

Copper Dashboard

Positive into 2024; market in balance as ROW demand recovers and supply tightens

Key takeaways: (1) Global copper output was up 1.2% YTD through November with early Dec data from Chile strong indicating that 2023 output was solid; this was largely matched by demand where strong China consumption offset a weak RoW demand. (2) Spot TCs have plunged from \$90/t in Aug-23 to sub \$30/t, indicating a tight concentrate market; meanwhile copper inventories remain at multi-year lows. Furthermore, JPM's Global Commodity team sees a largely balanced market in 2024 and a deficit in 2025 after the recent supply disruptions (Cobre Panama, etc.) ([link](#)). (3) Despite improving fundamentals, copper prices have moved sideways recently, with the macro economic backdrop still uninspiring. Overall, JPM's Global Commodity team's bullish copper view hinges on 3.5% growth in China demand, helped also by a recovery in RoW in 2H CY24. For more on the copper and base metals market, see Greg Shearer's latest report here: [Metals Weekly: The Year of the Dragon casts its long shadow over base metals for now](#).

On equities, JPM's Global copper miner stock ratings are in the comps table below. Based on our constructive copper outlook, we have a positive bias in stock ratings across our global copper coverage, noting we recently upgraded SFR to an Overweight ([link](#)). With the broader sector trading at a 2025E EV/EBITDA of 5.6x, and with a 2025E dividend yield of 5.1%, we see good valuation support among the copper equities.

Metals & Mining

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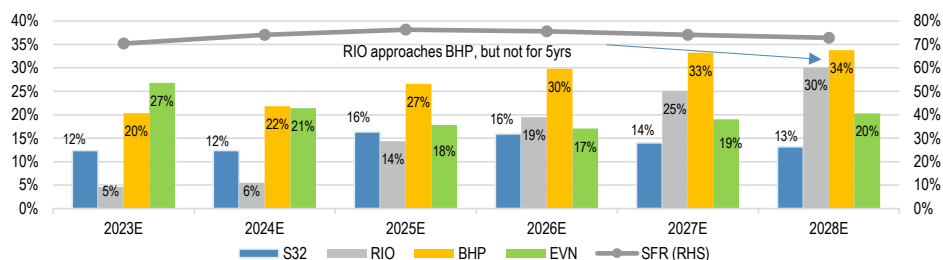
Table 1: JP Morgan Copper coverage comp sheet

Company	Ticker	Covering Analyst	JPM Rating	Market cap (US\$bn)	EV (US\$bn)	Price local FX	JPM Target local FX	Upside %	EV/EBITDA 2024 (x)	EV/EBITDA 2025 (x)	PE 2024 (x)	PE 2025 (x)	Dividend yield 2024 (x)	Dividend yield 2025 (x)	ND/EBITDA 1yr fwd (x)
BHP Ltd.	BHP AU	Lyndon Fagan	Overweight	151.2	165.1	45.9	51.0	11%	5.5	5.7	11.1	11.3	5.0%	4.9%	0.4
Rio Tinto Ltd.	RIO AU	Lyndon Fagan	Overweight	114.9	121.5	128.3	137.0	7%	4.6	4.9	10.4	11.1	6.0%	5.6%	0.2
Rio Tinto Plc	RIO LN	Patrick Jones	Overweight	114.9	120.2	5,349.0	7,000.0	31%	4.5	4.8	8.3	9.0	6.8%	6.5%	0.2
Glencore	GLEN LN	Patrick Jones	Rating Suspended	62.7	85.0	409.4			5.1	4.8	10.9	10.3	4.2%	5.4%	1.2
Southern Copper	SCCO US	Rodolfo Angele	Underweight	61.6	66.9	79.7	63.5	-20%	11.9	10.5	22.5	17.9	3.8%	4.4%	1.0
Vale	VALE3 BZ	Rodolfo Angele	Overweight	58.3	69.8	65.5	102.0	56%	3.7	3.8	5.1	5.6	8.5%	8.2%	0.6
Freeport	FCX US	Bill Peterson	Neutral	55.5	70.7	38.7	43.0	11%	7.5	6.5	24.8	18.7	1.5%	1.7%	0.6
Grupo Mexico	GMEXICOBMM	Rodolfo Angele	Neutral	40.7	45.9	89.5	92.0	3%	5.9	4.9	12.7	9.7	5.1%	6.6%	0.4
Anglo American	AAL LN	Patrick Jones	Overweight	27.8	42.7	1,810.0	2,450.0	35%	4.1	4.1	10.0	9.5	4.1%	4.3%	1.0
Teck	TECK/B CN	Bill Peterson	Overweight	19.9	25.4	52.1	60.0	15%	4.9	7.0	9.3	15.8	1.0%	1.0%	1.1
Antofagasta	ANTO LN	Patrick Jones	Underweight	21.3	25.3	1,720.5	1,380.0	-20%	7.5	6.3	27.8	21.9	1.7%	2.0%	0.3
First Quantum	FM CN	Patrick Jones	Neutral	6.3	12.9	12.3	11.0	-11%	8.1	4.0	64.2	6.6	0.5%	0.6%	2.2
South32	S32 AU	Lyndon Fagan	Overweight	9.2	9.7	3.1	4.2	34%	5.3	4.1	18.2	9.4	2.2%	4.1%	0.8
Boliden	BOL SS	Patrick Jones	Underweight	6.9	7.9	267.2	260.0	-3%	5.6	4.7	11.3	8.8	3.0%	4.1%	0.7
KGHM	KGH PW	Anna Antonova	Underweight	5.4	6.5	109.3	95.0	-13%	5.2	4.7	17.2	12.3	1.2%	1.6%	1.6
Lundin Mining	LUN CN	Patrick Jones	Neutral	6.3	9.3	11.1	8.4	-24%	5.7	5.3	15.1	13.9	3.9%	3.8%	1.3
Sandfire	SFR AU	Lyndon Fagan	Overweight	2.1	2.5	7.0	8.1	15%	7.8	5.0	4559.0	15.5	0.1%	1.6%	1.7
Ivanhoe Electric	IE US	Bill Peterson	Overweight	1.0	0.8	8.2	18.0	120%							
Average									5.7	5.6	25.4	11.7	4.9%	5.1%	0.6

Source: Bloomberg Finance L.P., J.P. Morgan estimates. Prices are based on the most recent close.

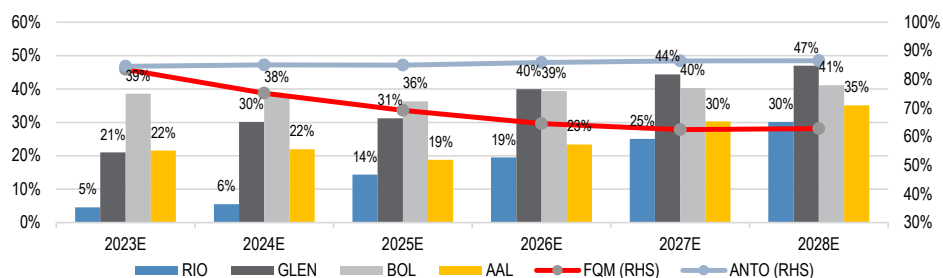
Copper miners

Figure 1: ASX copper exposure – EBIT exposure*



Source: J.P. Morgan estimates. *Note SFR and EVN show revenue exposure.

Figure 2: EMEA copper exposure – EBIT exposure*



Source: J.P. Morgan estimates. *Note BOL, FQM and ANTO show revenue exposure. Note: FQM stands for First Quantum.

Table 2: Global consensus copper comps

Company	Ticker	JPM Rating	Market cap USD (\$bn)	EV USD (\$bn)	Price local FX	EV/EBITDA 1yr fw	PE 1yr fw	Div yield 1yr fw	ND/EBITDA 1yr fw
BHP Ltd.	BHP AU	Overweight	151.2	165.1	45.9	5.6	11.2	5.0%	0.4
Rio Tinto Ltd.	RIO AU	Overweight	114.9	121.5	128.3	4.6	10.4	6.0%	0.2
Rio Tinto Plc	RIO LN	Overweight	114.9	120.2	53.5	4.6	8.4	6.8%	0.2
Glencore	GLEN LN	Rating Suspended	62.7	85.0	4.1	5.1	10.9	4.3%	1.2
Anglo American	AAL LN	Overweight	27.8	42.7	18.1	4.1	9.9	4.1%	1.0
Vale	VALE3 BZ	Overweight	58.3	69.8	65.5	3.7	5.1	8.5%	0.6
South32	S32 AU	Overweight	9.2	9.7	3.1	4.5	11.6	3.4%	0.8
Freeport	FCX US	Neutral	55.5	70.7	38.7	7.4	24.0	1.5%	0.6
Southern Copper	SCCO US	Underweight	61.6	66.9	80	11.8	21.9	3.9%	1.0
Grupo Mexico	GMEXICOBMM	Neutral	40.7	45.9	89	5.8	12.3	5.2%	0.4
Antofagasta	ANTO LN	Underweight	21.3	25.3	17.2	7.4	27.1	1.7%	0.3
First Quantum	FM CN	Neutral	6.3	12.9	12.3	7.3	33.7	0.6%	2.2
KGHM	KGH PW	Underweight	5.4	6.5	109.3	5.2	16.5	1.3%	1.6
MMG	1208 HK		2.1	9.4	1.9	6.0	9.4	0.0%	3.4
Jianxi Copper	358 HK		7.0	10.8	10.7	6.3	5.2	5.5%	
Zijin Mining	2899 HK		43.3	63.4	11.6	8.5	10.2	2.8%	
Teck	TECK/B CN	Overweight	19.9	25.4	52.1	5.0	9.7	1.0%	1.1
Lundin Mining	LUN CN	Neutral	6.3	9.3	11.1	5.6	15.0	3.9%	1.3
Boliden	BOL SS	Underweight	6.9	7.9	267	5.5	10.9	3.1%	0.7
Hud Bay	HBM CN		1.9	3.2	7.2	3.6	8.4	0.2%	2.3
Sandfire	SFR AU	Overweight	2.1	2.5	7.0	5.8	25.5	1.0%	1.7
29 Metals	29M AU		0.1	0.1	0.3	4.1		0.0%	
Average						5.9	12.5	4.8%	0.5

Source: Bloomberg Finance L.P., J.P. Morgan. Prices are based on the most recent close. Consensus estimates from Bloomberg for all stocks.

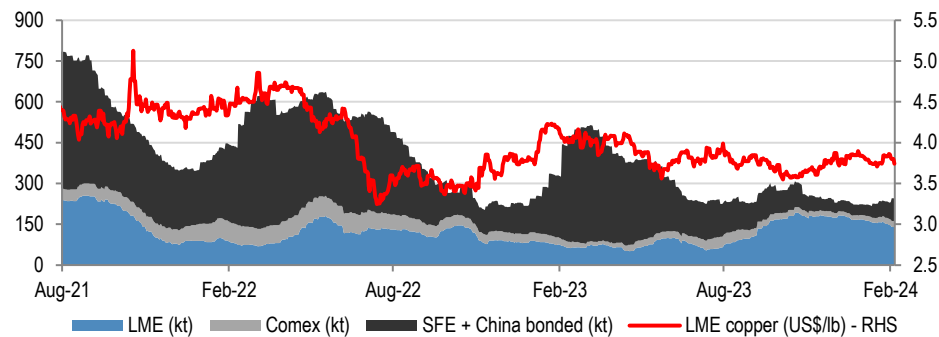
Table 3: Global copper production

Mined Copper	2020	2021	2022	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Global (Mt)	20.7	21.1	22.1	1.9	1.9	1.8	1.9	1.8	1.9	1.9	1.8	1.8	1.9	1.9	1.8	
Annualised (Mtpa)				22.9	22.0	23.3	21.9	22.4	21.9	23.0	21.7	21.8	22.5	22.0	22.5	
Year to date production (Mt)				22.1	1.9	3.7	5.5	7.4	9.2	11.1	13.0	14.8	16.7	18.5	20.4	
Year to date change (YoY)				4.6%	3.6%	5.8%	4.6%	4.5%	3.4%	3.0%	2.5%	2.1%	1.7%	1.4%	1.2%	
Change MoM				1.6%	-4.0%	5.9%	-5.9%	2.1%	-2.4%	5.0%	-5.7%	0.5%	3.4%	-2.4%	2.2%	
Change YoY		2.1%	4.6%	5.7%	3.6%	8.1%	2.4%	4.2%	-0.9%	1.2%	-0.2%	-0.5%	-1.4%	-1.6%	-0.4%	
Chile (Mtpa)	5.8	5.7	5.4	5.8	5.1	5.0	5.2	5.1	4.9	5.6	5.1	5.2	5.6	5.4	5.4	5.8
Peru (Mtpa)	2.1	2.3	2.5	2.9	2.5	2.7	2.6	2.7	2.7	2.8	2.3	2.6	2.9	2.8	3.1	
DRC (Mtpa)	1.5	1.8	2.2	2.3	2.5	2.7	2.5	2.6	2.5	2.5	2.4	2.5	2.6	2.6	2.6	
China (Mtpa)	1.8	1.9	2.1	2.2	1.9	2.1	1.9	1.9	1.8	2.0	1.9	1.8	1.8	1.8	1.8	
US (Mtpa)	1.2	1.2	1.3	1.3	1.2	1.3	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.2	
Russia (Mtpa)	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	1.0	
Indonesia (Mtpa)	0.5	0.7	0.9	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	0.9	1.0	0.9	0.9	
Zambia (Mtpa)	0.9	0.9	0.8	0.8	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	
Australia (Mtpa)	0.9	0.8	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	
Others (Mtpa)	5.2	4.9	5.0	4.8	5.2	5.8	5.1	5.4	5.3	5.1	5.0	5.0	4.9	4.7	4.8	
Change YoY (%)		2021	2022	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
Chile		-2.4%	-5.2%	-1.0%	1.3%	-3.7%	-4.8%	-0.7%	-13.5%	-0.2%	1.8%	4.5%	5.0%	-4.4%	-2.6%	0.0%
Peru		6.6%	8.0%	18.0%	5.6%	16.9%	17.8%	25.3%	25.9%	12.2%	-4.2%	5.5%	0.5%	4.4%	13.9%	
DRC		19.1%	24.8%	20.4%	19.9%	25.2%	21.3%	12.9%	9.9%	11.2%	8.0%	11.0%	16.3%	12.3%	6.3%	
China		6.1%	8.9%	10.4%	-0.9%	15.3%	-1.1%	-0.1%	-6.1%	-8.5%	-7.0%	-18.2%	-23.8%	-18.3%	-10.8%	
US		2.6%	6.2%	0.8%	-8.7%	-11.7%	-12.4%	-10.8%	-7.1%	0.2%	-2.8%	-8.8%	-8.8%	-5.0%	-5.4%	
Russia		2.5%	10.8%	9.7%	8.9%	11.3%	6.1%	1.6%	-2.6%	-1.3%	8.7%	-2.5%	-1.7%	-1.6%	4.9%	
Indonesia		49.9%	26.7%	16.5%	8.2%	5.4%	0.3%	0.5%	-1.1%	1.1%	-0.6%	0.6%	1.0%	0.9%	-3.4%	
Zambia		5.5%	-6.1%	-10.3%	-5.2%	6.0%	-8.2%	-6.8%	-8.1%	0.2%	2.1%	-4.0%	-4.0%	1.6%	-3.6%	
Australia		-5.3%	3.9%	16.2%	11.0%	1.3%	-1.4%	-5.8%	-8.1%	-6.3%	-4.3%	-9.1%	-9.8%	-3.0%	-1.5%	
Others		-5.3%	2.3%	-0.1%	1.9%	13.8%	3.2%	6.5%	3.3%	-0.6%	-1.5%	-1.2%	-3.1%	-0.7%	-3.4%	

Source: Bloomberg Finance L.P.

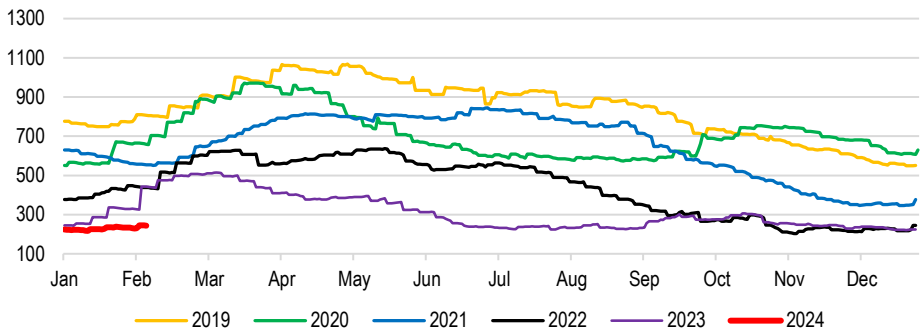
Copper price and inventory data

Figure 3: Global copper inventory vs price



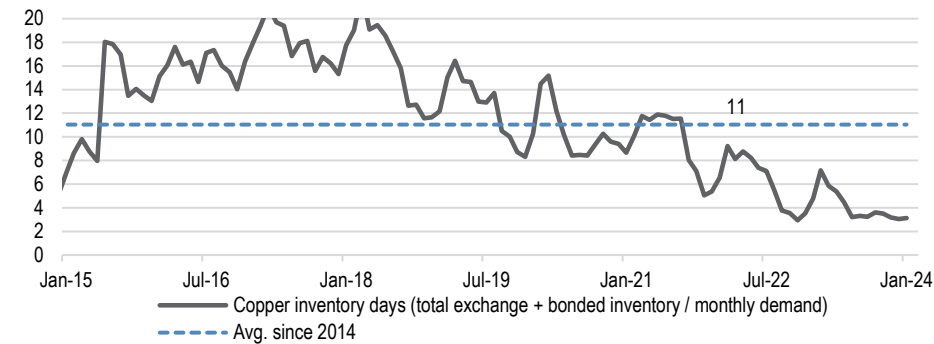
Source: Bloomberg Finance L.P.

Figure 4: Global copper warehouse inventory (LME+Comex+China) seasonality (kt)



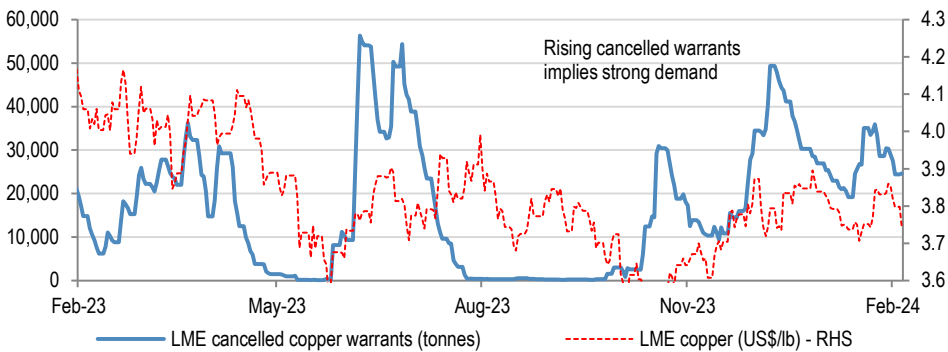
Source: Bloomberg Finance L.P.

Figure 5: Global copper inventory days (LME+China SHFE & bonded+Comex)



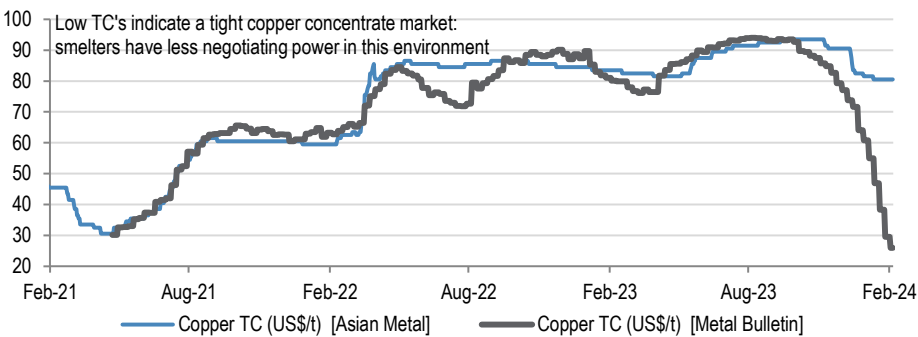
Source: Bloomberg Finance L.P.

Figure 6: LME cancelled warrants (tonnes)



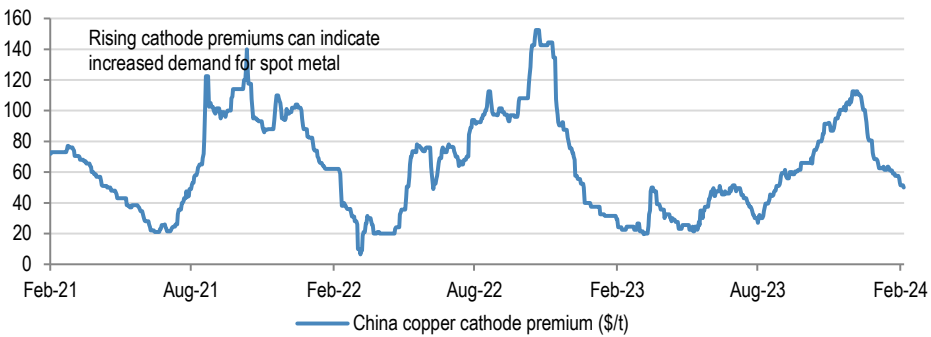
Source: Bloomberg Finance L.P.

Figure 7: Copper smelter treatment charge (\$/t)



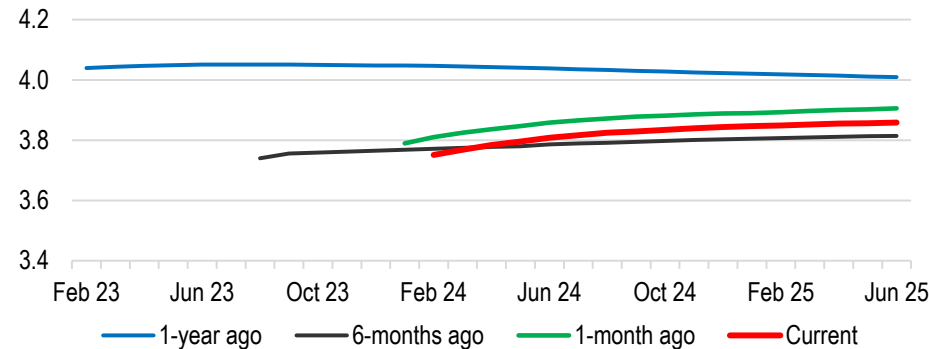
Source: Bloomberg Finance L.P.

Figure 8: China cathode premium (\$/t)



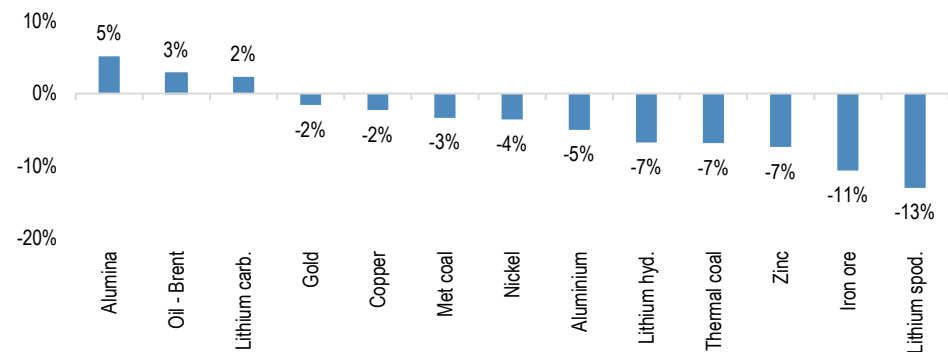
Source: Bloomberg Finance L.P.

Figure 9: LME copper price forward curve (\$/lb)



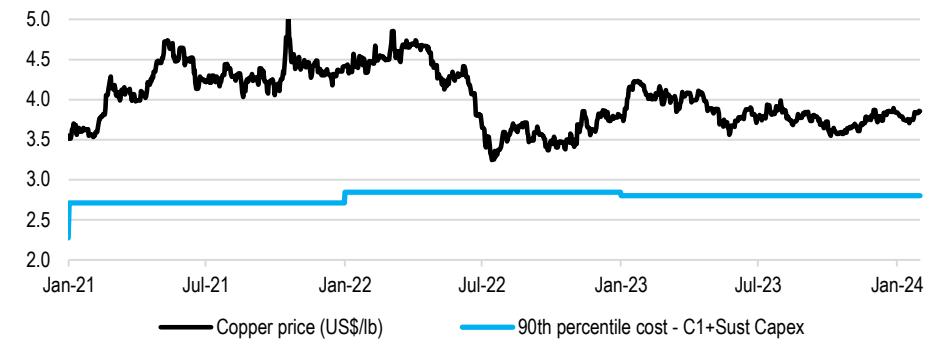
Source: Bloomberg Finance L.P.

Figure 10: Copper vs. other commodities – 2024 calendar YTD move



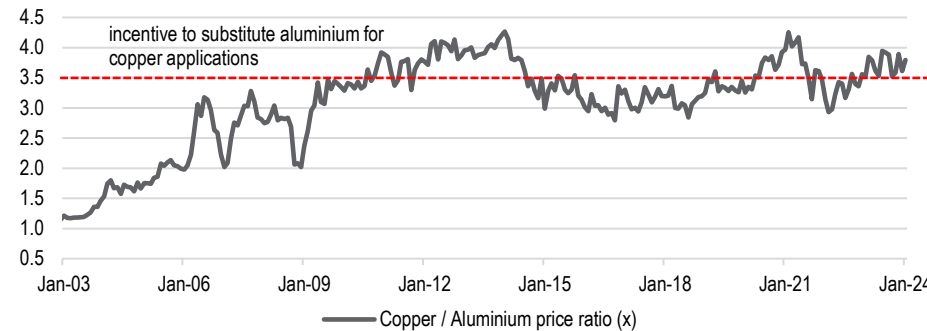
Source: Bloomberg Finance L.P.

Figure 11: Copper price vs. marginal cost (US\$/lb)



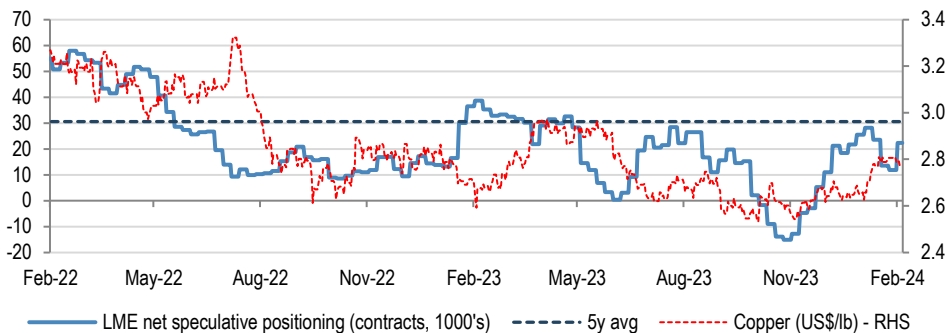
Source: Bloomberg Finance L.P., WoodMac.

Figure 12: Copper / Aluminium price ratio – a ratio above 4x typically indicates substitution risk to demand



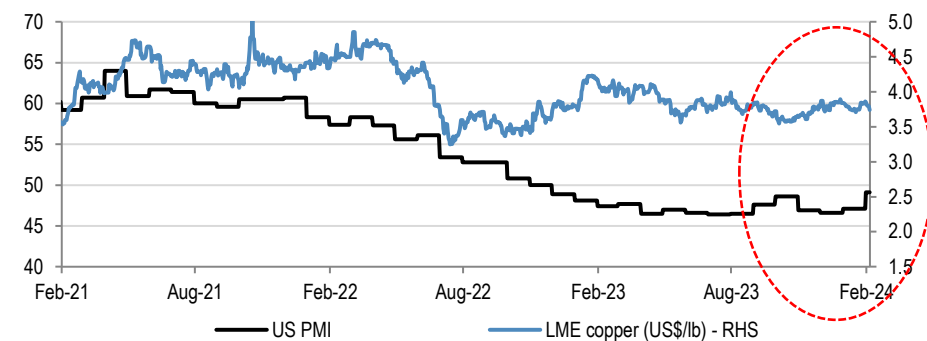
Source: Bloomberg Finance L.P.

Figure 13: LME net speculative positioning



Source: Bloomberg Finance L.P.

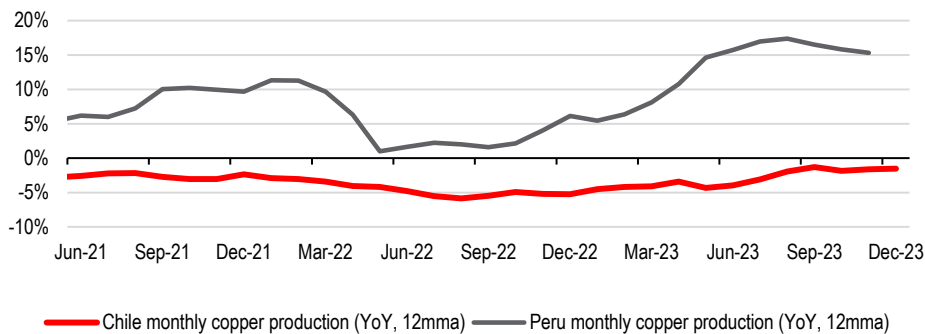
Figure 14: Copper price vs. US PMI



Source: Bloomberg Finance L.P.

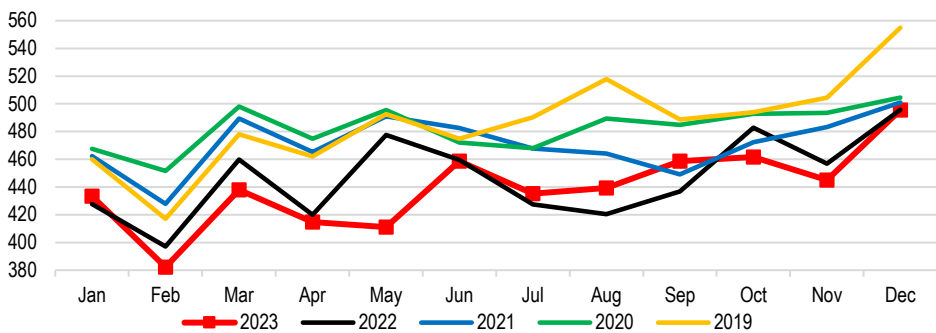
Chile and Peru copper production

Figure 15: Chile vs. Peru monthly copper production (YoY changes, 12-month moving average)



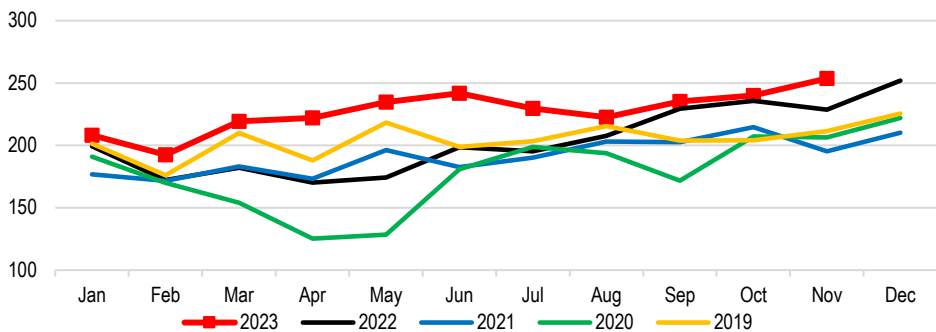
Source: Bloomberg Finance L.P.

Figure 16: Chile monthly copper production (kt)



Source: Bloomberg Finance L.P.

Figure 17: Peru monthly copper production (kt)



Source: Bloomberg Finance L.P.

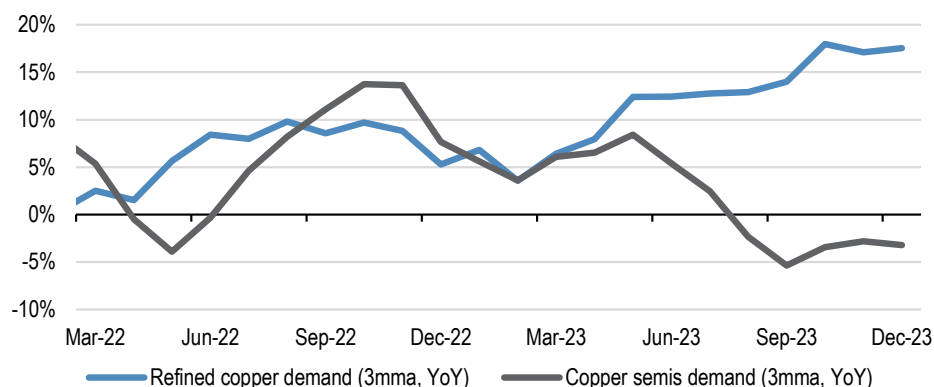
China production and consumption

Table 4: China copper production and trade

Copper	Dec-22 Month	Nov-23 Month	Dec-23 Month	Change MoM	Change YoY	Dec-22 YTD	Dec-23 YTD	Change YoY
Refined copper production (kt)	961	1,140	1,169	3%	22%	11,063	12,988	17%
Refined copper net imports (kt)	354	384	328	-15%	-7%	3,632	3,459	-5%
Inventory draw (build), SFE + bonded (kt)	-9	31	9			-37	-80	
Refined copper demand (kt)	1,306	1,554	1,506	-3%	15%	14,658	16,368	12%
Copper product production (kt)	2,164	2,012	1,950	-3%	-10%	22,865	22,170	-3%
Copper product net imports (kt)	455	474	393	-17%	-14%	4,955	4,545	-8%
Copper product demand (kt)	2,619	2,486	2,343	-6%	-11%	27,820	26,715	-4%
Copper concentrate net imports (Mt)	2.1	2.4	2.5	2%	18%	25	28	9%
Copper scrap imports (kt)	139	183	200	9%	44%	1,772	1,987	12%
Refined + products + conc. + scrap imports (Mt)	1.5	1.7	1.5	-7%	5%	16.7	16.9	1%

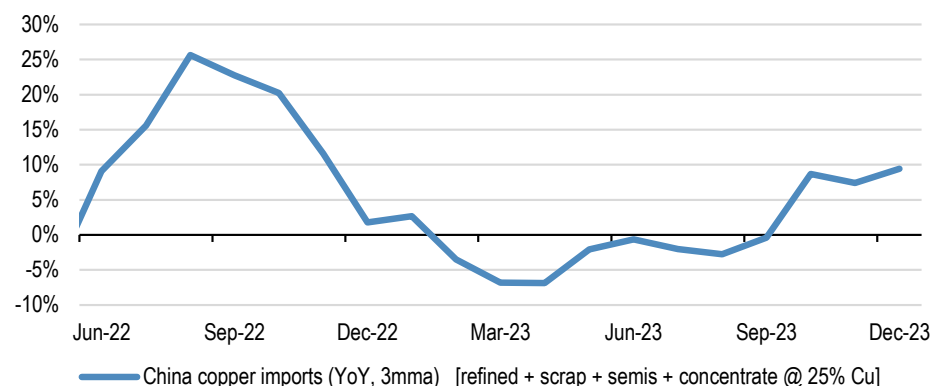
Source: Bloomberg Finance L.P.

Figure 18: China refined copper demand, YoY change



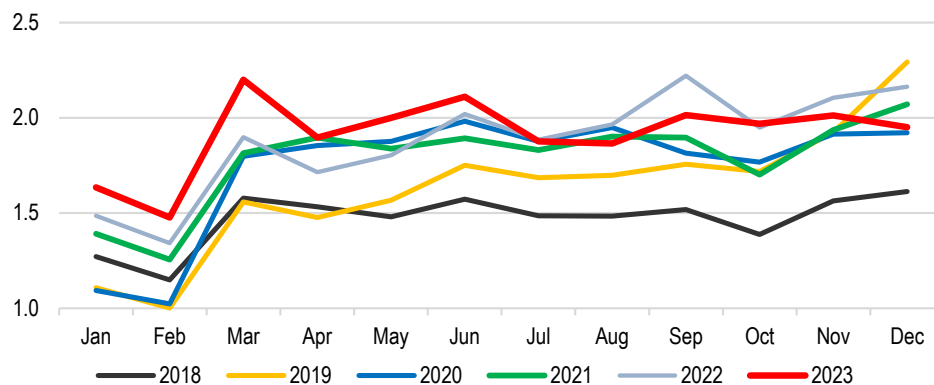
Source: Bloomberg Finance L.P.

Figure 19: China copper imports, YoY change



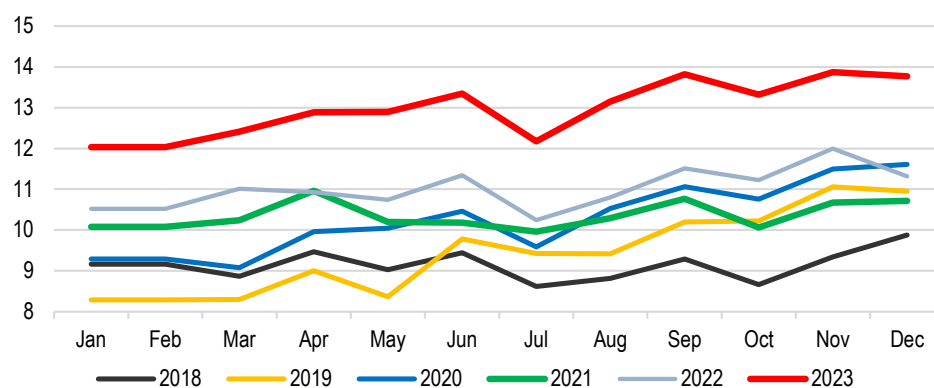
Source: Bloomberg Finance L.P., J.P. Morgan.

Figure 20: China copper product (semis) production (Mtpa rate)



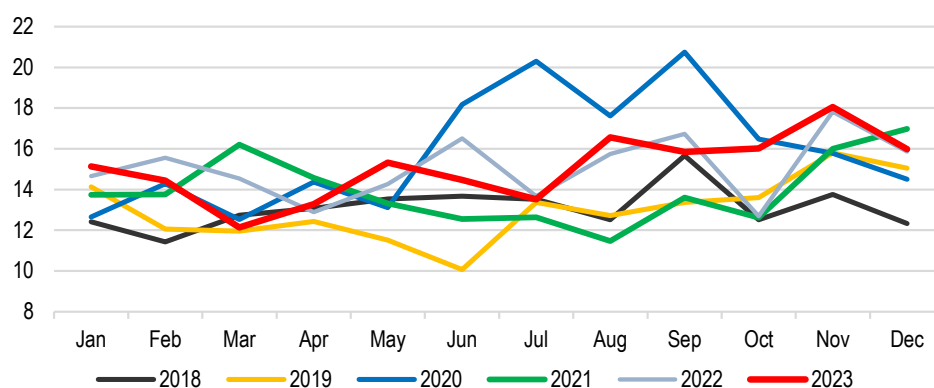
Source: Bloomberg Finance L.P.

Figure 21: China refined copper production (Mtpa rate)



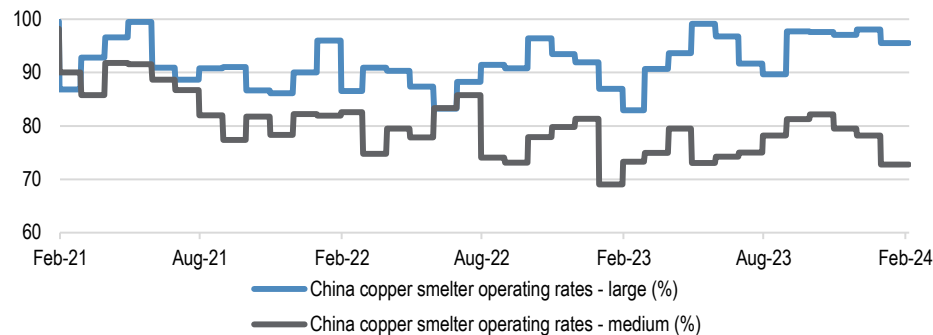
Source: Bloomberg Finance L.P.

Figure 22: Copper refined + scrap + concentrate net imports (Mtpa rate)



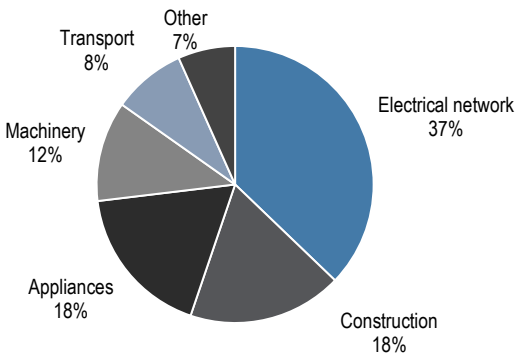
Source: Bloomberg Finance L.P.

Figure 23: China copper smelter operating rates



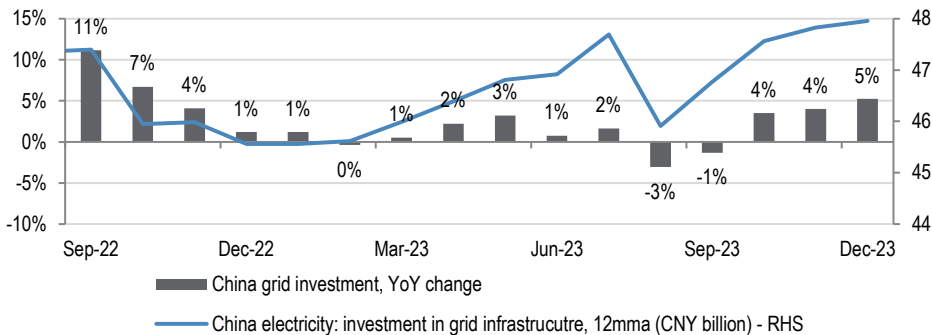
Source: Bloomberg Finance L.P.

Figure 24: China copper demand by sector



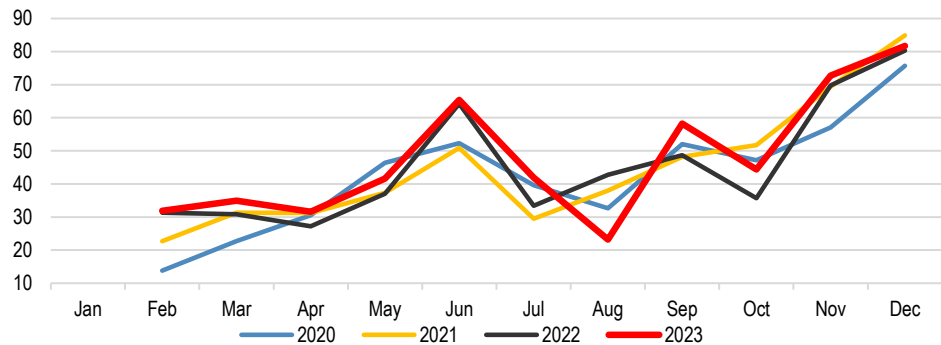
Source: WoodMac.

Figure 25: China investment in electrical infrastructure



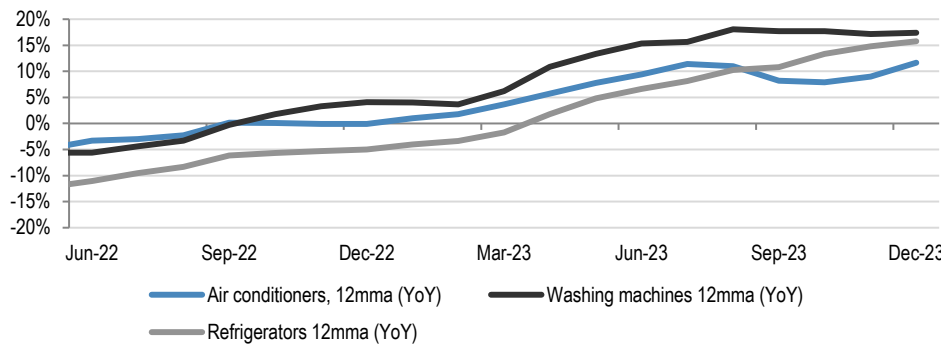
Source: Bloomberg Finance L.P.

Figure 26: China investment in electrical infrastructure (CNY bn)



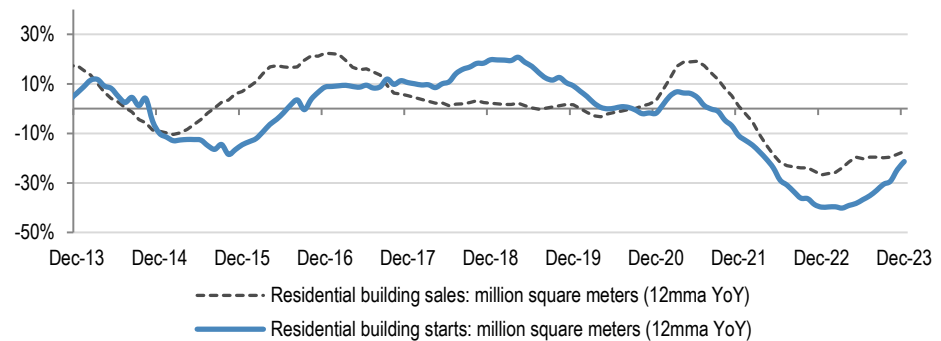
Source: Bloomberg Finance L.P.

Figure 27: China appliances production growth



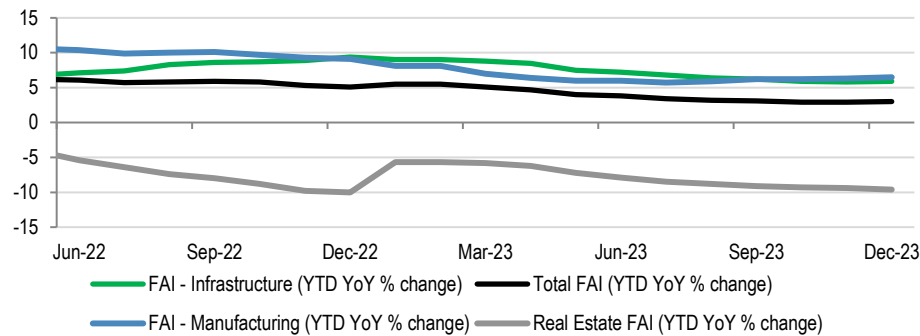
Source: Bloomberg Finance L.P.

Figure 28: China property



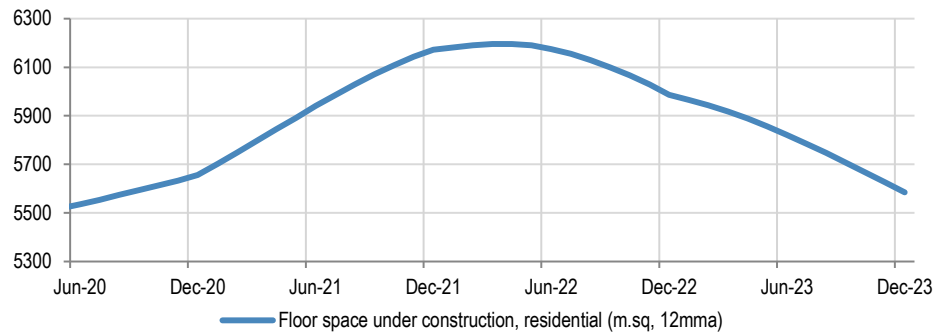
Source: Bloomberg Finance L.P.

Figure 29: China FAI



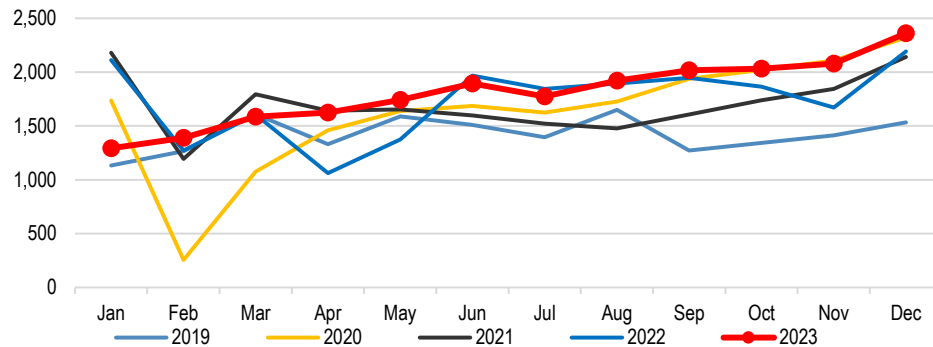
Source: Bloomberg Finance L.P.

Figure 30: China property – residential area under construction



Source: Bloomberg Finance L.P.

Figure 31: China total vehicle sales



Source: Bloomberg Finance L.P.

Table 5: Global PMI

		Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24
Groups	JP Morgan Global	48.8	48.7	49.1	49.9	49.6	49.6	49.5	48.7	48.6	49.0	49.2	48.8	49.3	49.0	50.0
	Developed Markets	47.8	47.3	48.1	48.1	48.4	48.5	47.6	46.3	47.1	46.8	47.4	47.5	47.7	47.0	48.9
	Emerging Markets	49.7	49.8	49.9	51.6	50.7	50.5	51.4	51.1	50.2	51.4	50.9	50.1	50.9	50.9	51.1
	European Union	46.7	47.5	48.6	48.3	47.3	45.8	44.9	43.4	42.7	43.4	43.4	43.2	44.4	44.5	46.5
	Eurozone	47.1	47.8	48.8	48.5	47.3	45.8	44.8	43.4	42.7	43.5	43.4	43.1	44.2	44.4	46.6
Asia Pacific	China (Caixin/Markit)	49.4	49.0	49.2	51.6	50.0	49.5	50.9	50.5	49.2	51.0	50.6	49.5	50.7	50.8	50.8
	China (Official PMI)	48.0	47.0	50.1	52.6	51.9	49.2	48.8	49.0	49.3	49.7	50.2	49.5	49.4	49.0	49.2
	Hong Kong	48.7	49.6	51.2	53.9	53.5	52.4	50.6	50.3	49.4	49.8	49.6	48.9	50.1	51.3	49.9
	India	55.7	57.8	55.4	55.3	56.4	57.2	58.7	57.8	57.7	58.6	57.5	55.5	56.0	54.9	56.5
	Indonesia	50.3	50.9	51.3	51.2	51.9	52.7	50.3	52.5	53.3	53.9	52.3	51.5	51.7	52.2	52.9
	Japan	49.0	48.9	48.9	47.7	49.2	49.5	50.6	49.8	49.6	49.6	48.5	48.7	48.3	47.9	48.0
	Malaysia	47.9	47.8	46.5	48.4	48.8	48.8	47.8	47.7	47.8	47.8	46.8	46.8	47.9	47.9	49.0
	Singapore	49.8	49.7	49.8	50.0	49.9	49.7	49.5	49.7	49.8	49.9	50.1	50.2	50.3	50.5	50.7
	South Korea	49.0	48.2	48.5	48.5	47.6	48.1	48.4	47.8	49.4	48.9	49.9	49.8	50.0	49.9	51.2
	Taiwan	41.6	44.6	44.3	49.0	48.6	47.1	44.3	44.8	44.1	44.3	46.4	47.6	48.3	47.1	48.8
	Vietnam	47.4	46.4	47.4	51.2	47.7	46.7	45.3	46.2	48.7	50.5	49.7	49.6	47.3	48.9	50.3
	Australia	51.3	50.2	50.0	50.5	49.1	48.0	48.4	48.2	49.6	49.6	48.7	48.2	47.7	47.6	50.1
	New Zealand	47.3	48.0	51.0	51.5	48.0	48.7	48.7	47.5	46.7	45.9	45.2	42.8	46.5	43.1	-
Europe	Austria	46.6	47.3	48.4	47.1	44.7	42.0	39.7	39.0	38.8	40.6	39.6	41.7	42.2	42.0	43.0
	Czech Republic	41.6	42.6	44.6	44.3	44.3	42.8	42.8	40.8	41.4	42.9	41.7	42.0	43.2	41.8	43.0
	France	48.3	49.2	50.5	47.4	47.3	45.6	45.7	46.0	45.1	46.0	44.2	42.8	42.9	42.1	43.1
	Germany	46.2	47.1	47.3	46.3	44.7	44.5	43.2	40.6	38.8	39.1	39.6	40.8	42.6	43.3	45.5
	Greece	48.4	47.2	49.2	51.7	52.8	52.4	51.5	51.8	53.5	52.9	50.3	50.8	50.9	51.3	54.7
	Ireland	48.7	48.7	50.1	51.3	49.7	48.6	47.5	47.3	47.0	50.8	49.6	48.2	50.0	48.9	49.5
	Italy	48.4	48.5	50.4	52.0	51.1	46.8	45.9	43.8	44.5	45.4	46.8	44.9	44.4	45.3	48.5
	Netherlands	46.0	48.6	49.6	48.7	46.4	44.9	44.2	43.8	45.3	45.9	43.6	43.8	44.9	44.8	48.9
	Poland	43.4	45.6	47.5	48.5	48.3	46.6	47.0	45.1	43.5	43.1	43.9	44.5	48.7	47.4	47.1
	Spain	45.7	46.4	48.4	50.7	51.3	49.0	48.4	48.0	47.8	46.5	47.7	45.1	46.3	46.2	49.2
	United Kingdom	46.5	45.3	47.0	49.3	47.9	47.8	47.1	46.5	45.3	43.0	44.3	44.8	47.2	46.2	47.0
	Russia	53.2	53.0	52.6	53.6	53.2	52.6	53.5	52.6	52.1	52.7	54.5	53.8	53.8	54.6	52.4
	Switzerland	54.4	54.5	49.3	48.9	47.0	45.3	43.2	44.9	38.5	39.9	44.9	40.6	42.1	43.0	43.1
	Turkey	45.7	48.1	50.1	50.1	50.9	51.5	51.5	51.5	49.9	49.0	49.6	48.4	47.2	47.4	49.2
Americas	Brazil	44.3	44.2	47.5	49.2	47.0	44.3	47.1	46.6	47.8	50.1	49.0	48.6	49.4	48.4	52.8
	Canada	49.6	49.2	51.0	52.4	48.6	50.2	49.0	48.8	49.6	48.0	47.5	48.6	47.7	45.4	48.3
	Mexico	50.6	51.3	48.9	51.0	51.0	51.1	50.5	50.9	53.2	51.2	49.8	52.1	52.5	52.0	50.2
	United States	47.7	46.2	46.9	47.3	49.2	50.2	48.4	46.3	49.0	47.9	49.8	50.0	49.4	47.9	50.7
	US ISM	49.0	48.4	47.4	47.7	46.3	47.1	46.9	46.0	46.4	47.6	48.6	46.9	46.6	47.1	49.1
Middle East	Egypt	45.4	47.2	45.5	46.9	46.7	47.3	47.8	49.1	49.2	49.2	48.7	47.9	48.4	48.5	48.1
	Israel	49.0	56.9	53.9	52.3	51.5	48.9	50.2	48.2	48.3	48.1	49.2	47.6	47.1	49.2	-
	Lebanon	48.1	47.3	47.7	48.8	49.7	49.5	49.4	50.2	50.3	48.7	49.1	48.9	49.5	48.4	49.4
	Saudi Arabia	58.5	56.9	58.2	59.8	58.7	59.6	58.5	59.6	57.7	56.6	57.2	58.4	57.5	57.5	55.4
	South Africa	50.6	50.2	48.7	50.5	49.7	49.6	47.9	48.7	48.2	51.0	49.9	48.9	50.0	49.0	49.2
	United Arab Emirates	54.4	54.2	54.1	54.3	55.9	56.6	55.5	56.9	56.0	55.0	56.7	57.7	57.0	57.4	56.6

Source: Bloomberg Finance L.P.

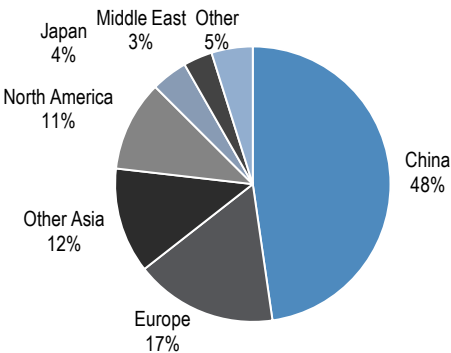
Table 6: Global demand

Copper	Dec-22	Dec-23	Change
	YTD	YTD	YoY
Refined copper production (kt)	11,063	12,988	17%
Refined copper net imports (kt)	3,632	3,459	-5%
Inventory draw (build), SFE + bonded (kt)	-37	-80	
Refined copper demand (kt)	14,658	16,368	12%
RoW copper production (kt)	11,007	9,235	-16%
RoW copper demand (kt)	7,638	6,086	-20%
Global copper production (kt)	22,070	22,223	0.7%
Inventory draw (build), Global (kt)	226	231	
Global copper demand (kt)	22,296	22,454	0.7%

Source: J.P. Morgan.

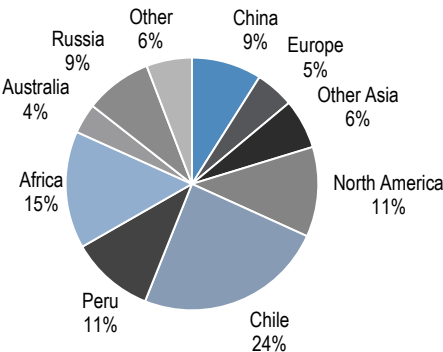
Global supply and demand

Figure 32: Copper demand by region, 2022



Source: WoodMac.

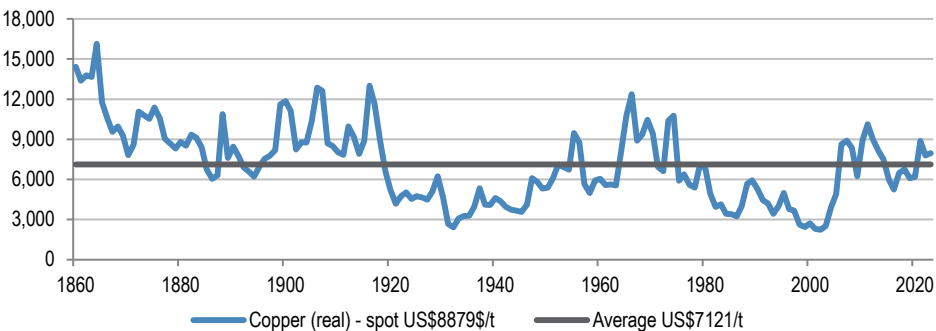
Figure 33: Copper mine supply by region, 2022



Source: WoodMac,

Long-term prices

Figure 34: Long-term copper price history (\$/t)



Source: Bloomberg Finance L.P.

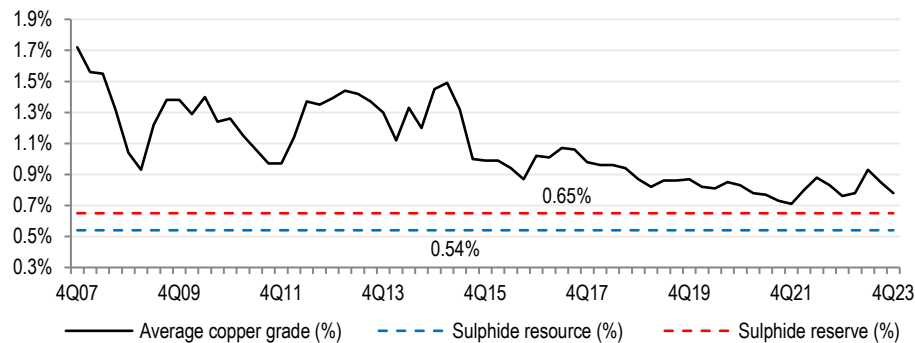
Table 7: J.P. Morgan Commodities Research – copper supply and demand balance (kt)

Global refined copper balance Thousand metric tonnes											
Mine Production	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E
Asia	2,901	3,047	3,006	3,208	2,956	3,069	3,174	3,409	3,433	3,661	3,823
China	1,543	1,501	1,531	1,616	1,691	1,709	1,832	1,916	1,973	2,000	2,075
North America	2,728	2,878	2,635	2,513	2,611	2,493	2,491	2,397	2,414	2,544	2,569
Central & South America	7,990	8,351	8,349	8,619	8,764	8,493	8,688	8,566	8,850	9,241	9,398
Europe	1,047	1,084	1,106	1,061	1,016	1,039	1,057	1,112	1,093	1,152	1,174
Eurasia	1,325	1,511	1,663	1,768	1,856	1,880	1,803	1,904	1,914	2,091	2,189
Middle East	280	328	341	379	379	373	408	417	440	495	526
Africa	2,011	2,017	2,137	2,443	2,455	2,723	3,006	3,414	3,734	4,099	4,593
Oceania	950	966	862	913	858	905	832	833	812	824	828
Mine Production	19,233	20,182	20,100	20,903	20,896	20,973	21,459	22,051	22,689	24,107	25,100
Refined Use	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F
Asia	13,978	14,553	15,256	15,951	16,239	16,176	16,942	17,284	17,921	18,501	19,072
China	10,151	10,613	11,168	11,873	12,209	12,556	13,108	13,366	14,035	14,526	14,860
North America	2,188	2,222	2,186	2,257	2,264	2,080	2,213	2,209	2,191	2,216	2,335
Central & South America	537	469	429	436	453	389	431	404	420	427	440
Europe	3,529	3,526	3,515	3,574	3,322	3,086	3,393	3,417	3,316	3,339	3,515
Eurasia	447	399	394	396	377	361	402	323	308	310	316
Middle East	706	756	767	796	780	719	734	760	781	803	844
Africa	244	193	185	181	164	135	159	159	161	162	164
Oceania	14	17	19	19	15	11	12	12	12	12	11
Refined Use	21,643	22,136	22,752	23,609	23,614	22,958	24,286	24,567	25,109	25,771	26,697
Global Balance	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F
Refined Production	22,056	22,461	22,683	23,429	23,463	23,523	24,270	24,526	25,378	25,799	26,433
Refined Use	21,643	22,136	22,752	23,609	23,614	22,958	24,286	24,567	25,109	25,771	26,697
Balance	413	325	-69	-180	-151	566	-16	-41	269	28	-264
Balance adjusted for governmental purchases/sales	38	125	-69	-180	-151	-34	94	-41	269	28	-264
	2015	2016	2017	2018	2019	2020	2021	2022	2023E	2024F	2025F
Mine Production	19,233	20,182	20,100	20,903	20,896	20,973	21,459	22,051	22,349	22,540	23,273
growth	3.7%	4.9%	-0.4%	4.0%	0.0%	0.4%	2.3%	2.8%	1.3%	0.9%	3.3%
Refined Production	22,056	22,461	22,683	23,429	23,463	23,523	24,270	24,526	25,378	25,799	26,433
growth	1.1%	1.8%	1.0%	3.3%	0.1%	0.3%	3.2%	1.1%	3.5%	1.7%	2.5%
Refined Use	21,643	22,136	22,752	23,609	23,614	22,958	24,286	24,567	25,109	25,771	26,697
growth	1.1%	2.3%	2.8%	3.8%	0.0%	-2.8%	5.8%	1.2%	2.2%	2.6%	3.6%
Balance	413	325	-69	-180	-151	566	-16	-41	269	28	-264
Balance adjusted for governmental purchases/sales	38	125	-69	-180	-151	-34	94	-41	269	28	-264

Source: Company reports, government and industry data, CRU, Wood Mackenzie, BGRIMM, J.P. Morgan Commodities Research.

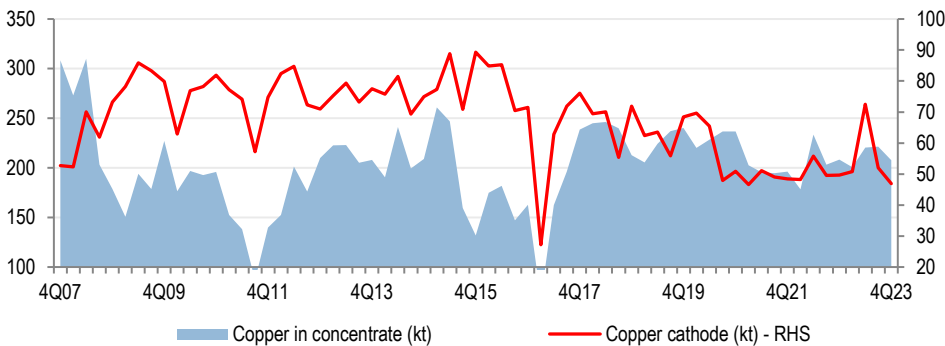
Escondida tracker

Figure 35: Escondida copper grades (%)



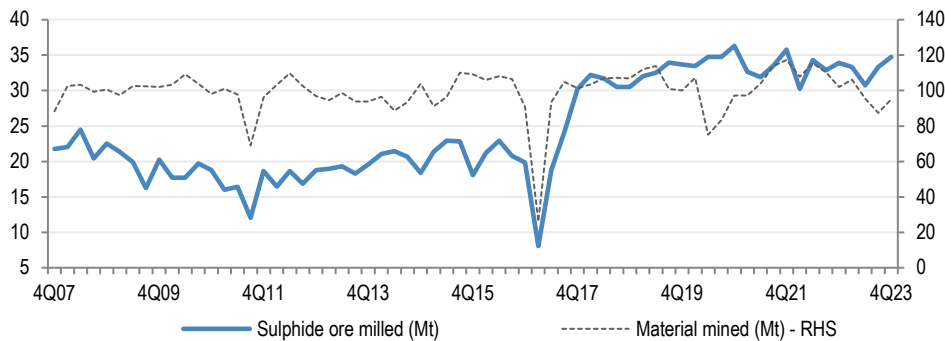
Source: Company reports.

Figure 36: Escondida copper production (kt per quarter)



Source: Company reports.

Figure 37: Escondida mill throughput and material mined per quarter (Mt)



Source: Company reports.

Market shares

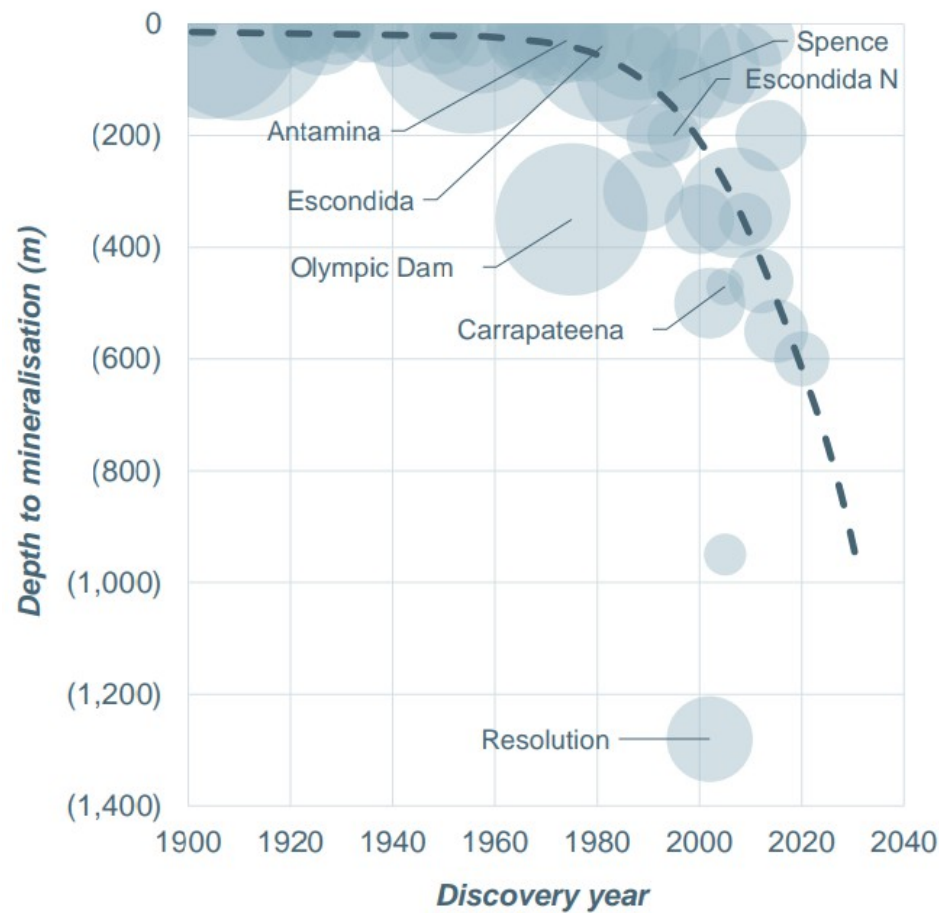
Table 8: Major producer market share (as of 2022)

Copper (attributable basis)				
Producer	Primary Location	Output (kt)	Market cap (\$m)	% share
Freeport	Multiple	2,105	57,603	9.5%
BHP	Chile	1,716	152,242	7.8%
Codelco	Chile	1,312	Not listed	8.0%
Glencore	DRC, Peru	1,183	63,166	5.4%
Group Mexico	Mexico, Peru	913	63,557	4.1%
Zijin Mining group	DRC	877	43,647	4.0%
First Quantum	Zambia, Panama	776	5,505	3.5%
Rio Tinto	Multiple	730	116,661	3.3%
Anglo American	Chile	660	28,165	3.0%
Antofagasta	Chile	486	21,939	2.2%
2022 global mine supply - total		22,051		
2022 global refined production - total		24,526		

Source: Bloomberg Finance L.P., J.P. Morgan.

Appendix

Figure 38: Major copper discoveries – depth of ore body



Source: BHP May 2023 presentation.

Table 9: Largest undeveloped copper projects by copper equivalent

Asset	Ownership	Location	Tonnage (Mt)	Grade (%)		Cont. Metal (Mt)	
				Cu	CuEq	Cu	CuEq
Pebble	Northern Dynasty	Alaska	10,910	0.34%	0.62%	36.9	67.8
KSM	Seabridge	British Columbia	11,042	0.22%	0.53%	24.8	59.0
Resolution	Rio Tinto (55%) / BHP (45%)	Arizona	1,859	1.52%	1.66%	28.3	30.9
Twin Metals	Antofagasta (83%) / Beaver Bay (17%)	Minnesota	2,509	0.52%	1.15%	13.0	28.7
Reko Diq	Barrick (50%) / Government of Pakistan (50%)	Pakistan	4,980	0.41%	0.56%	20.5	27.9
Mesaba	Teck (50%) / PolyMet (50%)	Minnesota	2,947	0.41%	0.80%	12.2	23.6
Onto	Vale (80%) / PT Aneka Tambang (20%)	Indonesia	2,057	0.83%	1.15%	17.2	23.6
El Arco	Southern Copper		4,542	0.39%	0.50%	17.8	22.6
NuevaUnion	Newmont (50%) / Teck (50%)	Chile	4,469	0.37%	0.50%	16.6	22.5
La Granja	Rio Tinto	Peru	4,320	0.51%	0.51%	22.0	22.0
Cascabel	SolGold	Ecuador	3,841	0.33%	0.48%	12.7	18.4
El Pachon	Glencore	Argentina	3,380	0.47%	0.52%	15.9	17.6
Norte Abierto	Barrick (50%) / Newmont (50%)	Chile	6,380	0.10%	0.27%	6.3	17.3
Ilurimagua	Enami EP (51%) / Corporación Nacional del Cobre (49%)	Ecuador	3,846	0.44%	0.44%	16.9	16.9
Frieda River	Guangdong Rising	Papua New Guinea	2,640	0.44%	0.59%	11.6	15.6
Los Azules	McEwen Copper	Argentina	3,628	0.37%	0.41%	13.4	15.0
Baïmskaya	Nova Resources	Russia	2,510	0.39%	0.57%	9.8	14.3
Taca Taca	First Quantum	Argentina	2,920	0.40%	0.49%	11.7	14.3
Vizcachitas	Los Andes Copper	Chile	3,364	0.36%	0.42%	12.1	14.0
Los Helados	NGEx (69.1%) / JX Nippon (30.9%)	Chile	2,926	0.36%	0.46%	10.6	13.5
MARA	Pan American (56.25%) / Glencore (43.75%)	Argentina	2,134	0.38%	0.61%	8.2	12.9
Casino	Western Copper & Gold	Yukon	3,903	0.12%	0.28%	4.9	11.1
West Wall	Glencore (50%) / Anglo American (50%)	Chile	1,961	0.46%	0.52%	9.0	10.3
Michiquillay	Southern Copper	Peru	2,288	0.43%	0.43%	9.8	9.8
Los Volcanes	Antofagasta (51%) / Luksic Group (49%)	Chile	1,911	0.50%	0.50%	9.6	9.6
Namosi	Newcrest (72.88%) / Mitsubishi Materials (25.12%) / Nittetsu (2%)	Fiji	2,260	0.35%	0.41%	8.0	9.3
Galore Creek	Newmont (50%) / Teck (50%)	British Columbia	1,435	0.43%	0.61%	6.1	8.8
Ann Mason	Hudbay	Nevada	2,456	0.29%	0.33%	7.0	8.2
Warintza	Solaris	Ecuador	1,466	0.42%	0.51%	6.2	7.5
Canariaco Norte	Candente	Peru	1,889	0.34%	0.40%	6.4	7.5

Source: Company reports (Filo Mining corporate presentation May 2023).

Companies Discussed in This Report (all prices in this report as of market close on 06 February 2024, unless otherwise indicated)

Sandfire Resources(SFR.AX/A\$6.99/OW)

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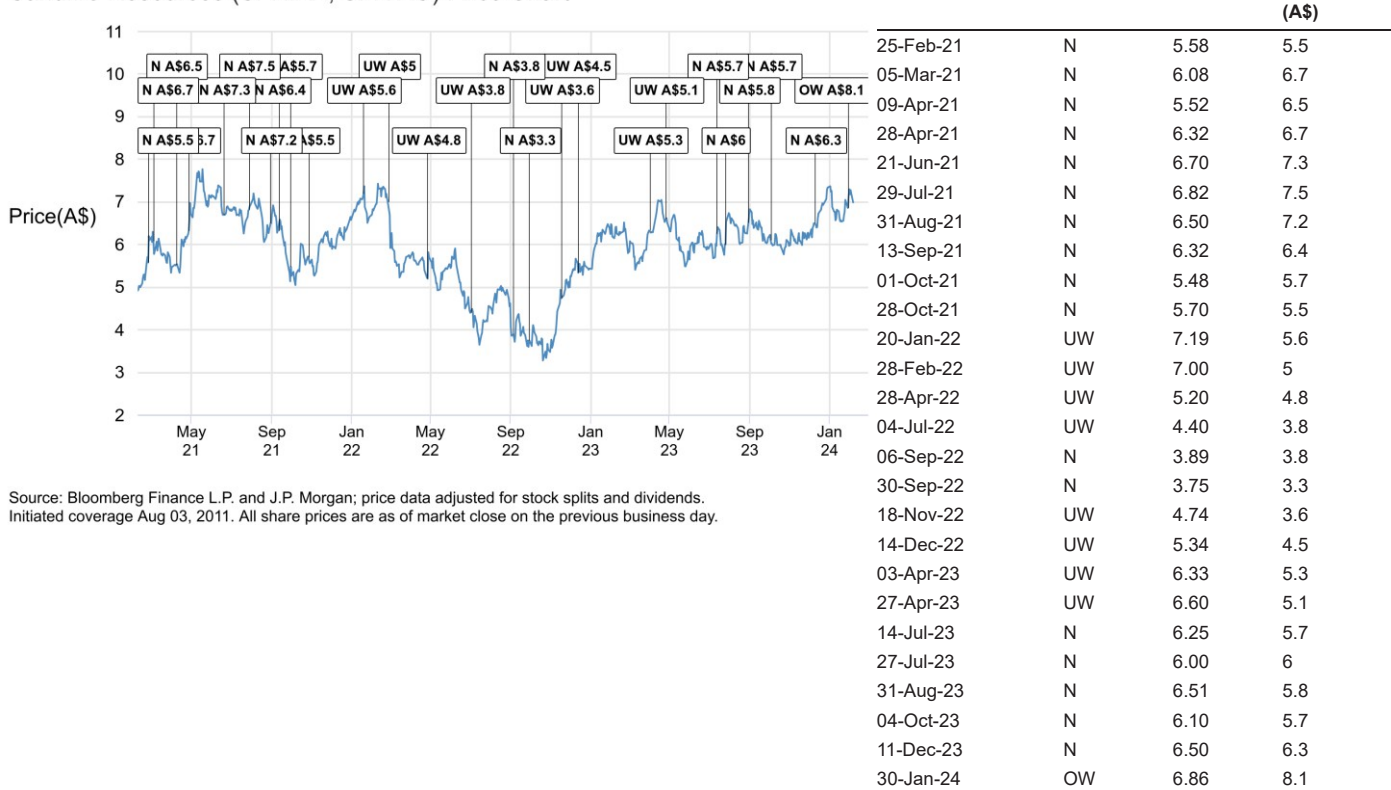
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Sandfire Resources (SFR.AX, SFR AU) Price Chart



Source: Bloomberg Finance L.P. and J.P. Morgan; price data adjusted for stock splits and dividends.
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