

**EHSAN KHOMAN**

Head of Commodities, ESG and  
Emerging Markets Research –  
EMEA

DIFC Branch – Dubai  
T: +971 (0)4 387 5033

E: [ehsan.khoman@ae.mufg.jp](mailto:ehsan.khoman@ae.mufg.jp)

**RAMYA RS**

Analyst

DIFC Branch – Dubai  
T: +971 (0)4 387 5031

E: [ramya.rs@ae.mufg.jp](mailto:ramya.rs@ae.mufg.jp)

24 August 2023

## China's economic malaise is carving a ceiling on commodity prices

**Global commodities:** Global markets continue to contend with a flagging Chinese economic recovery but it's not been a homogeneous story. Chinese oil demand has been solid year-to-date, while fresh credit concerns around Chinese property developers are clear headwinds. This disconnect matters for commodity returns. Chinese stimulus measures remain smaller than in previous cycles. With ~55% of global metals demand and ~14% of global energy demand derived from China, what happens in China matters for a cyclical asset class like commodities. Taken together, the macro backdrop is what is driving investor angst which risks sentencing the commodities upside over the remainder of 2023.

**Energy:** After surging to a six month high close to USD90/b two weeks ago, Brent crude's quiet rally is ebbing owing to (i) a pessimistic Chinese outlook; (ii) indications that the Fed is not yet done tightening; and (iii) higher Iranian and Venezuelan supply. Meanwhile, deliberations to avoid strikes at Australian LNG terminals have begun this week, with the threat to supply set to continue driving volatility across global gas markets.

**Base metals:** Until China stimulus achieves material improvement in confidence and/or easing DM policy, we expect little potential for sustained near term gains.

**Precious metals:** We would argue for fading upside moves in gold price until a clear downward trend in yields and the USD emerges.

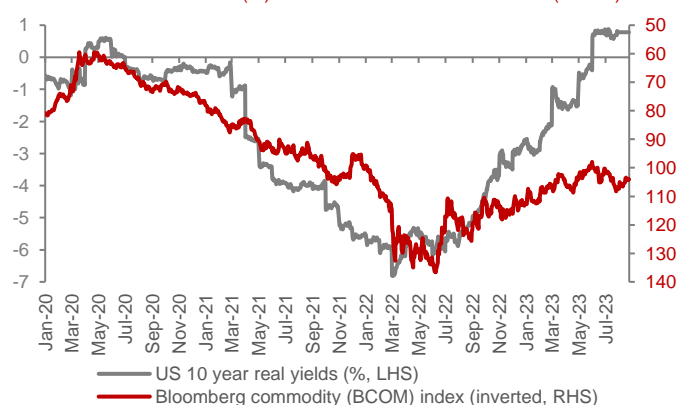
**Bulk commodities:** The persistent troubles in China's property market pose a threat to iron ore and thus far the myriad, piecemeal Chinese stimulus initiatives and reassuring rhetoric have failed to turn the tide.

**Agriculture:** Rice's precipitous rally has more room to run, as constrained supply meets robust demand.

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

### CHART OF THE WEEK: DECADE-HIGH REAL YIELDS DEFLATE FROTHY ASSETS

US 10 YEAR REAL YIELDS (%) VS BLOOMBERG COMMODITY (BCOM) INDEX



Source: Bloomberg, MUFG Research

Investors may scale back their demand for commodities exposure as higher US real rates threaten to stifle growth. Whilst our US rates strategist believes that Fed Funds rate will peak this quarter, rising energy, wage and rental prices is complicating the outlook for monetary policy.

## GLOBAL COMMODITIES (0.1% W/W; -7.1% YTD)

The devil is in the details as its not been a homogeneous story on Chinese commodities demand thus far this year

Global markets continue to contend with a flagging Chinese economic recovery. A protracted crisis in the property market, deflation, weak exports and a falling yuan reinforce fissures in the world's largest commodity consumer. Yet the devil is in the details as its not been a homogeneous story on Chinese commodities demand thus far this year. On the one hand, freed from the constraints of the pandemic, Chinese oil demand has been solid year-to-date approaching an all-time high of 16m b/d. On the other hand, metals demand is highly correlated to the infrastructure complex and fresh credit concerns around Chinese property developers are clear headwinds. This disconnect matters for commodity returns.

The mixed developments in China signal that energy demand is robust whilst the demand for metals weak

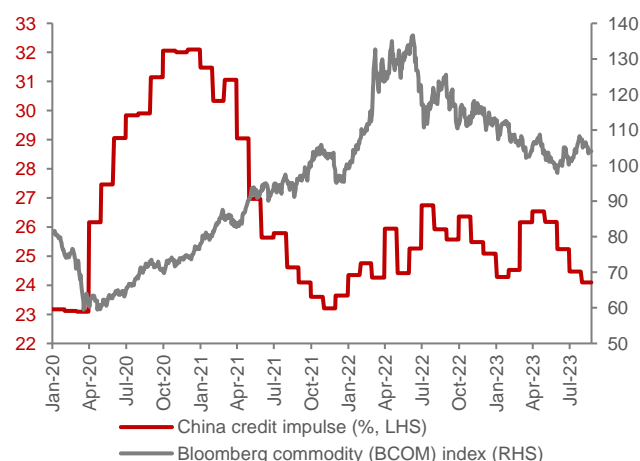
Base metals have retreated from their January high as the economy has lost steam, hampering margins at Chinese smelters and fabricators, especially for aluminium. The drop in profitability in H1 2023 is their worst performance in over a decade. In tandem, copper inventories have dropped with traditional drivers of consumption having stalled with new sources of growth from the energy transition which copper is a central driver supporting demand. Meanwhile, with construction accounting for as much as 40% of China's steel demand, the challenging state of the property market suggests steelmakers are going to be cautious about tapping more imports to replenish supplies. Turning to crude oil, shipments remain the bright spot among China's commodities imports with demand growth set to account for ~40% of the global total this year, as the tepid macro data is quite concentrated outside the oil-intensive services sector. Though, the recovery may now be running on fumes as refiners throttle back imports and switch to running down inventories. Separately, with China's economic activity underpinned by coal, China's economic malaise is reining in the breakneck pace of imports, which have nearly doubled from last year.

The macro backdrop is what is driving investor angst which risks sentencing the commodities upside for the remainder of 2023

As we recently catalogued, what is becoming increasingly apparent is that Chinese stimulus measures remain smaller than in previous cycles (see [here](#)). Structural challenges surrounding the government's desire to pivot to an economy led by consumption instead of investment – are helpful for energy and agricultural demand but not for old economy base metals driven by construction. With ~55% of global metals demand and ~14% of global energy demand derived from China, what happens in China matters for a cyclical asset class like commodities. Taken together, the macro backdrop is what is driving investor angst which risks sentencing upside for the broad Bloomberg commodities (BCOM) index over the remainder of 2023.

### STAGNANT CHINA CREDIT IMPULSE MAY SIGNAL WEAKNESS FOR THE BROADER COMMODITIES INDEX

CHINA CREDIT IMPULSE (%) VS BLOOMBERG COMMODITY (BCOM) INDEX



Source: Bloomberg, MUFG Research

### CHINESE MANUFACTURING SLOWDOWN HAS WEIGHED ON MACRO SENTIMENT AND INVESTOR POSITIONING

CHINA MANUFACTURING PMI VS NET COPPER POSITIONING (LOTS)



Source: Bloomberg, MUFG Research

## ENERGY (0.5% W/W; -6.8% YTD)

### Crude oil

Data from oil cargo shipments indicate Iran to boost its already surging oil exports

After surging to a six month high close to USD90/b two weeks ago, Brent crude's quiet rally is ebbing. The downturn has been exacerbated by three key factors – (i) a pessimistic economic outlook in China; (ii) indications that the Fed is not yet finished tightening; and (iii) a further revival in both Iranian and Venezuelan supply. Reports have come in that Iran and the US are inching towards an understanding that would ease sanctions enforcement in exchange for limits on Iranian uranium enrichment, which would in turn allow the flow of Iranian crude barrels to the currently tight market. Iran has already shipped 2.2m b/d of oil during the first 20 days of August – the highest ever monthly exports this year. This development comes after diplomatic efforts between the US and Iran have raised speculation about whether aspects of the nuclear deal abandoned by former President Trump in 2018 could be revived.

Russia honours initial commitment to cut production as seaborne crude flows fall

Meanwhile, seaborne crude flows from Russia, fell to their lowest since January after Russia pledges to restrict its oil exports. Average nationwide shipments in the four weeks to 20 August dropped to 2.84m b/d, tanker-tracking data compiled by Bloomberg show – nearly 1.1m b/d below the peak in mid-May. These figures are a testament that Russia is now honouring a pledge to keep supply off the global market alongside its allies in the OPEC+ producer coalition. Russia initially said it would cut oil production in retaliation for Western sanctions and price caps on its oil imposed after the invasion of Ukraine, using February 2023 figures as a baseline. Yet seaborne flows had continued to rise, dropping significantly only in the last few weeks.

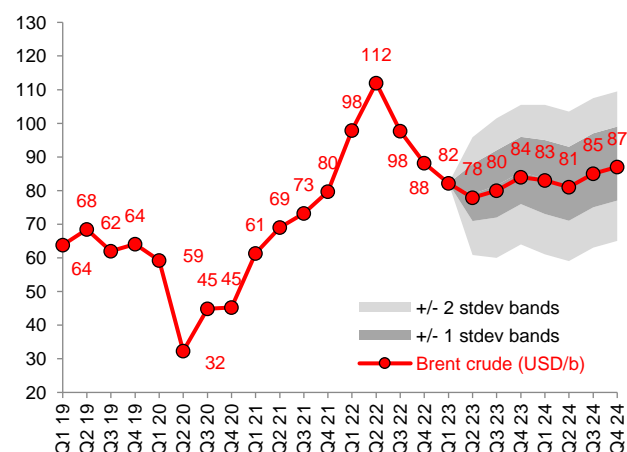
US crude oil inventories at lowest levels since the beginning of the year

The current pressure in the oil market comes from weaker-than-expected Chinese macro data, as well as, unfavourable July Fed minutes suggesting the possibility of further monetary tightening. However, oil fundamentals remain largely constructive as continued OPEC+ supply cuts should ensure that we see sizeable inventory draws for the remainder of the year. The latest weekly inventory report by the EIA was also largely constructive, showing US commercial crude oil inventories falling to the lowest level since the start of 2023.

Oil fundamentals to dominate the future course of prices

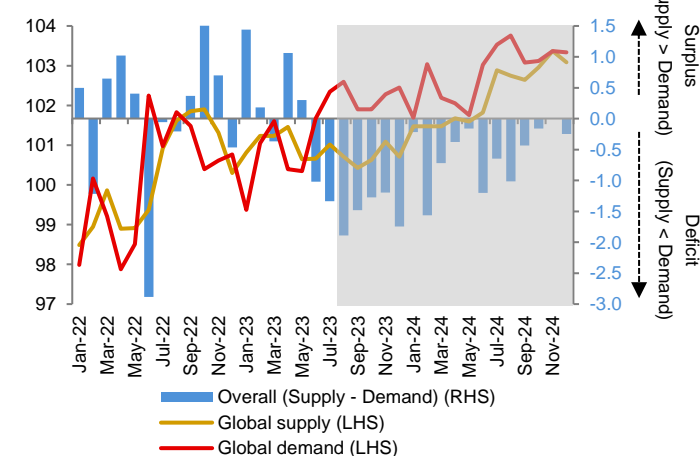
Looking ahead, we stick to our call for oil rising with rate hikes ending, the US dollar peaking, demand surging, all juxtaposed against the structural underinvestment thesis. We believe that between bullish physical fundamentals and a dimming macroeconomic backdrop, that the fundamentals will dominate the future course of the prices.

WE ANTICIPATE BRENT OIL TO PRINT NORTH OF USD80/B IN H2 2023 AND 2024 ON SUPPLY TIGHTNESS  
BRENT FORECASTS WITH STANDARD DEVIATION BANDS (USD/B)



Source: Bloomberg, New York Fed, MUFG Research

OIL MARKET FUNDAMENTALS POINT TO A DEEP DEFICIT IN H2 2023 ON HIGHER DEMAND AND WEAKER SUPPLY  
CRUDE OIL SUPPLY, DEMAND AND OVERALL BALANCE (M B/D)



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

## Natural gas

European natural gas (TTF) prices spiked again on the supply risks from Australian industrial action

Deliberations to avoid strikes at Australian LNG terminals have begun this week with early indications that workers will consider a “strong offer” from Woodside Energy Group on pay and work conditions – EU natural gas (TTF) prices have plunged ~15% on the development. Europe is currently recovering from last year’s energy crisis, when Russian supply cuts left it highly exposed to shifts in the tight global market. To add to this, the current likelihood of strike could disrupt 10% of the world’s liquefied natural gas flows, which has left the traders in Europe on edge. Labour unions have warned earlier that industrial action could start as soon as 2 September at a facility of Woodside Energy Group Ltd. if no deal is reached in pay discussions, which has sent the TTF prices soaring. We believe this price jump will be short-lived as European gas storage levels are remarkably robust at 89% full today – above the five year average, leaving the continent in a rosy position to navigate the winter heating season ahead.

Hurricane Hilary in focus in the US

Meanwhile, US natural gas (Henry Hub) prices fell as Hurricane Hilary failed to disrupt production in California, while Tropical Storm Harold missed offshore production areas in the Gulf of Mexico. Further, with cooler weather expected to cover two-thirds of the eastern US by next week, and hence lower demand for power to run air conditioners.

## Carbon markets

EU carbon prices hit highest in almost a month on the back of gains in natural gas

EU carbon prices surged to the highest in almost a month following the rise in gas prices which has bolstered the attractiveness of burning coal for power. These emission permits are set to find upward price support, helped by reduced auction volume during Europe’s summer holiday season. Carbon permits are increasing becoming popular as policy is deployed to encourage polluters to curb their emissions. Eurostat reported that the EU greenhouse gas emissions totalled 941m mtCO<sub>2</sub>e in Q1 2023, down ~3% from Q1 2022, amid a steady rise in EU carbon prices in this period.

## BASE METALS (2.0% W/W; -14.3% YTD)

Short-term gains in the base metals complex on the back of weakening US dollar

The demand outlook for base metals remains subdued, in our view, and the release of broadly weaker-than-expected July China macro data, as well as, apprehensions over liquidity risks in China’s USD2.9trn trust industry are a testament to our view. The only

### GOLD FALLS AS US YIELDS HIT RECORD HIGHS ON THE POSSIBILITY OF ANOTHER RATE HIKE

GOLD PRICES (USD/OZ)



Source: Bloomberg, MUFG Research

### COPPER PRICES REBOUND ON HOPES OF CHINESE DEMAND RECOVERY AND WEAKER US DOLLAR

COPPER PRICES (USD/LB)



Source: Bloomberg, MUFG Research

exception in our opinion has been copper, as we believe in strong global demand given the decarbonization efforts. Investment sentiment for copper remained upbeat this week, with positive price movements on the back of surprisingly upbeat copper consumption data in China, more support measures from the Chinese government and a weaker US dollar. Some price recovery in the rest of the base metals complex was also seen last week amid gains in global equity market and China's efforts to control the CNY. Looking ahead, until China stimulus achieves a material improvement in confidence and/or developed markets monetary policy adjusts to an easing cycle, we expect little potential sustained broad base metals near term upside.

### PRECIOUS METALS (0.4% W/W; 3.8% YTD)

#### Weakness in Gold prices as US yields hit highest since 2009

Following the US Federal Reserve's release of the minutes of the July monetary policy meeting, gold prices began to slide, as US yields hit decade high. The US central bank maintained its hawkish bias, leaving it open for another rate hike as inflation pressures remain elevated. This is the first time since March that gold has fallen below USD1,900/oz. The Federal Reserve's aggressive monetary policy tightening has been the biggest headwind for gold, and hence continues to struggle in this environment. As a non-yielding asset, gold is having to compete for a place in portfolios (less of an issue when bond yields are low, but more challenging as yields rise). With central banks raising interest rates (with the exception of China), it's intuitive that gold ETF holdings are now the lowest since early 2020 and net long positioning is the lowest since March, with significant new shorts added. Any dips below USD1,900/oz is viewed as a buying opportunity, in our view, as we would argue for fading upside moves in the USD-denominated gold price until a clear downward trend in yields and the USD emerges.

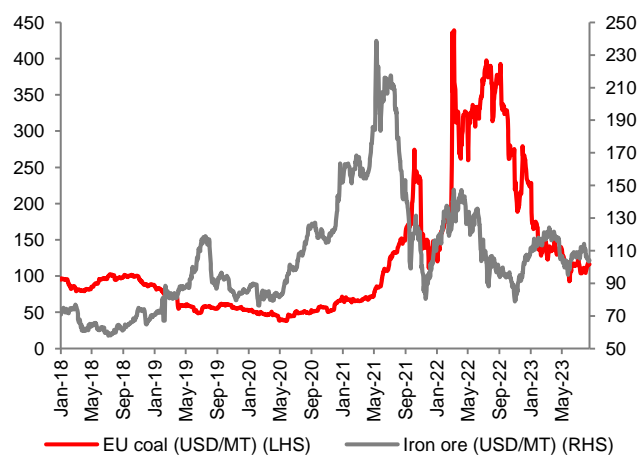
### BULK COMMODITIES (3.3% W/W; -1.9% YTD)

#### Iron ore is approaching one month highs amid increasing speculation on seasonal pick-up in China's property sector

Bulk commodities have been foraying upward this week, Iron ore in particular, following speculation that Chinese steel mills will ramp up output ahead of the country's seasonal pick-up in construction activity during September and October. However, concerns regarding oversupply remain as troubles continue to weigh down the real-estate industry in China, and likely to result in lower steel demand, hurting iron ore consumption. Taken together, our expectations is for the market to remain in a surplus over H2 2023, which would pull prices lower. Hence, in the longer term, broader

#### CHINA PROPERTY WOES DEPRESS PRICES FOR COAL AND IRON ORE

EU COAL AND IRON ORE: PRICES (USD/MT)



Source: Bloomberg, MUFG Research

#### RICE SUPPLY FACES NEW THREAT AS INDIA (LARGEST EXPORTER OF RICE) MULLS MORE LIMITS

THAILAND WHITE RICE 5% PRICES (USD/MT)



Source: Bloomberg, MUFG Research

bearishness surrounding sluggish growth in China and recessionary angst in the Europe will likely weigh on bulk commodity prices.

### AGRICULTURE (0.9% W/W; -4.9% YTD)

---

The potential for tighter curbs on Indian rice exports poses a fresh threat for global food inflation

Rice prices came under further pressure, as Indian government is considering a tax on shipments of parboiled rice, according to an article published on Bloomberg. Although there has been no official announcement on this as yet, the fact that world's largest supplier of rice grains is considering tighter curbs on exports, led to price surge. Also, a recent report by the Fitch ratings, mentions that China grapples with heavy rain and increasing flood risks posing threat to rice production in the country. Asian rice prices -- already at the highest in 15 years -- could climb further. In general, food crops are threatened by dry conditions and governments are currently seeking to ensure food stability as worries over food security stay front and centre for investors.

## Commodity prices – performance

	Commodity	Ticker	Unit	2022	2022/2023				Change %						
				31-Dec	01-Aug	08-Aug	15-Aug	22-Aug	Week	1 MTD	3 MTD	YTD	1 Year	3 Years	5 years
1	Bloomberg BCOM Total Returns	BCOMTR Index	Index	245.89	239.45	237.55	233.51	234.05	0.23	-2.96	4.71	-4.91	-12.27	53.32	36.24
2	Bloomberg BCOM Spot Index	BCOMSP Index	Index	536.54	506.55	502.95	497.72	498.35	0.13	-2.24	2.52	-7.12	-16.96	42.10	44.14
3	Energy	BCOMENSP Index	Index	423.92	382.40	393.22	395.11	389.36	-1.46	1.30	14.11	-8.15	-36.95	64.98	21.18
4	US Natural Gas	NG1 Comdty	USD/MMBtu	4.475	2.56	2.777	2.659	2.56	-3.72	-2.92	10.17	-42.86	-72.19	4.45	-13.73
5	EU Natural Gas	TZT1 Comdty	EUR/MMBtu	76.315	27.123	31.066	38.813	42.908	10.55	41.54	37.84	-47.39	-85.08	426.76	62.16
6	WTI Crude	CL1 Comdty	USD/b	80.26	81.37	82.92	80.99	80.35	-0.79	-3.48	8.28	-1.63	-15.78	86.47	16.39
7	Brent Crude	CO1 Comdty	USD/b	85.91	84.91	86.17	84.89	84.03	-1.01	-2.63	8.42	-3.03	-16.87	87.85	11.48
8	Gasoline	XB1 COMB Comdty	USD/lb	245.95	287.3	284.51	284.76	278.91	-2.05	-5.94	3.48	12.01	-6.07	114.54	33.78
9	EU ETS EUA	MO1 Comdty	USD/gal	81.49	84.16	83.44	86.19	88.92	3.17	3.77	3.46	9.12	-3.17	246.94	349.54
10	Metals	BCOMIN Index	Index	165.34	148.64	142.86	138.10	140.79	1.95	-5.81	-0.18	-14.29	-10.10	22.59	19.71
11	Industrial Metals Index	BCOMINSP Index	Index	290.239	265.654	255.713	248.7314	253.5856	1.95	-5.69	0.39	-12.63	-8.15	26.57	27.86
12	Copper	HG1 Comdty	USD/lb	381	391	377	367	376	2.44	-5.63	3.87	-0.73	2.35	29.65	42.49
13	Aluminium	LA1 Comdty	USD/MT	2,350	2,221	2,153	2,114	2,144	1.43	-5.00	-4.56	-8.76	-10.63	23.35	4.47
14	Zinc	LX1 Comdty	USD/MT	2,990	2,575	2,489	2,307	2,324	0.72	-9.64	-4.30	-22.30	-34.71	-4.77	-6.30
15	Nickel	LN1 Comdty	USD/MT	29,901	22,189	20,611	19,608	20,323	3.65	-8.15	-4.76	-32.03	-8.78	38.61	50.99
16	Precious Metals Index	BCOMPRSP Index	Index	534.84	570.15	558.19	553.21	555.39	0.40	-4.30	-2.48	3.84	12.64	-3.34	61.98
17	Gold	GC1 Comdty	USD/t oz	1,826	1,941	1,924	1,903	1,896	-0.32	-3.76	-4.09	3.84	9.37	-1.97	58.52
18	Silver	SI1 Comdty	USD/t oz	24.04	24.326	22.807	22.656	23.45	3.50	-4.61	1.47	-0.92	25.20	-10.89	63.80
19	Platinum	PL1 Comdty	USD/t oz	1074	940	904	892	926	3.73	-2.81	-11.90	-13.23	6.31	0.60	19.69
20	Palladium	PA1 Comdty	USD/t oz	1,798	1,237	1,218	1,239	1,265	2.12	1.13	-10.83	-28.25	-34.61	-40.83	41.57
21	Bulk Commodities	---	---	---	---	---	---	---	---	---	---	---	---	---	---
22	Hard Coking Coal	IAC1 Comdty	USD/MT	262.82	240.5	248	252.5	257.5	1.98	10.96	9.57	-2.02	2.86	140.65	38.81
23	Iron Ore	SCO1 Comdty	USD/MT	111.28	108.03	103.23	103.85	108.63	4.60	-2.72	3.80	-1.69	4.27	-11.37	62.72
24	Agriculture	BCOMAG Index	Index	68.82	67.97	66.55	65.02	65.58	0.86	-3.60	0.71	-4.91	-4.83	78.20	53.83
25	Agriculture Index	BCOMAGSP Index	Index	433.80	390.541	383.009	376.7214	379.9463	0.86	-2.59	-4.55	-12.42	-12.64	52.53	55.69
26	Grain Index	BCOMGRSP Index	Index	327.54	269.21	264.38	258.22	262.41	1.62	-3.17	-6.47	-19.89	-17.71	42.57	39.28
27	Soybean	S 1 Comdty	USD/bu	1,519	1,447	1,430	1,323	1,352	2.13	-7.54	1.08	-12.01	-14.68	48.40	58.76
28	Wheat	W 1 Comdty	USD/bu	792.00	652.25	656.25	598.50	601.75	0.54	-9.80	-3.50	-24.18	-23.28	13.89	15.04
29	Corn	C 1 Comdty	USD/bu	678.50	497.00	485.75	464.00	466.50	0.54	-7.24	-19.05	-31.10	-29.17	42.97	34.82
30	Soft Index	BCOMOSP Index	Index	345.72	372.83	363.07	356.52	352.39	-1.16	-4.71	-11.91	1.93	-9.38	53.11	71.47
31	Cotton	CT1 Comdty	USD/lb	83.37	86.87	86.20	86.20	84.99	-1.40	-0.53	-0.39	1.94	-27.91	33.36	2.99
32	Coffee	KC1 Comdty	USD/lb	167.30	164.55	161.35	149.25	146.60	-1.78	-9.81	-20.78	-11.24	-35.62	23.65	52.78
33	Sugar	SB1 Comdty	USD/lb	20.04	24.39	23.45	23.77	23.40	-1.56	-3.86	-10.19	15.67	29.57	80.67	129.05
34	Livestock Index	BCOMLISP Index	Index	218.93	239.20	237.41	230.79	230.84	0.02	-2.80	5.95	5.44	9.79	58.27	61.00
35	Live Cattle	LC1 Comdty	USD/lb	154.83	179.50	179.70	179.10	177.95	-0.64	-0.06	7.82	14.94	26.00	68.19	64.43
36	Lean Hogs	LH1 Comdty	USD/lb	87.70	103.68	102.10	78.20	79.58	1.76	-23.58	-2.75	-9.26	-15.32	46.68	48.46
37	USD Index	DXY Index	Index	103.52	102.30	102.53	103.21	103.56	0.34	1.92	0.31	0.28	-4.43	11.33	8.51

Source: Bloomberg, MUFG Research

## Commodity prices – quarterly and annual forecasts

Commodity	Ticker	Unit	22-Aug	Quarter Averages								Annuals				
			Spot	Q1-23	Q2-23	Q3-23	Q4-23	Q1-24	Q2-24	Q3-24	Q4-24	2022	2023	2024	2025	
<b>Energy</b>																
1	US Natural Gas	NGA Comdty	USD/MMBtu	2.56	2.80	2.50	2.90	3.10	3.40	3.60	3.75	4.15	4.61	2.82	3.73	4.50
2	EU Natural Gas	TZTA Comdty	EUR/MWh	42.91	54.38	75.11	33.00	62.00	58.00	45.00	65.00	68.00	106.35	68.84	79.75	68.00
3	EU ETS EUA	MOA Comdty	EUR/MT	89.87	89.92	86.47	84.00	90.00	92.00	83.00	97.00	105.00	83.57	87.48	94.25	110.00
4	WTI Crude	CLA Comdty	USD/b	79.64	76.32	88.62	76.00	79.00	78.00	77.00	81.00	83.00	81.01	76.95	79.75	86.00
5	Brent Crude	COA Comdty	USD/b	84.03	81.62	92.97	80.00	84.00	83.00	81.00	85.00	87.00	86.16	81.02	84.00	90.00
<b>Industrial Metals</b>																
6	Copper	LMCADS03 Comdty	USD/lb	8,363	9,507	8,150	8,350	8,400	8,800	9,200	9,800	10,150	8,792	8,465	9,488	10,350
7	Aluminium	LMAHDS03 Comdty	USD/MT	2,177	2,896	2,275	2,450	2,600	2,850	3,100	3,200	3,450	2,711	2,441	3,150	3,700
8	Zinc	LMZSDS03 Comdty	USD/MT	2,332	3,863	2,525	2,400	2,450	2,775	2,900	3,000	3,150	3,440	2,621	2,956	3,650
9	Nickel	LMNIDS03 Comdty	USD/MT	20,504	28,922	22,900	22,250	20,000	19,650	21,000	21,600	22,250	25,598	22,833	21,125	23,500
<b>Precious Metals</b>																
10	Gold	XAU Comdty	USD/t oz	1,926	1,918	1,955	2,045	2,030	2,015	2,085	2,100	2,030	1,856	2,000	2,058	1,950
11	Silver	XAG Comdty	USD/t oz	23.76	22.72	23.50	25.60	24.50	24.00	24.50	25.10	25.70	22.46	24.26	24.83	23.80
12	Platinum	XPT Comdty	USD/t oz	926	1,002.78	1,035	1,005	970	1,090	1,175	1,250	1,300	940.84	1,003	1,204	1,260
13	Palladium	XPD Comdty	USD/t oz	1,265	1,562	1,926	1,480	1,450	1,415	1,550	1,600	1,750	2,021	1,473	1,579	1,800
<b>Bulk Commodities</b>																
14	Hard Coking Coal	IACA Comdty	USD/MT	257.50	321.87	308.86	290.00	295.00	305.00	320.00	315.00	295.00	291.13	294.22	308.75	355.00
15	Iron Ore	SCOA Comdty	USD/MT	108.63	124.77	141.61	105.00	100.00	98.00	105.00	100.00	115.00	121.33	111.19	104.50	112.50
<b>Agriculture</b>																
16	Soybean	BOA Comdty	USD/bu	1,346	1,503	1,393	1,500	1,515	1,450	1,420	1,480	1,525	1,429	1,499	1,469	1,490
17	Wheat	W A Comdty	USD/bu	627.50	733.77	1019.17	730.00	775.00	810.00	840.00	820.00	850.00	876.51	737.19	830.00	910.00
18	Corn	C A Comdty	USD/bu	479.50	656.43	643.92	705.00	685.00	710.00	725.00	700.00	680.00	658.70	676.61	703.75	715.00
19	Cotton	CTA Comdty	USD/lb	84.36	83.34	92.18	72.00	78.00	80.00	85.00	82.00	86.00	92.79	78.34	83.25	85.00
20	Coffee	DFA Comdty	USD/lb	2374	2,022	2,054	2,030	1,960	1,950	1,975	1,980	2,000	2,039	2,048	1,976	2,005
21	Sugar	SBA Comdty	USD/lb	23.40	19.91	18.26	21.60	20.80	20.20	20.35	19.60	19.65	17.60	21.08	19.95	19.40

Source: Bloomberg, MUFG Research

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

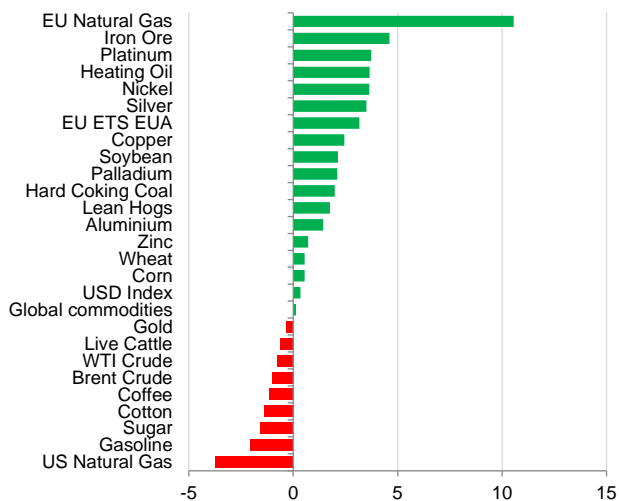
	Bullish	Neutral-to-bullish	Neutral	Neutral-to-bearish	Bearish
1 Energy	---	Brent, WTI	EU ETS EUA	---	EU/US nat gas
2 Base Metals	---	---	Nickel	Aluminium, Copper, Zinc	---
3 Precious Metals	---	---	Gold, Silver	Platinum	Palladium
4 Bulk Commodities	---	Hard Coking Coal	Iron ore	---	---
5 Agriculture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



# Core indicators – commodities flows and returns

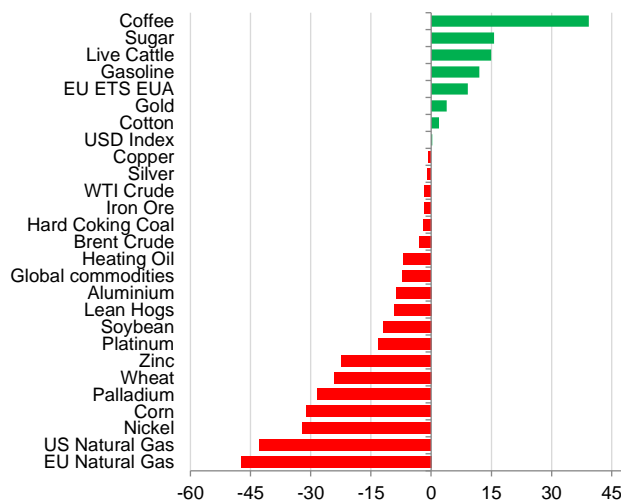
## COMMODITIES MARKET PRICE RETURNS

WEEK ENDING 22 August 2023 (% W/W)



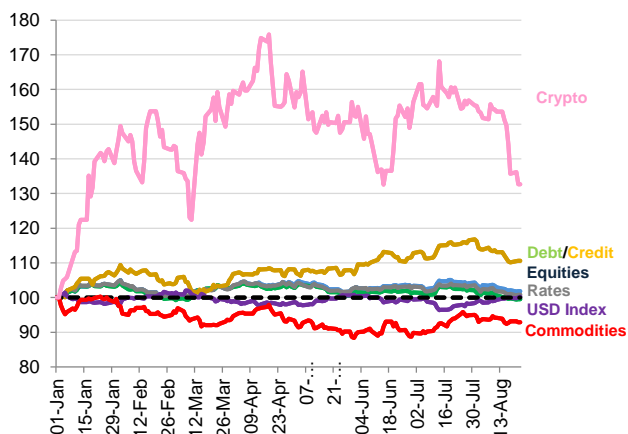
## COMMODITIES MARKET PRICE RETURNS

YEAR-TO-DATE 2023 (%)



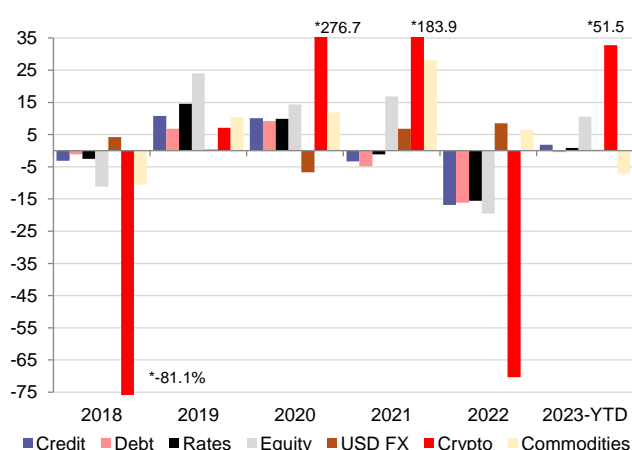
## USD-DENOMINATED GLOBAL ASSET MARKET RETURNS

REBASED 1 JANUARY 2023 = 100



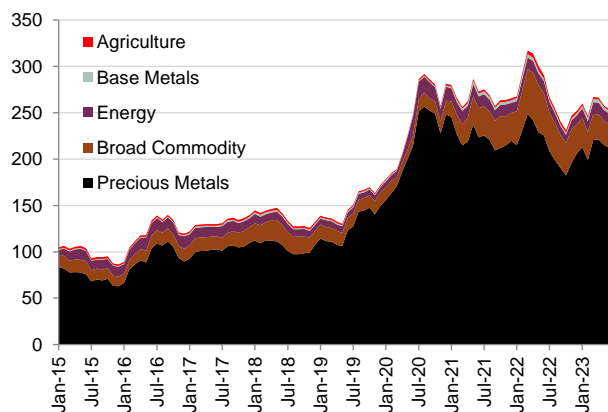
## USD-DENOMINATED GLOBAL ASSET MARKET RETURNS

ANNUALISED PERFORMANCE (%)



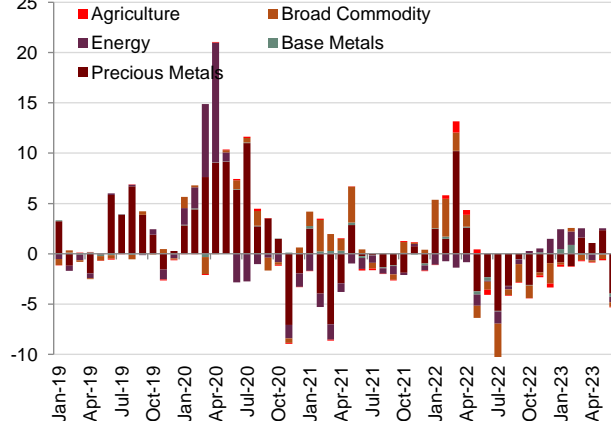
## COMMODITIES ETF COMBINED CUMULATIVE AUM

USD (BN)



## COMMODITIES ETF COMBINED CUMULATIVE FUND FLOWS

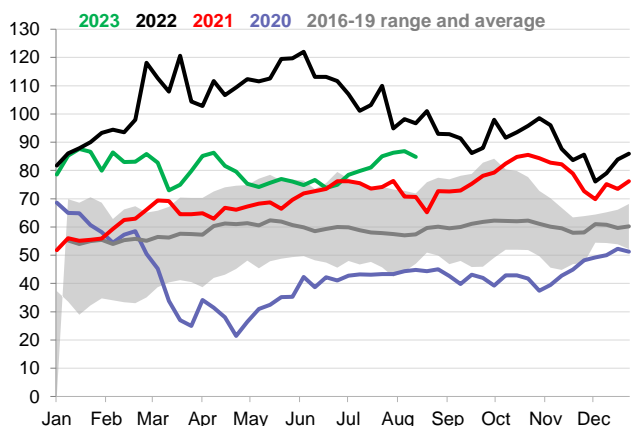
USD (BN)



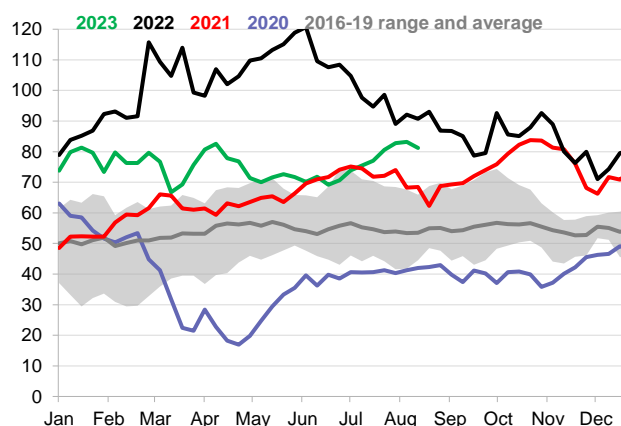
Source: Bloomberg, MUFG Research

# Core indicators – prices

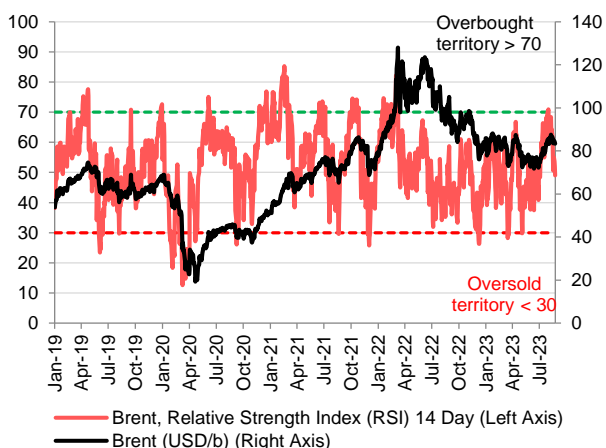
**BRENT SPOT**  
USD/B



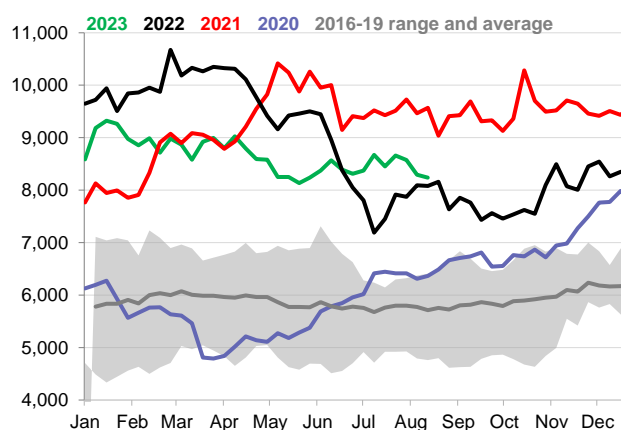
**NYMEX WTI SPOT**  
USD/B



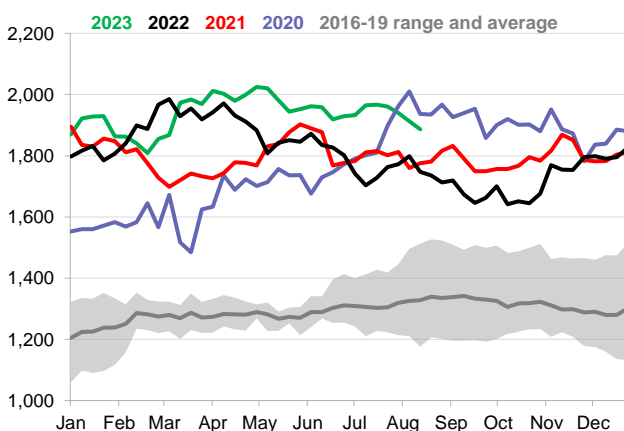
**14 DAY RELATIVE STRENGTH INDEX (RSI) AND WTI**  
USD/B AND 0-100 INDEX (<30 = OVERSOLD; >70 = OVERBOUGHT)



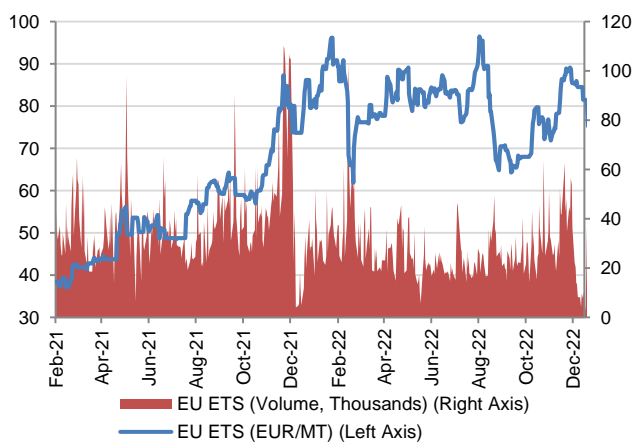
**COPPER SPOT**  
USD/LB



**GOLD SPOT**  
USD/T OZ



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

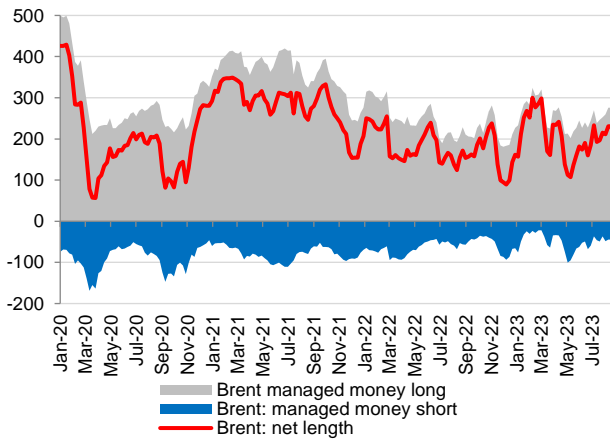


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

# Core indicators – market positioning

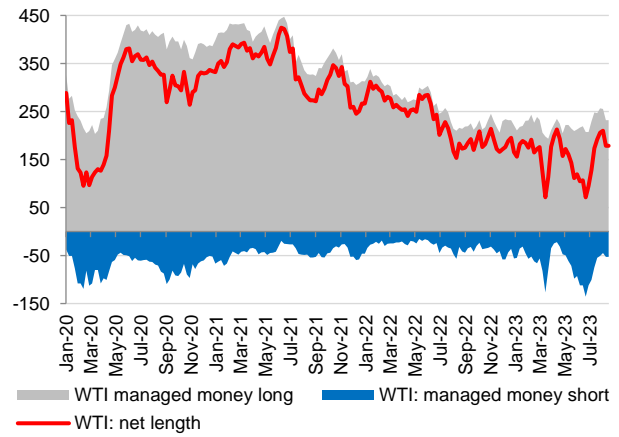
## BRENT CRUDE MANAGED MONEY

CONTRACTS (THOUSANDS)



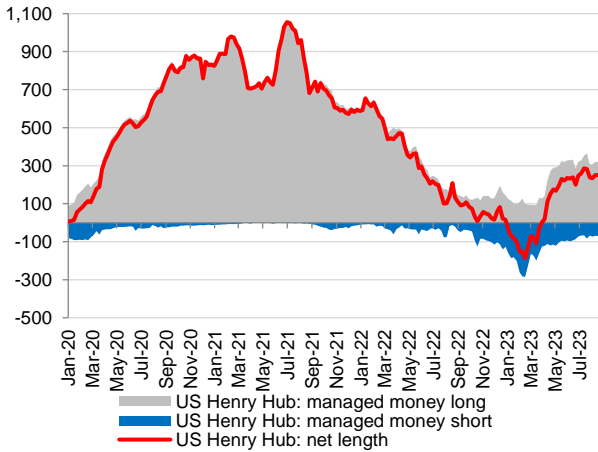
## WTI CRUDE MANAGED MONEY

CONTRACTS (THOUSANDS)



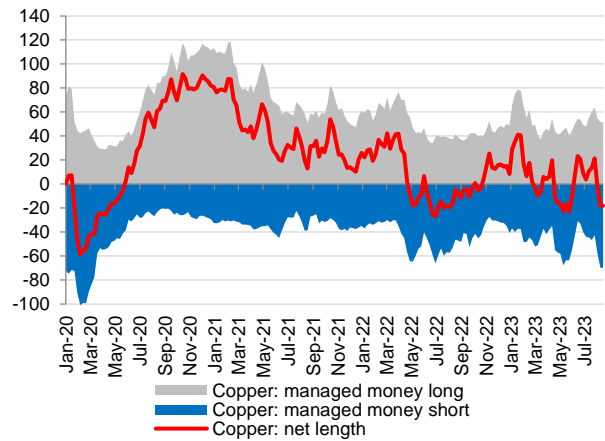
## US HENRY HUB NATURAL GAS MANAGED MONEY

CONTRACTS (THOUSANDS)



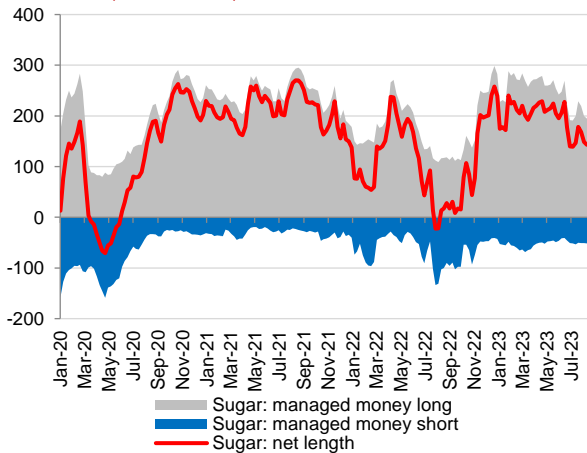
## COPPER MANAGED MONEY

CONTRACTS (THOUSANDS)



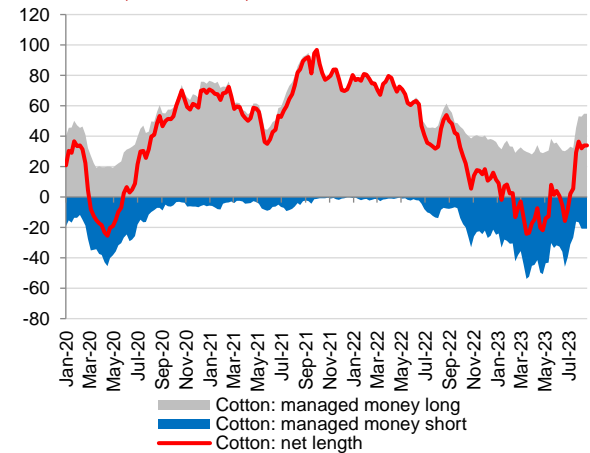
## SUGAR MANAGED MONEY

CONTRACTS (THOUSANDS)



## COTTON MANAGED MONEY

CONTRACTS (THOUSANDS)

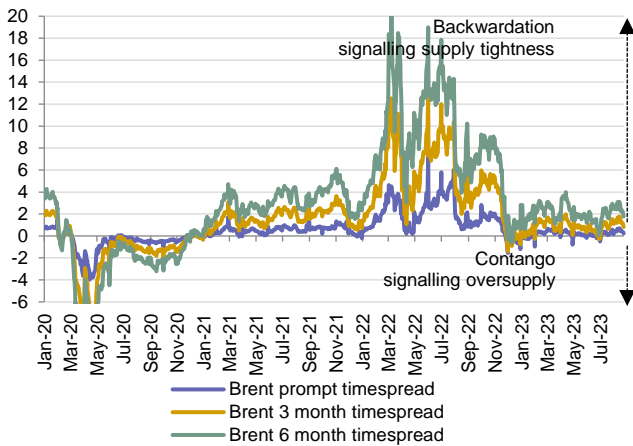


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

# Core indicators – timespreads and futures

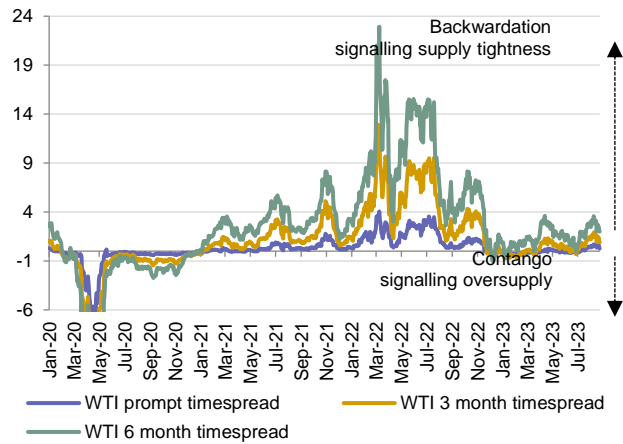
## BRENT TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



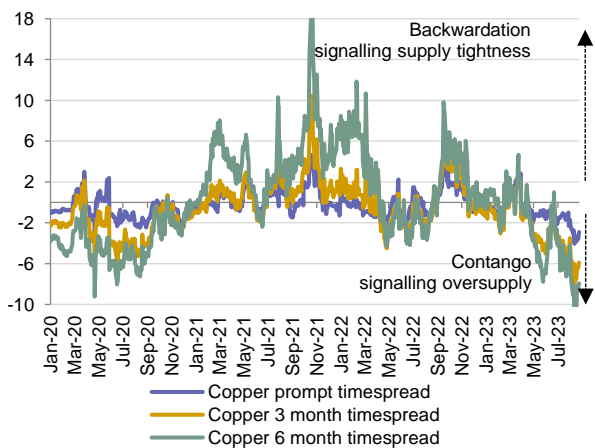
## WTI TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



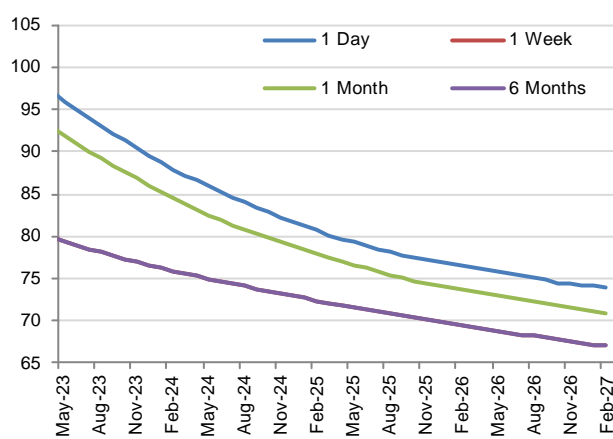
## COPPER TIMESPREADS – FRONT, 3 AND 6 MONTHS

USD/B



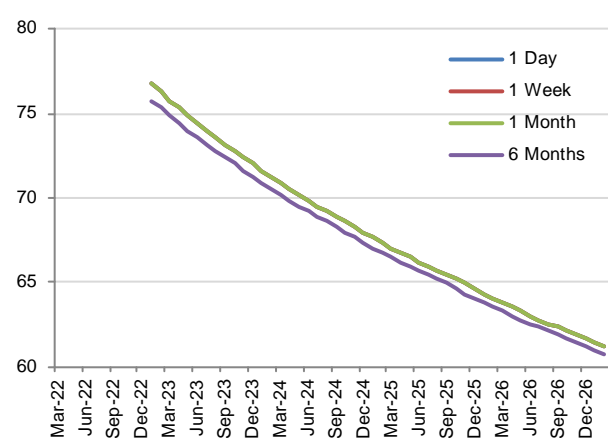
## BRENT FUTURES CURVE

USD/B



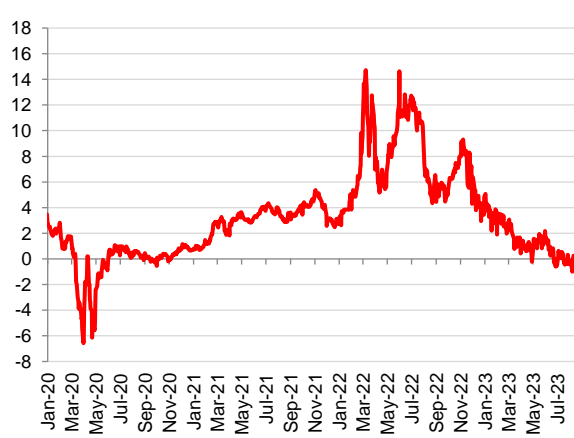
## WTI FUTURES CURVE

USD/B



## BRENT-DUBAI SPREAD

USD/B

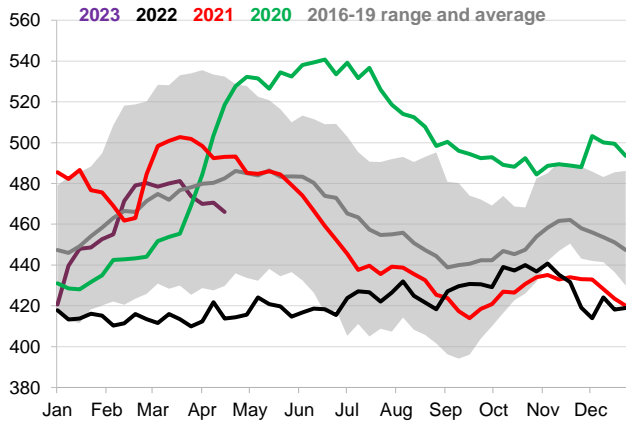


Source: Bloomberg, EIA, IEA, OPEC, MUFG Research

# Core indicators – inventories, storage and products

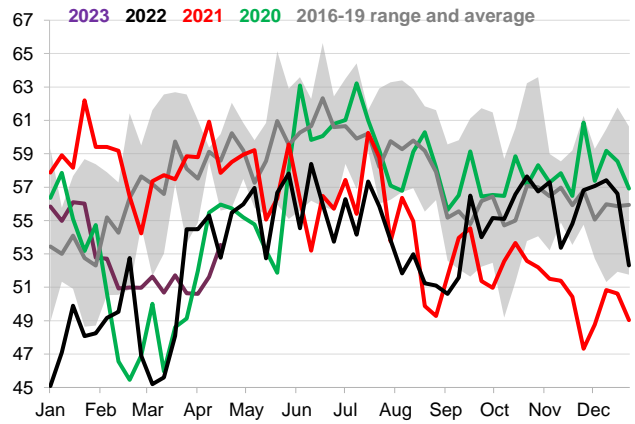
## US CRUDE INVENTORIES

MILLION BARRELS



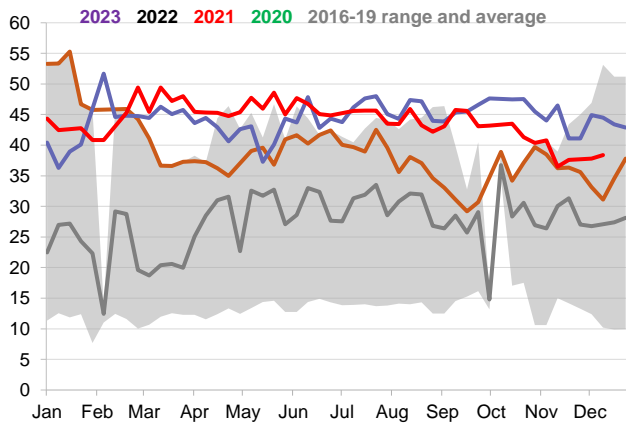
## ARA CRUDE INVENTORIES

MILLION BARRELS



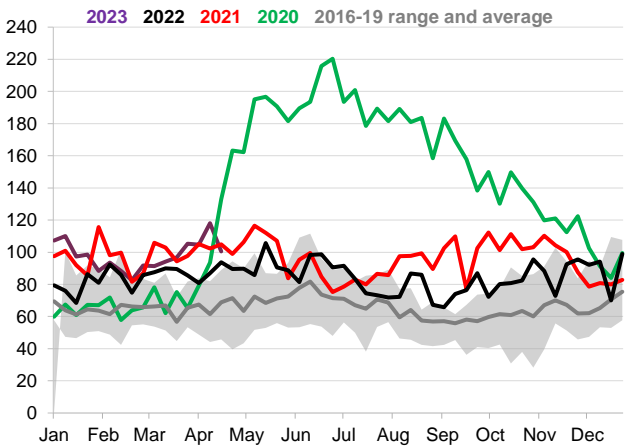
## CHINA SHANDONG CRUDE INVENTORIES

MILLION BARRELS



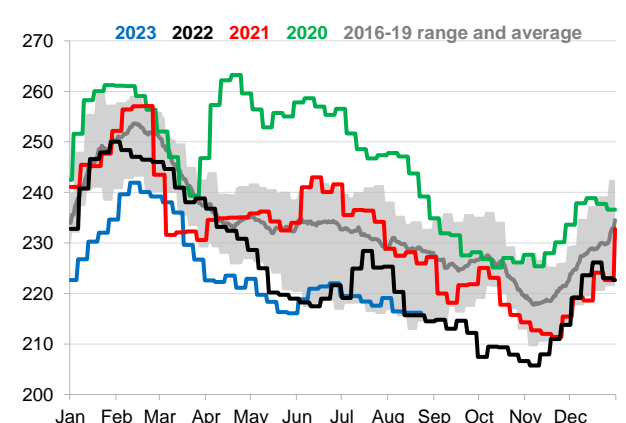
## GLOBAL CRUDE FLOATING STORAGE

MILLION BARRELS



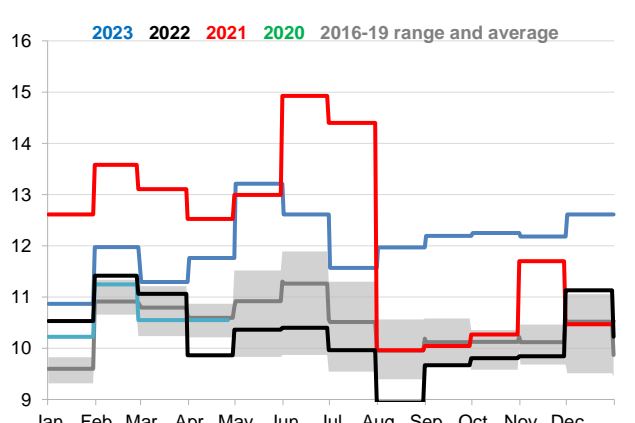
## US GASOLINE INVENTORIES

MILLION BARRELS



## JAPAN GASOLINE INVENTORIES

MILLION BARRELS



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

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

As of December 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 (%)
<b>Demand</b>									
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
<b>Total Global Demand</b>	<b>100,072</b>	<b>92,361</b>	<b>97,206</b>	<b>100,759</b>	<b>102,810</b>	<b>-7,711</b>	<b>4,845</b>	<b>3,553</b>	<b>2,051</b>
<b>Supply</b>									
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
<b>Total Global Supply</b>	<b>100,404</b>	<b>93,848</b>	<b>95,342</b>	<b>101,093</b>	<b>103,538</b>	<b>-6,555</b>	<b>1,494</b>	<b>5,751</b>	<b>2,445</b>
<b>Imbalance (Supply – Demand)</b>	<b>332</b>	<b>1,488</b>	<b>-1,863</b>	<b>335</b>	<b>729</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>
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: +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 Commodities, ESG and 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

# Disclaimer

This document has been prepared by MUFG Bank, Ltd. (the "Bank") for general distribution. It is only available for distribution under such circumstances as may be permitted by applicable law and is not intended for use by any person in any jurisdiction which restricts the distribution of this document. The Bank and/or any person connected with it may take use of or may act upon the information contained in this document prior to the publication of this document to its customers.

Neither the information nor the opinions expressed in this document constitute or are to be construed as, an offer, solicitation or recommendation to buy, sell or hold deposits, securities, futures, options or any other derivative products or any other financial products. This document has been prepared solely for informational purposes and does not attempt to address the specific needs, financial situation or investment objectives of any specific recipient. This document is based on information from sources deemed to be reliable but is not guaranteed to be accurate and should not be regarded as a substitute for the exercise of the recipient's own judgment. Historical performance does not guarantee future performance. The Bank may have or has had a relationship with or may provide or has provided financial services to any company mentioned in this document. Our group affiliates, from time to time, may have interests and/or underlying commitments in the relevant securities mentioned in this document or related instruments and/or may have positions or holdings in such securities or related instruments. All views in this document (including any statements and forecasts) are subject to change without notice and none of the Bank, its head office, branches, subsidiaries and affiliates is under any obligation to update this document.

The information contained in this document has been obtained from sources the Bank believed to be reliable but the Bank does not make any representation or warranty nor accepts any responsibility or liability as to its accuracy, timeliness, suitability, completeness or correctness. The Bank, its head office, branches, subsidiaries and affiliates and the information providers accept no liability whatsoever for any loss or damage of any kind arising out of the use of or reliance upon all or any part of this document. The Bank retains copyright to this document and no part of this document may be reproduced or re-distributed without the written permission of the Bank. The Bank expressly prohibits the distribution or re-distribution of this document to private or retail clients, via the Internet or otherwise, and the Bank, its head office, branches, subsidiaries and affiliates accept no liability whatsoever to any third parties resulting from such distribution or re-distribution.

MUFG Bank, Ltd. ("MUFG Bank") is a limited liability stock company incorporated in Japan and registered in the Tokyo Legal Affairs Bureau (company no. 0100-01-008846). MUFG Bank's head office is at 7-1 Marunouchi 2-Chome, Chiyoda-Ku, Tokyo 100-8388, Japan. MUFG Bank's London branch is registered as a UK establishment in the UK register of companies (registered no. BR002013). MUFG Bank is authorised and regulated by the Japanese Financial Services Agency. MUFG Bank's London branch is authorised by the Prudential Regulation Authority (FCA/PRA no. 139189) and subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Details about the extent of MUFG Bank London branch's regulation by the Prudential Regulation Authority are available from us on request.

MUFG Bank, Ltd. ("MUFG Bank") is a limited liability stock company incorporated in Japan and registered in the Tokyo Legal Affairs Bureau (company no. 0100-01-008846). MUFG Bank's head office is at 7-1 Marunouchi 2-Chome, Chiyoda-Ku, Tokyo 100-8388, Japan. MUFG Bank's London branch is registered as a UK establishment in the UK register of companies (registered no. BR002013). MUFG Bank is authorised and regulated by the Japanese Financial Services Agency. MUFG Bank's London branch is authorised by the Prudential Regulation Authority (FCA/PRA no. 139189) and subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Details about the extent of MUFG Bank London branch's regulation by the Prudential Regulation Authority are available from us on request.

This Presentation has been prepared by MUFG Bank. This Presentation is not intended for Retail Clients within the meaning of the United Kingdom PRA/FCA rules and should not be distributed to Retail Clients. This Presentation has been prepared for information purposes only and for the avoidance of doubt, nothing express or implied in this Presentation constitutes any commitment by MUFG Bank or any of its subsidiaries or affiliates to arrange and/or provide any party with any services and/or financing. This Presentation does not constitute legal, tax, accounting or investment advice.

MUFG Bank retains copyright to this Presentation and no part of this Presentation may be reproduced or redistributed without the prior written permission of MUFG Bank. MUFG Bank and its subsidiaries and affiliates accept no liability whatsoever to any third parties resulting from any unauthorised distribution. MUFG Bank and its subsidiaries, affiliates, directors and employees accept no liability whatsoever for any reliance on the information contained in the Presentation and make no representation or warranty as to its accuracy and completeness.

This Presentation is based on information from sources deemed by MUFG Bank to be reliable but is not guaranteed to be accurate and should not be regarded as a substitute for the exercise of the recipient's own judgement.

The views contained in this Presentation (including any statements and forecasts) are solely those of MUFG Bank and are subject to change without notice. MUFG Bank is under no obligation to correct any inaccuracies in the Presentation or update the information contained therein.

The provision of the service described in this Presentation is or will be subject to an agreement constituting terms of business ("the Agreement"). In the event of a conflict between information in this Presentation and the Agreement, the latter shall prevail.

MUFG Bank Presentation and all claims arising in connection with it are governed by, and to be construed in accordance with, English law. The Bank's DIFC branch - Dubai is part of the Mitsubishi UFJ Financial Group and is located at Level 3, East Wing, The Gate, Dubai International Financial Centre, Dubai, UAE. The Bank's Dubai branch is regulated by the Dubai Financial Services Authority (DFSA) (License number: F000470) and the Japanese Financial Services Agency.

The Bank's Doha office is part of the Mitsubishi UFJ Financial Group and is located at Suite A3, Mezzanine floor, Tomado Tower, West Bay, Doha, Qatar. The Bank's Doha branch is regulated by the Qatar Financial Centre Regulatory Authority (QFCRA) (License number: 00103) and the Japanese Financial Services Agency.

The Bank's Abu Dhabi branch is part of the Mitsubishi UFJ Financial Group and is located at 1st Floor, IPIC Square, Muror Street, PO Box 2174, Abu Dhabi, UAE. The Bank's Abu Dhabi branch is regulated by the Central Bank of the U.A.E (CBAUE) (License number: CN-1002032) and the Japanese Financial Services Agency.

The Bank's Bahrain branch is part of the Mitsubishi UFJ Financial Group and is located at 12th Floor, West Tower, Bahrain Financial Harbor, Bahrain. The Bank's Bahrain branch is regulated by the Central Bank of Bahrain (CBB) (License number: WB/020) and the Japanese Financial Services Agency.

This presentation has been prepared by the Bank and is not intended for Retail Clients within the meaning of the PRA/FCA, the DFSA, QFCRA, CBB and CBAUE rules and should not be distributed to Retail Clients. This presentation has been prepared for information purposes only and, for the avoidance of doubt, nothing express or implied in this presentation constitutes any commitment by the Bank, its subsidiaries or affiliates to arrange and/or provide any party with any services and/or financing. This presentation does not constitute legal, tax, accounting or investment advice. The Bank retains copyright to this presentation and no part of this presentation may be reproduced or redistributed without the prior written consent of the Bank. The Bank and its subsidiaries and affiliates accept no liability whatsoever to any third party resulting from any unauthorised distribution. The Bank, its subsidiaries, affiliates and each of their respective directors and employees accept no liability whatsoever for any reliance on the information contained in the presentation and make no representation or warranty as to its accuracy and completeness. This presentation is based on information from sources considered by the Bank to be reliable but is not guaranteed to be accurate and should not be regarded as a substitute for the exercise of the recipient's own judgement. The views, opinions and other information contained in this presentation (including, without limitation, any statements or forecasts) are solely those of the Bank and are subject to change without notice.

Notwithstanding the foregoing, nothing contained herein shall be deemed to limit or exclude liability on the part of the Bank to the extent it is not permitted to exclude in accordance with the laws administered by the Dubai Financial Services Authority (DFSA).

The Bank is under no obligation to correct any inaccuracies or update the information contained in this presentation. The provision of the service described in this presentation is, or will be, subject to an agreement constituting terms of business. In the event of a conflict between information contained in this presentation and such terms of business, the latter shall prevail. This disclaimer is governed by English law.

This report shall not be construed as solicitation to take any action such as purchasing/selling/investing in financial market products. In taking any action, the reader is requested to act on the basis of his or her own judgment. This report is based on information believed to be reliable, but the Bank does not guarantee or accept any liability whatsoever for, its accuracy. The Bank, its affiliates and subsidiaries and each of their respective officers, directors and employees accept no liability whatsoever for any loss or damage of any kind arising out of the use of all or any part of this report. The contents of the report may be revised without advance notice. The Bank retains copyright to this report and no part of this report may be reproduced or re-distributed without the Bank's written consent. The Bank expressly prohibits the re-distribution of this report to Retail Customers (within the meaning of the PRA/FCA, the DFSA, QFCRA, CBB, CBAUE rules), via the internet or otherwise and the Bank, its subsidiaries and affiliates accept no liability whatsoever to any third parties resulting from such re-distribution.

## CERTIFICATION

The author(s) mentioned on the cover of this report hereby certify(ies) (or, where multiple authors are responsible, individually certify with respect to each security that the author covers in this report) that the views expressed in this report accurately reflect their personal views about the subject company(ies) and its (their) securities, and also certify(ies) that they have not been, are not, and will not be receiving direct or indirect compensation in exchange for expressing any specific recommendation(s) or view(s) in this report.

## DISCLAIMERS

This report has been prepared by the Global Markets Research, US Rates and Credit Strategy desks within MUFG Bank, Ltd. ("MUBK") and MUFG Securities EMEA plc ("MUS/EMEA") and may be distributed to you either by MUBK, MUS/EMEA or by another subsidiary of the Mitsubishi UFJ Financial Group ("MUFG").

## Legal entities and branches

The securities related businesses within MUFG (together referred to in this presentation as "MUFG Securities") are: (1) MUFG SECURITIES EMEA PLC ("MUS/EMEA") which is authorised in the United Kingdom by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA (FS Registration Number 124512). MUS/EMEA has a branch office that is registered at Level 3, East Wing, The Gate, Dubai International Financial Centre, PO Box 506894, Dubai, UAE ("Dubai Branch"). The Dubai Branch is authorised to operate in the Dubai International Financial Centre ("DIFC") as a Non-DIFC Entity (Commercial License Number CL1656) and is regulated by the Dubai Financial Services Authority (Reference Number F002623); (2) MUFG Securities (Europe) N.V. ("MUS (EU)") which is authorised and regulated in the Netherlands by the Dutch Authority for the Financial Markets (AFM) and also regulated by De Nederlandsche Bank (DNB). MUS (EU) Paris Branch is regulated in France by the Autorité de contrôle prudentiel et de résolution (ACPR) and the Autorité des marchés financiers (AMF); (3) MUFG SECURITIES AMERICAS INC. ("MUS(USA)") which is registered in the United States with the Securities and Exchange Commission ("SEC") and regulated by the Financial Industry Regulatory Authority ("FINRA") (SEC# 8-43026; CRD# 19685); (4) MUFG SECURITIES (CANADA), LTD. ("MUS(CAN)") which is registered in Canada with the Ontario Securities Commission ("OSC") and regulated by the Investment Industry Regulatory Organization of Canada ("IIROC"); (5) MUFG SECURITIES ASIA LIMITED ("MUS(ASIA)") which is incorporated in Hong Kong, licensed under the Hong Kong Securities and Futures Ordinance and regulated by the Hong Kong Securities and Futures Commission (Central Entity Number AAA889). MUS(ASIA) is registered as a foreign company under the Corporations Act 2001 of Australia ARBN No. 169 329 453; and (6) MUFG Securities Asia (Singapore) Limited ("MUS(SPR)") which is licensed as an approved merchant bank by the Monetary Authority of Singapore. In respect of the financial services provided to wholesale clients in Australia, MUS(ASIA), MUS(EMEA), MUS(USA) and MUS(SPR) are each exempt from the requirement to hold an Australian financial services licence under the Corporations Act 2001 of Australia under the Australian Securities and Investments Commission Class Order Exemption CO 03/1099, CO 03/1103, CO 03/1100, and CO 03/1102, respectively. Each of MUS(ASIA), MUS(EMEA), MUS(USA), MUS(CAN), and MUS(SPR) are regulated under the laws of Hong Kong, the United Kingdom, the United States, Canada and Singapore respectively, which differ from Australian laws.

MUFG Bank Ltd ("MUBK"), is a limited liability stock company incorporated in Japan and registered in the Tokyo Legal Affairs Bureau (company no. 0100-01-008846). MUBK's head office is at 7-1 Marunouchi 2-Chome, Chiyoda-Ku, Tokyo 100-8388, Japan. MUBK's London branch is at Ropemaker Place, 25 Ropemaker Street, London EC2Y 9AN, and is registered as a UK establishment in the UK register of companies (registered no. BR002013). MUBK is authorised and regulated by the Japanese Financial Services Agency. MUBK's London branch is authorised by the UK Prudential Regulation Authority ("PRA") and regulated by the UK Financial Conduct Authority ("FCA") with limited regulation by the PRA.

## General disclosures

This report is for information purposes only and should not be construed as investment research as defined by MFIF 2 or a solicitation of any offer to buy or sell any security, commodity, futures contract or related derivative (hereafter "instrument") or to participate in any trading strategy. This report does not constitute a personal recommendation and does not take into account the individual financial circumstances, needs or objectives of the recipients. Recipients should therefore seek their own financial, legal, tax or other advice before deciding to invest in any of the instruments mentioned in this report.

Certain information contained in this report has been obtained or derived from third party sources and such information is believed to be correct and reliable but has not been independently verified. MUFG Securities does not make any guarantee, representation, warranty or undertaking, express or implied, as to the fairness, accuracy, reliability, completeness, adequacy or appropriateness of any information or comments contained in this report. Furthermore the information may not be current due to, among other things, changes in the financial markets or economic environment. MUFG Securities has no obligation to update any such information contained in this report.

This report is not intended to forecast or predict future events. Past performance is not a guarantee or indication of future results. Any prices provided herein (other than those identified as being historical) are indicative only and do not represent firm quotes as to either price or size. This report is proprietary to MUFG Securities and may not be copied, circulated or otherwise referred to without our prior written consent. Notwithstanding this, MUFG Securities shall not be liable in any manner whatsoever for any consequences or loss (including but not limited to any direct, indirect or consequential loss, loss of profits and damages) arising from any reliance on or usage of this report and accepts no legal responsibility to any investor who directly or indirectly receives this material.

## Country and region specific disclosures

This report is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or is located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to any law, regulation or rule. In this regard, please note the following in relation to the jurisdictions in which MUFG Securities has a local presence:

- United Kingdom / European Economic Area (EEA): This report is intended for distribution to a "professional client" or "eligible counterparty" as those terms are defined in the rules of the FCA and PRA. In other EEA countries, this report is intended only for persons regarded as professional investors (or equivalent) in their home jurisdiction.
- United States of America: This report, when distributed by MUS(USA), is intended for Institutional Investors ("Institutional Accounts" as defined by FINRA Rule 4512(c)). When distributed by a non-US affiliate of MUS(USA), this report is intended for distribution solely to "major U.S. institutional investors" or "U.S. institutional investors" pursuant to Rule 15a-6 under the U.S. Securities Exchange Act of 1934, as amended. Securities referenced in this report may have been underwritten by MUS(USA) and/or its affiliates. Nothing in this report should be considered an offer or solicitation of an offer to buy or sell securities or any other financial product or a commitment of any kind with respect to any transaction.
- IRS Circular 230 Disclosure: MUFG Securities does not provide tax advice. Accordingly, any discussion of U.S. tax matters included herein (including any attachments) is not intended or written to be used, and cannot be used, in connection with the promotion, marketing or recommendation by anyone not affiliated with MUS(USA) of any of the matters addressed herein or for the purpose of avoiding U.S. tax-related penalties.
- Hong Kong: This report is only intended for distribution to a "professional investor" as that term is defined in the Securities and Futures Ordinance and should not be passed onto any other person.
- Singapore: This report is only intended for distribution to an "institutional investor", "accredited investor" or "expert investor" as those terms are defined under regulation 2 of the Financial Advisers Regulation. It is solely for the use of such investors and shall not be distributed, forwarded, passed on or disseminated to any other person. Investors should note that, as a result of exemptions that apply when this report is distributed to "accredited investors" and "expert investors", MUSS is exempt from complying with certain requirements under the Financial Advisers Act, including section 25 of the Financial Advisers Act (which requires a financial adviser to disclose all material information on certain investment products), section 27 (which requires a financial adviser to have a reasonable basis for making recommendations on investments) and section 36 (which requires a financial adviser to disclose any interests that it holds in securities that it recommends).
- Canada: When distributed in Canada, this report is distributed by MUS(EMEA) or MUSA. MUS(EMEA) operates under an International Dealer Exemption from registration with the securities regulators in Alberta, British Columbia, Manitoba, Ontario and Québec. MUSA operates under an International Dealer Exemption from registration with the securities regulators in all Canadian Provinces and Territories. This report is only intended for a "permitted client" as that term is defined under the National Instrument 31-103 in Canada and is not intended for re-distribution to any other person. The information contained herein is not, and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell securities described herein, or solicitation of an offer to buy securities described herein, in Canada or any province or territory thereof. Under no circumstance is the information contained herein to be construed as investment advice in any province or territory of Canada and is not tailored to the needs of the recipient.
- Japan: This Note, when distributed by MUFG Securities affiliates located outside of Japan, is intended for distribution in accordance with Article 58-2 of the Financial Instruments Exchange Act 1948 ("FIEA") to a "Financial Instruments Business Operator" engaged in "Securities-Related Business" as defined in the FIEA or to the government, the Bank of Japan, a qualified financial institution defined in Article 209 of the Cabinet Office Ordinance Concerning Financial Instruments Business, etc., or an Investment Manager.
- When distributed by Mitsubishi UFJ Morgan Stanley Securities Co., Ltd., this Note is intended for distribution to a "Professional Investor (tokutei-toshikusa)" as defined in the FIEA.
- United Arab Emirates: This report is only intended for distribution to a "Professional Client" or "Market Counterparty" as those terms are defined under the rules of the Dubai Financial Services Authority and only a person meeting the criteria for these terms should act upon this report.
- Australia: This Note is only intended for distribution to persons in Australia who are sophisticated or professional investors for the purposes of section 708 of the Corporations Act of Australia, and are wholesale clients for the purposes of section 761G of the Corporations Act of Australia. This Note is not intended to be distributed or passed on, directly or indirectly, to any other class of persons in Australia.

## Other jurisdictions:

MUFG Securities also relies on local registrations or regulatory exemptions in order to undertake certain securities business in other countries. In Thailand, MUS(EMEA) has a derivatives dealer registration with the Securities and Exchange Commission, Thailand. In Canada, MUS(EMEA) and MUS(USA) each operate under an international dealer exemption registered with the securities regulators. MUS(EMEA) operates under the exemption in Alberta, Quebec, Ontario, British Columbia and Manitoba. MUS(USA) operates under the exemption in all Canadian Provinces and Territories.