LME Metals Seminar 2021

Monday 11 October, London and online





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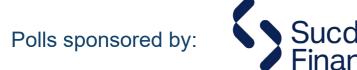




POLL

First it was toilet roll, then HGV drivers and CO2, and now petrol at the pumps...what's next for the UK's lengthening list of shortages?

- 1. Crisps
- 2.Meat
- 3. Alcohol
- 4. Christmas trees
- 5. Cars
- 6. Good poll questions





POLL 1 RESULTS

First it was toilet roll, then HGV drivers and CO2, and now petrol at the pumps...what's next for the UK's lengthening list of shortages?

1. Crisps 4.3% 2. Meat 17% 3. Alcohol 8.5% 4. Christmas trees 12.8% 5. Cars 42.6% 6. Good poll questions 14.9%

Polls sponsored by:







INDEPENDENT ANALYSIS, FORECASTS AND CONSULTANCY

The Global Economic Outlook

Neil Shearing, Group Chief Economist

11th October, 2021

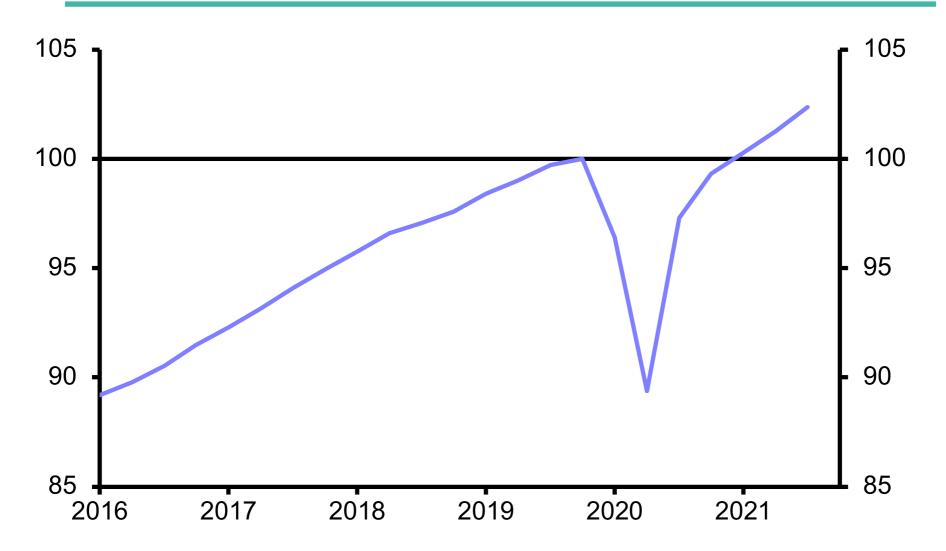
neil.shearing@capitaleconomics.com

1. Agenda

- The recovery so far.
- The outlook for China, US and other major economies.
- The outlook for inflation and monetary policy.
- The long term effects of the pandemic.
- The implications for commodity markets.

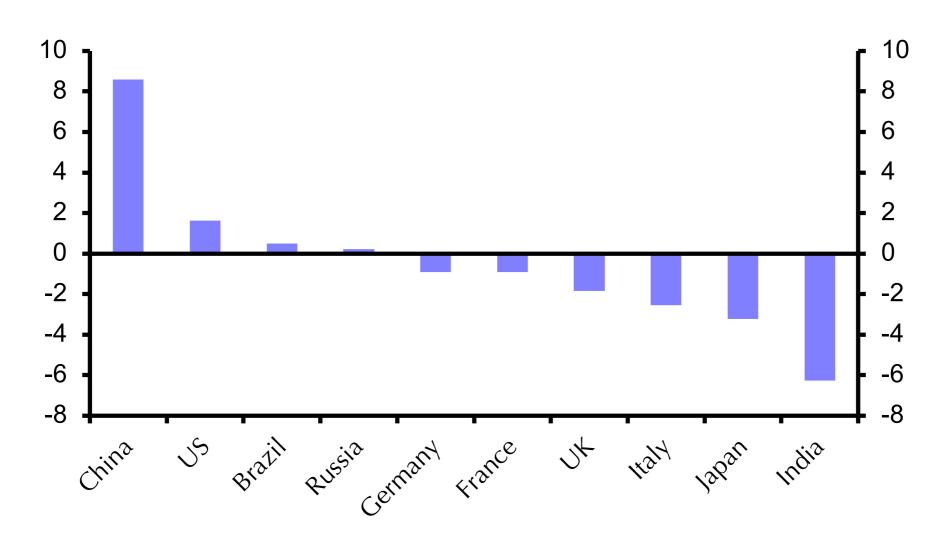


2. Global GDP (Q4 2019 = 100)



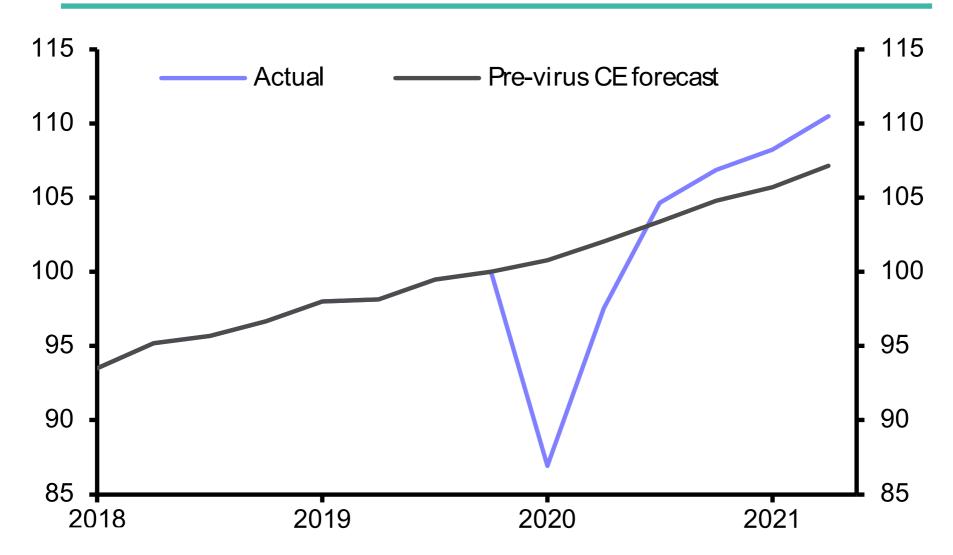


3. GDP Q3 2021 vs. Pre-Virus Peak (%-diff)



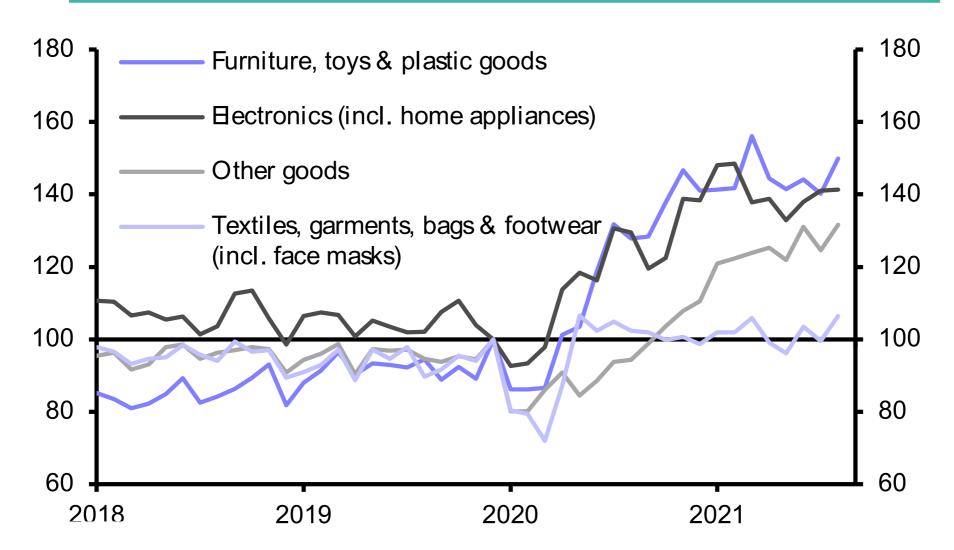


4. China GDP (CE Measure, Q4 2019 = 100)



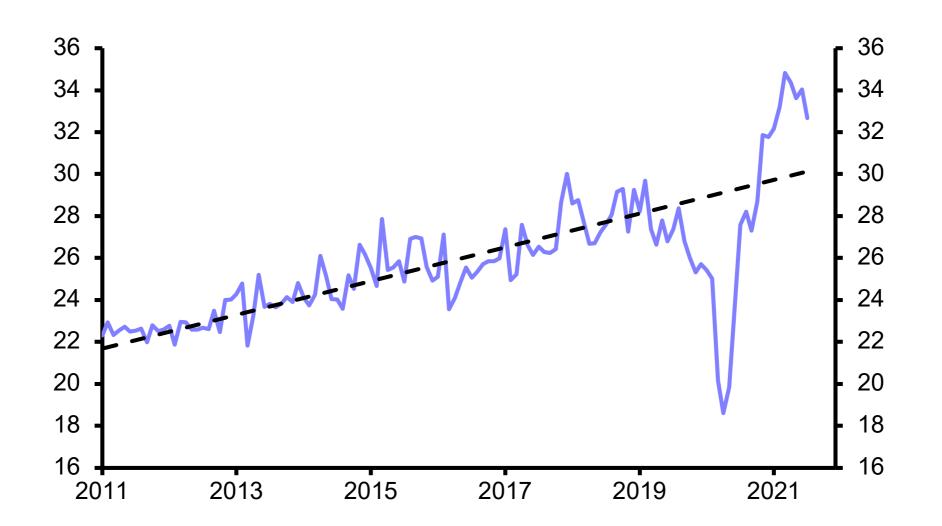


5. China Exports (US\$, Dec. 19 = 100)



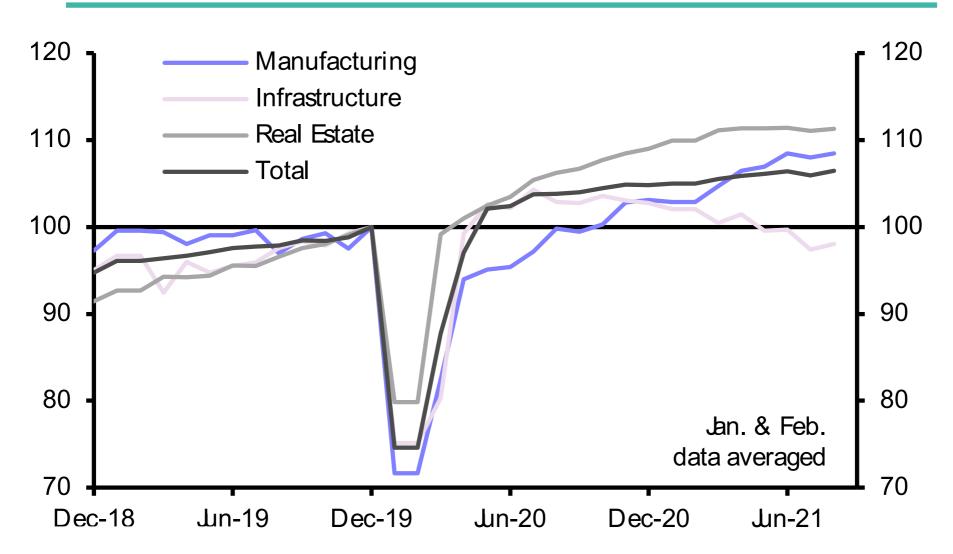


6. US Imports of Consumer Durable Goods (\$bn)





7. China Fixed Investment (Dec. 2019=100, seas. adj.)



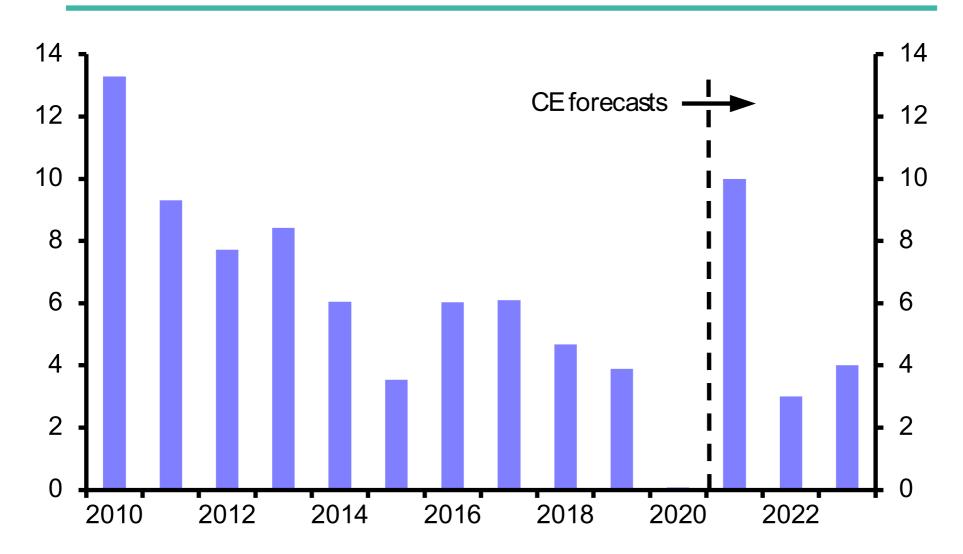


8. Consequences of Evergrande's Collapse

- The government is prioritising homebuyers, then suppliers in a managed restructuring of Evergrande. Banks, bondholders face losses.
- Many small developers are stressed, but the balance sheets of other large developers are far healthier than Evergrande's.
- Policymakers have the ability to prevent financial contagion but an economic headwind is inevitable:
 - Controls on developer financing have led to a drop in project starts. New property sales are declining despite price cuts.
 - Further ahead, a structural slowdown looms. Demand for new residential property is likely to halve this decade, as urbanization and new household formation slow.

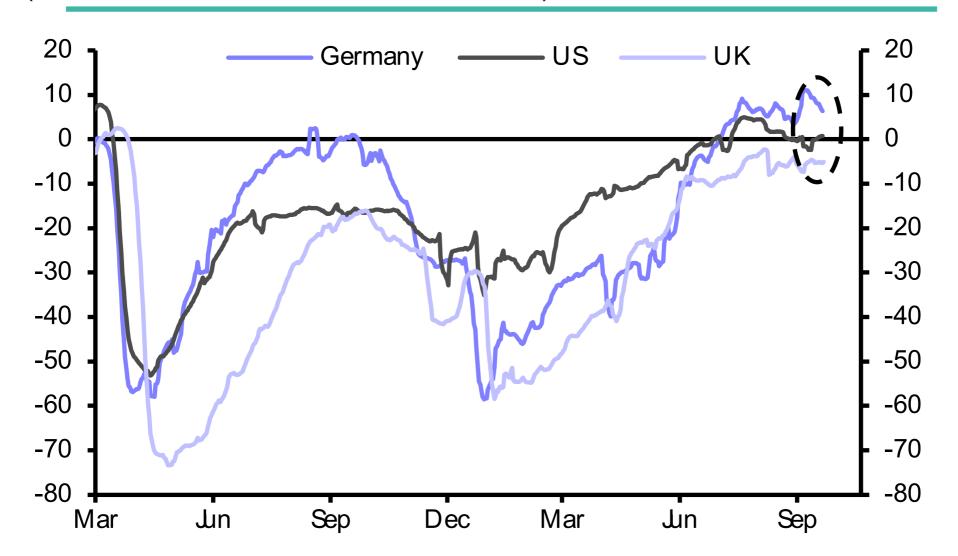


9. China Activity Proxy (% y/y)



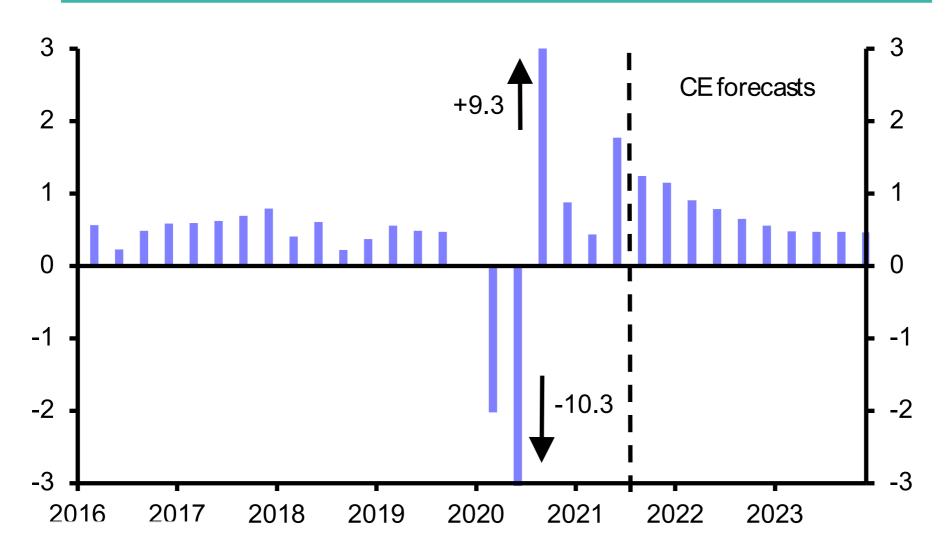


10. CE COVID Mobility Trackers in Selected DMs (% Diff. from Pre-Virus Level, 7D MA)





11. Developed Markets GDP Growth (% q/q)

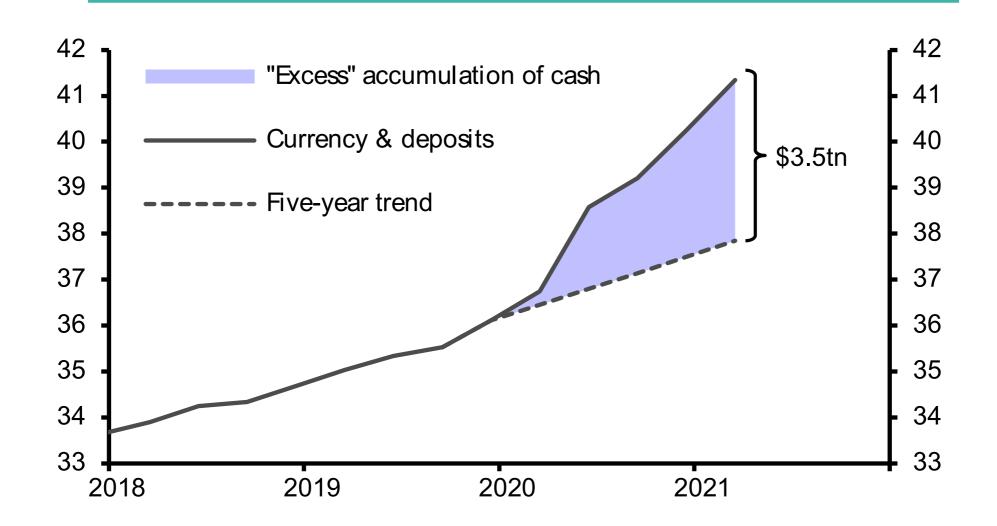




12. This time is different

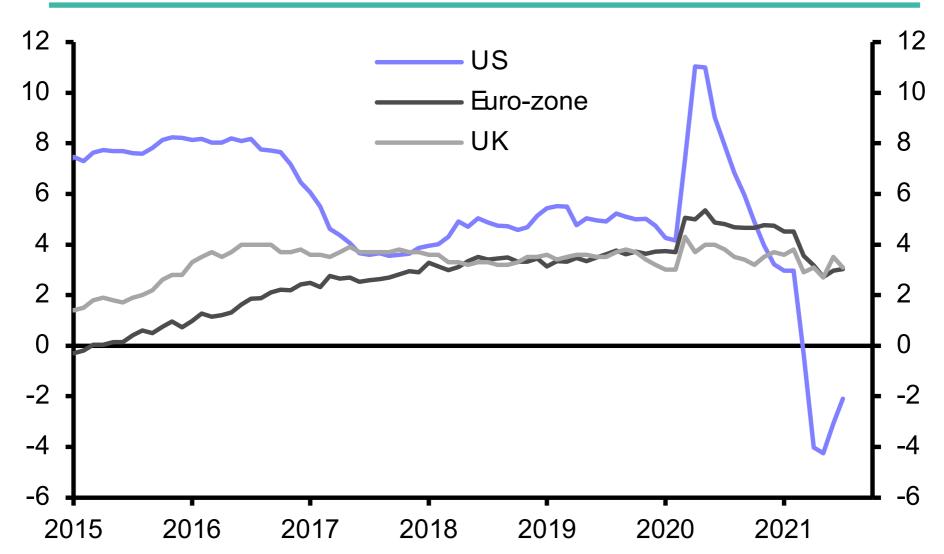
- Economic crises tend to leave a legacy of permanently reduced output.
- This is because crises tend to impair household and corporate balance sheets.
- The subsequent need to repair balance sheets depresses demand (e.g. after the 2008 financial crisis).
- But this time may be different...

13. DM Households' Currency & Deposits (\$trn)



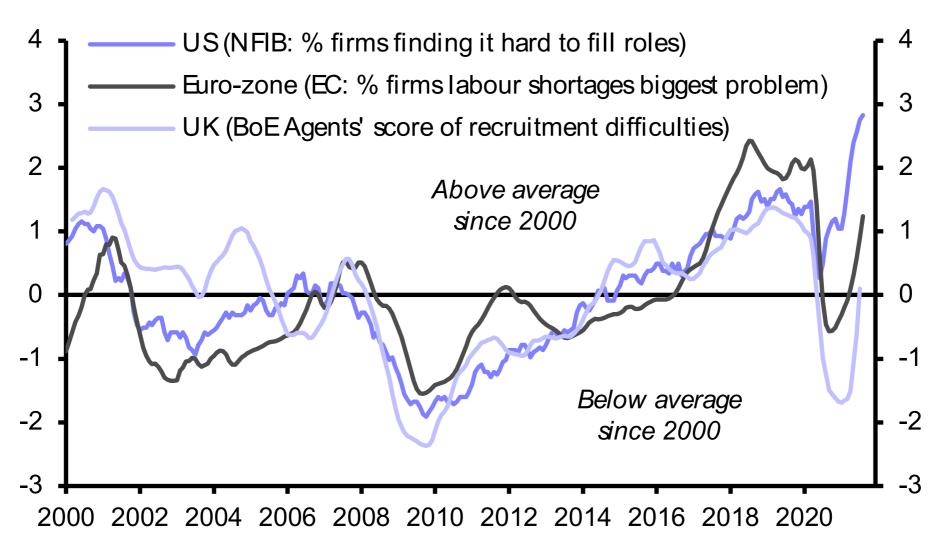


14. Lending to Private Sector (% y/y)



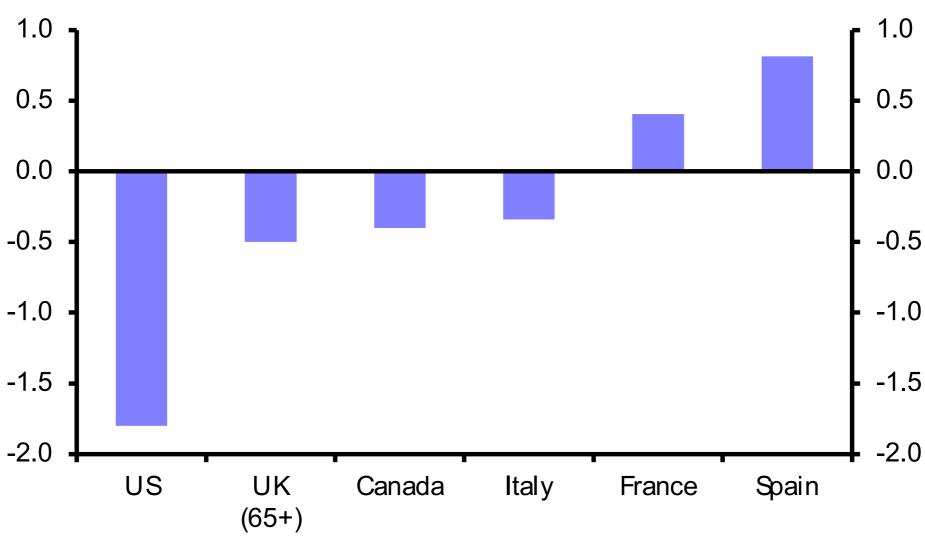


15. Business Survey Measures of Labour Shortages (Std. Dev. From Long-Run Average, 3m Ave.)





16. Labour Force Participation Rate(55+ Years Old, % Change Since End-2019)

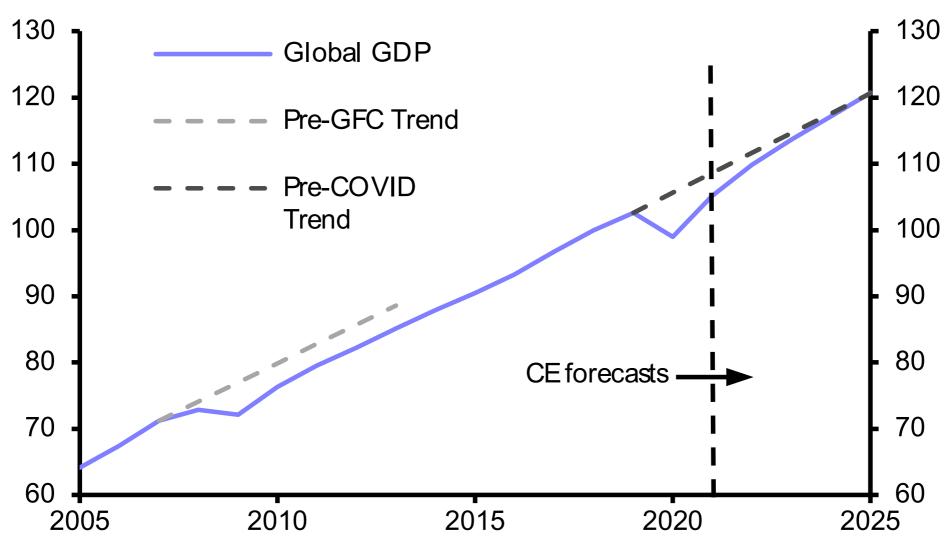




17. Will the pandemic damage supply potential?

- Most shortages will prove short-lived...
- ...but concerns about lower labour supply in the US?
- Some "destruction" of capital (e.g. office space)...
- ...but small in the grand scheme and offset by a boost to investment in other areas (e.g. digital tech).
- New ways of working could boost productivity?

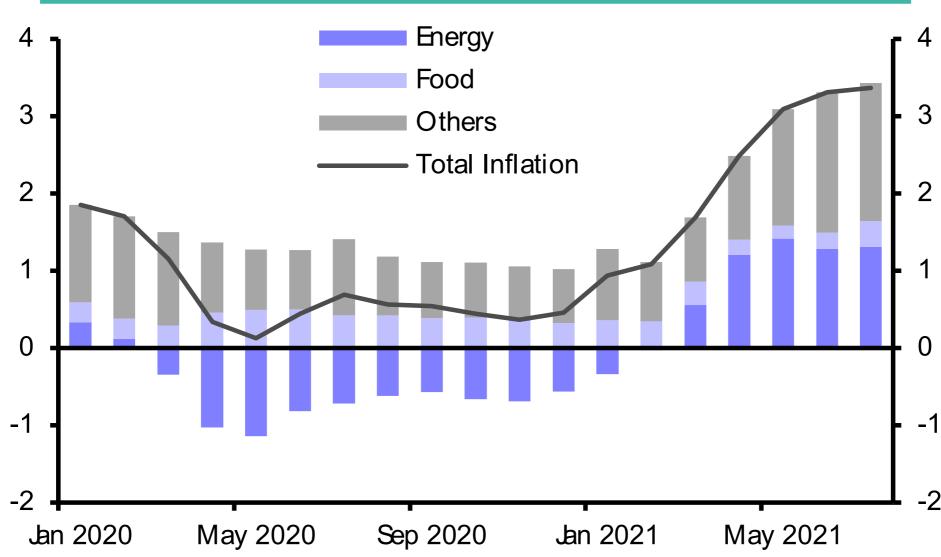
18. Global GDP (2018 = 100)





Sources: Refinitiv, Capital Economics

19. Contributions to Headline Inflation in G4 Economies (%-pts)





20. Some structural disinflationary forces are fading...

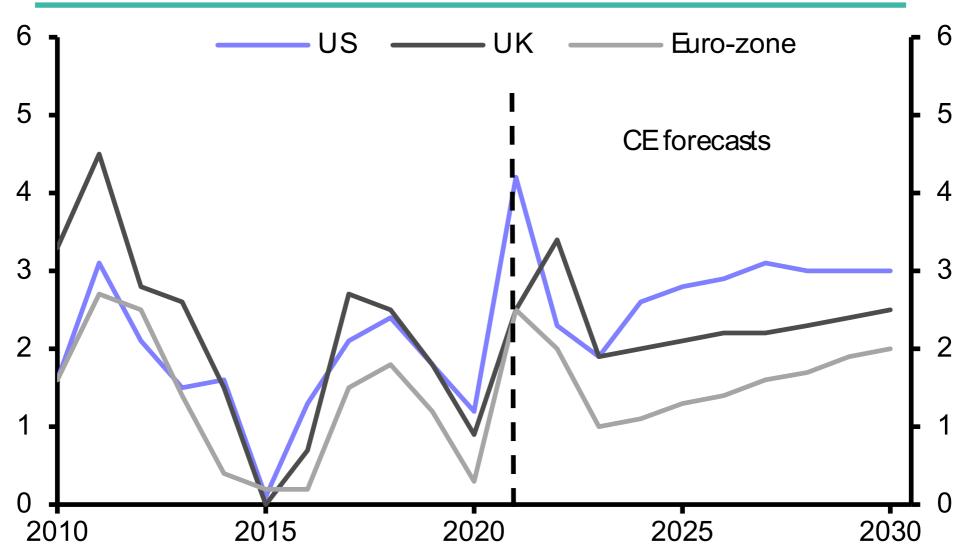
- Globalisation has peaked and US-China decoupling could contribute to a rise inflation pressures in some sectors.
- Demographics have gone from exerting downward pressure to upward pressure on inflation.
- Firms will face new costs including to green economies.
- Central banks' and governments' attitudes towards inflation is changing (more on this later).

21. ...but some disinflationary forces persist

- Labour markets remain highly flexible and workers' institutional bargaining power remains limited.
- Inflation expectations remain well anchored at low levels.
- New technologies will continue to bear down on capital goods prices.
- The development of the gig economy and remote working points to even greater labour market flexibility in some sectors.
- Structural changes in the global economy mean that inflation pressures are now more likely to show up in asset prices (e.g. housing) than consumer prices.

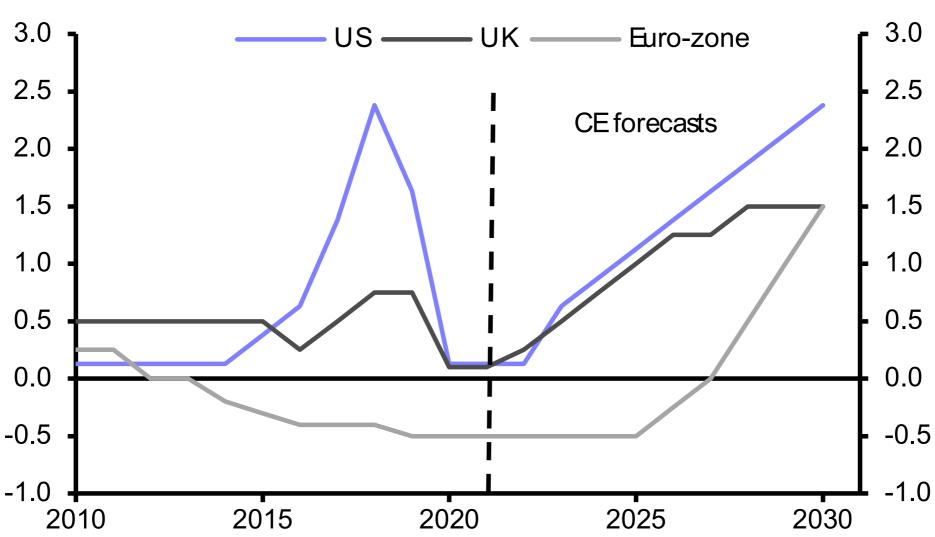


22. Headline CPI of Selected DMs (% y/y)





23. Policy Interest Rates (%)

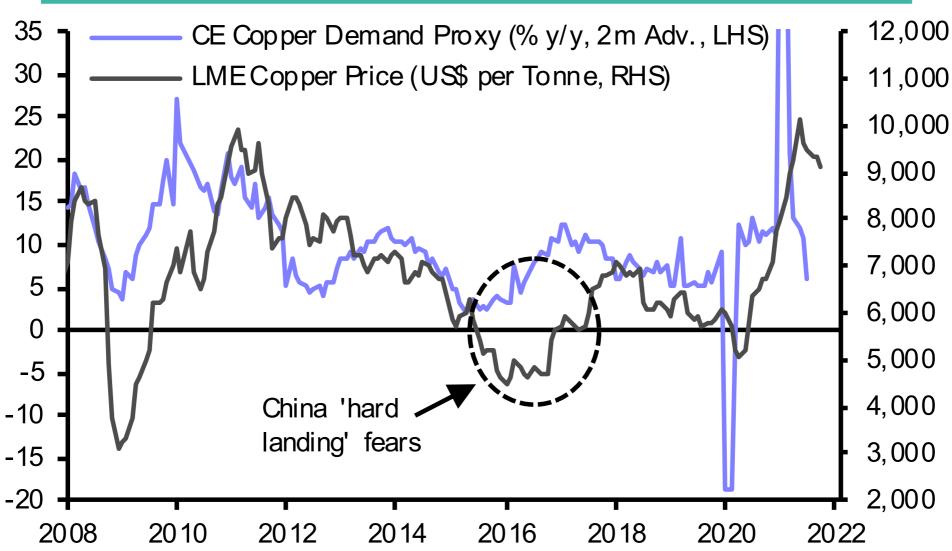




24. Three themes for commodity markets

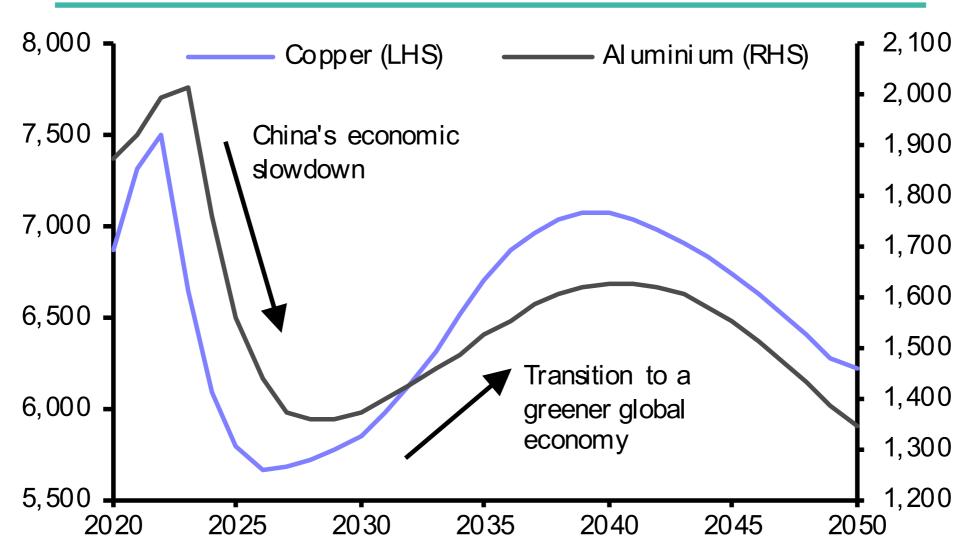
- Evergrande problems unlikely to cause **China's** economy to collapse but pandemic has deepened structural challenges.
- Advanced economies will stage a full recovery from the pandemic (different from 2008). But best of the recovery now behind us – the hard part lies ahead.
- Inflation is likely to fall back in all major economies next year as bottlenecks ease. But several countries are facing higher medium-term inflation. Risks greatest in US.

26. CE China Copper Demand Proxy & Copper Price





27. Long Run Real Price Forecasts (US\$ per Tonne)





28. Conclusions

- Global economy will stage a full recovery from the COVID crisis, but we're entering the hard part.
- In DMs, supply constraints will remain a brake on growth in 2022.
 China is facing bigger problems. Global GDP growth will slow next year.
- Inflation is likely to fall back in all major economies next year. But some countries are facing higher medium-term inflation. Risks greatest in US.
- Interest rates will start to normalise but process will be slow.



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China's role in the global metals market

Moderator:

Yang Liu, Head of China Sales, London Metal Exchange

Panellists:

- Xiao Amelia Fu, Head of Global Commodities Strategy, Bank of China International
- Nick Snowdon, Goldman Sachs
- Yanchen Wang, General Manager, SMM UK

Questions:

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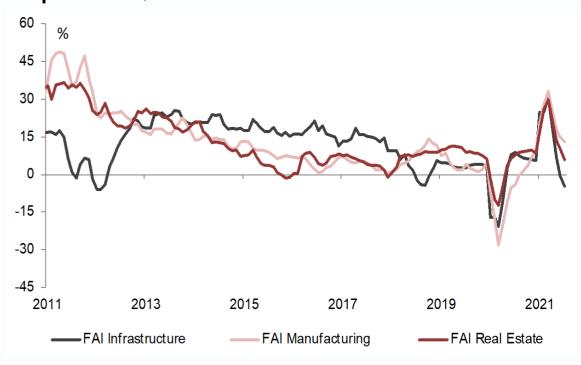
China's Economic Indicators Showed Signs of Slowdown



China Manufacturing PMI Recovered First, But Fell Below 50 in Sep



China's FAI Decelerated, But Infrastructure FAI Could Improve in Q4 and 2022 to Stabilize Growth



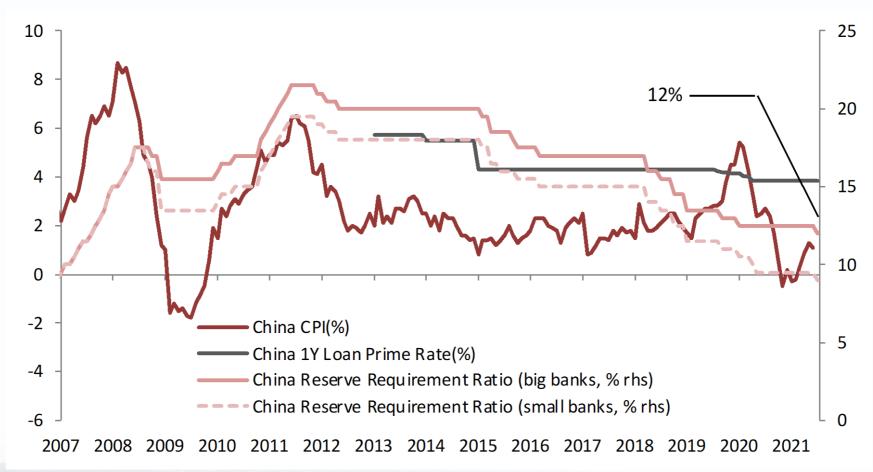
Source: BOCI Global Commodities, Bloomberg





China Monetary Guidance Shifted to Stability with Easing





Source: BOCI Global Commodities, Reuters

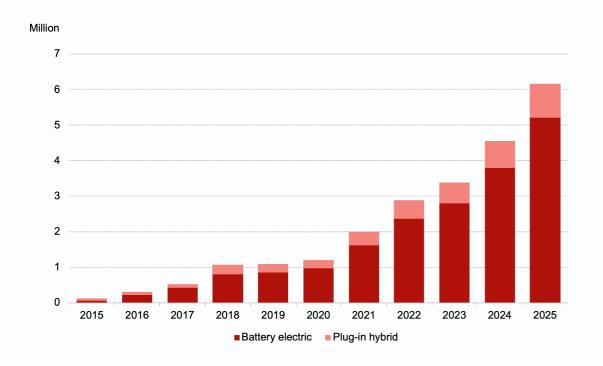




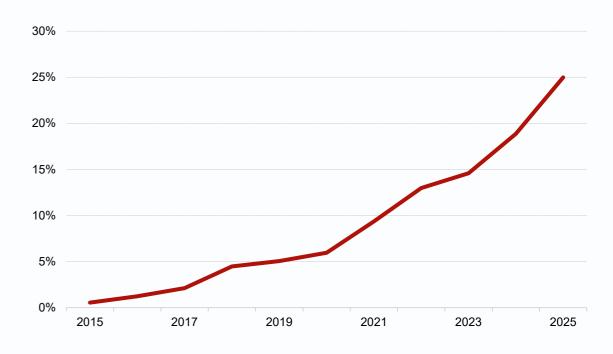
China's EV Sales Continued to Rise Strongly in 2021



China's EV Sales Continued to Increase



China's EV Share of New Passenger Vehicle Sales



Source: BOCI Global Commodities, Bloomberg

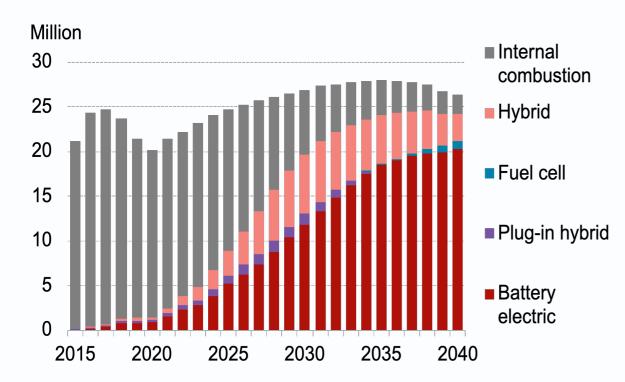




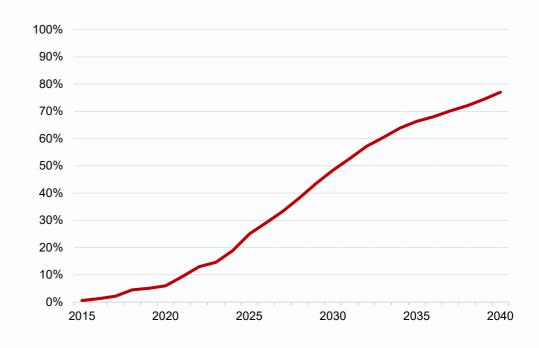
China's EV Sales Long Term Trends



China's EV Sales Long Term Bullish



China's EV Share of New Passenger Vehicle Sales Could Reach Close to 80% in 2040

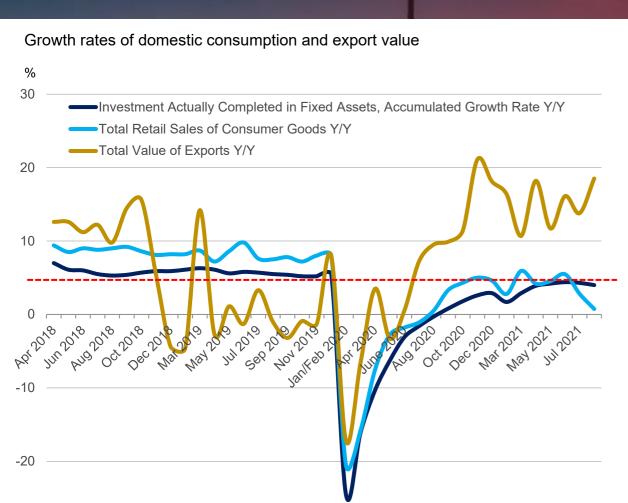


Source: BOCI Global Commodities, Bloomberg



Strong export is a crucial driver of China's economy recovery in 2021





Total value of exports from China Billion US\$ 180% 350 ____2021 Y/Y (RHS) 2019 2021 160% 300 140% 250 120% 200 100% 150 60% 100 20%

May

Jun

Jul

Aug

Sep

Oct

Nov

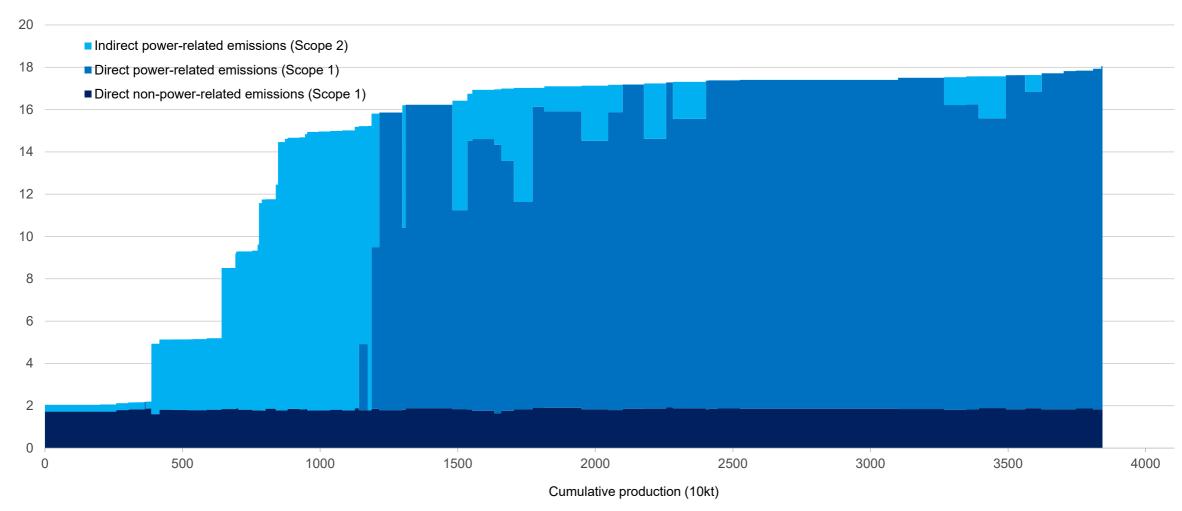
Feb

Note: 2021 growth rates are two-year average rates against 2019

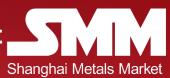
China primary aluminium GHG emission curve



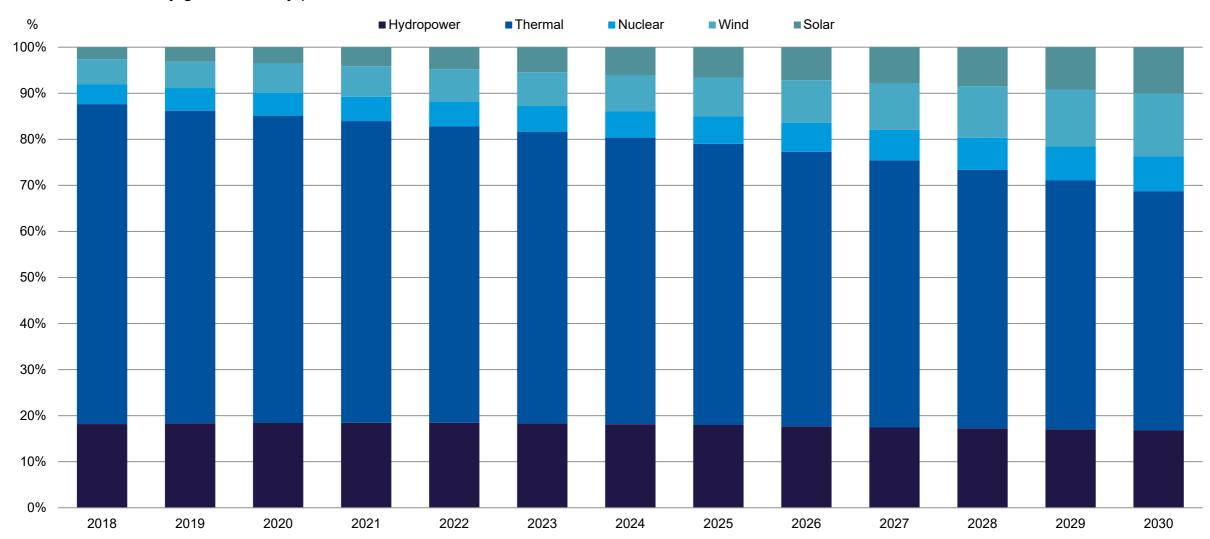
Primary aluminium GHG emissions curve, Scope 1 and 2 t CO2e/t Al



The proportion of thermal power will continue decreasing in Chinese power market

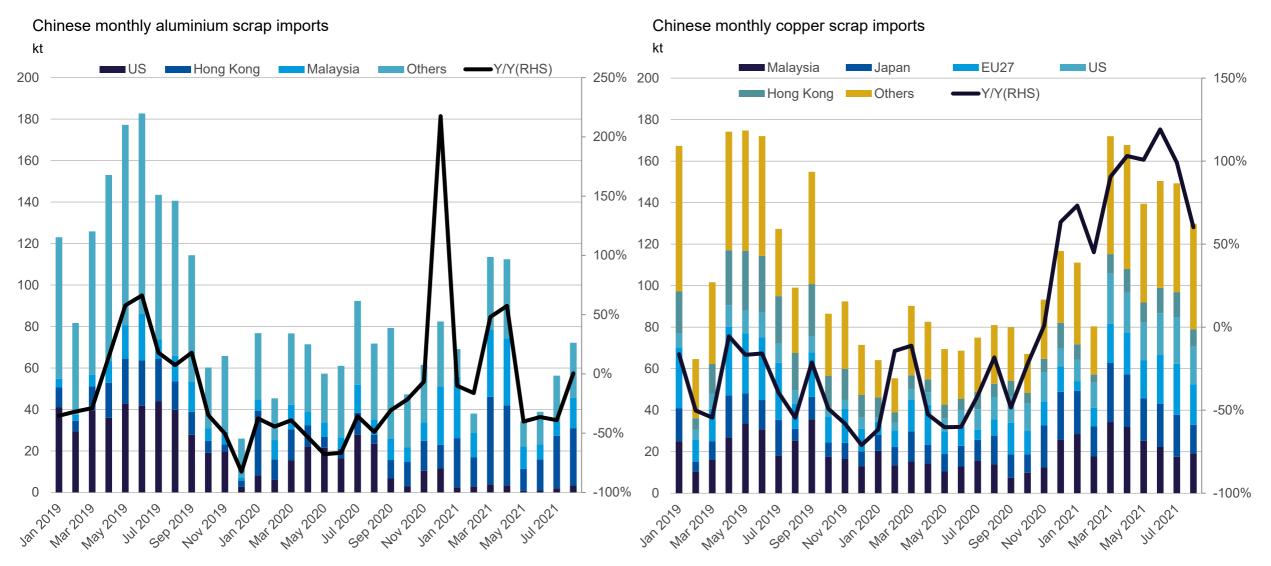


Chinese electricity generation by power source



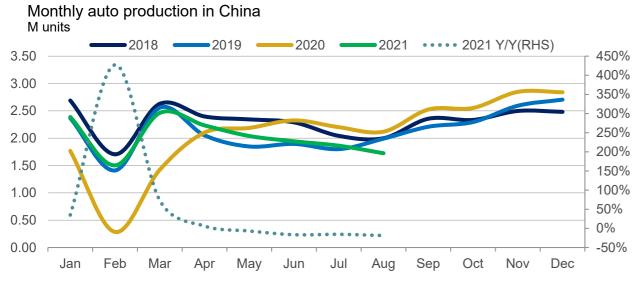
Chinese aluminium and copper scrap imports

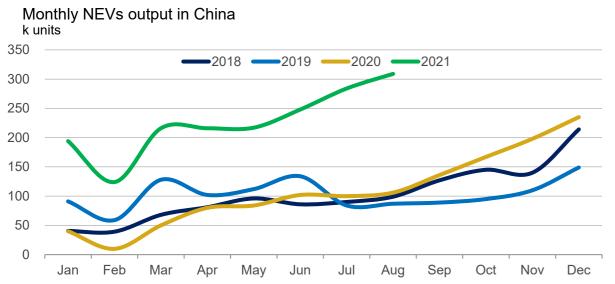




Strong growth of Chinese NEVs market since H2 2020

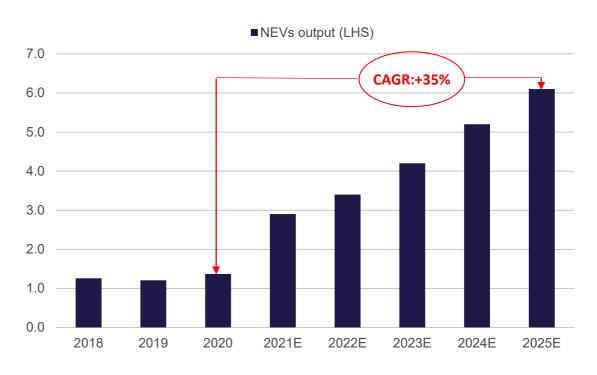






2018-2025 NEVs output in China





New energy vehicle penetration rate:



Real estate market in China



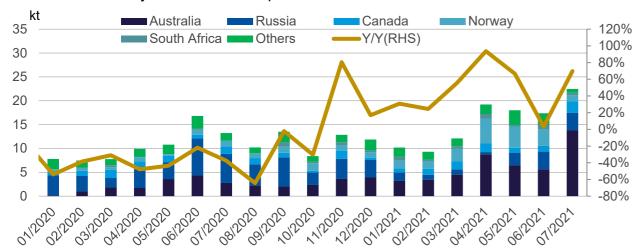


High premium supports refined nickel consumption for Ni sulphate

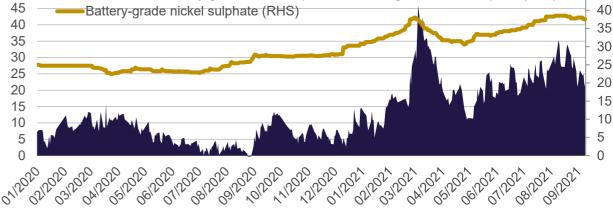


`000 yuan/t Nickel Sulphate





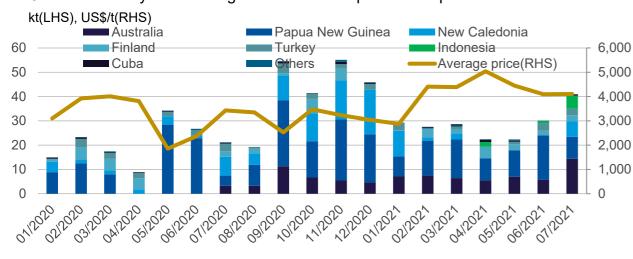
'000 yuan/t Nickel content



Premiums of battery-grade nickel sulphate over first-grade nickel briquette(LHS)

Nickel sulphate premium again refined nickel remains high

China's nickel hydrometallurgical intermediate products imports



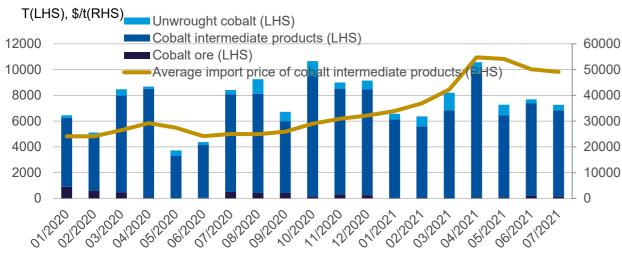
Nickel sulphate market balance in China



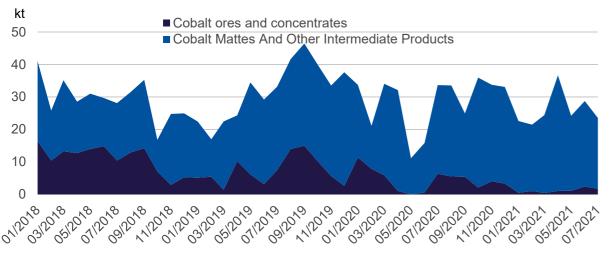
China remains overdependent on DRC cobalt supply



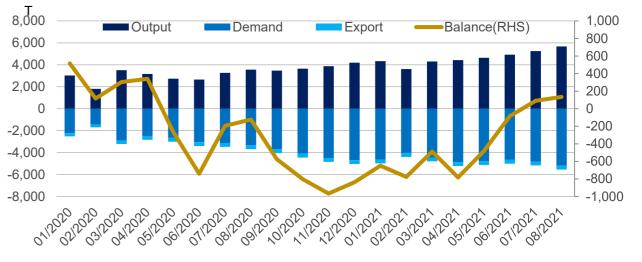




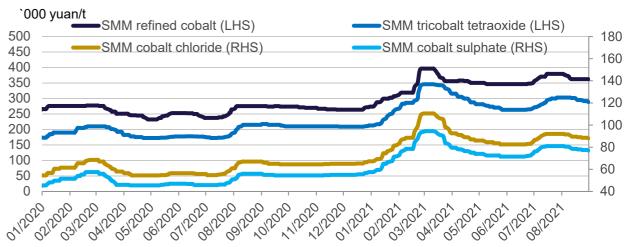
Cobalt imports from DRC



Cobalt sulphate market balance in China

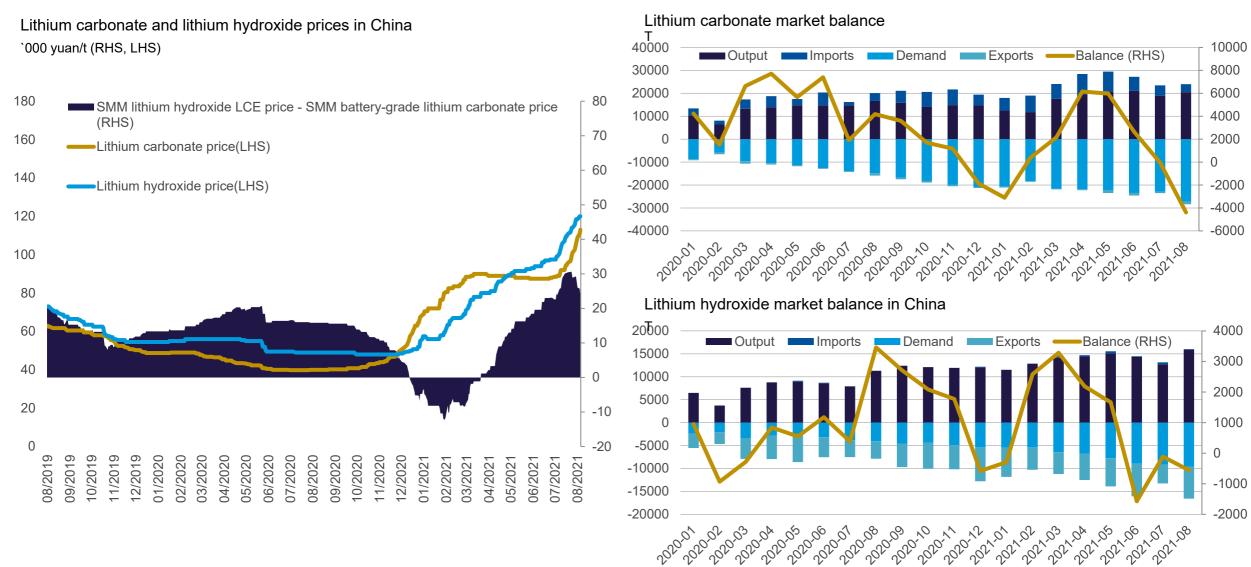


Refined cobalt and cobalt compounds prices in China



Strong demand pushes the lithium market into deficit





China's role in the global metals market

Moderator:

Yang Liu, Head of China Sales, London Metal Exchange

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Questions:

Ask a question using the Q&A box on the "Main stage"

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POLL

Which metal carries the most upside potential for the year ahead?

- 1. Aluminium
- 2.Copper
- 3.Lead
- 4. Nickel
- 5. Tin
- 6.Zinc

Polls sponsored by:





POLL 2 RESULTS

Which metal carries the most upside potential for the year ahead?

1. Aluminium 20.7% 2. Copper 46.3% 3. Lead 2.4% 4. Nickel 15.9% 5. Tin 11% 6. Zinc 3.7%

Polls sponsored by:





The Metals Debate

Moderator:

Mark Burton, Journalist, *Bloomberg*

Panellists:

- Aluminium Tim Weiner, Vice President Aluminum Pricing & Risk Management, Harbor Aluminum
- Copper Vanessa Davidson, Director of Base Metals Research and Strategy, CRU
- Lead and zinc Duncan Hobbs, Research Manager, Concord Resources
- Nickel Jessica Fung, Head Strategist, *Pala Investments*
- Tom Mulqueen, Head of Research, Amalgamated Metal Trading

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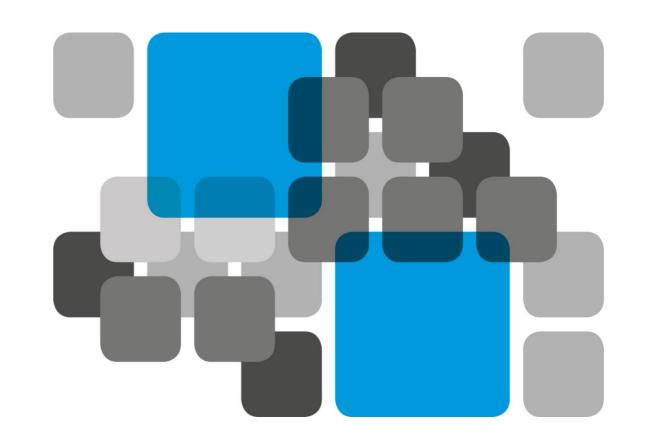


Copper Outlook 2022: Market loses some of its sparkle

Vanessa Davidson

Director of Copper Research & Strategy

LME Seminar – The Metals Debate QEII Conference Centre





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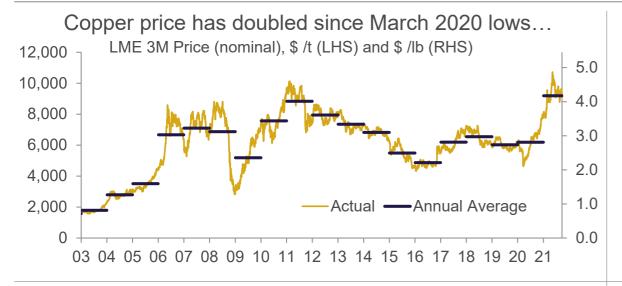
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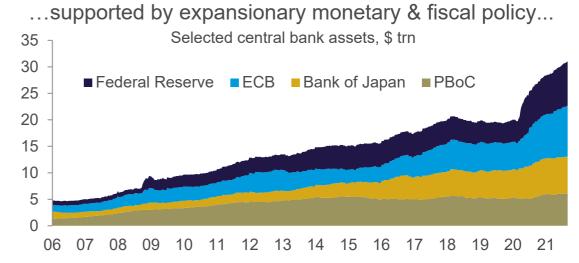
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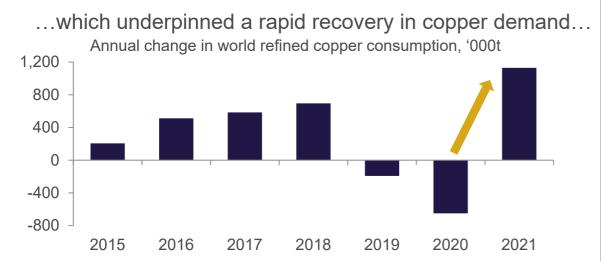
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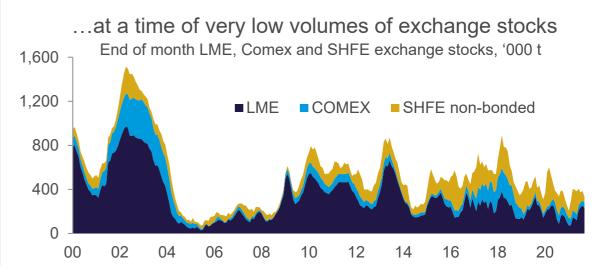


Review of 2021: Copper price peaks at record high in May



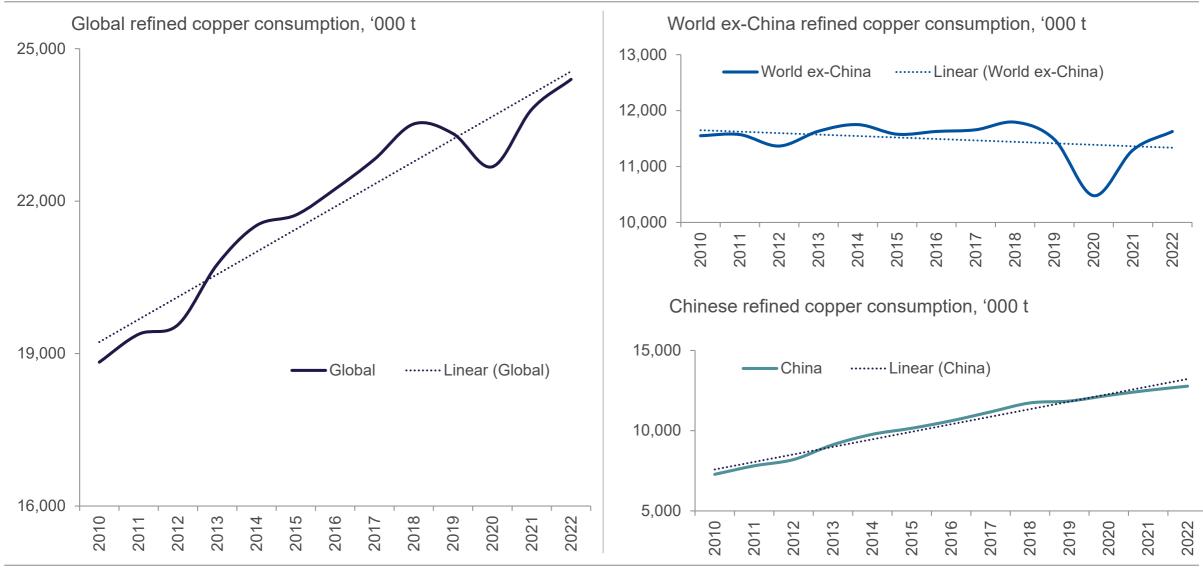








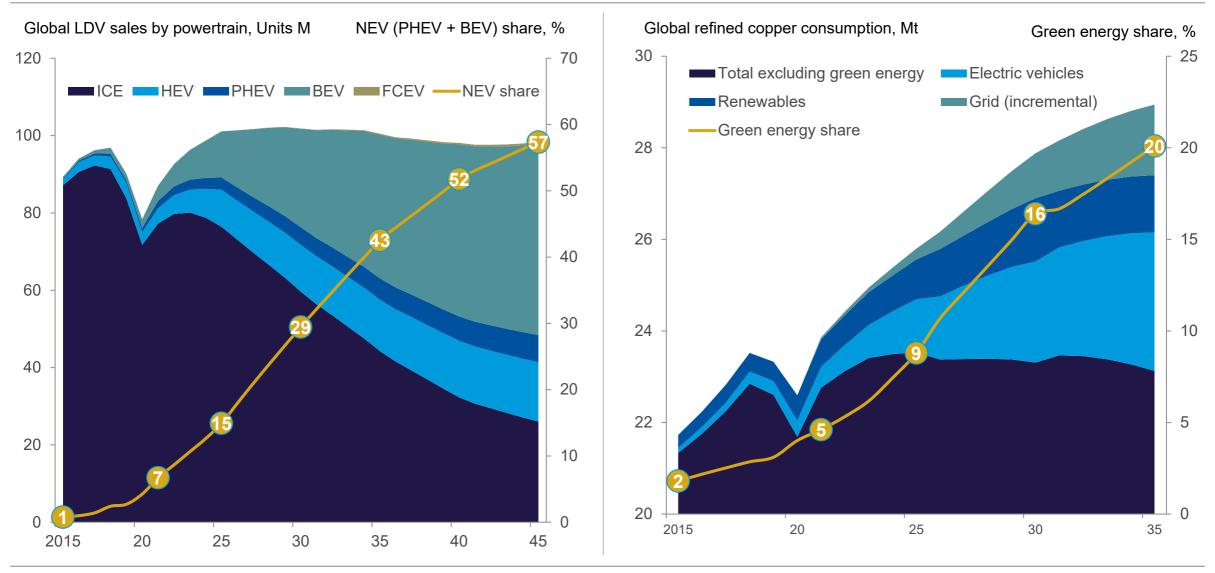
2022 Demand: Onwards and upwards but regional shift underway



DATA: CRU www.crugroup.com 5



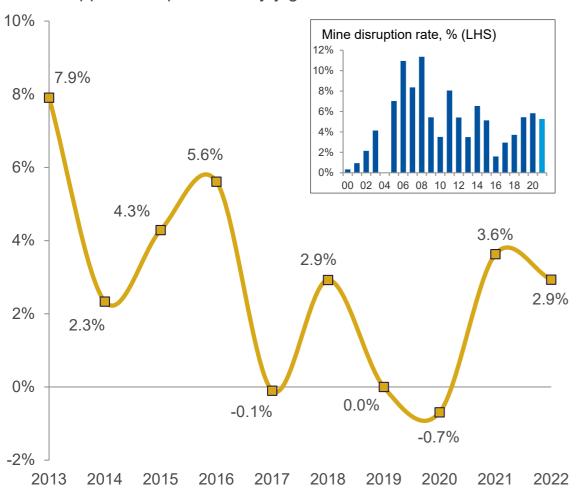
Longer term demand: Green energy transition is gathering pace





2022 Supply: Growth in mine output reliant on new projects

Global copper mine production y/y growth; %

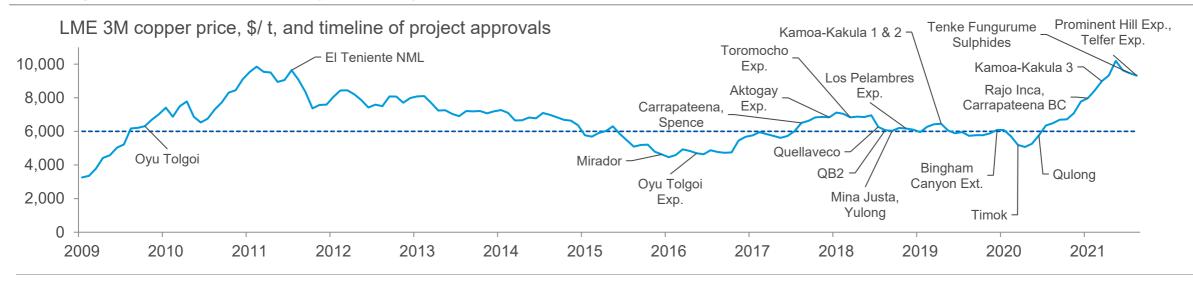


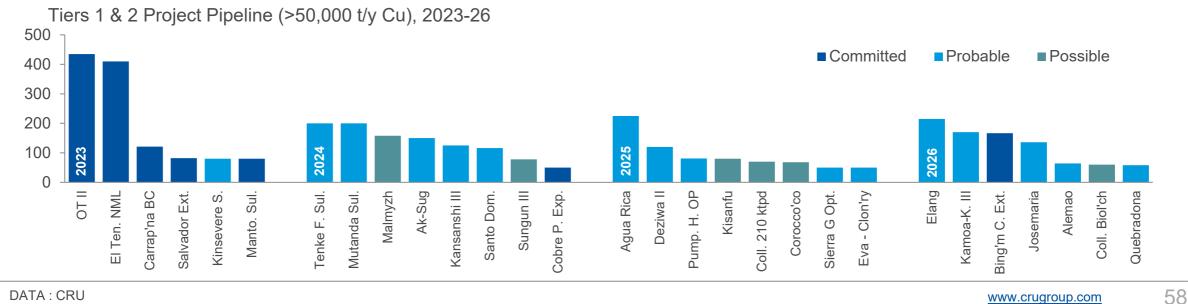
Mine projects (capacity >= 50,000 t/y), '000 t





Longer term supply: Project approvals slow – more needed



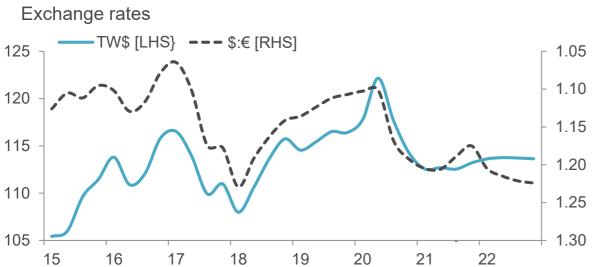


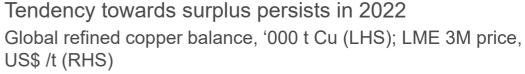
DATA: CRU www.crugroup.com

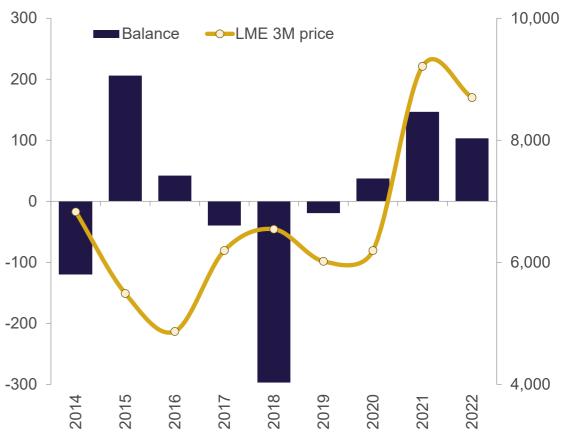


2022 Price Outlook: Average price lower but remains historically elevated









DATA: Oxford Economics, CRU www.crugroup.com 59



2022 Conclusions: Price and margin high relative to previous cycles

2022 Key Indicators:



World demand growth slows in 2022, after recovery in 2021



Growth in mine supply decelerates; projects important



Small market surplus forecast (<0.5% of global consumption)...



...keeping stock levels low



Average 2022 prices edge down but...



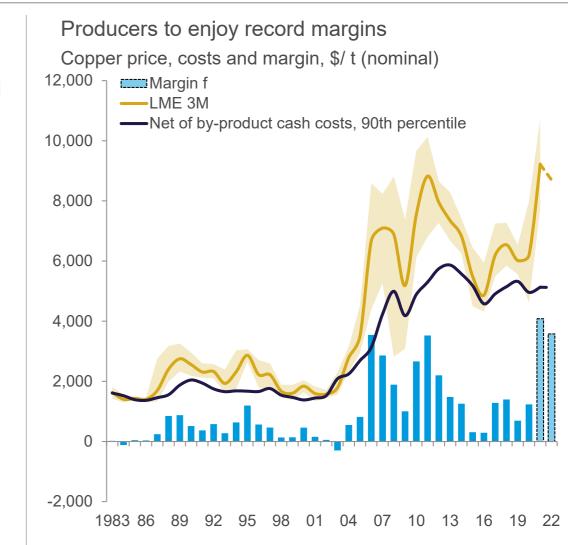
..downside is limited; price volatility persists



Green energy transition & lack of supply attract investors



Record producer margins in 2022 and beyond



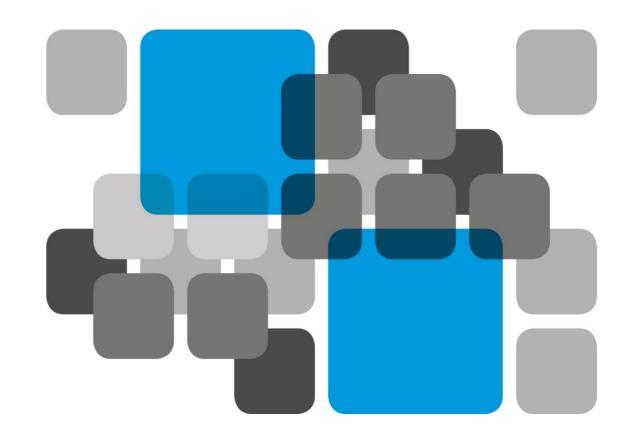
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LME Week Seminar metals debate: Zinc & lead

LME Week Seminar
London & online – 11th October 2021

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Concord Resources Limited

October 2021

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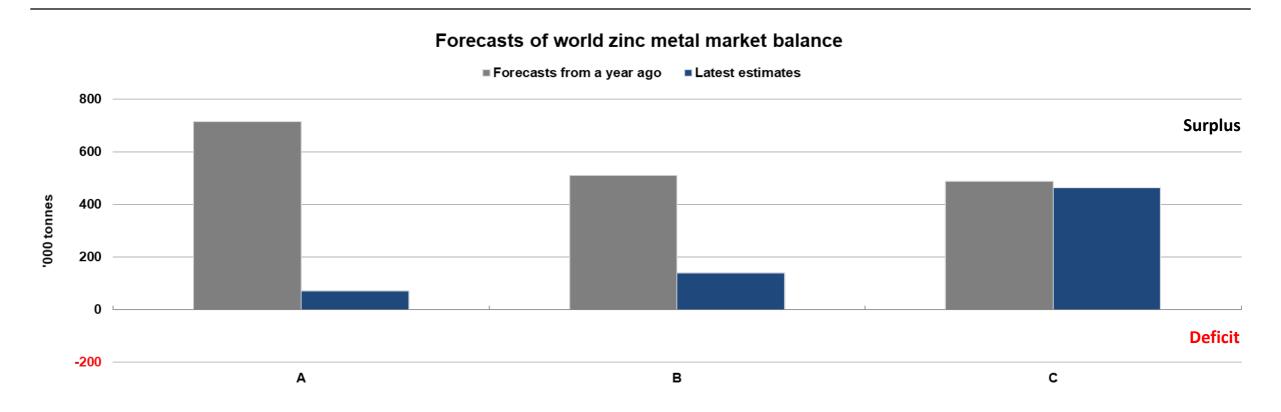
LME Week Seminar metals debate - zinc & lead

Zinc market

Lead market

Summary

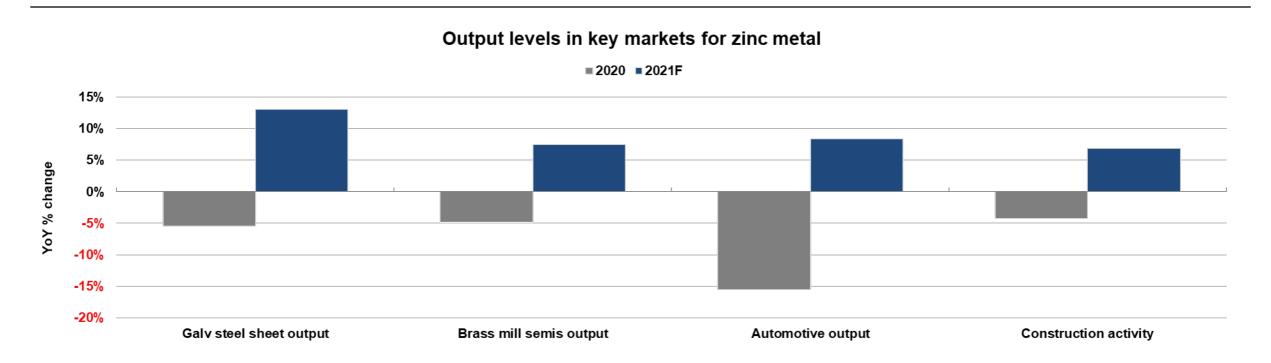
A year ago the world zinc metal market was widely expected to run a surplus in 2021



Latest estimates still show a surplus on paper, but reduced vs original expectations as market imbalance narrows

Note: Original forecasts published September-October 2020. Latest estimates published June-October 2021. Source: CHR, CRU, ILZSG, Concord Resources Limited, October 2021

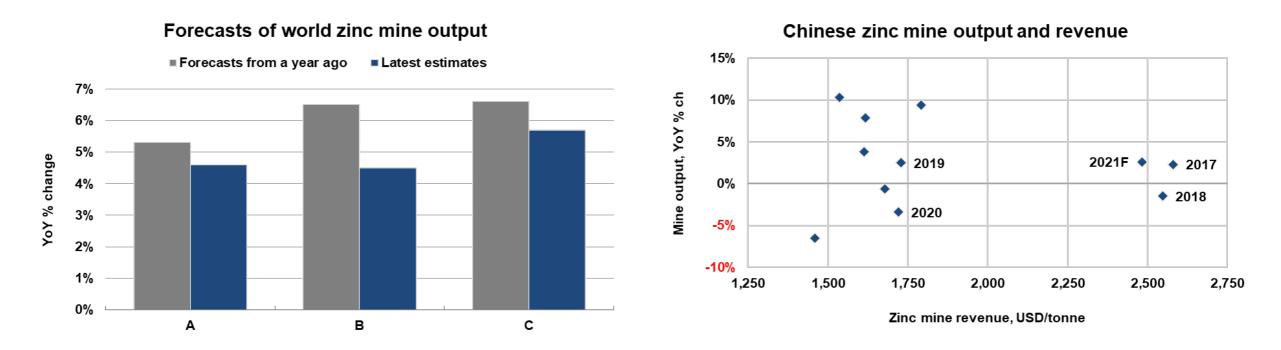
World zinc metal demand has rebounded strongly in 2021



- Galvanised steel production (±50%) and brass making (±17%) are key first use markets in primary zinc consumption
- Automotive output and construction activity are key markets for galvanised steel and zinc diecast alloys

Note: Automotive output – cars and light trucks. Construction activity – gross value added at market exchange rates. Source: CRU, ILZSG, LMC, OEF, Concord Resources Limited, October 2021

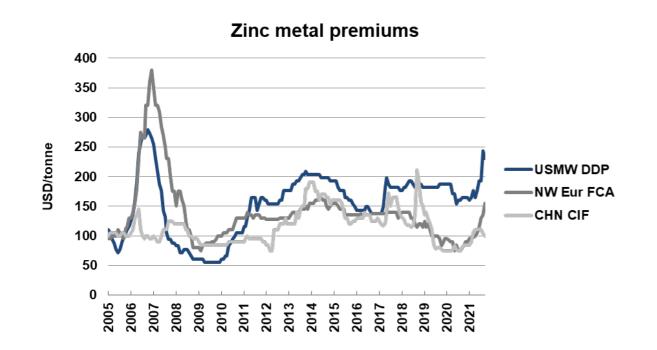
A year ago world zinc mine output was widely expected to rise sharply in 2021

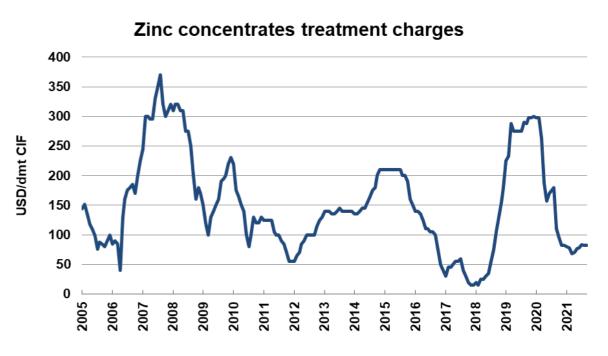


- Latest estimates of the expected increase in world zinc mine output this year have fallen vs original expectations
- In China, the relationship between zinc mine revenue and output growth has been breaking down in recent years

Note: Chart on left – original forecasts published October-December 2020. Latest estimates published April-October 2021. Chart on right – zinc mine revenues basis spot market terms, annual averages, 2011-2021 YTD. Source: CHR, CRU, FM, ILZSG, SHFE, Concord Resources Limited, October 2021

Physical zinc market price signals have been mainly positive this year to date

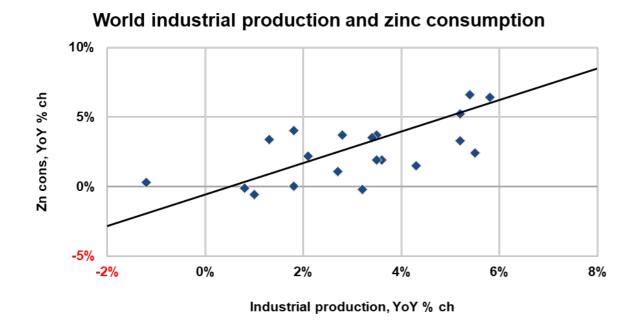


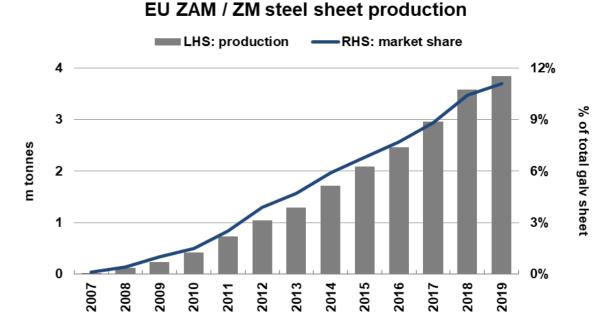


- Spot zinc metal premiums have recently spiked to multi-year highs in USA & Europe (don't forget freight impact), but lagging in China
- Spot zinc treatment charges have recently ticked up but levels remain towards low end of long-run range

Note: Spot premiums for special high-grade (SHG) zinc ingot. China data series CIF Far East 2005-2016, CIF China 2017FF. Spot TCs for standard clean zinc concentrates. Source: CRU, FM, LME, Concord Resources Limited, October 2021

World zinc consumption driven by industrial production and intensity of use



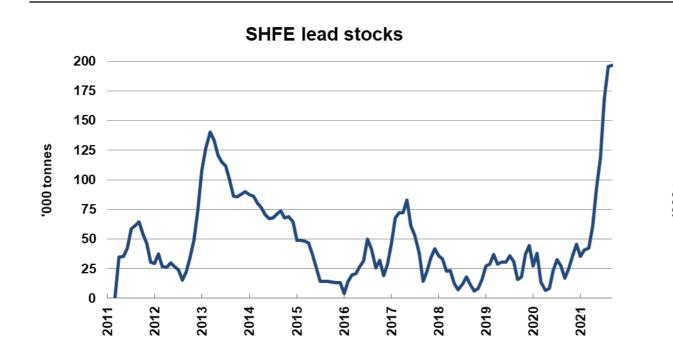


- YoY change in industrial production statistically explains majority of YoY change in world zinc consumption over the long run
- Structural change curbing zinc use in key markets. ZAM / ZM 20%-40% lighter than free-zinc coatings in continuous galvanising

Note: Industrial production and zinc consumption data 1998-2020. ZAM – Zinc-Aluminium-Magnesium. ZM – Zinc-Magnesium. Source: CPB, CRU, ILZSG, <u>SteelConsult</u>, Concord Resources Limited, October 2021

Lead market

Polarised – China overloaded, ex-China short



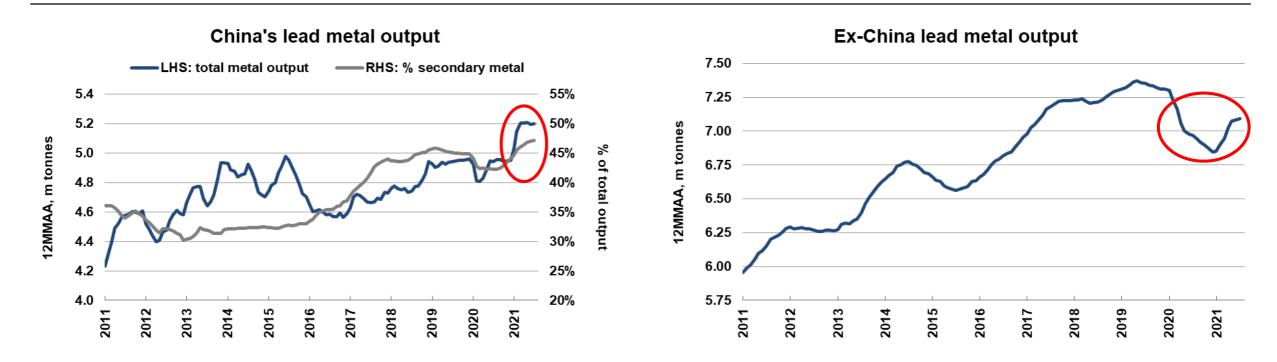


- Aggregate world lead metal market supply adequate but distribution skewed, reflected in exchange stocks
- SHFE lead metal stocks now around record high, LME lead metal stocks at lowest in over a decade

Note: Month end data to September 2021 Source: LME, SHFE, Concord Resources Limited, October 2021

Lead market

China's metal output up sharply this year, led by secondary producers; rest of world output weak



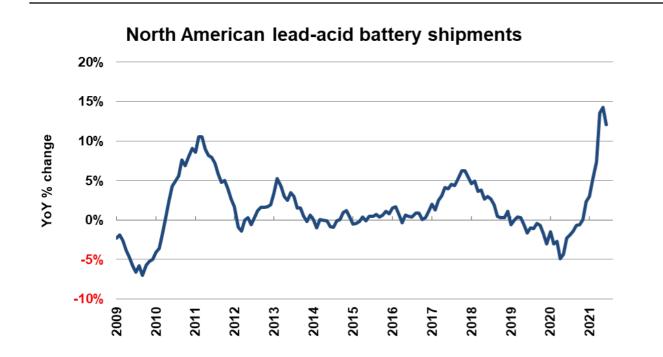
- Jan-Jul 2021 China's output up +9% YoY to ~2.95m tonnes (> 40% of world total), new record; secondary +24% YoY, primary -2% YoY
- Ex-China production problems and unplanned outages reported in Germany and UK, plant closure in USA in February 2021

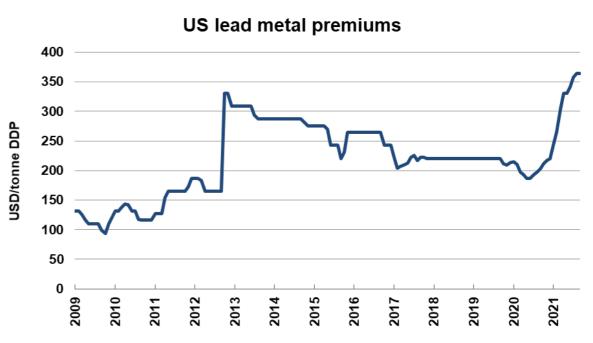
Note: Data to July 2021

Source: ILZSG, Concord Resources Limited, October 2021

Lead market

Ex-China lead metal demand has been strong in key markets this year, reflected in physical price signals



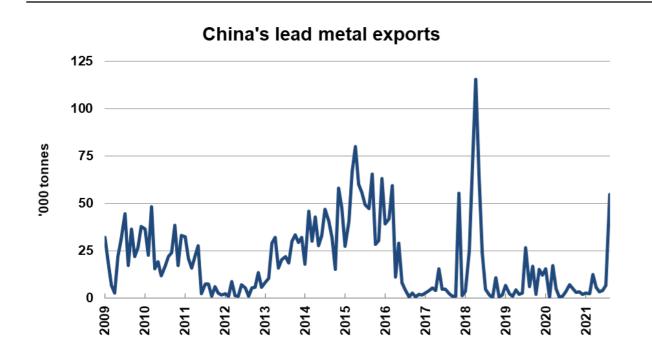


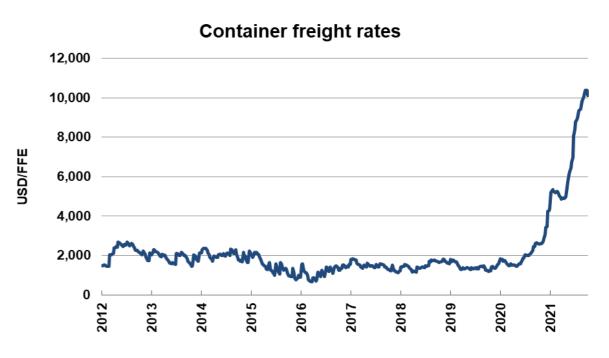
- H1 2021 North American lead-acid battery shipments 71m units, +17% YoY; stronger gain than post-GFC, despite lesser base effect
- Spot lead metal premiums hit (nominal) record highs this year in key markets ex-China (but again don't forget freight impact)

Note: Battery shipment data to June 2021. Spot premiums for secondary 397 lead ingot. Source: BCI. FM. Concord Resources Limited. October 2021

Lead market

China's lead metal exports limited, in part by surge in ocean freight rates



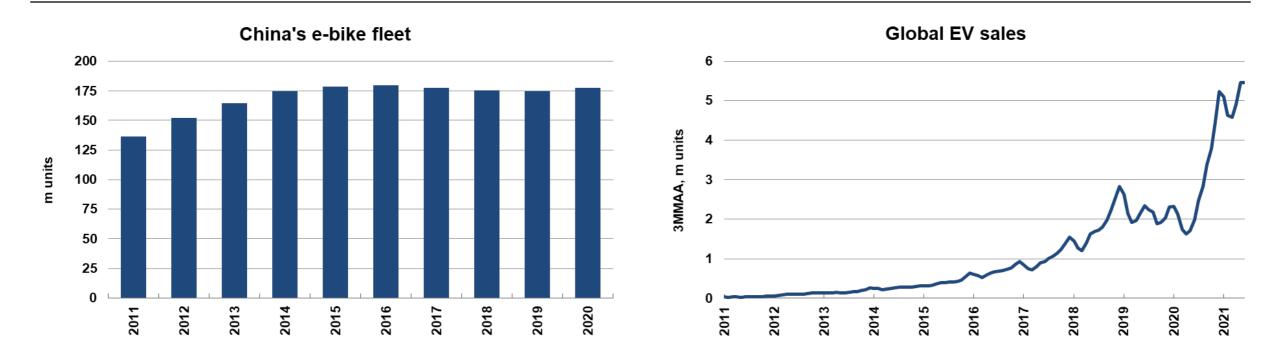


- China's lead metal exports spiked towards decade high in August (~55kta) but remain very small vs market size
- Tax treatment has limited China's lead metal exports since mid-2000s; surge in freight rates has been a further obstacle this year

Note: China lead metal exports basis HSC 7801.10.00, 7801.91.00 and 7801.99.00; monthly data, latest August 2021. World spot container freight index; weekly data, latest 7th October 2021. FFE – forty foot equivalent unit. Source: China Customs, Drewry Shipping Consultants, Concord Resources Limited, October 2021

Lead market

Risks to long-run lead demand loom on the horizon, especially for primary metal



- China's e-bikes have been a big driver of lead demand; fleet may have peaked, smaller batteries in new e-bikes, some switching to Li-ion
- Electric vehicle sales accelerating fast, taking market share from ICE vehicles; use smaller lead-acid batteries

Note: China's e-bike fleet year-end data. Global EV sales monthly data to June 2021. Source: BBG, CHR, Concord Resources Limited, October 2021

Summary

LME Week Seminar metals debate - zinc & lead



- Zinc metal market balance has been 'better' (i.e. surplus narrower)
 than originally expected this year, supporting prices
- Industrial production is primary driver of zinc demand, slower growth forecast in 2022 vs 2021; mine supply key point to watch, especially China
- Long-run negative risks to intensity of zinc use from changing technology in galv coatings (continuous & batch) and high prices in DCAs, but less 'scrap' risk than for other metals (sacrificial corrosion)
- World lead metal market polarised; China overloaded, rest of world short in 2021. Chinese exports should (eventually) contribute to rebalancing
- Major risks to long-run lead demand loom on horizon, especially for primary metal; possible return to past zinc-lead price ratios

Note: LME zinc-lead price ratio basis cash settlement prices; daily data to 7th October 2021. DCAs – die-cast alloys, mainly zinc-aluminium. Source: LME, Concord Resources Limited, October 2021

Concord Resources Limited

Our markets: every step of the supply chain

Metals	Aluminum	Copper	Zinc, lead, nickel	Alumina, bauxite	Precious metals
Products	P1020BilletsAlloysRod	CathodeCopper rodConcentrates	SHG & CGG zinc397 & 49s leadPrimary nickelConcentrates	SGARaw bauxite	GoldSilverPGMs
Origination	ConsignmentsPrepays/financingOff-take/marketingTolling	ConsignmentsPrepays/financingOff-take/marketingTolling	ConsignmentsPrepays/financingOff-take/marketingTolling	SwapsPrepays/financingOff-take/marketingTolling	Off-take/marketingBy-products from concentrates
Storage / logistics	LME systemWarehousingShipping	LME systemWarehousingShippingBlending	LME systemWarehousingShippingBlending	WarehousingShippingBlending	 Vaulting
Consumers	AerospaceAutomotiveConstructionPackaging	Wire and cableTubingBrassSmelters	GalvanizersBattery makersStainless & alloy steelmakers	RefineriesSmelters	BanksSmelters

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Agenda



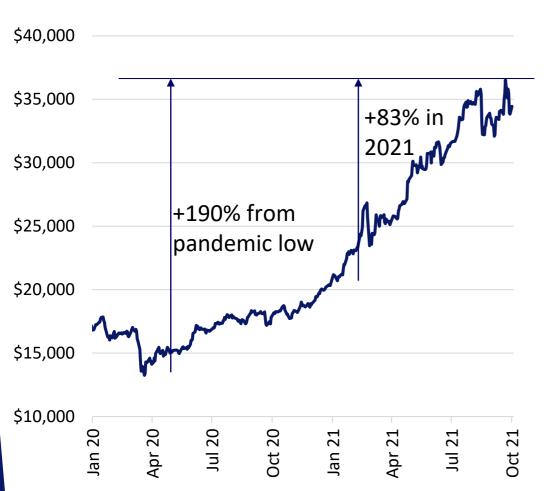


- Has a Tin Price Boom Been Long Overdue?
- Key Drivers For the Coming Months?
- Are Record Tin Prices Sustainable Long-Term?

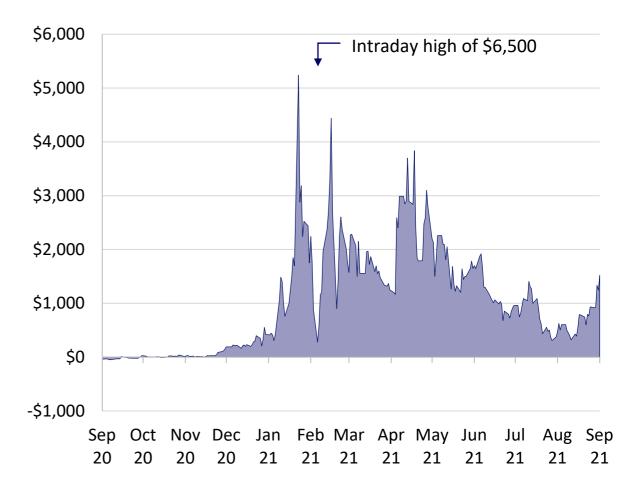
Record Prices and Backwardation in 2021



LME 3M Tin



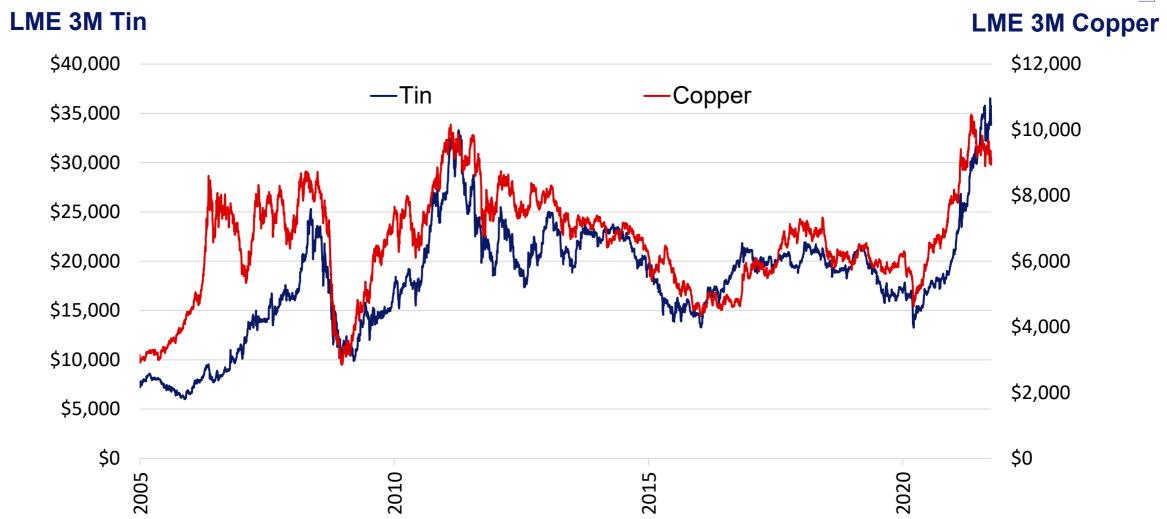
Cash-3M Spread Backwardation (US\$)





Macro-Influence Illustrated in Copper Alignment



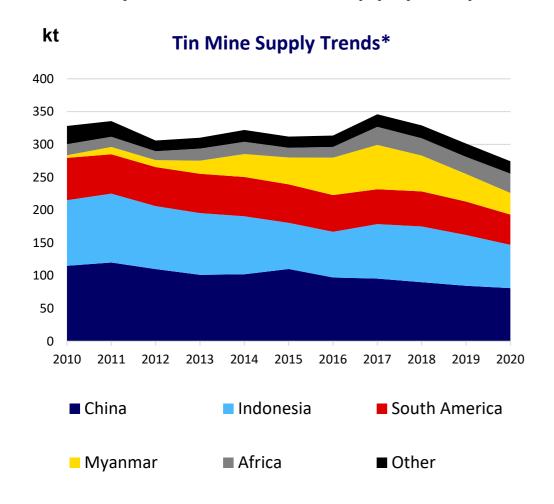




What's Tamed The Tin Bull Narrative Since 2011?

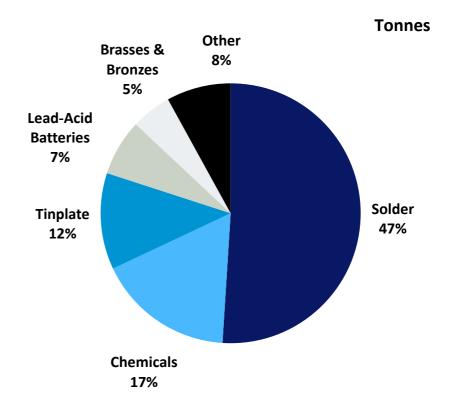


1. Myanmar Filled Supply Gap



2. Solder Use Economisation

Refined Tin Use By Application, 2020e





Agenda



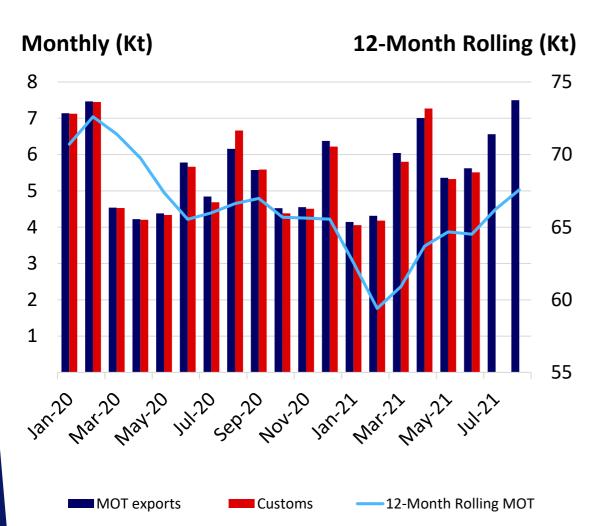


- Has a Tin Price Boom Been Long Overdue?
- **Key Drivers For the Coming Months?**
- Are Record Tin Prices Sustainable Long-Term?

Ex-China Supply On The Recovery Path

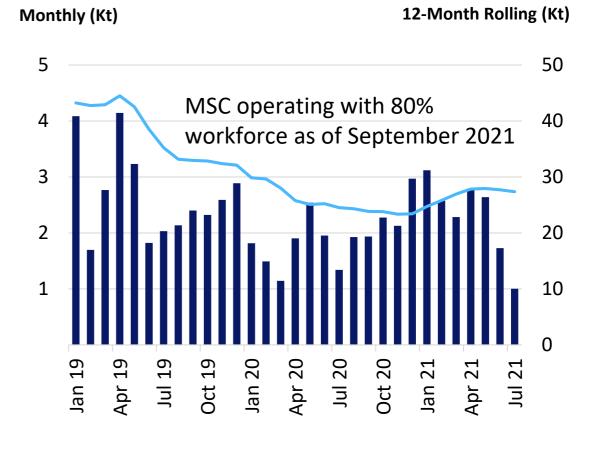


Indonesia Tin Export Indicators



Malaysia Tin Exports

Customs





-12-Month Rolling

Demand: Near Term Post-Pandemic Pressures

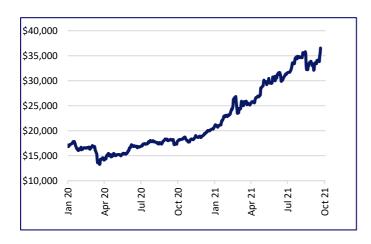




Fading WFH Demand Boost



Semiconductor Shortages (And Other Supply Chain Issues)



High Tin Prices



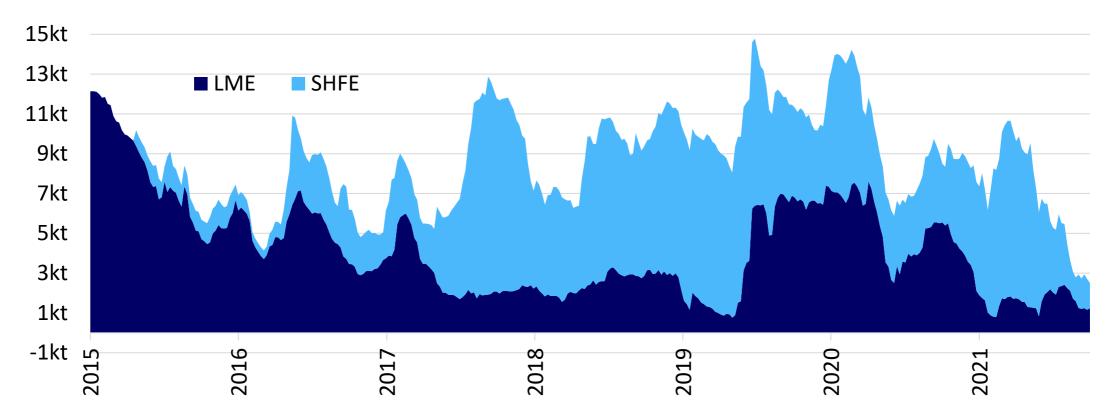
China Winter Energy Curbs



Scarce Inventory: Limited Capacity To Absorb Shocks



Tin Exchange Stocks (kt)

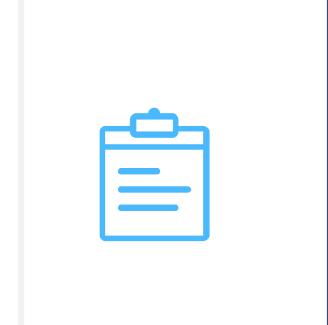


Means Inability to Run Big Deficits and Scarcity Pricing Tendencies



Agenda





- Has a Tin Price Boom Been Long Overdue?
- Key Drivers For the Coming Months?
- Are Record Tin Prices Sustainable Long-Term?

Long-Term Outlook For Demand Is Bright





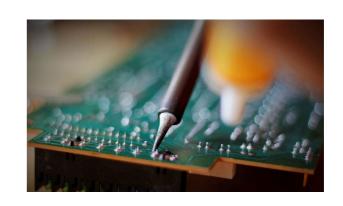
Pent Up Demand After Supply Chain Issues



Electronics Proliferation



Decarbonisation



Fading Solder Economisation Headwinds



New Supply Needs Time and Stable High Prices







Artisanal Mining



Industrial Mines



Investors Wary of the Next Black Swan

Time and Price Stability Needed



Conclusions



- 1. Tin's vulnerability to acute shortages exposed by the pandemic.
- 2. Scarcity conditions ongoing, but may ease amid a post-pandemic normalisation.
- 3. Electronics proliferation and decarbonisation to underpin long-term demand.
- 4. Return to pre-pandemic pricing unlikely as new supply needs price incentive.

Price Forecast: Extreme short-term volatility to persist. \$25-30k by end-2022. Trending upwards from this level long-term.

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POLL

Which metal carries the most upside potential for the year ahead?

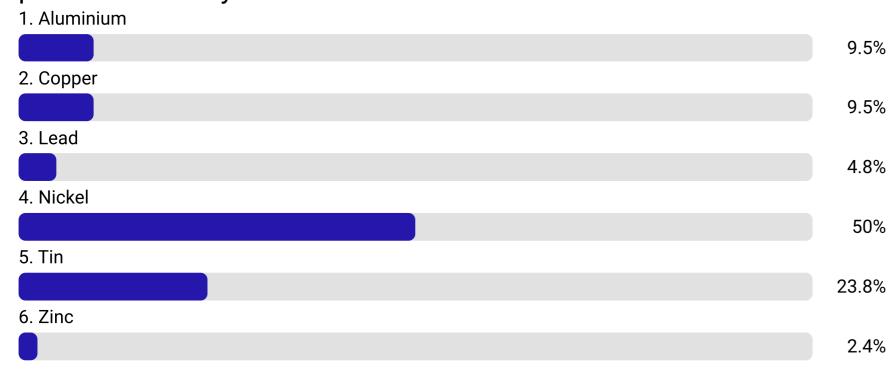
- 1. Aluminium
- 2.Copper
- 3.Lead
- 4. Nickel
- 5.Tin
- 6.Zinc





POLL 3 RESULTS

After having listened to the panel, which metal carries the most upside potential for the year ahead?







POLL

What do you see as the most influential factor for the current metals cycle?

- 1. Chinese government policy
- 2. Chinese demand
- 3. US government policy
- 4. OECD demand
- 5. Supply chain constraints
- 6. Other





POLL 4 RESULTS

What do you see as the most influential factor for the current metals cycle?

1. (Chinese	government	policy
------	---------	------------	--------

1. Offices government policy	
	36.5%
2. Chinese demand	
	20.3%
3. US government policy	
	4.1%
4. OECD demand	
	1.4%
5. Supply chain constraints	
	36.5%
6. Other	
	1.4%
•	





POLL

If you are here in the room today, where have you come from? And if you are watching online, where are you watching?

- 1. Europe
- 2. North America
- 3. South America
- 4. Asia
- 5. Africa
- 6. Australasia





POLL 5 RESULTS

If you are here in the room today, where have you come from? And if you are watching online, where are you watching?

1. Europe

· · · · · · · · · · · · · · · · · · ·	
	72.7%
2. North America	
	3.6%
3. South America	
	5.5%
4. Asia	
	16.4%
5. Africa	
	0%
6. Australasia	
	1.8%





LME Metals Seminar 2021

Thank you for attending!

Save the date for 2022: Monday 24 October 2022



