PLATINUM QUARTERLY
Q1 2017

World Platinum Investment Council

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Contents

FOREWORD

In a world of increasingly dramatic change, it is pleasing that London Platinum Week remains such a steadfast and important fixture in our industry's calendar. It provides a unique opportunity to come together, allowing us to collectively understand critical elements of our industry, where it has been and where it is going.

If the conversations my team and I have had over the first quarter of the year are anything to go by, this week is likely to be one of the most stimulating and thought provoking for some time.

The resounding feedback from our investor engagement programme is that an increasing number of investors, including those hurt by the fall in the price of platinum, are once again considering the precious metal. Today many are also including supply demand fundamentals when considering platinum, which is a significant change.

Importantly, many investors are once again contemplating why platinum's industrial premium over gold, valid for 80% of the past 40 years, remains relevant and should now be back in place. Let me explain.

We have on several occasions over the past two years, since we first launched the WPIC, sought to explain the reasons for the fall in the price of platinum despite continued deficits in the market. We have accounted for this anomaly by pointing to the levels of unpublished vaulted stock sales over the past five years, which have depressed prices, even during periods of significant deficits and a major strike.

Poor investment performance in the face of strong supply and demand fundamentals led many investors to exit the asset class in search of securing returns elsewhere.

Of the investors that remained, including many participants with short-term investment horizons, many chose to completely ignore supply and demand fundamentals. Instead, they resorted to other valuation methods that they believed would achieve stronger investment returns from platinum in a weak price environment.

Four valuation approaches, which assume perfect price discovery in the platinum market and correlated broadly with price performance, appear to have gained favour during this period:

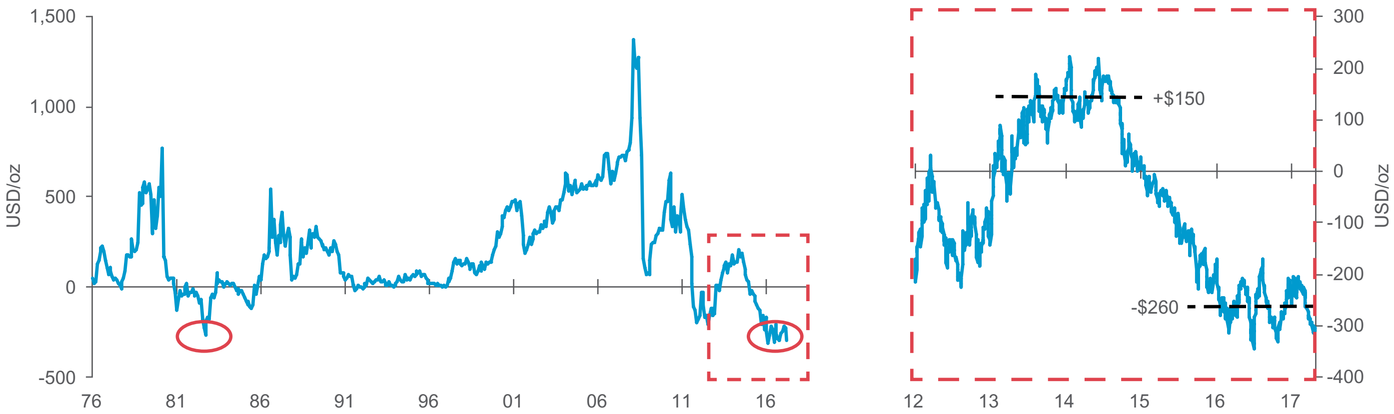
- By discounting investment demand to make the supply demand balance appear as a surplus
- By disregarding platinum's industrial applications, platinum could be viewed solely as a precious metal and valued relative to gold
- By inferring that the potential bankruptcy of a platinum producer would reduce 'surplus' supply, its cash cost per ounce became a proxy for the value of platinum
- By applying 'breakeven pricing', valid in mined commodities, to platinum – notwithstanding the absence of platinum supply response to a rising price.

Once one, or all, of the above indicators provided investors with a value trade that 'worked', the practice became embedded. Investors and analysts highlighted selected positive aspects of supply or negative aspects of demand to support the direction of the position or recommendation. Commentators and media aligned their views with this cherry-picking practice as it 'most accurately' reflected the weak price and directional movements.

Thankfully this illogical yet widespread approach seems to be losing traction, and fundamental analysis is resuming its critical position in the investment equation. These fundamentals are offering up many reasons to consider and invest in physical platinum, with retail investors already acting upon the perceived opportunities in the market.

Retail investors, particularly private wealth managers, high net worth individuals and family offices, many of whom operate under a two to three year time horizon, see the return of platinum's industrial premium as likely within their timeframe and are more interested in the medium-term drivers.

The graph below, detailing the real platinum/gold spread over the last 40 years in 2017 money terms, gives some insight into the movement of the 'industrial premium' over this period.



Over three years platinum has moved from an 'industrial premium' averaging $150/oz, in line with the average premium over 40 years, to a discount averaging $260/oz. This change appears surprising, but is perhaps best explained by the valuation approaches that have dominated the market over the past five years. The volatility appears to support greater scrutiny for why there is a discount with sustained strong fundamentals and reflecting differing views in the market.

Fundamental analysis sits at the core of the WPIC's mission and the latest *Platinum Quarterly* update shows a continuation of the trends we observed at the end of 2016.

Automotive platinum demand remains robust, particularly in Western Europe. This will surprise some investors given the continued media coverage related to the banning of diesel vehicles from city centres. However, we think there is a real opportunity for demand from this sector to grow.

The recently announced C40 initiative, led by the Mayors of Paris and London, is further evidence that policymakers are getting tough on vehicle manufacturers, as they seek a practical and viable solution to the air quality issues facing their cities. This announcement is a game-changer. We believe that platinum's role in this process, in the form of heavier loadings, will soon become increasingly apparent.

Alongside automotive demand, today's *Platinum Quarterly* also highlights that mining supply is predicted to fall further in 2017. The first quarter of the year saw total mine supply hit 1,330 koz, down 6% year-on-year and the lowest since Q3 2014.

The report details that overall platinum supply is projected to fall by 2% year-on-year to 7,730 koz in 2017, with both primary and secondary supply expected to decline. As we have said many times in the past, we believe that supply is becoming increasingly constrained as the effects of lower capital investment and rising real costs begin to have an impact. The latest report supports our hypothesis once again.

Platinum Quarterly also highlights a number of interesting developments in the investment demand segment. Global platinum ETF holdings grew by 65 koz in the first quarter of 2017, with increases observed across most regions. ETF assets in the quarter were at their highest level since the fourth quarter of 2015.

Bar and coin demand during the first three months of 2017 was supported by the minting of 20,000 one-ounce US American Eagle bullion coins in January, all of which were sold in just three days. Overall platinum investment demand is now projected to be 250 koz this year.

Finally, it is pleasing to report that our market development programme continued to grow in the first quarter of 2017, with the launch of two significant new initiatives.

In March, we announced the addition of platinum to the BullionVault online precious metals platform. The partnership means that 65,000 private investors who currently use this marketplace now have access to platinum. Just one month into the relationship investor buying has been strong.

In what was a busy month for our development team, March also saw the WPIC support the launch of India's first non-jewellery platinum product with our partner in the region, Muthoot Exim. The launch of the Anantavarsham Platinum Series of deities is the first of a number of new initiatives we are planning in India, a market that has enjoyed significant growth over the last two years.

Since the WPIC was launched in 2014, our market development activities have yielded 13 separate initiatives that make investing in physical platinum easier. Our efforts have directly resulted in more than 60 koz of metal being bought.

We look forward to updating you on a raft of exciting new market development initiatives in the coming months.

Paul Wilson, CEO

Table 1: Supply, demand and above ground stocks summary

		2015	2016	2017f	2016/2015 Growth %	2017f/2016 Growth %	Q4 2016	Q1 2017
Platinum Supply-demand Balance (koz)								
SUPPLY								
Refined Production		**6,150**	**6,025**	**5,960**	**-2%**	**-1%**	**1,490**	**1,390**
	South Africa	4,465	4,245	4,200	-5%	-1%	1,065	960
	Zimbabwe	405	490	440	21%	-10%	120	105
	North America	385	395	405	3%	3%	85	100
	Russia	715	715	735	0%	3%	170	180
	Other	180	180	180	0%	0%	50	45
Increase (-)/Decrease (+) in Producer Inventory		+45	+30	+10	-33%	-67%	-75	-60
Total Mining Supply		**6,195**	**6,055**	**5,970**	**-2%**	**-1%**	**1,415**	**1,330**
Recycling		**1,710**	**1,865**	**1,760**	**9%**	**-6%**	**480**	**420**
	Autocatalyst	1,190	1,235	1,255	4%	2%	300	300
	Jewellery	515	625	500	21%	-20%	180	120
	Industrial	5	5	5	0%	0%	0	0
Total Supply		**7,905**	**7,920**	**7,730**	**0%**	**-2%**	**1,895**	**1,750**
DEMAND								
Automotive		**3,390**	**3,435**	**3,405**	**1%**	**-1%**	**875**	**895**
	Autocatalyst	3,245	3,295	3,255	2%	-1%	835	855
	Non-road	145	145	150	0%	3%	35	40
Jewellery		**2,880**	**2,565**	**2,530**	**-11%**	**-1%**	**680**	**620**
Industrial		**1,670**	**1,775**	**1,610**	**6%**	**-9%**	**400**	**455**
	Chemical	605	595	585	-2%	-2%	135	145
	Petroleum	140	220	100	57%	-55%	55	45
	Electrical	165	160	150	-3%	-6%	40	40
	Glass	200	205	170	3%	-17%	5	80
	Medical and Biomedical	230	235	240	2%	2%	65	55
	Other	330	360	365	9%	1%	100	90
Investment		**305**	**505**	**250**	**66%**	**-50%**	**220**	**80**
	Change in Bars, Coins	525	430				110	25
	Change in ETF Holdings	-240	-10				115	65
	Change in Stocks Held by Exchanges	20	85				-5	-10
Total Demand		**8,245**	**8,280**	**7,795**	**0%**	**-6%**	**2,175**	**2,050**
Balance		**-340**	**-360**	**-65**	**6%**	**-82%**	**-280**	**-300**
Above Ground Stocks	**4,140***	**2,310**	**1,950**	**1,885**	**-16%**	**-3%**		

Source: SFA (Oxford). *As of 31st December 2012. NB: Numbers have been independently rounded.

Notes:
1. All estimates are based on the latest available information. They are subject to revision in our subsequent quarterly reports in the event that additional information is identified.

2. The WPIC did not publish quarterly estimates for 2013 or the first two quarters of 2014. However, quarterly estimates from Q3 2014 and Q4 2014 are contained in previously published PQs which are freely available on the WPIC website. Quarterly estimates from Q1 2015 and half-yearly estimates from H1 2015 are included in Tables 3 and 4 respectively, on pages 15-16 (supply, demand and above ground stocks).

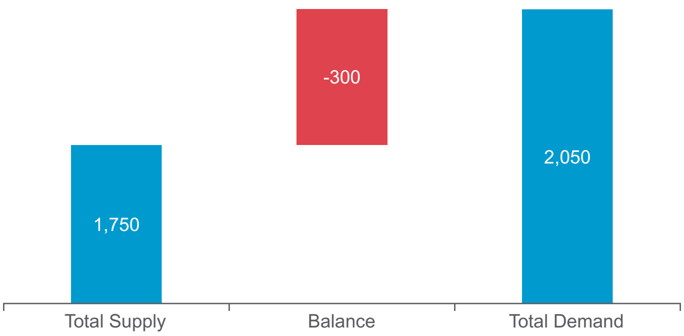
3. The 2017 forecast is based on historical data and trends as well as modelling, with varying degrees of accuracy depending upon the supply or demand category. Investment demand is expected to be the least predictable segment. Some historical views are based on data and modelling that pre-date WPIC publication of PQ.

2017 FIRST QUARTER PLATINUM MARKET REVIEW

Total platinum supply was 1,750 koz in the first quarter, a decline of 4% year-on-year, as a drop in primary supply (-90 koz) more than offset an increase in secondary supply (+25 koz). Global demand was 1% lower compared to Q1'16 at 2,050 koz as weaker investment demand (-75 koz) outweighed gains in the automotive (+20 koz), jewellery (+20 koz) and industrial sectors (+10 koz).

With global supply contracting more than demand year-on-year, the market balance expanded to a deficit of 300 koz in Q1'17 (Chart 1).

Chart 1: Supply-demand balance, koz, Q1 2017

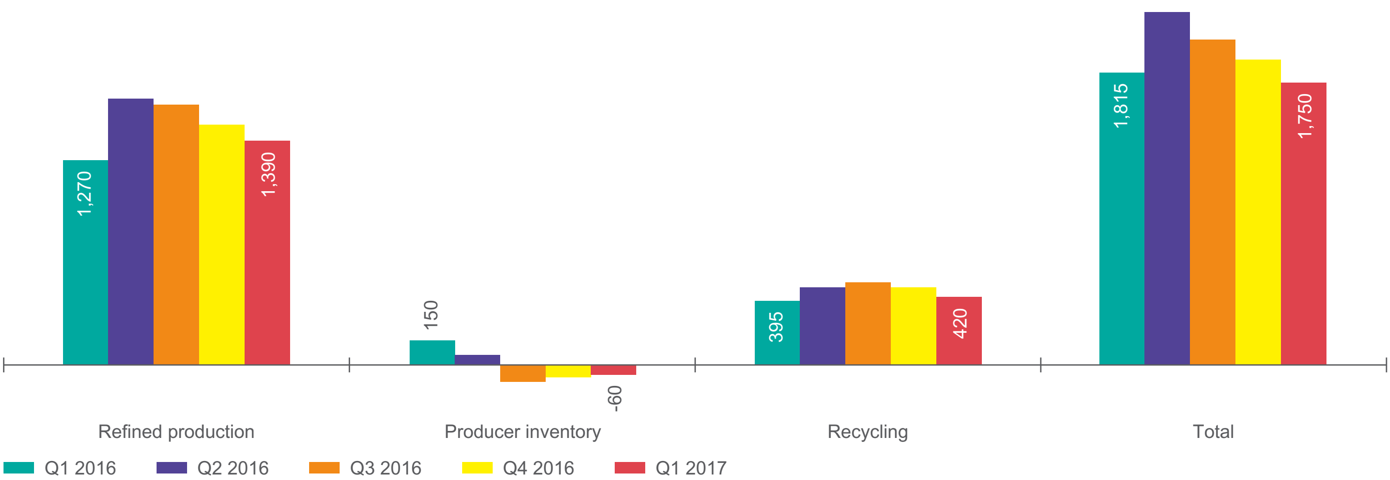


Source: SFA (Oxford)

Supply

Refined production recovered to 1,390 koz in Q1'17 (+10% year-on-year) (Chart 2), with processing capacity in full working order following outages in the first, third and fourth quarters of 2016. South African supply totalled 960 koz in Q1'17, an increase of 19% year-on-year, while supply from Zimbabwe decreased by 19% year-on-year, reflecting a return to typical mine production levels. Output from North America, Russia and other regions remained stable at a combined 325 koz, down 1.5% from the 330 koz produced in Q1'16. A producer inventory increase of 60 koz is estimated for Q1'17, versus a net sale of 150 koz that occurred in Q1'16 primarily to offset the impact of a temporary precious metals refinery closure in South Africa. Total mining supply is estimated at 1,330 koz in Q1'17, following a rise in producer inventory, a fall of 6% compared to Q1'16, and a reduction of 6% on Q4'16.

Chart 2: Platinum supply, koz



Source: SFA (Oxford)

Secondary platinum supply expanded by 6% year-on-year to 420 koz in the first quarter. Platinum recovered from spent autocatalysts was flat quarter-on-quarter, but up 7% year-on-year at 300 koz, and jewellery recycling rose 4% year-on-year to 120 koz. Volumes of spent autocatalysts were higher than the same quarter last year, but overall loadings were somewhat lower. Jewellery recycling in Japan grew in Q1'17 compared with Q1'16, encouraged by the higher platinum price this year, which compensated for somewhat lower recycling in China, where recycling is positively correlated to jewellery sales volumes.

Demand

In Q1'17 global demand was 2,050 koz, down 1% (-25 koz) year-on-year, owing to weaker investment demand as a higher platinum price in Japan reduced bar purchases compared to a strong Q1'16. Automotive, jewellery and industrial demand all increased modestly year-on-year in the first quarter.

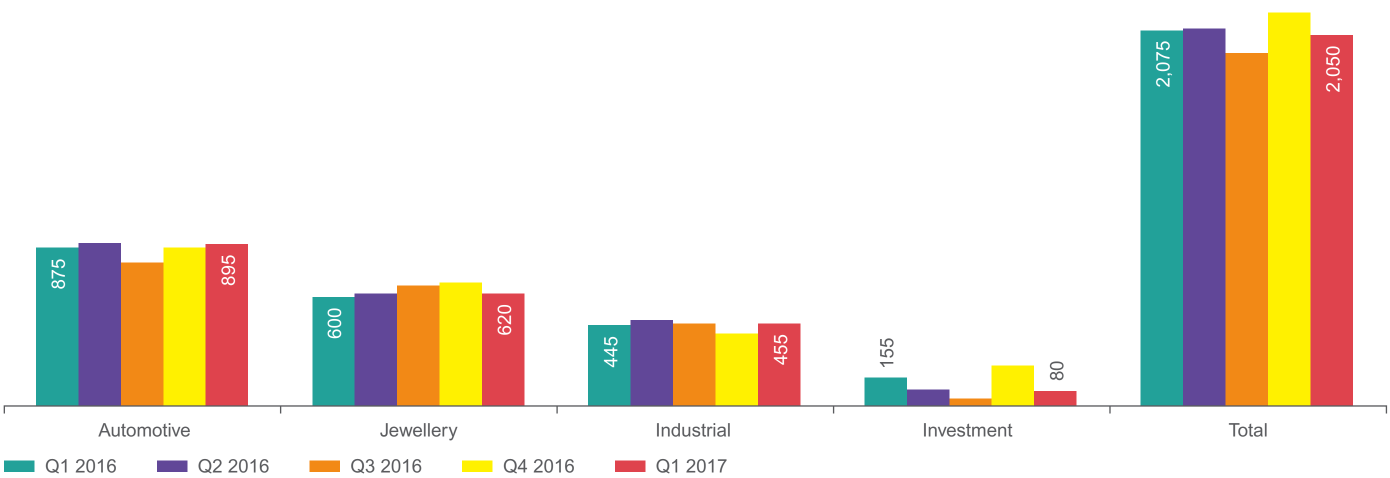
Automotive demand

Automotive platinum demand was up 2% (+20 koz) to 895 koz in in the first quarter of 2017, from 875 koz in Q1'16, as sales and loadings remained relatively robust, despite growing anti-diesel sentiment, particularly from urban politicians. In Europe particularly, greater scrutiny of emissions under on-the-road driving conditions is limiting any moves to thrift platinum loadings.

EU car sales rose by 8.4% year-on-year in the first quarter of 2017 (Source: ACEA). Diesel's market share was below 50% in the first quarter of 2017, down from just above 50% for the same period last year. However, the rate of decline has eased slightly after a steeper drop in late 2016. Germany and France have seen diesel shares contract following intense discussion over the possibility of restricting diesel car access to major cities; fear of having to pay higher tolls, or even facing a ban, means some motorists have chosen to buy a gasoline car instead. Electric vehicle sales volumes are still very low.

India, the second-largest light-duty diesel market, saw light vehicle sales rise 10% year-on-year in the first quarter of 2017, with passenger cars up 11% and light commercial vehicles up 6%. Sales growth was supported by pent-up demand caused by the demonetisation in late 2016, favourable lending rates, a strengthening rupee and the availability of new models. Diesels still comprise over 50% of vehicle sales in all but the mini and small hatchback segments.

Chart 3: Platinum demand, koz



Source: SFA (Oxford)

Jewellery demand

First-quarter global jewellery demand is estimated at 620 koz, a rise of 3% year-on-year, with all regions seeing demand at a similar or slightly higher level than in the first quarter of last year.

Chinese jewellery retail sales (all jewellery types) were up 4.8% year-on-year in Q1'17 according to the National Bureau of Statistics, helped by good sales over Chinese New Year and Valentine's Day. Chinese jewellery retailers reported improving revenues in Q1'17 with Hong Kong and Macau seeing a return to sales growth for the first time in three years. Chow Tai Fook, China's largest jewellery retailer, reported sales growth (all jewellery types) in both mainland China and Hong Kong and Macau in Q1'17, but still saw a slight decline in sales volumes year-on-year. Jewellery sales in mainland China continue to perform better than in Hong Kong where much of the spending is driven by tourists from the mainland who have been put off by the strong Hong Kong dollar. However, fabricator platinum demand has been weaker than the retail sales results would imply because manufacturers remain cautious as they are expecting the market to remain challenging this year.

Industrial demand

Net platinum use in industrial applications increased by 2% year-on-year (+10 koz) to 455 koz in Q1'17, following growth in the glass sector (+20 koz) and other end-uses (+5 koz), which together outweighed lower requirements for petroleum refining (-10 koz) and chemical catalysis (-5 koz). Glass demand was boosted by higher metal purchases by Chinese fabricators ahead of the scheduled start-up of new flat-panel display (FPD) capacity in the country during Q2'17, whilst greater fuel cell demand raised other industrial usage compared to Q1'16. However, refinery closures and rationalisation towards the end of last year in Western Europe returned platinum to market during the first quarter of 2017, whilst slower capacity expansion in China and North America also reduced net petroleum requirements, and lower nitric acid production softened chemical demand.

Investment demand

Investment demand totalled 80 koz in the first quarter of 2017, as bars and coins and ETFs made positive contributions while exchange stocks declined modestly (-10 koz) (Chart 4).

Chart 4: Platinum investment

Source: SFA (Oxford)

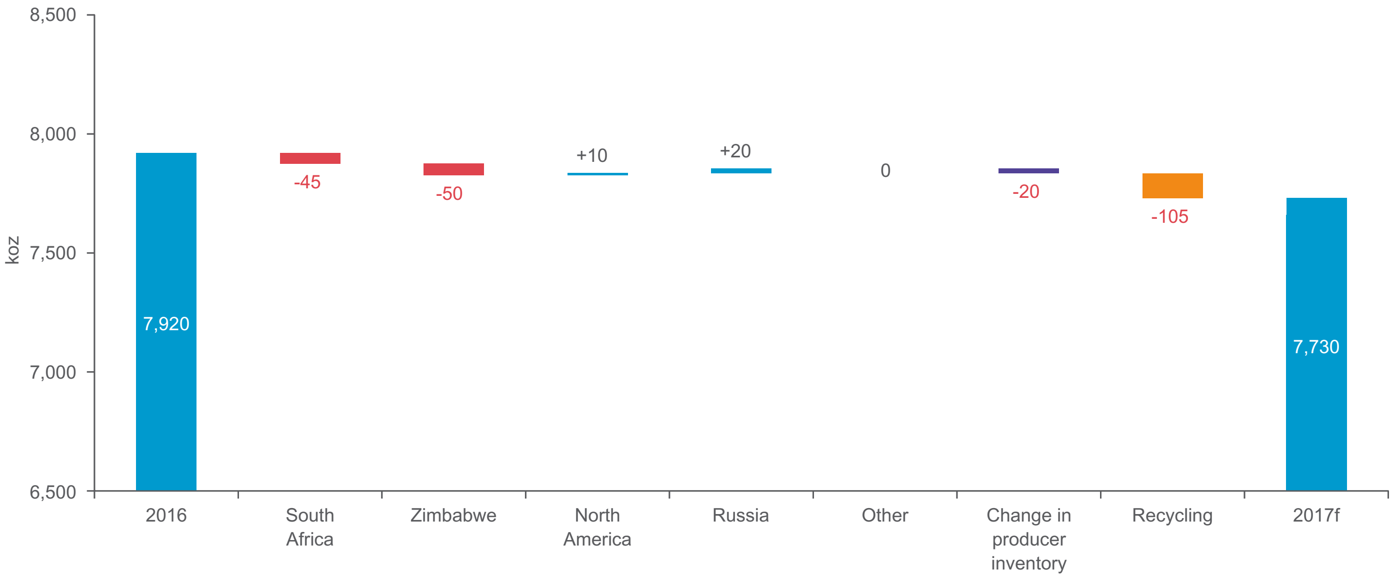
Bar and coin demand was 25 koz in the first quarter, driven mostly by coin purchases. The platinum US American Eagle bullion 1 oz coin was made available in January and the mintage of 20,000 sold out in three days. Platinum bar sales in Japan demonstrated just how price-sensitive investors there can be. With the price rising through January and February from ¥3,400/g to over ¥3,700/g, investors moved from being net purchasers of bars to net sellers, but as the price fell back towards ¥3,400/g in March they increased their purchases and decreased their sales so that over the quarter as a whole net demand was marginally negative. In the UK, BullionVault added trading in vaulted platinum bars to its existing offering of vaulted gold and silver bars in mid-March. In its first few weeks investor interest amounted to a few thousand ounces.

Global platinum ETF holdings grew by 65 koz in the first quarter, with increases being seen in most regions. US investors lifted their holdings the most, adding 34 koz, with the majority of the gain coming in February. In the UK, ETF investors started the year positively, increasing their holdings by 20 koz in January, but net sales in February and March left the ETFs up just 8 koz for the quarter. Swiss ETFs made modest gains each month for a total increase of 14 koz. The gradual decline in South African ETF holdings seen in the second half of 2016 continued in January and February, but renewed buying interest in March resulted in holdings rising 15 koz in Q1'17 for the first quarterly gain since Q3'15. Japanese investors bucked the trend and reduced their ETF holdings by 5 koz.

2017 FORECAST

Total platinum supply (Chart 5) is projected to decline by 2% year-on-year to 7,730 koz in 2017 (Chart 6), as both primary and secondary supply are expected to decrease. Refined production is forecast to fall by 1% to 5,960 koz as slight increases in Russia (+20 koz) and North America (+10 koz) are outweighed by reductions in South Africa (-45 koz) and Zimbabwe (-50 koz).

Chart 5: Changes in total supply, 2017f vs. 2016



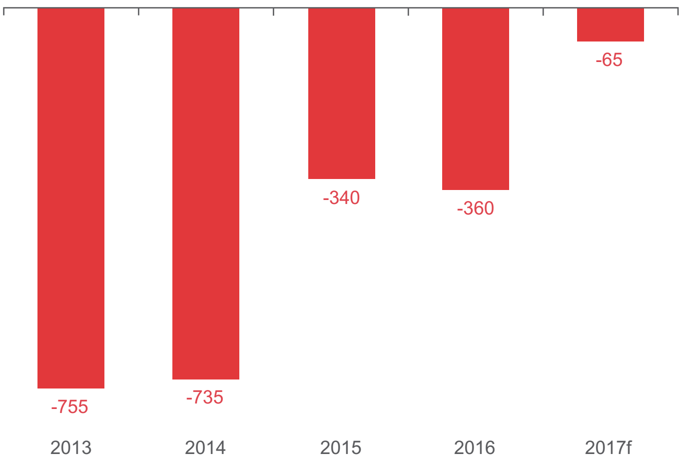
Source: SFA (Oxford)

Secondary supply is estimated to dip 6% to 1,760 koz. Jewellery recycling is projected to decline by 20% (-125 koz) to 500 koz this year as it returns to a more normal level in China after excess retail stock was returned to manufacturers last year, while autocatalyst recycling is expected to increase by 2% (+20 koz) to 1,255 koz on improving volumes.

Global demand is forecast to drop by 6% year-on-year to 7,795 koz, primarily owing to declines in industrial and investment demand. Overall automotive demand is relatively stable, slipping just 1% (-30 koz) to 3,405 koz, as contractions in Western Europe and Japan outweigh increasing requirements in other regions. Global jewellery demand is also projected to dip 1% (-35 koz) to 2,530 koz. Industrial demand is predicted to be 9% lower at 1,610 koz this year, mostly owing to reduced requirements in the petroleum industry where net demand is impacted by recycling associated with refinery closures in Europe and Japan. Investment demand is expected to be substantially lower this year, mostly owing to reduced platinum bar purchases in Japan, which is the largest region for bar purchases, following a surge in buying there in 2016 as the price fell.

With global demand anticipated to contract by a larger amount than total supply, the market deficit is projected to narrow from 360 koz to 65 koz in 2017 (Chart 6).

Chart 6: Supply-demand balance, koz, 2013-2017f



Source: SFA (Oxford)

Mine supply

Global refined supply is forecast to fall by 1% to 5,960 koz in 2017. South African output is estimated to decrease by 1% to 4,200 koz. This dip is attributable to restructuring (lower production targets) at some Western Limb operations, and lower yield from some Eastern Limb mines due to community disruption and depletion of reserves. Ramp-up of new shafts is projected to contribute around 120 koz this year.

Production from Zimbabwe is estimated to drop by 10% to 440 koz as output normalises at the largest operation. North American supply increases by 3% to 405 koz in response to greater yield from the primary PGM mines but this will be partly offset by depletion in the Sudbury region. Following a period of restructuring in 2016, output from Russia may grow by 3% this year to 735 koz.

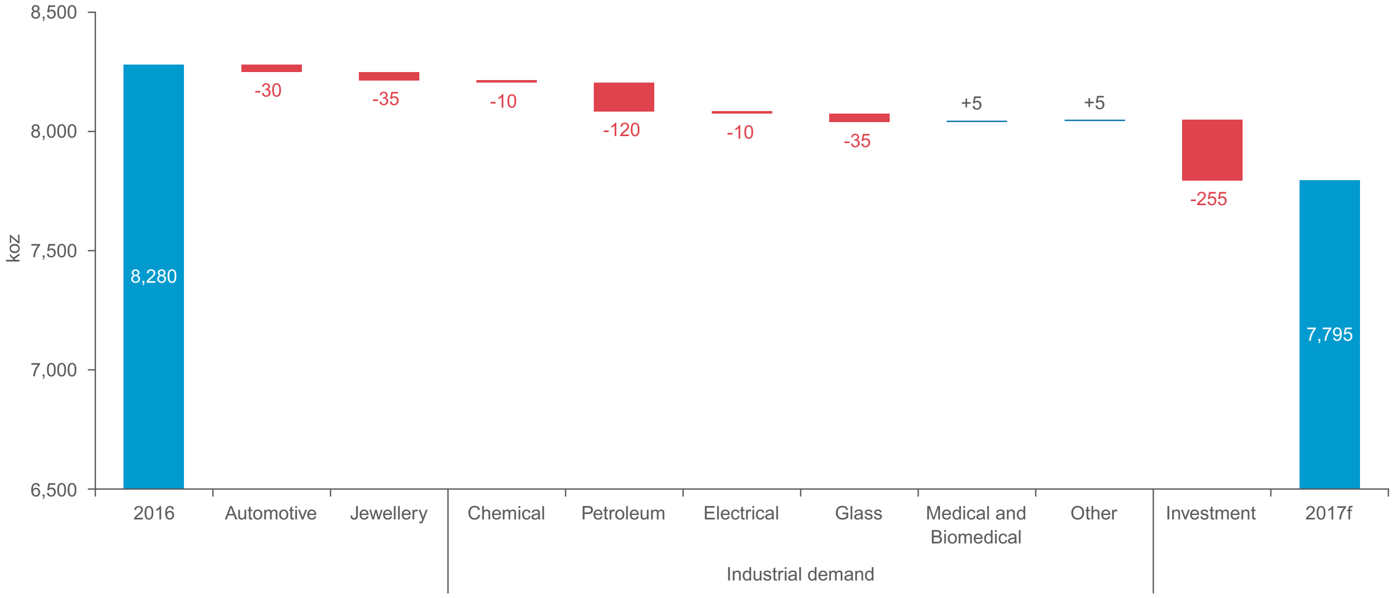
There are unlikely to be significant sales from stock in 2017 as producers have now restored their stocks to their planned steady state levels, which are at least 50 koz lower than in 2015 and 2016. A net reduction of 10 koz is forecast for the year. Total mining supply is estimated at 5,970 koz for 2017, which is a reduction of 1.5% compared to 2016.

Recycling

Total recycling is projected to decline by 6% year-on-year to 1,760 koz in 2017. Secondary supply from jewellery recycling is expected to decline by 20% year-on-year to 500 koz, as recycling returns to a more typical level in China after being boosted in 2016 by unusually large stock flows from retailers to manufacturers.

Platinum recovered from spent autocatalysts is forecast to rise by 2% year-on-year to 1,255 koz. The volumes and grades of recovered autocatalysts are likely to increase somewhat this year after being impacted by the fall in the prices of scrap steel and platinum over the last couple of years. Reduced profitability in the recycling industry led to some business closures and introduced short term volatility into the flow of recycled metal.

Chart 7: Changes in demand by category, 2017f vs. 2016



Source: SFA (Oxford)

Automotive demand

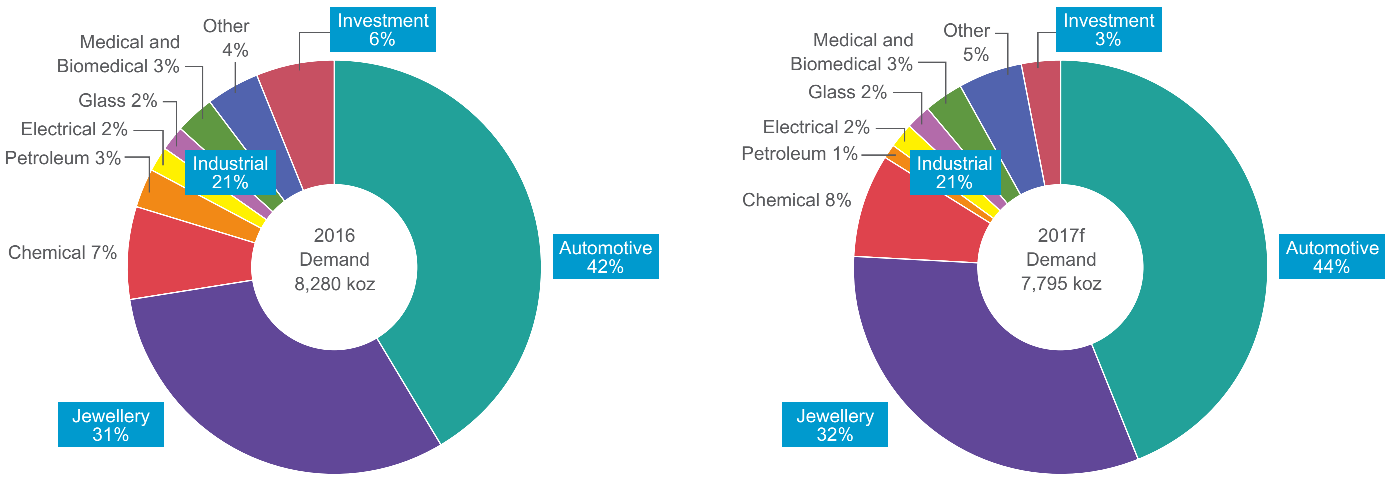
The full-year forecast for automotive platinum demand is 3,405 koz, down only very slightly from 3,435 koz in 2016. Despite the loss of diesel share in smaller cars in Western Europe and India, diesel is expected to retain much of the medium and larger car market, at least in the short to medium term.

Western European passenger car sales are currently forecast to grow by about 3% to over 14 million units in 2017, half the growth seen in 2016. The diesel share is expected to be lower in 2017 than 2016, driven by uncertainty over access to cities and by the additional cost of aftertreatment, reducing the cost-effectiveness of diesel cars, particularly smaller models, compared to their gasoline equivalents. The UK, one of the stronger diesel car markets, is expected to continue slowing. The risk is that if more European cities restrict diesel car access it could result in sales declining further in several other markets too.

From September 2017, the Worldwide Harmonized Light Vehicles Test Procedure (WLTP) will apply to all cars new to the European market. It is a more rigorous laboratory test for measuring criteria pollutant and carbon dioxide emissions from passenger cars, and is based on more realistic testing conditions, including higher speeds and more representative driving behaviour than the current laboratory test (NEDC). While there is likely to be some consumer uncertainty in the transition phase, it will ultimately provide greater clarity for consumers comparing diesel, gasoline and other powertrains.

In India, there are signs that automakers are stopping production of the diesel versions of some of their smaller cars, as diesel loses ground to gasoline. The costs of aftertreatment for diesel relative to gasoline are rising and diesel fuel is no longer heavily subsidised by the government, making the powertrain suited only to higher-mileage drivers who benefit from the greater fuel economy. The government is rationalising the tax structure, with a plan to implement a nationwide Goods and Services Tax in July 2017; this may boost consumer confidence and drive up sales, or the confusion may lead consumers to postpone purchases beyond 2017. These downside risks are likely to affect small cars more than larger ones, so the diesel impact is lessened.

Chart 8: Demand end-use shares, 2017f vs. 2016



Source: SFA (Oxford)

Jewellery demand

Global platinum jewellery demand is forecast to be 2,530 koz in 2017, down 1% from 2016, as anticipated declines in China and Japan outweigh gains in India and other regions.

Chinese jewellery demand is likely to shrink further in 2017, affected by the slower economic growth and a competitive environment for consumer spending. The jewellery industry is undergoing a period of rapid change to cope with the challenging market conditions that have prevailed since 2015. Manufacturers are proactively developing collections to be able to charge higher fees and retailers are adjusting their inventory levels, pricing and business models, moving to collection-based products with differentiated design or technical innovation that can attract consumers. Some smaller and independent retailers have been reducing their platinum displays. Major Chinese jewellery retailers are still expanding their store networks overall, while closing underperforming stores, and are upgrading stores to enhance their customers' experience with new displays.

Industrial demand

Industrial platinum demand is projected to decline by 9% year-on-year (-165 koz) to 1,610 koz this year, predominantly owing to a substantial drop in petroleum sector requirements (-120 koz), as refining capacity closures and cuts in Japan and Western Europe return metal to market throughout 2017, whilst net demand is also anticipated to fall for glass fabrication (-35 koz), electrical components (-10 koz) and chemical catalysts (-10 koz).

Chemical

Platinum requirements for chemical catalysis are forecast to fall by 2% (-10 koz) to 585 koz in 2017, largely owing to softer demand for nitric acid production in Western Europe and the RoW, whilst usage elsewhere is set to remain stable. Slower global consumption growth of nitric acid and its key derivatives owing to lower usage of nitrogen fertilisers, plus increasing underutilisation of existing capacity, is expected to reduce catalyst requirements this year, particularly in Western Europe and the RoW, but also in China, where overall platinum usage is predicted to stay flat, as continued growth in the silicone industry offsets declining demand in the nitric acid and paraxylene sectors.

Petroleum

Slower refining capacity growth in China and North America along with closures and curtailments in Japan and Western Europe are anticipated to significantly reduce net petroleum requirements to 100 koz (-55%) this year, following robust demand growth in 2016. Petroleum sector mergers in Japan were finally completed and industry-wide capacity cuts confirmed in H1'17 which, along with refinery reductions late last year in Western Europe, are set to return metal to market throughout 2017, resulting in net negative platinum demand in both regions this year. Reduced requirements for capacity expansion in China and North America are likely to be partially offset by strong growth in the RoW, with new capacity under construction throughout the Middle East, India and Southeast Asia.

Electrical

Platinum usage in electrical devices is expected to contract by 6% (-10 koz) to 150 koz in 2017, as HDD shipments are set to fall by 6% to a 12-year low of around 400 million drives. Q1'17 HDD deliveries declined by 8% year-on-year, as demand for PC drives continued to wane, whilst the second-largest HDD manufacturer reduced its output capacity by closing one of its largest production facilities, located in China, at the start of the year. Softer HDD demand is likely to reduce platinum requirements in both China and the RoW in 2017, whilst demand in other regions is set to remain stable.

Glass

Glass demand is projected to decline by 17% (-35 koz) to 170 koz this year, primarily owing to lower requirements for new fabrication capacity in China and the US following strong expansion in both nations in 2016. Demand elsewhere is set to remain relatively stable, with ongoing expansion in Africa and Asia expected to maintain demand levels in the RoW, whilst further closures of liquid-crystal display (LCD) plants late last year are likely to keep Japan's requirements net negative during 2017.

Other

Platinum consumption in other industrial end-uses is forecast to rise slightly (+1%) to 365 koz in 2017 from minor growth in fuel cell and turbine engine demand, although requirements for automotive sensors and plugs are set to remain flat year-on-year. Greater demand for stationary fuel cells should raise other industrial platinum use in Japan this year, whilst an increase in turbine engine production should lift consumption in North America, following soft demand in 2016.

Investment demand

Platinum investment demand is projected to be 250 koz this year. Bar and coin purchases along with ETFs are all expected to contribute positively to investment demand. Bar buying by Japanese investors is expected to ease from the high level seen in 2016 as the yen is forecast to weaken, resulting in a modest increase in the average platinum price. Coin purchases got off to a good start with the US Mint selling the full mintage of 20 koz of the platinum American Eagle bullion coin in January. This was the same mintage as in 2016, and for 2017 as a whole global coin sales are anticipated to be similar to those of last year.

ABOVE GROUND STOCKS

With the market forecast to have a deficit of 65 koz in 2017, which is smaller than the deficits in recent years (Chart 6), above ground stocks are estimated to end the year at 1,885 koz.

The WPIC definition of above ground stocks is: the year-end estimate of the cumulative platinum holdings not associated with exchange-traded funds, metal held by exchanges or working inventories of mining producers, refiners, fabricators or end-users.

Table 2: Supply, demand and above ground stocks summary – annual comparison

		2013	2014	2015	2016	2017f	2016/2015 Growth %	2017f/2016 Growth %
Platinum Supply-demand Balance (koz)								
SUPPLY								
Refined Production		**6,070**	**4,880**	**6,150**	**6,025**	**5,960**	**-2%**	**-1%**
	South Africa	4,355	3,115	4,465	4,245	4,200	-5%	-1%
	Zimbabwe	405	405	405	490	440	21%	-10%
	North America	355	400	385	395	405	3%	3%
	Russia	740	740	715	715	735	0%	3%
	Other	215	220	180	180	180	0%	0%
Increase (-)/Decrease (+) in Producer Inventory		-215	+350	+45	+30	+10	-33%	-67%
Total Mining Supply		**5,855**	**5,230**	**6,195**	**6,055**	**5,970**	**-2%**	**-1%**
Recycling		**1,980**	**2,035**	**1,710**	**1,865**	**1,760**	**9%**	**-6%**
	Autocatalyst	1,120	1,255	1,190	1,235	1,255	4%	2%
	Jewellery	855	775	515	625	500	21%	-20%
	Industrial	5	5	5	5	5	0%	0%
Total Supply		**7,835**	**7,265**	**7,905**	**7,920**	**7,730**	**0%**	**-2%**
DEMAND								
Automotive		**3,180**	**3,305**	**3,390**	**3,435**	**3,405**	**1%**	**-1%**
	Autocatalyst	3,035	3,155	3,245	3,295	3,255	2%	-1%
	Non-road	140	150	145	145	150	0%	3%
Jewellery		**2,945**	**3,000**	**2,880**	**2,565**	**2,530**	**-11%**	**-1%**
Industrial		**1,530**	**1,545**	**1,670**	**1,775**	**1,610**	**6%**	**-9%**
	Chemical	545	555	605	595	585	-2%	-2%
	Petroleum	115	65	140	220	100	57%	-55%
	Electrical	185	190	165	160	150	-3%	-6%
	Glass	145	175	200	205	170	3%	-17%
	Medical and Biomedical	220	220	230	235	240	2%	2%
	Other	320	340	330	360	365	9%	1%
Investment		**935**	**150**	**305**	**505**	**250**	**66%**	**-50%**
	Change in Bars, Coins	-5	50	525	430			
	Change in ETF Holdings	905	215	-240	-10			
	Change in Stocks Held by Exchanges	35	-115	20	85			
Total Demand		**8,590**	**8,000**	**8,245**	**8,280**	**7,795**	**0%**	**-6%**
Balance		**-755**	**-735**	**-340**	**-360**	**-65**	**6%**	**-82%**
Above Ground Stocks	**4,140***	**3,385**	**2,650**	**2,310**	**1,950**	**1,885**	**-16%**	**-3%**

Source: SFA (Oxford). *As of 31st December 2012. NB: Numbers have been independently rounded.

Table 3: Supply, demand and above ground stocks summary – quarterly comparison

	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q1'17/Q1'16 Growth %	Q1'17/Q4'16 Growth %
Platinum Supply-demand Balance (koz)										
SUPPLY										
Refined Production	**1,540**	**1,650**	**1,610**	**1,270**	**1,650**	**1,615**	**1,490**	**1,390**	**9%**	**-7%**
South Africa	1,125	1,210	1,190	805	1,200	1,175	1,065	960	19%	-10%
Zimbabwe	80	115	110	130	120	120	120	105	-19%	-13%
North America	100	90	100	100	105	100	85	100	0%	18%
Russia	190	190	160	190	180	175	170	180	-5%	6%
Other	45	45	50	45	45	45	50	45	0%	-10%
Increase (-)/Decrease (+) in Producer Inventory	-5	+30	-40	+150	+60	-105	-75	-60	N/M	-20%
Total Mining Supply	**1,535**	**1,680**	**1,570**	**1,420**	**1,710**	**1,510**	**1,415**	**1,330**	**-6%**	**-6%**
Recycling	**475**	**415**	**375**	**395**	**480**	**510**	**480**	**420**	**6%**	**-13%**
Autocatalyst	310	295	270	280	340	315	300	300	7%	0%
Jewellery	165	120	105	115	140	195	180	120	4%	-33%
Industrial	0	0	0	0	0	0	0	0	N/M	N/M
Total Supply	**2,010**	**2,095**	**1,945**	**1,815**	**2,190**	**2,020**	**1,895**	**1,750**	**-4%**	**-8%**
DEMAND										
Automotive	**865**	**815**	**845**	**875**	**900**	**790**	**875**	**895**	**2%**	**2%**
Autocatalyst	830	780	815	840	860	760	835	855	2%	2%
Non-road	35	35	35	35	35	35	35	40	14%	14%
Jewellery	**670**	**795**	**675**	**600**	**620**	**665**	**680**	**620**	**3%**	**-9%**
Industrial	**410**	**430**	**425**	**445**	**475**	**455**	**400**	**455**	**2%**	**14%**
Chemical	145	160	130	150	140	170	135	145	-3%	7%
Petroleum	35	35	35	55	60	55	55	45	-18%	-18%
Electrical	40	40	40	40	40	40	40	40	0%	0%
Glass	45	70	65	60	85	60	5	80	33%	N/M
Medical and Biomedical	65	45	65	55	65	45	65	55	0%	-15%
Other	80	80	90	85	85	85	100	90	6%	-10%
Investment	**115**	**285**	**-95**	**155**	**90**	**40**	**220**	**80**	**-48%**	**-64%**
Change in Bars, Coins	75	180	220	140	110	70	110	25	-82%	-77%
Change in ETF Holdings	45	110	-345	-25	-15	-85	115	65	N/M	N/M
Change in Stocks Held by Exchanges	-5	-5	30	40	-5	55	-5	-10	N/M	N/M
Total Demand	**2,060**	**2,325**	**1,850**	**2,075**	**2,085**	**1,950**	**2,175**	**2,050**	**-1%**	**-6%**
Balance	**-50**	**-230**	**95**	**-260**	**105**	**70**	**-280**	**-300**		

Source: SFA (Oxford). NB: Numbers have been independently rounded. N/M means not meaningful.

Table 4: Supply, demand and above ground stocks summary – half-yearly comparison

	H1 2015	H2 2015	H1 2016	H2 2016	H2'16/H2'15 Growth %	H2'16/H1'16 Growth %
Platinum Supply-demand Balance (koz)						
SUPPLY						
Refined Production	**2,895**	**3,260**	**2,920**	**3,105**	**-5%**	**6%**
South Africa	2,060	2,400	2,005	2,240	-7%	12%
Zimbabwe	175	225	250	240	7%	-4%
North America	200	190	205	185	-3%	-10%
Russia	370	350	370	345	-1%	-7%
Other	90	95	90	95	0%	6%
Increase (-)/Decrease (+) in Producer Inventory	+55	-10	+210	-180	N/M	N/M
Total Mining Supply	**2,950**	**3,250**	**3,130**	**2,925**	**-10%**	**-7%**
Recycling	**910**	**790**	**875**	**990**	**25%**	**13%**
Autocatalyst	625	565	620	615	9%	-1%
Jewellery	285	225	255	375	67%	47%
Industrial	0	0	0	0	N/M	N/M
Total Supply	**3,860**	**4,040**	**4,005**	**3,915**	**-3%**	**-2%**
DEMAND						
Automotive	**1,720**	**1,660**	**1,775**	**1,665**	**0%**	**-6%**
Autocatalyst	1,650	1,595	1,700	1,595	0%	-6%
Non-road	70	70	70	70	0%	0%
Jewellery	**1,415**	**1,470**	**1,220**	**1,345**	**-9%**	**10%**
Industrial	**815**	**855**	**920**	**855**	**0%**	**-7%**
Chemical	310	290	290	305	5%	5%
Petroleum	70	70	115	110	57%	-4%
Electrical	85	80	80	80	0%	0%
Glass	75	135	145	65	-52%	-55%
Medical and Biomedical	115	110	120	110	0%	-8%
Other	160	170	170	185	9%	9%
Investment	**105**	**190**	**245**	**260**	**37%**	**6%**
Change in Bars, Coins	120	400	250	180	-55%	-28%
Change in ETF Holdings	-5	-235	-40	30	N/M	N/M
Change in Stocks Held by Exchanges	-10	25	35	50	N/M	N/M
Total Demand	**4,055**	**4,175**	**4,160**	**4,125**	**-1%**	**-1%**
Balance	**-195**	**-135**	**-155**	**-210**		

Source: SFA (Oxford). NB: Numbers have been independently rounded. N/M means not meaningful.

Table 5: Regional demand – annual and quarterly comparison

	2013	2014	2015	2016	2017f	2016/2015 Growth %	2017f/2016 Growth %	Q2 2016	Q3 2016	Q4 2016	Q1 2017
Platinum gross demand (koz)											
Automotive	**3,180**	**3,305**	**3,390**	**3,435**	**3,405**	**1%**	**-1%**	**900**	**790**	**875**	**895**
North America	425	465	475	430							
Western Europe	1,360	1,450	1,555	1,645							
Japan	580	590	525	485							
China	130	125	130	170							
India	160	160	175	165							
Rest of the World	525	515	530	540							
Jewellery	**2,945**	**3,000**	**2,880**	**2,565**	**2,530**	**-11%**	**-1%**	**620**	**665**	**680**	**620**
North America	200	230	250	265							
Western Europe	220	220	235	240							
Japan	335	335	340	335							
China	1,990	1,975	1,765	1,410							
India	140	175	220	245							
Rest of the World	60	65	70	70							
Chemical	**545**	**555**	**605**	**595**	**585**	**-2%**	**-2%**	**140**	**170**	**135**	**145**
North America	55	55	65	55							
Western Europe	110	105	105	120							
Japan	15	15	10	15							
China	200	215	260	245							
Rest of the World	165	165	165	160							
Petroleum	**115**	**65**	**140**	**220**	**100**	**57%**	**-55%**	**60**	**55**	**55**	**45**
North America	40	25	-25	90							
Western Europe	-45	-15	70	10							
Japan	10	-35	5	0							
China	80	-5	45	80							
Rest of the World	30	95	45	40							
Electrical	**185**	**190**	**165**	**160**	**150**	**-3%**	**-6%**	**40**	**40**	**40**	**40**
North America	10	15	10	10							
Western Europe	5	10	10	10							
Japan	10	15	15	15							
China	75	70	60	60							
Rest of the World	85	80	70	65							
Glass	**145**	**175**	**200**	**205**	**170**	**3%**	**-17%**	**85**	**60**	**5**	**80**
North America	5	10	0	20							
Western Europe	-10	15	10	5							
Japan	0	-25	-5	-10							
China	90	85	95	100							
Rest of the World	60	90	100	90							
Medical and Biomedical	**220**	**220**	**230**	**235**	**240**	**2%**	**2%**	**65**	**45**	**65**	**55**
North America	90	90	90	90							
Western Europe	75	75	75	80							
Japan	20	20	20	20							
China	15	15	20	20							
Rest of the World	20	20	25	25							
Other industrial	**320**	**340**	**330**	**360**	**365**	**9%**	**1%**	**85**	**85**	**100**	**90**
Investment	**935**	**150**	**305**	**505**	**250**	**66%**	**-50%**	**90**	**40**	**220**	**80**
Total Demand	**8,590**	**8,000**	**8,245**	**8,280**	**7,795**	**0%**	**-6%**	**2,085**	**1,950**	**2,175**	**2,050**

Source: SFA (Oxford). NB: Numbers have been independently rounded.

GLOSSARY OF TERMS

Above ground stocks

The year-end estimate of the cumulative platinum holdings not associated with: exchange-traded funds, metal held by exchanges or working inventories of: mining producers, refiners, fabricators or end-users. Typically, unpublished vaulted metal holdings from which a supply-demand shortfall can be readily supplied or to which a supply-demand surplus can readily flow.

BDH

Butane dehydrogenation; catalytic conversion of isobutane to isobutylene.

Bharat Stage III/IV standards (BS-III, BS-IV)

Bharat Stage III is equivalent to Euro 3 emissions legislation. Introduced in 2005 in 12 major cities across India and enforced nationwide from April 2010. Bharat Stage IV is equivalent to Euro 4 emissions legislation. Introduced in 2010 in 14 major cities across India and set to be enforced nationwide from April 2017.

Bharat Stage V/VI standards (BS-V, BS-VI)

Early in 2016 the Indian government announced the intention to ‘leapfrog’ Bharat Stage V and move directly to Bharat Stage VI, equivalent to Euro 6, in 2020.

Conformity factor (CF)

The EU is to allow automakers to exceed current Euro 6 NO_x limits, giving time to adapt to new real-world driving emissions rules. From September 2017 for new models and from September 2019 for new vehicles, a CF of up to 2.1 (110%) will be allowed over the 80 mg/km NO_x limit. This CF will be phased out at the latest in 2021, then from January 2020 (new models) and January 2021 (new vehicles) a lower CF of 1.5 will be allowed, reflecting statistical and technical uncertainty of the tests.

Diesel oxidation catalyst (DOC)

A DOC oxidises harmful carbon monoxide and unburnt hydrocarbons, produced by incomplete combustion of diesel fuel, to harmless carbon dioxide and water.

Diesel particulate filter (DPF) and catalysed diesel particulate filter (CDPF)

A DPF physically filters particulates (soot) from diesel exhaust. A CDPF adds a PGM catalyst coating to facilitate oxidation and removal of the soot. The terms are often used interchangeably.

Emissions legislation

Tailpipe regulations covering emissions of particulate matter, hydrocarbons and oxides of nitrogen.

ETF

Exchange-traded fund. A security that tracks an index, commodity or basket of assets. Platinum ETFs included in demand are backed by physical metal.

Euro V/VI emission standards

EU emission standards for heavy-duty vehicles. Euro V legislation was introduced in 2009 and Euro VI in 2013/2014; will be widely adopted later in other regions.

Euro 5/6 emission standards

EU emission standards for light-duty vehicles. Euro 5 legislation was introduced in 2009 and Euro 6 in 2014/2015; will be widely adopted later in other regions.

Form factor

The size of a hard disk drive (e.g. 2.5-inch or 3.5-inch) which varies depending on the device the drive is used in.

GTL

Gas-to-liquids is a refinery process that converts natural gas to liquid hydrocarbons such as gasoline or diesel fuel.

HDD

Hard disk drive.

HDV

Heavy-duty vehicle.

koz

Thousand ounces.

LCD

Liquid-crystal display used for video display.

LCV

Light commercial vehicle.

Lean NO_x traps (LNT)

Rhodium-based, catalyses the chemical reduction of NO_x in diesel engine exhaust to harmless nitrogen.

Metal-in-concentrate

PGMs contained in the concentrate produced after the crushing, milling and froth flotation processes in the concentrator. It is a measure of a mine’s output before the smelting and refining stages.

moz

Million ounces.

Net demand

A measure of the theoretical requirement for new metal, i.e. net of recycling.

Non-road engines

Non-road engines are diesel engines used, for example, in construction, agricultural and mining equipment, using engine and emissions technology similar to on-road heavy-duty diesel vehicles.

OECD

Organisation for Economic Co-operation and Development, consisting of 34 developed countries.

oz

A unit of weight commonly used for precious metals. 1 troy ounce = 1.1 ounces.

Paraxylene

A chemical produced from petroleum naphtha extracted from crude oil using a platinum catalyst. This is used in the production of terephthalic acid which is used to manufacture polyester.

PDH

Propane dehydrogenation, where propane is converted to propylene.

PGMs

Platinum-group metals.

Producer inventory

As used in the supply-demand balance, the change in producer inventory is the difference between reported refined production and metal sales.

RDE

Real Driving Emissions - the term used by the EU to define the testing protocol that will measure pollutants emitted from cars, including NO_x, while driven on the road. It is in addition to laboratory tests. RDE testing will be implemented in September 2017 for new types of cars and will apply to all registrations from September 2019.

Refined production

Processed platinum output from refineries.

Secondary supply

Recycling output.

Selective catalytic reduction (SCR)

PGM-free, converts harmful NO_x in diesel exhaust to harmless nitrogen, via a tank of urea solution. Used in heavy-duty diesel vehicles, increasingly competes with LNT in light-duty diesel vehicles.

SGE

Shanghai Gold Exchange.

SSD

Solid-state drive.

Stage 4 regulations

European emission standards implemented in 2014 for non-road diesel engines.

Three-way catalyst

Used in gasoline cars to remove hydrocarbons, carbon monoxide and NO_x. Largely palladium-based now, some rhodium.

Tier 4 stage

Emissions standards phased in between 2008 and 2015 in the US for non-road vehicles.

WLTP

Worldwide Harmonized Light Vehicles Test Procedure is a laboratory test to measure pollutant emissions and fuel consumption. WLTP replaces the New European Drive Cycle (NEDC).

WPIC

The World Platinum Investment Council.

Ounce conversion

1 million ounces = 31.1 tonnes.