ICBC Standard Bank

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Global

Commodities | Strategy

PGMs Outlook

Moving up through the gears

- For 2018, we think the **platinum** market should return to balance or even record a small industrial deficit.
- Our base case forecast is c.120k oz decline in global mine supply and any material unplanned outages could quickly see global supply fall by c.300k oz YoY.
- If the pace of diesel's market share decline in Europe can slow and if healthy global growth supports jewellery and industrial demand, the overall market should start to find a firmer footing.
- Although ample availability of above ground stocks means the physical picture is unlikely to get particularly tight, a relatively weak US dollar should help investment demand for platinum and allow prices to trade sustainably above $1,000/oz.
- Over time, prices will provide the incentive to right **palladium's** balance – driving substitution in autocatalysts and industrial uses, as well as supporting the expansion of both recycling and new production capacity.
- But these are multi-year processes and, in the meantime, prices will need to incentivise the release of sufficient inventory to plug an ongoing deficit.
- To that end, ETF holdings are likely to continue their recent declines, down a cumulative 1M oz over 2016/17.
- This should keep prices relatively buoyant, with a negative macro event more than any short-term fundamental developments the major risk to the market.

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PGMs Outlook

Moving up through the gears

Platinum – summary view

In 2017 improving auto sales, up c.5% in the Eurozone, and healthy demand from US heavy trucks were offset by the continued decline in diesel's European market share. In consequence, auto-catalyst demand for platinum stagnated at the same time as recycling and primary supply increased by a combined c.130k oz. Despite a stabilisation of global jewellery sales, close to 2M oz, the market recorded another industrial surplus, leading platinum prices to underperform other precious metals.

For 2018, however, we think the market should return to balance or even record a small industrial deficit. Our base case forecast is c.120k oz decline in global mine supply and any material unplanned outages could quickly see global supply down c.300k oz YoY. Assuming that the pace of diesel's market share decline in Europe can slow and that still healthy global growth supports steady jewellery and industrial demand, the market should start to find a firmer footing. Although ample availability of above ground stocks means the physical picture is unlikely to get particularly tight, a relatively weak US dollar should help investment demand and allow prices to trade sustainably above $1,000/oz.

000 oz	actual		estimate		forecast	
Platinum Supply	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
South Africa	4,372	4,323	4,386	4,274	4,302	4,353
5% disruption				*-214*	*-215*	*-218*
Russia	736	714	735	705	710	710
North America	360	391	403	425	448	466
Zimbabwe	370	475	450	450	450	450
Others	190	200	200	200	200	200
Total primary supply	6,027	6,103	6,174	5,840	5,895	5,961
Platinum Demand						
Autocatalyst (gross)	3,250	3,295	3,278	3,295	3,322	3,393
Autocatalyst recycle	-1,150	-1,204	-1,269	-1,302	-1,318	-1,339
Jewellery	2,395	1,900	1,920	1,965	2,004	2,047
Chemical	551	581	605	617	629	642
Electronics (inc fuel cell)	211	225	236	247	255	271
Glass	160	242	229	232	236	239
Medical	215	217	220	227	233	240
Petroleum refining	142	143	155	165	168	172
Other	447	461	472	481	491	501
Total net demand	**6,221**	**5,860**	**5,847**	**5,928**	**6,022**	**6,166**
Primary balance	**-193**	**243**	**326**	**-87**	**-127**	**-205**
ETF Holdings	2,400	2,368	2,472			
Change	*-332*	*-31*	*104*			
Nymex Warehouse Stock	155	238	194			
Change	*19*	*84*	*-44*			
Other Physical Investment	526	461	300			
Movement of stock	**-407**	**-270**	**-34**			
XPT Spot Average ($/oz)	**1,054**	**989**	**928**	**1,025**		

Source: ICBC Standard, Company Reports, Bloomberg, PWC Autofacts

Palladium – summary view

A c.300k oz increase in global primary supply failed to close the gap with demand in 2017, as the market remained in substantial deficit. Strong emerging market demand was driven by Chinese SUV sales growth of c.15% and Indian auto sales bouncing back from the shock of demonetisation. That, coupled with (a hurricane replacement aided) only a moderate decline in US vehicle sales, more than offset continued substitution away from palladium in industrial applications.

Over time, prices will provide the incentive to right palladium's balance – driving substitution in autocatalysts and industrial uses, as well as supporting the expansion of both recycling and new productive capacity. But these are multi-year processes and, in the meantime, prices will need to incentivise the release of sufficient inventory to plug an ongoing deficit. To that end, ETF holdings are likely to continue their recent declines, down a cumulative 1M oz over 2016/17. This should keep prices relatively buoyant, with a negative macro event more than any short-term fundamental developments the major risk to the market.

000 oz	actual		estimate		forecast	
Palladium Supply	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
South Africa	2,515	2,477	2,527	2,425	2,441	2,464
5% disruption				*-121*	*-122*	*-123*
Russia	2,689	2,618	2,780	2,728	2,750	2,750
of which stock sales	*0*	*0*	*0*	--	--	--
North America	1,038	1,065	1,133	1,225	1,325	1,385
Zimbabwe	297	389	365	361	361	361
Others	140	130	150	150	150	150
Total primary supply	**6,679**	**6,679**	**6,955**	**6,767**	**6,904**	**6,987**
Palladium demand						
Autocatalyst (gross)	7,740	8,005	8,177	8,293	8,277	8,410
Autocatalyst recycle	-1,756	-1,860	-1,950	-1,993	-2,137	-2,352
Electronics	520	502	475	461	447	434
Chemical	423	435	460	465	469	474
Dental	455	445	430	419	409	399
Jewellery	191	187	180	177	175	172
Other	106	106	100	100	100	100
Total net demand	**7,680**	**7,820**	**7,872**	**7,922**	**7,740**	**7,636**
Primary balance	**-1,000**	**-1,140**	**-917**	**-1,155**	**-835**	**-650**
ETF Holdings	2,351	1,713	1,333			
Change	*-727*	*-638*	*-380*			
Nymex Warehouse Stock	84	73	41			
Change	*-138*	*-11*	*-32*			
Other Physical Investment	-2	1	2			
Movement of stock	**-133**	**-493**	**-507**			
XPD Spot Average ($/oz)	**558**	**614**	**871**	**1,180**		

Source: ICBC Standard, Company Reports, Bloomberg, PWC Autofacts

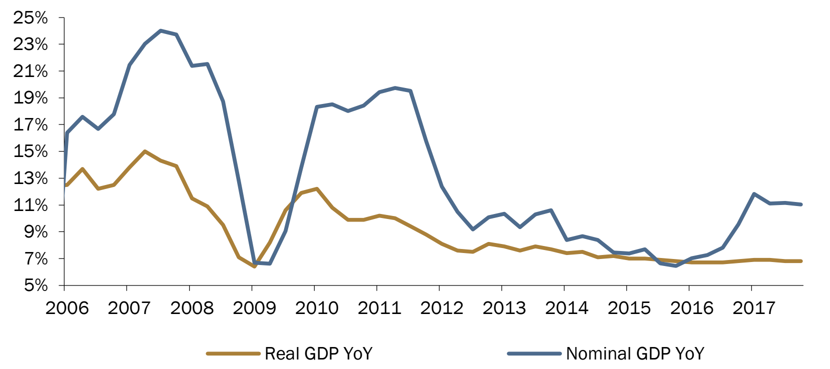
Macro-market backdrop

Global GDP growth accelerated to 3.7% in 2017, according to the IMF, with a synchronous improvement across most regions. With core inflation still subdued, major central banks have been able to maintain loose, albeit incrementally tighter, monetary policy, helping to provide a benign backdrop for both financial markets and real commodities demand.

Commodity prices remain highly correlated to global growth

Source: IMF, Bloomberg, ICBC Standard

Focus on China's nominal not real GDP for changes in commodities demand



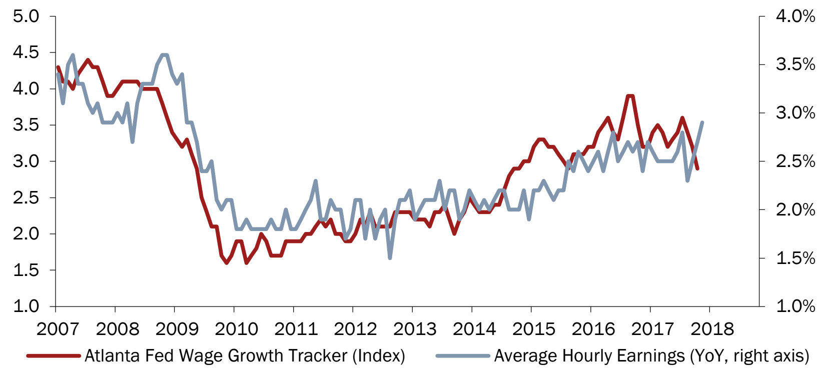
Source: China NBS, Bloomberg, ICBC Standard

The consensus view that asset prices would continue to bask in these "Goldilocks conditions" has, however, been challenged in recent days. Indeed, at the time of writing, the MSCI World equity index is down 6.6% from its high, while Brent crude is off 9.6%, spot gold is 3.7% lower and palladium has dropped 13%. The catalyst for these moves has not been fears that global growth will disappoint but, rather, a bout of bond and FX market volatility.

As discussed in our 2nd February note "What could possibly go wrong?", macro markets have been marked by a concentration of positions that could be summarised as short the dollar, short US rates (with a strong flattening bias), and long risk assets such as commodities and emerging markets. We agree with the fundamental rationale for these positions but, ultimately, they had become too crowded. And the past few days have been characterised, certainly within commodities markets, by a number of significant corrections in heavily positioned consensus trades – including, of course, palladium.

The proximate cause for this was February 2nd's US labour market data, particularly the above forecast 2.9% YoY jump in average hourly earnings, lifting expectations of future inflation.

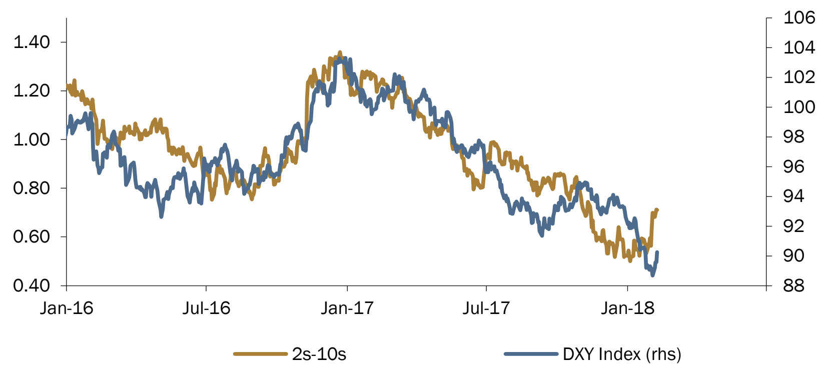
US wage growth finally reaccelerating?



Source: Atlanta Fed, US BLS, Bloomberg, ICBC Standard

This led to a steepening of the US Treasury yield curve and rally in the US dollar. Platinum's precious metal characteristics and relatively limited positioning have cushioned it against dollar strength, spot is down just 1.4% at the time of writing, but those commodities markets with significant investor length have suffered more markedly: crude down 5.6%, lead down 5.8% and palladium down 7.4%.

Steepening of the Treasury yield curve arrests the dollar's sell off



Source: Bloomberg, ICBC Standard

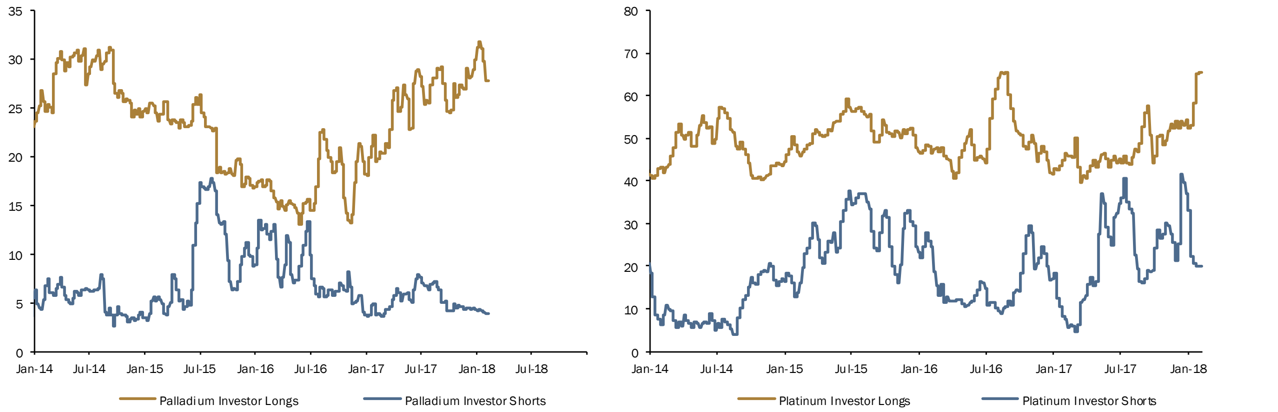
Far from a micro-fundamental move, this sell-off has been macro-investor positioning driven and we expect consumer buying in fundamentally tight markets – such as palladium – to begin providing support into this dip.

To illustrate the point further, CFTC positioning up to January 30th reflected how investors had covered shorts / added some length in platinum, while in palladium, even after 2k lots of length reduction, they remained exceptionally net-long. The subsequent c.12% drop in palladium futures' aggregate open interest reflects a substantial wash out of this length, as investors have exited positions en masse.

Not only do palladium's fundamentals remain supportive but platinum's supply-demand balance is also improving

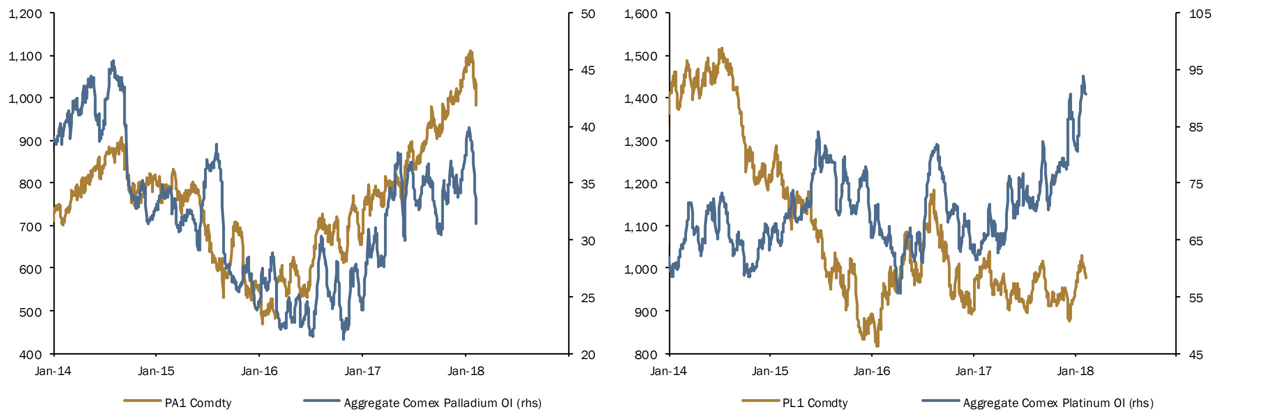
Nonetheless, as we lay out below, not only do palladium's fundamentals remain supportive but platinum's supply-demand balance is also improving. Absent a full-blown macro-market panic, we therefore expect both markets to find support in fairly short order.

Palladium exceptionally net-long, while platinum had largely seen short-covering before this past week's move



Source: Bloomberg, CFTC, ICBC Standard

And this length has been washing out, reflected in a c.12% drop in palladium futures' open interest

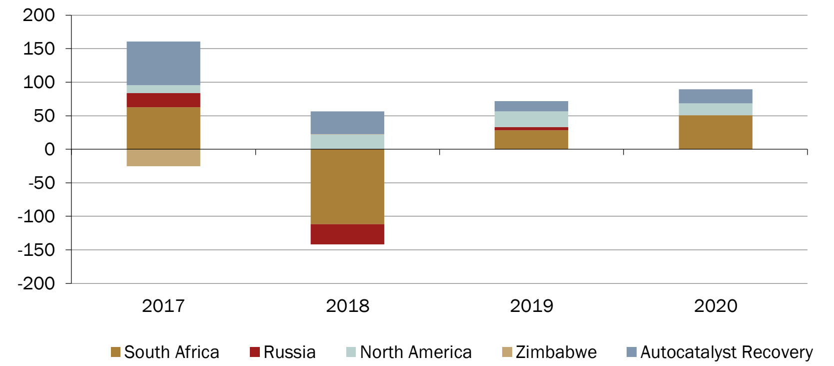


Source: Bloomberg, Nymex, ICBC Standard

Supply-side overview

Platinum's supply growth of 2017 is set to reverse in 2018: the market will feel the full effect of Bokoni's closure, Mogalawena is moving past its recent high grading, and Lonmin likely cuts some marginal tonnes from Gen 1 shafts. In aggregate, global mine supply is expected to fall by 120k oz, with only a c.30k oz offset from increased recycling.

Platinum YoY change in supply, thousand ozs



Source: ICBC Standard, Company Reports, Bloomberg

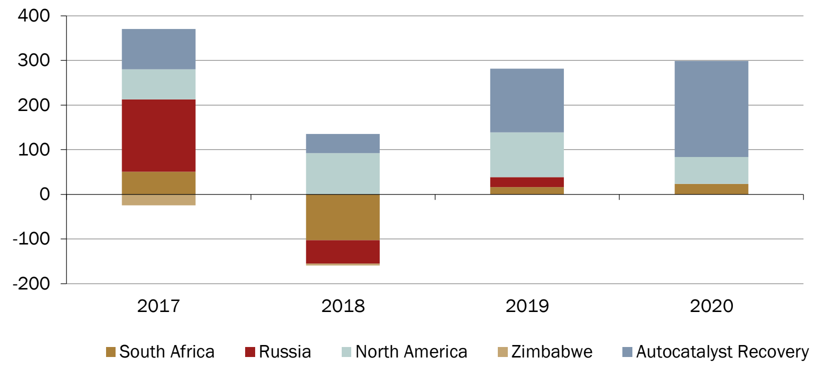
For 2019 and 2020, we forecast supply growth of c.55k oz and c.70k oz as Northam's Booysendal continues its expansion and Booysendal South project enters production. Styldrift will also add incremental volumes but North American supply growth is palladium heavy and all this could become academic if Sibanye were to take more significant action to reduce volumes from either Rustenburg or, if the proposed merger goes through, Lonmin.

We currently model only minor reductions from these two operations prior to 2020, with the potential for significant cutbacks being pushed into the next decade. However, with question marks hanging over both these major operations and the potential for unplanned or as yet unannounced cuts elsewhere, the risks to supply appear heavily tilted to the downside.

Palladium supply from South Africa will face the same headwinds in 2018 and Norilsk's Kola division nickel refinery upgrade should also reduce Russian production by c.50k oz. These reductions will, however, largely be offset by a further uptick in North American recycling and the ongoing ramp of Sibanye-Stillwater's Blitz project, not to mention higher volumes from North American Palladium's Lac des Ilse operation on account of a revised mine plan.

The market will be heavily dependent on autocatalyst recycling for additional ounces

Palladium YoY change in supply, thousand ozs



Source: ICBC Standard, Company Reports, Bloomberg

And it is these North American projects which should dominate palladium supply growth into the end of the decade, as Blitz adds a further 70k oz in 2019 and 60k oz in 2020. Elsewhere, however, there is little new supply to write home about and the greater speed with which secondary supply can respond to higher prices means the market will be heavily dependent on autocatalyst recycling for additional ounces this side of 2020.

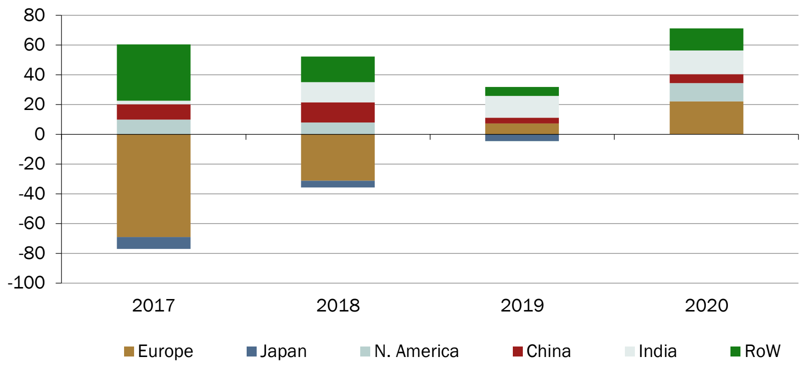
Demand overview

Diesel's declining share of European light vehicle sales was the major story for platinum in 2017 and this is reflected in the numbers, where we estimate a c.70k oz drop in autocatalyst demand. This trend should continue with a further c.30k oz demand decline, as diesel's market share falls towards 40%. If the pace of decline continues at c.5-7% YoY, our demand forecasts beyond 2018 will prove too optimistic but our current assumptions are that demand will stabilise due to:

- Slowdown in the pace of diesel's market share loss.
- Continued growth in European auto sales, of c.1.5% p.a.
- Steady, if not marginally higher, loadings as all new vehicles must meet real driving emissions (RDE) NOx tests from September 2019. The exact impact of this is still hard to gauge, being heavily dependent on the extent to which

selective catalytic reduction (SCR) or lean nox trap (LNT) technology is employed. If LNT dominates, there is upside to our base case forecasts.

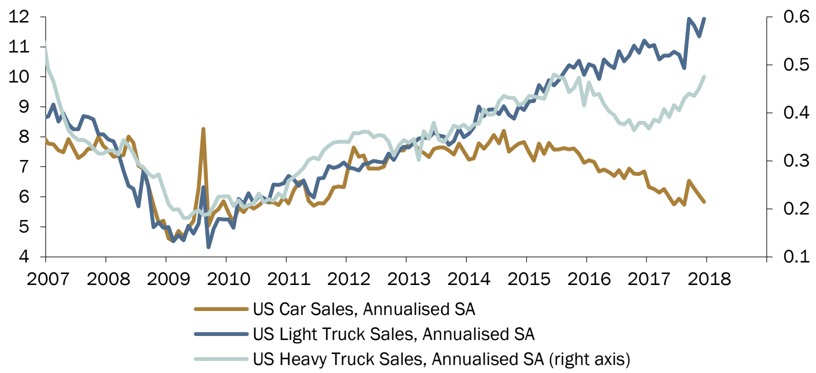
Platinum YoY change in autocatalyst demand, thousand ozs



Source: ICBC Standard, Company Reports, Bloomberg, PWC Autofacts

Outside of Europe, resurgent US heavy truck sales and 11% YoY growth in China's 2017 truck sales are positives for demand. But the heavy trucking sector remains too small in terms of absolute vehicle numbers to really tighten the balance. US truck sales around 400k units per year pale in comparison to combined light vehicle sales above 17 million units.

US monthly vehicles sales by sector (millions, annualised)



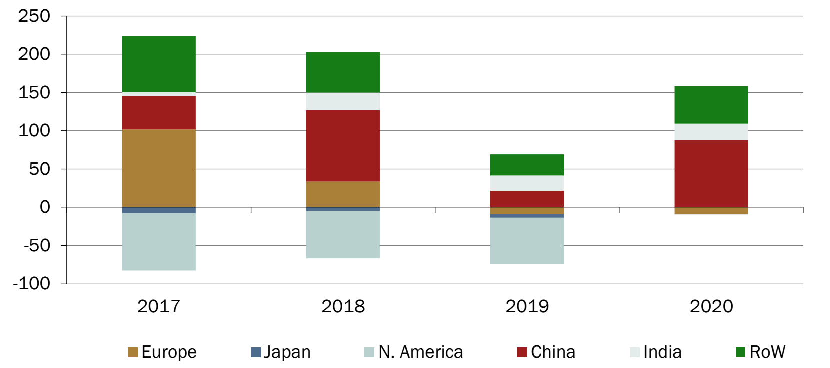
Source: Bloomberg, Ward's Automotive, ICBC Standard

Diesel's loss has been gasoline's gain, spurring an additional c.100k oz of European palladium demand in 2017 but for 2018 and beyond we expect emerging markets to be the key consumption drivers. In particular, 2018 sees the nationwide roll out of China 5 emissions legislation to cars and light trucks before China 6 standards follow in 2020. The combination of this with more measured sales growth around 2%/year should add c.200k ozs to annual palladium demand over the next three years.

The major headwind, however, is forecast to come from North American demand, which we expect to drop by c.120k ozs between 2018 and 2020. This comes from a marginal loss of gasoline market share, forecast c.1% p.a. fall in auto sales and, by 2020, expectation that there will have been some platinum for palladium substitution.

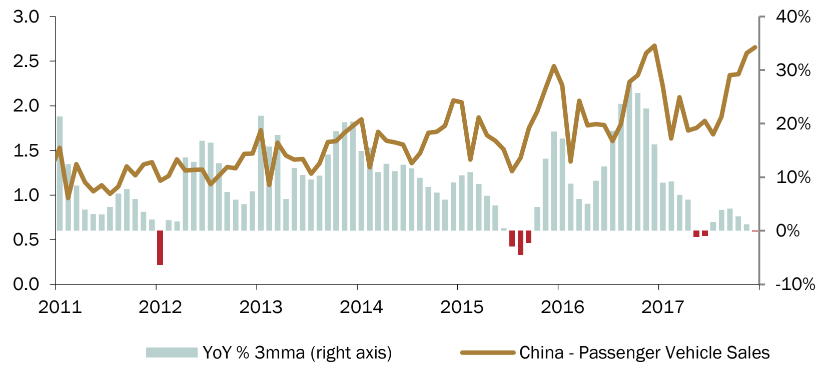
The question of substitution has been much raised since palladium first traded above platinum back in September but we remain sceptical about the pace with which it is likely to occur. In our understanding, OEMs do not have the flexibility or economic incentives to tweak relative PGM loadings on an ongoing basis, and so the potential windows for substitution will be new model releases. At these points, if our forecast that palladium will be trading above platinum proves accurate, substitution may be considered as part of the overall engine management and emissions control system design – hence by 2020, there should be some examples of it – but it is not likely to be considered on any kind of day-to-day basis.

Palladium YoY change in autocatalyst demand, thousand ozs



Source: ICBC Standard, Company Reports, Bloomberg, PWC Autofacts

China passenger vehicles sales (millions)



Source: Bloomberg, China NBS, CAAM, ICBC Standard

Finally, for autocatalysts, we need to address the general issue of the powertrain mix and, specifically, the rapid recent growth of electric vehicles (EVs). As discussed in our December 1st note "Electric Vehicles – The end of the beginning", our core view remains that EVs will only start to have a major impact on PGM markets around 2025.

Although EV sales are growing rapidly, they are coming from a low base and, globally, will only take a small fraction of the combined gasoline and diesel share between now and 2020. To use PWC Autofacts forecasts for the global sales power train breakdown, gasoline will decline from 78.5% in 2010 to 73.4% in 2020, while diesel will fall from 20.1% to 16.3%, on account of hybrids rising from 1.4% to 4.9% and EVs reaching 5.4% from 0% in 2010.

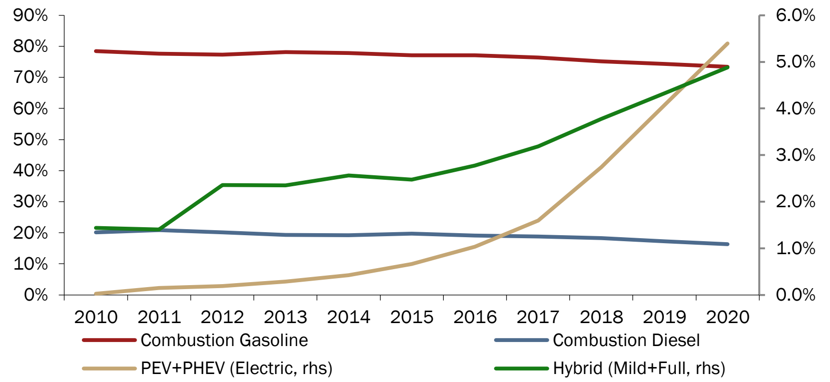
Furthermore, the exact pace of their market share penetration beyond 2020 is extremely hard to forecast due to the sheer number of significant unanswered questions. To highlight a few of these issues:

- A battery EV (BEV) powertrain is currently 2.5 - 3 times the cost of a conventional internal combustion engine (ICE) and, of that, the battery accounts for c.66-75% of a BEV powertrain's cost. Although coming down, cost remains a major obstacle to mass market adoption.

- The pace of technological change for BEVs means that residual values are unlikely to be strong. The changes between a current and new ICE model are incremental, for a BEV it could be that the range has doubled… This clearly poses a problem for trading in second hand cars.
- Building and powering the requisite charging infrastructure could generously be described as a work in progress. It is still unclear how to:
  - Achieve inter-operability of charging systems
  - Make fast charging commercially viable and safe
  - Generate (&/or store) the requisite electricity
- There is no current answer to how the tax loss from fuel/road tax will be offset by governments.

We therefore continue to monitor EV developments closely but do not yet find them to have a significant impact on our PGM market balances.

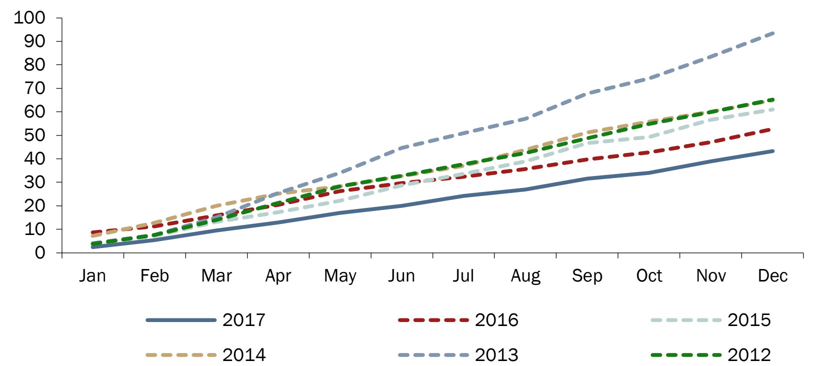
Globally both gasoline and diesel market share is falling but slowly and from a high base



Source: ICBC Standard, PWC Autofacts

To conclude on platinum jewellery demand, we think that the market has bottomed but do not expect significant near-term upside. Indian purchases bouncing back from demonetisation and GST introduction to expand at a forecast pace in excess of 10% p.a. is a relative bright spot but is coming from a base of c.250k oz against a near 700k oz total decline in China's demand since its 2013 peak. Until SGE platinum volumes at least stabilise, we will find it hard to forecast any more meaningful demand growth from the sector.

SGE Platinum volumes still down c.50% from their 2013 heyday



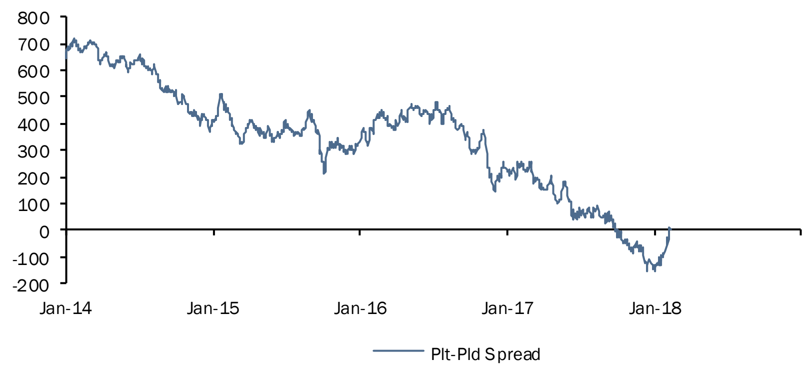
Source: ICBC Standard, SGE, Bloomberg

Conclusion

In summary, we remain constructive on palladium and think the platinum market is also now bottoming out. Although the two prices have come back into line over recent days, as detailed in the above macro section, we think this is due to near-term liquidation of speculative positions rather than any major fundamental change.

Palladium continues to trade with a backwardation that contrasts to platinum's contango

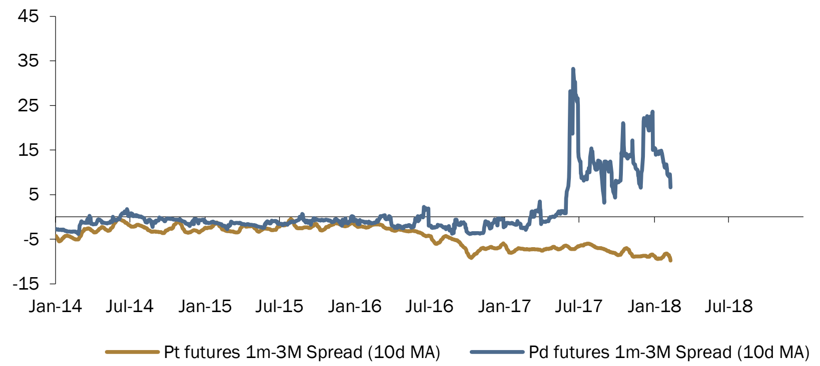
Platinum and Palladium trading back around parity



Source: Bloomberg, ICBC Standard

Indeed, palladium continues to trade with a backwardation that contrasts to platinum's contango and we think this fairly reflects the fact that it is a significantly tighter market. So long as this is the case, which we believe it will be between now and 2020, palladium prices should continue to outperform.

Palladium's backwardation continues to contrast with platinum's contango



Source: Bloomberg, ICBC Standard

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