

European diesel implications for platinum demand

Concerns on emissions from European diesel vehicles (c15% of demand) underpin the market opinion that platinum demand will fall. We believe the market is overestimating demand risk based on two assumptions:

Market assumption 1: European diesel market share will continue its recent steep decline. Consumers are buying gasoline vehicles rather than diesel (due to the NO_x issue and negative sentiment). However, this creates another emissions problem, as gasoline vehicles emit c20% more CO₂ than diesel. Importantly, automakers face fines if they do not meet **fleet-wide** CO₂ targets by 2020. This could be solved if automakers;

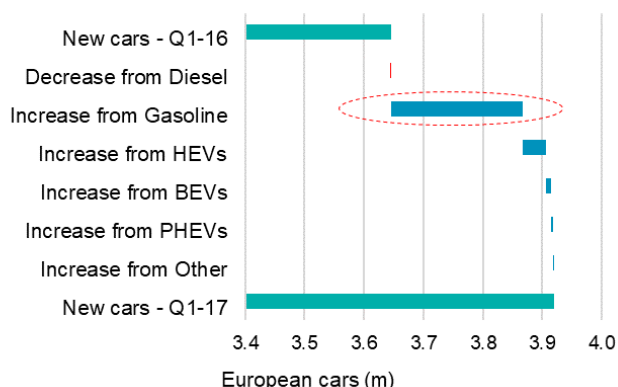
1) **Sell a much higher % of BEVs**; consensus expects a c5% market share by 2025. This is not nearly enough, in isolation, to meet fleet CO₂ targets. A much higher BEV market share seems unlikely given infrastructure (electric grid) requirements.

2) **Sell a higher % of hybrids**; consensus expects hybrids to be the solution to the CO₂ problem. However, market share of hybrids (mild and full) has only grown from 1.6% in Q1-14 to 2.8% in Q1-17. Market share may grow further, but unlikely by enough to meet CO₂ targets.

3) **Properly “clean up” diesel**; data shows automakers can comply with Euro 6 standards on the road, proving it is neither “too hard” nor “too expensive”. Independent testing shows 11 new diesel models are already compliant with stringent 2022 NO_x targets. However, consumer trust in automakers’ emissions claims is fragile. PSA has undertaken to publish independently certified real-world CO₂ test results for its vehicles, and announced its intention to publish NO_x results. Voluntary disclosure suggests it wants to rebuild consumer trust.

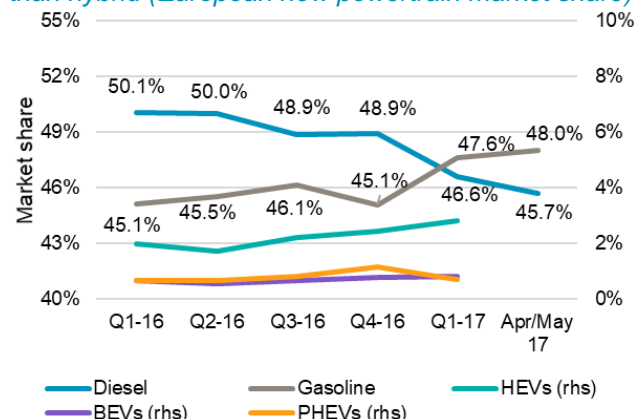
Our view: Assuming industry adopts independent emissions testing, and this is impactful through results being publicly available; **diesel share could be beneficially “higher for longer”**.

Growth in new passenger cars is largely gasoline, not hybrid (12m to Mar-17)



Source: LMC Automotive, ACEA, WPIC research (*See page 2 for included countries)

Gasoline continues to increase share at a higher rate than hybrid (European new powertrain market share)



Source: LMC Automotive, ACEA, WPIC research (*See page 2 for included countries)

Market assumption 2: Platinum loadings on European diesels are likely to decline, given the shift in technology from LNT to SCR (**).

Our view: An SCR system still requires 80% of the platinum used in an LNT system. Also, platinum loadings in both technologies are likely to increase to comply with Euro 6c. Therefore, **despite the shift to SCR; average platinum loadings on diesel vehicles are likely to increase.**

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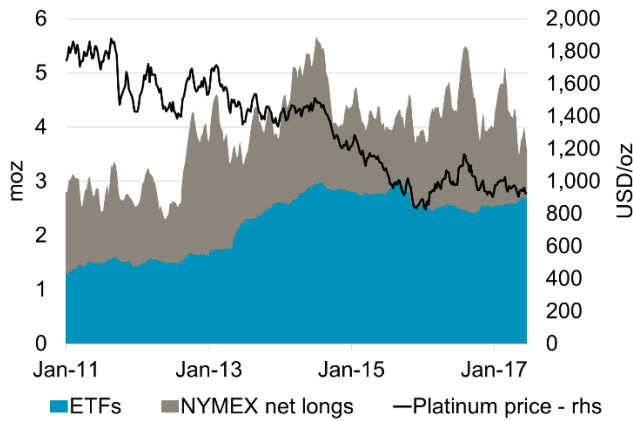
June 2017

Platinum in six charts – June 2017

We believe there are many reasons supporting consideration of platinum as an investment asset:

- Supply demand fundamentals are strong and ETF holdings are stable, despite price volatility
- Risks of supply declines are underestimated - cost pressure and falling mining investment continue
- Downside risks to platinum automotive demand are overestimated
- Futures positioning follows poor sentiment with high correlation to price
- Platinum is undervalued against its past, its production cost and against gold

Figure 1: ETF holdings stable despite price volatility; high correlation between futures and price



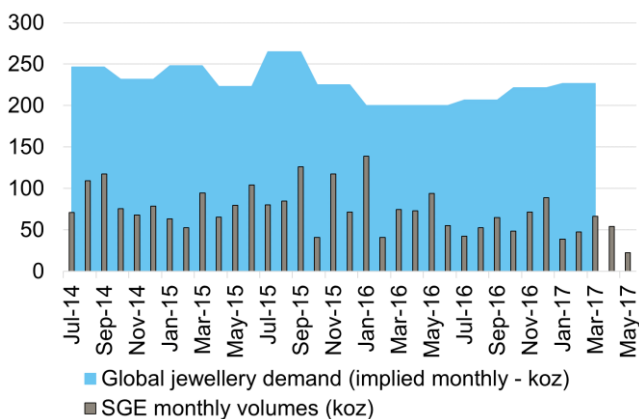
Source: Bloomberg, WPIC Research

Figure 2: Platinum discount to gold appears to have bottomed out at cUSD200-300/oz



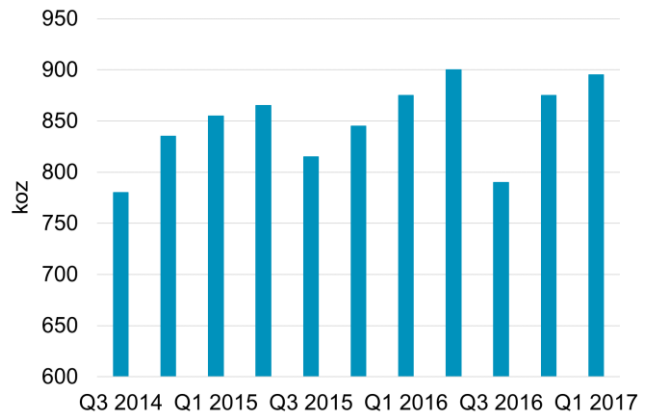
Source: Bloomberg, WPIC research

Figure 3: ROW platinum jewellery demand growth offsets dip in China demand



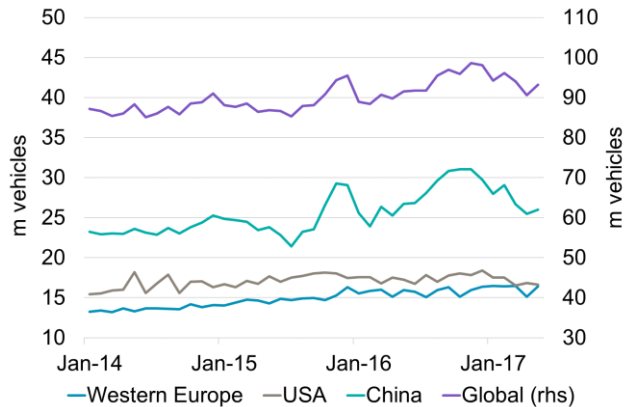
Source: Bloomberg, SFA (Oxford), WPIC research

Figure 4: Automotive platinum demand surprised to the upside in Q1-17 and revisions all positive to date



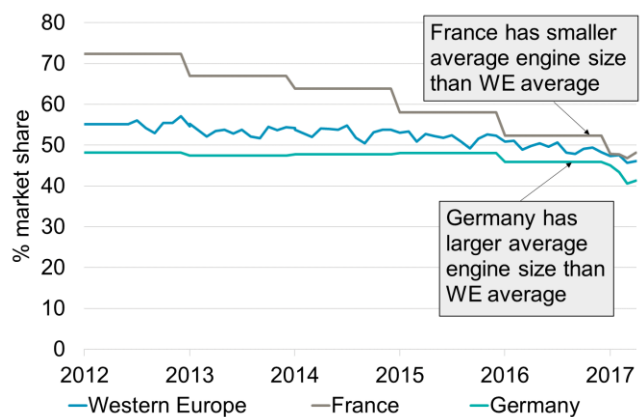
Source: WPIC Platinum Quarterly Q1 2017, SFA (Oxford)

Figure 5: Western Europe light vehicle car sales remain robust despite a softer global market



Source: LMC

Figure 6: Western Europe diesel market share is falling; but engine sizes are important



Source: LMC, WPIC research

* Europe includes passenger vehicles in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, UK, Norway and Switzerland (based on the availability of both diesel market share data and AFV data). **LNT – Lean NO_x Trap; SCR – Selective Catalytic Reduction. HEV – Hybrid Electric Vehicles, BEVs – Battery Electric Vehicles, PHEVs – Plug-in Hybrid Electric Vehicles