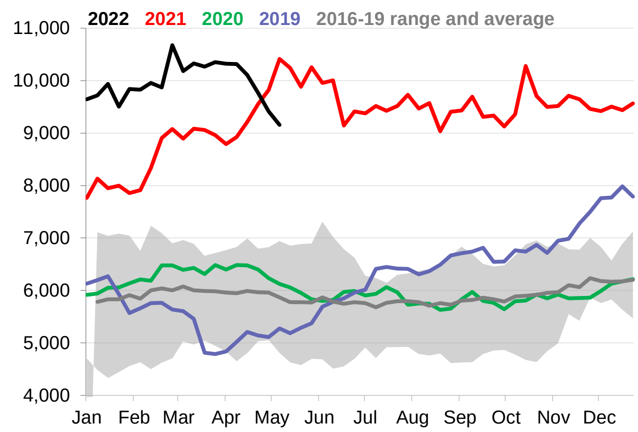
NYMEX WTI SPOT
USD/B



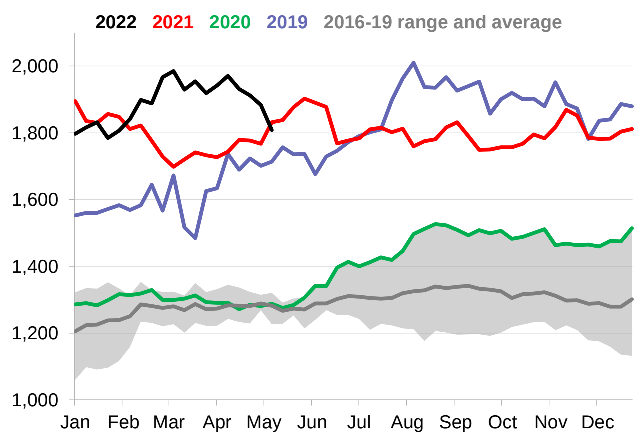
14 DAY RELATIVE STRENGTH INDEX (RSI) AND WTI
USD/B AND 0-100 INDEX (<30 = OVERSOLD; >70 = OVERBOUGHT)



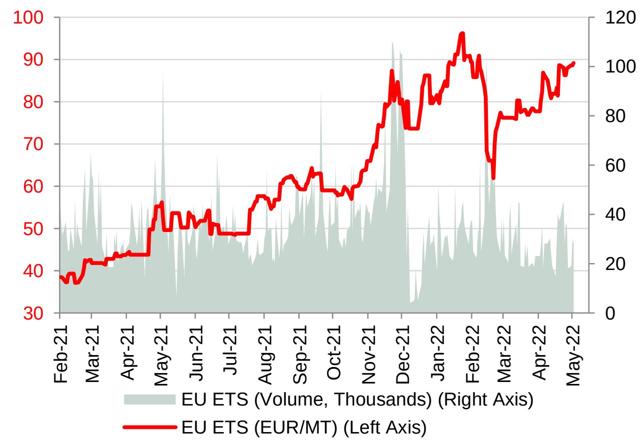
COPPER SPOT
USD/LB



GOLD SPOT
USD/T OZ



EU CARBON PRICE AND VOLUME
EUR/T AND EUA'S (THOUSAND VOLUME)

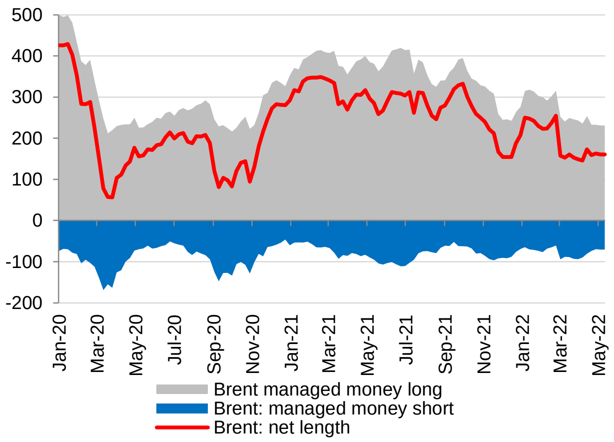


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

Core indicators – market positioning

BRENT CRUDE MANAGED MONEY

CONTRACTS (THOUSANDS)



WTI CRUDE MANAGED MONEY

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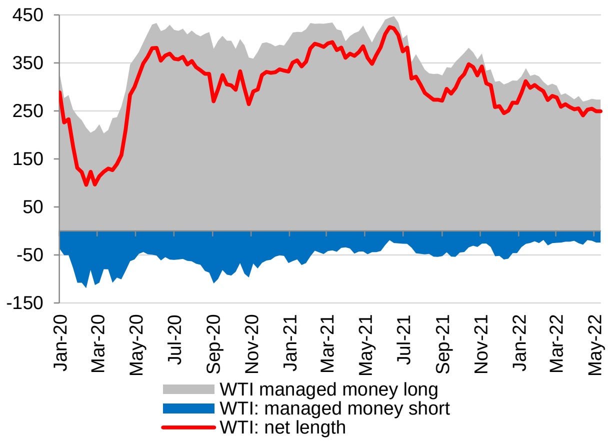

HENRY HUB NATURAL GAS MANAGED MONEY

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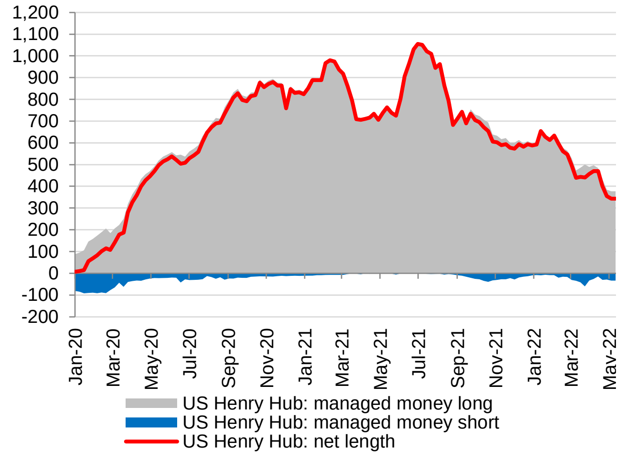

COPPER MANAGED MONEY

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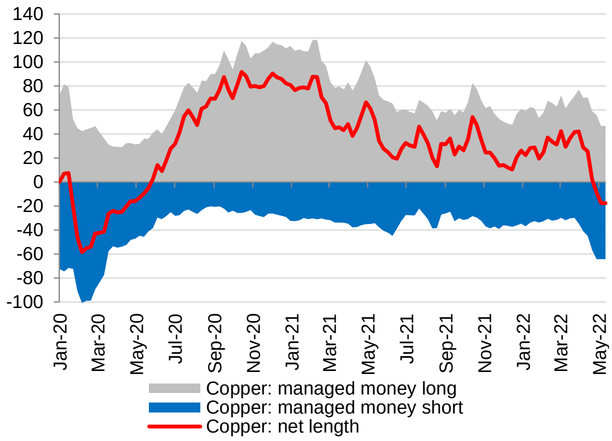

SUGAR MANAGED MONEY

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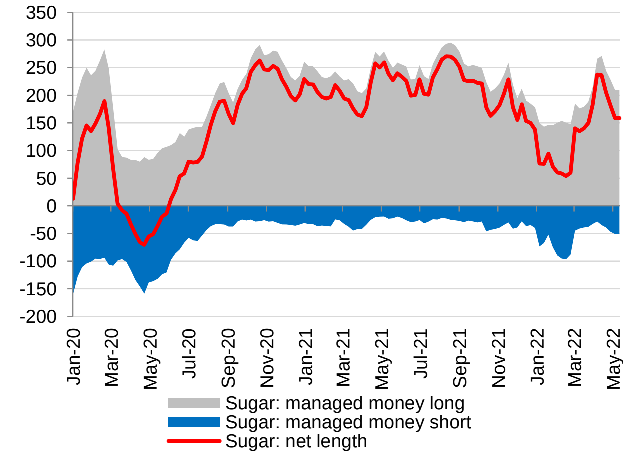

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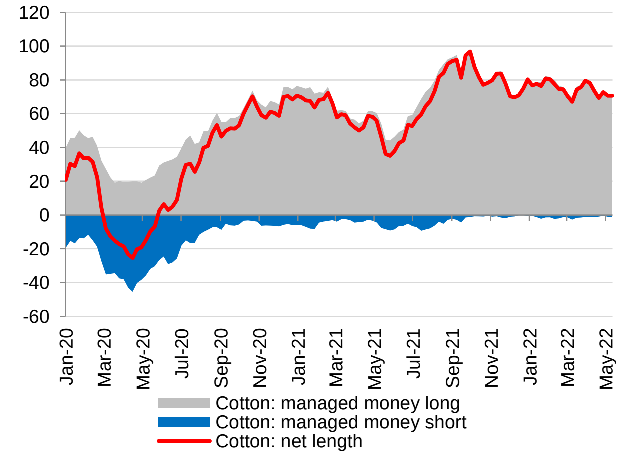
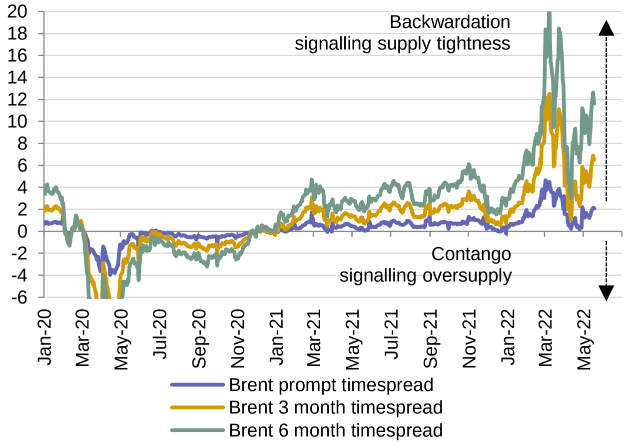


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

Core indicators – timespreads and futures

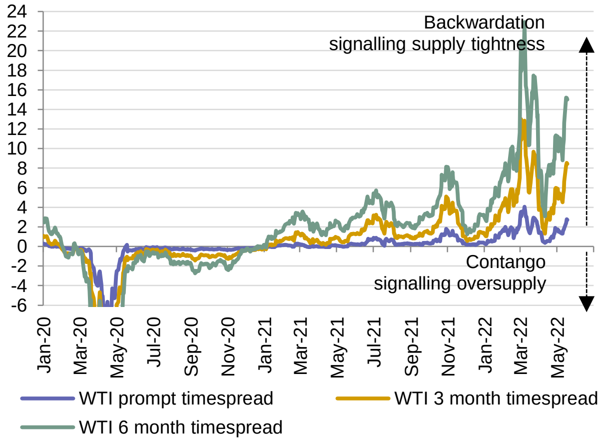
BRENT TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



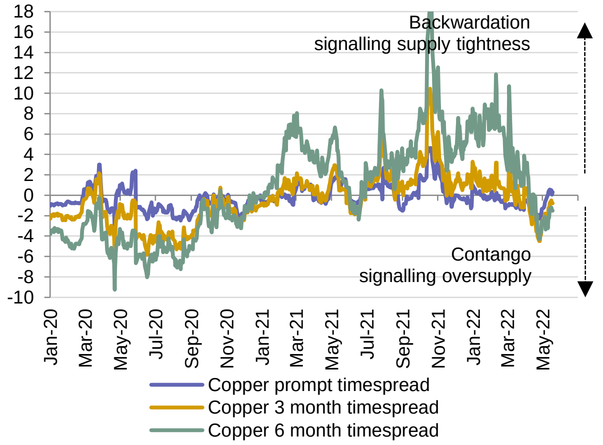
WTI TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



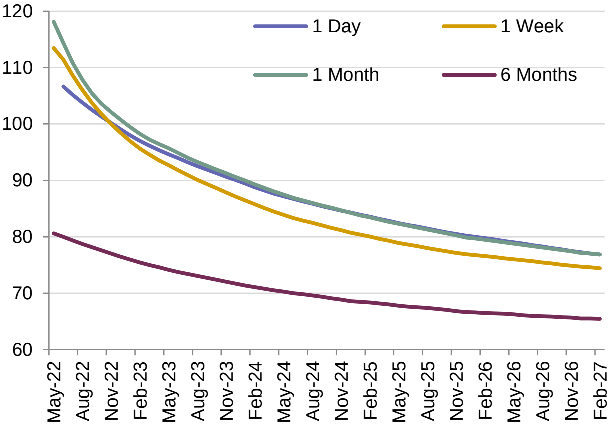
COPPER TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



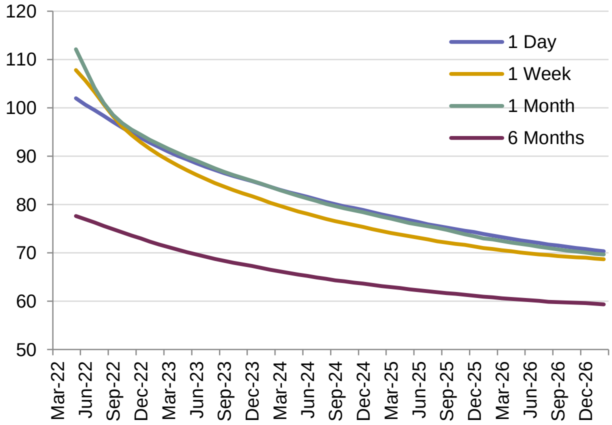
BRENT FUTURES CURVE

USD/B



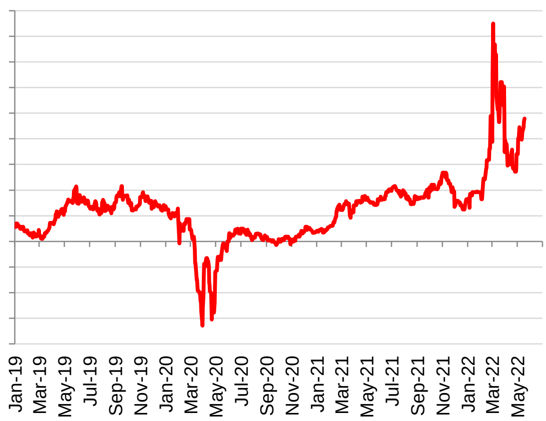
WTI FUTURES CURVE

USD/B



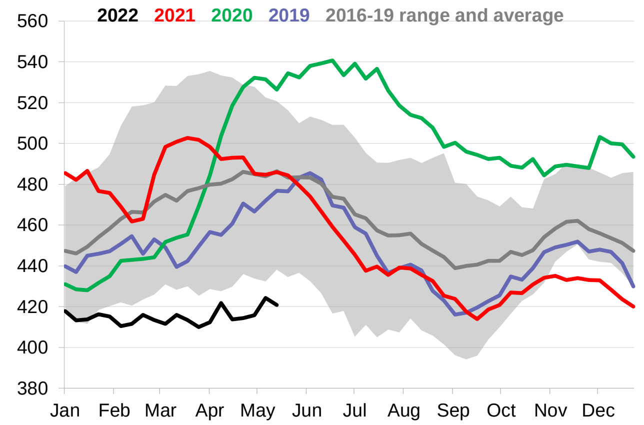
BRENT-DUBAI SPREAD

USD/B



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

US CRUDE INVENTORIES
MILLION BARRELS



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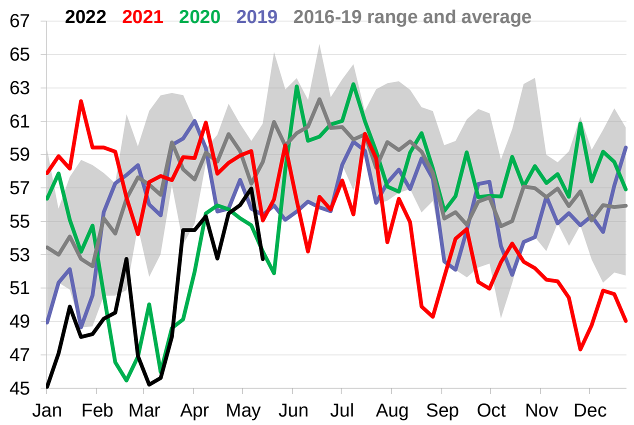
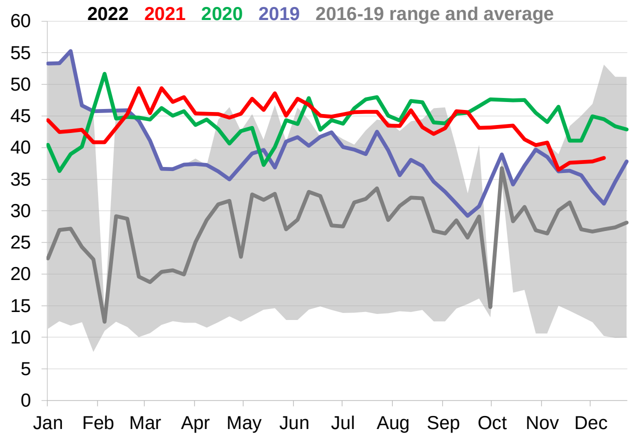
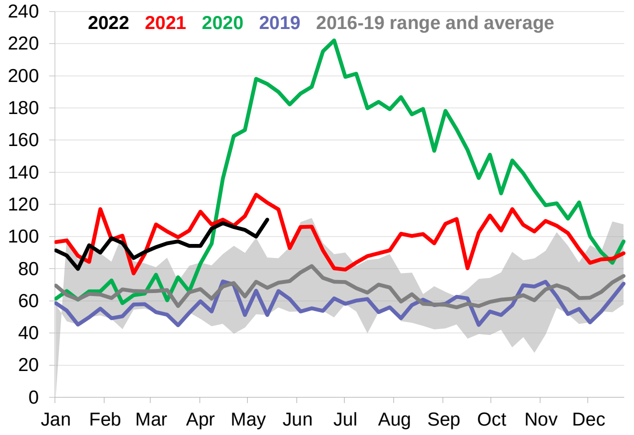
MILLION BARRELS



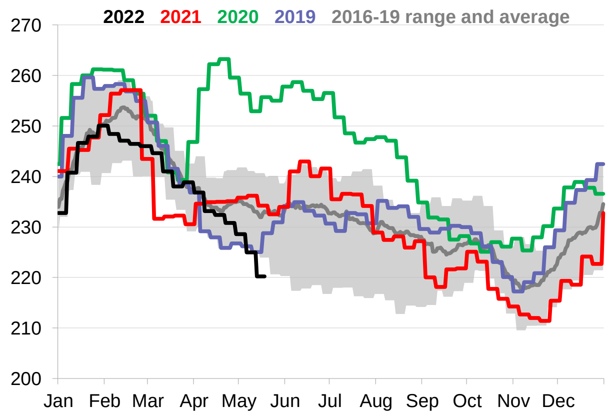
CHINA SHANDONG CRUDE INVENTORIES
MILLION BARRELS



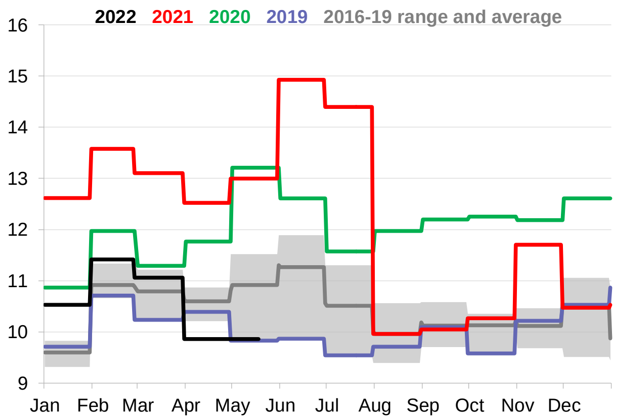
GLOBAL CRUDE FLOATING STORAGE
MILLION BARRELS



US GASOLINE INVENTORIES
MILLION BARRELS



JAPAN GASOLINE INVENTORIES
MILLION BARRELS



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

Global oil supply/demand balance (thousands b/d and y/y change)

As of April 2022	2019 (tho. b/d)	2020 (tho. b/d)	2021 (tho. b/d)	2022 (tho. b/d)	2023 (tho. b/d)	2020 (%)	2021 (%)	2022 (%)	2023 (%)
Demand									
North America	*25,245*	*22,124*	*23,777*	*24,703*	*24,955*	*-3,122*	*1,654*	*926*	*252*
LatAm	*6,654*	*6,275*	*6,578*	*6,732*	*6,855*	*-379*	*304*	*154*	*123*
Europe	*15,093*	*13,147*	*13,772*	*14,591*	*14,707*	*-1,945*	*625*	*819*	*116*
CIS	*4,722*	*4,417*	*4,724*	*4,948*	*5,007*	*-305*	*306*	*224*	*59*
Asia	*27,931*	*27,382*	*28,708*	*29,627*	*30,751*	*-549*	*1,326*	*919*	*1,124*
Middle East	*8,241*	*7,745*	*7,922*	*8,176*	*8,223*	*-496*	*177*	*254*	*47*
Africa	*4,251*	*4,129*	*4,324*	*4,429*	*4,623*	*-122*	*195*	*105*	*194*
Total OECD Demand	47,854	42,029	44,559	46,415	46,910	-5,825	2,530	1,856	494
Total Non-OECD Demand	52,218	50,332	52,647	54,343	55,900	-1,887	2,315	1,697	1,557
Total Global Demand	100,072	92,361	97,206	100,759	102,810	-7,711	4,845	3,553	2,051
Supply									
North America	*25,767*	*24,752*	*25,205*	*26,666*	*27,744*	*-1,014*	*453*	*1,461*	*1,078*
US shale	*9,923*	*9,194*	*9,009*	*9,748*	*10,550*	*-729*	*-187*	*741*	*801*
Other US	*8,306*	*8,276*	*8,619*	*9,153*	*9,344*	*-30*	*343*	*534*	*191*
Total US	*18,229*	*17,470*	*17,627*	*18,902*	*19,894*	*-759*	*157*	*1,275*	*992*
LatAm	*4,794*	*4,841*	*4,831*	*5,116*	*5,279*	*47*	*-10*	*285*	*163*
Europe	*3,477*	*3,685*	*3,527*	*3,632*	*3,757*	*208*	*-158*	*105*	*125*
CIS	*14,643*	*13,504*	*13,763*	*14,481*	*14,778*	*-1,139*	*259*	*718*	*296*
Asia	*7,694*	*7,510*	*7,437*	*7,391*	*7,234*	*-184*	*-74*	*-45*	*-157*
Middle East	*3,012*	*3,013*	*3,089*	*3,187*	*3,202*	*1*	*75*	*99*	*15*
Africa	*1,487*	*1,390*	*1,309*	*1,293*	*1,257*	*-97*	*-81*	*-16*	*-37*
Total Non-OPEC	65,004	62,530	63,128	66,043	67,655	-2,474	598	2,915	1,612
Total OPEC Crude	30,166	26,340	27,089	29,697	30,452	-3,826	748	2,609	755
Total OPEC NGL	5,234	4,978	5,126	5,353	5,431	-256	148	228	78
Total OPEC Supply	35,400	31,318	32,214	35,050	35,883	-4,081	896	2,836	832
Total OPEC+ Supply	46,105	41,049	42,039	45,415	46,435	-5,056	990	3,376	1,020
Ecuador	*531*	*479*	*494*	*459*	*437*	*-52*	*14*	*-34*	*-22*
Venezuela	*875*	*508*	*555*	*803*	*830*	*-367*	*47*	*248*	*28*
Algeria	*1,023*	*898*	*908*	*939*	*935*	*-125*	*10*	*31*	*-5*
Congo	*333*	*288*	*265*	*253*	*232*	*-44*	*-23*	*-12*	*-21*
Gabon	*213*	*189*	*184*	*184*	*180*	*-24*	*-5*	*0*	*-3*
Angola	*1,389*	*1,262*	*1,116*	*1,014*	*959*	*-127*	*-146*	*-102*	*-55*
Nigeria	*1,731*	*1,577*	*1,391*	*1,502*	*1,552*	*-154*	*-185*	*111*	*50*
Eq. Guinea	*110*	*113*	*101*	*100*	*94*	*3*	*-12*	*-1*	*-6*
Libya	*1,086*	*366*	*1,151*	*1,154*	*1,266*	*-720*	*785*	*4*	*112*
Iran	*2,362*	*2,157*	*2,683*	*2,700*	*2,883*	*-205*	*527*	*17*	*183*
Iraq	*4,712*	*4,044*	*4,026*	*4,427*	*4,514*	*-668*	*-17*	*401*	*87*
Kuwait	*2,682*	*2,437*	*2,414*	*,669*	*2,713*	*-245*	*-23*	*255*	*44*
Saudi Arabia	*9,944*	*9,184*	*9,083*	*10,420*	*10,596*	*-760*	*-101*	*1,336*	*176*
UAE	*3,177*	*2,840*	*2,717*	*3,073*	*3,260*	*-336*	*-124*	*356*	*187*
Total Global Supply	100,404	93,848	95,342	101,093	103,538	-6,555	1,494	5,751	2,445
Imbalance (Supply – Demand)	332	1,488	-1,863	335	729	---	---	---	---
OECD Commercial Stocks	65	377	-1,084	47	389	---	---	---	---
5yr Avg OECD Days of Demand	61.5	62.3	63.0	63.0	63.0	---	---	---	---

Source: Bloomberg, BP, EIA, IEA, GS, JODI, NBS, OPEC, Various Government Sources, MUFG Research

Research

London:

MR DEREK HALPENNY
Head of Research, Global Markets EMEA
& International Securities
T: +44 (0)20 7577 1887

MR LEE HARDMAN
Currency Analyst
T: l+44 (0)20 7577 1968

MS MOMOKO MIYACHI
Research Assistant
T: +44 (0)20 7577 1886

Shanghai:

MR MARCO SUN
Chief Financial Markets Analyst
T: +86 21 2063 5485

Hong Kong:

MS LIN LI
Head of Global Markets Research Asia
T: +852 2862 7005

New York:

MR GEORGE GONCALVES
Head of US Macro Strategy
T: +1-212- 405-6687

Dubai:

MR EHSAN KHOMAN
Head of Emerging Markets Research – EMEA
T: +971 (0)4 387 5033

Tokyo

MR TEPPEI INO
Tokyo Head of Global Markets Research
T: +81 (0) 3 6214 4185

MS SUMINO KAMEI
Senior Analyst
T: +81 (0) 3 6214 4179

MR TOMOKI HIRAMATASU
Analyst
T: +81 (0) 3 6214 4152

MR TAKAHIRO SEKIDO
Chief Japan Strategist
T: +81 (0) 3 6214 4150

MR KENTO SAITO
Research Assistant
T: +81 (0) 3 6214 4149

MR TOSHIYUKI SUZUKI
Global Market Economist
T: +81 (0) 3 6214 4148

Singapore:

MR JEFF NG
Senior Currency Analyst
T: +65 6918 5536

MS SOPHIA NG
Currency Analyst
T: +65 6918 5537

Sao Paulo:

MR CARLOS PEDROSO
Chief Economist
T: +55-11-3268-0245

MR MAURICIO NAKAHODO
Senior Economist
T: +55-11-3268-0420

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