Global Metals Weekly

Gold rallies as the Fed stops hiking

25 April 2023

Commodities
Global

Patchy gold purchases from investors

Persistent central bank purchases have been a defining feature of the gold market in recent years. Interestingly, three energy-exporting nations (Qatar, Iraq and UAE) have been among the top-10 official gold purchasers as of late. Given elevated energy prices recently, this is not necessarily a surprise. Terms of trade, current account balances and ultimately gold prices are all interconnected. Yet, while those purchases have supported gold prices in 2022, they were not sufficient to take the yellow metal higher. Indeed, aggregate non-commercial gold purchases last year were 27% below the levels seen in 2020; for reference, gold then rallied by 27% YoY in 2020 (prices rose by 1.7% YoY and 0.2% YoY respectively in 2021 and 2022). Our gold supply and demand model shows that investor purchases need to increase only slightly for prices to push higher: assuming that central banks keep boosting their gold holdings, increases in assets under management at physically backed ETFs should extend the rally.

Central banks: weaponising USD and inflation

Sticking with central banks, the World Gold Council's latest Central Bank Survey highlights that most monetary authorities still reference more "traditional" views of managing their reserve portfolios, including using gold as an inflation hedge. Outright de-dollarisation is mentioned by only a handful of central banks Yet the global economy seems to be moving towards a multi-polar world and the US currency in official foreign exchange reserves has fallen from around 70% two decades ago to 58% at present. Russia, by now the most sanctioned country globally, is a case in point, having been among the biggest de-dollarisers and gold buyers in recent years. Then Western nations froze some of the remaining assets due to the Ukraine invasion in 2022, incentivising central banks around the world to further increase holdings of fungible gold.

Fed stops hiking, as inflation expectations pick up

A traditional gold price model referencing 10-year real rates and USD put gold's fair value at $1,479/oz in 2Q22, compared to an actual price of $1,807/oz, highlighting that the correlation between the metal and its two main traditional drivers disconnected. Yet, gold has re-correlated of late, which matters especially when it comes to rates. Indeed, influenced by the recent banking turmoil, markets are pricing imminent rate cuts. At the same time, core inflation has been sticky and elevated price pressures for example in shelter highlight the risk of second round effects. Indeed, one-year inflation expectations have been picking up of late. This confirms our long-held view: central banks have no silver bullet for fighting inflation (see Global Metals Weekly: Investors to make central bank gold purchases count) and this should ultimately bring investors back to the market. The end to the hiking cycle will be critical for the yellow metal.

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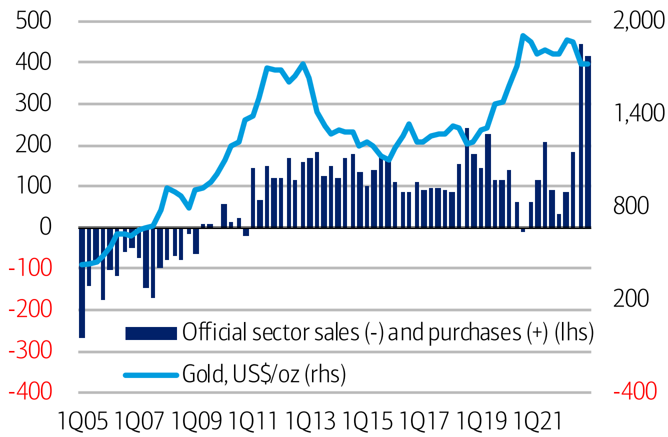
Gold onwards and upwards

Central bank purchases up, ETFs down

Persistent central bank purchases have been a defining feature of the gold market in recent years. Exhibit 1 picks up on this, showing that central banks have been net gold buyers since 2009. Meanwhile, Exhibit 2 highlights the breadth of gold purchases, with central banks in Asia, Europe, the Middle East and Latin America all increasing their holdings.

Exhibit 1: Quarterly central bank gold purchases
Central banks have been net gold buyers since 2009



Source: World Gold Council, BofA Global Research

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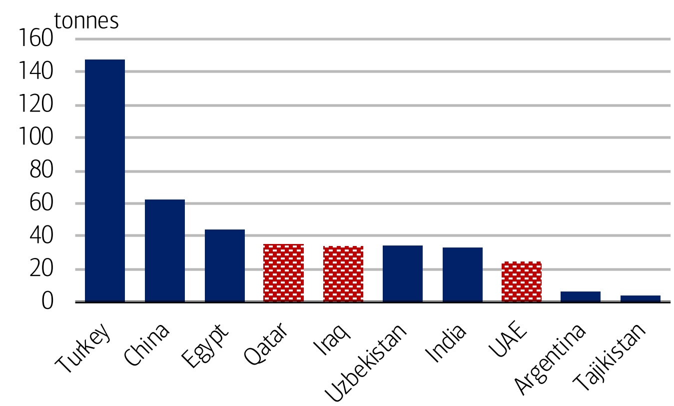
Exhibit 2: Central bank gold purchases in 4Q22 over 4Q21
Three oil exporters are among the top-10 gold buyers



Source: World Gold Council, BofA Global Research

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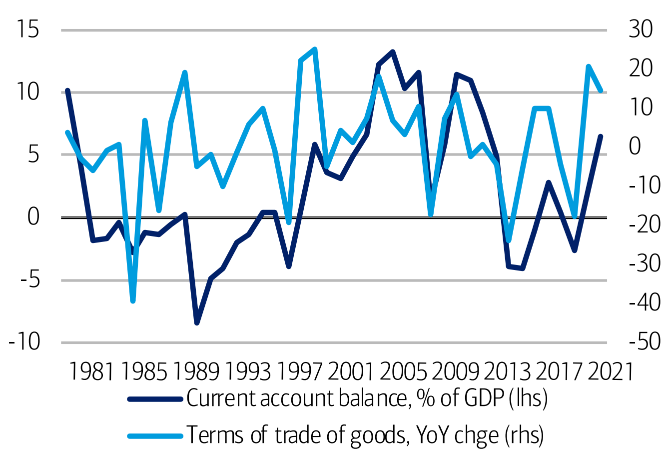
Interestingly, three energy-exporting nations (Qatar, Iraq and UAE) have been among the top-10 official gold purchasers of late. Given elevated energy prices recently, this is not necessarily a surprise, with Exhibit 3 and Exhibit 4 showing that terms of trade, current account balances and ultimately gold prices are all interconnected.

Exhibit 3: Middle East, current accounts and terms of trade
Rising terms of trade usually feed through quickly into current account balances



Source: IMF, BofA Global Research

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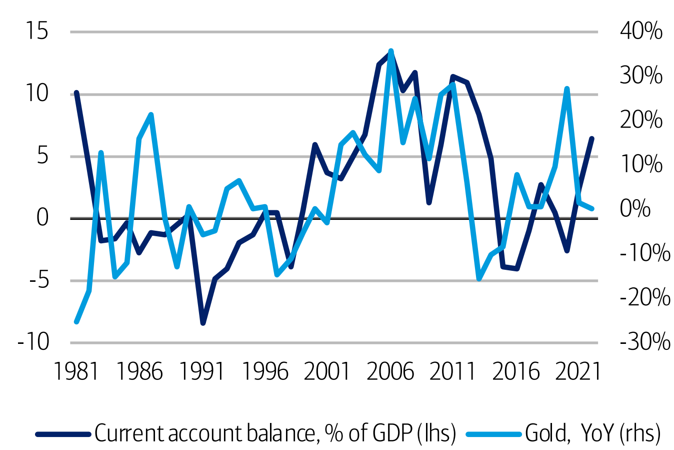
Exhibit 4: Middle East, current account and gold
Current accounts surpluses are recycled into gold



Source: IMF, BofA Global Research

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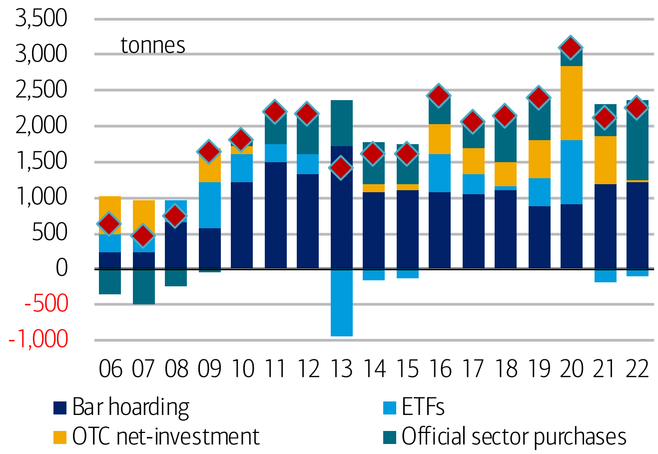
While those purchases have supported gold prices, they have not been sufficient to take the yellow metal higher last year. Exhibit 6 picks up on this, highlighting that aggregate non-commercial gold purchases were 27% below the levels seen in 2020; for reference, gold then rallied by 27% YoY (prices rose by 1.7% YoY and 0.2% YoY respectively in 2021 and 2022).

Exhibit 5: Gold, non-commercial gold purchases
Purchases run well below the levels seen in 2020, when gold rallied



Source: World Gold Council, BofA Global Research

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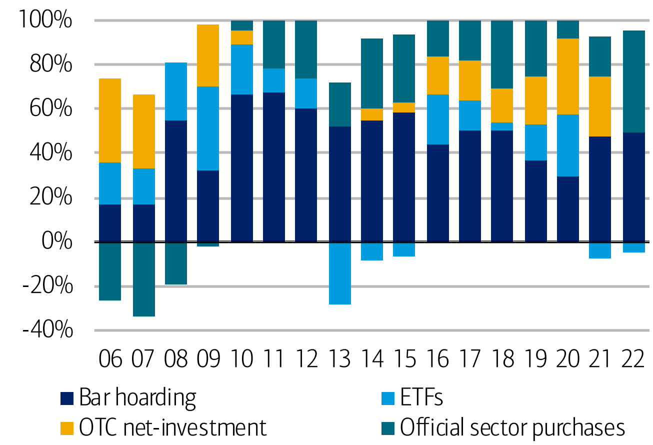
Exhibit 6: Gold, breakdown non-commercial gold purchases
The absence of ETF investors is a particular issue



Source: World Gold Council, BofA Global Research

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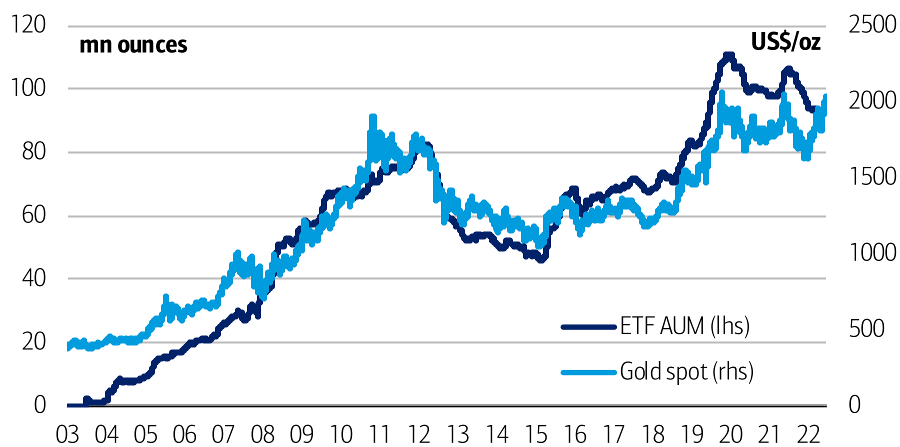
Which segment has lagged? Exhibit 7 outlines that purchases have been dominated by central banks and bar hoarders. Yet, assets under management at ETFs have fallen, after purchases had made up 25% of the total in 2020.

Exhibit 7: Physically backed ETFs, assets under management
Assets under management at physically backed ETFs are back to the levels in 2020



Source: Bloomberg, BofA Global Research

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Therefore, assuming that central banks will keep adding the yellow metal to their portfolios, the trajectory of ETFs is critical for the mined commodities. Where do we stand on this front? Exhibit 8 shows that assets under management have stopped declining as EURUSD has weakened; yet, inflows have so far been anaemic.

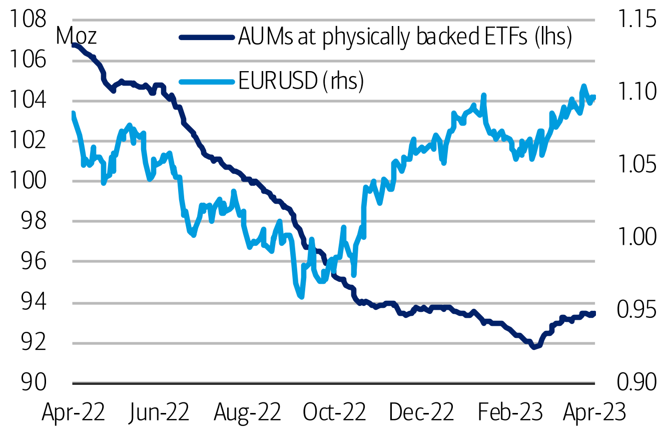
Exhibit 9 takes this a step further, showing our gold demand and supply model. While it is possible to model gold fundamentals on physical flows, we take a slightly different approach in analysing the precious metal than for other commodities, partially because some line items are price sensitive. Acknowledging this, we usually model mine supply, scrap supply as well as jewellery demand outright and then ask how much investor demand is required to support gold prices at different levels:

- **Mine supply** tends to be stable, with operators usually not reacting to prices
- **Scrap supply** is to some extent driven by economic distress, although prices also matter. In a rally, more recycled material comes to the market.

- **Jewellery demand** is linked to GDP per capita levels, but also gold prices. Usually, jewellery demand falls when gold gets more expensive as buyers in emerging markets normally buy on a budget and jewellery is linked to spot gold prices.
- **Implied investment demand**, i.e. bar hoarding, physically backed ETFs, OTC net-investment and official sector purchases, is the item balancing the market.

Bottom line: non-commercial purchases do not need to increase materially to justify gold hitting $2,500/oz this year; inflows into ETFs will be critical and dynamics in assets under management will be a crucial indicator confirming whether price gains can be sustained.

Exhibit 8: EURUSD and physically backed ETFs
A weaker USD stopped ETF outflows, but buyers have returned only reluctantly



Source: World Gold Council, BofA Global Research

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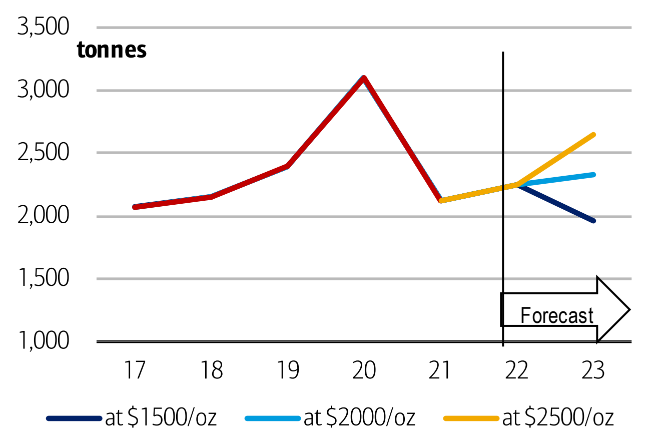
Exhibit 9: Gold, investor demand required for different price levels
Investors need to purchase more ounces to keep the rally going



Source: World Gold Council, BofA Global Research

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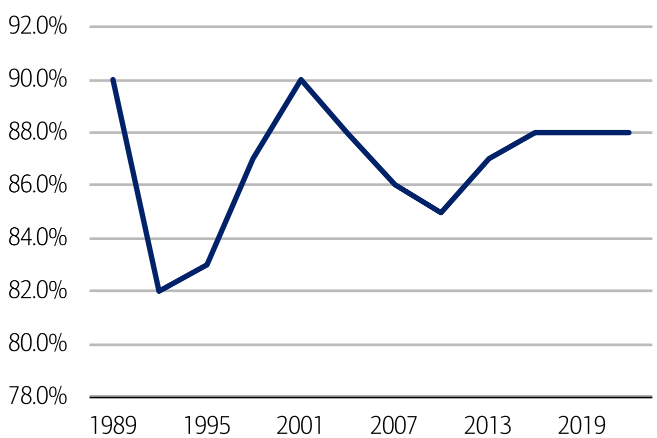
Central banks: weaponising USD and inflation

Share of USD in FX reserves keeps declining

Sticking with central bank buying, the importance of USD for the global economy has been much discussed in recent years. Exhibit 10 picks up on this, showing that USD turnover in OTC transactions has remained steady at around 88%.

Exhibit 10: FX turnover by currency, share of USD
While the share of USD is below previous highs, the US currency remains the staple on FX markets



Source: BIS, BofA Global Research

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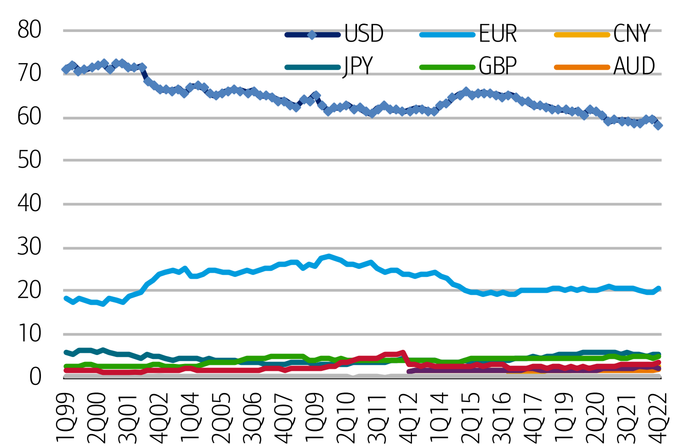
Exhibit 11: Breakdown of currency reserve holdings
Central banks have steadily reduced their exposure to USD



Source: IMF, BofA Global Research

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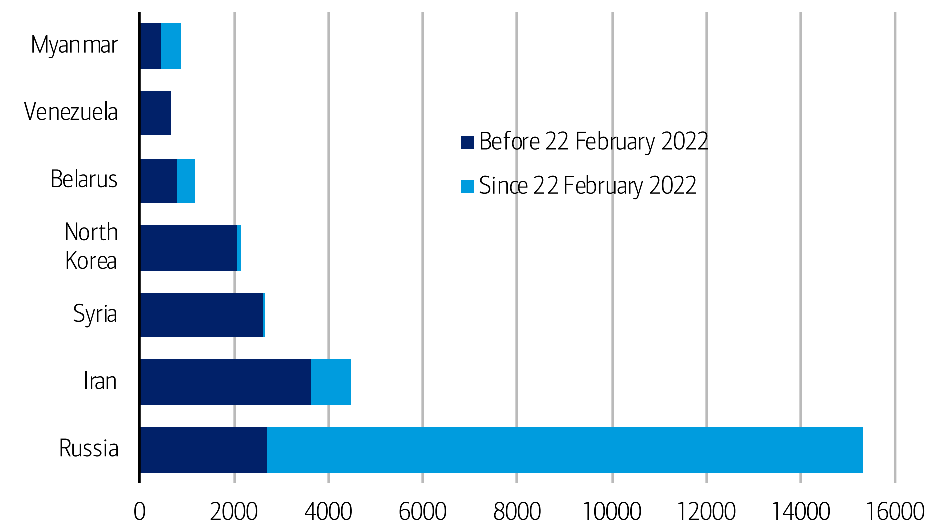
That said, the global economy is now moving towards a multi-polar world, reflected for instance in reports that Saudi Arabia considering quoting oil in CNY. Linked to that, Exhibit 11 outlines that the share of the US currency in official foreign exchange reserves has fallen from around 70% two decades ago to 58% at present. What are the implications? The remit of monetary authorities to hold different asset classes is usually limited; indeed, beyond bonds, gold tends to be one of the few assets central banks can own, so the yellow metal has been a key beneficiary of a re-weighting in reserves.

Weaponisation of USD

Of course, as Russia started a war in Ukraine, the shift to a more multi-polar world has taken on another dimension. Exhibit 12 highlights that Russia is by now the most sanctioned country globally. While the nation switched some of its currency reserves into gold in the run-up to the war, Western nations froze some of its remaining assets, prompting a warning from President Putin that the US is making a huge mistake in using the dollar as a sanctions instrument.

Exhibit 12: Total number of sanctions placed on countries across the world
Russia is now the most sanctioned country



Source: Castellum.AI

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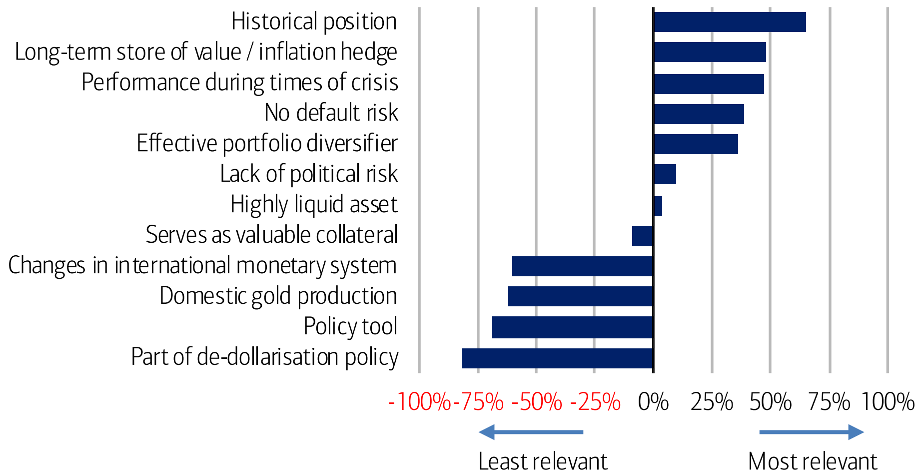
Either way, Russia's experience and those of its peer nations over the weaponisation of the USD has incentivised central banks to shift some of their assets into gold. At the same time, it is worth keeping in mind that even if Western countries have used sanctions proactively, the latest World Gold Council's latest Central Bank Survey highlights that most monetary authorities still reference more "traditional" views of managing their reserve portfolios. Indeed, after having a historical gold position, using gold as an inflation hedge has been the second-most popular motive (Exhibit 13). Outright de-dollarisation is mentioned by only a handful of central banks and, in all likelihood, they are the ones that see themselves in the cross-hairs of potential sanctions.

Exhibit 13: Central bank gold survey, diffusion index of responses (most relevant – least relevant)
Most central banks pursue traditional FX reserve strategies



Source: World Gold Council, BofA Global Research

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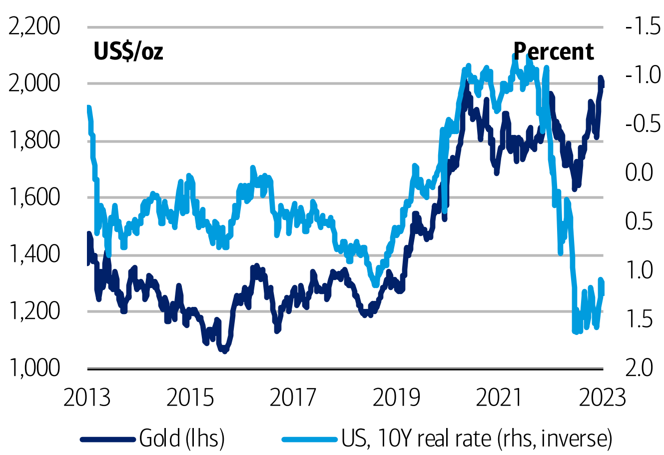
Macro becoming more supportive

Real rates/ EURUSD re-connecting with gold

What could make investors interested in gold and raise AUMs at physically backed ETFs? It is worth keeping in mind that real rates and USD tend to be among the most sustained gold market drivers, although the relationship between gold and rates/USD has at stages been patchy. Indeed, our gold price model referencing 10-year real rates and USD put gold's fair value at $1,479/oz in 2Q22, compared to an actual price of $1,807/oz (gold held up given central bank purchases).

Exhibit 14: Gold and 10-year US real rates
Higher real rates have been a headwind for gold; the yellow metal has held up on central bank gold purchases



Source: Bloomberg, BofA Global Research

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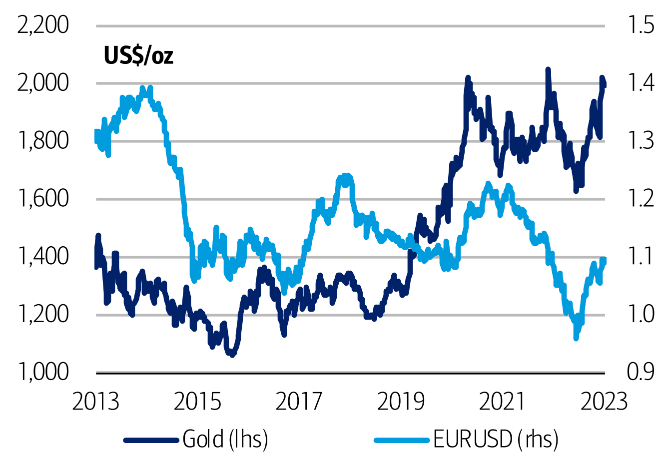
Exhibit 15: Gold and EURUSD
The relationship between gold and EURUSD has not always been strong



Source: Bloomberg, BofA Global Research

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That said, the positive correlation between gold and rates/ EUUSD has re-asserted itself YTD (Exhibit 16).

Exhibit 16: Correlation between gold and rates/ EURUSD
Gold has relinked to rates and EURUSD

	US, 10 year real rates	EURUSD
YTD	**-0.8083**	**0.9290**
2022	-0.1619	0.4723
2021	0.5780	0.5124
2020	0.0614	0.2695
2019	-0.1680	0.3871
2018	-0.3511	-0.0548

Source: Bloomberg, BofA Global Research

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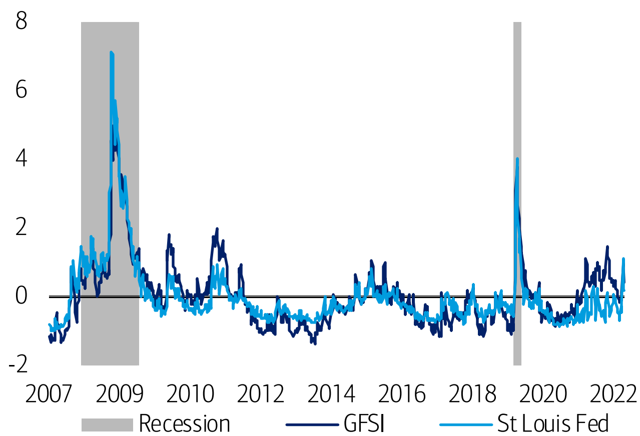
Banking events tightened financial conditions and spiked vol once again...

Looking at rates, central banks have been tightening monetary policy to combat inflation, a key headwind to gold in the past couple of years. Yet, we outlined in a recent Quantamental Insight report that self-induced turmoil has emerged in banking over the failure of SVB and Signature Bank. Concerns of mark-to-market losses from last year's bond market rout led depositors and markets alike to search for signs of weakness across the sector, which fuelled anxiety, mass withdrawals, and led to a significant liquidity crisis. When liquidity dried up, financial conditions tightened as lending became more stringent to preserve cash in the event of bank runs, spreads widened, and rate volatility surged (Exhibit 17).

Policy makers responded in force with liquidity provisions, and the situation appears to be contained and a blip. But fragility has now been introduced into the banking sector and markets, which brings another significant risk in the ongoing global disinflation saga (see the report US Economic Weekly: Sentiment has stabilized, but excess tightening remains a concern). Despite the sharp rise in volatility in response to banking developments, cross-asset implied volatilities have completely reversed the move, suggesting that markets now see the shock as a momentary blip. However, complacency may still abound as rates vol remains elevated.

Exhibit 17: BofA Global Financial Stress Indicator (GFSI) and St Louis Fed Financial Conditions indicator
Global financial stress and conditions spiked as the bank events emerged



Disclaimer: The indicator identified as the BofA Global Financial Stress Indicator above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark.
Source: Bloomberg

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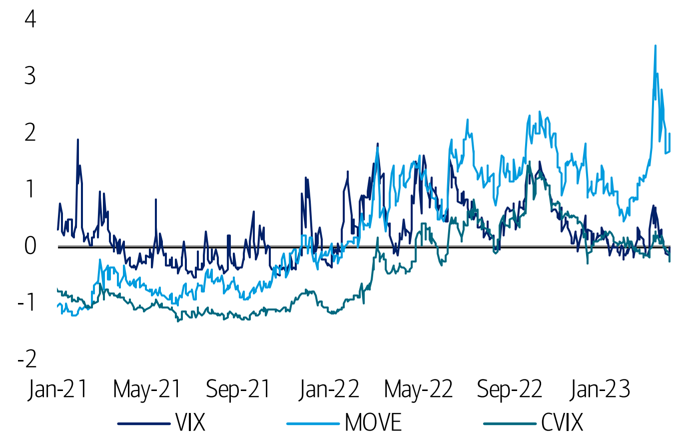
Exhibit 18: Z-score of cross-asset implied volatility
Rates volatility remains elevated but equity and FX vol has already retraced the moves



Source: Bloomberg

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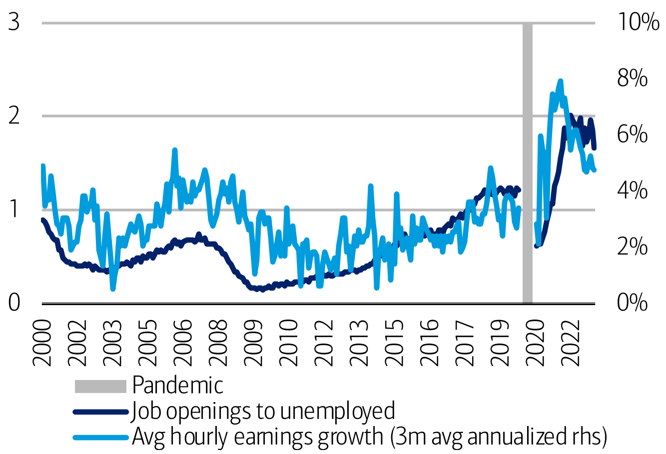
Nominal yields remain compressed as the lagged effects of monetary tightening over the past year is starting to show in the economy While the labour market is tight and has pushed yields higher, job openings relative to unemployment numbers have fallen. This should help ease wage growth, which has slowed over recent months but remains too high for comfort (Exhibit 19). The manufacturing sector is still in contractionary territory, but now durable goods demand is softening, and the services sector is starting to slow, suggesting that the economic pain from the tightening cycle may be around the corner (see US Economic Weekly: The post-January hangover) (Exhibit 20).

Exhibit 19: US JOLTS job openings to unemployed and average hourly earnings growth (3-month average of month-on-month annualized changes)

The labor market remains tight and wage growth remains elevated, but openings and wage growth are falling



Source: BLS

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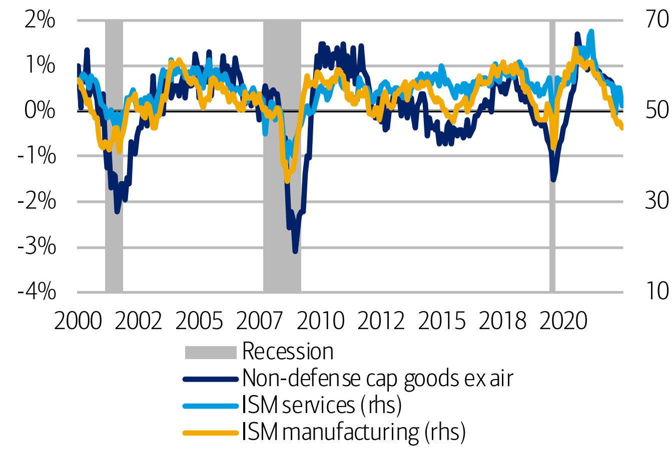
Exhibit 20: US non-defense capital goods ex aircraft 12-month moving average and ISM services

Durable goods orders and services activity are decelerating, joining the already contracting manufacturing sector



Source: Census, ISM

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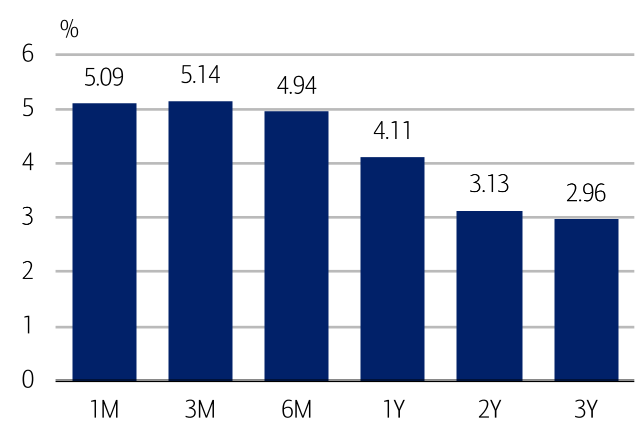
... but the disinflation episode still has a long way to go

Against this backdrop, the recent volatility has also thrown around forecasts over the trajectory of policy rates, with Exhibit 21 showing expectations that both the Fed and ECB will stop hiking within the next six months. Indeed, in the US, the banking concerns resulted in a dramatic repricing lower of Fed expectations. Terminal rate pricing has gone from a range of approximately 5.50 – 5.75 or higher, to now fully pricing out any additional hikes, along with cuts in 2023 (see World at a Glance: Sudden tumult 30 March 2023)

Exhibit 21: US, implied policy rate

Markets expect an imminent end to the hiking cycle



Source: Bloomberg, BofA Global Research

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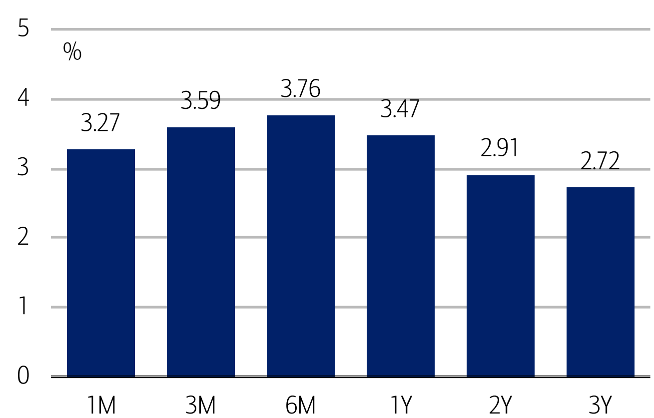
Exhibit 22: Eurozone, implied policy rate

Futures also price in cuts in Europe, albeit with a slight delay



Source: Bloomberg, BofA Global Research

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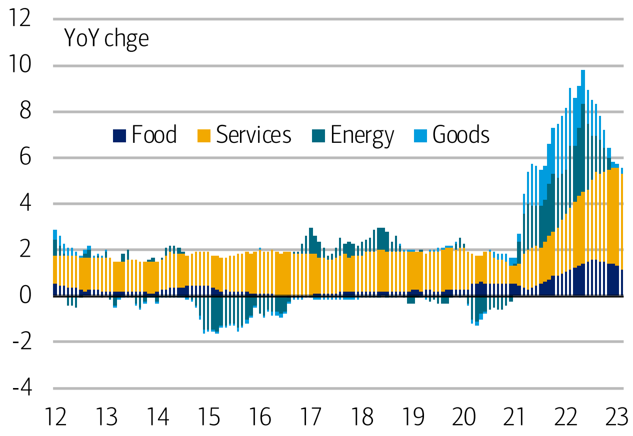
Dislocations showing in the economy have also led to discussions resurfacing over the Fed's dual-policy mandate. The hiking cycle has so far been largely focused on cooling down inflation. Yet, there is also an argument that central banks should let recent aggressive rate hikes do their work, rather than overtightening. The problem with that? Inflation remains elevated, as Exhibit 23 and Exhibit 24 outline.

Exhibit 23: US headline CPI
Services inflation remains an issue



Source: Bloomberg, BofA Global Research

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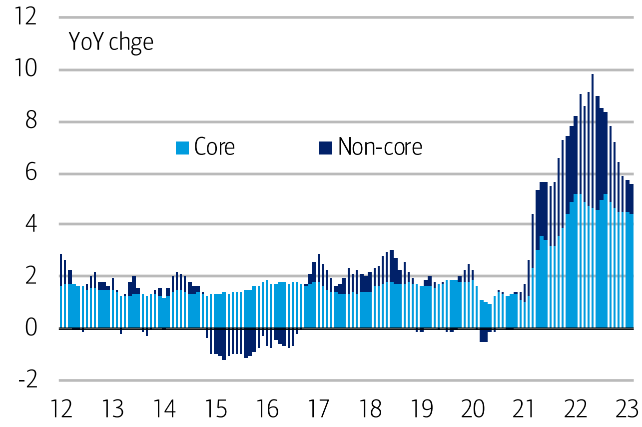
Exhibit 24: US, core and non-core inflation
Core inflation has been sticky



Source: Bloomberg, BofA Global Research

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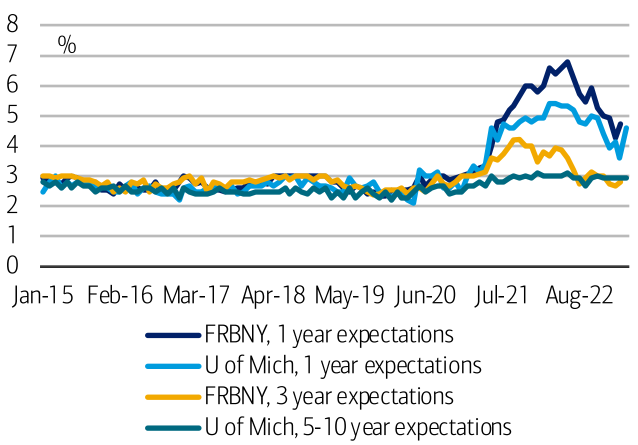
Items including shelter have remained sticky and raise the risk of second-round effects, so inflation remains potentially elevated. This is to some extent mirrored in Exhibit 25, which highlights that inflation expectations have been picking up again of late.

Exhibit 25: US, inflation expectations
1-year Inflation expectations have picked up again



Source: Bloomberg, BofA Global Research

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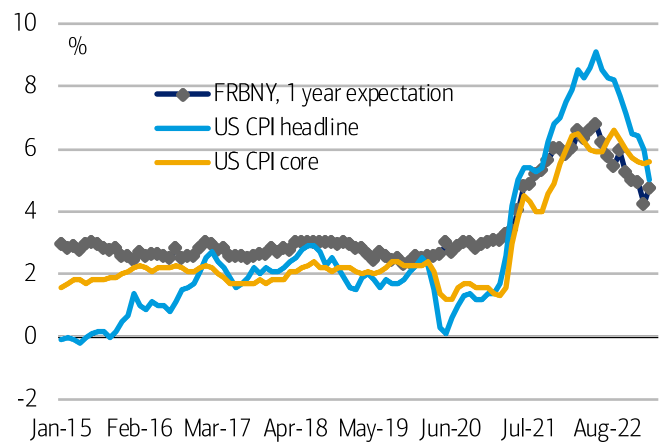
Exhibit 26: US, inflation expectations and CPI
While the Fed usually focusses on 5-10 year metrics, short-term inflation also matters



Source: Bloomberg, BofA Global Research

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Indeed, our colleagues in the US economics team note that the latest data on inflation expectations is mixed at best. Fed officials tend to focus on the 5-10-year metric to gauge whether inflation is anchored or not. It seems to have settled at about 2.9%, roughly matching the average in recent decades. The three-year NY Fed metric has also fallen back to "normal." However, there are several reasons to take the one-year metrics seriously:

- Recent inflation spikes have been very short-lived and one-year expectations seemed to over-react. By contrast, this increase looks more persistent, and people are paying a lot more attention. Last fall the Michigan survey found the highest awareness of high inflation ever, including going back to the 1970s.

- Prices have jumped a lot more than wages in the past year and presumably workers will want some "back pay" as well as rises covering any expected inflation.

- While one-year expectations have dropped, they remain much higher than normal. This is the most persistent rise since 1988-90.

As such, the hiking cycle is ending, even as inflation remains elevated and inflation expectations point towards second round effects; ultimately, this suggests that real rates may become less of a headwind to gold going forward.

Appendix

Exhibit 27: Price forecasts, fundamental drivers and risks
We are bullish on a range of cyclical commodities

Metal	2023E	2024E	Fundamental drivers	Risks (D = downside; U = upside)
Aluminium	$2,661/t 121c/lb	$3,500/t 159c/lb	• China is reaching for a 45mt capacity cap and smelters ex-China have closed capacity • China's smelters remain under pressure on hydro power shortages. At the same time, demand should pick up, so exports will likely remain capped. • We expect rising **deficits** going forward	• D: No production discipline in China/ World ex-China • D: China exports more • U: Smelter restraint and/or production disruptions reduce output • U: Stronger than anticipated demand growth
Copper	$9,427/t 428c/lb	$9,875/t 448c/lb	• Copper rallied as China re-opened. Yet, fundamentals need to catch up on seasonalities and a rebound of the economy • Demand in China has been patchy, but grid spending has completely offset weakness in housing. Demand may be more balanced in 2023, but it should hold up • Inventories are low, which is supportive, but could also increase volatility • We expect a small **surplus** for 2023	• D: China re-exports metal • D: Global demand slows sharply into next year • U: Strong restocking through the supply chain on improved confidence • U: Continued production disruptions in coming quarters
Lead	$2,108t 96c/lb	$2,000/t 91c/lb	• There are no immediate scrap and concentrates shortages, suggesting the market could flip back into surplus • China's demand has slowed structurally, as the ebike market has matured	• D: Destocking in China or higher lead exports from the country. • U: Strong seasonal demand for replacement batteries after cold/ hot winter/ summer months
Nickel	$23,222/t 1053c/lb	$21,250/t 964c/lb	• Nickel demand from electric vehicle producers should rise in the coming years, yet more NPI is being converted to nickel sulphate • China has built conversion capacity, which should take about 100Kt of Indonesian units into the refined market • Indonesian supply may prevent shortages near-term, but further out, more material is required • We expect a **surplus** for 2023, but **deficits** beyond	• D: NPI producers don't close shop; ore inventories last for longer and more ores are imported form the Philippines. • D: Faster ramp-up of Indonesian NPI production • D: Stainless steel demand remains subdued
Zinc	$2,905/t 132c/lb	$2,500/t 113c/lb	• The project pipeline is not well filled with high quality operations • Zinc may remain an underperformer, but immediate downside more limited, also because smelter closures in Europe have not been offset by supply additions elsewhere	• D: Unreported inventories exist on the zinc market. More metal could become available • D: The zinc market is fragmented. There is evidence that miners, especially in China, could consider further output increases
Gold	$2,009/oz	$2,061/oz	• Gold has been a trade on US rates. Banking volatility is not the same as a banking crisis. Yet, it may accelerate an end to the hiking cycle. This is bullish because gold is a trade on rates. • Central bank buying has been strong, but not sufficient; a Fed pivot may bring more investors into the market. • Gold to rally into year-end 2023.	• D: Deterioration of investor sentiment • D: Real rates become more positive; sustained USD rally • D: High gold prices deter buyers of physical gold; increased scrap supply
Silver	$24.55/oz	$25.75/oz	• The silver market has rebalanced on production discipline and demand from new applications including solar panels • As more spending on solar panels come through, silver should rally	• U: Investors returning to the market • U: China's imports to rise • D: ETF liquidation • D: More supply
Platinum Palladium	$1,186/oz $1,520/oz	$1,465/oz $1,632/oz	• Palladium is slowly moving into surplus, likely keeping prices capped. • Supply problems in South Africa have reduced platinum supply. The hydrogen economy and substitution should push the metal up	• D: Jewellery demand suffers due to rising prices. • D: In palladium, the risk of deliveries from Russian stockpiles has not gone away • D: Demand from key buyers like Europe not increasing • U: Production disruptions reduce availability of PT and PD
Iron Ore	$118/t CIF	$79/t CIF	• The iron ore market will likely be oversupplied in 2023. Yet, seasonal supply losses over La Nina in 1Q has already pushed prices above $120/t. • A restocking by mills may take them to $150/t by mid-year	• D: China's steel production slowing sharply • U: Mine closures/slowdown in production increases
HCC Thermal coal	$281/t $199t	$249/t $160/t	• Thermal coal prices to come under pressure as supply is increasing and the energy emergency normalises • A normalisation of supply should also contribute to lower met coal prices	• D: Lack of supply discipline • U: Chinese steel production stronger (HCC) • U: mine closures
Brent and WTI crude oil	$88/bbl $82/bbl	$90/bbl $84/bbl	• We project Brent and WTI to average $88/bbl and $82/bbl, respectively, in 2023. • The global oil balance should stay tight in 2023, supported by rebounding Asia demand, slower non-OPEC growth, and OPEC+ mopping up excesses. • We forecast global demand growth to slow to 1.8mn b/d YoY in 2023 from 2.3mn b/d in 2022. • Non-OPEC supply should grow roughly 1.6mn b/d YoY in 2023 from 1.9mn b/d in 2022. • We project total US crude and NGL supply to rise 1mn b/d in 2023 and 600k b/d in 2024. • OPEC crude oil supplies are set to rise 300k b/d in 2023 and remain about flat in 2024 as OPEC+ actively manages balances.	

Colours indicate our stance on each commodity: Green = bullish, Yellow = neutral, Red = cautious. 2020E/2024E = period averages. **Source:** BofA Global Research estimates

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Supply and demand balances

Exhibit 28: Aluminium supply and demand balance

Deficits set to increase

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	67765	68356	70427	73628	74714
YoY change	3.6%	0.9%	3.0%	4.5%	1.5%
Global consumption	68693	69219	71960	75558	79336
YoY change	7.6%	0.8%	4.0%	5.0%	5.0%
Balance	-927	-863	-1534	-1930	-4622
Market inventories	9142	8279	6745	4816	193
Weeks of world demand	6.9	6.2	4.9	3.3	0.1
LME Cash ($/t)	2474	2706	2661	3500	3668
LME Cash (c/lb)	112	123	121	159	166

Source: SNL, Woodmac, CRU, Bloomberg, company reports, IAI, BofA Global Research

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Exhibit 29: Copper supply and demand balance

Balanced market in 2023E

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	24611	24918	25863	27184	27834
YoY change	5.0%	1.2%	3.8%	5.1%	2.4%
Global consumption	24825	25019	25811	26844	27918
YoY change	3.6%	0.8%	3.2%	4.0%	4.0%
Balance	-214	-101	52	340	-84
Market inventories	1164	1063	1114	1454	1370
Weeks of world demand	2.4	2.2	2.2	2.8	2.6
LME Cash ($/t)	9321	8822	9427	9875	10500
LME Cash (c/lb)	423	400	428	448	476

Source: SNL, Woodmac, CRU, Bloomberg, company reports, ICSG, BofA Global Research

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Exhibit 30: Lead supply and demand balance

Lead should not be in short supply

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	13183	13472	13712	13837	13908
YoY change	4.5%	2.2%	1.8%	0.9%	0.5%
Global consumption	13127	13343	13631	13938	14070
YoY change	4.5%	1.6%	2.2%	2.3%	0.9%
Balance	56	129	81	-102	-162
Market inventories	706	834	916	814	652
Weeks of world demand	2.8	3.3	3.5	3.0	2.4
LME Cash ($/t)	2200	2149	2108	2000	1750
LME Cash (c/lb)	100	97	96	91	79

Source: SNL, Woodmac, CRU, Bloomberg, company reports, ILZSG, BofA Global Research

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Exhibit 31: Nickel supply and demand balance

Class 1 nickel may remain tight

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	2799	3264	3521	3794	3970
YoY change	8.1%	16.6%	7.9%	7.7%	8.9%
Global consumption	2675	2670	3317	3779	3857
YoY change	14.0%	-0.2%	24.2%	13.9%	10.5%
Balance, incl. NPI oversupply	124	594	204	15	113
Balance, excl. NPI oversupply	4	145	62	-255	-236
Market inventories	392	537	598	343	108
Weeks of world demand	7.6	10.4	9.4	4.7	1.5
LME price ($/t)	18455	25707	23222	21250	25000
LME price (c/lb)	837	1166	1053	964	1134

Source: SNL, Woodmac, CRU, Bloomberg, company reports, INSG, BofA Global Research

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Exhibit 32: Zinc supply and demand balance

Project pipeline not a significant risk

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	14412	13500	14000	15150	15900
YoY change	1.9%	-6.3%	3.7%	8.2%	5.0%
Global consumption	13984	13837	14039	14334	14635
YoY change	6.2%	-1.1%	1.5%	2.1%	2.1%
Balance	427	-337	-39	816	1265
Market inventories	1185	848	808	1624	2889
Weeks of world demand	4.4	3.2	3.0	5.9	10.3
LME Cash ($/t)	3003	3482	2905	2500	2250
LME Cash (c/lb)	136	158	132	113	102

Source: SNL, Woodmac, CRU, Bloomberg, company reports, ILZSG, BofA Global Research

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Exhibit 33: Iron ore supply and demand balance

Flipping back into surplus

Wet Mt	2021	2022E	2023E	2024E	2025E
Global production	2,268	2,289	2,320	2,454	2,569
YoY change	0.6%	0.9%	1.4%	5.8%	4.7%
Global consumption	2,301	2,223	2,292	2,344	2,361
YoY change	-0.5%	-3.4%	3.1%	2.3%	0.7%
Balance	-33	66	28	110	208
Iron ore price (US$/t)	160	117	98	79	82

Source: Company reports, CRU, Bloomberg, BofA Global Research estimates

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Exhibit 34: Platinum supply and demand balance

Substitution, a rebound of auto and hydrogen are all bullish

'000 ounces	2021	2022	2023E	2024E	2025E
Global production	7767	7054	7066	8023	8220
YoY change	21.4%	-9.2%	0.2%	13.5%	2.5%
Global consumption	7888	6532	7458	7608	7962
YoY change	11.5%	-17.2%	14.2%	2.0%	4.7%
Balance	-121	522	-392	416	258
Spot ($/oz)	1092	964	1186	1465	1453

Source: Matthey, company reports, BofA Global Research estimates

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Exhibit 35: Palladium supply and demand balance

Palladium will likely be oversupplied in the medium term

'000 ounces	2021	2022	2023E	2024E	2025E
Global production	10,010	9,686	9,720	10,515	10,899
YoY change	9.5%	-3.2%	0.3%	8.2%	3.7%
Global consumption	9,943	10,096	9,204	9,114	8,865
YoY change	0.6%	1.5%	-8.8%	-1.0%	-2.7%
Balance	67	-409	516	1,401	2,034
Spot ($/oz)	2,399	2,110	1,520	1,632	1,564

Source: Matthey, company reports, BofA Global Research estimates

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Price forecasts

Exhibit 36: Commodity price forecasts

We are bullish aluminium, copper, iron ore and gold

		Current	1Q23E	2Q23E	3Q23E	4Q23E	1Q24E	2Q24E	2022E	2023E	2024E	2025E	2026E	2027E	LT price
Base metals															
Aluminium	US$/t	2,386	2,445	2,450	2,750	3,000	3,250	3,250	2,706	2,661	3,500	3,668	3,097	2,494	2,369
	USc/lb	108	111	111	125	136	147	147	123	121	159	166	140	113	107
Copper	US$/t	8,779	8,956	9,250	9,500	10,000	10,500	10,000	8,822	9,427	9,875	10,500	9,607	8,523	8,315
	USc/lb	398	406	420	431	454	476	454	400	428	448	476	436	387	377
Lead	US$/t	2,196	2,131	2,200	2,050	2,050	2,000	2,000	2,149	2,108	2,000	1,750	2,110	2,493	2,638
	USc/lb	100	97	100	93	93	91	91	97	96	91	79	96	113	120
Nickel	US$/t	24,395	26,389	24,000	22,500	20,000	22,500	22,500	25,707	23,222	21,250	25,000	21,161	17,103	16,267
	USc/lb	1,107	1,197	1,089	1,021	907	1,021	1,021	1,166	1,053	964	1,134	960	776	738
NPI, 8-12%	CNY/t		1,000	1,000	1,000	1,000	1,032	1,032	1,424	1,000	1,032	1,062	1,117	1,175	1,210
Zinc	US$/t	2,705	3,122	3,000	2,750	2,750	2,500	2,500	3,482	2,905	2,500	2,250	2,482	2,729	2,841
	USc/lb	123	142	136	125	125	113	113	158	132	113	102	113	124	129
Precious metals															
Gold, nominal	US$/oz	1,984	1,885	1,950	2,000	2,200	2,300	2,000	1,803	2,009	2,061	1,900	1,965	2,036	2,088
Gold, real	US$/oz		1,885	1,950	2,000	2,200	2,244	1,951	1,803	2,009	2,011	1,808	1,805	1,801	1,800
Silver, nominal	US$/oz	25.11	22.47	23.24	25.00	27.50	26.00	27.00	21.80	24.55	25.75	23.50	26.12	28.93	30.16
Silver, real	US$/oz		22.47	23.24	25.00	27.50	25.37	26.34	21.80	24.55	25.12	22.37	23.92	25.56	26.00
Platinum	US$/oz	1,096	996	1,000	1,250	1,500	1,465	1,465	964	1,186	1,465	1,453	1,464	1,476	1,503
Palladium	US$/oz	1,554	1,578	1,500	1,500	1,500	1,632	1,632	2,110	1,520	1,632	1,564	1,527	1,489	1,503
		Current	**1Q23E**	**2Q23E**	**3Q23E**	**4Q23E**	**1Q24E**	**2Q24E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**LT price**
Bulk Commodities															
Hard coking coal	US$/t fob	251	300	300	250	275	249	249	370	281	249	218	193	167	162
Semi-soft	US$/t fob	255	202	202	168	168	168	168	277	185	168	147	130	112	109
Thermal Coal	US$/t fob	190	256	177	179	184	181	166	357	199	160	125	108	91	87
Iron ore fines	US$/t CIF	107	110	150	120	90	79	79	120	118	79	82	85	89	91
Other materials															
Lithium spodumene	US$/t	5,000	5,950	4,500	5,000	4,700	4,000	3,500	4,498	5,038	3,375	3,250	2,429	1,488	
Lithium carbonate	US$/t	28,625	67,234	40,000	45,000	43,000	35,000	35,000	71,531	48,809	32,500	32,500	27,730	21,967	
Lithium hydroxide	US$/t	38,800	70,805	50,000	55,000	44,500	36,500	36,500	70,142	55,076	34,000	34,000	29,235	23,479	
Alumina	$/t	355	331	331	331	331	340	340	362	331	340	348	361	374	384
Uranium	$/lb		50.28	55.00	60.00	58.00	60.00	65.00	50.17	55.82	66.25	75.00	67.08	59.17	52.55
Molybdenum	$/lb	22	33.48	19.10	19.10	19.10	19.10	19.10	18.74	22.70	19.10	16.50	14.45	12.29	11.89
Cobalt	$/lb	17	18.51	18.51	18.51	18.51	18.51	18.51	31.04	18.51	18.51	18.51	18.92	19.38	19.81
Manganese ore	$/dmtu	5	5.67	5.67	5.67	5.67	5.52	5.52	6.06	5.67	5.52	5.65	5.86	6.09	6.25
Steel, HRC															
HRC, Europe	US$/t	790	832	970	722	714	727	729	950	809	729				
HRC, US	US$/t	1,290	948	1,268	992	827	772	827	1,122	1,009	849				
HRC, China	US$/t	605	558	556	575	571	568	585	663	565	595				
Energy		**Current**	**1Q23E**	**2Q23E**	**3Q23E**	**4Q23E**	**1Q24E**	**2Q24E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**LT price**
Brent	US$/bbl	82.5	82.0	86.0	90.0	94.0	90.0	90.0	100.2	88.0	90.0	60.0	60.0	60.0	60.0
WTI	US$/bbl	78.7	76.0	80.0	84.0	88.0	84.0	84.0	95.3	82.0	84.0	57.0	57.0	57.0	57.0
Henry Hub	US$/MMBtu	2.3	2.7	2.3	2.8	3.3	4.0	4.0	6.7	2.7	4.0	2.6	2.6	2.6	2.6

Note: quarterly energy forecasts are period-end, rest are period averages; **Source:** BofA Global Research

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Key Market Data

Exhibit 37: Commodity prices, exchange rates, equity indices, yields and inventories

The China COVID reopening trade has fizzled out for now

Base metals	Cash, $/t	3-month, $/t	Cash, WoW change	3-month, WoW change
Aluminium	2,386	2,397	1.0%	0.5%
Copper	8,779	8,795	-2.8%	-2.5%
Lead	2,196	2,161	-0.1%	-0.4%
Nickel	24,395	24,477	1.5%	1.4%
Tin	26,779	26,594	7.6%	7.0%
Zinc	2,705	2,719	-5.9%	-4.8%
LMEX	3,985		-1.2%	
	Cash, c/lb	3-month, c/lb		
Aluminium	108	109		
Copper	398	399		
Lead	100	98		
Nickel	1,107	1,110		
Tin	1,215	1,206		
Zinc	123	123		
Other commodities, freight, exchange rates, equities and yields	Spot	WoW change		
Gold, $/oz	1,983	-1.1%		
Silver, $/oz	25	-1.0%		
Platinum, $/oz	1,127	7.5%		
Palladium, $/oz	1,605	6.5%		
Iron ore, China fines cfr $/dmt	117	-1.7%		
Brent, $/bbl	82	-5.4%		
Baltic Dry Index	1,504	4.8%		
EUR/USD	1.099	-0.1%		
Dow Jones Industrial Average	33,809	-0.2%		
10-year US Treasury yield	3.574	1.6%		
ICE BofA Commodity index, ER	419	-3.8%		
ICE BofA Commodity index Industrial Metals, ER	194	-1.4%		
ICE BofA Commodity index Precious Metals, ER	224	-1.3%		
ICE BofA Commodity index Energy, ER	471	-5.4%		
Exchange stocks and cancelled warrants	Stocks, tonnes	WoW change	Canc. warrants, tonnes	Canc. warr., of stocks
Aluminium				
LME	571,400	7.7%	66,625	11.7%
Shanghai	261,644	-4.6%		
Total aluminium	833,044	3.5%		
Copper				
LME	51,875	0.6%	3,800	7.3%
Comex	23,114	14.2%		
Shanghai	146,016	-2.3%		
Total copper	221,005	-0.1%		
Lead				
LME	32,200	22.0%	3,825	11.9%
Shanghai	25,825	-31.9%		
Total lead	58,025	-9.8%		
Nickel				
LME	41,124	0.0%	4,146	10.1%
Shanghai	1,496	-34.1%		
Total nickel	42,620	-1.8%		
Tin	1,535	-13.8%	165	10.7%
Zinc				
LME	53,500	21.0%	2,175	4.1%
Shanghai	79,941	-8.0%		
Total zinc	133,441	1.8%		

Source: BofA Global Research

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