Merchant Banking

INVESTMENT RESEARCH

# Fortis metals monthly

May 2008

FORTIS

Gold, silver, platinum, palladium, aluminium, copper, nickel, lead & zinc, tin, plastics, steel.

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Fortis Metals Monthly is an exclusive precious and base metals research joint venture between Fortis Bank SA/NV and VM Group.

# Metals and plastics – Strategic view

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## Introduction

In the US the dollar remains weak, business confidence is very low, and bankruptcies in April were almost 50% higher than the same month last year. Yet the copper price broke a new historic peak on 5th May on Comex, hitting $4.2605/pound, a rise of 11.5% on the previous trading day and equivalent to $9,390/t. Admittedly this was a somewhat artificial spike, given that the LME was that day closed for a public holiday, but the underlying investment support for base metals remains discernibly awesome. The market is clearly betting that the US Federal Reserve's cut in interest rates – down to 2%, lowest since December 2004 – will provide sufficient liquidity to counteract the growing signs of a full-blown recession and thus help base metals' demand remain vigorous.

## Gold

$1,000/oz was a reaction to market panic about the financial system. Now that has subsided gold is trading much lower, and some of the factors that were important before August 2007 are regaining centre ground. This does not mean the rally is over – a US economic slowdown, further dollar weakness, and increasing worries about stronger inflation should see prices gain in coming months. But the fizz has gone out of the market, for good or ill.

## Silver

Silver is following gold, by and large, but is showing some of its own idiosyncrasies. Investors seem more resilient, with the ETF not seeing the major outflows that happened in gold during April. This either means they believe the fundamentals are better, or they have not realised yet that they are not. Silver still needs new demand sources to replace lost photographic industry demand, and on what we know of Mitsui's silver-based autocatalyst, that doesn't seem to be it.

## Platinum

An exchange-traded product in the US has failed to set the world alight, but it and renewed concerns over South African power have sent platinum firmly above $2,000/oz. Both will determine whether it can stay there and even more head back towards its 2008 highs.

## Palladium

2008 hasn't yet been the year for palladium, although the metal has made useful price gains. Further heights will need clear evidence that demand growth remains strong and customers are substituting it for platinum and not substituting cheaper materials (such as nickel in electronics) for it.

## Aluminium

Prospects for the aluminium price are still very closely tied to what happens to China's aluminium trade. The country returned to being a very small net exporter in March but it is still too early to call the start of a fresh trend. Overall we remain positive regarding aluminium but persistently high exchange stocks can only continue to dampen investor enthusiasm.

## Copper

Copper prices by early May were up almost 30% since the start of the year, with bullish investors discounting what is likely to be a very small global surplus this year (widening in 2009), evidence of slackening Chinese refined copper imports, and the knock-on effects of a US building slowdown. But without major supply side problems copper may be living on borrowed time above $8,000/t.

## Nickel

A probable surplus of 70,000t of refined nickel could be seen this year and, with every likelihood of that being repeated in 2009, it should deter much fresh speculative investment; however, demand is growing and the global market is still reliant on various promised large-scale projects coming to fruition in the next three years.

## Lead and zinc

Lead has now slumped back to below where it started the year, despite the fact that Chinese refined lead exports remain very low. Lead prices could weaken even more in the months ahead as battery demand slows in the wake of consumer belt-tightening in the world's biggest automobile markets. Prior to the Chinese earthquake zinc prices were falling very much as we suggested they would. The disaster in three of China's most important metal-producing provinces has changed that perspective, but is likely only to postpone the development of a substantial surplus over the next 12 months. If Chinese production capacity gets back online quickly then the LME 3-month contract will return to its previous downward trend.

## Tin

The Indonesian story drags on, with even less certainty about the precise plans for production and exports than ever before. Meanwhile China's demand is rising strongly. It is increasingly possible that tin could spike to near $30,000/t before the end of the year, as speculative investors dive even deeper into the one base metal story that currently has a very sharply defined supply-demand aspect to it.

## Plastics

The high oil price is keeping plastics prices high, but as new capacity comes on stream in the Middle East there is a risk of oversupply later in the year and 2009.

## Forecasts

**Price forecasts**

| | | End-April | 1-month | 2-month | 3-month | 12-month |
|---|---|---|---|---|---|---|
| **Gold** | $ per oz | 871 | 830-900 | 850-950 (r) | 950-1,000 (r) | 1,000 (r) |
| **Silver** | $ per oz | 16.47 | 16-18 | 16-18 (r) | 16-18 (r) | 20 (r) |
| **Platinum** | $ per oz | 1,929 | 1,950-2,250 (r) | 2,200-2,400 (r) | 2,000-2,400 | 2,200 |
| **Palladium** | $ per oz | 418 | 400-450 (r) | 450-550 (r) | 450-550 (r) | 450-550 (r) |
| **Aluminium (3-month)** | $ per tonne | 2,986 | 2,800-3,100 (r) | 2,800-3,100 | 2,900-3,300 | 3,100-3,300 |
| **Copper (3-month)** | $ per tonne | 8,586 | 7,800-8,500 (r) | 7,800-8,500 (r) | 7,500-8,000 | 7,500 |
| **Nickel (3-month)** | $ per tonne | 29,025 | 25,000-28,000 (r) | 25,000-28,000 | 25,000-28,000 | 25,000 |
| **Lead (3-month)** | $ per tonne | 2,735 | 2,000-2,300 (r) | 2,000-2,300 (r) | 2,000 (r) | 2,000 (r) |
| **Zinc (3-month)** | $ per tonne | 2,257 | 2,200-2,500 (r) | 2,200-2,500 | 2,200 (r) | 2,200 (r) |
| **Tin (3-month)** | $ per tonne | 23,455 | 22,000-25,000 (r) | 22,000-25,000 (r) | 22,000-25000 (r) | 17,000 |
| **Plastic: LL (Global)** | $ per tonne | 1,490 | 1,500-1,600 (r) | 1,600 (r) | 1,650 (r) | 1,700 (r) |
| **Plastic: PP (Global)** | $ per tonne | 1,520 | 1,500-1,600 (r) | 1,600 (r) | 1,650 (r) | 1,700 (r) |
| **Steel: (3-month) Med** | $ per tonne | 1,015 | 1,100 | 1,100 | 1,200 | 1,200 |
| **Steel: (3-month) Asia** | $ per tonne | 1,000 | 1,100 | 1,100 | 1,200 | 1,200 |

| | | Average/2009 | Average/2010 | Average/2011 | Average/2012 | Average/2012 |
|---|---|---|---|---|---|---|
| **Gold** | $ per oz | 1,000 | 800 | 650 | 600 | 500 |
| **Silver** | $ per oz | 23 | 15 | 13 | 13 | 10 |
| **Platinum** | $ per oz | 1,800 | 1,700 | 1,700 | 1,500 | 1,300 |
| **Palladium** | $ per oz | 500 | 500 (r) | 400 | 400 | 300 |
| **Aluminium (3-month)** | $ per tonne | 4,000 | 3,500 | 3,500 | 3,000 | 2,500 |
| **Copper (3-month)** | $ per tonne | 6,000 | 5,000 | 5,000 | 5,000 | 4,000 |
| **Nickel (3-month)** | $ per tonne | 25,000 | 25,000 | 15,000 | 14,000 | 14,000 |
| **Lead (3-month)** | $ per tonne | 2,500 | 1,500 | 1,300 | 1,200 | 1,000 |
| **Zinc (3-month)** | $ per tonne | 2,200 | 2,200 | 2,500 | 2,500 | 2,500 |
| **Tin (3-month)** | $ per tonne | 14,000 | 13,000 | 13,000 | 12,000 | 10,000 |
| **Plastic: LL (Global)** | $ per tonne | 1,400 (r) | 1,200 | 1,200 | 1,200 | 1,200 |
| **Plastic: PP (Global)** | $ per tonne | 1,400 (r) | 1,250 | 1,250 | 1,250 | 1,250 |
| **Steel: (3-month) Med** | $ per tonne | 950 | 950 | 800 | 800 | 800 |
| **Steel: (3-month) Asia** | $ per tonne | 950 | 950 | 800 | 800 | 800 |

*Source: VM Group* *[r] = revised from previous month*

## Market Update

**Prices and stock levels**

| Prices (May 12th) | | Most recent price | Average over past 12 M | High | Low | Price 1 week ago | WoW (%) | Price 1 month ago | MoM (%) | Price 12 months ago | YoY (%) | Average 2007 | Average 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gold** | $/oz | 876.0 | 790.0 | 1,011.3 | 642.1 | 853.5 | **3%** | 927.8 | **(6%)** | 670.2 | **31%** | 696.5 | 604.0 |
| **Silver** | $/oz | 16.97 | 14.86 | 20.92 | 11.67 | 16.2 | **5%** | 18.0 | **(5%)** | 13.2 | **29%** | 13.4 | 11.6 |
| **Platinum** | $/oz | 2,079 | 1,552 | 2,273 | 1,240 | 1,878 | **11%** | 2,019 | **3%** | 1,329 | **56%** | 1,304 | 1,142 |
| **Palladium** | $/oz | 437.0 | 387.1 | 582.0 | 320.0 | 412.0 | **6%** | 469 | **(7%)** | 363 | **20%** | 354 | 320 |
| **Aluminium** | $/tonne | 2,906 | 2,683 | 3,212 | 2,376 | 2,859 | **2%** | 3,080 | **(6%)** | 2,847 | **2%** | 2,662 | 2,593 |
| **Copper** | $/tonne | 8,270 | 7,612 | 8,810 | 6,340 | 8,225 | **1%** | 8,660 | **(5%)** | 7,841 | **5%** | 7,095 | 6,671 |
| **Lead** | $/tonne | 2,306 | 2,922 | 3,880 | 2,015 | 2,559 | **(10%)** | 2,945 | **(22%)** | 2,065 | **12%** | 2,557 | 1,282 |
| **Nickel** | $/tonne | 27,045 | 31,479 | 50,450 | 25,495 | 27,770 | **(3%)** | 28,850 | **(6%)** | 49,800 | **(46%)** | 36,217 | 23,266 |
| **Tin** | $/tonne | 24,650 | 16,770 | 24,650 | 13,600 | 22,850 | **8%** | 20,800 | **19%** | 14,010 | **76%** | 14,532 | 8,766 |
| **Zinc** | $/tonne | 2,202 | 2,827 | 4,020 | 2,162 | 2,162 | **2%** | 2,326 | **(5%)** | 4,020 | **(45%)** | 3,243 | 3,252 |
| **PP** | $/tonne | 1,550 | 1,354 | 1,550 | 1,190 | 1,550 | **0%** | 1,490 | **4%** | 1,265 | **23%** | 1,220 | 1,176 |
| **LL** | $/tonne | 1,510 | 1,335 | 1,510 | 1,195 | 1,510 | **0%** | 1,490 | **1%** | 1,210 | **25%** | 1,255 | 1,213 |

| LME Stocks (May 12th) | | Most recent stocks | Average over past 12 M | High | Low | Stocks 1 week ago | WoW (%) | Stocks 1 month ago | MoM (%) | Stocks 12 months ago | YoY (%) | Average 2007 | Average 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Aluminium** | Tonnes | 1,033,800 | 917,678 | 1,043,775 | 822,700 | 1,039,275 | **(0.5%)** | 1,020,650 | **1%** | 834,825 | **24%** | 842,573 | 723,253 |
| **Copper** | Tonnes | 121,775 | 141,936 | 201,000 | 97,550 | 109,025 | **11.7%** | 116,250 | **5%** | 141,300 | **(4%)** | 158,899 | 119,593 |
| **Lead** | Tonnes | 61,075 | 41,775 | 61,075 | 20,850 | 58,825 | **3.8%** | 50,875 | **20%** | 44,950 | **36%** | 37,218 | 76,115 |
| **Nickel** | Tonnes | 49,734 | 34,187 | 52,308 | 4,674 | 51,234 | **(2.9%)** | 51,174 | **(3%)** | 4,674 | **964%** | 18,110 | 17,324 |
| **Tin** | Tonnes | 7,545 | 11,787 | 16,065 | 7,545 | 7,630 | **(1.1%)** | 8,095 | **(7%)** | 8,325 | **(9%)** | 11,891 | 13,187 |
| **Zinc** | Tonnes | 124,775 | 88,684 | 131,775 | 58,100 | 125,350 | **(0.5%)** | 129,400 | **(4%)** | 83,725 | **49%** | 81,377 | 218,452 |

*Source: VM Group*

# Analysis

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## Metals' correlation may be a dollar bet

*Trying to discern the underlying trend of commodities in 2008 has been rather like observing the battle plan of the Grand Old Duke of York's army – "when they were up they were up, and when they were down they were down." There's nothing new in some commodities moving in lockstep with others, but the direction in which prices have been moving this year shows a remarkable correlation. One obvious explanation for this is that the considerable flows of fresh investment are driving prices, but it is just as much a consequence of dollar weakness. This ought to be worrying for those investors who imagine there is a firmly established trend for prices to continue moving higher. Eventually, US economic prospects will brighten, interest rates will begin to reverse their recent downward spiral, and the dollar should recover. Timing – as ever – will be crucial.*

You do not need to be a statistician to note that commodity prices often move together, just looking at any comparative price charts shows that. Although clearly there are times when commodities show very specific price movements of their own – such as nickel in 2007 – there are also many occasions when prices move up or down in the same direction. This is not particularly surprising, as many of the same factors drive prices of different metals. Thus, on the demand side, the ascendancy of China as a developing industrial superpower consuming vast quantities of metals has affected all of the base metals, albeit it to different extents at different times. Another factor, one that is receiving a lot of attention currently, is the growing volume of investment money being ploughed into metals. Although there has always been a speculative element, the major new trend of the last three years has been the gradual positioning of commodities, with metals an important component, as an asset class in their own right, with the most obvious example being the "long-only" commodity-index related funds that we discussed in the April edition of the *Fortis Metals Monthly*. As these funds typically invest in a basket of different commodities, by definition they affect all of those commodities. Essentially, on a tidal wave (of fresh money) all boats float higher. If this thesis is true we should see strengthening correlations between prices of commodities, including metals, over time.

This notion can be tested by looking at the correlation of daily percentage price changes, for which the best measure to use is the correlation co-efficient. In this, a correlation of 1 would represent correlation, 0 would signify no correlation, and –1 complete negative correlation. In other words, the nearer the number is to 1, the higher the correlation. By way of background, the following table shows the correlation of metals prices with each other using their daily percentage price changes since the start of 2007. Where the rows and columns intersect gives the relevant correlation of the prices between those two pairs of metals.

**Correlations between daily prices of pairs of commodities since August 2007**

| | Aluminium | Copper | Lead | Nickel | Tin | Zinc | Gold | Silver | Platinum | Palladium |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminium | | **0.66** | 0.56 | 0.53 | 0.39 | **0.65** | 0.41 | 0.51 | 0.47 | 0.46 |
| Copper | | | **0.66** | 0.54 | 0.47 | **0.76** | 0.36 | 0.57 | 0.46 | 0.45 |
| Lead | | | | 0.53 | 0.42 | **0.69** | 0.28 | 0.48 | 0.38 | 0.45 |
| Nickel | | | | | 0.41 | 0.58 | 0.23 | 0.35 | 0.24 | 0.27 |
| Tin | | | | | | 0.41 | 0.15 | 0.36 | 0.23 | 0.23 |
| Zinc | | | | | | | 0.38 | 0.56 | 0.44 | 0.50 |
| Gold | | | | | | | | 0.59 | 0.53 | 0.49 |
| Silver | | | | | | | | | 0.52 | 0.54 |
| Platinum | | | | | | | | | | **0.72** |

*Source: VM Group* *Note: Bolded text shows where correlation is higher than 0.6*

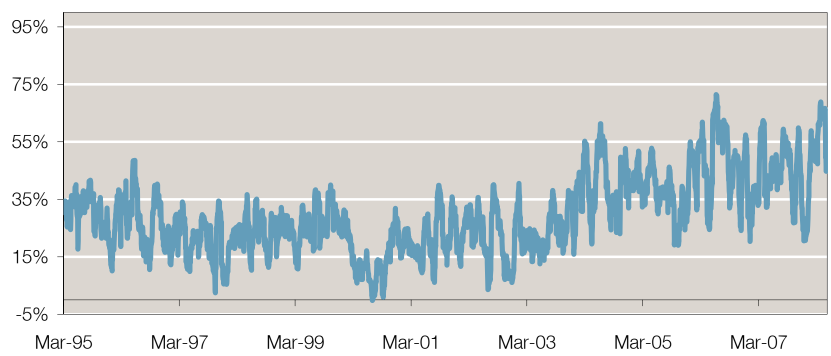
The first thing to note is that all of the metal pairings have positive correlations, i.e. there is some similarity in their price movements. Those numbers which are in bold show where the correlation coefficient is higher than 60%, to show the pairings that have the highest correlation. The choice of 60% is arbitrary – we select that as a reasonable minimum level of demonstrating a strong correlation.

The highest correlation of daily prices changes - since the start of 2007 - has been between zinc and copper, at 0.76. In fact zinc is highly correlated with aluminium and lead as well. Copper and lead, and copper and aluminium, also show high correlation.

For the precious metals the highest correlation has been between platinum and palladium. Given their similarities in supply and demand this is perhaps not surprising. Gold and silver, also seen as very similar, have a correlation of 0.59, which is perhaps not as high as one might intuitively suspect, although it is both metal's highest pairing. Silver's correlation with copper, at 0.57, is much higher than that of gold, 0.36, as one might expect given silver's greater industrial usage.

How have these price correlations changed over time? One way of looking at this is to take the correlation of daily price changes over the previous month (22 working days) for each of our pairings, and see how it has evolved. It would be enormously complex to show this for each of the possible 45 pairings, but the following chart shows the *average* correlation of all 45 pairings since 1995. This shows that the correlation varies a lot, but – notably – also that it has risen significantly from 2000, when for a brief spell the average correlation went negative. The peak of the correlation occurred back in May 2006, when metals' prices had a huge rally, but the recent bouts of high correlation have been of longer duration. In the last few weeks the correlation has fallen again, as the individual metal's price performance has diverged.

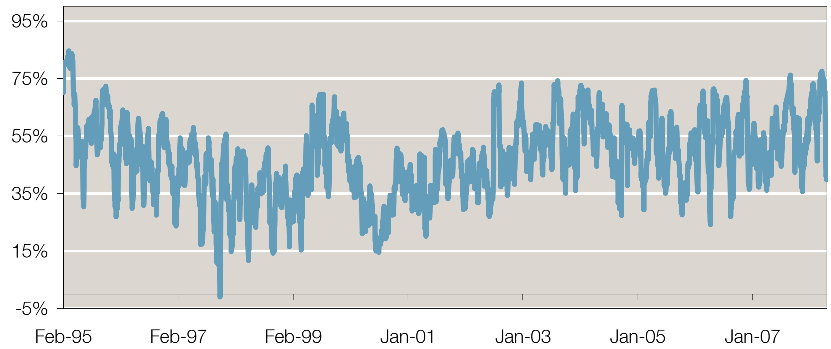
**Average correlation of daily prices changes over the previous month for all pairs of metals**




*Source: VM Group*

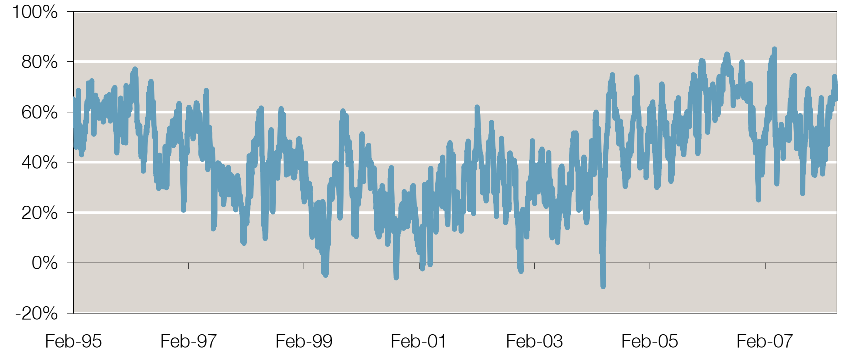
The following charts show the same correlation (daily price changes over the past month), but split out for 15 pairings of base metals and 6 pairings for precious metals. As might be expected from the table above, the average correlation between base metals is higher than for all metals, but it is interesting to see that the variation is less, and also that there is no obvious increase over the last few years. For precious metals the average correlation has been quite volatile, at times going negative. This might seem surprising, but there have been notable incidents – such as when palladium plummeted from over $1,000/oz to $200/oz – when they have shown quite divergent behaviour.

**Average correlation of daily prices changes over the previous month for all pairs of base metals**




*Source: VM Group*

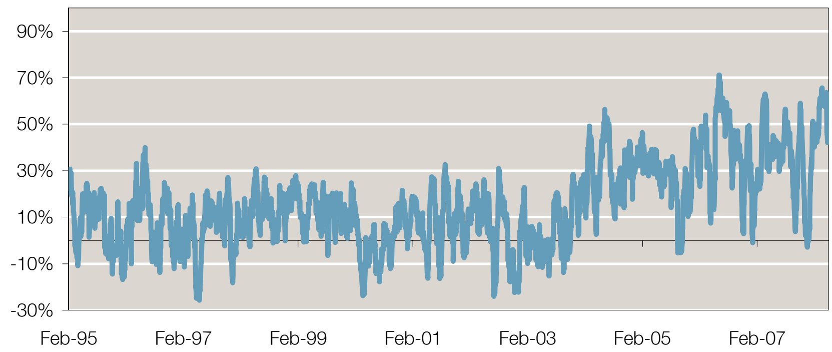
**Average correlation of daily prices changes over the previous month for all pairs of precious metals**




*Source: VM Group*

What is interesting is that the average correlation of all 45 pairings, i.e. each metal with every other metal, shows a clear rising trend, but the pairings of just the base metals with each other, or the precious metals with each other, do not. This must, therefore, mean there has been a large increase in the correlation of base metals with precious metals. And indeed that is what has happened, as the following chart shows. Until around the middle of 2003, the precious metals and base metals had shown very little positive correlation, with the past month correlation usually showing mildly positive but on many occasions being slightly negative. However since 2003 that correlation, whilst still erratic, has risen markedly. What does this signify? We suggest that this exercise gives qualified support to the notion that metal prices have been more correlated recently than in the past, and furthermore this would tend to support the view that we have been living through an 'all boats floating higher' period, in which there has been a well-documented massive influx of fresh investment money into the big commodity indices.

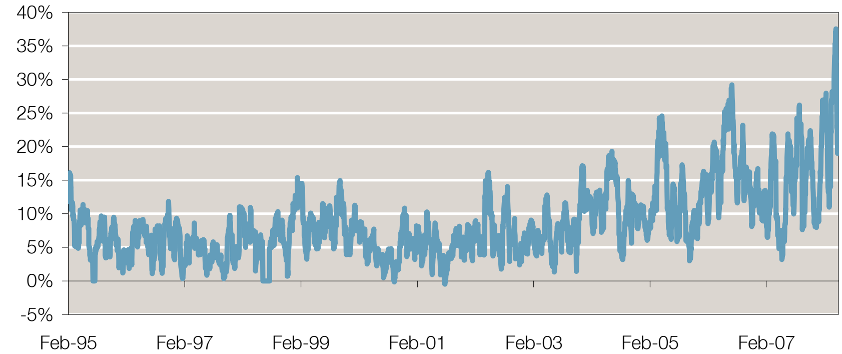
**Average correlation of daily prices changes over the previous month for all pairs of base metals with precious metals**




*Source: VM Group*

Further evidence for this comes from the final chart. Here we have extended our pairings from just metals to agricommodities and energy. We have selected 24 commodities, chosen from the two biggest commodity indices (the S&P GSCI and the DJ-AIG), which mean 257 possible pairings. Again, taking a moving average of the correlation of their daily prices over the previous month, it can be seen that there was almost no correlation for much of the 1990s and early 2000s, but since 2004 there has been a rising trend, peaking in the month to 17th April, when the daily price changes of all these commodities over the past month had showed an average correlation with each other of 0.38. This appears quite remarkable, given the lack of any fundamental similarities between this wide range of commodities. This correlation has subsequently fallen back in the last few weeks but remains considerably higher than the long-run average.

**Average correlation of daily prices changes over the previous month for all pairs of 24 commodities**



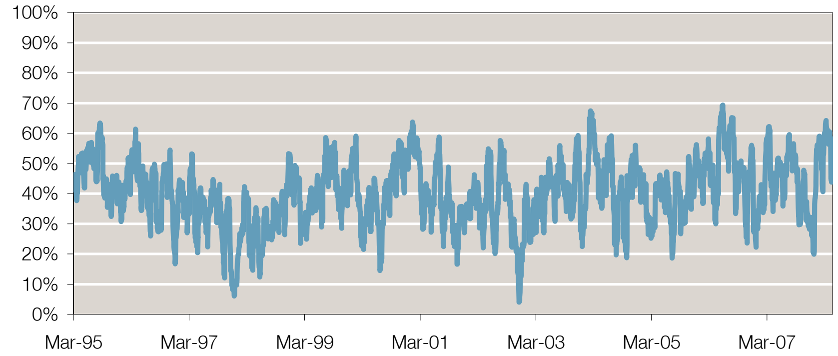

*Source: VM Group*

Something has clearly changed. The most obvious explanation for this is, as we noted earlier, could be the huge inflows of investment money that have entered commodities, mostly via index funds. But there is an additional factor underpinning the overall rise in commodity prices, one that tends to get overlooked in the rush to pin the responsibility onto investment funds. This is that all of these prices are denominated in dollars, and a very weak dollar at that, particularly since 2003. This means that much of the daily price movements can be traced back to the same source, a sharp movement (normally down) in the dollar's value, which leads to a move higher in commodity prices *in dollars*.

This chart shows the same data as the second chart in this piece, i.e. the average correlation of daily prices changes for all pairs of metals over the past 30 days, but this time with the prices measured in euros. Here it can be seen that there is no major trend up or down. A similar result is found when looking at the correlations between all 24 commodities.

This is, *prima facie*, surprising. It is particularly surprising that there is no discernible trend towards higher correlations. After all, it is an intuitively compelling assertion that there must have been some impact from the volume of fresh investment in commodities. The huge investment inflows, which we estimate to have reached $145bn by the end of 2007 must have had some effect on how correlated price movements are, particularly given there are obviously episodes such as occurred in March this year, when a sharp sell-off across all commodities starkly revealed that commodity prices moved in tandem due to speculation. More research needs to be done, but we posit that the evidence of these correlations – which of course leave aside certain commodity-specific events that can and do have a drastic impact on price movements (witness the startling rise in the tin price on the back of lower Indonesian production and exports and uncertainties over China's tin trade) – suggests that this wave of new investment money into commodities has been stimulated not just by attractive supply-demand fundamentals, but also investors having been drawn to commodities as 'anti-dollar' play. If true, this perhaps contains the seeds of a significant collapse in commodity prices if/when the US dollar recovers its former position of relative strength. Currently that may seem a mirage. But not all mirages prove to be false.

**Average correlation of daily prices changes over the previous month for all pairs of metals in euros**




*Source: VM Group*

# Focus

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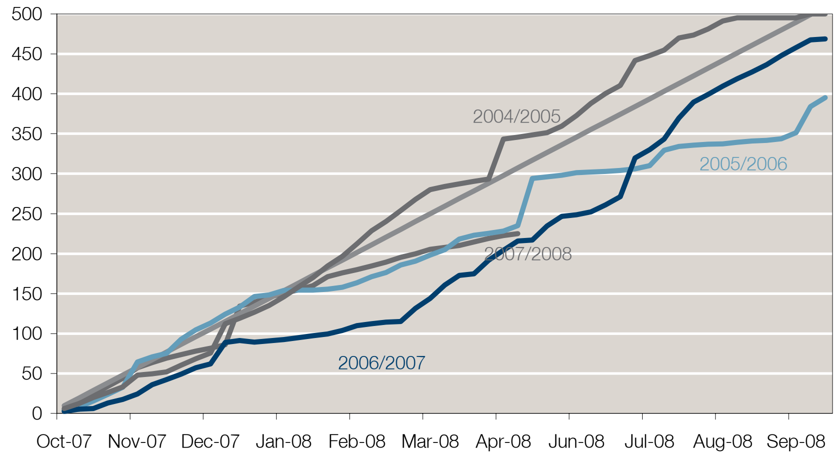
## Central banks go shy of selling gold

*The European central banks, which at the start of this decade were considered the key factor in the gold market, seem to have lost their appetite for selling the metal. The IMF is likely to fill the gap sooner rather than later, but after that sales will depend on Germany or Italy stepping up.*

Sales of gold by the signatories to the Central Bank Gold Agreement (CBGA), the group of European central banks that have since 1999 agreed to limit their gold sales to (currently) 500t/year, have slowed considerably in recent weeks, casting doubt on whether they will sell anywhere near the maximum permitted level. As the chart shows, in the first 13 weeks of the 2007/08 CBGA year (year 4), sales averaged 9.9t/week, slightly ahead of what is needed to sell 500t in a year, which is a rate of 9.6t/week. Since the turn of the year the pace of sales has slowed considerably, to just 4.7t/week, meaning sales so far in this CBGA year have fallen far behind 'target'. This means with 33 weeks of the CBGA year gone, sales have totalled around 225t (an average rate of less than 7t a week), far below the 317t that would have meant the signatories were on track for 500t. In fact the pattern of sales now looks most like the CBGA year 2005/2006, when 396t were sold in total over the year.

**Sales by CBGA year (tonnes)**




*Source: VM Group*

What is behind this shortfall? Put simply, a lack of sellers. The 'known' sellers, those central banks such as France and Switzerland which have announced how much they intend to sell and over what time period, have been selling broadly in line with those plans. It is the 'unknown' sellers, most obviously Spain and Portugal, those countries that have either sold gold but given no intention of how much and over what time period they intend to sell, who have been conspicuous by their absence in this CBGA year.

The following table shows our estimate of likely sales to end-April and projections for the full CBGA year. France, Switzerland, the Netherlands and Sweden are those with stated sales plans and they appear to be sticking to them – our full-year estimate assumes that France sells 120t, which is about its average annual sale over the past 3 years and what it needs to sell in order to sell 600t over five years, whilst the amount of sales forecast for both Switzerland and the Netherlands is enough to complete their long-running announced sales programmes. Sweden has confirmed it will sell 10t. The only seller so far this year for which we do not know its plans is the ECB, which sold 42t in December 2007. In the 2006/2007 CBGA year an ECB sale in December 2006 was followed by another in June 2007, and we are assuming a similar pattern this time. In total then if these sellers sell what we expect then their total sales in the CBGA year will be 380t, far short of the 500t maximum.

**Forecast of sales in 2007/2008 CBGA year**

| | Estimated sales to end-April | Full-year Estimate |
|---|---|---|
| France | 80 | 120 |
| Switzerland | 77 | 137 |
| The Netherlands | 20 | 29 |
| Sweden | 5 | 10 |
| ECB | 42 | 84 |
| Total | 224 | 380 |

*Source: VM Group*

There are other central banks that have sold gold in this CBGA (i.e. since 2004) but which have not sold any gold in this CBGA year (from September 2007) – namely Spain, Portugal, Germany, Austria and Belgium. The two most important are Spain and Portugal, who have made major sales in previous years, but have sold nothing this year. Portugal sold 55t in year 1 and 45t in year 2, but nothing in year 3, and as such we assume its sales plans have ended for now. Spain sold 30t in year 1, 62t in year 2 and 139t last year, but its most recent sale was in July 2007, and there has been no indication of more sales this year. Belgium has also been a hefty seller in the past, but its most recent sale was even longer ago, 12t in August 2005, and seems unlikely to resume sales in the near future. The other two banks on that list, Germany and Austria, have been only small sellers. Germany has sold a small amount (5t in each of the last three years) for coin sales, whereas Austria had said it would sell up to 90t over the five years of this CBGA, but has only sold 37.5t so far, and its rate of selling has been declining each year – last year it sold just 8.7t.

Thus although any of these banks *could* be sellers in the next few months, and which would therefore add to our forecast of 380t for the full CBGA year, it seems unlikely that they will sell much gold, and certainly not enough to see the maximum 500t a year sold. Hence we believe there will a shortfall in sales in this CBGA year.

## 2008-2009 year

The trends affecting the 2007/2008 CBGA year look to be even more marked for the final year of this CBGA, the 2008/2009 year. Our projections for 2007/2008 mean that Switzerland and the Netherlands will have completed their sales programmes, and even if they don't quite make it this year they will have only a miniscule amount left to sell. Thus, of the known sellers that leaves France, Germany and Sweden. France will have about 120t to go, which based on past performance we expect they will sell. Sweden is likely to sell again 10-15t, and Germany – unless it has an about-turn on its decision not to make large sales – might again sell small amounts for coins. Collectively then these countries will provide 140t or so. The ECB remains a wildcard, and could again be a seller, and this could mean another 60-80t.

This though, and in the absence of Spanish, Portuguese, Belgium or Austrian sales, means we have identified only about 200t of sales. Aside from those central banks returning to sales, there seem four possibilities:

- No other sales are forthcoming, meaning CBGA sales fall 300t short of target and overall supply from the official sector is the lowest for decades. This would be extremely bullish, not just because of the reduced supply but also because of the signal it gives as to the desire to sell gold by central banks not just in that CBGA year but also in any future CBGA (which would seem unnecessary to renew).
- One of the other signatories starts to sell in large volume. The most obvious countries here, simply because of the amount of gold they hold, are Germany

and Italy. Between them they have nearly 6,000t of gold, and very similar shares of gold as a % of foreign reserves, at 65% and 66% respectively. For both there have been suggestions of sales. The German government, and indeed many members of the Bundesbank's Governing board, were keen to sell 500-600t of gold during the five years of EGA II, but an argument about what should be done with the proceeds of the sales, has seen the Bundesbank digging in its heels and effectively preventing any sales. Italy is Italy, and although in August 2007 the Italian parliament passed a motion requiring the government to look into using gold sales as a way of reducing government debt, and the then Prime Minister, Romano Prodi, and his Finance Minister, Tommaso Padoa-Schioppa, both welcomed the motion, nothing has come of it with the Bank of Italy thought to be unimpressed. Whilst we do believe Italy and Germany will sell gold at some point, it seems unlikely to be soon.

- An existing 'known' seller decides to sell more – i.e. France, Switzerland or the Netherlands. This cannot be ruled out, but would go against the spirit of the Agreement to provide clarity about gold sales, and although the words used are not definitive, the Swiss National Bank President Jean-Pierre Roth said in April that the SNB had 'no plans' to sell more gold than the 250t announced last year (and which we expect to be completed in this CBGA year or early next).

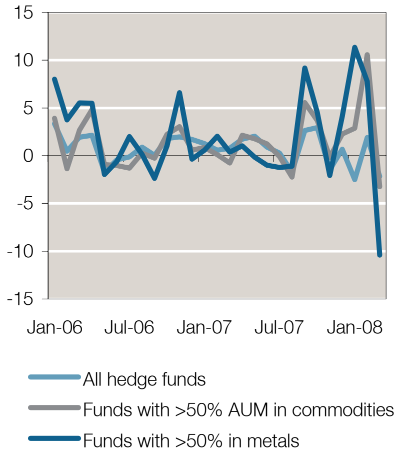
- The IMF, which wishes to sell 403t, will start to sell in the next CBGA year. The gold sales proposals, part of a broader package of financing reforms, continue to slowly work their way through the international bureaucracy. In early May 176 of the 185 member country governors agreed the package, although the major stumbling block remains with the US Congress, as the US IMF Executive Director cannot cast his vote without Congressional approval.

We do believe IMF gold sales will get Congressional approval, and will be part of the CBGA, but the uncertainty is to the timing. Given the Fund's insistence that its sales will not cause any 'market disturbance' one would assume they would have to be spread out so as to not mean a huge sale in any one month, and as such to fit into the 2008/2009 CBGA year will need to begin either late 2008 or early 2009, which will be quite tight. In the absence of IMF sales, it is possible that some of the other central banks are themselves waiting to see what happens, and if IMF sales were not to materialize in the 2008/2009 year, they would enter the market themselves. However this does not explain why they are not selling at the moment.

In short, when considering official sector sales, it is hard not to be bullish, particularly compared with the situation just a few years ago. Then we believed central banks were queuing up to sell, now there seems to be no real desire to sell even when there are opportunities to do so. This could all change, perhaps if the dollar was to strengthen and the gold price fall, but at the moment it's the lack of central bank sales, not the surplus, that is the talking point.

# Hedge funds activity

**Hedge funds % monthly returns by type**




*Source: VM Group*

## News

- May 1st: Hedge funds are offering lower fees in an effort to win back hesitant investors. London fund Endeavour Capital (which manages around $3bn) and New York's Drake Management have both said they will not charge performance fees for new funds until losses incurred by the closure of other funds within their stables have been recouped.
- Apr 17th: A Japanese governmental panel has rejected a British hedge fund, The Children's Investment Fund, doubling its stake in J-Power, the country's largest electricity wholesaler. The refusal was the first under a law that allows government vetoes of stakes above 10% in 'sensitive' sectors.
- Apr 15th: A voluntary 'best practice' guideline for hedge funds has been suggested by the President's Working Group for Financial Markets. The guidelines call for hedge funds to improve disclosure and risk controls, and recommend that funds provide annual and quarterly reports and audited financial statements similar to public companies.

## Analysis

- March – not as bad as feared

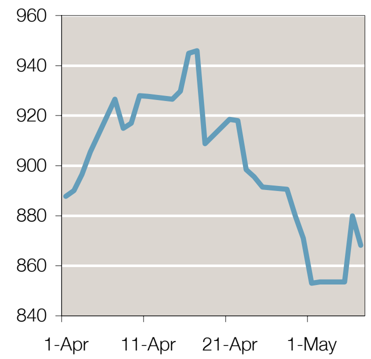
March was a tumultuous month for financial markets commodities, and was always going to be a difficult time for commodity hedge funds after prices tumbled from around the middle of the month – the Reuters CRB index fell 7.1%. Hedge funds certainly suffered, but the losses were perhaps not as large as might have been expected –all the hedge funds in the Barclay Group database fell by an average 2.18%, the funds with some commodity exposure fell by 2.24%. However those funds with (an estimated) more than 50% of their assets under management (AUM) in commodities fell by 3.26%, their worst performance since we started collecting data at the start of 2006. Those with more than 50% of their AUM in metals (a small sample) lost a huge 10.4%.

## Outlook

**Hedge funds in general had a poor first quarter, with the 6,653 in the Barclay database losing 2.6% on average. Although commodities had a bad end to the quarter, their strong February meant that we estimate hedge funds with some commodity exposure returned 3.4% over the quarter, outperforming those without. So far commodities have seen more diverse performance in Q2 08, and as such we expect commodity hedge funds to show greater diversity in their returns according to their particular asset mix.**

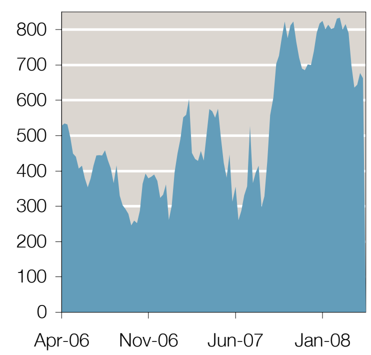
# Gold

**Gold price ($/oz)**




*Source: London Bullion Market Association*

**Comex: non-commercial net position (tonnes)**




*Source: VM Group*

**Gold price and Markit CDX index**


*Source: VM Group from Reuters Ecowin*

## News

- May 15th: Gold hedging fell 4.8 Moz in Q1 08 to 22.0 Moz, according to the Fortis Hedging and Financial Gold report. At 18% it was the largest percentage reduction since records begin in Q2 02.
- May 6th: AngloGold Ashanti plans to make a $1.6bn rights issue to fund a 3.8 Moz reduction in its hedge book. It cut the book by 1.3 Moz in Q1 08.
- Apr 29th: Zimbabwe's gold production was just 296 kg in March 2008, 61% lower year-on-year. Output has slumped as payments from the country's Reserve Bank for the gold have been delayed. Output in 2007 was just 7t.

## Analysis

- The end? Or just another pause?

Over the last five years or so, the gold market has often seemed as though just two types of trader – bulls and super-bulls, populated it. They were thin on the ground in April, as gold's lacklustre performance coincided with the euro reaching new all-time highs against the dollar, an event that hitherto has been a catalyst for fresh dollar gold price highs. Inevitably when a prostrate dollar gave a twitch back into life in late April, the last prop was gone, and gold fell sharply, fixing at just $853.00/oz on 1st May, its lowest fix since 2nd January. A muted early-May rally did not convince that there was not more weakness to come.

Investors appeared to take fright, with the market-leading StreetTRACKS ETF recording its largest outflows since its launch – first losing 18.4t on 22nd April and then shedding a total for the month of 61.6t, taking its holdings to 580t, the lowest since October 2007. These outflows have been blamed for the price fall, but we think they are a consequence and not a cause of the weak price, for silver has fallen in price by much the same amount and has not seen ETF outflows. Instead, gold's mini-crisis can be explained by the easing of a major crisis – the credit squeeze. We believe gold's surge from September was different from the gains it had made earlier in 2007 and other years, in that it was a panicked response by investors to fears of a meltdown in the financial system. Now the situation appears to be under control, gold has lost ground. This does not mean it *cannot* head back towards $1,000/oz *unless* the credit crisis again turns nasty – in fact it can – but for different reasons, and over a longer time-scale.

## Outlook

**In early May gold was rescued by a weaker dollar and news that AngloGold were to launch a major dehedging programme. The StreetTRACKS ETF saw inflows of 10 tonnes. But as long as the credit-crisis continues to ease, gains will be difficult for gold as investors leave its safe-haven for other markets. Short-term PM Fix: $830/oz-$900/oz.**

**Market data (April unless stated)**

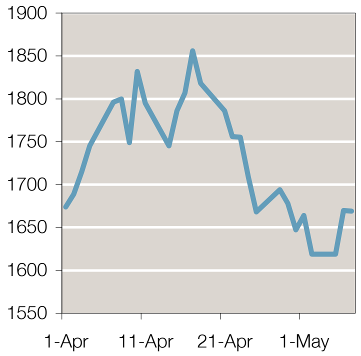
| Prices | $/oz | €/oz | Rand/kg | ETF investment | Tonnes holdings | Monthly change | Lease rates | 1m | 3m | 6m | 12m | Option volatility (end month, %) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average | 913 | 579 | 228,126 | US (2) | 644.0 | (61.6) | Average | 0.15 | 0.22 | 0.40 | 0.46 | 1-month | 25.70 |
| High | 946 | 595 | 238,320 | UK (2) | 150.0 | 5.0 | High | 0.27 | 0.37 | 0.56 | 0.63 | 3-month | 25.90 |
| Low | 888 | 566 | 215,050 | Aus | 21.0 | 0.3 | Low | (0.05) | 0.03 | 0.28 | 0.37 | 6-month | 26.20 |
| | | | | S.Africa | 27.0 | (2.0) | | | | | | 12-month | 26.30 |
| | | | | Swiss | 35.0 | 2.7 | | | | | | 24-month | 26.25 |
| | | | | India (4) | 4.0 | - | | | | | | | |
| | | | | German | 6.9 | 0.4 | | | | | | | |
| | | | | Turkish | 1.3 | - | | | | | | | |

*Source: Prices: London Bullion Market Association, Others: VM Group*

*Note: Indian ETF holdings calculated from rupee amounts and thus are approximations only.*

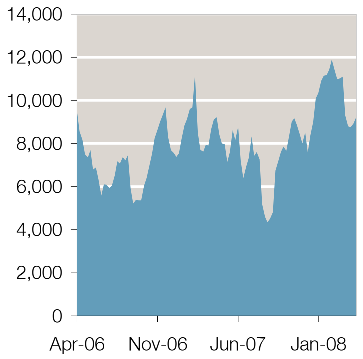
# Silver

**Silver price ($/oz)**



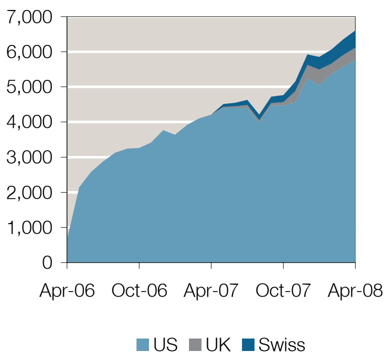

*Source: London Bullion Market Association*

**Nymex: non-commercial net position (ounces)**




*Source: Comex*

**Silver ETF holdings (tonnes)**




*Source: VM Group*

## News

- May 12th: Fresnillo, a subsidiary of the Mexican mining company Peñoles, said it will over the next 10 years increase production from its operations to 60 Moz/year.
- May 5th: Coeur d'Alene Mines resumed operations at its Cerro Bayo mine in southern Chile two weeks earlier than expected. One month previously the company said maintenance work would take six weeks, and anticipated the shutdown would reduce the mine's 2008 output by 180,000 oz.
- Apr 21st: Polymetal, Russia's biggest silver miner, said its output in Q1 2008 rose 32% compared to Q1 2007, to 4.7 Moz. It reaffirmed expected total output for 2008 of 17-18 Moz (15.9 Moz in 2007).

## Analysis

- Following gold

Silver generally traced gold in April and early May, starting brightly but fading towards the end. By 2nd May it was $16.19/oz, down from $17.99/oz at the end of March, although it recovered to close at $16.70/oz on 6th May. This is 13% higher over 2008, much better than gold's 5.5% increase. It might also explain why investors in silver appear to be made of sterner stuff than those in gold – the Barclay's Global Investors silver ETF added 198t during April to stand at a new record of 5,777t, whereas the market-leading gold ETF saw large outflows. Yet the large investor holdings in silver are a double-edged sword, as any sell-off has the potential to cause serious damage to the price. Over the medium-term the sustainability of silver prices at these levels continues to depend on the extent to which the industry can replace photographic industry physical demand. Anyone hoping for a fillip from Mitsui Mining and Smelting's claim to have developed an autocatalyst for diesel-engine cars using silver rather than platinum was disappointed. We believe the market's muted response is correct for two reasons: first, there is a history of such announcements in the autocatalyst industry coming to nothing; second, because (relatively speaking) the silver market is so large compared to the platinum market that, even if the product is successful, it is unlikely to make a huge difference to silver consumption. It is unclear whether the catalyst will work only in products such as tractors and cranes, or all diesel vehicles. If the former then we are looking at something like 20,000 oz of platinum to be replaced, if the latter then 2 Moz. But even if silver takes all of these markets, and loadings are 10 times higher, that would mean an additional 20 Moz of silver demand – less than 2% of current offtake.

## Outlook

**Why haven't there been outflows from the silver ETF, in line with gold? One explanation is that the gold ETF is held by large investment funds, with hair-trigger responses to barely discernible indicators, whereas silver is favoured by individual investors, more inclined to stay for the long haul. If they decided to sell, things could turn nasty; but sentiment could easily change if there are renewed signs of dollar weakness. Short-term London pm fix: $16/oz-$18/oz.**

**Market data (April unless stated)**

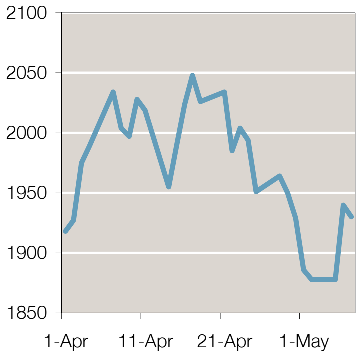
| Prices | $/oz | e/oz | p/oz | Lease rates | 1m | 3m | 6m | 12m | Trade (kg) (Dec) | Imports | Exports | ETF offtake (tonnes) | Holdings | Change | Option volatility (end month, %) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average | 17.59 | 11.15 | 8.88 | Average | (0.07) | 0.04 | 0.28 | 0.47 | USA (Feb) | 156,849 | 121,820 | US | 5777 | 198 | 1-month | 40.50 |
| High | 18.56 | 11.68 | 9.32 | High | 0.01 | 0.17 | 0.47 | 0.71 | Jap.(Mar) | 330,670 | 653,526 | UK* | 339 | 8 | 3-month | 38.50 |
| Low | 16.68 | 10.68 | 8.40 | Low | (0.14) | (0.07) | 0.17 | 0.36 | China (Mar) | 565,216 | 600,339 | Swiss | 492 | 44 | 6-month | 37.00 |
| | | | | | | | | | | | | | | | 12-month | 36.50 |
| | | | | | | | | | | | | | | | 24-month | 36.25 |

*Source Price: London Platinum and Palladium Market, Others: VM Group*

** Includes 'basket' ETF*

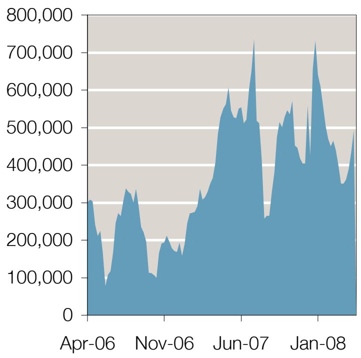
# Platinum

**Platinum price ($/oz)**



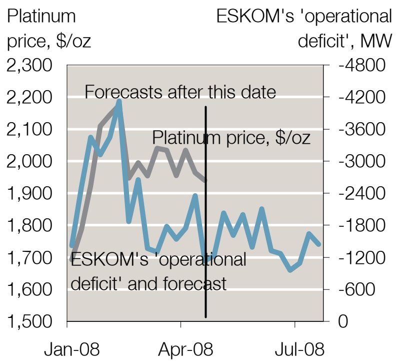

*Source: London Platinum & Palladium Market*

**Nymex: non-commercial net position (ounces)**




*Source: Reuters Ecowin*

**Eskom's power deficit (MW) and the platinum price in 2008 ($/oz)**




*Source: VM Group from Eskom/Ecowin data*

## News

- May 9th: Swiss investment bank UBS launched two platinum investment exchange traded notes on the NYSE. The products go either long or short the platinum component of the Bloomberg Constant Maturity Commodity Index thus invest in futures rather than physical metal.
- Apr 30th: Norilsk Nickel produced 138,000 oz of platinum in Q1 2008, and confirmed its expectation for the full year of 710,000-720,000 oz.
- Apr 29th: Anglo Platinum's output of refined platinum was 428,600 oz in Q1 2008, 24% lower than in the previous quarter, but it reiterated its target of 2.4 Moz for the full year.
- Apr 24th: Aquarius Platinum's attributable output of pgms in Q1 2008 (the company's third quarter) was 111,524 oz, 19% lower year-on-year.

## Analysis

- Platinum gains on ETN but shrugs off catalyst news

By recent standards, the platinum market in April was rather quiet, with the price trading in a relatively narrow range of $119/oz, from $1,929/oz to $2,048/oz, although after weakening considerably towards the end of the month and into early May it then received a boost from the news that UBS were launching a platinum exchange traded note (ETN) in the US. Although exchange traded funds in platinum have been available in Europe since mid-2007, US investors have not had direct access to them, and given the size of the investment market and the success of the gold and silver products in US it has been thought that it will be see much larger offtake than in Europe. In the first few days trading volumes were slight however and it is possible the European ETFs and platinum's high price will discourage investment in this.

The ETN had more market impact however than the announcement by Mitsui Mining and Smelting in mid-April that they had invented an autocatalyst that would use silver rather than platinum. Silver is 1/100th the price of platinum and, unlike platinum, is in plentiful and widespread supply. So the incentive for car companies to use it if the technology works is immense. Yet such announcements have a history of disappointing, and what details we know – that the catalyst was designed for low volume machines such as tractors – failed to set the market alight. In any case the planned new autocatalyst is not destined for commercialisation before 2012; much can happen between now and then.

## Outlook

**South African power problems have taken a back seat recently to the catalyst and investment news, but winter in South Africa – the country's peak season for electricity consumption – is fast approaching and while Eskom appear to be confident they can cope, the chance that they cannot remains the main potential for price spikes higher. The ETN will be watched closely and could disappoint. Short-term pm fix: $1,950/oz-$2,250/oz.**

**Market data (April unless stated)**

| Prices | $/oz | Lease rates | 1m | 3m | 6m | 12m | Trade (kg) | Imports | Exports | ETF offtake (oz) | Holdings | Change | Option volatility (end month, %) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average | 1,988 | Average | 1.2 | 2.1 | 3.2 | 4.5 | USA (Feb) | 843 | 286 | UK* | 348,760 | 16,473 | 1-month | 37.0 |
| High | 2,048 | High | 1.9 | 2.9 | 4.1 | 5.4 | Japan (Mar) | 4,928 | 2,429 | Swiss | 49,596 | 6,373 | 3-month | 40.5 |
| Low | 1,918 | Low | 0.5 | 1.5 | 2.5 | 3.6 | Hong Kong (Dec) | 1,131 | 185 | | | | 6-month | 42.5 |
| | | | | | | | Switzerland (Mar) | 3,119 | 4,274 | | | | 12-month | 42.5 |
| | | | | | | | China (Mar) | 2,642 | 0 | | | | 24-month | 42.3 |

*Source Price: London Platinum and Palladium Market, Others: VM Group*

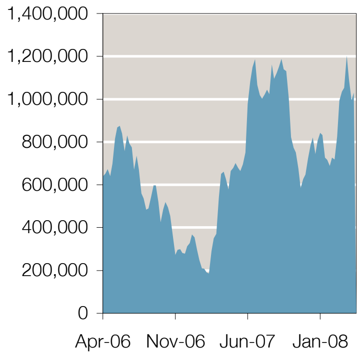
** Includes 'basket' ETF*

# Palladium

Palladium price ($/oz)

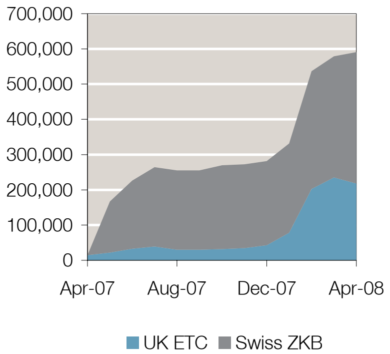

Source: London Platinum & Palladium Market

Nymex: non-commercial net position (ounces)




Source: Reuters Ecowin

Palladium ETF offtake, end-month, oz




Source: VM Group from company data

## News

- May 7th: North American Palladium reported that its Lac des Iles mine will be able to mine 250,000 oz of platinum per year until 2018, adding nearly 10 years to the mine's lifespan.
- May 5th: Nymex reduced the required margin on its 100 oz palladium futures contract to $6,000 from $7,000 (for clearing members) and $6,600 from $7,700 for non-clearing members.
- Apr 30th: Norilsk Nickel's palladium output in Q1 2008 was 597,000 oz, sharply lower than the Q1 2007 output of 716,000 oz, as adverse weather hampered the movement of ore to the company's refinery. Norilsk left its full year 2008 forecast at 3.02-3.07 Moz.

## Analysis

- Out of the spotlight

Palladium outperformed platinum during April, but only in the negative sense that it fell less, by 4.7% compared with platinum's decline of 5.4%. Yet for investors there is more of a mood of disillusionment with palladium, largely because pent-up expectations were greater. Its performance this year lags platinum by some margin (up 16% compared with 27%). Nymex investors voted with their feet, with the net long position of the small and large speculators falling 164,100 oz in the week ending 29th April to below 1 Moz (to 998,900 oz) for the first time in 2008 (before staging a small recovery the following week).

This poor performance was despite an at best mixed supply outlook. Norilsk had a poor quarter but reaffirmed their 2008 forecast, whilst in South Africa signs that the power crisis was fading during April gave way to renewed concern in early May.

But there is perhaps only so far the metal can rise on reduced supply. What would give palladium a real boost would be clear signs of stronger demand. Although palladium bulls talk about substitution of it for platinum in autocatalysts this is complicated by the continuing spread of diesel-engined vehicles (which tend to use platinum catalysts). In fact palladium might find its best hope lies in continuing strong car sales in Asia where gasoline predominates – Toyota announced its car sales to China in the year ending 31st March were 71% higher year-on-year. They will need to do well to offset weak US car sales.

## Outlook

**Although this year's supply problems for palladium have eased, the days of massive oversupply seem over. Russian exports to Switzerland were just 65kg in March, the lowest since June 2004. In the absence of another crisis in South Africa, attention is likely to turn to demand. Short-term London pm fix: $400/oz-$450/oz.**

Market data (April unless stated)

| Prices | $/oz | Lease rates | 1m | 3m | 6m | 12m | Trade (kg) | Imports | Exports | ETF offtake (oz) | Holdings | Change | Option volatility (end month, %) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average | 444.3 | Average | 0.02 | 0.23 | 0.37 | 0.51 | USA (Feb) | 1,095 | 598 | UK | 218,202 | (16,585) | 1-month | 39.0 |
| High | 466.0 | High | 0.17 | 0.41 | 0.67 | 0.87 | Japan (Mar) | 316 | 1,212 | Swiss | 371,229 | 28,624 | 3-month | 37.5 |
| Low | 417.5 | Low | (0.08) | 0.11 | 0.18 | 0.27 | Hong Kong (Dec) | 2,128 | 787 | | | | 6-month | 36.0 |
| | | | | | | | Switzerland (Mar) | 1,000 | 3,202 | | | | 12-month | 34.5 |
| | | | | | | | China (Jan) | 1,399 | 50 | | | | 24-month | 34.0 |

Source: London Platinum and Palladium Market, Others: VM Group

# Aluminium

## News

- May 5th: Tajikistan's primary aluminium output recovered in the last stages of Q1 2008, according to the state-owned company Talco. Having fallen by 3.5% during January-March, production bounced back sharply in April, meaning total production for the whole quarter was 132,420t, the same as Q1 2007. Aluminium exports account for 75% of the country's forex earnings. Total production by Talco in 2007 rose year-on-year by 1.3% to 419,260t.
- May 1st: BHP is to expand its Worsley alumina refinery in Australia at a cost of $1.9bn. This will raise capacity to 4.6 Mt from 3.5 Mt.
- Apr 21st: Total global production in March was 2.168 Mt against 2.024 Mt in February and 2.078 Mt in March 2007, according to provisional data from the International Aluminium Institute (IAI).
- Apr 7th: Russian aluminium exports in Q1 08 (to countries outside the CIS) were 1.3 Mt, 15% higher year-on-year.

## Analysis

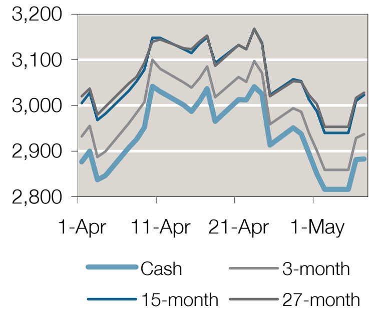
- Waiting to see what happens in China

The aluminium price moved sideways in April, with the 3-month LME contract closing at $2,929/t on 6th May, just $4/t lower than its closing price on 1st April. Mid-month saw a brief rally over $3,000/t, with prices buoyed by a weaker dollar and higher oil prices (aluminium production is very energy-intensive), before a dollar recovery and rising LME stocks knocked prices back. LME stocks peaked at 1,043,775t on 24th April, 11,725t higher than at the start of the month, before slipping back to 1,039,275t on 6th May. Chinese production of aluminium bounced back in March after February's weather-affected slowdown, with 1.044 Mt produced, up from 1.004 Mt in February and 8% higher year-on-year. This is the first increase in the year-on-year growth rate since August 2007; however then the increase was 37%, so unless there is a sharp increase in April the hypothesis that we have seen the end of huge Chinese growth rates in primary aluminium production will remain sound. Meanwhile, Chinese imports of alumina fell to 198,138t, the lowest monthly figure since at least January 2006, and more than 100,000t lower than in February 2008. However, this probably reflects greater local production rather than a reduction in demand for alumina.

## Outlook

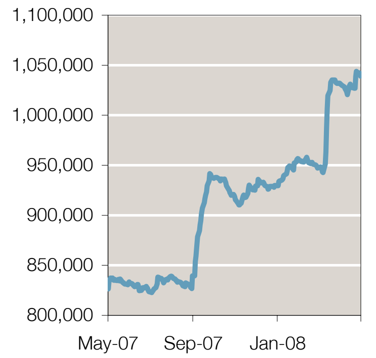
**China remains the key to aluminium's future price moves. The country returned to being a net exporter of primary aluminium in March, but only by a tiny amount, and we still expect it overall to be a net importer for 2008. This development coupled with soaring energy costs and hence aluminium smelting costs, should ensure prices remain firm. However, rising exchange stocks continue to cap the upside and unless they start to fall rallies are likely to fizzle out near to $3,000/t. Short-term LME 3-month price: $2,800/t-$3,100/t.**

**LME aluminium price ($/tonne)**



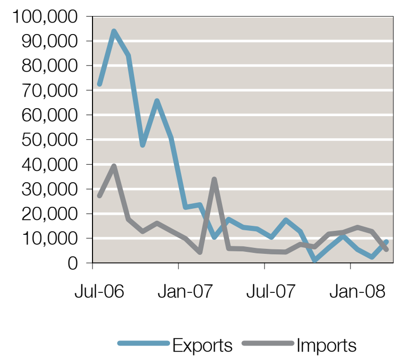

*Source: Reuters Ecowin*

**LME aluminium stocks (tonnes)**




*Source: Reuters Ecowin*

**Chinese primary aluminium trade (tonnes)**




*Source: Reuters Ecowin*

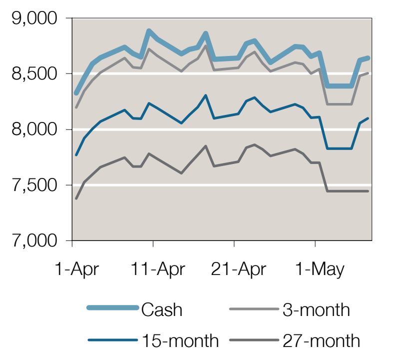
**Market data (April unless stated)**

| Prices ($/t) | Cash | 3-month | 15-month | 27-month | LME stocks | Tonnes | Prod (kt) | Feb | Mar | LME Open Interest (contracts) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average | 2,961 | 3,013 | 3,083 | 3,087 | Mar-08 | 1032050 | Europe | 738 | 769 | Aluminium | 709,932 |
| High | 3,041 | 3,100 | 3,168 | 3,168 | Apr-08 | 1038950 | Americas | 674 | 723 | | |
| Low | 2,835 | 2,887 | 2,968 | 2,980 | | | Asia | 295 | 317 | | |
| | | | | | | | China | 1,004 | 1,044 | | |
| | | | | | | | Other | 317 | 339 | | |
| | | | | | | | Total | 3,028 | 3,192 | | |

*Source: London Metal Exchange, except production: International Aluminium Association*

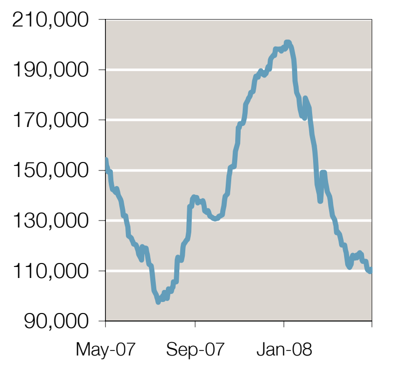
# Copper

LME copper price ($/tonne)



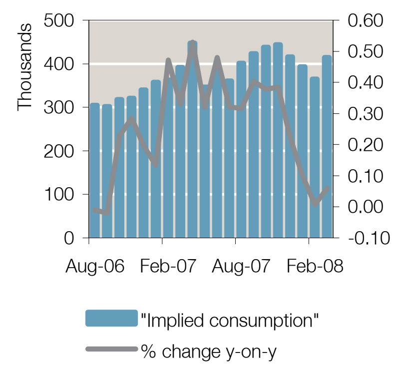

*Source: Reuters Ecowin*

LME copper stocks (tonnes)




*Source: Reuters Ecowin*

Chinese implied monthly consumption of copper (tonnes and % change YoY)




*Source: VM Group from Reuters Ecowin*

## News

- Apr 30th: Chile's National Statistics Institute said the country's copper output fell 8.4% year-on-year in March to 459,578t due to lower grades and labour disputes.
- Apr 29th: Grupo Mexico said it could not say when production might resume from its Cananea mine, where a nine-month strike has now been declared legal by the government. The mine operated at just 50% capacity in 2007, when production totalled 98,500t.
- Apr 29th: Anglo American reported a 9.1% increase in Q1 2008 copper output, to 159,733t, compared to the same period of 2007.
- Apr 28th: Copper output in Zambia was 128,913t in Q1 2008, 12% higher than Q1 2007, but 8.9% lower than in Q4 2007, as floods hit production.

## Analysis

- Investment enthusiasm remains firm

A three-week strike by sub-contractors at Chile's state-owned Codelco was called off on 5th May but has so far meant more than 20,000t of lost production and some $100m in financial losses. Codelco produced 347,000t in Q1 2008, almost 4% lower than Q1 2007, and 367,000t including output from the El Abra mine, in which Codelco has a share. The company attributed this to lower ore grades being mined, but its production has in any case been in slow decline and last year fell 5.5% year-on-year, to 1.583 Mt. Peru Copper, which is the Peruvian unit of Chinalco, China's dominant producer of aluminium, has exercised its option to develop the Toromocho mining project, which could increase Peru's copper production by 25% by 2011. Toromocho has estimated copper ore reserves of 2bn tonnes, with an average grade of 0.08%. Annual production from Toromocho, once the mine is at full capacity, is expected to be in excess of 200,000t of copper a year. Peru is the world's second-largest producer of copper, after Chile, with total output in 2007 of about 1.2 Mt.

## Outlook

**So far this year copper has risen almost 30% (as measured by the LME 3-month contract settlement price) and the strength has been entirely related to two factors – the weak US dollar and supply-side disruptions. The International Copper Study Group (ICSG) currently anticipates a very thin global refined metal surplus of 85,000t in 2008, compared to a deficit of 37,000t in 2007, widening to a 429,000t surplus in 2009. Persistently low inventories on the LME (by the first week of May almost 110,000 tonnes, about 90,000 tonnes lower than at the start of the year, less than one week's global consumption), have also played a supportive role. If the ICSG is right, then the move into surplus will be slow and could quite easily slide into yet another deficit. The price of the 3-month copper contract on the London Metal Exchange (LME) in April averaged more than $8,562/tonne, remarkably high given expectations of a recession-induced slowdown in demand from the US. In the year so far the same contract has averaged $7,925/tonne. Without clear evidence of some demand destruction (or a much stronger dollar) the price could stay relatively strong, ie >$7,000/t, with possibly much higher price spikes on more serious supply-side events, out to the end of 2010. LME 3-month short-term: $7,900/t-$8,500/t.**

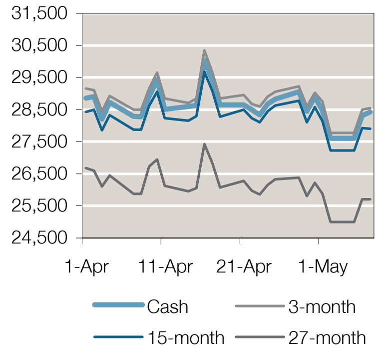
Market data (April unless stated)

| Prices ($/t) | Cash | 3-month | 15-month | 27-month | LME stocks | Tonnes | LME Open Interest (contracts) | |
|---|---|---|---|---|---|---|---|---|
| Average | 8,686 | 8,565 | 8,134 | 7,710 | Mar-08 | 111,350 | Copper | 259,161 |
| High | 8,885 | 8,750 | 8,305 | 7,860 | Apr-08 | 110,075 | | |
| Low | 8,326 | 8,196 | 7,770 | 7,380 | | | | |

*Source: London Metal Exchange*

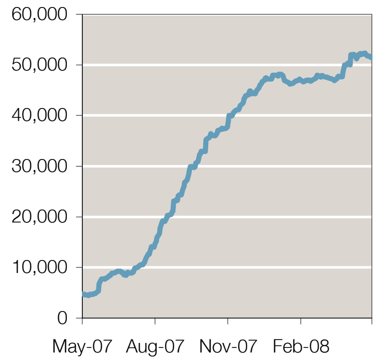
# Nickel

**LME nickel price ($/tonne)**



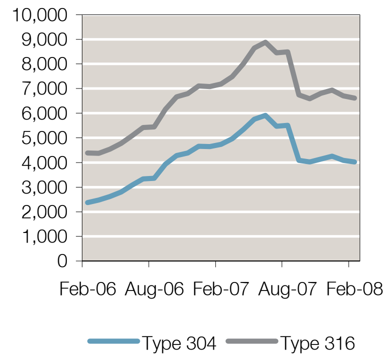

*Source: Reuters Ecowin*

**LME nickel stocks (tonnes)**




*Source: Reuters Ecowin*

**Stainless steel prices ($/tonne)**




*Source: Reuters Ecowin*

## News

- Apr 30th: Norilsk Nickel's Q1 2008 nickel production was 74,572t, up 22% on the same period of 2007.
- Apr 24th: The International Nickel Study Group (INSG) expects the global nickel market to be in a surplus of 70,000t in 2008, with both production and consumption at record levels.
- Apr 10th: The Munali Hills nickel mine in southern Zambia produced its first concentrate in April. The mine is expected to produce 10,500t/year of nickel when at full operation in 2009.

## Analysis

- China's stainless producers ease off the pedal

The world's biggest stainless steel producer, China, is cutting back production of the alloy and this will help ensure that the INSG's bearish projections for a nickel surplus this year come true. Reports from China put the current spot price for the highest grade of stainless steel, 304-series at about 31,000 yuan ($4,437) a tonne, which is far below production costs – the spot nickel price in China has been almost 240,000 yuan/t recently, and 304-series production costs are currently at least 4,000/t above spot prices for 304-series stainless steel. While many Chinese stainless producers have switched to producing lower grade stainless steel, using much less or even no nickel, 304-series, which is about 8% nickel content, is still in strong demand for most safety-critical applications. China's two largest stainless mills, the parent companies of Shanxi Taigang Stainless Steel and Baoshan Iron and Steel, together with the Chinese subsidiaries of South Korea's Posco, are reported to have halved their spot sales volumes for May.

Rio Tinto said it has reached agreement with the Indonesian government over taxation regulations, opening the way for it to push ahead with a $1.5bn nickel mine in the country's Sulawesi region, with hopes that the mine can be operational by 2015. Rio is currently the world's third largest nickel producer. In December 2007 Rio gave the go-ahead for development of its Eagle mine in the US, at a cost of $300m. Rio's statement was carefully vague but it asserted that the agreement with Indonesia gives it enough confidence to support investment in the project and was based on a combination of fixed rates and prevailing regulations. Before work can really get started however the company needs to come to terms with local governments near the project, which is initially aimed at production of some 46,000t/year, rising to as much as 100,000t. The Eagle mine is expected to produce about 16,000t/year from 2009.

## Outlook

**The LME 3-month nickel price has remained remarkably firm in recent weeks, given the strong probability of a global refined nickel surplus in 2008, one that ought to widen by the end of this decade if all the various large new mine projects get going on schedule. However, Asian-led demand will help global consumption keep pace with rising supply, and substitution to lower grade stainless steel remains problematic for many industries. LME 3-month short-term: $25,000/t-$28,000/t.**

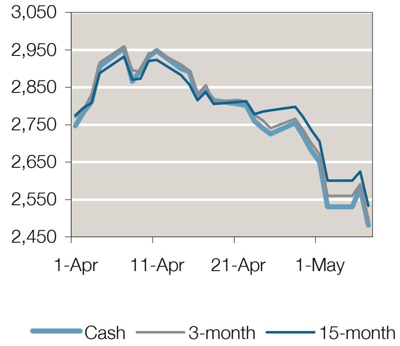
**Market data (April unless stated)**

| Prices ($/t) | Cash | 3-month | 15-month | 27-month | LME stocks | Tonnes | LME Open Interest (contracts) | |
|---|---|---|---|---|---|---|---|---|
| Average | 28,756 | 28,946 | 28,428 | 26,307 | Mar-08 | 50,370 | Nickel | 68,363 |
| High | 30,025 | 30,300 | 29,675 | 27,425 | Apr-08 | 51,432 | | |
| Low | 28,200 | 28,445 | 27,850 | 25,800 | | | | |

*Source: London Metal Exchange*

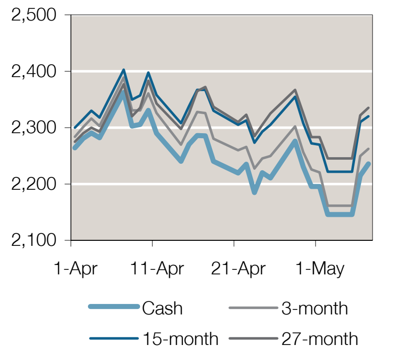
# Lead and zinc

**LME lead price ($/tonne)**



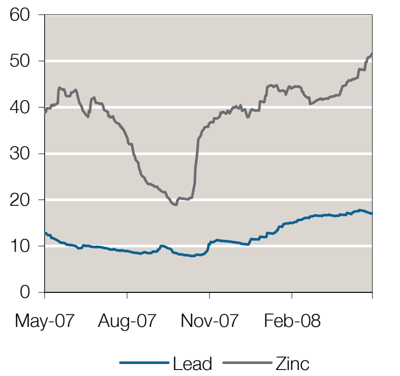

*Source: Reuters Ecowin*

**LME zinc price ($/tonne)**




*Source: Reuters Ecowin*

**LME stocks (Jan. 1st 2004 = 100)**




*Source: VM Group from LME*

## News

- May 14th: The International Lead and Zinc Study Group (ILZSG) estimated that the global refined lead market was in surplus by 7,000t in Q1 2008, while refined zinc saw a surplus of 72,000t. Refined lead usage and output were both slightly down on the same period in 2007; refined zinc production was slightly higher but usage dipped marginally.
- May 12th: An earthquake hit China's Sichuan province with its epicentre in Wenchuan county, just to the east of the provincial capital of Chengdu.
- May 5th: North American shipments of replacement automotive lead-acid batteries fell 6.5% in February compared to January, and dropped 8.67% compared to February 2007, according to the US-based Battery Council International. Cumulative shipments in the first two months of 2008 were 1.24% lower than the same period of 2007, at more than 14.8m units. Shipments of batteries destined for new cars sold for the same period were 3.88% lower.

## Analysis

- China earthquake props up zinc price

China is the focus of attention right now for both zinc and lead markets. The earthquake struck Sichuan province and reverberated in Gansu and Shaanxi provinces, which together account for at least 400,000t/year of zinc smelting capacity. As much as 100,000t of that may well take months to recover. This catastrophe induced a rise of 7% in the LME's zinc prices on 13th May, the day following, with the 3-month contract reversing its previous downwards' trend and trading back above $2,300/t. China was a net importer of refined zinc in March, by 4,522t, but overall in Q1 was a minor (337t) net exporter. Power shortages of various kinds throughout Q1 have cut China's domestic refined zinc production. Elsewhere in China, Gejiu's lead producers restarted an estimated two-thirds of their capacity in March/April, having shut up shop in January/February as they struggled with low prices and high export taxes. Gejiu is responsible for about 10% of China's annual lead production and has as much as 600,000t of lead refining capacity and nearly 500,000t of smelting capacity. The authorities in Yunnan province, where Gejiu is located, have reportedly given assurances of a cut in the VAT levied on them from 17% to about 10.5%, although this is still 3% above the rate they were paying in 2007 under (now-abolished) preferential tax arrangements authorised by Beijing. They also worry that the new local tax policies may not be approved by Beijing. The LME lead price (3-month contract) has in any case slumped and by 9th May was trading below where it started 2008, giving even less incentive to export.

## Outlook

**China remains the key factor in both of these metals – zinc would have fallen much more had the country's power shortages not dented local production, and now the earthquake threatens to severely dent output this year. China's lead producers may resume mothballed output but are unlikely to restore their high export levels of former years. LME 3-month short-term, lead: $2,000/t-$2,300/t, zinc: $2,200/t-$2,500/t.**

**Market data (April unless stated)**

| Prices ($/t) | Cash Lead | Cash Zinc | 3-month Lead | 3-month Zinc | LME stocks | Lead | Zinc | LME Open Interest (contracts) | |
|---|---|---|---|---|---|---|---|---|---|
| Average | 2,830 | 2,267 | 2,840 | 2,298 | Mar-08 | 49,325 | 123,975 | Lead | 71,471 |
| High | 2,955 | 2,363 | 2,960 | 2,389 | Apr-08 | 56,850 | 126,775 | Zinc | 193,635 |
| Low | 2,720 | 2,185 | 2,735 | 2,228 | | | | | |

*Source: London Metal Exchange*

# Tin

## News

- May 8th: Indonesia's refined tin exports bounced back in the first four months of 2008 to more than 33,800t, against more than 16,500t in the same period of 2007, according to the country's trade ministry.
- Apr 24th: Russia's ministry of economic development and trade is considering removing a 5% import tariff on tin to facilitate greater production of tinplate.
- Apr 14th: Miners at Bolivia's Huanuni tin mine returned to work after a 12 day strike over pay.

## Analysis

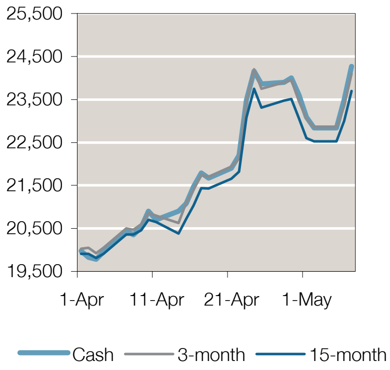
- Fresh record price, more to come

With tin stocks on the LME again very low (now at less than one day's global consumption at 7,565t by 9th May, against 12,150t at the start of the year), strong Chinese demand and shrinking Chinese exports, political ructions in Bolivia, and a propensity by the Indonesian authorities to confuse the market with regard to their precise intentions for its tin industry, it is little wonder that tin prices are at record levels and are more than 45% up since the beginning of 2008. Chinese demand is certainly growing strongly. Antaike, China's leading non-ferrous metals research organisation, estimated in April that the country's refined tin usage would rise by 10.4% year-on-year to 146,000t in 2008 and continue at a similar pace for a few more years to come, driven by two sectors, electronics and tinplating. Antaike also expects that a lack of major new mining projects and increased competition for scrap will mean a tigher supply-demand future. It forecasts a fall in China's net refined tin exports to 6,000t in 2008, from 10,588t in 2007. In Indonesia the central government plans to issue new regulations for mining by July this year, and early reports suggest that they will place a ceiling on the country's tin production at 100,000t/year, which would be slightly less than a third of global output. Indonesia's tin production – which in the past has been dominated by a handful of large, regulated companies, with a rash of smaller unlicensed smelters – could fall well below that figure this year, while its exports, which were almost 119,000t in 2006 (the last year before the state authorities started clamping down on smaller unlicenced smelters), may struggle to get to 100,000t. From July, Indonesian exports of all minerals – not just tin – will have to be verified by government auditors before being loaded onto ships leaving the country.

## Outlook

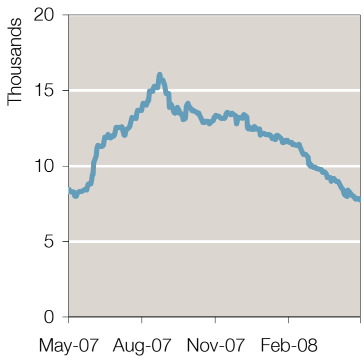
**The Antaike forecast for China's tin exports in 2008 looks rather generous, given that domestic demand is running very strongly and customs data published in April showed China was a net importer of more than 3,600t of refined tin in Q1 2008, with more than a third of that coming from Indonesia. The country's tin producers have faced a 10% export tax on refined tin since the start of this year and with high domestic prices have little incentive to export. Moreover, China's tin production in Q1 2008 was 13% lower when compared with Q1 2007, at 31,300t. This is a recipe not just for much higher prices, but for prices to remain high for some time to come. LME 3-month short-term: $22,000/t-$25,000/t.**

**LME tin price ($/tonne)**



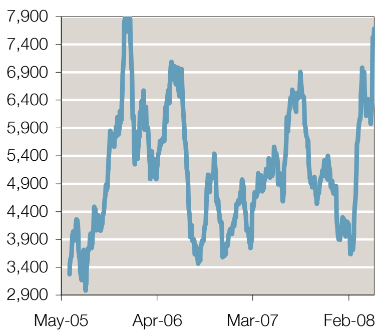

*Source: Reuters Ecowin*

**LME tin stocks (tonnes)**




*Source: Reuters Ecowin*

**LME contracts, volume traded (Daily, 1-month moving average)**




*Source: Reuters Ecowin*

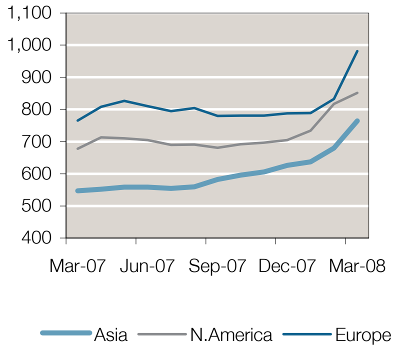
**Market data (April unless stated)**

| Prices ($/t) | Cash | 3-month | 15-month | LME stocks | Tonnes | LME Open Interest (contracts) | |
|---|---|---|---|---|---|---|---|
| Average | 21,566 | 21,580 | 21,317 | Mar-08 | 9,000 | Tin | 20,316 |
| High | 24,155 | 24,200 | 23,750 | Apr-08 | 7,745 | | |
| Low | 19,780 | 19,925 | 19,810 | | | | |

*Source: London Metal Exchange*

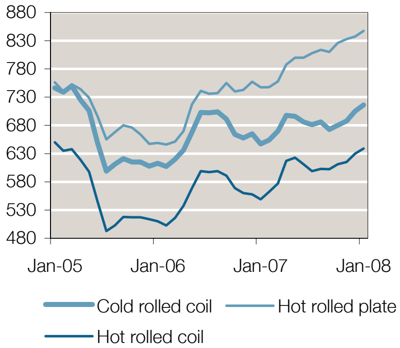
# Steel

**Composite steel prices ($/tonne)**



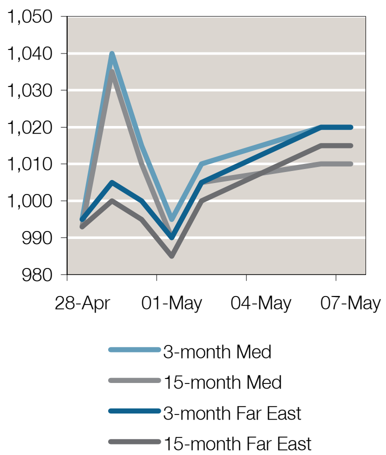

*Source: MEPs, Reuters Ecowin*

**Steel products, world prices ($/tonne)**




*Source: MEPs, Reuters Ecowin*
*Note: "World" is average of Asia, N.America, and Europe*

**LME steel prices ($/tonne)**




*Source: Reuters Ecowin*

## News

- May 14th: Chinese steel production in April was 44.68 Mt, slightly lower than April's record 44.87 Mt, but still 10% higher than April 2007, and meant that the country's steel output for the first four months of 2008 rose 9.1% compared to the same period last year. On an annualised basis this would equate to more than 520 Mt in 2008.
- May 2nd: Steel billet futures on the LME in their first week of ring trading rose above $1,000/t for both the Mediterranean and the Far East contracts; turnover was 108 lots for the former and 41 for the latter during the week.

## Analysis

- Wrangling over the 'China price' for iron ore

Wrangling between China's steel producers and Australian iron ore miners over the latter's push for a freight premium in iron ore prices dragged on in April, with neither side wishing to budge. Australian iron ore producers are sticking with their insistence that Chinese iron ore buyers should pay a freight premium of some $50/t, arguing that this would bring Australian iron ore prices into line with those imported by China from Brazil – high freight rates mean a difference of at least that in shipping ore from Brazil rather than Australia. Understandably, Chinese iron ore importers are resisting what they see as an unfair "China price" for Australian ore. Australian iron ore exporters would seem to hold the whip hand in this protracted discussion – from the end of June some annual contracts expire and Australian exporters will no longer be contractually obliged to ship ore at fixed prices. After that date, Chinese steel producers may face paying much higher spot prices or accepting prices recommended by mediators.

## Outlook

**Steel demand is currently still very strong in fast developing new economies in China and the Middle East and this will persist during the rest of 2008 at least. Steel demand from Asia and Oceania is expected to rise 8.6% in 2008 (year-on-year) and will be more than 50% of world demand, according to the International Iron and Steel Institute (IISI). Chinese consumption may grow by 11.5%, accounting for 35% of the global demand. However European consumption for steel is likely to be relatively flat. Eurofer, the industry group, said it expects consumption growth to be 0.8% in 2008, down from 2.9% in 2007, although it is projecting a recovery to just below 2% growth in 2009.**

**As for the LME's steel contracts, these are early days. To be successful and create a universally recognised benchmark like the contract for aluminium, volumes traded will need to grow quickly. The exchange will however have been heartened by an endorsement from Colakoglu, Turkey's biggest steel producer, which said at the end of April it would use the contracts. Please note we will include a comprehensive data table of LME steel prices from next month.**

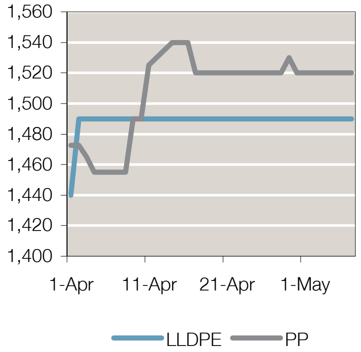
**Market data (April unless stated)**

| Prices ($/t) | Asia Composite | N.America Composite | Europe Composite | World Composite | LME Open Interest (contracts) | Med | Far East |
|---|---|---|---|---|---|---|---|
| Jan-08 | 637 | 734 | 789 | 720.00 | Steel | 56 | 37 |
| Feb-08 | 680 | 817 | 833 | 776.00 | | | |
| Mar-08 | 764 | 851 | 982 | 866.00 | | | |

*Source: MEPs: Reuters Ecowin*

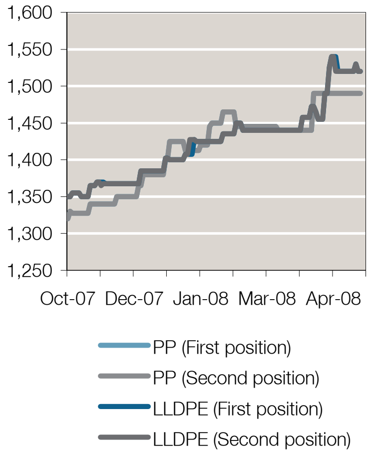
# Plastics

Plastics prices, nearest contract, LME ($/tonne)



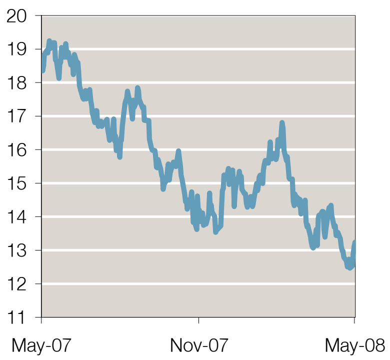

Source: Reuters Ecowin

Plastics prices, various contracts, LME ($/tonne)




Source: Reuters Ecowin

Plastics/crude oil ratio




Source: VM Group

## News

- Apr 29th: Qatar will become the Middle East's leading petrochemical producer, with production of 18 Mt/year by 2012. The country is already set to be the major producer of linear low-density polyethylene (LLDPE) next year through the Qatofin project, with output of 450,000t/year.
- April 29th: UK-based Symphony Environmental Technologies signed a 15 year distribution and supply agreement of its oxo-degradable polyolefin polymers technology with Middle Eastern processor, Fujairah Plastics.

## Analysis

- Prices rise but volumes low

There was a small sign of life in the LME PP global plastics contract in April, with the price edging higher from an opening level of $1,472.5/t to an all-time high of $1,540/t on the 14th April, before easing back to $1,520/t by the close of the month. Although much less volatile, the price of LL global plastics on the LME also crept up in April, closing at a new high of $1,490/t compared with an opening price of $1,440/t. Volumes however remain pitifully low, with the PP global contract seeing trading volumes of just 176 contracts in April, with other polypropylene contracts (regional based) adding another 157 lots traded, compared with a total of 1,166 contracts in April of 2007. The Linear Low Density polyethylene contracts were even quieter with a volume traded collectively of just 143 contracts, down from 4,029 in April 2007.

The higher prices are essentially due to the soaring cost of crude oil which broke through $120/b in early May, but it is interesting to note that the plastics price has not risen as much as crude – this time last year one tonne of polypropylene would buy 18 barrels of crude, today it is just 13 (see chart). There are various reasons for this, including a large expansion in Middle Eastern supply, but on the demand side high prices and/or the US economic slowdown are seeing users cut back on plastics usage, which at the same time allows them to make a useful environmental statement. For example Pepsi, the soft-drinks manufacturer announced a new bottle in April that uses 20% less plastic to hold the same volume of liquid, which they say will save 20m pounds of plastic (total US production of plastics runs at about 18bn pounds a year).

## Outlook

**Plastics production capacity continues to head to the Middle East where energy is cheaper, and as this comes on stream in the next few years a surplus could develop and producers outside the region are bound to suffer. High oil prices will push plastics prices higher over the coming months, however. Short-term outlook: PP and LL global, $1,500/t-$1,600/t.**

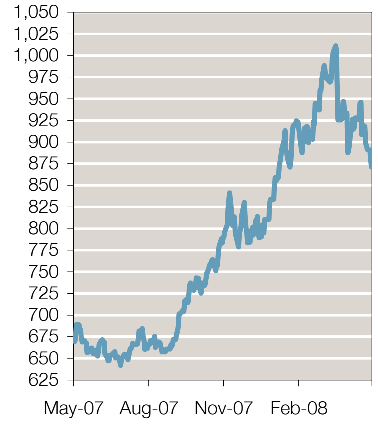
Market data (April unless stated)

| Average prices | | | Volumes (February) | | | Open Interest (contracts) (End March) | |
|---|---|---|---|---|---|---|---|
| Contract | Global LLDPE | Global PP | | All LLDPE | All PP | All LL contracts | All PP contracts |
| First position | 1,487.73 | 1,505.00 | Daily av. | 18.3 | 0.0 | 15 | 54 |

Source: Reuters Ecowin

# Prices

### Gold ($/oz)

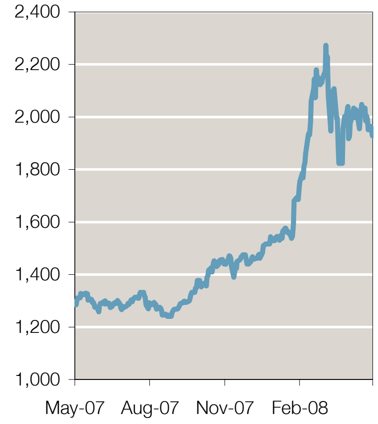



*Source: London Bullion Market Association*

### Silver ($/oz)


*Source: London Bullion Market Association*

### Platinum ($/oz)




*Source: London Platinum & Palladium Market*

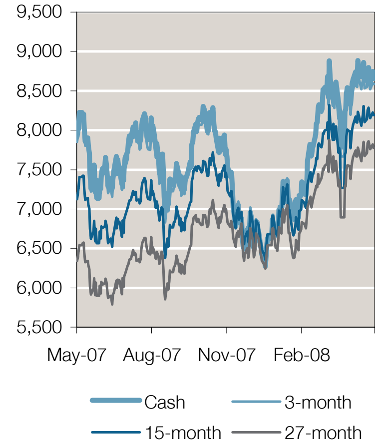
### Palladium ($/oz)


*Source: London Platinum & Palladium Market*

### Aluminium ($/tonne)


*Source: London Metal Exchange*

### Copper ($/tonne)




*Source: London Metal Exchange*

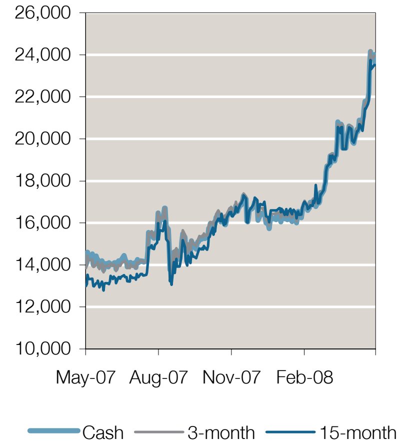
### Nickel ($/tonne)


*Source: London Metal Exchange*

### Lead & zinc ($/tonne)


*Source: London Metal Exchange*

### Tin ($/tonne)




*Source: London Metal Exchange*

# Quantitative research

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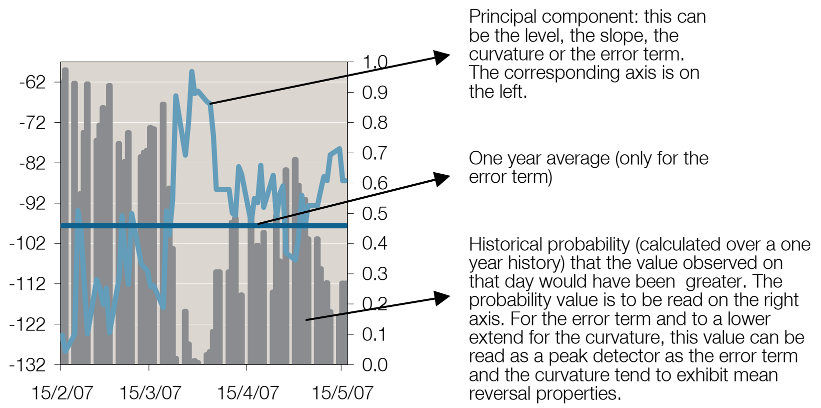
## PCA background

PCA stands for Principal Component Analysis. It is a standard technique used for the study of forward curve dynamics. At any point in time, a future curve can be represented by three values known as the level, the slope and the curvature. Each of these values has a physical meaning. A variation of the level represents a parallel shift of the curve, while a variation of the slope represents a rotation. An increasing slope indicates a clock-wise rotation and therefore reveals a backwardation of the curve. By contrast, a decreasing slope indicates a curve that shows a contango. We can therefore expect the slope to respond to market events associated with supply, demand, and stocks. Furthermore, the curvature gives an insight into prices during the particular month. A rising curvature indicates that during the first and the last third of the contract month the price increases, while the second third decreases. This provokes a distortion, or a sharper bend of the curve.

## Provided charts

For each metal there are five graphs. The first, at the top of the page, displays the forward curve for a number of dates. These are selected in order to demonstrate specific evolutions of the curve during the last month, and also to illustrate some particular features of the curve. The vertical axis displays the price of each contract (in USD) as provided by Bloomberg. The horizontal axis gives the future's settlement date. The used contracts are known as generic and are constructed by using successive contracts which always expire "in N months", as appropriate.

**Demonstration of PCA graph**




*Source: Fortis Modelling*

# Aluminium

## Future curve analysis

**Fundamental outlook**

China remains the key to aluminium's future price moves. The country returned to being a net exporter of primary aluminium in March, but only by a tiny amount, and we still expect it overall to be a net importer for 2008. This development coupled with soaring energy costs and hence refining costs, should ensure prices remain firm. However, rising exchange stocks continue to cap the upside and unless they start to fall rallies are likely to fizzle out near to $3,000/t. Short-term LME 3-month price: $2,800/t-$3,100/t.

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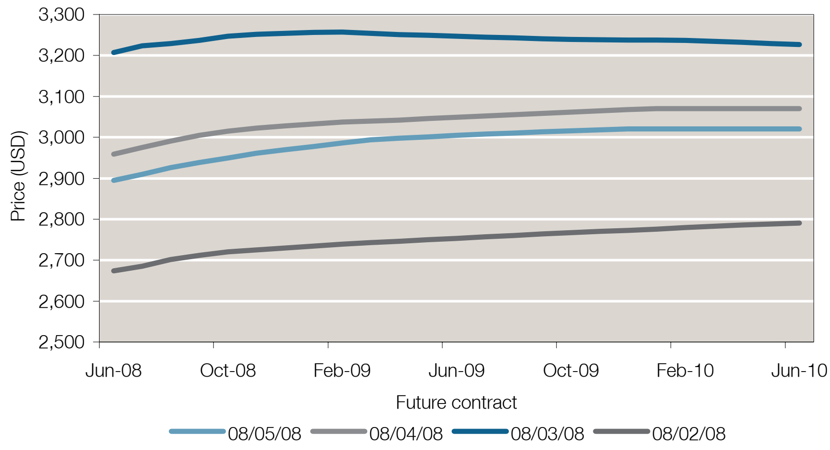
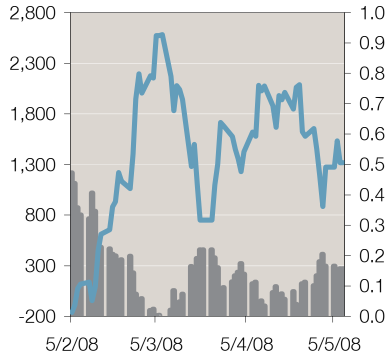
**Future contract**




*Source: Fortis Modelling, Bloomberg*

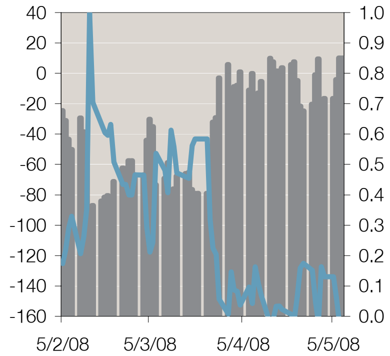
## Principal component analysis (arbitrary units)

**Level (t) - 96% of curve variance**



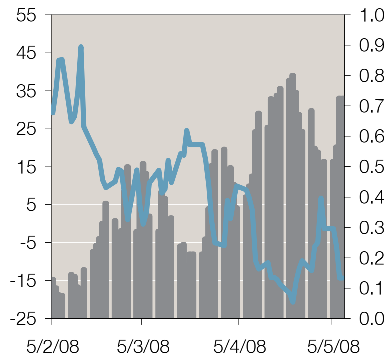

*Source: Fortis Modelling*

**Slope (t) - 4% of curve variance**



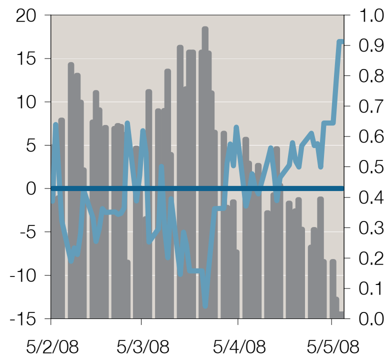

*Source: Fortis Modelling*

**Curvature (t) - 0.1% of curve variance**




*Source: Fortis Modelling*

**Error (t) - 0.01% of curve variance**




*Source: Fortis Modelling*

#### Fundamental outlook

The price of the 3-month copper contract on the London Metal Exchange (LME) in April averaged more than $8,565/t, remarkably high given expectations of a recession-induced slowdown in demand from the US. In the year so far the same contract has averaged $7,925/t. Without clear evidence of some demand destruction (or a much stronger dollar) the price could stay relatively strong, ie >$7,000/t, with possibly much higher spikes being possible on any more serious supply-side interruptions, out to the end of 2010. LME 3-month short-term: $7,900/t-$8,500/t.

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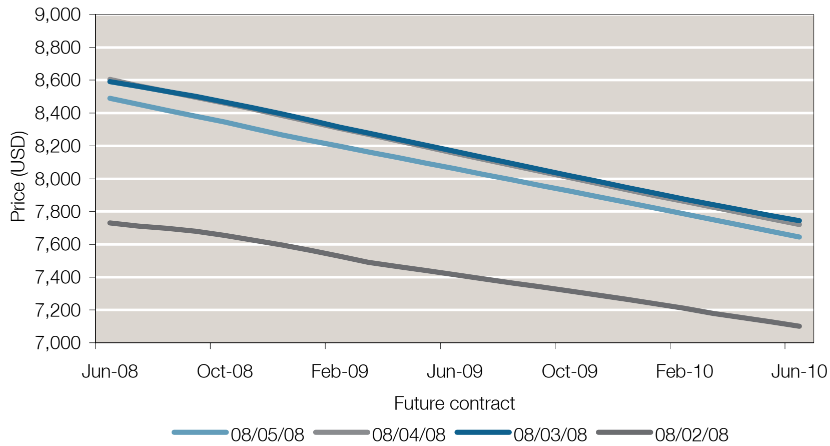
# Copper

## Future curve analysis

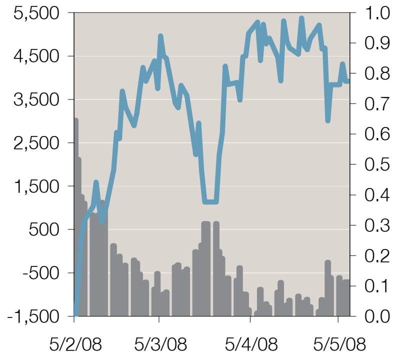
### Future contract




*Source: Fortis Modelling, Bloomberg*

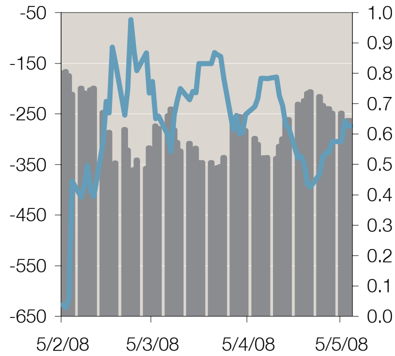
## Principal component analysis (arbitrary units)

### Level (t) - 94% of curve variance



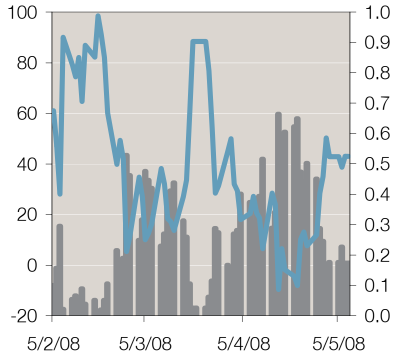

*Source: Fortis Modelling*

### Slope (t) – 5.3% of curve variance



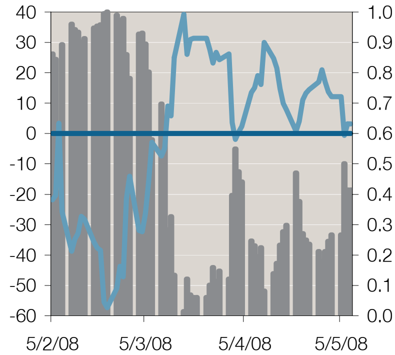

*Source: Fortis Modelling*

### Curvature (t) - 0.04% of curve variance




*Source: Fortis Modelling*

### Error (t) - 0.01% of curve variance




*Source: Fortis Modelling*

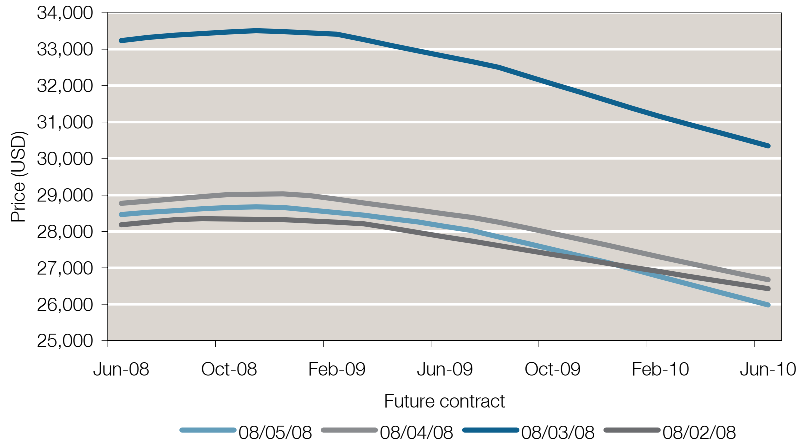
# Nickel
## Future curve analysis

**Fundamental outlook**

The likelihood of a rising surplus in the nickel market at present has had only a limited impact on prices which appear to be paying more attention to immediate strengths such as strong Asian demand and the difficulties for stainless steel manufacturers in using less nickel.

LME 3-month short-term: $25,000/t-$28,000/t.

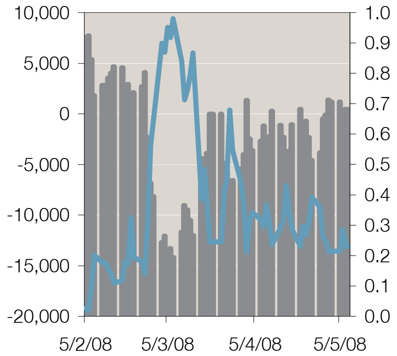
### Future contract




*Source: Fortis Modelling, Bloomberg*

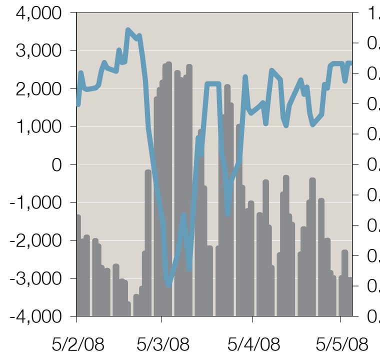
## Principal component analysis (arbitrary units)

### Level (t) - 98% of curve variance



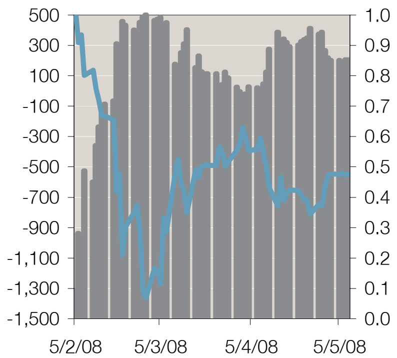

*Source: Fortis Modelling*

### Slope (t) – 1.8% of curve variance



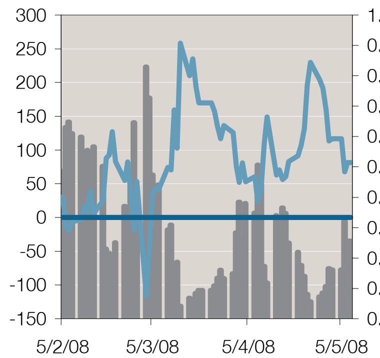

*Source: Fortis Modelling*

### Curvature (t) - 0.04% of curve variance




*Source: Fortis Modelling*

### Error (t) - 0.01% of curve variance



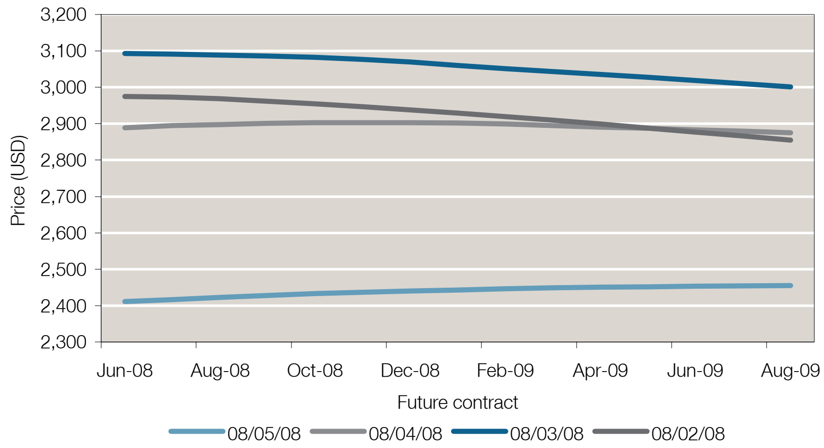

*Source: Fortis Modelling*

# Lead
## Future curve analysis

**Fundamental outlook**
China's lead production has been depressed, as have its exports, by the country's onerous export taxes on the metal. There are some signs that key producers in China have resumed higher levels of production, on undertakings that some of tax burden will be eased. Although the availability of Chinese metal remains much less than in previous years, the slowing of new car sales in the most important markets (a consequence of a slowdown in consumer spending) means that lead-acid battery demand is declining. Together with hopes that Australian exports may soon be unblocked, this helps explain why investors have lost their former rampant enthusiasm for lead – the price of which may slip below $2,000/t later this year. LME 3-month short-term: $2,000t-$2,300/t.

.

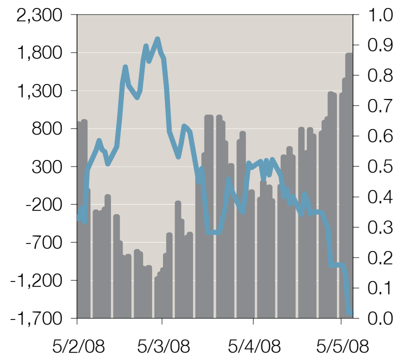
**Future contract**




*Source: Fortis Modelling, Bloomberg*

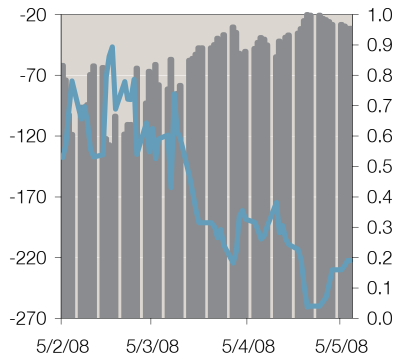
## Principal component analysis (arbitrary units)

**Level (t) - 99.2% of curve variance**



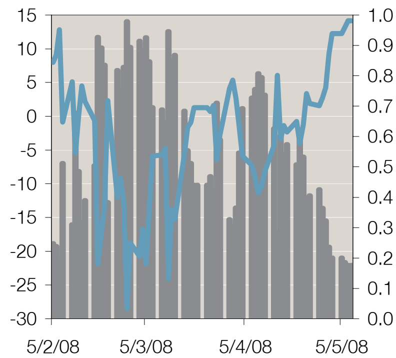

*Source: Fortis Modelling*

**Slope (t) - 0.8% of curve variance**



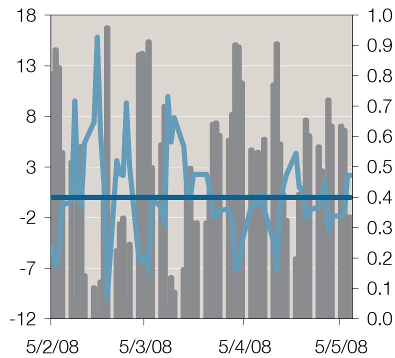

*Source: Fortis Modelling*

**Curvature (t) – 0.01% of curve variance**




*Source: Fortis Modelling*

**Error (t) – 0.00% of curve variance**




*Source: Fortis Modelling*

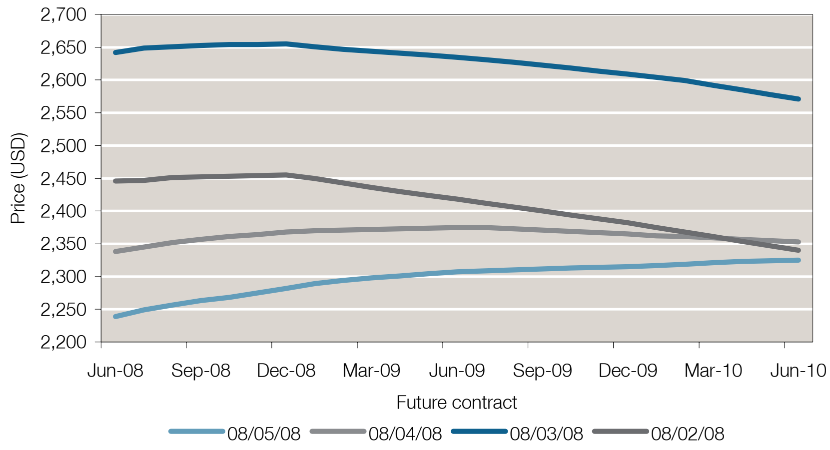
**Fundamental outlook**

The earthquake in China shows the difficulty in attempting estimates of what can happen to prices and supply-demand issues in these already volatile markets. Zinc had been headed for a significant surplus of more than 200,000t this year – that is now looking much less likely, and prices that had been weakening steadily may firm slightly over the next few months, especially if more supply issues materialise, such as a threatened national mineworkers' strike in Peru. Having said that, there is a vast amount of new mine supply waiting in the wings and longer term the LME price looks destined to fall close to $1,500/t, although that might not now happen before late 2009. LME 3-month short-term: $2,200/t-$2,500/t.

# Zinc

## Forward curve analysis

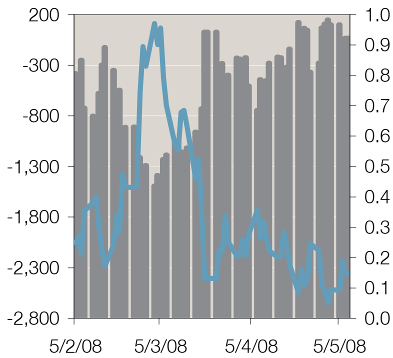
**Future contract**




*Source: Fortis Modelling, Bloomberg*

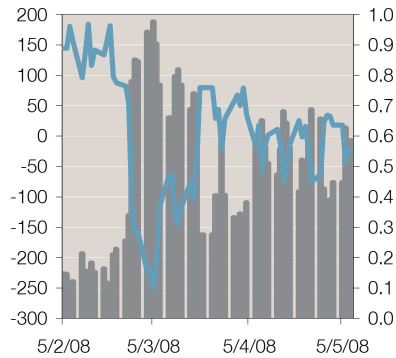
## Principal component analysis (arbitrary units)

**Level (t) – 99.5% of curve variance**



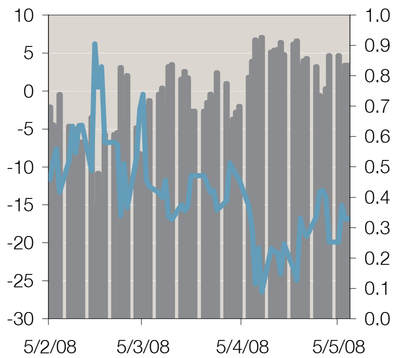

*Source: Fortis Modelling*

**Slope (t) – 0.5% of curve variance**



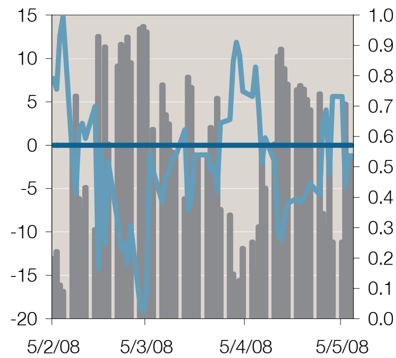

*Source: Fortis Modelling*

**Curvature (t) - 0.01% of curve variance**




*Source: Fortis Modelling*

**Error (t) - 0.00% of curve variance**



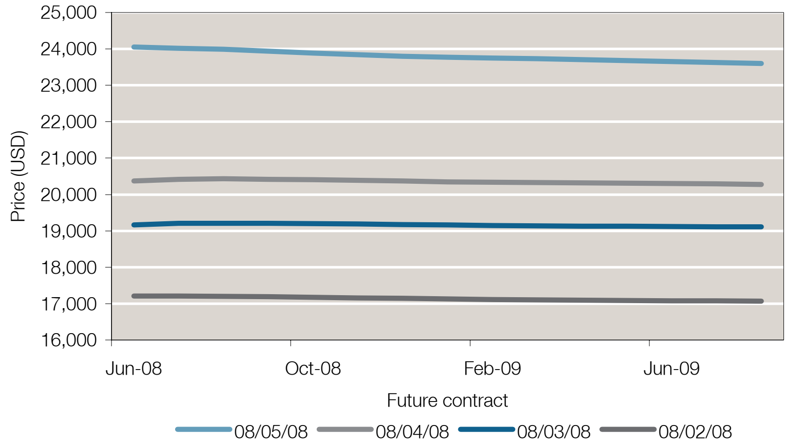

*Source: Fortis Modelling*

## Tin
## Future curve analysis

**Fundamental outlook**
Low LME stocks and strong Chinese demand mean prices continue at record levels. With Chinese producers having little incentive to export world prices could stay high and for longer. Doubts remain about the level of Indonesian exports this year and that too is helping price remain very high.

LME 3-month short-term: $22,000/t-$25,000/t.

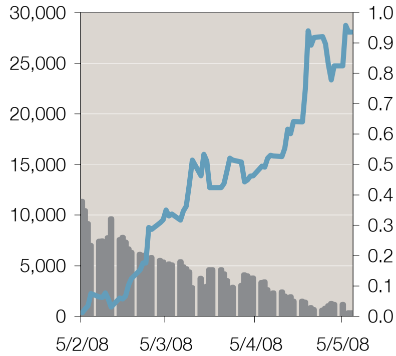
**Future contract**




*Source: Fortis Modelling, Bloomberg*

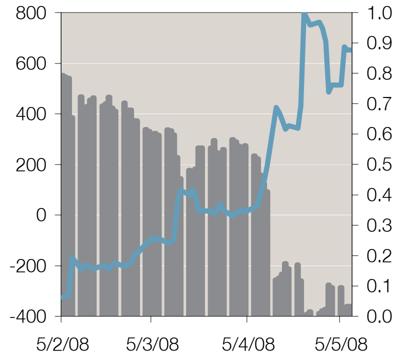
### Principal component analysis (arbitrary units)

**Level (t) – 99.8% of curve variance**



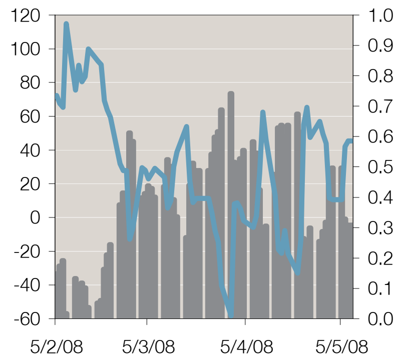

*Source: Fortis Modelling*

**Slope (t) – 0.2% of curve variance**



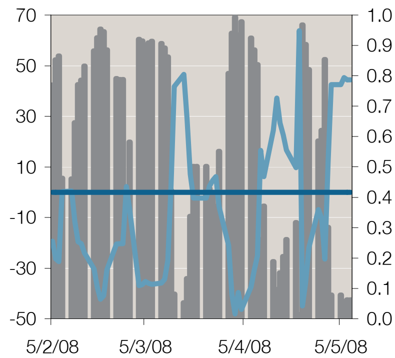

*Source: Fortis Modelling*

**Curvature (t) - 0.00% of curve variance**




*Source: Fortis Modelling*

**Error (t) - 0.00% of curve variance**




*Source: Fortis Modelling*

# Notes

## Disclaimer and copyright

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Virtual Metals comprises a uniquely skilled team, with a collective 50 years' experience in the precious metals markets and all that this implies – a plethora of market contacts and personal networks of long-standing trust and wisdom. Our clients include world-class mining companies, for whom Virtual Metals specialises in proprietary research covering gold, silver and the platinum group metals.

Apart from the mining industry, Virtual Metals has as clients refiners, bullion banks, equity brokers, trading houses and other institutions. Clients in all segments of the mining and metals industries select Virtual Metals for independent outsourced value and experience without adding to corporate overhead.

The Virtual Metals team excels in macro-economic analysis, the generation of supply and demand scenarios, costs analysis, derivative research and price forecasting. Confidentiality, experience and independence are key elements of such advisory roles. Our aim is to assist those in need of external expertise, as well as those who wish to supplement their own in-house resources. With our extensive international contacts, we are able to broaden our services through links with experienced associates in related fields worldwide.

To see further how we can meet your research and consulting requirements, please email info@vmgroup.co.uk or call or fax on the numbers above.

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