



MARKET SPOTLIGHT

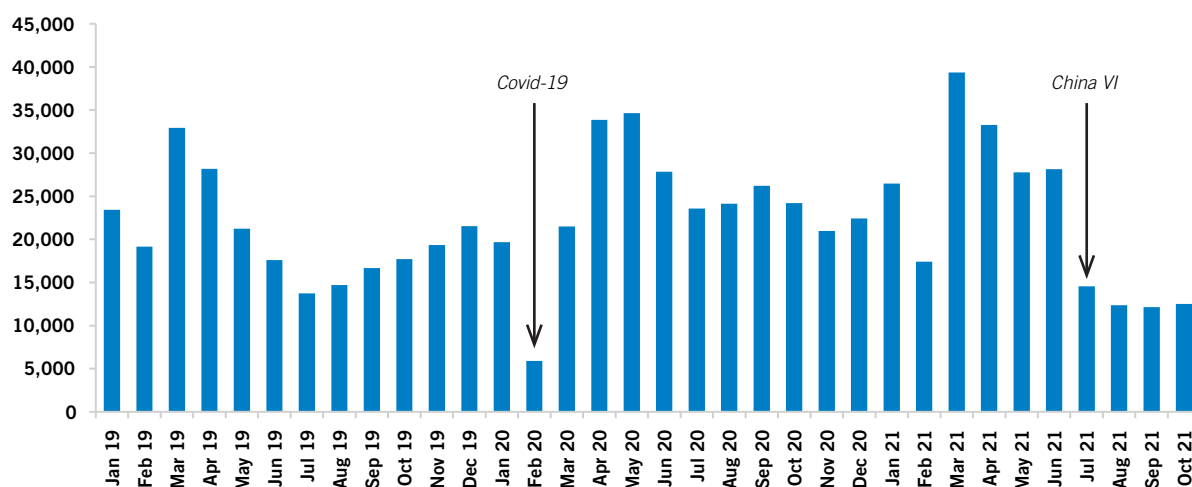
Has China given platinum a heavy-duty hangover?

China VI emissions legislation for heavy-duty vehicles (HDVs) was introduced in July this year. The latest rules are the tightest yet and require vehicles to have much more sophisticated emissions control technology, including PGM-bearing catalysts, where previously selective catalytic reduction (non-PGM) might have been sufficient. That has raised the average loadings used in catalysts significantly, predominantly benefitting platinum demand.

Unfortunately, sales of HDVs in China have slumped since the change came in and are now running at less than half the rate seen in the first half of the year. Sales in the first half of 2021 were up 20% year-on-year and sales in H1'20 were strong despite the impact of the coronavirus. However, the new rules have added to the cost of vehicles and, as has been the case prior to the introduction of previous standards, customers purchased new trucks ahead of the change. The semiconductor chip shortage has reduced HDV production only modestly. Year-to-date HDV sales are down slightly compared to last year, which saw record sales, but HDV platinum demand is still expected to be stronger this year than last year owing to the higher loadings.

HDV sales are predicted to drop by ~16% next year in China, normalising at 2019 levels. Although each vehicle will have more platinum in its catalyst, that still equates to lower platinum demand. In addition, Chinese economic growth is softening as the authorities have been reining in speculation and leverage in real estate, plus there have been power cuts owing to a combination of issues that has impacted manufacturing output. A slowing Chinese economy is a further risk for HDV sales.

Chinese HDV sales



Source: SFA (Oxford), Bloomberg, China Automotive Information Net

However, platinum demand still benefits from increased HDV sales in other regions in 2022, such as India which tightened emissions standards last year. Therefore, global platinum demand from this sector is still predicted to rise by 3%. Growing demand from this and other end-uses next year is a slight positive for the platinum price even if the market is in substantial surplus again (~1 mozt). More relevant for the price may be what happens with inflation and whether real assets benefit. A pick-up in investment demand could propel the price higher, as happened in the second half of 2020 and early 2021.



PRECIOUS METALS REVIEW

79 Au Gold

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,857	-0.36%	1,877	16/11/2021	1,850	17/11/2021
€/oz	1,641	0.73%	1,654	19/11/2021	1,623	15/11/2021

Seasonality may not be enough to lift Q4 gold demand in China. The final quarter of the year is a typically strong period for retail gold jewellery sales in China, but slowing economic growth and ongoing uncertainty around Covid-19 outbreaks could be a challenge for consumer demand this year owing to the impact on disposable income. China's economic growth in Q3 slipped to its slowest pace in a year at 4.3% as a property slowdown and energy shortages weighed on the post-pandemic recovery. Beyond the economic impact, power rationing is also impacting jewellery manufacturers' output, which could lead to production bottlenecks if it continues. A

resurgence of Covid-19 cases remains the largest risk to gold consumption for the remainder of the year, as lockdowns and other restrictions would suppress retail demand. Coronavirus containment measures are already tightening in Beijing in the run-up to the Winter Olympics in February 2022. China is the largest consumer gold market, accounting for 850 tonnes in 2019 (30% of global consumer demand) (source: World Gold Council). Gold has more or less held on to its gains after breaking out on the US CPI news and while the Fed and ECB do nothing about inflation, there is potential for further upside.

47 Ag Silver

	Close	Weekly change	High	Date	Low	Date
\$/oz	24.88	-1.41%	25.41	16/11/2021	24.66	19/11/2021
€/oz	21.98	-0.33%	22.35	16/11/2021	21.79	15/11/2021

The silver market moves into deficit in 2021 as mine supply forecasts are revised down slightly while demand remains strong. At the start of the year, the silver market was predicted to be in surplus of 23.3 moz, but latest figures from The Silver Institute indicate a modest deficit of 7 moz in 2021, for the first time since 2015. Global demand is set to reach 1,029 moz this year, driven by a strong recovery in industrial demand (+8% year-on-year) to 524 moz. Within the industrial market, the photovoltaic (PV), electrical & electronic, and brazing, alloy & solder sectors are all expected to record healthy

gains, of 13%, 10% and 10% respectively year-on-year. Mine supply has been revised down by ~19.5 moz since the start of the year to 829 moz with the inclusion of producers' Q3 results, and is not expected to recover to pre-pandemic levels (833.2 moz in 2019) this year. Silver mine supply has been declining since 2016, and secondary supply, which accounts for ~20% of overall silver supply, is likely to become an increasingly important source of metal. The silver price's upward momentum stalled last week but could return if inflation remains a concern.

78 Pt Platinum

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,038	-4.18%	1,107	16/11/2021	1,031	19/11/2021
€/oz	917	-3.12%	973	16/11/2021	914	19/11/2021

The chip shortage eclipses Covid-19 impact on Europe's car market. Car sales in Europe fell to a record low for the month of October as the semiconductor chip shortage continues to weigh on vehicle production and limits availability for consumers. New car registrations dropped by 29% year-on-year to 798,693 units last month (source: ACEA). Full-year sales in Europe are now forecast to reach just 10.41 million units in 2021, even lower than the 10.79 million recorded during 2020 which was due to the impact of Covid-19. Car sales are on track to be 27% lower than pre-pandemic (2019) levels this year. Nevertheless, light-vehicle sales globally

are set to be higher this year than last, which results in a recovery in platinum demand to 2.60 moz this year, up from 2.16 moz in 2020. This is despite weak sales and a continuing decline in the diesel passenger car market share in Europe. The gasoline segment adds some demand with the initial roll-out of platinum substitution into gasoline three-way catalysts (TWCs), and tighter emissions legislation for HDVs has also lifted platinum requirements. The platinum price slipped back last week, and its weak fundamental outlook should keep the price subdued.



PRECIOUS METALS REVIEW

⁴⁶Pd **Palladium**

	Close	Weekly change	High	Date	Low	Date
\$/oz	2,080	-0.68%	2,218	18/11/2021	2,059	19/11/2021
€/oz	1,838	0.41%	1,954	18/11/2021	1,824	15/11/2021

Will Biden's infrastructure bill be enough to drive EV uptake in the US? President Joe Biden signed the \$1.2 trn bipartisan infrastructure bill into law last week, with hopes that investment in EV charging stations and upgrades to the country's electric grid can lift EV sales in the world's second-largest gasoline ICE-dominated vehicle market. Momentum in the EV market has so far been driven by China and Europe, with US consumers' lifestyle and driving preferences generally less compatible with EV models currently on the market. However, the arrival of several new electric pick-ups in the US

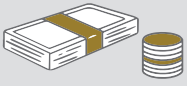
next year, including GM's Hummer EV, Ford's F-150 Lightning and Chevrolet's Silverado EV, could signal a shift in consumers' mindset. However, EV volumes are still expected to remain small in the US, with very little impact on the powertrain profile for palladium over the next 10 years as the gasoline combustion engine retains its majority share of the market. Near term, the chip shortage is having more of an impact on palladium demand than BEV sales and the price is estimated to hold below \$2,200/oz.

⁴⁵Rh ⁴⁴Ru ⁷⁷Ir **Rhodium, Ruthenium, Iridium**

	Rhodium	Ruthenium	Iridium
Reporting week	\$15,600/oz	\$620/oz	\$4,350/oz
Previous week	\$15,800/oz	\$620/oz	\$4,350/oz

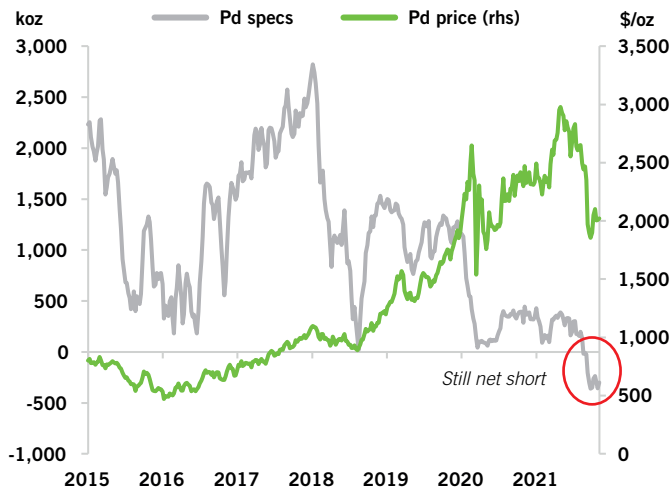
The COP26 outcome to drive global decarbonisation supports increased use of small 'hydrogen' metals: iridium in electrolyzers and ruthenium in fuel cells. The current growth forecast between 2021 and 2025 is over 10,000 ounces of iridium and a few tens of thousand ounces of ruthenium, but this is expected to be subject to upward revision as the current pipeline for PEM electrolyzers and fuel cell deployment falls well short of the levels required to meet net zero. Green hydrogen,

with no carbon footprint, drives iridium demand in proton exchange membrane (PEM) electrolyzers. Ruthenium use in PEM fuel cells is currently supported by the use of cheap and abundant grey and blue hydrogen as fuel, both of which are less pure than green hydrogen with its limited availability and do have a carbon footprint. The rhodium price edged lower last week (-\$200/oz), while iridium and ruthenium were unchanged.



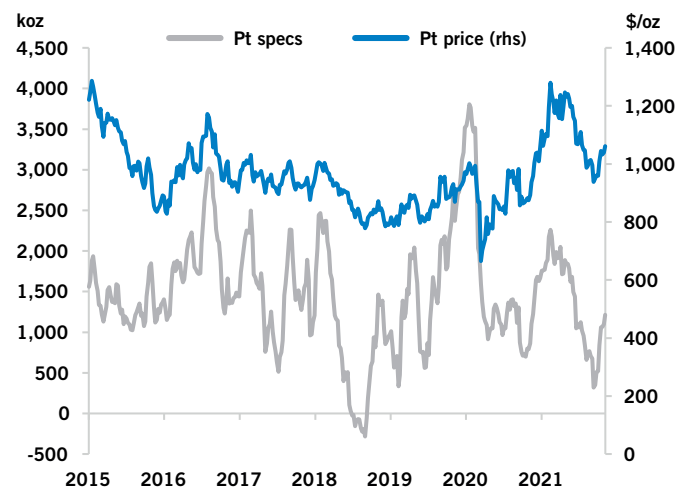
TRENDS AND INVESTMENTS

Palladium speculative futures position



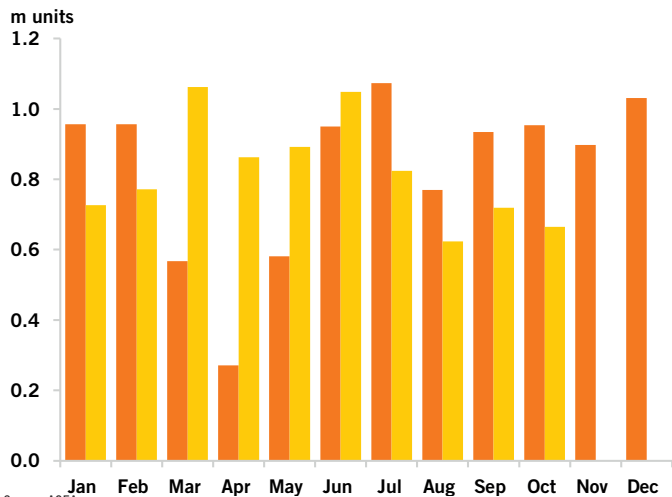
Source: SFA (Oxford), Bloomberg

Platinum speculative futures position



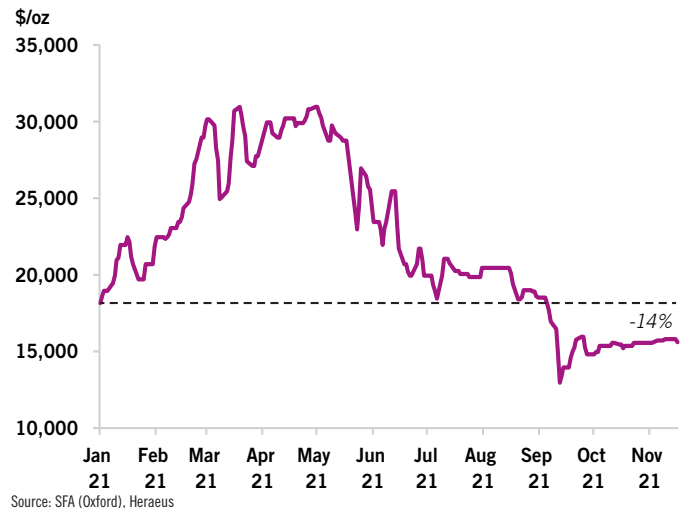
Source: SFA (Oxford), Bloomberg

EU car sales



Source: ACEA

Rhodium price



Source: SFA (Oxford), Heraeus

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