

GENC, B. Where is platinum heading? *Third International Platinum Conference 'Platinum in Transformation'*, The Southern African Institute of Mining and Metallurgy, 2008.

Where is platinum heading?

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This paper considers the fundamentals affecting platinum prices. It offers a brief overview of supply and demand patterns and highlights the volatility in market prices over the last decade. It also examines the difficulties South African platinum producers have to deal with to plan their future capacity. Although no solution is offered for the problem of estimating future platinum prices at reasonable confidence levels, this article nevertheless offers the reader an understanding of price variables currently at issue in South Africa.

Introduction

South Africa is one of the blessed countries in terms of mineral resources and it is the world's number one platinum producer. Johnson Matthey (2008) reported that South Africa alone produced 77 per cent (5.035 million ounces) of the annual global platinum output during 2007. Anglo Platinum (Angloplat), the world's foremost platinum producer, mined 2.47 million ounces of platinum in 2007, making up almost 50 per cent of the South African annual platinum production.

The new and expansion projects by South African platinum producers can be partly attributable to the high platinum prices experienced in the current and recent years. However, it will continue to rely on future high platinum prices. In order to predict future platinum prices, the fundamentals affecting the platinum market must be examined. This paper attempts to identify those fundamentals.

Platinum prices

Like other commodities, the platinum spot price is mostly driven by the balance between supply and demand figures, which require comprehensive analysis in terms of predicting future platinum prices. The principle determinants influencing the platinum prices are:

- Supply and demand
- Price of crude oil and gold
- The ratio between the value of the US dollar, Euro and the South African rand.

In addition to these factors, long-term contracts, political uncertainty and speculative activities had some impact on platinum pricing. Those impacts are visible in supply and demand figures. Market leaders in the analysis of market forces, which include Johnson Matthey (JM), GFMS, and HSBC, etc. attempt to predict the future platinum price trading range through a comprehensive analysis of these factors.

Supply

Mauve (2000) defined supply as 'the provision of a commodity'. An analyst must recognize the effect the

following factors have on availability. Tilton (1985) lists the following determinants of supply for most mineral commodities:

- The price of the commodity
- The status of the commodity
- Input costs
- Socio-political disruptions
- The structure of the market
- Technological change
- Governmental activities.

Total world supply for a commodity is estimated by calculating the total amount of that commodity made available to the market. Mineral commodities are made available from primary production (which generates individual products, main products, co-products and by-products) and secondary production, i.e. recycling of scrap. Figures for both primary and secondary production can be acquired from annual reports of producers, such as Angloplat, Impala Platinum (Implats) and Lonmin PLC (Lonmin), which are the world's number one, two and three South African platinum producers, respectively.

Platinum producers are required to publish their production results annually; they also publish their interim results as well as their quarterly reviews and production reports. This information can be obtained from the producers' internet websites and news reports. Once the underlying factors that affect supply and demand of a commodity have been well researched, a supply and demand balance can be calculated in such a way that analysts can determine future supply so that they can predict future platinum prices. Table I shows platinum supply and demand over the last ten years.

As it can be concluded from Table I, since 1999 the platinum demand was always greater than the supply, except year 2006 where there was 355 thousand ounces of surplus but this surplus became 385 thousand ounces of shortfall by the end of 2007. Despite the surplus in 2006, prices continued heading higher in 2007. South African production fell 5.2 per cent to 5.035 million ounces in 2007. On 25 January 2008 South Africa's power crisis worsened when all mining operations had to shut down for five days as government owned power utility Eskom, which produces

Table I
Platinum supply and demand (JM, 2008)

| | '000 oz | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-----------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Supply | South Africa | 3 680 | 3 900 | 3 800 | 4 100 | 4 450 | 4 630 | 5 010 | 5 115 | 5 295 | 5 035 |
| | Russia | 1 300 | 540 | 1 100 | 1300 | 980 | 1050 | 845 | 890 | 920 | 910 |
| | North America | 285 | 270 | 285 | 360 | 390 | 295 | 385 | 365 | 345 | 325 |
| | Others | 135 | 160 | 105 | 100 | 150 | 225 | 250 | 270 | 270 | 280 |
| | Total supply | 5 400 | 4 870 | 5 290 | 5 860 | 5 970 | 6 200 | 6 490 | 6 640 | 6 830 | 6 550 |
| Demand by application | Autocatalyst: Gross | 1 800 | 1 610 | 1 890 | 2 520 | 2 590 | 3 270 | 3 490 | 3 795 | 3 905 | 4 225 |
| | Recovery | -405 | -420 | -470 | -530 | -565 | -645 | -690 | -770 | -860 | -890 |
| | Chemical | 280 | 320 | 295 | 290 | 325 | 320 | 325 | 325 | 395 | 390 |
| | Electrical | 300 | 370 | 455 | 385 | 315 | 260 | 300 | 360 | 360 | 425 |
| | Glass | 220 | 200 | 255 | 290 | 235 | 210 | 290 | 360 | 405 | 430 |
| | Investment | 315 | 180 | -60 | 90 | 80 | 15 | 45 | 15 | -40 | 75 |
| | Jewellery | 2 430 | 2 880 | 2 830 | 2 590 | 2 820 | 2 510 | 2 160 | 1 965 | 1 640 | 1 585 |
| | Petroleum | 125 | 115 | 110 | 130 | 130 | 120 | 150 | 170 | 180 | 205 |
| | Other | 305 | 335 | 375 | 465 | 540 | 470 | 470 | 475 | 490 | 490 |
| Total demand | 5 370 | 5 590 | 5 680 | 6 230 | 6 470 | 6 530 | 6 540 | 6 695 | 6 475 | 6 935 | |
| Difference | 30 | -720 | -390 | -370 | -500 | -330 | -50 | -55 | 355 | -385 | |

95 per cent of SA's electricity, could not guarantee 100 per cent power supply to the mines. However, mining resumed afterwards but below full capacity. Most mines operated at 90 per cent of normal power consumption since then but by the end of April 2008 it was increased to 95 per cent, which is the current guaranteed level of power.

Eskom stated that the electricity crisis might take up to five years to resolve. This will definitely bring some short-fall in the supply of platinum in the short to medium term. Angloplat (2008) in its quarterly review said that its refined platinum output fell 24 per cent during the first quarter of 2008 compared to the same period in 2007, and forecast to produce 2.4 million ounces of platinum during 2008, 3 per cent less than 2007. Implats (2008), stated that the South African supply constraints due to power and people issues coupled with stable to firm automotive demand will result in very tight market conditions for platinum in 2008. Lonmin (2008) also cut its production target to 775 thousand ounces for 2008 which is 14 per cent lower than the company's previous estimate. Following the power crisis, the platinum price rose from \$1 530 at the beginning of January 2008 to a new record of \$2 290 on the 4th of March, 2008 indicating an almost 50 per cent price increase within two months. JM (2008) claims that speculative activities such as platinum-based exchange traded funds (ETFs) as well as investors were primarily responsible for driving the platinum price higher. Figure 1 shows the monthly average platinum prices over the last five years.

Demand

Mauve (2000) defined demand as 'the desire that a consumer has for a commodity'. Tilton (1985) lists the following factors that drive demand for most mineral commodities:

- The price of the commodity
- Income (growth in GDP)
- The availability of substitutes for a commodity
- The availability of complimentary substances that can be used in combination with a commodity
- Consumer preferences
- Technological change
- Governmental activities.

When platinum demand by application is concerned, the biggest demand came from the autocatalyst sector (54 per cent) while jewellery followed at 20 per cent in 2007. JM reported that in 2007 purchases of platinum for use in autocatalysts increased by 8.2 per cent to a record 4.23 million ounces, propelled by higher light duty diesel vehicle sales in Europe and medium to heavy vehicle sales in Japan and North America. Higher European demand caused an increase in diesel oxidation catalyst loadings in response to Euro V emissions limits, which necessitated the use of more platinum. The new emission regulation is coming into effect from September 2009. Currently, the European Commission is evaluating plans to introduce more stringent emission legislation on diesel particulate emissions. In December 2007, the Commission published a proposal for the Euro VI emission standards. Dieselnet (2008) reported that the new emission limits, comparable in stringency to the US 2010 standards, would become effective from 2013/2014. To meet these more stringent standards vehicle manufacturers will require more platinum. Figure 2 shows platinum demand by applications.

However, demand for platinum from the jewellery industry dropped slightly to 1.585 million ounces, whereas industrial demand for platinum continued increasing to 1.94 million ounces in 2007. This increase is supported not only by increased demand for computer hard disks but also the expansion of LCD glass manufacturing capacity in Asia.

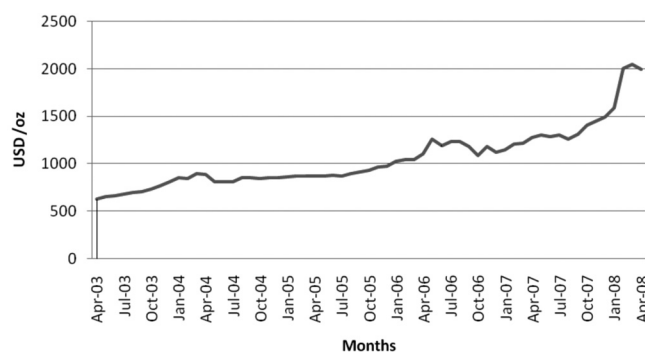


Figure 1. Platinum prices 2003–2008 (Adapted from JM, 2008)

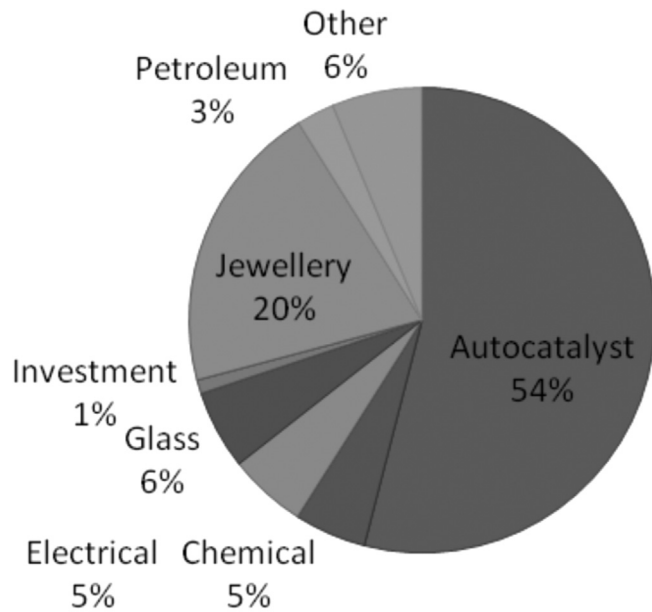


Figure 2. Platinum demand by application 2007 (Adapted from JM, 2008)

Demand for platinum in fuel cells continues to grow as fuel cell powered cars have already started being used; most car manufacturers now have small demonstration fleets of cars in operation. An expert in the field, Thomas (2008), said that the only way of reducing the greenhouse gases by 60 per cent or more below 1990 levels is by using hydrogen-powered vehicles in the transportation sector. In addition to all these, the running of two ETFs in Europe will most probably increase the demand furthermore.

Price of crude oil and gold

While platinum prices are heading higher and recording historical high prices, other commodities also show similar behaviour. Gold soared to an all time record high of \$1 032.70 an ounce on March 17, 2008 while crude oil futures reached \$146.69 on the 3rd of July, 2008, the highest since trading in the contract commenced in 1983. It is likely that these commodities will continue to show a close bond under similar market conditions. While crude oil and platinum perfectly overlay, gold pattern also moves parallel to them.

Figure 3 demonstrates a very clear correlation between gold, oil and platinum prices over the last ten years.

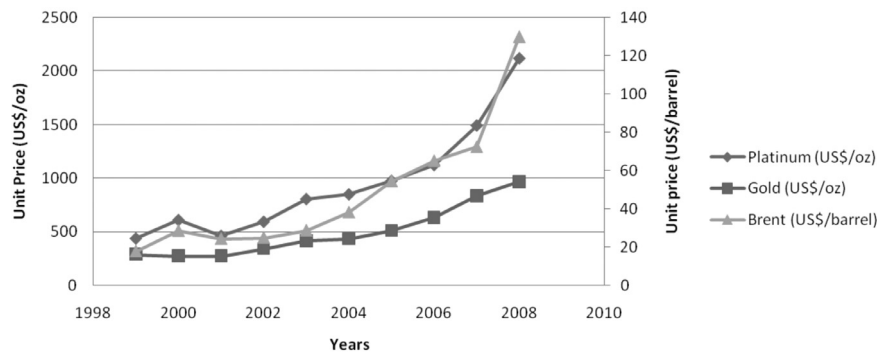


Figure 3. Correlation between crude oil, gold and platinum (Adapted from Kitco.com, Energy Information Administration and JM, 2008)

The ratio between the value of the US dollar, Euro and South African rand

Platinum prices for South African producers are highly sensitive to the ratio between the US dollar (USD) and the South African rand (ZAR) as platinum is traded predominantly in USD. Since 2001, the US trade and current account deficit have continued to widen, the latter being the main reason being the USD weakness against all major currencies. The deficit is the difference between revenue earned on exports and imports. According to Bureau of Economic Analysis (BEA), the US current-account deficit stands over \$738.6 billion annually for 2007, indicating that the US economy continues slowing down. Most recently the US subprime financial crisis as well as the continuity of lowering interest rates had a major impact on the USD and caused it to weaken even further. Since January 2006, the USD has fallen by 31 per cent against the Euro. The weak USD pushed the commodity prices higher, overall. Figure 4 demonstrates the value of the USD against the Euro.

The value of ZAR is extremely important as most of the SA platinum producers cost are mainly in ZAR while their revenues are wholly in USD, which makes the USD versus ZAR ratio very important. The strong ZAR has had huge implications in 2005 and 2006, in particular where new projects became less viable; as a consequence the possibility of new job creation was stalled. In December 2004 ZAR touched 5.61 to the USD, its best level since November 1998. A weak ZAR makes mining production more profitable. Since the beginning of 2008, South Africa's power problem became a major issue causing economic indices and business confidence to fall. According to Statistics South Africa (2008) SA's GDP fell to 2.1 per cent due to mainly mining production disruption caused by power failures in the first quarter of 2008; mining contribution to the GDP fell by 22.1 per cent. South Africa Revenue Service (SARS) (2008) revealed that the cumulative trade deficit for January to April 2008 was R31.6 billion versus a deficit of R20.9 billion for the same period in 2007. During the budget speech (2008) the Finance Minister estimated that the current account deficit for 2007 was R143 billion and SA's government is going to spend R11 billion for the 2010 Fifa World Cup, R78 billion for transport and R343 billion for Eskom over the five years. This spending plan will bring extra pressure on the current account deficit and it will stay wide during the next few years. Political instability in Zimbabwe also had some negative impact on the ZAR. Political conditions will also play a very important role on how the ZAR will be valued against the USD. Consequently, despite an all time high on

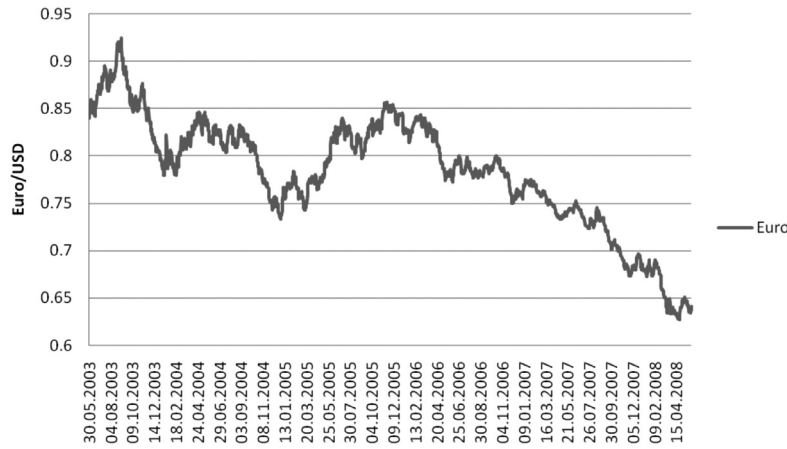


Figure 4. USD versus EURO (Adapted from Oanda.com, 2008)



Figure 5. USD versus ZAR (Adapted from Oanda.com, 2008)

platinum and gold prices, the ZAR failed to gain value against the USD so far and under the current circumstances the ZAR will most probably stay weak against the USD and it will trade between 7 and 8.5 against the USD for the rest of 2008. Figure 5 shows the value of the USD against the ZAR.

Platinum price forecast

Since power failures, safety and working conditions already held back South African platinum production, most analysts are now adjusting their platinum forecast for 2008 higher, expecting that the platinum market deficit will be greater. As there is no quick fix for SA’s power crisis, the platinum price trading range for the rest of 2008 will probably be between \$2 000 and \$2 600, as shown in Table II.

Conclusion

The future price of platinum will depend heavily on the supply and demand patterns. South Africa supplies almost 77 per cent of the world’s platinum output, making it an important factor to consider when estimating the future price of platinum. The current power related production problem as well as strong autocatalyst and industrial demand for the metal will most likely force the platinum price above the current rates in the short to medium term. The challenge is to quantify all the supply and demand

variables affecting platinum prices and to derive a model for estimating future prices within reasonable confidence limits. Such a model will be of great benefit to platinum producers who must plan optimal production capacity for the short, medium and long-term. The model is the subject matter of my current PhD work at Wits University and is still in the early stages of development. The variables to be considered in this model are supply and demand, price of crude oil and gold, and the ratio between the value of the USD, Euro and the ZAR.

Table II
Platinum price forecast in USD for 2008

| Institutions | Low | High | Average |
|------------------------------|-------|-------|---------|
| Johnson Matthey ^a | 1 775 | 2 500 | |
| GFMS ^b | 1 700 | 2 400 | |
| Investec ^c | | 2 400 | |
| HSBC ^d | | | 2 100 |
| RBC ^e | | 3 000 | |

Source: (a) JM, 2008, (b) Creamer, 2008, (c) Kruger, 2008, (d) Reuters, (e) Munshi

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Bekir has 12 years' experience in the mining industry. He currently lectures at the University of the Witwatersrand in the area of computer skills, computer applications in mining and computerized mine design. He is currently busy with his PhD and it is about predicting future platinum prices using a computer model.

