Introduction to Session 5: Above-Ground Stocks

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The LBMA has decided to use the title of this session – Above-Ground Stocks – in the broadest sense, so we have three distinguished speakers covering very different metals and elements of the market.

We will start with Graham Young of the Bank of England. Graham joined the Bank in 1992, having taken a history degree and a master’s degree in finance. He has worked in a variety of roles, one of which was one of the Governor’s private secretaries. His current post is senior manager of the Bank’s foreign exchange division, where he is responsible, amongst other things, for policy issues relating to gold.

Xavier Van Houte joined Umicore in 1997 for the hedging and selling of precious metals. He is now also responsible for the sale of a broad range of products and metals such as lead, aggregates for concrete, selenium, indium and tellurium. He will be speaking today on industrial scrap.

Finally this morning, we have Alan Williamson. Alan is head of commodity research at HSBC, where he has been for the past four years. At the bank, he is responsible for the market analysis and price forecasting of precious metals, base metals and bulk commodities. This morning he will lead us through the riddle – for want of a better word – that is the Russian pgm market.
The Role of the Bank of England in the Gold Market

Graham Young
Senior Manager, Foreign Exchange Division, Bank of England

This morning I would like to talk about the role of the Bank of England in the gold market. One element of that is our management, on behalf of the Government, of the UK’s official gold reserves, and I’ll be saying a little about that. But I will be saying more about other aspects of our involvement in the gold market that may be less familiar to some people in the audience here. In particular I will describe the Bank’s provision of custodial and account management services to central banks and to commercial firms active in the London market, reflecting our role in seeking to ensure the efficiency and effectiveness of the UK financial sector. And I will explain the Bank’s contribution to the self-regulation of the wholesale gold market. In all these areas we cooperate closely with the LBMA, and I shall explain how that relationship functions.

First, then, the official reserves. The UK is a little unusual, although certainly not unique, in that the official reserves of foreign currency and gold are held on the balance sheet of the Government rather than of the central bank. The Bank of England’s role is to manage the reserves portfolio, embracing both foreign currency assets and liabilities, on behalf of the Government, or more specifically the Treasury, our Finance Ministry. We do that according to a Remit, which they set for us each year. Strategic decisions about the reserves portfolio, such as high-level asset allocation, are taken by the Treasury. The Bank provides analysis and advice to assist the Treasury in making these decisions; we implement the decisions that the Treasury makes; and we manage the reserves on a day-to-day basis. I should add that in recent years the Bank’s management of the official gold reserves has also taken place within the framework of the 1999 Central Bank Agreement on Gold, with which I imagine you all to be familiar.

In the context of gold, the most significant strategic move of recent years was clearly the Government’s decision to reduce the holdings of gold in the reserves by just over half as a portfolio diversification measure. This was achieved through the series of auctions that the Bank conducted between 1999 and last year. Now, this is a topic that has already been subject to a considerable amount of comment and analysis, and I don’t propose to add much to that here. The Treasury have produced a very comprehensive Review of the gold sales programme, which is available on their website, and if any of you has residual questions about the programme I am sure you will be able to find the answers there. The UK remains a significant holder of gold: we have around 315 tonnes, worth $3½ billion at the current price, making us still amongst the largest 20 official holders.

Recently, of course, gold lending rates have been extremely low. Commentators seem to be in broad agreement as to why that is. There is a low interest rate environment globally, and one might expect that to influence interest rates on gold. But there are also factors specific to the gold market. In particular, much, although not all, gold lending ultimately facilitates the hedging by gold producers of their future output. And, as is well known, producer hedge books have become smaller recently.

Over the past couple of years, a number of central banks have withdrawn some of their gold from the lending market. Gold Fields Mineral...
Services estimate that outstanding lending by the official sector was 266 tonnes lower at the end of 2002 than it had been a year earlier. In reality this just reflects lower demand from the ultimate borrowers, communicated via the interest rate. In the context of short-term rates in the single digit basis points one might perhaps have expected official lending to fall further, when allowance is made for the compensation necessary to take account of credit risk and transaction costs.

I have spoken so far about the Bank of England’s role as agent for the Treasury in managing the official gold reserves. I would like to move on now to the broader market in London and the Bank’s role in it.

Comparative international data on turnover in the wholesale gold market is sparse, but London is generally considered to be the most significant centre for spot and forward purchases and sales, over-the-counter gold derivatives, and, in particular, for gold lending.

What is the Bank of England’s place in this? First, we are a very significant custodian of physical gold. Primarily this is gold that belongs to other central banks, but we also store gold in our vaults on behalf of a number of commercial firms that are active in the market. In fact, most of the gold we store is not our own. We are certainly not unique amongst central banks in this custodial role. Most notably, the US Federal Reserve also offers this service to other central banks, although not to private sector institutions. The Fed has the advantage of being located on bedrock so it is able to pile its holdings up to the ceiling. We are stuck with London clay, so we are limited to a certain number of bars per pallet!

And there are of course many commercial firms providing vaulting facilities, in London and elsewhere around the world. Most often, however, commercial bank storage services are conducted on an unallocated basis. This means, as many of you will be aware, that the owner has a claim on the commercial bank where it is held for a certain amount of gold, but does not have title to specific bars.

What the Bank provides is an account management service on an allocated basis. That means that those holding gold at the Bank, particularly other central banks, have the reassurance of knowing that they have title to specific bars; but they are also able to mobilise those gold holdings conveniently by making or receiving so-called ‘electronic book entry transfers’ between their account at the Bank and the account of their counterpart. Such a transfer does not require gold to be physically moved within the Bank’s vaults; rather, title to the bars in question is transferred within the Bank’s IT systems. We are probably unique in offering this kind of account management service on the scale that we do, and to a large number both of central bank and private sector participants in the market. The significance of this facility is that it provides an important element of the infrastructure that brings market participants together.

This system is one that has grown up organically over a long period of time, and very much in response to representations from our central bank customers and from the London market itself. It has no doubt been a factor in London maintaining its position as the most significant international centre in the wholesale gold market. However, other factors have, I am sure, been even more significant. In particular the establishment, and promotion by the LBMA, of London Good Delivery standards, has been crucial. Many aspects of the wholesale market could not exist in the absence of the fungibility and general acceptability of different bars within the London clearing system. Such is the confidence in this market standard that the term London Good Delivery is recognised and respected worldwide.

A further activity, one that grew out of the Bank’s custodial role, is that we are prepared to accept gold deposits from other central banks, which we lend on to the market in our own name, at a margin to reflect the cost and credit risk incurred. Our central bank customers thereby gain the convenience of being able to generate a return on part of their gold holdings, whilst only having to manage a single front and back office relationship. The assets and liabilities denominated in gold on the Bank’s own balance sheet derive entirely from this borrowing and lending activity. Since we publish these figures on our website each month in accordance with the IMF’s disclosure standards, anyone who is interested may track this business from there. At end-April it totalled around 45 tonnes, reflecting the current interest rate environment. It has been above 100 tonnes in the past.

We are happy that we have been in a position to assist the development of the market in these ways, but we are not wholly selfless! We do charge fees for the facilities we provide. More broadly these activities reflect the Bank’s role in seeking to ensure the effectiveness of the UK’s financial services, which we do in part by supporting the development of an efficient financial infrastructure.
Finally, I would like to say a word about the Bank’s role in the regulation of the gold market in the UK. This is, in fact, a very limited one. Since the establishment of the Financial Services Authority in 1998, it has been the regulator of individual institutions. The wholesale bullion market is considered to be an inter-professional market, or, in the distinctive parlance of the UK regulatory framework, a ‘non-investment products’ market. This means that, in general, the principle of caveat emptor applies and the market is expected to be self-regulating. The same is true, as it should be, of the foreign exchange and cash money markets in the UK.

As has always been the case, the Bank of England contributes to the self-regulation of all these markets. Nowadays we do that by facilitating the production of the Non-Investment Products Code, known by its acronym, the NIPs Code. This is a code of good practice for participants in these wholesale, over-the-counter markets, covering such things as dealing procedures and conventions. It provides a framework for market participants to gauge what is, and what is not, reasonable and professional conduct. The NIPs Code is produced and maintained jointly by the London Foreign Exchange Joint Standing Committee, for which the Bank of England provides a Chairman and a secretariat; by the Money Markets Liaison Group, for which we provide a similar service; and by the Management Committee of the LBMA.

The Financial Services Authority has also participated in the development of the Code and says that it expects the management of authorised firms to take due account of it. The LBMA has endorsed the NIPs Code on behalf of the bullion market, and is consulted on all proposed changes to the Code.

In fact it should be apparent from much that I have said that the Bank works very closely with the LBMA in a variety of contexts. Representatives of the Bank are invited to attend meetings of the Management and Physical Committees of the LBMA as observers, and beyond that we have a very close ongoing working relationship. It seems to us that the LBMA and its participant firms do an excellent job of promoting the bullion markets, increasingly at a global level rather than solely in London, and it has been a great pleasure for me to be able to speak at the LBMA’s annual conference today.
Good morning ladies and gentlemen and thank you, Jon, for that kind introduction. After a very brief presentation of Umicore Group and Umicore Precious Metals, I would like to put the accent today on several success factors for ensuring a sustainable recycling of industrial scrap. Industrial scrap should, of course, be considered part of aboveground stocks.

Organisational Structure

Let’s start with Umicore’s organisational structure, which is composed of four main entities:

1. Technology and services, including research, innovation, marketing services.
2. The materials business group, which is transforming a broad range of metals into high-tech products such as solar cells and night vision windscreen.
3. The zinc business group is involved in all kinds of zinc-related businesses, including die casting for the electronics industry and car body galvanising.
4. And last, but not least – the focus of today – there is copper and precious metals.

Umicore is a Belgian-based group active on five continents, and the Umicore precious metals facility is in Hoboken, fifty kilometres north of Brussels alongside one of the major Belgian rivers, the Scheldt, which of course is a facilitator from a logistical point of view. And thanks to this facility, we are leaders in the precious metals recycling business. Why?

Thanks to this integrated logistical exchange, we enjoy a certain leadership in the recovery of complex precious metals – complex meaning that we can accept a lot of impurities with low precious metal content, which are found in the lead, zinc or copper refining industry, or in recyclable products, as I mentioned, for the photographic industry and from petrocats, as well as electronic scrap and car catalysts, the famous honeycomb shape.

We also enjoy a focus on flexibility because we have multiple intake points, which means that, depending on the raw material, we can use several intake points in our flow sheets allowing us to have a very broad range of output, including precious metals, base metals, special metals, chemicals or aggregate for concrete. And our capacity for refining all those raw materials – from worldwide markets of course – is 250,000 tonnes per year.

Recycling

Now that you have a better idea about the profile of Umicore Precious Metals and Umicore Group, I propose to go deeper into the recycling issue because, as I mentioned, sustainable recycling is necessary for our industry. Let’s start with electronic scrap.

First of all a definition: what is e-scrap? E-Scrap consists of only the precious metals-bearing parts of electronic devices such as TV sets, video recorders, desktops, laptops, servers and mobile phones, which entails recycling PCBs (printed circuit boards). The primary consideration is that the variety of weights and the concentration of precious metals in these devices – which creates some problems – also require a global approach.
I would like to discuss the current situation in Europe – what is the status? Is it fully satisfactory? The WEEE (waste of electrical and electronic equipment) Directive is only part of the solution. It is a positive development, because all members of the EU must comply with it. The problem is that the application scope is limited to the auto sector, not the professional sector.

The target in terms of recovery rate is 75% – 65% from recycling the material itself, and 10% from the use of metal as a substitution for fuel, for instance, in the conversion processes. It was just voted on in December 2002, was published in the official journal of the European Community on 13 February, and the action date for full implementation is 31 December 2003.

But the major factor for success according to us is to have a very watertight audit and control system from collection to processing. Otherwise, you will not be able to avoid irrational scrap handling, which is a disaster from an economic and environmental point of view.

I mentioned that it’s a pity that the application scope is limited. You can see here that the expected volume of e-scrap will definitely grow, but mainly thanks to scrap from professional use. At the moment there is a real frame for that, and we see that the growth induced by the WEEE Directive is limited because it’s only for all sorts.

What is the contribution of recycling into this system? First of all, it maximises the recovery rate of printed circuit boards. Recovery rates mean recycling of metals and energy recuperation. For the time being, we have a yield of more than 98% with quality of metals recycled, which is similar to the primary manufactured metals. We are recycling precious metals (silver, gold, PGMs), base and other metals as well as pure metal or as products.

**Energy Recuperation**

But we also have energy recuperation. I will focus first on palladium. There will be a continuous increase of palladium availability out of scrap, despite a substitution by base metals such as nickel. As a result, PGM supplies from scrap are going to be more and more important.

Looking at energy recuperation, I took an example that has been carried out, and a study carried out by the Association of Plastic Manufacturing in Europe regarding mobile phone recycling and the echo efficiency problematic related to the energy recovery. They made several simulations to determine the best solution, and it’s fundamentally a problematic choice. You have to dismantle or shred and smelt the device. According to the plastic manufacturing industry, if you have to dismantle these devices, the cost is very high, and the smaller the device, the higher the cost. And it’s much better from a cost as well as an...
environmental point of view to shred the material and put it in a smelter.

What is required for sustainable e-scrap recycling? Eco-design, which is behind the ROHS (Removal of Hazardous Substances) Directive in the European Community, aims at avoiding – right from conception and product design – delicate substances such as thallium, mercury, cadmium and hexavalent chromium. It is necessary to have a watertight system implying control of the complete chain in order to avoid irresponsible processing of e-scrap.

Global legislation is needed, but doesn’t yet exist. And fundamental choices must be made. There are both drawbacks and advantages to the dismantling option versus the shredding option.

**Autocatalysts**

The situation with car catalysts shows some similarities. As with electronic scrap, we aim to get a maximum recovery rate similar to that of PCBs (printed circuit boards) of 99%. There are positive elements, facilitators in this, such as tightening legislation, which leads to increased amounts of PGMs for other catalyst production. If we look at the NOx emissions in grams/mile within a time frame of 10 years, 1994 – 2004, there is about a factor of 10 in the reduction of emissions. To a lesser extent, there is also a tightening in hydrocarbon emissions.

This induces, of course, increased demand for PGMs from other catalyst manufacturing. As a result, it is estimated that the PGMs recovered from used catalysts will significantly increase. From 2003 – 2010, we estimate that it will double. That is what will be recovered, not what is already now on the road, because that involves greater quantities and is very difficult to estimate.

Another positive element for sustainable recycling is the European Directive for End of Life Vehicles (ELV), the main points of which are summed up on the following slide.

There are two major milestones, 2006 and 2015, the first of which aims at having a recovery rate of 85% at the end of life of vehicles. This includes recovery of the metal, recycling, energy recuperation and re-use when possible. Another important axis in this directive is that car producers will have to prove the recoverability of their cars from 2005, which is quite ambitions at 95%. This is positive for our business, but up to now there are few countries in the European Community that have thoroughly implemented this Directive.
The Directive aims to guarantee free-of-charge take back from the last owner. I mentioned a limited implementation in Europe – there are only five countries able to do that up until now. Other countries have their own system in place, more or less linked to this European Directive. The collection rate at the moment is assessed at about 80% of non-exported vehicles. It does not exclude vehicles that are exported for their end-of-life, which means that the real rate is lower than that.

I mentioned that other countries are doing something, but the whole picture is not really clear. For instance, the Netherlands does quite well. They have an industry-organised system to monitor what’s happening in scrap handling. In Belgium, the industry association monitors that. In other countries, it is a government issue and in still others, there is no real system in place.

And another point in the value chain: there is a need for consolidation of authorised treatment facilities for coping with sharper environmental standards.

**Conclusion**

Now for some conclusions, based on these two cases, on the necessary factors to insure sustainable recycling of industrial scrap.

First of all, a clear and comprehensive, and I would add, approved legislation is compulsory. A rational and transparent recycling chain must be used.

At the moment there are some intermediates, but there is perhaps rational evasion which must be done in order to avoid unnecessary steps and, hence, unnecessary costs. Recovery rates must be maximised in terms of metal recycling, of course, cost efficiency and eco-efficiency. As for product design, we’re also going to have to think about how to recover energy out of the plastic fractions and all other catalysts.

Controls and audits of legislation implementation are necessary. Eco-design is a very big concern for the manufacturers, the OEMs, because they have to think about the end of life of their products. They are now responsible for that. This is positive, but it has to continue.

Now for some facts. In order to improve our company, I’m very proud to announce that yesterday we acquired the DMC² part of OMG Group – a major acquisition. The Umicore Group has 9,000 employees, and the DMC² entity, 3,500. The purpose is to reinforce our presence in the recycling business, to have more weight to defend the processes I’ve told you about, and to reinforce our presence in the downstream applications for precious metals – silver, gold and all precious metals.

I thank you for your attention.
My paper this morning concerns Russian stocks of platinum and palladium. As many in the audience will know, Russia’s precious metals production, consumption and inventory levels are state secrets and nowhere is Churchill’s description of Russia as a “a riddle wrapped in a mystery inside an enigma” more apt than when discussing the local precious metals markets. As such, my paper this morning will inevitably rely on more inferences, estimations and assumptions than other papers presented here. Nevertheless, we believe that we have been able to draw together a broadly accurate picture of Russian production, consumption and trade in the platinum group metals.

My paper today will be broadly divided into three sections – past, present and future. With respect to the past, in the 1970s and 1980s Russia accumulated significant stockpiles of both platinum and palladium. This was followed by aggressive de-stocking in the 1990s after the collapse of the old Soviet Union and the need for the new Russian government to generate badly needed foreign exchange. Confusion over the granting of export quotas and licences became the norm.

At present, as we will argue, Russian stocks of platinum have been largely depleted, although significant stocks of palladium – possibly as much as 10-12 million oz – remain.

Into the future, we expect the platinum market to remain very tight, with the industry needing all the platinum Russia can produce. Any stockpiling of platinum by the Russians could generate significant spikes in prices given the dearth of metal available to consumers. However, with the fundamentals of the palladium market continuing to deteriorate Norilsk and the Russian government will be in an increasingly difficult position and could be forced to finance ever-increasing inventories of unsold metal.

Before examining in more detail the trends in Russian PGM stocks, I think it would be useful to briefly describe Russia’s PGM production facilities.

Russia’s annual production of platinum is approximately 950,000oz, we believe, of which Norilsk Nickel accounts for roughly 800,000oz and the Siberian producers Kondyor and Koryak the balance of 150,000oz. Norilsk Nickel accounts for all of Russia’s 2.8Moz annual palladium production. Norilsk’s production facilities are divided between the Kola and the Taimyr peninsulas.

The core assets of the company reside in, or near, the city of Norilsk. At Norilsk the company operates eight mines, a primary smelter and two refineries, together with a slimes shop that sends raw materials to the Krasnoyarsk and Prioksk precious metals refineries. On the Kola peninsula Norilsk’s production facilities include the Pechenganickel and Severonikel combines.
Turning first to platinum, the following chart shows the historic level of Russian production and exports.

As I mentioned earlier, the common perception has it that Russian production of platinum group metals is a state secret and this is certainly the case. However, in the past the Russians have occasionally disclosed historic production data. This has not always been deliberate. In the late 1980s, for example, Russian platinum production levels were disclosed in the draft prospectus for a Eurobond issue, the data was strangely omitted from the final document. This, together with other data we have been able to assimilate, has formed the basis of the production levels shown in the chart.

We estimate Russian platinum production this year will be about 950,000oz. This is considerably higher than the levels seen in the early 1990s, but still below the highs of the late 1980s when Russian output topped 1Moz. Russian platinum consumption, which was considerable in the 1970s and early 1980s collapsed to nothing, leaving all of the production available for export. During the 1970s and 1980s Russian exports were significantly below Russian production levels, leading to an increase in domestic stockpiles. This stockpiling of inventory was reversed in the 1990s, depressing the international market.

With respect to palladium, Norilsk Nickel is Russia’s sole producer of the metal, with annual production around 2.8-2.9Moz. Until 1993 exports were considerably lower than annual output, leading to an ongoing increase in inventories of unsold metal. However, 1993 marked a sea change in Russia’s attitude to palladium exports, with the beginnings of a massive dumping of metal onto the international markets. At the peak, exports exceeded production by over 3Moz in 1998.

The change in the early 1990s from stockpiling to aggressive destocking was a direct result of the need of the government’s budget financing requirements. The Finance Ministry, through its subsidiary Gokhran, controlled most of the platinum and palladium inventories held by the Russian government. Some of the inventory was sold directly to the Western markets through Almazjuvelirexport (Almaz), the official Russian export agency.

The Finance Ministry also sold metal to the Central Bank in exchange for roubles to cover monthly budget deficits. In doing so, the Russian Central Bank accumulated an inventory position separate to that controlled by the Finance Ministry. The Central Bank tried to negotiate some palladium swaps in the earlier years, but did not succeed until 1999. Any profits from such transactions could be retained by the Central Bank for twelve months, and then half of which had to be repaid to the state treasury. Sales from Norilsk were also handled by Almaz, although export quotas and licences were only granted on an annual basis, at least that is until 1998 when a 10-year quota for palladium exports was granted.

However, with export quotas and licences still needing to be passed by the Duma, the Finance Ministry and the president, a complex web of interdependency and rivalry developed. This
resulted in repeated disruptions to exports on an annual basis, culminating in the farce of “Clause 19” that resulted in severe disruptions to shipments in 1999. In turn, with the Western markets increasingly reliant on Russian material, platinum and palladium prices became increasingly volatile.

So much for the past, but where does that leave Russian platinum and palladium inventories at the moment? With respect to platinum, we believe that Russian stocks have now largely been depleted, and that at most a residual stockpile of maybe 2-300,000oz remains in the hands of the Russian government. In this respect it should be noted that despite the high level of platinum prices in the last two years, Russian platinum sales have been broadly in line with underlying production levels. Even the high platinum lease rates seen at times over recent months has failed to attract any significant lending activity, again suggesting that Russian platinum stocks have been drawn down to minimum acceptable levels.

In August 2001 Norilsk took the unusual step of declaring that it had suspended sales of palladium into the spot market, as a response to the slump in palladium prices. Having peaked at almost USD1,100/oz in February 2001 palladium prices slumped to what was then a two year low of under USD400/oz. The announcement helped temporarily to boost sentiment in the palladium market, after which prices continued their almost unrelenting decline. Since August 2001 we believe that Russian palladium stocks have risen by almost 2Moz, taking aggregate inventories to around 11-12Moz.

With respect to palladium, however, a different story emerges. Between 1993 and 2001 we estimate that approximately 18Moz of palladium were sold from Russian stocks onto the Western markets. However, this still left a remaining inventory overhang of approximately 9-10Moz, we believe. This accords with comments made by Valery Rudakov of Gokhran in 2000 that central bank stocks of palladium were 2-300 tonnes (6-10Moz).

With respect to palladium, however, a different story emerges. Between 1993 and 2001 we estimate that approximately 18Moz of palladium were sold from Russian stocks onto the Western markets. However, this still left a remaining inventory overhang of approximately 9-10Moz, we believe. This accords with comments made by Valery Rudakov of Gokhran in 2000 that central bank stocks of palladium were 2-300 tonnes (6-10Moz).
adjusting metal production in line with expected market demand, increasing the efficiency of production and recovery rates, ensuring the sustainability and cost efficiency of the company’s operations and finally addressing the environmental impact of the company’s operations.

With respect to metal output, it is impossible to manage mine output such that production of nickel, copper, platinum and palladium are all at optimum levels. Norilsk appears to be targeting nickel production, by raising output of cuprous ores. This should leave output of PGMs roughly stable. Given the widely held belief that the fundamentals of the nickel market are the strongest of any of the base metals, Norilsk’s strategy seems to be to operate as a nickel mine, with production of copper and PGMs effectively as a by-product.

Keeping platinum production flat and with little if any inventory to act as a ‘safety valve’, the platinum market remains vulnerable to the possibility of damaging price spikes, we believe, given the underlying strength of the market fundamentals.

The platinum market has been in deficit in five of the last six years as good demand from the autocatalyst and jewellery sectors has outpaced rising mine production. We see little reason for this to change. Oftake from the auto industry remains strong, notwithstanding the current price differential between platinum and palladium which is encouraging car manufacturers to substitute the cheaper metal where possible. Jewellery demand in China also remains firm, with huge potential gains to be made if future marketing campaigns are as successful as past. On the supply side the South African producers have struggled to meet ambitious production targets. With industry stocks of platinum having been drawn down there is a real possibility of the platinum price spiking higher over the coming months. Although the all time highs of over USD1,000/oz are probably out of reach, a return to the 23-year high of USD710/oz seen earlier this year is a possibility, if not probability.

The opposite is, unfortunately, true of the palladium market, where the fundamentals of the market look almost unreservedly grim, even allowing for a switch from platinum into palladium in the autocatalyst sector. We expect the market to move into structural oversupply, with ongoing downward pressure on prices as a result. On the demand side, offtake from the electronics sector has collapsed to only a third of the level enjoyed two years ago, while in the auto sector ongoing de-stocking by the car companies will depress purchases. On the supply side, the output of by-product palladium in South Africa is rising sharply as the producers raise output from the UG2 reef, while a huge surge in scrap supplies appears imminent. Price risks remain on the downside.

Indeed, we believe that the only way for the palladium market to remain in balance is for the Russians to accrue an ever-increasing stockpile of palladium. We estimate that the Russians would need to stockpile somewhere between 1-
1.5 Moz of production annually over the coming years to keep the palladium market in balance. This is in sharp contrast to the 1990s, when the market required significant deliveries of metal from Russian stockpiles. Our base case scenario assumes that the Russians stockpile roughly half of this, leaving the market in ongoing oversupply and prices under pressure.

The possibility of the Russians stockpiling over 1 Moz each year of palladium is remote, we believe, and this view is confirmed by the terms of the proposed deal between Norilsk and Stillwater Mining. The agreement was reached late last year, but still has to be ratified. The principal terms of the transaction are shown in the table.

### Future - Norilsk/Stillwater transaction

- Stillwater to sell 51% stake to Norilsk Nickel for
  - USD100M cash
  - 876,000oz palladium (USD241M at USD275/oz, USD141M at USD160/oz)
  - Norilsk may purchase an additional 10% of Stillwater
  - 6 months after completion Stillwater to buy up to 1 Mozpa from Norilsk

For Stillwater ensures viability and capital for expansion plans
For Norilsk offers access to established distribution channel
- Reduces palladium stockpile
- Encourages auto companies to believe in security of supply
- Raises Norilsk from current status as supplier of last resort
- Access to Stillwater hedge book
- Increases exposure to US investors
But will ensure palladium market remains adequately supplied and prices under pressure

Briefly, Norilsk Nickel will take a 51% stake in Stillwater for USD100M in cash and 876,000 oz of palladium. At the time the deal was announced this inventory was worth approximately USD241M, but has since declined alongside the palladium price to around USD140M at current prices. Norilsk have the option of purchasing a further 10% stake in Stillwater and, although this has to be ratified, Norilsk will ship up to 1 Moz of palladium to Stillwater each year to be marketed in North America.

For Stillwater the deal allows the company to shore up its battered balance sheet and provides working capital and access to Norilsk’s technical team. For Norilsk, the deal offers the chance to remove almost 1 Moz from inventory and, more importantly, offers access to Stillwater’s distribution network while assuring the car companies of security of supply.

The insurance policy is that Norilsk now has access to the Stillwater hedge book. The deal also raises Norilsk’s profile with US investors, which in turn may help raise the rating on the company’s ADR (American Depository Receipts). For the palladium market, however, the sales from Norilsk through Stillwater, together with their sales into Europe and the Far East should ensure the market remains more than adequately supplied with metal for the foreseeable future.

To conclude, Russian policy towards PGM stockpiles changed in the early 1990s as the previous policy of stockbuilding was replaced by one of stock drawdown. We estimate that almost 3 Moz of platinum stocks were sold into the international market, leaving stockpiles close to exhaustion. With the underlying supply/demand fundamentals still so strong, and with little industry inventory available, there remains the possibility of a damaging price spike in the platinum market. By contrast, despite palladium sales of more than 15 Moz in the 1990s, an overhang of 10-12 Moz remains. Moreover, this overhang is rising as Norilsk has suspended sales into the spot market. True, Norilsk is managing to sell more metal on a contract basis, but unfortunately, with the fundamentals of supply and demand still so weak, the outlook for palladium prices remains depressed. Palladium looks set to resume its historic role of being a by-product of platinum and should be priced accordingly.
Session Five: Above-Ground Stocks
Questions and Answers

Jonathan Spall
Thank you for that, Alan. I think probably if there’s one thing I am going to take away from this Conference, it’s that the outlook for palladium is unrelentingly, unremittingly bearish. I think every time it’s been mentioned, people have talked about the large stockpiles and so on.

Now, we’ve been given some questions handed up here to the front but I’m going to first throw it open to the floor to see if there are any questions.

Bob Davis, Sempra Metals Ltd.
Question for Alan. Have you got any handle on reserve and resource numbers for Norilsk Nickel in pgms?

Alan Williamson
No – apart from that they’re very large.

Jonathan Spall
That answers everything. If there’s no one else from the floor, we’ll go to the written questions that were handed in – if I could ask Graham to start with one that he’s been given.

Graham Young
I’ve been asked number one, why does the BOE hold any gold reserves at all? And, two, can you see the remaining reserves being sold in the future?

So, on number one, why does the Bank hold any gold reserves at all? First of all it’s actually, of course, the Government – the Treasury – that holds the reserves and the Bank manages those on a portfolio basis. Secondly, I would really refer you to the Treasury’s review document of the auction programme because that does talk at some length about gold as a reserve asset, and how the Treasury thinks about the place that it should have in a reserve portfolio.

The fact is that they draw attention to the kind of portfolio diversification qualities of gold, that it’s tended to have a relatively low correlation with the fixed income assets that form most of the reserves, and is even negatively correlated to some time periods. And they do also refer to the argument for holding gold in a reserves portfolio in the case of extreme events, for want of a better word. But as I say, these things are discussed in the Treasury’s review at much, much greater length.

Can you see the remaining reserves being sold in the future? Well, significant strategic decisions about the reserves of portfolio are ultimately taken, of course, by the Treasury. And what they have said here is that the programme of sales that they announced in 1999 has obviously been completed some time ago, and that gold will continue to play an important role in the UK’s reserves, although not to the point where the net reserves will be overexposed to gold as they were in the past.

Xavier Van Houte
I’ve got a very good question – I’ll try to give a good answer. To what extent is the decreasing palladium price going to affect the recycling business?

Well there is, of course, a positive correlation between the metal quotation and the attractiveness to recycle it. That’s very clear. Now how to quantify it? That’s the big question mark. I’ve been told that if we take the example of silver in the 80s, thanks to the Hunt brothers, the price soared to $50, but raw material suppliers with silver were queuing in Hoboken.

This is not the case, indeed, for palladium at the moment.

But there are also factors that can have a role aside from the price for the recycling business, such as the economic slowdown that we are now facing – for instance, the lifetime of cars is being prolonged because one does not dare to buy a new car. Such elements can also impact the recycling rates. But at the moment we don’t see such a decrease, such as has been the case for the metal quotation in the recycling rates.

Alan Williamson
I’ve had two questions. How big do you think the Russian platinum and palladium stocks are – which hopefully I’ve answered – less than 0.5 million ounces for platinum and probably around 11, 12, maybe 13 million ounces of palladium.

The second question is, do you see the use of palladium stocks to pay for Stillwater as a good thing for the palladium industry?
Well that’s a tricky one, because I’m not quite sure what the palladium industry is. There’s really only sort of two main palladium producers, Stillwater and North American Palladium. If that’s the industry, then it’s good because the alternative is that Stillwater probably would have gone under.

In terms of, is it good for prices? Well, again, we’re keeping a lot of production on line, which otherwise probably would have been taken off the market. Palladium prices probably would have been a little bit higher had the transaction not gone ahead.

Again, in terms of Norilsk, it could well be that they are actually sacrificing slightly lower palladium prices for a much better marketing profile in North America, which in turn may actually raise the profile of the company’s ADR. So it’s a tricky one to answer, because I’m not quite sure what the palladium industry is.

Jonathan Spall

Okay, I’ve actually got one final one for Alan as well. We have heard about the enormous stocks there are of palladium and the shortage there is of platinum. Previously the industry has talked a great deal about substitutability between palladium and platinum. We saw people coming out of palladium back into platinum when the price rose up towards its peak of $1,100 or so. Given the more stable supply situation, do you think we’ll see increased substitutability, as we saw in the announcement last week and do you think this could actually alter the long-term fundamentals of the metals?

Alan Williamson

There is no doubt that the car companies are desperately trying to use as much palladium as they can relative to platinum. And that will be an ongoing feature of the market for the next several years. Whether that will be enough to revert either market back to balance remains to be seen.

In terms of palladium, virtually every other aspect of the supply and demand equation is still quite negative. South Africans are raising production; Stillwater’s going to remain in business. Electronics demand is a third of what it was. We’re seeing increased amounts of scrap coming through, both from the auto industry and the electronics industry.

And we actually see it quite difficult to envisage supply and demand balance where the palladium market is back in balance in any time in the foreseeable future unless we’ve got something completely wrong.

In terms of platinum, you’ve also got to bear in mind that there is substitutability, but there are significant aspects of the platinum market that remain quite strong in terms of the auto industry. We’ve still got very good demand from the diesel sector. Loadings per vehicle are still going up. We’ve still got tremendous potential demand from China. I’m sure eventually the markets will be brought back into balance, but I’m not quite sure over what timeframe it will be.

Jonathan Spall

Thank you for that. Anything else from the floor?

Martin Stokes, JP Morgan Chase

A question for Alan. Do you think there’s a realistic prospect of expansion of palladium use in the jewellery business?

Alan Williamson

Not really, to be perfectly honest. The amount of palladium we use in jewellery is pretty limited. I think it’s close to 200,000 ounces. So even if you double the size of the market, relative to the size of the services that we’re looking at, at over a million ounces, it’s still a drop in the ocean.

And still palladium is largely used as an alloying element rather than as a pure metal.

Again, the question is, the market is so bearish, what will come through? Will it be substitution? Will new end uses be found? We find it difficult to believe that in the foreseeable future for the next several years that anything will come through that’s going to kick the market back to balance.

Participant

How do you see the impact of the growing need for fuel cell technology – the so-called hydrogen economy – more and more being talked about over the last year or so? How do you see that developing?

Alan Williamson

Over the longer-term, we don’t really have much of an impact from fuel cells – in our supply and demand balance, until about 2008 at the earliest. And then it’s still less than 100,000 ounces of platinum rather than palladium. So that’ll be a positive going forward, and it might well be that by the time, we start to lose some of the market for autocats as thrifting takes place and the car companies become more and more used to achieving given environmental targets with less and less metal. But it’s at least five years away in terms of significant quantities that will affect the market balance.
Philip Clewes-Garner, Standard Bank

This actually concerns Alan and Xavier because there’s a question which arises between the pair of you on the legislative side of the auto industry and the enormous de-stocking that took place between 1994 and 2001 from Russia.

Alan said that 15 million ounces have been sent from Russia to the western world between those two dates, approximately. Now, given that Xavier said that by 2006, 85% of all cars have to be completely recycled, there must be a dramatic amount of palladium that should come back on the market between 2006 and probably about 2008, which could make the secondary market the biggest producer of palladium in the world. Correct?

Alan Williamson

Yes, the difficulty is modelling palladium scrap returns. In terms of our supply and demand balance, by about 2006 we’ve got palladium from auto sector scrap being at least 800,000 ounces, which is twice the production of Stillwater at the moment. And at the moment scrap supplies are 300,000 ounces, something like that.

Philip Clewes-Garner, Standard Bank

That could grow to three million ounces.

Alan Williamson

It could. The other way of putting your question, Philip, is that effectively what you’ve done during the 1990s is transferred a big inventory stockpile from the hands of the Russian government into existing order manufacturers. And at some point in the next five years that will come back onto the market, and it remains to be seen who’s going to be the buyer of it.

Philip Clewes-Garner, Standard Bank

Presumably there’ll be some type of organisation that uses the recycled palladium back within the auto industry?

Jonathan Spall

In fact, Xavier, do you want to comment on that as well? I think from your speech you said you expected tonnage to double between 2003 and 2010. Do you want to put some numbers on that or say how, in light of what Philip was saying, that changes things?

Xavier Van Houte

Yes, I think definitely your analysis is basically correct when you say that an increased supply of palladium is to be expected from the recycling business. That’s clear now, but I wanted to stress today that what is now on paper in this legislation is quite beautiful, but it’s not really reality yet. It will depend also on the way the legislation will be implemented – this is an important factor.

Now, just to quantify that, I have to say, it’s quite difficult. But the trend is there, that’s very clear.