

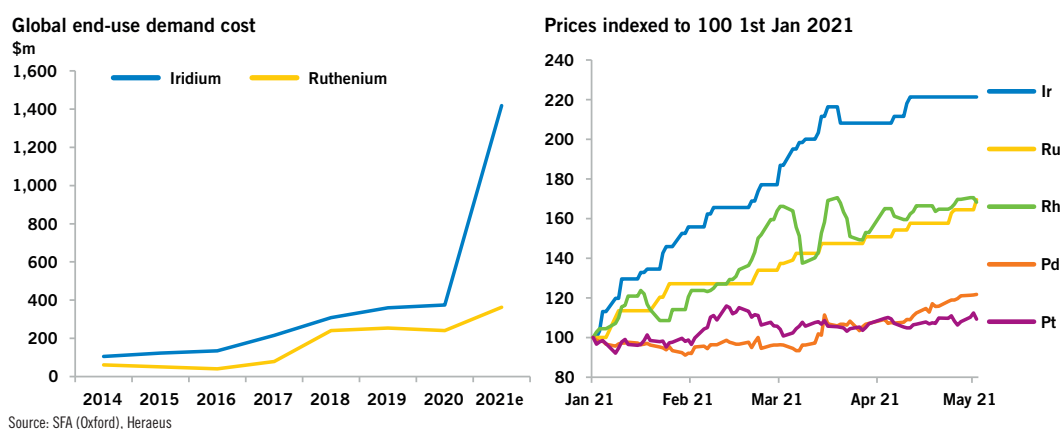


MARKET SPOTLIGHT

Small PGMs leading the price gains but for how much longer?

Iridium has been leading PGM prices higher. The PGM with the smallest market has had the greatest price gain this year, more than doubling. Ruthenium is a somewhat distant second but is still up 69%. Platinum and palladium are larger markets with better liquidity and their prices have risen less.

High prices cause metal costs to jump. Gross demand for iridium is estimated to be around 250 koz this year. However, with a large jump in the price from an average of \$1,607/oz last year, end-use costs could be three to four times higher than in 2020. For ruthenium, total demand costs may only be 50-60% higher.



Metal availability should improve through the year. After supply disruptions in South Africa last year, refined output should now have normalised. In addition, major producers in South Africa have some material that was not refined last year owing to smelter outages, at least some of which should be processed over the course of this year. This is expected to be greater than any drop in production in Russia following the temporary closure of two mines owing to flooding. Estimated annual Russian output of iridium (~25 koz) and ruthenium (~40 koz) is relatively small. Therefore, market tightness is expected to ease and the prices could pull back later in the year.

Demand looks set to grow in the medium term. However, prices and supply need to be stable and reliable for new end-use adoption. Iridium and ruthenium are key metals in polymer electrolyte membrane (PEM) electrolyzers and fuel cells, and they have the potential to develop into a significant market over the next 10 years. Currently, there is no sign of a shift away from PEM and the expectation is that R&D developments will enable thrifting of the metals and help to reduce overall costs in the future.

South African supply will hold up. High palladium and rhodium prices are incentivising replacement capacity, mine restarts and expansion projects in South Africa. Some projects are still being evaluated but several have already been announced, although it will be at least two years before production starts. This will help to keep South Africa's supply more or less flat into the mid-2020s. Any further replacement or expansion capacity incentivised by the high prices would increase the supply outlook.



PRECIOUS METALS REVIEW

79 Au Gold

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,835	3.86%	1,843	07/05/2021	1,771	05/05/2021
€/oz	1,509	2.71%	1,518	07/05/2021	1,473	03/05/2021

Investor interest in gold ETFs has been declining in 2021. ETF holdings have been falling steadily this year, down over 9 moz from a 112 moz peak in January. However, ETF holdings do seem to follow the price so they may well increase if the price continues to advance. Speculative positioning in gold futures on COMEX also fell to its lowest level in almost two years at the end of April despite the price trading more than \$100/oz higher than its low point in March.

Meanwhile, coin and bar sales have been going well. Bar and coin demand jumped 36% year-on-year in the first quarter to 339.5 t (Source: World Gold Council), the highest since Q4'16. The regions with the largest

gains were China, the US, and Turkey. Lower prices with ongoing concerns about inflation may have kept investors buying. Although April saw the lowest monthly sales of American Eagle gold coins (38.5 koz) from the US Mint this year, the total for the first four months of the year was the highest since 2013 at 450.5 koz. Bar sales in Germany eased slightly in April, after a very strong March, but remained well above average.

Gold has been making progress higher. If the price can move above \$1,860/oz, that would take it out of the downtrend channel it has been in since last August, which would indicate that the period of consolidation is over and the uptrend had resumed.

47 Ag Silver

	Close	Weekly change	High	Date	Low	Date
\$/oz	27.43	5.80%	27.68	07/05/2021	26.06	03/05/2021
€/oz	22.55	4.64%	22.83	07/05/2021	21.65	03/05/2021

Silver ETF holdings have held up better than gold, slipping 6% to 1,102 moz from the record high in February. Bar and coin buying has been well above average so far this year. This may well have helped silver outperform gold this year. Over the first four months of

the year, American Eagle silver coin sales from the US Mint have been the highest since 2016 when the price averaged around \$17/oz. Perth Mint coin and bar sales have been running close to double the typical level. If the rally continues, silver is favoured to outperform gold.

78 Pt Platinum

	Close	Weekly change	High	Date	Low	Date
\$/oz	1,256	4.39%	1,271	07/05/2021	1,197	03/05/2021
€/oz	1,033	3.24%	1,056	04/05/2021	993	03/05/2021

Even tighter emissions standards could boost platinum use in Europe. The European Commission is examining what the next level of emissions standards (Euro VII) should be for heavy-duty vehicles. A proposal is expected in November 2021. Tighter NOx limits and testing over a wider range of real-world conditions are anticipated. This would require additional aftertreatment to comply, which means higher cost and most likely more PGM. The International Council on Clean Transportation has estimated that the extra costs of a Euro VII system above a Euro VI system in 2025 could be €2,400 to €5,800 per vehicle, depending on which of three possible

solutions is used. The extra aftertreatment needed could include a second diesel oxidation catalyst or a passive NOx adsorber catalyst close-coupled to the engine, either of which would require additional platinum along with some palladium. While that should be positive for PGM demand, the higher costs for diesel vehicles would make it easier for alternative powertrains to compete on price. The platinum price rose last week but has made little headway for the last two months. Further sideways-to-lower price action is possible, as seasonally the price tends to fall over the latter part of the year.



PRECIOUS METALS REVIEW

⁴⁶ Pd **Palladium**

	Close	Weekly change	High	Date	Low	Date
\$/oz	2,934	-1.41%	3,019	04/05/2021	2,828	07/05/2021
€/oz	2,412	-2.51%	2,513	04/05/2021	2,352	07/05/2021

Car manufacturers cut tech to keep vehicles on sale.

Estimates of the disruption to car production this year from missing semiconductor parts have now reached 2.5 million units in the first half of the year (source: Infineon). However, it is not so clear that this will result in much lower PGM demand. Best-selling cars are being prioritised and some manufacturers are removing non-essential systems that are missing chips from models to keep cars available. Others, such as Ford and GM, are building the vehicles without the missing system and storing them until the parts become available. Global automotive palladium demand was expected to jump 19% to 8.7 moz this year as sales recover, before it became clear that the chip problem would not be over by the middle of the year. Any drop in demand is likely to be much smaller than the drop in supply caused by mine disruption in Russia, leaving the market with a large deficit this year.

Car sales in Europe are higher than in 2020 but still well below 2019 levels.

In the UK, car sales in the first four months of the year totalled 567,000, which was 16% higher than last year but 34% below 2019. In Germany, sales of 886,000 through April are 8% up on last year, but 26% lower than in 2019. The gains are coming from hybrids and electric vehicles at the expense of non-hybrid petrol and, in particular, diesel cars. Overall light-vehicle sales in Western Europe are predicted to be over 15 million units this year, about 14% lower than in 2019. With economies reopening and vaccination rates growing, vehicle sales can be expected to pick up going into the second half of the year. However, sales will need to increase more strongly than after last year's lockdowns to reach that level.

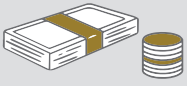
Palladium traded close to \$3,000/oz last week but failed to close above it. Palladium is overbought so near term the price might pull back before trying again to push through \$3,000/oz.

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

	Rhodium	Ruthenium	Iridium
Reporting week	\$29,750/oz	\$505/oz	\$6,750/oz
Previous week	\$30,800/oz	\$485/oz	\$6,750/oz

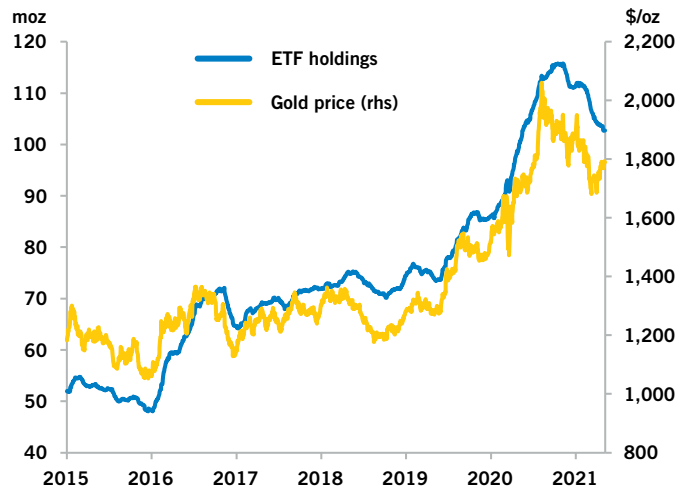
More stock to be released in 2021. Impala Platinum reported additional destocking of ruthenium and iridium in the first quarter of the year owing to improving demand. In addition, the company ended the quarter with 40 koz (Pt, Pd, Rh, Ir, Ru and Au) of excess concentrate inventory, so a further modest amount of small PGMs should be released as that stock is processed over the rest of the year.

Ruthenium's upward momentum has continued, with the price exceeding \$500/oz for the first time since 2007. However, the iridium price has stalled, and rhodium has slipped back slightly.



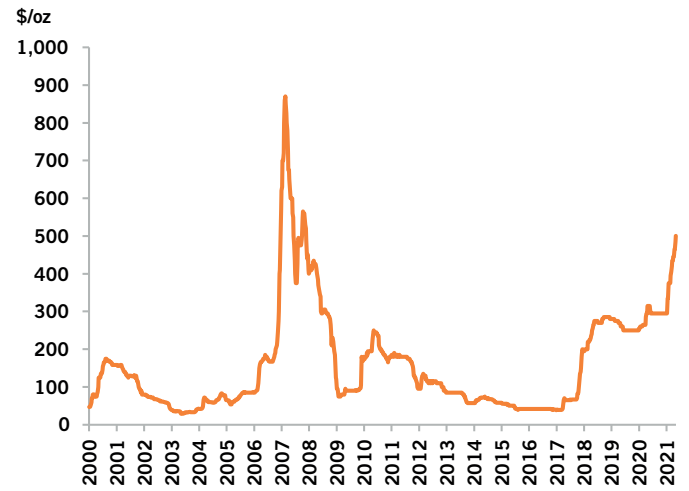
TRENDS AND INVESTMENTS

Gold ETF holdings



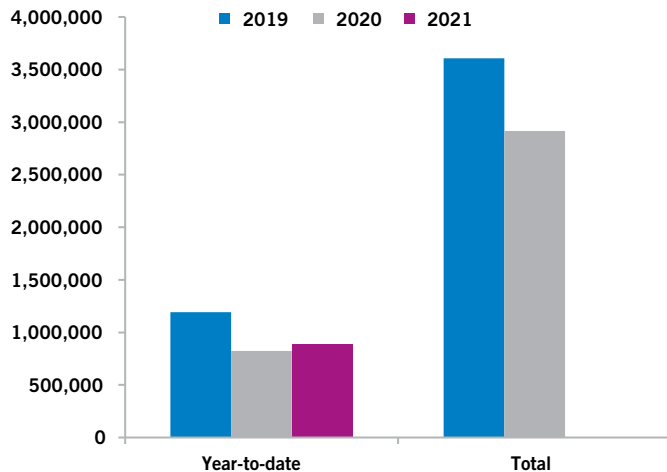
Source: SFA (Oxford), Bloomberg

Ruthenium price



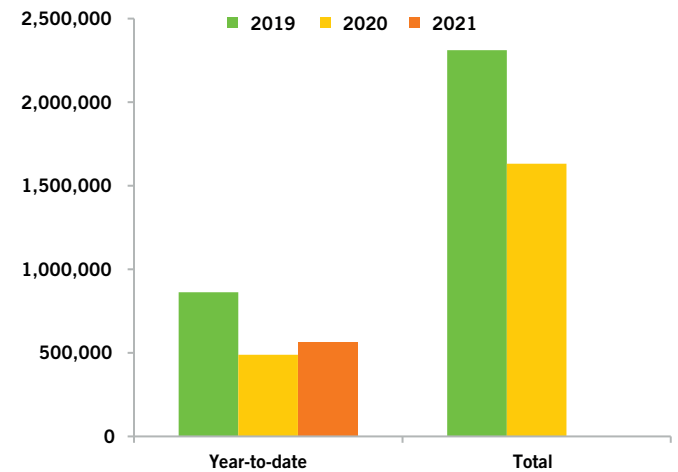
Source: SFA (Oxford), Heraeus

German car sales



Source: SFA (Oxford), KBA

UK car sales



Source: SFA (Oxford), SMMT

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