

# SUMMARY & OUTLOOK

## PLATINUM

Demand for platinum is forecast to increase by 5 per cent in 2006, to a record level of 7.02 million ounces. Growth in the autocatalyst sector, driven by aftertreatment for diesel vehicles, will more than offset a decline in global jewellery markets, which have been negatively impacted by rising metal prices. Platinum supplies are expected to rise by 350,000 oz to their highest level to date, 7 million ounces, led by expansions from South Africa. With both supplies and demand rising, the market is therefore expected to be close to balance with a deficit of only 20,000 oz.

Platinum demand for **autocatalyst** manufacture is expected to rise from 3.82 million ounces to 4.38 million ounces in 2006. European automotive industry purchases will grow strongly as the market share of diesel vehicles moves above 50 per cent. North America will also contribute increased platinum demand from catalysts fitted to both light and heavy duty diesel trucks. Emissions legislation continues to tighten around the world, driving catalyst loadings up despite some substitution of palladium for platinum.

In contrast, platinum demand from the global **jewellery** industry is forecast to drop by 225,000 oz to 1.74 million ounces in 2006. High prices and price volatility in the first half of the year have affected purchases of new metal by manufacturers across the major regions, particularly in China. Pipeline metal stocks have been reduced and there has been an increase in recycling of second-hand or unsold platinum jewellery.

Demand for platinum in **industrial** applications is projected to grow in 2006 to 1.76 million ounces, up a respectable 100,000 oz on 2005. Electronic applications will consume 18 per cent more platinum this year due to continuing growth in hard disk manufacturing. Metal usage in chemical applications will grow slightly. By contrast, the glass industry will consume less metal this year than in 2005, because of a lower scale of investment in manufacturing capacity for LCD glass.

Platinum **supplies** are forecast to rise by 5 per cent this year, to a new record of 7 million ounces. 2006 will see considerable growth in production from South Africa with the opening of new mines at Everest South and Two Rivers, and expansion at Anglo Platinum. We expect Russian sales for the year to rise slightly from last year to 895,000 oz. North American platinum output is anticipated to remain unchanged in 2006. The prospects for Zimbabwean production have also improved, with apparent resolution of many of the issues in dispute between the primary producers and the government.

The platinum market will therefore be in a modest deficit of 20,000 oz for 2006, despite a decline in global jewellery demand. These positive supply-demand fundamentals have given solid support to the price over the first nine months of 2006, but fund investment has continued to provide much of the impetus behind day-to-day price movements.

With commodity **prices** continuing to rise at a frantic pace for the early part of the year, heavy fund buying of platinum spilled over from 2005. This, coupled with good end user demand (including some forward buying), led to platinum price records being set

- **Demand** is expected to grow to 7.02 million oz in 2006. The autocatalyst sector will use more platinum, outweighing a decline in jewellery purchases.
- **Autocatalyst** demand for platinum is forecast to climb 15 per cent to 4.38 million oz in 2006, driven by the European diesel car sector. Heavy duty diesel manufacturers are also starting to consume significant amounts of metal.
- Demand for platinum from the **jewellery** market is projected to fall by 11 per cent to 1.74 million oz. Purchases are dropping in each region, especially China where they are expected to decline for the fourth successive year.
- **Industrial** demand for platinum is expected to rise by 6 per cent to 1.76 million oz. Growth in the chemical, electronics and petroleum sectors will outweigh small declines elsewhere.
- **Supplies** of platinum are forecast to rise by 5 per cent this year to 7 million oz. South African expansion will be significantly greater than in 2005.
- The platinum **price** rose strongly over the first half of the year, from an initial \$982 to a new all-time record of \$1,335 in May, supported by physical buying and fund interest. After this, fund sales of a range of commodities dragged platinum back to end September at \$1,140. Our forecast is for platinum to trade between \$980 and \$1,200 for the next six months.

Platinum Supply and Demand			
'000 oz			
		2005	2006
<b>Supply</b>			
South Africa		5,115	5,430
Russia		890	895
North America		365	365
Others		280	310
<b>Total Supply</b>		<b>6,650</b>	<b>7,000</b>
<b>Demand</b>			
Autocatalyst:	gross	3,820	4,380
	recovery	(770)	(830)
Jewellery		1,965	1,740
Industrial		1,660	1,760
Investment		15	(30)
<b>Total Demand</b>		<b>6,690</b>	<b>7,020</b>
<b>Movements in Stocks</b>		<b>(40)</b>	<b>(20)</b>



from January to May. Significant resistance levels were broken throughout this period. Platinum pushed above its previous all-time high dollar price (\$1,047.50) in January and also moved through the ¥4,000 per gram and €1,000 per oz levels. The peak came in mid-May as it fixed at \$1,335.

Later that month, widespread selling of emerging market and other higher risk assets, including commodities, sent precious metals prices sharply lower. After a period of some recovery, the platinum price slid to \$1,140 at the end of September.

### Supply

Expansions in mining and pgm processing capacity in South Africa are forecast to add 315,000 oz to platinum supplies in 2006, to a total of 5.43 million ounces. Zimbabwean output will grow but supplies from Russia and North America are expected to be stable.

Anglo Platinum will be responsible for the majority of South African growth, with improved production at a number of sites, including BRPM and Amandelbult. Output will also be boosted by 120,000 oz of metal which had not been processed due to the shutdown of the Polokwane smelter at the end of 2005. The group's total supplies will reach 2.73 million ounces.

Impala's main operations are likely to record slightly decreased production compared to 2005 due to lower than expected grades. Expansions at its other properties will push platinum production higher and the group believes it should process more than 2 million ounces of platinum in 2007.

Despite a weak first half due to a furnace rebuild, Lonmin's shipments are expected to grow in 2006 as excess metal in the pipeline is processed. Production at Aquarius will be bolstered by the newly-operational Everest South Mine, whereas sales of platinum by Northam are forecast to fall.

Shipments of platinum from Russia are projected to be close to production levels, at 895,000 oz for the year, a slight increase on 2005. Platinum production at Norilsk Nickel was 577,000 oz for the first three quarters. Output is likely to be augmented by the release of metal from its pgm-processing pipeline to bring sales for the year to 750,000 oz. The balance of Russian supply will come from alluvial mining with sales from state stocks expected to be negligible.

Platinum supplies from North America are likely to remain at 365,000 oz. Zimbabwean production is set to rise modestly in 2006, with most of this growth coming from Mimosa. With an improving operating environment, further expansion in Zimbabwe now seems possible in the medium term.

### Demand

Global demand for platinum in the autocatalyst sector is on course to reach a record level of 4.38 million ounces in 2006, a steep climb of 560,000 oz. For the first time, diesel models will represent more than one half of all European light duty vehicle sales. Combined with this, the Euro IV emissions regulations came into force across Europe at the start of the year, pushing pgm loadings higher on car catalysts.

In addition, a greater proportion of diesel passenger cars are now equipped with platinum-containing filters as well as diesel oxidation catalysts, further boosting platinum content per vehicle. European platinum demand is therefore expected to grow strongly, rising by 300,000 oz to a total of 2.25 million ounces.

There will also be strong growth in platinum autocatalyst demand in North America, to 950,000 oz in 2006. As US Tier II regulations progressively tighten, they are forcing manufacturers to fit catalysts with significant precious metal content to a number of light duty diesel trucks for the first time this year. The use of catalytic aftertreatment in heavy duty diesel vehicles will also add to growth. More oxidation catalysts and filters are being fitted to vehicles as standard and retrofit continues to add to demand.

The picture for platinum consumption is mixed elsewhere in the auto industry. Japanese platinum demand is expected to fall 6 per cent to 565,000 oz. With no new domestic legislation and few diesel cars manufactured, platinum use is decreasing as auto makers move to replace it with palladium in many three-way catalysts on gasoline vehicles. Platinum demand in China and the Rest of the World will rise by 165,000 oz to a combined total of 615,000 oz, reflecting high growth rates in many of these markets.

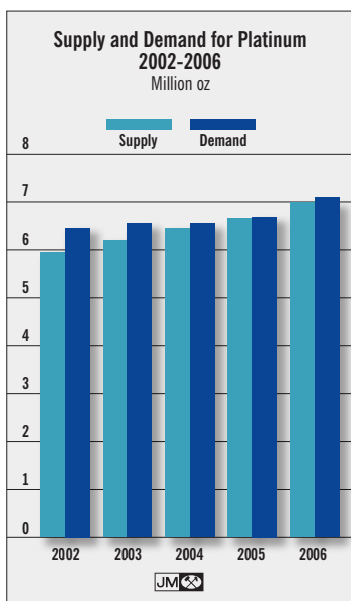
The jewellery industry is expected to see demand for platinum drop this year from 1.97 million ounces to 1.74 million ounces. Rising gold and platinum prices and exceptional volatility have reduced jewellery

purchases in most markets. Platinum demand in China is projected to contract 11 per cent to 780,000 oz and similar percentage falls are expected elsewhere.

Demand from the Chinese jewellery industry has continued to fall. Stock held by manufacturers and retailers remains at relatively low levels, with high metal financing costs responsible. Consumer purchases are expected to fall over the year, as the lower end of the market is eroded by retail price increases. Competition is coming from a range of other metals, including gold, white gold and palladium, which are sold alongside platinum pieces in most regional markets in China.

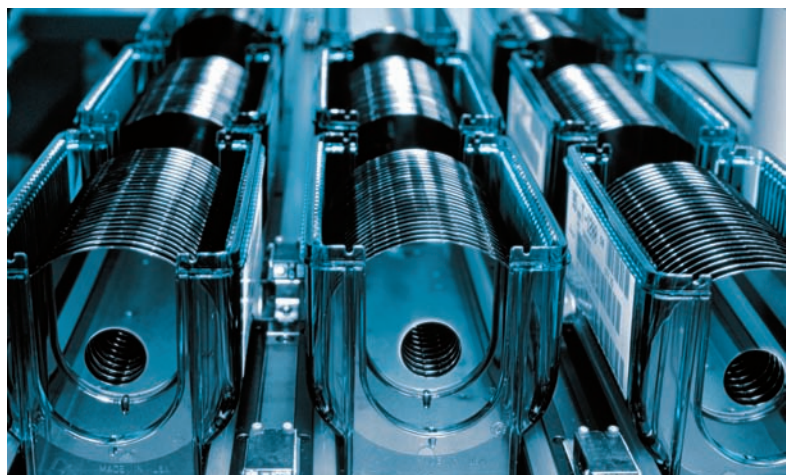
Nonetheless, purchasing by the jewellery trade on the Shanghai Gold Exchange has been stimulated when prices have fallen. The price decrease from May onwards has lent a degree of optimism to market participants and some upturn in demand is expected in the final quarter of the year. The bridal market has, meanwhile, proved robust. With the current Chinese year being particularly auspicious, the number of marriages has been high and has sustained platinum purchases in this area.

The Japanese jewellery sector has continued its decline. Three trends; a fall in the marriage rate, alternative options for consumer spending, and a move from three marriage rings to two, as well as high metal prices, will combine to push platinum demand down by 12 per cent to 450,000 oz.



The North American jewellery market continues to weaken, with an anticipated 13 per cent fall in purchases to 240,000 oz. In the USA, retailers focus on meeting well-defined price points and rising prices have made it challenging to produce attractive pieces at the lower end of the market. As a result, attention has been focused on the use of cheaper materials including white gold, lower purity platinum alloys and palladium jewellery, the last of which is beginning to be sold in increasing amounts.

The European market is also



expected to fall by 10 per cent in 2006, to 175,000 oz. UK hallmarking figures show that sales have been flat so far this year, supported by the bridal sector, whereas German domestic consumption has fallen rapidly.

Industrial uses of platinum are forecast to take 100,000 oz more metal in 2006 than the year before, raising demand to a healthy 1.76 million ounces. Good consumer sales in the electronics industry should drive annual demand for that sector 65,000 oz higher to 425,000 oz. Much of this growth is due to increased consumption in computer hard disks where platinum is used to increase their storage capacity.

The glass industry is continuing to expand LCD glass manufacturing capacity but at a lower rate than previously. The result is a decrease in platinum demand from 360,000 oz in 2005 to 325,000 oz, with the majority being bought for new factories under construction in Asia.

The chemical sector is expected to purchase 345,000 oz in 2006, a jump of 20,000 oz. Platinum use in these applications is largely price inelastic and continuing Chinese and Indian growth have kept demand for many commodity chemicals high, leading to increased consumption of process catalysts. Platinum requirements for the nitric acid industry will also edge higher than in previous years.

*Purchases of platinum for the manufacture of hard disks continue to grow, thanks to healthy sales of consumer electronics.*

### Outlook

Platinum demand is expected to climb higher in 2007, continuing the long term trend in annual growth. The increasing share of diesel vehicles in the European auto market and the first significant use of platinum

autocatalysts for heavier diesel vans and trucks are driving overall demand for platinum higher despite a weaker global jewellery market.

Diesel-fuelled vehicles continue to capture market share in Europe, with high fuel prices reinforcing the advantages gained from their good fuel economy. Although diesels now account for over 50 per cent of this market, growth is set to continue into 2007, albeit at a lower rate. The number of vehicles fitted with diesel particulate filters (DPF) is also increasing as manufacturers look to meet the expectations of environmentally-conscious European consumers and the particulate matter limits set by new emissions legislation. Overall, therefore, platinum demand from the European automotive market is expected to continue growing through 2006 and into 2007, although the pace of growth will decelerate.

Tightening regulations worldwide will increase consumption of platinum in the heavy duty diesel market. In the gasoline sector, platinum use in autocatalysts is more dependent on its price relative to palladium. Gasoline, or three-way, catalysts can use a variety of combinations of these metals and the choice of which to employ is based partly on cost but also on strategic considerations. At current price differentials, the replacement of platinum with palladium will continue throughout 2006 and into 2007, particularly in Japan and North America. In the Rest of the World (including China), high growth rates in vehicle production in many countries will mean that

total platinum usage will increase despite a reduction in the average platinum content per car.

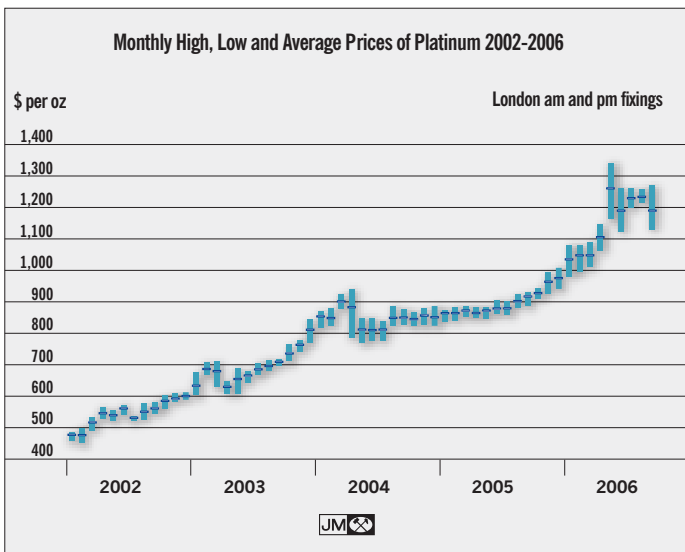
The outlook for the global jewellery market is less positive and will depend both on platinum's absolute price and its price relative to other precious metals. This year, the market is projected to contract by 11 per cent, with all regions suffering from high and volatile prices. However, we expect that final quarter purchases of platinum for Chinese jewellery will show some recovery from the first three quarters of the year - unless the price is especially volatile - as purchases are made for manufacturing requirements in advance of the Chinese New Year.

Looking forward into 2007, platinum jewellery is likely to face continued competition at the lower end of many markets, including China, from the increasingly-promoted K gold (which is sold in both white and yellow versions) and palladium. Although there is good consumer demand for platinum, price performance will be critical in determining the level of trade purchases. However, the relatively strong demand in the bridal market continues to provide a solid base for total platinum jewellery demand.

Increasing use in computer hard disks has driven platinum consumption higher and this will continue in 2007. Likewise, plant construction in Europe and North America should support platinum demand from both the glass and chemical sectors.

Platinum mine supply is expected to increase in 2007 sufficiently to match the predicted extra demand. South African expansion should be responsible for much of the growth. North American production is expected to rise, while sales of Russian metal are projected to change little.

We therefore expect 2007 to be the fourth successive year in which the platinum market is close to being in balance, with both supply and demand increasing. This equilibrium will underpin the platinum price although investment funds could be a significant influence in the shorter term. If the financial sector's interest in commodities remains high, the price of platinum could easily return to a level of \$1,200 during the next six months. If the level of fund interest were to decrease, driving prices lower, this should prompt some increase in buying from the jewellery sector and other industries, preventing the price from falling below \$980 over the same period.



## PALLADIUM

Palladium demand is forecast to fall 6 per cent this year to 6.85 million ounces. Purchases by the jewellery trade are expected to be 310,000 oz lower than in 2005, mainly due to a drop in Chinese demand. The automotive industry will use more palladium on both diesel and gasoline vehicles. Supplies are projected to rise 1 per cent on 2005 levels to 8.48 million ounces.

Palladium autocatalyst demand is forecast to grow 7 per cent in 2006 to 4.14 million ounces, with increasing substitution of palladium for platinum. There will be a return to growth in the electronics sector, with demand rising to 1.06 million ounces this year.

Palladium demand for jewellery is forecast to drop to 1.12 million ounces in 2006. Chinese purchases will fall, depressed by recycling and by the large amounts of metal bought in 2005 to fill the distribution pipeline.

Palladium supplies will edge 70,000 oz higher, to 8.48 million ounces. Expansion of South African platinum production will raise by-product palladium supply 10 per cent to 2.86 million ounces. Output from North America will grow by 50,000 oz. Russian production will be flat but should be augmented by large sales of state stocks.

The palladium price rose to a high of \$404 in May, on the back of rising speculative long positions on the futures exchanges. However, the sell-off in the commodity markets later that month then drove prices down. Lease rates stayed low, indicating a liquid market with little pressure on metal availability. Having started January at \$261 and closed September at \$315, the price outperformed platinum in percentage terms over this period.

- Demand for palladium is forecast to fall by 6 per cent to 6.85 million oz this year.
- The jewellery industry will purchase 1.12 million oz of palladium in 2006, more than 20 per cent down on 2005. Chinese demand will fall following the surge of stockbuilding last year, with increased recycling also having an impact.
- Autocatalyst palladium demand is projected to rise 7 per cent to 4.14 million oz, with growth being seen in all regions except Europe.
- Palladium demand for use in electronics is forecast to climb to 1.06 million oz, driven by strong consumer demand for portable electronic devices.
- Palladium supplies are expected to edge 1 per cent higher, reaching 8.48 million oz in 2006, with growing production in South Africa and North America.
- The palladium price moved from \$261 in January to a high of \$404 in May on the back of record fund long positions. It slid back to end September at \$315, in line with other commodities prices. We expect palladium to trade between \$260 and \$380 over the next six months.

Palladium Supply and Demand '000 oz			
		2005	2006
<b>Supply</b>			
South Africa		2,605	2,855
Russia		4,620	4,370
North America		905	955
Others		280	300
<b>Total Supply</b>		<b>8,410</b>	<b>8,480</b>
<b>Demand</b>			
Autocatalyst:	gross	3,870	4,140
	recovery	(630)	(805)
Dental		815	815
Electronics		965	1,055
Jewellery		1,430	1,120
Other		810	525
<b>Total Demand</b>		<b>7,260</b>	<b>6,850</b>
<b>Movements in Stocks</b>		<b>1,150</b>	<b>1,630</b>



### Supply

Total Russian palladium supply is again expected to be above production, at 4.37 million ounces. Norilsk Nickel has forecast its shipments for the year at 3.15 - 3.19 million ounces. The last 63,000 oz of metal from the Norilsk stock transfer to Stillwater Mining in 2003 was sold in the first quarter. Sales from Russian state stocks were made earlier this year and we expect more at the end of 2006 as long as Gokhran is granted its customary export quota.

South African palladium supplies are forecast to grow 250,000 oz to 2.86 million ounces in 2006 as expansions in mining capacity proceed more quickly than in 2005. Supplies from North America will climb 6 per cent to 955,000 oz. Palladium output from Zimbabwe and the Rest of the World will also increase by 20,000 oz this year to 300,000 oz.

### Demand

Purchases of palladium for use in autocatalysts are expected to rise to 4.14 million ounces in 2006. Decreasing demand in Europe due to the success of diesel technology will be more than offset by rises in North America and Japan where palladium is increasingly replacing platinum in catalysts for gasoline vehicles. Chinese sales are expected to grow to 4 million cars this year, further raising palladium consumption.

The electronics sector is expanding and substitution of base metals for palladium in

multi-layer ceramic capacitors (MLCC) is slowing. The outlook for demand is therefore positive as the likelihood of further substitution for palladium diminishes in the near term.

Palladium jewellery demand is expected to weaken in 2006. Chinese purchases will fall 28 per cent to 860,000 oz due to the recycling of large volumes of jewellery coming back from retailers in the form of Pd950 (95 per cent palladium). Palladium jewellery was introduced in 2004 in the form of Pd950 but the following year manufacturers moved most of their production to higher purity Pd990. Additionally, 2005 demand was inflated significantly above consumer purchases as the trade pipeline filled with work in progress and retail stocks were built.

US jewellers are forecast to use 40,000 oz of palladium in 2006. Global demand for palladium continues to be supported by its use in white gold and platinum jewellery alloys.

After very high physical retail investment of 400,000 oz last year, demand in 2006 will be weaker. Most other applications of palladium, including its use in process catalysts and in dental alloys, will be relatively flat.

### Outlook

Autocatalyst palladium demand is projected to grow this year. Auto makers are currently switching from platinum to palladium in many three-way catalysts and this trend is expected to continue in 2007.

Palladium purchases by European car makers are

forecast to weaken in 2006 but should start to recover next year. Although the continuing growth in diesel car output is reducing the number of gasoline vehicles manufactured, this should be balanced by rising palladium use in diesel catalysts.

In the jewellery sector, purchases of palladium in China should rise as the trade finishes recycling its old Pd950 inventories, becoming more representative of overall levels of retail sales. A recovery in demand would be further supported if trading of palladium

were to be permitted on the Shanghai Gold Exchange. A promotion campaign for palladium jewellery began in Shanghai and Beijing in September 2006.

Growing interest in palladium as an alternative to white gold for jewellery and watches in North America and Europe is also likely to contribute to higher global demand in 2007.

The electronics sector has performed well in 2006, with palladium demand exceeding 1 million ounces. Rising sales of electronic goods are boosting metal consumption, a trend which is expected to continue.

With South African platinum output rising, palladium supplies will grow in 2006 and 2007. Russian production is expected to be flat, despite long term plans to raise nickel output. Russian state stocks remain significant and the timing of sales from these may have a strong influence over short term price movements.

Supplies of palladium are forecast to exceed demand in 2006 by 1.63 million ounces, yet the price of palladium outpaced that of platinum, in percentage terms, between January and September. This price performance is explained by the readiness of investment funds to absorb the surplus. A better outlook for demand from the auto and jewellery sectors may encourage funds to extend long positions in palladium. In these circumstances, the price could rise as high as \$380. If, however, this support evaporates and positions are significantly reduced, the price will fall, although we believe it is unlikely to trade below \$260 over the next six months.

