Heraeus

PRECIOUS APPRAISAL

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MARKET SPOTLIGHT

Possible short-term price gains for PGMs to be offset as metal liquidity recovers

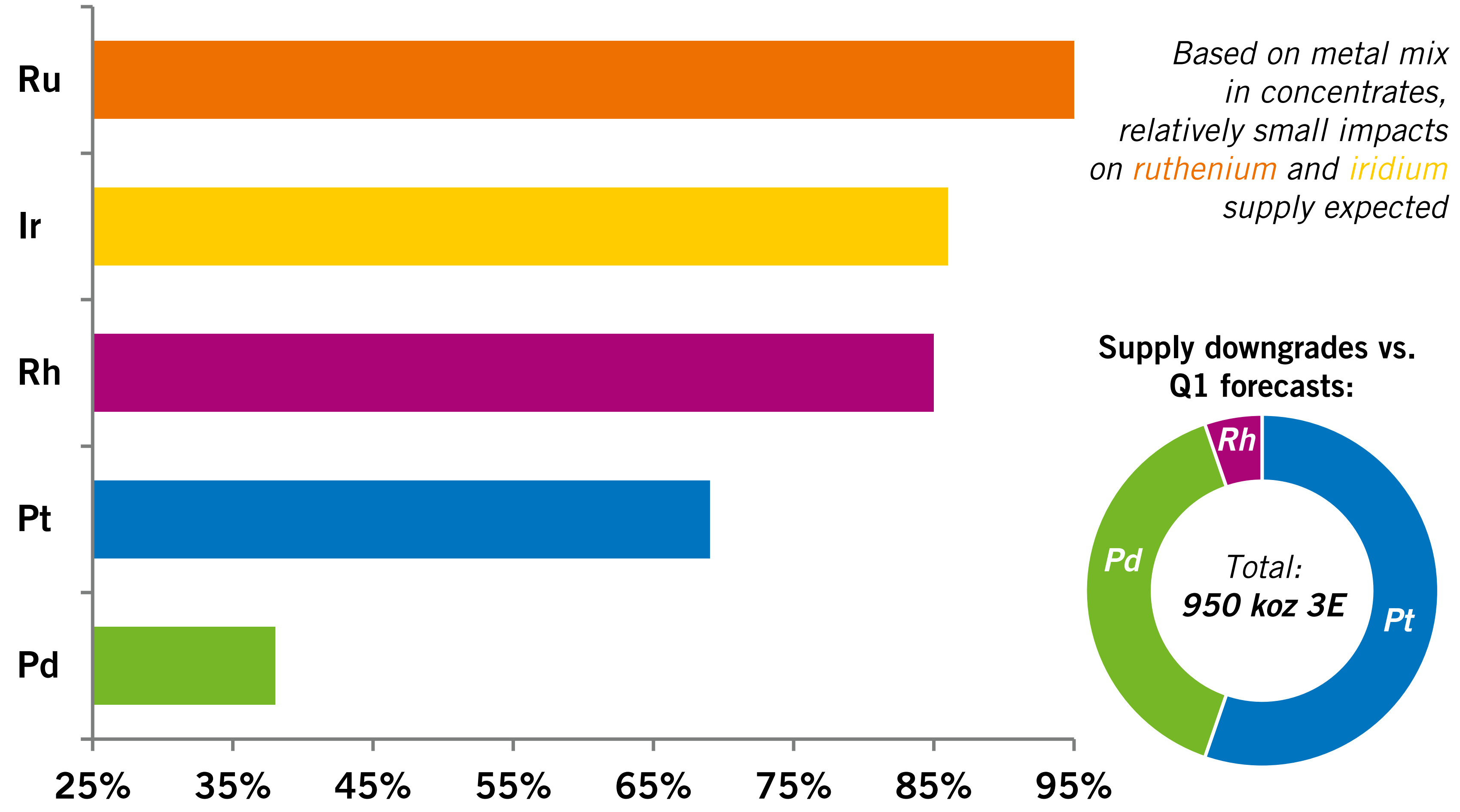
Supply of PGMs from South Africa is expected to be 15% lower year-on-year in 2022. This is compared with a relatively high base in 2021, when built-up stock from previous PGM processing issues was processed, boosting last year's refined output. However, output this year (6.95 moz, 3E) is also expected to be below levels of pre-pandemic production from 2019 (7.6 moz, 3E).

Palladium-rich supply is disproportionately affected. Heavy rains in first quarter of this year impacted mining activity at the palladium-rich Mogalakwena mine, reducing the average ore grade mined and impacting Q1'22 platinum and palladium production to the downside by 24% and 25% respectively, year-on-year. Furthermore, Amplat's Polokwane smelter, which processes concentrate from the mine, has suffered a delay to its rebuild which could result in a drop of more than 200 koz of platinum and palladium and nearly 25 koz of rhodium from refined production for 2022. The smelter is anticipated to come back online only towards the end of Q4'22 or in early 2023.

The carry-over of work in progress (WIP) stock into 2023 is forecast to result in market surpluses for PGMs. The rhodium market is projected to be oversupplied by >50 koz in 2023, whilst palladium swings from a 350 koz deficit in 2022 to being oversupplied by close to 500 koz in 2023. Improved supply and a weaker autocatalyst demand growth forecast suggest an overall downside price risk for the next 12 months, particularly for palladium and rhodium demand which are 82% and 88% exposed to the automotive sector, compared to 40% exposure for platinum.

Before WIP metal reaches the market, prices and lease rates could rise. The potential for further supply disruptions, whether increasing electricity outages or further smelter commissioning delays, while the palladium market is in deficit (during late 2022 and early 2023) leaves the price exposed to upside movements. As end-users typically buy their stocks and renew supply contracts early in the year, reduced metal availability from South Africa plus a conceivable competition for non-Russian metal, may temporarily lift prices from their current levels in the new year. As we move into 2023 and PGM markets shift into surplus, the risk of recessions in the US and Europe is likely to weigh on PGM prices, before any further downgrades to economic growth are considered.

South Africa production as % of global supply



Source: SFA (Oxford)

PRECIOUS METALS REVIEW

Gold

79
Au

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	1,673	2.05%	1,675	04/11/2022	1,617	03/11/2022
€/oz	1,688	2.24%	1,691	04/11/2022	1,647	31/10/2022

Central bank gold purchases hit multi-decade high. Gold buying by global central banks saw a 115% jump quarter-on-quarter in Q3'22 as net purchases ran up to 399 tonnes. The quarterly total is the largest on record (source: World Gold Council) and brings the year-to-date net gold purchases by central banks to 673 tonnes – the largest volume since 1976, and an increase of 45% versus 2021's annual figure. Most of the last quarter's gold buying is undeclared and is an estimate of purchases by non-reporting central banks. Two central banks with the largest gold reserves and local gold production that do not regularly report purchase volumes are Russia and China. It is common for large gold producers to purchase some or all domestic production over a given period. Of the reported purchases in Q3'22 the largest was 31 tonnes added by Turkey's central bank, bringing the country's year-to-date net purchases to 95 tonnes.

The Fed makes it four-in-a-row for jumbo hikes. The Federal Reserve hiked interest rates by another 75 bp last week, taking the federal funds target rate to 3.75-4.00%. The decision further tightens borrowing conditions in the US, making mortgages and other loan repayments more expensive in an attempt to cool the US economy. Despite a seemingly less-hawkish written statement, Fed chairman Jerome Powell offered clarification on monetary policy direction by asserting that the terminal rate at which the cycle ends is more important than the pace of increases. The expectations of interest rate peaks on the futures markets rose above 5% for the first time following the meeting, and traders now expect this to be met by May of next year. This is likely to result in sustained dollar strength during the period, and limited upside for the gold price.

The exodus from bullion-backed ETFs continued recently as investors instead focus on increasingly attractive bond market yields. Outflows from gold ETFs are likely to be net negative this year, as net global outflows currently stand at 52 tonnes (source: World Gold Council). A change in direction of flows back into exchange traded products may occur once the Fed switches to maintaining interest rates rather than hiking them, thus allowing global financial markets to refrain from second guessing the outcome of each FOMC meeting. This is unlikely to happen until at least the end of Q1'23, or even into Q2'23. When flows become net positive, ETFs have the opportunity to become market makers rather than market takers and this could provide some headroom for a gold rally.

The gold price finished October 1.8% lower month-on-month, marking the seventh monthly red candle - **the longest negative streak in more than 150 years** (source: Deutsche Bank).

PRECIOUS METALS REVIEW

Silver

47
Ag

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	20.73	8.54%	20.79	04/11/2022	18.83	03/11/2022
€/oz	20.91	8.73%	20.97	04/11/2022	19.09	31/10/2022

Does Europe's energy cost crisis hide a threat to refined silver supply? With the colder months approaching in Europe, energy supply is likely to tighten owing to the cessation of the supply of Russian oil and gas to much of the continent. With this, prices are likely to rise, potentially putting marginal base metal smelters at risk of closure, as seen already with aluminium smelters, taking silver refining capacity with them and adding to the global supply deficit. More than a third of primary silver supply comes as by-product metal from lead-zinc-copper mining (source: The Silver Institute) as the metals are often found together in mineral deposits. Initial forecasts estimate that the silver market would be in a deficit of ~100 moz in 2022. Elevated premiums on silver products and liquidation of silver-backed exchange traded products provide evidence of a tight market for physical silver. Any losses to refined output would expose silver to upside price risk if supply were constrained by refining capacity.

Like the other precious metals, silver rallied late last week after sliding after the Fed's interest decision. Silver outperformed the other precious metals last week, after lifting nearly 10% Thursday to Friday. This was likely a result of a fall in dollar strength owing to a month-on-month jump in the US unemployment rate and rumours that China is considering loosening its zero-Covid policy.

PRECIOUS METALS REVIEW
Platinum

78
Pt

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	958	1.20%	961	02/11/2022	912	03/11/2022
€/oz	966	2.05%	970	02/11/2022	934	31/10/2022

Platinum supply de-risked as wage negotiations conclude in South Africa. South Africa's second-largest platinum producer, Sibanye-Stillwater, agreed to a five-year inflation-linked wage deal with the largest mining trade unions at its Marikana and Rustenburg operations that together produce 16% of global primary platinum supply. The deal is two years longer than has been the norm and is in line with agreements reached with the country's other major PGM miners. Sibanye-Stillwater was the last to settle a new deal and this now means that all the major miners in South Africa have de-risked future supply from industrial action for an extended period, supporting stable PGM prices.

Two more of South Africa's miners report lower production thanks to persistent power problems. Eskom load-shedding was intense during Q3'22, leading to concentrator capacity reductions across all major producers in the country, causing an estimated build-up of ~100 koz 6E PGMs in addition to the WIP material from the Polokwane smelter rebuild. Both Sibanye-Stillwater and Impala Platinum (together responsible for >3 moz platinum supply) reported reductions in platinum production for the quarter as a result of the power issues. Impala reported a reduction of 4% year-on-year from 345 koz to 333 koz, while Sibanye-Stillwater saw refined platinum production fall 13% year-on-year from 304 koz to 266 koz in Q3'22. Lower metal supply at the tail-end of the year and into Q1'23 could support the platinum price higher in the short-term.

PRECIOUS METALS REVIEW
Palladium

46
Pd

	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
$/oz	1,849	-3.07%	1,953	01/11/2022	1,774	03/11/2022
€/oz	1,867	-2.73%	1,962	01/11/2022	1,822	03/11/2022

Hybrids could win in the short term, but palladium autocatalysts' days are numbered. The EU member states agreed at the end of October to ban the sale of new combustion engine cars from 2035, officially steering the bloc towards the switch to all-electric mobility – and putting an end date on new palladium autocatalyst demand in one of the largest markets. Also included in the deal is a downward revision to the limits on CO_2 emissions from new cars made from 2030 from 37.5% to 55% lower than current levels (2021: 116.3g CO_2/km). This goal paves the way for increased uptake of hybrid vehicles over conventional ICE engines as the current average cost is much lower than for a battery electric equivalent. In the Q3'22, the market share of HEVs grew 7% year-on-year, which was overshadowed by BEV sales which grew 22% year-on-year and accounted for 12% of the EU market share. However, most alternatively-powered vehicles sold in the EU are hybrid or plug in hybrid. This supports palladium (and rhodium) demand as the majority of HEVs have petrol engines.

The palladium price fell 14.7% in the month of October, marking the largest monthly decline since May. The palladium declined 3% last week despite a late rally on Friday, finishing the week at $1,849/oz.

PRECIOUS METALS REVIEW

Rhodium, Ruthenium, Iridium

45 Rh 44 Ru 77 Ir

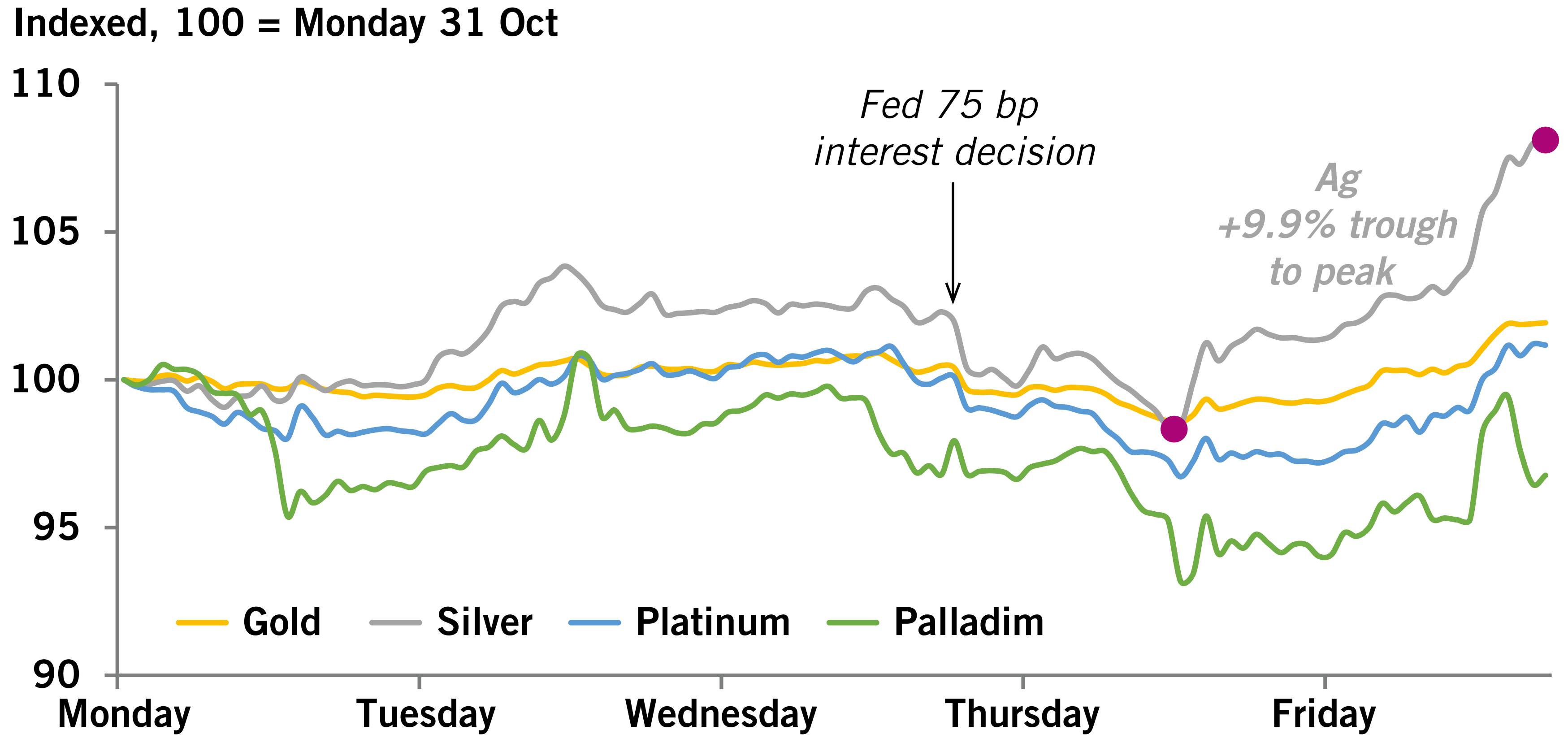
	RHODIUM	RUTHENIUM	IRIDIUM
Reporting Week	$14,450/oz	$505/oz	$4,050/oz
Previous Week	$15,450/oz	$505/oz	$4,050/oz

Commercial fuel cell vehicle production is scaling up in Europe. Major vehicle OEM Stellantis is planning to ramp-up its hybrid hydrogen-battery electric light commercial vehicle production in the EU to 5,000 units per year in the next 48 months. The vehicles use a combination of battery electric and hydrogen power to optimise range whilst minimising refuelling time – a recognised issue with commercial BEVs. This development is a major step towards the utilisation of fuel cell vehicles in the light commercial vehicle sector, which currently has the lowest FCEV market penetration by vehicle type (source: IEA), and the increasing use of ruthenium and platinum in alternative vehicles. Demand for ruthenium used in fuel cell catalysts is beginning to accumulate, particularly in China, where FCEV bus and truck fleets are the largest. The realisation of vehicle number targets could see ruthenium demand in fuel cells grow significantly in the coming decades.

The rhodium price pulled back by $1,000/oz last week to a 13-week low, but ruthenium and iridium prices remained unchanged.

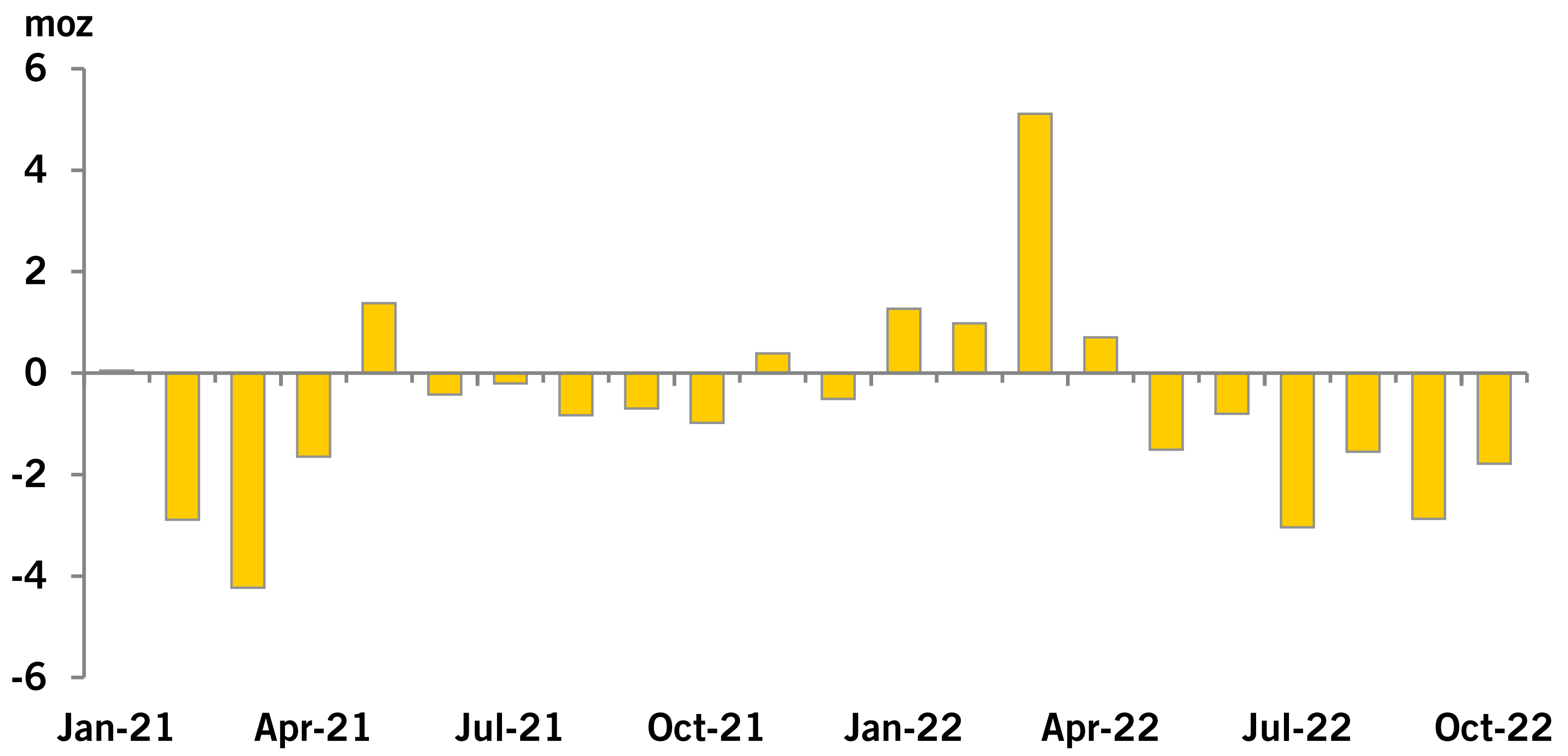
TRENDS AND INVESTMENTS

Precious metal prices



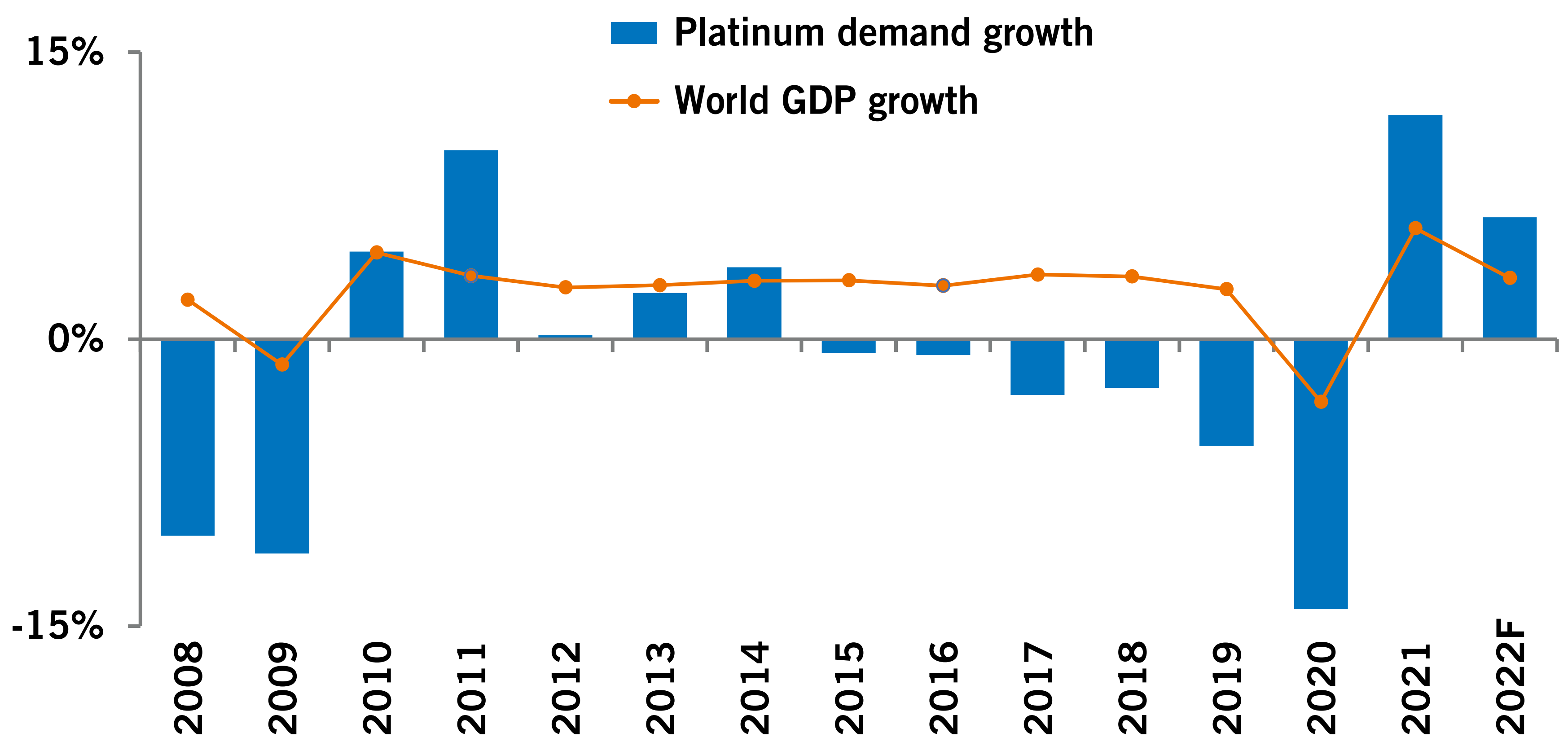
Source: SFA (Oxford), Bloomberg

Net in/outflows from global gold-backed ETFs



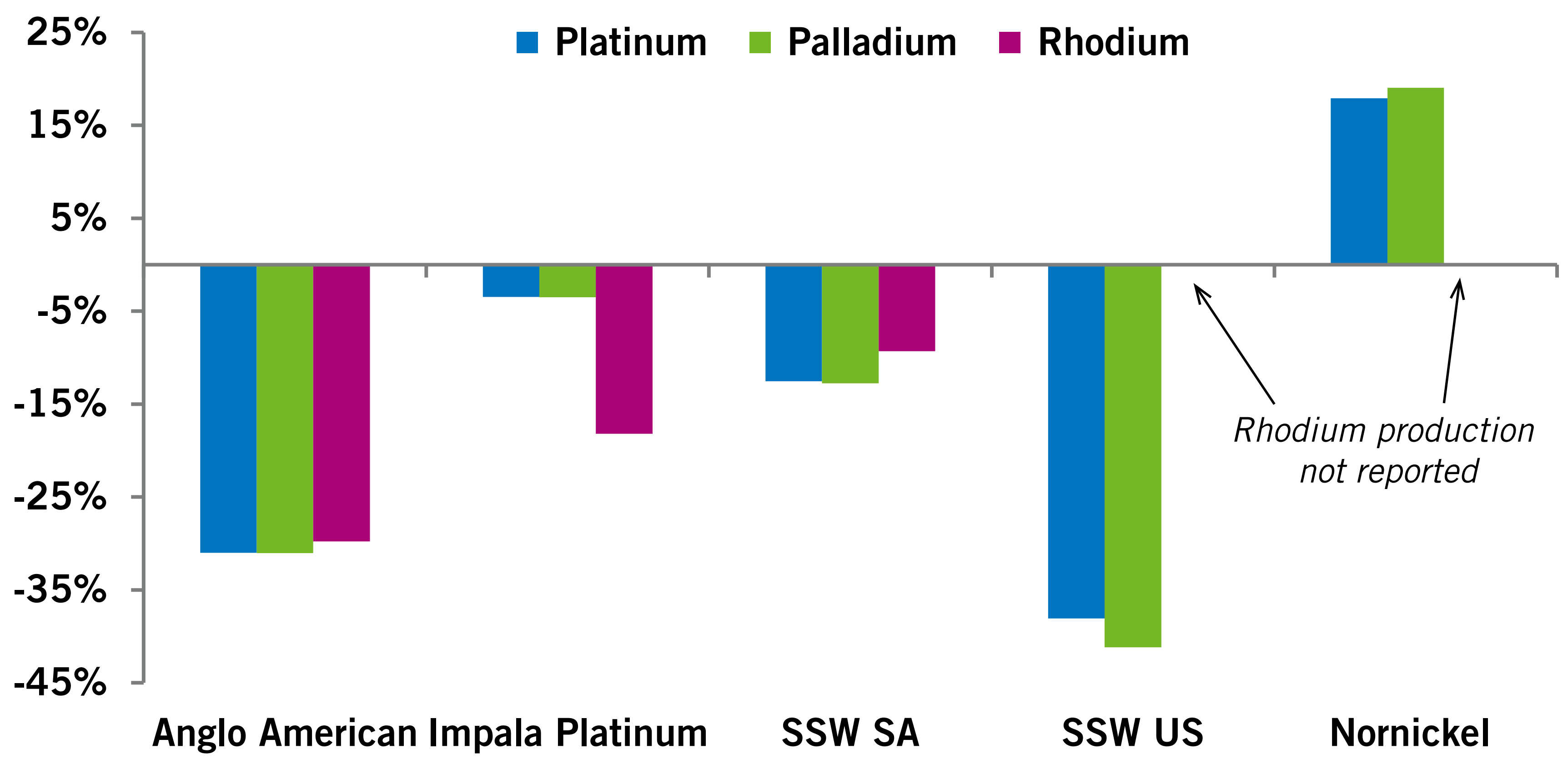
Source: SFA (Oxford), Bloomberg

Global GDP growth vs. platinum demand growth



Source: SFA (Oxford), IMF, World Bank

Year-on-year PGM production Q3'22



Source: SFA (Oxford), company reports

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