

PRECIOUS APPRAISAL



MARKET SPOTLIGHT

Recovery in data storage market positive for ruthenium demand

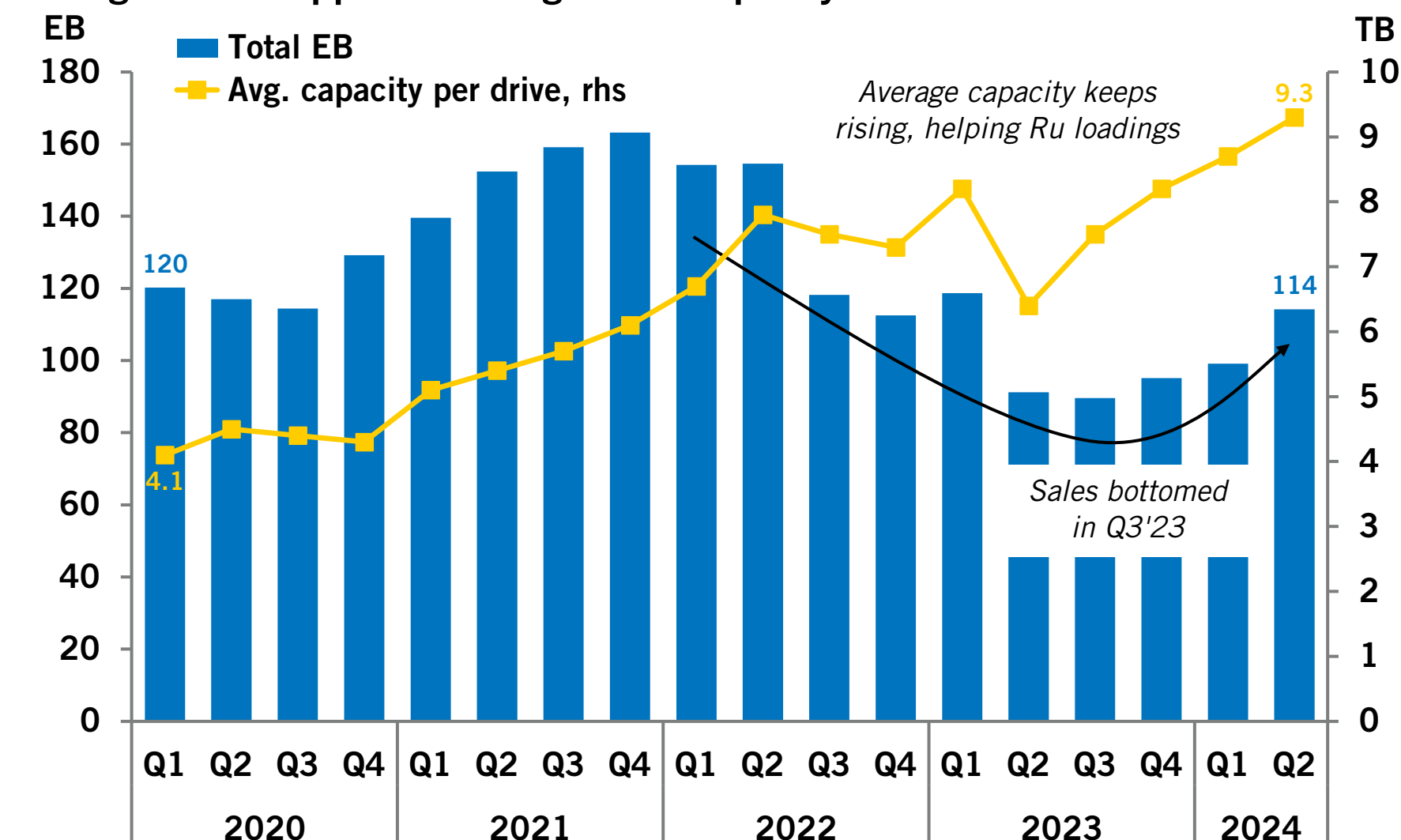
The ruthenium price has suffered over the last two years, having fallen by 41% from \$695/oz in May 2022 to \$410/oz as of last week. This has been due, in part, to a shift in PGM buying patterns from the data storage sector but, as the market turns, pressure could begin to ease.

The data storage industry has been going through a period of inventory adjustment, reducing the volume of new ruthenium demand. Hard-disk manufacturers overestimated the trend in demand for data storage following the ‘work-from-home’ boom in 2020-2021 and stocked up with ruthenium to produce record numbers of drives. However, the market slowed rapidly in H2’22, leaving these market participants with excess PGM inventory relative to consumption. HDD manufacturers have been working through this inventory without the need to come to the market to buy PGMs. Japanese ruthenium fabricator Furuya cited in its latest reporting that it now sees this situation coming to an end, with demand for its ruthenium sputtering targets used for HDD manufacturing increasing as HDD unit sales are now rising again.

The recovery in HDD and PC sales can drive ruthenium demand. Seagate and Western Digital, two of the largest HDD manufacturers, have seen growth in HDD sales and shipments in the last six months. Western Digital reported a 12% year-on-year increase in HDD storage capacity shipped in CYQ2’24. Similarly, Seagate saw a 25% year-on-year upswing in HDD sales revenue over the same period. Sales of PCs and laptops are also rising, having experienced three straight quarters of positive year-on-year growth (source: Canalys), as is spending on cloud services, which grew 19% in Q2’24. These data underpin the case for demand to rise going into next year. Although SSDs have taken some market share from hard disks, HDDs remain more cost-competitive in mass storage applications such as cloud computing and are expected to continue to be the first choice.

Storage demand should remain robust as inventory is largely worked down, and driven by increasing data generation, plus ruthenium-based disk technologies are set to remain competitive for several more years. Non-ruthenium alternative technology has long been in development but is yet to seriously compete. Rising data storage needs mean more demand for higher capacity drives with more platters that use PGMs (ruthenium + platinum). Higher capacity and more platters mean more PGM content per drive. HDD demand makes up 7% of total ruthenium demand, compared to just 1.6% of total platinum demand. Therefore, any meaningful growth in the HDD market could significantly benefit ruthenium.

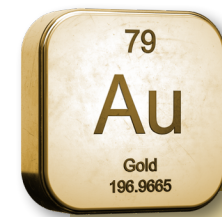
Seagate EB shipped & average drive capacity



Source: SFA (Oxford), Seagate. Note: EB = Exabyte, TB = Terabyte

PRECIOUS METALS REVIEW

Gold



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	2,503	-0.29%	2,529	28/08/2024	2,494	28/08/2024
€/oz	2,263	0.76%	2,282	29/08/2024	2,243	27/08/2024

Can gold maintain its summer momentum this September? Gold has yielded negative returns in every September since 2017 as traders make their return from the summer break. This time round, indicators suggest a pullback may be imminent. What could catalyse the gold price is the Federal Reserve rate cut now pencilled in for the end of the month following the Jackson Hole Conference held on 20 August. The question is whether there will be a 25 or 50 bp cut. The Federal Funds Rate tends to follow the US 2-year yield which dropped to a new low of 3.87% last week, far below the current Federal Funds target rate of 5.25%-5.5%. This raises the probability of a 50 bp cut to interest rates. The swaps market currently sees a 38% probability of this outcome, up from 24% a week ago. A larger cut to interest rates is likely to weaken the dollar more, and thus the gold price would be expected to rise more. What could mitigate this, however, is if the market has sufficiently priced in this risk to the gold price already, it having held around \$2,500/oz over the last fortnight.

Gold closed last week's trading at \$2,503/oz.

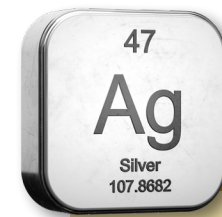
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Silver



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	28.96	-2.50%	30.19	26/08/2024	28.83	30/08/2024
€/oz	26.18	-1.50%	27.31	29/08/2024	25.88	28/08/2024

Peru's silver production is surprising to the upside. As the third-largest producer of silver, Peru recorded mine production of 3,041 tonnes in 2023. This year, output was forecast to drop by 556 tonnes (source: The Silver Institute). However, in the first half of the year, the country produced 1,592 tonnes of silver, an increase of 10% year-on-year, with major producers performing well. Buenaventura more than doubled its silver production year-on-year in H1'24 to 153 tonnes as it brought online the Yumpag operations, for which it secured its final environmental permit earlier this year. Peru's silver supply has been in decline since 2016 (excluding Covid impacts in 2021), and production is on track to reach a four-year high of 3,350 tonnes in 2024.

The silver price retraced to \$28.96/oz last week following two weeks of >2.5% gains and failing to secure the \$30/oz level.

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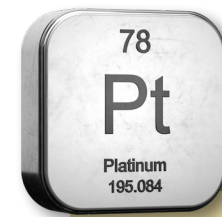
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Platinum



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	932	-2.61%	982	26/08/2024	930	30/08/2024
€/oz	843	-1.65%	880	26/08/2024	838	28/08/2024

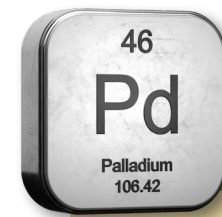
Implats is taking a measured approach to releasing its excess PGM inventory. Of the c.390 koz 6E in excess stock held by Impala Platinum at the end of its financial year (June 2024), only ~130 koz 6E will be processed and refined per year for the next three financial years. This should keep the platinum market tighter for longer, as this schedule for refining is slower than might have been expected. Stocks were built up during a period of load-shedding, when electricity supply for underground operations was prioritised, and during periods of regular smelter maintenance. The inventory processing will utilise excess smelting and refining capacity within the Impala Platinum Group assets, though capacity does not seem to be the limiting factor in the processing timeline. By the time all current stocks have been released in June 2027, Impala expects to have 600-800 koz 6E in excess processing capacity. Moving into 2025, the platinum market is forecast to remain in a deficit, despite the release of excess refined metal from Impala.

Despite rising to a more than one-month high early in the week, the platinum price declined sharply on 28 August and could not recover enough ground to end the week in the black. By Friday's close, the price stood at \$932/oz.

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Palladium



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	968	1.68%	996	30/08/2024	945	28/08/2024
€/oz	875	2.76%	898	30/08/2024	850	28/08/2024

European auto sales are stagnating. So is Europe’s automotive palladium demand. New passenger car registrations across Europe grew just 0.2% year-on-year in July this year and are up by a subdued 3.9% year-to-date at 6.5 million units (source: ACEA). Over the last 12 months, overall sales growth has been choppy, with three months seeing year-on-year contractions. Passenger car sales are expected to grow on an annual basis this year, but not by much. Even with overall growth, sales of catalysed vehicles are expected to fall, dragging down palladium demand in Europe by ~6% vs. 2023. It is not all positive for BEVs, however. In Germany, Europe’s largest autos market, BEV registrations have fallen by 20% year-on-year (source: KBA). This has been largely due to the abrupt removal of various subsidies by the German government in late 2023. The rapid loss of momentum in BEV sales following the subsidy cuts highlights that costs are still an issue for many European consumers. In Germany, consumers turning away from BEVs has resulted in ~50,000 additional sales of catalysed vehicles, which will help to improve palladium demand in the short term.

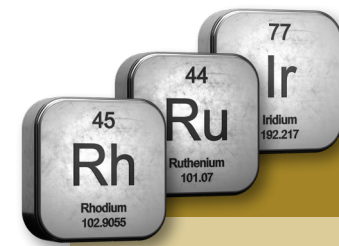
Palladium had a fourth strong week in a row to finish August, rising 1.68% to \$968/oz. The palladium price has appreciated by nearly 10% since the beginning of August, and is holding a premium to platinum of \$36/oz.

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PRECIOUS METALS REVIEW Rhodium, Ruthenium, Iridium



	RHODIUM	RUTHENIUM	IRIDIUM
Reporting Week	\$5,225/oz	\$410/oz	\$5150/oz
Previous Edition	\$5,225/oz	\$410/oz	\$5150/oz

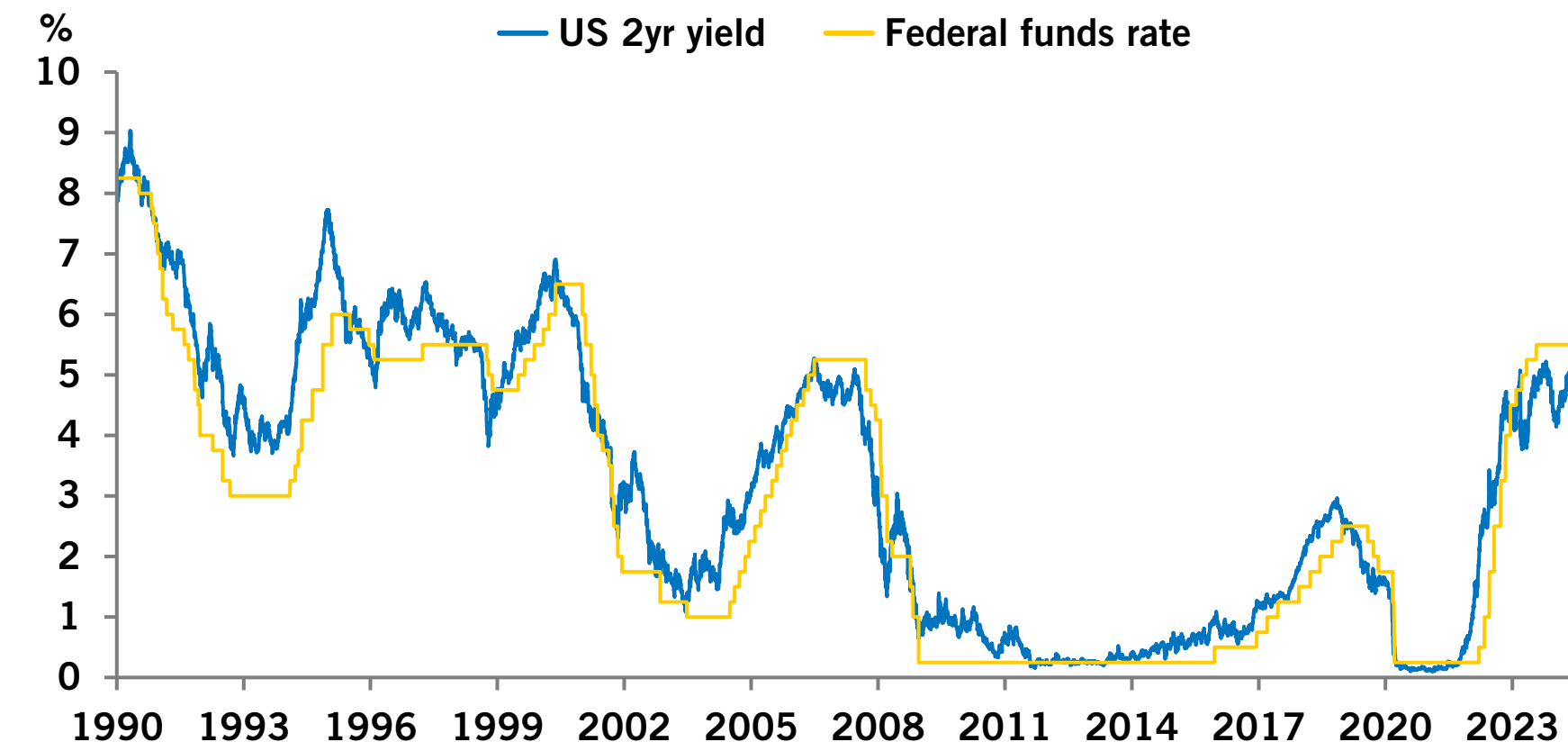
Toyota’s commitment to FCEVs is a positive move for future ruthenium demand. Two of the company’s subsidiaries have invested in a new fuel cell production facility in Beijing that has now entered production. The facility has capacity to produce 10,000 fuel cell units each year, with an expansion planned for completion by 2026. The facility will focus on fuel cell systems for commercial vehicles, for which China is the largest market. Uptake of commercial FCEVs has been relatively low. July was the best month on record for Chinese FCEV truck sales, with 613 units registered. This data suggests that FCEV production capacity may be far in excess of demand at present. However, moving into 2025, the hydrogen sector is forecast to be the fastest growing demand segment for ruthenium, as the number of FCEVs is forecast to rise steadily.

All three small PGMs saw no new price action last week.

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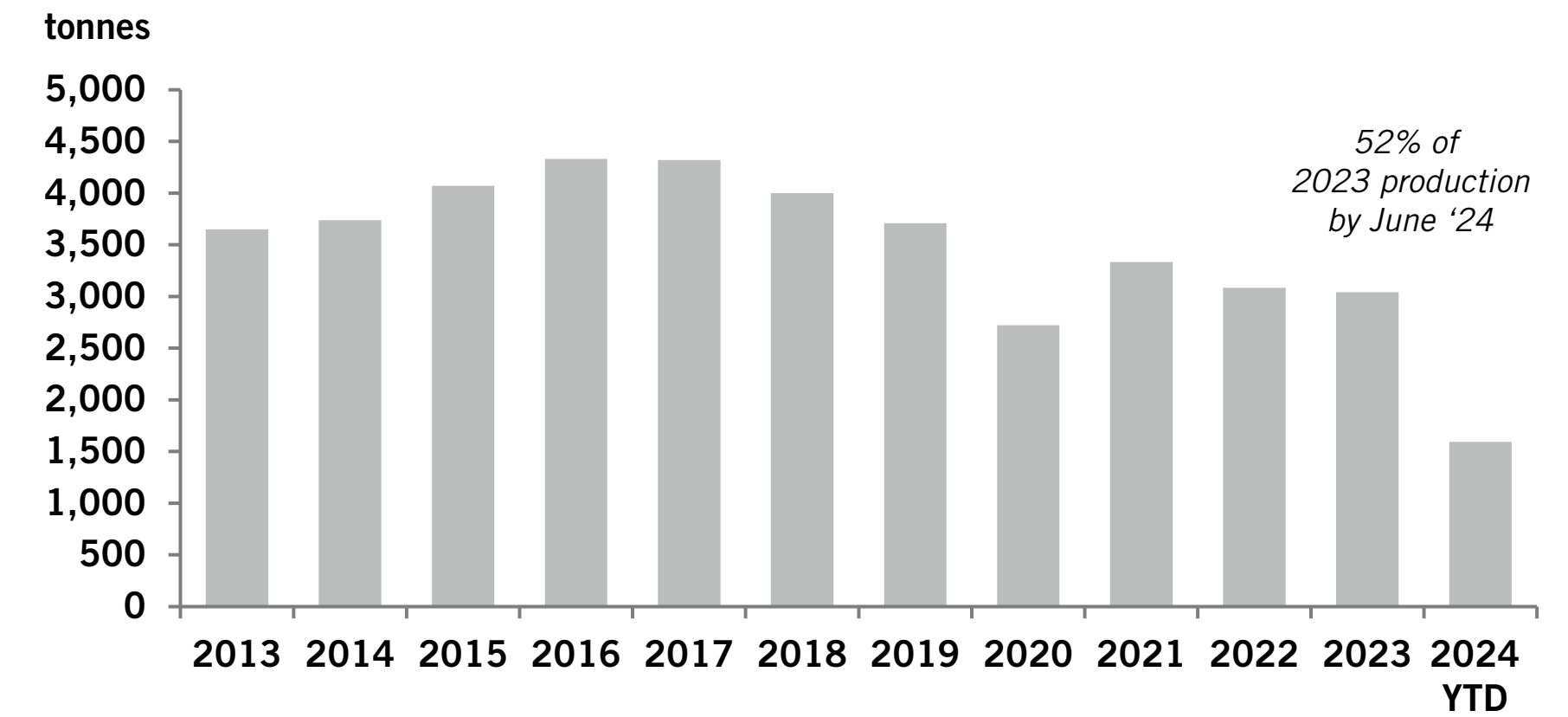
TRENDS AND INVESTMENTS

Federal funds target rate vs. US 2yr Treasury yield



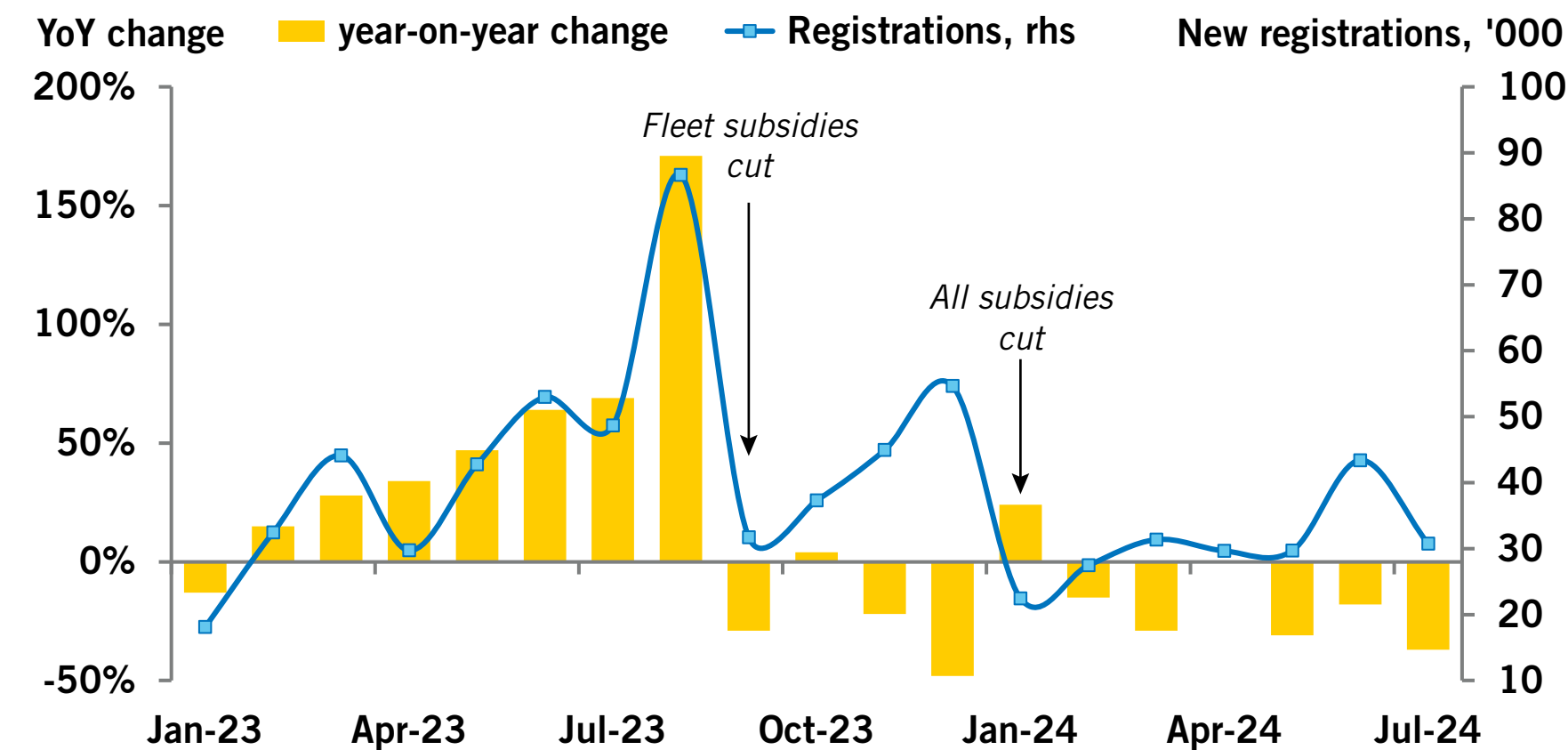
Source: SFA (Oxford), Bloomberg

Peru annual silver production



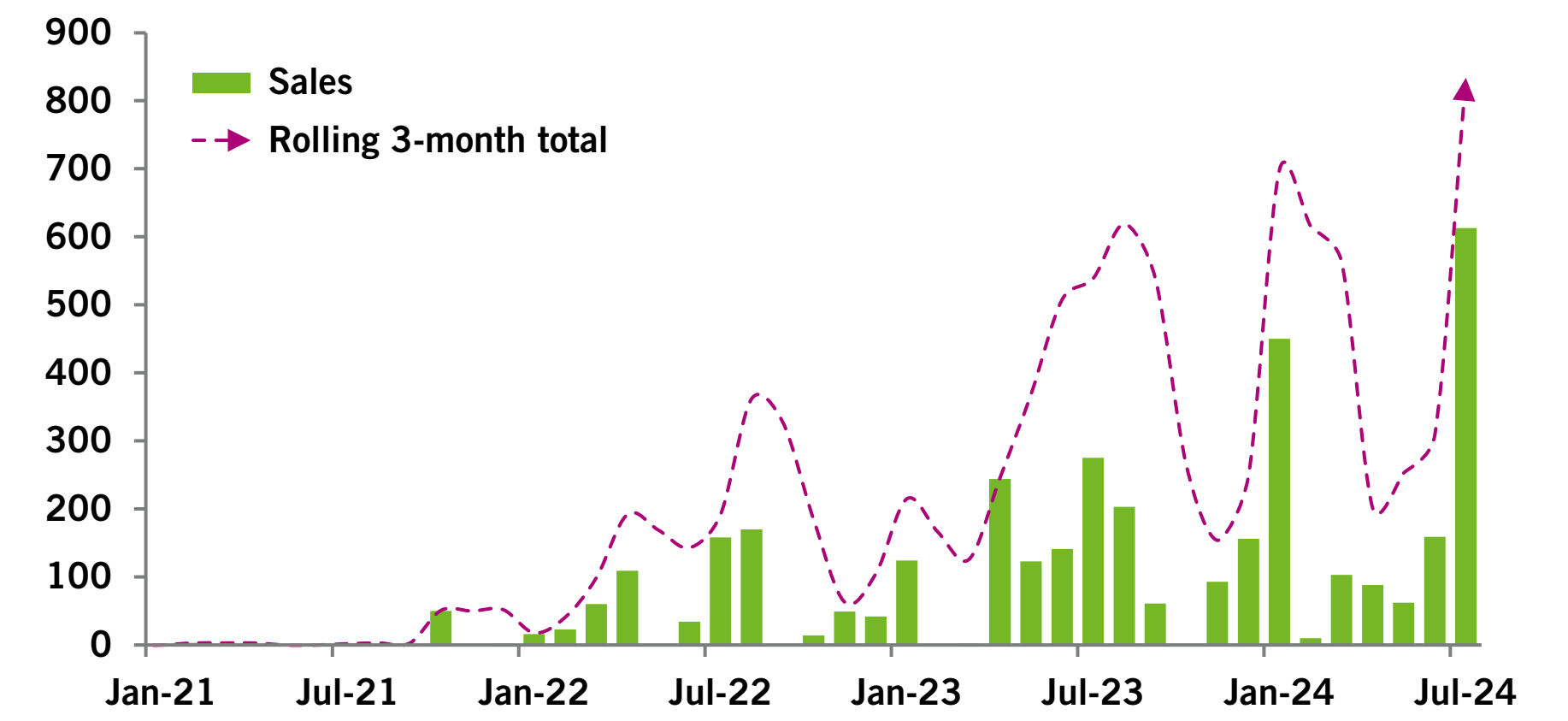
Source: SFA (Oxford), Peru Ministerio de Energía y Minas

Germany BEV registrations



Source: SFA (Oxford), KBA

China FCEV truck sales



Source: SFA (Oxford), Bloomberg

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