PLATINUM PERSPECTIVES

Automaker actions to avoid European CO_2 fines are good for platinum

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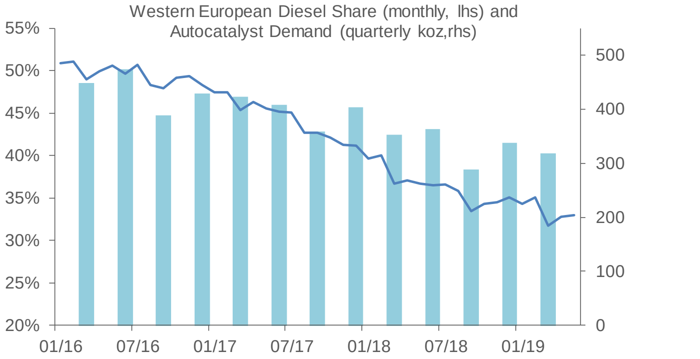
European legislation published in 2009 will levy huge fines on automakers from 2021, if the cars they produce emit too much CO_2. For each car sold, they will be charged €95 for every gram of CO_2 over 95g that they emit per km. For example, if an automaker that sold 1.8m cars in 2018, with average fleet CO_2 emissions of 113g/km, again sold 1.8m cars in 2021 and managed to reduce its fleet CO_2 emissions to 101g/km, a tough ask, their annual fine would be just over **€1 billion**. (i.e. 101g/km – 95g/km = 6mg/km x €95 x 1.8m cars). Consequently, automakers are implementing a suite of actions to reduce their average fleet CO_2 (*Figure 2*) and mitigate potential fine payments. These include simply increasing their sales of low CO_2 vehicles (electric, hybrid and diesel) but also using super-credits and eco-innovation credits.

Diesel engines use less fuel than equivalent gasoline engines and emit c20% less CO_2. But since *Dieselgate* in 2015 the diesel car portion in Western Europe has fallen from c.50% to c32% (*below left*). Lost diesel sales have been replaced by gasoline rather than by battery or hybrid cars (*below right*). This caused the declining trend in fleet CO_2 emissions to reverse in 2017 and 2018. In April 2019, the 2009 legislation was amended*, re-instating super-credits for new cars with CO_2 below 50g/km. These cars, within the CO_2 fine calculation, count as 2 vehicles in 2020, reducing to 1.33 vehicles in 2022. Lower fines from eco-innovation credits offset, for example, the cost of offering a plug-in hybrid version of a popular model. **From September 2019 all new diesel cars sold will be Euro 6d TEMP** compliant and will finally be 'clean' (in NO_x terms).** This makes it easier for automakers to promote diesel sales including plug-in hybrid diesel models.

*(EC 443/2009 and EU 2019/631)

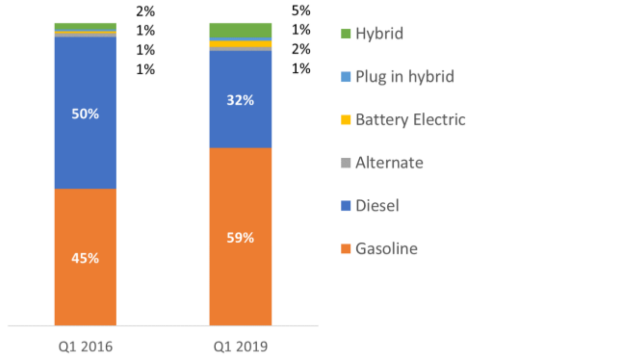
**(RDE or Real Driving Emissions)

The rate of decline in Western Europe car diesel share has slowed. Autocatalyst demand up in vans and heavy duty



Source: SFA (Oxford), LMC Automotive, WPIC Research

Western Europe powertrain mix: Lost diesel sales replaced by gasoline. Slow growth of BEV & hybrid



Source: ACEA, WPIC research.

Automakers have invested heavily in battery electric models but also hybridisation of petrol and diesel. Mild-hybrid (48volt motor boosting) improves fuel efficiency further, particularly in diesel models. Increasingly automakers confirm diesel as an important component of their CO_2 reduction strategies. Several, including Daimler and BMW, are retrofitting diesel car models to guarantee city access and preserve resale values; boosting consumer confidence in diesel vehicles.

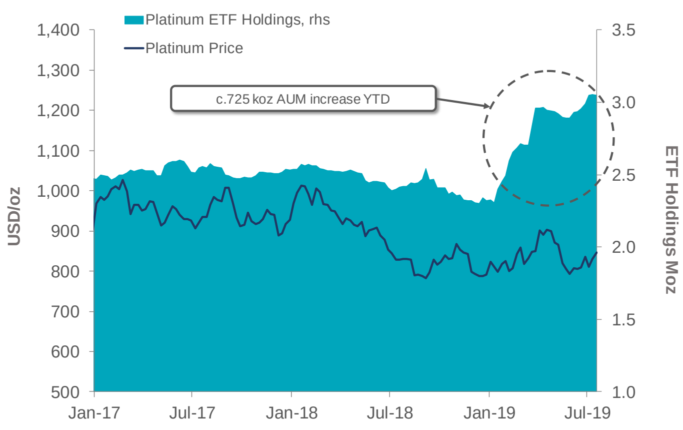
Platinum remains the primary metal in diesel autocatalysis. **Increased sales of diesel cars (including hybrid and mild hybrid) are positive for platinum demand.** Retrofitting reduces scrappage risk and recycling, and increases net platinum demand. **Every 4% increase in European diesel market share adds c.100koz of platinum automotive demand [#].** Market estimates of future diesel share may not yet include CO_2 related growth.

#(Johnson Matthey, WPIC research)

Platinum's attraction as an investment asset arises from:

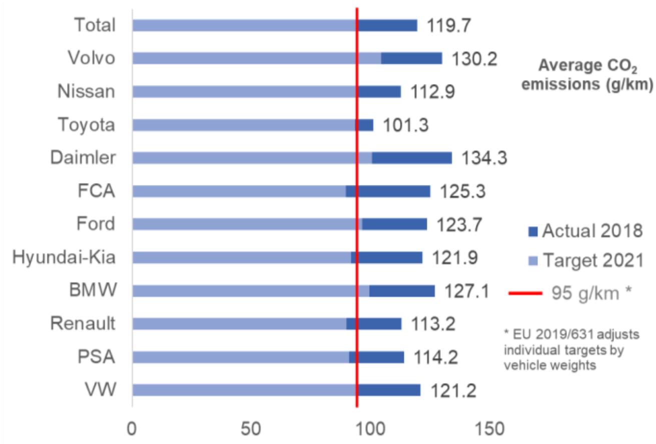
- Supply is relatively constrained with limited investment in new platinum group metal (PGM) mines
- Platinum price is near all-time lows relative to gold and palladium
- Total PGM demand growth should continue due to increasingly restrictive emissions rules
- Market balance mismatches between palladium and platinum argues for substitution
- Investment demand has surged as institutions begin to factor low price and positive fundamental outlook

Figure 1: Platinum's ETF holdings increased by 725 koz year-to-date



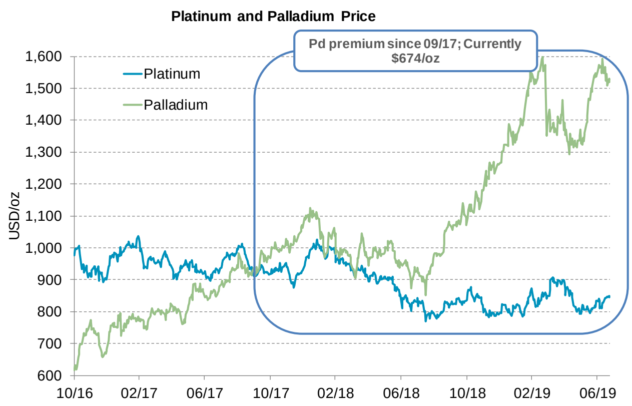
Source: Bloomberg, WPIC Research

Figure 2: European automaker fleet average CO_2 emissions



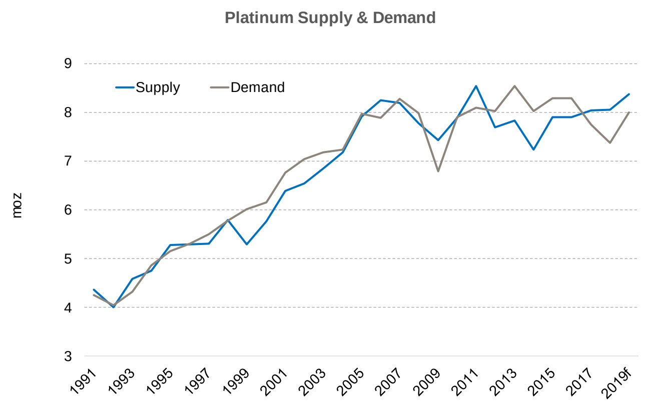
Source: Jato Dynamics - JATO.com, WPIC research

Figure 3: Palladium's price premium to platinum reflects a tight market and highlights the potential for substitution



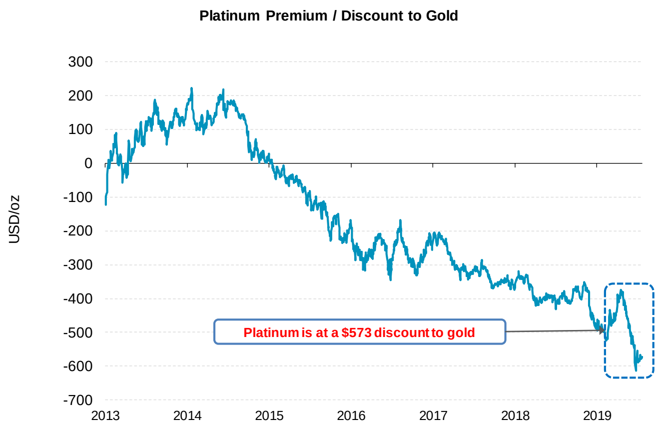
Source: Bloomberg, WPIC Research

Figure 4: The forecast platinum surplus in 2019 has narrowed due to a surge in investment demand (ETFs)



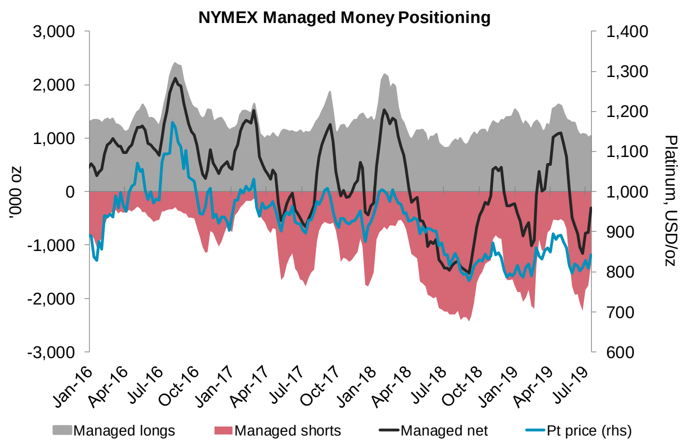
Source: Johnson Matthey, SFA, WPIC Research

Figure 5: As with platinum's deep discount to palladium, the discount to gold has recently widened to $573/oz



Source: Bloomberg, WPIC Research

Figure 6: NYMEX positioning shows easing short- and stable long positioning in July (net 300koz short)



Source: Bloomberg, WPIC Research