Global Metals Weekly

Steel price rally should support iron ore

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Commodities
Global

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Global steel production to grow modestly in 2023

Global crude steel production declined by 4% YoY in 2022 on weaker demand and high energy prices. We now expect global output to increase modestly by 0.8% YoY this year, followed by a 3.5% rebound in 2024. Heavily influenced by production cuts, HRC in Europe and the US has rallied by 33% and 61% in recent weeks to $839/t and $1,102/t, respectively. This is remarkable given the ongoing concerns over the strength of the global economy. Meanwhile, China's mills remain wedged between rising costs and weak fundamentals in the steel market. However, a seasonal rebound in demand should be supportive to steel prices, potentially incentivizing mills to increase iron ore inventories, which stand at record lows. On the back of it, iron ore may rally to $160/t this year.

Chinese steel rebound? Not yet, but 2024 looks better

China's crude steel production dropped by 1.9% YoY to 1,013Mt last year. While the end of Zero COVID should support the economy, persistent weakness in the property market remains a drag. Indeed, our China property team expects another 15-20% decline in new housing starts in 2023, although the market should stabilize by the end of the year. Linked to that, our China steel team expects a modest +0.5% growth in steel output this year before a stronger recovery of +2.7% in 2024. Fundamentals remain challenged, reflected in elevated steel stocks. Consequently, mills have reduced iron ore inventories to record lows. Lifting them to "normal" levels, potentially incentivized by a seasonal rebound in steel consumption, could move iron ore up.

US steel strong despite slowing economy

What drove the rally in US steel prices? Steel mills have cut production sharply, with capacity utilization rates at seasonal lows at present. While demand remains patchy, offtake from car manufacturers has been strong, and lead times have risen as a result. There is scope for an even stronger rally in steel prices, as economic headwinds subside, but mills need to remain disciplined. Our colleagues in the US expect capacity utilisation rates of 82% in 2024; which could justify prices spiking above $1,400/t (see our North American Steel note for period average price forecasts).

EU still lagging; Türkiye shipments at risk

Crude steel production in Europe fell by 10.5% YoY to 137Mt in 2022. While cost pressures are easing, the energy crisis and the operational outlook remain uncertain, likely limiting the appetite to reactivate shuttered production imminently. As such, steel prices should stay supported as economic activity in Europe bottoms out. Beyond that, Europe is exposed to the risk of lower steel shipments from Türkiye in the wake of the earthquake.

Abbreviations
BF – Blast Furnace
EAF – Electric Arc Furnace
HRC – Hot Rolled Coil

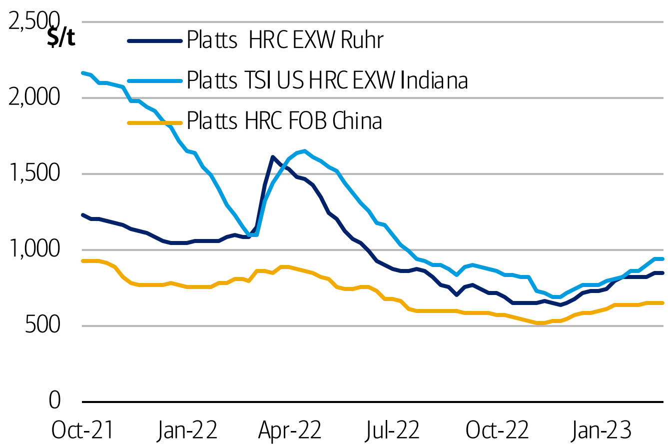
Steel price rally should support iron ore

Steel prices have been rebounding since the start of the year

Having bottomed out in 4Q22 (Exhibit 1), steel prices have rallied in Europe and the US by 33% and 61% to $839/t and $1,102/t respectively, since last December. Meanwhile, China's steel market has remained subdued: while prices are no longer trading at the $800/t discount seen mid last year, HRC is still hovering around $250/t below quotations in other regions.

Exhibit 1: Hot rolled coil prices

Steel prices have been rallying since late last year



Source: Bloomberg, BofA Global Research

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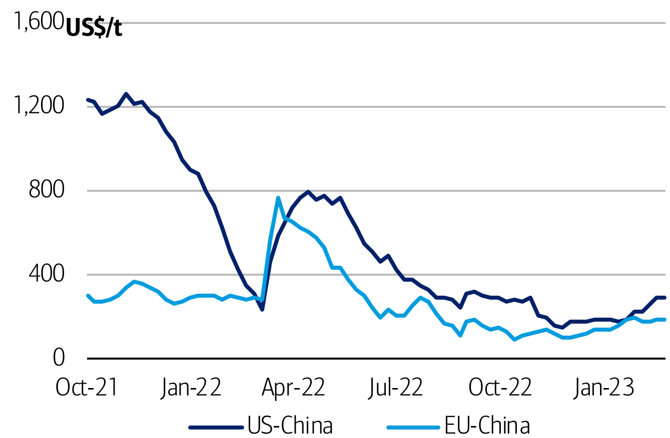
Exhibit 2: HRC price differentials

Chinese steel prices continue to trade at a discount to Western regions'



Source: Bloomberg, BofA Global Research

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We expect the global steel industry to rebound in 2024

Taking a step back, the weak macro backdrop had a significant impact on the global steel industry last year. Rising inflation, the energy crisis and, ultimately, slowing demand prompted mills to reduce crude steel production by 4%, after a strong rebound in 2021:

- Headwinds to the property sector in China have kept regional prices low. This also affected margins at mills, one reason output has been cut. Indeed, total crude steel production in China dropped to 1,013Mt in 2022, a 2% decline.
- Meanwhile, record-high energy prices were a key driver of plant closures in Europe, translating into an 11% negative impact on the region's output.
- As to the US, a slowdown in growth meant producers lowered capacity utilization rates with steel production declining by 6% to 81Mt.

We expect 2023 to be a 'transition' year before a recovery of the global economy gives more support to ferrous metals in 2024. Exhibit 3 picks up on this, showing that global steel output is set to be virtually unchanged at 1,893Mt this year, before rising by around 3% as the global economy rebounds in 2024.

Exhibit 3: Crude steel production, by country/region
We expect a modest recovery in crude steel production this year and a stronger rebound in 2024

Crude steel production, Mt	2021	2022	2023E	2024E
China	1,033	1,013	1,018	1,045
Europe	204	181	177	192
US	86	81	85	90
Other NAFTA	31	30	31	32
South America	46	43	42	43
Russia	77	72	68	70
CIS ex. Russia	30	14	13	14
Middle East	42	45	45	46
India	104	120	130	138
Japan	96	89	89	90
South Korea	70	66	67	68
Rest of the world	142	124	126	130
World ex. China	928	865	874	913
World	**1,960**	**1,878**	**1,893**	**1,958**
YoY change	4.2%	-4.2%	0.8%	3.5%

Source: CRU, WorldSteel, BofA Global Research estimates

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Exhibit 4: Steel capacity utilization rates, by country/region
Utilization rates in major regions should rise again in 2024

Utilisation rates	2021	2022	2023E	2024E
China	92%	89%	89%	91%
Europe	72%	63%	61%	66%
US	71%	74%	77%	82%
Other NAFTA	71%	68%	70%	71%
South America	75%	71%	68%	67%
Russia	89%	82%	78%	79%
CIS ex. Russia	54%	29%	28%	28%
Middle East	71%	76%	77%	79%
India	73%	80%	84%	84%
Japan	79%	74%	76%	76%
South Korea	92%	86%	87%	89%
RoW	62%	55%	58%	38%
World ex. China	73%	69%	69%	65%
World	**82%**	**78%**	**78%**	**77%**

Source: CRU, WorldSteel, BofA Global Research estimates

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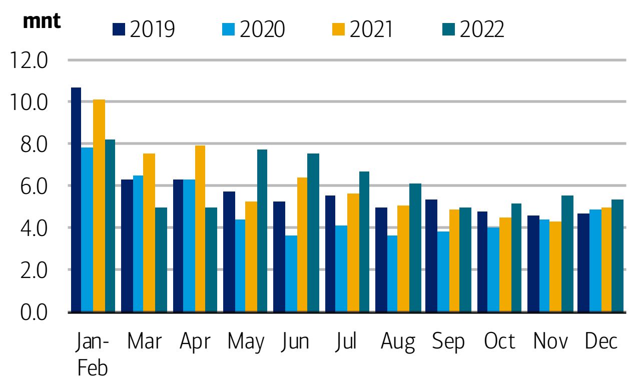
China: weak demand, low margins

Chinese steelmakers curtailed output and found relief in export markets

China's demand backdrop has been challenged by a confluence of issues, including a dramatic crackdown on property developers and the Zero COVID policy. Not surprisingly, steelmakers have managed production cautiously, although weak domestic demand (and high prices ex-China after the war in Ukraine started) still prompted an increase in exports (Exhibit 5, Exhibit 6), particularly from 2Q22.

Exhibit 5: China monthly steel product exports
In December 2022, Chinese exports of steel were 5.4mnt, +7.5% YoY. YTD net exports reached 56.9mnt, + 8% YoY



Source: China Customs, CEIC, BofA Global Research

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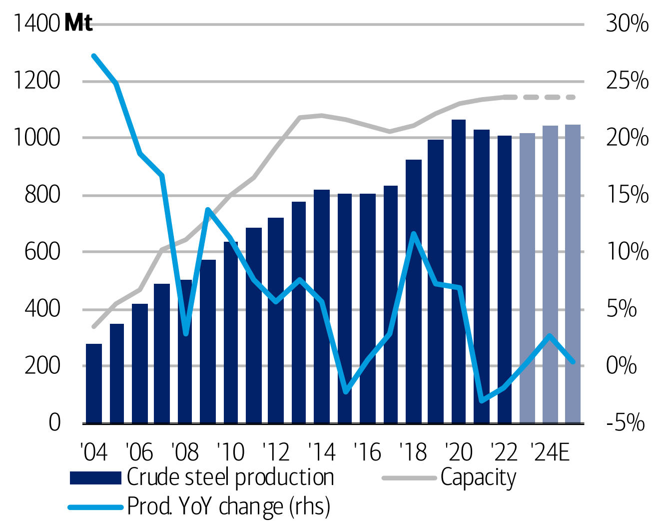
Exhibit 6: China crude steel production and capacity
China steel production should see modest growth this year



Source: NBS, CEIC, BofA Global Research estimates

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While the economy is slowly emerging from the Covid pandemic and the government is giving more support to the property sector, our China equity research team expects 2023 output to recover by only a modest 0.5% to 1,018Mt, before rising by 2.7% to 1,045Mt in 2024. This implies that steel mills will likely be running at capacity utilization rates of less than 90%, well below levels of 95% seen pre-pandemic.

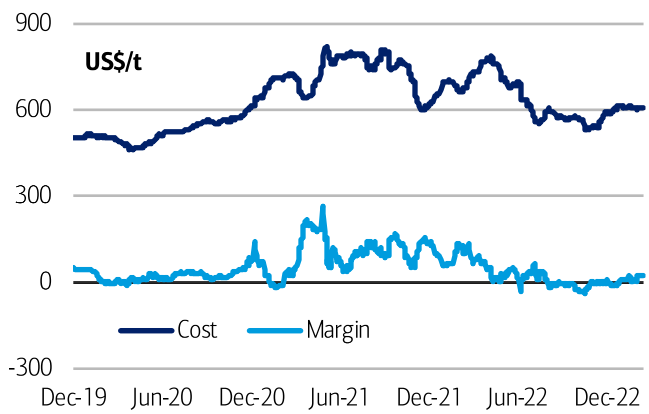
Margins still suppressed on rising costs and weak demand

Steel mill margins have been constrained by rising costs

While steel prices have tentatively pushed higher, a 65% rally in iron ore prices since November means that margins at Chinese steel mills have remained tight (Exhibit 7). In fact, we estimate that production costs at blast furnaces in China have increased by 16% this year, 65% of which has been driven by the recent rally in iron ore (Exhibit 8). Acknowledging these headwinds, the government has once again stepped up interventions, looking to stop speculation and the spread of false information in iron ore. Dalian Commodity Exchange has introduced position limits on some futures contracts, as a response.

Exhibit 7: China steel cost and margin (BF)

Despite the increase in steel prices, rising iron ore prices have kept margins at low levels



Source: Bloomberg, BofA Global Research estimates

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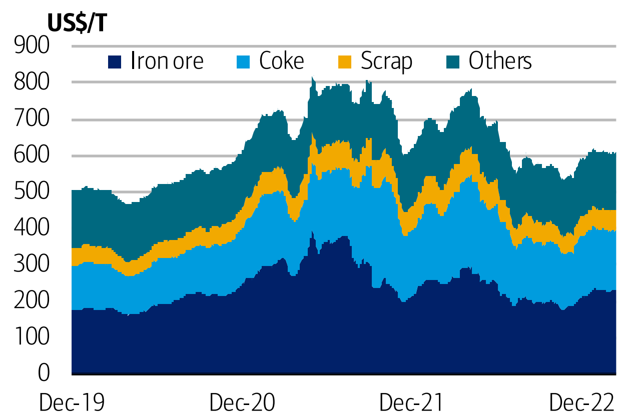
Exhibit 8: China steel production costs (BF)

Production costs have risen by up to 16% this year compared with November last year



Source: Bloomberg, BofA Global Research estimates

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Housing starts unlikley to turn positive until 2024

Meanwhile, China is set to churn out another +1Bt of steel this year, but this is not necessarily a sign of health for the ferrous complex. Indeed, housing remains an issue, as the authorities prioritize completions over new starts, with the latter steel (and iron ore) intensive. This is mirrored in Exhibit 9, which shows that our China property team expects another 15-20% decline in starts this year.

Exhibit 9: New home sales, new starts and completion forecasts for 2023-24

We expect new home sales volume to drop in 2023

	2022E	2023	2024
National sales volume	-26.0%	0%-8% drop	single-digit % growth
National sales value	-28.0%	3%-12% drop	single-digit % growth
Residential new starts	-39.0%	15%-20% drop	around 15% growth
Residential Completion	-18.0%	high-single-digit % increase	double-digit % decrease

Source: Bloomberg, Company data, BofA Global Research estimates

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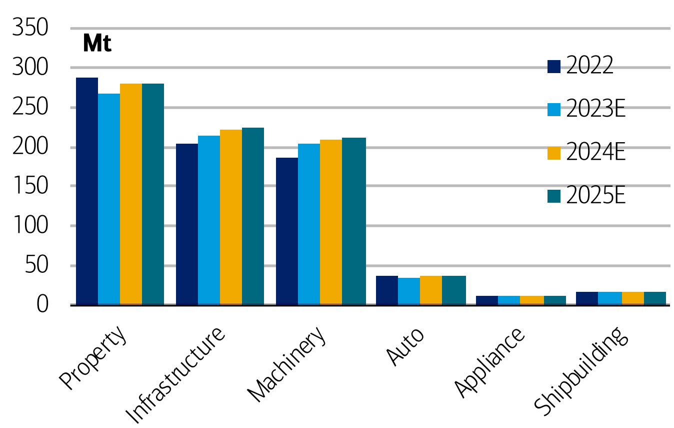
Exhibit 10: China steel demand, by sector

Steel demand from property to drop again this year



Source: BofA Global Research estimates

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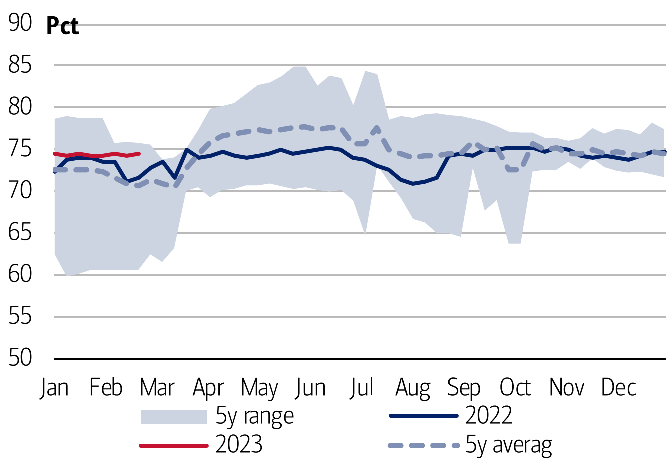
That said, new starts are set to turn positive next year (+15%), providing the missing piece in steel and iron ore demand. All in, our China equity research team expects steel demand from the property sector to decline by 7% this year and rebound by 5% next year (Exhibit 10).

Operating rates have been increasing, yet inventories are still high

Operating rates at China's steel mills increased to 75%, compared with a historical average of 71% at this time of year. Yet, they are well within longer-term ranges, highlighting that fundamentals in China's steel market remain challenging. Steel inventories are also 29% higher than usual for this time of year (Exhibit 12); the China Iron and Steel Association estimates that steel inventories at mills rose to 19.5Mt in mid-February (+16% YoY).

Exhibit 11: China operating rate of blast furnaces (Tangshan)
Chinese steel mills are operating at high rates, above historical averages



Source: Bloomberg, BofA Global Research

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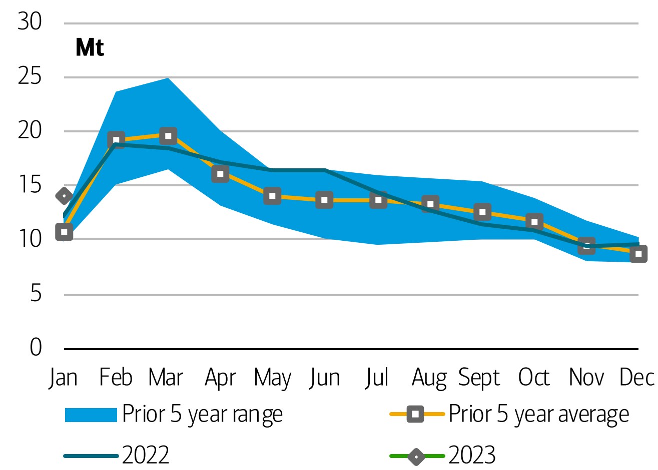
Exhibit 12: China steel inventories
Yet, steel inventories remain high, suggesting weakness in demand



Source: Bloomberg, BofA Global Research

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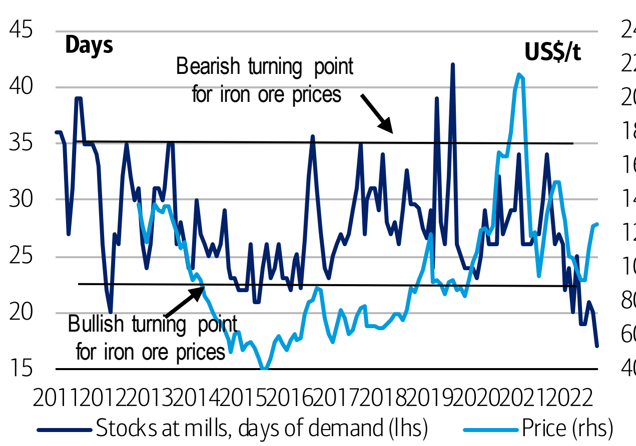
While housing remains an overhang this year, steel demand usually strengthens seasonally towards the end of spring. Hence, there is scope for a rally in steel prices. This also has implications for the iron ore market. Tight margins mean that steel producers have been drawing down iron ore inventories (Exhibit 13). Yet, rising steel prices could push mills back into the market, potentially lifting iron ore prices to $160/t.

Exhibit 13: Iron ore, inventories at steel mills and prices
Raising stocks to 35 days of demand could lift iron ore prices to +$160/t



Source: Mysteel, BofA Global Research

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Exhibit 14: Iron ore port inventories
Port inventories have been flat at just below 140mt

Source: Bloomberg, BofA Global Research

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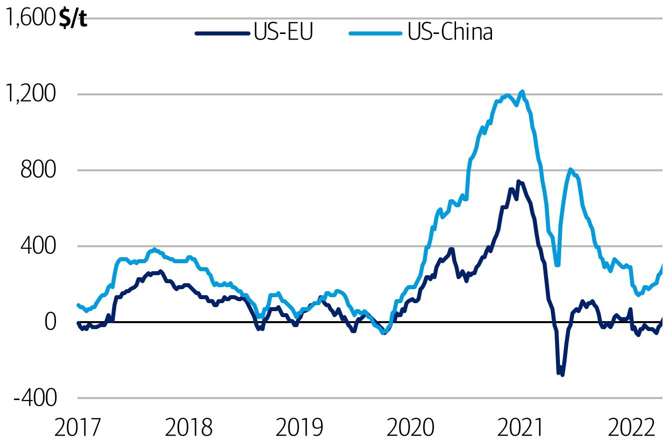
US: steel prices rally

US HRC prices rallied on production discipline and uptick in demand

In the US, HRC prices have rallied since December last year. This has revived price differentials against Europe and China (Exhibit 15). What drove that outperformance? Going back to the second half of 2022, steel mills in the US cut production sequentially in response to weaker prices then. Capacity utilization rates dropped to 72% towards year-end, a historical low seasonally (Exhibit 16).

Exhibit 15: Steel price differentials (HRC)
US HRC prices have been rising, reviving regional prices differentials



Source: Bloomberg, BofA Global Research

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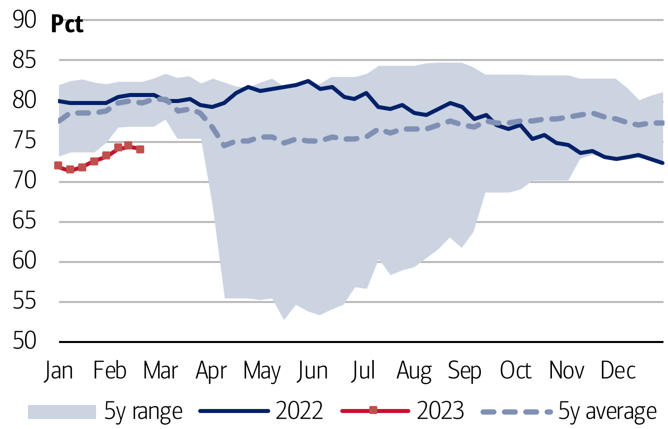
Exhibit 16: North American steel capacity utilization rates
US mills are sticking to their production discipline, lead times are up



Source: Bloomberg, BofA Global Research

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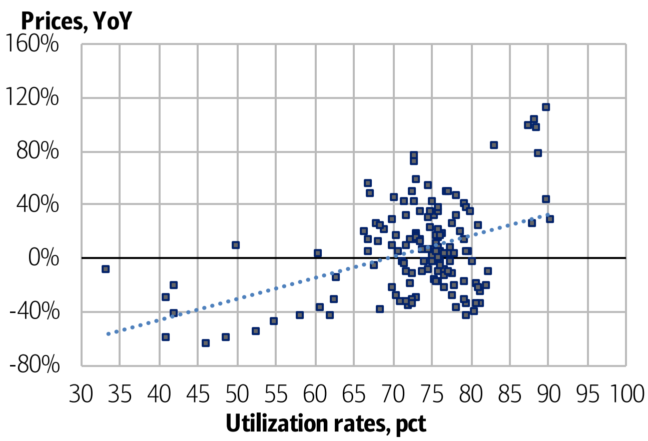
So far in 2023, producers have remained remarkably disciplined, with capacity utilization currently at 74% against a usual seasonal level of 80%. This, combined with 1) a seasonal pickup in demand during 1Q; 2) the end of destocking; 3) low inventory levels; and 4) rising scrap costs, helped drive up US HRC prices (see report: North American Steel: Reinstate coverage of US steel sector: macro and sector cycles say 'be selective'). All this is important because changes in capacity utilization rates matter for steel prices (Exhibit 17).

Exhibit 17: US steel capacity utilization rates and HRC prices
Prices and utilization rates are positively correlated



Source: Bloomberg, BofA Global Research

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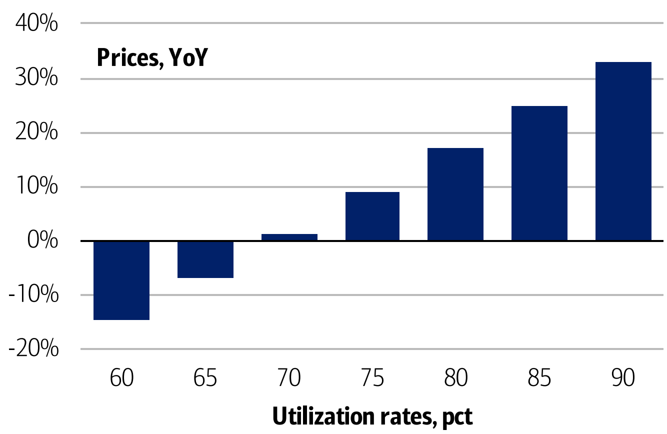
Exhibit 18: US HRC prices scenarios based on utilization rates
Steel prices tend to experience double-digit returns when utilization rates reach 80% or above



Source: Bloomberg, BofA Global Research estimates

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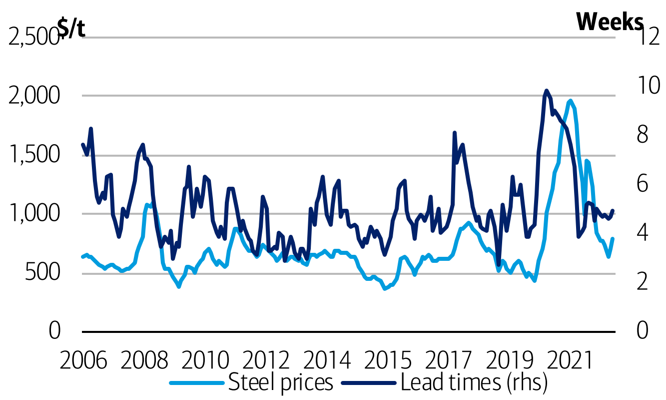
Indeed, based on historical relationships, steel prices tend to move in line with utilization rates. In particular, when the latter reaches 75% and above, steel prices tend to react positively (Exhibit 18). Our colleagues in the US expect capacity utilisation rates of 82% in 2024; using historic relationships, and maybe somewhat simplistically, this would justify prices spiking above $1,400/t (see our North American Steel note for period average price forecasts).

Lead times in the US have risen, supporting steel prices and margins

Already now, lead times at mills have risen from 4.7 to 6.3 weeks. This has handed pricing power to producers, so it is usually a bullish indicator (Exhibit 19). Cleveland-Cliffs has raised spot prices eight times since August last year, noting that it "has seen increases in both pricing and volume for its automotive steel business, reducing material available to be sold on a spot basis" (Exhibit 20).

Exhibit 19: US HRC steel prices and lead times
US steel prices and lead times are strongly correlated



Source: Bloomberg, BofA Global Research

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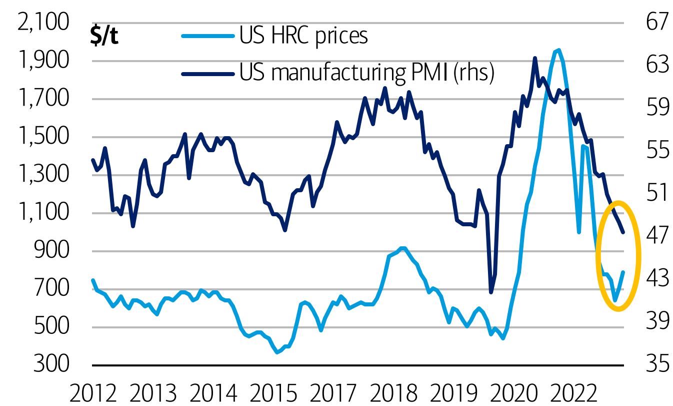
Exhibit 20: US HRC steel prices and manufacturing PMI
Steel prices have been rebounding, despite the economic slowdown



Source: Bloomberg, BofA Global Research

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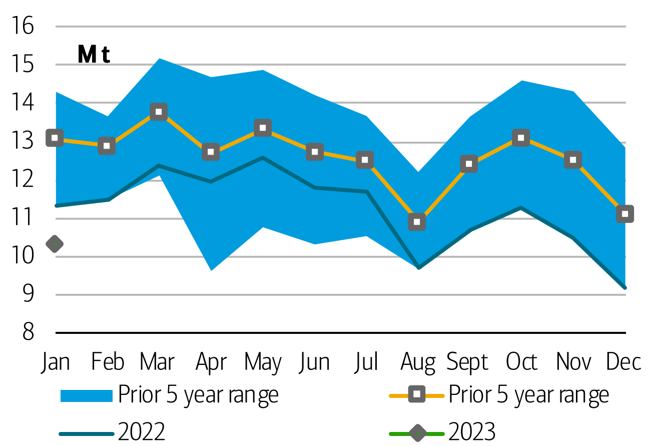
Europe

Steel production in the EU struggling to recover, dropping to decade lows

While steel markets in China and the US have started to show signs of a rebound, Europe is still lagging. Indeed, record high gas and electricity prices have hit energy-intensive industries. Linked to that, production on the continent has been low, particularly in 2H22 (Exhibit 22).

Exhibit 21: EU crude steel production
Steel production in Europe continues to fall to historical lows



Source: Bloomberg, BofA Global Research

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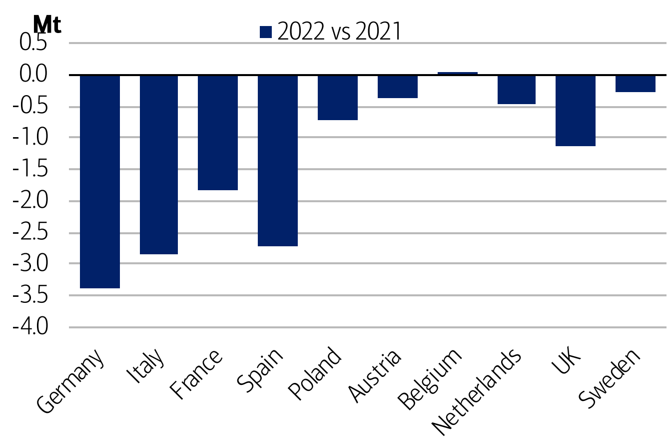
Exhibit 22: Europe crude steel production, top 10 producers (YoY)
The largest steel producers in Europe were severely hit last year



Source: WorldSteel, BofA Global Research

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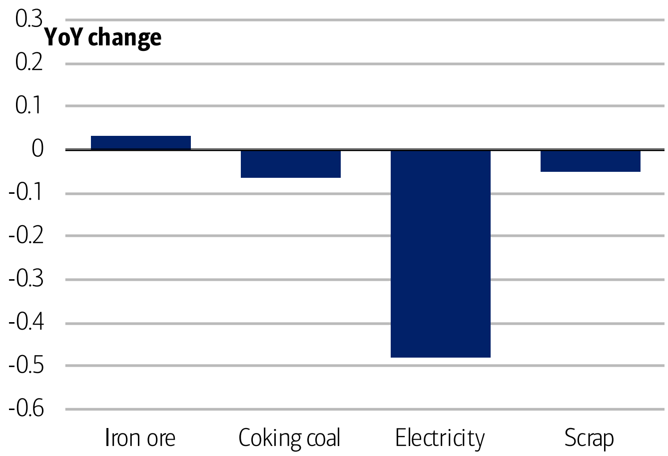
This pushed down 2022 supply by 10.5% YoY to 137Mt. The largest producers, also highly dependent on gas for power generation (e.g. Germany and Italy), were the hardest hit (Exhibit 23). Even more alarming, output in January dropped again to 10.3Mt, the lowest level since 2009 for this time of year.

Energy costs have eased, yet we remain cautious

Nevertheless, margins at EU steel mills have been improving recently on rising steel prices and lower electricity costs (Exhibit 24).

Exhibit 23: Change in EU steel mills cost, by feedstock (2023 YTD)

Production costs have eased compared with last year, as electricity prices dropped



Source: Bloomberg, BofA Global Research

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Exhibit 25: Europe light vehicle production

The European auto industry is set to remain strong this year

Region	2021	2022	2023E	2024E	2025E
Western Europe	**9,420,504**	**9,828,540**	**10,535,949**	**11,231,026**	**11,242,319**
Growth	*-6.30%*	*4.30%*	*7.20%*	*6.60%*	*0.10%*
Central Europe	**3,407,964**	**3,599,635**	**3,552,546**	**3,681,531**	**3,762,549**
Growth	*-3.50%*	*5.60%*	*-1.30%*	*3.60%*	*2.20%*
EU 28	**12,828,468**	**13,428,175**	**14,088,495**	**14,912,557**	**15,004,868**
Growth	*-5.60%*	*4.70%*	*4.90%*	*5.80%*	*0.60%*
Eastern Europe	**3,062,886**	**2,259,934**	**2,146,158**	**2,193,612**	**2,226,025**
Growth	*2.50%*	*-26.20%*	*-5.00%*	*2.20%*	*1.50%*
Total Europe	**15,891,354**	**15,688,109**	**16,234,653**	**17,106,170**	**17,230,893**
Growth	*-4.10%*	*-1.30%*	*3.50%*	*5.40%*	*0.70%*

Source: BofA Global Research estimates, S&P

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Yet, the outlook for European energy is still uncertain, so industry participants remain cautious. In a recent note, our European equity research team said that "while the Q4 destocking we observed may be coming to an end, we don't necessarily see a strong rebound in real underlying demand. Energy isn't an acute concern for now, but we don't necessarily believe this issue is behind us." (see ArcelorMittal note). Similarly to the US, we expect the European automotive industry to continue to provide a cushion for steel demand this year. Indeed, our autos team expects light vehicle production in the EU to grow by 4.9% this year and 5.8% next year (see note: European Automobiles: Global LVP tracker: 2023 starts with a touch of optimism).

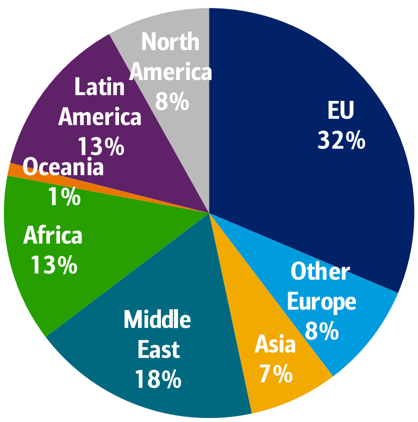
Türkiye

Steel shipments from Türkiye at risk of disruption, with Europe most exposed

Meanwhile, the earthquake that struck Türkiye early this month has added apprehension over steel deliveries. Indeed, damage to natural gas pipelines forced several steel mills to halt operations, with a dozen located in the affected regions of Iskenderun and Osmaniye. These account for a third of national steel output.

Türkiye is a key participant in the international finished steel market, exporting its products across all regions (Exhibit 26). The country is also the largest supplier of finished steel to Europe (Exhibit 27), so disruptions may feed through into local markets ex-Türkiye. This comes at a time where the Europe's second-largest trade partner, Russia, is banned from delivering finished steel, and the fourth-largest, Ukraine, suffered a 71% decline in production in 2022.

Exhibit 25: Turkey steel exports, by region
Turkey is a key player in the finished steel market, exporting products across the world



Source: Turkish Steel Exporters Association, BofA Global Research

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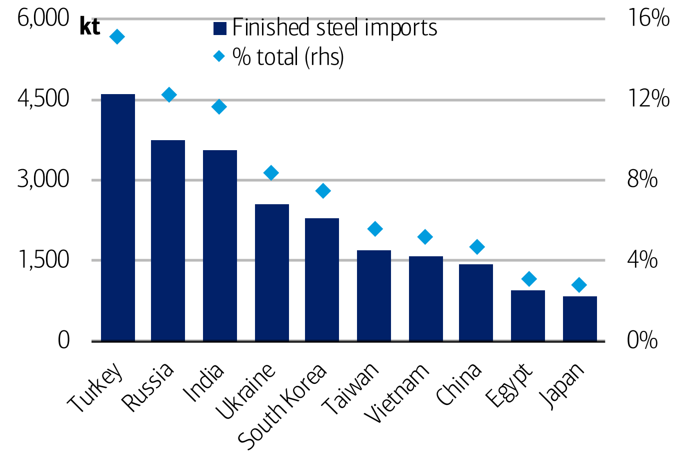
Exhibit 26: EU finished steel imports, by country (2021)
Turkey is the top supplier of finished steel to Europe



Source: EUROFERS, BofA Global Research

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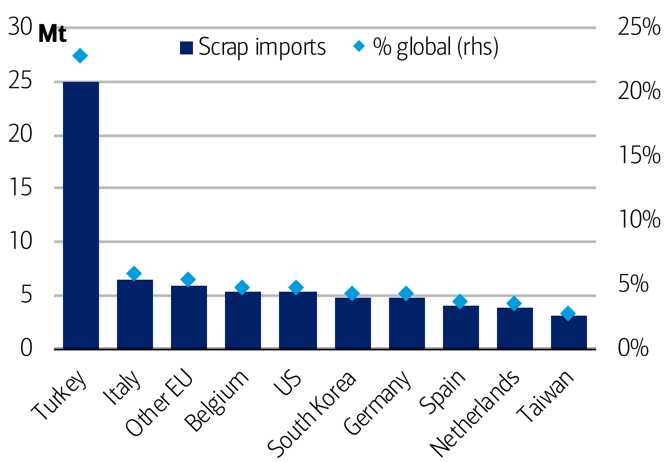
Turkish scrap prices might push higher on increased demand from construction

Developments in the steel scrap market are also worth following, because Turkey is the world's largest importer, representing nearly a quarter of the market (Exhibit 28). Operations at the port of Iskenderun have been suspended and may not come back to full capacity until May. The port is a key hub for the country's scrap trade, handling around 10Mt/y. Increased steel demand for reconstruction activities might continue to push scrap prices higher, as operators resume procurement and port constraints ease. Benchmark LME scrap prices for export to Turkey have risen by 4% since the first earthquake, from $415/t to $430/t.

Exhibit 27: Ferrous scrap imports, by country (2021)
Turkey is the world's largest importer of steel scrap



Source: WorldSteel, BofA Global Research

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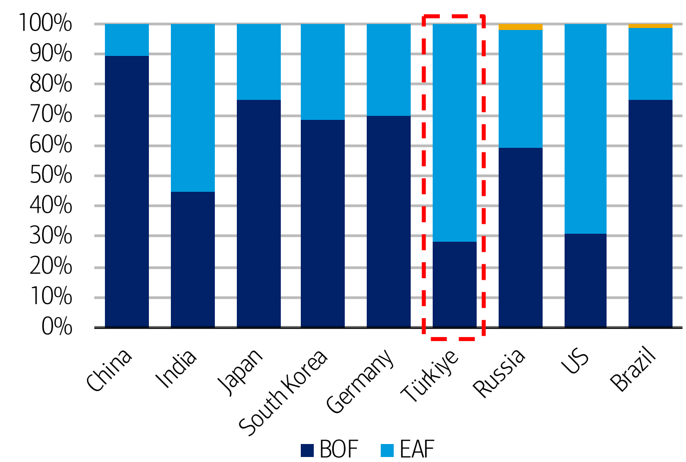
Exhibit 28: Steel production, by process (selected countries)
Most steel mills in Turkey are EAFs, i.e. use scrap as their main feedstock



Source: WorldSteel, BofA Global Research

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Appendix

Exhibit 29: 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	$2,738/t 124c/lb	$3,500/t 159c/lb	• China has reaching its 45mt capacity cap and smelters ex-China have closed capacity • Rolling COVID lockdowns pushed China's smelters to increase aluminium exports. As the economy reopens, these shipments should subside • A stabilisation of growth in the US and Europe should help demand • 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	$8,625/t 391c/lb	$9,875/t 448c/lb	• Demand in China has been patchy, but grid spending has completely offset weakness in housing. Demand may be more balanced in 2023, but it should hold up • Supply is disappointing, but additions are accelerating, pushing the market into surplus by 2023 • Inventories are low, which is supportive, but could also increase volatility • We expect a small **surplus** for 2023	• D: China re-exports metal • D: Global demand slows sharply into next year • U: Strong restocking through the supply chain on improved confidence • U: Continued production disruptions in coming quarters
Lead	$2,213t 100c/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	$25,625/t 1162c/lb	$25,000/t 1134c/lb	• Nickel demand from electric vehicle producers should rise in the coming years, yet more NPI is being converted to nickel sulphate • 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	$2,813/t 128c/lb	$2,500/t 113c/lb	• The project pipeline is not well filled with high quality operations • Zinc may remain an underperformer, but immediate downside more limited, also because smelter closures in Europe have not been offset by supply additions elsewhere	• D: Unreported inventories exist on the zinc market. More metal could become available • D: The zinc market is fragmented. There is evidence that miners, especially in China, could consider further output increases
Gold	$1,888/oz	$2,086/oz	• Gold has been a trade on US rates. Rising inflation has been bearish through rising nominal rates • Physical demand has been strong and a Fed pivot may bring more buyers into the market. • Gold to bottom out in 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	$23.40/oz	$25.75/oz	• The silver market has rebalanced on production discipline and demand from new applications including solar panels • If more spending on solar panels come through, silver should rally	• U: Investors returning to the market • U: China's imports to rise • D: ETF liquidation • D: More supply
Platinum Palladium	$1,325/oz $1,865/oz	$1,465/oz $1,632/oz	• Palladium is slowly moving into surplus, likely keeping prices capped. • Supply problems in South Africa have reduced platinum supply. The hydrogen economy and substitution should push the metal up	• D: Jewellery demand suffers due to rising prices. • D: In palladium, the risk of deliveries from Russian stockpiles has not gone away • D: Demand from key buyers like Europe not increasing • U: Production disruptions reduce availability of PT and PD
Iron Ore	$98/t CIF	$79/t CIF	• The iron ore market will likely be oversupplied in 2023. Yet, seasonal supply losses over La Nina in 1Q may temporarily push prices above $120/t • Stronger demand from Chinese mills may also help	• D: China's steel production slowing sharply • U: Stronger Chinese demand, for instance due to restocking • U: Mine closures/slowdown in production increases
HCC Thermal coal	$275/t $300t	$249/t $260/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	$100/bbl $94/bbl	$60/bbl $57/bbl	• We project Brent and WTI to average $100/bbl and $94/bbl in 2023, respectively • The global oil balance should stay tight in 2023, supported by rebounding Asia demand, slower non-OPEC growth, and OPEC+ mopping up excesses • We forecast global demand growth to slow to 1.7mn b/d YoY in 2023 from 2mn b/d in 2022 • Non-OPEC supply should grow roughly 1.8mn b/d YoY in 2022 and an additional 1mn b/d in 2023 • We project total US supply to rise 1.22mn b/d and 1.1mn b/d in 2022 and 2023, respectively • OPEC supplies are set to rise 2.6mn b/d in 2022 and 500k b/d in 2023 as OPEC+ actively manages balances	

Colours indicate our stance on each commodity: Green = bullish, Yellow = neutral, Red = cautious. **Source:** BofA Global Research estimates

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Supply and demand balances

Exhibit 31: Aluminium supply and demand balance
Deficits set to increase

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	67765	68292	70446	73628	74714
YoY change	3.6%	0.8%	3.2%	4.5%	1.5%
Global consumption	68693	69219	71960	75558	79336
YoY change	7.6%	0.8%	4.0%	5.0%	5.0%
Balance	-927	-927	-1515	-1930	-4622
Market inventories	9142	8215	6700	4770	148
Weeks of world demand	6.9	6.2	4.8	3.3	0.1
LME Cash ($/t)	2474	2684	2738	3500	3668
LME Cash (c/lb)	112	122	124	159	166

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

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Exhibit 32: Copper supply and demand balance
Balanced market in 2023E

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	24611	24918	25863	27184	27834
YoY change	5.0%	1.2%	3.8%	5.1%	2.4%
Global consumption	24825	25019	25811	26844	27918
YoY change	3.6%	0.8%	3.2%	4.0%	4.0%
Balance	-214	-101	52	340	-84
Market inventories	1164	1063	1114	1454	1370
Weeks of world demand	2.4	2.2	2.2	2.8	2.6
LME Cash ($/t)	9321	8778	8625	9875	10500
LME Cash (c/lb)	423	398	391	448	476

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

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Exhibit 33: 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	2130	2213	2000	1750
LME Cash (c/lb)	100	97	100	91	79

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

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Exhibit 34: Nickel supply and demand balance
Class 1 nickel may remain tight

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	2799	3264	3527	3794	3970
YoY change	8.1%	16.6%	8.1%	7.6%	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	210	15	113
Balance, excl. NPI oversupply	4	145	67	-255	-236
Market inventories	392	537	604	349	113
Weeks of world demand	7.6	10.4	9.5	4.8	1.5
LME price ($/t)	18455	25206	25625	25000	32500
LME price (c/lb)	837	1143	1162	1134	1474

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

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Exhibit 35: Zinc supply and demand balance
Project pipeline not a significant risk

'000 tonnes	2021	2022	2023E	2024E	2025E
Global production	14412	13500	14000	15150	15900
YoY change	1.9%	-6.3%	3.7%	8.2%	5.0%
Global consumption	13984	13837	14039	14334	14635
YoY change	6.2%	-1.1%	1.5%	2.1%	2.1%
Balance	427	-337	-39	816	1265
Market inventories	1185	848	808	1624	2889
Weeks of world demand	4.4	3.2	3.0	5.9	10.3
LME Cash ($/t)	3003	3446	2813	2500	2250
LME Cash (c/lb)	136	156	128	113	102

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

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Exhibit 36: Iron ore supply and demand balance
Flipping back into surplus

Wet mt	2021	2022E	2023E	2024E	2025E
Global production	2,268	2,289	2,326	2,456	2,565
YoY change	0.5%	0.9%	1.6%	5.6%	4.4%
Global consumption	2,301	2,223	2,275	2,310	2,310
YoY change	-0.5%	-3.4%	2.3%	1.5%	0.0%
Balance	-33	66	51	147	255
Iron ore price (US$/t)	160	117	98	79	82

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

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Exhibit 37: Platinum supply and demand balance
Substitution,a rebound of auto and hydrogen are all bullish

'000 ounces	2021	2022	2023E	2024E	2025E
Global production	7767	7054	7066	8023	8220
YoY change	21.4%	-9.2%	0.2%	13.5%	2.5%
Global consumption	7888	6532	7421	7550	7850
YoY change	11.5%	-17.2%	13.6%	1.7%	4.0%
Balance	-121	522	-355	474	370
Spot ($/oz)	1092	977	1325	1465	1453

Source: Matthey, company reports, BofA Global Research estimates

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Exhibit 38: Palladium supply and demand balance
Palladium will likely be oversupplied in the medium term

'000 ounces	2021	2022	2023E	2024E	2025E
Global production	10,010	9,686	9,720	10,515	10,899
YoY change	9.5%	-3.2%	0.3%	8.2%	3.7%
Global consumption	9,943	10,096	9,204	9,114	8,865
YoY change	0.6%	1.5%	-8.8%	-1.0%	-2.7%
Balance	67	-409	516	1,401	2,034
Spot ($/oz)	2,399	2,126	1,865	1,632	1,564

Source: Matthey, company reports, BofA Global Research estimates

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Exhibit 39: Cobalt supply and demand balance
Better supplied in 2023E

tonnes	2021	2022	2023E	2024E	2025
Global production	160,200	196,024	248,643	272,012	287,731
YoY change	15.1%	22.4%	26.8%	9.4%	5.8%
Global consumption	169,279	194,478	238,407	286,106	314,029
YoY change	26.2%	14.9%	22.6%	20.0%	9.8%
Balance	-9,080	1,547	10,237	-14,095	-26,299
Spot ($/lb)	23.4	31.6	27.5	32.0	27.6

Source: company reports, CRU, BofA Global Research

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Exhibit 40: Lithium supply and demand balance
Supply discipline needed in 2022/23E

	2021	2022	2023E	2024E	2025E
Global production	500,980	636,353	871,181	1,134,644	1,453,229
YoY change	18%	27%	37%	30%	28%
Global consumption	549,968	701,814	862,628	1,178,200	1,439,030
YoY change	64%	28%	23%	37%	22%
Balance	-48,989	-65,461	8,552	-43,556	14,199
Spot ($/lb)	19169	70496	67000	58076	40967

Source: company reports, CRU, BofA Global Research

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Exhibit 41: BofA mined commodities forecasts
Base metals to rally into 2H23

		Current	1Q23E	2Q23E	3Q23E	4Q23E	1Q24E	2Q24E	2022E	2023E	2024E	2025E	2026E	2027E	LT price
Base metals															
Aluminium	US$/t	2,385	2,450	2,750	2,750	3,000	3,250	3,250	2,684	2,738	3,500	3,668	3,097	2,494	2,369
	USc/lb	108	111	125	125	136	147	147	122	124	159	166	140	113	107
Copper	US$/t	9,084	7,500	8,000	9,000	10,000	10,500	10,000	8,778	8,625	9,875	10,500	9,607	8,523	8,315
	USc/lb	412	340	363	408	454	476	454	398	391	448	476	436	387	377
Lead	US$/t	2,141	2,250	2,500	2,050	2,050	2,000	2,000	2,130	2,213	2,000	1,750	2,110	2,493	2,638
	USc/lb	97	102	113	93	93	91	91	97	100	91	79	96	113	120
Nickel	US$/t	24,676	22,500	27,500	27,500	25,000	25,000	25,000	25,206	25,625	25,000	32,500	25,464	18,016	16,267
	USc/lb	1,119	1,021	1,247	1,247	1,134	1,134	1,134	1,143	1,162	1,134	1,474	1,155	817	738
NPI, 8-12%	CNY/t		1,000	1,000	1,000	1,000	1,032	1,032	1,359	1,000	1,032	1,062	1,117	1,175	1,210
Zinc	US$/t	3,143	2,750	3,000	2,750	2,750	2,500	2,500	3,446	2,813	2,500	2,250	2,482	2,729	2,841
	USc/lb	143	125	136	125	125	113	113	156	128	113	102	113	124	129
Precious metals															
Gold, nominal	US$/oz	1,832	1,750	1,800	2,000	2,000	2,100	2,200	1,797	1,888	2,086	1,900	1,987	2,081	2,140
Gold, real	US$/oz		1,707	1,756	1,951	1,951	1,999	2,094	1,797	1,841	1,986	1,764	1,780	1,796	1,800
Silver, nominal	US$/oz	20.74	21.50	22.11	25.00	25.00	26.00	27.00	21.73	23.40	25.75	23.50	26.44	29.58	30.92
Silver, real	US$/oz		20.98	21.57	24.39	24.39	24.75	25.70	21.73	22.83	24.51	21.82	23.60	25.49	26.00
Platinum	US$/oz	956	1,050	1,250	1,500	1,500	1,465	1,465	977	1,325	1,465	1,453	1,464	1,476	1,503
Palladium	US$/oz	1,428	2,000	1,750	2,000	1,710	1,632	1,632	2,126	1,865	1,632	1,564	1,527	1,489	1,503

		Current	1Q23E	2Q23E	3Q23E	4Q23E	1Q24E	2Q24E	2022E	2023E	2024E	2025E	2026E	2027E	LT price
Bulk Commodities															
Hard coking coal	US$/t fob	362	300	300	250	250	249	249	375	275	249	218	193	167	162
Semi-soft	US$/t fob	282	202	202	168	168	168	168	270	185	168	147	130	112	109
Thermal Coal	US$/t fob	194	300	300	300	300	260	260	302	300	260	190	146	99	87
Iron ore fines	US$/t CIF	127	110	100	90	90	79	79	117	98	79	82	85	89	91
Other materials															
Lithium spodumene	US$/t	6,000	6,000	6,000	5,000	5,000	4,000	4,000	4,296	5,500	4,000	3,000	2,029	1,001	
Lithium carbonate	US$/t	62,925	73,000	70,000	65,000	60,000	58,076	58,076	70,496	67,000	58,076	40,967	30,809	20,051	
Lithium hydroxide	US$/t	66,700	74,500	71,500	66,500	61,500	59,576	59,576	68,913	685	59,576	42,467	32,314	21,563	
Alumina	$/t	366	331	331	331	331	340	340	362	331	340	348	361	374	384
Uranium	$/lb		52.00	55.00	65.00	60.00	60.00	65.00	50.17	58.00	66.25	75.00	67.08	59.17	52.55
Molybdenum	$/lb	35	18.80	19.10	19.10	19.10	19.10	19.10	18.01	19.03	19.10	16.50	14.45	12.29	11.89
Cobalt	$/lb	17	30.00	30.00	25.00	25.00	30.00	30.00	31.55	27.50	32.00	27.62	24.15	20.48	19.81
Manganese ore	$/dmtu	6	4.60	4.60	4.60	4.60	5.52	5.52	6.02	4.60	5.52	5.65	5.86	6.09	6.25
Steel, HRC															
HRC, Europe	US$/t	800	663	667	671	674	619	621	946	669	622				
HRC, US	US$/t	1,213	925	1,157	937	772	816	816	1,120	948	816				
HRC, China	US$/t	660	558	556	575	571	568	585	663	565	595				

Energy		Current	1Q23E	2Q23E	3Q23E	4Q23E	1Q24E	2Q24E	2022E	2023E	2024E	2025E	2026E	2027E	LT price
Brent	US$/bbl	84.3	95.0	100.0	105.0	100.0	60.0	60.0	100.2	100.0	60.0	60.0	60.0	60.0	60.0
WTI	US$/bbl	77.7	89.0	94.0	99.0	94.0	57.0	57.0	95.3	94.0	57.0	57.0	57.0	57.0	57.0
Henry Hub	US$/MMBtu	2.8	5.5	4.1	4.2	4.3	2.6	2.6	6.4	4.5	2.6	2.6	2.6	2.6	2.6

Source: BofA Global Research estimates

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Key Market Data

Exhibit 42: Commodity prices, exchange rates, equity indices, yields and inventories
The China COVID reopening trade has fizzled out for now

Base metals	Cash, $/t	3-month, $/t	Cash, WoW change	3-month, WoW change
Aluminium	2,385	2,432	0.4%	0.6%
Copper	9,084	9,101	-0.2%	-0.1%
Lead	2,141	2,142	2.1%	1.8%
Nickel	24,676	24,890	-5.9%	-5.8%
Tin	25,139	25,334	-5.8%	-5.6%
Zinc	3,143	3,116	1.7%	1.9%
LMEX	4,104		-0.7%	
	Cash, c/lb	3-month, c/lb		
Aluminium	108	110		
Copper	412	413		
Lead	97	97		
Nickel	1,119	1,129		
Tin	1,140	1,149		
Zinc	143	141		

Other commodities, freight, exchange rates, equities and yields	Spot	WoW change
Gold, $/oz	1,837	0.6%
Silver, $/oz	21	-2.4%
Platinum, $/oz	959	0.6%
Palladium, $/oz	1,444	-2.7%
Iron ore, China fines cfr $/dmt	127	-0.1%
Brent, $/bbl	84	4.8%
Baltic Dry Index	1,099	63.1%
EUR/USD	1.067	0.6%
Dow Jones Industrial Average	32,662	-1.2%
10-year US Treasury yield	3.995	1.9%
ICE BofA Commodity index, ER	432	2.3%
ICE BofA Commodity index Industrial Metals, ER	201	-0.3%
ICE BofA Commodity index Precious Metals, ER	208	-0.1%
ICE BofA Commodity index Energy, ER	491	5.4%

Exchange stocks and cancelled warrants	Stocks, tonnes	WoW change	Canc. warrants, tonnes	Canc. warr., of stocks
Aluminium				
LME	585,750	0.0%	134,025	22.9%
Shanghai	291,416	0.0%		
Total aluminium	877,166	0.0%		
Copper				
LME	65,500	0.0%	13,700	20.9%
Comex	19,645	0.0%		
Shanghai	249,598	0.0%		
Total copper	334,743	0.0%		
Lead				
LME	24,975	0.0%	5,350	21.4%
Shanghai	77,216	0.0%		
Total lead	102,191	0.0%		
Nickel				
LME	45,054	0.0%	2,736	6.1%
Shanghai	3,283	0.0%		
Total nickel	48,337	0.0%		
Tin	3,075	0.0%	715	23.3%
Zinc				
LME	29,475	0.0%	6,300	21.4%
Shanghai	121,413	0.0%		
Total zinc	150,888	0.0%		

Source: BofA Global Research

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Disclosures

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