

# PLATINUM 2007



## Interim Review

Q&A's following the London presentation - Nov 13, 2007

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**Q1: Victoria Roberts: *Platts Metals*.**

I've done a calculation that in the platinum markets the non-investor demand constitutes about 98% of demand, but in palladium you haven't separated out the category of investment. And I was interested to know if you're able to give a more precise figure of what percentage of demand is accounted for by investment in palladium, please.

**A1: Mark Bedford: *Johnson Matthey***

It is of a similar order to platinum. But in general terms, I would say investor and fund interest in palladium is rather more substantial than it is in platinum.

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**Q2a: Paul Walsh: *Morgan Stanley***

A couple of questions. Can you talk a bit about what the auto guys are doing in the U.S., whether you've seen any stock building in light of the supply constraints, the high price and so on, and with an auto market in the U.S. looking a bit rocky, what kind of impact that might have? And can you actually quantify how much platinum is being bought by HDD customers now in terms of what demand is looking like overall in ounces for the HDD market.

**A2a: John Cullen: *Johnson Matthey***

On HDD, the number that we have for 2007 is 450,000 ounces of platinum. Our view is that will continue to grow in the future years.

On the first question, if you look at platinum and palladium for all the regions that we cover in the auto catalyst sector, North America is the only region that is down in any of the metals, and that was just for platinum, down slightly from 905,000 to 900,000 ounces.

There is a continued move to palladium by car manufacturers in North America. We believe the big three will have completed this move to palladium in gasoline by the end of 2008. We still expect some platinum in gasoline but this will be in cars predominantly manufactured by Asian companies in the North America. In heavy duty diesel we are also seeing more use of palladium with anywhere from a third to a fifth of the platinum being replaced by palladium.

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**Q3a: John Reade: UBS**

There's an awful lot of palladium going into China at the moment, if you look at import stats, if you look at stuff going into Hong Kong, et cetera. It doesn't seem to be showing up in your numbers for jewellery - excuse me. And if I looked, eyeballing off the slide on palladium, autocat usage in China, it looks at about 300,000 ounces. What are they doing with it?

**A3a: Mark Bedford**

I think there's a couple of areas that are worth looking at, John. Firstly, industrial demand for palladium in China is really quite substantial. We're doing a lot of work there at the moment to sort of tie down numbers there, but it's a significant number and it's a growing number.

The other thing that we've seen, I think there is some investment demand for palladium, particularly out of Hong Kong, almost in a sort of informal investment sector, if you will, whereby it isn't tied down in the statistics. But that's the way we make the numbers add together. It's a combination industrial plus investment, plus jewellery, this combination of those three things together. And I think what I would say is that both the industrial and investment side are bigger than we thought they were before.

**Q3b: John Reade**

Fair enough. Thanks. Would it be fair to say that the proportion that was being quoted in terms of investment in the platinum sector of 2% probably excludes OTC investment and therefore would be a rather unreliable number?

**A3b: Mark Bedford**

The way that we measure investment is as physical investment. The OTC market is extremely difficult to quantify, as you know. And we've never tried

to quantify the OTC market in this particular review. We're very much focused on the [physical] side.

**Q3c: John Reade**

No, that's fine. I just wanted to make that point clear to perhaps the previous question. And then the final thing, I haven't seen the survey, obviously. When are you going to start giving us a China supply and demand number. I mean, we've got the world, obviously, and then you break it into North America, Europe, Japan, other. China stands out as really something which should be in there for all the metals, really.

**A3c: Mark Bedford**

That's something we're looking at very hard, actually, John. It's a good point. What we've tried to start to do is we do show separate figures for China in some of the areas now. I think as time goes on we will separate China out almost completely.

**A3c: John Cullen**

I should say, on the auto catalyst side, we have China separated out.

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**Q4: Sandra Buchanan: *Metal Bulletin Monthly***

With regard to platinum production in South Africa, do you have a view on whether new smelting and/or refining capacity is going to keep up with new mine production?

**A4: Mark Bedford**

It's an interesting question. We actually had this question back in May and I looked at my answer to that recently and thought, was that the right thing to say? My view is that if the mining companies and the mining industry as a whole is investing in new shafts, new mining capacity, I believe that eventually and in the same sort of plan they have to be adding smelting and refining capacity to deal with the output.

The thing doesn't hold together as a long-term expansion plan unless you assume that smelting capacity and refining capacity will keep track of expanding mining capacity as we go along.

There are, obviously, announcements of potential new refining capacity. Some of the fabricators have added refining capacity down in Port Elizabeth. I've heard discussion of even more PGM refining capacity being added.

I think the interesting thing on refining is there's an economy of scale issue. It's very difficult to build effectively and economically a small PGM refinery, something that refines, I don't know, 500,000 ounces or less.

I think one of the challenges is to get enough horizon of input to build a big PGM refinery, because that's where they become really effective. I've got no doubt in the future those investments will be made. And I think in due course the PGM refining capacity will keep up with the expansion.

As far as smelting capacity we've added, it seems to me that smelters are added periodically in various places, both on the Eastern and Western Limb, and I don't see smelting capacity as particularly a bottleneck going forward. I was wondering if there was any comment from the panel regarding the rising concern about PGM smelting capacity in South Africa, which has the ability to possibly interfere with future supply.

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#### **Q5a: Ross Norman: *The Bullion Desk***

I thought it was interesting to see how well platinum jewellery demand is holding up, despite the particularly elevated prices; whereas palladium jewellery is stagnating despite the fact the prices are very modest. Does this tell us that platinum jewellery demand is effectively very inelastic, in other words, it's not at all price sensitive, in fact, perhaps quite the opposite?

#### **A5a: Mark Bedford**

I think we mentioned in the presentation that I think the platinum demand at these high prices has provided more resilient than we've expected. So the elasticity is not what we expected it to be. As far as palladium is concerned, I think you've got to remember about palladium jewellery in China in particular, it's at a different stage of its lifecycle compared to platinum jewellery.

Platinum jewellery is a long-established white metal. The branding is in place. The market is in place. It's very much a developed market in China. Palladium is not at that stage yet, and I think what we've seen this year is a correction of a lot of overstocking, a lot of excess inventory put in place. And, if you like, its trying to find its correct level or true level in the market in terms of demand. So I think the jury to an extent is out on palladium jewellery, what the actual ultimate demand can be in China. I still think it can be affected by extending marketing efforts, for example.

But it's still too early to say where it's going to level out, I think compared to platinum. One thing which I think is true now is that China is a three white metal market, platinum, the top of the market. And you also have white gold

and palladium, and I don't think that situation is going to go away. I think it is a three white metal market now.

**Q5b: Ross Norman**

And will the PGI be embracing palladium as well?

**A5b: Mark Bedford**

I think in general terms there will be a more concerted marketing campaign on palladium in the future. How that's done and who fronts it I think remains to be decided, Ross.

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**Q6a: Andrew Stott: *Analyst, Merrill Lynch***

What was the recycling growth on platinum in autocatalyst?

**A6b: John Cullen**

On platinum, the recycling grows from 855,000 to 885,000, so 30,000 ounces.

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**Q7a: Jackie Steinitz: *Resource Investor***

What do you see as the longer-term outlook for the supply-demand balance for both platinum and palladium?

**A7a: Mark Bedford**

Well, I think the subject of the review really is, we talk about in the next six months to a year. I think the best we can say at the moment is our outlook for 2008, is it's going to remain very tight. There are, in all of these things, sort of conflicting influences.

On the one hand, production in South Africa should increase in 2008, but there are clearly some challenges to be overcome to get the expansion moving again, but for reasons which John had mentioned, in the auto catalyst side, we see demand rising too. So at the moment we can see both demand and supply rising. Therefore, the market should stay relatively close to balance in 2008.

**Q7b: Jackie Steinitz**

And how about palladium?

**A7b: Mark Bedford**

Palladium, we don't really see any change going forward to that position of fundamental surplus. The major longer-term issue is how long will Russian stock sales continue? We still believe there are substantial state stocks in Russia, but they are dwindling compared to what they were a few years ago.

So I think the most interesting point in the palladium market may come in, say, two to three years time, perhaps when those Russian state stocks really do start to run out, and then we will see what the underlying supply-demand balance would be. But in the way that we measure it, we'll certainly expect to see a continuing surplus a few years yet. Probably over the last year the amount of pressure on car manufacturers to do something about global warming, bringing their carbon dioxide emissions down, has increased tremendously. Now, the only way to do it is build smaller engines that run more efficient. That's normally negative for PGMs. And there's a lot of work, I understand, being done on changing the way petrol engines are designed, for example, in the future and looking maybe at diesel hybrids. What's the net impact on PGMs, because I can imagine that there might be more emphasis on, say, platinum and rhodium in the future than what's on palladium, for example, looking at the different engine designs the car manufacturers are working on? What does Johnson Matthey see in the future happening there?

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**Q8a: John Reade**

Mark, you mentioned before that the next stage of legislative titling was going to come through in Europe in late 2008. Do you expect to see that having a fairly large impact on diesel catalyst usage or platinum usage in diesel catalysts?

**A8a: John Cullen**

What we've seen already is that in Germany this year, 85% of diesel cars have filters, even though it's not legislated until 2010. This is driven not just by tax incentives but also by environmentally conscious customers. We do believe that elsewhere in Europe average pgm loadings will increase in order to meet the tighter Euro V legislation.

**Q8b: John Reade**

And it's mandatory in 2010. Is that correct?

**A8b: John Cullen**

Yes that's correct and there are incentives to 2008. So it is driven by environmentally conscious consumers at the moment and by 2010 it will be driven by the legislation and it will be very be very positive for platinum.

**Q8c:**

And you've seen no signs of the higher costs involved in putting a CSF to a vehicle deterring the purchases? Because you said that the penetration rate of diesels was actually going up, not down.

**A8c: John Cullen**

Yes, in Europe diesel's share has gone from just under 50% in 2006 to an estimated 52% in 2007. The rate of growth is slowing down, but there's no sign of it going backwards.

**A8c: Mark Bedford**

I think the German experience is interesting. Here is quite an expensive optional extra that people want, regardless of -- they don't have to fit it, but they're paying for it. And I just think that suggests perhaps an underlying desire from a lot of consumers to make their cars greener, and these things certainly help. So I think the outlook for that particular technology is pretty good. It's not just the lawmakers that are deciding that these things are wanted and will be fitted.

**Q8d: John Reade**

Final point on this, and I'm sorry to labour it, France, which is also another very big market for diesels, with very high penetration, do they have any early adoption tax breaks in France?

**A8d: John Cullen**

I'm not aware of any on diesel vehicles; however I believe they have tax breaks on the diesel itself, on the fuel.

**A8d: Mark Bedford**

I mentioned in the presentation, I think France is a market where three in four registrations is now diesel.

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**Q9a: Sophie Jourdiere: Citigroup**

You mentioned in your presentation that light-duty diesel was still a big potential market in the U.S. but you didn't expect it to have any impact in the near term. I wondered whether you could just give us a bit more detail as to what you're seeing there, and in particular whether you've seen any acceleration or deceleration by the major car manufacturers to try and get the prototypes sort of more accepted into the marketplace in the U.S.?

**A9a: John Cullen**

We have seen some new entrants from Mercedes, BMW and others this year. This time last year we were asked by John Reade if we thought a 10% market share by 2015 was reasonable. We said yes we thought that was reasonable, however given what has happened in the past year with oil prices moving significantly higher, we'd have to say there's probably a greater chance than there was a year ago that we will see more diesel in North America.

The only other comment is that Global Insight's are forecasting production of diesel trucks in North America to increase from 4.5% in 2006 to 8.6% in 2012.

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**Q10: Lonnie Stragen: RBC Capital Markets.**

Just a quick one on the Nissan -- and I think it was Mazda that came out with this very nice quote that they cut loadings by 50% to 80% I think it was. Do you see any risk in there? I mean, is that a risk for palladium, essentially, because of the gasoline market, or could it cover any serious weight?

**A10: John Cullen**

The first thing was both the announcements, Nissan's was in July and Mazda in October, said they were using PGM-based catalysts.

Our view is that there are three key things happening from a pgm viewpoint in the autocatalyst market. Firstly the global production of vehicles is increasing every year, which means greater demand for pgms. Secondly we are seeing the continued introduction of tighter legislation, again, a positive for PGMs, and thirdly, for many years we have the car companies and the auto catalysts manufacturers working to thrift the amount of pgms used on catalysts. This third trend has the opposite effect from the first two and this cost control or thrifting process (the removal of precious metal) has been able to keep the growth in pgm requirements from the automotive industry to manageable levels. Attempts to thrift are ongoing and Johnson Matthey expects them to continue in coming years. Our view on both of these recent

announcements is therefore that they represent something like the degree of thrifting that could be possible over a short to medium term timescale. However, we do not expect either to materially affect the positive outlook for increasing pgm demand in the automotive sector.

**A10: Mark Bedford**

The critical thing with that sort of announcement is asking what is the context? Thrifting from what to what? Making a sort of a bold announcement is a bit meaningless if you don't say where you're starting from. As an observation, though, I'd say in general terms car catalysts in Japan tend to be at the heavier-loaded end of the spectrum on a global basis.

And therefore it could be that a lot of the sort of percentages that you're seeing may be just bringing Japanese into line with technology, which is available elsewhere in the world already. So I think it's very, very important not to get drawn into what the actual impact of those percentages would be, unless you know where they're starting from.

**A10: John Cullen**

The other part on that is the loadings on cars go from around a gram at the lowest level to around 10 to 15 grams on some of the heavier-loaded cars. Four to five grams is the average pgm loading globally and we think despite the tighter legislation and the continued thrifting, average loadings will stay at this type of level.

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**Q11: Peter Cartwright: *Evolution Securities Research***

There have been quite a few articles in the press on hybrid cars and also on the reintroduction of battery cars. Are these showing in any of your forward projections as being significant out of the total market?

**A11: John Cullen**

No, not in the short to medium term. From a PGM point of view, if they are diesel hybrids they'll be a positive for PGMs. If they're gasoline hybrids, they'll be neutral for PGMs.

Generally the hybrid cars have smaller engines than similar sized conventional cars. They have two power sources and run at a lower temperature. Because of running at a lower temperature you will most likely need more PGMs.

**A11: Mark Bedford**

As far as battery cars are concerned, I think it's still too early to say we've seen a real breakthrough in battery technology which is going to impact the numbers that we're showing in the short term. I think for some short-distance city vehicles, batteries may be a solution, but I think for the sort of mass-driving market, I don't see a battery technology at the moment, which is really impacting heavily on the ICE market as you see it.

**A11: John Cullen**

A final comment on the hybrids - usually people buying hybrids are very environmentally conscious and the cars are often designed to meet the strictest future California limits, which again means slightly heavier loadings than you would see for a conventional car.

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**Q12: Augentien Menovo: *Norilsk***

Two questions about palladium. I know that it's pretty much irrelevant to speak about mine production, but still, could you just comment on how much the mine production fell this year and the outlook are in total? And, also interested in palladium [they] mined for China auto catalyst sector. Are we going to see any significant pickup in demand from them? And, if we are, when then is that to happen?

**A12: John Cullen**

Sales and production are well up in China in the auto market, so we're seeing significant growth for platinum and palladium from this sector in China. The number in the book for China is 270,000 ounces of palladium in auto catalysts this year, and that's up 50,000 ounces on last year. So we're seeing strong growth.

We are seeing double-digit growth in demand for both metals (Pt and Pd). This is driven by the 10% to 20% increase in production in China.

**A12: Mark Bedford**

Going back to your question on the supply side, the picture is coloured to an extent by Russian state stock sales, which we include as supply in our figures, South Africa is down something by about 5%. North American production of palladium is up just slightly, but not as high as they might have expected earlier in the year.

So I would say the overall supply side figure, if you exclude the Russian stock sales, is probably down by around 5%, something in that order. But I'm

anticipating that will probably recover next year and I think your own production from Norilsk Nickel might be a little higher by the end of 2007 than maybe your last announcement suggested in October. So it's not too bad on the supply side.

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**Q13: Albert Jamison: *Lonmin***

I think I saw correctly there you said that your platinum and palladium supply from South Africa was down, but rhodium was slightly up. Is that correct? If so, what was your explanation for that?

**A13: Mark Bedford**

Our total production figure for the year is a corrected figure for supplies including pipeline, as well as what's actually mined.

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**Q14: Suki Cooper: *Barclays Capital***

I was just wondering what your view was on fuel cell technology and the impact on PGM demand? On the one hand, you've got Daihatsu announcing they're [going] to develop the cars without any PGM content. But, on the other hand, you've got announcements about incorporating more and more use of PGMs. So I was just wondering how you would incorporate it in your demand balances, if at all.

**A14: Mark Bedford**

Certainly in terms of our short-term -- and by short-term I mean the next couple of years, say -- automobile consumption of platinum for fuel cell is still very much at the prototype level. Although there's been some commercialization announcements made, by, for example, Honda, who seem to be putting a fuel cell vehicle on the market, that's still very limited in terms of demand for platinum.

What I would say about the Honda announcement, though, which I think was very positive for the whole fuel cell industry was for the first time they've really frozen the fuel cell technology to launch that vehicle. And they've said the fuel cell now works, we're going to put it in the car. This is a technology we can present to the market. And I think that's quite a significant step in the fuel cell market compared to where we were. As far as Daihatsu's concerned, that announcement obviously was a slightly different technology.

It's an alkaline-based fuel cell. You can make those with PGMs, but you can also make them without PGMs. Our observation of that particular technology is that it does have some durability question marks against it.

I think they may be okay for city vehicles needed for very short distances and so on. I think as a mass market solution, I'm not personally convinced that the alkaline fuel cell is the way to go, and the PEM fuel cell will still be the most important factor, which uses platinum, of course, as a catalyst. In terms of the numbers that we're presenting today, the automobile market for fuel cells is still a little bit far away to have a significant impact but there's still a lot of progress being made.

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#### **Q15a: Stephen Forrest: SFA Oxford**

I just wanted to get a sense of the market has become very conditioned to recycling as being predominantly auto catalyst. Given the regime of high prices across the PGM complex, I'd just like to know if you could comment on non-auto catalytic scrap and recycling.

#### **A15a: Mark Bedford**

I'd say for the most part it's relatively insensitive to price. A lot of the industrial recycling that we get in PGMs has been the same for years, and essentially the platinum industry was one of the first recyclers and continues to be so.

And most of the intrinsic content of a lot of industrial products has always been recycled. I don't see that changing. I think there is an element of price sensitivity in the automobile market, but it sort of comes and goes. If the price of rhodium is high, they'll tend to concentrate on the high-rhodium catalysts and so on. But overall I'm unconvinced that the high price of platinum at the moment has a fundamental effect on industrial recycling.

It has a rather bigger effect, obviously, on jewellery recycling, where old jewellery, particularly in markets like China, can be recycled. I think there is some evidence that at high prices people are encouraged to recycle old jewellery, but I wouldn't say it's a first order effect. And there's not perhaps a connection between price and recycling rates that you might expect.

#### **Q15b: Stephen Forrest**

So with your numbers being predominantly purchasing numbers, I'm interested to know, what has the yield been in non-auto catalytic recycling? How can we pick it out of your numbers what this contribution from the non-auto catalytic sector may have been in terms of ounces?

**A15b: Mark Bedford**

What we've always done is we've netted off non-auto cat recycling from our supply numbers at source. So it's very difficult for us to separate that. We don't do that. We tend to focus solely on new metal demand and what the new metal being drawn into the market.

We don't sit down and work out what the recycling level is from non-auto cat sources, because it's kind of a steady supply and refine loop. I mean, there are applications, such as oil refining, for example, where the amount of new metal required is not that huge compared to the amount of metal that's been churned around in the system. And I guess going back a long time we felt that that would be a kind of distorted way of presenting the numbers.

We did however think it was worth, and always have thought it's worth, separating out auto cat recycling as a separate issue. Because there is a kind of separation between people making auto catalysts and old auto catalysts coming back into the market. It can be as much as 10 years or more, so we treated that somewhat differently.

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**Q16a: Jason Fairclough: *Merrill Lynch***

Two quick questions, just on Russian stocks, wondering if you can share with us your guesstimate of where those are these days. And, secondly, just on China, on the outlook medium term, are we just looking for demand from auto catalyst there to grow in line with units, or do you foresee any kind of a step change?

**A16a: Mark Bedford**

As far as the Russian stocks are concerned, it's always impossible to know exactly. My personal opinion, I would say there are several years worth of sales left, but no more than that. And if I had to be -- if I was looking forward perhaps to sort of 2010, 2011, I'll be interested to see what the state stock levels are being exported when we run into that sort of timeframe. My feeling is that that will be getting towards the end of it.

**A16a: John Cullen**

Beijing and Shanghai have Euro 3 legislation. Euro 3 legislation was expected nationwide in July of this year however due to concerns regarding the availability of the sufficiently clean fuel it's been delayed for a year. So from July next year any new cars in those areas outside Beijing and Shanghai will need autocatalysts. That said, many of the western car companies are already making their cars Euro 3 compliant.

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**Q17: Ross Norman:**

Hi again. There have been suggestions that Johnson Matthey might be putting more of its attention into the rhenium market. If a yes, can you give us some idea what applications that will be for?

**A17: Mark Bedford**

Well, it's not really the subject of today's presentation. As far as rhenium goes, Ross, it could be. I think our interest comes from -- it's very much a product-based interest. There are product possibilities to supply into the rhenium market. It was interesting that our colleagues from the product side of the business sort of floated this idea out there that rhenium could be the new precious metal and came up with some arguments as to why it would be.

I don't know, there are some similarities between rhenium and the precious metal markets, but I'm unconvinced that the parallels are exact by any means. And I think Johnson Matthey's interest in rhenium really stems from the added-value possibilities of that particular market, rather than from our end of the business, which obviously relates more to the trading and commodities side.

**A17: John Cullen**

The aerospace and oil industry are two of the sectors that are of interest.

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**Q18:**

I think you said your estimate of platinum jewellery demand related to uptake for manufacturing. What news are you getting from the retail market for that retail uptake and what's happening to stock levels of platinum jewellery at the moment?

**A18: Mark Bedford**

I think the best way to answer that will probably be to look at it regionally. As far as retail demand is concerned in China, as I said earlier on, for platinum jewellery, the reports we're getting is demand has really been quite good. I said the retail price in China has risen quite significantly. But demand has perhaps been better than we might have expected under those circumstances.

As I also said in the presentation, I don't think we've seen necessarily what the impact of \$1,400 platinum might be on that particular demand. It could be just shrugged off and demand could just continue to grow. It's just very difficult to be certain at this point.

As far as other markets are concerned, in the U.S., I think it's the same story we've had in the last couple of years, really, where the high end of the market where platinum does extremely well, particularly in the wedding sector, for example, is still holding on very well indeed. The middle market, the fashion market, is where platinum tends to get squeezed when the price is high, and I don't really think that that story's changed in the last year or so.

In Europe, it's patchy. Demand in the UK is still pretty good and indeed I think there are going to be more platinum watches made in Switzerland this year than any year for some time. So I think it just shows you that there's real resilience for platinum as a brand in the jewellery market, even at these high price levels, but it will be interesting to see what happens in China going forward as the effect of these high prices comes through.

As far as inventory is concerned, I think in general terms the trade is much smarter now about the amount of platinum inventory it runs. The high price has two effects. It's costly to hold inventory. It's also costly to borrow [that] as well, to support inventory. And in general terms I think we've seen quite a reduction of inventory both in wholesalers and at retail, particularly in China in the last couple of years.

But, having said that, the rate of reduction of inventory was no higher in 2007 probably than it was in 2006. But I think just as a fact of life they will continue to try to squeeze down inventory as much as they can.

The Japanese jewellery market has fallen again. It's down to around 300,000 ounces, something like that. It's been a difficult picture in Japan for some time. Clearly, a long time ago, there was a huge amount of platinum lightweight chain, for example, sold in Japan, I think that's gone for good.

But, on the other hand, sales of platinum jewellery at the high end has suffered somewhat. There are some marketing initiatives going on to try and rectify that. The PGI, for example, has just done a campaign recently called a "Thanks Day" campaign where all their retiring salary men buy their wives platinum jewellery on the day they retire to thank them for their forbearance over the years, for their late nights and all the rest of it.

So we're working hard to try and keep platinum jewellery demand going in Japan, and having some success, too, but it's a tough market in Japan. There's no doubt about that.

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