Global Metals Weekly

# Gold jumps on known unknown

## Geopolitics matters, but rates remain key

Gold has rallied as the conflict between Hamas and Israel has escalated. The repricing of gold has been particularly visible in the options space, with risk reversals pushing visibly higher of late, confirming top-side buying. Not surprisingly, these purchases of optionality have been accompanied by rising vols. That said, pure directional position-taking has been much more muted. Aggregate investor purchases, visible in faltering demand for physical gold ETFs, remain well below the levels seen since the onset of the COVID pandemic. In our view, this confirms that, beyond an oil-related price spike, the next sustained leg higher in gold prices is unlikely to come until the Fed starts cutting rates.

## Wars intensify as fiscal firepower falls

The recent sharp increases in US rates, which our rates strategists put down to a repricing of the Fed hiking path, were a headwind for gold in 3Q23. “Bond vigilantes”, increasingly worried about rising/elevated fiscal deficits in the US, could end up having an outsized influence in the gold market. Linked to that, the make-up of spending is a concern: defense is a significant discretionary item at a time when armed conflicts are at a record high, while entitlements are critical in non-discretionary spending. Fiscal deficits may persist for a while, so they may not have an immediate impact on metals beyond bouts of volatility. Ultimately, though, the US government may have to take some tough decisions, also because net interest payments are on track to hit 15% of expenses according to the Congressional Budget Office.

## Oil at $150/bbl = gold at $2,400/oz

Sticking with defense, and while the relationship between gold and wars has not always been straightforward, we would caution against discounting the turmoil in the Middle East entirely. Indeed, the concept of “energy fragility” has again reared its head. Linked to that, we recently outlined four scenarios for the oil market, expecting prices to hit $150/bbl or higher if a broadening regional conflict resulted in damage to Middle East energy infrastructure. All else equal, gold could rally to $2,400/oz if this known unknown came to pass. Of course, beyond higher oil prices, the yellow metal would also be impacted by rates, which would in all likelihood fall initially on a flight to quality, although this may ultimately reverse over fears of increased inflation and fiscal spending.



Timestamp: 01 November 2023 01:55PM EDT

**01 November 2023**
Commodities
Global

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LNG: Liquified natural gas

UST: US Treasury yield

LME: London Metal Exchange

HCC: Hard coking coal

WTI: West Texas Intermediate

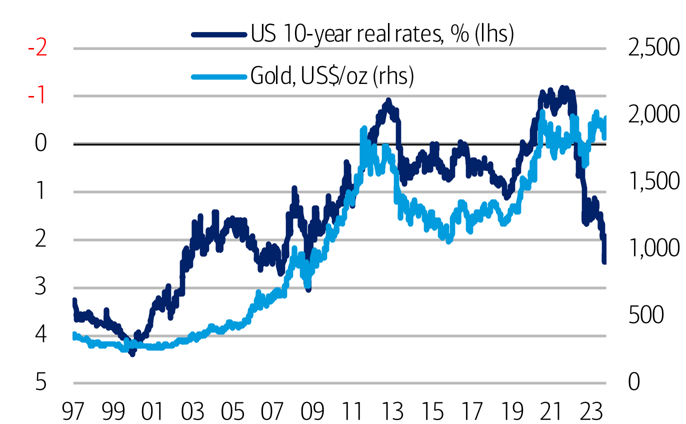
# Gold as a hedge against the unknown

## Macro has been a key concern

### Rates and USD remain key gold price drivers

Gold prices have held up against the backdrop of sharply higher US rates in recent weeks. Indeed, Exhibit 1 highlights that a visible gap has opened up between the assets, a development market participants are increasingly picking up on. While we acknowledge the dislocation, that chart comes with a significant caveat: Exhibit 2 shows that our traditional gold price model, which runs on US 10-year real rates and the dollar continues to perform well. How can that be justified? That model runs on changes in gold prices, rates and the USD, not levels. The bottom line: rates and USD matter, with changes in direction the correct metric to consider, not levels.

**Exhibit 1: US, 10-year rates and gold prices**
Gold has been resilient against a backdrop of sharply higher US rates




**Source:** Bloomberg, BofA Global Research

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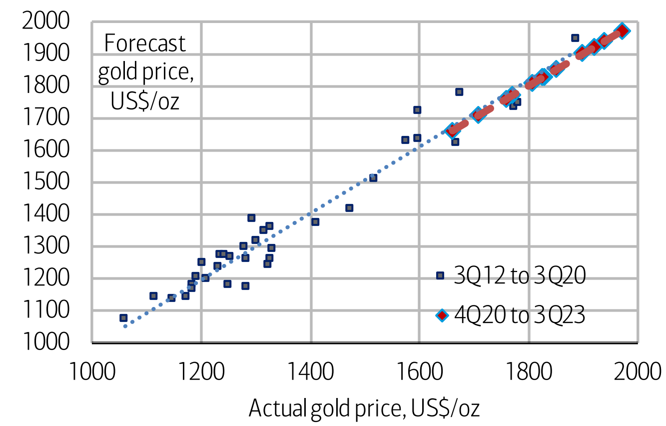
**Exhibit 2: Gold price estimates**
Changes in US rates and USD explain most of the gold price movements




**Source:** Bloomberg, BofA Global Research

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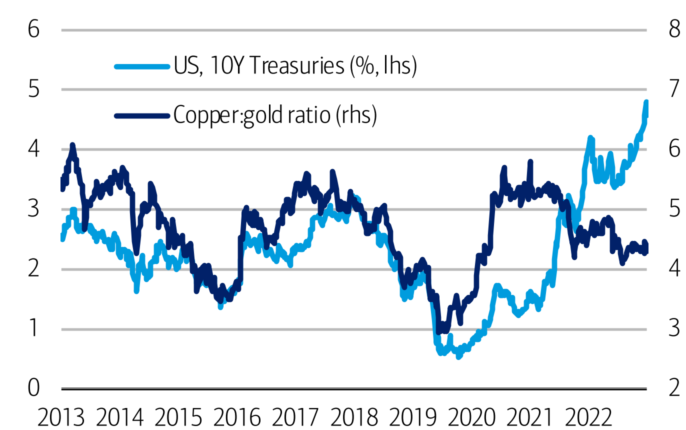
### Headwinds from US rates

#### Bond vigilantes versus repricing of Fed hiking path

Taking a closer look at the macro backdrop, the US economy is slowing and Europe is barely managing to stay out of recession. Accordingly, possible causes behind the recent rally in US rates, which was accompanied by falls in wider metals prices, such as copper, (Exhibit 4), have been much discussed.

**Exhibit 3: US Treasuries and copper:gold ratio**
Treasures have risen faster than the copper:gold ratio




**Source:** Bloomberg, BofA Global Research

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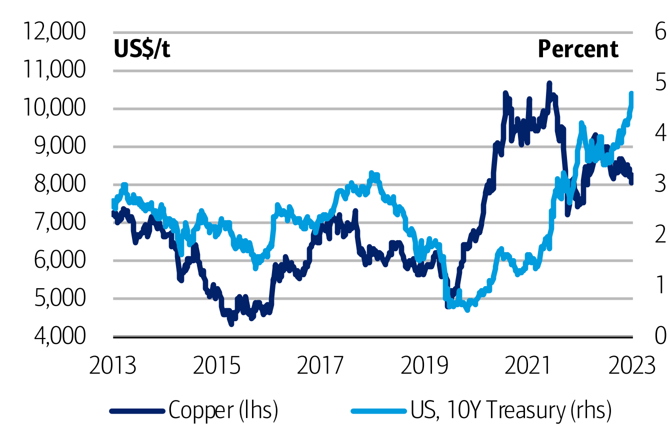
**Exhibit 4: US Treasuries and copper**
Treasuries have outpaced copper prices




**Source:** Bloomberg, BofA Global Research

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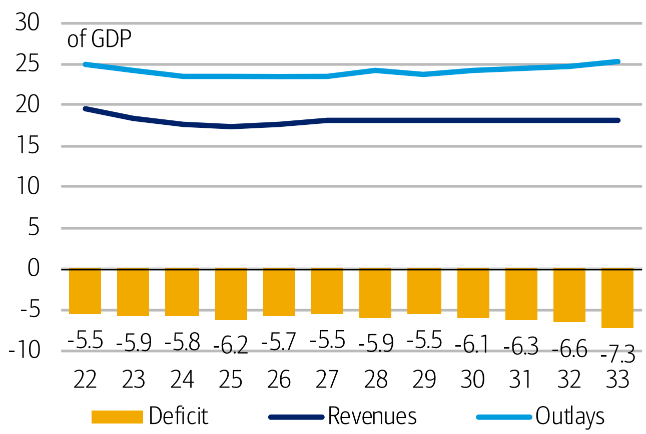
High/rising US fiscal deficits, apprehension that inflation may remain elevated, along with the decorrelation of bonds/equities have all been seen as potential candidates. Exhibit 3 picks up on this, showing the correlation between Treasuries and the copper:gold ratio. Somewhat simplified, taking copper's current spot price of $8,150/oz ($3.70/lb) as a starting point, the implication is that gold should be trading at just $1,600/oz. Yet, we would caution that the much lower spot price estimate is an indicator that bond vigilantes have come out in force. In fact, we believe both copper and gold are fairly priced, while rates have pushed higher since the market has been repricing the Fed rate path. That said, fiscal policy remains a concern. To that point, the IMF highlighted that "Faced with myriad spending pressures, political red lines limiting taxation at an insufficient level translate directly into larger deficits that push debt to ever-rising heights. Something must give to balance the fiscal equation. Policy ambitions may be scaled down or political red lines on taxation moved if financial stability is to prevail".

**Exhibit 5: US public finances**
Congressional Budget Office expects the deficit to increase




**Source:** Congressional Budget Office, BofA Global Research

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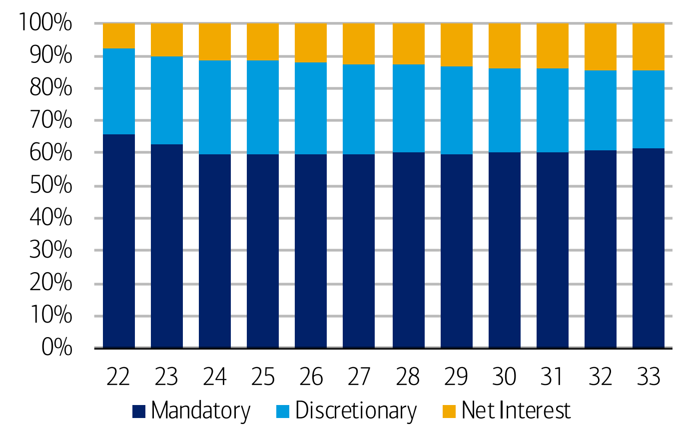
**Exhibit 6: US, public spending**
The bulk of US public spending is non-discretionary




**Source:** Congressional Budget Office, BofA Global Research

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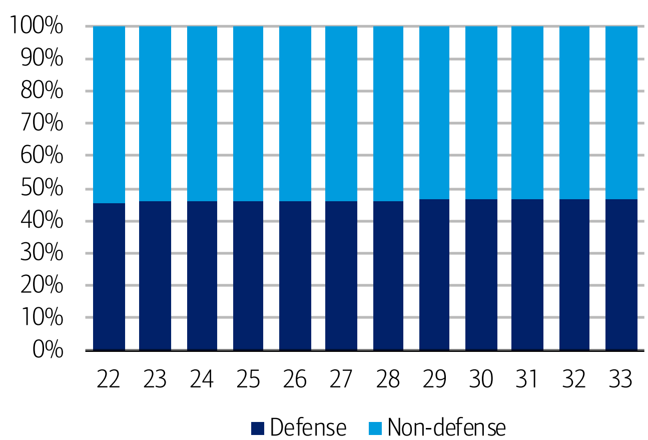
Exhibit 5 shows the US Congressional Budget Office's (CBO) expectation that fiscal deficits could rise above 7% by 2033. Exhibit 6 digs a bit deeper, outlining that this will be accompanied by a squeeze of **discretionary spending** from interest payments and mandatory expenditure.

**Exhibit 7: US, public discretionary spending**
Defense is a significant line item in discretionary spending




**Source:** Congressional Budget Office, BofA Global Research

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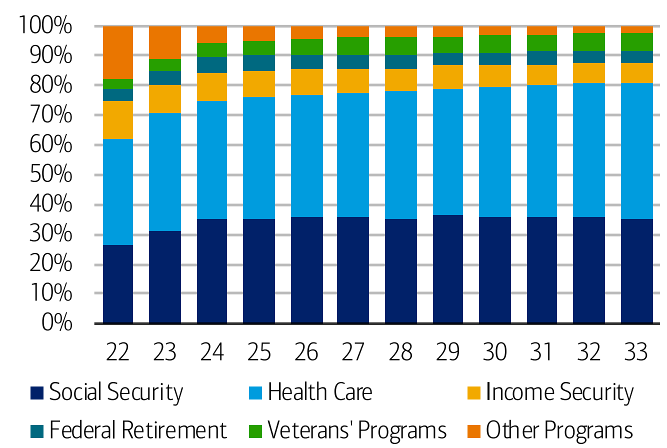
**Exhibit 8: US, public non-discretionary spending**
Entitlements make up the bulk of public spending




**Source:** Congressional Budget Office, BofA Global Research

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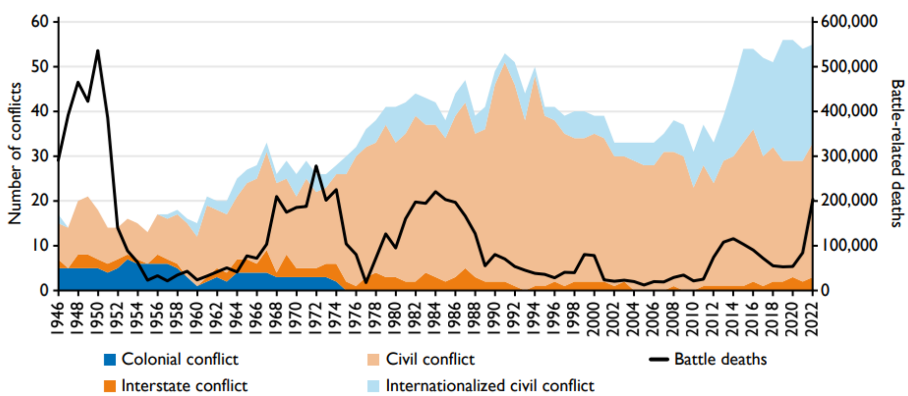
Meanwhile, Exhibit 7 shows that defense accounts for almost half of discretionary spending. As to **mandatory spending**, Exhibit 8 outlines that most of it is deployed on social security and health care, politically difficult to tackle. All this matters for a confluence of reasons:

- Recent policy rate increases are starting to feed through into the economy. Keeping in mind high public debt and net interest payments, there is a case to be made for the Fed to lower interest rates. Lower rates, accompanied by a weaker dollar, are supportive of gold.

- The dynamic around defense spending is also important, considering that the number of countries engaged in armed conflicts has risen to a record high (Exhibit 9). This is why Tudor's Paul Tudor Jones has suggested that we are going through "the most threatening and challenging geopolitical environment that I've ever seen," which is occurring "at the same time the United States is at its weakest fiscal position since World War 2." He added that gold (and Bitcoin) should "probably take on a larger percentage of your portfolio than historically.

**Exhibit 9: Number of countries with state-based armed conflicts by conflict type, 1946–2022**

The world has always been an insecure place, but it has become even more so lately




**Source** : Lacina & Gleditsch Battle Death Datasest (2005); UCDP/PRIO Armed Conflict Dataset; UCDP Battle-Related Deaths Dataset (Davies et al., forthcoming)

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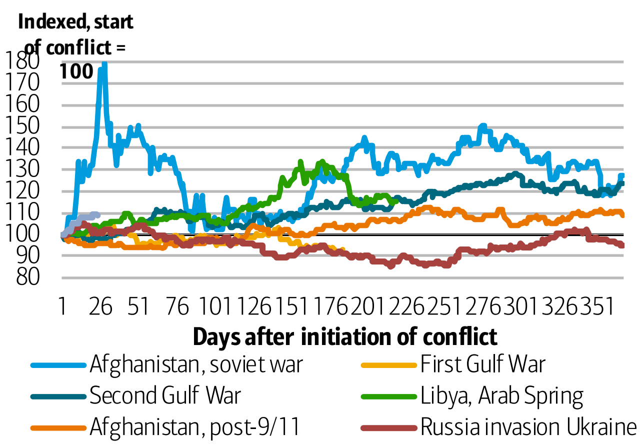
## Wars increase volatility

Gold is often seen as a safe haven asset, but the metal's response to geopolitical conflicts is very ambivalent.

**Exhibit 10: Gold price performance during geopolitical conflicts**

Gold tends to be supported by conflicts




**Source:** Bloomberg, BofA Global Research

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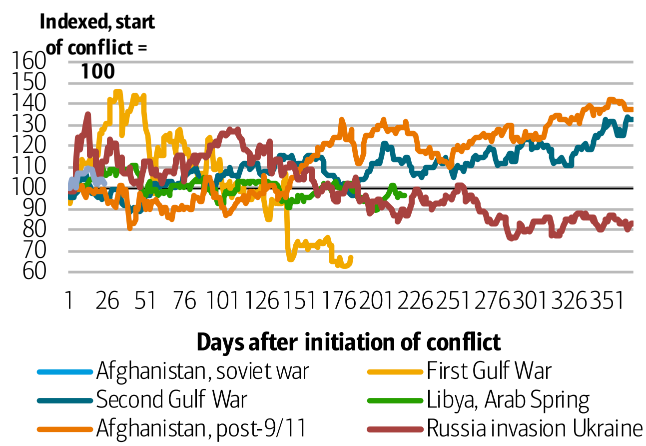
**Exhibit 11: Oil price performance during geopolitical conflicts**

Oil often rallies during wars




**Source:** Bloomberg, BofA Global Research

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This has, perhaps, been most visible during the First Gulf War, which pushed gold prices lower originally, even as oil prices rallied sharply (Exhibit 10 and Exhibit 11). Wars being patchy fundamental gold price drivers can also be seen in the current conflict: while gold has rallied by 10% since the start of the war between Hamas and Israel, it has struggled to rise above $2,000/oz.

Nevertheless, we would caution against discounting the turmoil in the Middle East entirely. Indeed, our (see report) cross-asset strategists recently looked at the concept of "energy fragility", noting that Israeli-Palestinian conflicts post 1973 have had a limited impact on energy prices because they were mostly contained. So, the key question for energy is whether the conflict might broaden regionally, and whether physical energy supplies could be lost if economic sanctions were imposed and/or military action were taken. **We break this out into four simplified potential outcomes for energy markets:**

1. Under a scenario where war is contained to Israel and Gaza and eventually eases, we would expect oil prices to trade in a **$90 to $95/bbl** range over the coming months and LNG to trade at around $15/MMBtu.

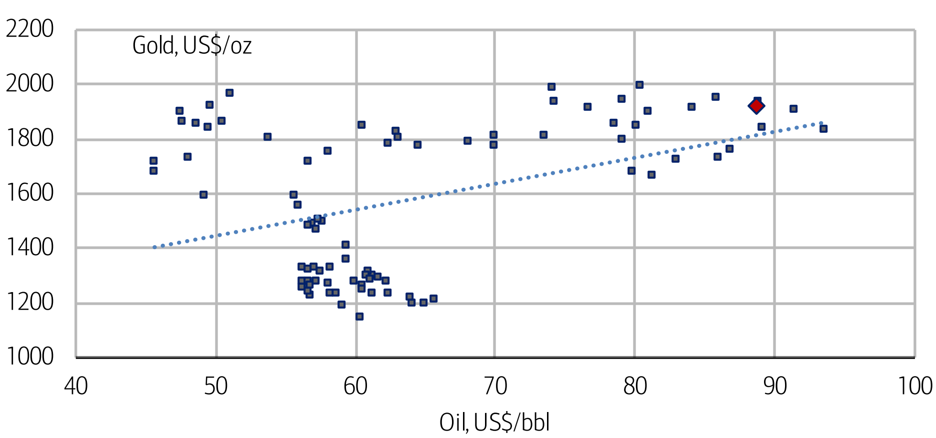
2. If the conflict does not broaden substantially, the US were to enforce Iranian oil sanctions and global oil supply was curbed by 1-1.5mn b/d in 2024, Brent prices would likely jump above **$100/bbl and LNG above $20/MMBtu**.

3. Should the conflict expand beyond Gaza to engulf Iran, we believe crude prices could quickly climb above **$120-130/bbl** to account for the potential risk of a Persian Gulf shutdown. Note that a spike of this size would likely occur without any actual production losses.

4. If an unfolding regional war expands to target Middle East energy infrastructure, the spike in prices could range from $130 to $250+/bbl. Supply losses of 2mn b/d or 2% of global supplies (equivalent to the whole production of Qatar or half of the UAE output) would likely push oil **past $150/bbl**. At the extreme end, if shipments through Hormuz, a choke point for nearly 20% of the world's oil and LNG, were to shut down for a meaningful period, oil could spike above $250/bbl and LNG could surpass $50/MMBtu.

With rates and USD usually the key gold price drivers, the relationship between oil and gold has not always been particularly strong (Exhibit 12). Either way, scenarios 1 to 4 would imply gold prices of $1,827/oz, $1,923/oz, $2,133/oz and $2,400/oz, respectively, all else equal.

**Exhibit 12: Monthly oil and gold prices since 2016**
While the correlation between oil and gold has not always been strong, gold usually trends up with oil




**Source:** Bloomberg, BofA Global Research

**Exhibit 12: Monthly oil and gold prices since 2016**

While the correlation between oil and gold has not always been strong, gold usually trends up with oil

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### Higher oil prices = lower rates

Having caveated the link between oil and gold, where else could support for the yellow metal come from? Our colleagues in rates research note that geopolitical risk and higher oil prices likely would mean at least two things for the UST market: (1) wider front-end breakeven inflation rates with higher oil; (2) a flight to quality bid at the UST back end (see our report: Global Rates Weekly: Real spooky rates, 13 October 2023). Our prior analysis suggests 10Y rates have historically declined 5-10bps in the week after previous geopolitical conflicts (Exhibit 13). We think this is a reasonable estimate for the potential impact on the UST back end; a stronger USD may to some extent offset that bullish impact on gold.

**Exhibit 13: Price changes around select geopolitical events in the past**

Typical response to geopolitical events consists of lower rates, steeper curve & higher oil prices

| | | 10y UST (bp) | | 5s30s curve (bp) | | Crude oil (%) | |
|---|---|---|---|---|---|---|---|
| **Event** | **Date** | **Day After** | **Week After** | **Day After** | **Week After** | **Day After** | **Week After** |
| First Iraq War | 1/17/91 | -18.2 | -6.9 | -- | -- | -33.0 | 1.3 |
| NATO bombing during Bosnian War | 8/30/95 | -2.6 | -14.6 | 4.5 | -10.3 | -0.2 | 3.2 |
| NATO bombing Kosovo War | 3/24/99 | 0.0 | 8.6 | -7.1 | -0.3 | -1.0 | 9.3 |
| 9/11 attack | 9/11/01 | -2.6 | -10.2 | 33.4 | 21.7 | 0.5 | -0.3 |
| Afghanistan War | 10/8/01 | 0.2 | 9.3 | -1.4 | 9.1 | 0.3 | -0.7 |
| Second Iraq War | 3/20/03 | -3.1 | -3.1 | 6.1 | 5.8 | -4.3 | 6.2 |
| Russia Invasion of Ukraine | 2/25/22 | -0.2 | -23.1 | -0.8 | 11.0 | -1.3 | 26.3 |
| Average | | -3.8 | -5.7 | 5.8 | 6.2 | -5.6 | 6.5 |
| Median | | -2.6 | -6.9 | 1.9 | 7.5 | -1.0 | 3.2 |

**Source:** Bloomberg

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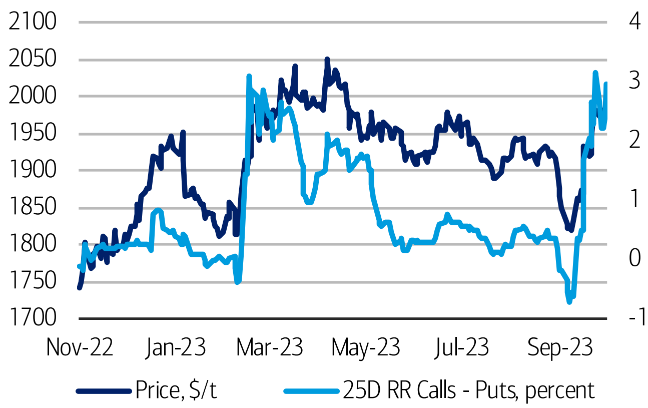
The base case remains that US 10Y Treasury yields peak around 5% range and be lower by the end of 2024. If oil does spike to $150, our view on the 10Y yield would be more limited. We would expect concerns about recession and geopolitics to lead to a flight to quality that would see UST rates fall amid elevated macro uncertainty and risk of a consumption hit with higher oil prices. That said, if the Fed was forced to keep rates high for longer or even hike because of rising inflation, that would ultimately be bearish for the yellow metal.

## Demand remains patchy

Looking into the reaction of investors to the escalation of the conflict in the Middle East, Exhibit 14 confirms that gold has repriced, with risk reversals pushing visibly higher of late, confirming top-side buying.

**Exhibit 14: Gold prices and risk reversals**
Risk reversals have repriced substantially




**Source:** Bloomberg, BofA Global Research

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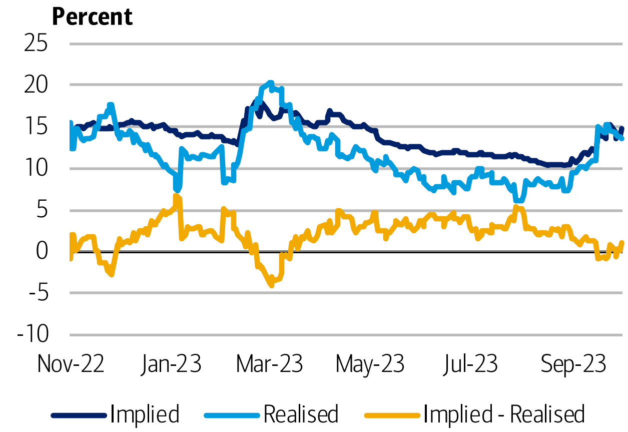
**Exhibit 15: Gold implied and realised vols**
Vols have risen




**Source:** Bloomberg, BofA Global Research

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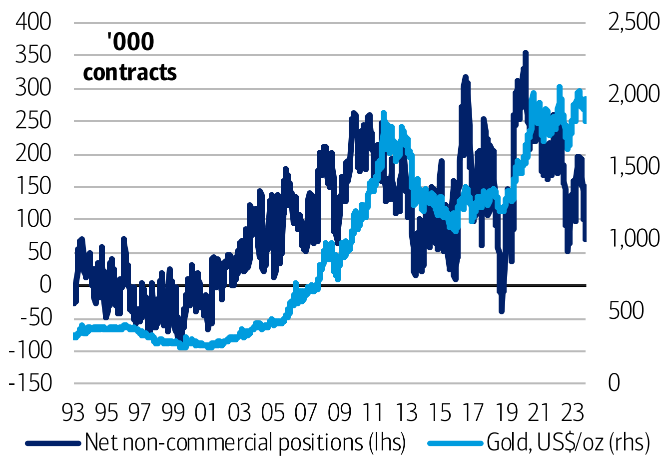
Not surprisingly, these purchases of optionality have been accompanied by rising vols (Exhibit 15). That said, pure directional position-taking has been much more muted, with Exhibit 16 showing that net non-commercial positions remain well below the recent highs, and Exhibit 17 confirming that positioning is not overextended.

**Exhibit 16: Gold net non-commercial futures positions**
Longs remain well below previous highs




**Source:** Bloomberg, BofA Global Research

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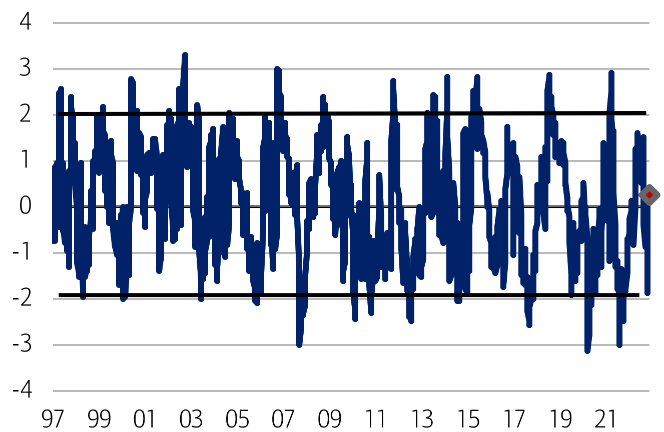
**Exhibit 17: z-scores of gold net non-commercial futures positions**
Gold positioning is not overextended




**Source:** Bloomberg, BofA Global Research

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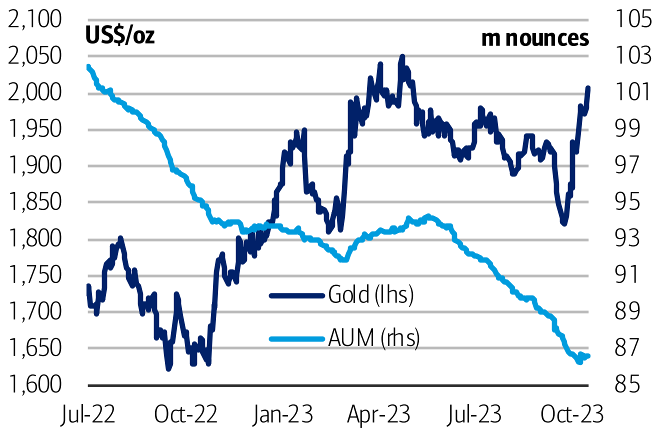
The lack of outright investor interest is also mirrored in Exhibit 18, which shows that assets under management at physically backed ETFs have stabilised, but not pushed higher. This is an issue because aggregate investor purchases remain well below the levels seen since the onset of the COVID pandemic (Exhibit 19). In our view, this confirms that, beyond an oil-related price spike, the next sustained leg higher in gold prices is unlikely to come until the Fed starts cutting rates.

**Exhibit 18: Gold and AUMs at physically backed ETFs**

ETF outflows have subsided




**Source:** Bloomberg, BofA Global Research

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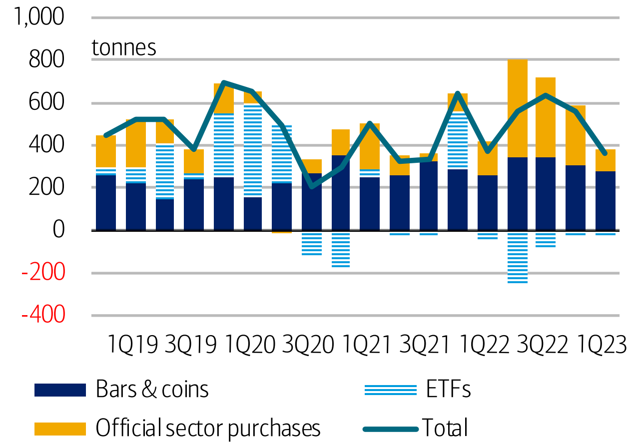
**Exhibit 19: Gold, investor demand**

Physical non-commercial purchases remain well below recent highs




**Source:** World Gold Council, BofA Global Research

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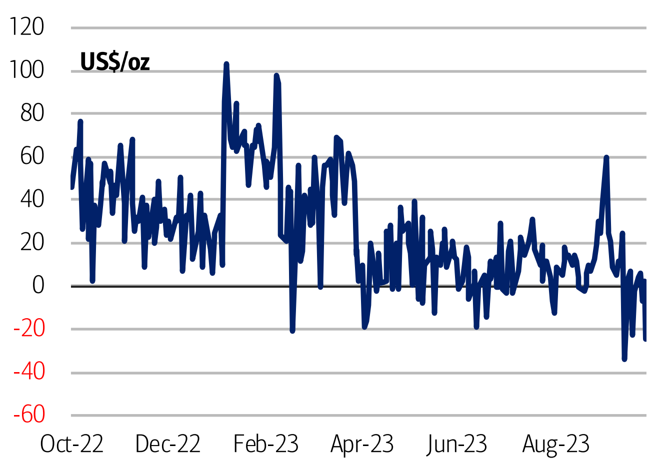
Regional purchases have been a wrinkle too, with India's domestic gold premia evaporating since prices of the yellow metal pushed higher (Exhibit 20). Similarly, China's premia are below the peak levels seen a few weeks back (Exhibit 21), although this was partially influenced by the government reversing a cut in import quota from August, which was then partially targeted at slowing imports of the precious metal to help stabilise CNY.

**Exhibit 20: India, gold premium**

India's domestic buyers have not chased the price higher




**Source:** Bloomberg, BofA Global Research

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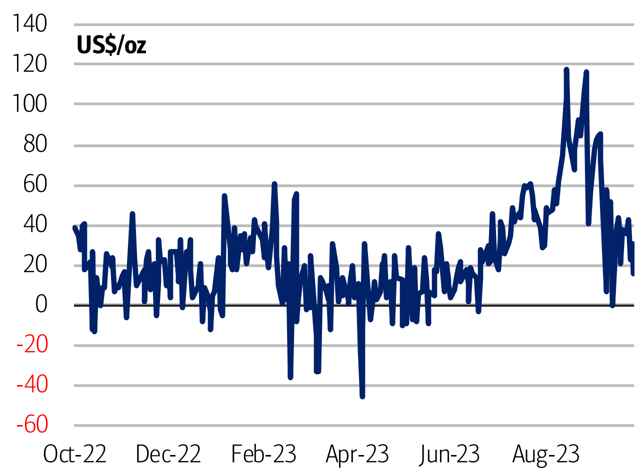
**Exhibit 21: China, gold premium**

China's gold premium normalised after the government issued import quota




**Source:** Bloomberg, BofA Global Research

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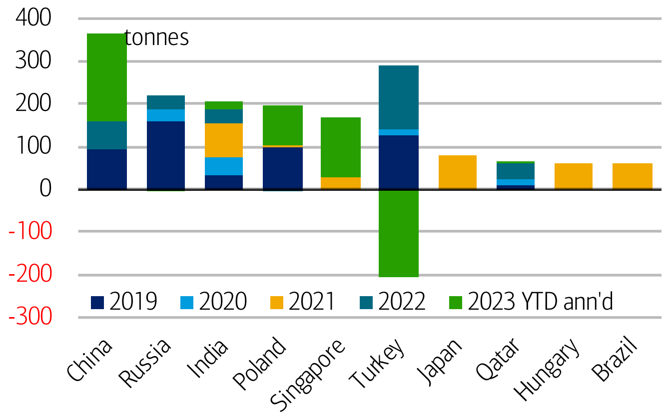
What has supported the gold market so far? Central bank purchases have been supportive, with China, Poland and Singapore among the key buyers YTD.

**Exhibit 22: Central bank gold purchases**
Central banks globally have accumulated gold




**Source:** World Gold Council, BofA Global Research

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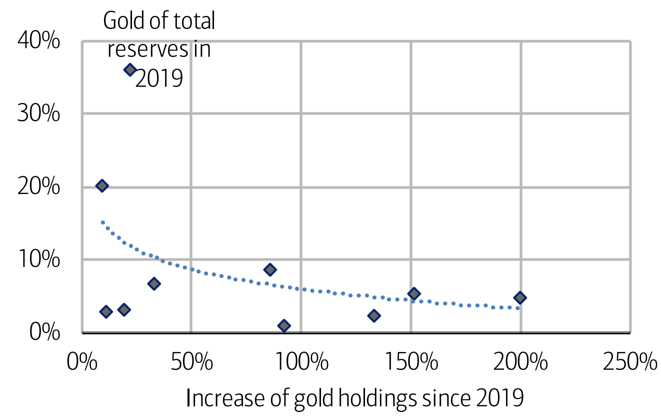
**Exhibit 23: Increase in gold reserves versus initial gold holdings**
Central banks with low gold holdings have been among the biggest gold buyers




**Source:** World Gold Council, BofA Global Research

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# Appendix

**Table 1: Commodity prices, exchange rates, equity indices, yields and inventories**
Metal prices have stabilised

| Base metals | Cash, $/t | 3-month, $/t | Cash, WoW change | 3-month, WoW change |
|---|---|---|---|---|
| Aluminium | 2,206 | 2,220 | 2.3% | 1.8% |
| Copper | 8,030 | 8,099 | 1.9% | 1.9% |
| Lead | 2,156 | 2,123 | 0.7% | 1.1% |
| Nickel | 18,152 | 18,374 | -1.4% | -1.2% |
| Tin | 24,655 | 24,902 | -0.5% | -0.3% |
| Zinc | 2,463 | 2,472 | 1.2% | 1.4% |
| LMEX | 3,610 | | 1.4% | |
| | Cash, c/lb | 3-month, c/lb | | |
| Aluminium | 100 | 101 | | |
| Copper | 364 | 367 | | |
| Lead | 98 | 96 | | |
| Nickel | 823 | 833 | | |
| Tin | 1,118 | 1,130 | | |
| Zinc | 112 | 112 | | |
| Other commodities, freight, exchange rates, equities and yields | Spot | WoW change | | |
| Gold, $/oz | 2,006 | 1.3% | | |
| Silver, $/oz | 23 | -1.1% | | |
| Platinum, $/oz | 908 | 0.9% | | |
| Palladium, $/oz | 1,125 | 2.1% | | |
| Iron ore, China fines cfr $/dmt | 119 | 1.3% | | |
| Brent, $/bbl | 90 | -1.8% | | |
| Baltic Dry Index | 1,563 | -23.6% | | |
| EUR/USD | 1.057 | -0.3% | | |
| Dow Jones Industrial Average | 32,418 | -2.1% | | |
| 10-year US Treasury yield | 4.837 | -1.6% | | |
| ICE BofA Commodity index, ER | 444 | -1.5% | | |
| ICE BofA Commodity index Industrial Metals, ER | 173 | 1.6% | | |
| ICE BofA Commodity index Precious Metals, ER | 217 | -0.0% | | |
| ICE BofA Commodity index Energy, ER | 543 | -2.4% | | |
| Exchange stocks and cancelled warrants | Stocks, tonnes | WoW change | Canc. warrants, tonnes | Canc. warr., of stocks |
| Aluminium | | | | |
| LME | 476,725 | -2.4% | 272,925 | 57.2% |
| Shanghai | 111,019 | -4.4% | | |
| Total aluminium | 587,744 | -2.8% | | |
| Copper | | | | |
| LME | 178,400 | -7.0% | 19,850 | 11.1% |
| Comex | 20,612 | -4.6% | | |
| Shanghai | 36,408 | -37.5% | | |
| Total copper | 235,420 | -13.4% | | |
| Lead | | | | |
| LME | 126,575 | 14.4% | 1,375 | 1.1% |
| Shanghai | 64,329 | 5.1% | | |
| Total lead | 190,904 | 11.1% | | |
| Nickel | | | | |
| LME | 45,144 | 4.5% | 8,082 | 17.9% |
| Shanghai | 9,168 | -1.5% | | |
| Total nickel | 54,312 | 3.4% | | |
| Tin | 7,120 | -3.1% | 675 | 9.5% |
| Zinc | | | | |
| LME | 81,600 | 4.4% | 20,950 | 25.7% |
| Shanghai | 31,876 | -14.2% | | |
| Total zinc | 113,476 | -1.6% | | |

**Source:** BofA Global Research

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**Table 2: 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 | $2,268/t 103c/lb | $2,688/t 122c/lb | • China is almost operating at its 45mt capacity cap and smelters ex-China have closed capacity<br>• China's smelters remain under pressure on hydro power shortages, but are now restarting some capacity. At the same time, demand has been strong, so exports will likely remain capped<br>• We expect rising **deficits** going forward | • D: No production discipline in China/World ex-China<br>• D: China exports more<br>• U: Smelter restraint and/or production disruptions reduce output<br>• U: Stronger-than-anticipated demand growth |
| Copper | $8,442/t 383c/lb | $9,250/t 420/lb | • Copper rallied as China re-opened, but most of these gains have reversed<br>• Demand in China has been patchy, but grid spending has completely offset weakness in housing. Demand may be more balanced in 2023, and should hold up. Copper to rally, if the government pushes through more stimulus<br>• Inventories are low, which is supportive, but could also increase volatility<br>• We expect a small **deficit** for 2023 | • D: China re-exports metal<br>• D: Global demand slows sharply into next year<br>• U: Strong restocking through the supply chain on improved confidence<br>• U: Continued production disruptions in coming quarters |
| Lead | $2,156t 98/lb | $2,000/t 91c/lb | • There are no immediate scrap or concentrates shortages, suggesting the market could flip back into surplus<br>• China's demand has slowed structurally, as the ebike market has matured | • D: Destocking in China or higher lead exports from the country.<br>• U: Strong seasonal demand for replacement batteries after cold/hot winter/summer months |
| Nickel | $21,786/t 988c/lb | $20,250/t 919c/lb | • Nickel demand from electric vehicle producers should rise in the coming years, yet more NPI is being converted to nickel sulphate<br>• China has built conversion capacity, which should take about 100Kt of Indonesian units into the refined market<br>• Indonesian supply may prevent shortages near-term, but further out, more material is required<br>• 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.<br>• D: Faster ramp-up of Indonesian NPI production<br>• D: Stainless steel demand remains subdued |
| Zinc | $2,648/t 120c/lb | $2,375/t 108c/lb | • The project pipeline is not well filled with high quality operations<br>• Zinc may remain an underperformer, but immediate downside more limited, also because smelter closures in Europe have not been offset by supply additions elsewhere<br>• Cost support is starting to kick in, as recent mine closures highlight | • D: Unreported inventories exist on the zinc market. More metal could become available<br>• D: The zinc market is fragmented. There is evidence that miners, especially in China, could consider further output increases |
| Gold | $1,924/oz | $1,975/oz | • Gold has been a trade on US rates. The rally past $2,000/oz subsided as the Fed signalled a resumption of rate hikes. Until the end of the hiking cycle is reached, gold prices will remain capped<br>• Central bank buying has been strong, but not sufficient; a Fed pivot may bring more investors into the market<br>• Gold to rally into 2024 | • D: Deterioration of investor sentiment<br>• D: Real rates become more positive; sustained USD rally<br>• D: High gold prices deter buyers of physical gold; increased scrap supply |
| Silver | $23.20/oz | $23.26/oz | • The silver market has rebalanced on production discipline and demand from new applications including solar panels<br>• As more spending on solar panels come through, silver should rally<br>• Bottoming out of the global economy in 2024 should also help industrial demand | • U: Investors returning to the market<br>• U: China's imports to rise<br>• D: ETF liquidation<br>• D: More supply |
| Platinum<br>Palladium | $976/oz<br>$1,379/oz | $1,050/oz<br>$1,100/oz | • Palladium is slowly moving into surplus, likely keeping prices capped.<br>• Supply problems in South Africa have reduced platinum supply. The hydrogen economy and substitution should offset some of the catalyst demand losses | • D: Jewellery demand suffers due to rising prices<br>• D: In palladium, the risk of deliveries from Russian stockpiles has not gone away<br>• D: Demand from key buyers like Europe not increasing<br>• U: Production disruptions reduce availability of PT and PD |
| Iron Ore | $115/t CIF | $98/t CIF | • Iron ore inventories at China's mills are extremely low.<br>• Production cuts at mills, along with higher steel demand should support steel prices, likely pulling iron ore higher as well near-term | • D: China's steel production slowing sharply<br>• U: Mine closures/slowdown in production increases |
| HCC<br>Thermal coal | $290/t<br>$181/t | $249/t<br>$160/t | • Thermal coal prices to come under pressure as supply is increasing and the energy emergency normalises<br>• Normalisation of supply should also contribute to lower met coal prices | • D: Lack of supply discipline<br>• U: Chinese steel production stronger (HCC)<br>• U: mine closures |
| Brent and WTI crude oil | $86/bbl<br>$81/bbl | $90/bbl<br>$86/bbl | • We project Brent and WTI to average $90/bbl and $86/bbl, respectively, in 2024<br>• The global oil balance should stay tight in 2024, as OPEC+ withholds supply from the market as demand growth slows<br>• We forecast global demand growth to slow to 2mn b/d YoY in 2023 and 1.1mn b/d in 2024<br>• Non-OPEC supply should grow roughly 2mn b/d YoY in 2023 and 1.2mn b/d in 2024<br>• We project total US crude and NGL supply to rise 1.27mn b/d in 2023 and 540k b/d in 2024<br>• OPEC crude oil supplies are set to fall 490k b/d in 2023 and 80k b/d in 2024 as OPEC+ actively manages balances | |

Colours indicate our stance on each commodity: Green = bullish, Yellow = neutral, Red = cautious. 2020E/2024E = period averages. bbl = barrel. b/d = barrels/day. c/lb = cents/pound. oz = ounce.

**Source:** BofA Global Research estimates

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**Table3: Commodity price forecasts**

Copper should outperform

| | | Current | 4Q23E | 1Q24E | 2Q24E | 3Q24E | 4Q24E | 1Q25E | 2022E | 2023E | 2024E | 2025E | 2026E | 2027E | LT price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Base metals** | | | | | | | | | | | | | | | |
| Aluminium | US$/t | 2,259 | 2,250 | 2,500 | 2,750 | 2,750 | 2,750 | 3,000 | 2,706 | 2,268 | 2,688 | 3,000 | 2,770 | 2,540 | 2,310 |
| | USc/lb | 102 | 102 | 113 | 125 | 125 | 125 | 136 | 123 | 103 | 122 | 136 | 126 | 115 | 105 |
| Copper | US$/t | 8,069 | 8,000 | 8,750 | 9,250 | 9,500 | 9,500 | 10,000 | 8,822 | 8,442 | 9,250 | 10,500 | 9,703 | 8,907 | 8,110 |
| | USc/lb | 366 | 363 | 397 | 420 | 431 | 431 | 454 | 400 | 383 | 420 | 476 | 440 | 404 | 368 |
| Lead | US$/t | 2,143 | 2,200 | 2,000 | 2,000 | 2,000 | 2,000 | 1,750 | 2,149 | 2,156 | 2,000 | 1,750 | 2,024 | 2,298 | 2,572 |
| | USc/lb | 97 | 100 | 91 | 91 | 91 | 91 | 79 | 97 | 98 | 91 | 79 | 92 | 104 | 117 |
| Nickel | US$/t | 18,267 | 18,500 | 18,500 | 22,500 | 20,000 | 20,000 | 22,500 | 25,707 | 21,786 | 20,250 | 22,500 | 20,289 | 18,077 | 15,866 |
| | USc/lb | 829 | 839 | 839 | 1,021 | 907 | 907 | 1,021 | 1,166 | 988 | 919 | 1,021 | 920 | 820 | 720 |
| NPI, 8-12% | CNY/t | | 1,000 | 1,032 | 1,032 | 1,032 | 1,032 | 1,062 | 1,424 | 1,129 | 1,032 | 1,062 | 1,102 | 1,141 | 1,180 |
| Zinc | US$/t | 2,454 | 2,500 | 2,500 | 2,500 | 2,250 | 2,250 | 2,250 | 3,482 | 2,648 | 2,375 | 2,250 | 2,424 | 2,597 | 2,771 |
| | USc/lb | 111 | 113 | 113 | 113 | 102 | 102 | 102 | 158 | 120 | 108 | 102 | 110 | 118 | 126 |
| **Precious metals** | | | | | | | | | | | | | | | |
| Gold, nominal | US$/oz | 1,998 | 1,900 | 1,950 | 1,950 | 2,000 | 2,000 | 2,100 | 1,803 | 1,924 | 1,975 | 2,150 | 2,112 | 2,074 | 2,037 |
| Gold, real | US$/oz | | 1,900 | 1,902 | 1,902 | 1,951 | 1,951 | 1,999 | 1,803 | 1,924 | 1,927 | 2,046 | 1,961 | 1,879 | 1,800 |
| Silver, nominal | US$/oz | 23.32 | 22.50 | 22.50 | 23.00 | 23.53 | 24.00 | 24.50 | 21.80 | 23.20 | 23.26 | 24.75 | 26.31 | 27.86 | 29.42 |
| Silver, real | US$/oz | | 22.50 | 21.95 | 22.44 | 22.96 | 23.41 | 23.32 | 21.80 | 23.20 | 22.69 | 23.56 | 24.43 | 25.24 | 26.00 |
| Platinum | US$/oz | 934 | 950 | 1,000 | 1,000 | 1,100 | 1,100 | 1,250 | 964 | 976 | 1,050 | 1,250 | 1,322 | 1,394 | 1,466 |
| Palladium | US$/oz | 1,130 | 1,250 | 1,200 | 1,200 | 1,000 | 1,000 | 1,000 | 2,110 | 1,379 | 1,100 | 1,000 | 1,155 | 1,310 | 1,466 |
| | | **Current** | **4Q23E** | **1Q24E** | **2Q24E** | **3Q24E** | **4Q24E** | **1Q25E** | **2022E** | **2023E** | **2024E** | **2025E** | **2026E** | **2027E** | **LT price** |
| **Bulk Commodities** | | | | | | | | | | | | | | | |
| Hard coking coal | US$/t fob | 350 | 310 | 249 | 249 | 249 | 249 | 218 | 365 | 290 | 249 | 218 | 198 | 178 | 158 |
| Semi-soft | US$/t fob | 178 | 168 | 168 | 168 | 168 | 168 | 147 | 277 | 211 | 168 | 147 | 133 | 120 | 107 |
| Thermal Coal | US$/t fob | 134 | 164 | 181 | 166 | 153 | 140 | 125 | 357 | 181 | 160 | 125 | 112 | 99 | 85 |
| Iron ore fines | US$/t CIF | 123 | 110 | 110 | 100 | 90 | 90 | 90 | 120 | 115 | 98 | 90 | 90 | 89 | 89 |
| **Other materials** | | | | | | | | | | | | | | | |
| Lithium spodumene | US$/t | 2,600 | 2,000 | 1,950 | 1,850 | 1,750 | 1,500 | 1,500 | 4,498 | 3,802 | 1,763 | 2,188 | 1,858 | 1,529 | |
| Lithium carbonate | US$/t | 23,400 | 20,000 | 18,000 | 17,000 | 16,000 | 15,000 | 15,000 | 71,531 | 37,386 | 16,500 | 21,875 | 21,250 | 20,625 | |
| Lithium hydroxide | US$/t | 21,225 | 19,500 | 19,500 | 18,500 | 17,500 | 16,500 | 16,500 | 70,142 | 39,184 | 18,000 | 23,375 | 22,750 | 22,125 | |
| Alumina | $/t | 339 | 331 | 340 | 340 | 340 | 340 | 348 | 362 | 343 | 340 | 348 | 357 | 366 | 375 |
| Uranium | $/lb | | 72.50 | 75.00 | 77.50 | 80.00 | 80.00 | 75.00 | 50.17 | 58.91 | 78.13 | 75.00 | 67.08 | 59.17 | 51.25 |
| Molybdenum | $/lb | 17.9 | 23.77 | 23.77 | 23.77 | 23.77 | 23.77 | 23.77 | 18.74 | 25.41 | 23.77 | 23.77 | 19.71 | 15.65 | 11.60 |
| Cobalt | $/lb | 18.2 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 31.04 | 17.57 | 18.00 | 18.00 | 18.44 | 18.88 | 19.32 |
| Manganese ore | $/dmtu | 4.20 | 4.35 | 4.35 | 4.35 | 4.35 | 4.35 | 4.35 | 6.06 | 4.79 | 4.35 | 4.35 | 4.93 | 5.51 | 6.09 |
| **Steel, HRC** | | | | | | | | | | | | | | | |
| HRC, Europe | US$/t | 625 | 703 | 771 | 751 | 741 | 732 | 722 | 950 | 773 | 749 | | | | |
| HRC, US | US$/t | 882 | 816 | 926 | 898 | 843 | 794 | 772 | 1,122 | 951 | 865 | | | | |
| HRC, China | US$/t | 529 | 571 | 568 | 585 | 602 | 623 | 592 | 663 | 565 | 595 | | | | |
| **Energy** | | **Current** | **4Q23E** | **1Q24E** | **2Q24E** | **3Q24E** | **4Q24E** | **1Q25E** | **2022E** | **2023E** | **2024E** | **2025E** | **2026E** | **2027E** | **LT price** |
| Brent | US$/bbl | 88 | 96 | 94 | 92 | 88 | 86 | 60 | 100 | 86 | 90 | 60 | 60 | 60 | 60 |
| WTI | US$/bbl | 83 | 92 | 90 | 88 | 84 | 82 | 57 | 95 | 81 | 86 | 57 | 57 | 57 | 57 |
| Henry Hub | US$/MMBtu | 3.3 | 3.3 | 3.8 | 3.5 | 4.3 | 4.5 | 2.6 | 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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## Supply and demand balances

### Table 4: Aluminium supply and demand balance
Deficits set to increase

| '000 tonnes | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 67563 | 68412 | 69638 | 73363 | 73793 |
| YoY change | 3.2% | 1.3% | 1.8% | 5.3% | 0.6% |
| Global consumption | 68618 | 69228 | 70134 | 73640 | 77322 |
| YoY change | 7.5% | 0.9% | 1.3% | 5.0% | 5.0% |
| Balance | -1054 | -816 | -496 | -277 | -3530 |
| Market inventories | 9142 | 8326 | 7830 | 7553 | 4023 |
| Weeks of world demand | 6.9 | 6.3 | 5.8 | 5.3 | 2.7 |
| LME Cash ($/t) | 2474 | 2706 | 2353 | 2875 | 3500 |
| LME Cash (c/lb) | 112 | 123 | 107 | 130 | 159 |

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

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### Table 5: Copper supply and demand balance
Balanced market in 2023E

| '000 tonnes | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 24127 | 24646 | 25893 | 27042 | 27575 |
| YoY change | 3.8% | 2.2% | 5.1% | 4.4% | 2.0% |
| Global consumption | 24863 | 25166 | 25607 | 26631 | 27697 |
| YoY change | 3.8% | 1.2% | 1.8% | 2.1% | 1.9% |
| Balance | -736 | -520 | 285 | 411 | -122 |
| Market inventories | 1164 | 643 | 929 | 1340 | 1218 |
| Weeks of world demand | 2.4 | 1.3 | 1.9 | 2.6 | 2.3 |
| LME Cash ($/t) | 9321 | 8822 | 8788 | 9750 | 10500 |
| LME Cash (c/lb) | 423 | 400 | 399 | 442 | 476 |

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

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### Table 6: Nickel supply and demand balance
Nickel to be well supplied

| '000 tonnes | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 2772 | 3220 | 3617 | 3980 | 4230 |
| YoY change | 7.9% | 16.2% | 12.3% | 10.0% | 10.5% |
| Global consumption | 2797 | 2920 | 3174 | 3629 | 3964 |
| YoY change | 13.8% | 4.4% | 8.7% | 14.3% | 10.0% |
| Balance, incl. NPI oversupply | -25 | 299 | 443 | 351 | 266 |
| Market inventories | 392 | 691 | 1134 | 1486 | 1751 |
| Weeks of world demand | 7.3 | 12.3 | 18.6 | 21.3 | 23.0 |
| LME price ($/t) | 18455 | 25707 | 22063 | 21250 | 22500 |
| LME price (c/lb) | 837 | 1166 | 1001 | 964 | 1021 |

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

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### Table 7: Zinc supply and demand balance
Project pipeline not a significant risk

| '000 tonnes | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 13883 | 13494 | 14100 | 14600 | 15150 |
| YoY change | 1.6% | -2.8% | 4.5% | 3.5% | 3.8% |
| Global consumption | 14016 | 13553 | 13896 | 14242 | 14596 |
| YoY change | 6.3% | -3.3% | 2.5% | 2.5% | 2.5% |
| Balance | -133 | -59 | 204 | 358 | 554 |
| Market inventories | 736 | 580 | 784 | 1142 | |
| Weeks of world demand | 2.7 | 2.2 | 2.9 | 4.2 | |
| LME Cash ($/t) | 3003 | 3482 | 2603 | 2375 | |
| LME Cash (c/lb) | 136 | 158 | 118 | 108 | |

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

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### Table 8: Iron ore supply and demand balance
Flipping back into surplus

| Wet Mt | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 2,326 | 2,382 | 2,373 | 2,467 | 2,580 |
| YoY change | 1.3% | 2.4% | -0.4% | 4.0% | 4.6% |
| Global consumption | 2,422 | 2,308 | 2,348 | 2,398 | 2,420 |
| YoY change | 0.6% | -4.7% | 1.7% | 2.2% | 0.9% |
| Balance | -96 | 73 | 25 | 69 | 160 |
| Iron ore price (US$/t) | 160 | 120 | 115 | 98 | 90 |

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

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### Table 9: Platinum supply and demand balance
Substitution and hydrogen an offset for catalyst

| '000 ounces | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 7750 | 6721 | 6633 | 7676 | 7990 |
| YoY change | 20.5% | -13.3% | -1.3% | 15.7% | 4.1% |
| Global consumption | 7848 | 6057 | 7231 | 7557 | 7685 |
| YoY change | 12.5% | -22.8% | 19.4% | 4.5% | 1.7% |
| Balance | -98 | 664 | -598 | 119 | 306 |
| Spot ($/oz) | 1092 | 964 | 1068 | 1465 | 1453 |

**Source:** Matthey, company reports, BofA Global Research estimates

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### Table 10: Lithium supply and demand balance
The lithium market is increasingly oversupplied

| tonnes | 2021 | 2022 | 2023E | 2024E | 2025E |
|---|---|---|---|---|---|
| Global production | 511,931 | 637,116 | 897,189 | 1,259,189 | 1,640,703 |
| YoY change | 22% | 24% | 41% | 40% | 30% |
| Global consumption | 528,983 | 720,407 | 920,934 | 1,198,060 | 1,541,595 |
| YoY change | 63% | 36% | 28% | 30% | 29% |
| Balance | -17,052 | -83,292 | -23,745 | 61,129 | 99,108 |
| Spot ($/lb) | 19169 | 71531 | 45980 | 32500 | 32500 |

**Source:** Company reports, Woodmac, Bloomberg, BofA Global Research estimates

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### Table 11: Cobalt supply and demand balance
The cobalt market needs some supply cuts

| tonnes | 2021 | 2022 | 2023E | 2024E | 2025 |
|---|---|---|---|---|---|
| Global production | 158,076 | 198,235 | 231,241 | 274,225 | 301,692 |
| YoY change | 14.4% | 25.4% | 16.6% | 18.6% | 10.0% |
| Global consumption | 159,887 | 188,640 | 220,119 | 265,120 | 309,644 |
| YoY change | 18.5% | 18.0% | 16.7% | 20.4% | 16.8% |
| Balance | -1,811 | 9,595 | 11,121 | 9,106 | -7,952 |
| Spot ($/lb) | 51,514 | 69,557 | 60,624 | 70,544 | 60,881 |

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

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