



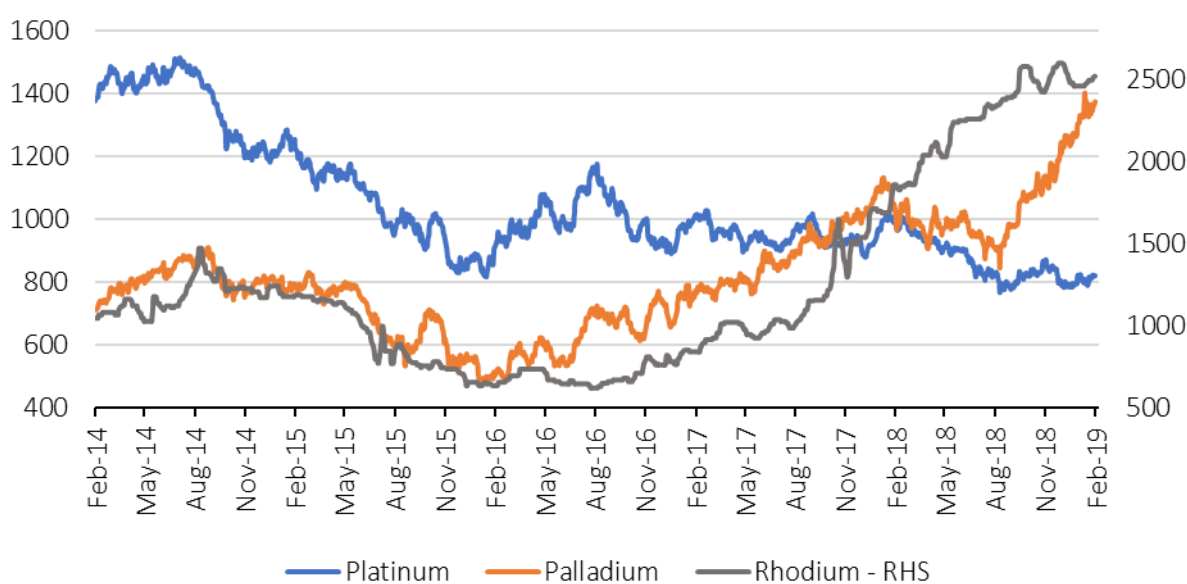
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Platinum group metals: Dissecting the divergence

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Over the last few years there has been a notable divergence in the price performance of the three main platinum group metals (PGMs), namely platinum, palladium and rhodium. Since the broad-based bottoming out of industrial metal prices in early 2016, the US\$ price of platinum has continued to languish, drifting down a further 5%. In stark contrast, palladium and rhodium prices have rallied by approximately 180% and 300% respectively. This divergence has become increasingly acute recently.

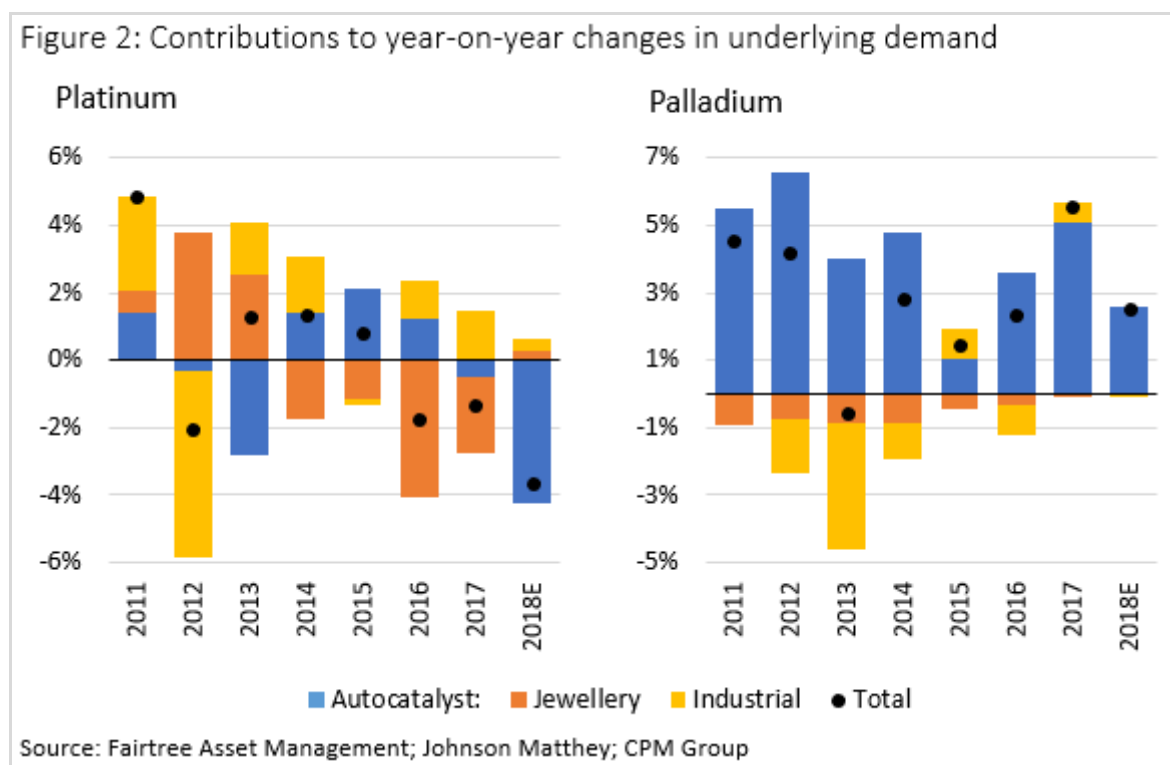
Figure 1: Price of Platinum Group Metals - US\$/oz



Source: Bloomberg; Fairtree Asset Management

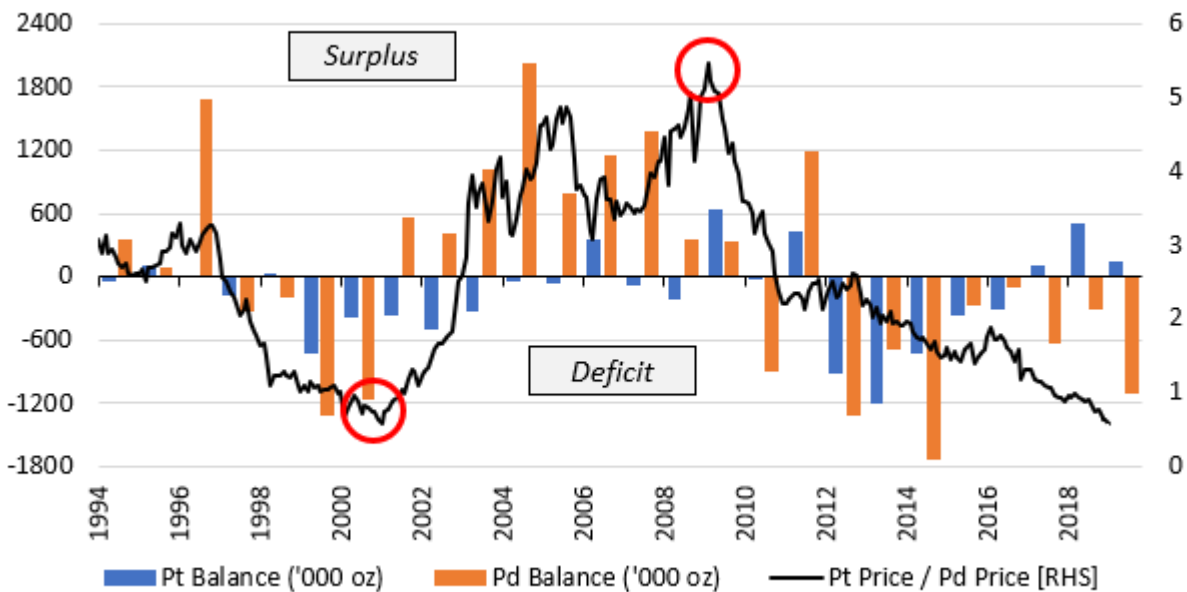
What has caused the price divergence?

Demand dynamics: Figure 2 illustrates how relative changes in the underlying demand for each metal have driven the deviation between platinum and palladium prices. Platinum demand has faced a number of headwinds, including declining jewellery sales in China and an emissions scandal which led to a deterioration in diesel vehicle market share. Conversely, the continued growth in global automobile sales coupled with the shift to palladium-rich gasoline vehicles and increasingly stringent emissions regulations have driven strong growth in auto-related palladium consumption.



Market balance: Over the last seven years the demand for palladium has consistently exceeded supply, resulting in a market with persistent deficits. Platinum has been less consistent, with the demand headwinds noted above moving the market into surplus. This dynamic has driven the ratio of the platinum (Pt) to palladium (Pd) price to levels last reached in 2000/2001.

Figure 3: Platinum & palladium market balance and price ratio

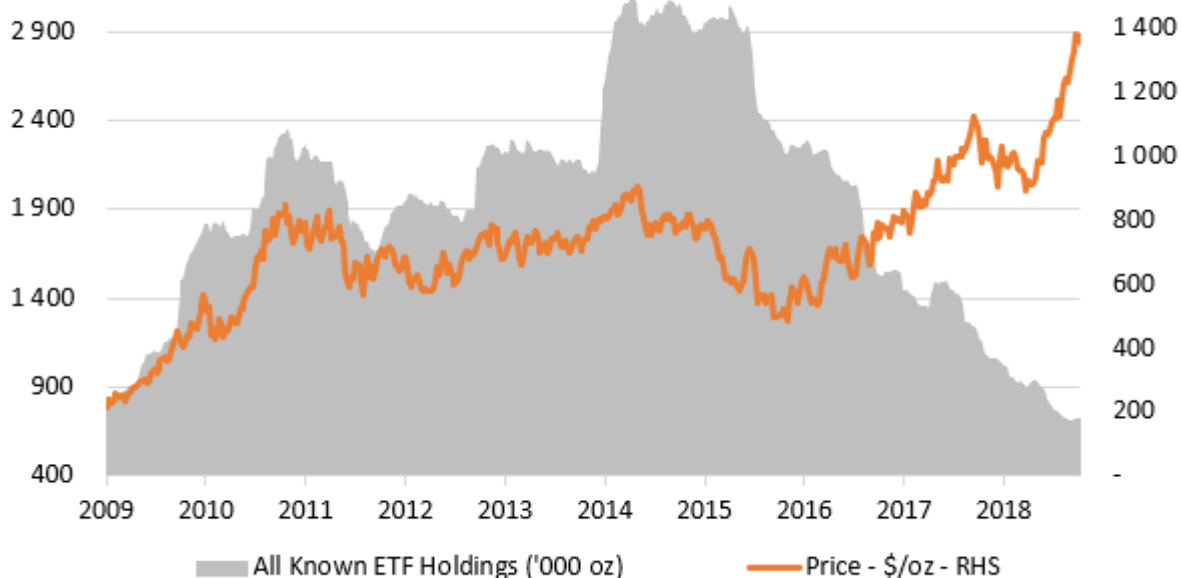


Source: Fairtree Asset Management; Bloomberg; Johnson Matthey; CPM Group

Is this divergence sustainable?

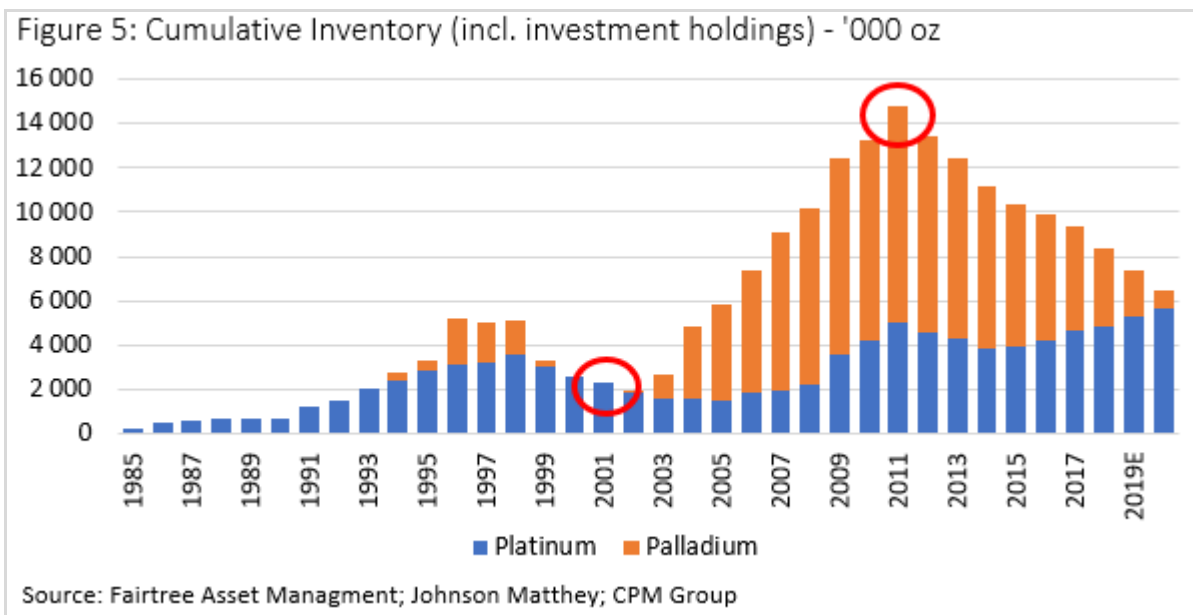
Inventory: We view the current market dynamic as unsustainable. The above-ground palladium stockpiles which are being utilised in order to meet this deficit are rapidly being depleted. This is illustrated by the unusual fact that ETF holdings (*physical metal used to back exchange traded financial instruments*) are decreasing despite a strengthening price, as illustrated in figure 4. This dynamic is, we believe, testament to the lack of a readily available palladium supply.

Figure 4: Pd ETF Holdings and Price



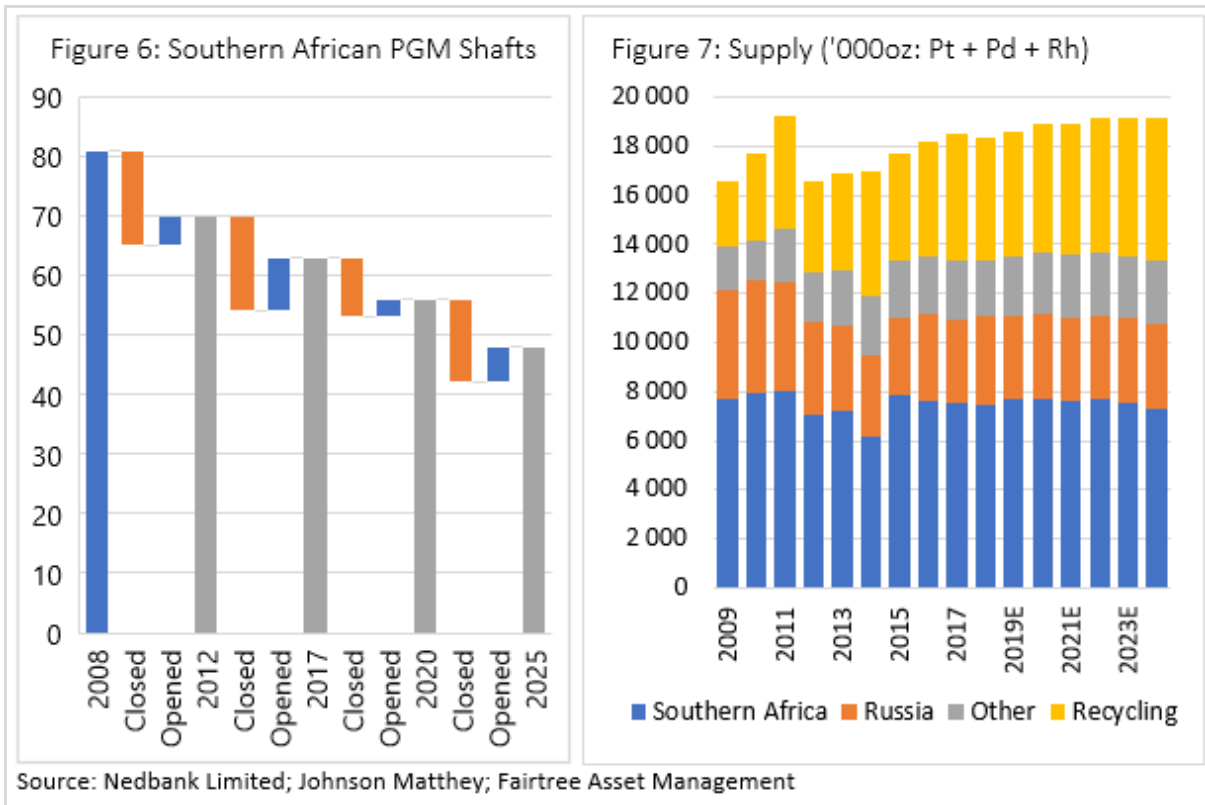
Source: Fairtree Asset Management; Bloomberg

The exact quantity of above ground stock of both platinum and palladium is uncertain and subject to much debate. Nevertheless, using long-term mining and consumption data, there has clearly been a substantial drawdown in implied palladium stocks, including investment holdings such as ETFs. Based on this data, and our discussions with market participants, current deficits are set to deplete all available stock within the next three years.



Supply response: Years of relatively low ZAR PGM prices, combined with significant mining cost inflation, has resulted in net shaft closures and a gradual deterioration in primary South African supply. This is a trend which is set to persist due to a number of years of constrained investment. This is illustrated in figure 6, which details announced and expected shaft additions and closures.

Even if metal prices continue to increase, we see little scope for any near-term increase in South African supply. Potential new projects are in early phases and would require a number of years of development before being able to deliver meaningful new metal to the market. Planned incremental growth in Russia, America and recycling is insufficient to fill the supply gap.

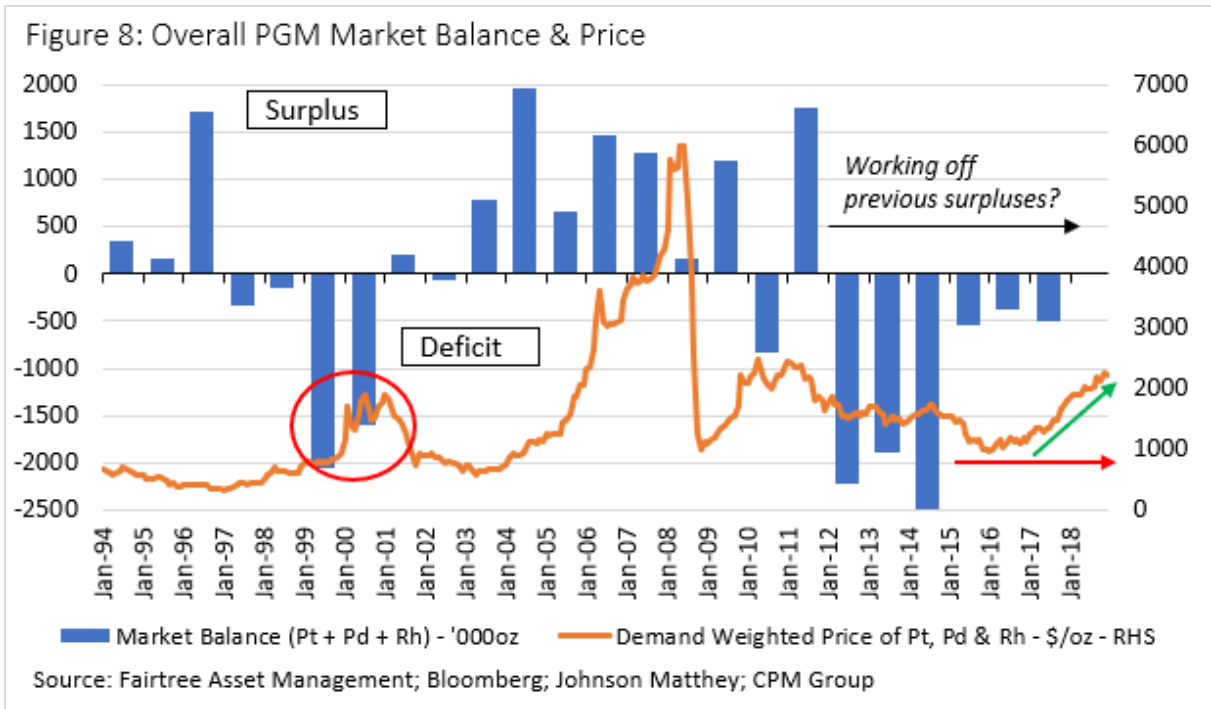


What will cause a reversion?

The above raises the question as to how this imbalance will be resolved. PGMs are largely interchangeable in their industrial and autocatalytic applications. The current price differential, as well as increasing concerns around palladium supply, should incentivise the substitution away from palladium into platinum. There is precedent for this “switching”, which occurred at both the beginning and end of the last decade.

While this seems inevitable, the timing of any large-scale substitution is uncertain. Industry participants have vastly differing views, with some believing large-scale switching remains a few years out. This is due to technicalities in autocatalytic chemistry, as well as the cautious approach auto-manufactures are taking to emissions compliance. Continued palladium price increases, and concerns around security of supply, may force them to act more aggressively however.

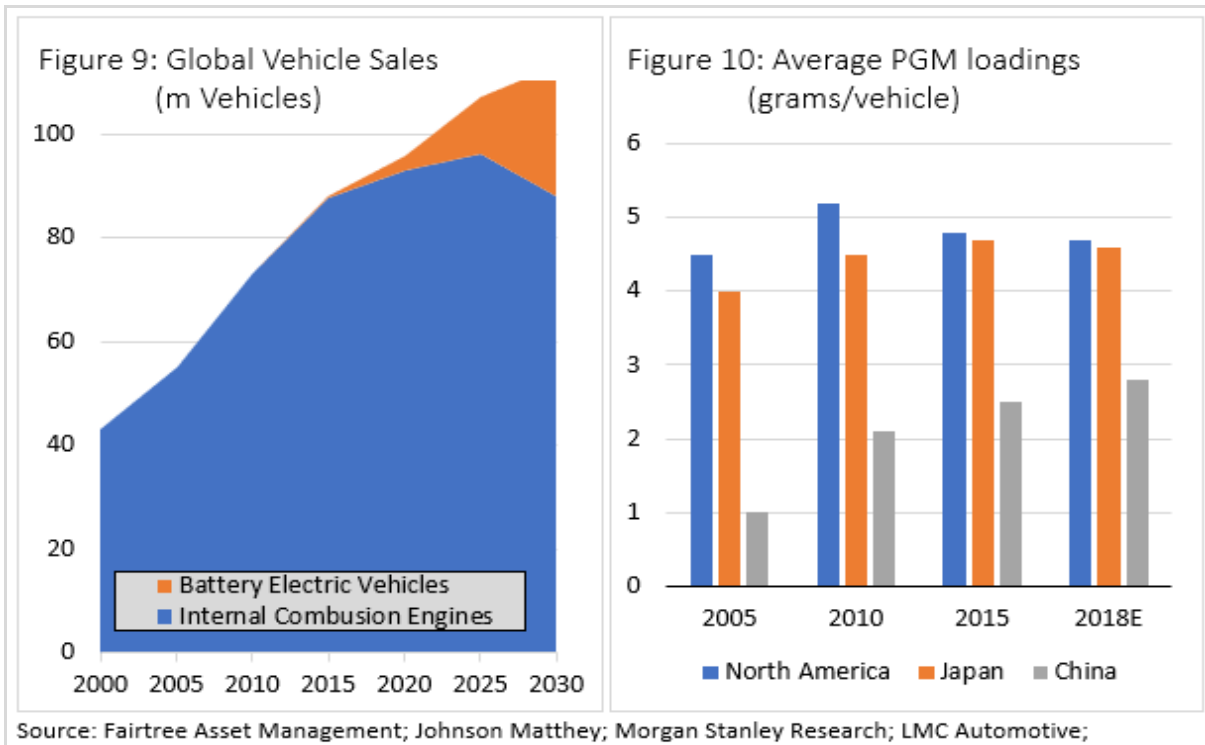
In essence, because these metals are mined together and are largely substitutable, over longer periods of time, they need to be consumed in a ratio which approximates the ratio in which they are mined. Prices and the supply/demand balance should therefore be seen holistically. Combined, the PGM market is in deficit, which should be supportive of the prices of these metals as a “basket”.



What about electric vehicles?

A key concern for PGM demand, which is at the forefront of many people’s minds, is the impact of electric and other “new-energy” vehicles. This disruptive technology is a topic of much discussion and starkly differing opinions. Calculating the impact these vehicles may have on PGM markets, and the timing thereof, is therefore difficult to confidently estimate.

While sales growth is strong, the market for pure battery electric vehicles remains very small. Overcoming the challenges relating to infrastructure, reliability, cost and range will still require significant investment and technological improvement. Even if we optimistically assume annual electric vehicle sales growth of 30%, the sales of internal combustion engine vehicles will only likely peak after 2025. In the interim, auto-driven PGM demand should be well supported. In addition to overall sales growth in emerging markets, increasingly stringent emissions regulation in India and China will drive up average PGM loading (amount of metal) per vehicle.



The future of automobile technology is also not a foregone conclusion. Hybrids vehicles are at least as PGM intensive as current internal combustion cars. And fuel cells, which use triple the amount of platinum compared to an internal combustion car, are also receiving invigorated attention and investment from governments and leading auto manufacturers.

Overall outlook

In conclusion, we believe that overall PGM supply and demand trends will keep the market in deficit for the foreseeable future, which should be supportive of robust prices in general. The price differential between palladium and platinum, together with concerns around availability of palladium supply, should cause a shift in consumption away from palladium towards platinum. This should be supportive of a stronger platinum price, which will be beneficial for the South African miners who generally mine a more platinum-skewed basket of metals.

Glacier Research would like to thank Donald Curayne for his contribution to this week's Funds on Friday.



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Donald joined Fairtree in July 2016 as an investment analyst. He studied Finance and Accounting at the University of Cape Town and subsequently completed his Chartered Accountancy training contract at KPMG in Johannesburg. After a brief audit assignment in the United States and completing the final CFA exam, he joined Fairtree's equity research team. His primary coverage includes JSE listed metals and mining companies.