BofA SECURITIES

Global Metals Weekly

Green revolution meets manufacturing recession

Cutting price forecasts: copper still best supported metal

As the second quarter draws to a close, we reduce our price forecasts overall, factoring in headwinds from a slow normalisation of activity in China, tighter monetary policy and a global manufacturing recession. We prefer **copper** among the base metals, partially because the green revolution has offset the demand drag from housing and increased policy support in China should push the metal higher into 2H. Meanwhile, **aluminium** is being held back by smelter restarts in China, but we don't anticipate significant surpluses, so the metal should find support. Finally, **nickel** and **zinc** fundamentals remain poor on rising refined supply in China and weak steel production respectively.

Precious metals: gold price capped until Fed stops hiking

Gold pushed above $2,000/oz in 2Q23, partially because the Fed was perceived to have reached the end of the hiking cycle. But with scope for another two policy rate increases, the yellow metal should remain capped for now. **Silver** will likely be supported by demand from solar panel and EV producers, but prices are unlikely to make meaningful headway until demand from traditional industrial sectors accelerates as the global economy bottoms out in 2024. **Platinum** fundamentals are set to be strong given South Africa's production issues and rising demand from the auto industry. **Palladium** is a one-trick pony, with 90% of demand related to cars with a combustion engine. With the energy transition gathering pace, we see structural headwinds for the precious metal.

Production discipline props up steel

Steel prices have been under pressure globally. Yet mills in the US have been extremely disciplined, which has limited the downside. Similarly, production discipline in China may well push steel prices higher, which in turn could lead to some **iron ore** restocking at the mills, likely pushing the raw material up. Meanwhile, there is no longer an energy crisis risk premium in **thermal coal** and we see Newcastle coal prices stabilising at around the current levels for now; linked to that, we lower our forecasts to $162/t in 2H23 from $182/t prior to adjust for somewhat weaker than expected conditions. The key downside risk to our view would be a further collapse in global gas prices from the current levels of $10-12/MMBtu.

MIFTs: lithium surplus keeps a lid on any rallies

Lithium prices came down sharply in 1H23, but have stabilised lately on a confluence of factors, including production cuts at processors in China and less aggressive destocking from consumers. However, the market is still in surplus, preventing meaningful rallies for now. As to **uranium**, based on a 2% mark-to-market lower for 2Q23 prices, and a slightly higher forecast for 4Q23E given our expectation for a pick-up in direct utility buying in the spot market, we maintain our 2023E uranium price at $55.80/lb.

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MIFT: Metal important for future technologies

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Post-Q2 price revisions

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Base metals: we prefer copper into 2H23

As the second quarter draws to a close, we reduce our price forecasts overall, factoring in headwinds from a slow normalisation of activity in China, tighter monetary policy and a global manufacturing recession. We prefer copper among the base metals, partially because the green revolution has offset the demand drag from housing and increased policy support in China should push the metal higher into 2H. Meanwhile, aluminium is being held back by smelter restarts in China, but we don't anticipate significant surpluses, so the metal should find support. Finally, nickel and zinc fundamentals remain poor on rising refined supply in China and weak steel production.

Exhibit 1: BofA price forecasts
We reduce price forecasts giving macro headwinds

		2023E			2024E		
		New	Old	Change	New	Old	Change
Base metals							
Aluminium	$/t	2,353	2,661	-11.6%	2,875	3,500	-17.9%
	c/lb	107	121	-11.6%	130	159	-17.9%
Copper	$/t	8,788	9,427	-6.8%	9,750	9,875	-1.3%
	c/lb	399	428	-6.8%	442	448	-1.3%
Lead	$/t	2,087	2,108	-1.0%	2,000	2,000	0.0%
	c/lb	95	96	-1.0%	91	91	0.0%
Nickel	$/t	22,063	23,222	-5.0%	21,250	21,250	0.0%
	c/lb	1,001	1,053	-5.0%	964	964	0.0%
Zinc	$/t	2,603	2,905	-10.4%	2,375	2,500	-5.0%
	c/lb	118	132	-10.4%	108	113	-5.0%
Precious metals							
Gold	nominal, $/oz	1,923	2,009	-4.2%	1,963	2,061	-4.8%
	real, $/oz	1,923	2,009	-4.2%	1,915	2,011	-4.8%
Silver	nominal, $/oz	22.98	24.55	-6.4%	23.26	25.75	-9.7%
	real, $/oz	22.98	24.55	-6.4%	22.7	25.12	-9.7%
Platinum	$/oz	1,068	1,186	-10.0%	1,465	1,465	0.0%
Palladium	$/oz	1,391	1,520	-8.5%	1,100	1,632	-32.6%
Bulk Commodities							
Iron ore fines	$/t cif	114	118	-2.9%	98	79	23.7%
Hard coking coal	$/t fob	278	281	-1.2%	249	249	0.0%
Semi-soft	$/t fob	185	185	0.0%	168	168	0.0%
Thermal Coal	$/t fob	184	199	-7.6%	160	160	0.0%
MIFTs and other commodities							
Lithium spodumene	$/t	4,132	5,038	-18.0%	3,125	3,375	-7.4%
Lithium carbonate	$/t	45,980	48,809	-5.8%	32,500	32,500	0.0%
Lithium hydroxide	$/t	48,363	55,076	-12.2%	34,000	34,000	0.0%
Alumina	$/t	342	331	3.1%	340	340	0.0%
Cobalt	$/lb	16.4	18.5	-11.5%	15.6	18.5	-15.7%
Uranium	$/lb	55.8	55.8	-0.1%	66.3	66.3	0.1%
Molybdenum	$/lb	24.4	22.7	7.6%	21.8	19.1	14.1%
Manganese ore	$/lb	4.9	5.7	-13.2%	4.6	5.5	-16.7%
Steel							
Northern Europe	$/t	773	809	-4.5%	749	729	2.6%
North America	$/t	971	1,009	-3.8%	849	849	0.0%
China	$/t	565	565	0.0%	595	595	0.0%

Source: BofA Global Research

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Gold handicapped by hawkish Fed

Gold pushed above $2,000/oz in 2Q23, partially because the Fed was perceived to have reached the end of the hiking cycle. But with scope for another two policy rate increases, the yellow metal should remain capped for now. Silver will likely be supported by demand from solar panel and EV producers, but prices are unlikely to make meaningful headway until demand from traditional industrial sectors accelerates as the global economy bottoms out in 2024. Platinum fundamentals are set to be strong given South

Africa's production issues and rising demand from the auto industry. Palladium is a one-trick pony, with 90% of demand related to cars with a combustion engine. As such, and with the energy transition gathering pace, we see structural headwinds for the precious metal.

Steel and steelmaking raw materials

Steel prices have been under pressure globally. Yet mills in the US have been extremely disciplined, which has limited the downside. Similarly, production discipline in China may well push steel prices higher, which in turn could lead to some iron ore restocking at the mills, likely pushing the raw material up. Meanwhile, there is no longer an energy crisis risk premium in thermal coal, so prices should remain well below recent highs.

MIFTs

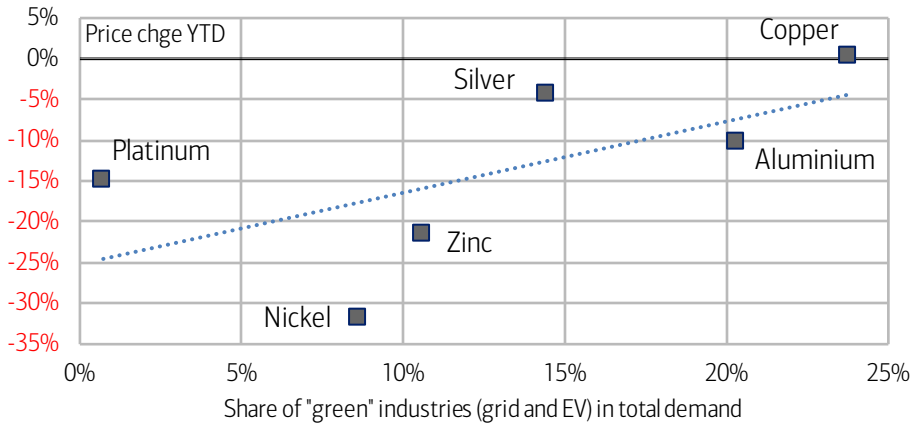
Lithium prices came down sharply in 1H23, but have stabilised lately on a confluence of factors, including production cuts at processors in China and less aggressive destocking from consumers. However, the market is still in surplus, preventing meaningful rallies for now. As to uranium, based on a 2% mark-to-market lower for 2Q23 prices, and a slightly higher forecast for 4Q23E given our expectation for a pick-up in direct utility buying in the spot market, we maintain our 2023E uranium price at $55.80/lb.

Copper has been resilient

Energy transition supports demand

Most commodities have faced headwinds since the China re-opening trade subsided. Indeed, among the metals, only gold, US steel and copper are up YTD. Exhibit 2 picks up on this, highlighting that the price performance has correlated with the exposure of different raw materials to energy transition industries.

Exhibit 2: Share of green industries and metals price performance YTD
Copper has been among the best performing metals YTD



Source: Bloomberg, Woodmac, CRU, BofA Global Research

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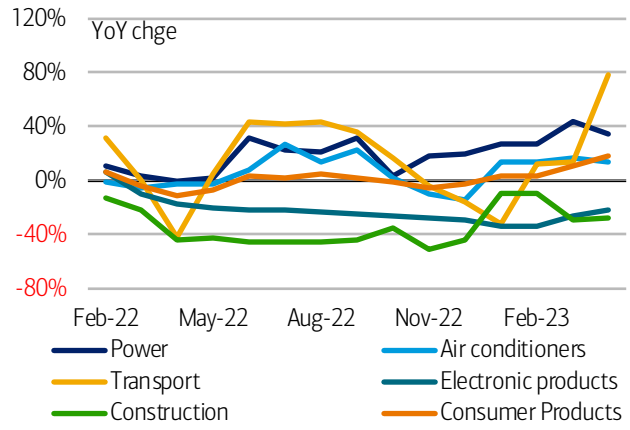
Is that just coincidence? Exhibit 3 highlights the extent to which growth rates in different sectors have varied in China. Indeed, housing has been contracting, while power (essentially investment in generation and transmission/distribution) along with transportation (predominantly cars with a combustion engine and EVs) have been expanding rapidly. Exhibit 4 pulls this all together, showing that activity in underlying sectors would justify copper demand growth of around 15% YoY in May. To put this into context, potential consumption of the red metal has expanded by around 2.1% in the past two decades.

Exhibit 3: China, performance of copper consuming sectors
Transportation and the grid have powered ahead



Source: Bloomberg, BofA Global Research

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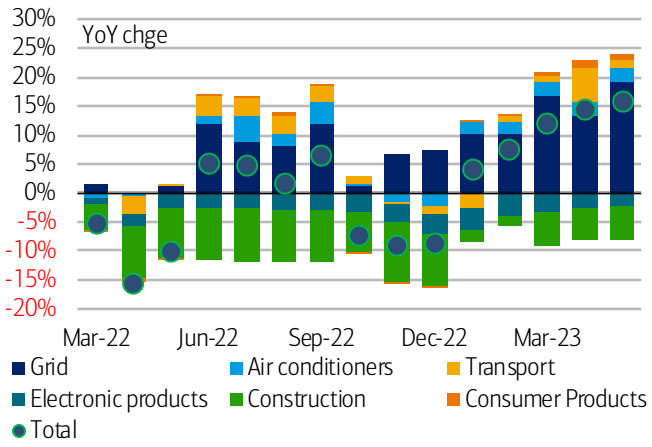
Exhibit 4: Copper, underlying metals demand
Sectoral performance suggests that copper usage has been supported



Source: Bloomberg, BofA Global Research

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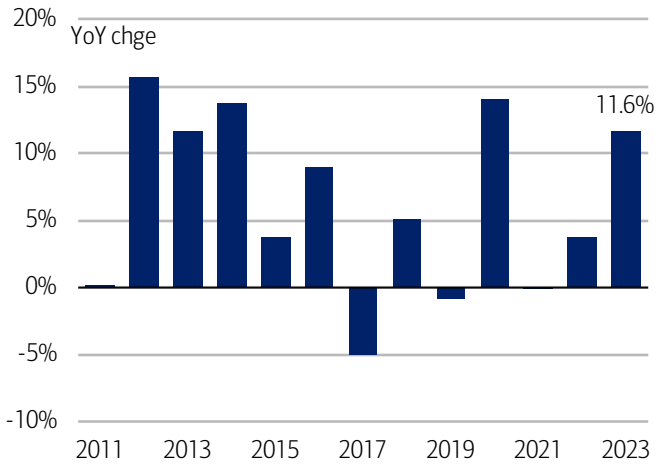
Similarly, Exhibit 5 shows that apparent copper usage (i.e. refined production + imports – exports + stock changes) has been expanding. Metal inventories are at the same time extremely low (Exhibit 6).

Exhibit 5: China, apparent copper demand YTD (Jan-May)
Copper demand has held up



Source: Bloomberg, BofA Global Research

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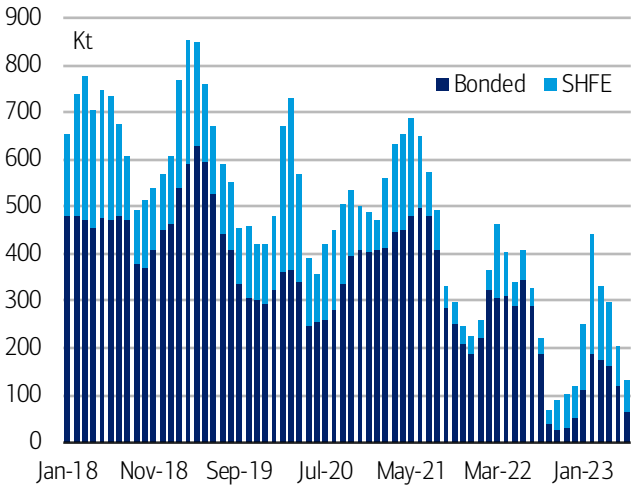
Exhibit 6: China, copper inventories
Inventories are low



Source: Bloomberg, CRU, BofA Global Research

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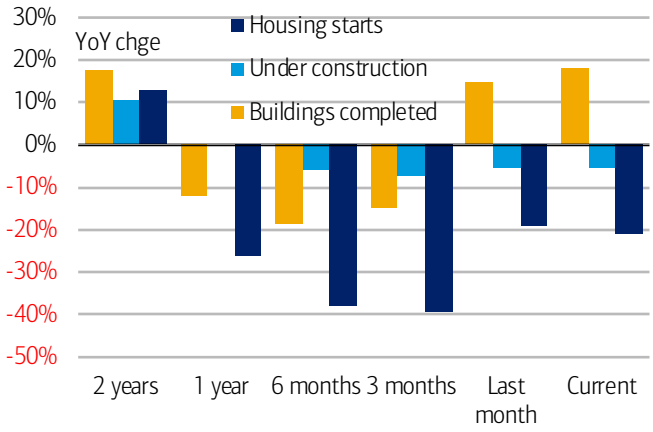
With demographics and urbanisation persistent headwinds to property, we believe the sector has long lost its role as a bullish underpinning. Exhibit 8 squares current housing starts with what our China property equity research team believes is underlying demand for accommodation in sqm. The data suggests that the most immediate headwinds from property should start to subside; put differently: China taking a more pragmatic view on activity in housing should already help, even without a big stimulus.

Exhibit 7: China, housing market
China's property market has turned the corner



Source: Bloomberg, BofA Global Research

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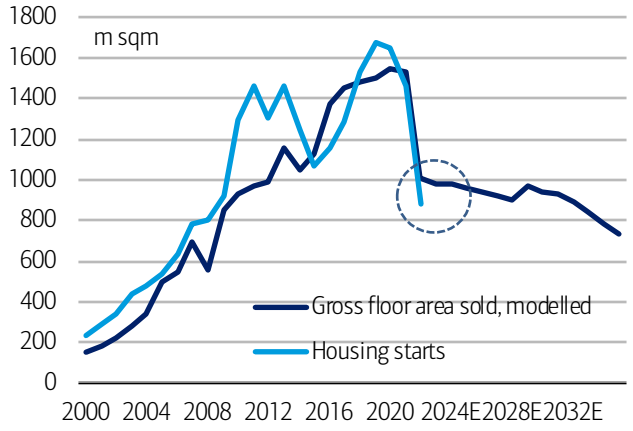
Exhibit 8: China, housing starts and modelled gross floor area sold
With speculation gone, the housing market has reset lower, but there is scope for a rebound from current levels



Source: Bloomberg, BofA Global Research

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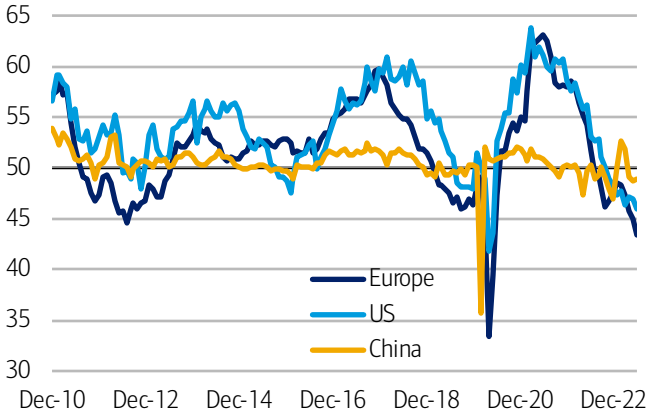
But the world is going through a manufacturing recession

With services doing well in many countries, we agree that the world is going through a manufacturing recession. This is also mirrored by Exhibit 9, which outlines that headline manufacturing purchasing manager indices (PMIs) in the US, Europe and China are hovering below the 50-point threshold. These levels would normally not justify any price increases; in fact, the trend-line in Exhibit 10 suggests that copper should be down by around 30% YoY. This would imply a price of $6,100/t ($2.81/lb).

Exhibit 9: Headline manufacturing Purchasing Manager Indices
Headline PMIs are all below the 50pt threshold



Source: Bloomberg, BofA Global Research

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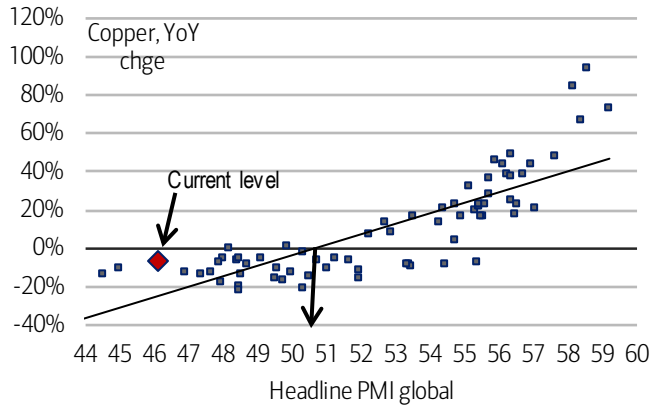
Exhibit 10: Headline manufacturing PMIs and copper prices
PMIs do not justify YoY price increases



Source: Bloomberg, BofA Global Research

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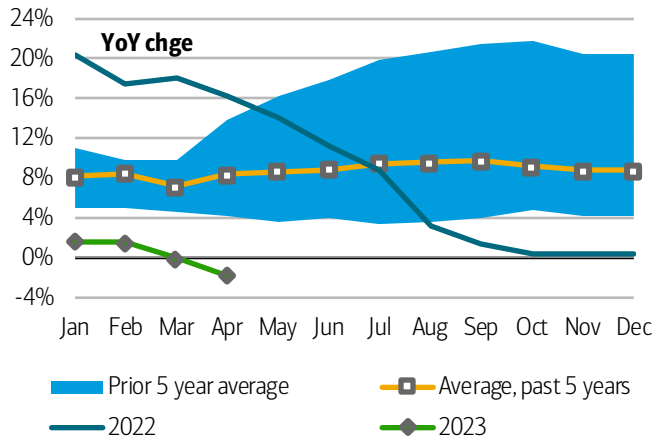
Inventories are a concern for China

Subdued sentiment has also fed through into actual metal purchases. Most notably perhaps, after inventories through the supply chain rose massively during the Covid lockdowns, market participants have been destocking.

Exhibit 11: China, inventories of metals products
Inventories rose substantially during the Covid lockdowns



Source: Bloomberg, BofA Global Research

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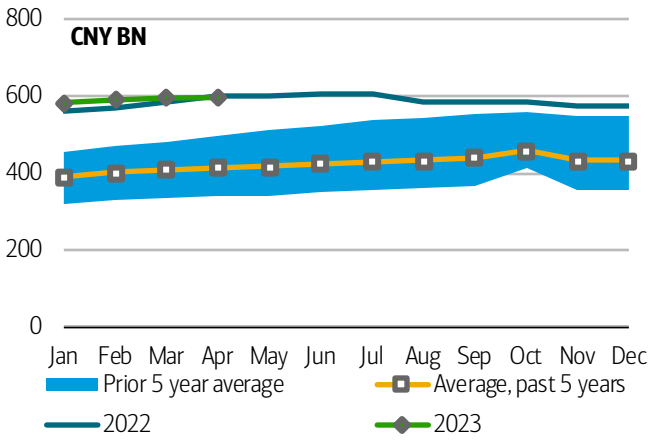
Exhibit 12: China, inventories of metals products
Inventories remain close to record highs



Source: Bloomberg, BofA Global Research

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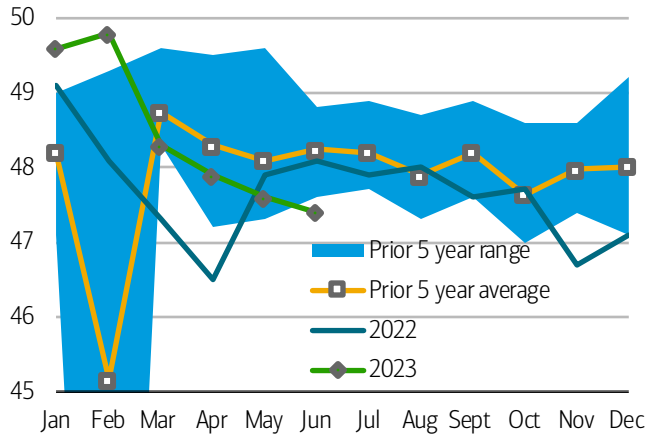
The "inventories" subindex of the Purchasing Manager Index survey also remains below 50 (Exhibit 13). Of course, low orders do not incentivise market participants to increase purchases materially and restock (Exhibit 14), reinforcing how important an improvement in sentiment is. Indeed, confidence is one of the key metrics to follow going forward.

Exhibit 13: China manufacturing PMI, inventories sub-index
Manufacturers have reduced inventories



Note: the threshold between expansion and contraction is 50
Source: Bloomberg, BofA Global Research

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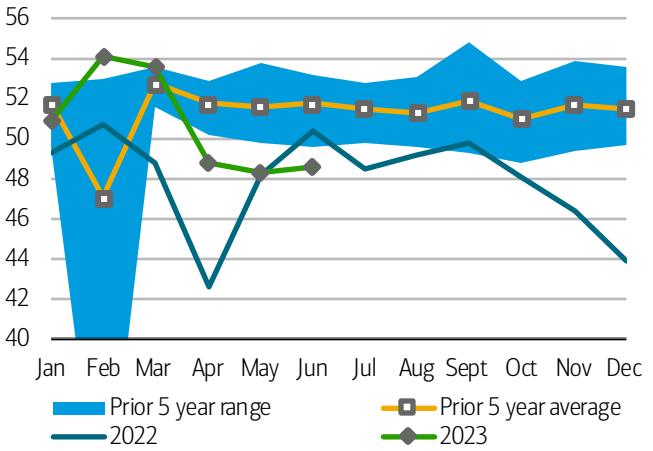
Exhibit 14: China manufacturing PMI, new orders sub-index
New orders have been low



Note: the threshold between expansion and contraction is 50
Source: Bloomberg, BofA Global Research

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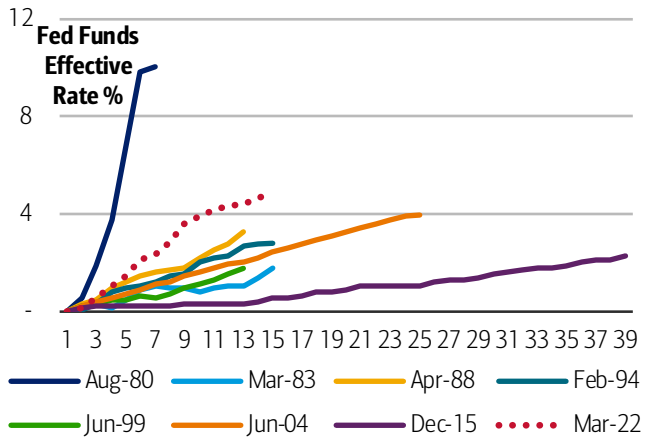
The macro backdrop remains challenging

These headwinds have been heavily influenced by central banks normalising monetary policy. This is mirrored by Exhibit 15, which highlights how aggressive the Fed's rate hikes have been. Similarly, Exhibit 16 shows that money supply growth has slowed in all key regions.

Exhibit 15: Federal Funds Effective Rate during select Federal Reserve rate hiking cycles
The Fed has increased interest rates at one of the fastest rates in decades in the past 15 months



Source: Bloomberg , BofA Global Research

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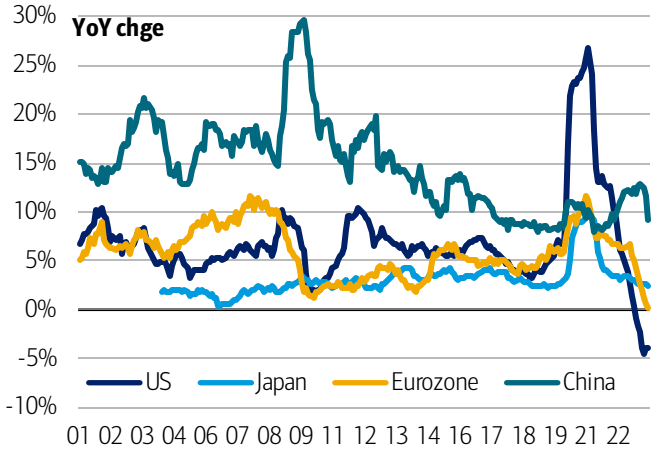
Exhibit 16: Monetary aggregate M2 in different countries
Central banks have normalised monetary policy



Source: Bloomberg , BofA Global Research

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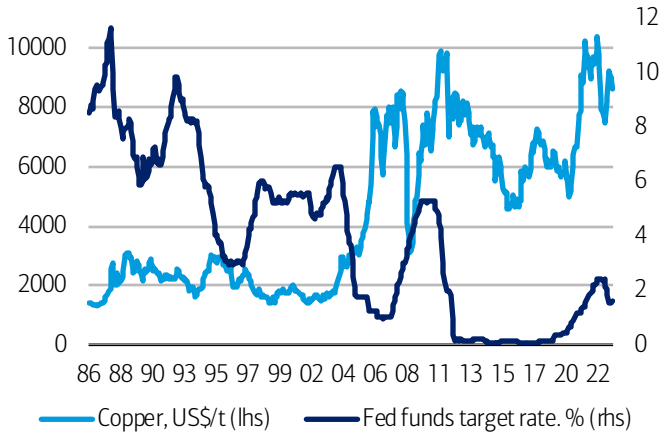
With all eyes on the Fed, the ECB and PBoC, a key question always is how metal prices react to changes in monetary policy. The relationship between policy rates and copper is not clear-cut, as Exhibit 17 and Exhibit 18 highlight. Notwithstanding this, with central banks looking to bring inflation under control by lifting the unemployment rate, we agree that the current policy stance is a headwind that is unlikely to subside until the monetary authorities start cutting rates.

Exhibit 17: Fed funds policy rate and copper prices
The relationship between policy rates and copper prices has been patchy



Source: Bloomberg , BofA Global Research

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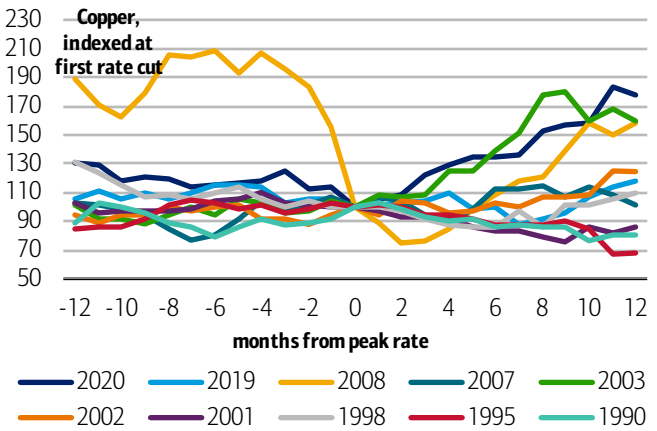
Exhibit 18: Fed funds policy rate and copper prices
Copper prices can benefit from the end of a hiking cycle



Source: Bloomberg , BofA Global Research

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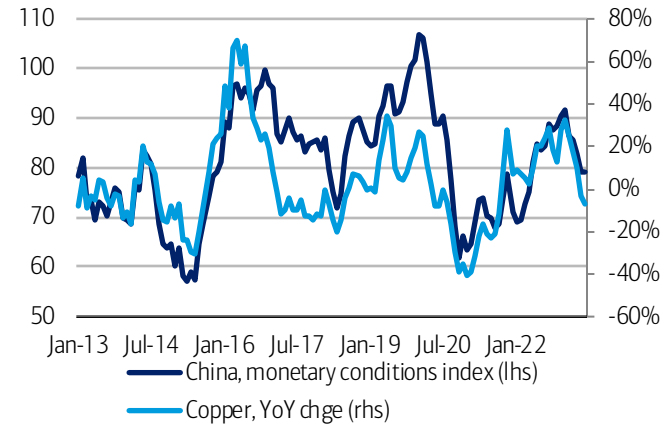
Linked to that, China's PBoC has already eased policy tentatively of late, which incidentally also has an impact on CNY. This matters because copper has tended to correlate closely with China's currency. Yet, Exhibit 20 highlights that this co-movement comes with a caveat: current CNY levels would justify copper prices of around $6,000/t ($2.72/lb), similar to the message from Exhibit 10. Yet, copper has not traded down to that level. Why is that? As noted, the energy transition has been a key factor.

Exhibit 19: China's monetary conditions and copper prices
Easing by PBOC would support copper prices



Source: Bloomberg , BofA Global Research

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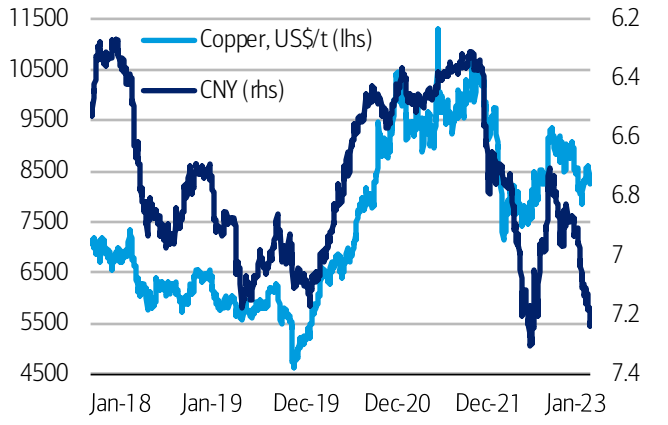
Exhibit 20: CNY and copper
CNY would justify copper prices around $6,000/t



Source: Bloomberg , BofA Global Research

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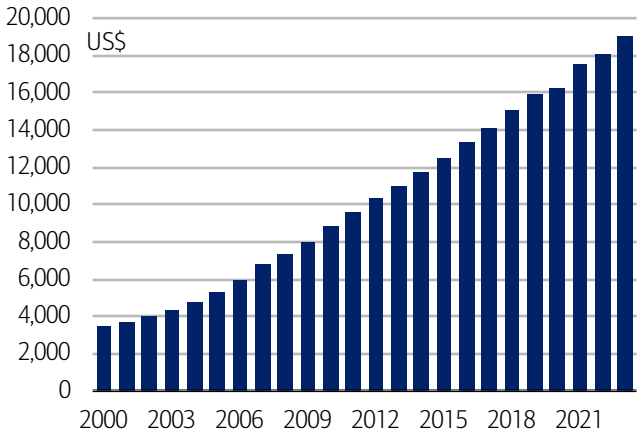
Revisiting China's structural problems

Productivity growth has slowed; debt is less effective in generating growth

Taking another look into the support from the energy transition, China industrialised rapidly after joining the WTO in 2001, with GDP per capita rising almost tenfold over the past 20 years, as Exhibit 21 outlines. Yet those growth rates have now slowed visibly (Exhibit 22). This deceleration is not unusual for emerging markets, often giving rise to concerns over falling into the middle-income trap, whereby rising wages erode competitiveness, making it hard for EMs to compete with DMs, which tend to be more productive and innovative.

Exhibit 21: China, GDP per capita
GDP per capita has risen steadily



Source: IMF, BofA Global Research

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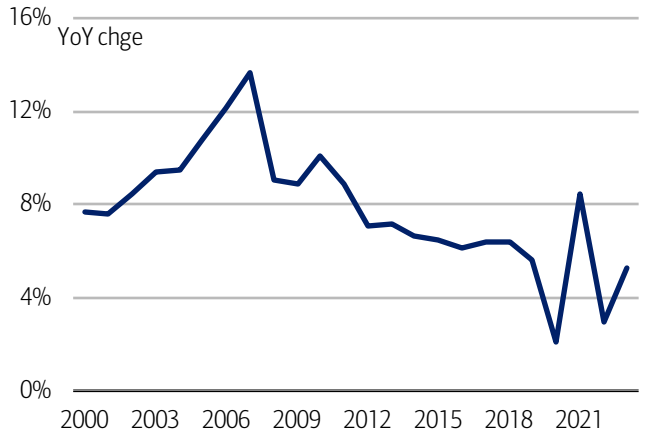
Exhibit 22: China, GDP per capita
The growth in GDP per capita has slowed gradually



Source: IMF, BofA Global Research

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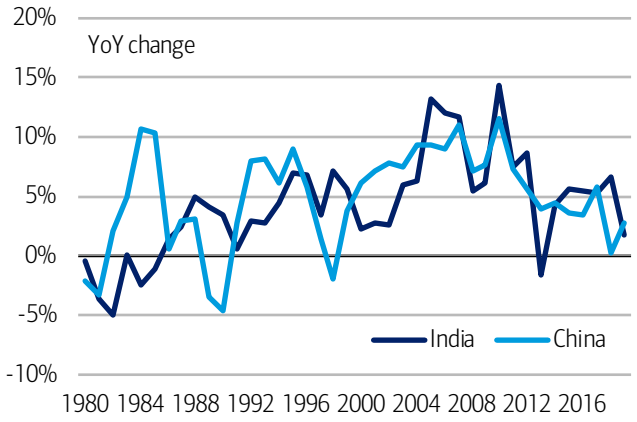
These issues are reflected in various growth metrics. Exhibit 23 shows, for instance, that China outpaced India's productivity growth in the decade before the Financial Crisis of 2007-08, but has since fallen behind. The structural headwinds to growth have also been mirrored in debt dynamics, with China now forced to spend more bucks to generate a unit of GDP growth (Exhibit 24).

Exhibit 23: Labour productivity per hour worked
China has fallen behind India



Source: Bloomberg, BofA Global Research

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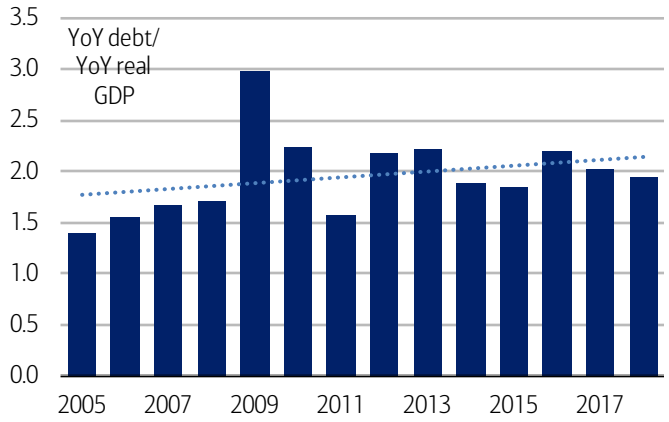
Exhibit 24: China, debt versus real GDP increases
Debt has delivered less bang for the buck



Source: Bloomberg, BofA Global Research

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China tackling shortcomings, which matters for metals

Encouragingly, China's authorities have acknowledged the issues at hand and are investing heavily in updating the country's industrial base to give the economy a sustained boost. Indeed, maintaining elevated growth is a focus of China's Communist Party, so it is not surprising that authorities are increasingly concerned about youth unemployment rates of 20%-plus.

Encouragingly, the government's ambitions have been captured in industrial policies like Made in China 2025, which ultimately targets making China the leading manufacturing power by 2049; whether that is achievable is a different question.

Exhibit 25: Key milestones in China
China aims to be the leading manufacturing power by 2049

Source: BofA Global Research

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Importantly for commodities, many of the industries China's government is focused on are metals-intensive. Exhibit 26 picks up on this, highlighting that new materials, along with energy savings and new energy vehicles, are seen as critical for the country. Indeed, the government takes a hands-on approach with industrial policy, guiding on capital allocation, policy coordination and tech-related innovation. Of course, this ultimately aims at lifting the country out of the middle-income trap through a transformation of the manufacturing base, which is set to focus on higher value-adding activity, that is increasingly independent of foreign technology.

Exhibit 26: China's 10 core industries
The government focuses on 10 core industries, many of which are metals-intensive

Source: BofA Global Research

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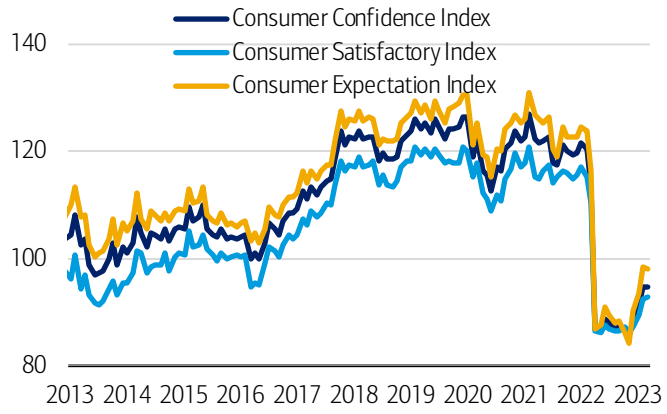
China is more about micro than macro

Post-reopening recovery is weaker than expected

Looking into the macro backdrop over recent weeks, our economists confirm that growth momentum eased notably after the post-reopening boost in 1Q23 (see here). Indeed, GDP expanded by 4.5% YoY in the first quarter, but the economy saw a broad-based growth moderation in key economic indicators in April-May. Industrial production, fixed-assets investment, and retail sales growth all came in weaker than expected, while export growth also fell into negative territory in May.

Why did growth lose momentum so soon? Some blame consumers for spending too little, but the truth is consumption almost never leads business cycles in China. Without pent-up demand due to Covid lockdowns, consumption would not have rebounded so strongly in 1Q23. Indeed during previous cycles, Chinese households preferred to increase their spending on the back of improved job security and income growth, so a rebound of investment usually precedes an increase in consumption. Given the income expectations and lingering concerns on job security, consumer confidence has yet to creep back to pre-Covid levels (Exhibit 27). Households have continued to build up their savings rather than investing or consuming, leading to elevated household new deposits even post-reopening (Exhibit 28).

Exhibit 27: Consumer confidence index
Consumer confidence restored after reopening, but still far below pre-Covid levels



Source: NBS

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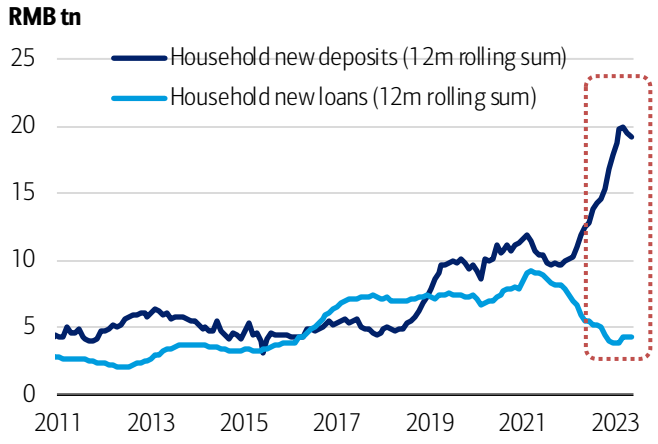
Exhibit 28: Household new deposits vs new loans
Households continued to save more rather than investing or consuming



Source: PBoC

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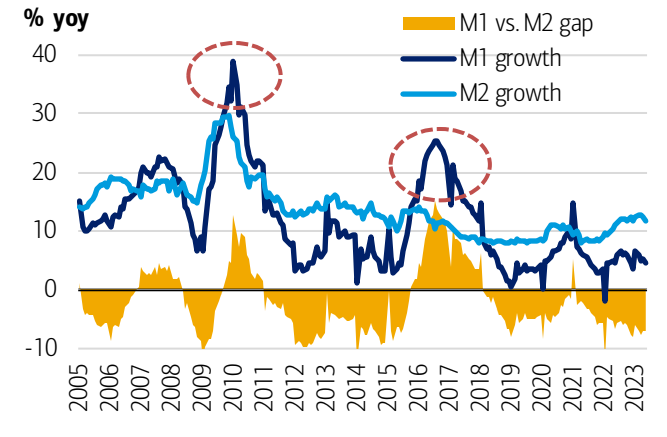
Credit demand is the issue, not supply

Monetary policy has become a focus of late. While important, this to some extent misses the ills in China: credit demand is the key issue, not credit supply, in our view. This has also been mirrored in comments from our colleagues in the economics team, who expected a new credit cycle to kick in about two months ago, with strong credit volume growth and low lending rates (see: April 2023 report), ultimately translating into stronger investment. However, a sharp weakening in sentiment among households, private firms, and even the public sector impaired credit demand and put the kibosh on capex plans.

Exhibit 29: M1 vs M2 growth
M1 growth failed to pick up in recent months despite strong credit growth



Source: CEIC

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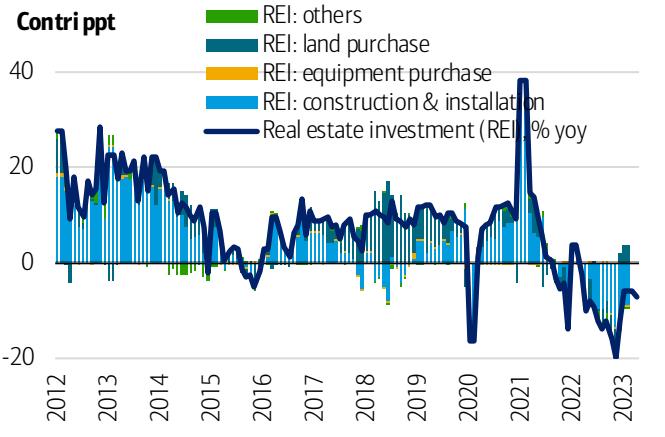
Exhibit 30: Real estate investment breakdown
Real estate investment weakened again in April despite a low year-ago base



Source: BofA Global Research, CEIC

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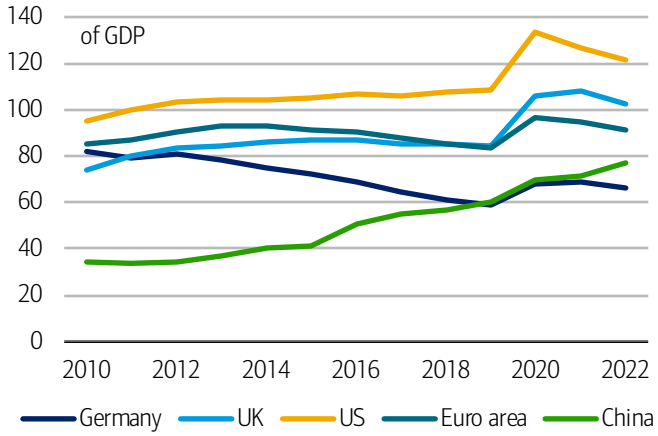
Indeed, while growth in M2 stayed elevated and medium- to long-term corporate loans continued to accelerate, the slow growth of M1 suggests few signs of corporates preparing for capex (Exhibit 29). Meanwhile, with regulations tightening on local government borrowing, public sector capex is slowing, instead of accelerating.

There are also downside risks to investment from weaker-than-expected property sales. After a short-lived improvement in Feb-Mar, new-home sales deteriorated in April-May. Signs of weakness also started to emerge in the secondary market. Disappointing sales growth held back property investment, including by SOE developers (Exhibit 30).

How to remedy the slow growth?

Our economists believe one of the best options for policy makers is to boost public sector leverage and expand infrastructure investment as soon as possible. To prevent deflationary pressure from setting in, China needs to see re-leveraging, by at least one sector. However, households and private businesses have remained reluctant to add leverage, and local governments are constrained by their hidden-debt build-up and diminished revenue. The only choice, and the most effective measure to stabilize growth, in our view, would be for the public sector to lever up.

Exhibit 31: Central government debt, of GDP
China's central government debt has risen, but it remains comparatively low



Source: IMF, BofA Global Research

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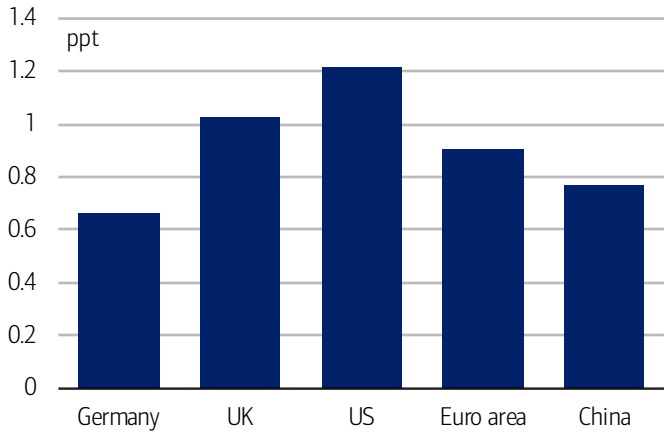
Exhibit 32: Cost of a 1ppt increase in interest rates, % of GDP
China's central government would be least affected by a 1ppt increase of policy rates



Source: IMF, BofA Global Research

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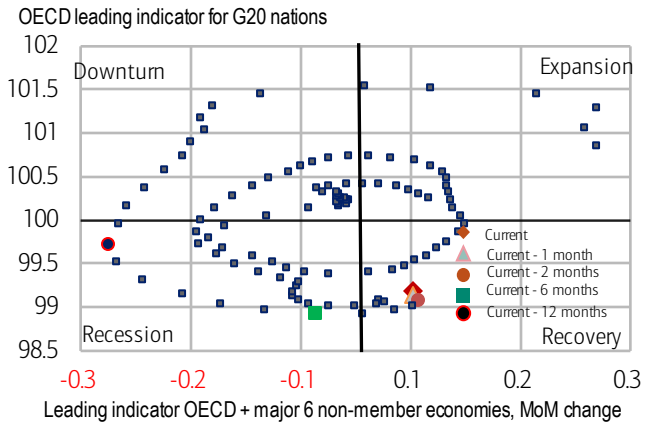
As such, the central government has room to grow its balance sheet, and policy banks will be the perfect conduit to not only address the existing local government financing vehicles (LGFV) stock of debts but also to offer new channels for future investment funding. This is mirrored by Exhibit 31, which shows that China's central government debt remains low compared to other countries, even if it has risen quickly. Exhibit 32 looks at this from a different angle: China's government would be among the least affected by a 1ppt increase in interest rates; incidentally, partially because the authorities in the country did not implement any meaningful support measures during the Covid pandemic, inflation and rates have remained low.

Exhibit 33: Commodity business cycle
The forward-looking business cycle has moved into "Recovery", led by China



Source: Bloomberg, BofA Global Research

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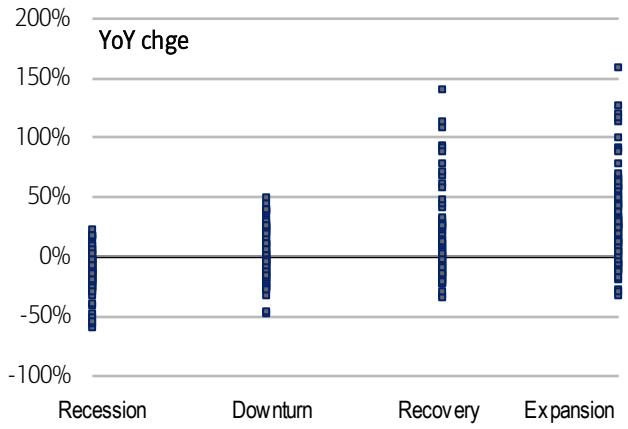
Exhibit 34: Commodity business cycle and copper prices
The "Recovery" phase tends to be bullish



Source: Bloomberg, BofA Global Research

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Encouragingly, one of our commodity business cycle analyses is in the "Recovery" phase (Exhibit 33), a rebound entirely driven by China. Keeping in mind that this analysis is forward-looking, prices should find support after summer.

Aluminium supply growth remains patchy

Production in China is rebounding

Concerns over the health of the global economy have been hanging over the base metals, pushing down prices in recent weeks. Despite this, the global aluminium market remains in deficit, predominantly on supply constraints. Indeed, hydro power generation contracted in China YoY, an issue for around 20% of the country's smelters. In Europe, the immediacy of the energy crisis has subsided, but many operators remain marginal: Aldel recently decided to permanently shut its 120kt smelter in the Netherlands.

Exhibit 35: Global aluminium production
Production is down in Africa and Europe, but rising elsewhere

	YTD 2023	YTD 2022	YoY change	Annualised May-23	Annualised May-22	YoY change	Annualised Apr-23	MoM change
Africa	656	667	-1.6%	1,590	1,637	-2.9%	1,570	1.3%
North America	1,587	1,577	0.6%	3,874	3,827	1.2%	3,893	-0.5%
Latin America	596	483	23.4%	1,436	1,189	20.8%	1,436	0.1%
Asia	1,929	1,901	1.5%	4,674	4,557	2.6%	4,684	-0.2%
West Europe	1,122	1,239	-9.4%	2,696	2,944	-8.4%	2,725	-1.1%
E.Europe	1,666	1,691	-1.5%	4,003	4,062	-1.4%	4,003	0.0%
Oceania	776	762	1.8%	1,884	1,778	6.0%	1,862	1.2%
Middle East	2,531	2,511	0.8%	6,111	6,075	0.6%	6,108	0.1%
Other non-IAI nations	776	776	0.0%	1,884	1,884	0.0%	1,874	0.5%
IAI ex-China	11,639	11,607	0.3%	28,152	27,952	0.7%	28,154	-0.0%
China	16,813	16,347	2.9%	40,739	40,550	0.5%	40,600	0.3%
IAI Total	**28,452**	**27,954**	**1.8%**	**68,891**	**68,502**	**0.6%**	**68,754**	**0.2%**

Source: IAI, BofA Global Research

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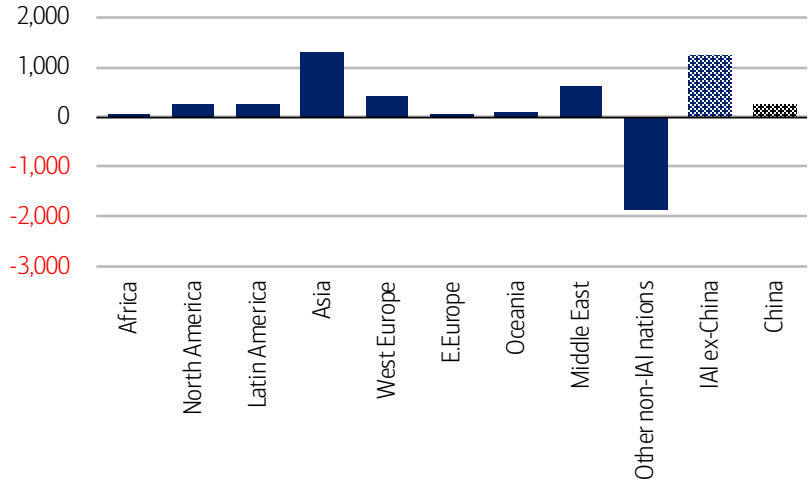
Our projections currently embed 1.4Mt more aluminium supply in 2023 than the annualised YTD run rates published by the International Aluminium Institute, partially because we see output increasing gradually throughout the year, also at smelters Yunnan province which had 2Mt of capacity shuttered in recent months. If we are wrong about these assumptions, the global aluminium supply shortfall may be bigger than we currently factor in. Aluminium should remain in a holding pattern, until there is more visibility on how strong metals demand will be, likely later in 3Q23

Exhibit 36: CY23 aluminium supply in our models, versus annualised YTD IAI production
We factor in almost 2Mt more aluminium supply than the run rate YTD



Source: Platts, Woodmac, CRU, Metal Bulletin, Reuters, Bloomberg, company reports, IAI, BofA Global Research

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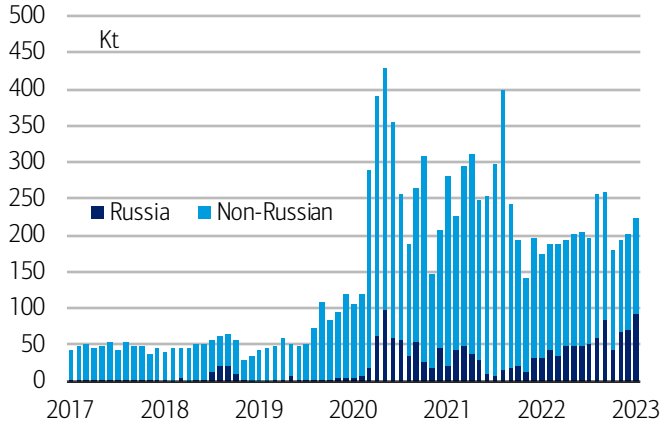
LME inventories a concern

The global market may lose some of Rusal's 4.2Mt aluminium units. If consumers do not renew contracts later this year (Glencore already said that its marketing agreement will not be renewed), this could increase pressure on the Russian company. LME inventories have been falling, and 45% of what is left has already been earmarked for removal; most of those tonnages are likely non-Russian material. With 52% of the tonnages left in the warehouses of Russian origin, the status quo is concerning. While volatility in time spreads and prices has so far been relatively muted, this may change if the London Metals Exchange is clogged with Russian tonnages consumers do not want to own.

Exhibit 37: China, aluminium imports by origin
China imports more aluminium from Russia



Source: Bloomberg, BofA Global Research

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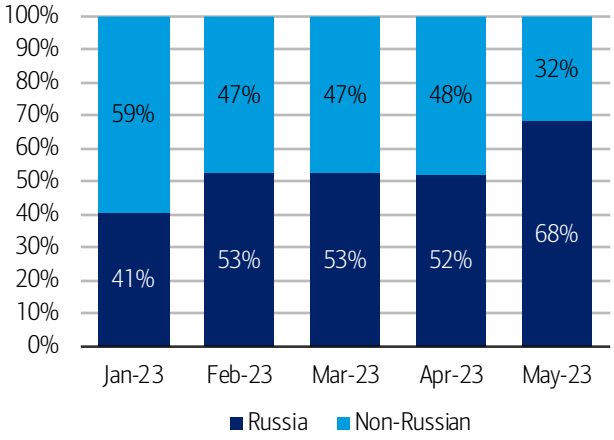
Exhibit 38: Breakdown of metal in LME warehouses by origin
Russian aluminium accounts for over 50% of metal stored in LME warehouses



Source: Bloomberg, BofA Global Research

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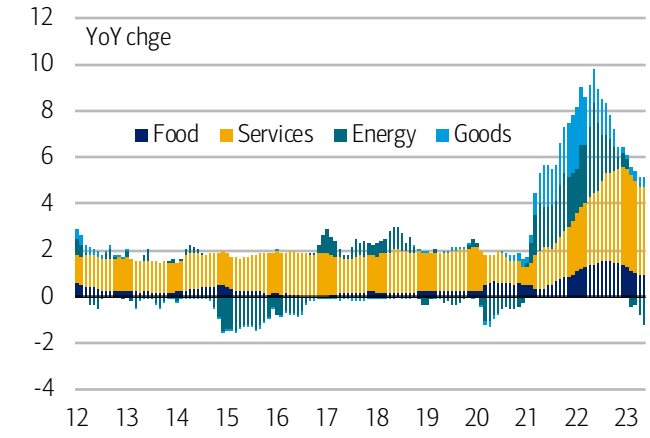
Gold: range-bound until the Fed stops hiking

Gold pushed above $2,000/oz in 2Q23, partially because the Fed was perceived to have reached the end of the hiking cycle. Yet, prices are again trading below the all-time highs because central banks around the world are focused on bringing inflation down. Exhibit 39 picks up on this, highlighting that lower energy prices and a reduction in goods inflation is helping monetary authorities. That said, inflation has been sticky in services. Inflation expectations have also remained elevated (Exhibit 40).

Exhibit 39: US, breakdown of headline CPI
Services inflation is the key issue



Source: Bloomberg, BofA Global Research

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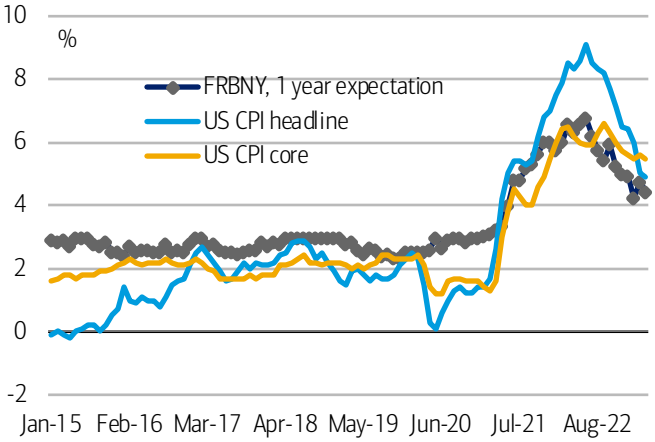
Exhibit 40: US, CPI and inflation expectations
Both CPI and inflation expectations have been sticky



Source: Bloomberg, BofA Global Research

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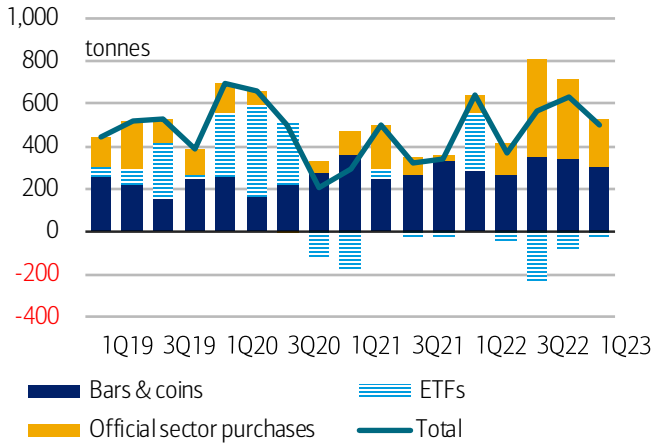
Of course, the macro backdrop has also been reflected in investor flows, with Exhibit 41 highlighting that aggregate non-commercial purchases remain below the levels seen in 2019/20, when prices last rallied on a sustained basis.

Exhibit 41: Breakdown of gold investor demand
ETF outflows are an issue



Source: World Gold Council, BofA Global Research

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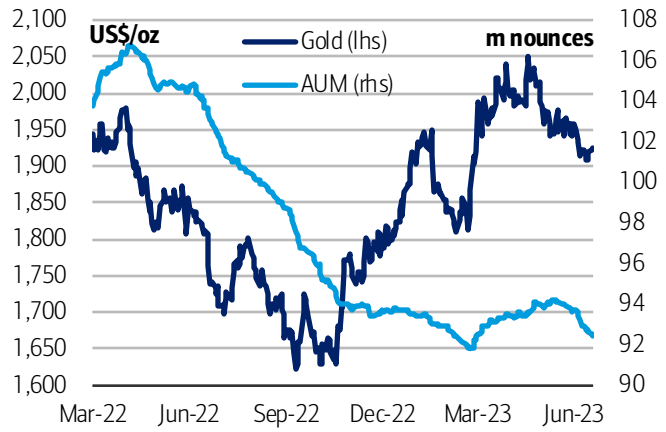
Exhibit 42: Gold prices and assets under management at ETFs
Retail investors show limited interest in ETFs



Source: Bloomberg, BofA Global Research

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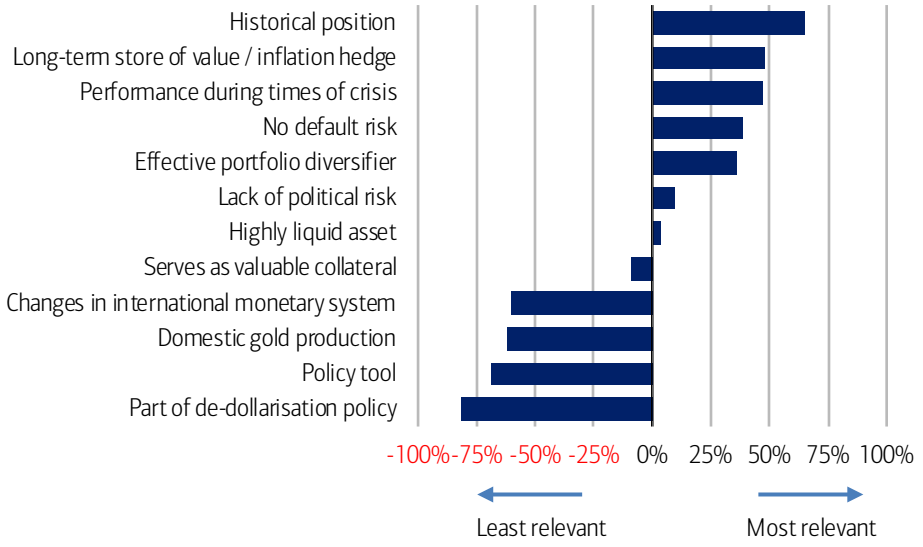
Outflows from physically backed ETFs have been a key issue, as Exhibit 42 highlights. Or put differently: gold prices are unlikely to rally until assets under management at these vehicles increase. This however, is unlikely to happen until the Fed reaches the end of the hiking cycle. Until then, the gold market looks supported at best, also because central banks keep increasing their gold holdings.

Exhibit 43: Central Bank Gold Survey, motives to own gold
Central Banks have different motives owning gold



Source: World Gold Council, BofA Global Research

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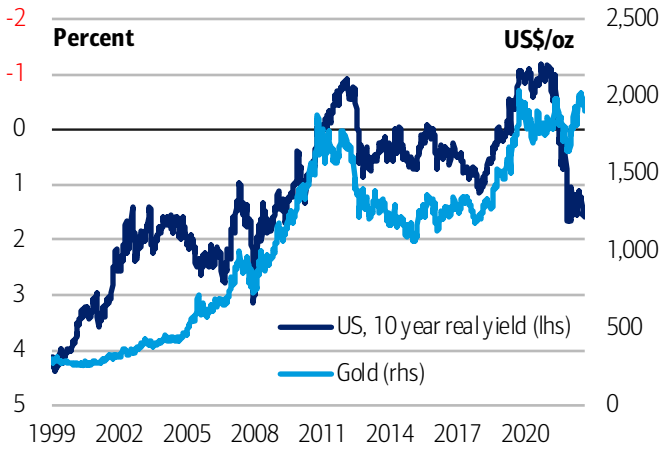
Incidentally, these central bank purchases are also one reason, gold has de-coupled to some extent from US 10-year real rates and USD, as Exhibit 44 and Exhibit 45 outline.

Exhibit 44: US rates and gold
Gold has decoupled from rates



Source: Bloomberg, BofA Global Research

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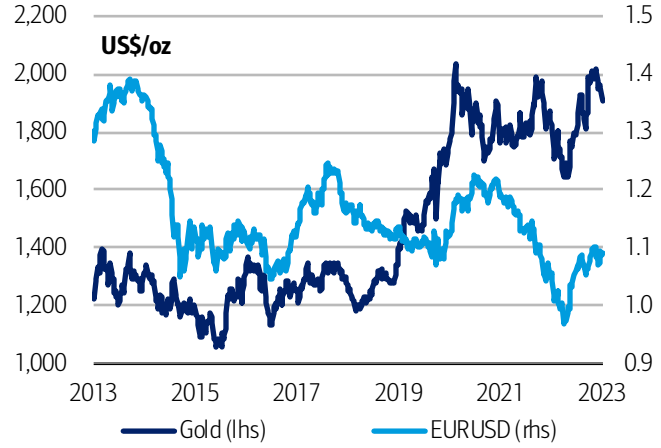
Exhibit 45: EUR and gold
EUR could justify much lower gold prices



Source: Bloomberg, BofA Global Research

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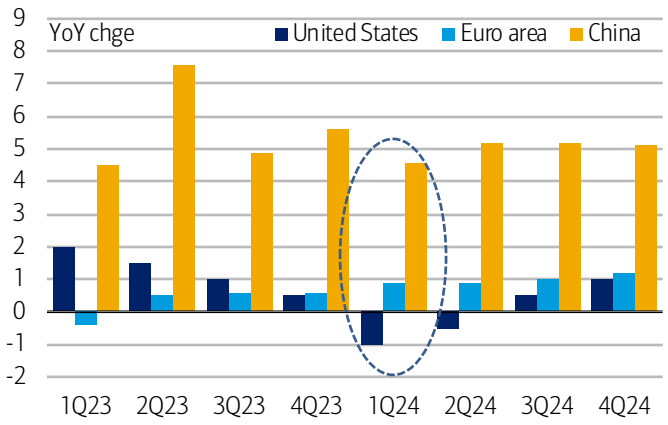
Silver: to outperform gold when global economy rebounds

Silver has been trading in a range over the past few months, also because traditional industrial demand has been weak. With the global economy not to bottom out until 2024, this is unlikely to change for now. That said, once buyers return to the market, we believe silver should start outperform gold (Exhibit 47).

Exhibit 46: BofA's GDP growth expectations
The global economy is set to bottom out in 2024



Source: BofA Global Research

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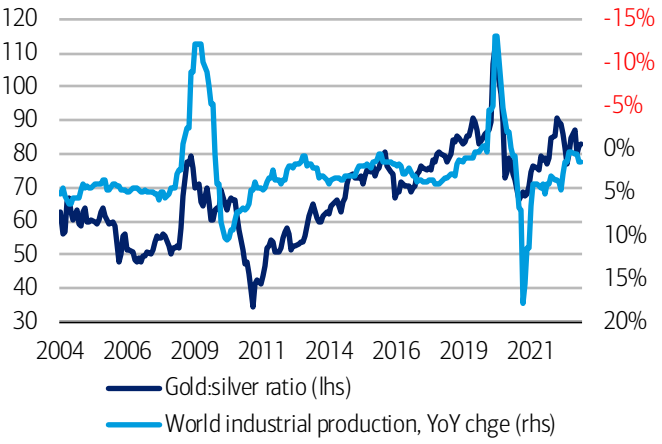
Exhibit 47: Global industrial production and gold:silver ratio
Rising growth would support silver relative to gold



Source: Bloomberg, BofA Global Research

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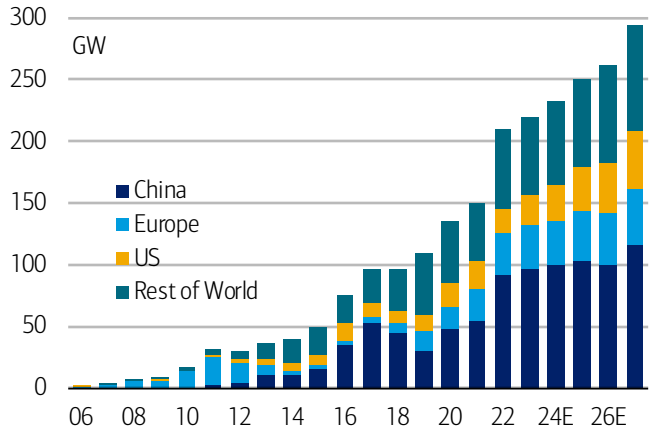
At that junction, demand from the energy transition, which has trended higher steadily in recent years, should also start being felt in fundamentals (Exhibit 48 and Exhibit 49).

Exhibit 48: Solar installations
PV installations are increasing steadily



Source: IEA, BofA Global Research estimates

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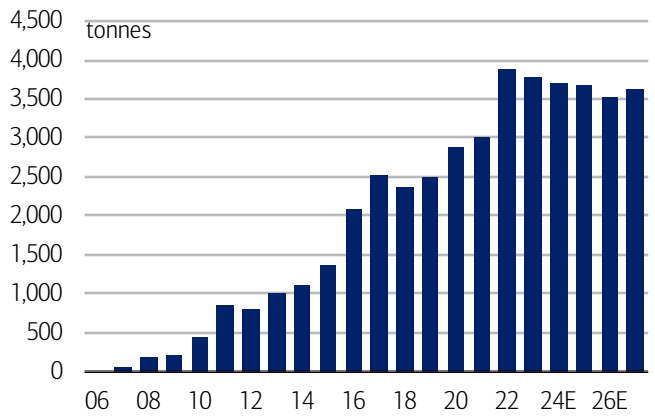
Exhibit 49: Silver demand from solar panels
Silver demand is set to stabilise at elevated levels



Source: IEA, Silver Institute, BofA Global Research estimates

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Steel: China's mills have been under pressure

Activity slows in China mills as new starts tumble further

Production discipline at China's steel mills, steel prices off the lows

With new housing starts in China declining, confidence in the country's steel industry has been subdued. Indeed, continued headwinds to steel prices have sharply offset lower iron ore prices early in 2Q. Negative mill margins then prompted some production discipline at steel producers. These curtailments have helped stabilise the steel market, a dynamic that could become more entrenched, especially if demand improves.

Property remains the missing piece in steel demand

While activity in China's property sector is bottoming out, real estate is not out of the woods yet. True, completions have rebounded and were up +19% YoY in May, but steel-intensive new starts keep running behind and are down -22% YoY. Linked to that, China's steel demand has fallen by 3.3% YoY this year, albeit this is a slight improvement on the -8.8% decline in 2022. Our equity research colleagues in China recently highlighted that the property market has slowed since Apr'23 and local salespeople and property experts believe more meaningful measures from the central government are needed.

Infrastructure – the silver lining, particularly renewables

If that's the reality today, what's next for the Chinese steel industry? Property remains the main headwind for steel demand long-term, as housing demand declines on various dynamics, including demographics out to 2030. Yet, infrastructure might be the silver lining for steel. Indeed, while property has long been the top steel-consuming sector, its share in demand has been declining from 38% in 2020, to 30% today; this compares to infrastructure's share of 24%. Digging a bit deeper, markets often don't acknowledge how important steel is for the energy transition. Yet, in the end, solar and wind require between 35 and 45 tons of steel and 120-180 tons per MW of capacity installed. So April's 79% YoY spending increase in grid infrastructure does matter. Looking further out, we see potential for green spending to entirely offset the decline in steel demand from property by 2030.

US: steel prices have rallied sharply

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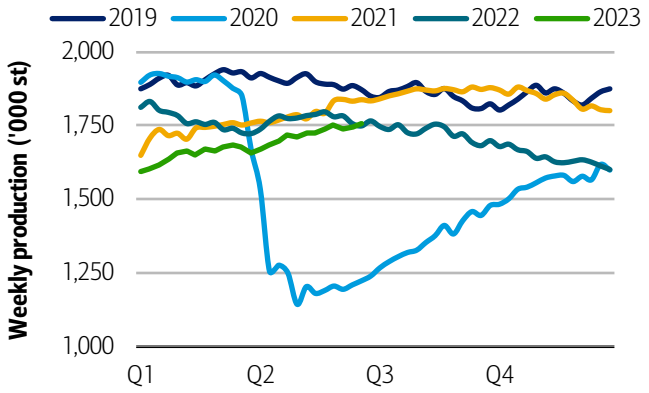
After seeing a >80% rally to ~$1,200 per short ton (/st) through mid-April, U.S. hot-rolled coil (HRC) price corrected to ~$850/st level by mid-June. The pace and magnitude of the correction was indeed higher than our expectation, with HRC averaging $1,063/st in 2Q23 (~8% below our prior forecast of $1,150/st). As domestic supply situation improved (blast furnace restarts + new capacities ramp; see Exhibit 50), panic buying/restocking activity came to an end and buyers quickly moved to the side-lines. HRC lead times declined sharply from ~9 weeks in March to ~5 weeks by mid-June (see Exhibit 51).

Exhibit 50: U.S. weekly steel production
Production has increased ~10% since the start of the year



Source: American Iron and Steel Institute (AISI), BofA Global Research

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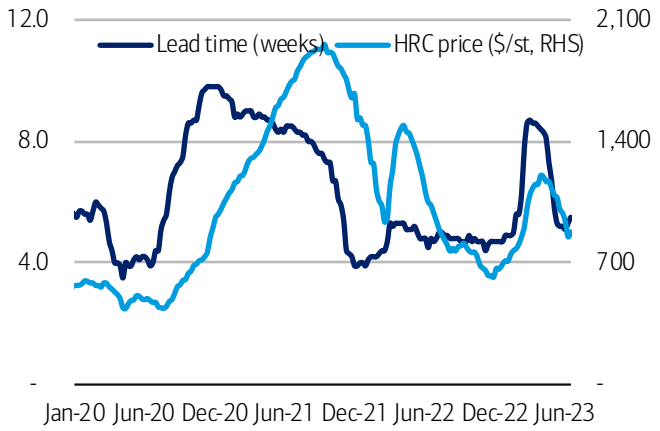
Exhibit 51: U.S. HRC lead times vs. price
HRC lead times declined from ~9 weeks in March 2023 to ~5 weeks by mid-June



Source: Platts, CRU, BofA Global Research

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According to domestic mills, underlying demand continues to be robust, with automotive production improving and order activity from construction, industrial, and energy sectors remaining solid. As seen in the table below, year-to-date (YTD) 2023 apparent steel demand is estimated to be largely flat on a sequential basis (1H23 vs 2H22). The price action over the past 4 quarters highlights the power of destocking / restocking cycle within a highly concentrated domestic sheet market (top 4 companies = >80% of hot strip mill capacity).

Exhibit 52: US apparent steel demand
H1'23E apparent steel demand is flat versus H2'22, but down 8% on a year-on-year (YoY) basis

	Q1'22	Q2'22	Q3'22	Q4'22	Q1'23	Q2'23E	H1'23	H2'22	H1'23 / H2'22	H1'22	H1'23 / H1'22
Crude steel production	22.3	23.0	22.5	21.1	21.5	22.4	43.9	43.5	1%	45.2	-3%
Imports (finished steel)	6.6	6.8	6.2	5.6	5.7	5.9	11.6	11.8	-2%	13.5	-14%
Exports	2.1	2.2	2.1	1.8	2.2	2.1	4.3	3.9	8%	4.3	0%
Net imports	4.6	4.6	4.1	3.8	3.5	3.8	7.3	7.9	-7%	9.2	-21%
Apparent steel use	27.7	27.5	26.7	24.2	24.8	26.3	51.0	50.9	0%	55.2	-8%
Import market share	*23.9%*	*24.8%*	*23.3%*	*23.1%*	*22.9%*	*22.4%*	*22.6%*	*23.2%*	*-58 bps*	*24.4%*	*-173 bps*
US HRC average ($/short ton)	1,222	1,325	837	687	859	1,063	961	762	26%	1,274	-25%

Source: AISI, US Census Bureau, CRU, BofA Global Research

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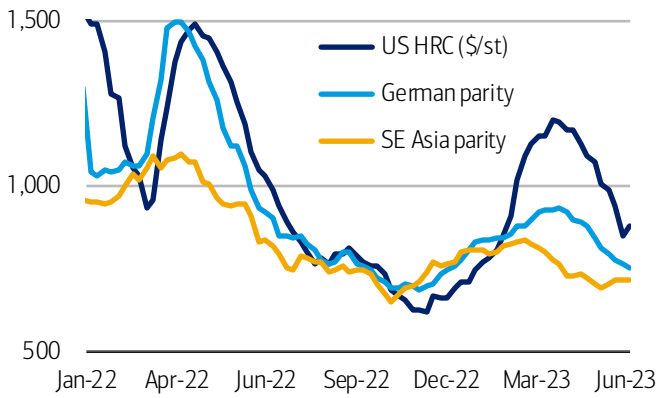
With Service Center inventories moving lower, US domestic mills announced $50-100/st price hikes during mid-to-late June, targeting a base HRC price of $900-950/st. The

announcements led to a modest increase in ordering activity. Lead times extended slightly by 0.4 week, albeit supposedly driven by large, discounted deals done near $800/st levels (per Platts/SMU).

Looking ahead, the realization of the announced price hikes, will likely depend on the Service Centers' appetite to restock. We do not expect the price increases to be sustainable. We see continued downside risks to pricing amid 1) rising domestic production (ramp-up of new electric arc furnace (EAF) sheet capacities and competition for market share), 2) further increases in import volumes with the import arbitrage continuing to remain wide (May preliminary flat-rolled imports and June permits are at the highest levels since August 2022) and 3) a typical seasonal slowdown in Q4 (tempering the potential for supply chain restocking).

Exhibit 53: U.S. HRC vs regional import parity price
Import arbitrage remains wide at $100-150/st



Source: BofA Global Research estimates, CRU, Platts

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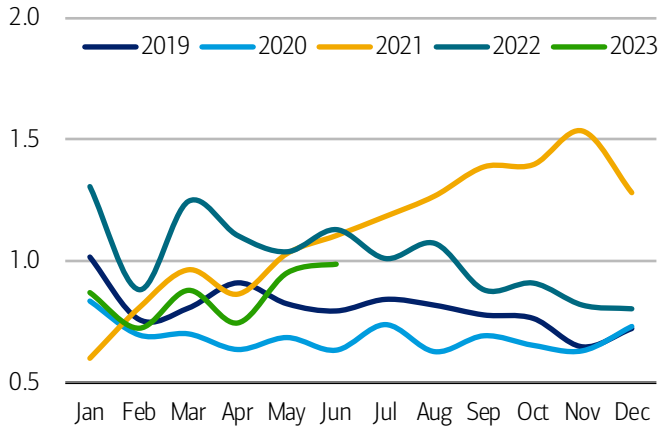
Exhibit 54: U.S. carbon flat-rolled steel imports (m st)
May imports / June permits at the highest level since August 2022



Source: US Census Bureau, BofA Global Research

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We therefore lower our 2023E full year price forecast by 4% to $880/st. Upside risks include production disruptions at any of the domestic mills (and/or idling of one or more Blast Furnaces), a continued delay in the restart of the AHMSA mill in Mexico, stronger-than-expected underlying demand / restocking and improvement in foreign steel pricing. For 2024, we maintain our full year average forecast at $770/st, but adjust our quarterly numbers to account for a stronger rebound in H1'24 (seasonal pickup in activity, underpinned by demand from spending related to Infrastructure Investment and Jobs Act (IIJA), Inflation Reduction Act (IRA) and reshoring). Our European Steel team forecasts an HRC price of $749 per metric tonne which translates to a US import parity price level of $752/st, largely in-line with our US HRC price forecast of $770/st.

Exhibit 55: Updated US hot-rolled coil (HRC) price forecasts
Modestly lowering 2023 prices, while maintaining full year 2024 average forecast

Product	Unit	2020	2021	2022	Q1'23A	Q2'23A	Q3'23E	Q4'23E	2023E	Q1'24E	Q2'24E	Q3'24E	Q4'24E	2024E	2025E
US Hot Rolled Coil	USD/Short Ton	577	1,580	1,018	859	1,063	875	725	880	775	825	765	715	770	700
Change vs prior	%				0%	-8%	-3%	-3%	-4%	11%	10%	-10%	-8%	0%	0%

Source: BofA Global Research estimates, CRU

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US supply and demand forecasts

We forecast US apparent steel demand to decrease slightly in 2023E (following a -8% YoY decline in H1). Stronger construction demand and continued recovery in automotive production should drive higher steel consumption in 2024E.

Exhibit 56: US steel supply and demand model
US apparent steel demand is forecast to decrease 1% YoY in 2023E; stronger construction and auto demand to drive a consumption rebound in '24E.

(in m short tons)	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Crude steel production	87	90	95	97	80	95	89	90	95	98
% change	-0.5%	4.0%	6.1%	1.3%	-17.1%	18.0%	-6.1%	1.5%	5.0%	4.0%
Capacity	123	122	122	121	118	116	115	118	122	126
% change	-1.0%	-0.9%	0.4%	-0.7%	-2.9%	-1.1%	-1.6%	2.7%	3.7%	3.4%
Capacity utilization (AISI/BofAe) (%)	*70.5%*	*74.0%*	*78.2%*	*79.8%*	*68.1%*	*81.2%*	*77.5%*	*76.6%*	*77.6%*	*78.0%*
Imports (finished steel)	26	30	26	21	16	23	25	24	23	22
% change	-16.4%	12.2%	-13.1%	-18.1%	-23.3%	41.1%	11.0%	-5.0%	-5.0%	-3.0%
Exports	9	10	9	7	7	8	8	8	9	9
% change	-6.4%	12.8%	-16.2%	-15.9%	-9.9%	23.5%	1.0%	3.0%	3.0%	3.0%
Net imports	17	19	17	14	10	15	17	16	14	13
% change	-20.9%	11.9%	-11.4%	-19.2%	-30.5%	53.2%	16.5%	-8.9%	-9.4%	-6.7%
Apparent steel use	104	109	112	110	91	108	106	105	108	111
% change	-4.4%	4.4%	2.5%	-1.0%	-17.4%	18.0%	-1.5%	-0.9%	2.9%	2.6%
Import market share (%)	*25%*	*27%*	*23%*	*19%*	*18%*	*21%*	*24%*	*23%*	*21%*	*20%*
BofA US HRC ($/short ton)	521	616	830	601	577	1,580	1,018	880	770	700

Source: BofA Global Research estimates, AISI, US Census Bureau, CRU

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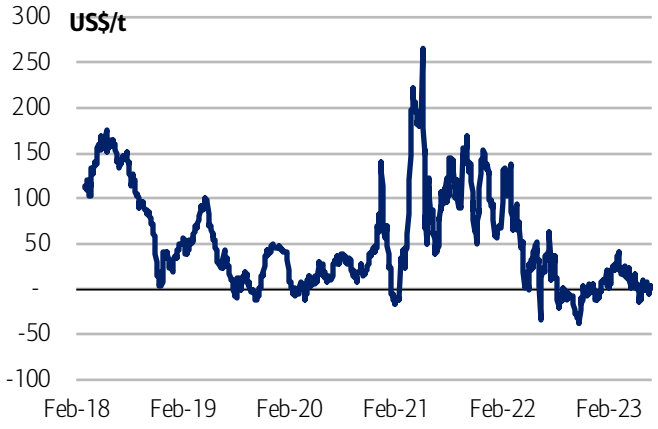
Iron ore: China's mills have been destocking

Mill margins may pull iron higher short term

Iron ore rallied to $133/t in mid-March from $80/t in November 2022 on optimism around a re-opening of China's economy and rising steel production, although weaker shipments from Brazil, the world's second-largest iron ore supplier also helped lift prices. Yet, iron ore then came under pressure on weak fundamentals in China's steel market. In particular, mill margins were very low (Exhibit 57), incentivising operators to destock ores (Exhibit 58). Some production discipline and improved sentiment has since lifted steel prices, pulling iron ore along with it.

Exhibit 57: Margins at Chinese steel mills (BF)
Yet, margins failed to pick up, reflecting weak underlying fundamentals



Source: Bloomberg, BofA Global Research estimates

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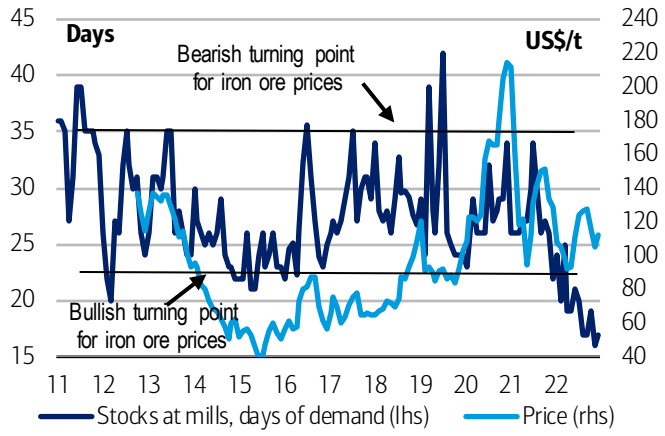
Exhibit 58: Iron ore prices and stocks at Chinese steel mills
Iron ore inventories at mills dropped to record lows; improving margins could prompt a restock, driving iron ore prices higher



Source: Bloomberg, Mysteel, BofA Global Research

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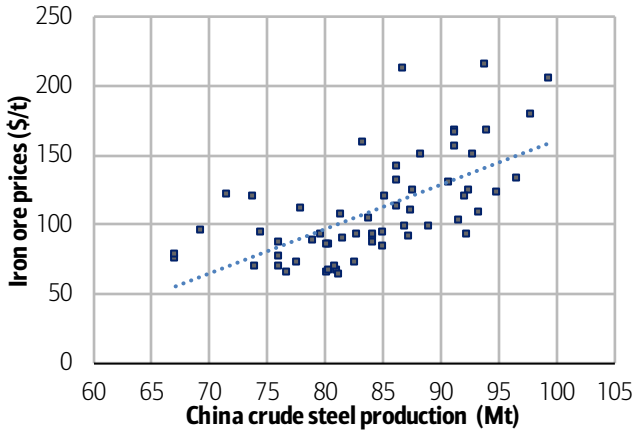
Looking through summer, we think two factors should determine iron ore dynamics: 1) steel production caps, which are bearish and 2) higher steel prices, which are bullish. Indeed, the latter could ultimately prompt some iron ore restocking, lifting prices into summer and autumn.

Yet China's steel mills remain under pressure...

China's mills faced a challenging mix in 1Q23: steel production accelerated, demand remained subdued, inventories built and steel prices fell. At the same time, iron ore prices rallied, mill margins compressed and operators reduced inventories. Iron ore stocks are now at the lowest levels since we started tracking them. The latest PMI

report highlights that China's manufacturer sector has been slow to re-accelerate. Worryingly, we expect the property sector in China to fall another 7% this year, with infrastructure investment providing only a partial offset. As such, iron ore prices have come under pressure more recently. Should China's economy reaccelerate going forward, steel prices may find support and lead to iron ore restocking. Bringing inventories at mills back to "normal" levels could justify prices at $120/t in 3Q23.

Exhibit 59: Iron ore prices and China crude steel production (2018-2022)
Iron ore prices is positively correlated to Chinese steel production



Source: Bloomberg, BofA Global Research

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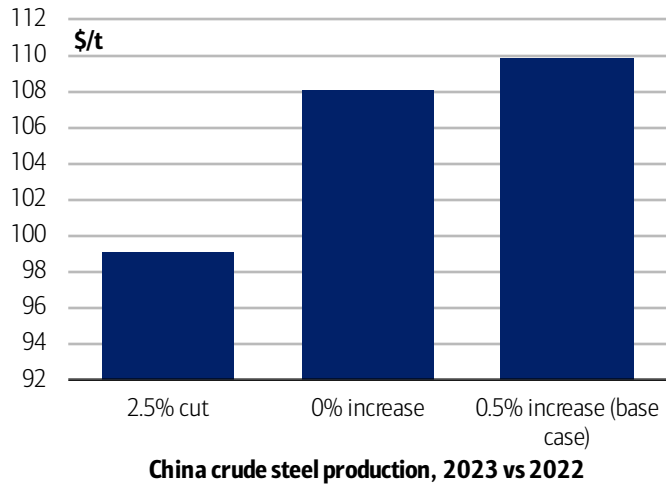
Exhibit 60: Iron ore average price scenarios, 2Q23-4Q23
Capping China's steel production at 2022 levels implies lower iron prices



Source: Bloomberg, BofA Global Research estimates

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...and we see downside risks to ores in 2H23

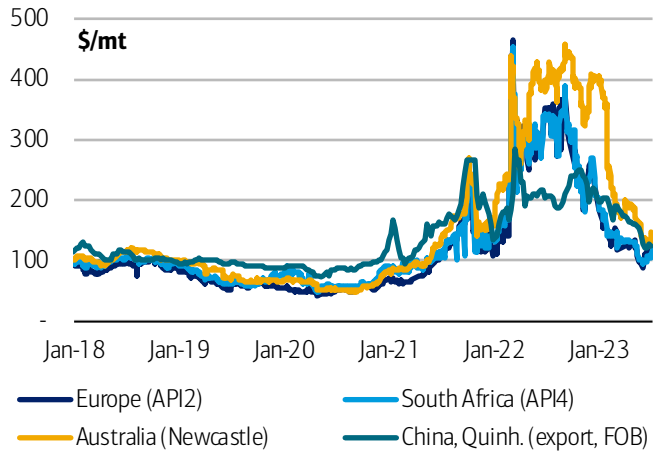
Iron ore shipments usually have a weak start to the year seasonally, but then accelerate through spring and summer. Exports from Brazil have been particularly challenged YTD, but more volumes should hit the market in the coming months. Overall, we expect shipments to hold up throughout the year, as major miners have kept production guidance unchanged and we factor in 7Mt of additional iron ore supply in CY23 from the four major producers (it is worth keeping in mind that supply from Australia/ Brazil is seasonal, so can increase by up to 40Mt between 1Q and 3Q). This suggests to us that, beyond the upside from re-stocking, which may boost iron ore demand by 70Mt (this assumes a restock to the maximum levels seen in the past), fundamentals will ultimately weaken. As such, we think iron ore should come under sustained pressure as we approach 2024.

Thermal coal: reduced demand and increased supply

Seaborne coal prices pulled back on reduced demand...

Two main factors came together simultaneously in 2022 to create the largest-ever spike in thermal coal (and natural gas) prices: Europe's move to ban Russian coal imports and the attack that permanently damaged the Nordstream natural gas pipeline. Following the astonishing increase in global coal prices in 2022 due to Russia (see Global Energy Weekly: Mind the Russian energy gap), all the main benchmarks have retraced significantly (Exhibit 61) on a combination of reduced demand and increased supplies. Naturally, the drop in European and Asian LNG prices (Exhibit 62) has also been a key contributor to help push thermal coal down from Europe to the US to Australia to South Africa (see Global Energy Weekly: EU gas still soft, but prone to shocks).

Exhibit 61: Global thermal coal prices
Seaborne thermal coal prices have retraced on reduced demand and increased supplies



Source: Bloomberg, McCloskey

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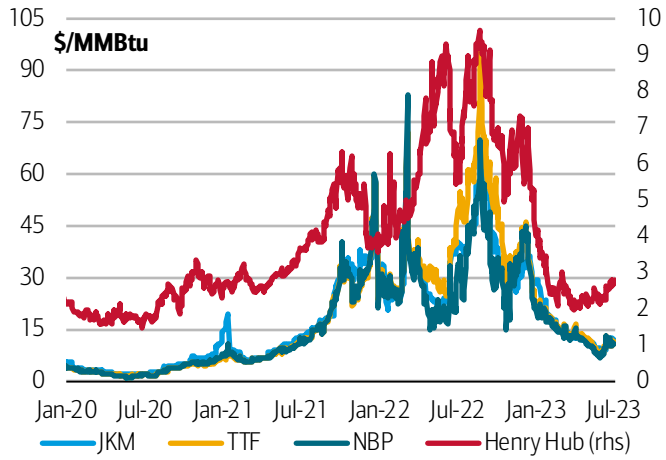
Exhibit 62: Global gas prices
The sharp drop in global gas prices has also been a key driver in pushing thermal coal prices down



Source: Bloomberg

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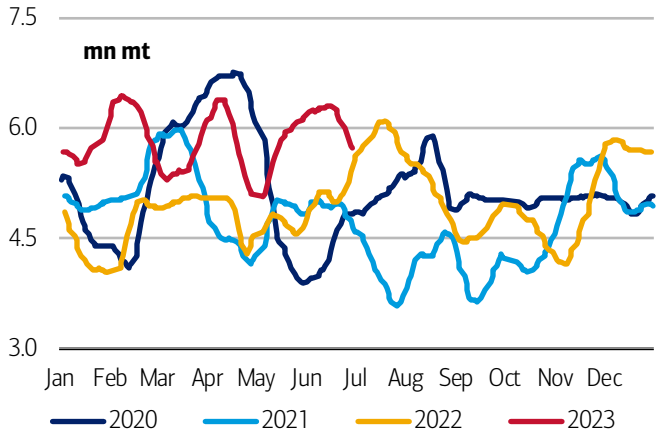
...although China coal imports remain at very high levels

Following the large-scale gas, coal and power price spikes last year, Europe has been able to rebuild natural gas and even coal inventories, helped by a warm winter, high LNG import volumes, large-scale industrial demand destruction, and better non-thermal electricity generation conditions. A weaker global economic backdrop and large-scale substitution has also helped reduce price tensions, coupled with a near 400mn ton increase in Chinese domestic supplies last year. While European coal demand softened and China's economy has yet to strengthen substantial after the post Covid reopening, both regions have continued to build coal stocks at ports and power stations (Exhibit 63), mostly citing energy security concerns linked to geopolitical instability. As such, Chinese imports of coal are up 94% year-on-year, driven by strong volume growth from Australia, Russia, and Indonesia (Exhibit 64).

Exhibit 63: Coal inventory at Qinhuangdao port, 7-day MA
Despite record high domestic supplies, China has continued to build coal stocks as it prioritizes energy security



Source: CEIC

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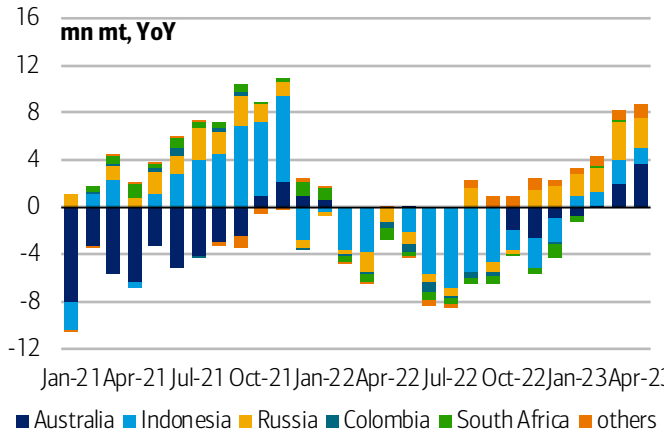
Exhibit 64: YoY change in import destinations for China steam coal
Chinese coal imports have almost doubled this year, with strong volumes coming from Australia, Russia and Indonesia



Source: McCloskey

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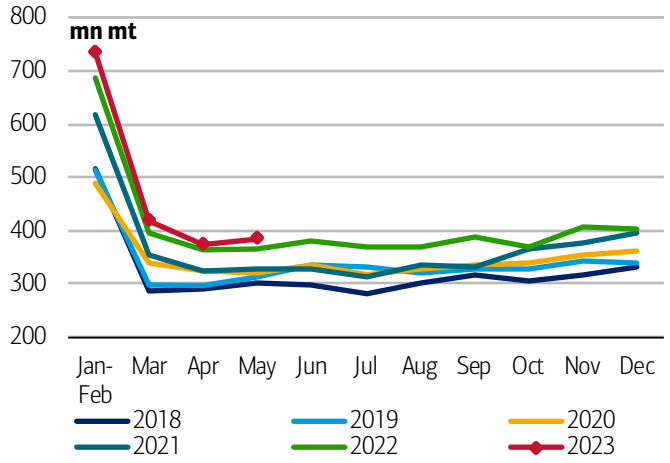
Increased output from China, Indo pushed coal lower...

While imports have been strong, Chinese domestic supply has continued to expand at the breakneck pace of 5%, quite a feat for the producer of half of the world's coal (Exhibit 65). As such, China is on target to grow production by 200mn tons, or slightly

under a quarter of the annual seaborne coal market volumes of 900mn tons. Yet profitability is starting to become an issue as prices locally fall towards production break-even levels. Meanwhile, Indonesia's production is also up double digits as the local industry aims to produce a total 694mn tons in 2023, pressuring prices lower (Exhibit 66). Russian coal exports are also up 5% YoY, but about two fifths of Russian coal miners were loss making in 1Q23 as a result of the steep discounts forced on Russian materials below the global coal price.

Exhibit 65: China crude coal production
China domestic coal supply growth continues at a strong pace, likely adding another 200mn mt this year



Source: CEIC

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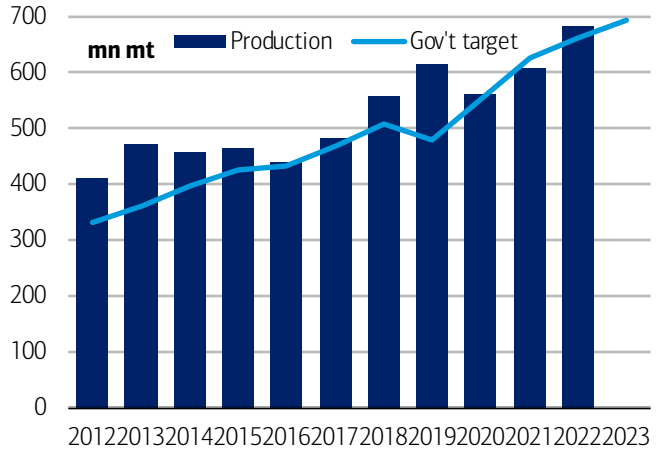
Exhibit 66: Indonesia production and government target
Indonesia is also boosting domestic output and is on track to meet its 2023 target of 694mn mt



Source: McCloskey

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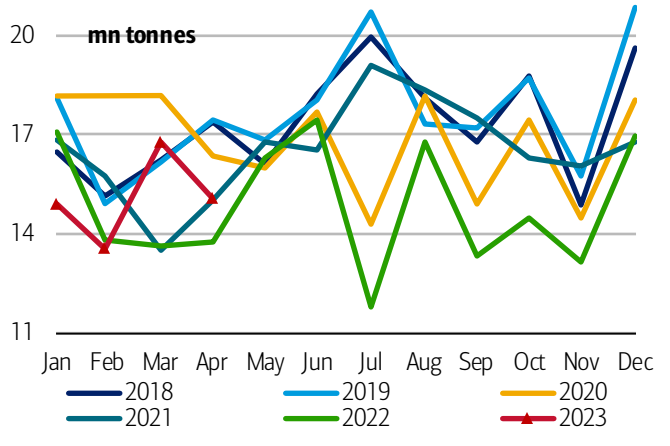
...but the market should stabilise at current price levels

Moreover, any further increases in Australian supplies are at risk (Exhibit 67), as budget pressures in the New South Wales (NSW) government's finances have sparked calls for a review of the state's royalty taxes on coal production. Currently, NSW taxes are significantly lower than those in the adjacent Queensland region (NSW produces mostly thermal coal, while Queensland predominantly produces metallurgical coal).

Exhibit 67: Thermal coal exports ex. lignite: Australia
Exports from Australia have improved since March and are currently up by 3.5% YoY YTD



Source: McCloskey

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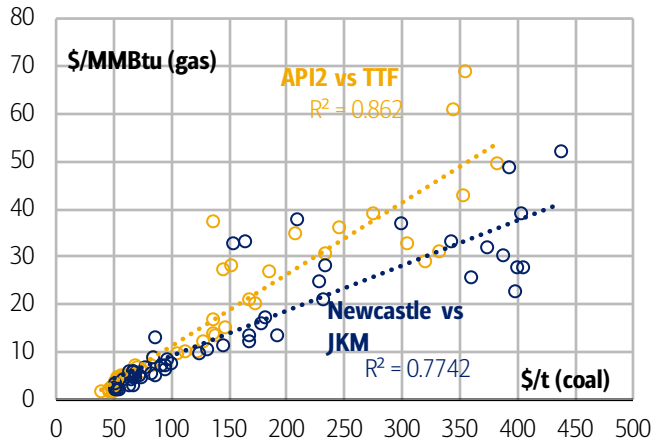
Exhibit 68: Thermal coal vs natural gas (monthly averages, 2020 to date
A further collapse in global gas prices could put more downside pressure to thermal coal prices



Source: Bloomberg, BofA Global Research

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Beyond Australia, there is a risk that Colombian miners curb supplies if local prices fall below $70/t while South African exports could roll back on maintenance during the

summer. As a result, we see Newcastle coal prices stabilising at around the current levels for now and maintain our 2024 and 2025 Newcastle forecasts intact. But we lower our forecasts to $162/t in 2H23 from $182/t prior to adjust for somewhat weaker than expected conditions. The key downside risk to our view would be a further collapse in global gas prices from the current levels of $10-12/MMBtu (Exhibit 68).

Uranium: bullish outlook

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BofA price forecasts

Based on a 2% mark-to-market lower for Q2'23 prices, and a slightly higher forecast for Q4'23E (2% higher to $59/lb) given our expectation for a pick-up in direct utility buying in the spot market, we maintain our 2023E uranium price at $55.80/lb.

Exhibit 69: Updates to quarterly uranium (U_3O_8) price forecasts
We mark Q2'23 lower but increase Q4'23E for a net no-change for 2023E

	US$/lb	Q1'23A	Q2'23A	Q3'23E	Q4'23E	2023E
Old	U_3O_8	*50.28*	*55.00*	*60.00*	*58.00*	*55.80*
New	U_3O_8	*50.28*	*53.80*	*60.00*	*59.00*	*55.80*
% change	U_3O_8	0%	-2%	0%	2%	0%

Source: BofA Global Research estimates, UxC, LLC

BofA GLOBAL RESEARCH

We reiterate our 2023E and longer-term uranium (U_3O_8) price forecast.

Exhibit 70: BofA annual uranium (U_3O_8) price forecasts (in $/lb)
We continue to see strong tailwinds to uranium pricing over the next two years (through to 2025E)

	US$/lb	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E (LT)
Current	U_3O_8	*22.06*	*24.54*	*25.89*	*29.49*	*34.90*	*49.54*	*55.80*	*66.30*	*75.00*	*67.10*	*59.20*	*51.25*
yoy change	%	-17%	11%	6%	14%	18%	42%	13%	19%	13%	-11%	-12%	-13%

Source: BofA Global Research estimates, UxC, LLC

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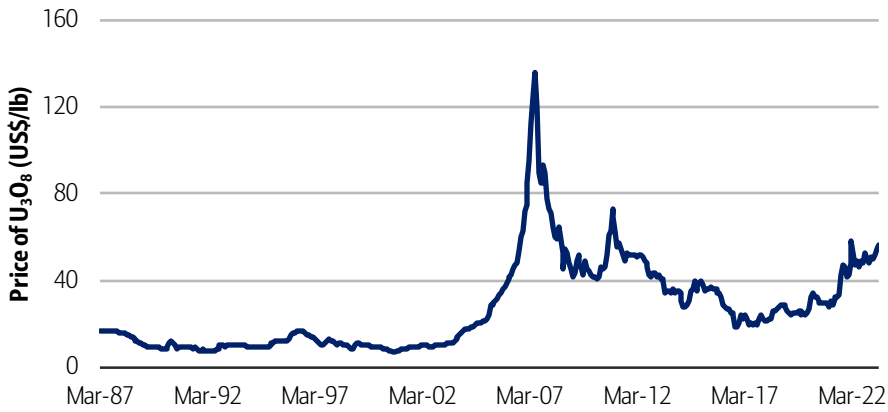
U_3O_8 markets

While the spot price of uranium (U_3O_8) has been improving steadily since late 2017, when CCJ idled its McArthur River uranium mine, it has been quite volatile.

Exhibit 71: Price of uranium (U_3O_8) in $/lb
U_3O_8 has been strengthening steadily since Cameco idled its McArthur River mine in late 2017



Source: UxC, LLC

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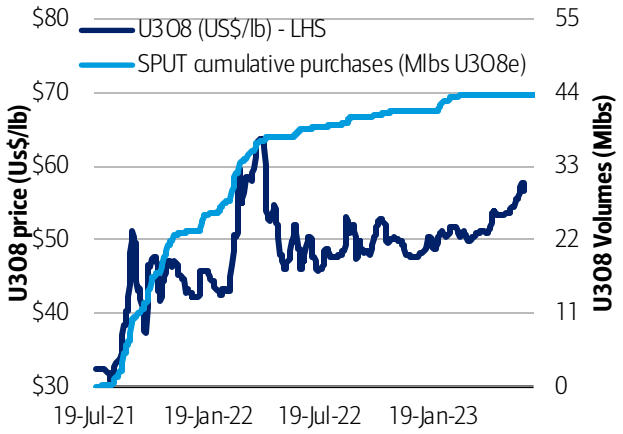
The Sprott Physical Uranium Trust (SPUT) has become an important driver of spot pricing since its inception in July 2021. But more recently, it's been absent from the market as it has traded at a discount to its net asset value (NAV). In our view, the rising uranium price has been driven by end-consumer demand (nuclear utilities).

Exhibit 72: UxC daily spot price vs. cumulative SPUT purchases of U_3O_8
Slow SPUT purchasing helps explain the sideways U_3O_8 price



Source: UxC, LLC; Sprott Physical Uranium Trust website

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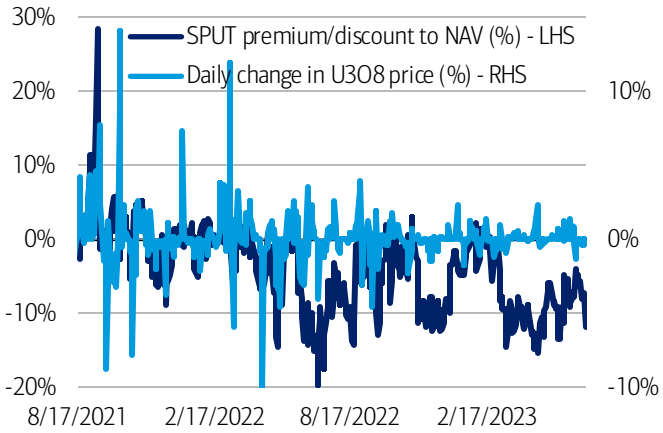
Exhibit 73: SPUT unit price premium to NAV vs. daily U_3O_8 price changes
When priced at a discount to NAV, SPUT U_3O_8 purchases slow



Source: UxC, LLC; Sprott Physical Uranium Trust website

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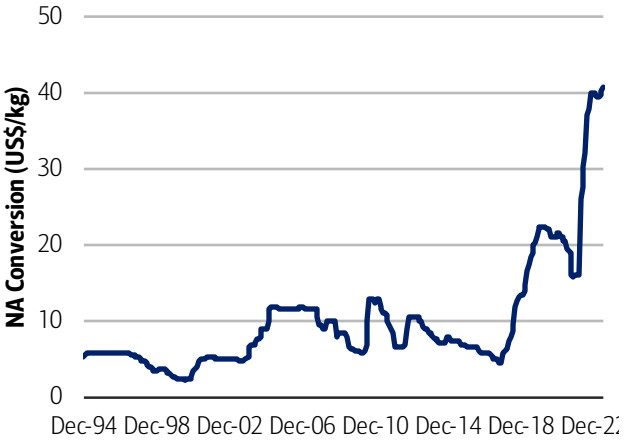
Conversion markets

Conversion pricing in North America and the European Union is at all-time highs and could remain robust given reports of continued tight supply. While several facilities are now ramping-up in the West that could provide some relief over the longer-term, continued tightness in the near-term seems likely, suggesting a building of pent-up demand for natural uranium (U_3O_8).

Exhibit 74: North American (NA) conversion pricing (US$ / KgU)
Conversion pricing is at all-time highs



Source: UxC, LLC

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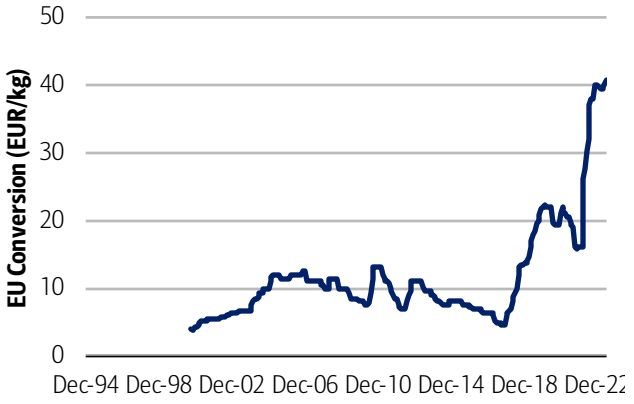
Exhibit 75: European Union (EU) conversion pricing (EUR / KgU)
Conversion pricing is at all-time highs



Source: UxC, LLC

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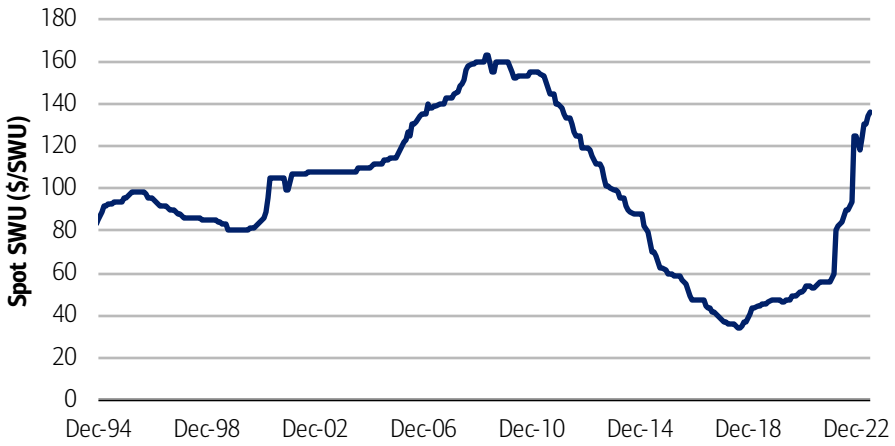
Enrichment markets

Global enrichment markets are tightening rapidly, which should lead to increasing demand for U_3O_8 through a rising rate of overfeeding.

Exhibit 76: Enrichment prices as measure in USD per separative work unit (SWU)
SWU pricing has strengthened substantially since Russia's invasion of Ukraine



Source: UxC, LLC

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Appendix

Exhibit 77: Commodity prices, exchange rates, equity indices, yields and inventories
Metal prices have stabilized

Base metals	Cash, $/t	3-month, $/t	Cash, WoW change	3-month, WoW change
Aluminium	2,123	2,168	-1.6%	-1.3%
Copper	8,346	8,360	-0.4%	-0.0%
Lead	2,111	2,093	-2.3%	-0.2%
Nickel	20,334	20,508	-1.2%	-1.4%
Tin	28,100	27,320	1.5%	3.9%
Zinc	2,403	2,411	1.0%	1.0%
LMEX	3,701		-0.3%	
	Cash, c/lb	3-month, c/lb		
Aluminium	96	98		
Copper	379	379		
Lead	96	95		
Nickel	922	930		
Tin	1,275	1,239		
Zinc	109	109		
Other commodities, freight, exchange rates, equities and yields	**Spot**	**WoW change**		
Gold, $/oz	1,925	0.6%		
Silver, $/oz	23	0.5%		
Platinum, $/oz	920	-0.8%		
Palladium, $/oz	1,249	-3.8%		
Iron ore, China fines cfr $/dmt	110	-2.1%		
Brent, $/bbl	76	5.2%		
Baltic Dry Index	1,044	-11.7%		
EUR/USD	1.088	-0.7%		
Dow Jones Industrial Average	34,418	1.4%		
10-year US Treasury yield	3.857	2.4%		
ICE BofA Commodity index, ER	398	0.4%		
ICE BofA Commodity index Industrial Metals, ER	177	-0.6%		
ICE BofA Commodity index Precious Metals, ER	214	0.3%		
ICE BofA Commodity index Energy, ER	444	2.1%		
Exchange stocks and cancelled warrants	**Stocks, tonnes**	**WoW change**	**Canc. warrants, tonnes**	**Canc. warr., of stocks**
Aluminium				
LME	539,700	0.6%	267,775	49.6%
Shanghai	98,079	-25.2%		
Total aluminium	637,779	-4.5%		
Copper				
LME	67,200	-12.8%	28,750	42.8%
Comex	31,706	12.8%		
Shanghai	68,313	13.1%		
Total copper	167,219	1.0%		
Lead				
LME	42,375	6.2%	2,550	6.0%
Shanghai	26,946	-30.3%		
Total lead	69,321	-11.7%		
Nickel				
LME	38,364	-2.5%	2,490	6.5%
Shanghai	3,133	-9.2%		
Total nickel	41,497	-3.0%		
Tin	3,720	28.1%	70	1.9%
Zinc				
LME	76,475	-2.3%	14,425	18.9%
Shanghai	59,474	9.3%		
Total zinc	135,949	2.5%		

Source: BofA Global Research

Exhibit 78: 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	$2,353/t 107c/lb	$2,875/t 130c/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, but are now restarting some capacity. 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	$8,788/t 399c/lb	$9,750/t 442c/lb	• Copper rallied as China re-opened, but has given back most of these gains • 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 • Inventories are low, which is supportive, but could also increase volatility • We expect a small **deficit** 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	$2,087t 95/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	$22,063/t 1001c/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	$2,603/t 118c/lb	$2,375/t 108c/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 • 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 • D: The zinc market is fragmented. There is evidence that miners, especially in China, could consider further output increases
Gold	$1,923/oz	$1,963/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 • 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	$22.98/oz	$23.26/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 • Bottoming out of the global economy in 2024 should also help industrial demand	• U: Investors returning to the market • U: China's imports to rise • D: ETF liquidation • D: More supply
Platinum Palladium	$1,068/oz $1,391/oz	$1,465/oz $1,100/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	$114/t CIF	$98/t CIF	• Iron ore inventories at China's mills are extremely low. • Production cuts at mills, along higher steel demand should support steel prices, likely pulling iron ore higher as well near-term	• D: China's steel production slowing sharply • U: Mine closures/slowdown in production increases
HCC Thermal coal	$278/t $184/t	$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	$80/bbl $75/bbl	$90/bbl $85/bbl	• We project Brent and WTI to average $80/bbl and $75/bbl, respectively, in 2023. • The global oil balance should stay tight in 2023, supported by additional OPEC+ cuts starting in May, slower non-OPEC growth, and rebounding Asia demand, • We forecast global demand growth to slow to 1.2mn b/d YoY in 2023 and 1mn b/d in 2024. • Non-OPEC supply should grow roughly 1.8mn b/d YoY in 2023 and 720k b/d in 2024. • We project total US crude and NGL supply to rise 1.1mn b/d in 2023 and 600k b/d in 2024. • OPEC crude oil supplies are set to fall 650k b/d in 2023 and 230k 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

Exhibit 79: Commodity price forecasts

Copper should outperform

		Current	2Q23E	3Q23E	4Q23E	1Q24E	2Q24E	3Q24E	2022E	2023E	2024E	2025E	2026E	2027E	LT price
Base metals															
Aluminium	US$/t	2,123	2,260	2,250	2,500	2,750	2,750	3,000	2,706	2,353	2,875	3,500	3,103	2,707	2,310
	USc/lb	96	103	102	113	125	125	136	123	107	130	159	141	123	105
Copper	US$/t	8,346	8,461	8,250	9,500	10,000	10,000	9,500	8,822	8,788	9,750	10,500	9,703	8,907	8,110
	USc/lb	379	384	374	431	454	454	431	400	399	442	476	440	404	368
Lead	US$/t	2,111	2,118	2,050	2,050	2,000	2,000	2,000	2,149	2,087	2,000	1,750	2,024	2,298	2,572
	USc/lb	96	96	93	93	91	91	91	97	95	91	79	92	104	117
Nickel	US$/t	20,334	22,277	20,000	20,000	22,500	22,500	20,000	25,707	22,063	21,250	22,500	20,289	18,077	15,866
	USc/lb	922	1,011	907	907	1,021	1,021	907	1,166	1,001	964	1,021	920	820	720
NPI, 8-12%	CNY/t		1,000	1,000	1,000	1,032	1,032	1,032	1,424	1,000	1,032	1,062	1,102	1,141	1,180
Zinc	US$/t	2,403	2,539	2,250	2,500	2,500	2,500	2,250	3,482	2,603	2,375	2,250	2,424	2,597	2,771
	USc/lb	109	115	102	113	113	113	102	158	118	108	102	110	118	126
Precious metals															
Gold, nominal	US$/oz	1,928	1,977	1,925	1,900	1,900	1,950	2,000	1,803	1,923	1,963	2,150	2,112	2,074	2,037
Gold, real	US$/oz		1,977	1,925	1,900	1,854	1,902	1,951	1,803	1,923	1,915	2,046	1,961	1,879	1,800
Silver, nominal	US$/oz	22.86	24.20	22.65	22.50	22.50	23.00	23.53	21.80	22.98	23.26	24.75	26.31	27.86	29.42
Silver, real	US$/oz		24.20	22.65	22.50	21.95	22.44	22.96	21.80	22.98	22.69	23.56	24.43	25.24	26.00
Platinum	US$/oz	914	1,027	1,000	1,250	1,465	1,465	1,465	964	1,068	1,465	1,453	1,457	1,462	1,466
Palladium	US$/oz	1,235	1,445	1,300	1,250	1,200	1,200	1,000	2,110	1,391	1,100	1,000	1,155	1,310	1,466
		Current	**2Q23E**	**3Q23E**	**4Q23E**	**1Q24E**	**2Q24E**	**3Q24E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**LT price**
Bulk Commodities															
Hard coking coal	US$/t fob	229	243	250	275	249	249	249	370	278	249	218	198	178	158
Semi-soft	US$/t fob	167	202	168	168	168	168	168	277	185	168	147	133	120	107
Thermal Coal	US$/t fob	143	160	159	164	181	166	153	357	184	160	125	112	99	85
Iron ore fines	US$/t CIF	111	111	120	100	110	100	90	120	114	98	90	90	89	89
Other materials															
Lithium spodumene	US$/t	3,500	4,178	3,500	3,250	3,500	3,000	3,000	4,498	4,132	3,125	3,250	2,567	1,883	
Lithium carbonate	US$/t	43,150	36,189	45,000	43,762	35,000	35,000	30,000	71,531	45,980	32,500	32,500	28,333	24,167	
Lithium hydroxide	US$/t	42,925	39,889	43,500	45,262	36,500	36,500	31,500	70,142	48,363	34,000	34,000	29,833	25,667	
Alumina	$/t	328	344	331	331	340	340	340	362	342	340	348	357	366	375
Uranium	$/lb		53.80	60.00	59.00	66.30	66.30	66.30	50.17	55.77	66.30	75.00	67.08	59.17	51.25
Molybdenum	$/lb	22.2	21.30	21.80	21.80	21.80	21.80	21.80	18.74	24.42	21.80	21.80	18.40	15.00	11.60
Cobalt	$/lb	15.6	16.05	15.60	15.60	15.60	15.60	15.60	31.04	16.37	15.60	15.60	16.84	18.08	19.32
Manganese ore	$/dmtu	4.57	4.80	4.60	4.60	4.60	4.60	4.60	6.06	4.92	4.60	4.60	5.10	5.59	6.09
Steel, HRC															
HRC, Europe	US$/t	681	845	711	703	771	751	741	950	773	749				
HRC, US	US$/t	926	1,171	965	799	854	909	843	1,122	971	849				
HRC, China	US$/t	545	556	575	571	568	585	602	663	565	595				
Energy		**Current**	**2Q23E**	**3Q23E**	**4Q23E**	**1Q24E**	**2Q24E**	**3Q24E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**LT price**
Brent	US$/bbl	76.1	77.7	80.0	82.0	90.0	90.0	90.0	100.2	80.5	90.0	60.0	60.0	60.0	60.0
WTI	US$/bbl	71.2	73.7	75.0	77.0	84.0	84.0	84.0	95.3	75.4	84.0	57.0	57.0	57.0	57.0
Henry Hub	US$/MMBtu	2.8	2.3	2.8	3.3	4.0	4.0	4.0	6.7	2.8	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

Exhibit 80: Aluminium supply and demand balance
Deficits set to increase

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	**67563**	**68550**	**69770**	**73505**	**74274**
YoY change	3.2%	1.5%	1.8%	5.4%	1.0%
Global consumption	**68618**	**69228**	**70662**	**74196**	**77905**
YoY change	7.5%	0.9%	2.1%	5.0%	5.0%
Balance	**-1054**	**-677**	**-892**	**-691**	**-3632**
Market inventories	9142	8464	7572	6881	3250
Weeks of world demand	6.9	6.4	5.6	4.8	2.2
LME Cash ($/t)	**2474**	**2706**	**2353**	**2875**	**3500**
LME Cash (c/lb)	**112**	**123**	**107**	**130**	**159**

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

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Exhibit 81: Copper supply and demand balance
Balanced market in 2023E

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	**24137**	**24589**	**25525**	**27296**	**27870**
YoY change	3.8%	1.9%	3.8%	6.9%	2.1%
Global consumption	**24863**	**25166**	**25623**	**26648**	**27714**
YoY change	3.8%	1.2%	1.8%	4.0%	4.0%
Balance	**-726**	**-577**	**-98**	**648**	**156**
Market inventories	1164	587	489	1137	1293
Weeks of world demand	2.4	1.2	1.0	2.2	2.4
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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Exhibit 82: 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**	**2087**	**2000**	**1750**
LME Cash (c/lb)	**100**	**97**	**95**	**91**	**79**

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

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Exhibit 83: Nickel supply and demand balance
Class 1 nickel may remain tight

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	**2799**	**3264**	**3513**	**3794**	**3970**
YoY change	8.1%	16.6%	7.6%	8.0%	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**	**196**	**15**	**113**
Balance, excl. NPI oversupply	**4**	**145**	**54**	**-255**	**-236**
Market inventories	392	537	590	335	99
Weeks of world demand	7.6	10.4	9.3	4.6	1.3
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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Exhibit 84: 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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Exhibit 85: Iron ore supply and demand balance
Flipping back into surplus

Wet Mt	2021	2022	2023E	2024E	2025E
Global production	**2,274**	**2,299**	**2,328**	**2,468**	**2,572**
YoY change	0.7%	1.1%	1.2%	6.0%	4.2%
Global consumption	**2,305**	**2,226**	**2,289**	**2,311**	**2,323**
YoY change	-0.4%	-3.5%	2.9%	1.0%	0.5%
Balance	**-31**	**74**	**38**	**157**	**249**
Iron ore price (US$/t)	**160**	**120**	**114**	**98**	**90**

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

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Exhibit 86: 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**	**6604**	**8023**	**8220**
YoY change	21.4%	-9.2%	-6.4%	21.5%	2.5%
Global consumption	**8282**	**6138**	**7489**	**7573**	**7960**
YoY change	17.0%	-25.9%	22.0%	1.1%	5.1%
Balance	**-515**	**916**	**-885**	**450**	**260**
Spot ($/oz)	1092	964	1068	1465	1453

Source: Matthey, company reports, BofA Global Research estimates

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Exhibit 87: 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**	**9,651**	**10,515**	**10,899**
YoY change	9.5%	-3.2%	-0.4%	8.9%	3.7%
Global consumption	**10,149**	**9,829**	**9,107**	**9,004**	**8,741**
YoY change	2.3%	-3.2%	-7.3%	-1.1%	-2.9%
Balance	**-139**	**-143**	**545**	**1,510**	**2,159**
Spot ($/oz)	2,399	2,110	1,391	1,100	1,000

Source: Matthey, company reports, BofA Global Research estimates

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