Summary and Outlook

Platinum

- Demand for platinum is forecast to climb to a new high of 6.37 million oz in 2002.
- Consumption of platinum in autocatalysts will grow but purchases of the metal will be largely unchanged at 2.52 million oz as some US manufacturers utilise inventories.
- Jewellery demand is expected to rebound to 2.78 million oz, although the rise will nearly all be due to continued growth in the Chinese market.
- Industrial demand will be stable at 1.55 million oz. Purchases from the glass industry will recede from the high level of 2001 but use of platinum-based catalysts by the chemical industry will increase.
- Supplies of platinum are forecast to grow marginally to 5.88 million oz. Shipments from Russia will fall towards the level of mine production, offsetting a substantial rise in South African output.
- With the market in deficit for the fourth year in a row, the platinum price strengthened from $455 in January to $560 by the end of September.

Platinum Supply and Demand
'000 oz

	2001	2002
Supply		
South Africa	4,100	4,440
Russia	1,300	950
North America	340	355
Others	110	135
Total Supply	**5,850**	**5,880**
Demand		
Autocatalyst: gross	2,530	2,520
recovery	(530)	(570)
Jewellery	2,550	2,780
Industrial	1,550	1,550
Investment	90	90
Total Demand	**6,190**	**6,370**
Movements in Stocks	(340)	(490)

Overview

Demand for platinum is forecast to climb by 2.9 per cent to 6.37 million oz in 2002. Chinese purchases of platinum for jewellery will rise strongly for the seventh year in succession. The use of platinum in autocatalysts continues to grow but purchases of metal by the auto industry will be stable owing to the use of stocks. Demand from industrial users will be broadly similar to 2001.

Supplies of platinum are expected to grow only marginally to 5.88 million oz. Increasing South African output will be offset by a large drop in Russian sales. Consequently, the deficit in the platinum market is expected to widen to 490,000 oz. This deficit has been evident in tightening physical liquidity and the strengthening platinum price. Substantial volumes of metal were withdrawn from market stocks held in Switzerland during the first nine months of 2002 to help satisfy demand.

Autocatalyst demand for platinum is forecast to remain stable at 2.52 million oz in 2002, despite growth in underlying use of the metal. This paradox is accounted for by the significant use of inventories of platinum by some US auto manufacturers, who had built up stocks over the previous two years.

In all the major vehicle manufacturing regions, the shift from palladium towards greater use of platinum in autocatalyst systems has noticeably increased consumption of the latter metal this year. In Europe, platinum demand has been boosted by the continued growth in sales of diesel cars (which only utilise platinum-based autocatalysts) at the expense of gasoline vehicles. Platinum consumption in 2002 will also increase as auto companies certify new models to tighter emissions standards.

After falling in 2001, **jewellery** demand for platinum is expected to rebound by 230,000 oz to 2.78 million oz in 2002. Chinese demand will again experience double-digit growth and is forecast to reach 1.47 million oz. In contrast, Japanese retail sales of platinum jewellery declined between January and September.

Demand for platinum in **industrial** applications is forecast to be stable at 1.55 million oz. New chemical manufacturing capacity in the Middle East and Asia will generate a modest increase in demand for platinum-based process catalysts, but glass industry demand for platinum will slip as expansions are proceeding at a lower rate than in 2001. Electrical demand is also expected to be flat – the more widespread use of hard disks containing platinum in non-computing applications will be offset by weak computer sales.

Purchases of platinum **investment** products were relatively strong in the first

quarter of the year but sales have fallen back as the price has risen. Overall investment demand, at 90,000 oz, is expected to be the same as 2001.

Supplies are forecast to reach 5.88 million oz this year, a marginal increase of 30,000 oz over 2001. New projects and expansions of existing operations in South Africa will deliver substantially higher volumes of metal in 2002. Russian sales, on the other hand, are likely to drop close to the level of production.

The liquidation of long futures positions in January caused the platinum **price** to slide from $481 to $455. Since then the price has strengthened in several rallies, each successive rise peaking higher than the last. Rising supplies have not been able to keep pace with the growth in physical demand and market liquidity has tightened. By the end of September platinum was trading close to $560 and strengthened further in early October.

Supply

Sales of platinum from **South Africa** are forecast to reach a new high of 4.44 million oz in 2002. The largest increase in output will come from Anglo Platinum but production from all the established producers will grow.

Anglo Platinum plans to supply 2.25 million oz of platinum this year, an increase of approximately 140,000 oz. Production will be lower than the company's initial 2002 forecast due to delays to the ramp up of production at the Bafokeng Rasimone Platinum Mine (BRPM) and a decline in head grade at PPRust due to a low-grade intrusion. On the positive side, output from the Waterval expansion has been building rapidly following commissioning of a new concentrator in February. The new Modikwa mine, a joint venture with African Rainbow Minerals, will also make its first contribution to refined production this year, although output will be small.

Impala's operations have benefited from increased concentrator throughput, due in part to processing of an ore stockpile, while Lonmin is substantially expanding its mining and milling operations. Northam's production will recover from the dip in 2001, caused by a prolonged strike, and output from Aquarius's Kroondal mine is nearing planned capacity.

We predict that supplies from **Russia** in 2002 will fall to 950,000 oz, significantly down from 2001 when 1.3 million oz of metal were sold. Central government stocks of platinum are now relatively low, so shipments are expected to be close to the level of production at Norilsk Nickel and the alluvial operations in the Far East of Russia. Although Norilsk is keen to sign contracts for the majority of its palladium production, the company has said that it will continue to sell platinum on the spot market.

Supplies of platinum from **North America** are forecast to rise by 15,000 oz in 2002, primarily due to increasing pgm output from Stillwater Mining Company. Output is also increasing in Zimbabwe: Zimplats will get a maiden contribution from its Ngezi mine this year, while an expansion programme at Mimosa is underway.

Firm platinum prices continue to stimulate a high level of exploration, both in South Africa and elsewhere. However, the drop in the palladium price from over $1,000 in January 2001 to $320 by June 2002 has weakened the economics of most projects outside Southern Africa as the great majority of them are significantly richer in palladium than platinum.

Demand

Autocatalyst demand for platinum is forecast to be virtually unchanged at 2.52 million oz this year, despite continued growth in underlying consumption. North American purchases are expected to fall by 40 per cent to 480,000 oz as some auto companies reduce their metal inventories. US car manufacturers are having to manage heavy pressure on their balance sheets, not least from healthcare and pension liabilities, while at the same time consumer finance deals and cash rebates on car sales have cut profit margins. The already strong focus on cost reduction has therefore intensified. After making net additions to their platinum inventories in previous years, several US auto makers have been using stocks to supplement purchases during 2002.

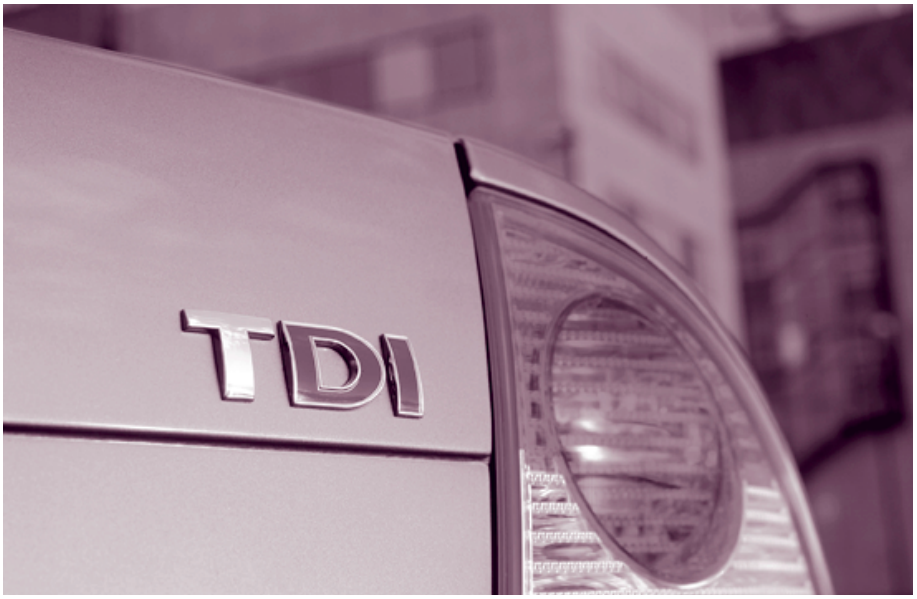
The greater use of platinum-based catalysts for gasoline vehicles, at the expense of palladium dominant systems, will have a positive impact on platinum consumption this year. Technical programmes that were initiated in 2000 and 2001, when the palladium price was at

its highest, have resulted in increased platinum consumption in all major manufacturing regions.

European autocatalyst platinum demand is forecast to expand by 185,000 oz to 1.25 million oz. Growing production of diesel cars will again be an important factor as they only utilise platinum-based catalytic converters. Two out of every five cars sold in western Europe are now diesels and use of platinum in diesel autocatalysts will account for almost 900,000 oz of demand in 2002.

Tighter vehicle emissions regulations will be introduced in Europe in 2005, and new standards are also likely to come into force in Japan the same year. These will necessitate higher pgm loadings on some models. Manufacturers in Europe are already producing cars that comply with the tougher standards because tax incentives in several countries make them attractive to consumers. Japanese manufacturers are also producing new models that will meet proposed new emission limits. The improved environmental credentials of these vehicles give auto companies a significant marketing advantage in Japan.

After falling for two consecutive years,



Supply and Demand for Platinum 1998-2002
Million oz

jewellery demand for platinum is forecast to rebound by 9 per cent in 2002 to 2.78 million oz. The Chinese jewellery industry will again purchase record volumes of platinum – demand is expected to rise 13 per cent to 1.47 million oz this year.

There have been no signs that the rise in the platinum price over the first nine months of this year affected the growth in the manufacture of platinum jewellery in China. However, in several other markets, the price has been something of a deterrent to both the trade and consumers.

In addition, the poor state of the economy in Japan, and weak consumer confidence in the USA and continental Europe have held back retail sales of platinum jewellery in these regions. Japanese demand, however, will rise to 735,000 oz because fabricators have been liquidating lower volumes of stock than in 2001. The European market, with the exception of the UK, was subdued during the first nine months of 2002 and demand is expected to be flat at 170,000 oz.

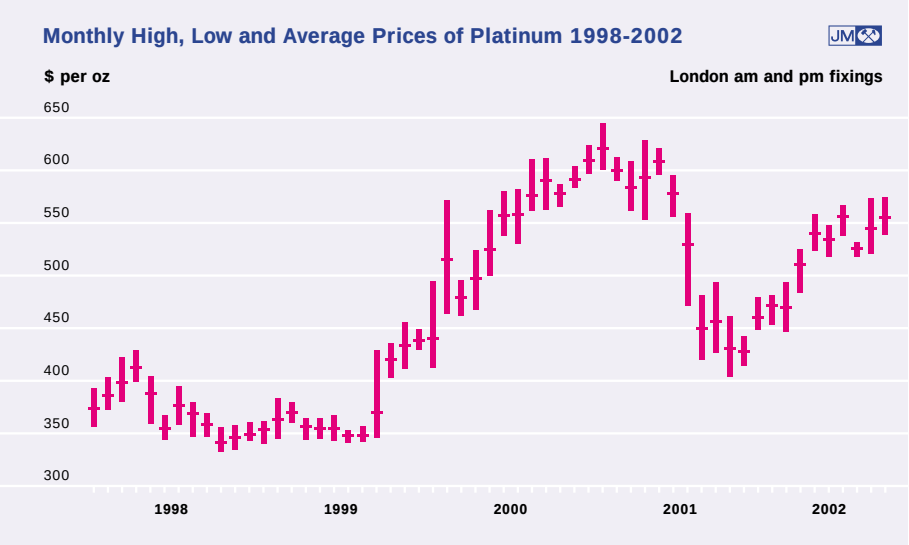
Industrial demand for platinum is predicted to be unchanged from 2001 this year at 1.55 million oz. Overall electrical demand will be stable at 385,000 oz – the spread of hard disks to non-computing applications will be tempered by weaker sales of personal computers and increasing storage capacity (which reduces the average number of disks required per product). Thermocouple demand has been hit by the slump in the semiconductor industry – although semiconductor orders have shown tentative signs of picking up, overcapacity remains substantial and investment in manufacturing equipment will be low in 2002.

Use of platinum-based catalysts by the chemical industry is forecast to rise 5 per cent to 300,000 oz. Growth in demand will stem from increases in paraxylene manufacturing capacity in the Middle East and Asia, plus a small increase in nitric acid capacity in Asia. Glass industry demand for platinum will fall from the high level of 2001 as the rate of capacity expansion in Asia has slowed. However, substantial investment in LCD glass manufacturing facilities in China and South Korea continues.

Dental demand is expected to be static after increasing by 20 per cent in 2001, when many dentists switched from palladium to high-gold alloys containing 10 per cent platinum. The fall in the palladium price has not so far encouraged a significant reversal of the substitution, many dental practices having made considerable investment in alternative materials.

Net **investment** demand for platinum is expected to be similar to 2001. Strong

purchases were made by Japanese investors in the first few months of the year when the platinum price was relatively low. Demand fell from April onwards as the price rallied, although a sharp rise in the value of the yen versus the dollar plus a slide in the gold price boosted Japanese purchases of precious metals in July.



Outlook

The economic outlook in most major regions of platinum consumption is uncertain. US consumer confidence is fragile in light of the stock market slump, corporate accounting scandals and political tensions. Countries in western Europe that have adopted the euro have found their ability to stimulate domestic demand constrained by the fact that interest rates are set centrally. In Japan, the huge level of debt overhanging the banking sector means that the economy may get worse before it gets better.

Although this global economic uncertainty places a caveat on any forecast, the fundamentals for platinum demand are good and we remain positive about the outlook for demand in 2003.

Growth in the autocatalyst sector is likely to be led by a rebound in North American purchases. Following the recent erosion of platinum inventories in the USA, demand next year will be more closely aligned with the underlying use of platinum in autocatalysts. However, while sales of light vehicles have held up remarkably well during the first nine months of 2002, there is unease about the resilience of the market. Preliminary data for the first two weeks of October suggested that sales might be starting to weaken, and figures over the remainder of the year will be closely watched.

European autocatalyst demand for platinum is forecast to grow solidly in 2003; diesels will continue to take market share from gasoline cars and an increasing number of vehicles will be certified to the tighter Euro Stage IV standards. The move away from palladium to platinum-based autocatalysts, however, will have less of an impact in 2003 – the fall in the price of the former metal has removed much of the rationale for further switching.

Jewellery demand in Europe, Japan and North America will remain sensitive to the sense of financial well-being felt by consumers. Retailers in the USA in particular are hoping for a strong Christmas season but are unwilling to make predictions about 2003.

Japanese retail sales of all jewellery will fall in 2002 and it is too early to speculate about 2003. That said, there will be less old jewellery stock available for recycling and this should provide another modest boost to platinum demand next year. Platinum also retains a strong hold on the Japanese bridal market and consumers' preference for white metal jewellery continues to grow, white gold having taken market share from yellow gold this year.

Chinese jewellery demand has the potential to grow further in 2003 – platinum jewellery is now well established in most major cities and the number of sales outlets continues to expand.

Profit margins throughout the Chinese platinum jewellery industry, however, are small. If platinum prices continue to climb during the remainder of 2002 and into 2003, margins will be further squeezed unless retail prices are also increased. The extent to which Chinese retail sales are independent of price may then start to be tested.

In the industrial sector, if sales of personal computers recover as manufacturers predict in 2003 then we would expect to see a rise in platinum demand for hard disks. However, as storage capacity increases, fewer disks are required per drive and this will moderate growth in metal demand. Demand for platinum-based catalysts for petroleum cracking and chemical processes is forecast to be largely stable next year.

Platinum supplies from South Africa are expected to increase substantially again in 2003 but the production targets are challenging. Russian sales are likely to continue at or close to the level of production, as we believe that the central government inventories are at relatively low levels.

After a substantial net outflow of platinum from Switzerland in 2002, it is unlikely that the heavy rate of withdrawals from market stocks can continue into 2003. The physical market, therefore, should remain tight and we expect platinum to trade between $550 and $650 during the next six months. The possibility of further squeezes on short-term liquidity and lease rates is high, which could result in short sharp jumps in the spot price above our forecast upper level.

Palladium

- Palladium demand is forecast to slump by almost 2 million oz to 4.88 million oz in 2002, slipping below the level of mine production.
- Heavy use of inventories by some US auto companies will greatly reduce the amount of palladium purchased for autocatalyst manufacture.
- Electronic component fabricators have continued to run down their palladium stocks at the expense of purchases, albeit at a reduced rate. Nickel has taken further market share in multi-layer ceramic capacitors.
- Total supplies of palladium are expected to plunge to 4.91 million oz. Russian shipments are forecast to drop by 63 per cent to 1.6 million oz in response to the weak market.
- South African supplies of palladium will rise to 2.19 million oz, while expansions in North America will see sales climb to 970,000 oz.
- The palladium price subsided from $440 at the start of 2002 to $320 by June, but stabilised close to this level through to the end of September.

Palladium Supply and Demand
'000 oz

	2001	2002
Supply		
South Africa	2,010	2,190
Russia	4,340	1,600
North America	830	970
Others	120	150
Total Supply	**7,300**	**4,910**
Demand		
Autocatalyst: gross	5,090	3,160
recovery	(280)	(370)
Dental	720	730
Electronics	710	750
Other	550	610
Total Demand	**6,790**	**4,880**
Movements in Stocks	510	30

Overview

Palladium demand is forecast to plunge by 28 per cent to 4.88 million oz in 2002 – the first time demand has been below 5 million oz since 1994. Some auto companies in the USA have been working off inventories of metal, while electronic component manufacturers have also drawn heavily on stocks. Supply is also expected to slump, falling by over 2.3 million oz to 4.91 million oz as Russia continues to stay out of the spot market.

The net result should be a weak, but finely balanced market. Although demand is expected to be only slightly below supply from primary sources, sales of over 300,000 oz of palladium by the US Defense National Stockpile Center during the first 10 months of the year have added to the surplus.

The palladium spot price retreated from $440 in January to $320 in June and has stabilised around that level since. The slide was partly in response to announcements by Ford that it had written down $1 billion of precious metal inventories and forward contracts.

The **autocatalyst** sector has seen a substantial fall in palladium demand. The big three US-owned car companies accrued substantial stocks of palladium between the late 1990s and 2001. Concerns about supply disruptions and rising and volatile prices have since receded, and we estimate that they have satisfied a large proportion of their production needs from inventories this year. In addition, some metal has been sold back to the market. Net autocatalyst demand, therefore, is forecast to fall to 3.16 million oz, down from over 5 million oz in 2001.

In the **electronics** sector, component manufacturers have been running down large palladium stocks, which they accumulated towards the end of 2000. The use of inventories, however, has declined compared to 2001 and purchases should recover moderately to 750,000 oz.

Norilsk Nickel has continued to abstain from the palladium spot market and, with demand weak, Russian **supplies** are forecast to drop by 63 per cent to 1.6 million oz. Growing South African output of palladium will exceed Russian shipments this year. North American output is also forecast to rise, reaching 970,000 oz.

The reduction in Russian shipments of palladium has helped to prevent the **price** from dropping much below $320 since June 2002, in the face of weak demand.

Supply

Russia withdrew from the palladium spot market in August 2001. This, plus the lack of demand from the US auto industry, is expected to result in a collapse in Russian sales to only 1.6 million oz in 2002.

Norilsk Nickel wants to sell the bulk of its palladium production via contracts negotiated directly with consumers and does not envisage returning to the spot market in 2003. The company recently announced palladium supply contracts with both Mitsubishi and General Motors.

South African supplies of palladium are forecast to rise by 180,000 oz to 2.19 million oz in 2002, reflecting the expansions of platinum output achieved by all the established producers this year. In **North America**, Stillwater Mining Company and North American Palladium will produce greater volumes of palladium, and total supplies will grow to 970,000 oz.

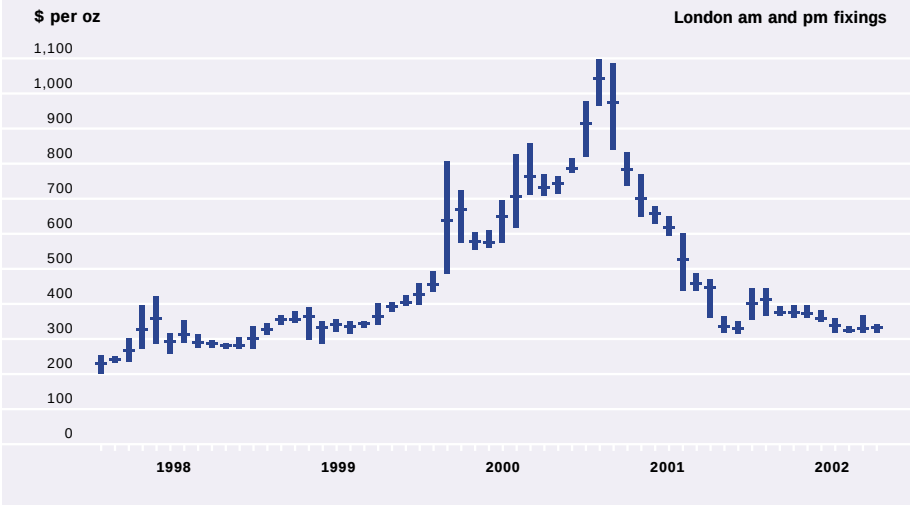
Demand

Purchases of palladium for **autocatalyst** manufacture are forecast to plunge to 3.16 million oz in 2002. This will be a considerable distance below the actual level of consumption due to the use of inventories by some US auto manufacturers in lieu of metal purchases.

From the mid-1990s through to early 2001, auto companies' demand for palladium rose rapidly and supplies from Russia were disrupted. However, as the price climbed towards $1,000, car companies began to thrift palladium and several moved towards greater use of platinum-based catalyst systems. These factors, combined with the need to minimise costs, have led some US auto makers to make substantial inroads into their palladium stocks this year, reducing purchases of metal.

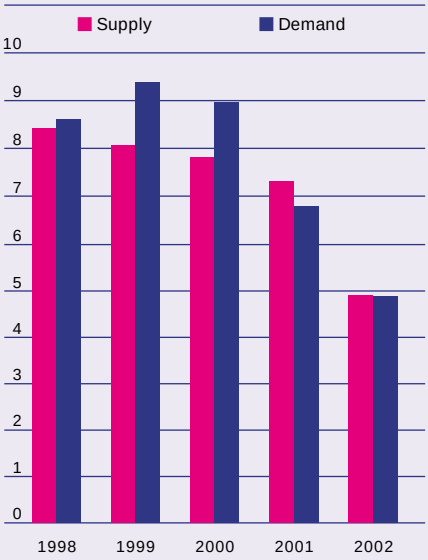
In addition, palladium thrifting programmes and its partial substitution by platinum are expected to reduce the underlying use of palladium in autocatalyst manufacture in the USA and Europe. European consumption has weakened as gasoline powered cars have continued to lose market share to diesels. The latter do not use catalysts containing palladium.

Monthly High, Low and Average Prices of Palladium 1998-2002



Supply and Demand for Palladium 1998-2002

Million oz



The upturn in the **electronics** industry has not materialised as strongly as had been expected, and component and metal stocks will again undermine palladium demand this year. The substitution of palladium by nickel in multi-layer ceramic capacitors (MLCC) has also continued and this trend is not likely to be reversed. The use of stocks, however, will be lower than in 2001 and so purchases of metal should increase modestly to 750,000 oz.

There has not as yet been any significant move back to palladium-based alloys in the **dental** sector this year, after previous price rises and volatility hastened the move towards alternatives.

Outlook

Overall, we forecast a moderate recovery in palladium demand in 2003 as inventories of metal held by manufacturers have been significantly depleted this year. Net demand, however, is expected to remain significantly below that of 2001.

Thrifting programmes will continue to have an impact on palladium consumption in autocatalysts, and diesel cars will take further market share from gasoline vehicles in Europe. The move away from palladium-rich systems to platinum-based autocatalysts on gasoline vehicles will continue to be felt, as programmes that are already at an advanced stage are unlikely to be reversed. However, the substantial price differential that currently exists between palladium and platinum has weakened the rationale for further switching to the latter.

Given the size of past inventories, further depletion of palladium stocks by US auto companies is possible in 2003. However, we believe that this is unlikely to be on the scale of this year and we expect North American demand to improve.

The majority of component inventories and palladium stocks should be largely eliminated from the electronics industry by the end of the year. As a result we expect to see small growth in net demand for palladium in 2003. However, the substitution of palladium by nickel in MLCC is continuing.

In August this year, the Russian Finance Minister, Alexei Kudrin, said that sales of precious metals and gemstones from central stocks would be increased in 2003 to help meet the country's debt repayments. These are scheduled to exceed $17 billion next year. There is potential for a significant increase in Russian sales of palladium, therefore, and this plus the continued weakness of demand will continue to act as a buffer to the spot price in the short-term. We expect palladium to trade between $250 and $330 during the next six months.