

# Summary & Outlook

## Platinum

- Demand for platinum is expected to climb by 5 per cent to a record 5.94 million oz in 2001.
- Auto industry purchases of platinum are forecast to rise by 25 per cent as diesels gain market share and platinum is substituted for palladium in some gasoline catalysts.
- Jewellery demand is expected to decline by 11 per cent as sharp falls in Japan and the USA outweigh another record year in China.
- Increasing use of platinum in glass production, dental alloys and petroleum refining will boost industrial demand by 3 per cent.
- Investment offtake is expected to be positive this year, though still relatively small.
- Supplies of platinum are forecast to rise by 5 per cent as mine expansions in South Africa begin to come on stream.
- Despite strong demand and limited market stocks, negative sentiment and short selling dragged the price down to \$429 at the end of September, 30 per cent lower than at the start of 2001.

## Overview

Demand for platinum is forecast to increase to 5.94 million oz in 2001, boosted by another sharp increase in consumption in autocatalysts. This year, further expansion in the diesel sector has been augmented by growth in the use of platinum on gasoline vehicles and demand is forecast to reach 2.36 million oz. High palladium prices have triggered a return to platinum by some auto makers, a trend that is expected to continue despite recent changes in the relative price of the two metals.

Sales of platinum to jewellery manufacturers will contract sharply this year, to 2.52 million oz. This is mainly due to a collapse in demand in Japan, where the market has been adversely affected by a switch to gold at the

cheaper end of the market, and by substantial recycling of surplus stocks of platinum jewellery. In contrast, the Chinese market has continued to expand rapidly this year, with consumers proving less price sensitive than was previously feared.

Industrial demand, at 1.52 million oz, is expected to record a modest increase. Although the world economy has slowed significantly, investment decisions made in previous years are still generating additional platinum demand in the glass and petroleum sectors. However, consumption in hard disks has been hit by lower sales of personal computers.

Investment demand, at 50,000 oz, is forecast to be positive in 2001, reversing the disinvestment that occurred last year.

### Platinum Supply and Demand

'000 oz

	2000	2001
<b>Supply</b>		
South Africa	3,800	4,080
Russia	1,100	1,050
North America	285	340
Others	105	110
<b>Total Supply</b>	<b>5,290</b>	<b>5,580</b>
<b>Demand</b>		
Autocatalyst: gross	1,890	2,360
recovery	(470)	(510)
Jewellery	2,830	2,520
Industrial	1,470	1,520
Investment	(60)	50
<b>Total Demand</b>	<b>5,660</b>	<b>5,940</b>
Movements in Stocks	(370)	(360)



Supplies are expected to reach 5.58 million oz this year, despite lower sales from Russia. Expansions by South African producers are beginning to add to supply although, as in 2000, some production has been lost due to technical problems and industrial action. Despite the increase, supplies will again fall below the level of demand, leading to a deficit of 360,000 oz.

The platinum price peaked at \$645 in January and remained above \$550 throughout the first half of 2001, supported by strong consumer demand and limited availability. The price subsequently eased, falling to \$429 at the end of September. The decline was heavily influenced by speculative activity. Large net long positions held by the

general public on TOCOM were liquidated between June and August, and by September a substantial short position had been accumulated.

## Supply

Supplies of platinum from South Africa are expected to exceed 4 million oz for the first time in 2001. Several projects have come on stream in the last 2-3 years and are currently building up towards full production. At Anglo Platinum, additional ounces have been generated from the new Bafokeng Rasimone Platinum Mine (BRPM), and capacity increases at the existing Amandelbult and Lebowa operations. Impala, through its Barplats subsidiary, has benefited from the start up of the refurbished Crocodile River mine. Lonmin, Kroondal and Northam have also increased capacity this year.

However, this year's increase in output will be significantly less than the mines themselves had originally intended. Some expansions have encountered delays in the build up to full production, while industrial action has also affected production. We estimate that, had existing and new operations operated as planned, platinum output

this year would have been at least 200,000 oz higher than our current forecast.

Next year should see a significant jump in refined platinum output. Two new mines are scheduled to enter production in 2002 – Anglo Platinum's Waterval and Maandagshoek operations – while capacity expansions by other producers should also add to industry totals. Platinum production is planned to rise by around 500,000 oz, but in reality we believe the increase will be smaller – it is unlikely that the industry will entirely escape the technical problems and industrial disputes that have reduced output in recent years.

Despite pgm output falling below plan, industry profits have been at record levels during the last year, boosted by high pgm prices and a weak rand. This, combined with expectations of strong growth in platinum demand, has encouraged producers to plan further increases in capacity. During the first nine months of 2001, Anglo Platinum, Lonmin and Impala all announced further investment in new platinum mining ventures. If all currently-planned projects proceed as scheduled, South African platinum production could exceed 5.5 million oz by the middle of this decade. However, we believe that the recent weakening in the world economic outlook may be the trigger for producers to re-examine their expansion schedules.

Supplies of platinum from Russia are expected to total 1.05 million oz in 2001. Shipments were restricted during the first quarter, with more substantial quantities of metal beginning to flow from April onwards. Following the implementation of a new presidential decree concerning exports of precious metals, there was some disruption to exports during August and September, but this is not expected to have a material impact on overall platinum sales this year.

The new decree allows for a wider range of banks and producers to export



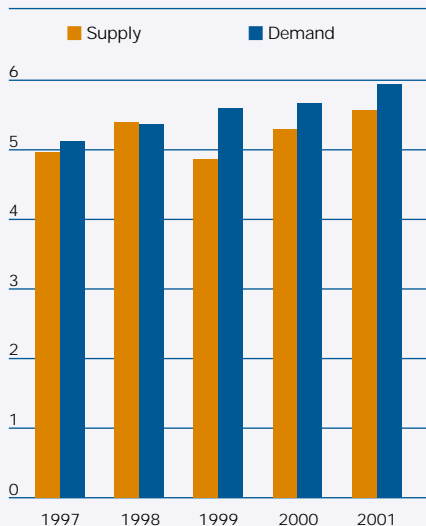
refined pgm. It also allows for longer-term quotas covering periods of up to five years, a provision from which Norilsk Nickel is expected to benefit. However, sales remain under the control of the Ministry of Finance, as all pgm exports must continue to be made through the state marketing agency, Almaz.

Output of pgm by Norilsk Nickel is expected to increase gradually in future years, as the company invests in new facilities to treat disseminated ore and reprocess tailings. However, production from the alluvial operations of the Russian Far East has fallen since the late 1990s and is not expected to return to previous levels. With government stocks of platinum now small, we expect Russian sales of platinum to be close to actual production in future.

Supplies of platinum from other regions will be up slightly in 2001. In North America, production will be boosted by the end of a seven month strike at Falconbridge and by expansion at Stillwater. Output of pgm in Zimbabwe remains very small, but will increase next year as Zimplats' Ngezi open-pit project enters production.

Supply and Demand for Platinum 1997-2001

Million oz



## Demand

Sales of platinum to auto makers are forecast to rise by 25 per cent to 2.36 million oz in 2001. The most important single contributor to this increase will be the European diesel sector, where the use of platinum is expected to rise by 40 per cent this year. This reflects the growing market share taken by diesel vehicles, and a significant rise in loadings to meet European Stage III legislation.

The re-adoption of platinum-based catalysts for gasoline vehicles is also beginning to have an impact on demand. The dramatic rise in the palladium price that occurred between 1999 and early 2001 encouraged auto makers to reassess their catalyst strategy, with the result that some companies – especially those which had moved most heavily into palladium technology – are now increasing their use of platinum. This has made a moderate contribution to demand in 2001 and is expected to have a more significant impact next year.

Jewellery demand for platinum is forecast to retreat further from the peak of 2.88 million oz seen in 1999, falling by 11 per cent to 2.52 million oz in 2001. It has been a year of sharply contrasting

fortunes in the two major markets: another remarkable increase in Chinese platinum jewellery fabrication, which is forecast to reach 1.3 million oz this year, will be offset by a plunge in Japanese demand to a 16 year low of just 700,000 oz.

Predictions that Chinese demand would at best stabilise this year have proved unfounded. Although fabrication levels have undoubtedly been affected by a combination of higher platinum prices and a wave of government tax investigations, the effect has been to slow the rate of expansion rather than to halt it altogether. Consumers have proved less price sensitive than previously expected, and a series of increases in retail prices appears to have had little impact on purchasing activity.

In contrast, the Japanese market has been hard hit by higher platinum prices. Although unit sales of all precious metal jewellery rose by 5 per cent in the first half of 2001, consumer demand for platinum pieces fell by 17 per cent. This reflected a sharp contraction in platinum's share of the market for lower-priced jewellery items, with white gold now being widely used for inexpensive white fashion jewellery.

In terms of platinum demand, the impact of falling retail sales has been magnified by financial weakness in the Japanese jewellery industry. In order to reduce funds tied up in slow-moving product lines, manufacturers and retailers have continued to recycle outdated stocks of jewellery. This has provided some of the platinum required for fabrication this year, reducing purchases of fresh metal from the market.

In the USA, the world's third largest market for platinum jewellery, demand during the first nine months of 2001 was affected by higher platinum prices and a slowdown in consumer spending. Following the terrorist attacks on 11th September, the industry is expecting poor sales during the final quarter and we therefore predict a sharp decline in sales of platinum to jewellery makers this year. Most European and Asian countries will also see a fall in platinum jewellery fabrication, although the UK is likely to prove an exception to this trend.

Industrial demand for platinum is forecast to rise by 3 per cent to 1.52 million oz. Sales to the glass sector will be particularly strong, with the construction of new LCD glass capacity continuing to consume large quantities of platinum. Offtake by the petroleum industry will also rise, mainly due to sales of platinum for new reforming capacity in the Middle East. There will also be strong growth in the use of platinum in a range of smaller applications such as dental alloys and biomedical devices. Demand in the chemical sector will be stable, with growth in the use of platinum catalysts for the production of speciality silicones being offset by lower consumption in other processes.

The only industrial sector in which demand is expected to contract is the electrical industry. Following rapid growth in the use of platinum in hard disks in the last three years, demand in 2001 has been hit by a downturn in



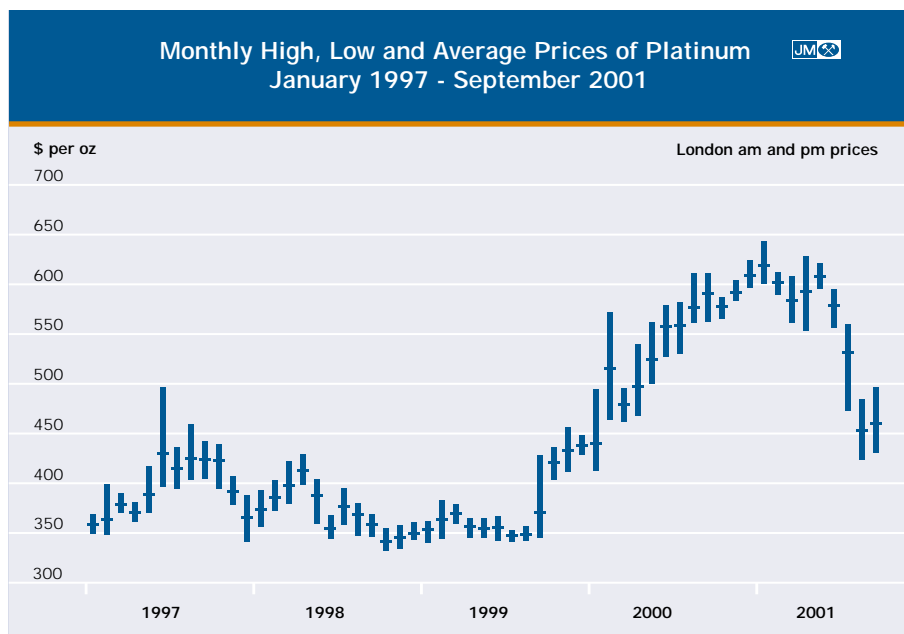
computer sales. Technological advances are also having an impact: improvements in disk storage capacity have resulted in a decline in the average number of disks used in each hard drive, though this has been partly offset by a modest increase in the platinum content of each disk.

Investment demand will be positive this year, following significant disinvestment in 2000. Last year's negative number was primarily due to profit-taking by Japanese investors, as 500g and 1kg platinum bars bought in earlier years at low prices were returned to the market. Further disinvestment occurred in early 2001, but a decline in the price since mid year has stimulated new demand. For the year as a whole we expect fresh investment in large platinum bars to balance sales back to the market. Sales of the US Mint's bullion platinum Eagle coin are expected to be slightly up on the level of last year.

## Outlook

The full impact of the 11th September terrorist attacks is not yet clear, but there is little doubt that world growth will slow significantly. Many economic forecasters believe that the major markets of the USA and Japan are already in recession and will remain so despite fiscal stimulation by governments. As a result, our forecasts of platinum demand for next year are subject to much greater uncertainty than usual. Changes in relative pgm prices may also affect demand, especially in the auto industry, but it is too early to determine the precise impact. While we remain positive about the outlook for platinum, short-term growth in the market will be lower than previously anticipated.

Jewellery demand is the area of greatest sensitivity. In Japan, retail sales of jewellery are likely to contract again, especially in the upper price levels where platinum is strongest. However, we believe that inventories of platinum jewellery held by manufacturers and



retailers are now at very low levels, and next year should therefore see a decline in the recycling of old jewellery stocks that has reduced fresh demand for platinum over the last two years. If so, sales of platinum to Japanese jewellery fabricators could stabilise or even rise modestly.

There is little prospect of any immediate increase in sales of platinum jewellery in the USA, but the outlook in China is brighter. The rapid development of the Chinese platinum jewellery market in 2001, despite less than favourable circumstances, suggests that the prospects for future expansion remain good. Lower platinum prices have helped to improve profit margins, and this should stimulate manufacturers and retailers to continue to expand their platinum jewellery business.

In the autocatalyst sector, we believe that platinum demand will grow again, despite expectations of a significant downturn in vehicle production worldwide. Catalyst changes have a lead-time of many months, so the very high palladium prices of late 2000 and early 2001 will continue to have an impact over the next year. There will be further switching back to platinum catalysts on gasoline vehicles, especially in North

America and Europe. Demand in the latter region will also continue to benefit from rising demand in the diesel sector.

Industrial demand is likely to slow during 2002, in line with a downturn in world economic activity. It is likely that some planned expansions in the chemical, glass and petroleum sectors will be delayed or cancelled, and we may see another fall in the use of platinum in hard disks.

Supplies are expected to rise next year. While we think it unlikely that the Russians can deliver much more than 1 million oz of platinum in a single year, production in South Africa is planned to increase sharply. However, the last two years have demonstrated the extent to which technical problems can cause production to fall short of planned levels.

Market stocks held by investors and fabricators have been depleted by substantial deficits since 1999, while the underlying lack of liquidity is indicated by consistently high lease rates. However, we expect the weaker economic outlook to continue to affect market sentiment. This will limit any recovery in the price in the short term. We expect that platinum will trade between \$400 and \$500 during the next six months.

# Palladium

- After experiencing rapid growth throughout the second half of the 1990s, demand for palladium is expected to slump by 24 per cent in 2001.
- Purchases by the auto industry are forecast to fall by 14 per cent as auto makers reduce consumption and draw on stocks built up in earlier years.
- Demand from the electronics industry has plummeted and is expected to be less than half that of last year.
- Largely in response to the high price of recent years, dental demand is forecast to be 16 per cent down and other uses will decline by 4 per cent.
- Sales by Russia have fallen back but increased output in South Africa and North America will limit the decline in overall supplies to 3 per cent.
- In response to the dramatic weakening of demand in 2001, the palladium price slumped from its peak of \$1,094 in January to \$360 by the end of September.

## Palladium Supply and Demand

'000 oz

	2000	2001
<b>Supply</b>		
South Africa	1,860	2,000
Russia	5,200	4,600
North America	635	815
Others	105	115
<b>Total Supply</b>	<b>7,800</b>	<b>7,530</b>
<b>Demand</b>		
Autocatalyst: gross	5,640	4,840
recovery	(230)	(290)
Dental	820	690
Electronics	2,160	1,050
Other	570	550
<b>Total Demand</b>	<b>8,960</b>	<b>6,840</b>
Movements in Stocks	(1,160)	690



## Overview

After substantial deficits during the last two years, the palladium market has moved into surplus during 2001. Annual supplies are expected to fall by 3 per cent to 7.53 million oz, but there will be a much sharper contraction in demand: down 24 per cent to 6.84 million oz. This decline will be caused by lower consumption in virtually all applications, combined with substantial reductions in palladium stocks held by consumers in the auto and electronics sectors.

Sharp rises in the palladium price between 1999 and early 2001 have begun to have an impact in the auto sector. Auto makers are thrifting palladium using a variety of strategies, including the increased use of other pgm. Also, part of this year's palladium requirement has been met from stocks built up by the auto industry in 1998-99.

The electronics industry has also drawn heavily on palladium inventories in 2001. This has magnified an already sharp drop in consumption due to a

plunge in the output of multi-layer ceramic capacitors (MLCC). As a result, sales to electronics manufacturers, at 1.05 million oz, are forecast to be less than half last year's level.

Supplies of palladium from Russia are expected to total 4.6 million oz, 600,000 oz lower than last year. As demand has weakened, we believe that Norilsk Nickel, and perhaps also the Ministry of Finance and the Central Bank, has withheld palladium from the market in order to support the price. Meanwhile, South African supplies are expected to rise slightly, reaching the 2 million oz mark for the first time.

The palladium price surged to a record \$1,094 in January, reflecting consumers' concern about potential disruption in Russian supplies. With an increase in sales of Russian metal at the London fixings, the price began to descend rapidly from February onwards, collapsing to a two year low of \$360 at the end of September.

## Supply

Russian shipments of palladium are forecast to decline to 4.6 million oz in 2001, the lowest since 1995. Although trade statistics show that almost 4.5 million oz was shipped to Switzerland and the USA in the first quarter, we believe that only part of this metal was actually sold.

There are now substantial stocks of Russian palladium in Switzerland, believed to be under the ownership of the Russian Ministry of Finance and the Central Bank. It is difficult to predict when this metal might be made available to the market, but we have assumed that there will be no significant sales in the last quarter of this year.

During 2001, Norilsk Nickel has continued to supply palladium under its ten year export quota, granted in 1999. Much of its output is sold to consumers under long-term contracts, with the remainder being sold on the spot market. However, in August a spokesman indicated that

Norilsk was limiting spot sales in order to support the palladium price.

South African supplies are forecast to rise by 8 per cent to 2 million oz in 2001. Looking ahead, if planned expansions in platinum mining go ahead, palladium production in South Africa will rise by more than 1 million oz by the middle of the decade. Much of this will come from new projects on the Eastern Bushveld, where the UG2 reef contains unusually high concentrations of palladium.

North American supplies are forecast to rise by 28 per cent to 815,000 oz in 2001. Both North American Palladium and Stillwater are currently undertaking major expansion programmes which could lift North American output by a further 50 per cent by mid decade.

## Demand

In the auto sector, thrifting programmes stimulated by steep rises in the palladium price in 1999 and 2000 have begun to have an impact. As a result, palladium use in catalysts is expected to fall by around 10 per cent this year, despite further tightening of emissions legislation in many markets.

As in 2000, this year's purchases of palladium by the auto industry are expected to be substantially below the

level of actual consumption, with some companies drawing upon their strategic stocks. We estimate that demand will fall by 14 per cent to 4.84 million oz, the lowest level for three years.

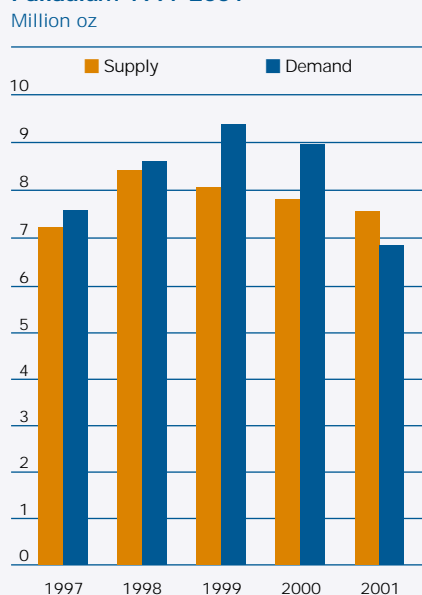
In the electronics industry, demand for palladium is expected to more than halve to a 19 year low of 1.05 million oz. This decline is mainly a result of a collapse in output of MLCC, which is expected to be down by more than 30 per cent this year. In addition, some of the larger MLCC manufacturers have been able to meet much of their palladium requirement from inventories.

## Outlook

Efforts to thrift palladium by auto makers are expected to continue, despite recent falls in the price. We believe that the industry will remain cautious in the face of perceived insecurity of palladium supplies, and will continue with efforts to reduce loadings through a combination of engine management, advanced catalyst technology and greater use of other pgm.

Despite this, we do not foresee any dramatic reduction in usage of palladium in autocatalysts. We believe that increasingly stringent HC limits, especially in North America and Europe, will help to maintain demand for

### Supply and Demand for Palladium 1997-2001



palladium close to current levels.

Thrifting is also expected to continue in the electronics industry, with further adoption of nickel pastes for the electrode layers in MLCC. Ultimately, palladium is likely to be retained only in certain high-specification capacitors.

Paradoxically, despite these negative trends, it is possible that palladium demand could increase in 2002. Both the auto and electronics industries have consumed large quantities of palladium from stocks during 2001, and fresh purchases of metal could therefore be higher next year. In addition, lower prices may encourage a limited return to palladium-based dental alloys.

As ever, the level of supplies in 2002 will depend heavily upon Russian sales. Allowing for modest increases in South African and North American production, we believe that shipments of Russian metal in excess of 4 million oz would result in a further surplus.

In the short term we have assumed that the Russians will continue to moderate sales in order to prevent a further decline in the price, which we forecast will vary between \$260 and \$380 over the next six months.

### Monthly High, Low and Average Prices of Palladium January 1997 - September 2001

