

PRECIOUS APPRAISAL

No. 24
1st August 2022



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MARKET SPOTLIGHT

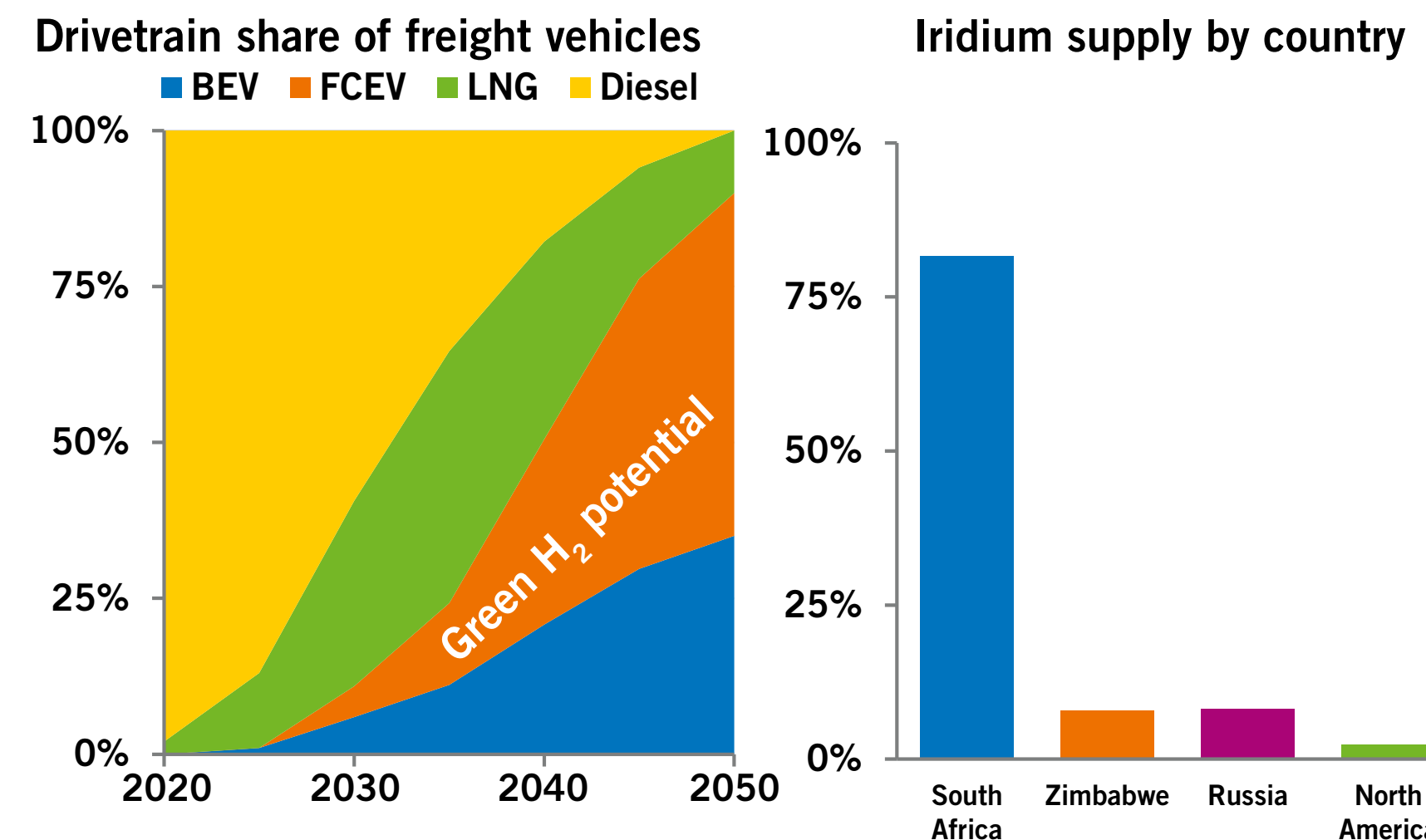
European energy anxiety may accelerate growth in iridium demand for hydrogen

Momentum towards a shift to green hydrogen is increasing. In July, the first Important Project of Common European Interest for green hydrogen production had €5.4 bn in funding approved for 41 different H₂ projects of various scales. In response to the Russia-Ukraine war, the EU also accelerated targets for energy independence and the green transition as it became clear that reliance on Russian gas imports is too high.

Demand for iridium in electrolyzers is likely to grow. Meeting the new 2030 target for EU green H₂ production of 10 mt p.a. would require production capacity of approximately 90-100 GW, and current installed capacity is just 1.75 GW. To help to achieve this, a recent multilateral agreement in the EU committed to a ten-fold increase in electrolyser manufacturing in Europe by 2025. Proton exchange membrane (PEM) electrolyzers are the most suited of the available technologies for green hydrogen production and use iridium and platinum-coated electrodes.

The UK, Germany and the Netherlands have potential as future green hydrogen hubs owing to their proximity to available wind power from the North Sea as well as the density of industrial hubs. Freight transport, steelmaking and oil refining are potential demand sectors, and have infrastructure for transportation of gases that can be converted for green hydrogen. The Port of Rotterdam has plans to be a green H₂ production and import hub and the UK has a growing electrolyser manufacturing base. Germany has incentive to increase its domestic hydrogen production as it seeks to wean itself from Russian natural gas while simultaneously reducing emissions.

Unit costs of green hydrogen plus required infrastructure are hurdles to adoption. The fossil fuel industry is mature and has taken >100 years to build and achieve the synergies at present. A similar level of development will be required for a hydrogen transition in just a quarter of a century. The investment required to convert to green hydrogen is large, as currently ~95% of hydrogen is produced from hydrocarbons rather than water via electrolysis.



Source: SFA (Oxford), European Hydrogen Backbone

Efforts at thriftiness and recycling need to continue to enable the rollout of electrolyzers and scale up green H₂ production capacity. As iridium is a by-product of PGM mining, primary supply is small, inelastic, and tied to the production of other metals, primarily in South Africa. Reclaiming metal from the currently operating electrolyzers at the end of their working life will be important as they can potentially contain enough PGMs for multiple units at lower future loadings, helping to ensure security of material supply.

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PRECIOUS METALS REVIEW

Gold



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	1,766	2.00%	1,768	29/07/2022	1,712	27/07/2022
€/oz	1,731	2.25%	1,732	29/07/2022	1,676	25/07/2022

Has the US entered a recession? Last week, the US posted a second consecutive quarter with negative growth for real GDP of -0.9%. This measure is conventionally used to define a recession; however, Fed and White House economists are hesitant to confirm it. They argue that the employment market is still remarkably tight with non-farm payroll figures growing in June despite the GDP contraction, and the latest real personal income excluding transfers figures showing growth. Both are indicators of economic strength and would suggest a true downturn is not yet established. These measures are, however, lagging indicators and may not yet exhibit the impact of the general slowdown in the economy. In addition, the previous 10 times the US economy has recorded two consecutive quarters in a row with negative growth, a recession has been called. The US economy could slow to the point that the Fed is forced to halt hikes or to cut interest rates. In this event the dollar could weaken, providing support to the gold price.

For the Fed, it's all about inflation, inflation, inflation. While admitting that the US economy was softening (but not yet recessionary), the Fed continued to raise interest rates by another 75 basis points last week, taking the federal funds target rate to 2.25-2.5%. A further large rise at the next meeting of the FOMC (21 September) is not ruled out, and contingent on how hot inflation continues to run. The drop in the dollar buoyed gold immediately following the decision.

India retakes the top spot for jewellery demand in Q2. The second quarter saw Indian jewellery demand recover by 49% year-on-year to 140 t (source: World Gold Council). The large increase is, in part, due to the low base from Q2'21 of just 94 t. The boost in demand is due to the Akshaya Tritiya festival and second-quarter wedding demand coinciding with a correction in the gold price through April and May. India managed to overtake China as the largest gold jewellery consumer mainly because of massive demand destruction caused by millions of Chinese residents being subject to lockdowns in major cities during April and May. China's jewellery consumption plummeted 28% in Q2 to 109 t, making it the smallest quarterly demand since Q2'10 (excluding the first wave of the pandemic). The global economic backdrop of slower growth and higher interest rates remain headwinds for global gold demand in the second half. Demand is expected to pick up slightly in Q4 in India as wedding-gift buying should rise. The outlook in China looks gloomy as Covid cases are beginning to tick upwards again and consumer confidence recently hit the lowest level on record after being strongly positive at the beginning of the year.

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Silver



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	20.26	7.89%	20.29	29/07/2022	18.32	25/07/2022
€/oz	19.86	8.15%	19.90	29/07/2022	17.88	25/07/2022

Silver ETFs have sprung a leak. Investors appear to have lost confidence in precious metals as prices have come off, with holdings in silver-backed funds down 96 moz (-11%) since the start of the year. Compared to other commodity-based ETFs, precious metals have seen the largest outflows in the last three months. In total, precious metal funds saw \$11.7 bn in outflows compared to \$1.9 bn in energy funds and \$560 m in agriculture-related investment options. If the silver price rallies, it is expected that net inflows should resume as sentiment swings back.

The silver price hit a new high for the month of July of \$20.29/oz on Friday last week following the second consecutive 75 bp interest rate hike by the Fed. The dollar fell and consequently the silver and gold prices moved higher.

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Platinum

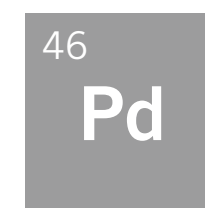
⁷⁸ Pt	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	902	2.15%	910	29/07/2022	871	25/07/2022
€/oz	884	0.14%	890	29/07/2022	853	25/07/2022

Load-shedding has sparked South Africa into action to confront its electricity problems. President Ramaphosa announced the removal of the cap on private power generation that has stood at 100 MW since last year, after being upped from 10 MW previously. This announcement means that private power plants of any size can be built without licensing, and they may supply excess electricity to the grid – helping to alleviate the country’s shortages. As one of South Africa’s main consumers of energy, the mining sector could benefit from this change as miners could then ride out power blackouts that caused lost shifts at Amplats and Impala in late 2019. During H1’22, Amplats lost only 6 koz of total PGM production to power outages during Stage 6 load-shedding but may struggle to reach guidance of 2.4-2.6 moz of refined platinum production if problems continue into the second half of the year. Less power disruption should mean more stability of supply, but improvements will take time to implement, and in the meantime further load-shedding cannot be ruled out.

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Palladium



	CLOSE	WEEKLY CHANGE	HIGH	DATE	LOW	DATE
\$/oz	2,131	5.02%	2,139	29/07/2022	1,975	25/07/2022
€/oz	2,089	5.26%	2,095	29/07/2022	1,935	25/07/2022

China appears to be soaking up shunned Russian palladium. Imports of palladium from Russia into China, as reported by Chinese authorities, were 69 koz last month, the largest since at least 2009. Shipments of palladium may have been re-routed from Europe following the invasion of Ukraine and removal of Russian refineries from the LPPM’s good delivery list. Demand for palladium in China comes mainly from the automotive sector (84% of 3.2 moz of total demand forecast for 2022). China’s light-vehicle production suffered earlier in the year, primarily owing to lockdowns in the major production hub of Shanghai plus chip shortages throttling manufacturing. It has now begun to rebound, with passenger car production growing 32% month-on-month in June to 2,230,000 units. Global demand for palladium is set to grow modestly this year to just under 10 moz, although economic weakness in Europe and North America could drag demand lower if industrial and automotive demand falls.

Supply of high-tech equipment still a concern for Nornickel but guidance remains. The world’s largest single palladium producer recorded output of 1.4 moz of palladium in the first half of the year, up 8% year-on-year from 1.3 moz in the same period in 2021. Following this strong performance, the company maintains its guidance for the year of 2.45-2.71 moz of palladium production. The main threat to palladium supply from Nornickel is the operation’s reliance on imported equipment. The miner held a conference earlier this year to expedite domestic manufacturing of required equipment. Sanctions from Europe have now halted exports to Russia. The palladium market is forecast to be in a slight surplus this year, but with potential for further economic weakness, it could swing towards further oversupply and the price could fall back below \$2,000/oz.

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Rhodium, Ruthenium, Iridium



	RHODIUM	RUTHENIUM	IRIDIUM
Reporting Week	\$15,850/oz	\$580/oz	\$4,650/oz
Previous Week	\$16,750/oz	\$580/oz	\$4,850/oz

Ruthenium use in hard drives is being slowly deleted. Two next-generation data storage options are jockeying for dominance over the next 3-5 years: microwave-assisted magnetic recording (MAMR) and heat-assisted microwave recording (HAMR). MAMR uses ruthenium while HAMR does not. Hard disk manufacturers are beginning to favour HAMR and roadmaps for high-capacity unit releases of 40+ TB of storage by 2026 have been released, threatening demand for ruthenium in the long term. Substantial growth in cloud storage solutions is forecast to positively impact ruthenium demand in hard disks, potentially helping to offset the losses from technology switches.

The ruthenium price stayed stable this week after falling in the previous period. Rhodium and iridium both fell, the latter closing the week at \$4,650/oz, a 21-week low.

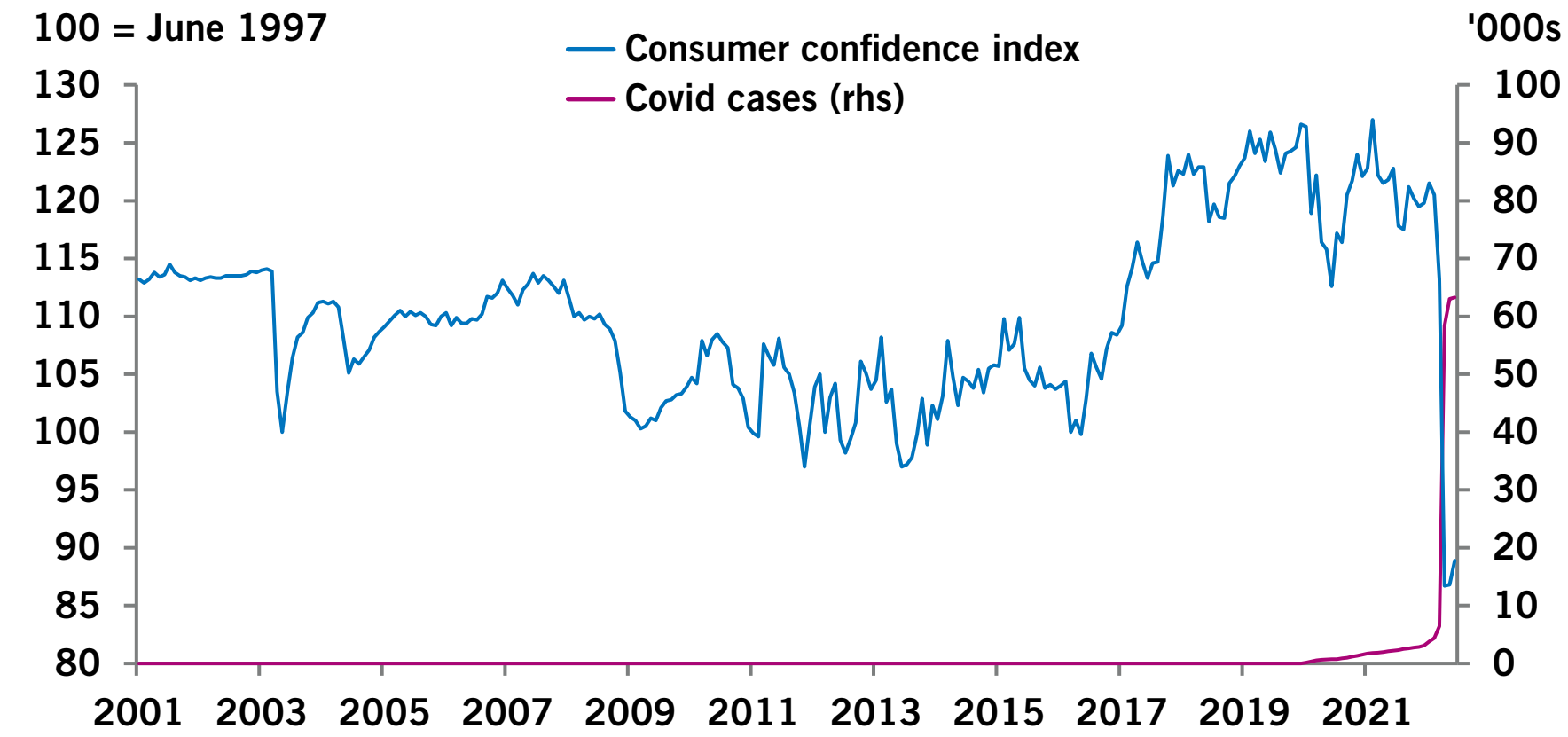
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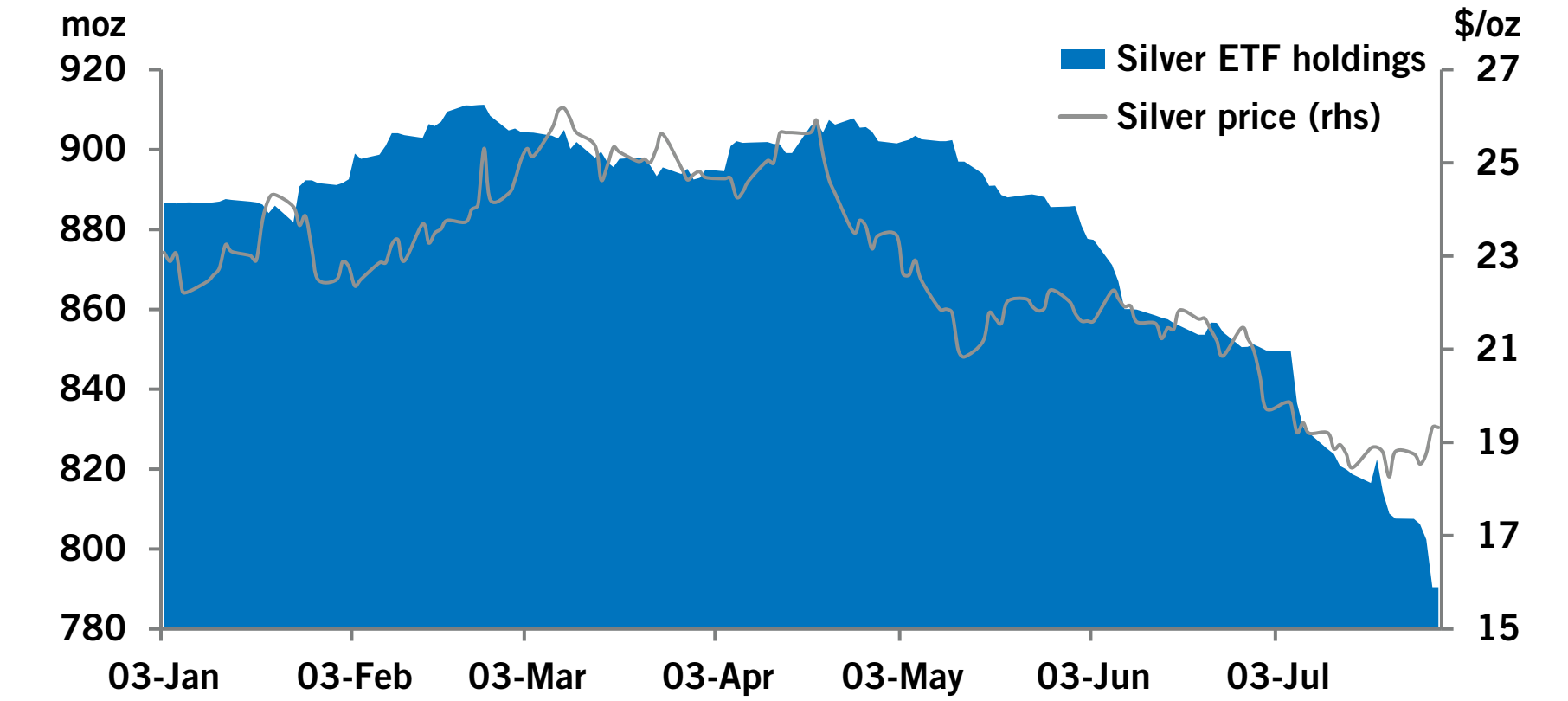
TRENDS AND INVESTMENTS

Chinese consumer confidence vs. Covid cases



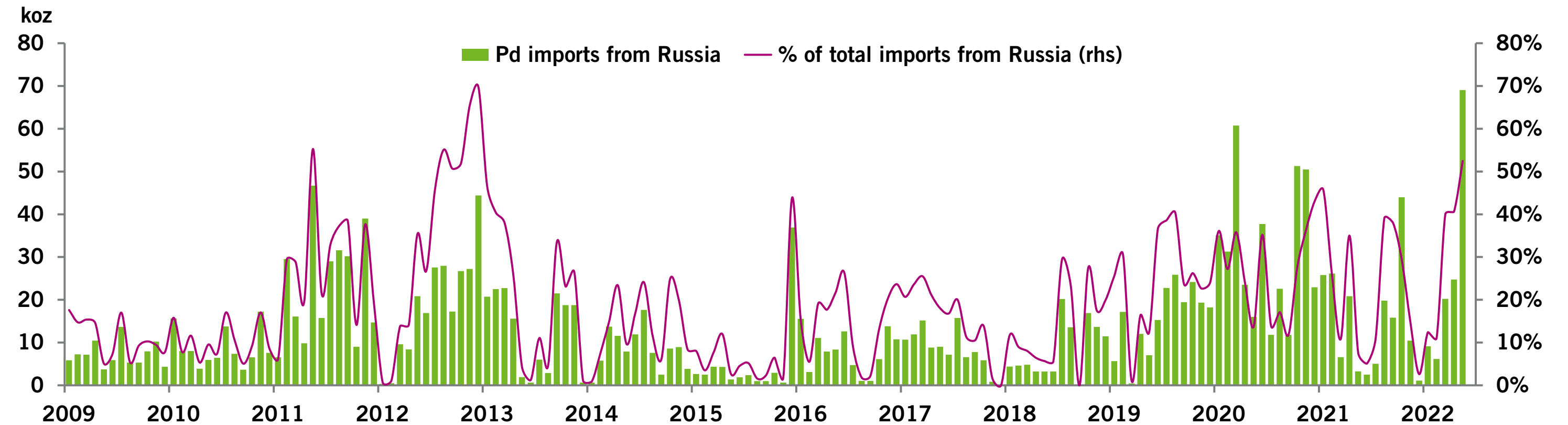
Source: SFA (Oxford), Bloomberg

Silver ETF holdings



Source: SFA (Oxford), Bloomberg

China's imports of palladium from Russia



Source: SFA (Oxford), Bloomberg

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