

OUTLOOK

A number of trends are of key importance to the platinum group metals markets in 2008. In particular, the ability of the South African mining industry to stem the loss of production due to recent challenges in its operating environment will be vital to the market balance.

Platinum group metal production had previously been expected to grow in 2007 and in 2008. However, a new approach to safety – the temporary closure of shafts where fatal accidents occurred – and a very wide range of other operational challenges weighed heavily on production. Output and sales of pgms from South Africa fell in 2007 as a result.

This was followed, in early 2008, by the severe electricity shortages and ensuing power cuts experienced by industry in South Africa. This reached a peak in late-January when all deep level mining was temporarily stopped due to the safety hazards resulting from the short-notice loss of power to underground operations. Although mining restarted relatively quickly, a certain amount of pgm production was lost at that time. The short-term result of this temporary stoppage drove metal prices upwards and it is likely to mean that industry-wide pgm production in 2008 will be little higher than in 2007.

The power situation has stabilised with mines receiving a greater amount of their normal electricity requirements. Individual companies have prioritised particular mines or processing steps in order to maximise profitability and output. Assuming that the electricity supply can be maintained through the South African winter and power is available for new and expanding operations, the overall effect on South African pgm production in 2008 is estimated to be a shortfall of under 200,000 oz of platinum, less than initially feared. However, this figure does not include losses due to other causes such as the temporary closure of Amandelbult due to flooding, the slow ramp-up of production at Lonmin's new mechanised shafts and the challenges of finding and retaining skilled staff.

Over the longer-term, it is likely that the lack of sufficient generating capacity will continue until at least 2012. A number of the mining companies are installing some of their own electricity generation capacity to supplement the power that they are able to purchase. However, this will not fully resolve the issue and electricity supplies are likely to constrain South African

mining for several years. The effect of this "power gap" on the expansion plans of the mining industry cannot yet be fully quantified although some delays in the implementation of new projects will certainly occur.

A global economic slowdown now appears to be in progress, led by the USA. Any reduction in economic growth would soften demand for industrial metals such as the platinum group metals. Should the global economy suffer more than expected, there is the potential for lower demand for these metals than we currently forecast. However, it is still likely that demand for platinum and palladium will grow in 2008.

The price performance may also be affected by the same issues: falls in stock market indices around the world have had two opposing effects. Some investors have moved into gold and precious metals as "safe havens" while others have sold commodities to offset losses elsewhere. Any major stock market fall is likely to result in a greater sell-off and could knock pgm prices lower, even if physical demand is not affected.

PLATINUM

Platinum jewellery demand was fairly resilient in 2007, although the price averaged \$1,304, or 36 per cent more than in 2006. In fact, gross metal demand for jewellery (i.e. the total amount of platinum used by jewellery manufacturers including metal recovered from scrap) rose. However, the extraordinarily rapid price rise in January and February 2008 did have an effect on the jewellery trade with purchases in the key Chinese market falling in response. The full impact of prices above \$2,000 may not have been seen yet.

The outlook for jewellery demand over the entire year is more dependent on price than previously. While much of the high-end and the bridal sector is insulated from price changes, this is not true for the entirety of the market. However, a softening of the platinum price in March did encourage higher amounts of purchasing on the Shanghai Gold Exchange by the Chinese jewellery trade suggesting that the overall picture for 2008 may not be significantly worse than in 2007.

In the autocatalyst market, recent trends driving platinum demand are likely to persist into 2008 and beyond. The market share of production taken by light duty diesel vehicles in Europe should continue

rising from its already high level. The number of these vehicles with particulate filters will grow. The fitment of platinum-based aftertreatment on heavy duty diesel vehicles, in order to meet tightening legislation, will increase as well. All of these trends are expected to boost platinum demand from current levels.

However, a high platinum price, and a very large price differential between platinum and palladium are driving work on thrifting and replacement of platinum. In the gasoline sector worldwide, increased use of palladium catalyst formulations instead of platinum-based technology can be expected, although the scope for additional change is limited. In the diesel sector, an increase in the number of vehicles fitted with platinum-palladium catalysts rather than platinum-only catalysts is certain to happen. Considerable research effort is also being made by the industry to increase the palladium content of diesel catalysts. Together, these trends should restrict growth in platinum demand in the medium-term and beyond.

One significant change from previous years has been the 2007 launch of two exchange traded funds (ETFs) which are backed by physical platinum. Activity in these was limited for the first few months of their existence but the rate of investment accelerated dramatically in late-2007 and early-2008 as the price rose. It is currently hard to forecast the behaviour of ETF investors but activity over this period suggests that much of the money is invested over relatively short timescales. Demand and price also appear to be positively correlated – that is, when the price rises, more metal is bought by investors. Investment activity will also depend, though, on global economic conditions. Taken together, this complicates the forecasting of future demand. However, it seems reasonable, on the basis of current activity, to expect demand from this sector to be higher in 2008 than it was in 2007.

We expect that 2008 will again see large amounts of platinum reclaimed from jewellery scrap, particularly in Asia. There is now only limited scope for rationalisation of metal stocks at manufacturers, wholesalers and retailers. However, there is still an extremely large volume of metal in Japan in the form of jewellery bought over the last thirty years which is likely to continue returning for reprocessing under current market conditions, depressing jewellery demand. The amount of platinum recovered from



scrapped autocatalysts should rise too.

A further question for platinum will be the price sensitivity, or elasticity, of many of the industrial markets. Platinum is typically only used when its unique properties provide a benefit that outweighs its considerable cost. At current price levels, this balance could shift in some industrial sectors. However, there have been relatively few indications of this in industrial applications to date and we do not expect wholesale changes during 2008 or in the following years in most sectors. Instead, many users may be forced to rely on careful inventory control to contain costs.

Platinum supplies are expected to struggle in 2008, largely as a result of disruptions in South Africa. Problems in the mining sector have not solely been confined to power supply: flooding, reef geology and personnel issues have already played a part. However, Amandelbult is set to resume full production in the second quarter of 2008 and most producers are coping fairly well with their restricted power supplies. With construction of new mining capacity continuing, there is potential for South African platinum supplies to return to stronger growth in 2009. Nonetheless, worldwide production this year is likely to fall short of 2006 levels even if there is some recovery from 2007.

Nonetheless, the market is expected to be in a substantial deficit across 2008 as a whole. This suggests a strong price performance throughout the year, something which was certainly seen in the first quarter. The driving forces behind the price movements are not, though, solely pulling in one direction. A tight

While 2007 was a tough year for the South African pgm producers, there were a few bright spots with some mines reporting improved results.

supply-demand balance is supportive of the price but the deficit could be eroded by a USA-led global economic slowdown. However, the dollar looks likely to remain weak against most other major currencies, supporting the price, in dollar terms at least.

Stock market volatility has also infected the commodity markets and the US-subprime crisis is likely to continue to prompt extraordinary volatility in the platinum price. Poor performance by equities has encouraged investors into commodities, especially perceived safe havens such as gold. Conversely, wide daily movements on the stock markets have driven sales of the most liquid asset classes including metals. A sustained fall across the global exchanges would drive precious metals prices lower.

Upside risk remains, however: any further substantial interruptions to South African supply will push the price higher. Political uncertainty in Zimbabwe could damage output there too. We therefore expect platinum to trade in a wide range from \$1,775 to \$2,500 during the next six months.

PALLADIUM

Demand for palladium is expected to rise in 2008. The outlook for global palladium jewellery demand is somewhat uncertain but there should be increased requirements for this metal from the autocatalyst, industrial and investment sectors.

The production of platinum Olympic memorabilia to mark the Beijing Games will contribute to demand in 2008.

The autocatalyst sector is likely to show growth during 2008. Although the prospect of a USA-led global slowdown, or even recession, is still evident, automotive sales should remain relatively healthy. Although sales in the more established markets of Europe, Japan and North America will show little to no growth overall, the emerging markets of China, India, South America and, increasingly, Russia will manufacture and import more light duty vehicles. With the majority of these fitted with palladium-based aftertreatment technology, demand should increase.

There is also some scope remaining to replace platinum catalyst formulations with palladium ones. In the gasoline sector, this has been underway for several years already and there will be no step change in the trend. In the diesel market, however, we can expect both an increase in the number of vehicles with platinum-palladium oxidation catalysts fitted and, for the longer-term, considerable R&D effort into increasing the viable proportion of palladium in these catalysts from the current level of between a quarter and a third of the precious metal content.

Palladium investment demand has been reinvigorated by the launch of two exchange traded funds (ETFs) in 2007. Large amounts of metal were bought in the first quarter of 2008 alone, leading us to forecast substantial growth in demand from this sector if current market conditions persist.

Growth in electronics sector demand for palladium can be expected. The trends driving this industry have considerable momentum: memory and processing requirements continue to grow rapidly, forcing pgm use higher; and sales of electronic devices seem set to grow by more than 10 per cent again in 2008. Increased levels of recycling of consumer electronics and miniaturisation of components will not be able to prevent a rise in demand. Other industrial demand and dental sector purchases are also likely to rise.

The prospects for palladium jewellery demand are less clear. Most of the original Pd950 stock in China has now been sold or refined, and the amount of recycled metal used by manufacturers is likely to fall. With unsold stocks at retailers dropping, manufacturing demand should more closely reflect retail sales. Manufacturer purchases of metal were strong in the first quarter of 2008, suggesting some growth in demand this year is possible. The March 2008 announcement by the major



pgm producers of a concerted marketing campaign for palladium jewellery may drive consumer purchasing and demand higher in the medium-term.

Palladium supplies from mining are likely to fall in 2008 compared to 2007. Although Russian production is expected to change little, South African metal sales will be dented by the power supply problems experienced in the first quarter and by the range of other challenges facing the industry. Of note, therefore, is the question of the level of sales from Russian State stocks. We currently expect to see sales of a lower volume of Russian metal in 2008 than in recent years. We believe the shipments of roughly 500,000 oz from Russia into Switzerland in December 2007 did not reach the market that year and are therefore likely to form part of 2008 supplies. If so, the palladium market is likely to be in surplus again.

While we have reported very substantial fundamental surpluses in the palladium market over recent years, it seems likely that these have been absorbed by a limited number of large investors and institutions. The holding of amounts of palladium stock in Switzerland and elsewhere has supported the price and also depressed lease rates.

Lower palladium output from South Africa in early 2008 helped the price to firm. The behaviour of the palladium price in recent years has also been heavily influenced by movements in the prices of gold and of platinum. However, movements in the price in the final quarter of last year and the first quarter of 2008 may have been related more closely to investment in the European exchange traded funds and to other speculative activity based on a perceived correlation between the palladium price and the platinum price.

We currently forecast that palladium supplies will fall this year – subject to sales of Russian State stocks falling – and that demand will grow again in 2008. This suggests a tightening of the market and the potential for price rises to occur. If the platinum price performs strongly during the next six months, then palladium is likely to benefit and it could trade as high as \$575 within the same period. However, investor behaviour remains absolutely key. With many millions of ounces of palladium in investor hands, any widespread sell-off, whether driven by poor stock market performance or a US recession, would force the price down. We currently expect a floor price of no lower than \$400 during the coming six months.

OTHER PGM

A period of prolonged high rhodium prices has encouraged research into rhodium thrifting in a number of industries. Rhodium does, though, remain a vital material for use in gasoline catalytic converters. However, we expect to see a degree of thrifting of the average rhodium content of a catalyst. This is against a backdrop of tightening vehicle emissions legislation around the world and healthy growth rates in automotive production. Any decrease in overall rhodium usage is therefore likely to be small in the short to medium-term.

In other sectors, the effects of a high rhodium price are likely to persist. In the glass industry, new purchases of rhodium for extra LCD glass production capacity are likely. However, these will be offset by a continuing trend to reduce the rhodium content of the alloys used in order to contain costs. Glass sector demand may therefore fall in 2008.

Rhodium production is likely to suffer from the South African supply problems and may decrease in 2008. Much of the new production on the Eastern Bushveld – whether from new mines or from expansions – will be from rhodium-rich ores. Although rhodium output will rise over time as these operations expand their production, the current operating challenges in South Africa suggest a continuation of tight market conditions for at least some period of time.

The ruthenium market is also forecast to experience further price sensitivity and thrifting. The wider introduction of lower ruthenium content pastes used in the production of plasma display panels is likely to cut demand from this application again in 2008. More importantly, though, demand for ruthenium in the hard disk industry is likely to more closely reflect actual metal usage on PMR hard disks. The market share of this technology will increase in 2008, leading to higher gross demand but a continued focus on inventory control and process improvements will lead to higher recycling. It is likely that the overall trend in ruthenium demand, across all applications, will be downwards once again in 2008.

Iridium demand is unlikely to change greatly: although a worsening of economic conditions could dampen demand from the chemical industry, greater use in spark plugs can be expected.