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Commodities "TINA" moment in the sun

Global commodities: Global inflationary pressures have now returned to the level last experienced in the 1970s. This is triggering a coordinated attempt by central banks to drain liquidity from the global economy, with the consequences felt across risk assets. As central banks can drain liquidity faster than the economy can generate new production capacity, financial assets like equities, bonds and credit instruments (driven by growth rates) will continue to underperform physical assets like commodities (driven by demand levels) (see here and here). This is corroborated with year-to-date outperformance in commodities (+31%) relative to equities (-14%), bonds (-12%), credit (-12%), rates (-11%) and crypto (-47%). Succinctly, *There Is No Alternative* ("TINA") outside of commodities across major risk assets.

Energy: After weeks of wrangling, the EU finally agreed on a watered-down ban on seaborne Russian oil and refined product imports – exempting pipeline crude in a compromise meant to satisfy Hungary. Meanwhile, Russia's Gazprom halted gas flows to the Netherlands and Denmark after refusal to be paid in Roubles.

Base metals: Copper and zinc are rallying on Chinese reopenings and benign USD conditions, nickel has continued its recent strength amid thinning liquidity and aluminium has extended losses on speculation of over-pledged inventories in China.

Precious metals: Gold and silver have wilted as USD and yields rise with Fed's inflation determination top of mind. PGMs continued to fall on growth concerns.

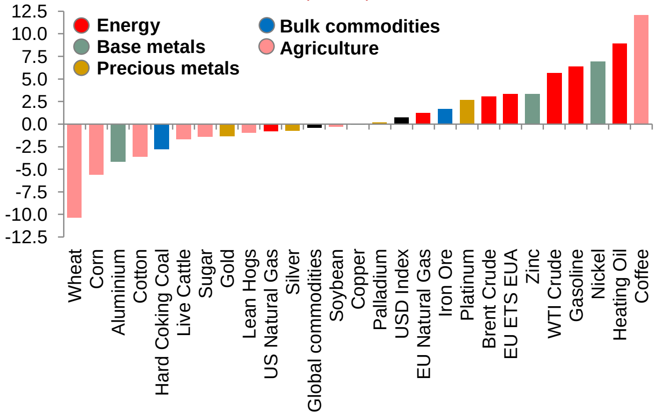
Bulk commodities: Iron ore prices are gaining on China optimism. Coal prices are also rising as EU utilities increase buying ahead of the Russian coal ban in August.

Agriculture: Wheat, corn and soybean prices have tumbled on the prospects of some Ukrainian grain shipments re-starting from the Black Sea with Russian offering to provide a safe passage of Ukrainian cargo in return for some relief from sanctions.

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

COMMODITIES PERFORMANCE: STAY LONG COMMODITIES IN STAGFLATION

BLOOMBERG COMMODITY INDEX (BCOM) RETURNS, WEEK-ON-WEEK TO 01 JUNE 2022 (%)



The current stagflationary environment of slowing growth but high inflation means multi-asset portfolios are likely to remain volatile across equities and bonds until a convincing peak in inflation and stabilisation of activity improves risk appetite. As physical markets commodities are only driven by volume – not growth rates – there is clear conviction in commodities ability to offer absolute outperformance to portfolio's so long as demand remains above supply such as in today's late-cycle dynamics.

Source: Bloomberg, MUFG Research

GLOBAL COMMODITIES (-0.4% W/W; 30.8% YTD)

Stagflation hits financial assets (equities, bonds and credit instruments) not physical assets like commodities

As inflation continues to spread across the globe – fuelled by the strong rally in energy and food prices – investors are seeking protection over stagflation concerns. Such an environment of slowing growth but high inflation suggests multi-asset portfolios are likely to remain volatile across equities and bonds until a convincing peak in inflation and stabilisation of activity strengthens risk appetite. As we have catalogued, while financial assets (equities, bonds and credit instruments) are forward-looking and driven by growth "rates", commodities are spot physical assets driven by demand "levels" (see here and here). This distinction matters as interest rate hikes slows down the growth rate of demand (which drives anticipatory financial assets), not demand levels (which drives unanticipatory assets like commodities).

As inflation continues to rise, commodities remain the best hedge

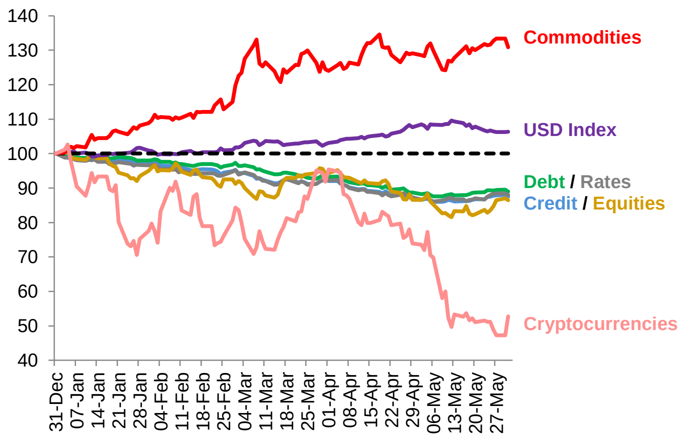
To put this into context, commodities have proven to be more correlated with inflation rates than financial assets. Due to their anticipatory nature, financial assets price in forward expectations of earnings, financial market valuations and economic growth which makes them a good hedge against anticipated inflation. However, once inflationary expectations become worrisome enough to create concerns of rate hikes, financial assets no longer act as a good inflation hedge. Meanwhile, commodities being spot assets only depend on the level of demand relative to the level of supply today. They are thus an attractive asset class to protect against short-term unanticipated inflation that is created in response to a rapidly expanding economy, where the level of demand for certain inputs (capital and labour), is exceeding the level of supply. The relationship between short-term CPI and commodities strengthens during periods of elevated volatility in commodity prices (just as now) which links back to the physical nature of commodities since large adjustments in commodity prices, swings in inventories and high spot price volatility are interrelated.

There is no alternative to commodities during stagflationary episodes

All told, inflationary pressures have now returned to the level last experienced in the 1970s. This is triggering a coordinated attempt by central banks to drain liquidity from the global economy, with the consequences felt across risk assets. As central banks can drain liquidity faster than the economy can generate new production capacity, financial assets will continue to underperform physical commodity assets. This is corroborated with year-to-date outperformance in commodities (+31%) relative to equities (-14%), bonds (-12%), credit (-12%), rates (-11%) and crypto (-47%). Succinctly, *There Is No Alternative* ("TINA") outside of commodities across major risk assets – in a stagflationary environment, commodities are the hedge of first resort.

RUNAWAY COMMODITY PERFORMANCE YEAR-TO-DATE WITH FURTHER UPSIDE RISKS ON SCARCITY PRICING

CROSS-ASSET PERFORMANCE YEAR-TO-DATE (100 = 1 JANUARY 2022)



Source: Bloomberg, MUFG Research

COMMODITIES OUTPERFORM ALL MAJOR ASSET CLASSES DURING IN A LATE CYCLE ENVIRONMENT

CROSS-ASSET PERFORMANCE SINCE 1972, BUSINESS CYCLE STAGES

	Recession	Early cycle	Mid cycle	Late cycle*
Commodities				
Brent crude oil	15.2%	5.0%	17.1%	73.5%
US natural gas	25.2%	12.3%	12.9%	28.9%
Aluminum	17.3%	-3.6%	-9.9%	15.5%
Copper	-26.5%	-10.9%	17.7%	18.1%
Gold	44.5%	-18.9%	61.8%	30.6%
Corn	8.6%	-14.9%	39.9%	10.9%
Wheat	-3.4%	-11.6%	64.6%	15.7%
Sugar	30.0%	-59.1%	36.0%	44.7%
Bonds				
US 10yr bond	4.2%	5.8%	3.4%	5.3%
Equity				
S&P 500	1.7%	27.5%	7.6%	1.0%
NYSE Compos.	-8.8%	25.8%	5.8%	4.3%

*Source: Bloomberg, MUFG Research; * Late cycle corroborates with the current period in global markets*

ENERGY (0.7% W/W; 77.1% YTD)

Crude oil

EU agrees on a watered-down ban of seaborne Russian oil and refined product imports

After weeks of wrangling, the EU finally agreed on a watered-down ban on seaborne Russian oil and refined product imports – exempting pipeline crude in a compromise meant to satisfy Hungary. Granted, the ban is flawed but it still covers what matters (cutting ~90% of oil imports from Russia to the EU by year-end) and is a much-needed signal of intent, in our view.

EU agreement on the ban of Russian oil and refined products is overdue progress even if it makes concessions

The initial proposal was for all Russian crude oil imports into the EU to be banned. However, this led to some opposition from Hungary and other Central and Eastern Europe (CEE) countries, which are heavily dependent on Russian pipeline oil. Therefore, the EU has agreed to exempt pipeline flows for now and instead ban just seaborne imports over the next six months. Refined product imports will be wound down over the next eight months. While pipeline flows are exempt from the ban, it is likely that we still see these flows reduced. Germany and Poland have signalled that they will work towards reducing Russian flows to zero. This is key, given that they are the largest recipients of Russian oil from the Druzhba pipeline. Equally important, the exemptions of pipeline flows are likely to be only temporary. The EU will still work towards getting Hungary and other CEE countries to cut their dependence on Russian oil over a longer duration of time.

Details of the EU ban of Russian oil and refined products suggests up to 90% of Russian imports into the EU could be affected by year-end

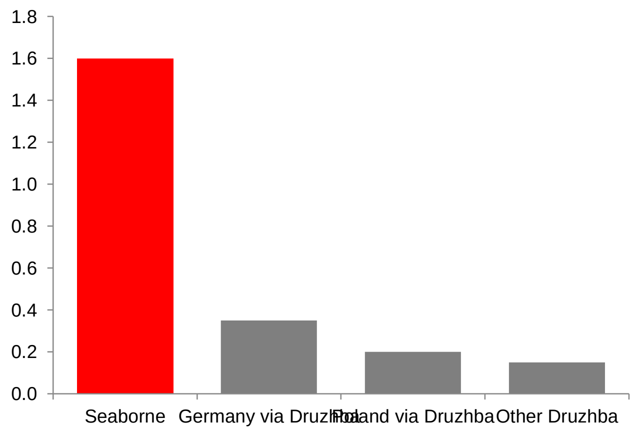
To put this into context, the EU imports 2.3m b/d of crude oil from Russia, ~25% of total crude oil imports. From this, around two-thirds of these imports are seaborne, whilst the remainder comes through the Druzhba pipeline. However, if Germany and Poland stick to their plan of reducing Russian oil imports to zero, rather than seeing flows cut by two-thirds by year-end, we could see ~90% of Russian imports into the EU affected. Separately, the EU also imports a significant amount of refined product from Russia, specifically gasoil, naphtha, and fuel oil. Eurostat numbers show that the EU imported in excess of 0.8m b/d of these three products from Russia in 2020, of which more than 55% was gasoil. Russia meets more than 40% of total EU imports for all three of these products.

It remains to be seen how refiners in Germany and Poland recalibrate their crude inflows

The milder ban on Russian oil will make it easier for EU member countries to tolerate the latest round of sanctions, particularly those who are heavily dependent on Russian pipeline oil flows. How Germany and Poland logistically handle a reduction in flows from Russia remains indeterminate as of now – though refiners in these

EU IMPORTS 2.3M B/D OF CRUDE OIL FROM RUSSIA, WITH SEABORNE OIL CONSTITUTING ~70% OF TOTAL

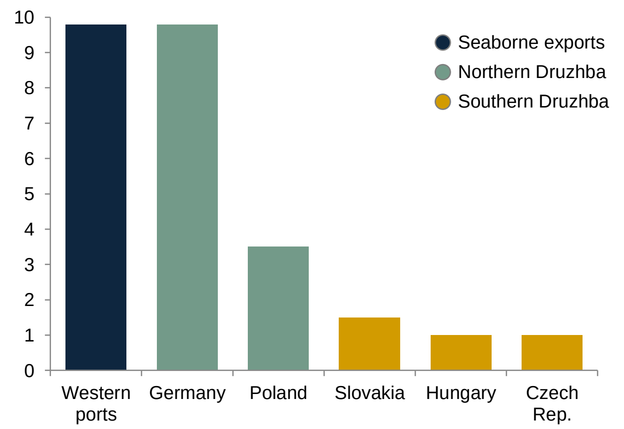
EU IMPORTS OF RUSSIAN OIL AND PRODUCTS, BY SOURCE (M B/D)



Source: Bloomberg, MUFG Research

RUSSIA COULD LOSE ~USD25BN FROM LOST MARKETS AND AGGRESSIVE DISCOUNTS OF ITS URALS

RUSSIA EXPORT REVENUE FROM CRUDE OIL AND PRODUCTS (USD BN)



Source: Bloomberg, Russia MoF, Transneft, MUFG Research countries rely on the Druzhba pipeline can use other pipeline routes from Gdansk and Rostock. Beyond logistical contemplations, refiners will also want to replace the medium sour Russian Urals crude with a benchmark of a similar quality. At a rudimentary level, if a refiner adjusts its crude inputs, this could have an impact on refinery yields – given the tightness in the middle distillate market, refiners will want to ensure they take grades which will yield more middle distillates.

There are reports that some OPEC+ members are considering exempting Russia from production quotas which could pave the way for the group to bring more barrels to the undersupplied market

The announced EU ban of seaborne Russian crude and refined product, combined with signs of easing COVID restrictions in China pushed Brent crude prices to two month highs north of USD120/b earlier this week. However this was offset this week following reports that some OPEC+ members are considering exempting Russia from production quotas which could pave the way for the group to bring more barrels to the undersupplied market. To contextualise this, as a number of countries have sanctioned Russian oil, it will be a challenge for Russia to increase output in the coming months and hit its output target under the OPEC+ deal. This potentially opens the door for other OPEC+ members to increase output at a greater magnitude. However in reality, given that most members have consistently fallen short of their output targets for several months, it will likely be a struggle for the group as a whole to increase output more aggressively. The next OPEC+ ministerial meeting is scheduled for today (2 June), and the current quota framework is set to expire in September. No decision has been confirmed, but exemption wouldn't be without precedents – Iran, Libya and Venezuela are already not subject to production quotas. Exemptions would allow Russia to produce at maximum capacity, which we see limited at ~11m b/d (crude plus condensates) due to export constraints through Europe. Importantly, a further deterioration of Russia's production, positions Saudi as the "last line of defence" against the recessionary risk of price spikes.

Oil is pushing higher on a host of bullish forces – we maintain our maximum pain call for Brent to peak at USD141/b in Q3 2022 (height of demand destruction)

Looking ahead, we reiterate our oil price call that the price-induced demand destruction necessary to reduce consumption is set to become widespread by the third quarter, with a corresponding Brent price above USD140/b (see here and here). We believe that these are the maximum pain thresholds that ultimately could bring to jolt corporate activity, squeeze private consumption and begin to ease the market's severe tightness, with Brent falling to average USD112/b in the last quarter of 2022.

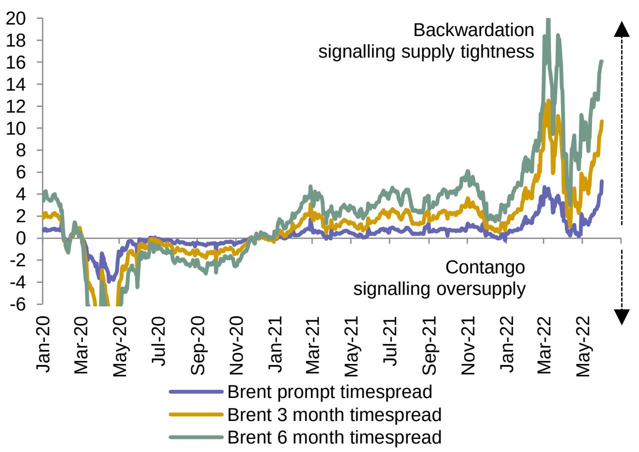
Natural gas

Rouble roulette continues in EU gas

European natural gas (TTF) prices have whipsawed as the continent's Russian

OIL'S TIMESPREADS HAS WIDENED ON EU'S RUSSIAN BAN AND EASING OF CHINESE COVID RESTRCTIONS

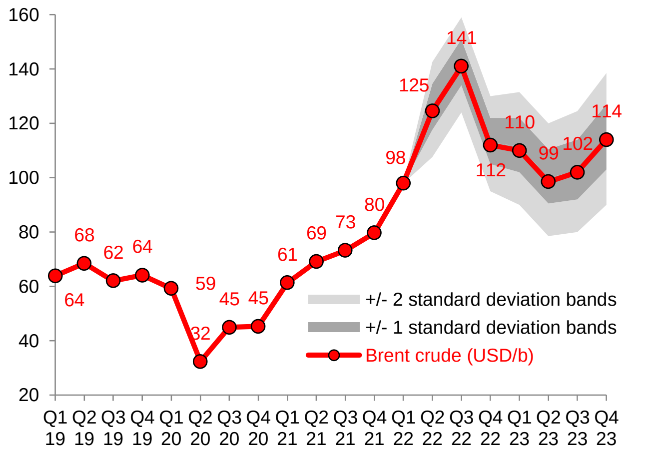
BRENT TIMESPREADS – FRONT, 3 AND 6 MONTHS (USD/B)



Source: Bloomberg, MUFG Research

OUR ESTIMATES POINT TO OIL PRICE INDUCED DEMAND DESTRUCTION TO BECOME WIDESPREAD BY H2 2022

BRENT CRUDE (USD/B) FORECASTS WITH STANDARD DEVIATION BANDS



Source: Bloomberg, MUFG Research

Rouble (RUB) payments dilemma lingers on. Gazprom has this week halted gas flows to the Netherlands and Denmark which brings to a total eight countries that have been affected by a stop in Russian gas – Poland, Bulgaria, Finland, Lithuania, Latvia and Estonia being the others (see here). The partial Dutch state owned gas trader GasTerra and Denmark's Orsted have refused to agree to Russia's new payment terms with the amount of gas supply affected will be ~2Bcm in each country. GasTerra had already articulated plans to end supplies itself when its contract with Gazprom expires in October anyway. Our expectations are that both countries should be able to make up for these lost flows, given robust LNG imports, especially from the US. In addition, we are also witnessing stronger gas flows from the UK via the BBL pipeline. On an annual basis, the eight countries affected import 23Bcm of Russian gas, which is ~13% of total Russian gas flows to the EU. According to Gazprom, they do not expect further supply cuts to any other EU buyers, given that buyers have either paid or have already been informed that flows to them will be stopped.

US Henry Hub prices continue to remain supportive (for now)

Meanwhile, US natural gas prices remain elevated, recently reaching levels unseen since 2008 with an intraday high of USD9/MMBtu in early 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.

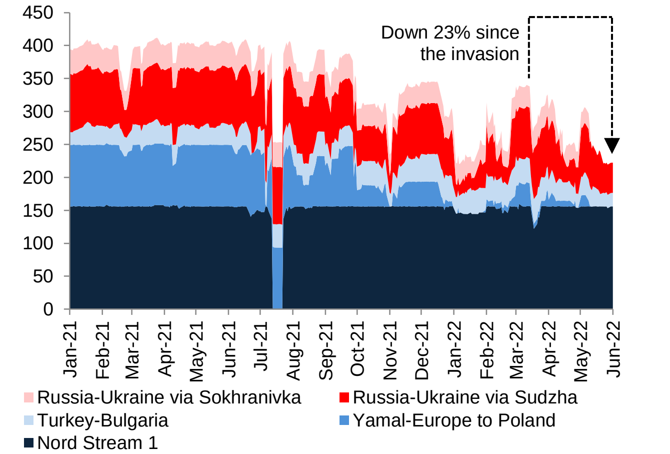
Carbon markets

The European Parliament is likely to limit its CO_2 market ambition push

The European Parliament is likely to scale back in a plenary vote of the environment committee's proposal to accelerate emissions reductions in the EU bloc's carbon market this decade, according to EU lawmaker Bloss. For context, the EU has been 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 (see here). The proposed plans would involve selling between 200-250m ETS certificates from the Market Stability Reserve (MSR). On net, the rally in EUAs so far this year means upside to 2022 futures is likely limited. However, we believe the structural uptrend is

RUSSIAN GAS SHIPMENTS TO EUROPE THROUGH KEY ROUTES ARE DOWN 23% SINCE INVASION

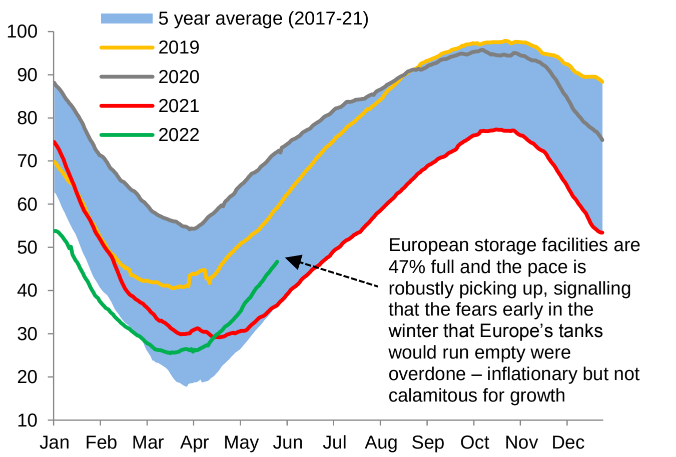
RUSSIAN PIPED NATURAL GAS SUPPLY TO EUROPE (MMBTU/D)



Source: Bloomberg, MUFG Research

EU GAS INVENTORIES ARE BEING REBUILT AND FIRMLY WITHIN THE LAST 5 YEAR AVERAGE INVENTORY BAND

NATURAL GAS INVENTORIES IN EUROPE (% OF TOTAL)



Source: Bloomberg, MUFG Research

intact and see higher prices for 2023 futures.

China is set to delay adding new sectors to its carbon markets until 2024

China is set to delay adding some of its most polluting industries to its carbon market to 2024 – a move that risks making it challenging to achieve its carbon neutral targets by 2060. According to reports, China is looking to bring in aluminium, cement, petrochemical and steel companies from 2024. The recent decision by the Chinese government to prioritise coal use in response to energy shortages appears to have blunted the market's development. Trading has been notably thin thus far in 2022 – with the carbon price staying broadly flat for long stretches – as the release of new allowances was postponed.

BASE METALS (1.0% W/W; 7.2% YTD)

Aluminium

Speculation of fraud has plunged aluminium prices this week

Aluminium prices have slumped this week on speculation that traders may have over-pledged Chinese aluminium ingot inventories at Chinese warehouses as collateral to raise financing multiple times. The alleged fraud is speculated to have spread to warehouses in Foshan, Shanghai, Zhengzhou and Ningbo, creating a crisis of confidence and reducing purchases on the spot market. More broadly, although aluminium balances look a little looser in recent weeks with faster supply growth in China and risks on the demand side, we continue to see 2022 mired in deficit against a backdrop of the lowest available inventories on the LME on record. Fundamentally, aluminium's current 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). For now, we maintain our aluminium prices averaging USD3,633/MT this year.

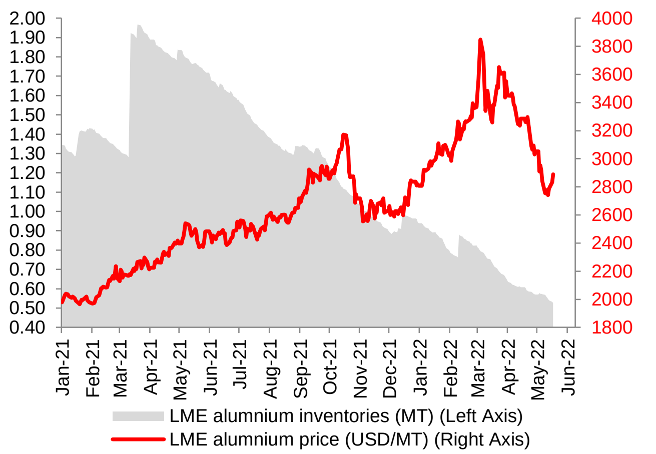
Nickel

Nickel prices are rising on very thin liquidity

Nickel has rebounded in recent trading sessions and broke above USD30,000/MT amid a very thin market. Speculation has grown that Indonesia may throw tariffs on

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

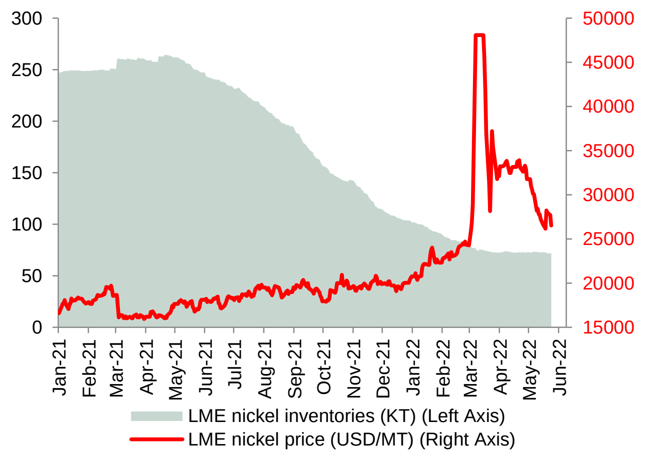
ALUMINIUM PRICE (USD/MT) AND INVENTORIES (MT, THOUSANDS)



Source: Bloomberg, LME, MUFG Research

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

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



Source: Bloomberg, LME, MUFG Research

nickel exports with a nickel content below 70%, which was mentioned by an official last week. However, there hasn't been any confirmation on the details of the tariff and the timing.

Nickel's bull market is already here

At the beginning of the year, nickel's place within green metals was as a key competitor in the race for mineral dominance of energy storage. Now, 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. Unlike copper and aluminium – both of which face green demand driven super cycles in coming years – extreme tightness and rapidly rising prices in the nickel market are already here. Even with the most pragmatic short cycle supply solution, the battery grade nickel market will continue to face extreme tightness this year. Turbo-charged by Russian physical decoupling supply risks and some positioning extremes, prices moved rapidly higher early in the year. However, with inventories already at low levels, the time frame for resolution signals that a near depletion in class 1 stock is likely to occur over the coming quarters before an eventual softening turn.

Copper

Copper prices are rebounding on gradual Chinese reopenings and relatively benign USD conditions

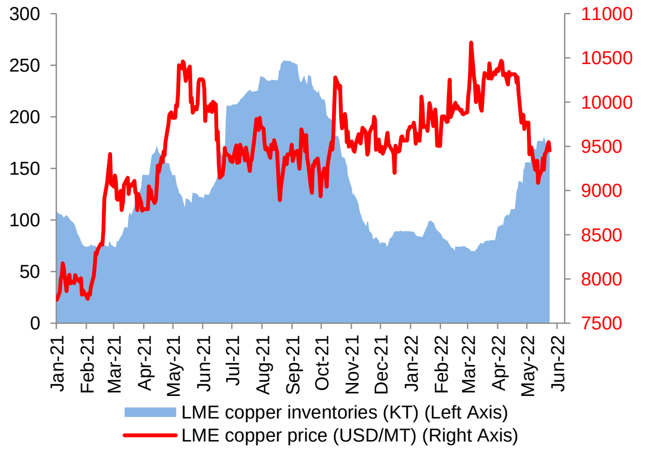
Copper prices are rallying on Shanghai's reopening plans and relatively benign USD conditions. Shanghai has reported 15 COVID cases – lowest in three months – from a peak of more than 27,000 a day in April. Containment of the Omicron variant in Shanghai will be seen as vindication for China's intensive COVID zero strategy, which allows no tolerance even as other countries live with the pathogen.

Supply scarcity continues to mire the complex

While copper demand concerns remain overly tied to global growth concerns, copper supply concerns have waned with reports of the continued flow of Russian metal alongside a broader expectation for stronger global mine output over the next couple of years. We view this supply narrative is misguided. On Russia, we believe such a short-term continuation of flows – unlike those seen in grains or energy – hides a deeper contraction in potential Russian mine supply. With equipment and key personnel barred from the region, alongside more restrained capital, we believe that there will be considerable disruptions to Russia's mine supply from 2023 onwards.

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

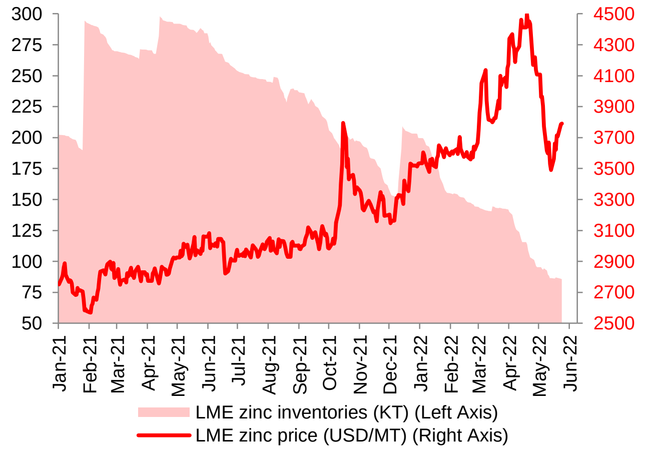
COPPER PRICE (USD/MT) AND INVENTORIES (MT, MILLIONS)



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

Such supply disruptions is the premise of our bullish conviction (MUFG average Q4 2022 forecast USD11,900/MT).

Zinc

Zinc has been rallying on China optimism and a weaker USD

As with copper, zinc has rebounded on easing Chinese lockdowns and a weaker USD profile recently. Zinc has been supported high energy prices curtailing production in Europe, alongside low inventories. Although treatment charges for smelters rose with the recent annual negotiations, high power prices continue to weigh on margins in Europe. The relatively easier process of ramping a zinc smelter up and down could keep supply more responsive in the near term, but in the medium term, zinc's higher exposure to China property and steel demand, where incoming data remains very weak, could be challenging. On net, we maintain our bullish forecasts though expect a slight pullback given prices appear to have overshot fundamentals somewhat (MUFG average 2022 forecast USD3,853/MT).

PRECIOUS METALS (-1.3% W/W; -0.8% YTD)

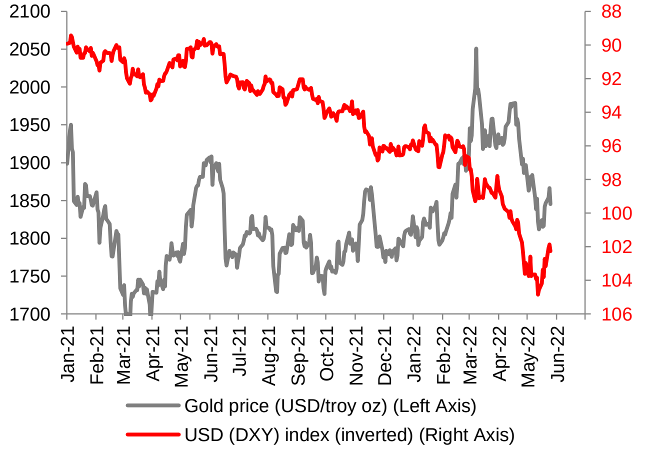
Gold

Gold has wilted as USD and yields rise with investors' assessment of the Fed's determination to combat inflation top of mind

Gold has been on the defensive this week with firmer yields and a stronger USD weighing on the precious metals complex. It is important to re-emphasise that while gold tends to disconnect from real rates during the Fed hiking periods, the relationship with the USD is more persistent. Since the majority of gold is produced and consumed outside of the US, broad-based USD appreciation should lead to a similar depreciation in gold, holding other variables constant. 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. Having said that, our medium-term view has not changed and we view the current price weakness as an opportune entry point for investors' strategic investors. Our FX analysts see the USD as structurally overvalued and expect a meaningful medium term depreciation. Also our US macro rates strategist expects a much higher risk of a US recession which should maintain demand for defensive assets like gold. We believe that gold prices will now accelerate from current levels (MUFG average Q4 2022 forecast USD2,250/oz).

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

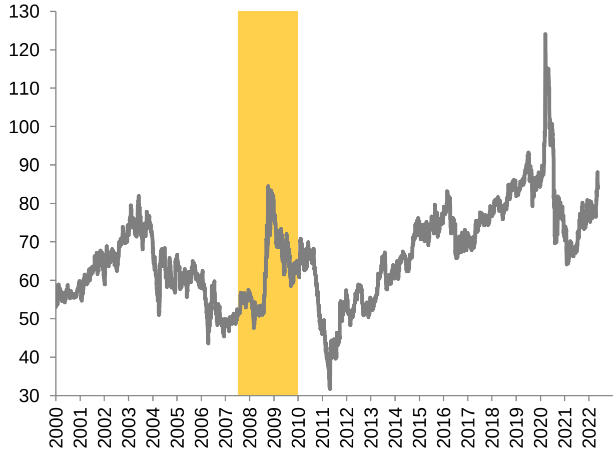
GOLD PRICE (USD/OZ) VS US USD BROAD (DXY) INDEX



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

Silver

Whilst silver has underperformed gold year-to-date, we believe that silver could outperform for the remainder of the year on stronger industrial demand

Silver has followed gold lower for much the same macro themes of a rebound in the USD and higher yields. Silver has underperformed gold, down 8% year-to-date while gold is broadly flat, with the gold-silver ratio rising to almost 90x at one point but moderating more recently to ~83x.This has been driven by weaker industrial sentiment, while the US solar industry has warned of slower activity due to supply chain disruptions. Generally speaking, silver gained earlier this year on gold strength, geopolitical risks following the Ukraine invasion and higher inflation. The withdrawal of monetary and fiscal stimulus, notably Fed rate hikes, subsequently erased those gains. We anticipate 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 and industrial demand is up and may rise further – despite the slowing world economy – for the next several years. Looking ahead, we believe silver is set to slightly outperform gold on stronger industrial demand (MUFG average Q4 2022 forecast USD30/oz).

Platinum and palladium

Palladium and platinum have weakened owing to weaker auto sales and a broader weak global backdrop

Both core platinum group metals (PGM) – platinum and palladium – continue to edge lower owing to sluggish auto sales and broader apprehensions of a slowing global economy. Big picture, counterbalancing forces are driving the PGM complex. On the one hand, elevated supply risks predominantly driven by Russian physical disruptions notably in palladium (Russia is the world's largest producer). On the other hand, persistent autocatalyst recycled supply remains constrained. Taken together, we expect a rebound in the back of 2022 as China lockdowns fade easing supply chain strains and our expectations of more favourable investor positioning. Our preference resides with platinum given the more diversified demand base and subdued base over palladium where demand is concentrated on the auto sector.

BULK COMMODITIES (-0.6% W/W; 21.7% YTD)

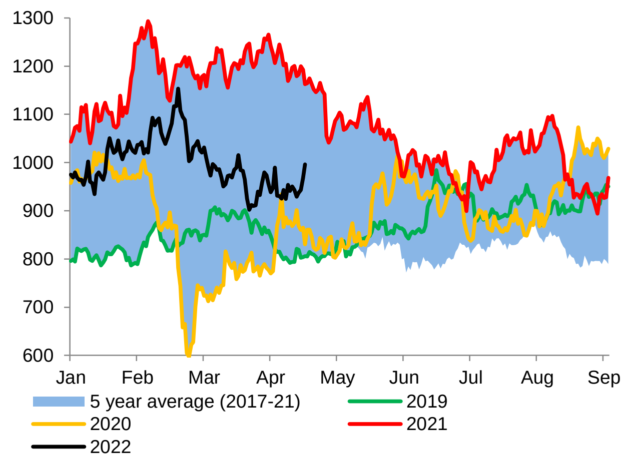
Iron ore

Iron ore prices gaining on China hopes

Iron ore prices are rebounding after Shanghai's easing of lockdown restrictions is

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

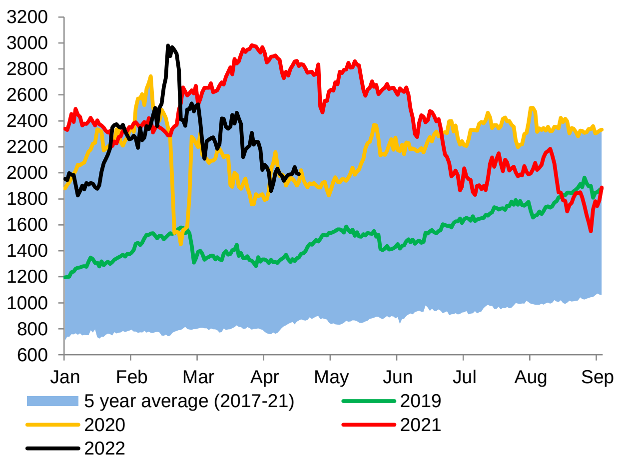
PLATINUM SPOT PRICE (USD/MT)



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

providing optimism that demand for the steel-making material may get a kickstart. In another constructive signal, the authorities in China's Shangdong province recently issued a directive to regulate crude steel output – steel curbs and fewer market supplies during the year should life profit margins at mills. Looking ahead, we expect iron ore as the key China reopening benefactor. Whilst iron ore's supply-demand fundamentals are strong, we believe prices are under pressure from China's weak steel demand, and capped by low steel mill margins. With supply from the majors on the rise after a feeble Q1 2022 and China's steel demand not yet bouncing, there might be more near term downside. Though, as lockdowns ebb and stimulus becomes more effective in H2 2022, we still expect China's steel demand to recover, which could push steel output higher. On net, we prefer iron ore relative to overvalued coal for the remainder of 2022 on the back of a steel demand-led iron ore price recovery.

Coal

Coal prices are edging higher mainly driven by ex-China demand, with notably European utilities increasing purchasers ahead of the August Russian coal ban

As the August deadline that bans Russian coal imports into the EU draws closer, European utilities have been attempting to increase purchases, which is supporting front-end coal prices. Separately, with the exception of South Africa, coal shipments by the major exporters remain robust, as can be expected at the current price level. Russia's shipments have not been significantly impacted yet, but we still anticipate at least some of its coal exports to be left stranded when the European ban kicks in. Together with likely incremental near-/medium-term European coal demand, we see a relatively tight seaborne market ahead, and see upside risks to prices in H2 2022.

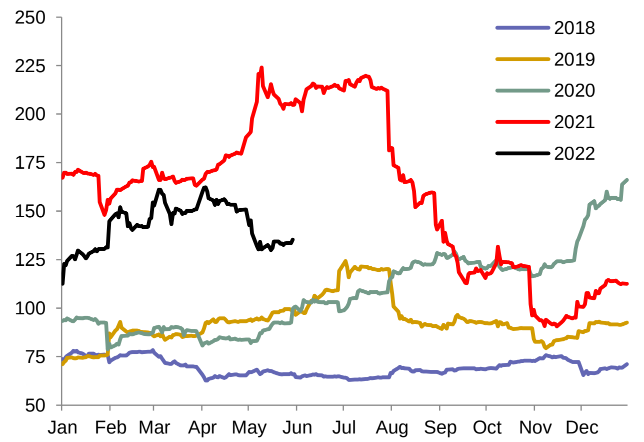
AGRICULTURE (-2.7% W/W; 23.1% YTD)

Grain prices have fallen sharply on hopes that some Ukrainian grain shipments can re-start from the Black Sea

In encouraging signs, wheat, corn and soybean prices have tumbled this week as the market factored in the possibility of some Ukrainian grain shipments re-starting from the Black Sea with Russian offering to provide a safe passage of Ukrainian cargo in return for some relief from sanctions. President Putin has said that Russia is ready to facilitate the unhindered export of grains from Ukrainian ports (main grain export ports include Chornomorsk, Mykolaiv, Odesa, Kherson and Yuzhny). in coordination with Turkey, adding that Russia was also ready to export significant volumes of fertilises and food should certain sanctions against Russia be lifted.

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

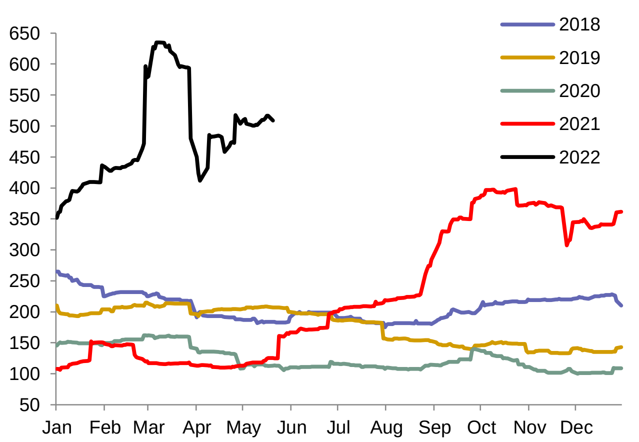
IRON ORE SPOT PRICE (USD/MT)



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

Market optimism of such an agreement may be displaced

It is far from clear whether such an agreement can be reached but as it stands it would appear that there is simply no way to export Ukraine's large-scale harvests out to the world without opening a maritime corridor through the Black Sea. The European Commission last month launched a rescue mission to help Ukraine shift foodstuffs by road and rail rather than from its ports, which carried ~90% of exports before Russia's invasion. The president of the Ukrainian Grain Association Gorbachov declared that "before, we could export up to 7 million tons per month from Ukrainian sea ports, and now in the best case I hope we will reach one and a half million tons".

Laser focus on rice as a substitute for wheat

With the world facing mounting food insecurity due to shortages and soaring costs, markets are closely watching rice prices for any signals that social unrest may erupt in certain parts of the emerging markets space. When it comes to grains, the substitute for wheat as food is often rice. With India being the world's largest rice exporter, accounting for ~40% of trade, and has already curbed foreign wheat sales, roiling global agricultural markets.

Hoarding – which is markedly inflationary – is becoming increasingly prevalent

Indeed, food protectionism, especially within the wheat, corn and soybean space, is precipitously on the rise with more than 30 emerging markets taking steps to restrict food exports since the war in Ukraine began three months ago. High input (energy and fertiliser) costs, shipping delays, labour shortages and inclement weather are enticing hoarding behaviour as farmers across the world are endeavouring to secure tomorrow's supply themselves by precautionary inventory building today (see here). 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.

A material reduction in expected inventories of wheat and corn

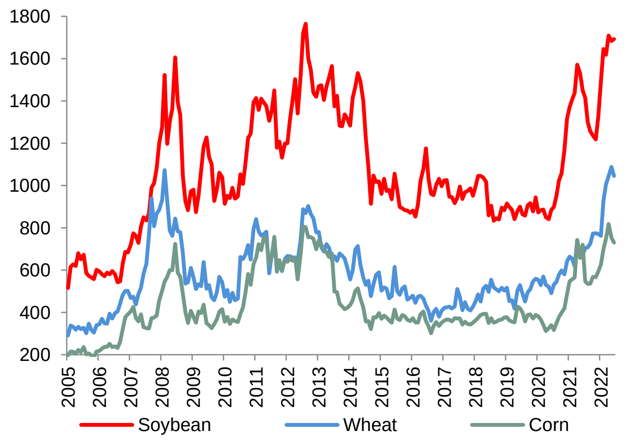
Recent estimates from the USDA show a markdown in expected production and inventories of wheat and corn in 2022-23, as a result of these disruptions. Policymakers in many emerging markets face growing challenges in managing food security, which could flow over into geopolitical volatility in unpredictable ways. There is upside risk to inflation, particularly in emerging markets, which reduces household disposable incomes. Such an environment poses further upside risks to food price inflation which complicates policy choices for central banks globally.

Trade restrictions have seen a growing risk surrounding food security

Food security has become a more pressing issue, reflecting the persistent supply challenges. Some countries, particularly higher yielding emerging markets and food importers, are at more risk than others. A range of policy interventions, impacting the

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

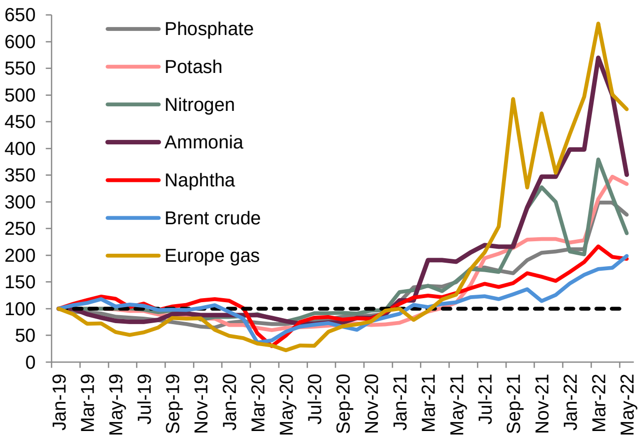
SOYBEAN, WHEAT AND CORN PRICES (USD/BUSHELS)



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

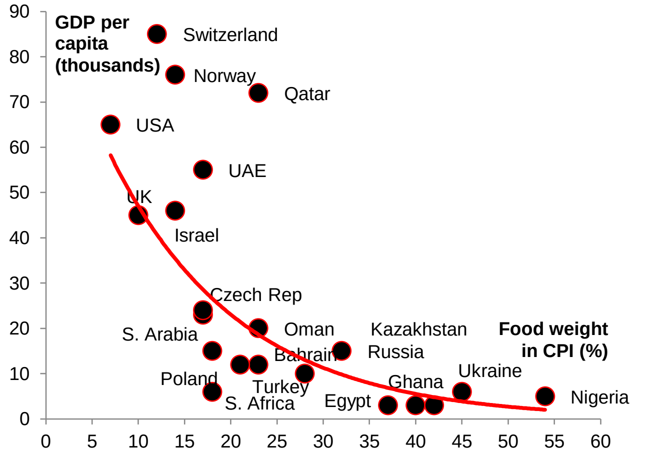
trade of agricultural commodities, have been introduced, now covering more calories (as a percentage of global trade) than in the 2008 crisis. These policies could exacerbate the high prices, as work from the World Bank has shown is the case in previous crisis.

Hoarding reinforces our long commodities conviction given the rise in de-globalisation, de-carbonisation and a reduction in capital availability owing to structural underinvestments

With the sharp rise in de-globalisation, de-carbonisation and a reduction in capital availability given structural underinvestments over the years, hoarding reinforces the long commodities conviction. At the heart of this supposition is the need for countries to establish resiliency in their supply chains – whether in response to trade wars, climate change, geopolitical risks and/or sanctions. These pressures all lead to the same trade off, namely, inflationary pressures against the security of supply. If history is any guide, the costs of such policies will be inflationary as the pursuit of economic autarky for strategic purposes favours maintaining higher cost but more secure supply chains, over the lower cost comparative advantage model of globalisation. These shifts, and their inflationary ramifications, are just starting out, in our view.

A HIGHER SHARE OF FOOD IN THE CPI BASKET IN EM GIVEN LOWER LEVELS OF ECONOMIC DEVELOPMENT

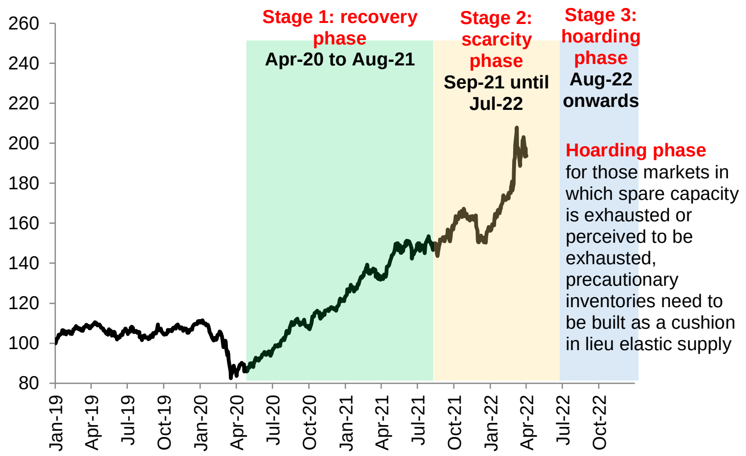
GDP PER CAPITA (USD, THOUSANDS) VS. FOOD WEIGHT IN CPI (%)



Source: IMF, National Official Sources, MUFG Research

COMMODITY MARKETS MAY PIVOT FROM DEMAND RECOVERY TO SUPPLY SCARCITY AND NOW HOARDING

BLOOMBERG COMMODITY INDEX, REBASED JANUARY 2019 = 100



Source: Bloomberg, MUFG Research

Commodity prices – performance

				2021	2022				Change %						
	Commodity	**Ticker**	**Unit**	**31-Dec**	**11-May**	**18-May**	**25-May**	**01-Jun**	**Week**	**1 MTD**	**3 MTD**	**YTD**	**1 Year**	**3 Years**	**5 years**
1	Bloomberg BCOM Total Returns	BCOMTR Index	Index	211.80	266.60	281.64	282.34	284.96	0.93	1.36	11.80	34.54	41.77	74.38	70.41
2	Bloomberg BCOM Spot Index	BCOMSP Index	Index	502.25	623.85	658.49	660.00	657.06	-0.44	0.00	9.22	30.82	35.86	97.58	102.06
3	Energy	BCOMENSP Index	Index	368.86	583.49	637.13	648.79	653.18	0.68	0.00	32.98	77.08	97.57	145.23	162.39
4	US Natural Gas	NG1 Comdty	USD/MMBtu	3.73	7.39	8.30	8.80	8.72	-0.83	7.13	90.82	133.94	181.12	255.58	190.09
5	EU Natural Gas	TZT1 Comdty	EUR/MMBtu	3.73	98.80	94.18	84.51	85.55	1.24	-8.99	-29.69	21.62	229.36	663.51	466.56
6	WTI Crude	CL1 Comdty	USD/b	75.21	99.76	112.40	109.77	115.97	5.65	1.12	12.14	54.18	71.23	116.75	139.78
7	Brent Crude	CO1 Comdty	USD/b	77.78	102.46	111.93	113.56	117.02	3.05	-4.77	11.44	50.40	66.52	81.39	131.05
8	Gasoline	HO1 Comdty	USD/lb	222.85	354.15	394.17	381.10	405.34	6.36	-0.71	31.17	81.81	86.68	124.84	153.00
9	EU ETS EUA	MO1 Comdty	USD/gal	80.22	86.93	91.33	80.98	83.66	3.31	2.46	25.08	6.86	63.84	251.46	1587.40
10	Metals	BCOMIN Index	Index	172.89	180.00	181.08	183.65	184.62	0.53	-0.50	-5.39	6.79	14.94	66.27	66.94
11	Industrial Metals Index	BCOMINSP Index	Index	303.57	315.74	317.63	322.14	325.47	1.04	0.00	-4.79	7.22	15.56	73.89	79.99
12	Copper	HG1 Comdty	USD/lb	9,721	9,229	9,366	9,454	9,448	-0.06	0.00	-4.41	-2.81	-7.90	62.05	66.27
13	Aluminium	LA1 Comdty	USD/MT	2,803	2,723	2,877	2,883	2,764	-4.13	0.00	-18.09	-1.40	12.04	55.49	43.93
14	Zinc	ZNC1 Comdty	USD/MT	3,580	3,609	3,670	3,802	3,929	3.35	0.00	6.74	9.75	29.05	49.39	51.70
15	Nickel	LN1 Comdty	USD/MT	20,874	28,319	26,352	26,514	28,348	6.92	0.00	15.23	35.81	56.77	136.64	217.41
16	Precious Metals Index	BCOMPRSP Index	Index	530.97	524.10	521.85	533.69	526.55	-1.34	0.00	-7.46	-0.83	-7.82	43.09	40.80
17	Gold	GC1 Comdty	USD/t oz	1,829	1,841.00	1,818.90	1,865.40	1,840.10	-1.36	-0.14	-5.33	0.63	-3.30	40.92	45.23
18	Silver	SI1 Comdty	USD/t oz	23.35	21.39	21.74	22.06	21.90	-0.74	0.98	-14.23	-6.22	-22.07	50.34	26.73
19	Platinum	PL1 Comdty	USD/t oz	964.40	947.20	943.40	942.90	968.30	2.69	2.78	-5.39	3.19	-17.05	25.31	7.13
20	Palladium	PA1 Comdty	USD/t oz	1,912	2,044	2,032	1,987	1,990	0.17	-0.24	-21.42	4.07	-30.34	49.19	140.63
21	Bulk Commodities	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	Hard Coking Coal	XW1 Comdty	USD/MT	341.76	503.33	501.50	516.33	501.82	-2.81	-18.30	-11.51	19.97	154.66	98.50	180.82
23	Iron Ore	SCO1 Comdty	USD/MT	112.50	130.27	131.58	133.10	135.34	1.68	4.00	-5.16	23.42	-32.24	40.59	149.19
24	Agriculture	BCOMAG Index	Index	60.79	74.37	79.63	76.92	74.84	-2.70	-0.73	2.94	23.11	26.14	80.72	49.47
25	Agriculture Index	BCOMAGSP Index	Index	406.67	492.85	527.72	509.72	499.63	-1.98	0.00	3.00	22.86	23.69	98.37	98.37
26	Grain Index	BCOMGRSP Index	Index	293.87	382.48	414.44	396.64	385.04	-2.92	0.00	4.95	31.03	22.84	96.37	111.97
27	Soybean	S 1 Comdty	USD/bu	1,328.75	1,630	1,678	1,693	1,687	-0.34	0.24	-1.07	26.98	8.96	92.22	84.95
28	Wheat	W 1 Comdty	USD/bu	770.75	1,083.25	1,277.50	1,154.75	1,035.00	-10.37	-4.83	3.32	34.28	49.24	105.77	141.26
29	Corn	C 1 Comdty	USD/bu	593.25	786.50	800.75	771.75	728.25	-5.64	-3.38	-1.59	22.71	5.70	70.49	96.49
30	Soft Index	BCOMOSSP Index	Index	394.34	400.91	433.13	416.87	423.64	1.62	0.00	4.43	7.43	35.28	96.58	65.79
31	Cotton	CT1 Comdty	USD/lb	112.60	142.94	148.46	141.54	136.41	-3.62	-1.85	7.96	21.15	61.91	100.37	75.72
32	Coffee	KC1 Comdty	USD/lb	226.10	204.00	228.20	213.65	239.45	12.08	3.52	0.91	5.88	48.65	128.87	87.47
33	Sugar	SB1 Comdty	USD/lb	18.88	18.54	20.00	19.75	19.47	-1.42	0.41	6.22	3.18	10.12	60.99	36.89
34	Livestock Index	BCOMLISP Index	Index	196.83	206.40	211.13	211.45	208.36	-1.46	0.00	-3.83	5.86	3.08	24.88	13.80
35	Live Cattle	LC1 Comdty	USD/lb	138.90	132.40	133.00	132.73	130.53	-1.66	1.36	-5.85	-4.75	16.51	21.96	3.83
36	Lean Hogs	LH1 Comdty	USD/lb	81.48	101.08	105.15	109.03	107.98	-0.96	1.34	3.04	34.31	-7.76	33.89	35.22
37	USD Index	DXY Index	Index	95.67	103.92	103.36	101.86	102.59	0.72	0.83	5.32	7.24	14.21	4.95	5.55

Source: Bloomberg, MUFG Research

Commodity prices – quarterly and annual forecasts

	Commodity	Ticker	Unit	01-Jun	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	8.72	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	85.55	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	83.66	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	115.97	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	117.02	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	9,448	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	2,764	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	3,929	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	28,348	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	1,840	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	21.90	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	968.30	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	1,990	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	413.33	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	135.34	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	1,687	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	1,035	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	728.25	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	136.41	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	231.23	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	19.40	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

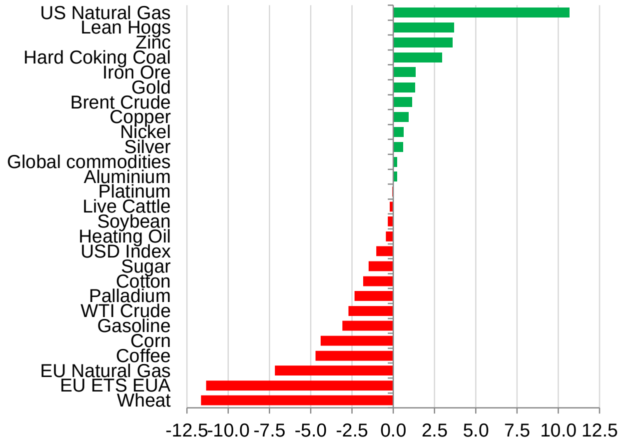
		Bullish	Neutral-to-bullish	Neutral	Neutral-to-bearish	Bearish
1	Energy	EU natural gas, Brent, WTI	US natural gas	---	---	
2	Base Metals	Aluminium, Copper, Nickel	Zinc	---	---	---
3	Precious Metals	Platinum, Palladium	Gold, Silver	---	---	---
4	Bulk Commodities	Hard Coking Coal	---	Iron ore		---
5	Agriculture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

Source: Bloomberg, MUFG Research

Core indicators – commodities flows and returns

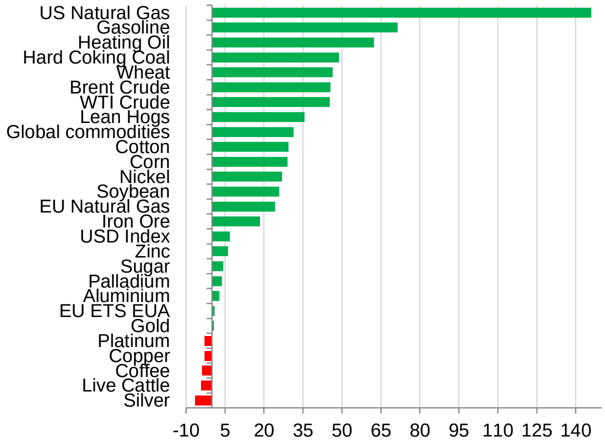
COMMODITIES MARKET PRICE RETURNS

WEEK ENDING 01 JUNE 2022 (% W/W)



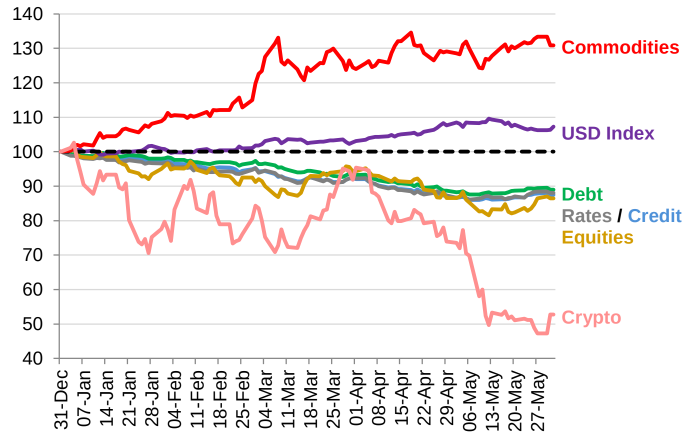
COMMODITIES MARKET PRICE RETURNS

YEAR-TO-DATE 2022 (%)



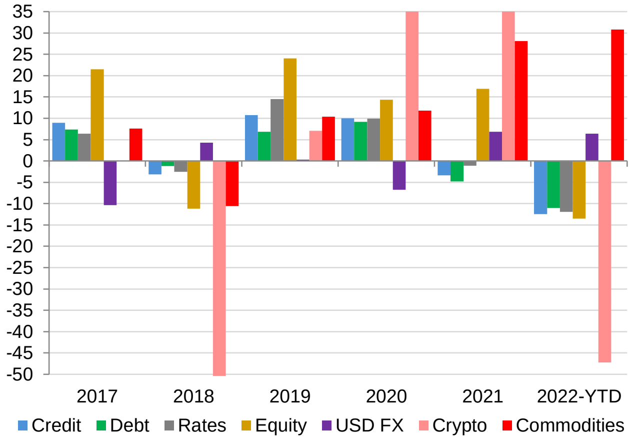
USD-DENOMINATED GLOBAL ASSET MARKET RETURNS

REBASED 1 JANUARY 2022 = 100



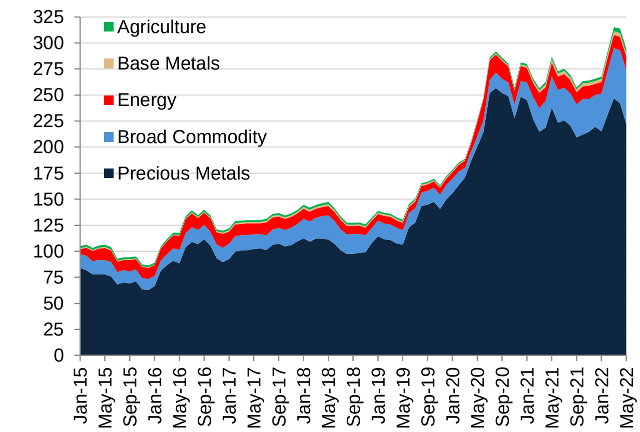
USD-DENOMINATED GLOBALL ASSET MARKET RETURNS

ANNUALISED PERFORMANCE (%)



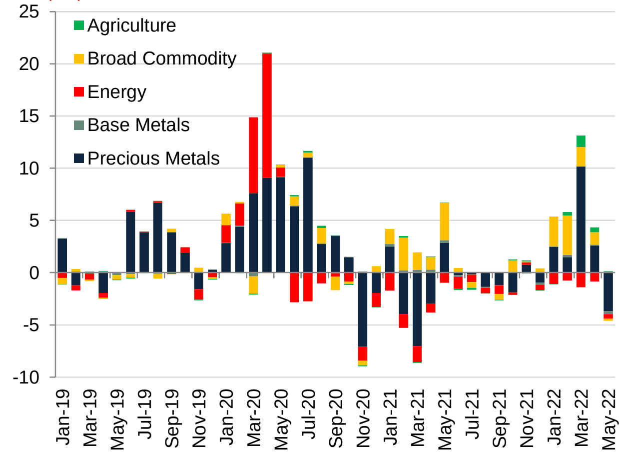
COMMODITIES ETF COMBINED CUMULATIVE AUM

USD (BN)



COMMODITIES ETF COMBINED CUMULATIVE FUND FLOWS

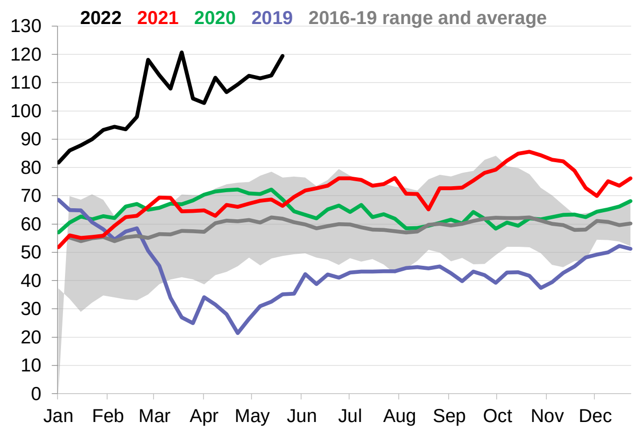
USD (BN)



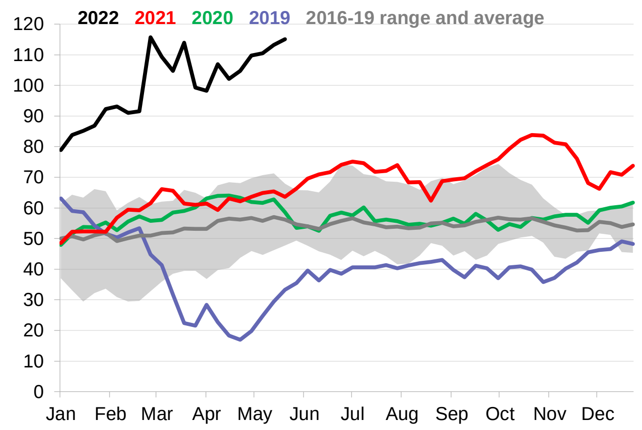
Source: Bloomberg, MUFG Research

Core indicators – prices

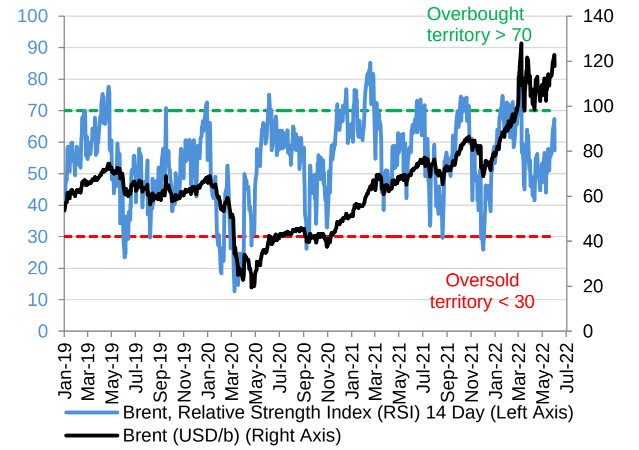
BRENT SPOT
USD/B



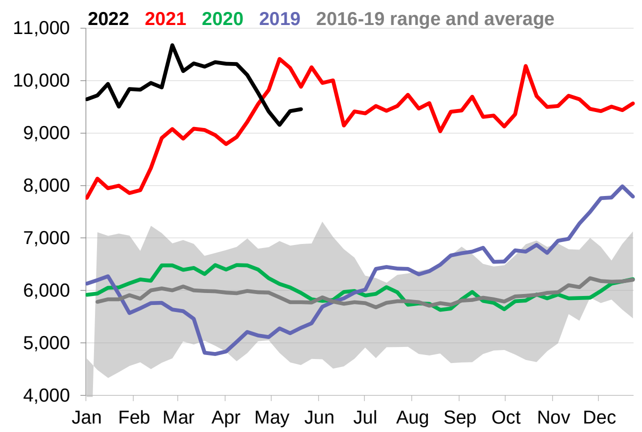
NYMEX WTI SPOT
USD/B



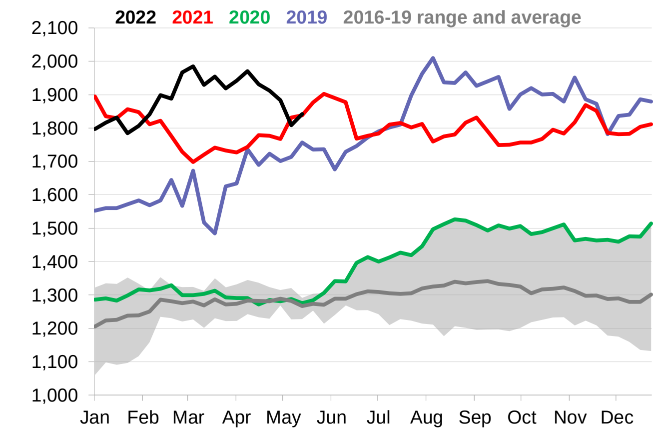
14 DAY RELATIVE STRENGTH INDEX (RSI) AND WTI
USD/B AND 0-100 INDEX (<30 = OVERSOLD; >70 = OVERBOUGHT)



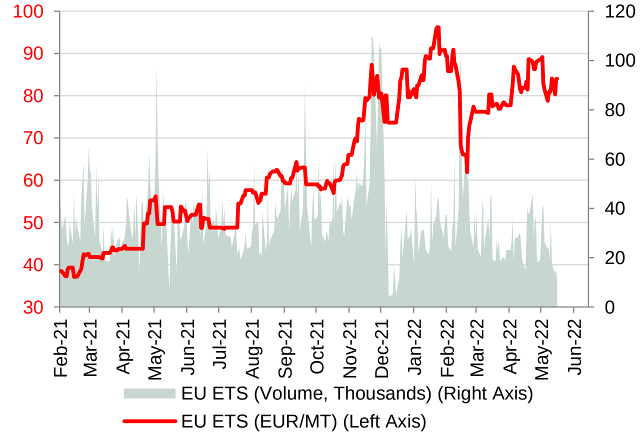
COPPER SPOT
USD/LB



GOLD SPOT
USD/T OZ



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

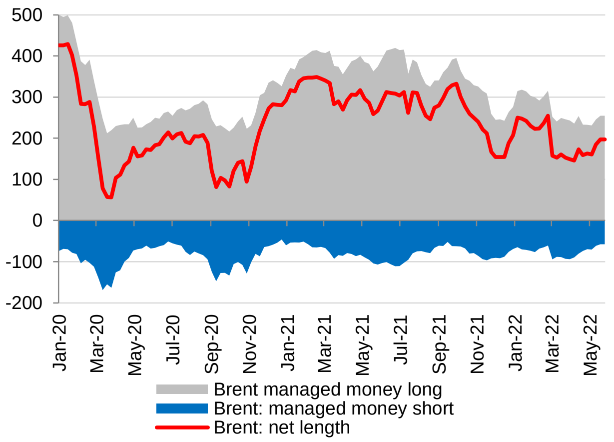


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

Core indicators – market positioning

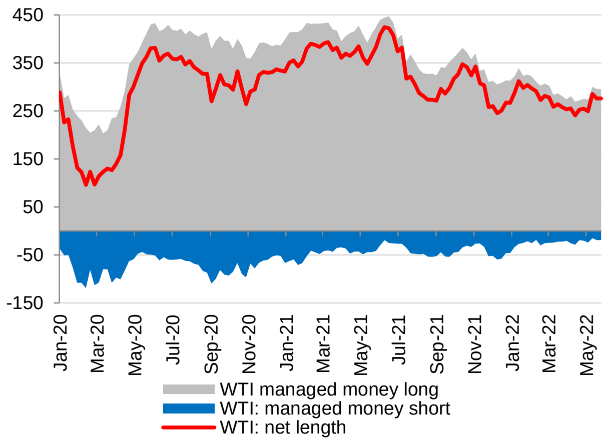
BRENT CRUDE MANAGED MONEY

CONTRACTS (THOUSANDS)



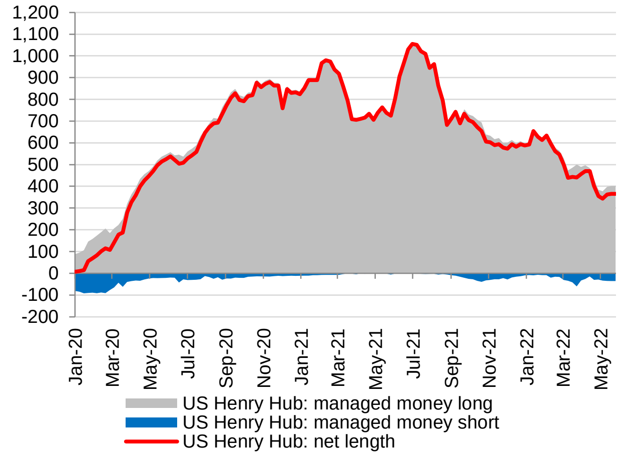
WTI CRUDE MANAGED MONEY

CONTRACTS (THOUSANDS)



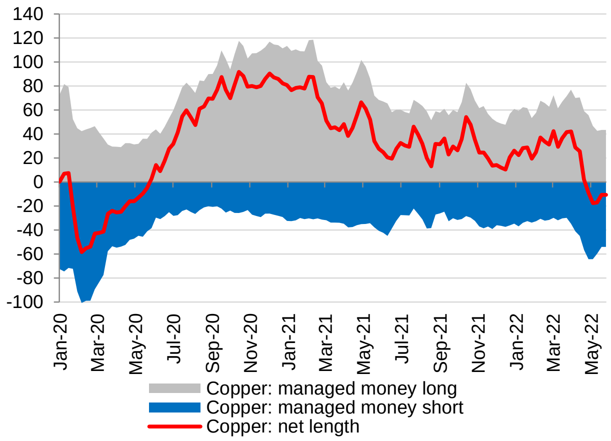
HENRY HUB NATURAL GAS MANAGED MONEY

CONTRACTS (THOUSANDS)



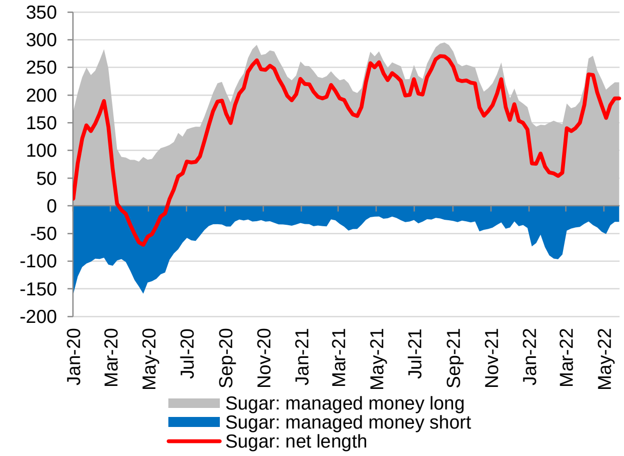
COPPER MANAGED MONEY

CONTRACTS (THOUSANDS)



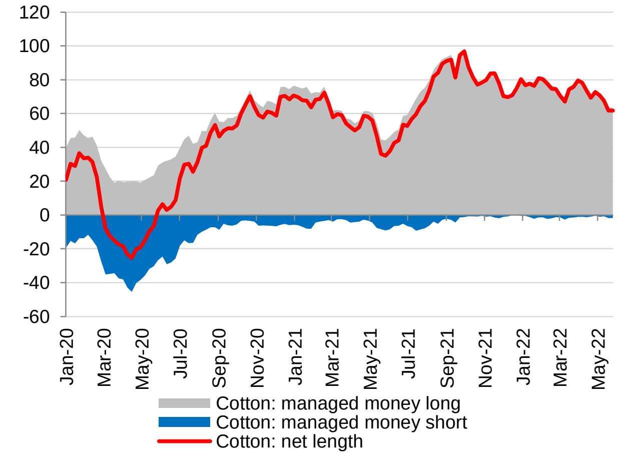
SUGAR MANAGED MONEY

CONTRACTS (THOUSANDS)



COTTON MANAGED MONEY

CONTRACTS (THOUSANDS)

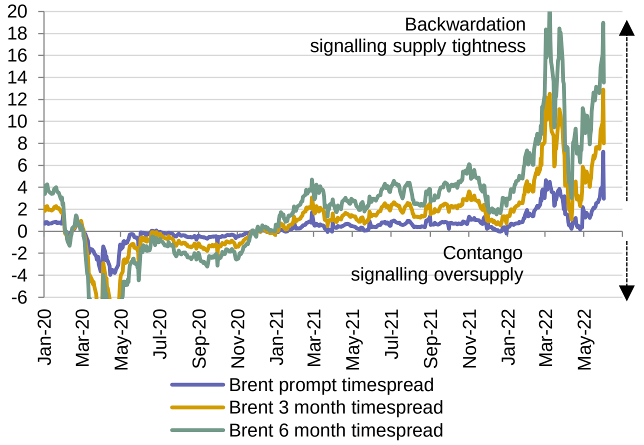


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

Core indicators – timespreads and futures

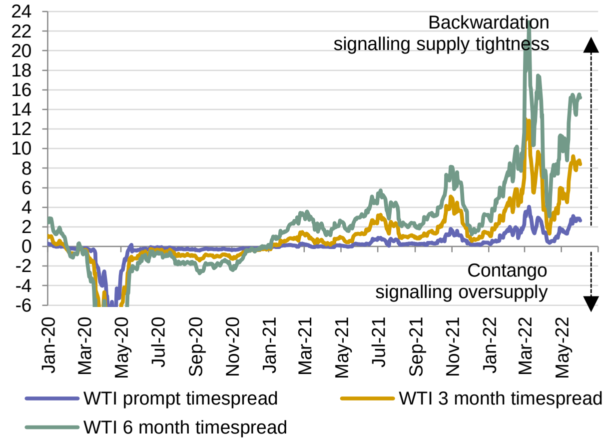
BRENT TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



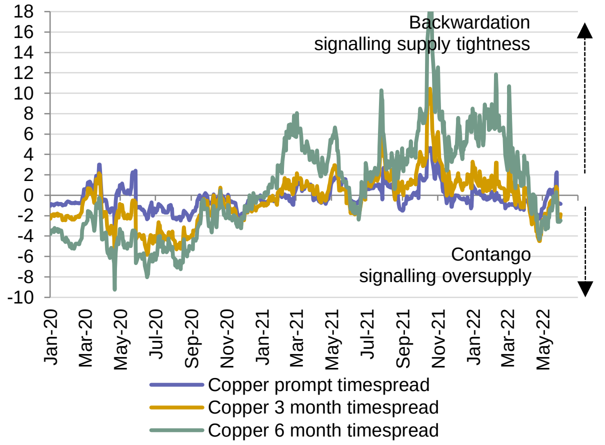
WTI TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



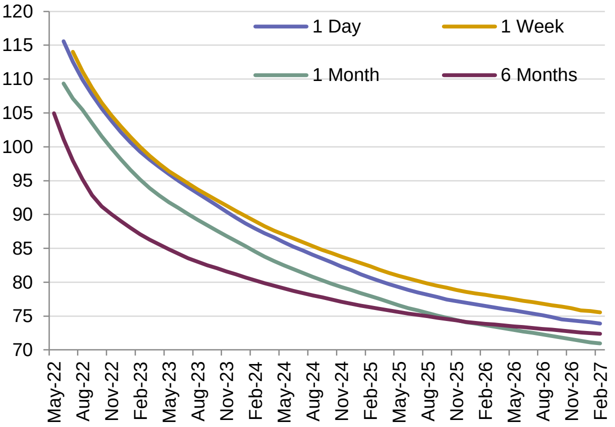
COPPER TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



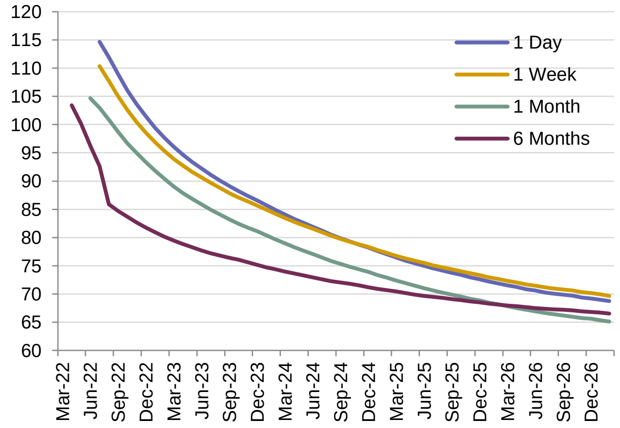
BRENT FUTURES CURVE

USD/B



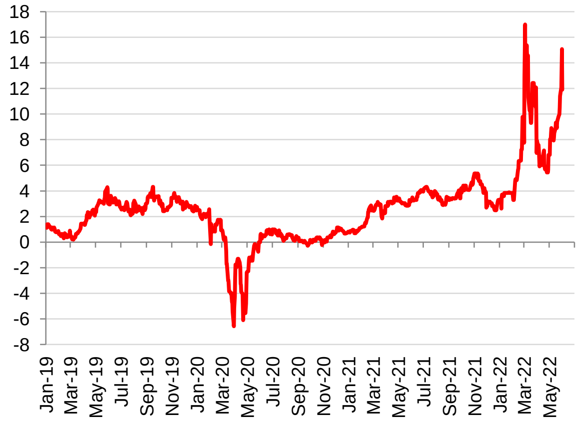
WTI FUTURES CURVE

USD/B



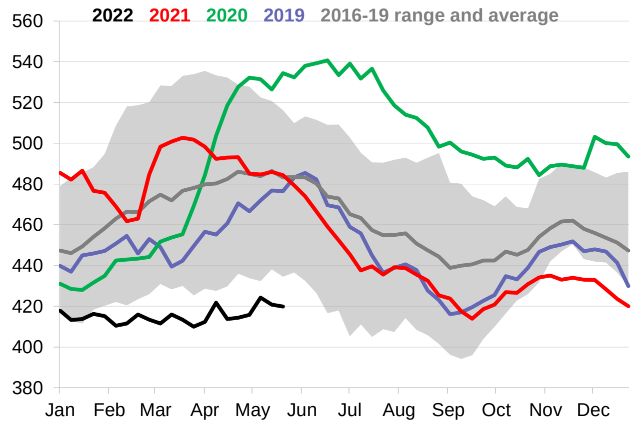
BRENT-DUBAI SPREAD

USD/B

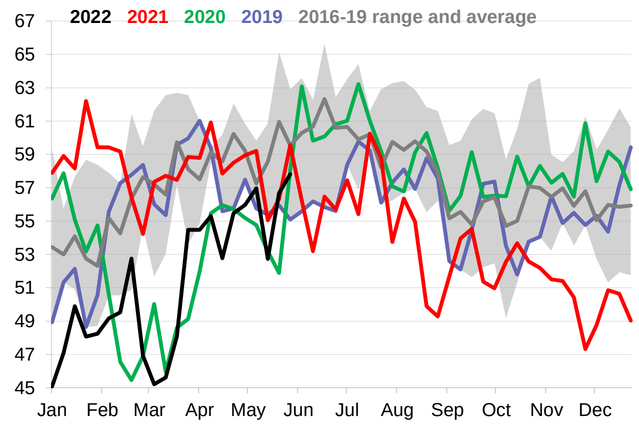


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

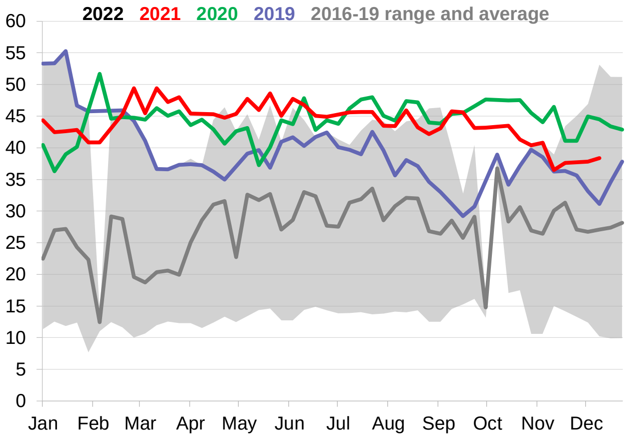
US CRUDE INVENTORIES
MILLION BARRELS



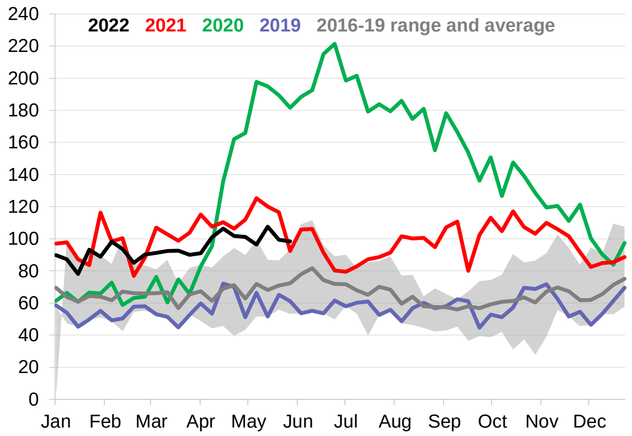
ARA CRUDE INVENTORIES
MILLION BARRELS



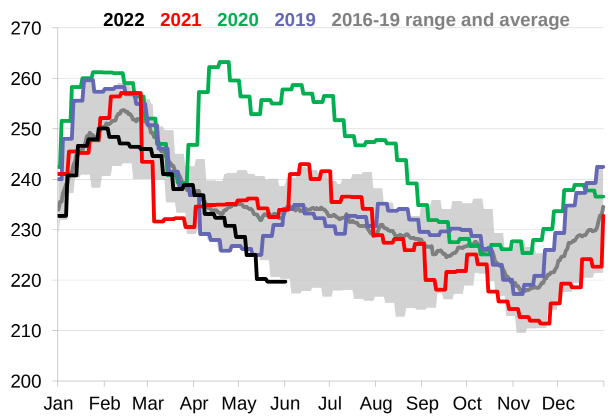
CHINA SHANDONG CRUDE INVENTORIES
MILLION BARRELS



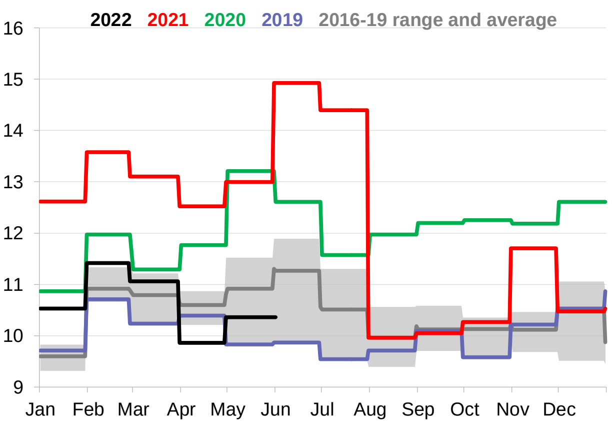
GLOBAL CRUDE FLOATING STORAGE
MILLION BARRELS



US GASOLINE INVENTORIES
MILLION BARRELS



JAPAN GASOLINE INVENTORIES
MILLION BARRELS



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

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

As of June 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

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