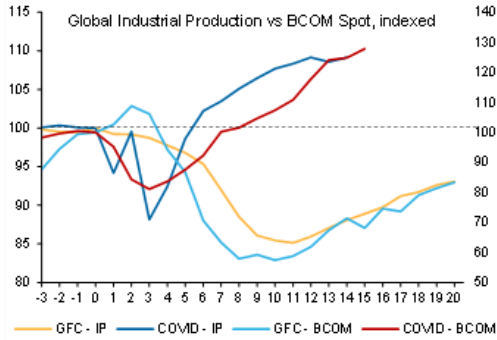


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17 June 2021 Global

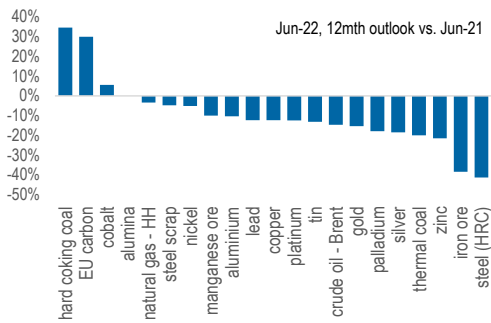
COMMODITIES

Commodities' rally has been consistent with IP



Source: UN, National Statistics Agencies, Macrobond, Bloomberg, Macquarie Strategy, June 2021

But we are calling for a cyclical peak



Source: Financial Exchanges, Bloomberg, Macquarie Strategy, June 2021

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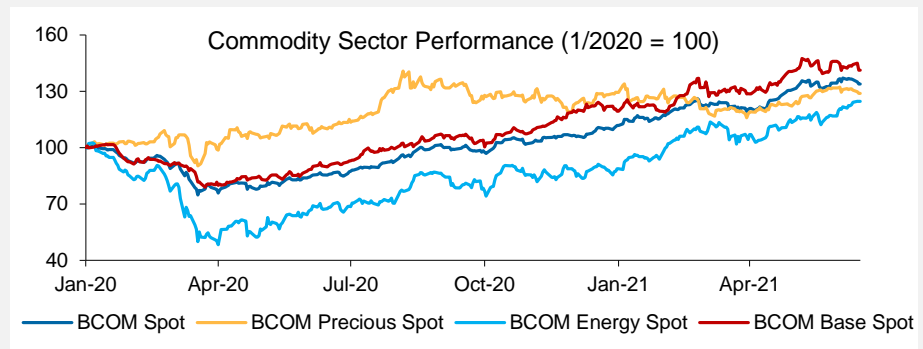
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## Commodities Compendium

### As good as it gets, for now

- Our core view has been that commodities are enjoying [a supercharged cyclical rebound but not yet embarking on a “super cycle”](#).
- Specifically, [we have been arguing](#) that, precious metal prices peaked in 3Q20, industrial metal prices are peaking in 2Q21 and that crude oil will peak in 3Q21.
- We retain this narrative, on the views that:
  - ⇒ Although US interest rates have been held back by recently weak labour supply, strong labour demand should enable the Fed to signal tapering in late Q3/early Q4, bringing the curtain down on gold’s cyclical bull market. A view which was reaffirmed by the June FOMC meeting.
  - ⇒ Industrial metals have performed in-line with or above expectations during Q2 but there are already indications that the boom in global goods demand is easing, as the [US fiscal impulse fades and consumers begin to substitute back towards services](#).
  - ⇒ Though the level of raw materials demand should remain elevated, with additional support from restocking of depleted finished inventories, we expect global industrial production to ease in 2H21.
  - ⇒ Crude, however, benefits from the ongoing recovery in transport demand and the comparatively disciplined return of production, delivering a 2021e deficit of ~1Mbd.

After the “everything rally”... expect some sector divergence



Source: Bloomberg, Macquarie Strategy, June 2021

- Beyond this, positive structural trends from energy transition driven demand growth, and the challenges to sufficiently increasing supply, support our anticipation of deficits in certain markets, such as copper and aluminium.
- Nevertheless, the energy transition is not a tide that we expect to lift all ships. Separating that structural dynamic from the recent cyclical “everything rally” – on the back of a monetary and fiscal policy driven surge in global industrial activity – we think that current commodity market conditions will prove to be as good as it gets, at least for now.

## Key commodity calls

Our commodity preferences listed below are set relative to spot prices reported shortly before the publication of this report.

### 3–6-month tactical views

- **Brent Crude** – Fundamental tightness and modest positioning leaves room for further upside towards \$80/bbl in Q3.
- **Precious Metals** – Q2's rally beat our expectations but the June FOMC impact on real yields reaffirms our view that prices will head lower from here.

### Next 12 months' most preferred

- **EU Carbon** – July market reforms the next potential catalyst for higher prices, against a backdrop of positive structural trends.
- **Hard Coking Coal** – The bulk commodity laggard is finally tightening up, with trade reshuffling under-way.

### Next 12 months' least preferred

- **Iron Ore** – Higher for longer but not this high, expect an exit from scarcity pricing as steel demand growth moderates.
- **Zinc** – Easing of concentrate tightness and a softening of galvanised steel demand growth should see prices correct.

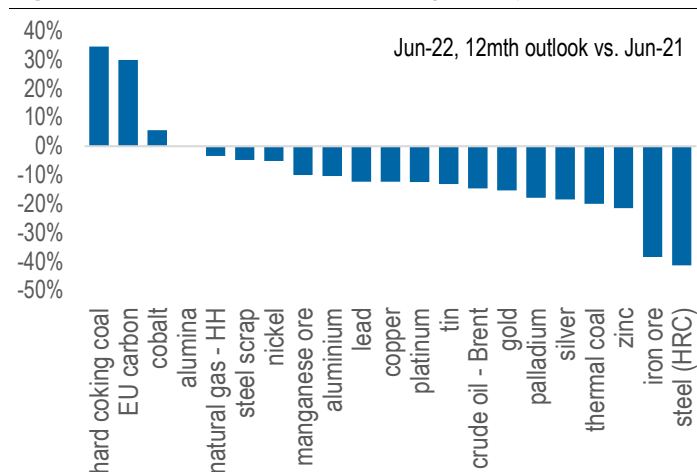
### 5-year winners

- **EU Carbon** – Will need to reach prices that incentivise abatement of industrial emissions.
- **Battery raw materials** – The EV revolution is underway.

### 5-year strugglers

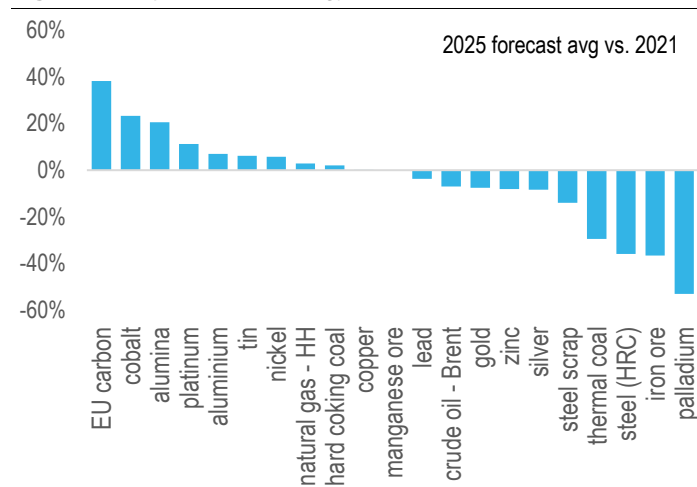
- **Palladium** – The end of the structural bull market, with autocatalyst demand set to decline at the same time as primary and secondary supply rise.
- **Thermal Coal** – Dramatic current tightness set to fade, as renewable capacity rolls out.
- **Ferrous** – Structurally higher prices but current cyclical tightness is unsustainable.

**Fig 1** Next 12-months: We are calling for a cyclical turn



Source: Macquarie Commodity Strategy, June 2021

**Fig 2** Five years out: Energy transition; avoid bulks/palladium



Source: Macquarie Commodity Strategy, June 2021

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## Summary of latest commodity price forecasts

**Fig 3 Macquarie's metals, bulk and energy price forecasts**

| commodity               | unit                       | LT price<br>2020\$ real | Jun-21<br>est. | Sep-21<br>est. | Dec-21<br>est. | Mar-22<br>est. | Jun-22<br>est. | 2020<br>act. | 2021<br>est. | 2022<br>est. | 2023<br>est. | 2024<br>est. | 2025<br>est. |
|-------------------------|----------------------------|-------------------------|----------------|----------------|----------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|
| copper                  | \$/tonne                   | <b>6,950</b>            | 9,700          | 9,250          | 8,500          | 8,750          | 8,500          | 6,175        | 8,988        | 8,375        | 8,000        | 8,500        | 9,000        |
| aluminium               | \$/tonne                   | <b>2,150</b>            | 2,400          | 2,300          | 2,250          | 2,180          | 2,150          | 1,703        | 2,261        | 2,153        | 2,225        | 2,338        | 2,420        |
| zinc                    | \$/tonne                   | <b>2,110</b>            | 2,930          | 2,700          | 2,500          | 2,300          | 2,300          | 2,265        | 2,720        | 2,300        | 2,350        | 2,400        | 2,500        |
| nickel                  | \$/tonne                   | <b>17,000</b>           | 17,400         | 18,000         | 17,000         | 16,500         | 16,500         | 13,782       | 17,488       | 16,500       | 16,125       | 17,000       | 18,500       |
| lead                    | \$/tonne                   | <b>1,820</b>            | 2,110          | 2,025          | 1,950          | 1,850          | 1,850          | 1,824        | 2,025        | 1,825        | 1,850        | 1,900        | 1,950        |
| tin                     | \$/tonne                   | <b>26,000</b>           | 31,100         | 28,000         | 26,750         | 26,000         | 27,000         | 17,152       | 27,807       | 27,000       | 28,875       | 29,375       | 29,500       |
| gold                    | \$/oz                      | <b>1,400</b>            | 1,830          | 1,700          | 1,600          | 1,550          | 1,550          | 1,769        | 1,731        | 1,550        | 1,500        | 1,550        | 1,600        |
| silver                  | \$/oz                      | <b>20.0</b>             | 27.00          | 25.25          | 23.00          | 22.00          | 22.00          | 20.51        | 25.37        | 21.00        | 20.50        | 22.00        | 23.25        |
| platinum                | \$/oz                      | <b>1,050</b>            | 1,200          | 1,125          | 1,100          | 1,050          | 1,050          | 886          | 1,147        | 1,100        | 1,275        | 1,200        | 1,275        |
| palladium               | \$/oz                      | <b>1,000</b>            | 2,800          | 2,750          | 2,500          | 2,400          | 2,300          | 2,201        | 2,614        | 2,250        | 1,813        | 1,400        | 1,225        |
| rhodium                 | \$/oz                      | <b>2,000</b>            | 27,000         | 20,000         | 17,500         | 15,000         | 12,500         | 11,191       | 21,960       | 11,375       | 6,500        | 4,500        | 3,000        |
| iron ore, spot fines    | \$/tonne, cfr China        | <b>80</b>               | 195            | 150            | 120            | 135            | 120            | 109          | 158          | 120          | 95           | 90           | 100          |
| iron ore, spot lump     | \$/tonne, cfr China        | <b>96</b>               | 232            | 176            | 137            | 158            | 144            | 118          | 184          | 143          | 113          | 108          | 120          |
| hard coking coal        | US\$/tonne, fob Aust.      | <b>145</b>              | 130            | 180            | 170            | 185            | 175            | 125          | 152          | 178          | 165          | 175          | 155          |
| LV-PCI                  | US\$/tonne, fob Aust.      | <b>106</b>              | 108            | 135            | 128            | 118            | 119            | 78           | 118          | 119          | 124          | 129          | 115          |
| semi-soft coking coal   | US\$/tonne, fob Aust.      | <b>97</b>               | 102            | 122            | 116            | 106            | 107            | 69           | 109          | 106          | 112          | 117          | 103          |
| manganese ore           | \$/mtu, cif China          | <b>4.70</b>             | 5.00           | 5.20           | 4.80           | 4.50           | 4.50           | 4.64         | 5.01         | 4.50         | 5.00         | 5.50         | 5.00         |
| steel (avg HRC)         | \$/tonne                   | <b>457</b>              | 1,159          | 970            | 876            | 805            | 680            | 541          | 973          | 708          | 604          | 590          | 623          |
| steel scrap (avg #1HMS) | \$/tonne                   | <b>230</b>              | 464            | 453            | 442            | 496            | 442            | 272          | 441          | 447          | 360          | 345          | 379          |
| thermal coal, spot      | US\$/tonne, fob Aust.      | <b>56</b>               | 100            | 95             | 90             | 80             | 80             | 58           | 93           | 80           | 70           | 68           | 66           |
| thermal coal, JFY       | US\$/tonne, fob Aust.      | <b>58</b>               | 110            | 110            | 110            | 110            | 78             | 75           | 100          | 86           | 71           | 70           | 68           |
| EU carbon               | EUR/t, spot                | <b>65</b>               | 50             | 55             | 60             | 65             | 65             | 25           | 51           | 65           | 55           | 60           | 70           |
| alumina                 | US\$/tonne, spot fob Aust. | <b>288</b>              | 280            | 270            | 270            | 280            | 280            | 269          | 280          | 283          | 295          | 325          | 337          |
| ferrochrome             | c/lb, EU                   | <b>130</b>              | 156            | 156            | 156            | 160            | 160            | 111          | 146          | 151          | 134          | 143          | 150          |
| molybdenum              | \$/lb                      | <b>11.00</b>            | 13.70          | 17.00          | 16.00          | 15.00          | 14.00          | 8.66         | 14.50        | 13.50        | 12.00        | 12.00        | 12.00        |
| cobalt                  | \$/lb (99.8%)              | <b>28.5</b>             | 21.80          | 22.00          | 22.00          | 23.00          | 23.00          | 15.76        | 21.90        | 23.50        | 25.50        | 26.25        | 27.00        |
| crude oil - Brent       | \$/bbl                     | <b>56.00</b>            | 68.00          | 72.00          | 61.00          | 60.00          | 58.00          | 43.20        | 65.58        | 57.75        | 58.00        | 59.49        | 61.01        |
| crude oil - WTI         | \$/bbl                     | <b>52.00</b>            | 64.75          | 68.00          | 56.50          | 55.50          | 53.50          | 39.44        | 61.85        | 53.25        | 53.85        | 55.24        | 56.66        |
| natural gas - HH        | \$/mmBtu                   | <b>2.60</b>             | 2.90           | 2.80           | 2.60           | 2.80           | 2.80           | 2.11         | 2.76         | 2.73         | 2.69         | 2.76         | 2.83         |

Source: Macquarie Commodity Strategy, LME, CME, ICE, Bloomberg, Platts, (i.e. 2021\$ real, active from 2026), June 2021

## Key price forecast revisions

- *Ferrous upgrade* – a higher demand path and limited investment in new capacity should support steel prices and mill margins, keeping higher cost marginal tonnes in the iron ore market (see – [Ferrous Outlook: There's money in steel](#)).
- *Copper upgrade* – we still expect a cyclical pull back from 2Q21 highs but medium-term supply uncertainty is on the rise.
- *Aluminium upgrade* – slower new capacity ramp-ups and rising long-run costs from carbon pricing.
- *Tin upgrade* – until new supply emerges, the market looks set for sustaining deficits, as a structural demand winner from the energy transition.
- *EU Carbon upgrade* – we were already bullish, just not bullish enough.
- *Cobalt downgrade* – the return of Mutanda and increased Indonesian supply checks deficits.

**Fig 4 Revisions to Macquarie's price forecasts** (annual averages)

| commodity               | 2021 | 2022 | 2023 | 2024 | 2025 | LT price<br>2020\$ |
|-------------------------|------|------|------|------|------|--------------------|
| copper                  | 6%   | 14%  | 14%  | 13%  | 13%  | 0%                 |
| aluminium               | 4%   | 5%   | 5%   | 4%   | 4%   | 12%                |
| zinc                    | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| nickel                  | 6%   | 1%   | 0%   | 0%   | 6%   | 3%                 |
| lead                    | 2%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| tin                     | 12%  | 4%   | 5%   | 5%   | 0%   | 47%                |
| gold                    | 3%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| silver                  | 4%   | 2%   | -4%  | 0%   | 0%   | 3%                 |
| platinum                | -4%  | 0%   | 6%   | 0%   | 0%   | 0%                 |
| palladium               | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| rhodium                 | -11% | 0%   | 0%   | 0%   | 0%   | 0%                 |
| iron ore, spot fines    | 32%  | 30%  | 26%  | 21%  | 40%  | 31%                |
| iron ore, spot lump     | 64%  | 39%  | 26%  | 21%  | 40%  | 31%                |
| hard coking coal        | -1%  | 0%   | 2%   | 6%   | 0%   | 10%                |
| LV-PCI                  | 2%   | 0%   | 2%   | 6%   | 0%   | 8%                 |
| semi-soft coking coal   | 3%   | 0%   | 2%   | 6%   | 0%   | 10%                |
| manganese ore           | -3%  | -12% | 0%   | -6%  | -9%  | 0%                 |
| steel (avg HRC)         | 56%  | 19%  | 13%  | 6%   | 27%  | 0%                 |
| steel scrap (avg #1HMS) | 38%  | 51%  | 38%  | 33%  | 53%  | 0%                 |
| thermal coal, spot      | 9%   | 7%   | 0%   | 0%   | 0%   | 0%                 |
| thermal coal, JFY       | 29%  | 16%  | 2%   | 0%   | 0%   | 0%                 |
| EU carbon               | 29%  | 44%  | 10%  | 25%  | 27%  | 0%                 |
| alumina                 | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| ferrochrome             | 4%   | 17%  | 0%   | 0%   | 5%   | 0%                 |
| molybdenum              | 23%  | 23%  | 9%   | 0%   | 0%   | 4%                 |
| cobalt                  | -8%  | 0%   | -5%  | -7%  | -15% | 0%                 |
| crude oil - Brent       | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| crude oil - WTI         | 0%   | 0%   | 0%   | 0%   | 0%   | 0%                 |
| natural gas - HH        | 3%   | 0%   | 0%   | 0%   | 0%   | 0%                 |

Source: Macquarie Commodity Strategy, LME, CME, ICE, Bloomberg, Platts, June 2021

## Macro Outlook

### The return of synchronised growth

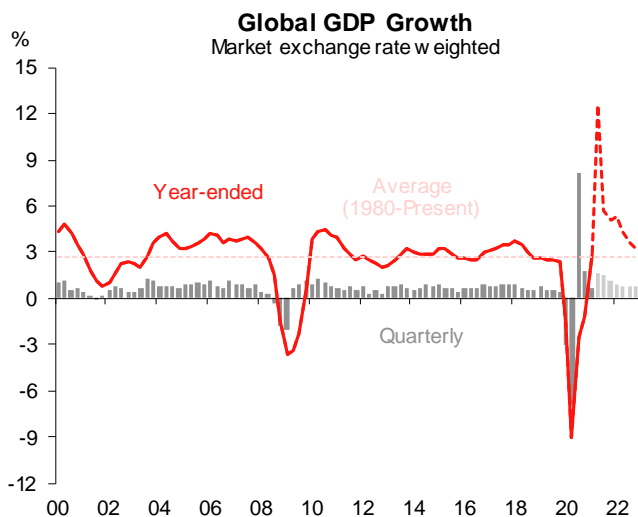
- extract from: [Global Economic Outlook: Macro policy “credibly promising to be irresponsible”. But is it fighting the last war?](#)

#### Roaring 2021

The global economy is recovering rapidly, with GDP at a new peak, and the pace of expansion re-accelerating after the lull in Q1. Encouragingly, after a period of uneven growth – both among the major economies and between sectors – we are on the cusp of a more synchronised/balanced expansion, with the recovery resuming in Europe and spending rebalancing away from goods and back to services.

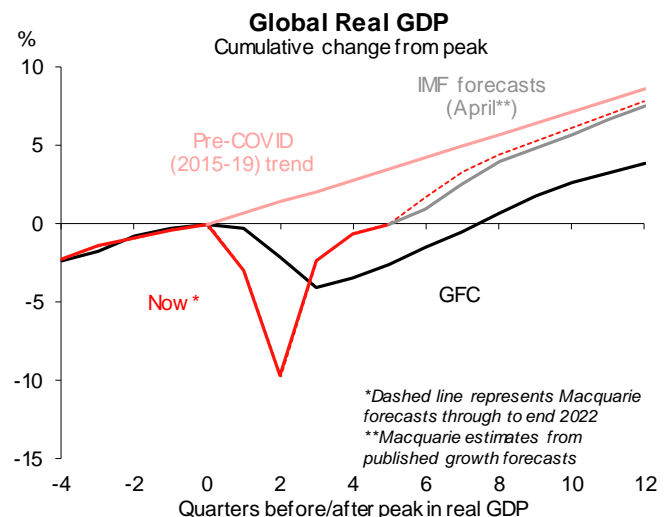
- Global GDP growth looks to have increased from the anaemic ½% seen in Q1 to a rapid 1½% in Q2, with that pace likely to be sustained in Q3, before slowing back towards trend in 2022.
- In y/y terms, global GDP should grow by around 5% this year – the fastest expansion seen for decades – and around 3¼% in 2022, with the level of activity at the end of next year only modestly below the pre-COVID trend.

**Fig 5** The global recovery has continued, with GDP likely to expand by ~5% this year – the fastest pace in decades



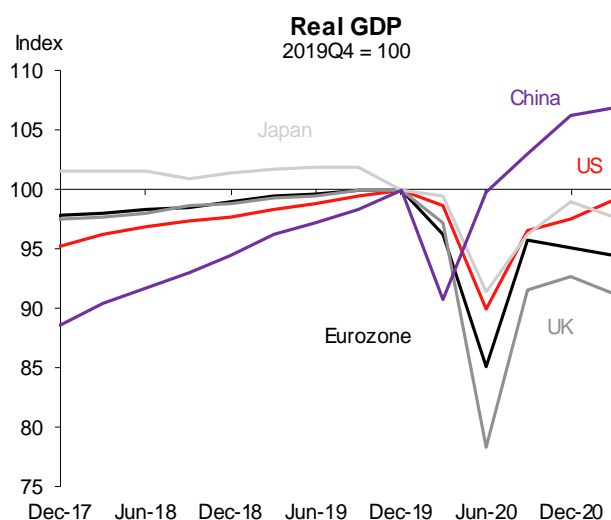
Source: Macrobond, Macquarie Macro Strategy

**Fig 6** The level of GDP regained its peak in Q1, and is likely to approach its previous trend by the end of next year



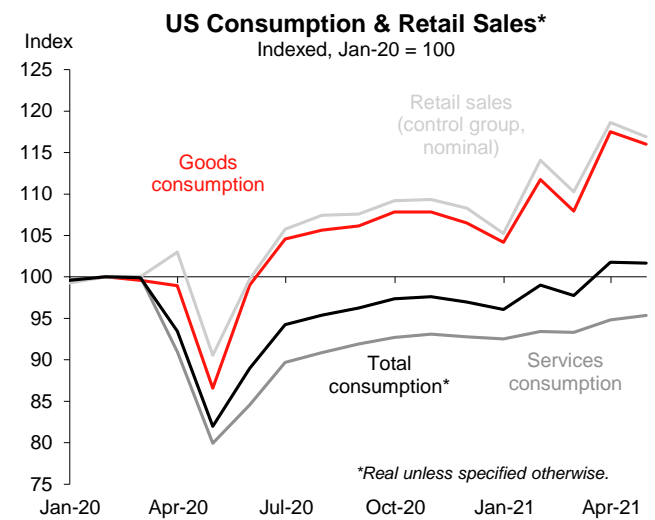
Source: IMF, Macrobond, Macquarie Macro Strategy

**Fig 7** However, the recovery has been uneven, with Chinese GDP back on trend, and the US beginning to boom, while Europe is still weak



Source: Macrobond, Macquarie Macro Strategy

**Fig 8** Ongoing high levels of COVID infections have suppressed services, while goods spending is booming

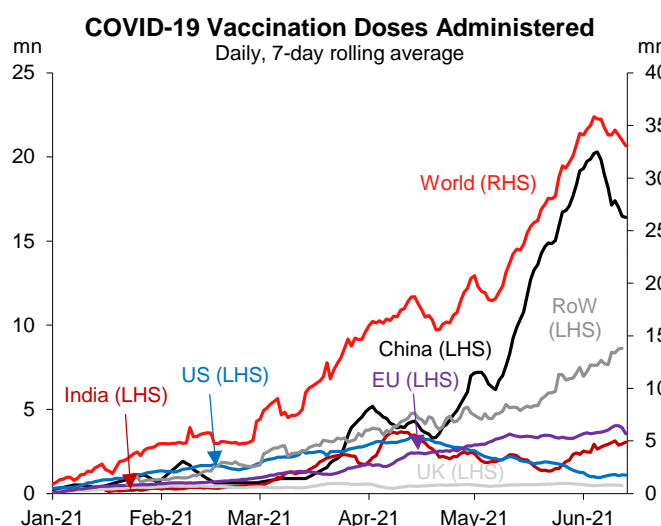


Source: Macrobond, Macquarie Macro Strategy

Unsurprisingly, COVID-19 remains the biggest known unknown, with effective suppression a prerequisite for strong recovery. To that end, the recent data are encouraging, with the number of global daily confirmed cases probably having peaked in mid-May, as the Northern Summer (90% of the global population live North of the equator) and the rapid vaccine rollout combine to limit the spread.

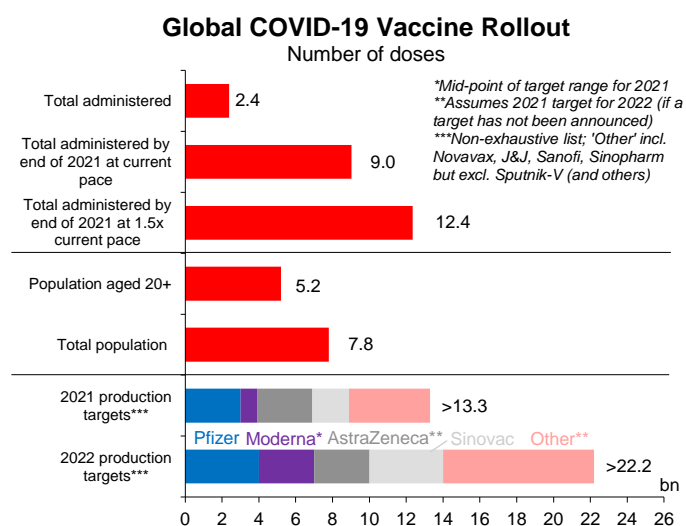
- The world has already administered almost 2.5 billion vaccine doses, with the pace picking up rapidly in recent months, to above 30 million per day.
- While the rollout has been uneven, this is now beginning to change, with the Eurozone overtaking the US in terms of daily doses, and China administering ~15 million per day (4x the daily US peak).
- Importantly, manufacturing is ramping up fast, with Western production alone likely to be well over 10 billion doses this year. This, along with Chinese and Russian supply, suggests that there will be enough vaccines to inoculate the world by year end.
- If the current daily pace of rollout continues for the remainder of the year, the world will administer around 8 billion doses in 2021. However, if the pace increases by a further 50%, we will see around 11 billion doses.
  - ⇒ Given that the world adult population is around 5.2 billion, this suggests that it should be possible to inoculate all adults that want to be vaccinated this year.
- Rather than production capacity, the constraint is likely to increasingly become developed market vaccine hoarding, vaccine hesitancy, and local EM medical capacity.
  - ⇒ For example, Australia has ordered ~195 million doses for a population of only 25 million.
- However, we suspect that once the large countries have inoculated most of their populations – a milestone likely to be achieved in both the US and Europe by the end of summer – they will then release large quantities of vaccine to the rest of the world.

**Fig 9 The pace of vaccination has picked up materially, with over 30 million doses being administered globally per day**



Source: Our World in Data, Macrobond, Macquarie Macro Strategy

**Fig 10 The world will produce enough vaccines to inoculate most adults this year, with a surplus likely in 2022**



Source: Media reports, Our World in Data, Macrobond, Macquarie Macro Strategy

### Macro policy “credibly promising to be irresponsible” ...

Against this improving backdrop, the latest US fiscal stimulus was akin to pouring kerosene on an already hot manufacturing sector, with real US goods consumption increasing by a dramatic 7.3% in the month of March, helping push copper and iron ore prices to historical highs. This, along with the Fed’s promise not to increase policy interest rates until they achieve their dual inflation and employment mandate, has seen market concerns shift to inflation, as both the Federal



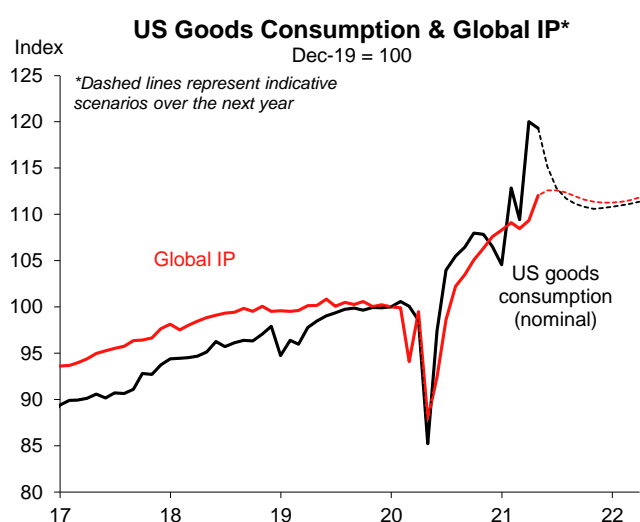
Government and the Fed “credibly promise to be irresponsible”, a policy first recommended by Paul Krugman when discussing Japan in the 1990s.<sup>1</sup>

On balance, we agree with the Fed that the current price increases will be transitory, with the likely dip in goods consumption (as spending rebalances back to services) taking the heat out of hard commodity prices. As such, we expect Chairman Powell to begin to prepare the market for an upcoming taper in late Q3/early Q4, with the eventual reduction in asset purchases unlikely to begin until early 2022.

However, further out, with the fed funds rate at zero, and fiscal policy still highly accommodative, wage pressures could continue to build, forcing an eventual pivot. A dynamic that arguably began to show up at the June FOMC.

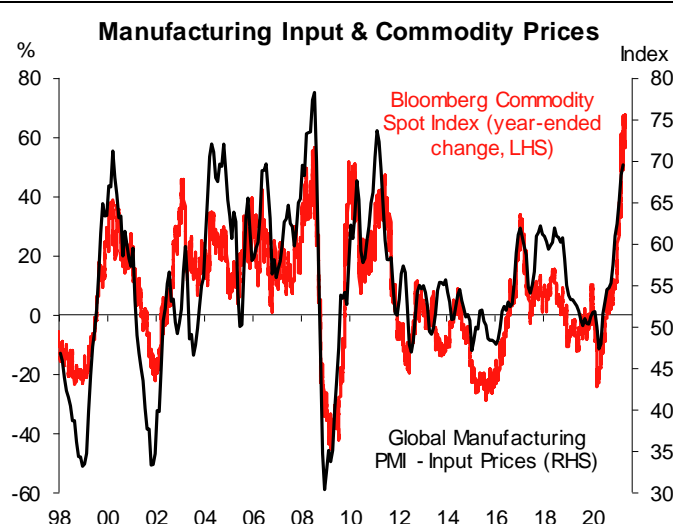
- By definition, the longer the Fed leaves its first move, the faster it will then need to move, and the greater the risk of financial instability.
- This suggests that by late 2023, [we are likely to see](#) either a period of rapid tightening, with the fed funds rate eventually moving above neutral, or a major asset price bust.
  - ⇒ While the focus in the media has been on Larry Summers’ inflation warning, he has also suggested that current policy settings are increasing the prospect of extreme financial instability.
  - ⇒ This is consistent with the warning from the former Fed Chairman, Paul Volcker, in his 2018 autobiography when he suggested that “*the real danger comes from encouraging or inadvertently tolerating rising inflation and its close cousin of extreme speculation and risk taking, in effect standing by while bubbles and excesses threaten financial markets. Ironically, the “easy money,” striving for a “little inflation” as a means of forestalling deflation, could, in the end, be what brings it about.*”
- When Krugman first talked about being rationally irresponsible, Japan was in a liquidity trap and facing a period of outright deflation. To us, the situation in the US at present looks very different.
- Indeed, we suspect the Fed may currently be [fighting the last war](#), with 2023 promising to be a most interesting year...

**Fig 11 The US goods surge has peaked...**



Source: Macrobond, Macquarie Macro Strategy

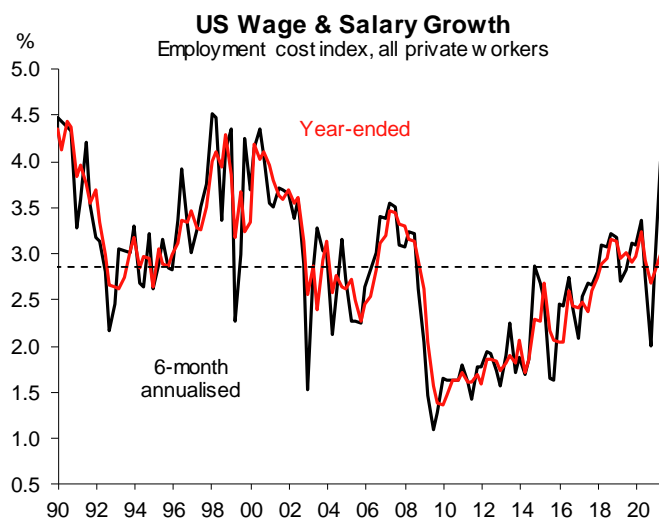
**Fig 12 ...which should see commodity price inflation moderate a bit**



Source: Bloomberg, Macrobond, Macquarie Macro Strategy

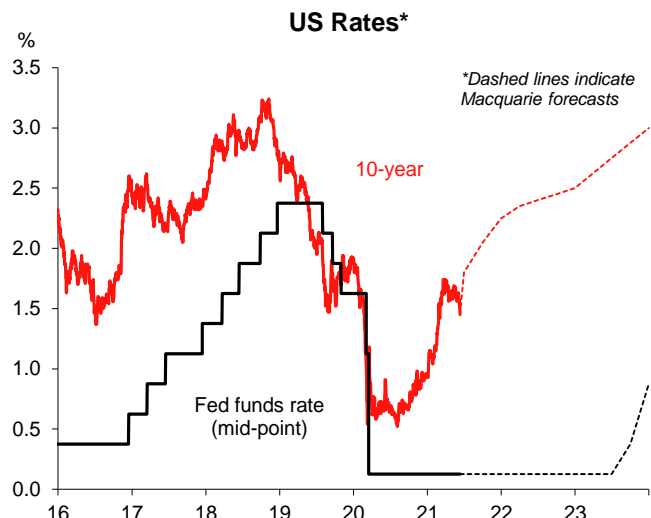
<sup>1</sup> In 1998, with Japan dipping into deflation, Nobel Laureate [Paul Krugman suggested](#) that, to escape the liquidity trap, the macro authorities needed to “credibly promise to be irresponsible” i.e. to make a persuasive case that they would permit inflation to occur, thereby producing the negative real interest rates the economy needed.

**Fig 13 US wage inflation has not slowed as much as would normally occur during a deep recession**



Source: Macrobond, Macquarie Macro Strategy

**Fig 14 The Fed will try to keep long rates contained this year, but the market will increasingly begin to price in a Fed hike in 2023**



Source: Macrobond, Macquarie Macro Strategy

We see the risks as broadly symmetrical. On the downside, the tragic COVID outbreak in India has shown that we are all in this together, and that the risk of a dangerous mutation remains too high. However, with US policy makers trying to find the economy's limits, there are also considerable upside risks.

**Fig 15 GDP growth forecasts (forecasts shaded)**

| QoQ          | Quarterly |        |        |        |        |        |        |        |        |        | Annual |      |      |      |
|--------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|------|
|              | Sep-20    | Dec-20 | Mar-21 | Jun-21 | Sep-21 | Dec-21 | Mar-22 | Jun-22 | Sep-22 | Dec-22 | 2020   | 2021 | 2022 | 2023 |
| US           | 7.5       | 1.1    | 1.6    | 2.3    | 1.7    | 1.2    | 0.9    | 0.8    | 0.7    | 0.7    |        |      |      |      |
| China        | 3.1       | 3.2    | 0.6    | 1.3    | 1.4    | 1.4    | 1.3    | 1.2    | 1.4    | 1.5    |        |      |      |      |
| Eurozone     | 12.5      | (0.7)  | (0.6)  | 2.0    | 2.0    | 1.1    | 0.7    | 0.6    | 0.5    | 0.4    |        |      |      |      |
| Japan        | 5.3       | 2.8    | (1.3)  | 0.8    | 1.3    | 0.5    | 0.3    | 0.3    | 0.2    | 0.2    |        |      |      |      |
| India        | 23.7      | 7.9    | 1.5    | 0.4    | 1.2    | 1.0    | 1.3    | 1.5    | 1.5    | 1.5    |        |      |      |      |
| UK           | 16.9      | 1.3    | (1.5)  | 4.2    | 3.5    | 1.8    | 1.5    | 1.4    | 1.3    | 1.0    |        |      |      |      |
| Canada       | 8.9       | 2.3    | 1.6    | 0.5    | 1.4    | 1.0    | 0.8    | 0.6    | 0.6    | 0.5    |        |      |      |      |
| Australia    | 3.4       | 3.1    | 1.2    | 1.1    | 1.0    | 0.9    | 0.8    | 0.8    | 0.8    | 0.8    |        |      |      |      |
| New Zealand  | 13.9      | (1.0)  | 0.3    | 0.7    | 0.8    | 0.9    | 0.9    | 0.9    | 0.8    | 0.8    |        |      |      |      |
| Global (MER) | 8.2       | 1.7    | 0.6    | 1.7    | 1.5    | 1.1    | 0.9    | 0.8    | 0.8    | 0.8    |        |      |      |      |
| Global (PPP) | 8.7       | 2.2    | 0.7    | 1.5    | 1.4    | 1.1    | 0.9    | 0.8    | 0.8    | 0.8    |        |      |      |      |

| YoY          | Quarterly |        |        |        |        |        |        |        |        |        | Annual |      |      |      |
|--------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|------|
|              | Sep-20    | Dec-20 | Mar-21 | Jun-21 | Sep-21 | Dec-21 | Mar-22 | Jun-22 | Sep-22 | Dec-22 | 2020   | 2021 | 2022 | 2023 |
| US           | (2.8)     | (2.4)  | 0.4    | 12.9   | 6.8    | 7.0    | 6.3    | 4.7    | 3.7    | 3.2    | (3.5)  | 6.6  | 4.4  | 2.6  |
| China        | 4.9       | 6.5    | 18.3   | 7.5    | 6.0    | 5.0    | 5.6    | 5.6    | 5.6    | 5.6    | 2.3    | 8.5  | 5.6  | 5.4  |
| Eurozone     | (4.1)     | (4.9)  | (1.8)  | 13.3   | 2.7    | 4.5    | 5.9    | 4.5    | 2.9    | 2.2    | (6.7)  | 4.4  | 3.9  | 1.4  |
| Japan        | (5.5)     | (1.0)  | (1.8)  | 7.7    | 3.5    | 1.2    | 2.8    | 2.3    | 1.2    | 0.9    | (4.7)  | 2.5  | 1.8  | 0.7  |
| India        | (7.3)     | 0.4    | 0.5    | 36.1   | 11.3   | 4.2    | 3.9    | 5.0    | 5.4    | 5.9    | (6.9)  | 11.4 | 5.1  | 6.1  |
| UK           | (8.5)     | (7.3)  | (6.1)  | 21.5   | 7.5    | 8.0    | 11.4   | 8.4    | 6.1    | 5.3    | (9.8)  | 7.0  | 7.7  | 3.5  |
| Canada       | (5.3)     | (3.2)  | 0.3    | 13.7   | 5.9    | 4.5    | 3.7    | 3.8    | 3.0    | 2.5    | (5.4)  | 6.1  | 3.2  | 2.1  |
| Australia    | (3.7)     | (1.1)  | 0.4    | 9.1    | 6.6    | 4.3    | 3.8    | 3.5    | 3.2    | 3.2    | (2.4)  | 5.0  | 3.4  | 2.8  |
| New Zealand  | 0.2       | (0.9)  | 0.6    | 13.9   | 0.8    | 2.7    | 3.3    | 3.5    | 3.5    | 3.4    | (3.0)  | 4.2  | 3.5  | 2.9  |
| Global (MER) | (2.5)     | (1.2)  | 2.9    | 12.5   | 5.7    | 5.0    | 5.3    | 4.4    | 3.6    | 3.3    | (3.6)  | 6.3  | 4.1  | 2.8  |
| Global (PPP) | (2.5)     | (0.8)  | 3.4    | 13.4   | 5.9    | 4.8    | 5.0    | 4.3    | 3.7    | 3.4    | (3.5)  | 6.6  | 4.1  | 3.1  |

Source: Macrobond, Macquarie Macro Strategy

## Commodities Backdrop

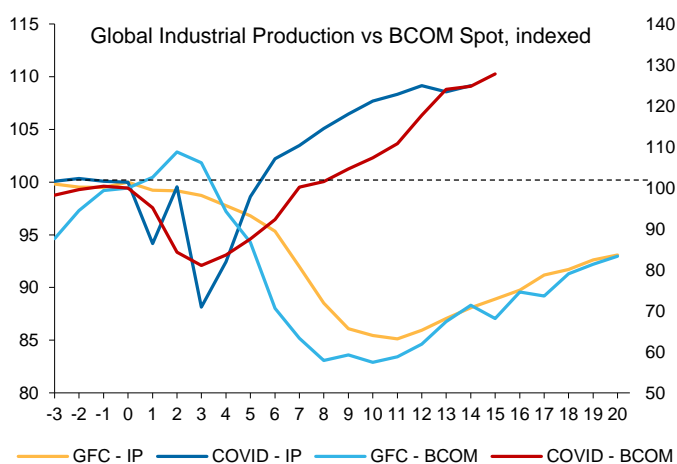
### As good as it gets, for now

Our economists are forecasting a period of [synchronous global growth through 2H21](#), but the shift from a goods and manufacturing driven recovery into a services led expansion means that 2Q21 is likely to mark a cyclical high point for the industrial metals and bulk commodities as a whole. Crude oil, however, should extend its rally into 3Q21, as transport demand recovers further.

Beyond this, positive structural trends from energy transition driven demand growth, and the challenges to sufficiently increasing supply, support our anticipation of deficits in certain markets, such as copper and aluminium.

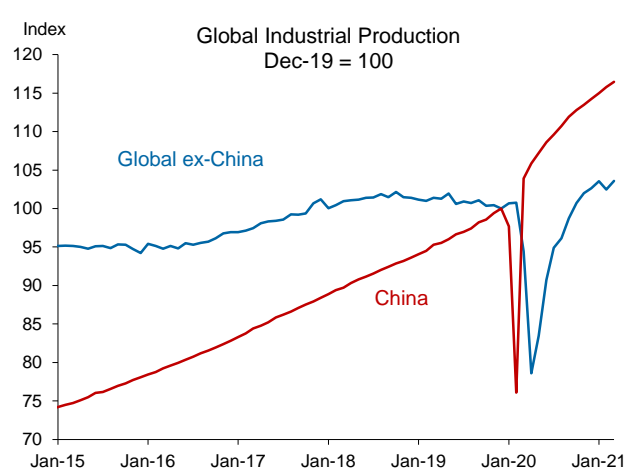
Nevertheless, the current raw materials bull market has principally been driven by surging global industrial production (IP), on the back of a US-led boom in global goods demand. As the [US fiscal impulse wanes](#) and consumers substitute back to services, we expect an [incremental slowdown in manufacturing activity](#) to precipitate a pull-back in metals prices through the remainder of the year.

**Fig 16 Commodities' recovery has tracked global IP**



Source: UN, National Statistics Agencies, Macrobond, Bloomberg, Macquarie Strategy, June 2021

**Fig 17 Which has been China dominated**



Source: UN, National Statistics Agencies, Macrobond, Macquarie Strategy, June 2021

Despite ex-China raw materials demand recovering rapidly, China has been the dominant driver of global industrial production and, hence, raw materials demand strength. Initially, this was domestically focussed, with infrastructure fixed asset investment (FAI) surging 29% QoQ in 2Q20, after seasonal adjustment (SA).

Since 3Q20, however, headline FAI has essentially returned to its pre-Covid trend. Similarly, domestic consumer demand has recovered to its pre-Covid trend but neither has jumped above it in the way that industrial production has achieved.

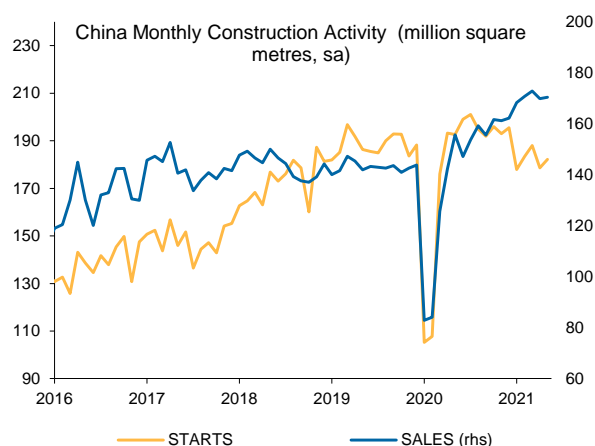
Although real estate has been relatively strong, new construction starts have lagged, with developers facing tighter financing conditions. Property sales growth also stalled in April and May, raising the prospect that marginally tighter credit conditions may already be taking some heat out of the sector.

Recent rhetoric around controlling commodity price gains has not, to date, been backed up by particular measures to restrain demand but supports the view that additional stimulus is currently very unlikely. Regarding the announcement that the State Reserve Bureau (SRB) will also sell a portion of their copper, aluminium and zinc stocks, we expect volumes to be relatively modest (e.g. 300-500kt for aluminium, not the top end estimates of ~800kt that would imply almost all of the SRB's aluminium inventory being released) and for sales to progress incrementally over a number of months. In that way, volumes may decline if prices ease, as we expect them to.

Given the ongoing moderation in credit growth and its flow through to money supply, we expect a further easing in domestically driven secondary sector activity (construction + industry). The apparent cause of divergence between production and domestic demand indicators, to date, is export strength. As our economists summarised it – [China's economy has gone back to the 2000s](#).

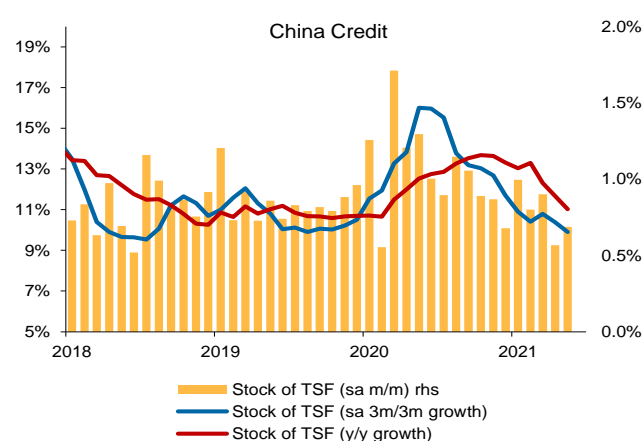
Indeed, total April exports were 32% above their pre-Covid level, within which exports of mechanical and electrical goods accounted for c.60%. Without a reacceleration in credit growth, China's current raw materials demand strength appears vulnerable to a slowdown in external goods demand, of which the first signs emerged in May's 3% MoM decline in exports.

**Fig 18 Real estate sales have been an outperformer**



Source: China NBS, Macrobond, Bloomberg, Macquarie Strategy, June 2021

**Fig 19 But should now feel the effects of slower credit**



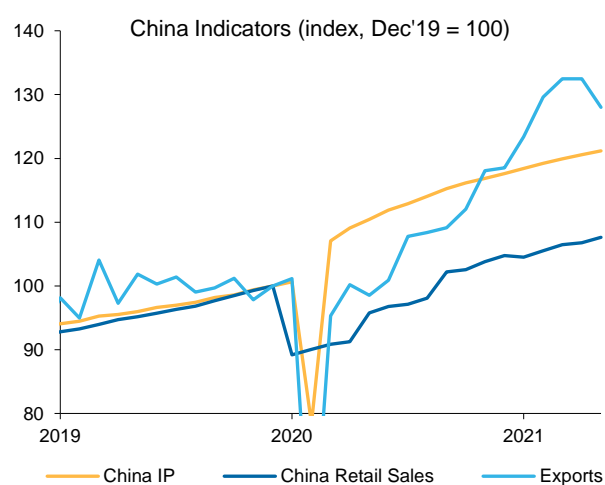
Source: PBoC, Macrobond, Macquarie Strategy, June 2021

**Fig 20 Which drags on overall secondary sector activity**



Source: China NBS, PBoC, Macrobond, Bloomberg, Macquarie Strategy, June 2021

**Fig 21 Increasing the importance of export strength**



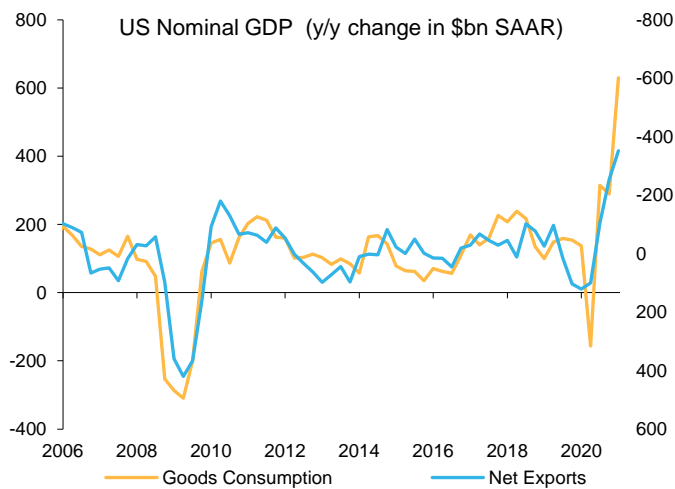
Source: China NBS, China Customs, Macrobond, Macquarie Strategy, June 2021

The key driver of global goods demand strength has arguably been US consumption, where fiscal stimulus – delivering a 21% MoM lift in March incomes – has turbocharged the impact of lockdowns in pushing consumer substitution from services to goods.

Although total consumption in April was only 1.7% above its pre-Covid real terms peak, the drag has been a 4.6% contraction in services. By contrast, goods consumption is up 16% and, crucially for hard commodities, durable goods up 29%. In turn, this has been met by imports, rather than an equivalent rise in domestic manufacturing activity (manufacturing component of US IP in May still down 0.5% from pre-Covid peak).

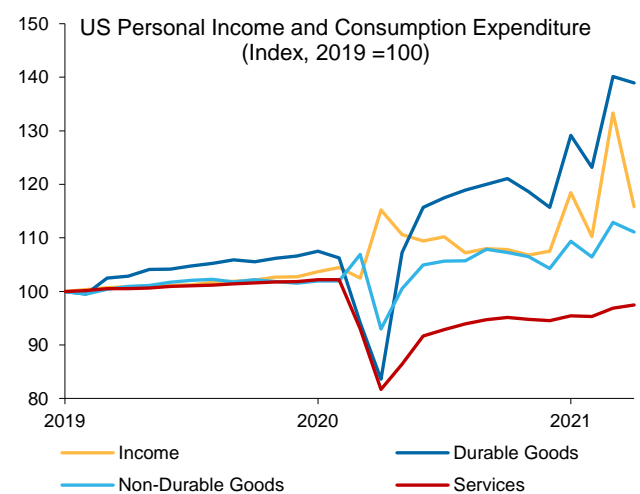
However, with no more stimulus cheques to come and reopening under way, we anticipate a fall in US durable goods demand, even as total consumption continues to rise. To that end, April data showed a marginal sequential softening in real durable goods demand (-0.9% MoM), even as the new motor vehicles sub-component rose 4.5% MoM. Given cheques went out in the second half of March, the immediate test of underlying strength will be how firm durable goods demand holds in May and June (*retail sales indicate that a gradual decline is under way*).

Fig 22 US goods demand has been met by imports



Source: US BEA, Bloomberg, Macquarie Strategy, June 2021

Fig 23 But with stimulus dropping out, demand should ease

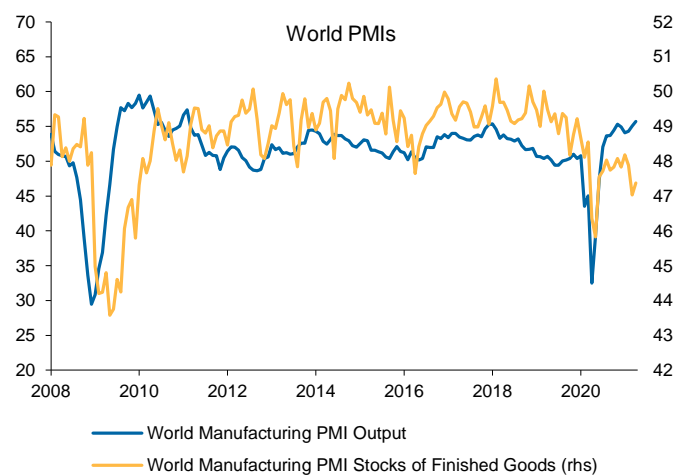


Source: US BEA, Bloomberg, Macquarie Strategy, June 2021

We think it will slow further and consequently expect global IP to decline sequentially through 2H21, before steadying into the turn of the year. To be clear, the level of IP will remain elevated but this is a marked turn in the pace of growth.

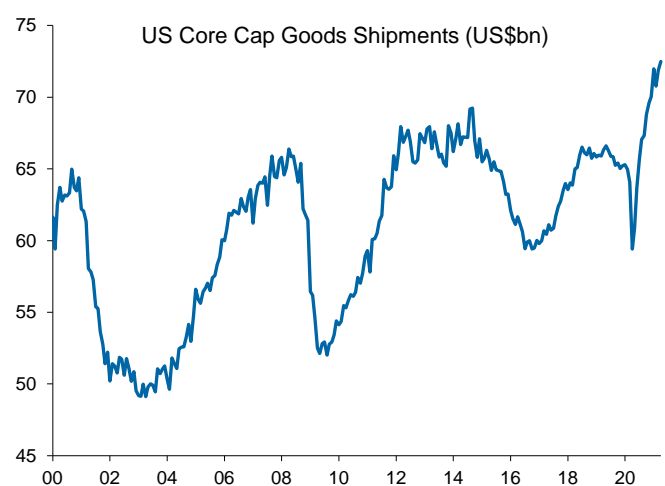
From an industrial metals perspective, low finished goods inventories – demand has been running above manufacturing output – present a significant cushion, as restocking demand should support raw materials consumption. This is probably *most pronounced in the global autos sector*, given the impact on production from semiconductor shortages. Strong corporate capex should also extend, but, on balance, we still expect an aggregate slowdown in demand growth. And, even in those markets experiencing acute physical tightness, once the marginal tonne becomes easier to source prices should decline, albeit to still elevated absolute levels.

Fig 24 Finished goods inventories yet to be rebuilt



Source: Markit, Macrobond, Macquarie Strategy, June 2021

Fig 25 And corporate capex a clear tailwind



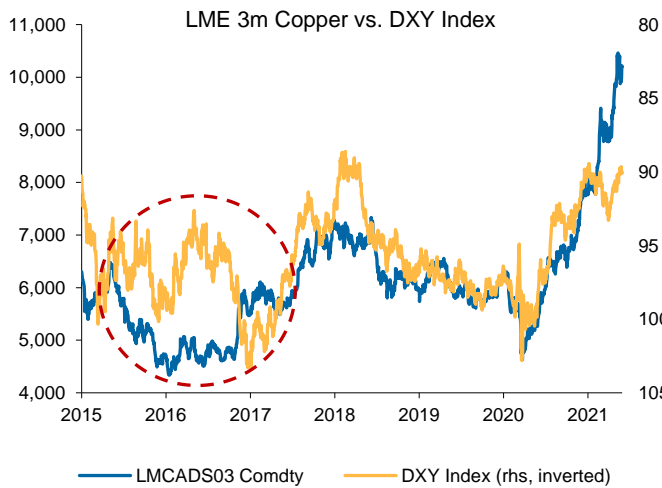
Source: US BEA, Macrobond, Macquarie Strategy, June 2021

The financial backdrop is likely to remain supportive, given the implications of our headline GDP view for global risk sentiment. However, with the anticipation of continued demand improvements arguably baked in, we expect a moderation of prices in 2H21 as real demand delivers on the downside of market expectations.

As for the influence of inflation, *we think it comes down to causation*. If inflation continues to rise on (goods) demand-pull strength, then industrial commodity prices should rise too (and demand will be beating our forecasts!).

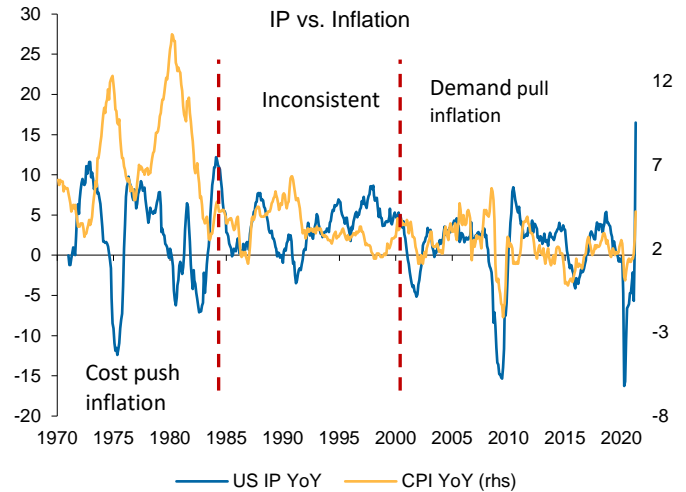
However, if the global economy slips into cost push inflation or gets to the point that overheating triggers a far more forceful central bank policy response, then we view it as bad for industrial commodities because industrial activity would likely suffer and real demand fall.

**Fig 26 Metals have been outperforming USD**



Source: Bloomberg, Macquarie Strategy, June 2021

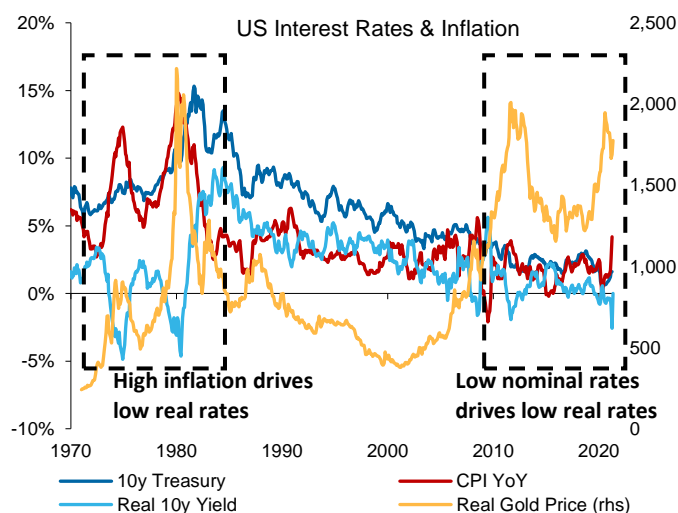
**Fig 27 For industrial commodities, the key to inflation is causation**



Source: US BLS, Bloomberg, Macquarie Strategy, June 2021

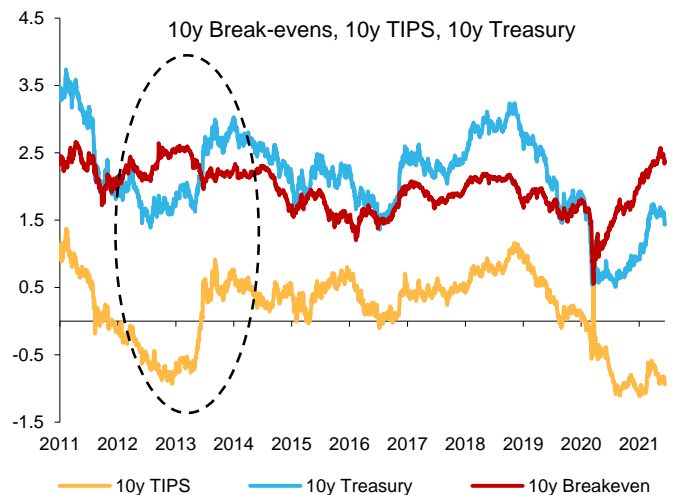
Unless, as with oil supply shocks in the 1970s/80, commodities are the cause of the supply shock, they are unlikely to benefit in real terms from a true inflationary spike (except gold, of course, on account of real rates then going deeply negative). That said, absent inflation expectations threatening to become unanchored – with the Fed unwilling or unable to calm things, gold will struggle to return to a “bull market”.

**Fig 28 An inflation break-out would be a game changer**



Source: US BEA, US BLS, Bloomberg, Macquarie Strategy, June 2021

**Fig 29 But the signal of tapering should lift real rates**

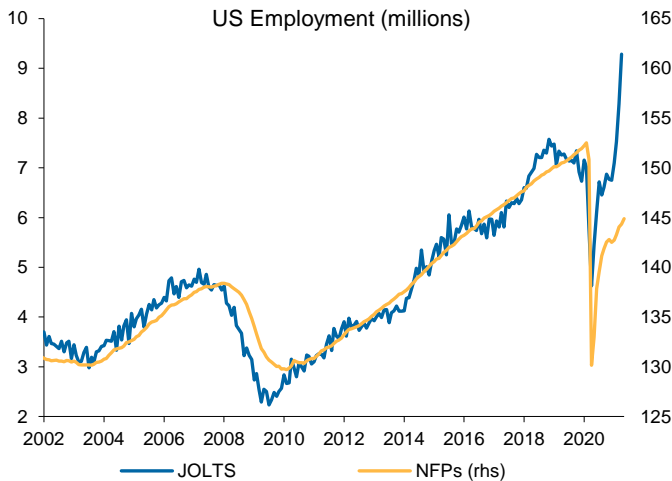


Source: Bloomberg, Macquarie Strategy, June 2021

The combination of dollar weakness and sliding real rates, with a seemingly [supply constrained US labour market](#) disappointing expectations of jobs growth in Q2, had resurrected gold's fortunes in recent weeks but the strength of labour demand and ongoing reopening momentum in the service sector mean we still expect strong employment gains through the summer. This should see the Fed signalling plans to taper (during 2022) in late Q3/early Q4, resulting in higher real rates and lower gold prices. A view that has been reaffirmed by the June FOMC meeting.

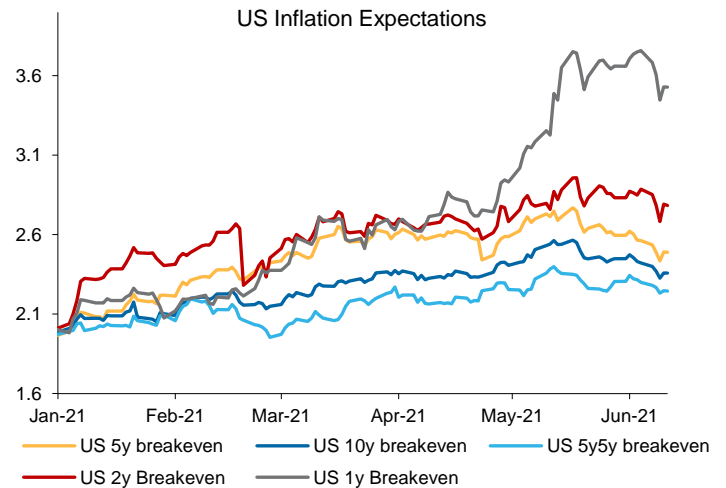
Crude, of course, should benefit from the mobility recovery linked to global reopening and we forecast a 2021 deficit of 1Mbpd to push prices towards a peak around \$80/bbl for Brent in Q3. Higher oil prices may also support near-term inflation expectations but *so long as inflation does not broaden out*, the market seems content to accept the argument that the current uplift is transitory. And, beyond the next few months, we are not structural oil bulls, given both the long-term demand implications of energy transition and a current supply backdrop of ~10Mbpd in spare capacity. Not to mention our above consensus call for 1.2Mbpd in shale production growth by end-2022 from end-2020.

**Fig 30 Labour demand does not seem to be the problem**



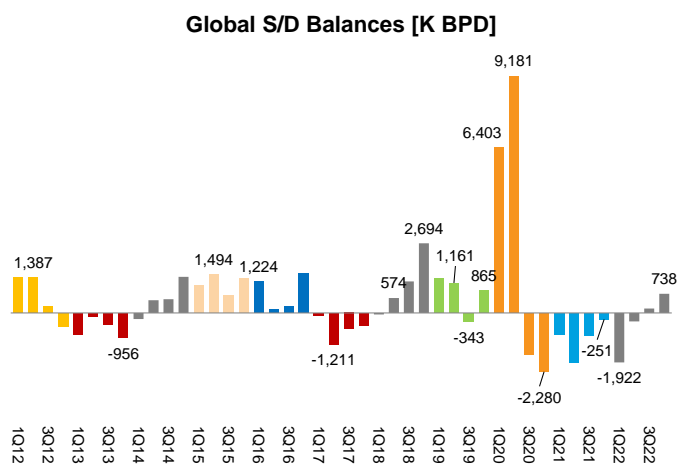
Source: US BLS, Bloomberg, Macquarie Strategy, June 2021

**Fig 31 Rates markets are pricing inflation as transitory**



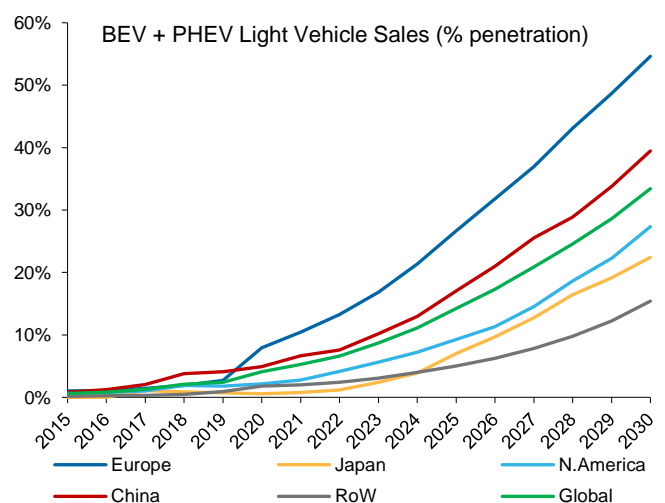
Source: Bloomberg, Macquarie Strategy, June 2021

**Fig 32 Crude: 2021 deficits to fade through 2022**



Source: IEA, EIA, Company Reports, Macquarie Strategy, June 2021

**Fig 33 The energy transition is underway**

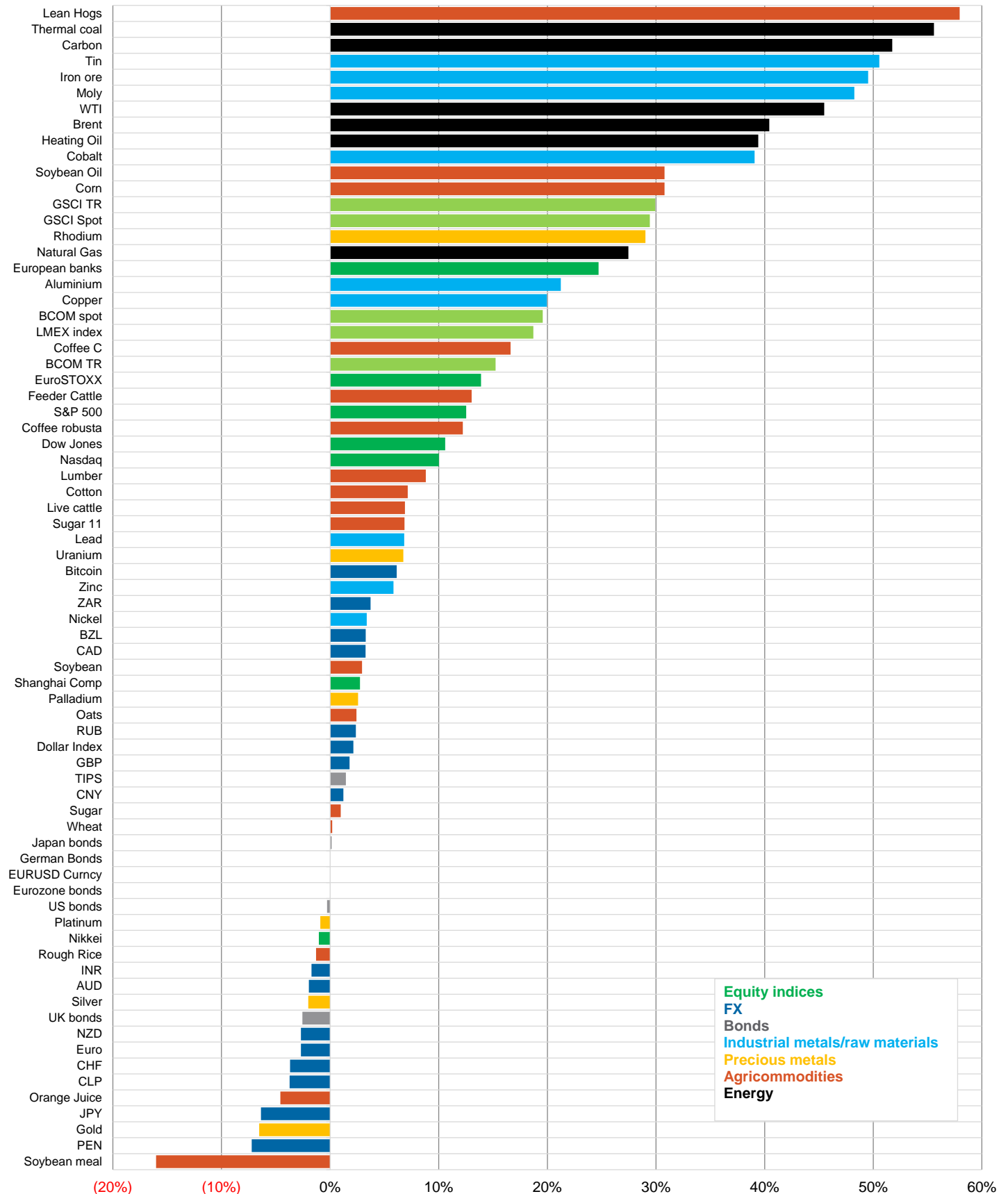


Source: LMC, RhoMotion, Bloomberg, Macquarie Strategy, June 2021



Fig 34 2021 YTD price performance

## Commodity &amp; financial asset price moves, 2021 YTD, US\$ terms, %



Source: Bloomberg, Financial Exchanges, Macquarie Commodity Strategy, June 2021



## Copper

### Separating the cyclical from the structural

Our copper balance is little changed from the reworked model we published in March (see – [Copper: Electric Shock](#)). Indeed, we still forecast a c.250kt deficit for 2021, marginal surpluses between 2022-24, a c.450kt deficit in 2025 and structural deficits quickly moving above 1Mtpa beyond this.

We have made modest upgrades to our demand view, now expecting global light electric vehicle (EV) penetration to breach 14% by 2025, on a headline vehicle sales figure of 97.6M. That implies total automotive copper demand should rise from ~2.25Mt in 2019 to ~3.1Mt by the middle of the decade, with the potential to push on towards ~4.5Mt by 2030.

For the build out of (overwhelmingly renewable) generation capacity we still expect demand to rise from ~1.2Mt in 2019 to ~2.3Mt by 2025, based on our upside scenario to Bloomberg New Energy Finance's base case outlook. For associated grid demand, we see significant uncertainty around medium-term forecasts, given their inter-dependence on "push" from power generation and "pull" from construction activity, as well as grid upgrading requirements. Nevertheless, current trends are clearly positive, and our upside scenario would imply global grid related copper demand reaching ~4.3Mt by 2025, from ~3.7Mt in 2019.

Fig 35 Global copper market balance

| '000t copper            | 2017        | 2018        | 2019        | 2020        | 2021F       | 2022F       | 2023F       | 2024F       | 2025F       |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Mine production         | 19,991      | 20,753      | 20,595      | 20,707      | 20,818      | 21,909      | 22,895      | 23,395      | 22,913      |
| % Change YoY            | -1.1%       | 3.8%        | -0.8%       | 0.5%        | 0.5%        | 5.2%        | 4.5%        | 2.2%        | -2.1%       |
| <b>Concs balance</b>    | <b>360</b>  | <b>395</b>  | <b>-137</b> | <b>104</b>  | <b>-90</b>  | <b>17</b>   | <b>161</b>  | <b>263</b>  | <b>-102</b> |
| Refined production      | 22,772      | 23,497      | 23,856      | 23,500      | 24,117      | 25,172      | 25,915      | 26,393      | 26,423      |
| % Change YoY            | 2.0%        | 3.2%        | 1.5%        | -1.5%       | 2.6%        | 4.4%        | 3.0%        | 1.8%        | 0.1%        |
| Consumption             | 22,634      | 23,492      | 23,662      | 23,709      | 24,355      | 25,072      | 25,769      | 26,303      | 26,861      |
| % Change YoY            | 3.2%        | 3.8%        | 0.7%        | 0.2%        | 2.7%        | 2.9%        | 2.8%        | 2.1%        | 2.1%        |
| Refined balance         | 138         | 5           | 194         | -209        | -238        | 100         | 146         | 90          | -438        |
| SRB/bonded stocking     | -60         | 0           | 0           | 300         | 0           | 0           | 0           | 0           | 0           |
| <b>Adjusted balance</b> | <b>198</b>  | <b>5</b>    | <b>194</b>  | <b>-509</b> | <b>-238</b> | <b>100</b>  | <b>146</b>  | <b>90</b>   | <b>-438</b> |
| <b>LME Cash (\$/t)</b>  | <b>6162</b> | <b>6527</b> | <b>6006</b> | <b>6191</b> | <b>9000</b> | <b>8375</b> | <b>8000</b> | <b>8500</b> | <b>9000</b> |

Source: LME, Comex, SHFE, ICSG, Wood Mackenzie, CRU, Company Reports, Macquarie Strategy, June 2021

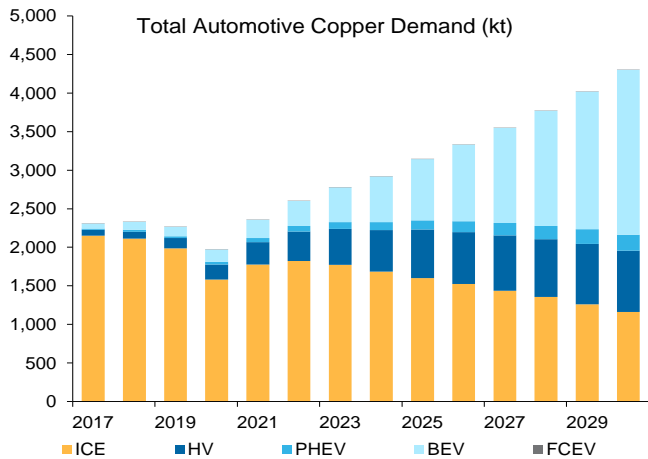
In terms of the supply required to meet this demand, we still see sufficient growth in the next three years from existing expansions (e.g. Grasberg underground, +400ktpa), recently completed projects (e.g. Kamoā-Kakula, +400ktpa) and mines in the later stages of development (e.g. Quellaveco, +350ktpa). Beyond this, however, lies significant uncertainty.

There is clear potential for growth, particularly in the DRC where Kamoā could reach 800ktpa, but the prospect of tax changes in Chile and Peru adds to the potential for sustained deficits later this decade. Though we do not anticipate any immediate declines from current operations – a possible strike from the main labour union at Escondida poses greater short-term risk there – it is difficult to envisage any currently uncommitted projects moving ahead in either country until there is greater certainty around their constitutions and tax regimes.

To be clear, we do not expect 2Mtpa deficits to realise, but high prices will be required to incentivise sufficient mine production growth, scrap generation and demand destruction – through thrifting and substitution – for them to be avoided.

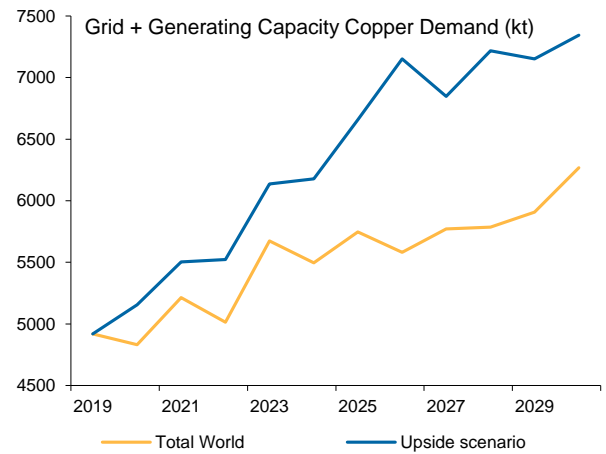
As for how high prices will trade, it comes down to demand. During periods of strong global growth, a structurally tightening balance creates the potential for extremely high prices, but we think that current prices – if sustained – are already more than sufficient to incentivise a market response. Indeed, as outlined in the above overview, we still expect a pull-back in prices through 2H21 as a slowdown in global industrial production takes some heat out of industrial metals markets.

**Fig 36 Rising EV penetration to lift copper usage**



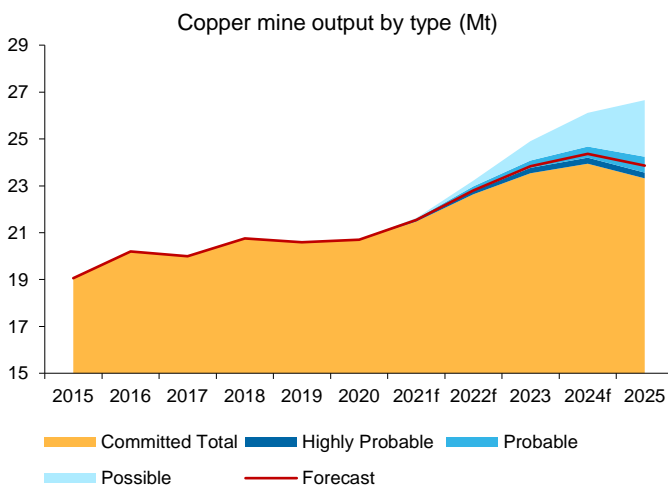
Source: LMCA, RhoMotion, Macquarie Strategy, June 2021

**Fig 37 As renewables deliver rising power + grid demand**



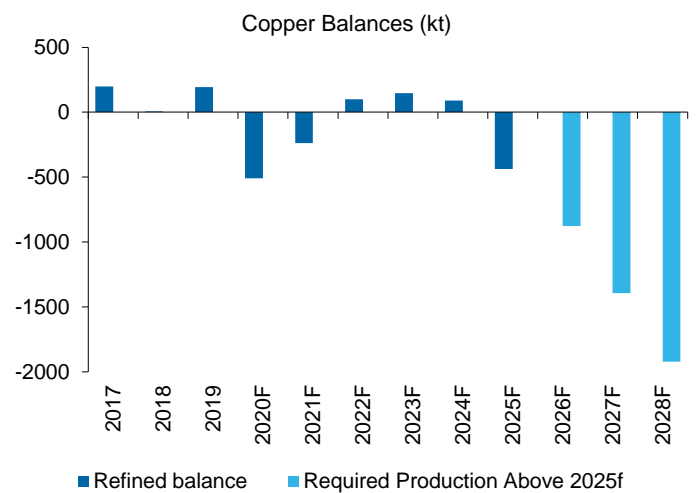
Source: Bloomberg NEF, CRU, Macquarie Strategy, June 2021

**Fig 38 There should be enough supply growth, for now**



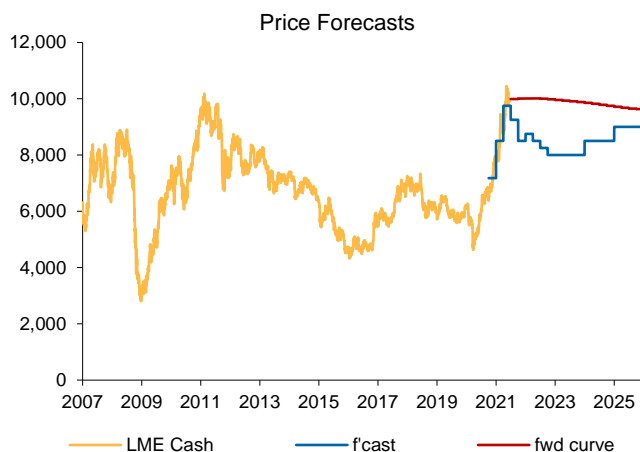
Source: Company Reports, Wood Mackenzie, CRU Macquarie Strategy, June 2021

**Fig 39 But structural deficits then loom**



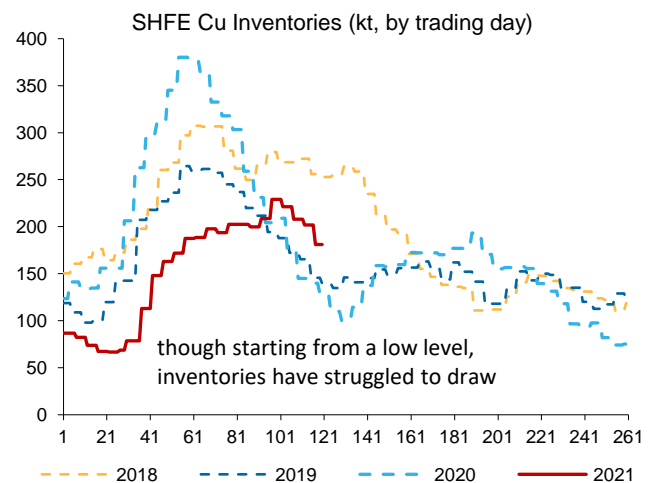
Source: LME, Comex, SHFE, ICSG, Wood Mackenzie, CRU, Company Reports, Macquarie Strategy, June 2021

**Fig 40 A cyclical pull-back amid structural strength**



Source: LME, Bloomberg, Macquarie Strategy, June 2021

**Fig 41 With physical markets already suffering from high price "indigestion"**



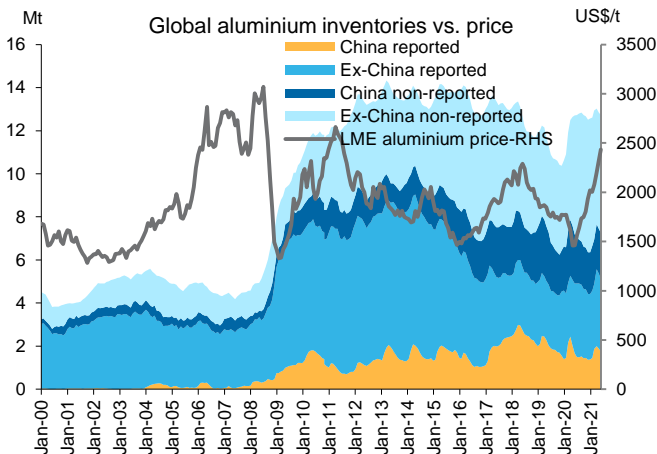
Source: LME, Bloomberg, Macquarie Strategy, June 2021

# Aluminium

## Resurgent global demand

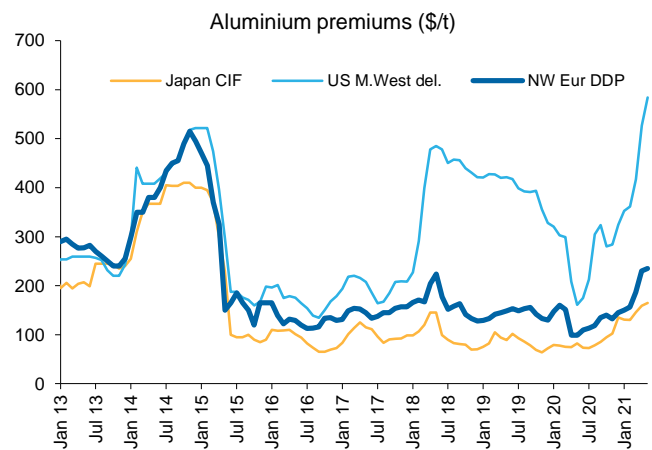
Aluminium prices have been supported by strong global demand in recent months, as shown by the drawdown in visible inventories. Despite still large estimates of unreported inventory from previous surplus years, accessible inventory remains limited and physical premiums have soared. Reported aluminium inventory is only 4 weeks of global demand, while estimated total inventory has come down to ~10 weeks currently.

**Fig 42** Reported aluminium inventory is only 4 weeks of global demand, in total ~10 weeks currently



Source: LME, SMM, CRU, Macquarie Strategy, June 2021

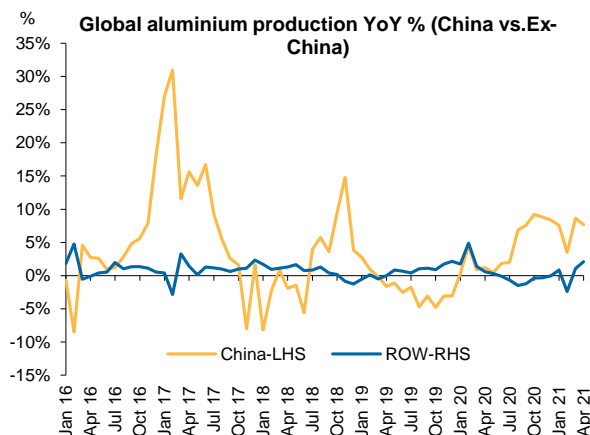
**Fig 43** Physical premiums have soared globally with strong demand and limited accessible stocks



Source: CRU, Platts, Macquarie Strategy, June 2021

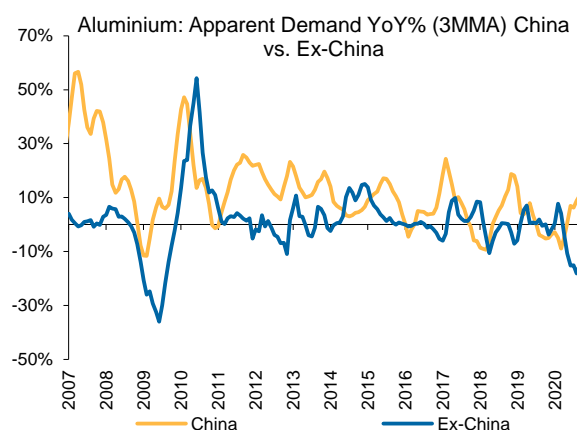
China's primary aluminium supply had a strong growth rate of ~8% YoY in the first five months, but demand has been rising at an even faster pace (+10% YoY). Ex-China's supply response has lagged with only 2% YoY growth in April, but both China and ex-China smelting capacity utilisation rates are running above 88%, suggesting some supply-side capacity constraints and support for smelters' ability to sustain elevated margins.

**Fig 44** China supply growth is strong but not as fast as demand recovery, ex-China supply growth has lagged



Source: IAI, Macquarie Strategy, June 2021

**Fig 45** China has been leading demand recovery and ex-China demand is returning to pre-pandemic

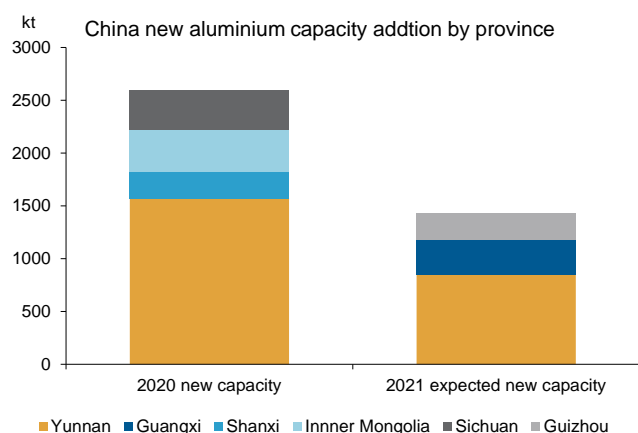


Source: IAI, Macquarie Strategy, June 2021

Energy policy is also disrupting aluminium supply. In China, continued energy consumption control in Inner Mongolia has impacted 350~400ktpa of smelting capacity, while recent power shortages in Yunnan impacted ~900ktpa of capacity. Although power shortages in Yunnan should alleviate during July, and supply losses YTD can be covered by disruption rate in our model, these supply disruptions during seasonally strong demand have been positive for market sentiment. Moreover,

they have delayed the completion of new capacity additions in these two major provinces. We now assume 1.4mtpa of new capacity will be finished this year in China, versus 1.9mtpa previously.

**Fig 46 China new capacity addition has slowed...**



Source: SMM, ALD, Macquarie Strategy, June 2021

**Fig 47 ...But demand growth is also softening**



Source: NBS, Macquarie Strategy, June 2021

However not all news is good. China demand growth has slowed since April, as shown by our weighted downstream demand indicators and aluminium semis production. China's SRB has officially announced it will sell aluminium, copper and zinc inventory to "non-ferrous metal processing and manufacturing companies". Total volumes are unknown, but sales of aluminium, which have been anticipated for some time, are likely to be in the order of 300-500kt. Ex-China supply should also edge higher, led by India, Malaysia, and Russia, with the potential for restarts in Brazil too.

We expect aluminium prices to trend lower from late Q2 towards next year for this cycle, given demand growth momentum should ease further. However, as China is expected reach its capacity cap by 2023, and global capacity growth remains modest, we expect aluminium to return to deficit from 2023, delivering higher prices from then. A potential risk is the development of new smelting capacity by Chinese producers outside of China (with early plans for 2-3mtpa in Indonesia), but this will be needed to fill the projected supply gap from 2024 onwards, as primary aluminium demand is expected to sustain growth around 1.5-2%pa (with some substitution by scrap).

In the long run, efforts directed at global decarbonisation will likely add to production costs, either by way of carbon taxes or higher capex requirements to build reliable clean energy (for green aluminium). We therefore lift our long-term price by 12% to US\$2150/t based on our forecast of potential carbon cost implications for marginal producers.

**Fig 48 Global ALUMINIUM market balance**

| millions of tonnes             | 2016         | 2017        | 2018         | 2019         | 2020        | 2021F       | 2022F       | 2023F        | 2024F        | 2025F        |
|--------------------------------|--------------|-------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|
| <b>World Production</b>        | <b>59.6</b>  | <b>63.7</b> | <b>64.6</b>  | <b>63.8</b>  | <b>65.0</b> | <b>68.6</b> | <b>70.7</b> | <b>71.6</b>  | <b>72.6</b>  | <b>73.5</b>  |
| % Change YoY                   | 3.6%         | 6.9%        | 1.4%         | -1.3%        | 2.0%        | 5.5%        | 3.0%        | 1.3%         | 1.4%         | 1.2%         |
| of which: China                | 32.3         | 36.0        | 36.5         | 35.4         | 36.5        | 38.9        | 40.2        | 40.8         | 41.3         | 41.4         |
| Ex-china                       | 27.3         | 27.7        | 28.1         | 28.4         | 28.5        | 29.7        | 30.5        | 30.8         | 31.3         | 32.1         |
| <b>World Consumption</b>       | <b>60.0</b>  | <b>63.4</b> | <b>65.7</b>  | <b>65.1</b>  | <b>63.3</b> | <b>68.1</b> | <b>70.6</b> | <b>72.5</b>  | <b>74.0</b>  | <b>75.1</b>  |
| % Change YoY                   | 6.0%         | 5.6%        | 3.6%         | -0.9%        | -2.8%       | 7.5%        | 3.7%        | 2.7%         | 2.0%         | 1.5%         |
| of which: China                | 31.4         | 33.8        | 35.7         | 36.1         | 37.6        | 39.5        | 40.6        | 41.6         | 42.2         | 42.6         |
| Ex-china                       | 28.7         | 29.6        | 30.0         | 29.0         | 25.7        | 28.5        | 30.0        | 31.0         | 31.8         | 32.5         |
| <b>Global balance</b>          | <b>-0.42</b> | <b>0.28</b> | <b>-1.11</b> | <b>-1.34</b> | <b>1.72</b> | <b>0.53</b> | <b>0.08</b> | <b>-0.90</b> | <b>-1.38</b> | <b>-1.63</b> |
| <b>Estimated total stocks</b>  | <b>14.1</b>  | <b>14.2</b> | <b>13.0</b>  | <b>11.7</b>  | <b>13.7</b> | <b>14.2</b> | <b>14.3</b> | <b>13.4</b>  | <b>12.0</b>  | <b>10.4</b>  |
| Weeks of consumption           | 12.2         | 11.6        | 10.3         | 9.4          | 11.2        | 10.9        | 10.5        | 9.6          | 8.4          | 7.2          |
| <b>LME Cash Price (US\$/t)</b> | <b>1604</b>  | <b>1968</b> | <b>2111</b>  | <b>1792</b>  | <b>1703</b> | <b>2261</b> | <b>2153</b> | <b>2225</b>  | <b>2338</b>  | <b>2420</b>  |
| LME Cash Price (US\$/lb)       | 72.8         | 89.3        | 95.8         | 81.3         | 77.2        | 102.6       | 97.6        | 100.9        | 106.0        | 109.8        |

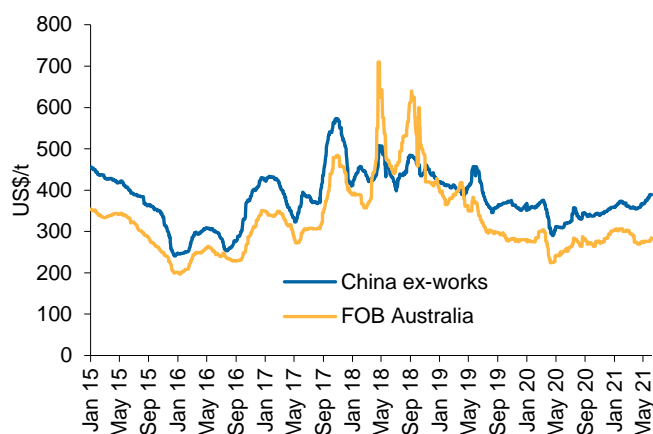
Source: IAI, CRU, Wood Mackenzie, Macquarie Strategy, June 2021

## Alumina & Bauxite

### Struggling to keep pace

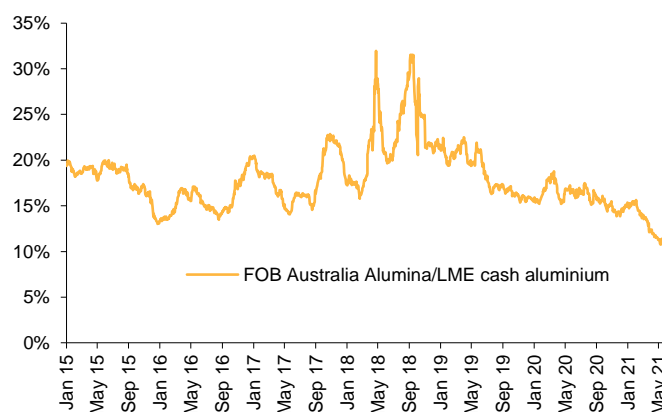
The price ratio between alumina (FOB Australia) and aluminium has dropped to below 12% this year, the lowest since 2006 Q4. While aluminium prices have reached their highest level since 2012, alumina prices have merely returned to their pre-pandemic levels and are lacking sufficient drivers for better performance on either the supply or demand side. China had been the last resort for supply surplus in the seaborne market but high freight rates in the first few months of this year impacted China's demand for seaborne alumina, with other buyers able to achieve lower prices.

**Fig 49 Alumina price only returned to pre-pandemic level**



Source: Platts, Macquarie Strategy, June 2021

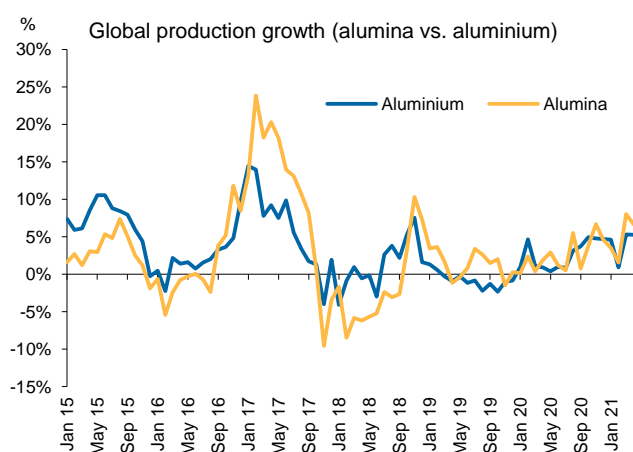
**Fig 50 Price ratio between Alu and AL sliding lower**



Source: Platts, LME, Macquarie Strategy, June 2021

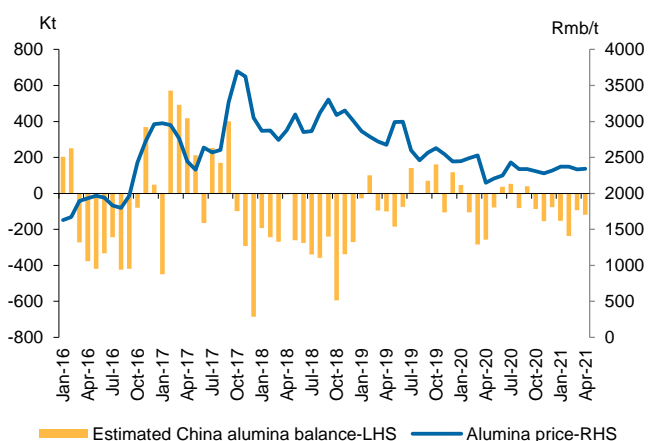
Global alumina production has recovered from COVID-19 since H2 last year, and over recent months the supply growth rate has outpaced demand growth (aluminium production). However, China's domestic market is estimated to have been in deficit for the first few months this year, thus domestic alumina outperformed seaborne prices, opening the import arbitrage over recent months.

**Fig 51 Alumina supply growth has outpaced aluminium**



Source: IAI, Macquarie Strategy, June 2021

**Fig 52 China's market has been in deficit this year**



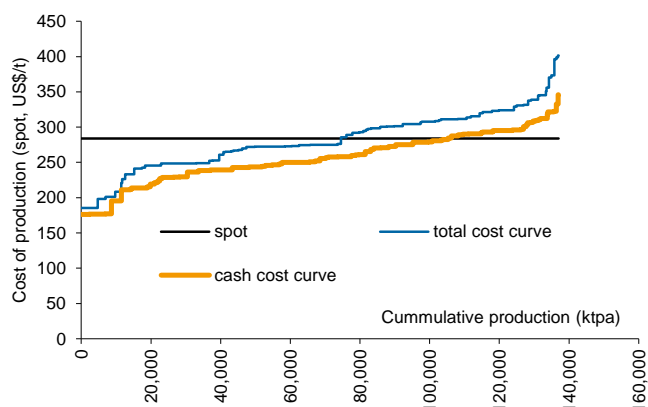
Source: IAI, TDM, Macquarie Strategy, June 2021

While alumina prices have lagged the downstream industry chain, 20% of global refineries are estimated to be loss-making at current prices. This is primarily due to a lack of capacity constraint in refining, coupled with ample supply of bauxite.

Unlike aluminium, where capacity growth has slowed and should decline further as China caps its smelting capacity, global alumina capacity continues to rise (mainly Asia). In China, we see 1.6~2mtpa of new capacity to be added each year from 2021 to 2023, and many big projects are planned after 2023 (potentially more if two big projects in Guizhou and Guangxi that are currently

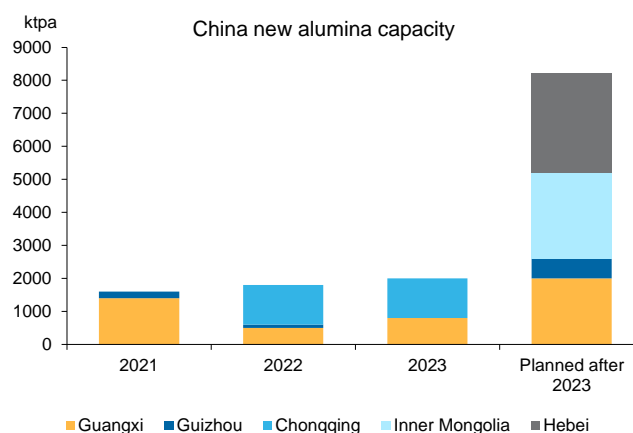
suspended go ahead). For this year, supply growth is not just from new projects but also from restarted capacity that was temporarily idled due to environmental issues (like those in Shanxi).

**Fig 53 20% of global refineries are likely losing money**



Source: Wood Mackenzie, Macquarie Strategy, June 2021

**Fig 54 Many new projects are planned through 2023+**



Source: SMM, ALD, Macquarie Strategy, June 2021

We forecast a continued surplus in the global alumina market over the next few years but expect a mild improvement in the alumina/aluminium price ratio towards 14% given currently depressed margins. For alumina prices to go higher, the market needs some unexpected supply disruptions or industrial policy to constrain refining. There has been a discussion on constraining alumina capacity to match aluminium capacity in China, but the difficulty is that China remains a net importer of alumina, so there is still some room for domestic capacity to grow.

Alumina does not emit as much carbon as aluminium, but it also creates pollution, so environmental policy presents a potential risk for supply, as seen during 2019 in Shanxi province due to the red mud issue. Ore export restrictions from major mine supply countries could be another potential risk if they were to encourage local refining/smelting investment.

Given increased ownership of bauxite resources in Guinea, China may either reduce alumina imports and lift bauxite imports or build additional refining capacity outside of China. Recent announcements that Energy China is going to build a 2mtpa capacity alumina refinery in Indonesia being case in point. Either way, it is a challenge for alumina producers, unless investment is constrained for the whole industry.

We expect relatively stable bauxite prices in the coming years. High freight rates have dampened buying appetite this year and left some high-cost miners struggling with thin margins, but this is expected to improve as freight rates ease. China's domestic bauxite supply continues to face quality depletion issues and environmental pressures, and an increasing number of inland refineries are switching to be able to process imported ore.

**Fig 55 Global ALUMINA market balance**

| millions of tonnes              | 2016         | 2017         | 2018         | 2019         | 2020F        | 2021F        | 2022F        | 2023F        | 2024F        | 2025F        |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>World Consumption</b>        | <b>115.8</b> | <b>123.7</b> | <b>125.5</b> | <b>123.9</b> | <b>126.3</b> | <b>133.0</b> | <b>137.3</b> | <b>139.1</b> | <b>140.7</b> | <b>142.4</b> |
| % Change Y-o-Y                  | 3.6%         | 6.9%         | 1.4%         | -1.3%        | 2.0%         | 5.3%         | 3.2%         | 1.3%         | 1.2%         | 1.2%         |
| of which: China                 | 62.7         | 70.0         | 70.8         | 68.8         | 70.9         | 75.5         | 78.0         | 79.2         | 80.2         | 80.5         |
| Ex-China                        | 53.1         | 53.7         | 54.6         | 55.1         | 55.4         | 57.5         | 59.2         | 59.9         | 60.5         | 62.0         |
| <b>World Production</b>         | <b>115.5</b> | <b>123.5</b> | <b>123.1</b> | <b>124.9</b> | <b>126.9</b> | <b>134.3</b> | <b>138.4</b> | <b>140.5</b> | <b>142.3</b> | <b>144.0</b> |
| % Change Y-o-Y                  | 2.7%         | 6.8%         | -0.3%        | 1.5%         | 1.6%         | 5.8%         | 3.1%         | 1.5%         | 1.3%         | 1.2%         |
| of which: China                 | 60.6         | 67.8         | 69.2         | 68.6         | 68.1         | 73.2         | 76.5         | 77.8         | 79.4         | 81.1         |
| Ex-China                        | 54.9         | 55.7         | 53.9         | 56.3         | 58.8         | 61.1         | 61.9         | 62.7         | 62.9         | 62.9         |
| <b>Global balance</b>           | <b>-0.2</b>  | <b>-0.3</b>  | <b>-2.3</b>  | <b>1.1</b>   | <b>0.6</b>   | <b>1.2</b>   | <b>1.1</b>   | <b>1.4</b>   | <b>1.5</b>   | <b>1.6</b>   |
| <b>Price (US\$/t FOB Aust.)</b> | <b>254</b>   | <b>354</b>   | <b>474</b>   | <b>332</b>   | <b>269</b>   | <b>280</b>   | <b>283</b>   | <b>295</b>   | <b>325</b>   | <b>337</b>   |

Source: IAI, Wood Mackenzie, Macquarie Strategy, June 2021

## Zinc

### China's supply struggles

Zinc has outperformed some of its more illustrious peers in recent months, driven more by supply concerns than booming demand. The main concern revolves around power cuts in China, with power rationing in Yunnan and Guangxi provinces. Offsetting this is potential selling by China's SRB.

Global auto sales and construction activity have recovered strongly this year leading to a faster recovery in demand (up 4.6% YoY) than refined production (up only 1.8% YoY due to limited COVID-19 impact in 2020), leading to an almost halving of the calculated metal surplus to 447kt this year. Over the 2022-2025 period we see demand growth slowing to  $\pm 2\%$  a year.

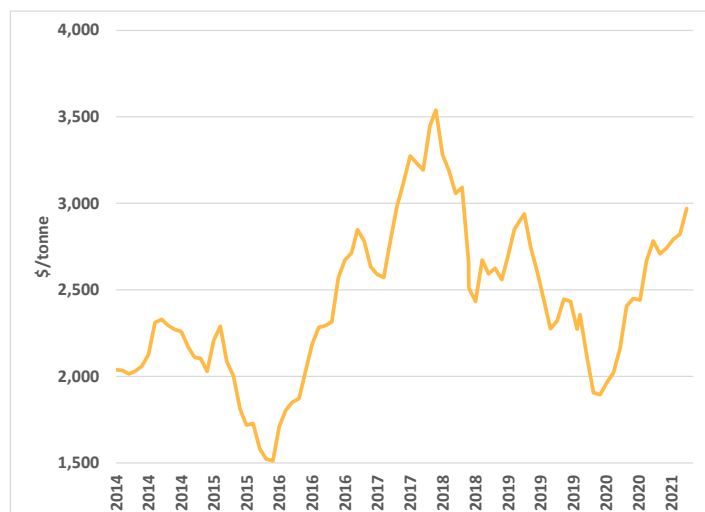
Annual treatment charges were finally settled for 2021 at \$159/t, roughly double Chinese import spot terms but sharply down on 2020's settlement of \$299.75/t (with no price participation). Chinese smelter cuts have eased the tightness in the spot concentrate market, and we could well have seen the bottom of the spot market. We see no repeat of 2020's large concentrate deficit throughout the forecast period as the market returns to a rough concentrate and metal market balance.

After disruption, we forecast essentially flat mine supply out to 2025, with some risks to output in both China and Peru. Peru mines around 1.5Mtpa of zinc in concentrate, roughly 11% of world supply and the likely President-elect has talked of imposing a 70% tax rate on mining profits.

The key to the current market, however, is Chinese demand and supply. Our numbers, in general terms, reflect a lower mine production level than forecasts by many others and a steady demand outlook, particularly as it relates to a strong recovery in autos and home appliances this year. In terms of Chinese mine capacity growth, a large proportion of planned new projects / expansions were delayed last year due to slow integration after M&A, license restrictions and, of course, COVID-19. There was only 60ktpa of capacity growth completed in 2020, versus initial expectations of 100~150ktpa. Looking forward, 2021 expected production growth from new projects and expansions is ~150ktpa, with another 150~200ktpa scheduled for 2022. That said, ore grade depletion and safety/environmental protection policies are likely to continue constraining concentrate production at the margin.

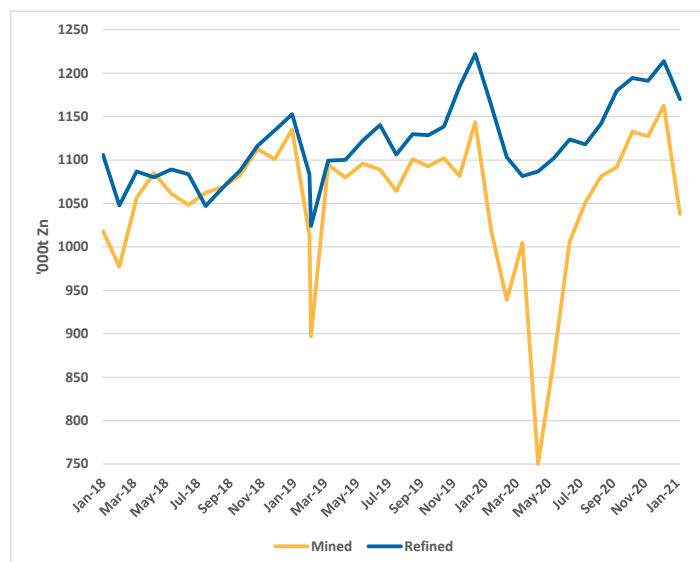
Bringing all these factors together, we still foresee small initial surpluses in both concentrate and metal and a weakening in average prices from recent levels but for the market to essentially drift back towards balance, with a risk that further under-performance on the supply-side could tip the market into small deficits.

**Fig 56 Zinc prices trade around \$3,000/t (monthly averages) as market worries about China supply risk**



Source: LME, Macquarie Commodity Strategy, June 2021

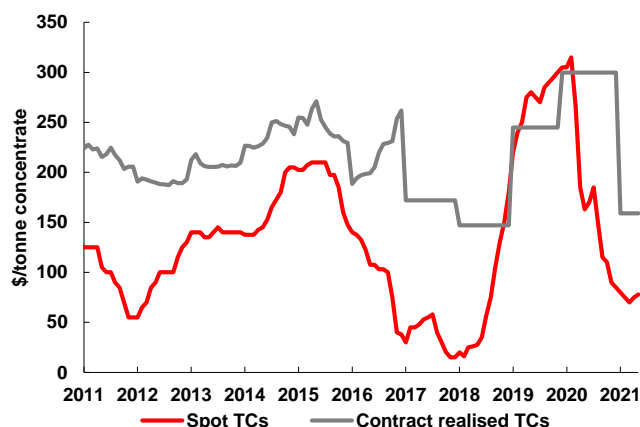
**Fig 57 Peru mine output falls leads to global mismatch between mine and smelter supply growth in 2020**



Source: ILZSG, Macquarie Commodity Strategy, June 2021

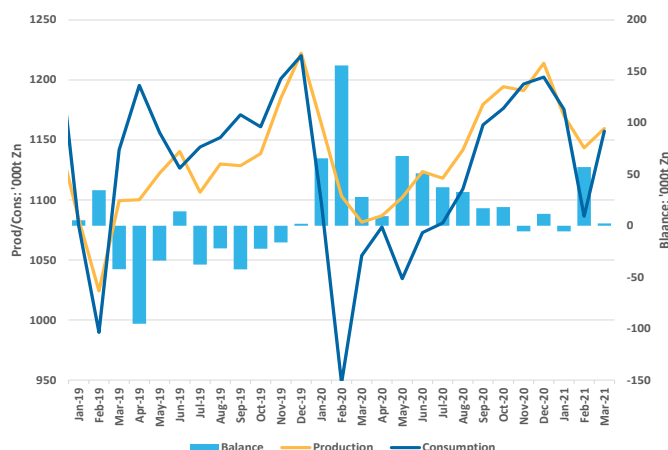


**Fig 58 Spot TCs remain weak due to ongoing concentrate tightness – annual terms finally settled**



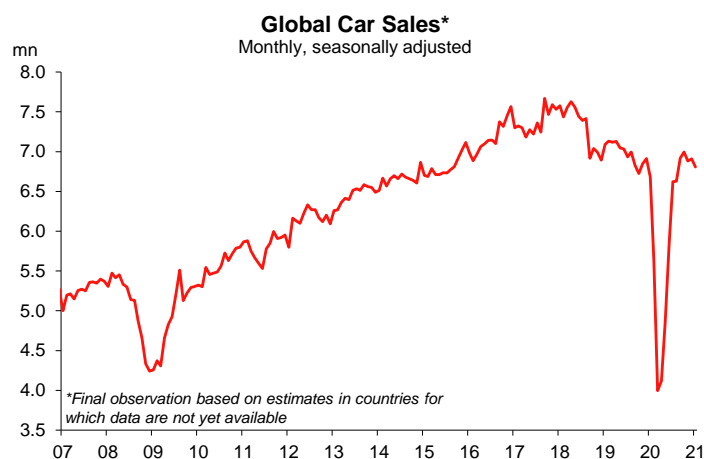
Source: WoodMac, Macquarie Commodity Strategy, June 2021

**Fig 59 ILZSG monthly global metal supply/demand – predominantly in surplus since Jan 2020**



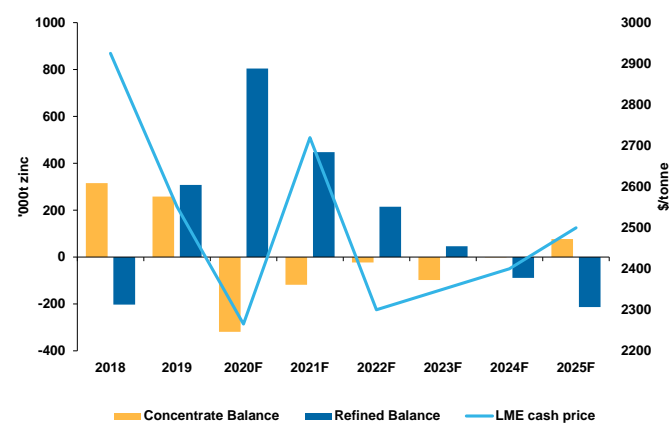
Source: ILZSG, Macquarie Commodity Strategy, June 2021

**Fig 60 Strong recovery in global auto sales: after falling 14% YoY in 2020, could grow by 16% this year?**



Source: Macrobond, Macquarie Commodity Strategy, June 2021

**Fig 61 After recent metal surpluses market is moving to balance/small deficit out to 2025, supporting prices**



Source: ILZSG, WM, LME, Macquarie Commodity Strategy, June 2021

**Fig 62 Global zinc market balance ('000 tonnes zinc contained)**

|                              | 2019         | 2020F        | 2021F        | 2022F        | 2023F        | 2024F        | 2025F        |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>'000t zinc</b>            |              |              |              |              |              |              |              |
| Mine production              | 12,966       | 12,628       | 13,031       | 13,120       | 13,099       | 13,257       | 13,392       |
| % Change YoY                 | 0.6%         | -2.6%        | 3.2%         | 0.7%         | -0.2%        | 1.2%         | 1.0%         |
| <b>Concs Balance</b>         | <b>258</b>   | <b>-319</b>  | <b>-118</b>  | <b>-23</b>   | <b>-98</b>   | <b>-1</b>    | <b>77</b>    |
| Refined production           | 13,559       | 13,813       | 14,055       | 14,125       | 14,267       | 14,409       | 14,553       |
| % Change YoY                 | 1.8%         | 1.9%         | 1.8%         | 0.5%         | 1.0%         | 1.0%         | 1.0%         |
| Consumption                  | 13,252       | 13,009       | 13,608       | 13,910       | 14,221       | 14,498       | 14,767       |
| % Change YoY                 | -2.0%        | -1.8%        | 4.6%         | 2.2%         | 2.2%         | 1.9%         | 1.9%         |
| <b>Refined Balance</b>       | <b>308</b>   | <b>805</b>   | <b>447</b>   | <b>215</b>   | <b>46</b>    | <b>-88</b>   | <b>-213</b>  |
| Estimated total stocks       | 1439         | 2244         | 2691         | 2906         | 2952         | 2864         | 2650         |
| Weeks of consumption         | 5.6          | 9.0          | 10.3         | 10.9         | 10.8         | 10.3         | 9.3          |
| <b>LME Cash Price (\$/t)</b> | <b>2,552</b> | <b>2,265</b> | <b>2,720</b> | <b>2,300</b> | <b>2,350</b> | <b>2,400</b> | <b>2,500</b> |
| LME Cash Price (c/lb)        | 116          | 103          | 123          | 104          | 107          | 109          | 113          |

Source: ILZSG, LME, Wood Mackenzie, Macquarie Commodity Strategy, June 2021



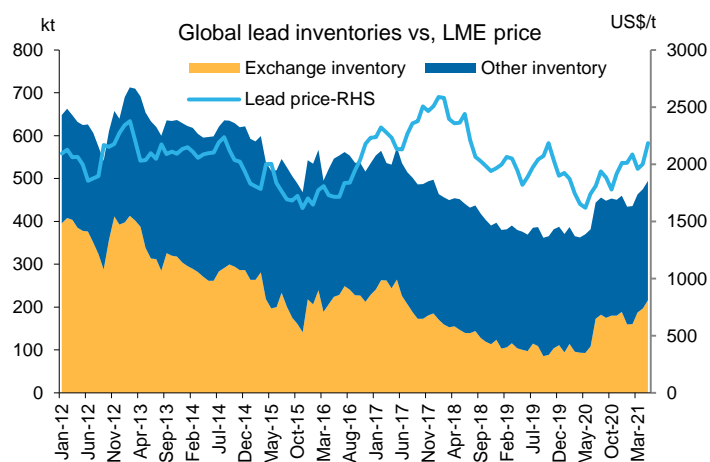
# Lead

## Secondary supply surge

Global visible lead inventory showed a clear increase over the past quarter, driven by steady builds in SHFE inventory (from smelter deliveries as spot prices maintained discounts vs. futures price). Although lead prices improved along with other base metals, they continue to lag the complex.

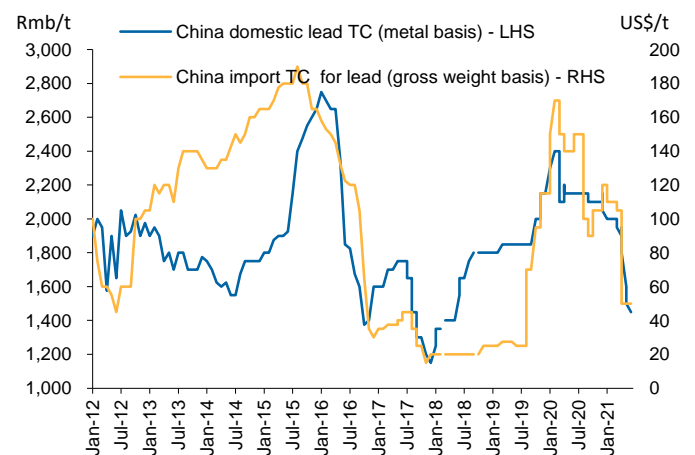
According to the ILZSG, world primary production only increased by 2.6% YoY in Q1, but secondary production jumped by 14.4% YoY, delivering total output growth of 9.7% YoY. The big rise in secondary production was driven by China, where supply soared by 44% YoY in Q1 due to the impact of COVID-19 on supply chains in 2020. The latest data from Antaika shows that China's primary production fell 5.7% YoY in May, whereas secondary production rose by 10.6% YoY, accounting for 54% of total refined supply.

**Fig 63 Lead inventory has kept rising this year**



Source: LME, SHFE, CRU, Macquarie Strategy, June 2021

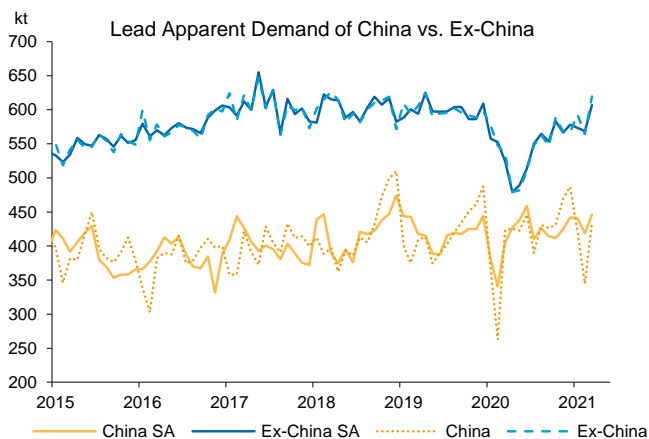
**Fig 64 Lower TC indicative of tight concentrate supply**



Source: SMM, Macquarie Strategy, June 2021

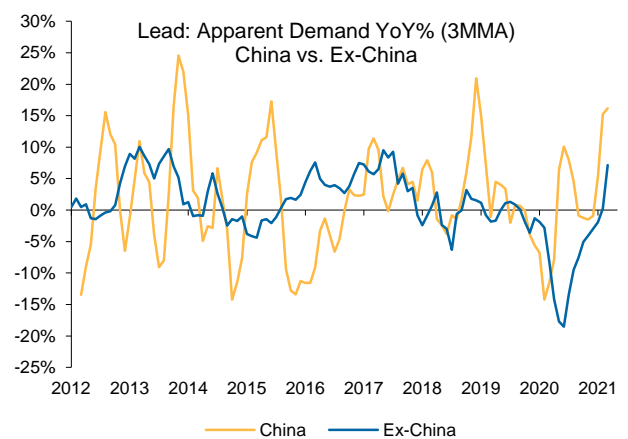
2020 was a big year for secondary refining capacity growth in China, with ~1.5Mtpa of new capacity added and contributing to rising supply this year. Environmental inspections that were started in April temporarily impacted secondary supply, but output already started to recover in May. While concentrate supply remains tight, and TCs commensurately low, recovering secondary production filled the gap left by lower primary output. Ex-China lead production improved by 5.2% YoY in Q1, of which primary production only climbed by 0.9% YoY and secondary production climbed by 6.6% (from a low base).

**Fig 65 Global lead demand has recovered to pre-pandemic level**



Source: ILZSG, Macquarie Strategy, June 2021

**Fig 66 China demand growth may have plateaued while ex-China demand growth continued expanding**

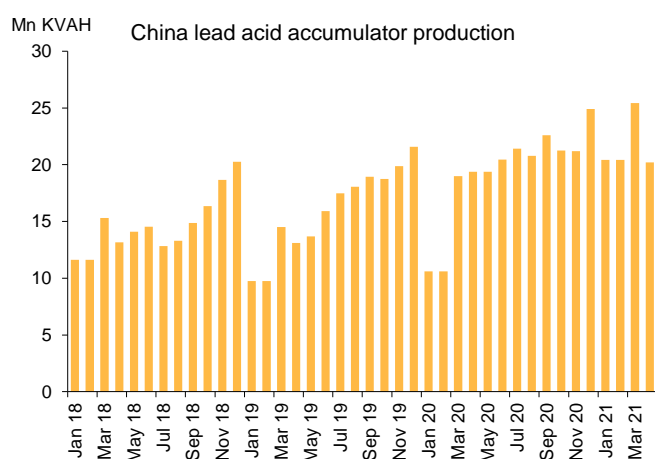


Source: ILZSG, Macquarie Strategy, June 2021

Apparent consumption data shows that China's demand quickly recovered to pre-pandemic levels in 2Q20, while the improvement in ex-China demand has been slower but has also now normalised. By removing inventory change, China's lead demand was running at over 15% YoY in Q1 and ex-China demand was growing at around 7% YoY. But data in recent months suggests China's demand growth has slowed while ex-China demand growth has accelerated, likely explaining the outperformance of LME prices vs. SHFE since April.

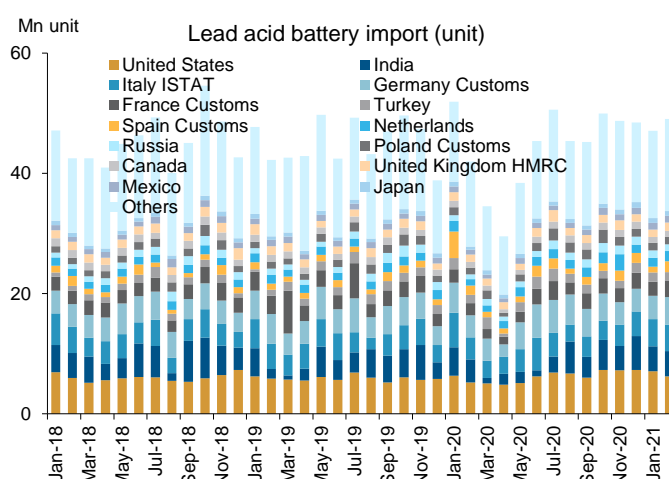
Given 85% of global lead usage is in lead-acid batteries (LAB), it is the key industry to track from a demand perspective. China's LAB production is holding at last year's level but is yet to rise further amid the traditional weak season in Q2, while global shipment data suggests LAB imports into major countries are relatively high, in line with the change in lead apparent demand.

Fig 67 China LAB production is holding at 2020 level



Source: NBS, Macquarie Strategy, June 2021

Fig 68 Global LAB shipments are relatively high



Source: TDM, Macquarie Strategy, June 2021

In the short-term, ex-China demand may continue benefiting from post-pandemic recovery. Also, secondary producers in China are starting to face margin loss as lead prices eased but scrap battery prices remain firm, creating the potential for slower production growth and Chinese inventory builds at the same time as demand should improve seasonally through summer.

In the long run, however, LAB demand remains challenged by substitution, and continued secondary supply growth limits the potential for market tightness, despite limited mine supply growth.

Fig 69 Global lead market balance

| '000t lead                   | 2017         | 2018         | 2019         | 2020         | 2021F        | 2022F        | 2023F        | 2024F        | 2025F        |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Mine production              | 4,813        | 4,912        | 5,051        | 4,845        | 4,973        | 5,029        | 5,093        | 5,109        | 5,099        |
| % Change YoY                 | -3.1%        | 2.1%         | 2.8%         | -4.1%        | 2.6%         | 1.1%         | 1.3%         | 0.3%         | -0.2%        |
| Refined production           | 12,474       | 12,757       | 13,268       | 12,893       | 13,449       | 13,722       | 14,042       | 14,332       | 14,587       |
| % Change YoY                 | 6.7%         | 2.3%         | 4.0%         | -2.8%        | 4.3%         | 2.0%         | 2.3%         | 2.1%         | 1.8%         |
| Consumption                  | 12,707       | 13,002       | 13,185       | 12,499       | 13,092       | 13,535       | 13,909       | 14,238       | 14,518       |
| % Change YoY                 | 4.1%         | 2.3%         | 1.4%         | -5.2%        | 4.8%         | 3.4%         | 2.8%         | 2.4%         | 2.0%         |
| <b>Refined balance</b>       | <b>-233</b>  | <b>-245</b>  | <b>83</b>    | <b>394</b>   | <b>357</b>   | <b>187</b>   | <b>132</b>   | <b>94</b>    | <b>69</b>    |
| Estimated total stocks       | 497          | 252          | 335          | 729          | 1,086        | 1,273        | 1,406        | 1,500        | 1,569        |
| Weeks of consumption         | 2.0          | 1.0          | 1.3          | 3.0          | 4.3          | 4.9          | 5.3          | 5.5          | 5.6          |
| <b>LME Cash Price (\$/t)</b> | <b>2,316</b> | <b>2,245</b> | <b>1,999</b> | <b>1,824</b> | <b>1,988</b> | <b>1,825</b> | <b>1,850</b> | <b>1,900</b> | <b>1,950</b> |
| LME Cash Price (£/lb)        | 105.1        | 101.8        | 90.7         | 82.8         | 90.2         | 82.8         | 83.9         | 86.2         | 88.5         |

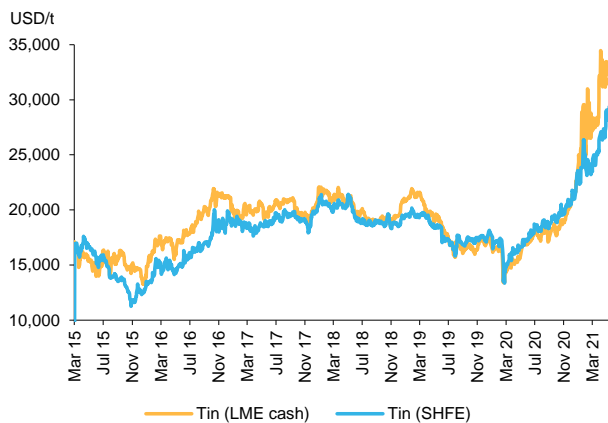
Source: ILZSG, LME, Wood Mackenzie, Macquarie Commodity Strategy, June 2021

## Tin

### Calling for a supply response, but from where...?

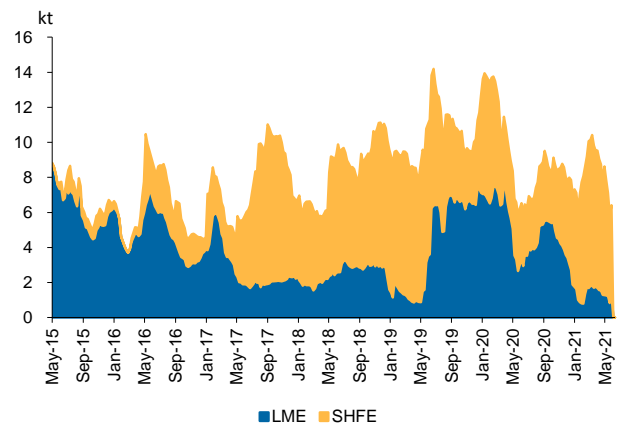
Tin prices have been lifting month by month since April 2020, benefitting from rapid recovery in global demand and supply disruptions in Indonesia. Adding to the cyclical backdrop, we also outlined the promising structural outlook in our [March update](#). In May, the monthly average price jumped another 15%, which we largely attribute to supply disruptions and significant visible destocking, with LME stocks dropping to 825t in the week to 28<sup>th</sup> May. Since then, however, there has been a marginal inventory build and, thanks to increased Chinese exports and recovering Indonesian shipments, the market may have passed its tightest point, at least in the short-term.

**Fig 70 LME prices rally further in 2Q21**



Source: LME, SHFE, Macquarie Commodity Strategy, Jun 2021

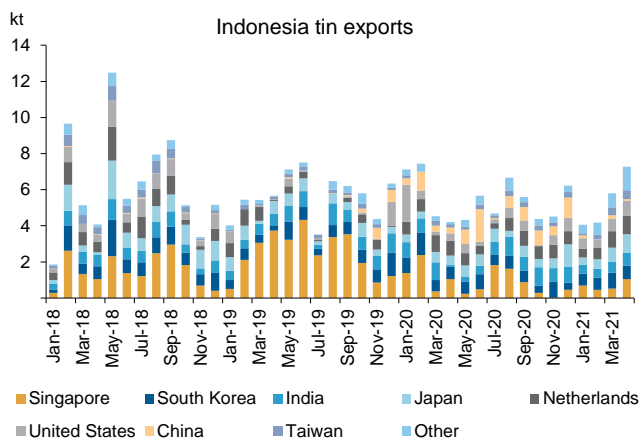
**Fig 71 Destocking of both LME and SHFE inventory**



Source: LME, SHFE, Macquarie Strategy, Jun 2021

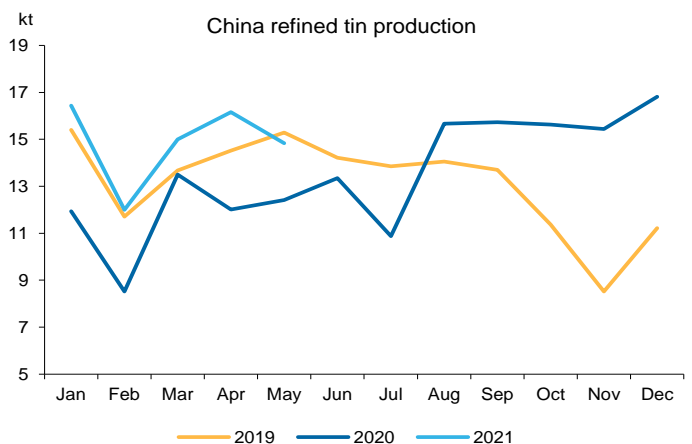
Indonesian production collapsed in 2020, with the top producer PT Timah cutting full year production to just 45.7kt (-35% YoY). Nevertheless, production from private miners in Indonesia remains uncertain. From trade data, we can see a mild improvement since 2H20, and exports in April 2021 jumped 25% MoM to 7.27kt, the highest level since March 2020 and almost flat with the monthly figures for Jan & Feb 2020. This creates the possibility that extreme tightness could ease in 2H21, if this trend continues. On that basis, and assuming that Indonesian inventories are low following destocking last year, we project 6.5% YoY growth for Indonesia's full year metal output.

**Fig 72 Indonesia tin exports improved in March and April**



Source: TDM, Macquarie Commodity Strategy, Jun 2021

**Fig 73 China's production disrupted in May**



Source: Antaike, Baiinfo, Macquarie Strategy, Jun 2021

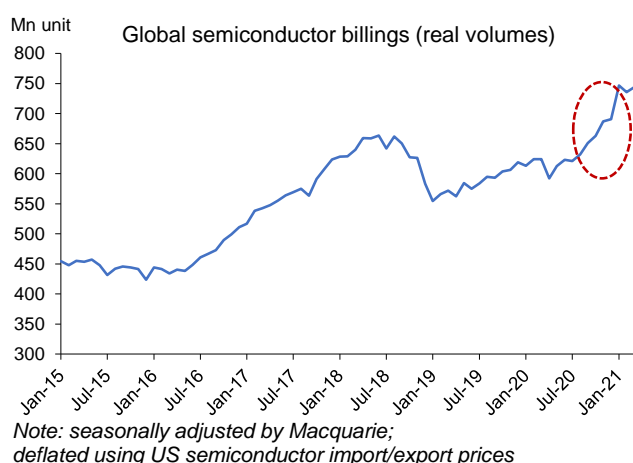
China has become the net exporter again since Feb'21, shipping 1.2kt in April and the widening "arb" means we expect more will follow. There may be some delay, however, as China's May production was disrupted by power supply restrictions in Yunnan province, the biggest production area in Southwest China and accounting for ~45% of nationwide output.

According to Antaika, China's refined production fell 8% MoM, with the Southwest area's output down 23% MoM. Ore tightness has been a persistent bottleneck for Chinese smelters in the past but does not appear to be a problem at present, with year-to-April imports increasing 27% YoY (+2% YoY vs. 2019). By source, the dependence on Myanmar has been declining gradually. It remains dominant – 85% of the year-to-April imports are from Myanmar – but this is down from >90% in recent years, with incrementally higher volumes shipped from the DRC and Bolivia.

On the demand side, we have made few adjustments but do allow for more demand destruction in traditional consumption sectors on account of such elevated prices; while we remain positive on demand from soldering applications in semiconductors and PV installations. From tracking global semiconductor billing volumes, we can see a rapid increase in 2H20, accelerating from the upward trend before Covid-19. This pace is unlikely to sustain as consumer electronics sales growth slows but structural trends remain positive and we assume limited scope for further falls in intensity of usage from component miniaturisation.

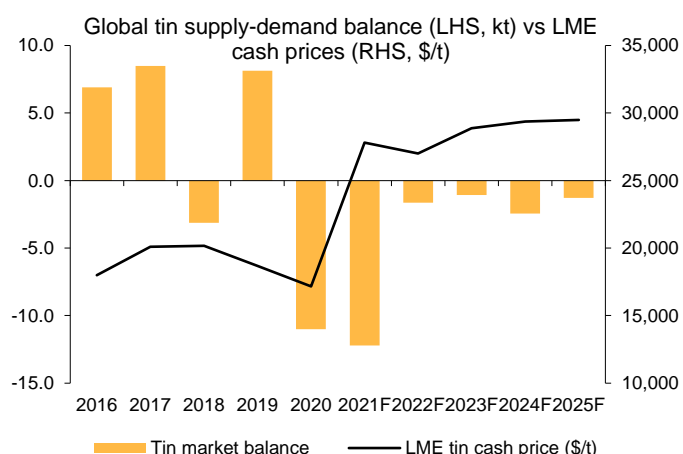
Compared with our previous March forecast, we have downgraded 2021 supply growth to 5.3% YoY, with global output still 5% below that in 2019. This is largely driven by a weak 1H21 but supply is expected to improve sequentially in 2H21 and sustain through 2022 (+4.9% YoY). This should help prices to ease in 2022 but steady structural growth means current demand projections imply the erosion of almost all estimated inventory over the coming years. Clearly, we do not expect this forecast to realise. What it underlines, however, is the need for further demand destruction and increased supply growth. Beyond a continued Indonesian recovery, the key question is where is it going to come from?

**Fig 74 Global semiconductor billings**



Source: WSTS, Macquarie Commodity Strategy, Jun 2021

**Fig 75 Years of deficit ahead...**



Source: ITA, company reports, Macquarie Commodity Strategy, Jun 2021

**Fig 76 Global tin market balance**

| '000t tin contained              | 2016          | 2017          | 2018          | 2019          | 2020          | 2021F         | 2022F         | 2023F         | 2024F         | 2025F         |
|----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Tin mine production              | 304.9         | 323.6         | 313.0         | 303.3         | 292.4         | 295.7         | 304.0         | 305.9         | 308.8         | 315.1         |
| YoY change                       |               | -3%           | 6%            | -3%           | -3%           | -4%           | 1%            | 3%            | 1%            | 2%            |
| Tin metal production             | 352.1         | 364.6         | 366.3         | 366.2         | 329.9         | 347.3         | 364.3         | 366.6         | 370.7         | 379.5         |
| YoY change                       |               | 5%            | 4%            | 0%            | 0%            | -10%          | 5%            | 5%            | 1%            | 2%            |
| Tin consumption                  | 345.2         | 356.1         | 369.5         | 358.1         | 340.9         | 359.5         | 366.9         | 369.7         | 374.1         | 380.8         |
| YoY change                       |               | 1%            | 3%            | 4%            | -3%           | -5%           | 5%            | 2%            | 1%            | 2%            |
| <b>Tin market balance</b>        | <b>6.9</b>    | <b>8.5</b>    | <b>-3.1</b>   | <b>8.1</b>    | <b>-11.0</b>  | <b>-12.3</b>  | <b>-2.6</b>   | <b>-3.1</b>   | <b>-3.4</b>   | <b>-1.3</b>   |
| US DLA strategic stockpile       |               |               |               |               |               | -0.0          | -1.0          | -2.0          | -1.0          |               |
| <b>Adjusted balance</b>          | <b>6.9</b>    | <b>8.5</b>    | <b>-3.1</b>   | <b>8.1</b>    | <b>-11.0</b>  | <b>-12.2</b>  | <b>-1.6</b>   | <b>-1.1</b>   | <b>-2.4</b>   | <b>-1.3</b>   |
| <b>LME tin cash price (\$/t)</b> | <b>17,991</b> | <b>20,102</b> | <b>20,164</b> | <b>18,670</b> | <b>17,152</b> | <b>27,807</b> | <b>27,000</b> | <b>28,875</b> | <b>29,375</b> | <b>29,500</b> |

Source: ITA, WBMS, LME, Macquarie Commodity Strategy, Jun 2021

## Nickel

### Booming demand buoys prices in 2021, but Indonesian supply surge still coming

LME nickel prices have bounced after the March sell-off which followed the news that Tsingshan plans to start converting nickel pig iron to nickel matte, which could then be a feedstock to make battery-grade nickel sulphate. We fear the rally could be short-lived, however, due to reemerging over-supply by the end of 2021, something that is expected last for several years.

The reason for the recovery in prices is booming nickel demand from both the stainless steel market (70% of demand, with growth of 28% YoY in 1H21) and a surge in the EV battery market. Nickel has by far the best growth prospects of any base metal. In 2021, we forecast a 14.5% recovery in global nickel use followed by trend growth of 5-7% a year out to 2025.

In addition to booming demand, short term nickel prices have been supported by mounting production losses from non-Indonesian supply with an accident at Nornickel, a closure in Myanmar and a strike at Vale's Sudbury operations. In addition, nickel product supply fell 45% YoY in New Caledonia in January-April.

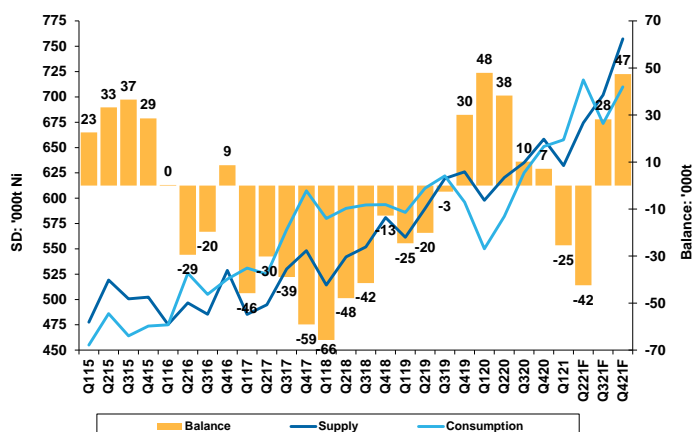
Offsetting this is the relentless rise in Indonesian nickel pig iron production and we continue to raise our forecasts for 2021 and beyond. The past quarter has also seen the announcement of a giant new HPAL project (120ktpa Ni, 15ktpa Co) by PT Huayou Nickel Cobalt which is scheduled to start in 2023. The first HPAL projects for the battery market started in April (36ktpa PT Halmahera Persada Lygend) and two other HPAL projects at Morowali (PT QMB New Energy, 50ktpa) and Morowali Huayue Nickel and Cobalt (2x30ktpa) are likely to start in 2022.

In recent years, a faster rise in NPI production than overall stainless steel production was accommodated by a fall in use of class 1 nickel metal in stainless steel melts. Use of class 1 is now approaching an irreducible minimum in stainless steel melts – hence for the first time it is possible to “over-supply” the NPI market and we think this is the reason why NPI prices are likely to trade at an ongoing large discount to LME and nickel sulphate, making conversion of NPI into nickel sulphate increasingly attractive.

The huge additions to both NPI and HPAL supply planned in Indonesia in the coming years should adequately supply most of the growth requirements for stainless steel and batteries although issues of ESG (especially CO2 intensity of NPI) and over-reliance on China/Indonesia remain major talking points in the market.

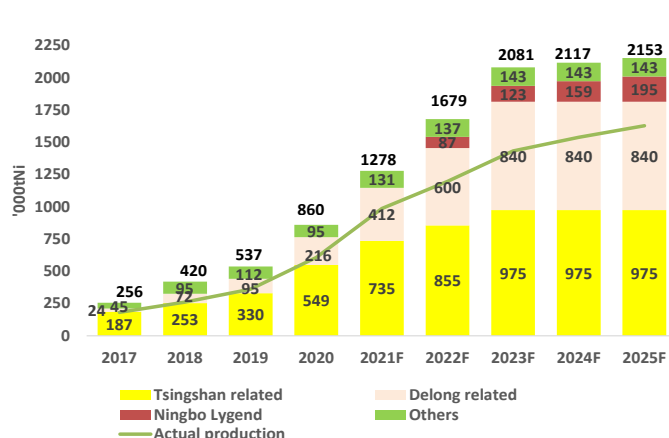
Last year, the surplus in nickel units was mostly in class 1 metal due to the replacement of class 1 by NPI/FeNi/Scrap and also the collapse in demand in traditional class 1 using sectors (plating and nickel alloys in particular). The booming stainless and battery markets have, however, increased class 1 demand this year leading to steady LME stock draws and rising premiums.

**Fig 77 Global nickel market swings into 1H 21 deficit on surging demand and slower supply growth**

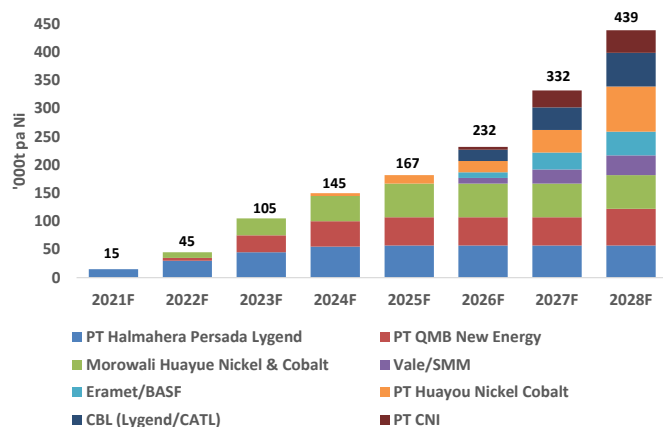


Source: SMM, LME, FAN, Macquarie Commodity Strategy, June 2021

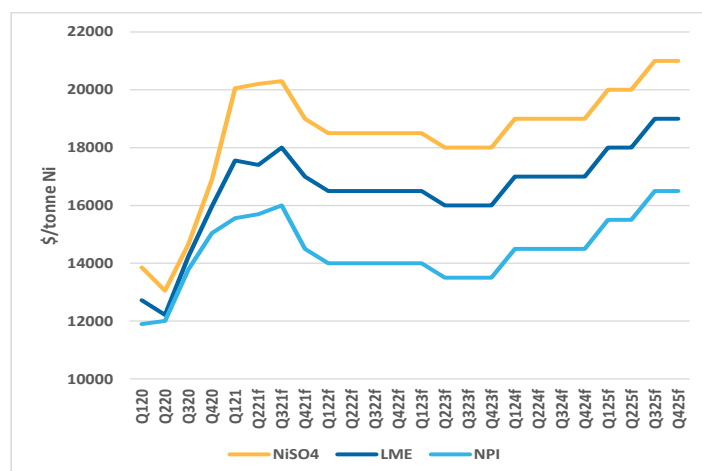
**Fig 78 The relentless rise of Indonesian nickel pig iron (NPI) production – 200-300ktpa could switch to matte**



Source: SMM, FAN, Macquarie Commodity Strategy, June 2021

**Fig 79 Potential Indonesian high-pressure acid leach (HPAL) capacity set to grow rapidly after 20205**

Source: Company reports, Macquarie Commodity Strategy, June 2021

**Fig 80 Nickel price forecasts by quarter to 2025: lower prices until Indonesian supply is absorbed**

Source: LME, SMM, Macquarie Commodity Strategy, June 2021

Nickel use in batteries is now recovering strongly after weakness in EV sales until mid-2020. Specifically, it rose 10% YoY to near 200kt last year and this year growth could be 40-50%, with projections then for  $\pm 600$ ktpa by 2025 and  $\pm 1.3$ Mtpa by 2030. Despite short term challenges from lithium iron phosphate batteries in China (containing no nickel), the outlook in the rest of the world remains strong, with the trend to higher-nickel chemistries remaining intact.

We still foresee surpluses through to 2025 but now see some discipline from Chinese investors in bringing on new capacity since there will be excess supply of NPI/FeNi over the next few years. Indonesian costs have risen by \$1,000/t due to higher ore costs (LME-linked) and higher electricity costs (due to rising coal prices), but costs remain below \$9,000/t on average (though NPI discounts remain in the \$1,500-2,000/t range). We expect these to rise as more supply hits the market in 2022 and 2023.

Incentive prices for Indonesian HPAL are probably closer to \$14,000-15,000/t, although this remains unproven, awaiting the first plants to be fully commissioned. While risks to nickel's near-term price are to the downside, a strong post-virus global economic recovery story, combined with large-scale Chinese NPI closures in 2021 could see current prices hold for longer than medium-term fundamentals justify.

**Fig 81 Global nickel supply/demand balance**

| '000t Ni                                | 2019         | 2020         | 2021f        | 2022f        | 2023f        | 2024f        | 2025f        |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total SS production                     | 53356        | 52320        | 60458        | 62707        | 65248        | 67713        | 70133        |
| % Change                                | 2.2%         | -1.9%        | 15.6%        | 3.7%         | 4.1%         | 3.8%         | 3.6%         |
| Primary nickel consumption              | 2414         | 2408         | 2758         | 2887         | 3062         | 3270         | 3498         |
| % Change                                | 2.4%         | -0.2%        | 14.5%        | 4.7%         | 6.0%         | 6.8%         | 7.0%         |
| Nickel Supply                           | 2397         | 2512         | 2765         | 2978         | 3255         | 3447         | 3569         |
| % Change                                | 9.5%         | 4.8%         | 10.1%        | 7.7%         | 9.3%         | 5.9%         | 3.5%         |
| (of which NPI)                          | (945)        | (1,110)      | (1,388)      | (1,521)      | (1,683)      | (1,763)      | (1,828)      |
| <b>World Market Balance</b>             | <b>-17</b>   | <b>104</b>   | <b>7</b>     | <b>91</b>    | <b>193</b>   | <b>178</b>   | <b>71</b>    |
| Estimated total stocks                  | 553          | 656          | 664          | 755          | 948          | 1126         | 1197         |
| Weeks' world demand                     | 11.9         | 14.2         | 12.5         | 13.6         | 16.1         | 17.9         | 17.8         |
| <b>LME Cash Price (\$/t)</b>            | <b>13908</b> | <b>13782</b> | <b>17488</b> | <b>16500</b> | <b>16125</b> | <b>17000</b> | <b>18500</b> |
| <b>Chinese NPI price (\$/t)</b>         | <b>13162</b> | <b>13182</b> | <b>15439</b> | <b>14000</b> | <b>13625</b> | <b>14500</b> | <b>16000</b> |
| <b>Chinese Ni sulphate price (\$/t)</b> | <b>15268</b> | <b>14609</b> | <b>19888</b> | <b>18500</b> | <b>18125</b> | <b>19000</b> | <b>20500</b> |

Source: INSG, LME, SMM, Macquarie Strategy, June 2021



## Stainless Steel

### Strong recovery nearing its peak

Global stainless steel production has recovered strongly from the 2020 Covid-linked cuts in world demand and production and is on course to grow by over 15% YoY in 2021. Chinese and Indonesian production growth has been particularly firm, especially in 300-series, but this year non-Chinese/Indonesian production is also growing strongly. After falling by 12% in 2020 and 8% in 2019, non-Chinese/Indonesian production is on course to grow by 15% this year with mills reporting full order books to early 2022.

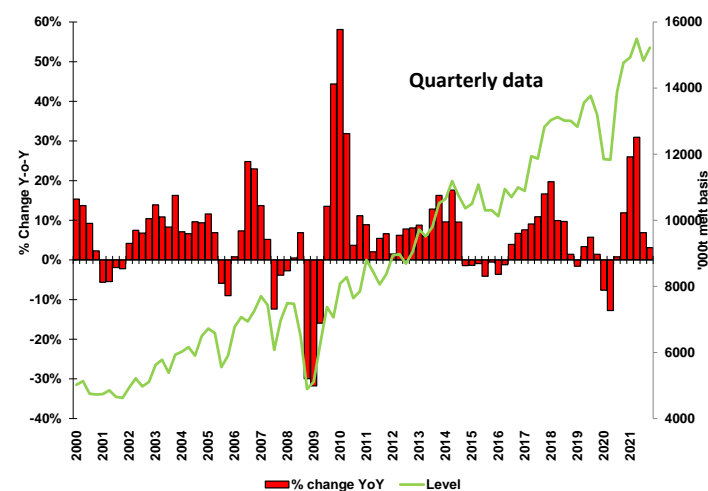
Production is still dominated by China and Indonesia, which together were 66% of global output in 2020 and 2021. Back at the start of 2008, these two countries' share of the global total was just 25%. Indonesian production rose strongly towards the end of 2020, with China the main destination for its exports, and is projected to grow by 108% YoY to 2.24mt in the first half.

**Fig 82 Global stainless steel melt production, by area**

| '000t                     | 2020<br>Q2    | 2020<br>Q3   | 2020<br>Q4   | 2021<br>Q1E  | 2021<br>Q2F  | Year<br>2020 | Year<br>2021F | Year<br>2022F | Year<br>2023F | Year<br>2024F | Year<br>2025F |
|---------------------------|---------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|
| USA                       | 450           | 500          | 568          | 634          | 600          | 2145         | 2469          | 2518          | 2569          | 2620          | 2673          |
| Japan                     | 541           | 493          | 631          | 685          | 690          | 2413         | 2825          | 2881          | 2881          | 2881          | 2887          |
| Europe                    | 1368          | 1419         | 1718         | 1874         | 1874         | 6315         | 7114          | 7158          | 7231          | 7273          | 7279          |
| Korea                     | 456           | 591          | 564          | 606          | 600          | 2199         | 2386          | 2410          | 2434          | 2458          | 2483          |
| Taiwan                    | 195           | 210          | 233          | 222          | 225          | 859          | 887           | 800           | 750           | 700           | 693           |
| India                     | 344           | 950          | 950          | 981          | 1000         | 3160         | 4011          | 4252          | 4507          | 4777          | 5064          |
| China                     | 7655          | 8756         | 8898         | 8631         | 8988         | 31491        | 34819         | 36211         | 37841         | 39354         | 40732         |
| Indonesia                 | 625           | 735          | 969          | 1063         | 1276         | 2830         | 4939          | 5433          | 5977          | 6574          | 7232          |
| <b>Total (inc others)</b> | <b>11831</b>  | <b>13875</b> | <b>14766</b> | <b>14927</b> | <b>15489</b> | <b>52320</b> | <b>60458</b>  | <b>62707</b>  | <b>65248</b>  | <b>67713</b>  | <b>70133</b>  |
| Total Ex-China/Indonesia  | 3550          | 4385         | 4899         | 5233         | 5225         | 17999        | 20700         | 21063         | 21431         | 21784         | 22170         |
| <b>% change yoy</b>       |               |              |              |              |              |              |               |               |               |               |               |
| USA                       | -31%          | -25%         | -1%          | 1%           | 33%          | -18%         | 15%           | 2.0%          | 2.0%          | 2.0%          | 2.0%          |
| Japan                     | -26%          | -31%         | -15%         | -9%          | 28%          | -19%         | 17%           | 2.0%          | 0.0%          | 0.0%          | 0.2%          |
| Europe                    | -25%          | -4%          | 10%          | 4%           | 37%          | -7%          | 13%           | 0.6%          | 1.0%          | 0.6%          | 0.1%          |
| Korea                     | -18%          | -3%          | -3%          | 3%           | 32%          | -6%          | 8%            | 1.0%          | 1.0%          | 1.0%          | 1.0%          |
| Taiwan                    | -27%          | -19%         | 6%           | 0%           | 15%          | -14%         | 3%            | -9.8%         | -6.3%         | -6.7%         | -1.0%         |
| India                     | -63%          | -5%          | 4%           | 7%           | 191%         | -17%         | 27%           | 6.0%          | 6.0%          | 6.0%          | 6.0%          |
| China                     | -2%           | 7%           | 14%          | 40%          | 17%          | 3%           | 11%           | 4.0%          | 4.5%          | 4.0%          | 3.5%          |
| Indonesia                 | 28%           | 21%          | 73%          | 112%         | 104%         | 25%          | 75%           | 10.0%         | 10.0%         | 10.0%         | 10.0%         |
| <b>Total World</b>        | <b>-12.8%</b> | <b>0.8%</b>  | <b>11.9%</b> | <b>26.0%</b> | <b>30.9%</b> | <b>-1.9%</b> | <b>15.6%</b>  | <b>3.7%</b>   | <b>4.1%</b>   | <b>3.8%</b>   | <b>3.6%</b>   |
| Total Ex-China/Indonesia  | -32%          | -11%         | 2%           | 1%           | 47%          | -12%         | 15%           | 1.8%          | 1.7%          | 1.6%          | 1.8%          |

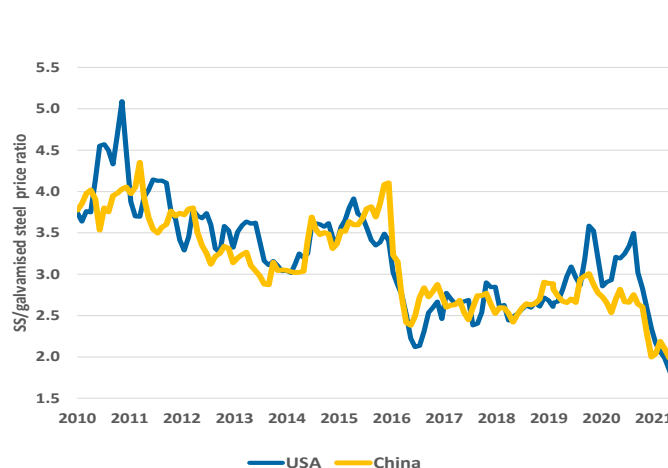
Source: WBMS, CRU, ISSF, Eurofer, METI, Macquarie Commodities Strategy, June 2021

**Fig 83 Rapid recovery in world stainless steel production after 2020 lockdown induced cuts - nothing like 2008/9**



Source: CRU, ISSF, Macquarie Commodities Strategy, June 2021

**Fig 84 Stainless is the cheapest it has been in relation to ordinary carbon steel**



Source: CRU, Macquarie Commodities Strategy, June 2021

We are projecting a 15.6% YoY rise in world output in 2021 compared with our forecast of 9.3% in March and 6.4% in December 2019, taking production 13% above 2019's level and above 60Mt for the first time. This level of recovery reflects the huge global monetary and fiscal stimulus enacted after Covid and a shift in global spending away from services to goods. Stainless end-use is mainly in consumer durables and capital spending, both of which are benefiting from the stimulus. Another factor could be the relative "cheapness" of stainless steel compared with competing materials, including ordinary steels. Stainless is often selected in capital spending projects based on its upfront costs relative to other materials. While stainless steel prices are rising strongly, carbon steel prices have risen even faster.

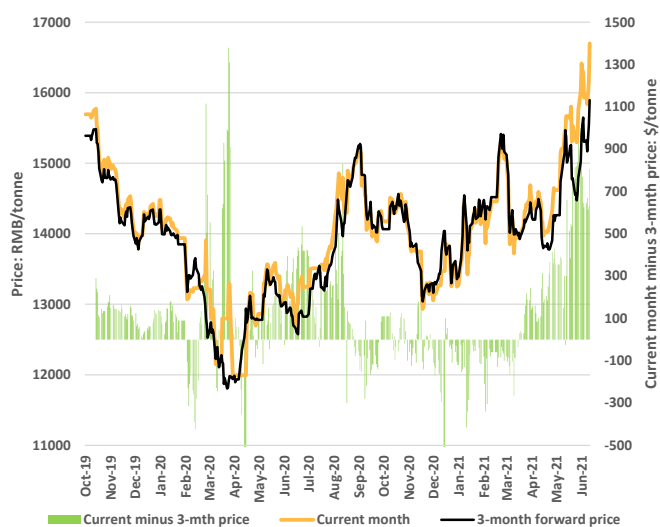
In 2020, 300-series production was much stronger than 400-series due to a weaker auto sector and the predominance of 300-series in the growth in Indonesian (100% 300-series) and Chinese output. As the auto sector recovers this year (we think sales could grow by ~15% YoY following a decline of 14% last year), 400-series production should recover.

Chinese and Indonesian stainless steel producers have achieved strong growth despite trade barriers that have been erected in all major import markets. Indonesia's share of global production is still low at around 8% this year, but this is expected to rise in the coming years. Indonesia is already a major factor in global trade, accounting for over 15% of world exports in 2020. Total Indonesian melt production last year was 2.8mt compared with installed capacity of 4.5Mtpa, implying a utilisation rate of 62%, while this year's production could exceed nameplate capacity and rise to almost 5mt. Delong is planning to expand its current 1Mtpa capacity to 2.5Mtpa. Meanwhile, in China, there are still massive plans to build capacity including a greenfield 4mtpa plant by Tsingshan in Guangzhou. In total, there are well over 10mtpa of additions planned in China over the next five years.

Much of this capacity is for 300-series grade (8% ni). The rationale for building this capacity is the ability to use cheap nickel pig iron. This nickel effectively costs  $\pm 50\%$  of LME price (after iron value is included), compared with 70-90% paid by non-Indonesian stainless producers (even in China).

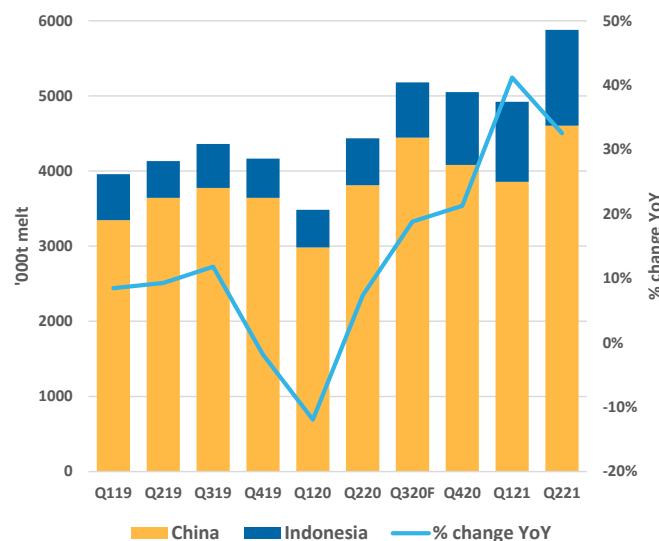
Medium-term prospects remain bullish for stainless demand growth, as it continues to gain market share against other materials, but all the supply growth is likely to come from China, India and Indonesia. We see global growth rates remaining in the 4-5% a year rate on average. Indonesia's new stainless steel production alone will not be sufficient to meet all ongoing demand requirements. Production in Europe, the USA, Japan, Taiwan and Japan will most likely be lower in 2025 than it was in 2019 and will be increasingly based on stainless scrap with lower use of primary raw materials.

**Fig 85 Soaring SHFE Chinese stainless prices amid growing tightness, reflected in backwardation emerging**



Source: SHFE, Macquarie Commodities Strategy, June 2021

**Fig 86 Combined Indonesian and Chinese 300-series stainless steel production up almost 40% YoY in first half**



Source: ZLJ Steel, Macquarie Commodities Strategy, June 2021



## Ferrochrome

### Booming demand, destocking and ferrochrome supply squeeze

Chrome is the raw material with the greatest exposure to stainless steel (>80% of demand) and is one of the commodities to have benefited from the global stainless steel recovery (though not as much as molybdenum!). The recovery is particularly evident in the European market with the Q221 (and rolled over into Q3) benchmark rising to \$1.56/lb, the highest level since 1Q17. This came off the back of four consecutive quarters of deficit totalling around 1mt from 2Q20-1Q21.

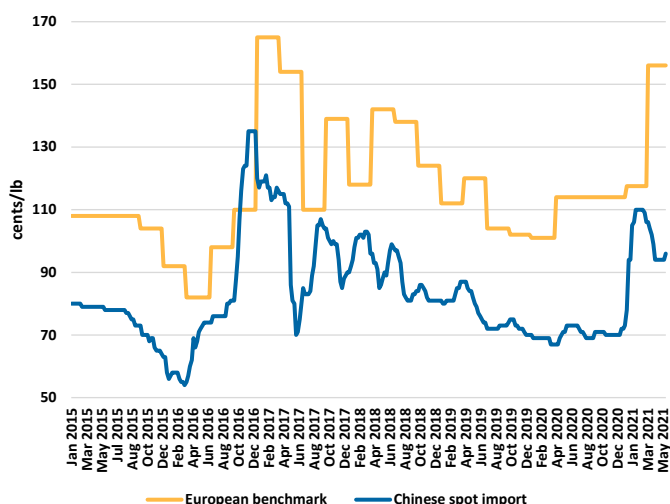
There were disruptions to South African, Indian and Chinese supply in 2020 leading to a 10.7% fall in global ferrochrome production last year. In 2021, enforced output cuts in Inner Mongolia and power cuts in five provinces have restricted Chinese output but supply has recovered strongly in South Africa. Booming stainless steel production and tight supplies are now supporting a price recovery. Chinese spot and tender prices for both ore and alloy eased in April/May. Lower ore prices lowered Chinese costs, which fed through into lower tender offers by stainless mills. However, prices are starting to rise again as the market tightens on the back of Chinese cuts.

There has been a large rundown of ferrochrome stocks in South Africa, China and Europe over the past year. In particular, an apparent fall in South African stocks of 730kt (see Fig 89) since Q1 20. The issue is what happens after the stocks are liquidated? Our supply/demand balance suggests that if production rebounds in China in 2H21, the market returns to proximate balance between supply and demand, but lower inventory cover will support rising prices of ore and alloy. There are risks to power supply availability for ferroalloys in China and South Africa, suggesting little downside to prices in the coming years with some emerging upside risks. In the medium term, due to decarbonisation policies, China may decide to switch ferrochrome production to Indonesia (as they have done with nickel pig iron) but costs are most likely higher than in China.

Weaker Chinese demand (due to FeCr production cuts), led to UG2 ore prices falling from a December 2020 peak of \$180/t cfr to just above \$150/t in Q221. However, due to power cuts, many smelters are switching to higher grade ores to maximise productivity and premiums for these ores (vs. UG2) are rising rapidly (South African 44% is now at >\$35/t premium to UG2 compared with \$10-20/t in the past). As ferrochrome production recovers, UG2 ore prices should start to rise and this will lead to higher Chinese ferrochrome costs and prices.

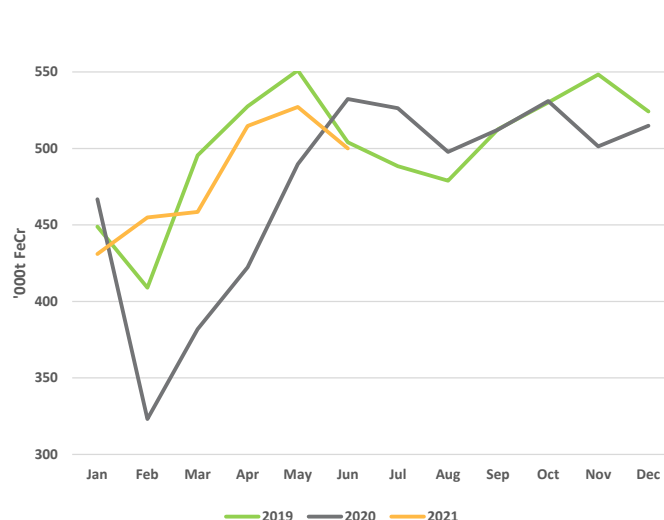
In the medium term, the outlook for chrome pricing is positive. Continued strong stainless demand growth needs to be supported by steady (increasingly higher-cost) South African ore supply growth. For ferrochrome production, risks to South African and Chinese supply due to power availability issues are high, with a likely big shift in production to Indonesia, which will have higher logistics costs than China, supporting structurally higher prices.

**Fig 87 Ferrochrome pricing:** big jump in European benchmark for Q2 2021 (highest since 2017), just as Chinese spot prices weaken

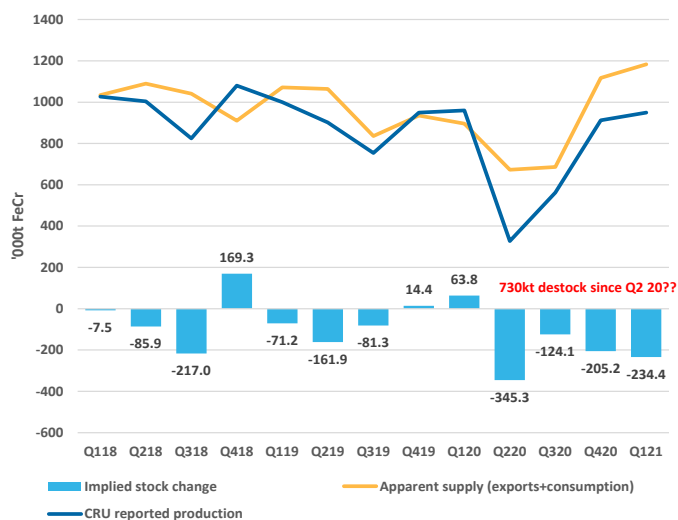


Source: Platts, Fastmarkets, Macquarie Commodity Strategy, June 2021

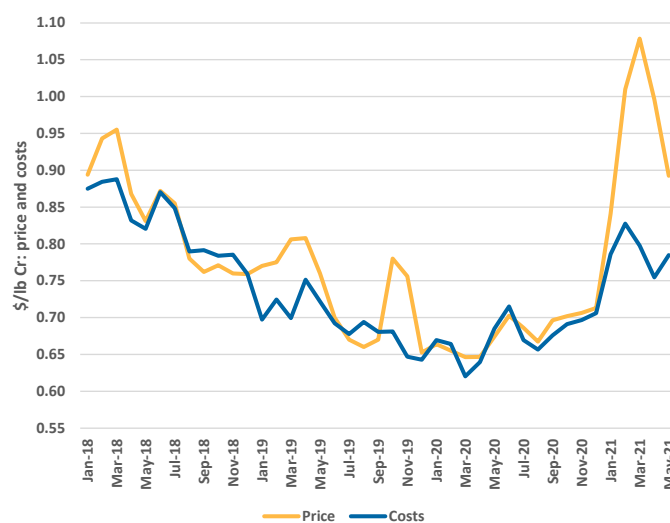
**Fig 88 Chinese ferrochrome production still up from depressed H1 2020 levels but less than 2019 as output and power cuts restrict growth**



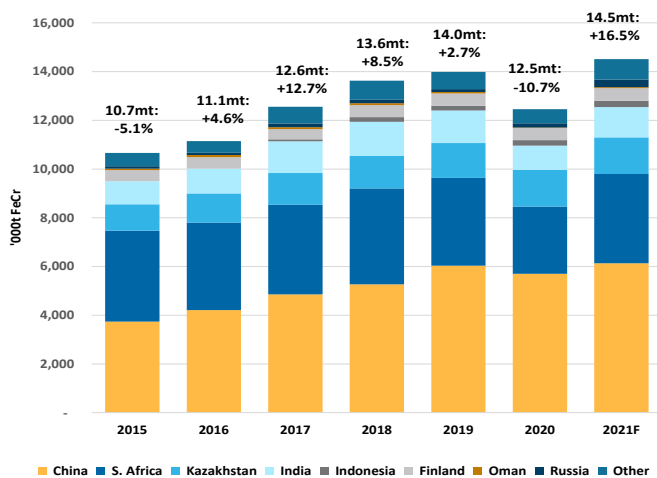
Source: Ferroalloy.net, Macquarie Commodity Strategy, June 2021

**Fig 89 South African ferrochrome exports greatly exceed production suggesting large destock since Q2 2020**

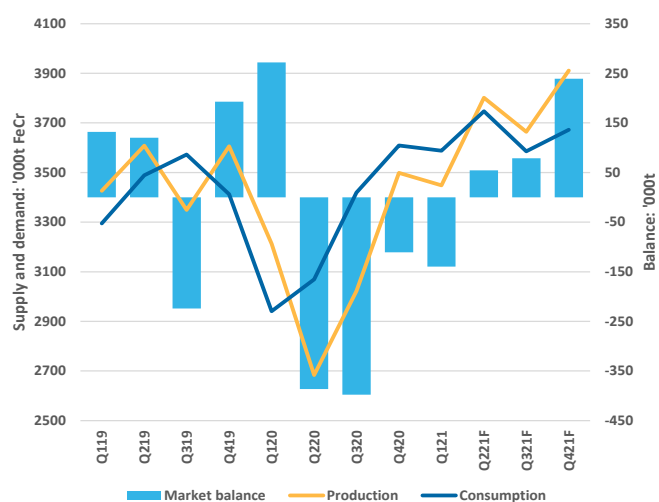
Source: CRU, TDM, Macquarie Commodity Strategy, June 2021, Note: after correcting Q1 SA exports downwards to reflect data issues.

**Fig 90 Ferrochrome prices/costs in Inner Mongolia: prices race well above costs as supply is (temporarily) constrained**

Source: Ferroalloy.net, Macquarie Commodity Strategy, June 2021

**Fig 91 Actual/estimated world ferrochrome output by region, 2015-21F: strong recovery in 2021**

Source: CRU, Industry sources, ICDA, Macquarie Commodity Strategy, June 2021

**Fig 92 Large deficits have eliminated stocks - market back to balance in H2 21, if supply recovers and demand eases**

Source: CRU, Industry reports, Macquarie Commodities Strategy, June 2021

**Fig 93 Global high-carbon ferrochrome market balance**

| Ferrochrome (kt)                | 2018   | 2019   | 2020   | 2021F  | 2022F  | 2023F  | 2024F  | 2025F  |
|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <b>Production</b>               | 13,626 | 13,990 | 12,459 | 14,360 | 15,516 | 16,050 | 16,290 | 16,836 |
| YoY % change                    | 8.5%   | 2.7%   | -10.9% | 15.3%  | 8.1%   | 3.4%   | 1.5%   | 3.4%   |
| <b>Consumption</b>              | 13,120 | 13,769 | 13,039 | 14,593 | 15,248 | 15,694 | 16,301 | 16,895 |
| YoY % change                    | 7.5%   | 4.9%   | -5.3%  | 11.9%  | 4.5%   | 2.9%   | 3.9%   | 3.6%   |
| <b>Balance</b>                  | 506    | 221    | (580)  | (233)  | 268    | 356    | (11)   | (59)   |
| <b>Stocks</b>                   | 3,160  | 3,381  | 2,801  | 2,568  | 2,836  | 3,192  | 3,181  | 3,122  |
| <b>Weeks of consumption</b>     | 12.5   | 12.8   | 11.2   | 9.2    | 9.7    | 10.6   | 10.1   | 9.6    |
| Euro contract price (list) c/lb | 130.5  | 109.5  | 110.8  | 146.4  | 151.3  | 133.8  | 142.9  | 150.0  |
| Chinese spot charge chrome c/lb | 86.8   | 74.6   | 67.2   | 98.7   | 96.3   | 93.1   | 100.0  | 105.0  |
| Chrome ore 42% UG2 SA CFR       | 191.0  | 155.5  | 137.5  | 162.5  | 171.3  | 175.0  | 185.0  | 195.0  |

Source: CRU, Fastmarkets, Merafe, Macquarie Commodity Strategy, March 2021

## Molybdenum

### Phenomenal price rise reflects big supply – demand swings

An unexpectedly strong rise in demand and a logistical squeeze (shortage of containers) has led to a major run up in prices in recent weeks, particularly in Europe, taking prices to \$20/lb, a level least seen in 2008. We expect this “squeeze” on supplies to be short-lived, but still see prices staying at higher levels than we had previously been forecasting. Medium term, the market remains balanced between supply and demand, assuming some big copper projects come on stream and, after last year’s problems, Chinese primary supply continues to grow in response to demand.

Last year saw a dramatic 11.3% YoY rise in copper by-product production while primary production fell 7.7% YoY. The rise was remarkable given that global copper mine production did not grow. Demand fell sharply in the first three quarters of last year but not by as much as its exposure to the transport and oil and gas industries would have suggested. This was due to a remarkably strong recovery in Chinese demand, followed by an equally remarkable rebound in the rest of the world. We estimate global demand fell only 5.3%, defying initial predictions of a double-digit decline.

The big driver of the molybdenum price recovery last year, however, was a massive rise in Chinese imports, mainly of concentrates, from Chile, Peru, Armenia and the USA. Total net imports reached 100m lbs Mo, up from only 1.4m lbs in 2019. In essence, the entire surplus created by the rise in non-Chinese production and the collapse in non-Chinese demand was “bought” by China, transforming the market from one of over-supply to under-supply.

The rise in Chinese imports of concentrates was accompanied by a fall in Chinese mine production (of around 6% YoY), which partially explains the rise in imports, but the pace of imports seems out of line with the underlying recovery in demand.

Looking more closely at the Chinese market, we calculate apparent demand of the main first use production in China, ferro molybdenum (which is used by the steel industry and accounts for over 80% of Chinese consumption) rose by 20% YoY last year. This is based on a reported 18.5% YoY rise in domestic ferro-molybdenum production and a sharp rise in net imports. This compares with reported rises in carbon steel and stainless steel of closer to 5% YoY, which suggests a major rise in the production of the moly-containing containing grades of alloy steels and/or stockpiling of ferro-molybdenum.

The largest increases in by-product supply in 2020 were at four operations, Codelco in Chile, Toquepala in Peru, Kennecott (Bingham Canyon) in the USA and Kajaran in Armenia. Combined production from those operations rose 48% YoY to 157m lbs in 2020. It appears to reflect copper mining moving to moly-rich parts of orebodies in the case of Codelco, Kennecott and Armenia and a mine expansion at Toquepala (which has now been completed).

It is expected that Kennecott, Codelco and Armenia will mine less molybdenum this year based on current mine plans, although Kennecott surprised on the upside in Q1 2021. This could reduce the combined production of the four operations by 26% YoY (-40m lbs) to 116m lbs. Other copper by-product mines are likely to maximise copper production at the expense of molybdenum due to the rise in copper prices and we expect lower Mo production at other operations including Sierra Gorda, Los Pelambres, Grupo Mexico and Antamina. Offsetting this is the expected start-up at two new operations in mid-year, BHP’s Spence mine in Chile (9m lbs/year Mo) and Newcrest’s Cadia Hill mine in Australia (7.5m lbs/year Mo).

In total, we project a 7.1% YoY fall in by-product production in 2021 to 360m lbs (before a disruption allowance). Offsetting this, is a projected strong rise in primary production (mainly in China) of 11.4% YoY (or 23m lbs) following the estimated fall of 7.7% YoY last year. The largest molybdenum producer in the world, Freeport, is projecting a small (5mlbs) rise in its sales this year to 85m lbs, following a 5m lbs YoY cut at its primary mines last year (mainly Climax mine).

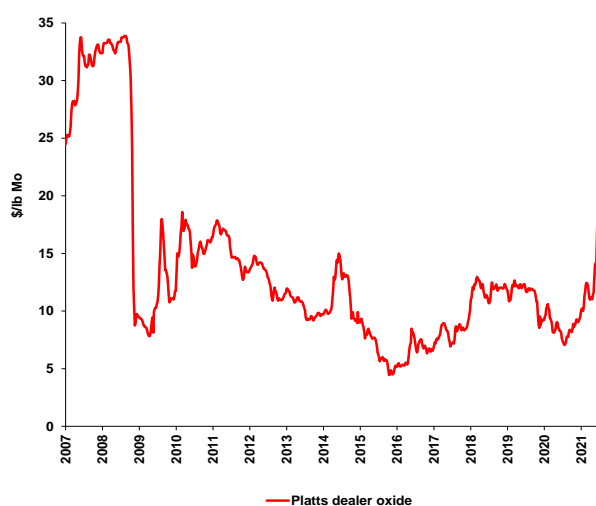
Including recycling from catalysts and after a disruption allowance, we project that global finished supply will fall by 2.2% YoY to 584m lbs, after growing 2.2% last year.

After falling an estimated 5.3% last year, we project a 10% YoY growth in consumption to 601m lbs (previous number 591m lbs). This suggests that the market will swing from an estimated surplus last year of 51m lbs to a deficit of 17m lbs.

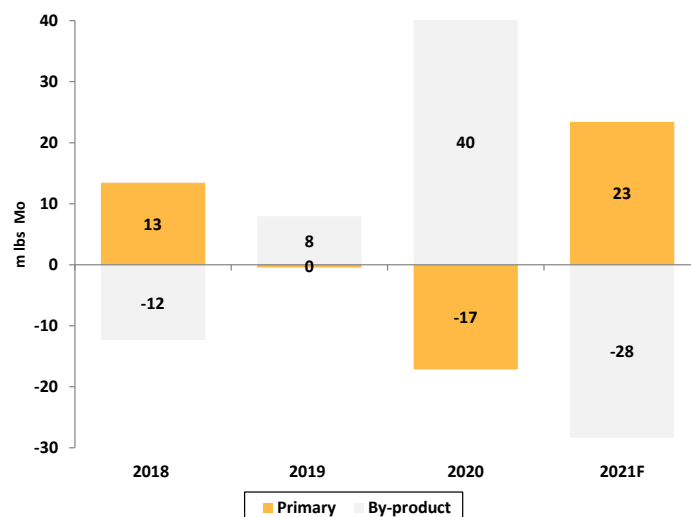
**Fig 94 Global molybdenum market balance (M lbs Mo)**

| m lbs Mo                          | 2017       | 2018       | 2019       | 2020F      | 2021F      | 2022F      | 2023F      | 2024F      | 2025F      |
|-----------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Demand</b>                     |            |            |            |            |            |            |            |            |            |
| Europe                            | 141        | 143        | 135        | 117        | 134        | 141        | 143        | 146        | 147        |
| USA                               | 57         | 60         | 57         | 46         | 50         | 53         | 54         | 56         | 57         |
| Japan                             | 52         | 56         | 54         | 45         | 48         | 51         | 53         | 54         | 55         |
| China                             | 202        | 215        | 221        | 235        | 258        | 271        | 285        | 293        | 306        |
| Other                             | 106        | 109        | 109        | 103        | 110        | 117        | 120        | 124        | 128        |
| <b>Total Demand</b>               | <b>558</b> | <b>584</b> | <b>576</b> | <b>546</b> | <b>601</b> | <b>633</b> | <b>654</b> | <b>672</b> | <b>693</b> |
| Change YoY                        | 8.9%       | 4.6%       | -1.3%      | -5.3%      | 10.1%      | 5.3%       | 3.4%       | 2.8%       | 3.1%       |
| <b>Supply</b>                     |            |            |            |            |            |            |            |            |            |
| Primary mine production           | 209        | 217        | 223        | 206        | 229        | 246        | 257        | 260        | 262        |
| By-product mine production        | 351        | 352        | 357        | 398        | 369        | 380        | 419        | 432        | 441        |
| Catalysts                         | 13         | 13         | 14         | 13         | 13         | 13         | 14         | 14         | 14         |
| Disruption allowance/yield losses | -9         | -9         | -9         | -18        | -27        | -28        | -30        | -31        | -32        |
| <b>Total Supply of products</b>   | <b>564</b> | <b>573</b> | <b>584</b> | <b>597</b> | <b>584</b> | <b>611</b> | <b>659</b> | <b>675</b> | <b>686</b> |
| Change YoY                        | 11.1%      | 1.7%       | 2.0%       | 2.2%       | -2.2%      | 4.6%       | 7.9%       | 2.5%       | 1.5%       |
| <b>Market Balance</b>             | <b>6</b>   | <b>-11</b> | <b>8</b>   | <b>51</b>  | <b>-17</b> | <b>-22</b> | <b>5</b>   | <b>3</b>   | <b>-7</b>  |
| Price \$/lb Mo oxide              | 8.21       | 11.93      | 11.40      | 8.66       | 14.50      | 13.50      | 12.00      | 12.00      | 12.00      |

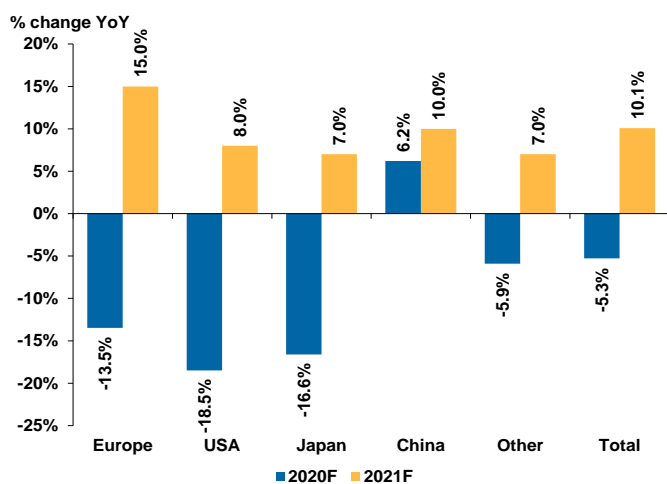
Source: Company and country data, IMO/SMR, Macquarie Commodity Strategy, June 2021

**Fig 95 Spot prices soar to highest since 2008 (\$/lb Mo in oxide)**

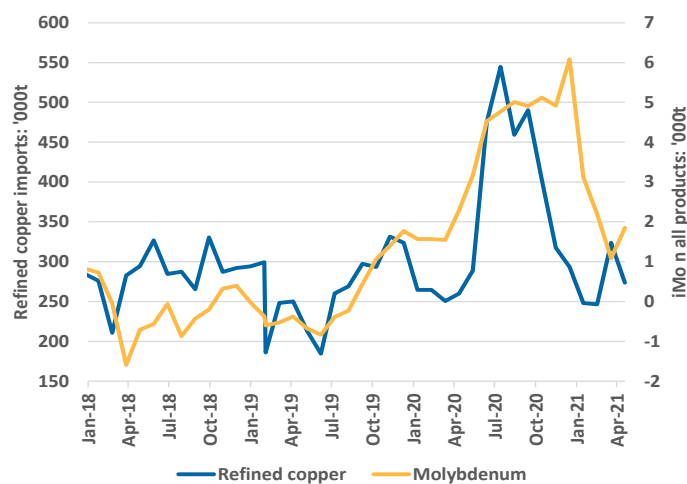
Source: Platts, Macquarie Commodity Strategy, June 2021

**Fig 96 After massive rise in 2020 (all bought by China!), copper by-production supply set to fall sharply this year**

Source: Comelco, IMO/SMR, Macquarie Commodity Strategy, June 2021

**Fig 97 Remarkable recovery in moly demand in 2021 takes market by surprise...especially in Europe**

Source: IMO/SMR, Macquarie Commodity Strategy, June 2021

**Fig 98 China buys both copper and moly cheap in 2020**

Source: TDM, Macquarie Commodity Strategy, June 2021

## Cobalt

### Market broadly balanced as Glencore announces Mutanda restart

Cobalt prices rallied strongly in late-2020/early 2021 as demand boomed in China's battery sector. There was a reduced availability of spot cobalt hydrates (partly due to shipment delays from the DRC) which led to a shortage of cobalt sulphate as cobalt sulphate production rose by 50% YoY in Jan-May but demand for sulphate rose by over 80% YoY. This rally coincided with the purchase of an estimated 5kt of metal by the Chinese strategic stockpile (SRB), leading to a sharp jump in imports of unwrought cobalt from Australia, Canada, Morocco and Zambia. That was helpful for the weakest part of the market, metal, which had been badly impacted by the cratering demand from aerospace last year with demand from superalloys falling 25% YoY in 2020.

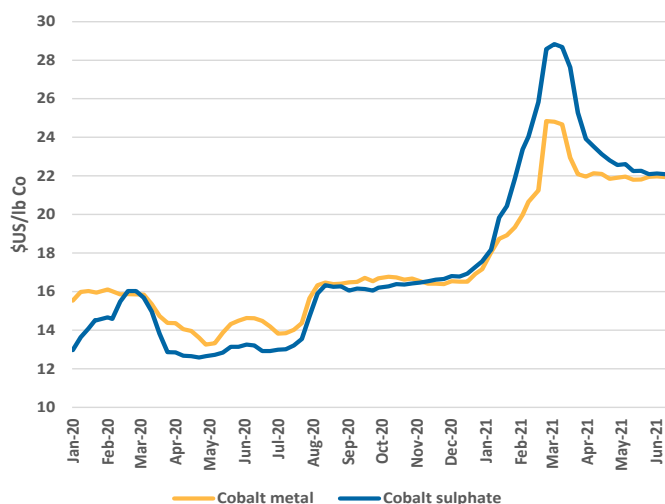
Cobalt metal prices rallied from just under \$16/lb last November to just over \$25/lb in February but have since fallen back towards \$20/lb, while Chinese cobalt sulphate prices hit almost \$29/lb at their peak, having traded at a discount to metal at the start of 2020. A tightness in spot hydroxides has led to a major recovery in the price paid for intermediates from just over 60% of the metal price to around 90% in recent months. Most hydroxides are now sold under long term contracts.

Booming EV sales in Europe and China have led to a soaring demand for cobalt sulphate in 2021. Despite the steady encroachment of lower (or zero) cobalt intensive battery mixes such as LFP, the reality for the period out to 2025 is steady demand growth as the number of EVs being built continues to grow strongly – we have raised our projections for EV passenger car sales yet again and now see sales growing 52% YoY this year to 4.6m units and then hitting 14m units by 2025. We continue to see LFP occupying around 20% of total sales (even as the market grows rapidly). A move to higher nickel chemistries in NCM batteries means that cobalt will grow at a slower rate than nickel (cobalt content in NCM 811 is 3-5%) but the market will continue to grow strongly.

The big news over the past quarter was Glencore's decision to reopen the Mutanda mine in 2022. The mine, which previously produced over 25ktpa of Co, will be most likely be ramped up to 20ktpa as the market requires the metal in a way that keeps supply and demand well balanced. In total, there are a large number of DRC mine growth projects which could add 80ktpa+ to DRC supply by 2025 from around 95kt last year. In addition, there have been further announcements of by-product cobalt supply increases from Indonesian nickel production, the latest being the PT Huayou Nickel Cobalt project, due to start in 2023 with a target of 15ktpa Co at full capacity. We can identify 55-60kt of new cobalt coming from Indonesia out to 2028.

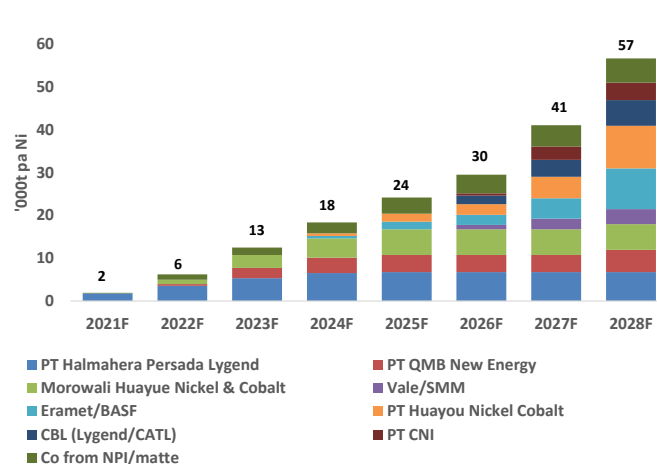
The recovery in demand has eliminated our previous expectations of nearby surplus and towards 2025 we continue to foresee a deficit (albeit smaller than before). By the end of our forecast period, we see prices trading in the \$25-30/lb range.

**Fig 99 Cobalt price recovery hits the buffers after late-21 supply squeeze – Chinese domestic prices**



Source: SMM, Macquarie Commodity Strategy, June 2021

**Fig 100 Indonesian cobalt production set to rise sharply, mainly from Ni/Co HPAL projects as well as NPI/matte**



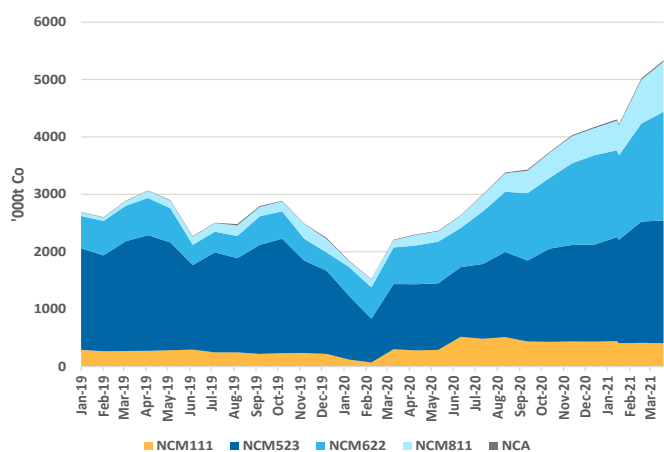
Source: Company reports, Macquarie Commodity Strategy, June 2021

Fig 101 Global cobalt balance

| 000t Co                                    | 2018         | 2019         | 2020         | 2021F        | 2022F        | 2023F        | 2024F        | 2025F        |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Mine production                            | 138.1        | 134.8        | 124.3        | 146.2        | 163.7        | 173.1        | 191.7        | 200.5        |
| % change YoY                               | 25.5%        | -2.4%        | -7.8%        | 17.6%        | 12.0%        | 5.7%         | 10.8%        | 4.6%         |
| Refined production                         | 131.9        | 135.8        | 141.6        | 149.5        | 160.7        | 183.6        | 205.9        | 222.9        |
| % change YoY                               | 19.6%        | 3.0%         | 4.2%         | 5.6%         | 7.5%         | 14.3%        | 12.2%        | 8.2%         |
| <b>Demand</b>                              |              |              |              |              |              |              |              |              |
| Batteries                                  | 64.5         | 65.9         | 70.2         | 84.7         | 101.0        | 119.7        | 140.1        | 165.8        |
| Non battery                                | 58.6         | 60.6         | 57.8         | 59.6         | 60.8         | 61.9         | 63.1         | 64.3         |
| <b>Total</b>                               | <b>123.1</b> | <b>126.5</b> | <b>128.0</b> | <b>144.4</b> | <b>161.8</b> | <b>181.7</b> | <b>203.2</b> | <b>230.1</b> |
| % change YoY                               | 5.1%         | 2.8%         | 1.2%         | 12.8%        | 12.0%        | 12.3%        | 11.9%        | 13.2%        |
| <b>Balance</b>                             | 8.8          | 9.3          | 13.6         | 5.1          | -1.1         | 2.0          | 2.7          | -7.2         |
| SRB stocking                               |              |              | 2.0          | 3.0          |              |              |              |              |
| <b>Adjusted balance after SRB stocking</b> | <b>8.8</b>   | <b>9.3</b>   | <b>11.6</b>  | <b>2.1</b>   | <b>-1.1</b>  | <b>2.0</b>   | <b>2.7</b>   | <b>-7.2</b>  |
| <b>Price (\$/lb) 99.8% free market</b>     | <b>36.8</b>  | <b>16.3</b>  | <b>15.8</b>  | <b>21.9</b>  | <b>23.5</b>  | <b>25.5</b>  | <b>26.5</b>  | <b>27.0</b>  |

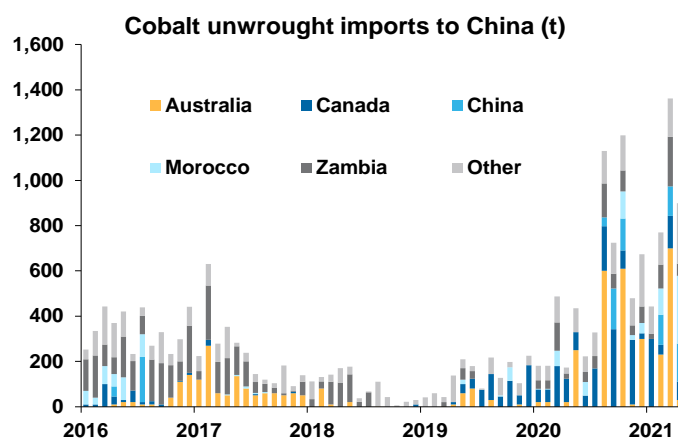
Source: CI, DRC Customs, TDM, MB, RhoMotion, NBS, Macquarie Commodity Strategy, March 2021

Fig 102 Bulk of Co used in MCM523 and 622 batteries in Chinese ternary precursor production



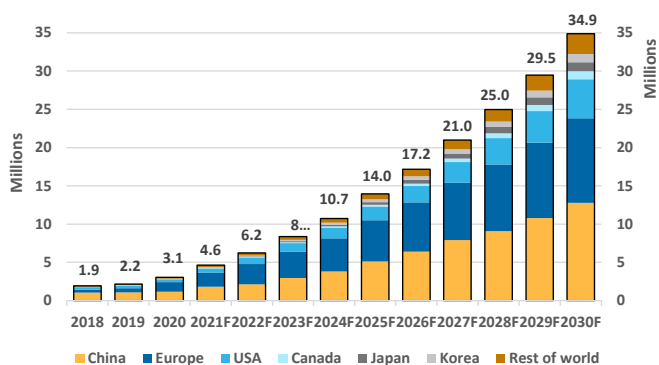
Source: Macquarie Commodity Strategy estimates based on SMM/CIAP data, June 2021

Fig 103 Unwrought imports rise as the SRB comes in



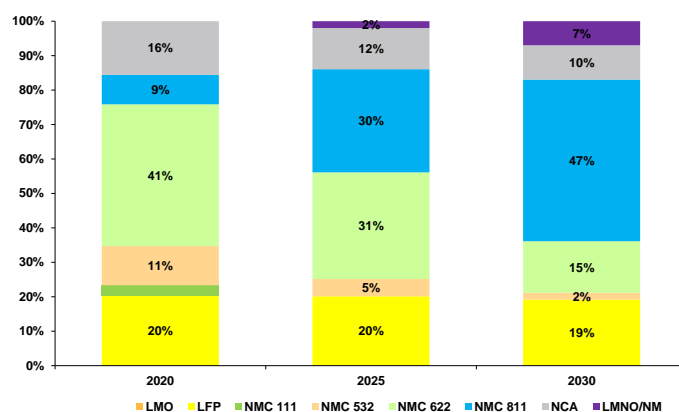
Source: TDM, Macquarie Commodity Strategy, June 2021

Fig 104 Global EV sales to rise strongly in coming years – could be up 50% this year and average 30% a year to 2030



Source: Rho Motion, Macquarie Commodity Strategy, June 2021

Fig 105 Battery type in EVS – LFP to maintain 20% share and Ni-rich (lower but not zero cobalt) to gain shares



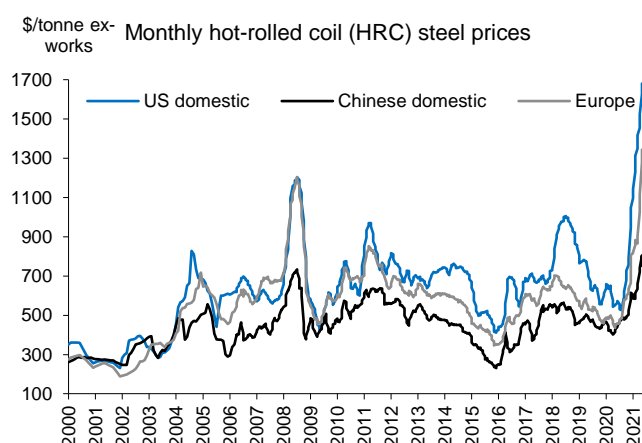
Source: Rho Motion, Macquarie Commodity Strategy, June 2021

## Steel

### Higher utilisation delivering better margins

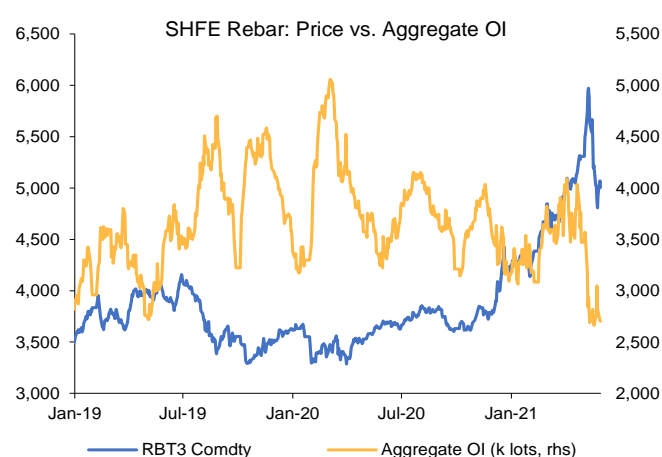
Steel prices have surged to extremely high levels in all major markets, led by the US, where HRC is approaching \$1,700/t, a record high. In Asia, a “clampdown on speculation” by the Chinese government has seen length exiting onshore futures market and SHFE rebar/HRC prices losing ~20% on the subsequent pull back. However, prices have pared back some of these losses recently on firm physical demand and the prospect of more production cuts on the occasion of the 100<sup>th</sup> anniversary of the Community Party (in early July).

**Fig 106 Steel reaps higher as key economies face capacity constraints**



Source: steelbenchmarker, Macquarie Commodity Strategy, June 2021

**Fig 107 OI shrinks onshore as gov clamps down on speculation**



Source: Bloomberg, Macquarie Commodity Strategy, June 2021

**Fig 108 Global steel market balance (Mt)**

|                        | 2017        | 2018        | 2019         | 2020          | 2021         | 2022        | 2023        | 2024        | 2025        |
|------------------------|-------------|-------------|--------------|---------------|--------------|-------------|-------------|-------------|-------------|
| <b>China</b>           |             |             |              |               |              |             |             |             |             |
| Apparent consumption   | 833         | 872         | 928          | 1,004         | 1,068        | 1,105       | 1,133       | 1,154       | 1,169       |
| <i>Real estate</i>     | 293         | 314         | 341          | 356           | 367          | 372         | 379         | 383         | 386         |
| <i>Infrastructure</i>  | 115         | 115         | 121          | 132           | 139          | 145         | 149         | 152         | 155         |
| <i>Machinery</i>       | 104         | 108         | 116          | 132           | 142          | 150         | 157         | 162         | 166         |
| <i>Autos</i>           | 66          | 65          | 61           | 62            | 69           | 73          | 75          | 77          | 78          |
| <i>Other</i>           | 256         | 269         | 289          | 323           | 351          | 365         | 374         | 381         | 384         |
| Net exports            | 68          | 62          | 55           | 19            | 49           | 31          | 9           | 9           | 9           |
| Crude steel production | 894         | 949         | 998          | 1,056         | 1,120        | 1,127       | 1,142       | 1,163       | 1,177       |
| <b>%growth</b>         | <b>2.8%</b> | <b>6.1%</b> | <b>5.1%</b>  | <b>5.9%</b>   | <b>6.1%</b>  | <b>0.6%</b> | <b>1.3%</b> | <b>1.9%</b> | <b>1.2%</b> |
| Pig Iron Production    | 765         | 789         | 830          | 897           | 931          | 941         | 944         | 947         | 944         |
|                        | -2.3%       | 3.2%        | 5.2%         | 8.0%          | 3.9%         | 1.0%        | 0.3%        | 0.3%        | -0.3%       |
| <b>World, ex-China</b> |             |             |              |               |              |             |             |             |             |
| Apparent consumption   | 919         | 953         | 947          | 830           | 927          | 951         | 986         | 1,010       | 1,038       |
| <b>% growth</b>        | <b>1.2%</b> | <b>3.7%</b> | <b>-0.7%</b> | <b>-12.3%</b> | <b>11.7%</b> | <b>2.5%</b> | <b>3.7%</b> | <b>2.4%</b> | <b>2.7%</b> |
| Crude steel production | 858         | 883         | 871          | 789           | 879          | 903         | 939         | 962         | 991         |
| <b>%growth</b>         | <b>4.6%</b> | <b>2.9%</b> | <b>-1.4%</b> | <b>-9.4%</b>  | <b>11.4%</b> | <b>2.8%</b> | <b>3.9%</b> | <b>2.5%</b> | <b>2.9%</b> |
| Pig Iron Production    | 469         | 480         | 473          | 427           | 477          | 490         | 506         | 519         | 532         |
| <b>% growth</b>        | <b>1.6%</b> | <b>2.3%</b> | <b>-1.5%</b> | <b>-9.7%</b>  | <b>11.7%</b> | <b>2.8%</b> | <b>3.2%</b> | <b>2.5%</b> | <b>2.5%</b> |
| <b>HRC Prices</b>      |             |             |              |               |              |             |             |             |             |
| <i>US</i>              | 679         | 909         | 680          | 646           | 1,522        | 988         | 710         | 685         | 620         |
| <i>China</i>           | 488         | 538         | 489          | 496           | 699          | 588         | 535         | 525         | 590         |
| <i>Europe</i>          | 599         | 644         | 529          | 529           | 875          | 648         | 615         | 605         | 670         |

Source: Customs data, worldsteel, NBS, steelbenchmarker, Platts, Macquarie Strategy, June 2021.



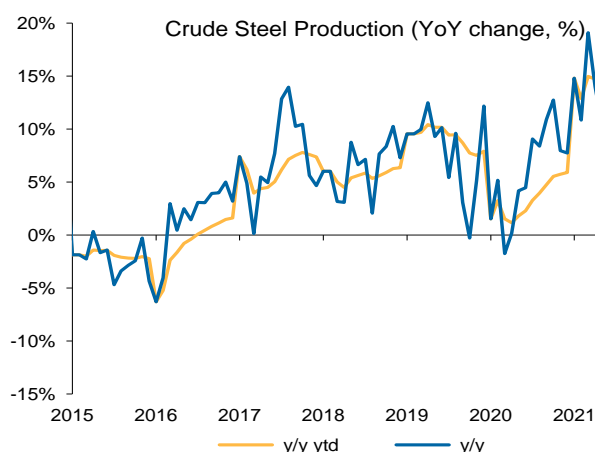
We maintain our view that global steel demand is at a cyclical peak which cannot be sustained, and we still expect HRC steel prices to fall when global IP starts to slow from its currently supercharged rebound. The drop in US goods sales in May suggest the peak is in for global manufacturing, although low inventories (in steel, but also across end-use sectors) could shield prices for a little longer.

Excess global capacity has been long blamed for steelmakers' weak profitability over the past two decades. Low-capacity utilisation, a consequence of both China's "undisciplined" expansion and the Global Financial Crisis has meant weak bargaining power for steelmakers, allowing upstream industries (most notably iron ore miners) to reap the rewards of booming steel demand.

However, [as we showed recently](#), much of the "BF excess capacity" has now been permanently closed, while environmental pressures – particularly in developed markets, are holding back investment in new capacity. On top of this, we believe China's efforts to reduce GHG emissions are likely to lead to measures aimed at cutting finished steel exports (a form of "pollution imports" from the Chinese perspective), allowing for a shift towards higher average utilisation rates.

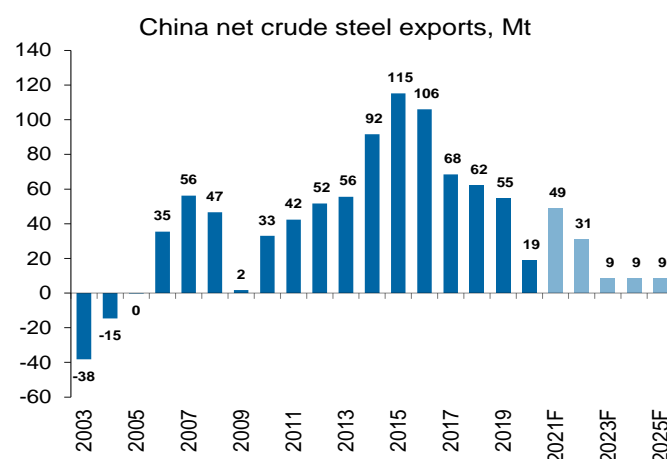
We therefore lift our HRC steel price forecasts by more than implied by our raw materials' price upgrade and now expect structurally stronger profit margins for the industry when this cycle is over. To an extent, steel production is likely to shift to EMs, however, growing international coordination to counter carbon leakage (for example via a ["carbon border adjustment mechanism"](#)) mean these countries will face significant barriers in the export market.

**Fig 109 China's CS growth to slow (2021F: +6.7%)**



Source: Platts, TDM, Company reports, worldsteel, NBS, Macquarie Strategy, June 2021

**Fig 110 China's exports could fall if output is cut**



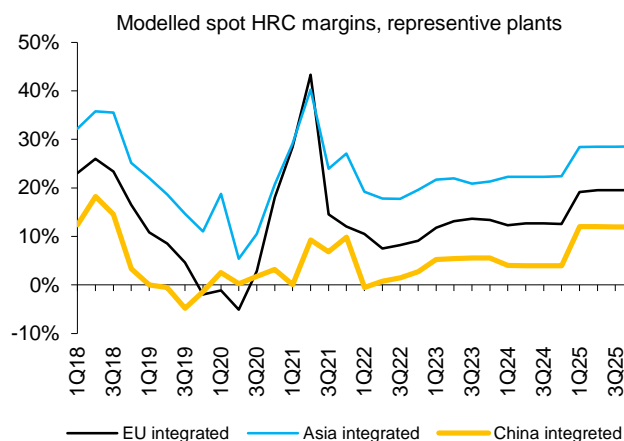
Source: CEIC, Macquarie Strategy, June 2021

**Fig 111 Steel production to "relocate" ex-China**



Source: worldsteel, Macquarie Strategy, June 2021

**Fig 112 Stronger outlook for steel margins**



Source: Platts, Mysteel, Bloomberg, Macquarie Strategy, June 2021



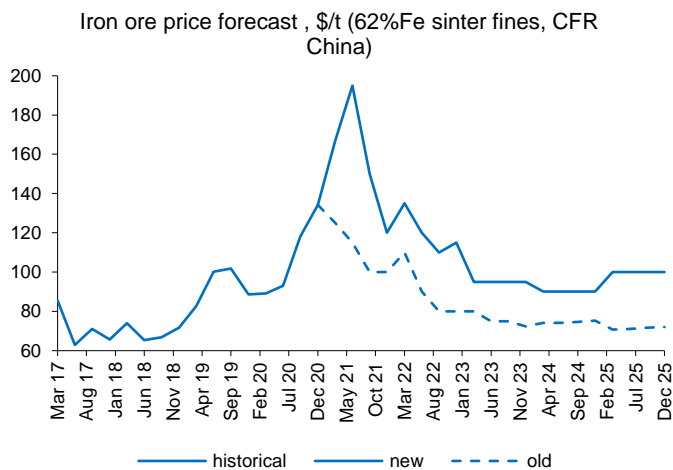
## Iron ore

### Balanced, at a higher price

We have upgraded the iron ore price outlook across our forecast horizon by ~28% and lifted our long-run real price by 31% to \$80/t. We maintain that global steel demand is at a cyclical peak and warn that the iron ore price could fall sharply [when global IP starts to turn](#). However, we believe that the step change in Chinese demand over the past twelve months is sustainable and, combined with a lack of expansions from the majors, more high-cost supply is needed in the medium term.

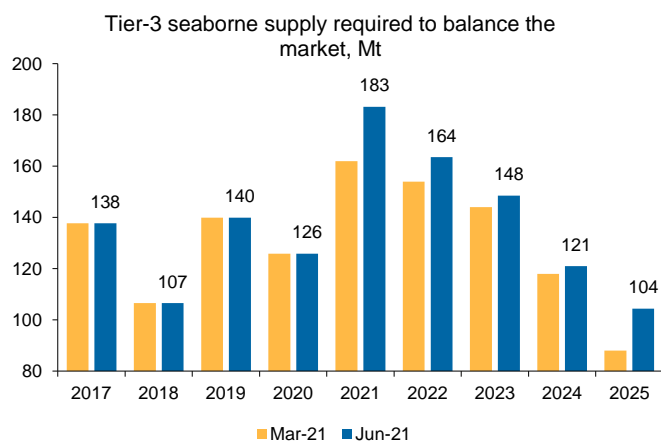
The supply gap created by Vale's dam disasters (~50Mtpa) and surging Chinese demand (+150Mtpa since 2019) is being filled by high-cost supply mainly from India and mid-tier producers in Australia and Brazil. China's domestic supply response to high prices still appears relatively limited and the seaborne cost curve has steepened. As a result, [the equilibrium iron ore price has moved higher](#).

**Fig 113 Prices forecasts: big short-term lift, on demand surge**



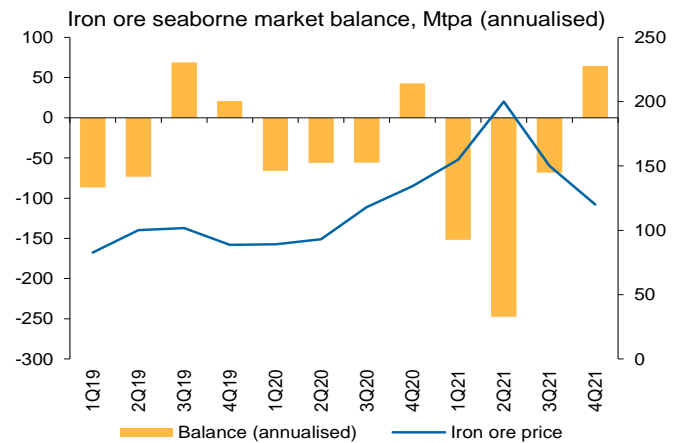
Source: Platts, Macquarie Commodity Strategy, March 2021

**Fig 115 More high cost supply needed**



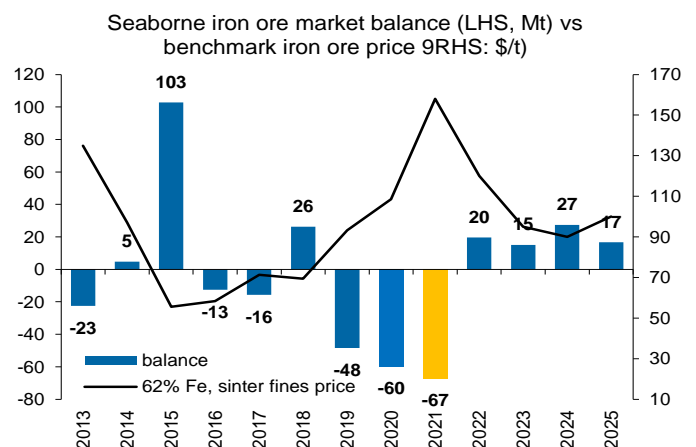
Source: Platts, TDM, Company reports, worldsteel, NBS, Macquarie Strategy, June 2021

**Fig 114 Quarterly balance: tightness to fade into year-end**



Source: IHS, Platts, company reports, Macq. Comm. Strategy, March 2021

**Fig 116 Medium term: balanced, at a higher price**



Source: Platts, TDM, Company reports, worldsteel, NBS, Macquarie Strategy, June 2021

Fig 117 Global iron ore market balance (Mt)

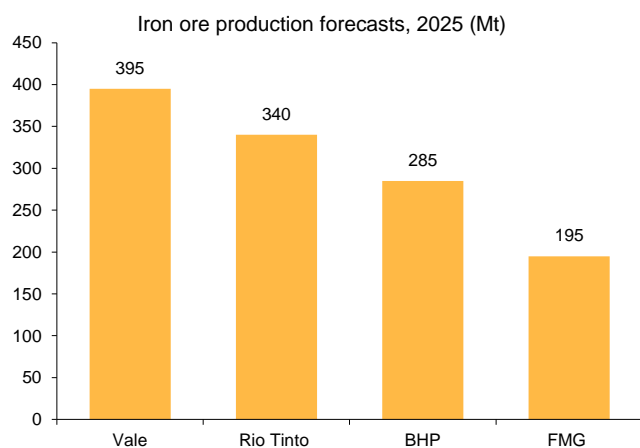
| Mt wet  | 2017      | 2018      | 2019      | 2020       | 2021       | 2022       | 2023      | 2024      | 2025       | LT        |
|---|-----------|-----------|-----------|------------|------------|------------|-----------|-----------|------------|-----------|
| <b>Seaborne Demand</b>                            |           |           |           |            |            |            |           |           |            |           |
| <i>China</i>                                      |           |           |           |            |            |            |           |           |            |           |
| Total Consumption                                 | 1,184     | 1,222     | 1,285     | 1,388      | 1,442      | 1,457      | 1,462     | 1,467     | 1,462      |           |
| Total Imports <sup>(1)</sup>                      | 1,129     | 1,099     | 1,123     | 1,189      | 1,237      | 1,249      | 1,254     | 1,259     | 1,247      |           |
| Change in (visible) inventories                   | 70        | -5        | -15       | -12        | -10        | 0          | 0         | 0         | 0          |           |
| Apparent Domestic Production                      | 134       | 127       | 156       | 197        | 205        | 218        | 218       | 218       | 225        |           |
| Others seaborne imports                           | 406       | 422       | 399       | 348        | 390        | 400        | 403       | 412       | 419        |           |
| Total seaborne demand                             | 1,534     | 1,521     | 1,522     | 1,537      | 1,627      | 1,649      | 1,657     | 1,671     | 1,666      |           |
| <b>Seaborne Supply</b>                            |           |           |           |            |            |            |           |           |            |           |
| Rio Tinto   | 330       | 338       | 327       | 331        | 327        | 340        | 340       | 340       | 340        |           |
| BHPB  | 268       | 274       | 273       | 290        | 287        | 285        | 285       | 285       | 285        |           |
| FMG   | 169       | 168       | 174       | 180        | 177        | 179        | 184       | 189       | 194        |           |
| Vale  | 331       | 350       | 286       | 285        | 302        | 324        | 330       | 345       | 353        |           |
| Tier-2 supply <sup>(2)</sup>                      | 298       | 284       | 322       | 325        | 350        | 357        | 369       | 391       | 389        |           |
| Tier-3 supply (required to balance the market)    | 138       | 107       | 140       | 126        | 183        | 164        | 148       | 121       | 104        |           |
| Market balance (Change in Tier-3 and inventories) | -16       | 26        | -48       | -60        | -67        | 20         | 15        | 27        | 17         |           |
| <b>62%Fe, sinter fines price</b>                  | <b>71</b> | <b>69</b> | <b>93</b> | <b>109</b> | <b>158</b> | <b>120</b> | <b>95</b> | <b>90</b> | <b>100</b> | <b>80</b> |

Source: Customs data, IHS, Macquarie Commodity Strategy, June 2021; note: LT price, 2020\$ (real).

We still forecast a balanced market by 4Q21 but now expect prices to settle around \$120/t (62%Fe, CFR China) when this cycle is over. We see prices dipping temporarily below \$100/t in 2023 as a series of seaborne expansions hit the market (Mineral Resources, Champion Iron, FMG's Iron Bridge to name a few) but our longer-term profile is also raised.

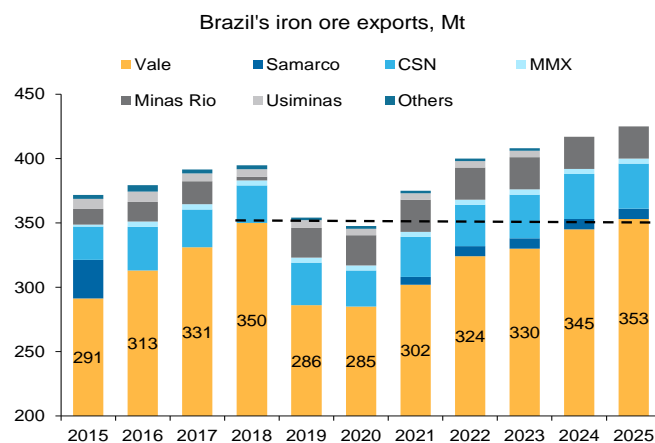
Specifically, we have lifted our LT price to \$80/t (real 2021) as some of the high-cost supply which has entered the market will be required in the longer term, assuming the majors maintain current production targets (Fig 21) and do not abandon their "value over volume" strategy.

Fig 118 Iron ore majors, LT production assumptions



Source: Company Reports, Macquarie Strategy, June 2021

Fig 119 Vale: back at full production only in 2024-5



Source: Company Reports, TDM, Macquarie Strategy, June 2021

Spare infrastructure capacity and abundant reserves mean plenty of potential low-cost brownfield expansions in the Pilbara, though pursuing them comes with a heightened political risk factor given China's ambition to reduce its reliance on Australia in the longer term. In Brazil, [Vale's exports are not expected to return](#) to pre-Brumadino levels (350Mt) until 2024. Expansions in the Northern System will be offset by declining output (and grade) in the Southern/South-Eastern system due to tighter licensing constraints after the two dam disasters of the past decade. As for Simandou in Guinea (90Mt), we think the project will probably go ahead but the complexity of the infrastructure required means a full ramp up is (at-least) 5-7 years away.

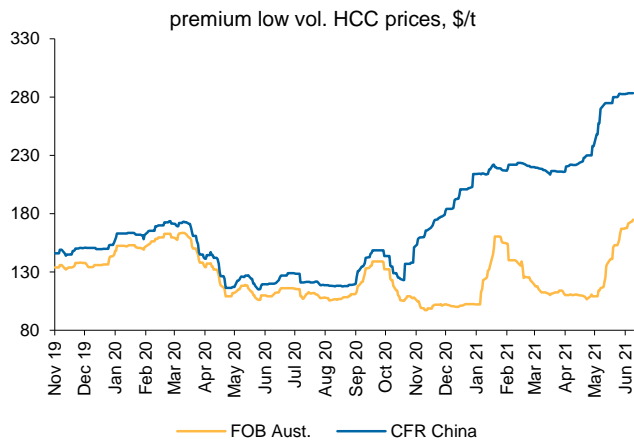
# Metallurgical Coal

## Modest LT upgrade

We have not made major changes to our short/medium term view on met coal. The rebalancing of the seaborne market has taken longer than initially expected: we calculated in a recent note there remained a [10Mt overhang of "surplus Australian coal" in the market](#). European steelmakers in particular have also been slow in taking advantage of low Australian prices, mainly due to LT contracts and the heightened risk of changing coal blends at a time of strong steel profit margins.

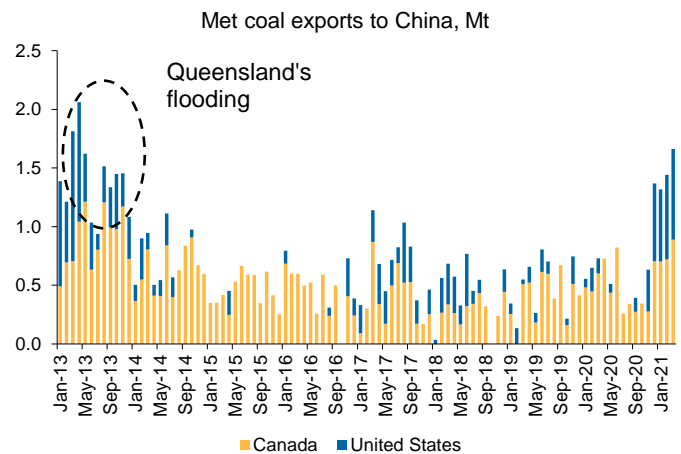
However, there is evidence trade reshuffling has now gathered pace: strong bidding for North American cargoes from Chinese traders has sent CFR China index up by \$50/t in May; the FOB Aus. HCC index has followed suit, rallying from \$110/t to >\$170/t as ex-China buyers moved to take advantage of comparatively cheap Australian coal. The rally took place despite a slowdown in India's crude steel production, which was severely impacted by the latest covid outbreak.

**Fig 120** FOB Aus. Index follows CFR prices higher in May



Source: Platts, Macquarie Commodity Strategy, June 2021

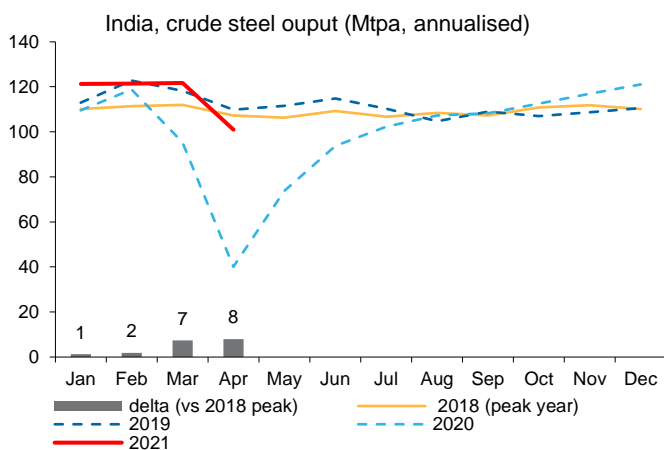
**Fig 121** China's pull on North American market opens the door for Australian coal in Europe and LatAm



Source: TDM, Macquarie Commodity Strategy, June 2021

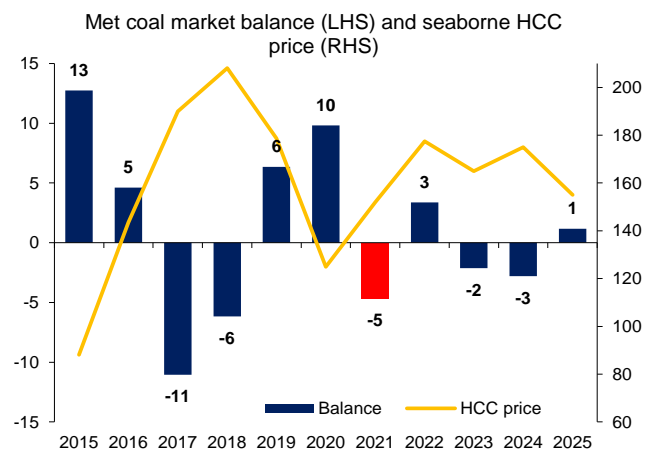
On balance, we remain bullish near-term and see the potential for prices to rise towards \$200/t given the exceptionally strong ex-China demand profile. The main risk though comes from increasing Australian supply following AngloAmerican's decision to restart Moranbah North (6.5mt of high-quality HCC) but the ramp up should be gradual.

**Fig 122** Price up despite India's covid woes



Source: worldsteel, Macquarie Commodity Strategy, June 2021

**Fig 123** Met coal annual S&D, Mt

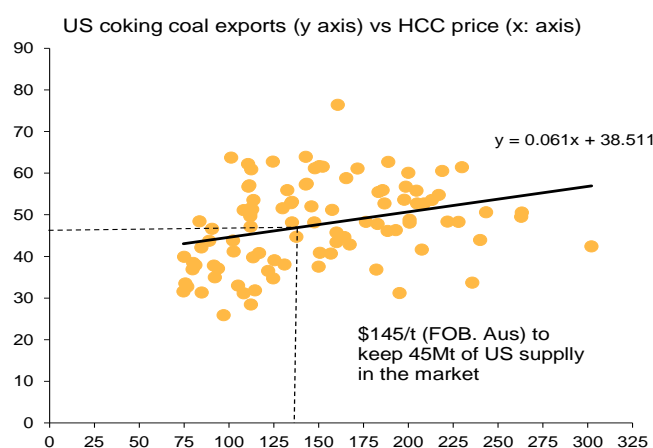


Source: Platts, TDM, Company Reports, SxCoal, Macquarie Commodity Strategy, June 2021

We have also upgraded our LT price forecast 10% to \$145/t, which better reflects the price required to keep US marginal supply in the seaborne market. Even after allowing for a gradual increase in Australian exports (to 195Mt; >historical peak of 189mt achieved in 2016), demand growth from South East Asia (partly a reflection of reduced Chinese steel exports to the region) mean that approximately 45Mt of US seaborne supply is required in the LT.

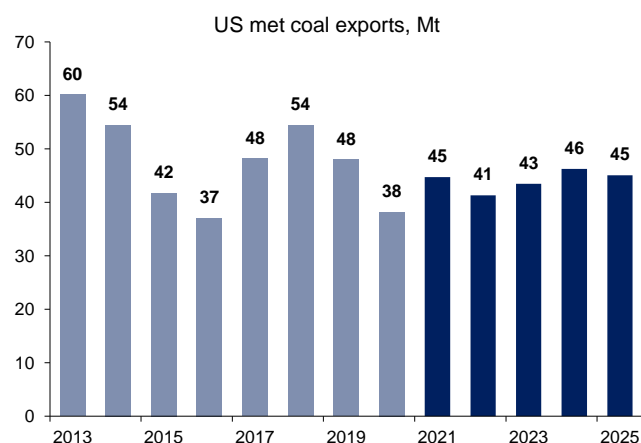
We maintain the view that China will remain a net importer of high quality seaborne hard coking coal in the longer term, as more steel production relocates closer to the coast and environmental pressures constrain domestic supply. The deployment of H-DRI capacity is expected to gain pace this decade in Europe and while it could lead to some marginal demand destruction (particularly for PCI), the impact is unlikely to become a real drag on met coal demand until the 2030s.

**Fig 124 More US supply needed in the LT**



Source: Platts, TDM, Macquarie Strategy, June 2021

**Fig 125 US coking coal export forecasts, Mt**



Source: TDM, Macquarie Strategy, June 2021

**Fig 126 Internationally traded metallurgical coal market balance**

| <b>Import Demand</b>                 | 2015       | 2016       | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       | 2023       | 2024       | 2025       | LT         |
|--------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <i>China</i>                         |            |            |            |            |            |            |            |            |            |            |            |            |
| Total Consumption                    | 737        | 733        | 726        | 721        | 776        | 788        | 817        | 824        | 825        | 827        | 823        |            |
| Total Imports <sup>(1)</sup>         | 45         | 53         | 63         | 58         | 66         | 57         | 55         | 56         | 56         | 57         | 57         |            |
| of which, seaborne                   | 35         | 35         | 43         | 38         | 41         | 38         | 26         | 27         | 25         | 26         | 26         |            |
| Apparent Domestic Production         | 692        | 680        | 662        | 663        | 710        | 731        | 762        | 768        | 769        | 770        | 766        |            |
| JKT (Japan, SK and Taiwan)           | 99         | 101        | 95         | 100        | 101        | 84         | 94         | 92         | 92         | 92         | 92         |            |
| India                                | 49         | 47         | 51         | 56         | 59         | 56         | 63         | 68         | 76         | 83         | 85         |            |
| Europe                               | 65         | 65         | 67         | 66         | 64         | 53         | 61         | 67         | 66         | 66         | 65         |            |
| Others                               | 36         | 35         | 34         | 39         | 39         | 37         | 41         | 43         | 47         | 51         | 54         |            |
| <b>Total imports</b>                 | <b>294</b> | <b>301</b> | <b>310</b> | <b>320</b> | <b>330</b> | <b>287</b> | <b>314</b> | <b>326</b> | <b>337</b> | <b>348</b> | <b>353</b> |            |
| <b>Export Supply</b>                 |            |            |            |            |            |            |            |            |            |            |            |            |
| Australia                            | 186        | 189        | 173        | 179        | 183        | 170        | 175        | 187        | 191        | 194        | 197        |            |
| United States                        | 42         | 37         | 48         | 54         | 48         | 38         | 45         | 41         | 43         | 46         | 45         |            |
| Canada                               | 25         | 25         | 27         | 30         | 31         | 28         | 31         | 33         | 33         | 35         | 37         |            |
| Russia                               | 18         | 22         | 23         | 26         | 25         | 24         | 26         | 28         | 28         | 28         | 28         |            |
| Mozambique                           | 5          | 5          | 7          | 7          | 5          | 3          | 5          | 6          | 8          | 10         | 10         |            |
| Mongolia                             | 10         | 18         | 20         | 20         | 25         | 19         | 29         | 29         | 31         | 31         | 31         |            |
| Others                               | 4          | 5          | 4          | 3          | 3          | 3          | 3          | 3          | 4          | 4          | 5          |            |
| <b>Total exports</b>                 | <b>290</b> | <b>301</b> | <b>301</b> | <b>320</b> | <b>320</b> | <b>285</b> | <b>314</b> | <b>326</b> | <b>337</b> | <b>348</b> | <b>353</b> |            |
| Market balance (Change in US supply) | 13         | 5          | -11        | -6         | 6          | 10         | -7         | 3          | -2         | -3         | 1          |            |
| <b>HCC price</b>                     | <b>88</b>  | <b>143</b> | <b>190</b> | <b>208</b> | <b>179</b> | <b>125</b> | <b>152</b> | <b>178</b> | <b>165</b> | <b>175</b> | <b>155</b> | <b>145</b> |

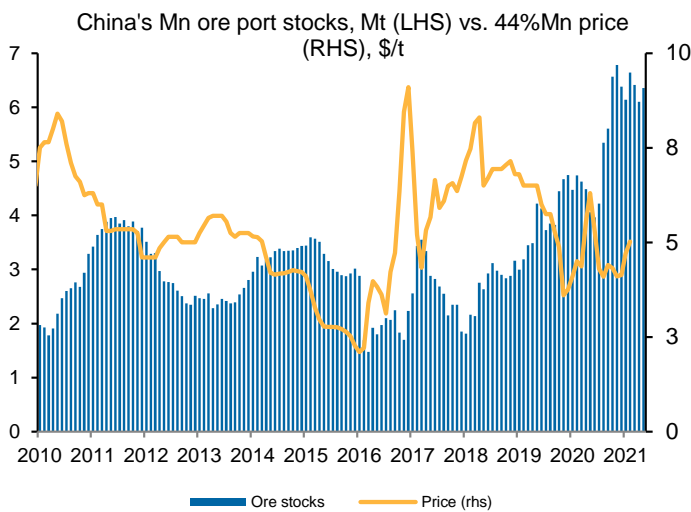
Source: Custom Statistics, TDM, SxCoal, Commodity Insights, Macquarie Commodity Strategy, LT price, 2020\$ real, June 2021

# Manganese

## Range bound

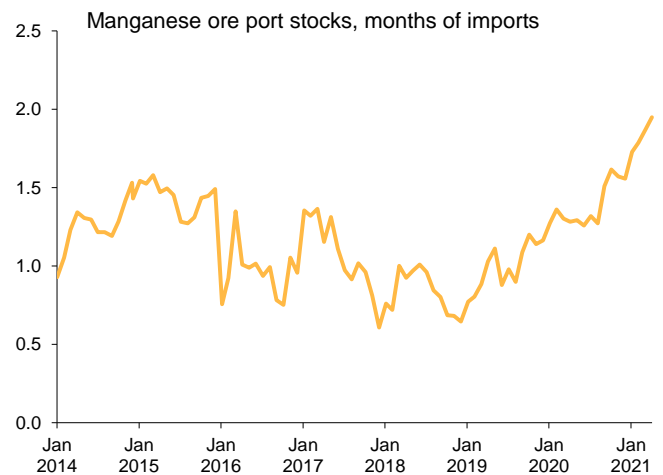
Manganese ore prices have traded in a narrow range (\$4.8-5/mtu, 44%Mn CIF China) for most of this year, as high inventories have shielded this tiny raw material from the price volatility seen in major bulks. To an extent, this reflects a weaker China pull for seaborne material: after bouncing back post-Covid, despite very strong crude steel production, China's total imports have declined well below trend this year, raising the possibility that intensity of use has started to decline again. Partly because of lower import arrivals, port stocks have stabilised just below 5Mt.

**Fig 127 High inventories keep ore prices in check**



Source: Mysteel, Platts, Macquarie Commodities Strategy, June 2021

**Fig 128 On a months-of import basis, stocks are going up**



Source: Mysteel, Macquarie Commodities Strategy, June 2021

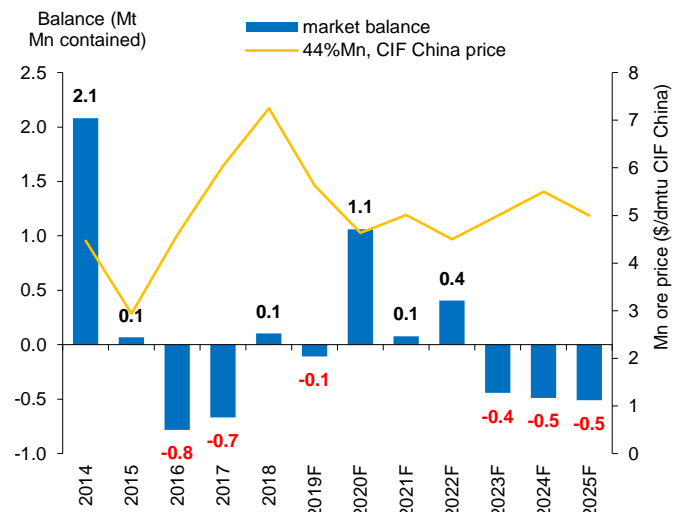
Near term, widening profitability at Chinese ferroalloy plants is a source of upside risk for ore prices: market sentiment was boosted after Ningxia province, a major silicomanganese production hub in China (20% of national total), released its planned production restrictions on ferro-alloy smelters on June 2. Other provinces such as Inner Mongolia (35%) have followed through, helping silicomanganese prices (the main end-use market for manganese ore) to reach two-year highs. Ferroalloy prices are also surging in other markets, boosted in part by [container shortages, as recently noted in the case of molybdenum](#).

**Fig 129 China's imports well below trend**



Source: Company reports, Macquarie Commodities Strategy, June 2021

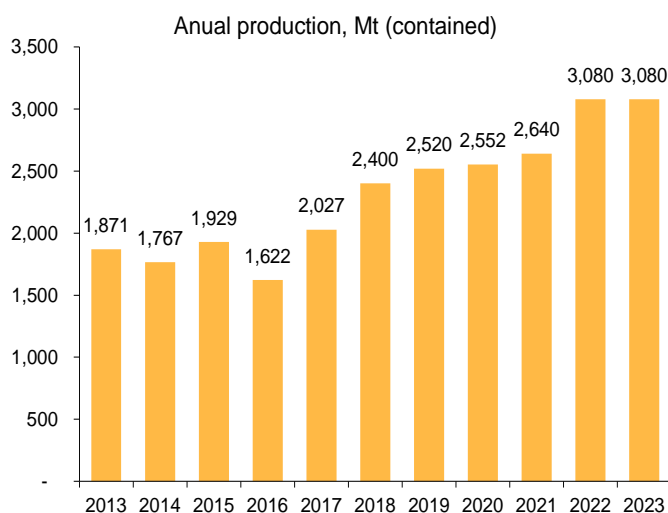
**Fig 130 Inventory overhang weighs on 2021/2 balance**



Source: IMnI, IHS, world steel, Macquarie Commodity Strategy, LT price is in 2020\$ (real), June 2021

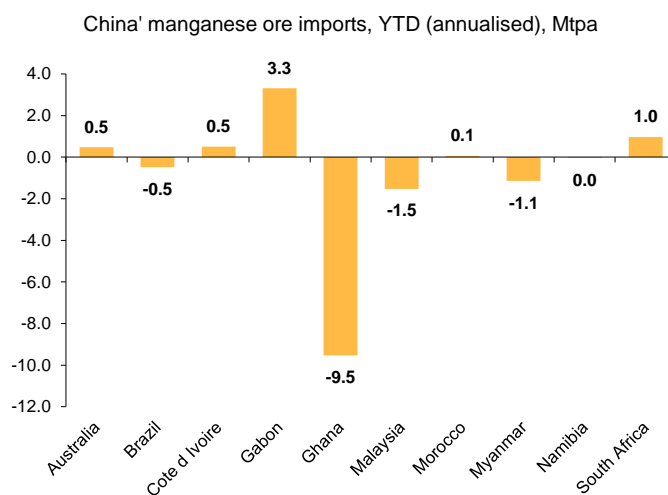
However, high inventories and still growing supply would suggest any temporary uptick in prices over the coming months is unlikely to last. Looking at the supply side in more detail, a major source of growth is Eramet's Moanda operation in Gabon – a large, first quartile operation whose output rose to 5.8Mt last year (+22% YoY). This was partly offset by a decline in exports from another major mine in Africa (Ntsuta -Ghana) where mining came to a halt due to a dispute on royalty payments between the government and the Chinese owner, TMI (but shipments have now resumed). Glencore's Mokala mine in South Africa (1.5Mtpa; 37-40% Mn) also started mining late last year and is ramping up.

**Fig 131 Eramet's Moanda expansion in Gabon...**



Source: Company reports, Macquarie Commodities Strategy, June 2021

**Fig 132 ...as Ghana cuts shipments and high-cost mines in South East Asia exit the market**



Source: IHS, Macquarie Commodities Strategy, June 2021

We see small deficits towards the back end of our forecast period, but these should be easily met by more trucked supply from South Africa. While there is a degree of variability depending on FX and freight rate assumptions, a price of 5-5.5/dmtu (44%Mn Basis, CIF China) should be enough to incentivise these tonnes to come to market.

**Fig 133 Global manganese ore market balance**

|   | 2014  | 2015  | 2016  | 2017  | 2018  | 2019F | 2020F | 2021F | 2022F | 2023F | 2024F | 2025F | 2025-2019<br>% CAGR |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
| <b>Mt Mn contained</b>                    |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| Crude steel production, mt                | 1,709 | 1,718 | 1,690 | 1,752 | 1,832 | 1,868 | 1,845 | 1,999 | 2,030 | 2,081 | 2,125 | 2,168 | 3%                  |
| % Change y-o-y                            | 4%    | 0%    | -2%   | 4%    | 5%    | 2%    | -1%   | 8%    | 2%    | 2%    | 2%    | 2%    |                     |
| Stainless steel production, mt            | 42.9  | 42.2  | 45.8  | 48.6  | 51.1  | 52.6  | 54.2  | 56.4  | 59.2  | 61.8  | 64.2  | 67.0  | 5%                  |
| % Change y-o-y                            | 9%    | -2%   | 9%    | 6%    | 5%    | 3%    | 3%    | 4%    | 5%    | 4%    | 4%    | 4%    |                     |
| Mn ore consumption                        | 18.5  | 15.8  | 15.7  | 17.6  | 19.6  | 20.2  | 20.1  | 22.7  | 23.1  | 23.7  | 24.2  | 24.7  | 4%                  |
| % Change y-o-y                            | 3%    | -14%  | -1%   | 12%   | 12%   | 3%    | -0%   | 13%   | 2%    | 2%    | 2%    | 2%    |                     |
| -Mn alloys for crude steel                | 16.5  | 13.9  | 13.6  | 15.4  | 17.3  | 17.8  | 17.5  | 20.0  | 20.3  | 20.7  | 21.1  | 21.5  | 4%                  |
| -EMM for stainless steel                  | 1.0   | 0.9   | 1.0   | 1.0   | 1.2   | 1.3   | 1.4   | 1.4   | 1.5   | 1.5   | 1.5   | 1.6   | 4%                  |
| -Other                                    | 0.9   | 1.0   | 1.0   | 1.1   | 1.1   | 1.2   | 1.2   | 1.3   | 1.4   | 1.4   | 1.5   | 1.6   | 7%                  |
| Mn ore mine production                    | 20.5  | 15.9  | 14.9  | 16.9  | 19.7  | 20.1  | 21.2  | 22.8  | 23.5  | 23.2  | 23.7  | 24.2  | 4%                  |
| % Change y-o-y                            | 7%    | -23%  | -7%   | 13%   | 17%   | 2%    | 5%    | 8%    | 3%    | -1%   | 2%    | 2%    |                     |
| <b>Global Mn ore balance</b>              | 2.1   | 0.1   | -0.8  | -0.7  | 0.1   | -0.1  | 1.1   | 0.1   | 0.4   | -0.4  | -0.5  | -0.5  |                     |
| Mn ore price forecast (\$/dmtu CIF China) | 4.5   | 2.9   | 4.6   | 6.0   | 7.2   | 5.6   | 4.6   | 5.0   | 4.5   | 5.0   | 5.5   | 5.0   |                     |

Source: IMnI, IHS, world steel, Macquarie Commodity Strategy, LT price is in 2020\$ (real), June 2021

## Gold

### History may not repeat, but it often rhymes

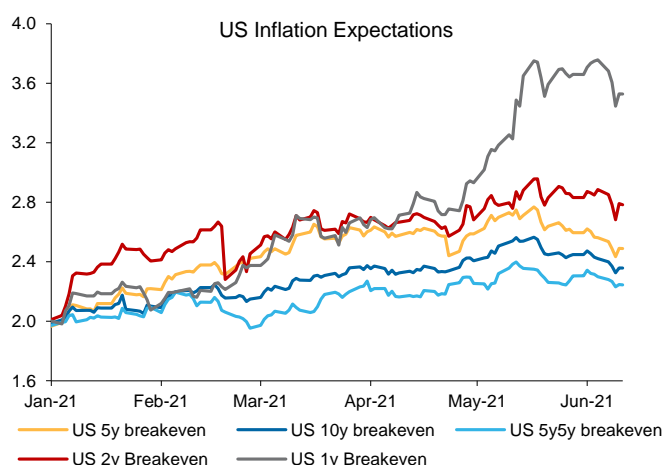
Gold prices have comfortably [beaten our expectations](#) over the past two months, with the recent backdrop presenting near “goldilocks” short-term conditions for the yellow metal.

The strength of the US economic recovery, coupled with rising inflation, having been sufficient to lift 10y inflation breakevens above 2.5%. However, inflation’s [likely transitory nature](#), a [supply constrained labour market](#) recovery, and [the Fed’s commitment to data rather than forecast dependence](#) mean that 10y Treasury yields slipped towards 1.4%. Consequently pushing 10y TIPS yields back below -90bps.

Aided by seemingly firm recent physical demand, this enabled gold to break out of its downtrend from August’s high, with investor activity also picking up. Indeed, momentum has been positive with ETFs receiving incremental inflows and systematic investors likely buying CME futures. Combined ETF and CME net length of ~124Moz is elevated but still 10% short of its 2020 peak.

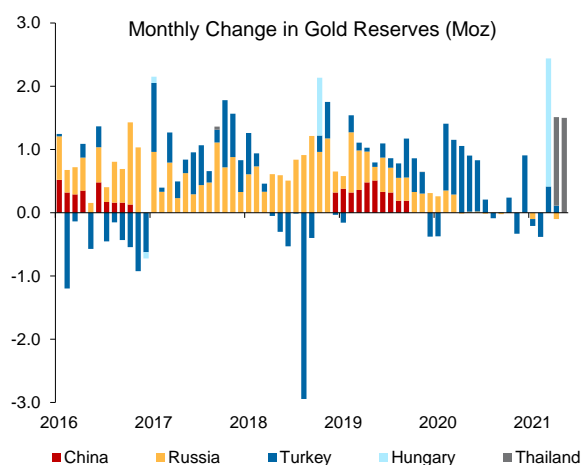
Central bank buying has also delivered an upside surprise, following Hungary’s purchase of 2Moz in March and Thailand’s purchase of 2.9Moz over April and May. In consequence we have raised our forecast 2021 official sector purchases to 250Moz but Russia’s recent indication that they currently have no plans to restart gold purchases and Turkey’s ongoing reserve challenges mean we still expect a significant slowdown from the 485Moz/yr average pace of buying during 2016-20.

**Fig 134 Bond market treating inflation as transitory**



Source: Bloomberg, Macquarie Strategy, June 2021

**Fig 135 TIPS reversal supported gold in Q2**



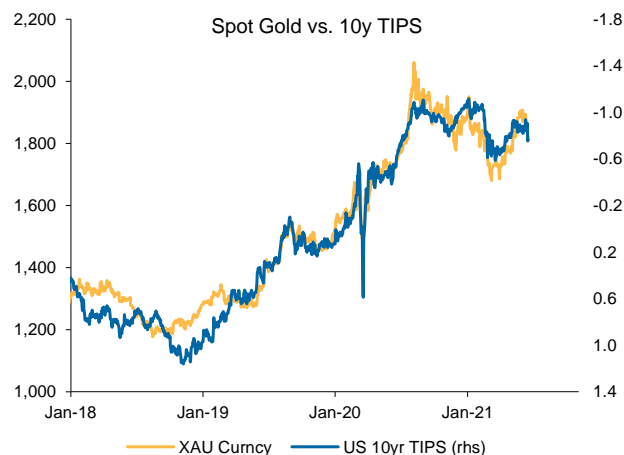
Source: IMF, Bloomberg, Macquarie Strategy, June 2021

Moreover, it is worth remembering that gold enjoyed a significant relief rally during 2012, only to resume its sell-off and subsequently collapse during 2013. We do not anticipate a repeat of the taper tantrum but the [June FOMC meeting](#) should have brought this recent resurgence to a close. Indeed, our economists [forecast of steadily rising 10yr yields](#), with a year-end target of 2.25% and real yields around -35bps, still implies gold falling towards \$1,600/oz.

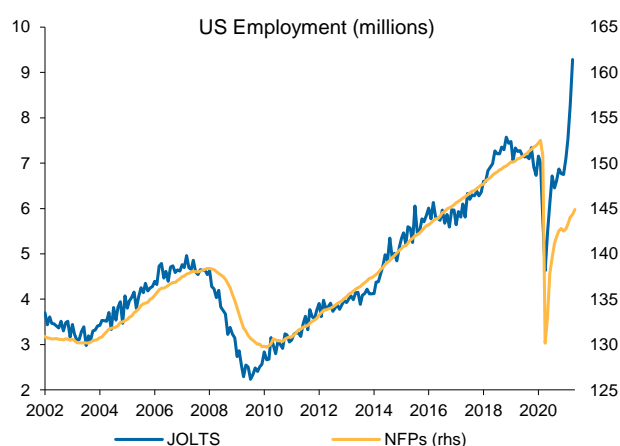
The core question, in our view, is therefore the pace of the US service sector reopening and its feed through to the labour market, as the key determinant of when the Fed starts to openly “talk about tapering”. Disappointing our expectations of three months ago, apparent labour supply constraints have limited non-farm payrolls growth to 837k during April and May. This could suggest a relatively grinding pace of recovery is set to continue but labour demand indicators such as the JOLTS survey of job openings paint a far stronger picture, with the series hitting an all-time high of 9.3mn in April.

We therefore expect strong labour gains through the summer to enable the announcement of tapering in [late Q3 or early Q4](#). Given its likely impact on real yields – via both higher nominal yields and lower breakevens, tapering presents a particular challenge for gold. Absent a significant deterioration in labour market dynamics – from another wave of the virus, for example – or inflation expectations becoming unanchored, with the Fed unwilling or unable to rein them back in, we think gold is set to resume its path lower.



**Fig 136 TIPS reversal supported gold in Q2 but may already be over**

Source: Bloomberg Macquarie Strategy, June 2021

**Fig 137 Labour demand indicates the potential for strong employment growth**

Source: US BLS, Bloomberg, Macquarie Strategy, June 2021

**Fig 138 Global gold market balance**

|   | 2016         | 2017         | 2018         | 2019         | 2020         | 2021f        | 2022f         | 2023f        | 2024f        | 2025f        |
|---|--------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|
| <b>tonnes</b>                                 |              |              |              |              |              |              |               |              |              |              |
| <b>Supply</b>                                 |              |              |              |              |              |              |               |              |              |              |
| Mine production                               | 3,459        | 3,492        | 3,554        | 3,530        | 3,389        | 3,490        | 3,543         | 3,560        | 3,536        | 3,511        |
| %chg YoY                                      | 3.7%         | 0.9%         | 1.8%         | -0.7%        | -4.0%        | 3.0%         | 1.5%          | 0.5%         | -0.7%        | -0.7%        |
| Scrap   | 1,233        | 1,111        | 1,132        | 1,273        | 1,283        | 1,308        | 1,269         | 1,256        | 1,263        | 1,288        |
| Net Hedging/-Dehedging                        | 38           | -26          | -12          | 6            | -52          | 0            | 0             | 0            | 0            | 0            |
| <b>Total Supply</b>                           | <b>4,729</b> | <b>4,578</b> | <b>4,674</b> | <b>4,809</b> | <b>4,620</b> | <b>4,799</b> | <b>4,812</b>  | <b>4,817</b> | <b>4,798</b> | <b>4,799</b> |
| %chg YoY                                      | 7.1%         | -3.2%        | 2.1%         | 2.9%         | -3.9%        | 3.9%         | 0.3%          | 0.1%         | -0.4%        | 0.0%         |
| <b>Demand</b>                                 |              |              |              |              |              |              |               |              |              |              |
| <b>Fabrication (including Scrap)</b>          |              |              |              |              |              |              |               |              |              |              |
| Jewellery                                     | 2,104        | 2,241        | 2,248        | 2,123        | 1,412        | 1,835        | 2,110         | 2,216        | 2,260        | 2,294        |
| Electronics                                   | 256          | 266          | 268          | 262          | 248          | 258          | 266           | 271          | 276          | 282          |
| Official Coin Sales                           | 208          | 188          | 242          | 221          | 293          | 351          | 299           | 305          | 289          | 295          |
| other   | 67           | 67           | 66           | 64           | 54           | 55           | 53            | 50           | 48           | 45           |
| <b>Total Fabrication</b>                      | <b>2,635</b> | <b>2,762</b> | <b>2,825</b> | <b>2,669</b> | <b>2,006</b> | <b>2,500</b> | <b>2,727</b>  | <b>2,842</b> | <b>2,874</b> | <b>2,916</b> |
| %chg YoY                                      | -12.6%       | 4.8%         | 2.3%         | -5.5%        | -24.8%       | 24.6%        | 9.1%          | 4.2%         | 1.1%         | 15%          |
| Identified Bar Hoarding                       | 797          | 780          | 775          | 579          | 535          | 578          | 549           | 576          | 605          | 635          |
| Net ETF Purchases/-Sales                      | 541          | 272          | 70           | 398          | 877          | -400         | -200          | -100         | 300          | 400          |
| Net Official Purchases/-Sales                 | 395          | 379          | 657          | 668          | 326          | 250          | 150           | 250          | 250          | 250          |
| <b>Total Demand</b>                           | <b>4,368</b> | <b>4,192</b> | <b>4,327</b> | <b>4,315</b> | <b>3,745</b> | <b>2,928</b> | <b>3,226</b>  | <b>3,568</b> | <b>4,029</b> | <b>4,202</b> |
| %chg YoY                                      | 2.6%         | -4.0%        | 3.2%         | -0.3%        | -13.2%       | -21.8%       | 10.2%         | 10.6%        | 12.9%        | 4.3%         |
| <b>Balance (implied other investment)</b>     | <b>361</b>   | <b>386</b>   | <b>346</b>   | <b>494</b>   | <b>875</b>   | <b>1,871</b> | <b>1,586</b>  | <b>1,249</b> | <b>770</b>   | <b>597</b>   |
| <b>Gold Spot Price (annual average; US\$/</b> |              |              |              |              |              |              |               |              |              |              |
| <b>%chg YoY</b>                               | <b>7.6%</b>  | <b>0.7%</b>  | <b>0.9%</b>  | <b>9.7%</b>  | <b>27.2%</b> | <b>-2.1%</b> | <b>-10.5%</b> | <b>-3.2%</b> | <b>3.3%</b>  | <b>3.2%</b>  |

Source: Source: Company Reports, IMF, WGC, TDM, Metals Focus, US Mint, Perth Mint, Bloomberg, Macquarie Strategy, June 2021

# Silver

## Cyclical sweet spot drawing to a close

The second quarter turned into a sweet spot for silver, with precious metals benefitting from a weak US dollar and falling real interest rates, at the same time as booming global goods demand underpinned growth in industrial production (IP). Prices performed accordingly, rallying 20% back above \$28/oz and keeping the ratio to gold below 70. We have therefore revised our price forecasts, expecting a 2021 full year average of \$25.37.

Nevertheless, given our belief that Q2 will mark a near-term cyclical peak for global industrial production and expectation that continued services led growth in the US will enable the Federal Reserve to announce QE tapering before the end of the year, we struggle to see how things can get much better. Over the coming quarters, we still therefore expect prices to follow gold lower, retreating into the low \$20s.

A technical break towards \$30/oz remains possible, with the market not excessively long – net investor positioning on the CME is ~50% below its 2017 high, and ETF holdings of 938Moz are 82Moz below their post-Reddit highs. However, for such a move to be sustainable, it would likely require a further acceleration in global IP and/or a renewed drop in real bond yields.

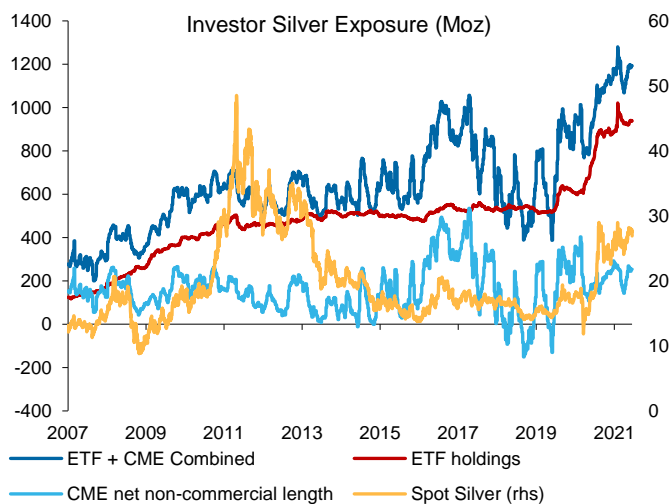
Indeed, we do not see anything micro-fundamental that suggests silver prices should jump immediately higher. As detailed in [Silver's solar scenarios](#), both rising EV penetration and the build out of solar photovoltaic capacity are structural positives for silver demand but slow moving and, for the latter, expected to be heavily offset by ongoing thriftiness. If we kept our intensity of use assumptions constant, for example, silver's forecast solar PV demand would rise from ~99Moz in 2019 to 231Moz by 2025. Our base case, however, is for sectoral demand to reach 167Moz.

Increased scrap generation, in response to higher prices, marginally loosens our forecast balances but energy transition driven demand trends are still sufficient for us to project persistent deficits before ETF investment flows. This creates the potential for elevated prices when investment demand is strong but ETFs can turn net sellers in a precious metals downturn, even if silver holdings have tended to be stickier than gold. Moreover, unlike any of the pure industrial metals, above ground stocks – including the 1.17Bnoz held in LBMA vaults – provide a significant cushion against the potential for true physical tightness to emerge.

Fig 139 Global silver market balance

|   | Jun-2021 | 2016         | 2017         | 2018         | 2019         | 2020         | 2021f        | 2022f        | 2023f        | 2024f        | 2025f        |
|---|----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Moz</b>                                    |          |              |              |              |              |              |              |              |              |              |              |
| <b>Supply</b>                                 |          |              |              |              |              |              |              |              |              |              |              |
| Mine Production                               |          | 893          | 877          | 848          | 837          | 786          | 831          | 844          | 848          | 859          | 869          |
| %chg YoY                                      |          | -0.1%        | -1.8%        | -3.3%        | -1.3%        | -6.0%        | 5.7%         | 1.5%         | 0.5%         | 1.3%         | 1.1%         |
| Old Silver Scrap                              |          | 157          | 159          | 156          | 160          | 170          | 187          | 183          | 185          | 189          | 193          |
| Net Producer Hedging                          |          | -12          | -1           | -7           | 14           | 9            | 10           | 0            | 0            | 0            | 0            |
| <b>total supply</b>                           |          | <b>1,038</b> | <b>1,035</b> | <b>996</b>   | <b>1,010</b> | <b>965</b>   | <b>1,028</b> | <b>1,027</b> | <b>1,033</b> | <b>1,048</b> | <b>1,061</b> |
| %chg YoY                                      |          | -1.3%        | -0.3%        | -3.7%        | 1.4%         | -4.5%        | 6.6%         | -0.1%        | 0.6%         | 1.4%         | 1.3%         |
| <b>Demand</b>                                 |          |              |              |              |              |              |              |              |              |              |              |
| <b>Jewellery</b>                              |          | 198          | 205          | 213          | 201          | 155          | 178          | 184          | 185          | 185          | 186          |
| <b>Coins and Medals</b>                       |          | 209          | 150          | 181          | 176          | 238          | 273          | 205          | 195          | 204          | 209          |
| <b>Silverware</b>                             |          | 52           | 58           | 61           | 60           | 51           | 55           | 56           | 57           | 58           | 59           |
| <b>Industrial Applications</b>                |          | 578          | 593          | 572          | 576          | 558          | 624          | 642          | 646          | 652          | 658          |
| Electrical & Electronics                      |          | 234          | 243          | 235          | 230          | 212          | 229          | 240          | 241          | 243          | 246          |
| Brazing Alloys & Solders                      |          | 55           | 58           | 58           | 59           | 56           | 59           | 61           | 60           | 60           | 60           |
| Photography                                   |          | 38           | 35           | 34           | 34           | 30           | 31           | 30           | 29           | 28           | 26           |
| Photovoltaic                                  |          | 94           | 102          | 93           | 99           | 114          | 151          | 151          | 157          | 163          | 167          |
| other industrial (incl. ethylene oxide)       |          | 157          | 155          | 152          | 155          | 147          | 155          | 160          | 158          | 158          | 158          |
| <b>Net ETF Purchases</b>                      |          | 50           | 2            | -20          | 83           | 280          | 50           | 0            | 0            | 0            | 0            |
| <b>Net Official Sector Purchases</b>          |          | -1           | -1           | -1           | -1           | 0            | 0            | 0            | 0            | 0            | 0            |
| <b>Total Demand</b>                           |          | <b>1085</b>  | <b>1007</b>  | <b>1005</b>  | <b>1096</b>  | <b>1282</b>  | <b>1181</b>  | <b>1087</b>  | <b>1082</b>  | <b>1100</b>  | <b>1112</b>  |
| %chg YoY                                      |          | -4.6%        | -7.2%        | -0.2%        | 9.0%         | 17.0%        | -7.9%        | -8.0%        | -0.4%        | 1.6%         | 1.1%         |
| <b>Balance (implied "other" investment)</b>   |          | <b>-47</b>   | <b>28</b>    | <b>-9</b>    | <b>-85</b>   | <b>-317</b>  | <b>-153</b>  | <b>-60</b>   | <b>-49</b>   | <b>-52</b>   | <b>-51</b>   |
| <b>silver price</b> (annual average; US\$/oz) |          | <b>17.11</b> | <b>17.05</b> | <b>15.71</b> | <b>16.16</b> | <b>20.51</b> | <b>25.37</b> | <b>21.00</b> | <b>20.50</b> | <b>22.00</b> | <b>23.25</b> |
| %chg YoY                                      |          | 9%           | -0%          | -8%          | 3%           | 27%          | 24%          | -17%         | -2%          | 7%           | 6%           |

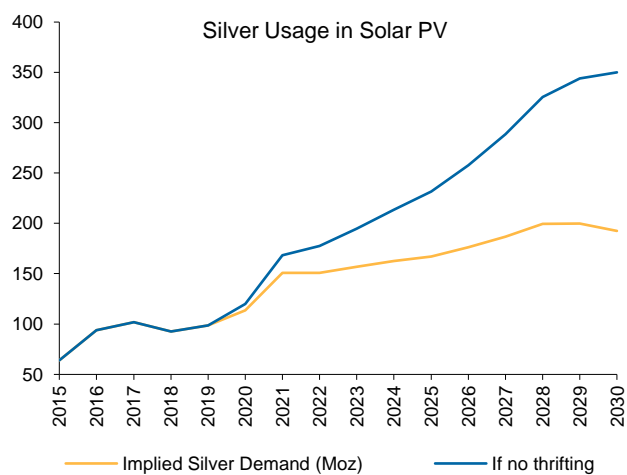
Source: Company Reports, Wood Mackenzie, US Mint, Perth Mint, Silver Institute, TDM, Bloomberg, Macquarie Strategy, June 2021

**Fig 140 Net investor positioning long, but off the highs**

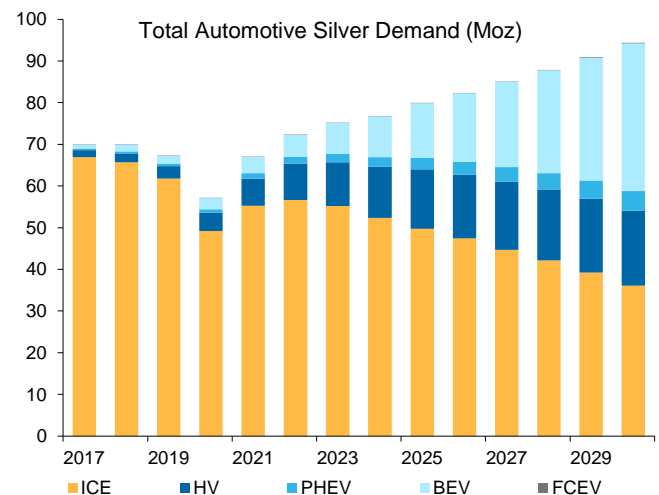
Source: CME, CFTC, Bloomberg, Macquarie Strategy, June 2021

**Fig 141 Keeping the Au ratio relatively low**

Source: Bloomberg, Macquarie Strategy, June 2021

**Fig 142 Solar is supportive but not a demand game changer**

Source: Silver Institute, Bloomberg NEF, Macquarie Strategy, June 2021

**Fig 143 Rising EV penetration another positive trend**

Source: LMCA, Rho Motion, Macquarie Strategy, June 2021

**Fig 144 Quarterly silver price forecasts**

| US\$/oz | Silver    |       |     |        |
|---------|-----------|-------|-----|--------|
|         | Spot Avg. | New   | Old | Change |
| Q1-2021 | 26.23     | --    | --  | --     |
| Q2-2021 | 27.00     | 25.00 |     | 8.0%   |
| Q3-2021 | 25.25     | 24.00 |     | 5.2%   |
| Q4-2021 | 23.00     | 22.00 |     | 4.5%   |
| Q1-2022 | 22.00     | 21.00 |     | 4.8%   |
| Q2-2022 | 22.00     | 21.00 |     | 4.8%   |
| Q3-2022 | 20.00     | 20.00 |     | 0.0%   |
| Q4-2022 | 20.00     | 20.00 |     | 0.0%   |

Source: Bloomberg, Macquarie Strategy, June 2021

**Fig 145 Annual silver price forecasts**

| US\$/oz | Silver    |       |     |        |
|---------|-----------|-------|-----|--------|
|         | Spot Avg. | New   | Old | Change |
| 2019a   | 16.20     | --    | --  | --     |
| 2020a   | 20.52     | --    | --  | --     |
| 2021e   | 25.37     | 24.31 |     | 4.4%   |
| 2022e   | 21.00     | 20.50 |     | 2.4%   |
| 2023e   | 20.50     | 21.25 |     | -3.5%  |
| 2024e   | 22.00     | 22.00 |     | 0.0%   |
| 2025e   | 23.25     | 23.25 |     | 0.0%   |
| LT      | 20.00     | 19.44 |     | 2.9%   |

Source: Bloomberg, Macquarie Strategy, June 2021

## Platinum & Palladium

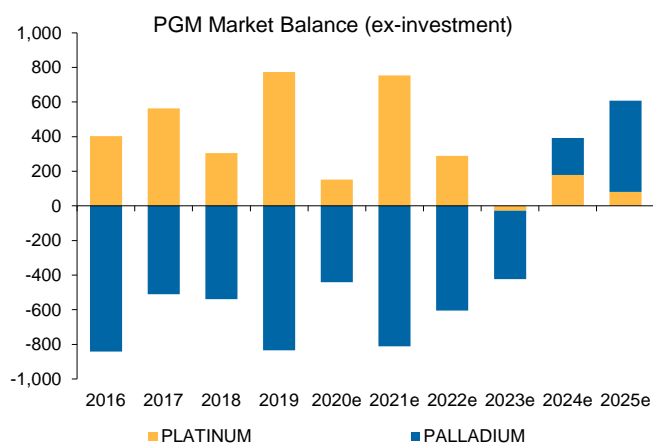
### The path back to balance

Our view on the PGMs is little changed from March, anticipating that (starting from polar opposite positions) both markets will drift back towards (and likely beyond) balance over the forecast period. Specifically, we project 2021 pre-investment balances of 810koz Pd deficit and 755koz Pt surplus.

Compared to our March balance, palladium's deficit has narrowed by 200koz, largely on account of Norilsk reducing their initial estimates of supply losses from flooding at the Oktyabrsky and Taimyrsky mines. Our longer dated balances also now move into larger surpluses, with a c.500koz surplus forecast for 2025, driven primarily by upward revisions to our EV penetration assumptions.

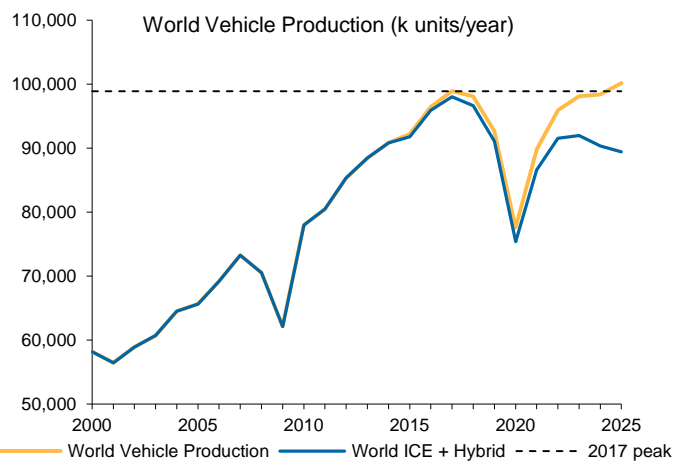
These changes also dent our platinum demand numbers but to a far more modest extent, given automotive catalysts account for ~85% of gross Pd demand vs. ~45% of Pt. Even so, our 2021 Pt balance is also c.200koz looser than a quarter ago, on account of increased Russian supply forecasts and a c.100koz downward revision to jewellery demand (still rebounding by 6% YoY but we had initially envisaged a sharper recovery).

Fig 146 The path back to balance, and beyond



Source: Company Reports, LMCA, Rho Motion, JM, WPIC, Bloomberg, Macrobond, Macquarie Strategy, June 2021

Fig 147 As auto-catalysts head for gradual decline



Source: LMCA, Rho Motion, Macquarie Strategy, June 2021

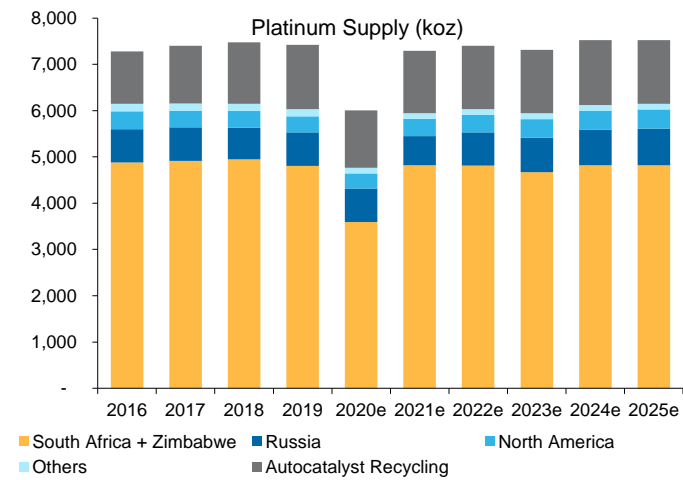
Although platinum returns to (and stays around) balance by 2023 in our forecasts, a lacklustre demand backdrop and the emergence of incremental supply growth (Zimplats Mupani project, Sibanye Stillwater's K4) prevent it from moving into clear deficit. Substitution (from Pd to Pt) and higher heavy duty diesel truck loadings do help – we forecast global autocat demand to hold around 3.5Moz/yr – but are insufficient to deliver structural demand growth.

The hydrogen economy remains a potential game changer for platinum but we struggle to model a meaningful impact on our balances before 2025. From 2020e demand of c.65koz, we think it should double by 2025 but will remain small in absolute terms. Come the late 2020s and 2030s it is likely to be a different story, with plausible scenarios generating >1Moz of sectoral demand, but technological uncertainty – potential solid state batteries, battery swapping at service stations etc. – make it difficult for the market to pre-price a high fuel cell penetration outcome so far in advance.

For palladium, after a decade as arguably the fundamentally tightest industrial metal, there is a stark contrast between the expectation of continued deficits this year and next and a forecast period within which demand growth is expected to turn negative. The fact that this coincides with anticipated supply growth – both from recycling and Norilsk's South Cluster Project – makes for a particularly bearish medium-term outlook.

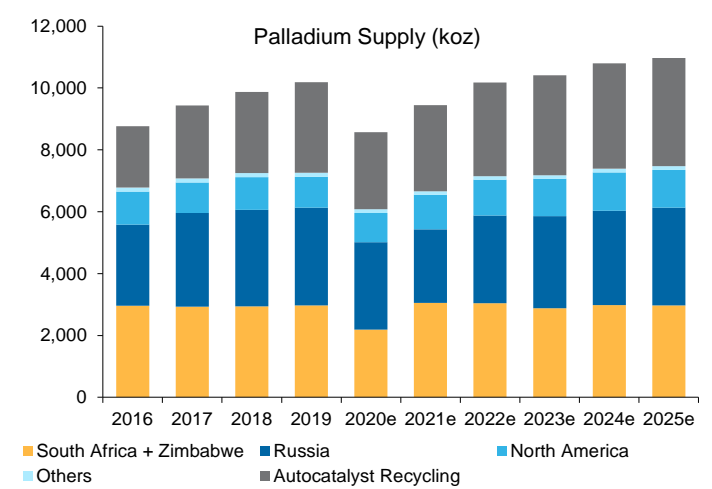
We would not be surprised to see spot prices retest \$3,000/oz in Q3, and for the curve to be steeply backwardated at some point, as Norilsk's mine losses flow through to weaker refined production. Further out, however, even if supply growth were to disappoint (as the past two years in PGMs have shown, supply can prove fragile), without a new technological application, it stands to be a structural loser from the emerging energy transition.

**Fig 148 Platinum supply effectively back to normal**



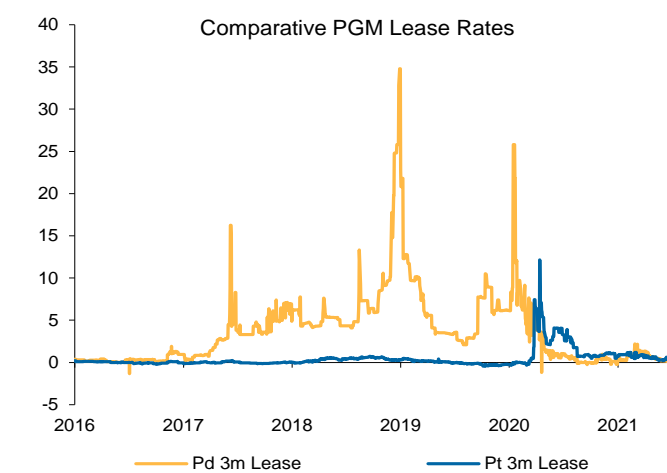
Source: Company Reports, JM, Macquarie Strategy, June 2021

**Fig 149 But palladium constrained by Norilsk's outage**



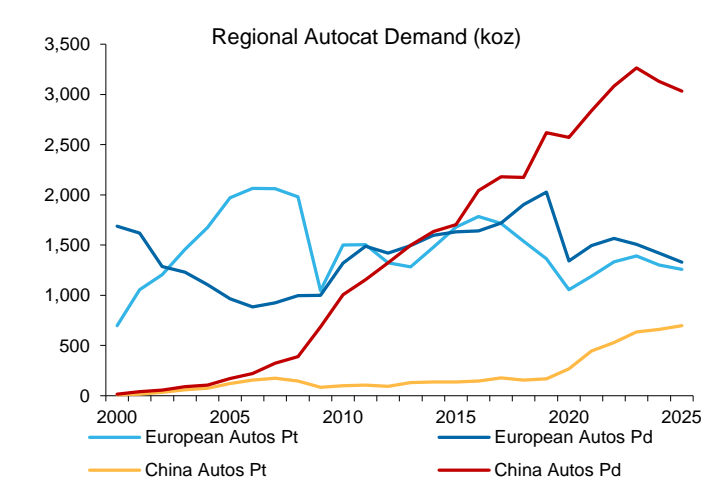
Source: Company Reports, JM, Macquarie Strategy, June 2021

**Fig 150 Yet lease rates remain calm**



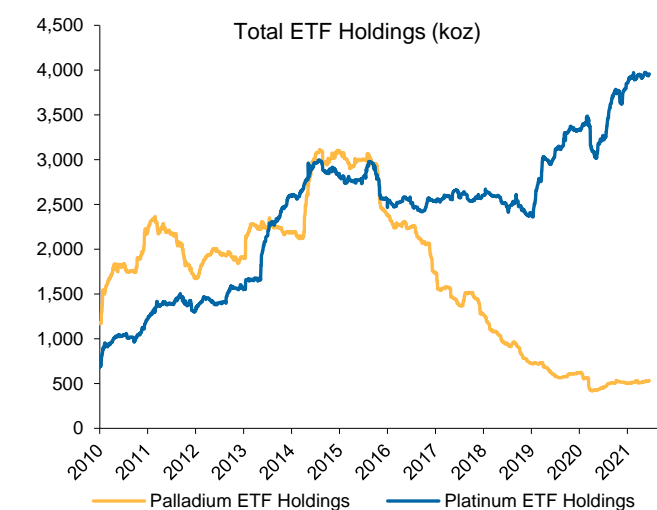
Source: Bloomberg, Macquarie Strategy, June 2021

**Fig 151 Palladium autocat demand set to stall**



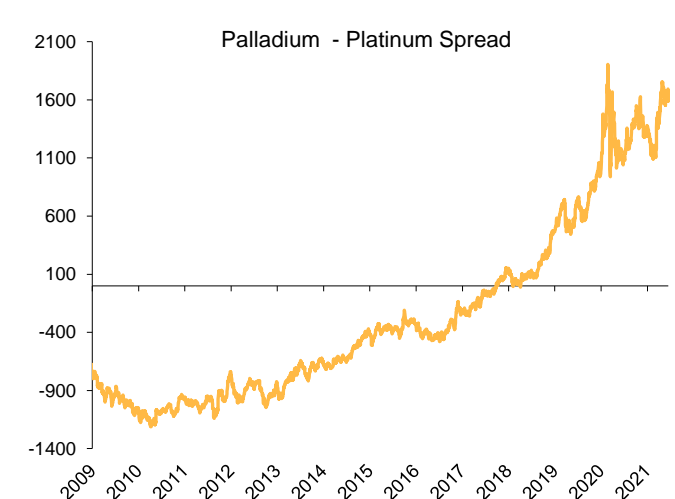
Source: LMCA, Rho Motion, Macquarie Strategy, June 2021

**Fig 152 No reversal of divergent ETF holdings**



Source: Bloomberg, Macquarie Strategy, June 2021

**Fig 153 Approaching the end of a structural trend?**



Source: Bloomberg, Macquarie Strategy, June 2021

Fig 154 Global platinum and palladium market balances

| PLATINUM   | 2016         | 2017         | 2018          | 2019          | 2020e        | 2021e         | 2022e         | 2023e         | 2024e         | 2025e         |
|--|--------------|--------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|
| <b>koz</b>                                       |              |              |               |               |              |               |               |               |               |               |
| <b>Supply (inc. stock sales)</b>                 |              |              |               |               |              |               |               |               |               |               |
| South Africa +Zimbabwe                           | 4,881        | 4,916        | 4,946         | 4,808         | 3,595        | 4,821         | 4,814         | 4,668         | 4,818         | 4,822         |
| Russia   | 714          | 720          | 687           | 721           | 719          | 630           | 713           | 749           | 766           | 792           |
| North America                                    | 391          | 360          | 359           | 345           | 329          | 370           | 383           | 399           | 410           | 409           |
| Others   | 162          | 157          | 152           | 156           | 125          | 125           | 125           | 125           | 125           | 125           |
| <b>Aggregate Primary Supply</b>                  | <b>6,148</b> | <b>6,153</b> | <b>6,144</b>  | <b>6,030</b>  | <b>4,768</b> | <b>5,945</b>  | <b>6,035</b>  | <b>5,941</b>  | <b>6,120</b>  | <b>6,148</b>  |
| %chg YoY   | -0.2%        | 0.1%         | -0.1%         | -1.9%         | -20.9%       | 24.7%         | 1.5%          | -1.6%         | 3.0%          | 0.5%          |
| <b>Autocatalyst Recycling</b>                    | 1,132        | 1,249        | 1,329         | 1,391         | 1,238        | 1,345         | 1,368         | 1,372         | 1,402         | 1,372         |
| %chg YoY   | -0.4%        | 10.3%        | 6.4%          | 4.7%          | -11.0%       | 8.6%          | 1.7%          | 0.3%          | 2.2%          | -2.2%         |
| <b>Demand</b>                                    |              |              |               |               |              |               |               |               |               |               |
| Auto catalyst (gross)                            | 3,339        | 3,214        | 3,053         | 2,863         | 2,397        | 2,957         | 3,335         | 3,514         | 3,456         | 3,486         |
| Industrial (net)                                 | 1,328        | 1,411        | 1,965         | 1,794         | 1,811        | 1,781         | 1,902         | 1,929         | 1,972         | 2,018         |
| Jewellery (net)                                  | 1,675        | 1,639        | 1,559         | 1,403         | 1,184        | 1,259         | 1,322         | 1,335         | 1,342         | 1,349         |
| Other (net)                                      | 535          | 575          | 591           | 588           | 462          | 538           | 554           | 562           | 574           | 585           |
| <b>Aggregate Demand</b>                          | <b>6,877</b> | <b>6,839</b> | <b>7,168</b>  | <b>6,648</b>  | <b>5,854</b> | <b>6,535</b>  | <b>7,114</b>  | <b>7,341</b>  | <b>7,343</b>  | <b>7,438</b>  |
| %chg YoY   | -4.8%        | -0.6%        | 4.8%          | -7.3%         | -11.9%       | 11.6%         | 8.8%          | 3.2%          | 0.0%          | 1.3%          |
| <b>Industrial Balance</b>                        | <b>403</b>   | <b>563</b>   | <b>305</b>    | <b>773</b>    | <b>152</b>   | <b>755</b>    | <b>289</b>    | <b>-28</b>    | <b>179</b>    | <b>81</b>     |
| As proportion of demand                          | 5.9%         | 8.2%         | 4.3%          | 11.6%         | 2.6%         | 11.5%         | 4.1%          | -0.4%         | 2.4%          | 1.1%          |
| <b>Investment</b>                                | 620          | 361          | 67            | 1,131         | 1,022        |               |               |               |               |               |
| %chg YoY   | 37.5%        | -41.8%       | -81.4%        | 1588.1%       | -9.6%        |               |               |               |               |               |
| <b>of which Visible Physical Holdings</b>        |              |              |               |               |              |               |               |               |               |               |
| Change in ETF holdings                           | -12.1        | 59.8         | -223.4        | 966.9         | 507.1        |               |               |               |               |               |
| Change in Exchange Inventory                     | 83.5         | -44.0        | -20.6         | -13.9         | 463.5        |               |               |               |               |               |
| Other Investment inc. Coin & Bar                 | 548.6        | 345.2        | 311.0         | 178.0         | 514          |               |               |               |               |               |
| <b>Flow of Metal</b>                             | <b>-217</b>  | <b>202</b>   | <b>238</b>    | <b>-358</b>   | <b>-870</b>  | <b>755</b>    | <b>289</b>    | <b>-28</b>    | <b>179</b>    | <b>81</b>     |
| (investment + industrial stock change)           |              |              |               |               |              |               |               |               |               |               |
| <b>Platinum price</b> (annual average; US\$/oz)  | 989          | 950          | 880           | 865           | 886          | 1,147         | 1,100         | 1,275         | 1,200         | 1,275         |
| %chg YoY   | -6.2%        | -3.9%        | -7.4%         | -1.6%         | 2.4%         | 29.4%         | -4.1%         | 15.9%         | -5.9%         | 6.3%          |
| <b>PALLADIUM</b>                                 |              |              |               |               |              |               |               |               |               |               |
| <b>koz</b>                                       |              |              |               |               |              |               |               |               |               |               |
| <b>Supply (inc. stock sales)</b>                 |              |              |               |               |              |               |               |               |               |               |
| South Africa +Zimbabwe                           | 2,966        | 2,933        | 2,936         | 2,967         | 2,192        | 3,051         | 3,041         | 2,877         | 2,980         | 2,975         |
| Russia   | 2,618        | 3,030        | 3,128         | 3,168         | 2,820        | 2,380         | 2,838         | 2,981         | 3,052         | 3,159         |
| North America                                    | 1,065        | 982          | 1,052         | 989           | 951          | 1,114         | 1,155         | 1,206         | 1,240         | 1,215         |
| Others   | 129          | 131          | 135           | 140           | 120          | 120           | 120           | 120           | 120           | 120           |
| <b>Aggregate Primary Supply</b>                  | <b>6,778</b> | <b>7,076</b> | <b>7,251</b>  | <b>7,264</b>  | <b>6,083</b> | <b>6,665</b>  | <b>7,154</b>  | <b>7,184</b>  | <b>7,392</b>  | <b>7,469</b>  |
| %chg YoY   | -1.4%        | 4.4%         | 2.5%          | 0.2%          | -16.3%       | 9.6%          | 7.3%          | 0.4%          | 2.9%          | 1.0%          |
| <b>Autocatalyst Recycling</b>                    | <b>1,986</b> | <b>2,358</b> | <b>2,621</b>  | <b>2,924</b>  | <b>2,484</b> | <b>2,780</b>  | <b>3,022</b>  | <b>3,224</b>  | <b>3,406</b>  | <b>3,505</b>  |
| %chg YoY   | 1.7%         | 18.7%        | 11.2%         | 11.6%         | -15.1%       | 11.9%         | 8.7%          | 6.7%          | 5.7%          | 2.9%          |
| <b>Demand</b>                                    |              |              |               |               |              |               |               |               |               |               |
| Auto catalyst (gross)                            | 8,042        | 8,464        | 8,836         | 9,667         | 7,784        | 8,913         | 9,411         | 9,436         | 9,206         | 9,056         |
| Industrial (net)                                 | 1,239        | 1,191        | 1,264         | 1,061         | 1,016        | 1,106         | 1,125         | 1,120         | 1,129         | 1,140         |
| Jewellery (net)                                  | 168          | 146          | 136           | 117           | 78           | 93            | 95            | 94            | 94            | 94            |
| Other (net)                                      | 157          | 144          | 175           | 177           | 129          | 144           | 150           | 152           | 155           | 158           |
| <b>Aggregate Demand</b>                          | <b>9,606</b> | <b>9,945</b> | <b>10,411</b> | <b>11,022</b> | <b>9,007</b> | <b>10,256</b> | <b>10,780</b> | <b>10,802</b> | <b>10,584</b> | <b>10,448</b> |
| %chg YoY   | 2.8%         | 3.5%         | 4.7%          | 5.9%          | -18.3%       | 13.9%         | 5.1%          | 0.2%          | -2.0%         | -1.3%         |
| <b>Industrial Balance</b>                        | <b>-842</b>  | <b>-511</b>  | <b>-539</b>   | <b>-834</b>   | <b>-441</b>  | <b>-810</b>   | <b>-604</b>   | <b>-395</b>   | <b>214</b>    | <b>526</b>    |
| As proportion of demand                          | -8.8%        | -5.1%        | -5.2%         | -7.6%         | -4.9%        | -7.9%         | -5.6%         | -3.7%         | 2.0%          | 5.0%          |
| <b>Investment</b>                                | -646         | -386         | -574          | -87           | -190         |               |               |               |               |               |
| %chg YoY   | -2.0%        | -40.2%       | 48.7%         | -84.8%        | 118.4%       |               |               |               |               |               |
| <b>Flow of Metal</b>                             | <b>-196</b>  | <b>-125</b>  | <b>35</b>     | <b>-747</b>   | <b>-251</b>  | <b>-810</b>   | <b>-604</b>   | <b>-395</b>   | <b>214</b>    | <b>526</b>    |
| (investment + industrial stock change)           |              |              |               |               |              |               |               |               |               |               |
| <b>Palladium price</b> (annual average; US\$/oz) | 615          | 871          | 1,030         | 1,541         | 2,201        | 2,614         | 2,250         | 1,813         | 1,400         | 1,225         |
| %chg YoY   | -11.1%       | 41.7%        | 18.3%         | 49.5%         | 42.9%        | 18.7%         | -13.9%        | -19.4%        | -22.8%        | -12.5%        |

Source: Company Reports, LMCA, Rho Motion, JM, WPIC, Bloomberg, Macrobond Macquarie Strategy, June 2021

## Crude Oil

### Still bullish for summer'21

We remain bullish on the oil complex. We expect significant summer demand growth to create tighter refined product markets, increase refining margins, and higher refining throughput. Together, we expect these two drivers to further tighten physical crude markets. We are leaving our previous oil forecasts unchanged and expect Brent to average \$66 in 2021 and \$58 in 2022 (see table below for quarterly estimates). The key supply concern remains the timing and magnitude of increased Iranian exports to the market. Amidst the ongoing ebb and flow of negotiations, we remain relatively constructive on the potential for a US/Iran return to the JCPOA. In any case, even with increased Iranian supply expectations (a still-risked ~3.2 MBD in '22), our S/D balance remains in deficit until a more meaningful US shale response mounts in 2022.

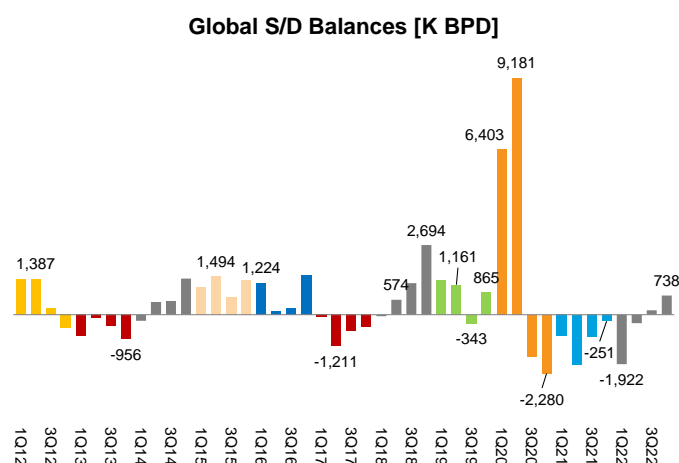
We have increased our demand estimates for 2022 by ~1 M BPD, which is primarily driven by our expectations for jet fuel. We have made no changes to our gasoline and diesel demand estimates for 2021 or 2022, but we believe gasoline has more upside demand skew as we expect some jet demand conveyance into gasoline.

**Fig 155 Oil outlook unchanged; JKM view moves higher**

| \$/BBL                | 1Q21     | 2Q21     | 3Q21     | 4Q21     | FY21     | 1Q22     | 2Q22     | 3Q22     | 4Q22     | FY22     |
|-----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Brent                 | \$61.44  | \$68.00  | \$72.00  | \$61.00  | \$65.61  | \$60.00  | \$58.00  | \$55.00  | \$58.00  | \$57.75  |
| WTI-Brent             | (\$3.13) | (\$3.25) | (\$4.00) | (\$4.50) | (\$3.72) | (\$4.50) | (\$4.50) | (\$4.50) | (\$4.50) | (\$4.50) |
| WTI                   | \$58.30  | \$64.75  | \$68.00  | \$56.50  | \$61.89  | \$55.50  | \$53.50  | \$50.50  | \$53.50  | \$53.25  |
| <b>GAS [\$/MMBTU]</b> |          |          |          |          |          |          |          |          |          |          |
| HH                    | \$2.72   | \$2.90   | \$2.80   | \$2.60   | \$2.75   | \$2.80   | \$2.80   | \$2.60   | \$2.70   | \$2.73   |
| JKM                   | \$8.77   | \$8.50   | \$7.50   | \$9.00   | \$8.44   | \$9.50   | \$7.50   | \$7.00   | \$9.00   | \$8.25   |

Source: Macquarie Macro Strategy

**Fig 156 Stock draws anticipated through 2Q22**



Source: Macquarie Macro Strategy

### Light end demand still surging

Demand across the end use segments at the light end of the barrel remains strong. Ethylene demand and propylene demand strength are keeping ethane and LPG demand strong. LPG and BTX demand are also benefitting from new car sales which are still trending above 90 M units per annum, despite the impact of global semiconductor shortages. In the US, the strong trend in new housing starts is keeping demand elevated for LPG and naphtha; we see naphtha benefitting from both elevated petrochemical and gasoline demand. Rounding out the picture, propylene end use demand remains strong and is benefitting from restocking.

### Fuel oil demand strong on global trade and power generation

At the bottom of the barrel, we also see improving demand dynamics, as we anticipate continued momentum in global trade increasing marine bunker consumption. We also expect strong demand from power generation and increased demand for asphalt and carbon black at the heaviest end of the barrel.

### Broad-based global supply growth anticipated to YE '22

Outside of a moderate increase in Iranian volumes, our supply outlook is little changed through 2022. From a high level, we anticipate global supply chasing demand higher and ultimately rising back above pre-COVID levels in 2H '22. Key in driving this increase relative to pre-COVID levels are previously disrupted areas, namely Libya and Iran, which we anticipate producing a combined ~4 MBD in our balances, compared to ~2 MBD in March 2020 and ~5 MBD of combined capacity. While a full return of Iranian supply to 3.5-4.0 MBD could further pressure our balances, the risk of this event fracturing OPEC cohesion appears diminished given recent reports of Iraq-hosted talks between Saudi Arabia and Iran.

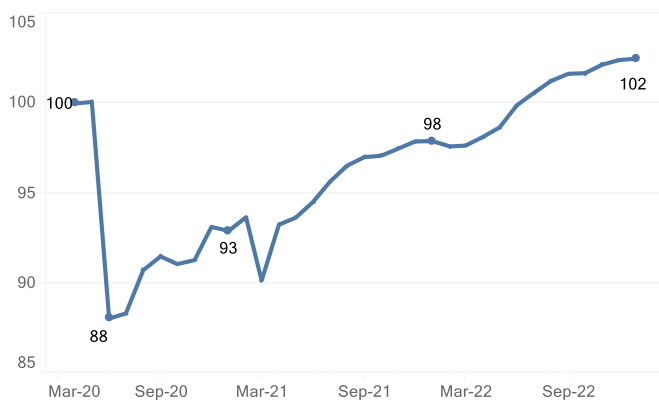


Likewise, we expect a return of US supply growth to play a key role in 2022 balances and longer-term price formation. We continue to anticipate [robust tight oil growth in '22](#) and believe this is achievable in a low-mid \$50 WTI range, at historically conservative levels of re-investment. Enabling this performance are [emerging countercyclical productivity gains](#) and significant capital cost reductions in tight oil. While we do not anticipate resurgent shale growth triggering an openly belligerent response from OPEC+ (i.e., price war), given the constitution of the group, we do think this growth impulse will check any instincts to overtighten in '22.

With the US rig count tracking our expectations fairly well in Q2 '21 and [indications of continued activity gains emerging](#), our US supply expectations through YE '22 are little changed. In total, we continue to anticipate ~1.2 MBD of cumulative tight oil growth from YE '20 to YE '22, with the timeline of this growth now slightly accelerated. We now model ~430 KBD of exit/exit tight oil growth in '21 (with modest growth in 1H '21), followed by ~770 KBD of exit/exit tight oil growth in '22.

**Fig 157 Supply anticipated above pre-COVID levels in 2H '22**

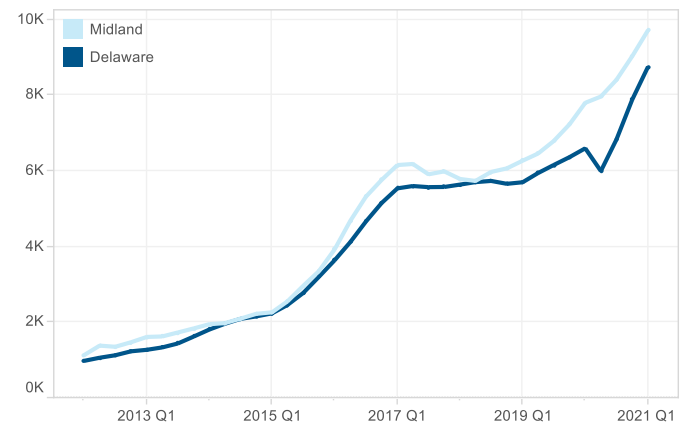
Global Oil Supply (MBD)



Source: IEA, EIA, Macquarie Macro Strategy

**Fig 158 Tight oil productivity gains emerging in downturn**

Est. Permian Oil Prod'n Per Rig Year (Trailing 4Q Avg.)



Source: Baker Hughes, IHS, Macquarie Macro Strategy. Note: Q1 '21 production/lateral foot assumed at 2H '20 levels given storm impacts

## LNG

### The cure for high prices is...

The competition for LNG supply intensified unexpectedly this spring. Sustained cold weather, much lower-than-expected Russian gas supply, and increased coal-to-gas switching on the back of surging emissions costs have supported a 60%+ increase in prompt TTF. JKM, on the other hand, has chased the strength in the European market to keep the arb open for Atlantic cargos. Stronger YoY pull from LatAm and transient supply outages have also supported global gas prices. As a result, we have lifted our 2021 JKM forecast by \$1.5/MMBtu to reflect a more balanced market wherein we see a modest surplus of 2.5 MM tons.

In the near term, we expect the spot JKM prices to retreat towards the \$8/MMBtu level. High spot prices have already led to a negative citygate gas margin in many places in Asia, and state energy companies are reselling term LNG supplies to take advantage of the unseasonably high prices. India is also delaying/cancelling LNG deliveries due to COVID demand destruction. While the S-D gap has narrowed in Q2 for the aforementioned reasons, we see a bigger surplus in Q3, driven by normalized EU & LatAm demand and better supply availability. On the flip side, given Chinese gas injections are ~2 BCM slower YoY and Japan expects a tight summer power balance, more elastic gas demand could emerge after a modest price drop.

Longer term, developments around Nord Stream 2 still offer a substantial impact on the global gas balance, where [recent moves](#) from the US State Department seem net positive for the project. For 2024 and beyond, assuming weather normal, we expect the delay in Total Mozambique LNG to create a notable deficit for winter 25/26 and 26/27. Among existing projects, the construction of Arctic 2 and Canada LNG may need to speed up to fill the supply gap. Greenfield US projects have also gained more attention lately as a result of the Mozambique delay. We expect more SPAs and project FIDs in the coming months as the market solves for the anticipated imbalance.

**Fig 159 Macquarie Global LNG Balance**

| in MT                        |              | 1Q20         | 2Q20        | 3Q20        | 4Q20        | 2020         | 1Q21         | 2Q21         | 3Q21        | 4Q21        | 2021         | 1Q22         | 2Q22        | 3Q22        | 4Q22         | 2022         | 2023         | 2024         | 2025         |
|------------------------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|
| Demand                       | Asia         | 67.9         | 56.3        | 61.1        | 70.8        | 256.1        | 75.5         | 63.1         | 64.6        | 73.4        | 276.6        | 74.5         | 66.3        | 68.1        | 75.8         | 284.7        | 300.0        | 316.5        | 333.1        |
|                              | China        | 15.0         | 16.6        | 17.1        | 20.4        | 69.1         | 19.9         | 18.7         | 18.4        | 22.5        | 79.4         | 20.9         | 19.6        | 19.3        | 23.6         | 83.4         | 89.7         | 96.2         | 102.9        |
|                              | JKT          | 39.0         | 28.1        | 30.3        | 36.7        | 134.2        | 42.3         | 30.9         | 31.9        | 35.8        | 140.8        | 39.1         | 30.1        | 31.1        | 34.9         | 135.2        | 136.6        | 137.9        | 139.3        |
|                              | South Asia   | 10.1         | 8.1         | 9.9         | 10.7        | 38.8         | 9.9          | 10.1         | 11.2        | 11.5        | 42.7         | 10.4         | 11.8        | 12.6        | 12.7         | 47.5         | 51.5         | 55.7         | 60.1         |
|                              | Other        | 3.8          | 3.6         | 3.7         | 3.0         | 14.1         | 3.4          | 4.0          | 4.3         | 3.9         | 15.5         | 4.1          | 4.8         | 5.1         | 4.6          | 18.6         | 22.3         | 26.8         | 30.8         |
|                              | Europe       | 27.6         | 23.4        | 16.5        | 17.1        | 84.6         | 19.6         | 25.8         | 20.6        | 21.4        | 87.4         | 21.6         | 23.2        | 20.1        | 20.3         | 85.2         | 78.4         | 74.5         | 76.7         |
|                              | LatAm        | 2.3          | 2.8         | 3.1         | 3.3         | 11.5         | 3.3          | 4.1          | 4.3         | 2.8         | 14.4         | 3.5          | 3.6         | 3.9         | 3.0          | 14.1         | 15.0         | 16.1         | 17.2         |
|                              | Other        | 1.4          | 2.9         | 3.4         | 1.7         | 9.4          | 1.6          | 3.2          | 3.5         | 2.1         | 10.4         | 2.0          | 3.6         | 4.0         | 2.6          | 12.3         | 14.2         | 16.3         | 18.8         |
|                              | <b>Total</b> | <b>99.2</b>  | <b>85.5</b> | <b>84.0</b> | <b>92.9</b> | <b>361.5</b> | <b>100.1</b> | <b>96.6</b>  | <b>94.1</b> | <b>99.9</b> | <b>390.6</b> | <b>101.6</b> | <b>96.8</b> | <b>96.2</b> | <b>101.7</b> | <b>396.3</b> | <b>407.7</b> | <b>423.4</b> | <b>445.8</b> |
| Supply / Production Capacity | US           | 14.2         | 10.6        | 6.5         | 14.6        | 45.9         | 16.9         | 17.5         | 17.9        | 18.2        | 70.5         | 18.4         | 18.7        | 18.7        | 18.9         | 74.6         | 84.4         | 87.9         | 96.1         |
|                              | Qatar        | 20.3         | 19.2        | 19.7        | 19.0        | 78.1         | 21.4         | 19.7         | 19.7        | 19.7        | 80.6         | 19.5         | 19.5        | 19.5        | 19.5         | 78.2         | 76.6         | 75.9         | 78.6         |
|                              | Australia    | 20.9         | 18.6        | 19.1        | 20.2        | 78.7         | 19.6         | 19.6         | 19.6        | 19.6        | 78.4         | 19.9         | 19.9        | 19.9        | 19.9         | 79.6         | 78.6         | 75.9         | 74.2         |
|                              | Russia       | 8.0          | 7.0         | 7.1         | 8.3         | 30.5         | 8.1          | 7.6          | 7.6         | 7.6         | 30.9         | 7.4          | 7.4         | 7.4         | 7.4          | 29.5         | 29.1         | 33.1         | 38.0         |
|                              | Nigeria      | 5.5          | 4.8         | 5.4         | 5.1         | 20.8         | 4.8          | 5.2          | 5.2         | 5.2         | 20.5         | 5.2          | 5.2         | 5.2         | 5.2          | 21.0         | 21.0         | 21.0         | 24.8         |
|                              | Malaysia     | 6.9          | 5.0         | 5.6         | 6.3         | 23.8         | 7.1          | 6.9          | 6.9         | 6.9         | 27.9         | 6.9          | 6.9         | 6.9         | 6.9          | 27.4         | 27.0         | 26.8         | 26.5         |
|                              | Other        | 23.3         | 20.4        | 20.6        | 19.5        | 83.8         | 22.1         | 20.8         | 20.8        | 20.8        | 84.4         | 22.1         | 22.1        | 22.1        | 22.8         | 89.2         | 95.7         | 96.9         | 94.1         |
|                              |              | <b>Total</b> | <b>99.2</b> | <b>85.5</b> | <b>84.0</b> | <b>92.9</b>  | <b>361.5</b> | <b>100.1</b> | <b>97.4</b> | <b>97.7</b> | <b>98.0</b>  | <b>393.2</b> | <b>99.5</b> | <b>99.7</b> | <b>99.7</b>  | <b>100.6</b> | <b>399.5</b> | <b>412.5</b> | <b>417.3</b> |

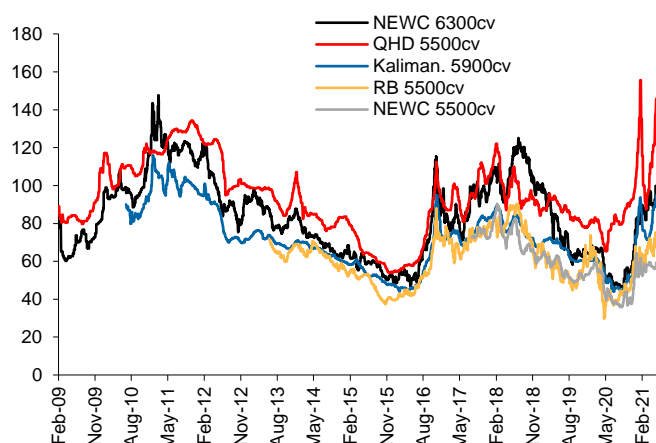
Source: IHS, Platts, Argus, Bloomberg, Macquarie Macro Strategy

## Thermal coal

### Tightness returns

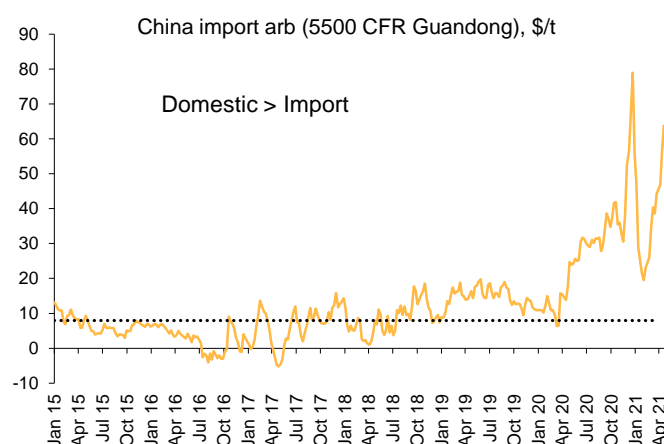
Global thermal coal tightened again in recent months, after a dip in Q1, driven by strong buying on the back of rising demand from coal-fired power generation. NEWC prices are matching their 2018 high, and the other benchmarks are close. China's domestic price has also been very volatile since last year, with the marginal source of supply – coal imports – controlled by quotas.

Fig 160 Thermal coal prices are near their 2018 highs



Source: Platts, IHS, Macquarie Strategy, June 2021

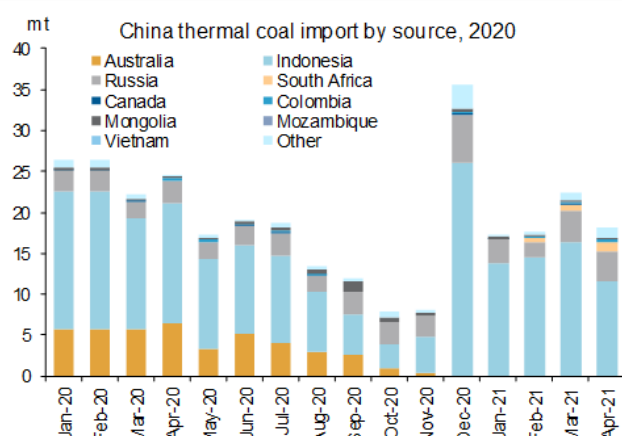
Fig 161 Quota restriction keeps China import arbitrage open



Source: Platts, HIS, Sxcoal, Macquarie Strategy, June 2021

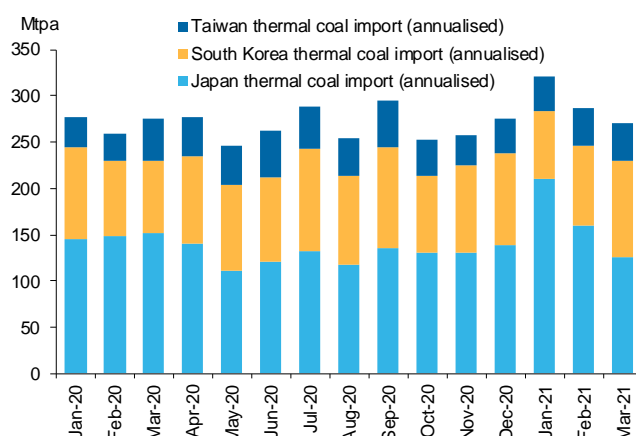
Due to quota restrictions and the ban on Australian imports, China domestic thermal coal price has held above seaborne prices, amid constrained domestic supply – from a lack of capacity growth and local government inspections (see our recent [note](#)). Chinese buyers are therefore willing to pay higher prices for alternatives to Australian coal, including cargoes from Indonesia, Russia, South Africa, and Colombia, leading to rising competition in the seaborne market for high CV coal.

Fig 162 China switches to other countries for high quality thermal coal to fill its supply gap



Source: China Customs, TDM, Macquarie Strategy, June 2021

Fig 163 JKT thermal coal demand holding steady in Q1 and should have climbed in Q2



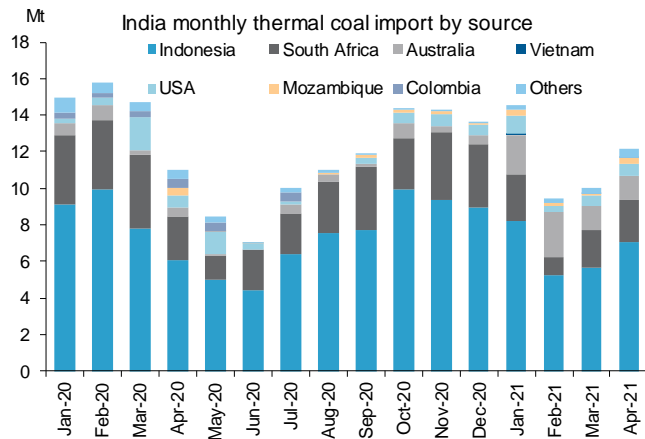
Source: IHS, Macquarie Strategy, Jan 2021

The demand recovery from other Asian countries has been in line with our expectation, except for India. JKT imports were steady in Q1 and seem to have increased in Q2, according to recent shipping data (full trade data not yet available), while Australian exports did not show much of an increase. Consequently, they had to source coal from some non-traditional suppliers, such as North America, supporting thermal coal prices in other regions as well.

India's thermal coal imports were disappointing in Q1, as local power plants destocked inventory due to high freight rates while domestic supply also increased. Imports improved in April and May but June could see a dip due to the second wave of COVID-19.

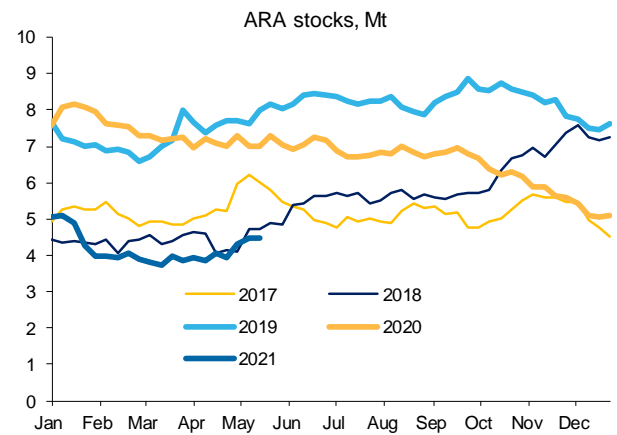
In Europe, ARA stocks are extremely low and coal has been a beneficiary of tightness in European gas markets, inventories for which are also depleted and have failed to build in-line with seasonal norms. In turn, this has contributed to the rally in LNG prices, with Asian countries needing to pay-up to attract additional cargoes. Indeed, price gains across the energy complex helped thermal coal prices too.

**Fig 164 India's thermal coal imports recovered in April**



Source: Gresswell, Macquarie Strategy, June 2021

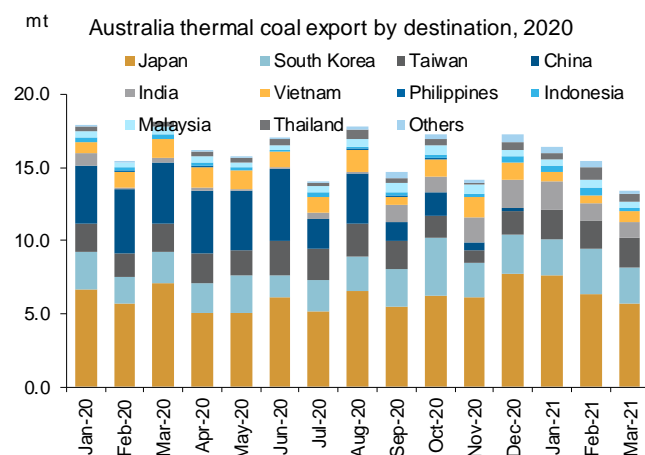
**Fig 165 ARA coal stocks are relatively low...**



Source: IHS, Macquarie Strategy, June 2021

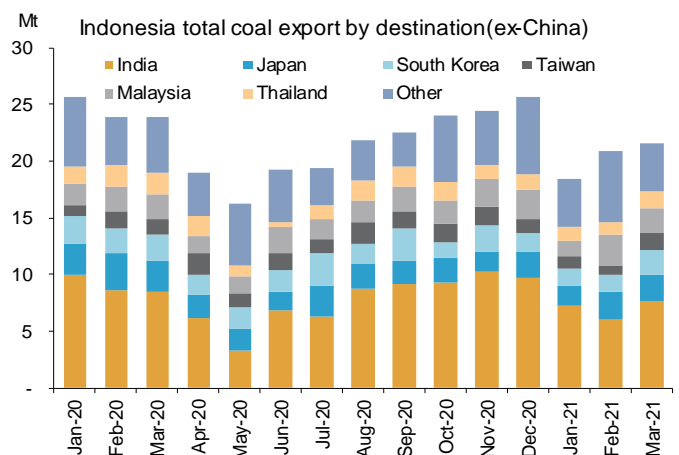
On the supply side, Australia managed to switch their exports from China to other countries, avoiding a big drop in their total volumes compared with last year. Indonesian exports to ex-China countries clearly declined as they increased exports to China, in a reshuffling of trade flows. Recent shipping data indicates that total Indonesian thermal coal exports may not have risen much in April and May, contributing to recent competition for cargoes.

**Fig 166 Australia managing to redistribute coal exports**



Source: IHS, Company reports, Macquarie Strategy, June 2021

**Fig 167 Indonesia reduced exports to ex-China markets**



Source: IHS, Company reports, Macquarie Strategy, June 2021

China has recently relaxed import quotas for June, allowing for increased imports to aid power plants' summer restocking. With Q3 seaborne cargoes well booked up, near-term momentum is likely to remain strong, especially if India's imports lift. We now forecast a 26Mt deficit this year (higher exports from marginal suppliers in Indonesia and the US are required), but the momentum may ease after summer if China's domestic supply improves and global IP/manufacturing activities soften, reducing the strain on power generation. Next year's seaborne market is then expected to roughly balance, before small surpluses gradually re-emerge.

Fig 168 Internationally traded thermal coal market balance (Mt)

|                                      | 2013       | 2014         | 2015       | 2016       | 2017       | 2018         | 2019         | 2020       | 2021         | 2022         | 2023         | 2024       | 2025       |
|--------------------------------------|------------|--------------|------------|------------|------------|--------------|--------------|------------|--------------|--------------|--------------|------------|------------|
| <b>Import Demand</b>                 |            |              |            |            |            |              |              |            |              |              |              |            |            |
| China                                | 252        | 229          | 156        | 196        | 201        | 216          | 225          | 232        | 226          | 225          | 219          | 212        | 201        |
| India                                | 138        | 170          | 172        | 156        | 146        | 161          | 169          | 148        | 159          | 158          | 152          | 150        | 143        |
| Japan                                | 143        | 145          | 150        | 146        | 150        | 146          | 143          | 134        | 140          | 138          | 136          | 133        | 130        |
| South Korea                          | 97         | 98           | 101        | 101        | 116        | 116          | 112          | 96         | 106          | 104          | 99           | 94         | 89         |
| Other Asia, Developed                | 69         | 68           | 64         | 67         | 63         | 63           | 62           | 56         | 61           | 62           | 61           | 60         | 59         |
| Vietnam                              | 3          | 5            | 7          | 12         | 10         | 17           | 33           | 46         | 48           | 53           | 58           | 63         | 68         |
| Malaysia                             | 23         | 21           | 20         | 24         | 27         | 34           | 34           | 36         | 40           | 42           | 43           | 43         | 45         |
| Other Asia, Emerging                 | 34         | 38           | 41         | 44         | 50         | 63           | 60           | 64         | 66           | 71           | 75           | 79         | 82         |
| EU28                                 | 142        | 157          | 143        | 120        | 122        | 117          | 75           | 63         | 64           | 64           | 59           | 55         | 52         |
| Other Atlantic                       | 84         | 97           | 104        | 104        | 109        | 115          | 116          | 106        | 107          | 107          | 108          | 109        | 110        |
| <b>Total Import Demand</b>           | <b>984</b> | <b>1,031</b> | <b>958</b> | <b>971</b> | <b>995</b> | <b>1,048</b> | <b>1,031</b> | <b>982</b> | <b>1,016</b> | <b>1,024</b> | <b>1,009</b> | <b>998</b> | <b>978</b> |
| <b>Export Supply</b>                 |            |              |            |            |            |              |              |            |              |              |              |            |            |
| Australia                            | 188        | 201          | 202        | 201        | 200        | 208          | 212          | 199        | 208          | 213          | 213          | 214        | 214        |
| Canada                               | 3          | 3            | 2          | 2          | 2          | 1            | 1            | 1          | 1            | 1            | 1            | 1          | 1          |
| South Africa                         | 73         | 76           | 77         | 75         | 83         | 81           | 79           | 75         | 77           | 80           | 80           | 80         | 80         |
| United States                        | 46         | 31           | 25         | 17         | 39         | 51           | 37           | 24         | 32           | 25           | 20           | 20         | 20         |
| Indonesia                            | 424        | 408          | 366        | 369        | 389        | 429          | 456          | 404        | 422          | 431          | 428          | 418        | 400        |
| Colombia                             | 74         | 75           | 81         | 89         | 83         | 80           | 76           | 52         | 66           | 71           | 71           | 71         | 71         |
| Russia                               | 117        | 132          | 133        | 144        | 158        | 172          | 181          | 168        | 190          | 185          | 180          | 180        | 180        |
| Others                               | 36         | 28           | 18         | 22         | 19         | 22           | 27           | 22         | 20           | 18           | 16           | 14         | 12         |
| <b>Total Exports Supply</b>          | <b>963</b> | <b>954</b>   | <b>905</b> | <b>920</b> | <b>974</b> | <b>1042</b>  | <b>1069</b>  | <b>946</b> | <b>1016</b>  | <b>1024</b>  | <b>1009</b>  | <b>998</b> | <b>978</b> |
| <b>Market Balance <sup>(1)</sup></b> | <b>-37</b> | <b>32</b>    | <b>48</b>  | <b>4</b>   | <b>-42</b> | <b>-51</b>   | <b>-14</b>   | <b>65</b>  | <b>-26</b>   | <b>-1</b>    | <b>7</b>     | <b>10</b>  | <b>18</b>  |
| <b>NEWC spot (6300 GAR)</b>          | <b>85</b>  | <b>71</b>    | <b>59</b>  | <b>66</b>  | <b>88</b>  | <b>107</b>   | <b>75</b>    | <b>58</b>  | <b>93</b>    | <b>80</b>    | <b>70</b>    | <b>68</b>  | <b>66</b>  |

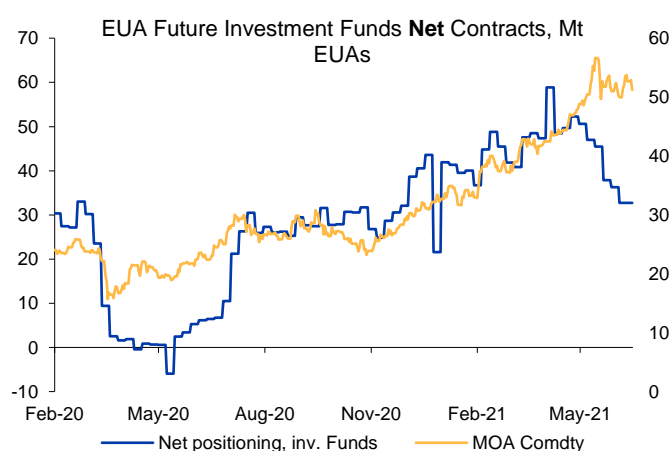
Source: Custom Statistics, CRU, IHS, Macquarie Strategy, SxCoal, June 2021. LT price is in 2020\$ (real). Note (1): market balance is defined as the change in high-cost exports in any given year (mainly US & Indonesia) required to meet import demand.

## Carbon

### Catching its breath

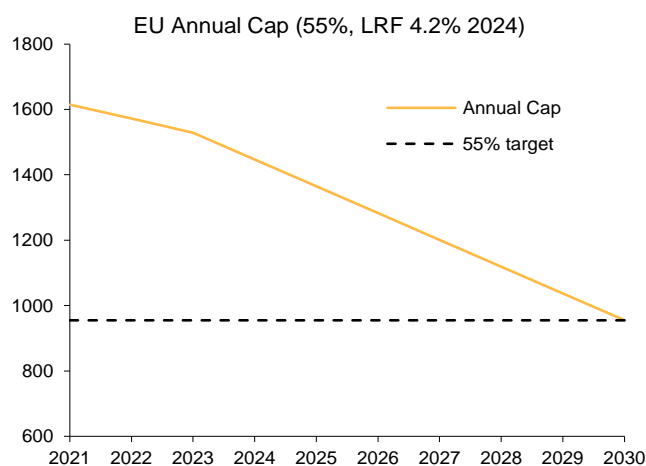
EUAs have found some stability in the \$50-55/t range (Dec-21 future contract) after an impressive rally to an all-time high of 57/t in early May. Late buying from industrials has faded post-compliance date (30<sup>th</sup> April) while [the launch of the UK ETS market](#) on May 19 has resulted in some extra EUA supply, as UK entities slowly convert their EUA hedges (estimated at 30-35Mt) into British certificates. Another factor capping prices in the short term is the prospect of more EUA supply (602Mt according to our estimates) coming to market this quarter via the release of free allocation to industrials. Early data released from Germany this week came in higher than expected, highlighting some near-term risk for EUA prices.

**Fig 169 Profit taking as EUAs cross the 50 euros mark**



Source: Bloomberg, Macquarie Commodity Strategy, June 2021

**Fig 170 A tightening supply outlook**



Source: BNEF, Energy Aspects, Commodities Strategy, June 2021

At the same time, various attempts to break below the 50 euros mark this quarter have been quickly reversed, suggesting there remains plenty of buying appetite on the sidelines, waiting for an attractive entry point. The “EU Green Deal” package (to be released on 14<sup>th</sup> of July) should see a set of bullish changes to the way the ETS market works, though the main question is to what extent these are now priced in. Below is a summary of the main reforms under consideration, together with our own assessment of market expectation for what is likely to be implemented.

- 1. Annual Cap Reduction:** 55%-60% reduction in total GHG emissions (vs 1990 levels) for ETS sectors (bigger than EU-wide target) is expected; various options on the table, including a higher LRF starting from 2023/4 or a one-off adjustment.
- 2. MSR (Market Stability Reserve) reform:** The MSR began operating in 2019. Its aim is to absorb excess surplus in the market, for as long as the TNAC is above a certain injection threshold (currently set at 833Mt – a level which many in the market deem too high). The Commission is considering lowering the threshold and increasing the injection rate post 2024 (currently set at 12% of the TNAC<sup>2</sup>) – a move which would substantially increase the number of allowances removed by the MSR in the coming years compared to current legislation.
- 3. Broadening of the ETS** (i.e. to shipping): intra-EU shipping emissions largely expected to be included in the EU ETS (50-55Mt). The inclusion of all voyages (from/to EU port) would be a bullish surprise (130-140Mt according to an [EU Commission report](#)).
- 4. A Carbon Border Adjustment Mechanism (CBAM)**, discussed in detail [here](#)). Expected in 2023 with steel, aluminium, electricity, cement, and fertiliser imports likely to be included in the first phase. The introduction of a CBAM would mean a faster phase out of free allocations to the industrial sector (the current mechanism in place to prevent carbon leakage).

<sup>2</sup> MSR flows are based on the published TNAC, which excludes aviation. We have assumed TNAC calcs will be changed starting from 2024 to address what is arguably a conceptual error in the current ETS.

These reforms, together with the tight EU energy markets (particularly gas) are a source of upside risk for carbon prices too: we see EUA prices rising to 60 euros by year-end. Note though, the ~30 euros move over the past 12 months is expected to drive abatement in the power sector (via fuel switching but also more renewable build planned in 2022 & 2023) resulting in some deferred demand destruction (primary rationale for the mid-term dip in our price outlook).

**Fig 171 European carbon market balance, Mt**

| EUA (excl UK, aviation)              | unit         | 2017         | 2018         | 2019         | 2020         | 2021         | 2022         | 2023        | 2024       | 2025       | 2026       | 2027       | 2028        | 2029        | 2030        | Phase IV (21- |
|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|------------|------------|------------|-------------|-------------|-------------|---------------|
| free allocations                     | Mt           | 799          | 760          | 735          | 664          | 602          | 591          | 591         | 534        | 534        | 489        | 489        | 368         | 333         | 297         | <b>4,829</b>  |
| auctions                             | Mt           | 951          | 916          | 617          | 777          | 546          | 564          | 586         | 703        | 666        | 723        | 679        | 634         | 590         | 545         | <b>6,235</b>  |
| total supply                         | Mt           | 1,750        | 1,676        | 1,352        | 1,441        | 1,147        | 1,155        | 1,177       | 1,237      | 1,200      | 1,212      | 1,168      | 1,002       | 923         | 843         | <b>11,064</b> |
| total demand                         | Mt           | 1,753        | 1,680        | 1,527        | 1,355        | 1,321        | 1,342        | 1,319       | 1,275      | 1,232      | 1,192      | 1,153      | 1,116       | 1,080       | 1,046       | <b>12,076</b> |
| <b>annual balance</b>                | Mt           | <b>-3</b>    | <b>-4</b>    | <b>-175</b>  | <b>86</b>    | <b>-173</b>  | <b>-188</b>  | <b>-142</b> | <b>-38</b> | <b>-32</b> | <b>20</b>  | <b>15</b>  | <b>-113</b> | <b>-157</b> | <b>-203</b> | <b>-1,012</b> |
| <b>price</b>                         | <b>euros</b> | <b>6</b>     | <b>16</b>    | <b>25</b>    | <b>25</b>    | <b>51</b>    | <b>65</b>    | <b>55</b>   | <b>60</b>  | <b>70</b>  | <b>75</b>  | <b>76</b>  | <b>78</b>   | <b>80</b>   | <b>82</b>   |               |
| <b>EUAA (aviation)</b>               |              |              |              |              |              |              |              |             |            |            |            |            |             |             |             |               |
| allocation                           | Mt           | 39           | 38           | 39           | 42           | 34           | 33           | 33          | 32         | 31         | 30         | 30         | 29          | 29          | 28          |               |
| emissions                            | Mt           | 64           | 67           | 68           | 25           | 35           | 46           | 57          | 58         | 59         | 60         | 61         | 63          | 64          | 65          |               |
| balance                              | Mt           | -25          | -29          | -29          | 17           | -1           | -13          | -25         | -26        | -28        | -30        | -31        | -33         | -35         | -37         | <b>-259</b>   |
| TNAC (excl. aviation)                | Mt           | 1,655        | 1,655        | 1,385        | 1,579        | 1,406        | 1,218        | 1,076       | 1,038      | 1,006      | 1,026      | 1,041      | 927         | 770         | 567         |               |
| <b>TNAC (incl. aviation)</b>         | Mt           | <b>1,567</b> | <b>1,538</b> | <b>1,240</b> | <b>1,450</b> | <b>1,276</b> | <b>1,075</b> | <b>909</b>  | <b>844</b> | <b>784</b> | <b>775</b> | <b>758</b> | <b>612</b>  | <b>419</b>  | <b>179</b>  |               |
| <b>Hedging Requirements</b>          |              |              |              |              |              |              |              |             |            |            |            |            |             |             |             |               |
| Hedging requirements (ICIS)          |              | 860          | 800          | 775          | 795          | 790          | 770          | 720         | 670        | 620        | 590        | 560        | 530         | 500         | 500         |               |
| Hedging requirements (EA)            |              | 883          | 807          | 782          | 800          | 798          | 781.7        | 762         | 752.4      | 722.4      | 693.6      | 665.9      | 639.4       | 613.9       | 589.4       |               |
| EA-ICIS                              |              | 23           | 7            | 7            | 5            | 8            | 11.67        | 42.02       | 82.39      | 102.4      | 103.6      | 105.9      | 109.4       | 113.9       | 89.43       |               |
| Hedging Requirements                 | Mt           | 872          | 804          | 779          | 798          | 794          | 776          | 741         | 711        | 671        | 642        | 613        | 585         | 557         | 545         |               |
| TNAC - Hedging Requirements          |              | 764          | 760          | 442          | 656          | 500          | 334          | 197         | 173        | 142        | 162        | 173        | 55          | -125        | -366        |               |
| <b>Permanenet Abatement Required</b> |              | <b>0</b>     | <b>0</b>     | <b>0</b>     | <b>0</b>     | <b>0</b>     | <b>0</b>     | <b>0</b>    | <b>0</b>   | <b>0</b>   | <b>0</b>   | <b>0</b>   | <b>0</b>    | <b>-55</b>  | <b>125</b>  | <b>366</b>    |

Source: BNEF, Energy Aspects, Macquarie Commodity Strategy, June 2021

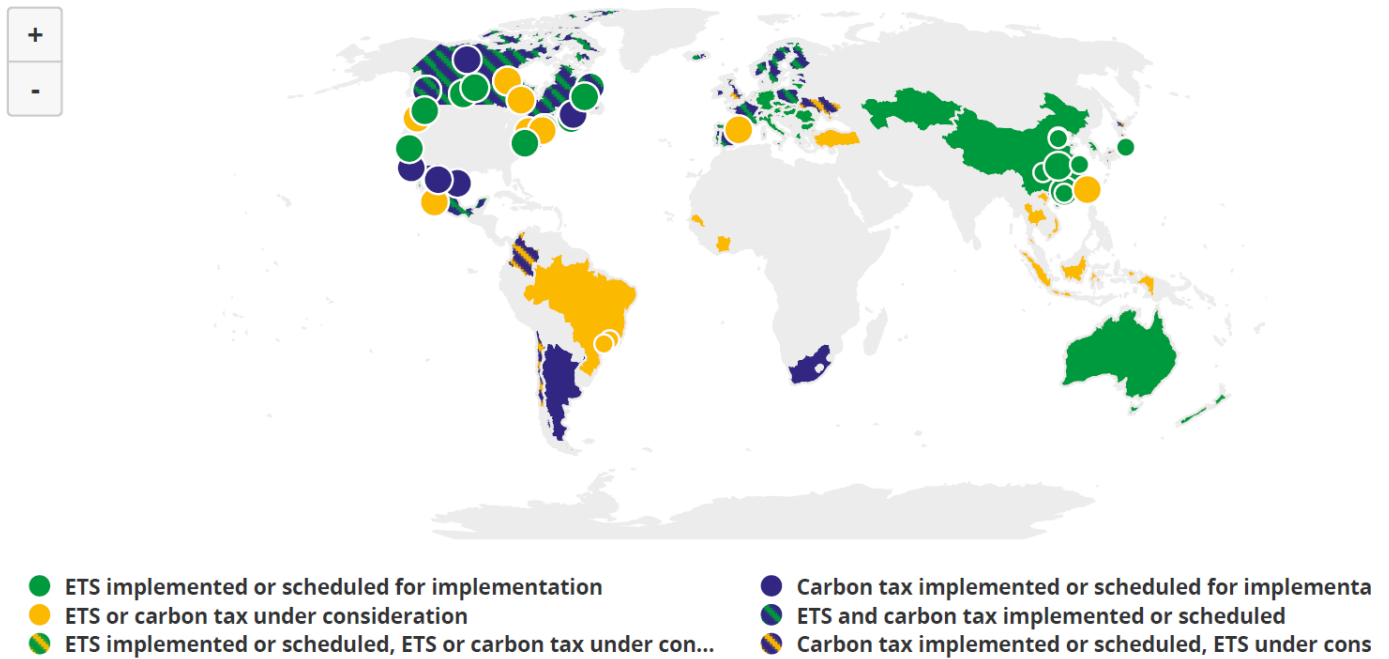
Looking beyond Europe, one important development is the launch of the China ETS market (anticipated by the end of the month) which is expected to cover 3.6Bnt of GHG emissions (becoming the world's largest). The scheme will initially cover just coal-fired power plants but is ultimately expected to include industrial sectors as well. Rather than a "cap & trade" scheme, China's ETS is based on carbon intensity coefficients and current allocation is widely regarded as too generous, which should cap prices in the short term. However, supply is likely to be tightened over time and new sectors should be added (cement may be included by year end but there is no official date yet).

With the launch of China's ETS, approximately [23% of global GHG emissions will be covered](#) by some form of carbon pricing (ETS and/or carbon tax), though prices differ widely both across regions and market types (compliance vs voluntary).



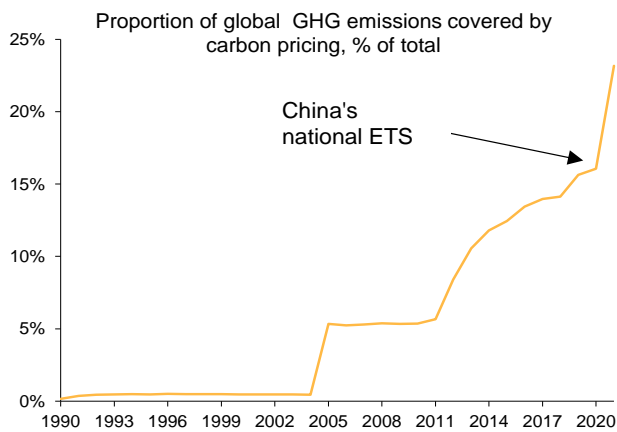
**Fig 172 Summary map of national, regional, and sub-national carbon pricing initiatives**

Summary map of regional, national and subnational carbon pricing initiatives



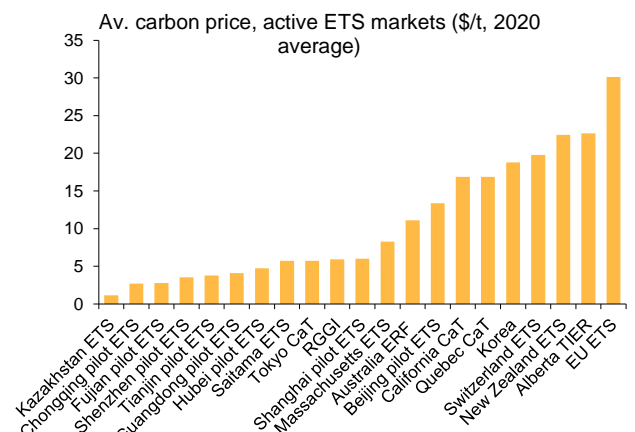
Source: World Bank, Macquarie Commodity Strategy, June 2021

**Fig 173 23% of global GHG emissions are now covered by carbon pricing**



Source: World Bank, Macquarie Strategy, June 2021

**Fig 174 Carbon prices – still a wide range**



Source: World Bank, Macquarie Strategy, June 2021

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