PLATINUM PERSPECTIVES

Palladium's inelastic supply and continued market tightness is driving platinum substitution

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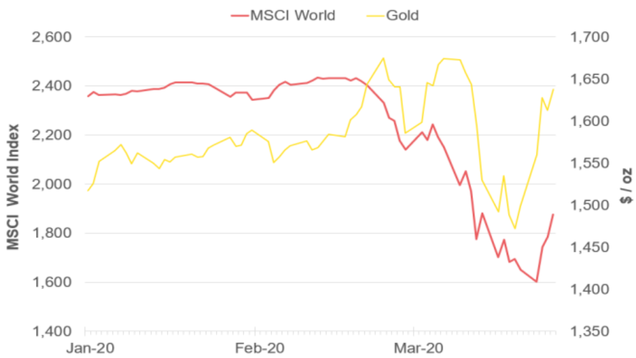
The spectacular increase in the price of palladium since 2016, particularly during 2019, attracted widespread interest from investors, industrial users, and market commentators. Our latest ***Platinum Essentials*** analyses in detail the palladium market and its underlying value and price drivers.

COVID-19 brought palladium's multi-year price surge to an end in February. The pandemic has dramatically increased global risk, prompting a flight to cash, depressing asset classes from precious and industrial metals to equities. However, palladium's 43% peak to trough price fall in February/March, more dramatic than other precious and industrial metals, bar rhodium (-60%), has been driven more by physical purchasing for vehicle manufacture in China than by investors.

Chinese automaker physical palladium purchases were key to 2019's price surge, driven by the implementation of strict China 6 emissions standards. **In January/February 2020, Chinese passenger car production fell 48% year-on-year and stopped automaker palladium purchases. However, in March Chinese automaker output returned to pre-COVID-19 levels, resulting in spot buying to meet higher current loadings and a rapid price rebound.**

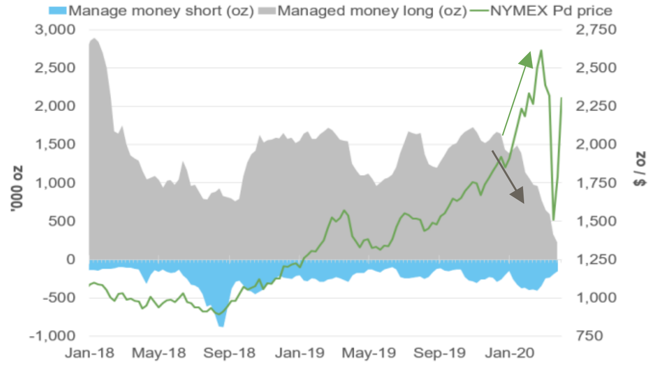
Changes in investor positioning in palladium, in futures and physically-backed ETFs, were not significant in palladium's 2019 price rise, nor in the March 2020 collapse. The fall in NYMEX money manager length, from its peak in 2018, and steady palladium ETF sales since 2015, had little impact on palladium's steady price rise. Palladium's limited liquidity, and hard to determine value, price floors and ceilings kept investors away.

The COVID-19 pandemic prompted a flight to cash with gold sales initially used to cover equity margin calls



Source: Bloomberg, WPIC Research

Money managers cut long positions as Pd rallied in Jan/Feb; limited changes when prices fell in March



Source: CFTC, WPIC Research. (CFTC data as of Mar 24th, 2020, Pd Price as of Mar 31st)

Palladium's ongoing sustained deficits maintain the impetus for platinum substitution

Because over 90% of palladium mine supply is as a by-product to platinum and nickel mining, mining investment decisions typically follow the platinum and nickel markets. Consequently, palladium supply is unresponsive to the palladium price. Palladium mine supply has fallen by 6.3% over the last decade, with no new supply expected until 2025.

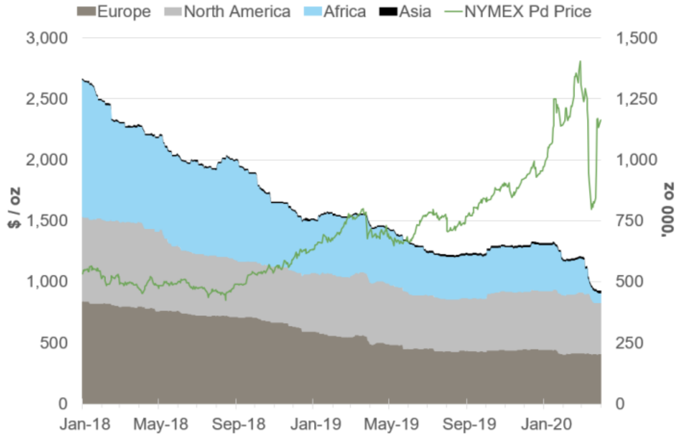
Palladium's primary use (>80%) has been historically as a cost-effective alternative to platinum in automotive applications. The platinum price sets the long-term "value" of platinum's next best alternative product in automotive catalysis; palladium, now interchangeable on a 1:1 mass basis.

The current sharply contrasting palladium and platinum prices, and extreme palladium market tightness, suggests demand rebalancing is inevitable, if not already underway.

Platinum's attraction as an investment asset arises from:

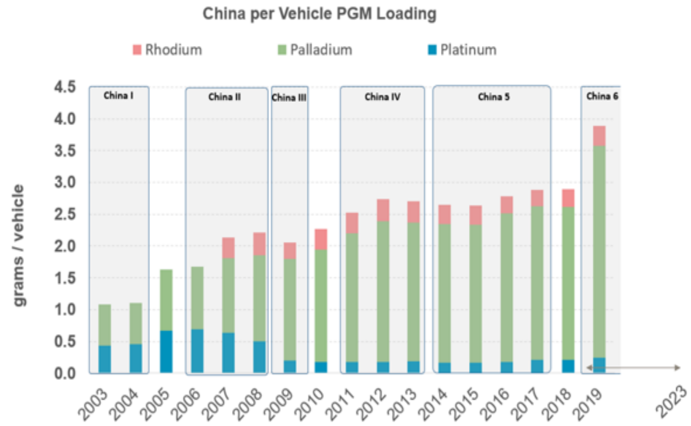
- Supply is relatively constrained with limited investment in new platinum group metal (PGM) mines
- Platinum price is near all-time lows relative to gold and at record lows relative to palladium
- Total PGM demand growth should continue due to increasingly restrictive emissions rules
- Market balance and price mismatches between palladium and platinum is driving substitution
- Investment demand has surged as institutions act on low price and strong demand growth potential

Figure 1: Palladium ETFs divested consistently since 2015, a trend which accelerated in 2020, -30% YTD



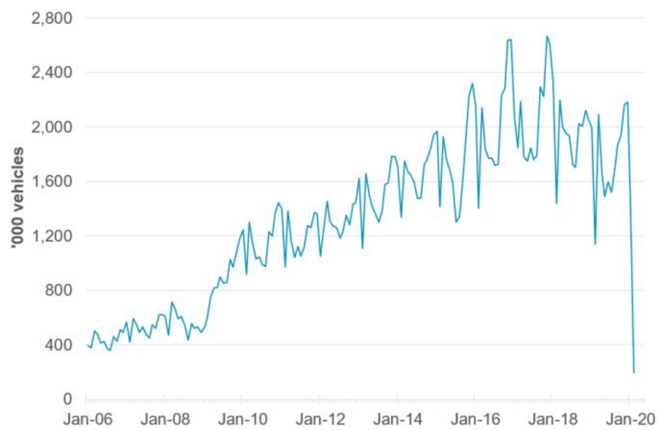
Source: Bloomberg, WPIC Research (Data as of Mar 31st, 2020)

Figure 2: Automotive Pd demand rose by 10% (895 koz) due to the implementation of China 6 standards in 2019



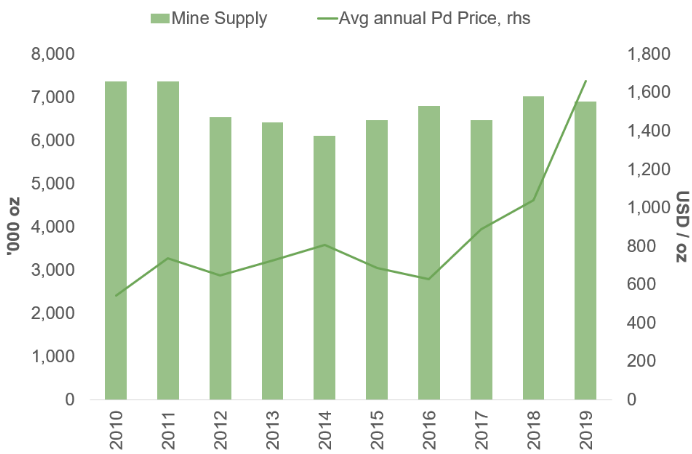
Source: Johnson Matthey, WPIC Research

Figure 3: Chinese Jan/Feb-20 car output fell 48% yoy. In March car production is back at pre-COVID-19 levels with car sales stimulus and spot buying in China



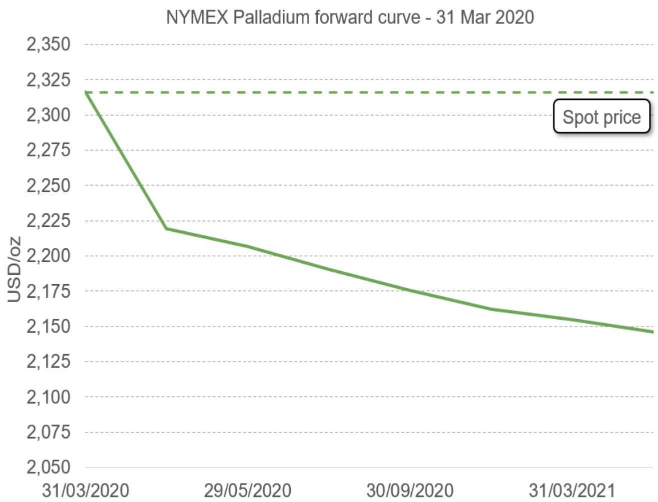
Source: China Automotive information Net, WPIC Research

Figure 4: Palladium's price rally has not incentivised new mine supply, volumes have fallen by 6.3% since 2010



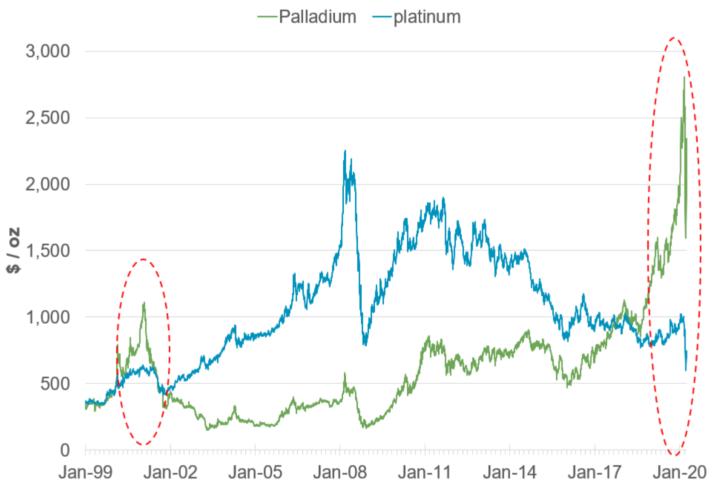
Source: Johnson Matthey, Bloomberg, WPIC Research

Figure 5: Pd forward curve: in backwardation for 35 months, highlighting the severe lack of ingot and sponge



Source: Bloomberg, WPIC Research

Figure 6: Palladium's continued price premium to platinum enhances the financial incentive for substitution. Like 2008 Pt for Pd substitution but more severe due to China 6



Source: Bloomberg, WPIC Research (Data as of Mar 31st, 2020 – Pd premium to Pt: $1,621/oz)

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