

PRECIOUS APPRAISAL



- 01 MARKET SPOTLIGHT
- 02 GOLD
- 03 SILVER
- 04 PLATINUM
- 05 PALLADIUM
- 06 RHODIUM, RUTHENIUM, IRIDIUM
- 07 TRENDS AND INVESTMENTS
- 08 ABOUT HERAEUS

MARKET SPOTLIGHT

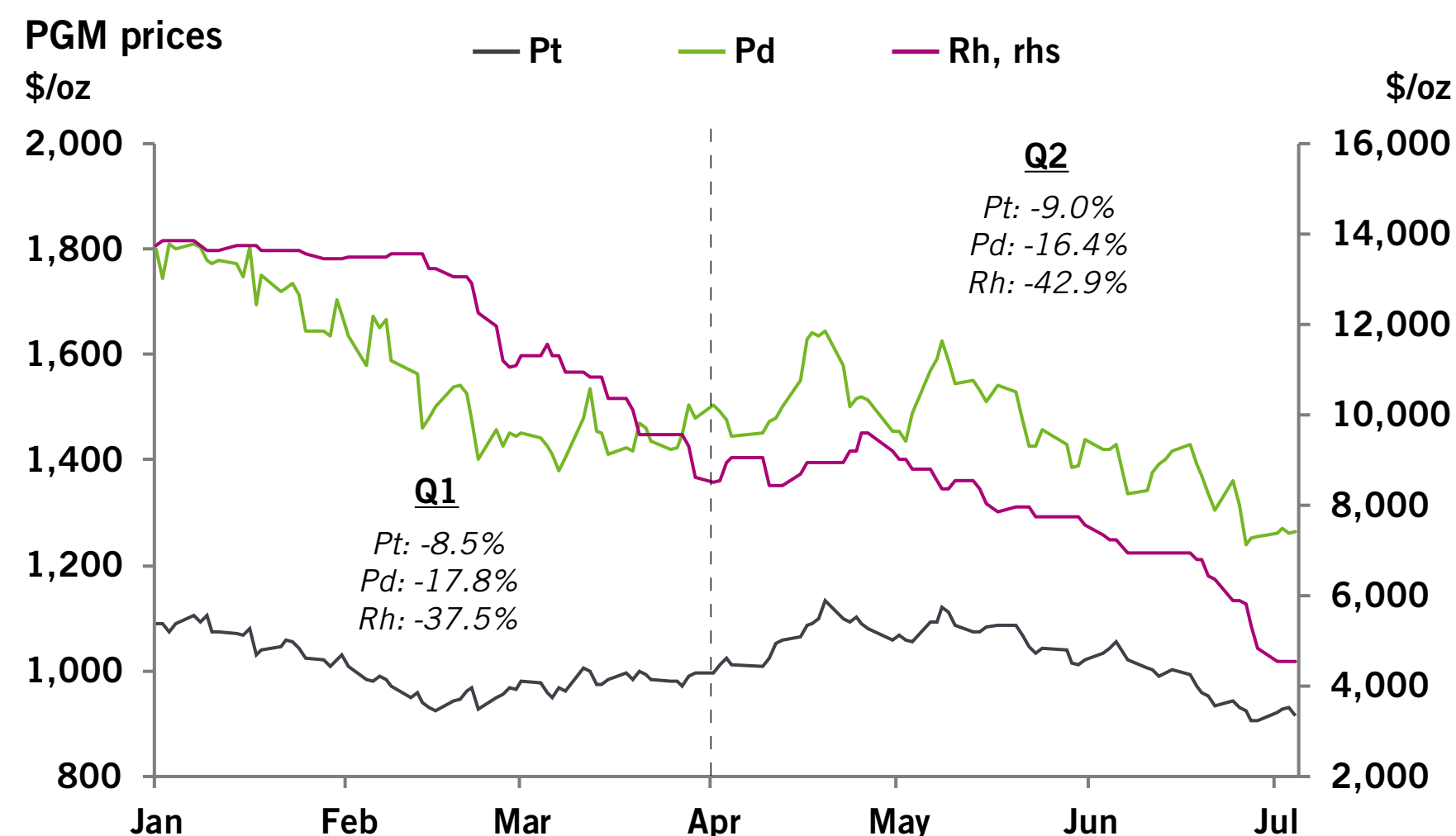
Will H2'23 be a turning point or a sticking point for PGM prices?

The platinum price declined 17% and palladium fell by nearly twice as much to \$1,256/oz in H1'23. Supply risks in South Africa could not overcome a weaker demand profile fuelled by poor economic performance and inflationary pressure. The rhodium and palladium prices are still trying to find equilibrium following supply-side disruption that pushed prices to record highs in 2021 and 2022, respectively. Rhodium is the underperformer this year, having now fallen to \$4,450/oz.

A sluggish industrial sector has frustrated Chinese growth. The Chinese economy grew by 4.5% year-on-year in Q1'23, up from 2.9% in Q4'22, exceeding most forecasts. The recovery was led by consumer spending as the country ended Covid restrictions. The manufacturing PMI contracted in June and has been slowing since February, illustrating that the industrial sector has been less robust. Although moderate year-on-year improvement is expected in Q2'23 owing to base-effects, the boost from consumer spending is likely to dissipate in H2'23. Chinese platinum industrial demand growth is forecast to grow by just 3.5% this year, versus a CAGR of 14% in 2018-2022.

A US recession looks possible by year-end and could lead to lower light-vehicle sales, the bulk of which would be lost next year. A recession that is deeper than conventionally expected would result in slowing light-vehicle production in H2'23 before dropping further in 2024, dragging down palladium and rhodium demand and potentially pushing both markets into surplus. Activity is slowing simultaneously in Europe and North America, which together account for 35% of global palladium demand.

Price support from supply risks is receding. Eskom's power generation capacity improved in June and is now in line with 2022, though load-shedding intensity and the impact on mines is much lower now. If stability is maintained until the South African spring, the impact on PGM producers should be minimal in H2'23. The platinum and rhodium prices would be less supported by supply-side uncertainty in that scenario. Palladium has much greater exposure to Russian supply (39% of global supply vs. 11% of platinum), and is therefore more exposed to a potential liquidity squeeze late in 2023 when Nornickel begins major smelter maintenance.



Source: SFA (Oxford), Bloomberg

Palladium remains exposed to a short-covering rally and platinum is attractively priced against gold. PGM prices are expected to trend lower in the second half of the year, though historical seasonality favours palladium over platinum and shorter-term rallies are possible. At less than half the price of gold, platinum looks good value thanks to a bullish long-term demand outlook. Palladium speculators built up near-record futures short positions in H1'23, and a relatively small price recovery could ignite a larger rally as short positions are closed out. The rhodium price is now down 86% from its peak and looks oversold, but further decline is possible.

- 01 MARKET SPOTLIGHT
- 02 GOLD
- 03 SILVER
- 04 PLATINUM
- 05 PALLADIUM
- 06 RHODIUM, RUTHENIUM, IRIDIUM
- 07 TRENDS AND INVESTMENTS
- 08 ABOUT HERAEUS

PRECIOUS METALS REVIEW

Gold



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,928	0.44%	1,935	05/07/2023	1,903	06/07/2023
€/oz	1,758	0.04%	1,775	05/07/2023	1,751	06/07/2023

Turkish selling masks consistent central bank gold demand. Net global gold demand from central banks was -27 tonnes in May (source: World Gold Council). For a second month, the central bank of Turkey sold large amounts of gold into the domestic market to satisfy local demand. Demand has surged as the value of the lira collapsed and a change in policy meant that gold could be purchased in the local currency rather than only in dollars, as was previously the case. Turkey also suspended imports of some gold products following the earthquake experienced in February. Domestic demand of 59.5 tonnes was 237% higher year-on-year in Q1'23 (source: World Gold Council). Excluding Turkey's activity, which is not a reflection of central bank reserves policy change, central bank activity was positive. On an annual basis, central bank buying is not likely to be as high as last year's record figure of 1,136 tonnes, as the year-to-date net change in reserves is -43.3 tonnes (+129 tonnes excl. Turkey).

Gold ETFs saw outflows as gold fell below trend in June. Global holdings of gold in investment products fell by 1.62 moz in June and were cut by another 250 koz in the first week of July. Every region apart from Asia saw outflows. Institutional investors saw the break from the six-month upward trend as a bearish signal in June and have reduced exposure to bullion. As of Friday last week, gold ETF holdings were down 1.8% on a rolling 30-day basis, though outflows were more measured compared to February when the gold price saw a similar drawdown in price.

Last week, gold finished slightly higher week-on-week at \$1,928/oz, following bond market volatility owing to different measures of employment in the US over- and under-shooting expectations, and shifting the interest rate outlook.

PRECIOUS APPRAISAL

10th July 2023

01 MARKET SPOTLIGHT

02 GOLD

03 SILVER

04 PLATINUM

05 PALLADIUM

06 RHODIUM, RUTHENIUM, IRIDIUM

07 TRENDS AND INVESTMENTS

08 ABOUT HERAEUS

PRECIOUS METALS REVIEW

Silver

⁴⁷
Ag

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	23.05	1.33%	23.30	05/07/2023	22.53	06/07/2023
€/oz	21.02	0.93%	21.41	06/07/2023	20.52	06/07/2023

Silver is unlikely to make new highs this year. Industry is struggling in Europe and China, and economic indicators point to a slowdown in the US economy by 2024. The synchronisation of global industrial and manufacturing activity decline could weigh on silver owing to its large industrial demand base. The bright spot is likely to be solar photovoltaic demand, as previously discussed, thanks to public sector inducements such as the Inflation Reduction Act and the REPowerEU programmes. Photovoltaic demand for silver is forecast to grow to 28% of total industrial demand, up from 19% in 2019 (source: The Silver Institute). Owing to the weakening industrial and wider macroeconomic fundamentals, silver is expected to underperform gold until a recovery in the larger industrial economies (China, US, Germany) begins to materialise. Silver edged lower last week to finish trading on Friday at \$23.05/oz, more than 11% lower than the year-to-date high of \$26.07/oz.

PRECIOUS APPRAISAL

10th July 2023

01 MARKET SPOTLIGHT

02 GOLD

03 SILVER

04 PLATINUM

05 PALLADIUM

06 RHODIUM, RUTHENIUM, IRIDIUM

07 TRENDS AND INVESTMENTS

08 ABOUT HERAEUS

PRECIOUS METALS REVIEW

Platinum

⁷⁸
Pt

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	914	0.49%	931	04/07/2023	896	06/07/2023
€/oz	833	0.11%	854	04/07/2023	824	03/07/2023

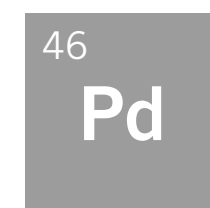
Platinum's lesser-known role in renewable energy production helps to support demand this year. Platinum is used in conjunction with rhodium in machinery components for the production of glass fibres. The role of fibreglass in wind power generation is expected to drive the ongoing expansion of glass production capacity in 2023. This is estimated to lift platinum demand by ~100 koz and push total industrial platinum demand up 6% year-on-year to 2.3 moz, despite the weak economic outlook weighing on other industrial uses in Europe and the US.

The platinum price has been trading in a tight range between \$900/oz and \$920/oz for the last two weeks. The metal is bordering on being oversold, which could provoke a bear market rally in the short term.

- 01 MARKET SPOTLIGHT
- 02 GOLD
- 03 SILVER
- 04 PLATINUM
- 05 **PALLADIUM**
- 06 RHODIUM, RUTHENIUM, IRIDIUM
- 07 TRENDS AND INVESTMENTS
- 08 ABOUT HERAEUS

PRECIOUS METALS REVIEW

Palladium



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,240	0.78%	1,278	06/07/2023	1,219	03/07/2023
€/oz	1,131	0.37%	1,174	06/07/2023	1,120	03/07/2023

US light-vehicle sales data points to resilience so far this year. Second-quarter and first-half US light-vehicle sales are up notably year-on-year, but are still far below pre-pandemic levels. H1'23 sales volume totalled 7.7 million units, a 13% increase on H1'22 (source: Wards Intelligence) when production was hit by the semiconductor chip shortage. Stronger year-on-year sales suggest that despite much higher interest rates, car buyers are not yet sufficiently put off from buying new vehicles despite the average transaction price of a new vehicle reaching \$48,000 in May, up ~\$11,000 since May 2019 (source: Edmunds). Pre-pandemic, palladium autocatalyst demand was >8 moz per year. This year, demand is forecast to reach around 7.7 moz, reflecting the impact of both vehicle supply and demand restraints. If interest rates continue to rise, as futures markets are predicting, they will likely find US consumers' pain point and sales should slow, dragging on palladium demand over the next 12 months.

The weak fundamental demand outlook for the automotive sector is a structural headwind for the next few months. The decline of the palladium price moderated last week, leaving the price at \$1,240/oz.

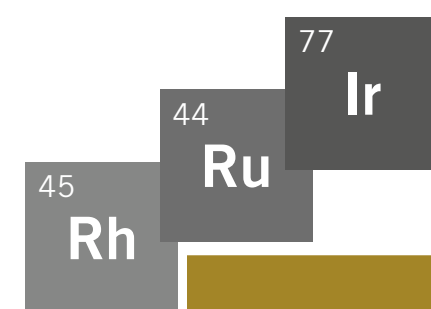
PRECIOUS APPRAISAL

10th July 2023

- 01 MARKET SPOTLIGHT
- 02 GOLD
- 03 SILVER
- 04 PLATINUM
- 05 PALLADIUM
- 06 RHODIUM, RUTHENIUM, IRIIDIUM**
- 07 TRENDS AND INVESTMENTS
- 08 ABOUT HERAEUS

PRECIOUS METALS REVIEW

Rhodium, Ruthenium, Iridium



	RHODIUM	RUTHENIUM	IRIDIUM
Reporting Week	\$4,450/oz	\$475/oz	\$5,050/oz
Previous Week	\$4,850/oz	\$495/oz	\$5,050/oz

Yet more incentives for green hydrogen supports future iridium and ruthenium demand. The US has proposed a \$1 billion, multi-year demand-side funding programme that aims to bridge the gap between green (+ blue) hydrogen producers and potential buyers that are concerned with pricing and viability of supply. Thus far, most public spending has focused on the supply side. Funds from the programme could be used to subsidise the prices paid by off-takers and create a market-maker entity to match buyers and sellers while the market is in its infancy. Other methods of implementing demand-side subsidies are also under consideration. Supporting the demand for green hydrogen will encourage the establishment of production hubs in the US, many of which could utilise iridium-ruthenium catalyst membrane as part of proton exchange membranes.

The rhodium and ruthenium prices declined by 8% and 4%, respectively, last week. Meanwhile, iridium stayed stable at \$5,050/oz.

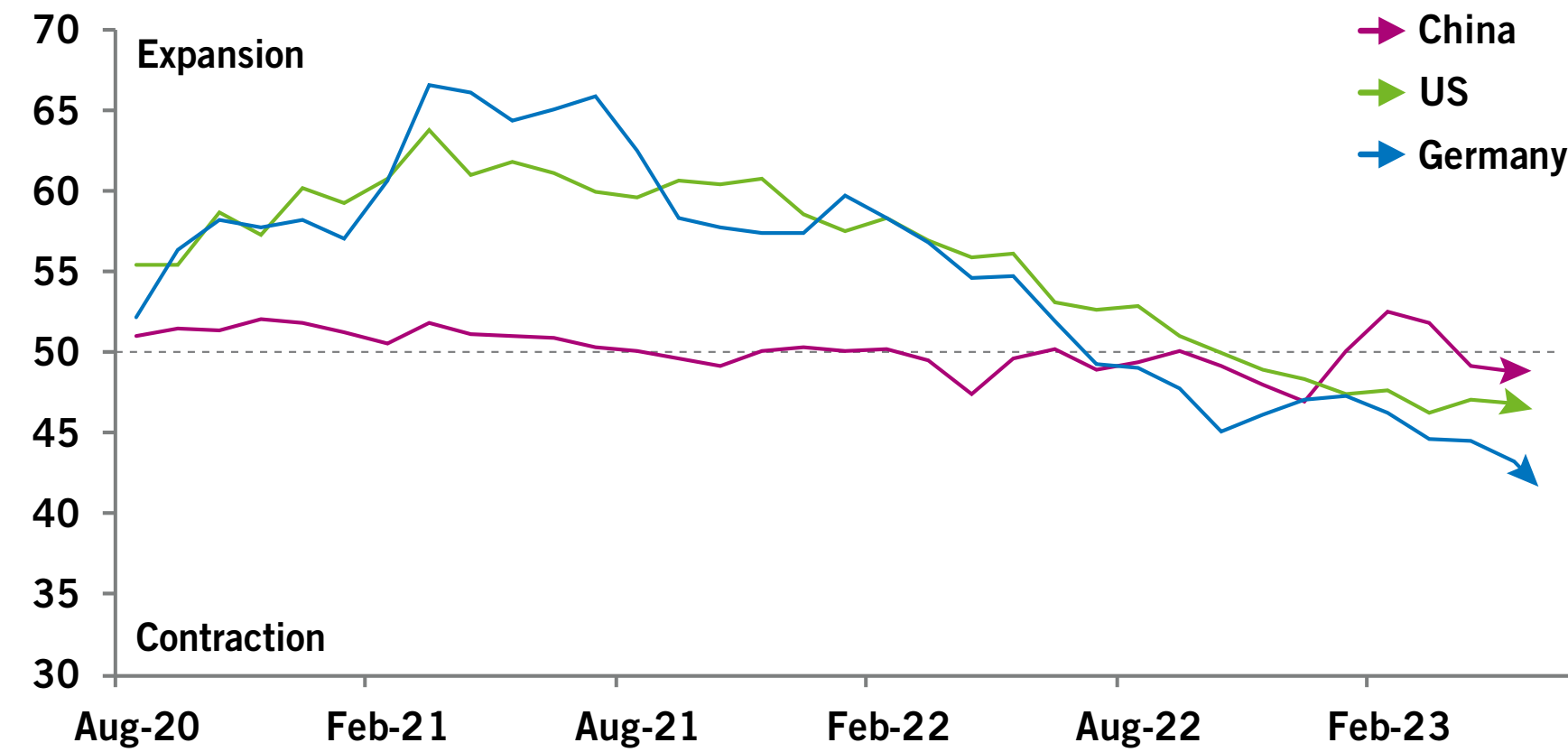
PRECIOUS APPRAISAL

10th July 2023

- 01 MARKET SPOTLIGHT
- 02 GOLD
- 03 SILVER
- 04 PLATINUM
- 05 PALLADIUM
- 06 RHODIUM, RUTHENIUM, IRIIDIUM
- 07 TRENDS AND INVESTMENTS
- 08 ABOUT HERAEUS

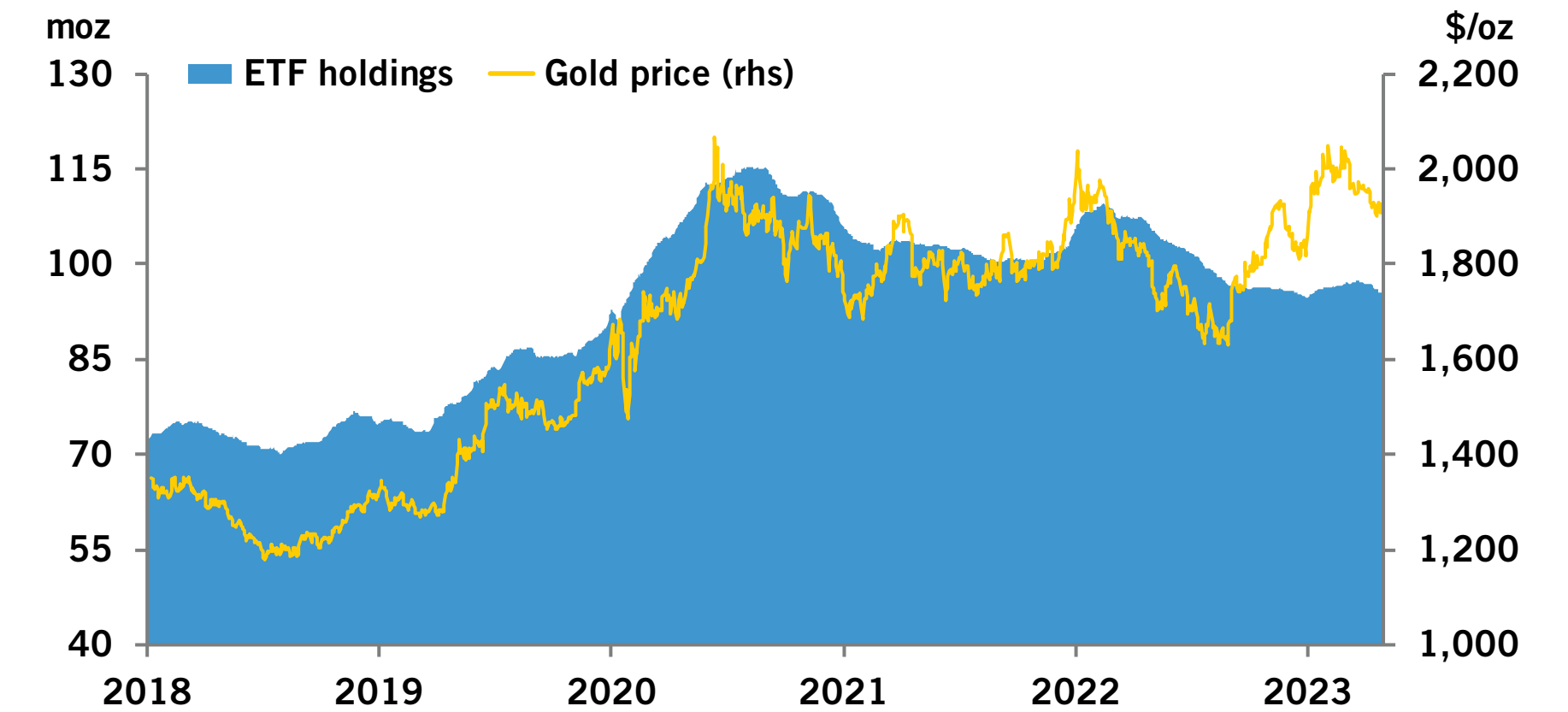
TRENDS AND INVESTMENTS

Industrial powerhouses' manufacturing index



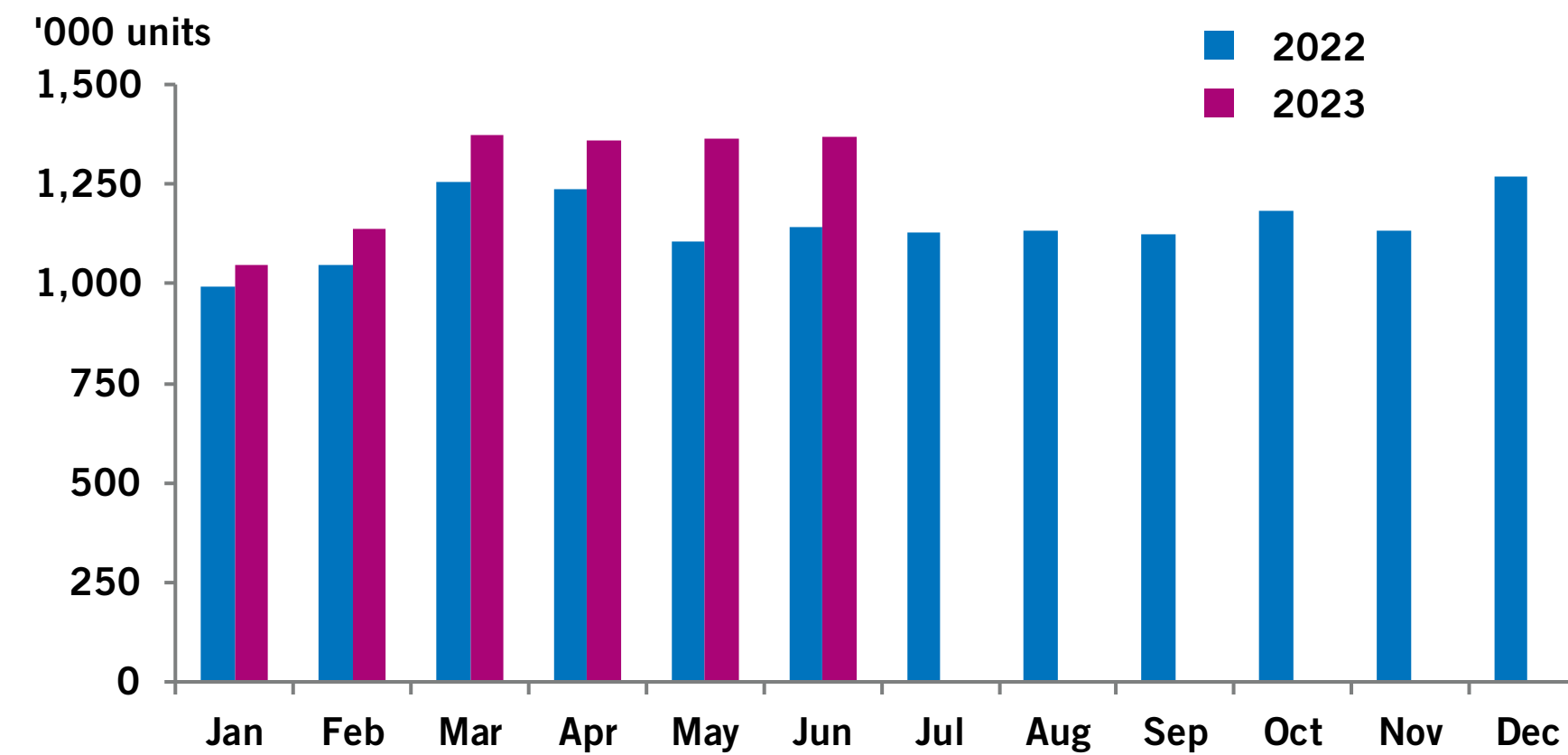
Source: SFA (Oxford), Bloomberg

Gold ETF holdings



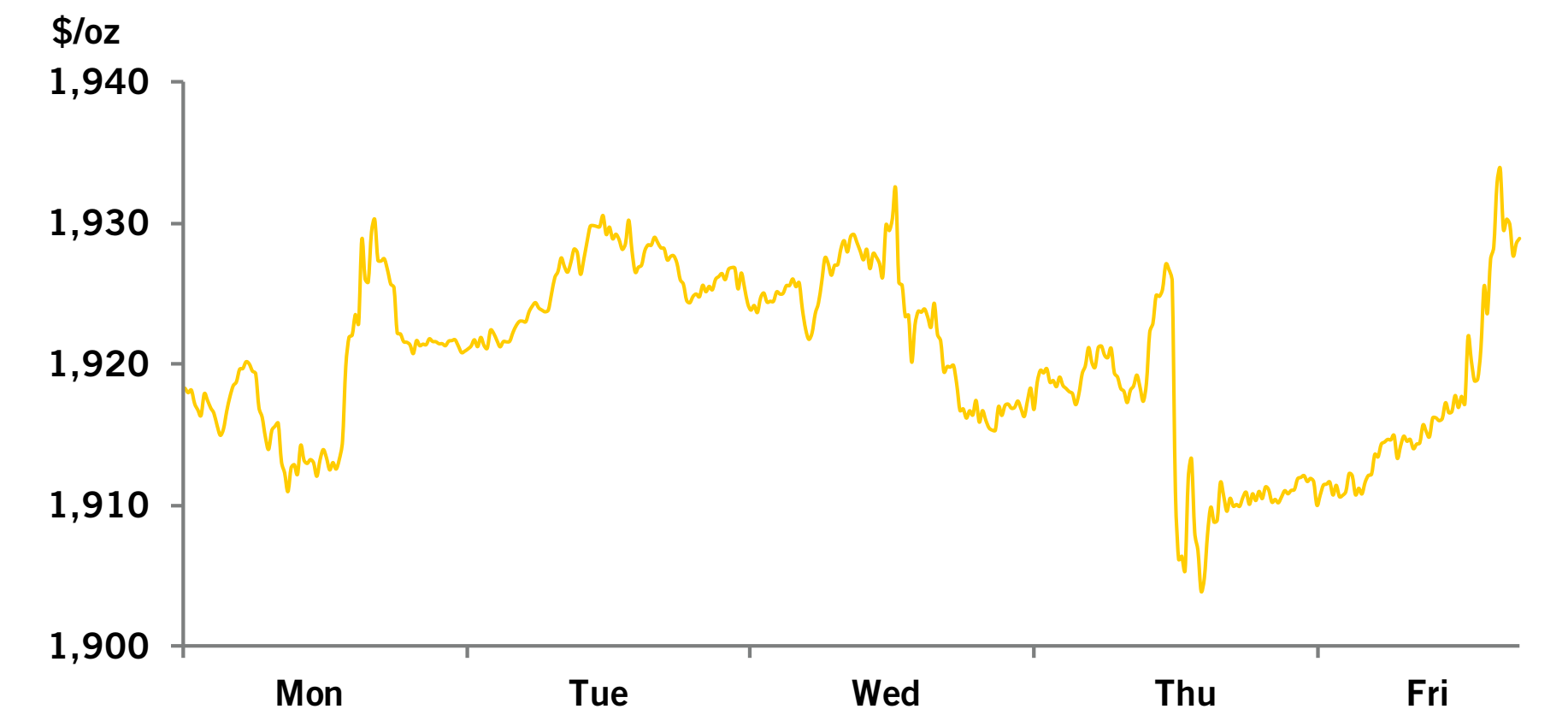
Source: SFA (Oxford), Bloomberg

US light-vehicle sales



Source: SFA (Oxford), Bloomberg

Last week's gold price action



Source: SFA (Oxford), Bloomberg

PRECIOUS APPRAISAL

10th July 2023

- 01 MARKET SPOTLIGHT
- 02 GOLD
- 03 SILVER
- 04 PLATINUM
- 05 PALLADIUM
- 06 RHODIUM, RUTHENIUM, IRIIDIUM
- 07 TRENDS AND INVESTMENTS
- 08 **ABOUT HERAEUS**

ABOUT HERAEUS

Learn more about important trends in the precious metals markets on a weekly basis with our Heraeus Precious Appraisal. **Please subscribe: www.herae.us/trading-market-report.**

Heraeus Precious Metals

Europe, Middle East, Africa & other regions

Phone: +49 6181 35 2750
edelmetallhandel@heraeus.com

South East Asia

Phone: +852 2773 1733
tradinghk@heraeus.com

USA

Phone: +1 212 752 2180
tradingny@heraeus.com

China

Phone: +86 21 3357 5658
tradingsh@heraeus.com



The Heraeus Group is a broadly diversified and globally leading family-owned technology company, headquartered in Hanau, Germany. The company's roots go back to a family pharmacy started in 1660. Today, Heraeus bundles diverse activities in the Business Platforms Metals and Recycling, Health, Semiconductor and Electronics as well as Industrials. Customers benefit from innovative technologies and solutions based on broad materials expertise and technological leadership.

Heraeus Precious Metals is globally leading in the precious metals industry. The company is part of the Heraeus Group and covers the value chain from trading to precious metals products to recycling. In addition to gold and silver, it also has extensive expertise in all platinum group metals.

The Heraeus Precious Appraisal is produced in collaboration with:

SFA (Oxford) Ltd

United Kingdom
Phone: +44 1865 784366
www.sfa-oxford.com
The Oxford Science Park,
Oxford, United Kingdom, OX4 4GA



Disclaimer

This document is being supplied to the recipient only, on the basis that the recipient is reasonably believed to be a professional market participant in the precious metals market. It is directed exclusively at entrepreneurs and especially not intended for the use of consumers.

The material contained in this document has no regard to the specific investment objectives, financial situation or particular need of any specific recipient or organisation. It is not provided as part of a contractual relationship. It is not and should not be construed as an offer to sell or the solicitation of an offer to purchase or subscribe for any investment or as advice on the merits of making any investment.

This report has been compiled using information obtained from sources that Heraeus and SFA (Oxford) Ltd ("SFA") believe to be reliable but which they have not independently verified. Further, the analysis and opinions set out in this document, including any forward-looking statements, constitute a judgment as of the date of the document and are subject to change without notice.

There is no assurance that any forward-looking statements will materialize. Therefore, neither SFA nor Heraeus warrants the accuracy and completeness of the data and analysis contained in this document.

Heraeus and SFA assume no liability for any losses or damages of whatsoever kind, resulting from whatever cause, through the use of or reliance on any information contained in this document. However, in so far as a liability claim exists under German law, Heraeus and SFA shall have unlimited liability for willful or grossly negligent breach of duty.

Unless expressly permitted by law, no part of this document may be reproduced or distributed in any manner without written permission of Heraeus. Heraeus specifically prohibits the redistribution of this document, via the internet or otherwise, to non-professional or private investors and neither Heraeus nor SFA accepts any liability whatsoever for the actions of third parties in reliance on this document.