Summary & Outlook

Platinum

- Demand for platinum in 2000 is forecast to rise by 2 per cent to reach a new record level of 5.69 million oz.
- Jewellery demand will increase for the 17th consecutive year to reach a new high of 2.94 million oz, although the expected 2 per cent increase is smaller than in recent years, due to higher prices.
- After three years of modest decline, platinum demand for autocatalysts is expected to increase by 12 per cent to 1.8 million oz, due mainly to greater use on diesel cars in Europe.
- Industrial demand should rise by 8 per cent, with continuing growth in the use of platinum in computer hard disks and the production of glass for liquid crystal displays.
- Supplies of platinum are forecast to increase by 11 per cent to 5.41 million oz, with substantially higher shipments from Russia following amendments to the legislation that inhibited exports in 1999.
- With demand expected to exceed supplies by 280,000 oz, the price of platinum has advanced strongly this year, rising from a low of $414 in January to a high of $612 in August.

Platinum Supply and Demand
'000 oz

	1999	2000
Supply		
South Africa	3,900	3,920
Russia	540	1,100
North America	270	285
Others	160	105
Total Supply	**4,870**	**5,410**
Demand		
Autocatalyst: gross	1,610	1,800
recovery	(425)	(460)
Jewellery	2,880	2,940
Industrial	1,355	1,460
Investment	180	(50)
Total Demand	**5,600**	**5,690**
Movements in Stocks	(730)	(280)

Overview

Demand for platinum in 2000 is forecast to rise by 90,000 oz to its highest ever level of 5.69 million oz, propelled by a 190,000 oz increase in purchases by the auto industry. This advance is due mainly to higher loadings on catalysts for diesel cars, which have gained market share in Europe. In addition, there has been the beginning of a return to the use of platinum in autocatalysts for gasoline cars, a move that is expected to gain momentum in future years, especially if the palladium price remains above that of platinum.

The use of platinum in jewellery has continued to grow, despite the increased price of the metal. The exception has been in Japan, where demand at the cheaper end of the market has proved to be price sensitive. Remarkably, the Chinese jewellery market, where higher prices were expected to have most impact, has grown again and will exceed 1 million oz for the first time.

The most significant impact of the higher price this year has been a sharp decline in purchases of platinum for investment. Demand for coins and small bars is expected to halve, and Japanese investors have taken advantage of higher yen prices to take profits on large investment bars bought in earlier years.

Industrial demand is expected to grow by 105,000 oz. Increased use of platinum in computer hard disks will boost electrical demand by 90,000 oz. Investments in new plant to make high quality glass for liquid crystal displays used in consumer electronic goods will contribute to an increase of 40,000 oz in the glass industry. Demand in the chemical and petroleum refining sectors will decline marginally.

Supplies have also expanded, by 540,000 oz to 5.41 million oz. The largest contributor to the increase has been Russia, where the restrictions on exports of platinum imposed by the notorious Clause 19 of the 1999 Russian budget legislation were lifted by an amendment to the law signed early in January 2000.

We forecast a deficit of platinum again this year, although the shortfall between supply and demand of 280,000 oz will not be as high as the record level of 1999.

The price of platinum made strong gains throughout the first nine months of the year. After falling to a low of $414 early in January, following news of the amendment to Clause 19, it rose sharply thereafter as Russian sales fell below expectations. Physical shortages of metal drove lease rates above 70 per cent in January and again in April. Although Russian deliveries increased from May, strong consumer demand supported the price, which reached $612 in August and again in September, the highest level since December 1988.

Supply

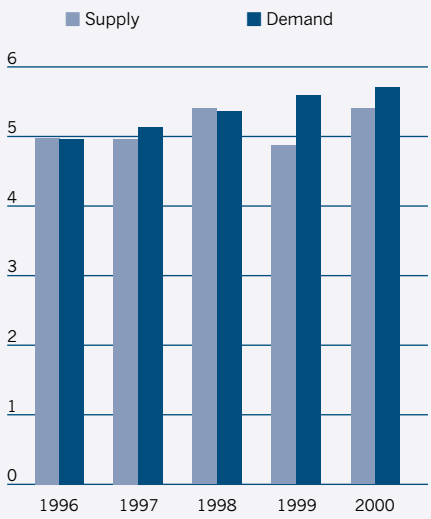
Supplies of platinum from South Africa in 2000 are expected to be only 20,000 oz higher than last year, a much smaller increase than originally expected. Severe rains between February and April led to flooding of some mines and also affected surface processing operations, while strikes have also contributed to shortfalls in production. Despite this, the current year has been one of excitement and optimism in the South African industry. In response to higher prices and prospects of sustained growth in demand for platinum, all the South African producers have embarked upon expansions of their mining operations. In addition, several companies new to platinum mining have appeared on the scene.

The largest producer, Anglo Platinum (formerly Amplats), already has expansion projects at Amandelbult, Lebowa and Bafokeng-Rasimone that are nearing completion, and in December 1999 announced the construction of a new mine at Maandagshoek. In May this year, Anglo announced its intention to expand platinum production even further, to around 3.5 million oz by the end of 2006. Full details of this extra expansion were not revealed, but new projects at Kroondal and Waterval have subsequently been confirmed.

The other platinum producers in South Africa have also been active. Impala, as an 85 per cent owner, is participating in the reopening of the Crocodile River mine, which should deliver its first metal in 2001. In June, it was announced that Impala is to acquire the Toronto-based Platexco and develop a new mine on that company's Winnaarshoek property in the Eastern Bushveld. The third largest producer, Lonmin, announced, also in June, plans to raise output at its existing operations to 800,000 oz by 2007.

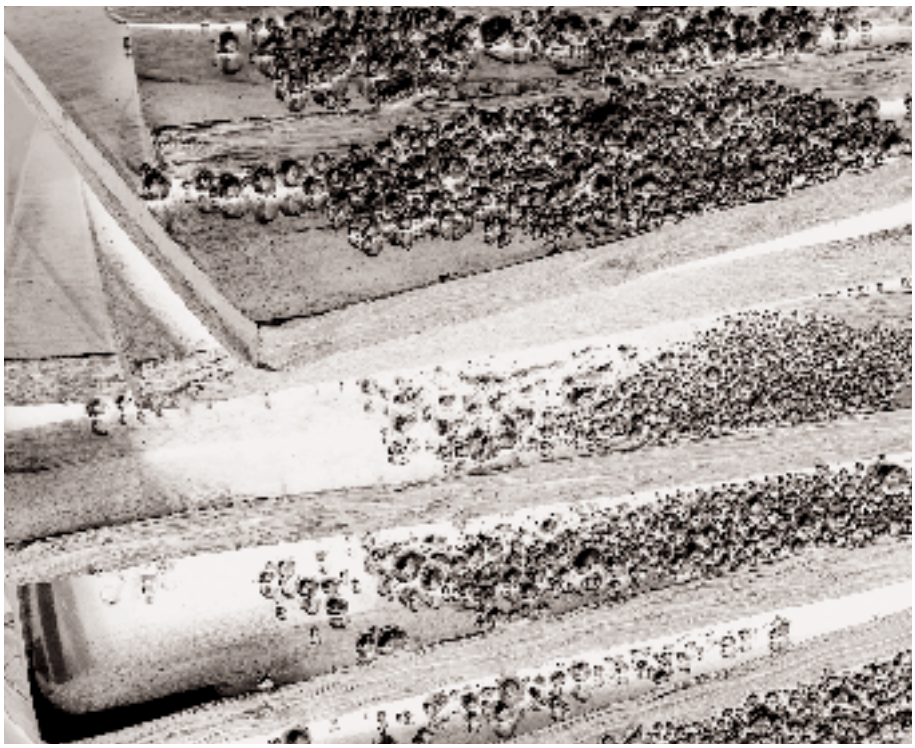
Supply and Demand for Platinum 1996-2000

Million oz



Northam and Kroondal were new entrants to the platinum market in the 1990s. Northam produced its first metal in 1993, but has struggled to make money. However, at current production rates and pgm prices Northam is profitable and plans to increase output from 2001 through an expansion of mining on the UG2 reef. Kroondal only commenced mining in 1999 but a joint venture agreement with Anglo Platinum, announced in August, should enable it to triple platinum output.

Aquarius Platinum, a 45 per cent owner of Kroondal, is also progressing a number of other pgm prospects, some of which were acquired from Impala in July this year. The most advanced is at Marikana, which should yield its first pgm in 2001. Another new entrant is the Canadian miner SouthernEra Resources, which has acquired Impala's majority



interest in the Messina project. This mine was partly developed in the early 1990s before being mothballed when pgm prices were weak. Work is underway to restore and extend the mining infrastructure and full scale production of platinum is scheduled for 2003.

Figures for platinum production in Russia are still a state secret, but it seems likely that output at Norilsk has increased. Driven in part by the high price of pgm, Norilsk Nickel is investing substantially in improving mining infrastructure and process efficiencies, and is giving greater attention to maximising recovery of pgm. However, Russian pgm supplies do not necessarily move in line with production changes. As an example, for much of 1999 Norilsk was unable to sell its platinum and rhodium output due to the restrictions set by Clause 19 of the 1999 Russian Budget legislation. Although an amendment to this legislation was signed by President Putin early in January 2000, it was not until May that export quotas and licences were approved and significant amounts of platinum began to flow from Russia to western markets.

Norilsk has been cushioned by revenues from palladium, sales of which were not restricted by Clause 19. The alluvial producers in the Far East of Russia have been less fortunate: they produce only platinum and had no choice in 1999 but to sell, probably at discounted prices, in the home market. The consequent lack of revenue has hindered placer mining during the 2000 season and annual output is thought to have fallen to two thirds of peak levels, at around 200,000 oz. Total Russian sales in 2000 are nonetheless expected to increase by 560,000 oz to 1.1 million oz.

Other western supplies have declined in 2000, primarily due to the closing of the Hartley Platinum mine in Zimbabwe in June 1999. North American output has increased slightly, with higher production at Inco and North American Palladium outweighing a decline at Falconbridge caused by a prolonged strike at its Sudbury nickel mines. Output at Stillwater will be similar to that of last year.

Demand

Demand for platinum has grown in most sectors – the principal exception being the market for investment products, which this year has seen a sharp decline in sales of coins and small investment bars and a net sellback of large investment bars in Japan.

Jewellery demand for platinum has continued to grow, but at a less rapid pace than in recent years. Higher platinum prices have had some effect in curtailing demand for platinum in the lower value jewellery sector. But in China, where retail prices and margins are lower than in most other manufacturing countries, demand has increased by 15 per cent and this year will exceed 1 million oz for the first time. Advances have also been seen in Europe, principally the UK, and in the USA.

In contrast, Japan, although still the largest jewellery market for platinum, is expected to experience a decline of 13 per cent in demand this year. Despite signs of recovery in the Japanese economy, private consumption still lags other economic indicators and demand for platinum jewellery at the cheaper end of the market has proved sensitive to the higher metal prices, with some share being lost to lightweight white gold products. However, sales of more expensive platinum jewellery were slightly up in the first half of 2000, evidence of platinum's strong position in this sector of the market.

The use of platinum in autocatalysts has recovered this year and the prospects are for higher demand in the future. The reversal is largely due to higher loadings on catalysts fitted to diesel engines in Europe to meet the Euro III legislation that came into force in January 2000. The impact of this change has been enhanced by a 13 per cent increase in sales of diesel cars in Europe as consumers opt for more fuel efficient vehicles to counteract higher fuel prices. There has also been some switching from palladium to platinum in catalysts for gasoline vehicles as auto makers seek to reduce their dependence on palladium. Better technology is leading to platinum-containing catalysts of equivalent performance to those based

mainly on palladium, capable of meeting existing and future standards. Looking ahead, the use of platinum seems likely to increase significantly for gasoline vehicles, as manufacturers, perceiving South Africa to be a more predictable source of pgm than Russia, seek to reduce their dependence on palladium.

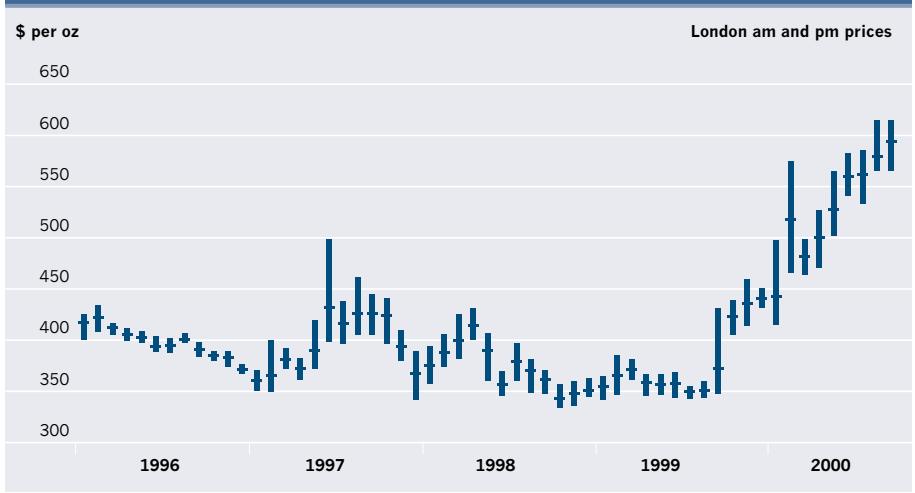
Industrial demand for platinum is expected to rise by 105,000 oz, led by increases in the electrical and glass industries. The use of platinum in hard disks for computer storage has grown and this year we believe that more than 90 per cent of all computer hard disks will contain platinum to improve data storage capacity, up from around 75 per cent in 1999. This will be the major contributor to an increase of 90,000 oz in demand from the electrical sector.

The market for the high quality glass necessary for liquid crystal displays (LCDs) is buoyant, with rapidly increasing use of LCDs in consumer electronic goods such as computers, digital cameras and televisions. As a result, most leading manufacturers of LCD glass are currently adding to their production capacities.

The market for investment products has been adversely affected by the rising price of platinum this year. Investors in Japan traditionally buy precious metals when prices are perceived to be low, or at times of significant price falls. In the period 1993 to 1996, and again at times in 1998 and 1999, they bought substantial amounts of platinum in the form of 1kg and 500g investment bars at prices below ¥1,400/g. The rise of platinum to a level of over ¥2,000/g this year has encouraged some investors in Japan to take profits. As a result, we expect net demand for large bars in Japan to be negative in 2000.

Purchases of platinum coins and small bars have also fallen this year. Sales of the US Mint's platinum bullion coin in the American Eagle series have declined sharply, and few Australian

Monthly High, Low and Average Prices of Platinum
January 1996 - September 2000



Koalas and Canadian Maple Leafs have been minted. However, we expect most, if not all, of this year's edition of the proof mintage of the platinum Eagle to be sold, even though it was not available for sale until September. There is evidence that some coins and small bars have been sold back by US investors taking advantage of the higher platinum prices, and we believe that some of these products have subsequently been melted and recycled as jewellery alloys. Overall, we expect that net offtake in 2000 for coins and small bars worldwide will halve to 45,000 oz.

Outlook

With demand for platinum forecast to exceed supply by 280,000 oz, following on from a record deficit of 730,000 oz in 1999, the market for platinum remains tight and extremely sensitive to changes in both supply and demand. As in several years past, there is still uncertainty about how much metal Russia will export in the remainder of the year, and how quickly export quotas and licences will be granted in the new year. Other supplies should grow, with increasing contributions from expansions in South Africa in 2001.

Two factors are likely to have most influence on demand for platinum in the near future. Higher prices of platinum have had only a limited negative effect on jewellery consumption. Despite this, there are concerns that demand could prove to be price sensitive, especially in China, where the margins between retail prices and material costs are slimmest. Manufacturers may be reluctant to buy platinum should the price rise much above the $600 level, although there is no sign at present of any waning of desire on behalf of Chinese consumers to acquire platinum jewellery.

Demand for platinum in autocatalyst has recovered some of the ground lost in recent years, and the outlook is for continued growth, both for diesels and as an alternative to palladium in some catalysts fitted to gasoline vehicles. Although the impact of any switch from palladium is likely to be gradual in the immediate future, a few companies have increased their inventories of platinum in 2000, in anticipation of increased demand. If other auto makers follow suit this could boost near term demand for platinum.

On balance, we believe that platinum will trade in a range of $560 to $630 over the next six months.

Palladium

- After 14 years of continuous growth, demand for palladium is forecast to decline by 10 per cent to 8.40 million oz in 2000.
- Purchases of palladium by the auto industry are set to fall by 12 per cent, as some auto companies draw heavily on stocks.
- Demand for palladium in electronics is expected to rise by 5 per cent as increased substitution by base metals is outweighed by the growth in capacitor production.
- The use of palladium in dental alloys has fallen by 22 per cent due to the higher price; demand in other applications is down 9 per cent.
- Total supplies of palladium in 2000 are forecast to decline by 2 per cent to 7.92 million oz.
- Norilsk Nickel has continued to ship palladium steadily, but overall supplies from Russia are expected to fall by 4 per cent to 5.2 million oz due to lower sales from government stocks.
- We expect demand to exceed supply by 480,000 oz, which, combined with last year's even larger deficit and continuing uncertainties about Russian supplies has driven the palladium price to record highs.

Palladium Supply and Demand
'000 oz

	1999	2000
Supply		
South Africa	1,870	1,960
Russia	5,400	5,200
North America	630	665
Others	160	95
Total Supply	**8,060**	**7,920**
Demand		
Autocatalyst: gross	5,880	5,160
recovery	(195)	(230)
Dental	1,110	870
Electronics	1,980	2,070
Other	585	530
Total Demand	**9,360**	**8,400**
Movements in Stocks	(1,300)	(480)

Overview

Total demand for palladium is forecast to fall by 960,000 oz in 2000. The main reason for this decline, the first for 14 years, is a lower level of purchasing by the auto industry. In contrast with the last two years, when inventories of palladium were added to substantially, this year several major auto makers have drawn down their stocks, to mitigate the impact of dramatically higher prices.

Supplies in 2000 are also down, by 140,000 oz to 7.92 million oz. The net impact is that demand will again exceed supply, though by a smaller amount than in 1999. The resulting deficit of 480,000 oz will be met, in part, by sales from the US Defense Stockpile. In the first nine months of 2000 the Defense Logistics Agency (DLA) sold 64,000 oz of palladium and is authorised to sell a further 300,000 oz in the fiscal year commencing October 2000.

Having started the year at around $440, a lack of Russian supplies drove the price of palladium upwards in the first two months and precipitated an intense squeeze on TOCOM as investors scrambled to close out short positions. The price peaked at $800 on 21 February before the TOCOM authorities imposed restrictions on trading. After declining to $553 by April, the price then rose steadily from June to reach a new high of $855 in August, before declining to $712 in September as the first contractual metal of the year arrived in Japan from Russia.

Supply

The supply of palladium from Russia has once again been a major factor in the volatility of the price this year. Norilsk Nickel claims to be supplying steadily from production, but its willingness to enter into long term contracts with consumers has almost certainly resulted in less metal being available for spot sales by Almaz than in previous years. In addition, and perhaps more importantly, it appears that the Central Bank - a major contributor to Russian supplies in recent years - has been less active as a seller of palladium in 2000.

Rumours persist that the Central Bank has entered into collateral deals with western banks and it may be that these arrangements have reduced the amount of palladium currently available for sale. There are also indications that part of the stock previously held by the Central Bank has been returned to the Ministry of Finance; it is not clear how much of this metal will be sold this year. Despite these uncertainties, we believe that Russian exports in 2000 will total 5.2 million oz, just short of last year's level.

Supplies from western mines are expected to increase by 60,000 oz in 2000 to 2.72 million oz, mainly due to an increase in sales by South African mines

of 90,000 oz. North American output will be up 35,000 oz, with higher output from Inco and North American Palladium partly offset by lower production at Falconbridge. The closure of Hartley Platinum in Zimbabwe in 1999 has sharply reduced the amount of palladium from other sources.

Demand

Demand for palladium is forecast to fall by 10 per cent to 8.4 million oz. This, the first decline in demand for 14 years, follows a period of strong growth over the previous five years, when demand almost doubled.

The main reason for the decline is that demand from the auto industry has fallen by 720,000 oz in 2000 to 5.16 million oz. In sharp contrast with recent years, when auto companies added to inventories, we believe some have drawn down stocks in 2000 to mitigate the effect of the higher prices ruling for palladium this year. The fall in demand is misleading, however, as the use of palladium in autocatalysts fitted to new cars has risen. Increased consumption has occurred principally in Europe and the USA as companies have produced a higher proportion of low emission vehicles to meet new standards in these regions.

Companies manufacturing multi-layer ceramic capacitors (MLCC) have continued to advance the substitution of palladium, mainly with nickel. However, a massive 50 per cent increase in the number of MLCC produced this year has resulted in a small increase in demand for palladium in this application. Despite further substitution in other electronics applications, we estimate that overall demand for palladium by the electronics industry will increase by 90,000 oz this year to reach 2.07 million oz.

Consumption of palladium in dental alloys will fall again this year, by 22 per cent to 870,000 oz, in response to the higher metal prices. Demand in Europe and North America has fallen by more than a third, but the use of palladium in Japan has been less affected. In April, the Japanese government changed the system of payments under the state insurance scheme for dental treatment using the standard gold:palladium alloy. The new arrangement will reflect more closely the actual cost of materials used and should thereby reduce sensitivity to changes in metal prices.

Outlook

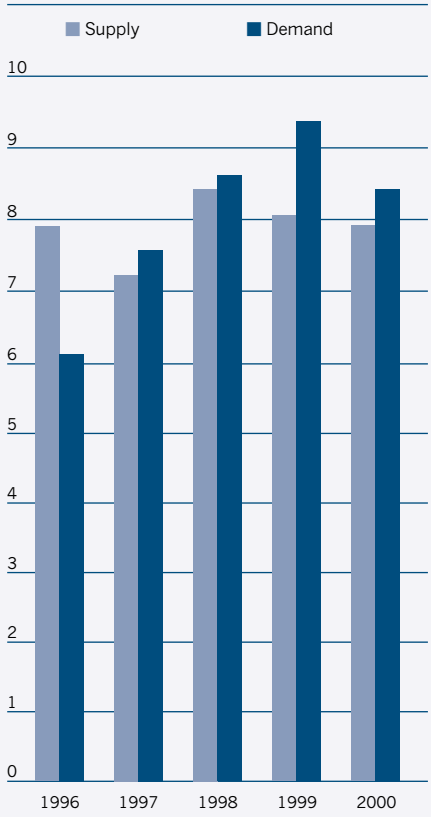
The future outlook for palladium demand is heavily dependent on the degree to which substitution of the metal is achieved in its main applications, and the rate at which any such changes occur. There has already been significant substitution of palladium in electronics applications and in dental alloys and more can be expected.

During 2000, several auto makers have expressed their intention to reduce palladium usage by thrifting catalyst loadings or substituting with other pgm. Although such moves will impact future demand, stricter emissions standards worldwide, especially for hydrocarbons, seem certain to ensure that palladium will continue to play a major role in the control of auto emissions.

With demand for palladium continuing to exceed mine production, the level and pattern of Russian sales from stocks will again be the critical factor in determining the price of the metal. For the next six months we expect a range of $700 to $850.

Supply and Demand for Palladium 1996-2000

Million oz



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