

PRECIOUS APPRAISAL



01 MARKET SPOTLIGHT

02 GOLD

03 SILVER

04 PLATINUM

05 PALLADIUM

06 RHODIUM, RUTHENIUM, IRIIDIUM

07 TRENDS AND INVESTMENTS

08 ABOUT HERAEUS

MARKET SPOTLIGHT

Gold has headwinds but the outlook is bright

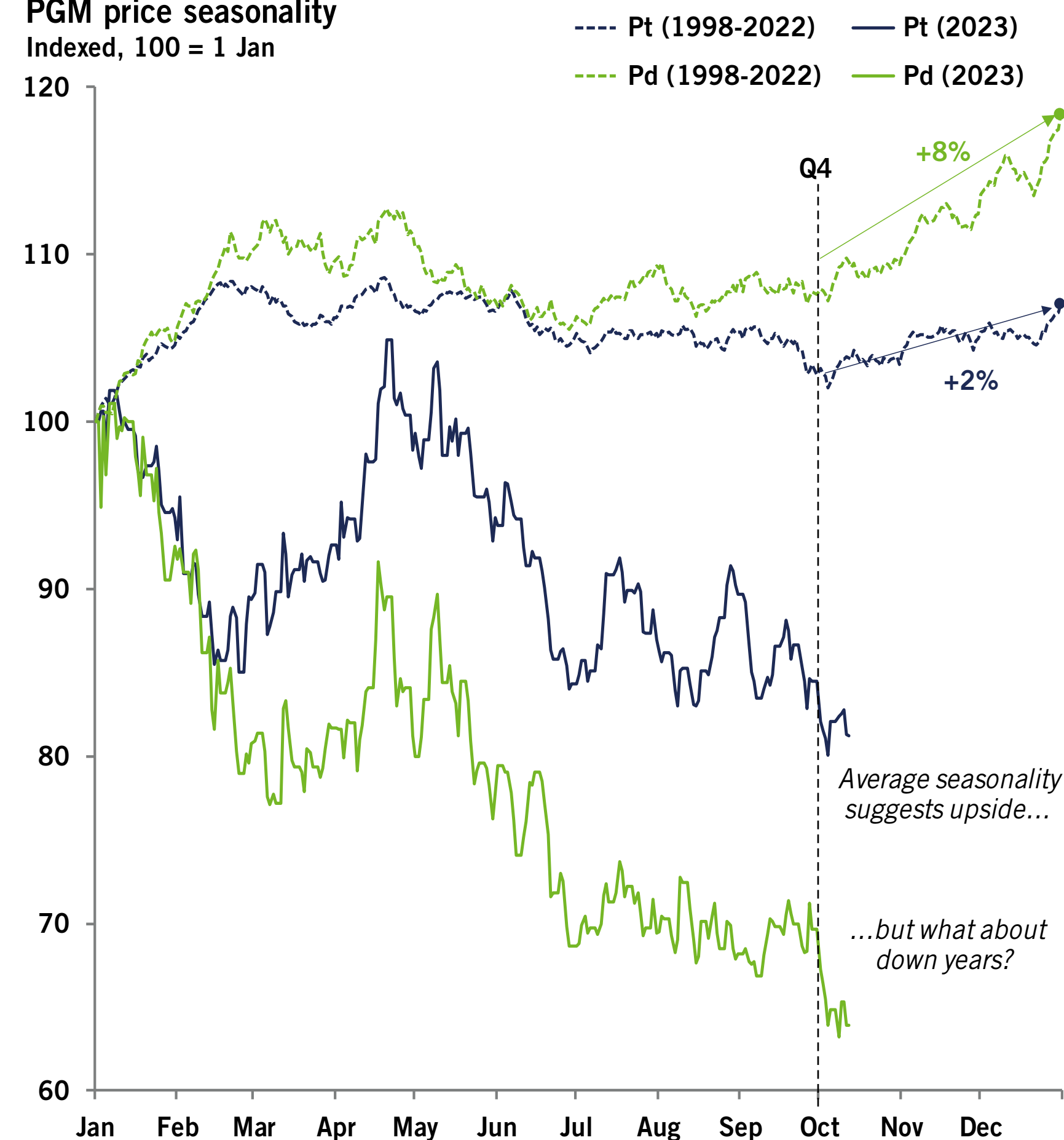
Historical price seasonality implies upside potential for PGMs in the fourth quarter. Since 1998, on average, platinum has gained 4% in Q4, while palladium has rallied by 8%. This seasonally strong period of PGM prices tends to extend into further gains in the new year.

Platinum and palladium have performed badly this year. The platinum price finished last week nearly 18% lower than at the start of 2023 and seems unlikely to climb back to the \$1,000/oz level before the end of the year. Palladium is down by 35% year-to-date, as the decline from the all-time high in March 2022 has continued. Automotive OEMs are thought to have entered the year with excess PGM inventories, reducing the need for open-market purchases. Negative year-to-date returns are the worst of the last five years for both platinum and palladium, and are likely to finish 2023 in the red, even when factoring in a possible late-Q4 rally in line with seasonal expectations.

Downward price trends tend to persist in the last quarter during PGM bear markets. Splitting out years where annual returns were negative shows that these years significantly underperform the mean, and the trend continues to the downside in Q4 (see p. 8). Given the negative year-to-date returns in PGMs, the risk is that platinum and palladium prices could continue to fall, as in previous years with negative annual returns.

Supply events may be what are needed to see higher PGM prices. Nor Nickel is due to begin major smelter maintenance in Russia soon, which could reduce liquidity in the palladium market late in Q4'23 and into Q1'24. If this coincides with automakers resuming normal purchases towards the end of the year, the palladium price could bounce back in early 2024. Even in bear markets, platinum and palladium prices still tend to rise early in the year.

PGM price seasonality
Indexed, 100 = 1 Jan



Source: SFA (Oxford), Bloomberg

PRECIOUS METALS REVIEW

Gold

79

Au

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,923	4.93%	1,923	13/10/2023	1,844	09/10/2023
€/oz	1,831	5.85%	1,832	13/10/2023	1,748	09/10/2023

Fed talk starting to turn dovish. Expectations for a US interest rate hike in November are cooling following communications from Fed members, and gold has reacted positively. The probability of a hike in November has fallen from 41% a month ago to 7.7% as of last week. US yields and the dollar softened immediately following these statements, suggesting that there may be no need for further increases to interest rates in light of the recent rally in yields across the curve, despite a higher-than-expected inflation reading for September. Two-year yields remain above 5% and the ten-year is holding above 4.5%. Once yields begin to fall, gold is expected to move higher.

Decline in the rupee gold price could be a catalyst for India’s festive-season demand. The fourth quarter of the year tends to be the best for consumer gold demand in India. Over the last decade, Q4 gold demand has averaged 243 tonnes, versus an average quarterly demand of 163 tonnes throughout the rest of the year (source: World Gold Council). Festivals and auspicious gold buying events such as Diwali (12 November 2023) tend to stimulate demand. Consumer gold demand fell by 11.5% year-on-year, and gold imports dropped by 17% in H1’23 when the local gold price reached new all-time highs. The local gold price has since declined by approximately 9%, which may underpin stronger demand in October-December. India’s annual demand is likely to fall year-on-year owing to weakness in the first half, but a strong Q4 could bring total demand to around 650 tonnes.

Ongoing conflict in the Middle East helped the gold price rise. The Israel-Hamas conflict has boosted safe haven demand for gold, helping the price to rise week-on-week. Typically, event driven price rises tend to dissipate through the next week as the shock of the initial action fades. However, gold was very oversold and the additional impetus from the conflict has seen the gold price surge. It gained nearly 5% week-on-week the most since March, closing at \$1,923/oz.

PRECIOUS METALS REVIEW

Silver

47

Ag

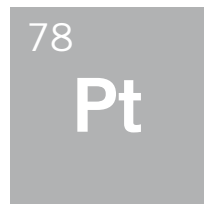
	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	22.72	5.38%	22.78	13/10/2023	21.57	09/10/2023
€/oz	21.64	6.33%	21.69	13/10/2023	20.44	10/10/2023

The world’s second-largest silver mine will resume production after Newmont reached a preliminary agreement with labour unions that have been on strike since 7 June. The mine had been expected to produce 31-35 moz of silver this year, however following the stoppage, plus the time needed to ramp back up to steady-state production, silver output may be reduced by approximately 11 moz, or around 1.3% of the global primary production forecast (source: The Silver Institute). The loss of production is not expected to result in a shortage of silver. Silver-backed ETFs hold in excess of 700 moz of metal in above-ground stock as of last week.

The silver price rose in tandem with gold last week as a wave of risk-off sentiment swept global markets. Silver finished the week 5.4% higher at \$22.72/oz.

PRECIOUS METALS REVIEW

Platinum



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	880	-0.51%	898	12/10/2023	866	13/10/2023
€/oz	838	0.32%	847	10/10/2023	823	13/10/2023

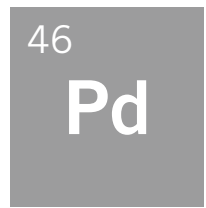
PGM producers are talking tough over cost-cutting. CEOs from South Africa’s major PGM producers met in Johannesburg at the beginning of the month. The need to adjust costs to a lower PGM basket price was a primary topic of discussion. Sibanye-Stillwater’s CEO, Neal Froneman, publicly warned that the company may be forced to close some loss-making shafts in South Africa following the 41% contraction in the South African PGM basket price year-to-date. Other producers with higher cost shafts are also likely to be considering this option. Anglo American has also announced plans to reduce its corporate headcount globally. Shaft closures are likely to take some time to complete, however, and primary platinum production from South Africa is currently forecast to grow by around 3% to approximately 4.2 moz this year. It is possible that final investment decisions on large capital mine expansion and life-extension projects may be delayed while producers look to conserve working capital in the near term.

The outlook for platinum jewellery demand is challenging. China, the world’s largest platinum jewellery market, has been hampered by Covid lockdowns and sluggish growth since 2020. Demand from the jewellery sector has fallen by 21% since then to 570 koz, as forecast for 2023. Platinum jewellery fabrication is estimated to have declined by 20% year-on-year in China (source: Platinum Guild International). Platinum jewellery faces stiff competition from gold alternatives, which remain more popular with consumers owing to their greater perceived intrinsic value. China’s consumer confidence remains low, and concerns over GDP growth are likely to limit demand later in the year.

The platinum price failed to return to the psychological level of \$900/oz last, finishing the week lower for the third week in a row.

PRECIOUS METALS REVIEW

Palladium



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,132	-3.22%	1,189	11/10/2023	1,120	09/10/2023
€/oz	1,078	-2.32%	1,121	11/10/2023	1,062	09/10/2023

US auto industry strikes spread in the US. The ongoing strikes impacting the US’s main automotive manufacturers has spread to Ford’s largest vehicle plant, where the largest of the company’s range of F-series pickups are produced. Ford has said the extension of industrial action to this plant could impact a number of facilities in the US. This development is the most likely to impact production figures of light vehicles, and autocatalyst palladium demand in the US, owing to ripple effects across other plants. Ford does, however, have the inventory to weather lengthy strikes. The stock of F-150 pickups equalled 97 days of supply at the beginning of October (source: Cox Automotive), so sales of the US’s most popular light vehicle are unlikely to be significantly impacted. Vehicle production in North America is expected to rise by approximately 1 million units this year to 12 million, which could raise palladium demand by 10% to just under 1.7 moz. However, If these strikes do intensify late into Q4’23, there is a risk that palladium autocatalyst demand could underperform expectations.

Unlike gold and silver, palladium’s downward momentum continued last week, and the price closed the week’s trading down 3.2% at 1,132/oz.

PRECIOUS APPRAISAL

16th October 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	\$5,550/oz	\$475/oz	\$5,300/oz
Previous Week	\$4,650/oz	\$475/oz	\$5,250/oz

Bilateral pacts fuel future hydrogen PGM demand. In the past few weeks, UK-Germany, and India-Saudi Arabia green hydrogen pacts have been signed in order to boost cross-border collaboration in the development of technology and production. The details of these deals are not known but government actions will help accelerate the adoption of green hydrogen, utilising iridium and platinum in electrolyser catalysts which are expected to account for a growing portion of PGM demand over the next decade. Saudi Arabia is keen to develop its domestic hydrogen economy, having raised \$6.1 billion for the construction of the world’s largest green hydrogen production base at the NEOM project on the Red Sea by 2026. End-uses are also being fostered, and Saudia Arabia’s first fuel cell powered passenger train is scheduled to being operation later this month in Riyadh.

Both the rhodium and iridium prices moved higher last week. The iridium price rose to \$5,300/oz, a year-to-date high, and rhodium followed suit, gaining a more ground to finish last week at \$5,550/oz. Ruthenium has seen less price volatility so far in H2’23, having been stable at \$475/oz for the last 70 trading days.

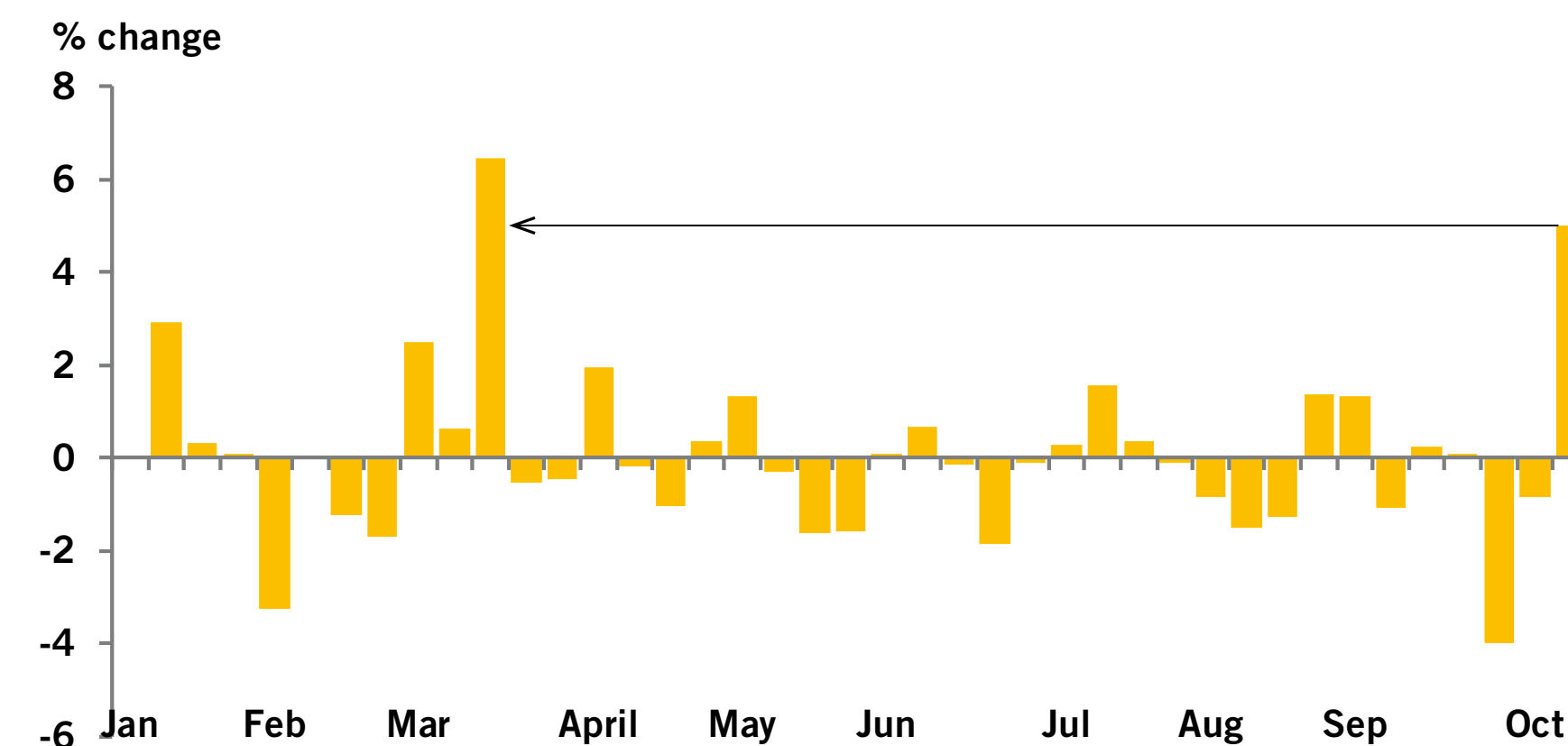
PRECIOUS APPRAISAL

16th October 2023

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

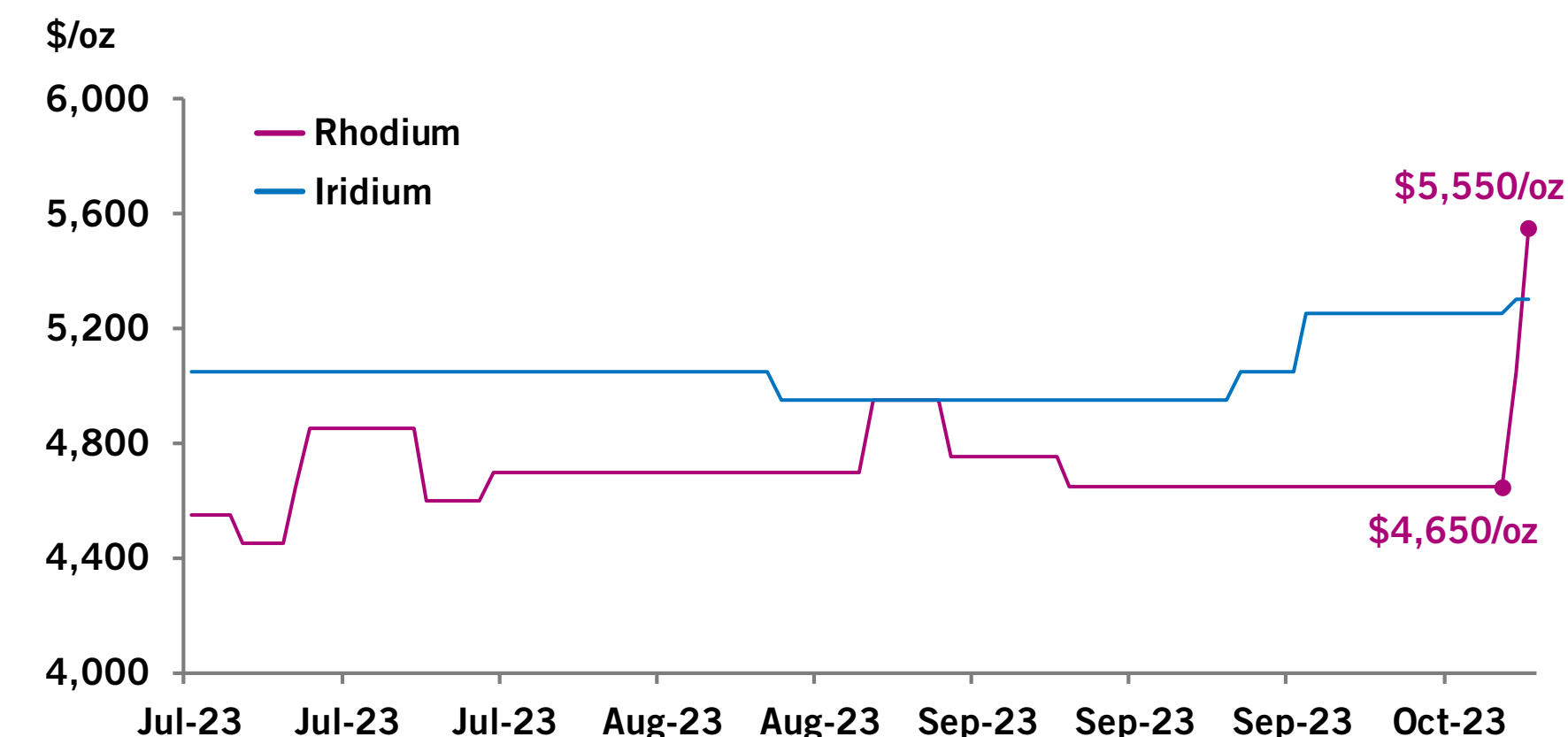
TRENDS AND INVESTMENTS

Weekly change in the spot gold price



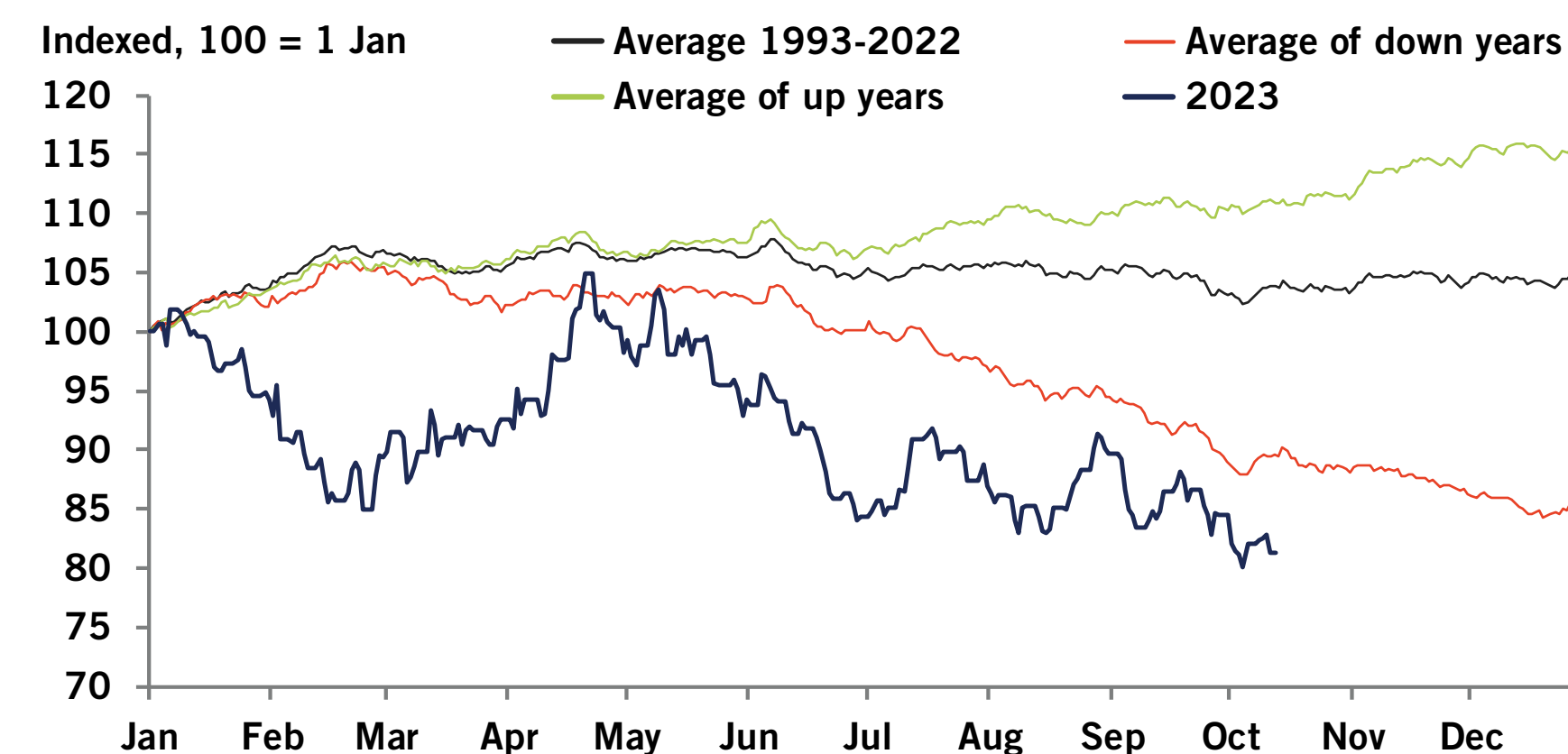
Source: SFA (Oxford), Bloomberg

Rhodium and iridium prices



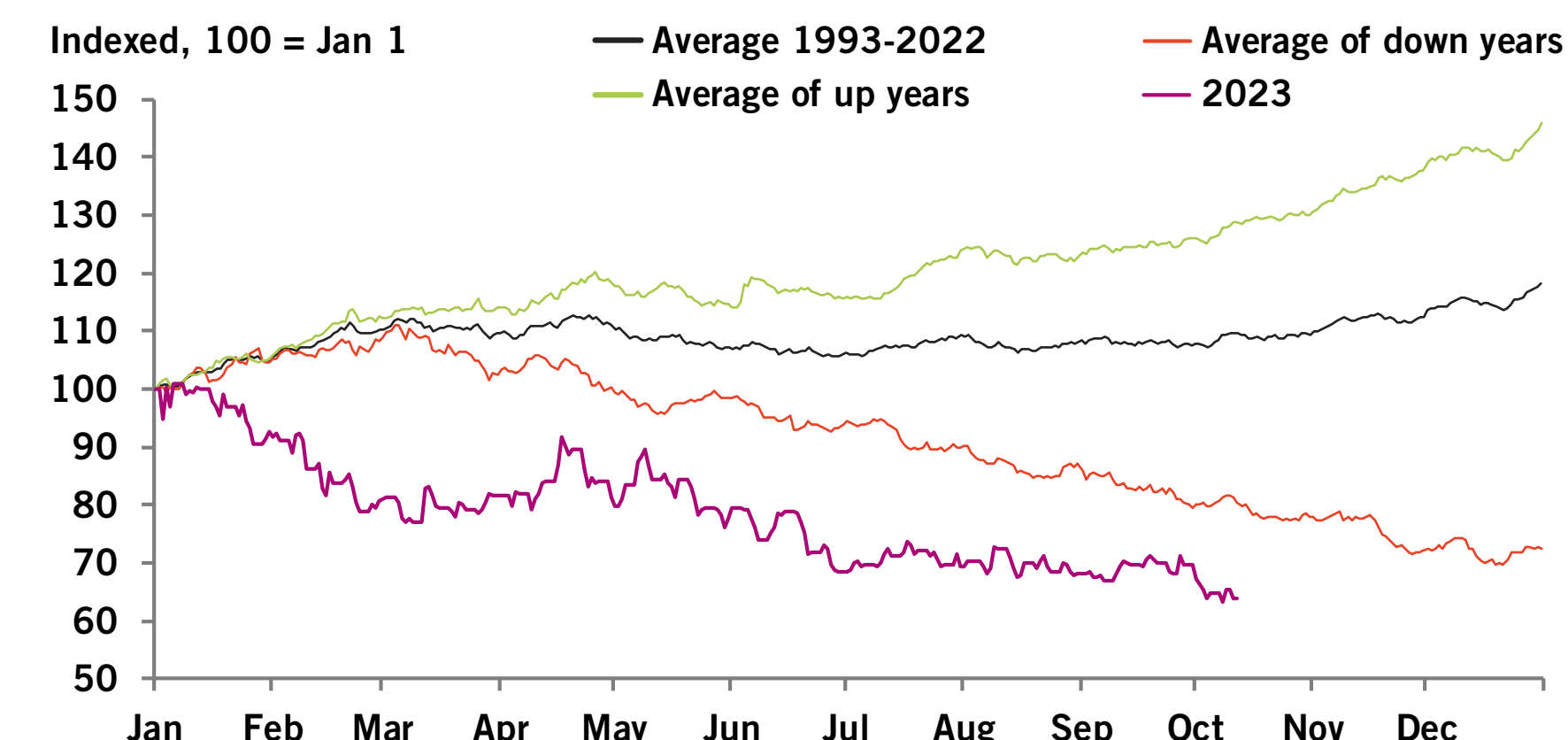
Source: SFA (Oxford), Heraeus

Platinum price seasonality



Source: SFA (Oxford), Bloomberg

Palladium price seasonality



Source: SFA (Oxford), Bloomberg

PRECIOUS APPRAISAL

16th October 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



consulting analysts in tomorrow's commodities and technologies

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.