

SUMMARY

PLATINUM

Global demand for platinum rose by 1.2 per cent to 6.78 million ounces in 2006, supported by an increase in the use of this metal for autocatalysts and a range of industrial applications. This growth more than offset a decline in new metal purchased by the jewellery sector. Supplies of platinum also climbed in 2006, rising at a slightly faster rate than demand, to reach a total of 6.79 million ounces. South African production expanded to 5.29 million ounces, boosted by the addition of new mining capacity, and was the main driver behind this growth. Overall, therefore, the platinum market was effectively in balance over the entirety of 2006, with a nominal surplus of only 10,000 oz.

The automotive market represented the majority of demand (4.20 million ounces), up from 3.80 million ounces the year before. The continuing increase in the market share of the diesel engine has pushed platinum consumption in autocatalysts higher. In Europe, more than half of all new light duty vehicles are now diesel-powered and carry platinum-based aftertreatment. Stricter Euro IV emissions legislation came into force in January 2006 and increased the number of particulate filters being manufactured too. Both of these factors pushed platinum consumption in European autocatalysts to a record 2.16 million ounces, despite some palladium usage (in combination with platinum in every case) in diesel exhaust aftertreatment.

Global autocatalyst platinum demand would have been still higher if the price differential between platinum and palladium had not been so great. Since platinum started trading at a premium to its sister metal in 2001, auto makers have worked hard to minimise their precious metal costs. They have done so both by thrifting and

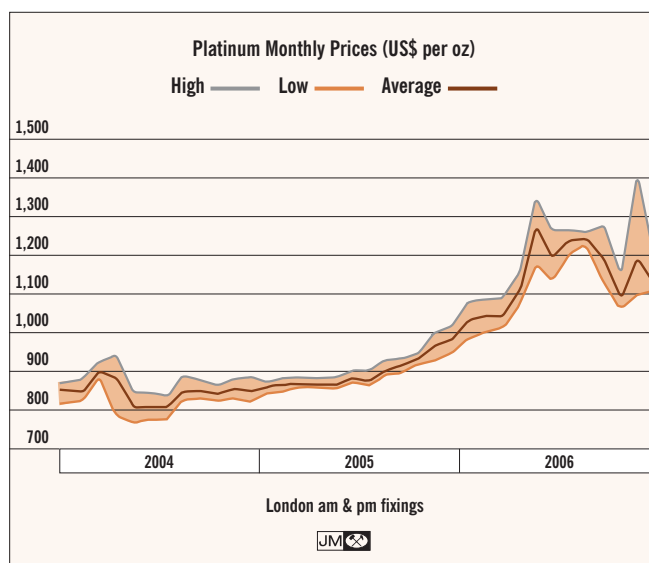
by substitution of platinum by palladium on gasoline catalysts. Since this switching has been happening for several years, there is now more limited scope to reduce platinum requirements. However, the process did continue in 2006, reducing average platinum loadings everywhere, although the negative effect of thrifting on demand was outweighed by increased production of passenger vehicles in Japan and the Rest of the World.

Significant volumes of platinum - in excess of 200,000 oz - were also used in the heavy duty diesel market around the world. This represents rapid growth from 2005, with tightening environmental legislation in many countries the prime driving force.

Industrial demand for platinum grew too, rising 11 per cent to 1.87 million ounces. Although a high price encouraged thrifting of platinum in a number of applications, growth was seen in many sectors. A good example is the glass industry which took 30,000 oz of platinum more than in 2005, with expansions in LCD glass manufacturing capacity responsible for the increase.

The electronics sector had a good year, with annual sales of computers increasing by 10 per cent. With the number of hard disks in these and other devices rising, metal purchases by the hard disk sector climbed to 245,000 oz, 26 per cent up on 2005. The chemical sector also saw expanding demand for fertilisers, explosives and polymers, driving platinum demand higher. A high oil price and national concerns over energy self-sufficiency lifted platinum use in the petroleum refining sector by 21 per cent to 205,000 oz.

Platinum demand for global jewellery fabrication fell to 1.61 million ounces in 2006,



Despite posting only a 14 per cent rise during 2006, the platinum price was high throughout the year and peaked at \$1,390.

| Platinum Supply and Demand '000 oz | | | |
|---------------------------------------|----------|--------------|--------------|
| | | 2005 | 2006 |
| Supply | | | |
| South Africa | | 5,115 | 5,290 |
| Russia | | 890 | 880 |
| North America | | 365 | 345 |
| Others | | 270 | 270 |
| Total Supply | | 6,640 | 6,785 |
| Demand | | | |
| Autocatalyst: | gross | 3,795 | 4,195 |
| | recovery | (770) | (855) |
| Jewellery | | 1,965 | 1,605 |
| Industrial | | 1,690 | 1,870 |
| Investment | | 15 | (40) |
| Total Demand | | 6,695 | 6,775 |
| Movements in Stocks | | (55) | 10 |

down from 1.97 million ounces the year before. The decline occurred in all regions, with purchases of new metal by manufacturers falling substantially.

A rising platinum price had little impact on consumer purchasing in China with retailers reporting higher turnover but a slight decline in the weight of metal bought. However, it had a much greater impact on the amount of recycling which reduced net demand by 13 per cent, to 760,000 oz, representing the lowest figure since 1998.

Chinese consumers are used to trading-in old jewellery pieces, usually in part exchange for new jewellery. High prices have encouraged this process. “Old” metal, including unsold stock returned by retailers, now represents perhaps a quarter of total metal requirements, with a corresponding decrease in purchases of new metal by manufacturers. Manufacturing volumes therefore declined by a much smaller percentage than the fall in demand. Pipeline stocks were also reduced, impacting upon new metal demand. Stocks are probably now close to their realistic minimum level.

In Europe and North America, the higher end of the market fared reasonably well. Cheaper, more fashion-orientated products sold less well, however, under competition from other white metals including white gold as high prices affected retailer profit margins. Platinum demand fell as a result.

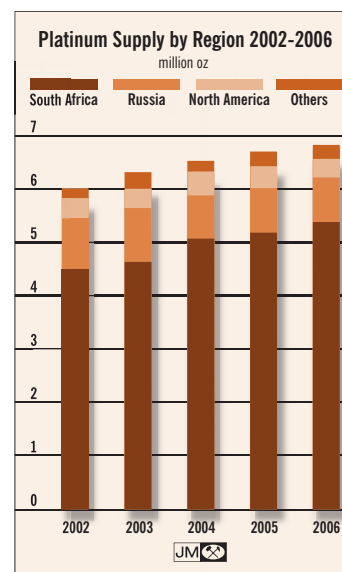
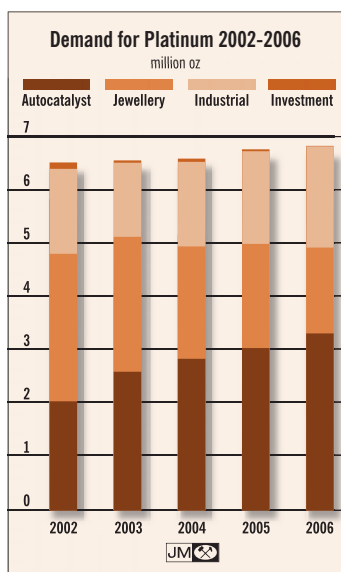
The Japanese jewellery market also saw demand fall: consumer sales have been dropping off for a number of years due to demographic changes (and slow economic growth) although an increased level of recycling of old rings and chain sold by the public was mainly responsible for the decline in 2006. So, while purchases of platinum jewellery fell, net demand was depressed further by the weight of metal returned to the market.

South African platinum supplies grew to 5.29 million ounces in 2006, with production raised by new mines at Everest and Two Rivers. A good performance from expansions and current operations at Anglo Platinum ensured an enhanced contribution of 2.82 million ounces from that company. Production of platinum by Impala fell slightly while Lonmin’s sales were remarkably strong despite problems with its smelters. Although the primary producers took advantage of this increased production to replenish their stocks somewhat after years of market deficits, supplies of platinum grew, particularly in the second half of the year.

Russian supplies of platinum were almost identical to 2005 levels, at 880,000 oz. Although Norilsk Nickel moved to expand its base metal production, lower platinum content in the ore being mined meant that production was only maintained at the same level. Output from Russia’s alluvial mines was slightly down.

The platinum price appreciated 14 per cent over 2006 and ended at \$1,117. It hit record highs of \$1,335 in May and \$1,390 in November, but most of the price increase took place in the first half of the year, reflecting the supply-demand balance. With South African mining expanding, second half metal supplies were greater than those in the first half. High platinum prices also slowed various market segments including jewellery in the second half of the year. Although the last six months exhibited improved liquidity, the price spike (to \$1,390) in November illustrated the residual tightness in the market.

The investment community also had a significant influence on the price. Although long positions on NYMEX and TOCOM fell over the year, fund activity may simply have been displaced into over-the-counter (OTC) transactions and remained significant. There is no doubt that the price of gold and of other commodities were of great importance to the platinum market: it is no coincidence that as gold appreciated, platinum followed it higher, rising \$135 over the year.



PALLADIUM

World demand for palladium fell by 10 per cent in 2006 to a total of 6.64 million ounces. Growth in the use of palladium in autocatalysts - to 4.02 million ounces from 2005's total of 3.87 million ounces - was supported by greater consumption of this metal by the electronics sector, where demand rose by 10 per cent to 1.07 million ounces. These positive trends were outweighed by a 30 per cent decrease in purchases of palladium in the global jewellery industry, where demand fell sharply to just below the one million ounce level. Demand for physical investment products also dropped substantially.

Palladium supplies decreased compared to 2005, despite expansions in mining capacity in South Africa and higher output at Norilsk Nickel: this was partly due to lower sales of the metal from Russian state stocks. Despite the fall in supplies, the supply demand balance shows a weighty surplus of 1.43 million ounces for 2006.

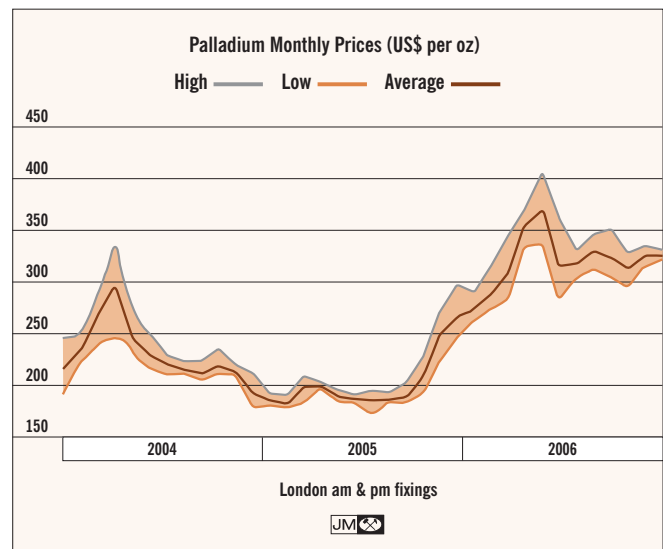
Palladium production rose strongly in South Africa in 2006, climbing 11.5 per cent to 2.91 million ounces. Anglo Platinum increased its output to 1.54 million ounces, helped by growth in the mined volume of palladium-rich UG2 ore. Other mining houses contributed increased palladium output, including Lonmin, Aquarius and ARM. By contrast, palladium supplies from Impala and Northam both fell, due to the milling of ore with lower pgm content. Elsewhere, North American Palladium and Stillwater reported much improved output of palladium for the year, offsetting drops at Falconbridge and Inco which were acquired during 2006 by Xstrata and Companhia Vale do Rio Doce (CVRD) respectively.

The weight of metal mined in Russia also increased. Norilsk Nickel reported a marginal increase in its palladium production to 3.16 million ounces. Much of the balance of Russian supplies in 2006 was made up of sales from state stocks. Large volumes of palladium were shipped from Russia into Switzerland at the start and end of 2006, we assume by Gokhran, the state depository. As the extraordinary December 2006 shipments of 1.29 million ounces were so late in the year, we think it unlikely that they were sold to consumers and therefore exclude them from our 2006 supply estimates.

2006 also saw the final sales of the stocks of metal which changed hands when Norilsk Nickel acquired Stillwater Mining. These sales totalled an additional 63,000 oz of palladium, sharply down on the 375,000 oz sold in 2005. Overall, this means that our estimate for 2006 Russian supplies is 720,000 oz lower than in 2005 at 3.90 million ounces.

On the demand side of the equation, the autocatalyst sector remains easily the most important contributor. Purchases rose again in 2006 to 4.02 million ounces worldwide - the highest level since 2001. The growing price differential between platinum and palladium over recent years has provided a financial incentive for auto makers to switch their catalyst formulations for gasoline vehicles from those based on platinum and rhodium to palladium-rhodium technology. Although this trend has been ongoing for several years, the switching process has not yet proceeded to its maximum extent and continues to drive palladium demand higher in most regions.

Although palladium consumption fell in the European market - due to thrifting and the growing market share of the diesel engine - it climbed elsewhere. Growth was particularly



Movements in the palladium price were strongly influenced by the gold and platinum markets, showing the importance of fund investors to this metal.

| Palladium Supply and Demand '000 oz | | |
|--|--------------|--------------|
| | 2005 | 2006 |
| Supply | | |
| South Africa | 2,605 | 2,905 |
| Russia | 4,620 | 3,900 |
| North America | 910 | 985 |
| Others | 270 | 270 |
| Total Supply | 8,405 | 8,060 |
| Demand | | |
| Autocatalyst: gross | 3,865 | 4,015 |
| recovery | (625) | (800) |
| Dental | 815 | 800 |
| Electronics | 970 | 1,065 |
| Jewellery | 1,430 | 995 |
| Other | 900 | 560 |
| Total Demand | 7,355 | 6,635 |
| Movements in Stocks | 1,050 | 1,425 |

JMI

strong in China, and in many other Asian markets, where production volumes are growing quickly. Automotive demand for palladium in the Rest of the World region (including China) rose by 11 per cent to 885,000 oz. Palladium purchases also rose 20 per cent in Japan on the back of strong domestic production.

Palladium is also beginning to gain a foothold, albeit a small one, in the diesel market. It is being used, to a limited extent, in diesel oxidation catalysts and particulate filters. In all such catalysts it is used in combination with platinum to help improve thermal stability and maintain platinum's catalytic performance at a lower overall cost. While palladium use in this application remains low, it rose steadily during 2006.

Demand for palladium in the electronics sector grew for the fifth successive year to 1.07 million ounces. The most important individual application remains its use in multi-layer ceramic capacitors (MLCC). With the consumer electronics markets still growing at more than ten per cent annually, MLCC production volumes are rising fast, outweighing any adverse effect from manufacturers switching from palladium-based to nickel-based MLCCs.

The major negative development for palladium demand came from the jewellery sector. Purchases of new metal plummeted from a global 1.43 million ounces to 995,000 oz. The Chinese market still remained the most important, but demand there fell from 1.20 million ounces in 2005 to 760,000 oz. Shipments of palladium into Hong Kong and China were much higher than this but we believe some of the large volumes imported in early 2006 were for fund investment purposes rather than to satisfy physical demand for the metal.

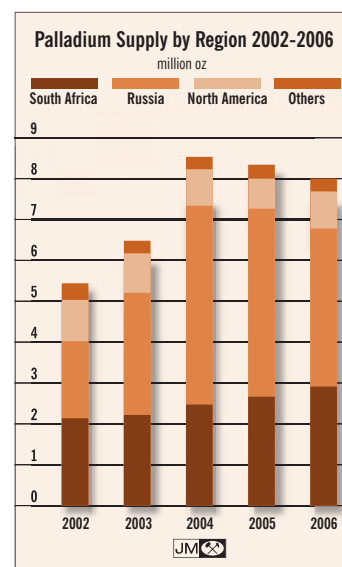
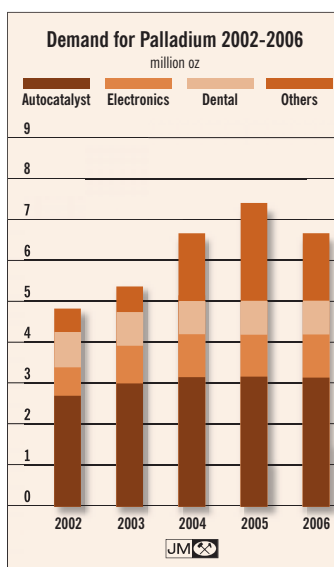
Demand for palladium from the jewellery sector is a relatively recent phenomenon in China, having only really become significant in 2004. Much of the demand for metal in 2004 and 2005 was for pipeline stocks: these allowed Chinese manufacturers to increase production in palladium and also enabled retailers to establish stocks. With the pipeline now full, the requirements for new metal were significantly lower in 2006 and, perhaps, more representative of consumer demand.

Much of the original stock manufactured was in the form of Pd950, a 95 per cent palladium alloy. This did not sell particularly well and almost all new manufacturing is in the higher-purity Pd990 alloy. The market saw large amounts of this unsold Pd950 jewellery returning to be refined and converted into Pd990 during 2006, reducing net palladium demand substantially.

The decline in the jewellery market can, however, be overstated. Despite a 30 per cent fall in 2006, global demand remains higher than it was in 2004 and very significant quantities of palladium jewellery are available on sale in Chinese secondary and tertiary cities. Outside China, interest in using palladium as a jewellery metal increased, with a small number of new products being seen in Europe and North America. Global palladium usage in white gold and platinum jewellery alloys remained almost unchanged from 2005.

The dental market performed relatively well in 2006, with demand almost level with 2005 at 800,000 oz. Palladium remained cheaper than gold and lost little market share in this end use. Demand for palladium in other applications fell sharply, mainly because of a decline in interest in palladium coins and small bars.

The palladium market therefore showed a surplus of more than one million ounces in 2006. However, the palladium price performed more strongly than might be expected on the basis of weak market fundamentals. It started 2006 at \$261 and rose to \$404, before ending the year at \$324, still well supported by hedge funds and other large investors.



OTHER PGM

Rhodium

Net rhodium demand rose for the fifth successive year to 837,000 oz in 2006, 1.2 per cent above its 2005 level. While the glass sector consumed more metal than in 2005, sales to the automotive industry once more constituted the bulk of demand, at 868,000 oz. Reclamation of rhodium from spent autocatalyst also increased, hitting 170,000 oz for the full year. Supplies rose more quickly than demand but the market was again in deficit, resulting in a strong price performance.

Although the global automotive industry bought more rhodium in 2006 than in the previous year, not every region contributed to this growth. Demand fell in Europe and North America where production volumes were relatively flat compared to previous year levels. The desire of the auto makers to limit the effects of a rising rhodium price by thrifting even outweighed the impact of new European legislation and caused a reduction in the rhodium content of an average autocatalyst there. Elsewhere, principally in Asia, the number of light duty vehicles being made grew, stimulating higher rhodium use.

Recycling of autocatalysts from damaged or scrapped cars continued to make a substantial contribution to secondary supply. At 170,000 oz, this was a quarter higher than in the previous year and should grow again in 2007, in line with increasing rhodium usage, particularly on vehicles sold in North America, during the 1990s.

Rhodium use in the glass industry rose 3,000 oz to 60,000 oz, in line with expansions in LCD glass manufacturing capacity. Other applications including electronics and chemicals were responsible for demand of 79,000 oz.

Supplies of rhodium also grew in 2006, rising by 9 per cent to 824,000 oz. South African expansions in mining capacity were largely responsible. These are mainly based on extracting UG2 ore which typically has a higher rhodium content per ounce of platinum than Merensky Reef. Supplies of rhodium from Russia also rose, reflecting what appears to have been sales from state stockholders.

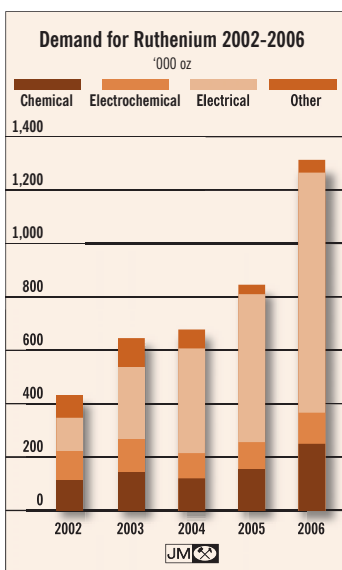
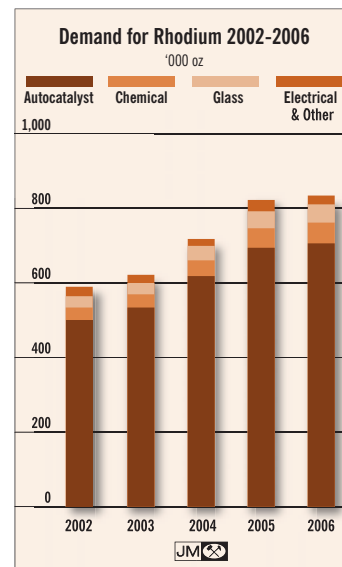
Rhodium's price was highly volatile throughout almost all of 2006. With demand still outstripping supply, it is not surprising, in retrospect, that the price averaged 121 per cent more than in 2005, at \$4,550 for the year. However, although physical consumers of rhodium have become used to considerable price volatility, 2006 was as bumpy a ride as they had ever seen. In simple terms, market bids disappeared when the price rose too

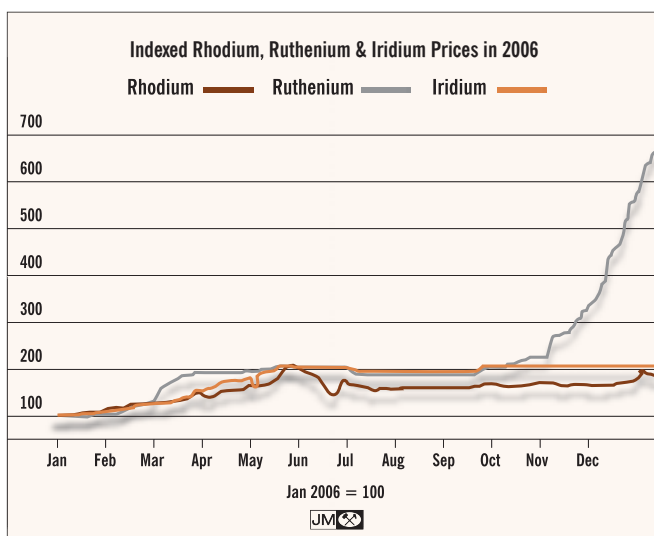
sharply, with virtually no metal changing hands. The price then dropped, allowing a period of two-way trading before it fell to a level at which offers dried up. Entirely predictably, the price would rise at this point and the cycle would then repeat. This behaviour was seen on numerous occasions in 2006 with speculator activities less important than those of participants in the physical market.

Ruthenium

Ruthenium demand soared by 45 per cent in 2006 to a record level of 1.29 million ounces. With purchases climbing so steeply, particularly for use in the electronics sector, supply was hard-pressed to keep pace and the price rose very rapidly throughout the year. 2006 saw the first signs of price sensitivity in a few applications (such as the use of ruthenium in platinum jewellery alloys) as the rising price encouraged end users to look at alternative materials or at thrifting of ruthenium.

On the demand side, ruthenium's main uses are in the chemical, electrochemical and electronics sectors. Substantial amounts of ruthenium have been used in the electronics industry for a number of years, particularly in the form of either sputtering targets or





The prices of all of the minor metals rose strongly in 2006. Ruthenium, however, showed the largest percentage growth, driven by strong fundamental demand.

requires considerably more ruthenium. As this technology is new, thrifting opportunities, where they exist, are limited over the short-term and rapid growth in production of PMR disks sent demand spiralling upward.

The picture for metal demand was complicated by purchases of metal by the hard disk producers in order to fill pipeline stocks: much of the ruthenium used in a sputtering target is simply recycled and used in new targets. Although very large quantities of spent ruthenium targets were refined in 2006, we believe that the rate of growth in this sector was such that a backlog of unrefined scrap has built-up. This boosted demand above the amount of metal actually deposited on disks, with the market tightening as a result.

Most of the mining houses do not report data on ruthenium production, but analysis of recent market information suggests that annual South African output of this metal, at somewhere in the region of 800,000 oz, is higher than that of rhodium. A significant amount of metal was also sold from stocks held by the primary producers to meet physical demand in 2006.

Movements in the ruthenium price reflected the growth in demand. As ruthenium is now an important strategic material for manufacturers of hard disks, many of these companies moved to secure supplies. Fairly significant amounts of metal were tied up in the pipeline, being made into sputtering targets or being refined, tightening metal availability still further. Speculative purchasing of ruthenium also helped drive the price much higher throughout 2006, from \$87 to a year-end \$610. However, there were market rumours of sales of ruthenium stocks from some companies in early 2007, signifying an easing of the upward pressure on the price.

Iridium

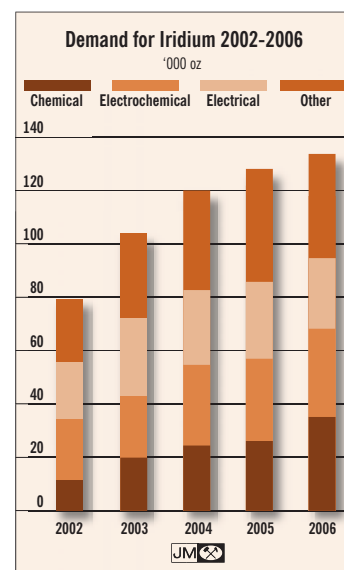
Iridium demand edged 2.3 per cent higher in 2006 to a total of 131,000 oz. However, in fundamental terms, the market remains oversupplied with primary production above this level. No significant new applications for iridium were introduced in 2006. There was minor growth in the use of this metal in process catalysts (to 33,000 oz) and in spark plugs but much of this increase in demand was offset by a reduction in the use of iridium crucibles by the electronics industry to 28,000 oz.

Despite this metal surplus, the iridium price rose strongly throughout the first half of 2006. Having started the year at \$195, reasonable levels of physical demand were accompanied by speculator purchasing and forced the price up to \$400 by June, where it stayed for the remainder of the year.

ruthenium pastes and it is these various applications that showed the greatest increase in net metal demand during 2006.

Ruthenium paste is used in the manufacture of flat screen plasma displays and this has been a significant source of demand over recent years. However, as the ruthenium price rose, the manufacturers were prompted to start a metal thrifting programme which reduced ruthenium demand slightly from 2005.

In contrast, in the hard disk sector net ruthenium requirements more than trebled to 388,000 oz. Ruthenium has previously been added to hard disks in order to increase the amount of data that can be stored. However, many manufacturers are now switching production over to a newer technology (perpendicular magnetic recording or PMR) which



OUTLOOK

PLATINUM

Platinum demand should continue its ten year record of continuous growth in 2007. The auto industry will consume more platinum in autocatalysts, with expansion in the European light duty diesel sector one of the key factors. Increasing Asian automotive production is also likely to raise platinum demand. The outlook for platinum demand from the jewellery sector is less clear, although an increase in metal purchases is feasible in 2007 given a more stable price.

Platinum supplies are also expected to grow in 2007. However, with Russian platinum exports interrupted in the first few months, the first half of the year is expected to be relatively tight in supply-demand terms. Expansions in South African capacity and processing of the backlog of material at Lonmin should progressively raise supplies during the year, leading to a more liquid market in the second half. Over 2007, should the mine expansions proceed to plan, the platinum market could move further into surplus.

In the light duty automotive sector, the market share of the diesel engine is expected to edge higher in Europe in 2007. If this proves to be the case, European platinum consumption in autocatalysts will rise once more. Diesel particulate filters are becoming more prevalent on light duty vehicles, which will raise the average platinum content of a vehicle's aftertreatment system even though no new emissions legislation is due this year in Europe. Palladium's introduction into diesel catalysts will have a minimal effect on platinum demand in 2007.

However, all major auto makers have been working for some time on replacing platinum with palladium in gasoline catalysts to realise substantial cost savings. 2007 will see this substitution process continuing in every region, as the car companies introduce new catalyst formulations which were approved in late 2006 or early 2007. These are expected to reduce platinum consumption in some regions, most notably North America. However, the effect will be outweighed in Japan and the rest of Asia by an increase in the number of light duty vehicles manufactured.

The pace of substitution is expected to slow in 2008, by which time a large majority of gasoline catalysts will be based on palladium. In our view, it is unlikely that

platinum will be completely eliminated from gasoline exhaust aftertreatment on any timescale.

The heavy duty diesel market should see further growth in all regions. 2006 global demand was in excess of 200,000 oz due to the introduction of new emissions legislation in Europe and North America. 2007 will be the first full year in which the Euro IV European rules apply and demand will therefore rise again in that region.

The high platinum price clearly had a negative effect on demand in the global jewellery market in 2006. Consumer purchases were mildly affected by the rising price but this was less important than the very large amount of recycling of platinum jewellery occurring in China and Japan. The high metal prices encouraged the establishment of a much-improved recycling infrastructure for jewellery in Japan and this is likely to raise recycling volumes on an annual basis. There are very substantial volumes of metal in each country which could be returned over coming years in the form of old pieces of jewellery and recycling rates are likely to remain high in 2007. However, in the longer-term, the price performance of platinum will be key in determining the level of recycling.

Even if recycling remains at its current high percentage of overall metal consumption, we believe there are positive prospects for the jewellery market. New marketing which aims to sell platinum jewellery to retiring baby-boomers in Japan could help slow the decline that demographic changes have caused in that country. 2006 Chinese retail sales were little changed from the year before despite a year of rising prices. With domestic economic growth very strong, there is still much growth potential in that market. In fact, volumes of metal traded on the Shanghai Gold Exchange in the first quarter of 2007 were slightly above the figures for the corresponding period in 2006, showing signs of a market which could be strengthening.

Demand from the chemical and petroleum refining sectors may edge higher in 2007 and 2008. Global economic growth remains a key issue and, if this remains strong, demand for many bulk chemicals and oil will rise. This would drive construction of new chemical and petroleum refining capacity in 2007 and further into the future.

In some industrial applications, where price sensitivity is a greater issue (for instance in the dental

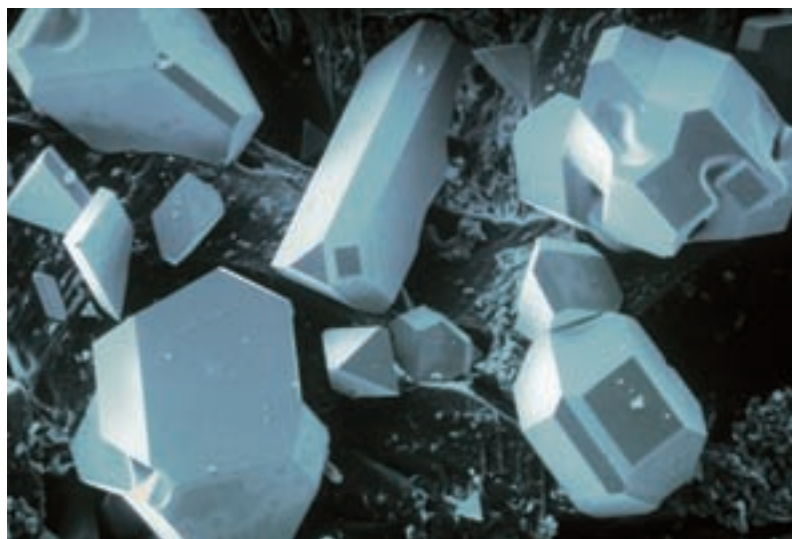
industry and in the process catalyst sector), the incentive to thrift platinum, at current price levels, from products and processes is strong for many companies. We therefore expect research into thrifting or substitution to take place over the medium-term.

2007 should see growth in platinum supplies, led by South Africa, where further increases in capacity will occur. If these expansions proceed according to schedule, sales of South African platinum could rise by more than 5 per cent from 2006 levels, a pace which would outstrip the growth in demand. However, any delays or interruptions in mining, such as from the industrial disputes seen in the first quarter of 2007 at Modikwa or the smelter rebuild at Marikana, would mean that supply and demand could be much more finely balanced.

Russian exports of platinum are forecast to fall slightly in 2007 (although this decline should be more than offset by rises in South African output). However, the first months of the year saw a major disruption in the shipping of platinum and rhodium from Russia (palladium was unaffected). New legislation was passed in January 2007 abolishing export quotas for platinum group metals. At the time of writing, the new regulations had not been finalised and approved by the relevant authorities. As a result, there were no platinum shipments in the early part of 2007; Russian contracts were being met from overseas stocks or metal leased or bought from elsewhere, with no indications of when shipments might be resumed.

Provided that the South African producers meet their production targets, and that the hiatus in Russian shipments is resolved, we expect the platinum market to be in surplus in 2007 but with particular tightness in the first half of the year. The launch of an exchange traded fund (ETF) was widely expected and had already provided some support to the platinum price. If the platinum ETFs are particularly successful in gathering investment, then they could apply further upward pressure to the metal price. With this in mind, we believe that platinum could reach \$1,400 over the next six months. The price could rise further and show greater volatility if further significant supply disruptions occur or if fund positions were to change markedly.

However, fund activities could have a negative effect. Funds could become bearish towards commodities



due to external factors such as the growing problems in the North American housing market, which could lead to a reduction in US consumers' savings rates. This would be likely to have the effect of encouraging funds to sell off some of their investments in commodities, something which would impact on platinum via its links to the gold price and to the US Dollar.

There is therefore some downside potential for the platinum price over the same six month period. However, were the price to fall as low as the \$1,200 mark, the lower end of our forecast range, we believe this would revitalise consumer and speculative purchasing, supporting the price at this level.

South African supplies of platinum should grow in 2007, as they have every year since 2001. With demand expected to rise as well, any supply disruptions could sway the balance of the market.

PALLADIUM

Having fallen in 2006, global palladium demand is forecast to resume its growth in 2007. The automotive market is expected to consume more of this metal, replacing platinum in many, but by no means all, of the remaining gasoline autocatalysts where it is still employed. In the palladium jewellery market, as in platinum, there is considerable uncertainty as to the future trend in demand. Based on current market data and perceptions, a modest level of growth in purchases of palladium by Chinese jewellery manufacturers is not out of the question this year. The electronics sector will again be the third significant area of demand, with metal purchases expected to remain above one million ounces.

Supplies of palladium from South Africa will rise, roughly in line with the increasing production of platinum. Russian primary metal production may fall slightly but the sales of state stocks are expected to be large once more (including sales from shipments made into Switzerland in December 2006). Although the exact volume of palladium supplies to the market in 2007 is hard to forecast precisely, it seems likely that it will be higher than in 2006. In any case, we anticipate that the palladium market will show a substantial fundamental surplus this year, for the seventh year in a row.

Having risen in 2006 to its highest level since 2001, when the palladium price was at its all-time peak, demand for palladium from the autocatalyst sector shows good prospects for further growth this year. With the platinum price substantially above that of palladium, there is still a considerable economic incentive for automakers to switch to the latter metal. The majority of gasoline catalytic converter production has already been changed over to palladium (or was already using palladium in any case) but the process is continuing in 2007. We do not, however, expect this switching to displace all platinum from use in three-way catalysis.

This continuing move to palladium will ensure that purchases of palladium for autocatalysts will rise in 2007 despite any thrifting of platinum group metals which can be achieved. The number of vehicles manufactured is also likely to grow in 2007. The Asian

markets, in particular, should exhibit healthy increases in production volumes, adding further momentum and driving palladium consumption higher.

Palladium is also set to play an increasing role in diesel aftertreatment. While platinum-palladium diesel autocatalysts were first fitted to vehicles in 2005, they are still used on relatively few models. Consequently, very little palladium will be utilised compared with the amount of platinum used in the light duty diesel vehicle sector. We do, however, expect to see palladium employed both on oxidation catalysts and on diesel particulate filters. It is important to note, however, that current technology only features palladium as a relatively minor precious metal component, always alongside platinum. Growth in the use of palladium will therefore only dampen the expansion in platinum consumption a little.

The consumer electronics market is expected to grow again in 2007. For instance, sales of computers are expected to rise 8 per cent above 2006 levels. This trend will boost requirements for all types of electronic components, of which the most important for palladium demand is the multi-layer ceramic capacitor (MLCC). Where there is a cheaper alternative to the use of palladium, there is an incentive for substitution or thrifting to take place. In the MLCC market, nickel will take more market share from palladium but MLCC unit growth will counter this. The precise balance of these trends in terms of palladium demand is hard to predict but we expect it to remain stable.

Where palladium is itself the alternative material in the electronics industry - whether as a cheaper replacement for gold or as an environmentally-friendly substitute for heavy metals - there is potential for growth in demand over the short to medium-term.

The prospects for 2007 are less certain for palladium in the jewellery trade. The rapid growth in demand from 2003 to 2005 was based only partly on rising consumer purchases of palladium jewellery. More importantly, Chinese manufacturers and retailers acquired very large amounts of metal (supported by extremely cheap financing rates for palladium) in order to build working and retail stocks. We judge that the pipeline is now full and that palladium demand in 2007 will more accurately reflect consumer purchases. However, some of this pipeline metal has come back for reprocessing already, depressing demand for

The Chinese market represents the majority of palladium jewellery demand. 990 parts per thousand has become the standard purity.



new metal. Some unsold Pd950 pieces still remain in the system which could be returned by retailers for recycling in 2007.

Prospects for consumer demand are also unclear. The availability and popularity of palladium jewellery is patchy even in similar cities in China. Small amounts of palladium jewellery are on sale in Beijing but have not sold well to date. In Shanghai, there are very few palladium pieces even on display. By comparison, palladium jewellery is found in quantity and sells well in many second and third tier cities. The outlook for consumer demand is therefore uncertain but with some positive signs. However, low manufacturing volumes of palladium jewellery in the final quarter of 2006 suggest that growth in jewellery demand in 2007 is likely to be limited.

Outside China, the weight of palladium bought for jewellery manufacture is likely to grow in 2007 but from a much lower base. New products have been seen in palladium, especially men's wedding rings, but this product development is at the test market stage. The amount of metal being used is increasing, however, as palladium begins to establish a market niche, and European and North American demand should rise accordingly.

The dental market is likely to decline again in 2007. As we have previously reported, demand in the key Japanese market depends upon the balance between the price of the Kinpala dental alloy and the government subsidy which is used to pay for it. Although the subsidy is regularly reassessed, it was below the level of the alloy's price in early 2007, with purchases of palladium for this application diminishing correspondingly.

As in the platinum market, supplies of palladium from South Africa are expected to increase again in 2007. However, the balance of the palladium market will be heavily dependent on the level of Russian state stock sales. We have assumed that the large shipments of palladium from Russia to Switzerland at the end of 2006 were made too late to be sold into the market last year. We expect these stocks to be liquidated this year, and therefore anticipate a large overall total of sales from this source, even if no further exports are made from the remaining state stocks.

The palladium price remained largely untroubled by weak supply-demand market fundamentals in 2006 and was instead supported by significant and growing

fund positions in the metal and on the futures markets. With another surplus of palladium expected in 2007, fund support will remain of key importance.

If the funds continue to absorb the surplus, then the price of palladium could reach \$420 over the next six months. ETFs have recently been launched for palladium as well as for platinum and, if successful, could reinforce the price. Conversely, a lessening of the appetite for palladium from hedge funds and other investors would weaken the price. Softening prices of precious metals or other commodities would also negatively affect the palladium price. However, unless fund selling is particularly dramatic, we do not expect palladium to trade below \$320 over the same period.

OTHER PGM

2006 saw some evidence of price sensitivity from end users of rhodium and ruthenium. If prices of these metals remain elevated, this trend of thrifting or substitution could intensify in some sectors.

The car market will remain key for rhodium and the balance between continued thrifting and growing production volumes will vary in different regions. The European market is likely to see some decline in rhodium purchases with the diesel car's market share increasing as well. By contrast, demand in the Asian markets should rise as production volumes increase strongly yet again.

With rhodium production from South Africa expected to increase in 2007 and Russian supplies likely to fall (with lower sales by stockholders behind this latter change), the rhodium market could move closer to balance in 2007. This would imply an easing of the price although the difficulties in first quarter Russian rhodium supplies have provided support to date.

In the ruthenium market, we expect to see further growth in demand from the computer hard disk sector in 2007, as manufacturers continue to increase the proportion of their output which is based on perpendicular magnetic recording (PMR) technology. This will be offset to a degree by growing amounts of recycling of the backlog of spent ruthenium sputtering targets. Thrifting, in response to the elevated price, is likely to come into effect in this and other industrial applications over time to ease some of the price pressure.