LME Metals Seminar 2022





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POLL 1

In what has been a very unusual year, hosting a world cup, mid-season and mid-winter, doesn't seem so odd after all. But who is going to win it?

- 1. Brazil
- 2. France
- 3. England
- 4. Argentina
- 5. Spain
- 6. Germany
- 7. Other





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Welcome speech Nicolas Aguzin, Chief Executive, HKEX





LME Metals Seminar 2022





Industry keynote address Inka Guixa, CEO, La Farga





Industry keynote address Inka Guixa, CEO, La Farga





LME Metals Seminar 2022





Economic keynote: global economic outlook Sven Smit, Senior Partner, McKinsey & Company





McKinsey & Company

Where is The Economy, is it still Global?

Sven Smit – Chair McKinsey Global Institute



We see three other periods that resemble today, with a similar concentration of globally disruptive events and crossing points

Overview of selected systemwide, catalyzing events since WWII

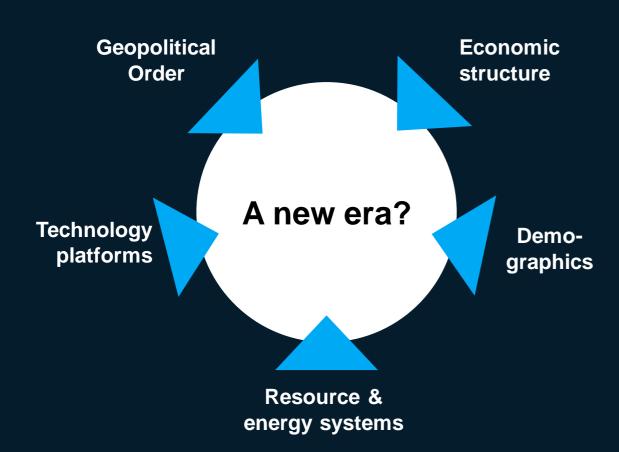
1944-1946 1972-1974 1989-1992 2020-2022 Fall of USSR Russia-Ukraine war **Bretton Woods system** Fiat money / D US dollar loses convertibility Cold War tension dissipates US dollar becomes global War in Europe, causing supply to gold and markets open shocks reserve currency **Global institutions** Oil crisis **EU** foundation COVID-19 Establishment of UN, IMF, Energy price spikes causing Maastricht treaty signed, Pandemic takes >6m lives and World Bank, and others economic disruption paved the way for the Euro disrupts livelihoods **Atomic bomb Stagflation** Inflation leviathan Internet Recession with high inflation WWW developed, first First use of nuclear weapon Highest levels of inflation in 40 in war and unemployment commercial ISPs launched years Peacetime shift Japanese growth China's opening China's ascent Japan's GDP surpasses Shift from wartime economy, Deng Xiaoping invigorates China's GDP overtakes EU. regrowth (e.g., Marshall plan) Germany's economic reform but no longer in 'hyper-growth'

Between periods of disruption, global events played out in thematic 'eras'

		1070 1071	4000 4000	2002
	1944–1946	1972–1974	1989–1992	2020–2022
Domains	Era of Post-Wa	r Boom Era of Co	ontention Era of Ma	arkets
World order	Decolonizing world towards two compet with new pan-Weste institutions (e.g., NA	ing blocs countries sta ern economic po	tart arising as chains built on chains built built on chains built on chains built on chains built on chains b	world with supply on factor cost d cooperative ules
Technology platforms	Golden age of engin fundamentals of info	ormation and foundations	sumer electronics and Digital eman enabled es established	nation: connected and
Demographic forces	Establishment of mo (sub)urban life in W fall in extreme pover	est, global replacement	nt rate in West; life small, urban	rergence towards n family; ubiquitous nts in health and
Resource and energy systems	Energy expansion a petroleum boom		1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	abundant world with ss, but climate
Global economic tectonics	Transition from war economy, rebuilding and European socie	of Japanese interest rate	es shape Western and inflation	g falling interest rates , China in top gear th' for most of era

Five factors that typically change when a new era begins such as post WWII, the early 1970s, and the early 1990s

What we are seeing today



Geopolitical order

- Russia invades Ukraine; China/India do not join condemnation
- US-China competition, Geoeconomic tools increasingly at work
- Evolution of Quad / U.S.-EU Trade & Technology Council

Economic structure

- COVID alters supply chain, labor market, inflation dynamic
- China slips out of 'top-gear' growth and searches for COVID-exit
- · Corporate actors shift focus to stakeholder concerns

Demographics

- Global 'peak child' reached
- 'Baby Boomers' retire in West
- Dependency ratio for many countries at inflection point (now rising)

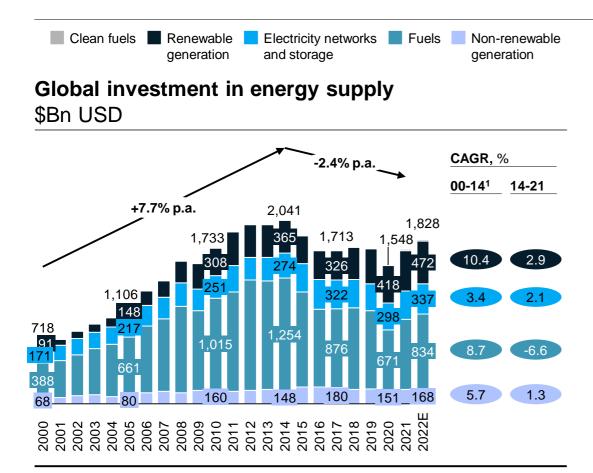
Technology platforms

- Saturation point close for smartphones and internet
- COVID-19 accelerated digital adoption by ~7 years
- · Exponential Al innovation and cloud/edge/trust architecture

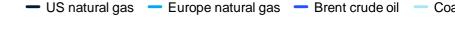
Resource & energy systems

- Under-investment in future energy requirements
- · Historical peaks across energy commodity prices
- Energy security gains new salience, scramble to secure supply

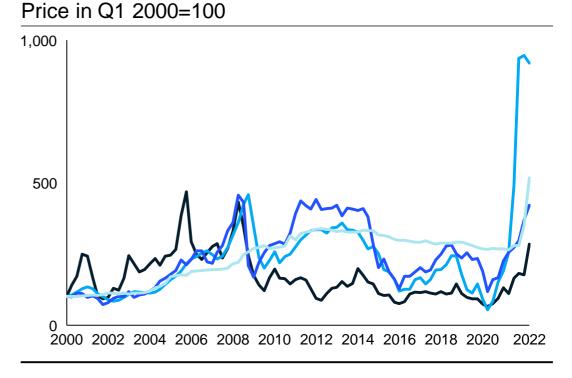
Signals in the global energy system



The investment on energy have shrunk across all types



Indexed quarterly price of goal, gas, and oil²



Price of fossil fuels have skyrocketed

^{1.} Categories from 2000-2015 are estimates based on Global investment in energy supply over time (Figure 1.2).

^{2.} Quarterly price of Europe natural gas, US natural gas and Brent crude oil were from World Bank Commodity Price Data Pink Sheet. Quarterly price of coal was the price of coal in the US from Oxford Economics.

Lives and Livelihoods scenarios

Globally disruptive events and potential crossing points widening range of outcomes for Lives and Livelihoods

Preliminary

Changing world order and global economic tectonics

Pace, scale and depth of reactions to changes in the world order and structural shifts in economic operating environment

Sustained change & beneficial shifts in economic outcomes

Shifts in world order largely accommodated restoring supply/ demand imbalances in goods and labor markets, supply chain fluidity, and inflation expectations

Uneven change slowed by competing economic interests

Shifts in world order accommodated in part creating uneven resolution of supply/ demand imbalances in goods and labor markets, supply chain fluidity and inflation expectations

Disruptive change with hard-to-resolve economic transitions

Shifts in world order are disruptive impeding resolution of supply/demand balances in goods and labor markets, supply chain congestion, and inflation expectations



Platform standards bifurcate impeding progress of shifts

Geoeconomic concerns override energy transition goals slowing public/private spending impeding productivity gains

Platforms proliferate slowing pace and impact of shifts

Targeted public/private spending navigate geoeconomic concerns, raises productivity and moderates cost of energy transition

Platforms compete openly and raise impact/hasten shifts

Rapid public/private spending with few geoeconomic barriers accelerates productivity and affordable energy transition

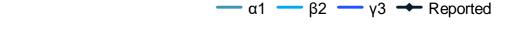
Shifts in technology and resource energy platforms

Scale and breadth of commitment to efficiently scaling technology platforms and accelerating the shift of the energy transition

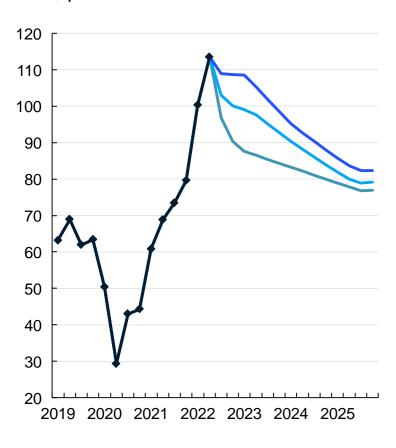
Key input prices – which are set globally – are likely to remain elevated for some time

Scenarios as of September 12, 2022

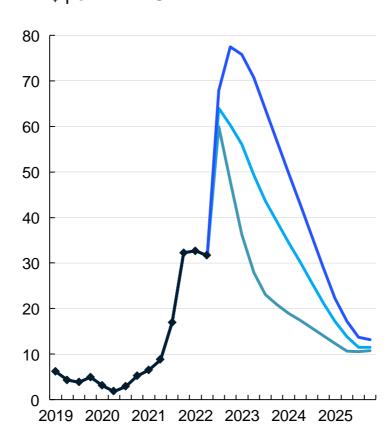
Preliminary



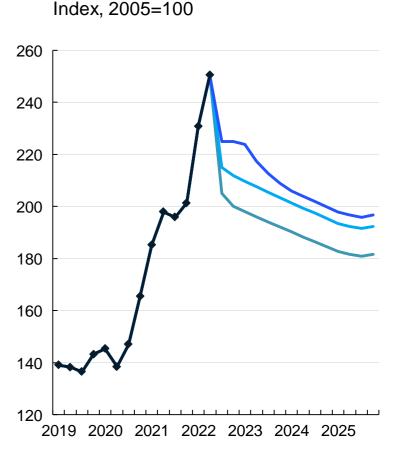
Crude oil, Brent \$ per barrel



Natural gas, Europe \$ per MMBTU



World food price



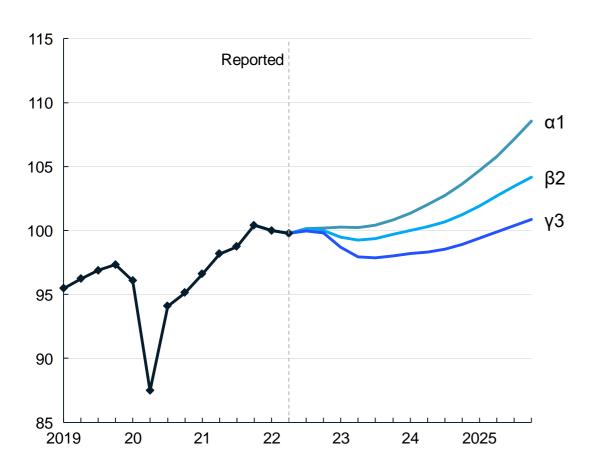
Real GDP – United States

McKinsey scenarios, September 12, 2022

Preliminary

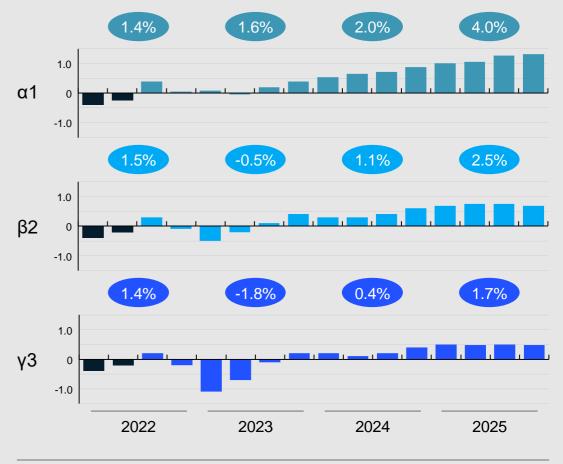
Real GDP

Indexed, 2022 Q1=100



Real GDP

Quarterly and annual percent change



Source: National statistics agencies; McKinsey analysis, in partnership with Oxford Economics

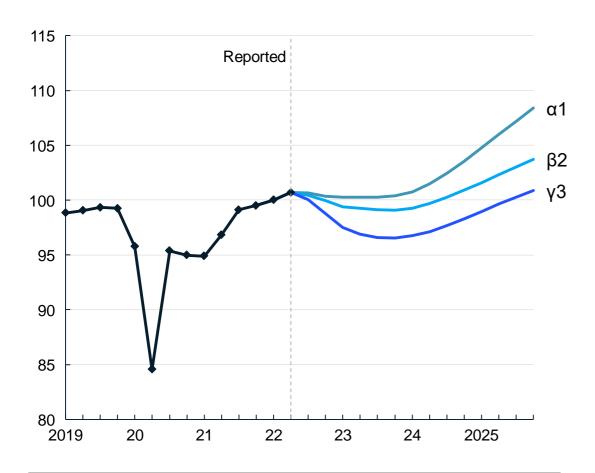
Real GDP – Eurozone

McKinsey scenarios, September 12, 2022

Preliminary

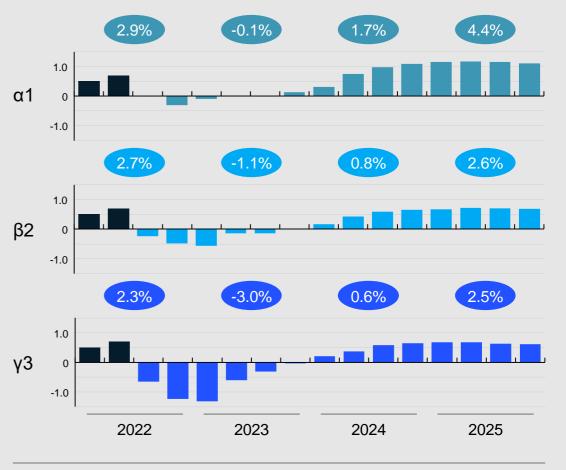
Real GDP

Indexed, 2022 Q1=100



Real GDP

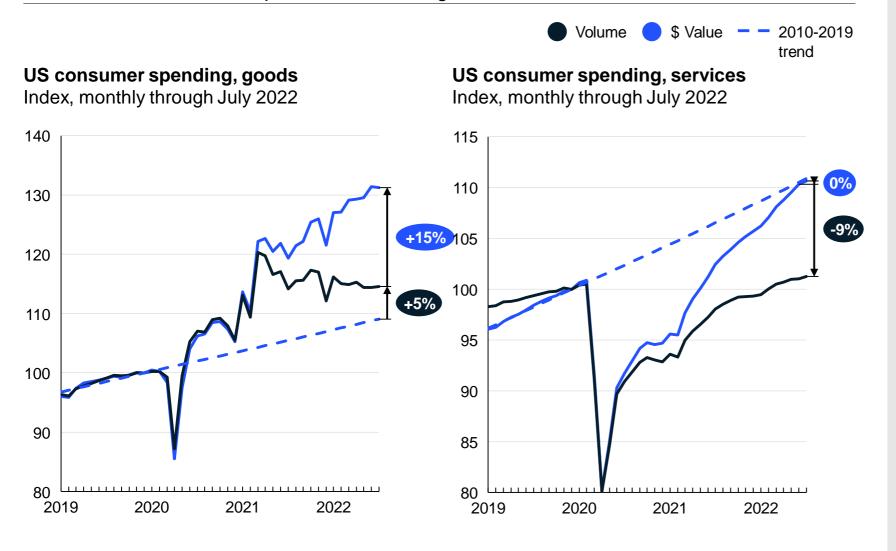
Quarterly and annual percent change



Source: National statistics agencies; McKinsey analysis, in partnership with Oxford Economics

US spending on goods increased significantly stretching supply chains to the limit

Volume has slowed as impact of inflation begins to take hold



+\$1,218B

Cumulative nominal spending on goods above trend since January 2020

-\$1,680B

Cumulative nominal spending on services below trend since January 2020

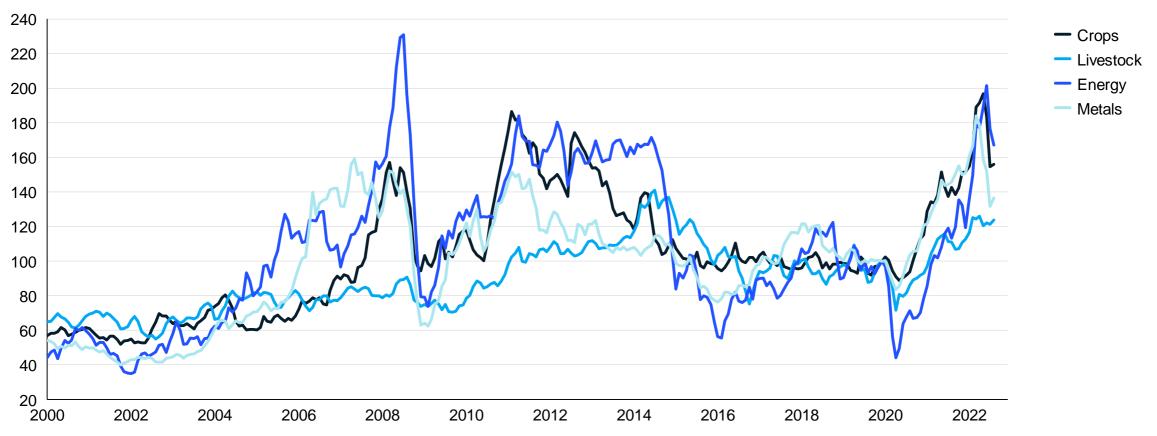
Source: BEA, McKinsey analysis

Commodity prices have come of their highs driven by Russia's invasion of Ukraine

This slowdown will play through to CPI and PPI inflation in coming months

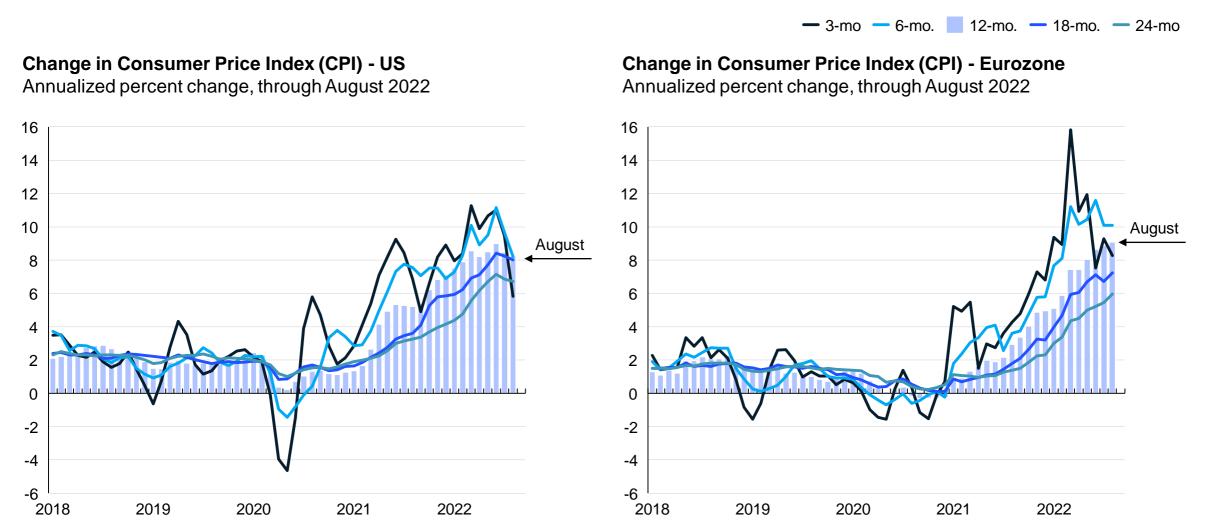
Commodity prices, sector-based baskets

Index, December 2019=100; monthly through August 2022



August CPI reading suggests the acceleration in US inflation is behind us, while Eurozone prices continue to grow at faster pace

Central banks may still move more aggressively than even revised market expectations have anticipated



Central banks continue to hold the "hearts and minds" of bond market participants

Medium- and long-term inflation expectations remaining at 2-3%

5-year market-based inflation expectations

Percent, weekly through September 9, 2022





Based on its current assessment, over the next several meetings the Governing Council expects to raise interest rates further to dampen demand and guard against the risk of a persistent upward shift in inflation expectations

European Central Bank Policy
 Statement, September 8, 2022

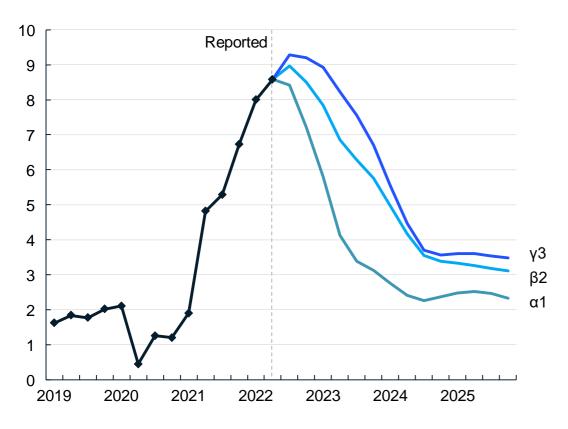
Inflation and FED policy—United States

McKinsey scenarios, September 12, 2022

Preliminary

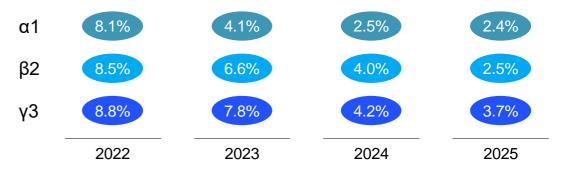
Consumer Price Index, quarterly

4-quarter change



Consumer Price Index, annual

Annual change

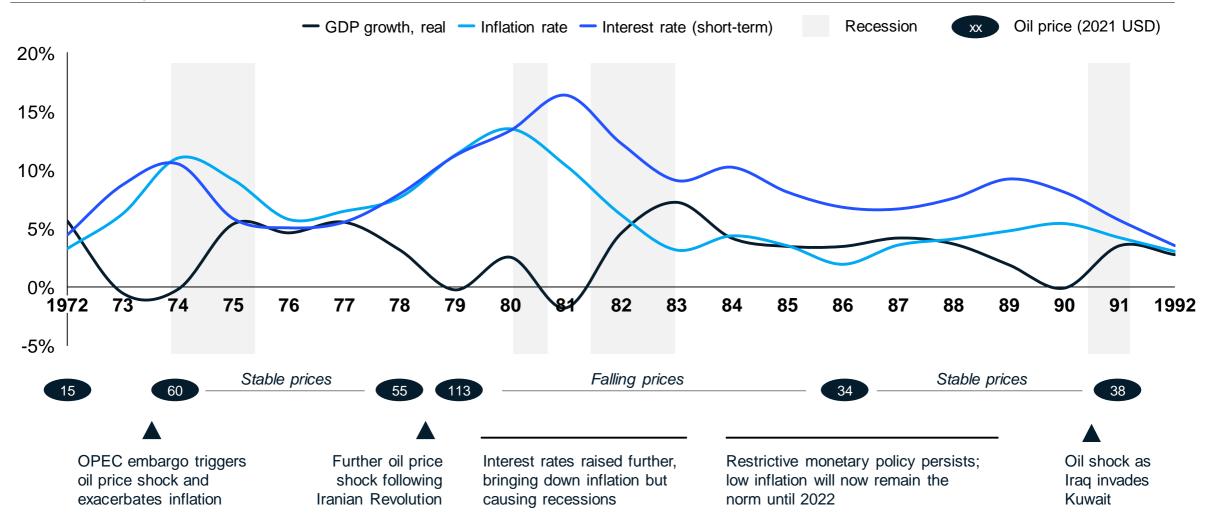


Federal funds target rate

Percent, scenarios as of September 12, 2022 5.00% 4.50% 3.50% 2.50% 1.75% 1.00% 0.50% 0.25% β2 Mar 17 May 5 Jun 16 Jul 28 γ3 α1 Jan 1 Peak rate, 2023 2022

Let's look back at the stagflation era

US real GDP growth, inflation, interest rates, and recessions¹; oil price (Dated Brent, 2021 USD)



^{1.} GDP growth indexed to 2015 USD; inflation given by year-on-year Consumer Price Index (All Urban) % change; short-term interest as the Federal Funds Effective Overnight Rate; recessions as dated by NBER

Source: Federal Reserve St Louis, BP Statistical Review, 2022

Going into the next Era: direction of travel, and big forks in the road

	Current direction of travel From To		Forks in the road	
Domain				
World order	Unipolar	Multipolar	Polarize in to 'blocs' vs. strengthen global institutions and support multi-lateral co-operation Return to political centrism vs. hyper-polarization	
	Global	Regional		
	Moderate	Polarized		
Technology platforms	Few cases of AI outperformance	Myriad cases of Al outperformance	Policy environment enables speed of innovation vs. exercises cautio (i.e., privacy, AI safety)	
			Progress enabled by open co-operation vs. IP-protected institutions	
Demographic forces	Young world	Ageing world	Invest in health to add 'life to years and years to life' vs. prioritize oth expenditure (e.g., social care for elderly, defense)	
	Communicable diseases	Non-communicable diseases		
			Be radical in addressing social inequality (e.g., wealth, health) vs. continue with current policy levers	
Resource and energy systems	Climate neglect	Climate 'priority'	Invest rapidly to ensure 'well below 2C' global warming vs. continue	
	High spend on fossil fuels	Low spend on energy (incl. renewables)	current pace to avoid economic, social, and local environmental cost of energy transition	
Global economic tectonics	High productivity growth	Low productivity growth	'Belt-tighten' to deleverage vs. try to innovate and boost productivity outgrow' debt	
	'Catch-up' growth	Capital deepening		
	Low leverage	High leverage		
			McKinsay & Company	

Five potential future trade archetypes are emerging

Market Access

Degree to which foreign firms can sell products/ services to consumers in a country

A function of both market forces and government regulations

Closed

Open

Controlled Exports

Foreign firms sell products into a country, but manufacture elsewhere

Decoupled

Foreign firms can not sell or manufacture products into a country

Local for local market

Foreign firms can sell products, as long as they are manufactured domestically

Potentially will also require "local technology / IP / R&D"

Degree of market access dependent on "local content"

Open

Foreign firms sell to consumers, manufacture, and export products globally freely to a region

Operations node

Local manufacturing operations support a global supplier network, irrespective of local market potential

High

Barriers to In-Country Supply Chain Activity

Degree to which foreign firms are using local R&D, manufacturing or supply base to provide global output

Low

Eight tests for building resilient growth mindsets



1

How prepared are you to handle your known vulnerabilities?

2

How equipped are you to weather a combination of fast-moving, unknown challenges?

3

What early-warning indicators are you obsessing over to anticipate the scale and speed of disruption?

4

What disruptive competitor moves might re-shape your industry?

5

What actions - or reactions - do you anticipate from your financial, supplier, and societal stakeholders?

6

Are you poised to take advantage of new opportunities that present themselves? 7

Can you support consistent, fast, and flexible decision-making - without succumbing to organizational fatigue?

8

Do your management team and board have the muscles needed to navigate an inflationary, recessionary environment?

"You cannot overtake 15 cars in sunny weather – but you can when it's raining." Ayrton Senna



McKinsey & Company



Apply history's lessons learned to overcome today's uncertainty



Deploy a new playbook. Companies that survived or did well in the last two years may not do so in inflationary or recessionary environments. Leverage board experience on learnings from earlier crises



Prepare for both entry and exit from recession. A potential recession will likely be shallower and shorter than in the past. Focus on seizing opportunities as you emerge from the downturn



Go bold on scenarios, rather than error-prone forecasts.

Forecasts are nearly always wrong, and "miss" key events (e.g., pandemic, slowing globalization, supply chain woes, inflation). Use scenarios to inform operationalization



Radically enhance Finance, since the cost of being wrong is high. Finance now must consider evolving macroeconomic factors to an extent not faced in decades. Higher rates mean near-term cash flow and earnings are at a premium. Tighten links between Finance and the frontline

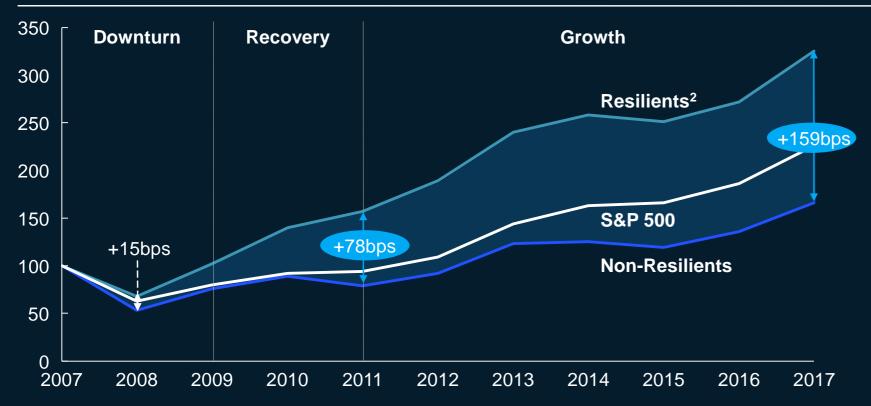


Focus now on resilient growth. Embrace actions now to withstand shock and future unknowns while preserving a growth mindset (e.g., acquisitions)

History teaches us that resilient companies are much more likely to come out as winners – especially during crisis

Last Updated June 30, 2022

TRS performance of ca. 1,000 global companies¹ during the 2007-08 Financial Crisis



Resilient companies achieve + ~ 100bps TRS driven by...

Outperformance in earnings throughout the cycles and revenues in the recovery

Faster and harder moves on productivity, preserving growth capacity

Divestments in downturn phase, acquisitions when recovery started

Operational and financial optionality

In practically all sectors, resilient companies demonstrate similar attributes

Source: CPAnalytics, MSCI, McKinsey Analysis

^{1.} Total returns to shareholder; calculated as average of sub-sector medians performance of resilient and non-resilient. Includes 1,140 companies (excludes FIG & REITs)

^{2.} Resilient companies defined as top geometric mean TRS quantile by sector.

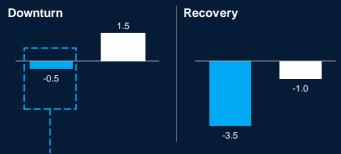
What did resilient companies do differently?

Resilients Non-Resilients

Based on historical research

Resilients moved faster, harder on productivity; preserved growth capacity

Operating costs¹, % of revenue change



Resilients focused on COGS reduction through operational effectiveness²

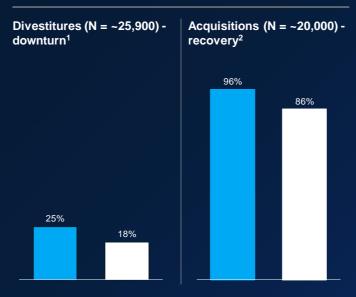


Note: Calculated as an average of different sub-sector medians for 'Resilients' and 'Non-resilients'. Excludes financial companies and REITs

1 Operating Costs = COGS + SG&A - D&A. Change in Op cost (as a % of revenue) between 2007 and 2009 for Downturn period and 2009 and 2011 for Recovery period; 2 Resilients revenue grew at the same time period; COGS and SG&A not adjusted for D&A (D&A is the primary driver for the discrepancy between operating cost and sum of COGS + SG&A)

Resilients divested more heading into the downturn and acquired more as the recovery started

Avg. of sector median divestment (or acquisition) % As % of value of transactions

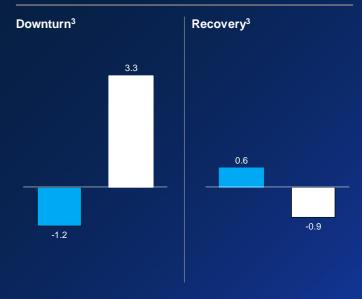


Note: This analysis excludes financial companies, and REITs. This analysis was conducted using fiscal years

1 Downturn is defined as all deals announced between 2007-2009; 2 Recovery is defined as all deal announced between 2010-2011

Resilients created optionality early in the recession – operational and financial

Change in Leverage ratio, (Debt¹/Capital²)



Note: Calculated as an average of different sub-sector medians for 'Resilients' and 'Non-resilients'. Excludes financial companies and REITs

1 Total Debt (book value) = Short Term Borrowings + Current Portion of Long Term Debt + Current Portion of Capital Lease + Long Term Debt + Long Term Capital Lease + Finance Division Debt Current + Finance Division Debt Non Current; 2 Capital = Total Common Equity + Total Preferred Equity + Minority Interest + Total Debt.; 3 Downturn is defined as 2007 and 2009; Recovery is defined as 2009-2011

Resilient companies ("Resilients") defined as top TRS quantile by sector

Source: McKinsey Quarterly Q2 2019, <u>Bubbles pop. downturns stop</u>; CPAnalytics; Capital IQ

LME Metals Seminar 2022





From globalisation to regionalisation - how the geopolitical landscape is shaping the metals market





From globalisation to regionalisation – how the geopolitical landscape is shaping the metals market

Moderator:

Robin Martin, Head of Market Development, London Metal Exchange

Panellists:

- Kwasi Ampofo, Head of Metals & Mining, Bloomberg
- Max Layton, Managing Director, Citi Research
- Colin Hamilton, Managing Director and Commodities Analyst, BMO Capital Markets

Questions:

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Join the conversation.



Break





LME Metals Seminar 2022





The Metals Debate





Which metal has the most upside potential for 2023?

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





The Metals Debate

Moderator:

Andrea Hotter, Special Correspondent, Fastmarkets

Panellists:

- Aluminium Jorge Vasquez, Managing Director of Market Intelligence & Industry Consulting Harbor Aluminum
- Copper Ed Meir, Consultant, Commodity Research Group
- Lead and zinc Natalie Scott-Gray, Senior Metals Analyst, StoneX
- Nickel **Jim Lennon**, Consultant, *Macquarie*
- Steel Colin Richardson, Steel Lead, Argus Media
- Tin James Willoughby, Analyst, International Tin Association

Questions:

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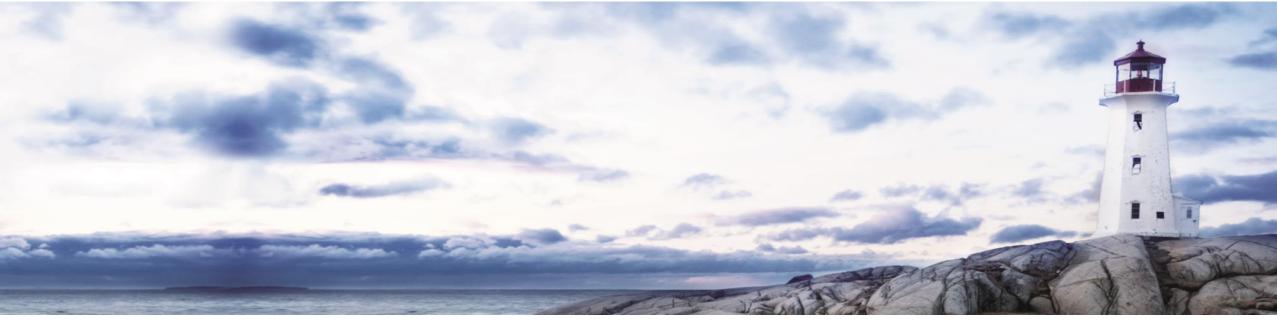
The Metals Debate - Aluminium

Jorge Vasquez, Managing Director of Market Intelligence & Industry Consulting *Harbor Aluminum*









> DEMAND AND PRICE CORRECTION FAR FROM OVER

Aluminum's Market & Price Outlook 2023

LME SEMINAR 2022 / JORGE VAZQUEZ

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For further information, please contact: Veronica Medina | Administrative Manager Mail to: veronica.medina@askharbor.com T.+1 (512) 640-3606



LME aluminum prices have collapsed in 2022 as only HARBOR forecasted

LME CASH ALUMINUM PRICE FORECASTS EVOLUTION FOR 2023 (1)

(\$/mton; monthly data) FWD PRICE 3,500 3,200 2,948 CONSENSUS 2,900 (12,680)2,380 2,600 2,5 35 2,372 2,300 2,250 2,1 2,150 2,000 00 HARBOR BASE 1,700 Jun Jul Sep Oct Apr May Aug Mar

Source: HAKBOR Aluminum

(1): High, low and average of HARBOR's and other analysts' forecasts updated in the prior two months, through October 7, 2022.



Indeed, LME aluminum prices have lost \$2,000 per mton in just six months



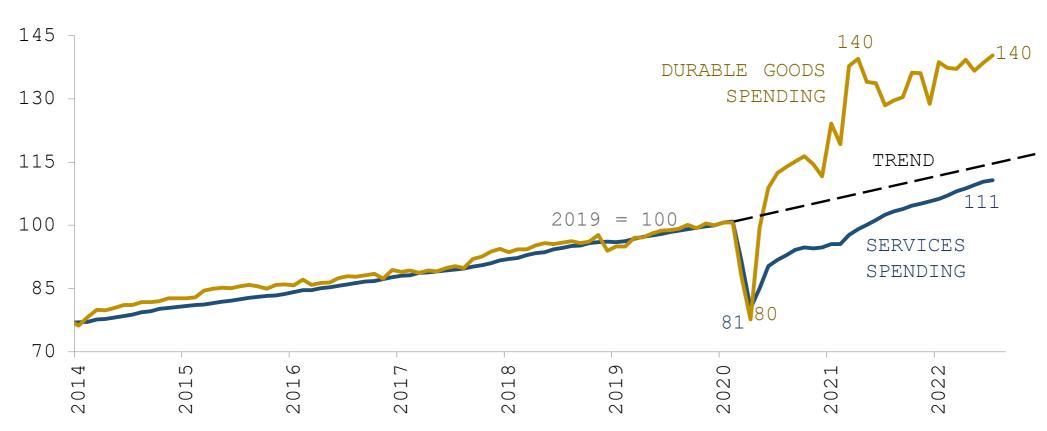
Source: HARBOR Aluminum with LME data. Last updated on October 14, 2022



Rebalancing away from goods and toward services has considerable room to run...

USA CONSUMER SPENDING BY CATEGORY

(index; monthly data)



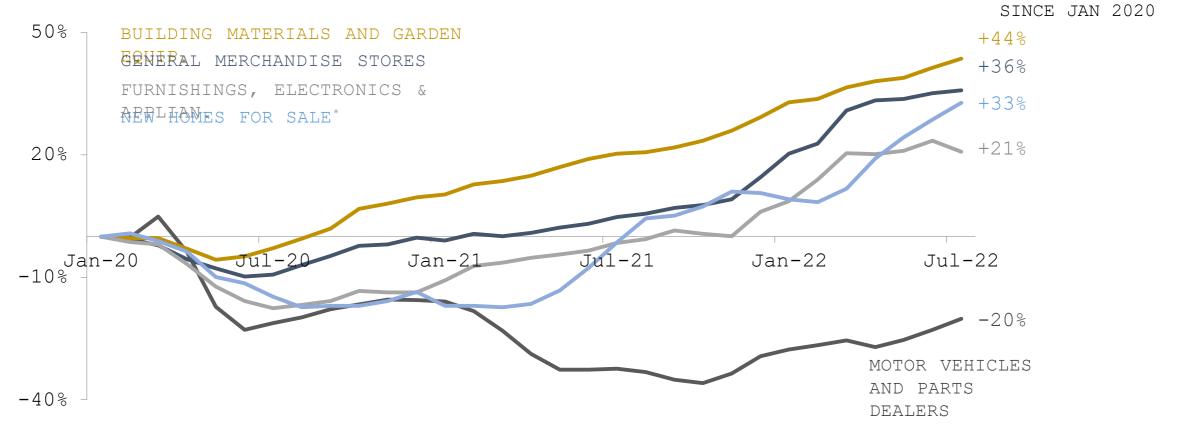
Source: HARBOR Aluminum with Federal Reserve data.



...with most sectors carrying record inventories, rapidly losing value...

US RETAIL INVENTORIES & NEW HOMES FOR SALE*

(change since January 2020; monthly data)



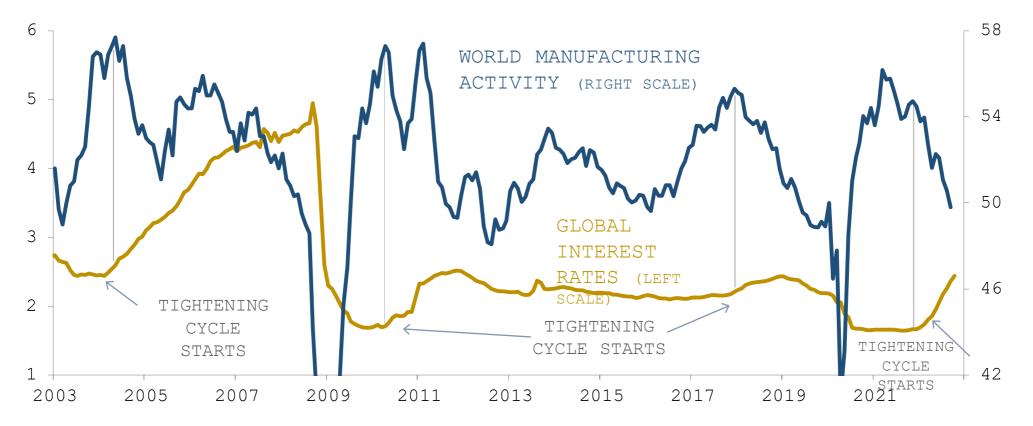
Source: HARBOR Aluminum with US Census Bureau data.
*New single family units Completed and Under Construction (excluding Not Started).



...with end-user demand contraction yet to intensify..."Don't fight the Fed"

GLOBAL INTEREST RATES INDEX* VS MANUFACTURING ACTIVITY

(percentage; monthly data)



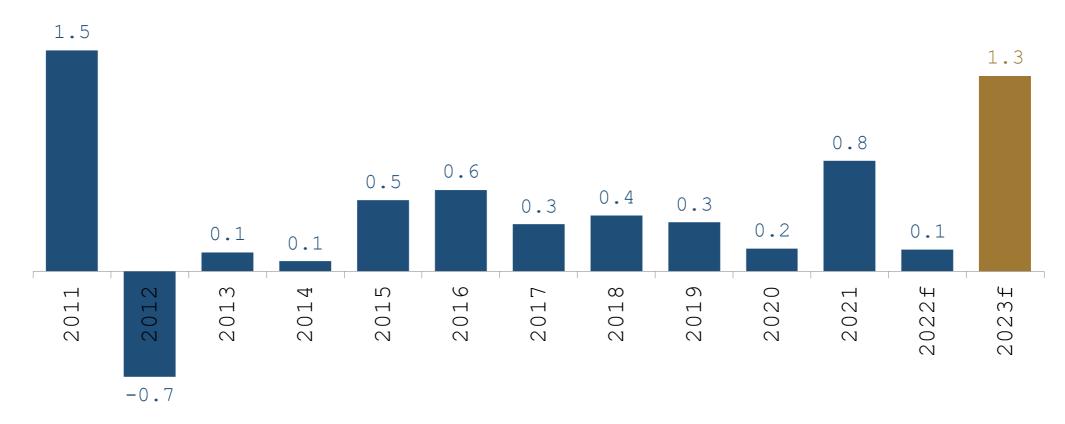
Source: HARBOR Aluminum with Bloomberg data *Index of interest rates in USA, China, Japan, UK, India and Eurozone.



Despite European curtailments, ROW's primary production is expand the most in a decade

WESTERN WORLD PRIMARY ALUMINUM PRODUCTION GROWTH

(annual change in million mton)



Source: HARBOR Aluminum.

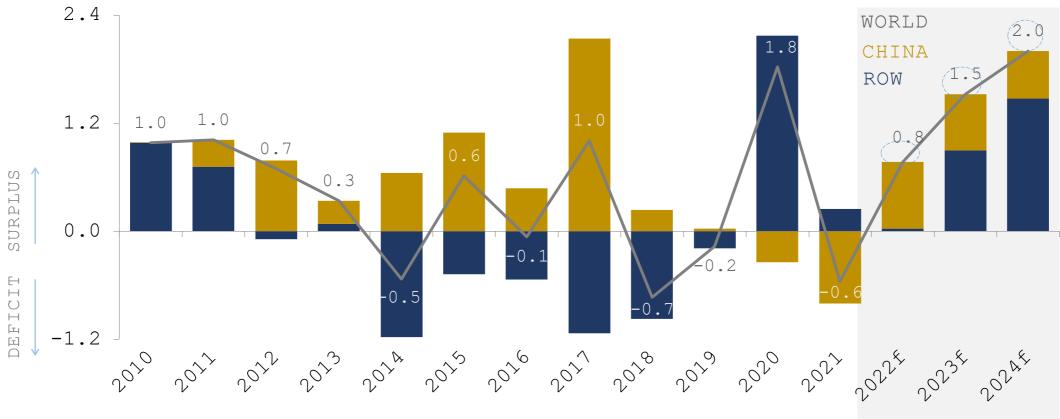
^{*}Downside scenario where Europe potentially idles an additional 365k mtpy of smelting capacity



As a result, the world primary aluminum market has shifted to a growing surplus...

WORLD PRIMARY ALUMINUM MARKET BALANCES & FORECASTS

(million mton; annual data)



Source: HARBOR Aluminum and LME data.



...with LME prices targeting the \$1,750-\$1,450 per mton zone at some point in 2023

LME 3M ALUMINUM PRICES

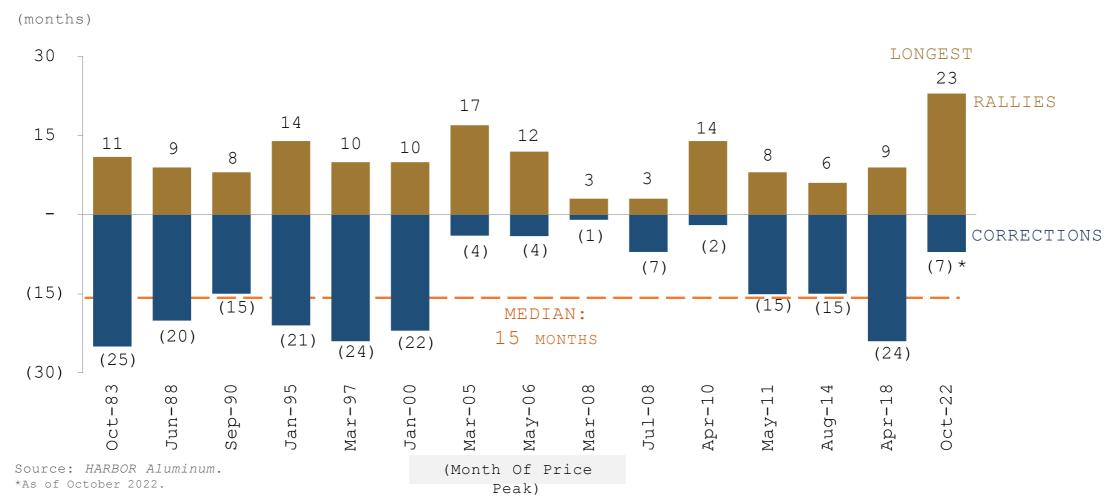


Source: HARBOR Aluminum with LME data. Last updated: October 14, 2022.



Ongoing LME price correction seems to have at least 8 months left

DURATION OF LME PRICE RALLY & CORRECTION EPISODES



The Metals Debate

Moderator:

Andrea Hotter, Special Correspondent, Fastmarkets

Panellists:

- Aluminium Jorge Vasquez, Managing Director of Market Intelligence & Industry Consulting Harbor Aluminum
- Copper Ed Meir, Consultant, Commodity Research Group
- Lead and zinc Natalie Scott-Gray, Senior Metals Markets Analyst, StoneX
- Nickel **Jim Lennon**, Consultant, *Macquarie*
- Steel Colin Richardson, Steel Lead, Argus Media
- Tin James Willoughby, Analyst, International Tin Association

Questions:

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The Metals Debate - Copper

Ed Meir, Consultant, Commodity Research Group





The Metals Debate

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The Metals Debate – Lead & Zinc

Natalie Scott-Gray, Senior Metals Analyst, StoneX







LME Week Seminar Metals Debate: Zinc & Lead

StoneX Financial Ltd

24th October 2022

Natalie Scott-Gray

Senior Metals Analyst Base Metals EMEA & Asia

























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Zinc Market Update

- How Have the Fundamentals Changed Over 2022
- 2023 Supply Drivers
- 2023 Demand Drivers
- Summary & Conclusions

Lead Market Update

- How Have the Fundamentals Changed Over 2022
- 2023 Supply Drivers
- 2023 Demand Drivers
- Summary & Conclusions

Zinc: How Has the Fundamental Picture Changed?

Source for chart: Bloomberg, StoneX







Zinc Market Balance 2022 - Forecast Comparison

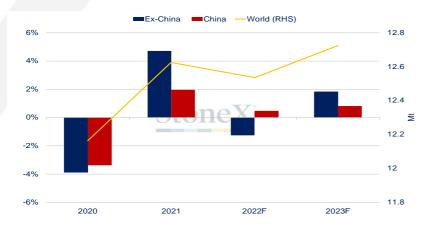


- We forecast that zinc will record a significantly larger than expected deficit in 2022, with exaggerated supply risks (stemming from smelter bottlenecks within Europe) offsetting demand weakness.
- Robust fundamentals have helped underpin zinc's price performance over the rest of the suite in 2022.

Zinc: European Energy Security Concerns To Drive Refined Supply Outlook in 2023



Zinc Mine Production to Improve After Year of Hurdles



This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

Impact of Disruption to European Production Set to Continue



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Concentrate Market to Remain in a Surplus



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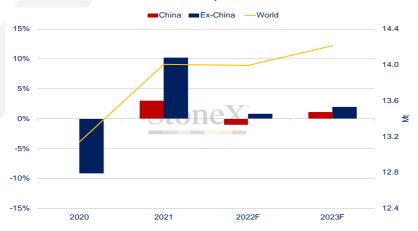
Refined Supply to Recover Globally, But Downgraded due to European Supply Disruptions



Zinc: Constrained Industrial Production to Hit Demand Prospects in 2023



Refined Zinc Consumption to Remain Weak



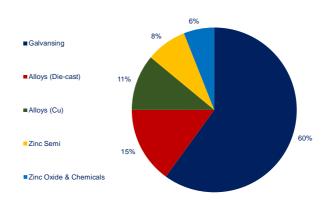
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Industrial Production Growth to Slow in 2023



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End Uses of Zinc



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Physical Premia to Remain Historically Elevated



Source for chart: Bloomberg, CRU, StoneX

Zinc: Well Positioned to Outperform Average Base Metal Suite Price Performance

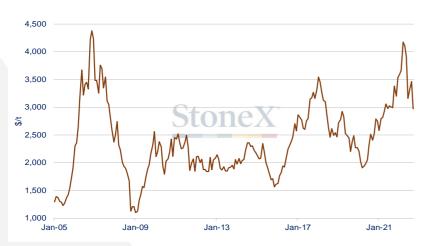


Zinc Market Balance to Remain in a Deficit in 2023



This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

LME Zinc 3M



Source for chart: Bloomberg, CRU, StoneX

 Macro headwinds amid mild fundamentals are set to result in lower average LME prices for zinc 2023 compared to 2022, with the market balance forecast to record a shrinking deficit upon slowing global demand prospects, while supply risks remain.

 The timing and pace of a Chinese recovery will be critical in underpinning higher prices, not just in raising demand prospects, but exaggerating regional supply tightness in the west upon a redirection of trade routes (and opening of the SHFE/LME arbitrage).

• Smelter profitability bottlenecks within Europe will remain a key story-line in the year ahead, with record low global stock inventories likely to result in price volatility upon backwardations on the LME.

Lead: How Has the Fundamental Picture Changed in 2022?







Lead Market Balance 2022 - Forecast Comparison



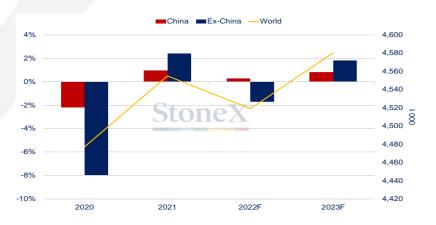
This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

- Lead is forecast to flip into a deficit in 2022 (reversing our expectations of a modest surplus), driven by supply downgrades (on the back of smelter bottlenecks on a global scale), offsetting a weakening demand picture.
- Lead is likely to remain on a less volatile path than the rest of the base metal suite due to its lower exposure to primary supply risks, smaller market imbalances, relative illiquidity and commonly misunderstood long-term role in decarbonisation.

Lead: Universal Rebound in Refined Production After Smelter Bottlenecks in 2022

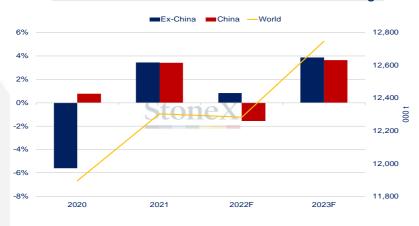


Lead Mine Production to Rebound



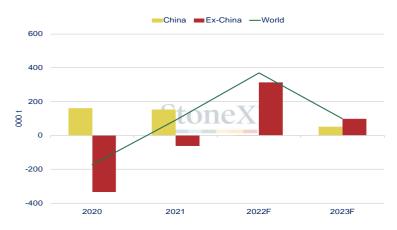
This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

Refined Production to Rebound to Record High



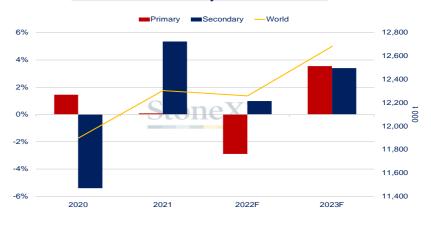
This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

Concentrate Surplus to Pull Down From Three Year High



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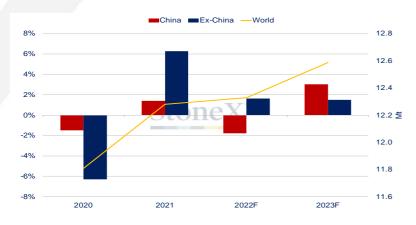
Production Recovery to be Universal



Lead: Recovery in Supply Chains to Unlock Higher Demand in 2023 – Focus on China







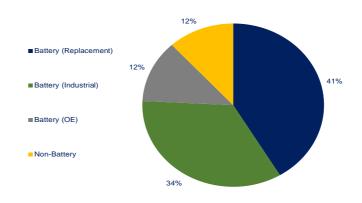
This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

Demand From OE to Underpin Growth



This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

End Uses of Lead



This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

Supply Shortfall in the West – A Sellers' Market?



Lead's Role In the Green Transition – Misunderstood?







This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

Lead-acid batteries will remain a dominant battery technology over the decade, with demand set to expand

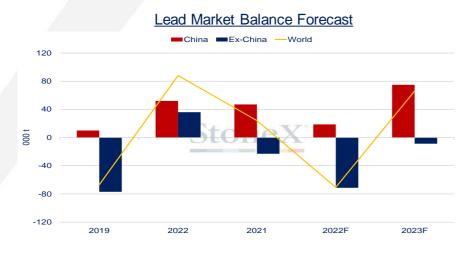


Key Drivers Behind Lead's Use in a Greener World?

- ICE vehicles to remain dominant powertrain over the decade (lead battery replacement 3x over lifetime)
- Long tail of ICE battery replacement
- Lead-Acid to remain dominant battery in industrial applications
- Use in New Electric Vehicles (as auxiliary battery)
- Increasing use in Energy Storage Systems (ESS)
- · Established 'closed loop' recycling
- Lower raw material cost (compared to lithium-ion batteries)

Lead: Supply Cushion to Leave Lead Lagging in 2023





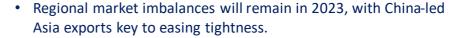
This table includes predictions/forecasts. Past performance may not be a reliable guide to future performance. Source for chart: Bloomberg, CRU, StoneX

LME Lead 3M



Source for chart: Bloomberg, CRU, StoneX

 Macro headwinds amid modest fundamentals are set to result in lower average LME prices for lead in 2023 compared to 2022, with the market flipping into a surplus upon a universal rebound in supply.



 Demand recovery will continue to be aided by improving supply chains in, supporting OE demand, although inflation-driven demand weakness is forecast to impede the speed of recovery over the next year, with battery replacement outstripping OE demand.

• Lead to be part of the solution towards decarbonation goals, alongside (not against) lithium-ion batteries.

• **Lead** prices to remain on a less volatile path than the rest of the base metal suite due to its lower exposure to supply risks, smaller market imbalances, relative illiquidity and misunderstood long-term role in decarbonisation (weakening future investor sentiment).



THANK YOU



Natalie Scott-Gray
Senior Metals Analyst
Base Metals

Office: +44 (0)203 580 6544 Mobile: +44 (0) 7384 833895

Email: natalie.scott-gray@stonex.com

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The Metals Debate – Nickel

Jim Lennon, Consultant, Macquarie

Monday 24 October, London and online





Nickel: a question of class

Key to price is how quickly class 2 can be converted into class 1



2022 is the first year where a surplus has not emerged in class1 (LME deliverable) nickel metal but in "class 2" nickel pig iron and ferronickel as well as in stainless steel scrap and intermediates (mainly Indonesian nickel matte)



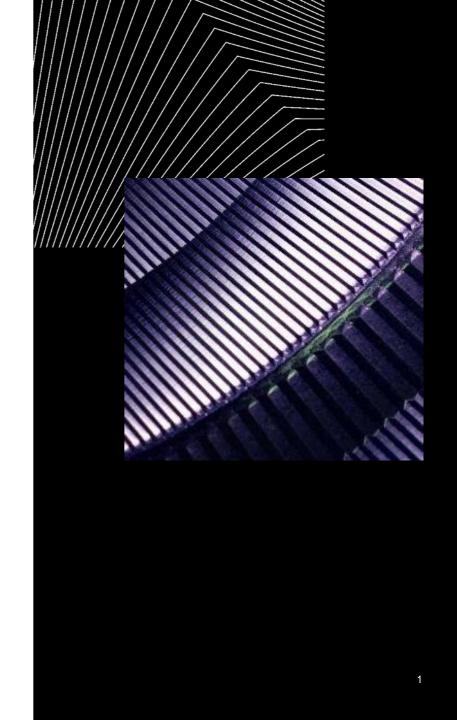
The price for class 1 (LME/SHFE) has moved to an unprecedented premium to class 2



Market surpluses likely for the next four years given the substantial overhang of under utilised Indonesian capacity to produce nickel units



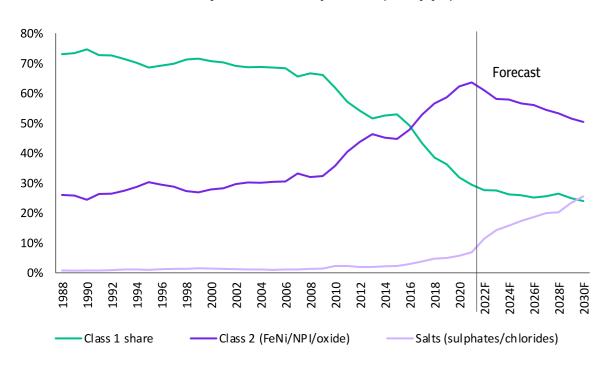
Key to LME prices is the extent to which class 2 can be converted into class 1 – limited conversion capacity is likely to be a feature of the market at least until the end of 2023



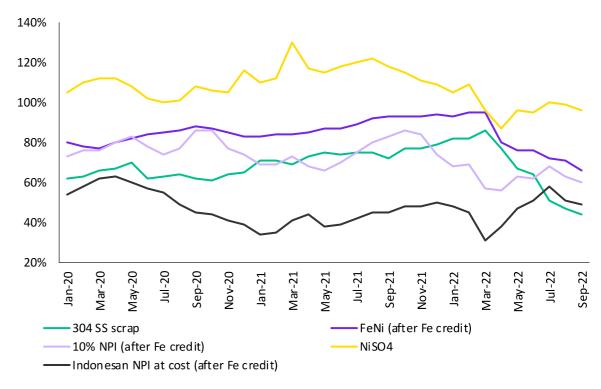
Role of class 1 in global supply fallen sharply since LME started trading in 1988 - LME deliverable now less than 25% of total supply

Discounts to LME for non-class 1 rise in 2022

Share of main nickel products in primary supply



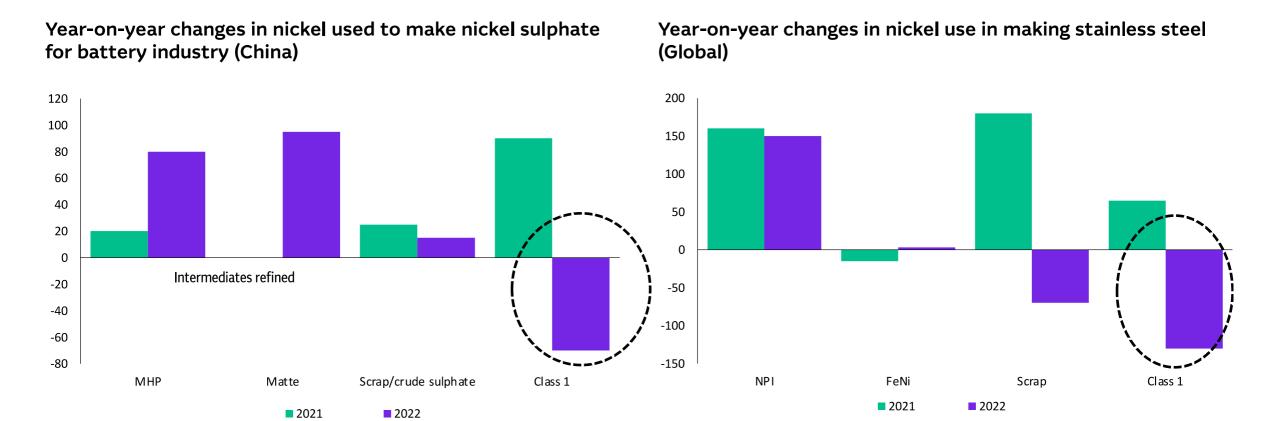
Value of nickel products as % of LME price (monthly)



Source: LME, CRU, Ferroalloynet, SMM, Macquarie Strategy, October 2022.

Lower-prices intermediates and NPI drive out class1 nickel use from batteries and stainless steel in 2022

Class 1 demand down by around 200kt YoY in 2022, equal to 2021's stocks draw



Source: Xinze, SMM, Ferroalloynet, Macquarie Strategy, October 2022.

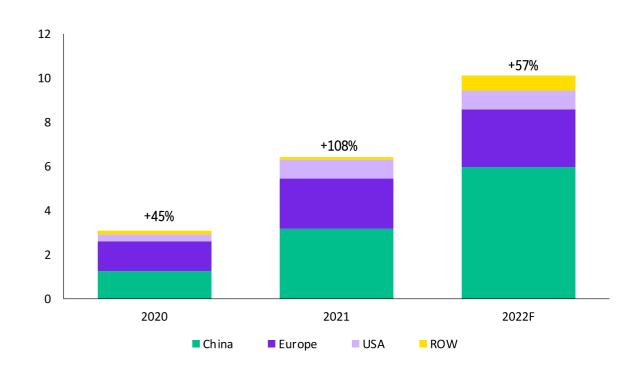
Electric vehicles becoming main growth driver for nickel

In 2022 batteries growth contrasts with stainless decline

Global stainless steel production by region - mt melt

+13.5% -2.7% -1.8% 40 40 20 20 202 202 2021 2022F China Indonesia Other Asia Europe Rest of world (US/Brazil/SA)

Global EV sales by region (BEV+PHEV) - million cars



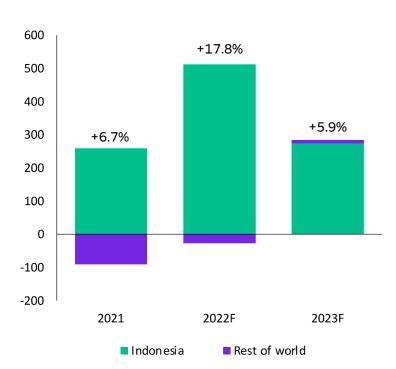
Source: CRU, World Stainless, Rho Motion, Macquarie Strategy, October 2022.

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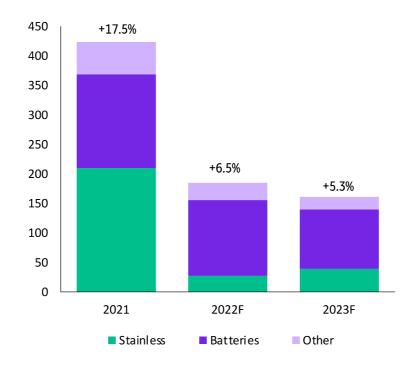
Nickel in a nutshell

From deficit to surplus as supply growth accelerates in 2022 and demand growth slows

Changes in world nickel supply (kt Ni)



Changes in world nickel use (kt Ni)



Global nickel balance (kt Ni)



Source: INSG, CRU, Macquarie Strategy, October 2022.

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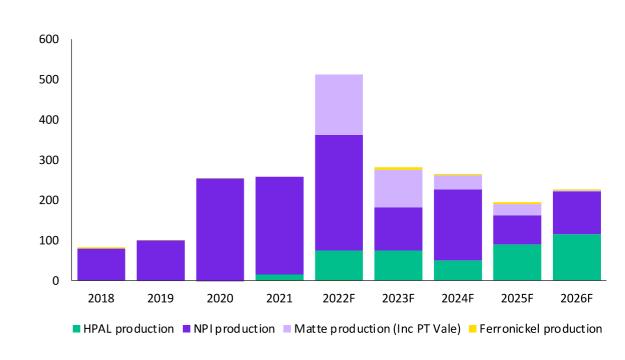
Big growth in Indonesian supply in 2022 partly reflects delays in 2021 due to Covid

Indonesia to reach 60% of world supply in 2025/6 vs. 28% in 2020

Projected total Indonesian supply to 2026 ('000t Ni)

3000 70% 60% 2500 50% 2000 40% 1500 30% 1000 20% 500 10% 2017 2018 2025F 2019 2020 2021 2022F 2023F 2024F 2026F Ni matte (Vale) Ore exports Matte for batteries/metal FeNi (Antam) Share world supply

Year-on-year changes in Indonesian supply



Source: Company reports, Ferroalloynet, SMM, Mysteel, Macquarie Strategy, October 2022.

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6

Summary of outlook - from deficit to surplus

	2020	2021	2022F	2023F
Stainless production	52335	59380	57762	60260
% change	-1.8%	13.5%	-2.7%	4.3%
Nickel use	2418	2842	3027	3188
% change	0.4%	17.5%	6.5%	5.3%
Nickel supply	2511	2679	3155	3343
% change	3.9%	6.7%	17.8%	5.9%
World market balance	+92	-163	+128	+155
Estimated market stocks	720	539	667	822
Weeks' demand	15.5	9.9	11.5	13.4

Russian disruptions the biggest risk factor

- Strong Indonesian supply and slower stainless demand growth swing market back into surplus in 2022
- Surplus to get bigger in 2023
- For the moment, we assume no disruption to Russian supply
- Surplus mainly in class 1 but class 1 getting back to balance and small surplus likely in 2023

Source: INSG, Company reports, Macquarie Strategy, October 2022.

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The Metals Debate

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The Metals Debate – Steel

Colin Richardson, Steel Lead, Argus Media

Monday 24 October, London and online







Volatility: The New norm

And how to manage it

Colin Richardson LME seminar 24 October



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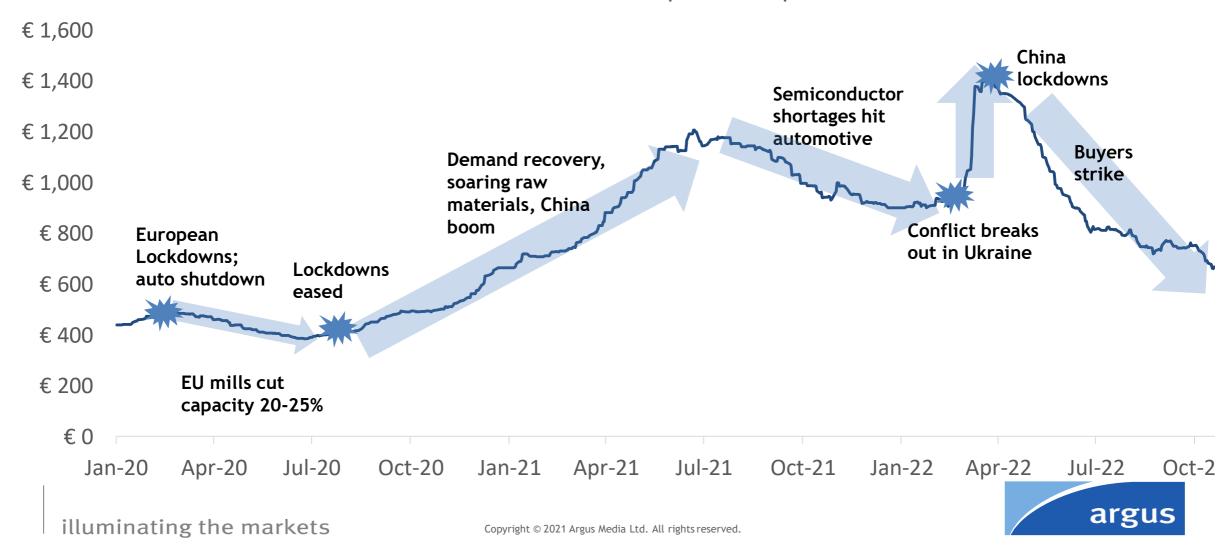


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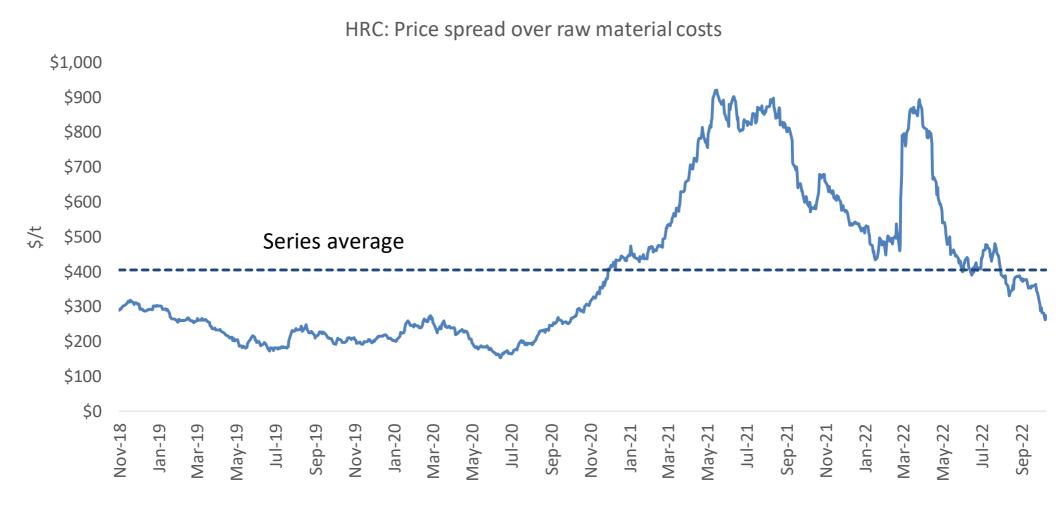


Black Swan Events: Steel prices have never been less predictable

HRC ex-works Northwest Europe: Price per tonne



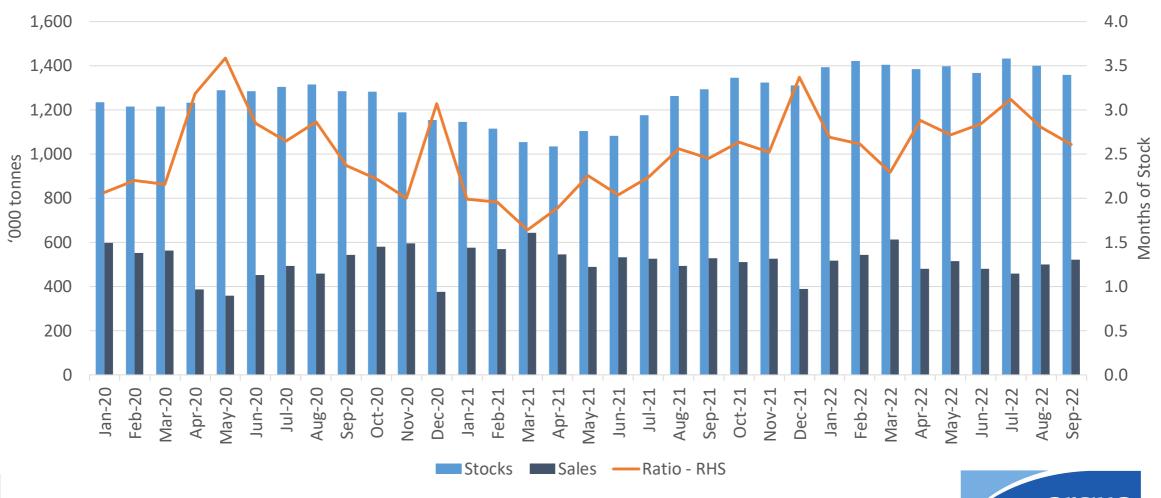
Margins under pressure





Flats: Stock levels slipping







Colin Richardson Steel lead

colin.richardson@argusmedia.com
+447368404954



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- Aluminium Jorge Vasquez, Managing Director of Market Intelligence & Industry Consulting Harbor Aluminum
- Copper Ed Meir, Consultant, Commodity Research Group
- Lead and zinc Natalie Scott-Gray, Senior Metals Markets Analyst, StoneX
- Nickel **Jim Lennon**, Consultant, *Macquarie*
- Steel Colin Richardson, Steel Lead, Argus Media
- Tin James Willoughby, Analyst, International Tin Association

Questions:

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

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The Metals Debate – Tin

James Willoughby, Analyst, International Tin Association

Monday 24 October, London and online





Which metal has the most upside potential for 2023?

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





Break

Monday 24 October, London and online





LME Metals Seminar 2022

Monday 24 October, London and online





POLL 4

What will be the most significant factor impacting China's economy in 2023?

- 1. Continuation of zero-covid policy
- 2. Geopolitical tensions
- 3. Real estate slowdown
- 4. Infrastructural investment
- 5. Global demand for Chinese manufacturing and services
- 6. The green premium





Spotlight on China policy and its impact on metals

Monday 24 October, London and online





Spotlight on China policy and its impact on metals

Moderator:

Yang Liu, Head of China Sales, London Metal Exchange

Panellists:

- Amelia Fu Xiao, Head of Commodity Markets Strategy, BOCI
- Clyde Russell, Asia Commodities and Energy Columnist, *Thomson Reuters*
- Jinny Yang, Managing Director, Chief China Economist, China Market Strategy, ICBC Standard
- Julian Kettle, Vice Chairman, Metals and Mining, Wood Mackenzie

Questions:

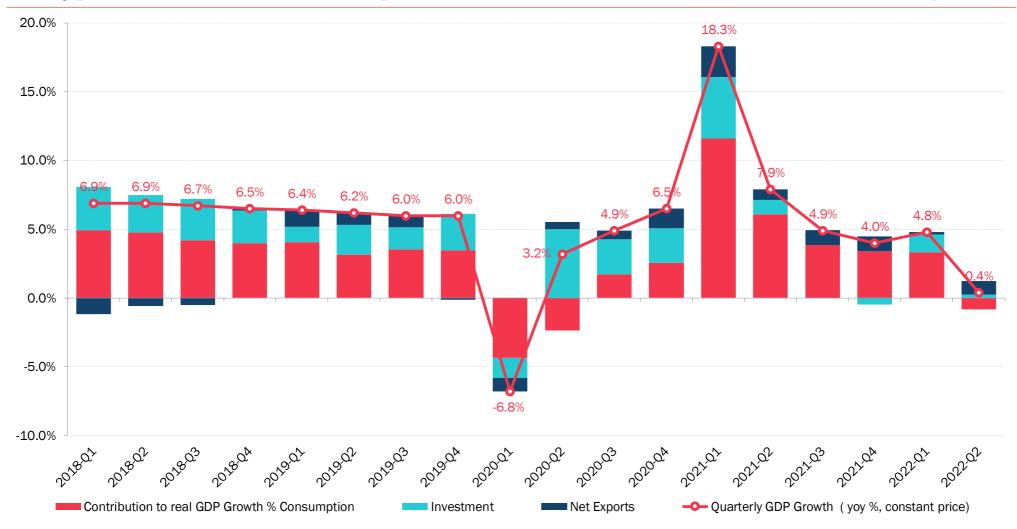
Ask a question using the Q&A box on the "Main stage"

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0.4% GDP growth in Q2-22 reflected a notable contraction in consumption

Mildly positive contribution from net exports and investment unable to offset weakness in consumption.





Beijing recently stepped up supportive measures to offset growth risks

CNY 3.52tn special purpose bond have already been rolled out by end-August. An additional CNY 500bn reserve quota has recently been approved by State Council to enable further special bond issuance before end-October as extra fiscal boost before year-end.

		2022 GWR Targets	2021 GWR Targets	2022 vs 2021
GDP	GDP Target (%)	c. 5.5%	>6.0%	
Fiscal	Official Fiscal Deficit (CNY bn)	3,378 (est.)	3,446	
	Official Fiscal Deficit Ratio (% GDP)	2.8%	3.2%	
	Special Bond Quota (CNY bn) *	3,650 [*] • 500 additional reserve quota	3,650	
	Special Bond Quota (% GDP)	3.0% - 3.4%	c.3.4%	
	Special Fiscal Arrangement (CNY bn)	 Extra 1,500 Special fiscal transfer payments to local gov. from central gov. A New Financial Stability Fund (tbc) 300 new credit quota for policy banks 	NA	New
	Broad Fiscal Deficit Ratio (% GDP)	c. 7.0% - 8.0%	c. 6.5% - 7.0%	
	Tax Cuts (CNY)	Est. CNY 2.5tn tax cut/rebate before year-end	CNY 50,000 VAT free allowance per annum for SMEs	
Social	Household Disposable Income Growth (yoy %)	"Same as nominal GDP growth rate" (c. 5.5%)	"Same as nominal GDP growth rate"	
	Urban New Job Creation (mn)	11.00	11.00	
	Unemployment Rate (%)	max. 5.50%	5.50%	
	Poverty Reduction (mn)	NA	Social Welfare System (14 th FYP by 2025)	NA
	Climate Change Action	 Flexible annual target with the goal to achieve 14th FYP target by 2025 Energy consumption quota to exclude usage of raw material & renewable energy 	3% reduction in energy intensity	
Monetary	CPI (%)	c. 3.0%	3.0%	
	New Loan Growth for SMEs (%)	NA	> 30%	NA
	M2 (yoy %)	"Same as nominal GDP growth rate"		
	Total Social Financing (yoy %)	"Increase new loan base and lower borrowing cost for real economy"	"Same as nominal GDP growth rate"	

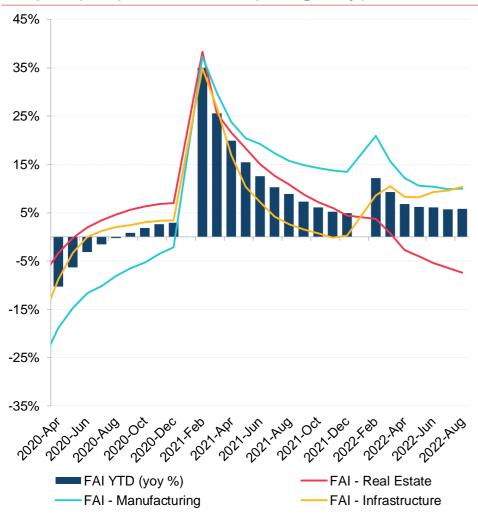


Note: More than CNY 3.5tn worth of local government special purpose bond issuance quota have already been rolled out by endAugust. Market expects another issuance peak in late September and October as MoF asks local government to deliver the extra CNY 500bn issuance quota by October-end.



Slowdown in housing sector continued to weigh on investment sentiment





Government continues to be the key growth driver of national investment in Aug, but bearish sentiment in private sector persists.



Source: WIND, ICBC Standard



Property market stalled amidst mortgage boycott and bearish outlook

Sporadic COVID outbreaks significantly weakened household confidence and borrowing appetite despite easing mortgage policies.



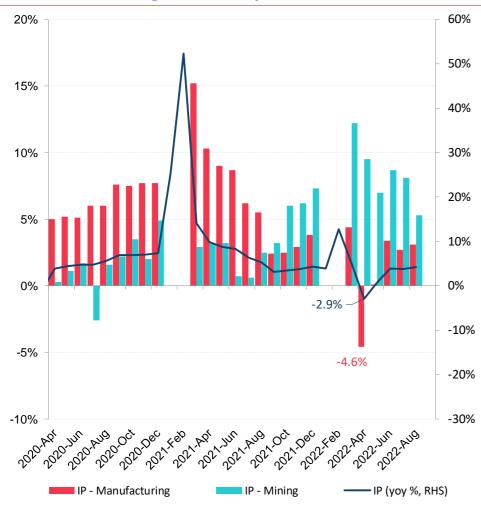
Home sales slump worsens as mortgage boycott in July dented home buyers' confidence with signs of recovery yet to emerge.



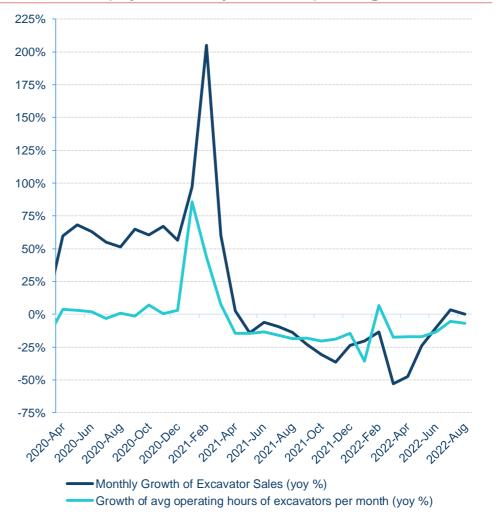


Leading indicators suggest projects are resuming despite weaker IP

Despite less pressure from logistic disruptions, recovery of IP is still limited with IP easing to 3.8% in July from the 3.9% rebound in June.



Sales and occupancy rate of excavators suggest more efforts to deliver infrastructure projects but are yet to return positive growth.

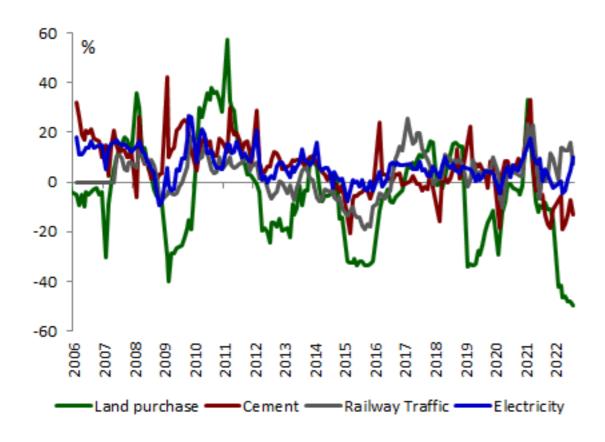




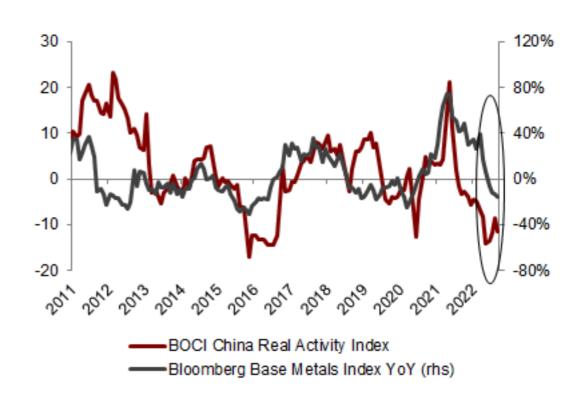


Base Metals vs China Real Activity Index

Components of China Real Activity Index

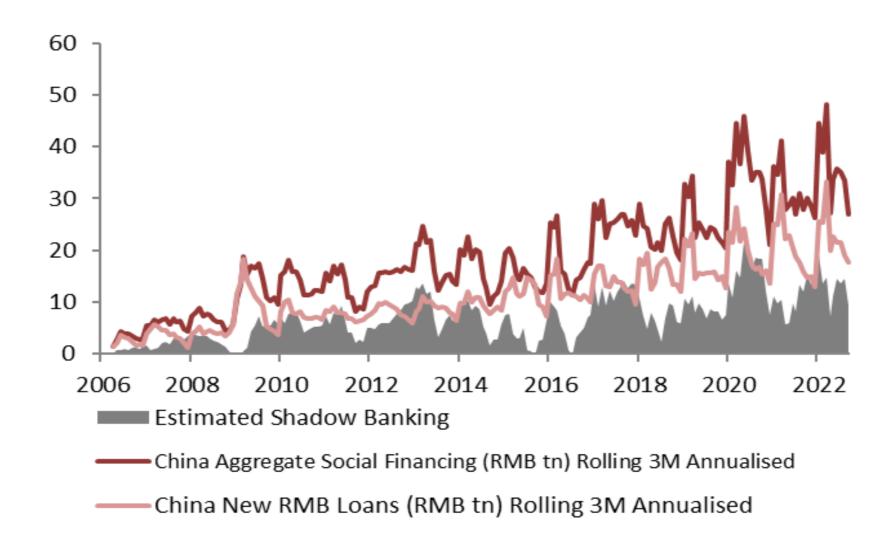


Base Metals have trended broadly with China Real Activity Index





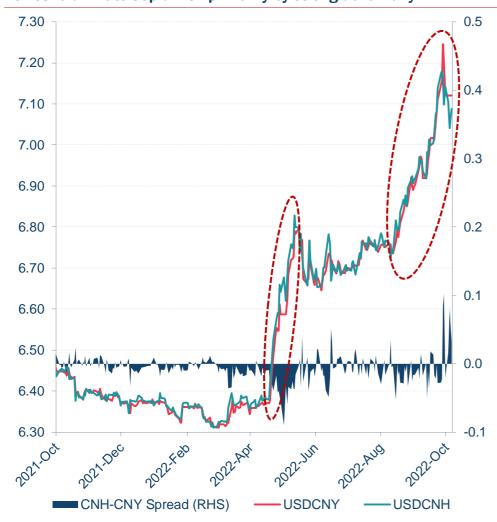
Improving New Loans in September Reflects Policy Support





Monetary policy divergence and strong dollar rally weigh on the yuan

USDCNH reached multi-year highs and has once stood above the 7.0 threshold in late Sep driven primarily by strong dollar rally.



Recent yuan depreciation is nonetheless in sync with other non-USD major currencies amidst further divergence of monetary policies.

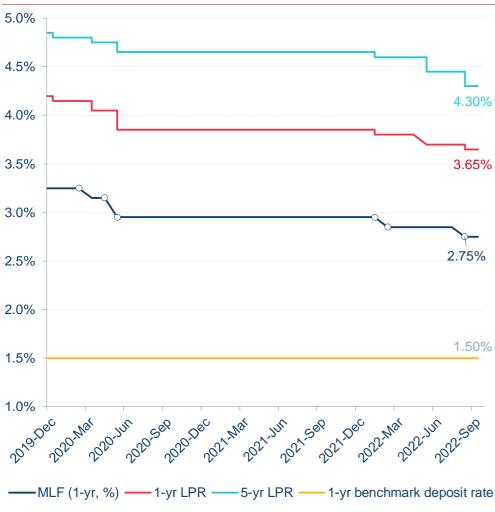




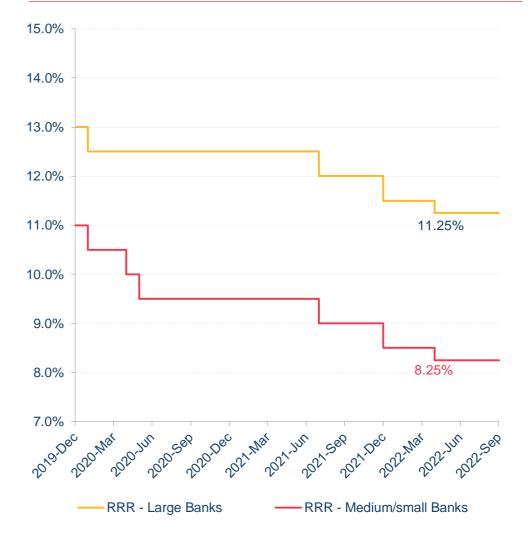


PBoC further lowered benchmark rates amidst growing growth pressure





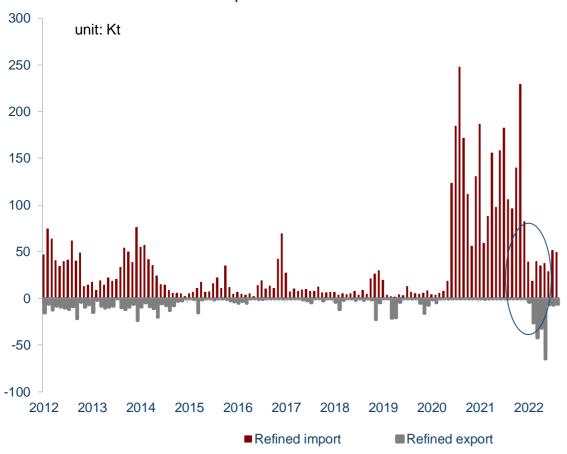
The broader RRR remains unchanged after the 25bps cut in April to offset the pandemic impact, though missed market expectation.



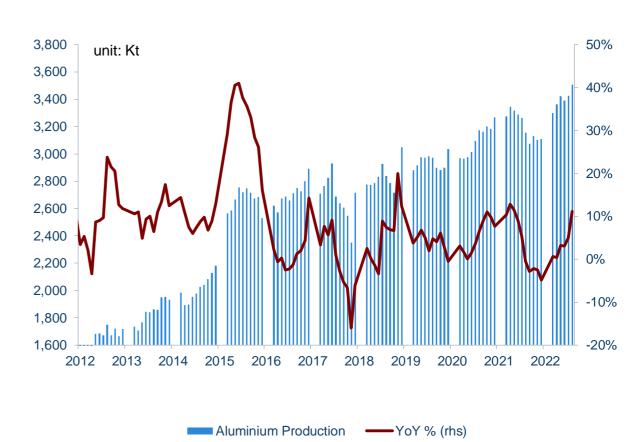


China's Refined Aluminium Exports & Production

China Turned into a Net Exporter of Refined Aluminium in 2022



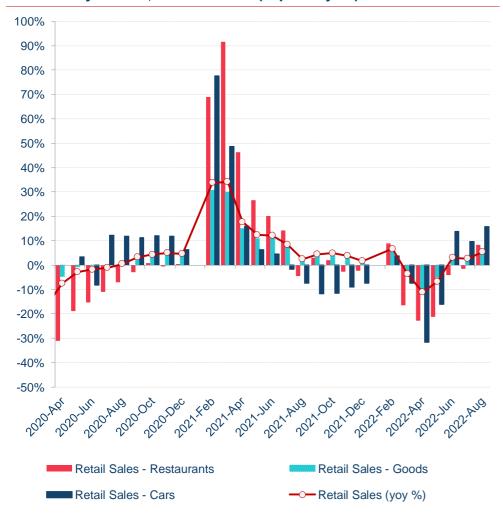
China's Aluminium Production Growth Improved



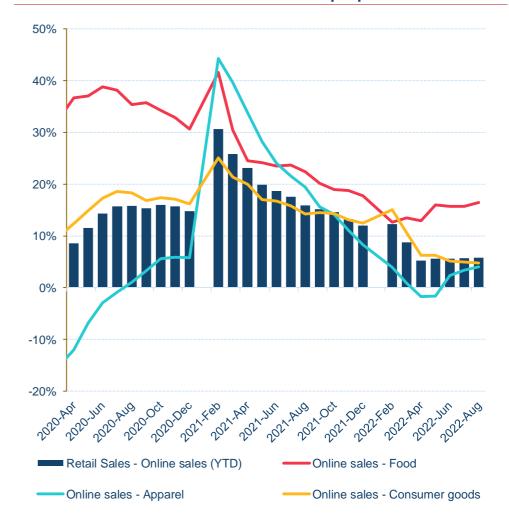


Recovery post June opening-up faded with new waves of COVID cases

Monthly retail sales are sensitive to new restrictions imposed across major cities, but auto sales (especially EV) remains resilient.



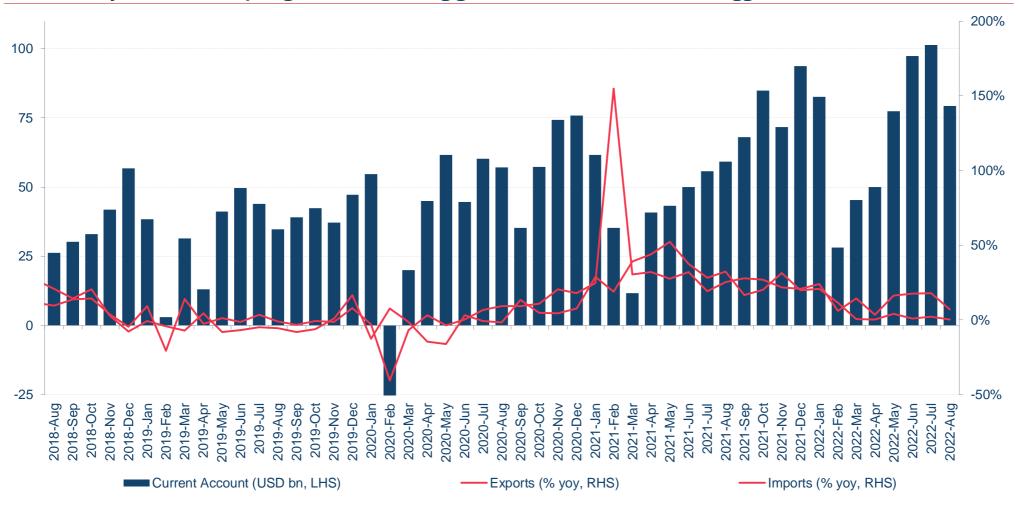
August online sales of consumer goods further dropped on weak demand and YTD online sales remain below pre-pandemic level.





Export growth sharply slowed in August as global demand weakens

While current account surplus remained broadly steady in August, export growth saw notable slowdown to 7.1% from 18.0% in July with limited import growth amidst rising global recession concerns and sluggish domestic demand in China.





Spotlight on China policy and its impact on metals

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Spotlight on China policy and its impact on metals





Q&A

Please send your questions in via the delegate app

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#LMEweek

Join the conversation.



LME Metals Seminar 2022





From End to end – setting expectations in ESG performance





What would you say is most needed to support the sustainable transition?

- 1. Increased cross recognition of standards and certifications
- 2. Accurate, meaningful ESG data
- 3. Consistent regulation internationally
- 4. ESG-related premiums
- 5. Full supply chain traceability





From End to end – setting expectations in ESG performance

Moderator:

Stacy Hope, Ph.D, Managing Director, Women in Mining UK

Panellists:

- Scott Maloney, Vice President, Corporate Affairs, *Teck*
- Michèle Brülhart, Executive Director, Copper Mark
- Wouter de Groot, Head of Sustainability, FLSmidth
- Adam Johnson, Raw Material Manager, Jaguar Land Rover

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Join the conversation.



From End to end – setting expectations in ESG performance





Lunch break

Sponsored by Cobalt Institute





LME Metals Seminar 2022

Thank you for attending!

Save the date for 2023: Monday 9 October 2023



