PLATINUM PERSPECTIVES

Platinum for palladium substitution is embedded into automotive demand and unlikely to reverse swiftly

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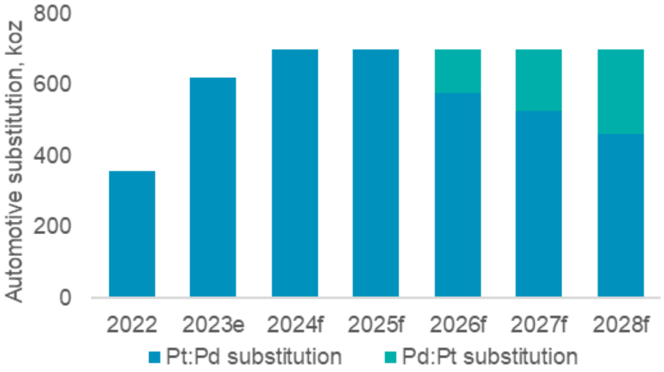
Platinum for palladium autocatalyst substitution is expected to reach 700 koz in 2024f, up from 620 koz in 2023f. Our analysis shows that there are no economic incentives and a number of risks to reversing this process. Furthermore, the process of reverse substitution will be slow, even if it does occur. Thus, existing substitution is largely embedded in annual automotive demand for the medium term.

Platinum and palladium can be substituted on an almost 1:1 basis in autocatalysis. Simple economics led initial substitution in gasoline vehicles; palladium market deficits underpinned price increases resulting in platinum prices trading at a significant discount to palladium since 2017. The impact of substitution on annual platinum demand takes time since it almost exclusively only occurs on new vehicle models, representing around 15% of the market in any given year. Once substitution occurs, it is typically locked in for the vehicle platform's life of around seven years because of the cost and risk to substitute on a vehicle platform already in production. Thus, reverse substitution will likely be slow to take effect (Fig. 1).

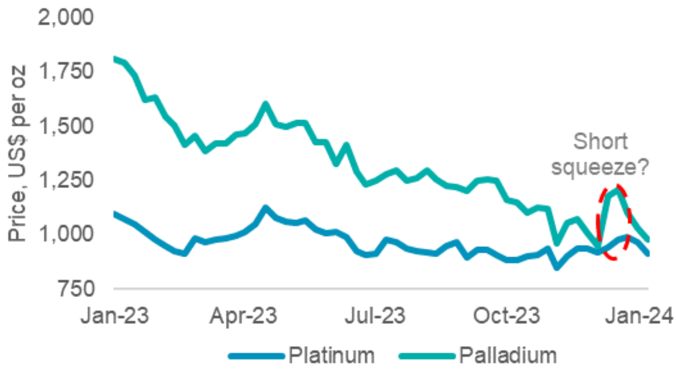
But the palladium market does not appear immediately conducive to reverse substitution. Although palladium's price premium to platinum has narrowed (Fig. 2) and markets are expected to enter surplus from 2025f (Fig. 8), substitution's economic incentive is unfavourable since palladium remains at a premium to platinum. Furthermore, several risks to palladium markets may caution automaker procurement teams from starting to substitute palladium for platinum. Firstly, palladium's transition to market surpluses is largely based on a ~1 Moz increase in recycling supply (Fig. 4). Recycled PGM supply has been lower than expected due to lifestyle and affordability trends extending vehicle lives (link). This could delay palladium moving into surplus.

Fig 1. Automotive substitution still favours platinum



Source: Metals Focus 2022 to 2024f, WPIC Research thereafter

Fig 2. Palladium converged toward platinum in 2023



Source: Bloomberg, WPIC Research

Secondly, substituting palladium for platinum increases exposure to Russia (11% of global Pt supply, 40% of Pd, Fig. 5), which may not be desirable on ESG grounds or due to sanctions and supply chain risks.

Finally, it is also easy to overlook the risks associated with the depletion of above ground palladium stocks which fell by 5.2 Moz since 2010 due to eleven annual periods of market deficits. In all but 2022 and 2023, palladium market deficits have correlated to price increases (Fig. 6). WPIC expects palladium market deficts in 2024f which historically suggests price support that would disincentivise substitution. Moreover, the combination of low physical stocks, supply risks and a build-up of short positions of the metal bias price risk to the upside; in December 2023, palladium prices increased US$240 in a week, indicative of a squeeze. **Given market conditions without clear economic or supply incentives, it appears too soon to consider reversing platinum for palladium substitution. Our base case assumption is for gradual substitution from 2026f if indeed the palladium market does enter a surplus in 2025f.**

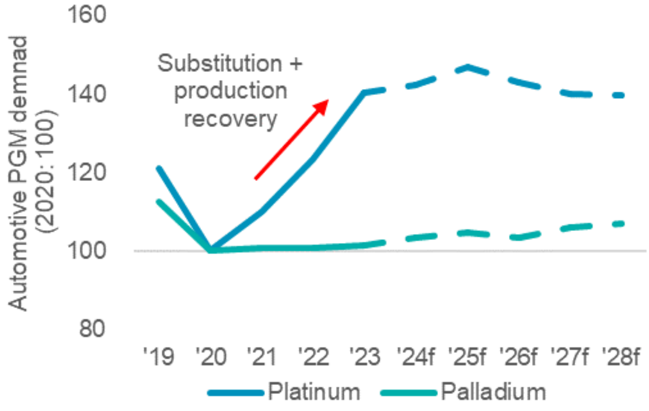
Platinum for palladium substitution will reach ~700 koz in 2024, helping a post-COVID automotive platinum demand recovery.

Neither the economic nor supply conditions currently justify a sudden reversal of automotive substitution, although our base case assumption if for gradual substitution after the palladium market enters a surplus in 2025.

Platinum's attraction as an investment asset arises from:

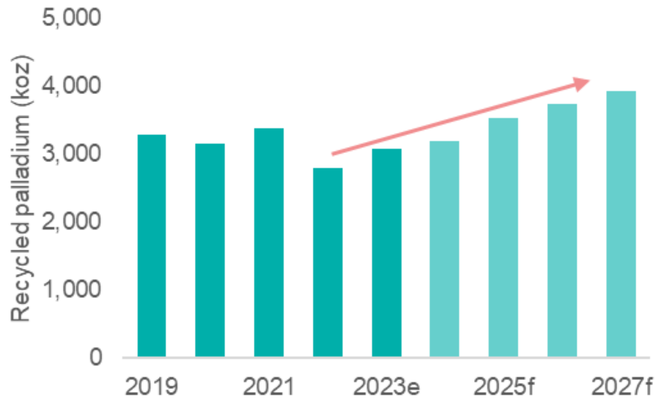
- WPIC research indicates the platinum market entering a period of consecutive supply deficits from 2023
- Platinum supply remains challenged, both from primary mining and secondary recycling
- Automotive platinum demand growth should continue into 2024f due principally to substitution of platinum for palladium in gasoline vehicles
- Platinum is a critical mineral in the global energy transition underpinning a key role in the hydrogen economy
- The platinum price remains historically undervalued and significantly below both gold and palladium

Figure 3: After COVID platinum automotive demand growth exceeded palladium due to substitution



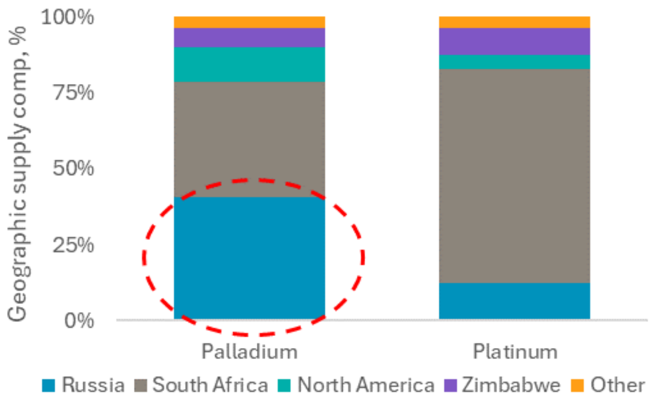
Source: Metals Focus 2019 to 2024f for Pt and 2022 for Pd, WPIC Research thereafter

Figure 4: Recycled palladium supply is expected to increase by around 1 Moz to 2027f



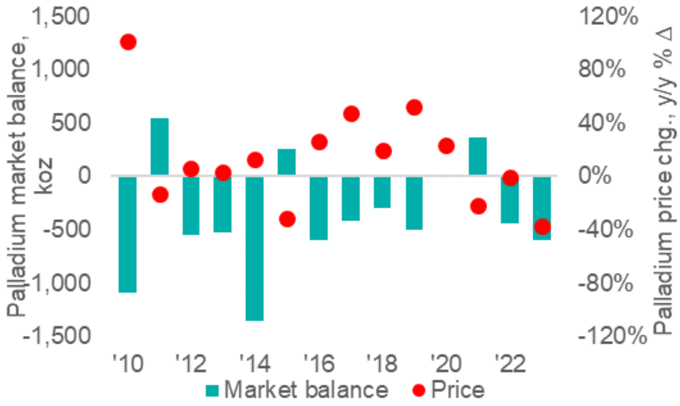
Source: Metals Focus to 2022, WPIC Research thereafter

Figure 5: Primary palladium supply is exposed to Russia where smelter maintenance is slated for 2024 and sanctions may suppress output.



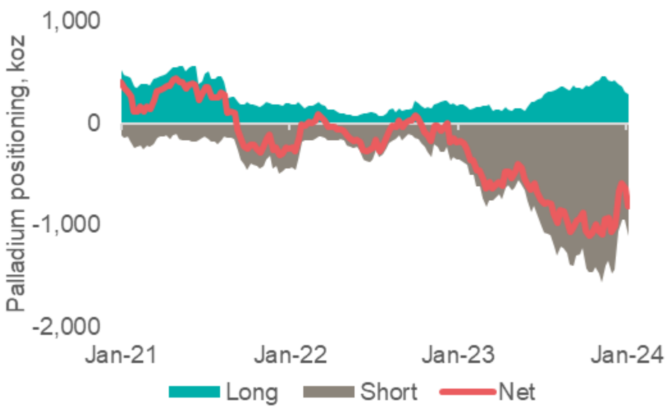
Source: Metals Focus 2023, WPIC research

Figure 6: Barring 2023, palladium price changes have been inversely correlated to market balances since 2010



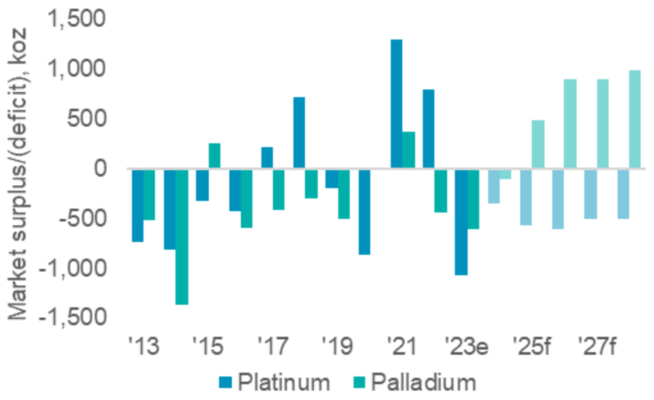
Source: Metals Focus 2010 to 2022, WPIC research

Figure 7: Financial markets have built significant net short positions on palladium, likely on expectations of market balances trending to surpluses



Source: Bloomberg, WPIC research

Figure 8: Palladium markets will remain in deficit during 2024, continuing a decades long trend on drawing down above ground stocks



Source: SFA (Oxford) for Pt between 2013 to 2018, Metals Focus 2019 to 2024f for Pt and 2022 for Pd, WPIC Research thereafter

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