

# Fortis Asian metals monthly

January 2008



Gold, silver, aluminium,  
copper, lead, zinc, steel.

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## Strategic view

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### Introduction

Hanging over base metals is one big uncertainty – the possibility of a significant US economic slowdown tipping over into outright recession sometime in 2008. Growth in China is likely to be in double digits again this year but there too credit will become progressively tighter, which is likely to impact base metals' demand marginally. We anticipate generally slowing demand for all base metals in 1H 2008. But within this there are some undoubted buying opportunities beginning to emerge – and aluminium in particular may see a much better year.

### Gold

Having now fixed above \$900/oz for the first time ever (London pm fix 14<sup>th</sup> January) gold is truly sailing in uncharted waters. Given such a massive net long position in futures and ETFs as we now have, a correction seems inevitable and indeed happened two days' later – but it may be shallow and short-lived. If gold settles into an \$875/oz-\$920/oz trading range for the next month or two then the prospects of \$1,000/oz this year will become that much stronger.

### Silver

Apart from odd moves in the silver ETF, which puzzled the market in late December, silver remains a relatively dull market and the price has begun significantly to lag gold's move higher.

### Aluminium

Prices were static in December, but signs that China will in the next two years switch to becoming a net importer could make aluminium the surprise winner of 2008, despite its recent lacklustre record as an investment.

### Copper

For copper the gathering gloom over the US economy is very bearish – hopes of clinging on to the \$7,000/t level this year depend strongly on continued high rates of Chinese demand.

### Lead

Lead prices have weakened considerably but lower Chinese output and exports should help the price stay above \$2,000 this year.

### Zinc

Zinc remains vulnerable to growing supply and a vigorous export level from China. The end of December saw zinc bulls take some heart from expectations that China would impose export duties on super high-grade zinc – but so far they have been disappointed.

### Steel

The steel market may be in for a period of unprecedented growth in consumption, according to MEPS International, which estimates global steel consumption will exceed 1.45bn tonnes/year by 2011, a rise of some 28% against 2006 – two-thirds of the extra growth coming from Asia.

## Forecasts

### Price forecasts

		End-December	1-month	2-month	3-month	12-month
<b>Gold</b>	\$ per oz	833.75	885-925	900-950 (r)	900-950 (r)	1,000 (r)
<b>Silver</b>	c per oz	14.76	15.50-17	16-17 (r)	16-17 (r)	17-18 (r)
<b>Aluminium (3-month)</b>	\$ per tonne	2,405.50	2,300	2,300	2,400	3,600 (r)
<b>Copper (3-month)</b>	\$ per tonne	6,715	6,800-7,200	6,500	6,300 (r)	6,000 (r)
<b>Lead (3-month)</b>	\$ per tonne	2,532	2,500-2,600	>2,500	>2,500	2,200
<b>Zinc (3-month)</b>	\$ per tonne	2,331	2,100-2,300	2,200 (r)	2,200 (r)	2,000 (r)
		Average/2-years	Average/3-years	Average/4-years	Average/5-years	Average/6-years
<b>Gold</b>	\$ per oz	700	575	550	550	500
<b>Silver</b>	c per oz	11	10	10	9	9
<b>Aluminium (3-month)</b>	\$ per tonne	2,000	3,500 (r)	3,500 (r)	3,000 (r)	2,500 (r)
<b>Copper (3-month)</b>	\$ per tonne	6,000	5,000	5,000	5,000	4,000
<b>Lead (3-month)</b>	\$ per tonne	1,500	1,500	1,300	1,200	1,000
<b>Zinc (3-month)</b>	\$ per tonne	2,200	2,200	2,500	2,500	2,500

Source: VM Group

(r) = revised estimates from previous report

## Analysis

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### Highest-ever gold fix – but for how long?

The sound of tumbling commodity price records greeted the start of 2008, with crude oil briefly crossing the \$100/barrel mark, agricultural commodities of all kinds from palm oil to robusta coffee at new highs, a record platinum fix of \$1,589/oz in London on Monday 14<sup>th</sup> January, and gold fixing above \$900/oz in London on the same day. Nor did gold stride meekly across the \$900/oz barrier – it climbed over it vigorously, arrogantly, fixing at \$911.50/oz. The afternoon fix was slightly weaker that day, at \$902/oz, but the fact that it stayed above \$900/oz was tremendously encouraging for the gold bulls who see it soaring higher yet. No longer do we have to scratch our heads and try to recall when the gold price hit a peak (it was January 1980, \$850/oz, coinciding with an earlier phase of American disgruntlement with Iran); that peak is right now, and apparently happy to keep advancing. The big question is – does this new peak represent an Everest for gold, or just another foothill *en route* to finding that Everest?

### A very steep climb

It's currently difficult to see what might stop the gold price from going much higher. One factor that might prevent its upward surge from being smooth is the sheer rapidity with which it has recently moved above \$800/oz. The daily afternoon London fix was fairly range-bound between January-August 2007, the average monthly fix for those months drifting between a low of just above \$631/oz in January and a high of slightly more than \$679/oz – which came in April. In other words, the rise above \$700/oz (in September the average London afternoon fix was more than \$712/oz) was subject to setbacks. The final quarter of 2007 saw the slope initially begin to rise more vertically – an average above \$754/oz in October succeeded by one of more than \$806/oz in November – but then again there was a slight pause, with the December average marginally lower, at slightly more than \$803/oz.

If we look back a little further then it's evident that the gold price has in broad terms been on a strongly upward movement for the past seven years. The London afternoon fix averaged slightly more than \$271/oz in 2001; above \$309/oz in 2002; more than \$363/oz in 2003; above \$409/oz in 2004; almost \$445/oz in 2005; and above \$603/oz in 2006; and above \$695 in 2007. Measured in terms of this annual average that represents a rise of \$424/oz (more than 156%) in the past seven years. A very rough calculation suggests that in 2008, if the London afternoon gold fix rose by the average rise of these past seven years, which is 22%, then it would average \$1,033/oz in 2008.

### More ups and downs likely

Yet by definition such simple calculations flatten the many ups and downs along the route from \$271/oz to where we are today. The past is a fallible guide to the future, in respect to gold as anything else. The price rise in 2008 has been so far, so fast, that a short-term correction seems inevitable. But while this year's average daily pm fix might be much lower or higher than \$1,033/oz, as things currently stand there are two major factors which incline us to think that – on the whole 2008 will be yet another strong year for the gold price.

The first is the background context in which gold now functions. The second is the nature of the new investment in gold. It's impossible to separate the one from the other in terms of their positive support for the gold price. Taking the new investment which has flooded – there is no hyperbole in using this to describe what has happened – into gold in recent months first, simply because it is possible to be more objective about it. Up to 8<sup>th</sup> January this year the combined investment in gold futures by the non-commercial speculators (or equivalent) on Comex, Tocom and the Chicago Board of Trade had risen to almost 945t – a new record for the net long position on these three futures?

exchanges, and it compares with just over 400t for the same date in 2006. Of more relevance perhaps is what has happened to the gold ETFs' investment; a year ago they accounted for 600t, today they collectively total more than 833t, also a record. The gold ETFs have sucked money out of gold equities and physical, the first time this has been possible with such ease and efficiency. The nature of ETF investment is, we suspect, rather different from that in futures, with the former intending to take a much longer view of the price than the latter. The massive increase in the futures' net long position encourages the view that at some stage a futures sell-off must happen, with speculators deciding to book profits; but the background context right now suggests we should see a series of short-lived, profit-skimming corrections, each followed by further buying waves, rather than any major collapse either this year or next.

Furthermore, the reason why we see no major downward correction on the horizon is that gold has to an extent rejoined the mainstream of investment assets (albeit perhaps one for more sophisticated investors), not really for its traditional value as a hedge against inflation, but rather as a hedge against doubt and uncertainty vis-à-vis most other investment assets, including equities, bonds and currencies. With US presidential candidates publicly outbidding each other on the amount they consider advisable to inject into the US economy to avoid economic recession – 'will \$50bn be enough? Oh, go on, make it a round \$100bn' – the more savvy US investors (and others elsewhere) are hunting for the best defensive/offensive asset play.

As more investors alight upon gold and switch from other assets into bullion, this will of course only help further a self-fulfilling prophecy – only a small switch from equities to gold is necessary to make a big splash as there is roughly 1,000 times more money invested in equities globally than gold ETFs and futures combined. However, we now face a Catch-22: until the longs bail out the price will remain high – and the high price keeps the longs holding on. When the bears start to act (as surely they will, even if not this year) everyone will scurry to be the first to declare that this was no more than a bubble, after all. We may be some time away from that.

## Focus

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### 2008 – the trends are already in place

*Last year demonstrated once again one core fact about base metals – investment money follows the fundamentals of supply and demand. This was also the case with precious metals, even gold, where the supply-demand balance ought really to be considered not so much in physical metal availability, but in the rise – and fall – of investment confidence in other assets. In this focus we detail the winners and losers of 2007 and consider the prospects for 2008. As in previous years, all base metal prices refer to the official settlement prices on the LME benchmark three-month contract; those for gold to the daily London pm fix and for silver the daily London fix. The time-span for our calculations for price movements during the year commences with the closing price of the last day of trading in December 2006 as this provides the starting point for the opening of trading on the first trading day of January 2007. Our charts show all the base metals traded on the LME as well as the four main precious metals, even though we do not normally cover all these metals in this report. We have included them so that readers can make a better comparison of relative performance.*

### Metals and plastics prices in 2007: base metals \$/t, precious metals \$/oz

	Open	End Jun	Close	H1 (%)	H2 (%)	Change (%)	Average	Peak Date of Peak	Low	Date of Low
Aluminium - 3 Month	2,821	2,736	2,405.5	(3.01)	(12.08)	<b>(14.73)</b>	2,663.38	2,914 10-Apr-07	2,376	18-Sep-07
Aluminium - 63 Month	2,061	2,179	2,743	5.73	25.88	<b>33.09</b>	2,255.98	2,781 19-Feb-07	1,875	7-Feb-07
Copper - 3 Month	6,201	7,520	6,715	21.27	(10.70)	<b>8.29</b>	7,097.27	8,230 3-Oct-07	5,270.5	8-Feb-07
Copper - 63 Month	4,691	4,297	5,985	(8.40)	39.28	<b>27.58</b>	4,621.73	6,328 19-Nov-07	3,240	2-Feb-07
Lead - 3 Month	1,700	2,645	2,532	55.59	(4.27)	<b>48.94</b>	2,565.64	3,880 15-Oct-07	1,536	8-Feb-07
Lead - 15 Month	1,463	2,482	2,428	69.65	(2.18)	<b>65.96</b>	2,326.19	3,515 15-Oct-07	1,305	8-Feb-07
Nickel - 3 Month	33,000	35,810	26,050	8.52	(27.25)	<b>(21.06)</b>	36,205.78	51,000 8 & 9-May-07	25,495	16-Aug-07
Nickel - 27 Month	23,650	29,960	25,900	26.68	(13.55)	<b>9.51</b>	28,940.92	34,950 8-May-07	18,900	15-Jan-07
Tin - 3 Month	11,400	13,900	16,500	21.93	18.71	<b>44.74</b>	14,520.14	17,400 16-Nov-07	10,105	9-Jan-07
Tin - 15 Month	10,775	13,370	16,705	24.08	24.94	<b>55.03</b>	13,931.55	17,310 16-Nov-07	9,700	9-Jan-07
Zinc - 3 Month	4,179.5	3,326	2,331	(20.42)	(29.92)	<b>(44.23)</b>	3,247.23	4,179.5 2-Jan-07	2,206	22-Nov-07
Zinc - 27 Month	3,322	2,728	2,313	(17.88)	(15.21)	<b>(30.37)</b>	2,758.19	3,322 2-Jan-07	2,183	22-Nov-07
Gold	639.75	650.5	833.75	1.68	28.17	<b>30.32</b>	695.39	841.1 8-Nov-07	608.4	10-Jan-07
Silver	13.01	12.54	14.76	(3.61)	17.70	<b>13.45</b>	13.3835	15.82 7-Nov-07	11.67	21-Aug-07
Palladium	334	365	364	9.28	(0.27)	<b>8.98</b>	354.78	382 20-Apr-07	320	22-Aug-07
Platinum	1,135	1,273	1,529	12.16	20.11	<b>34.71</b>	1,303.70	1,544 27-Dec-07	1,118	8-Jan-07

Source: VM Group

### 2007– highlights

**The accolade goes to lead**, which recorded the highest gain in 2007 (for both base and precious metals) of 48.94%, a second stellar year for the least-loved of base metals – it rose 59% in 2006. The essential reason for lead's terrific performance is almost a textbook example of commodity price movements. Having fallen 6% in 1H 2006, it gained 70% in 2H 2006, a rally which sustained in 1H 2007, when it rose a further 55.59%, declining by just 4.27% in 2H 2007. This 12-month rise across 2006-2007 – reaching a peak of \$3,880/t on 10<sup>th</sup> October – coincided with progressive awareness by investors that a number of supply-side problems were not going to be resolved quickly, and that physical demand in some key developing economies (China especially) was growing much more strongly than anticipated. The most immediate prompt for the rally derived from disrupted Australian supplies and LME stock levels falling from their 2007 peak of 48,725t on 17<sup>th</sup> May to 20,850t on 24<sup>th</sup> September. But a potentially more permanent turning point in lead's fortunes happened in June, when the Chinese authorities imposed a 10% export tariff on refined lead, partly to restrain expansion in yet another energy-intensive base metal and partly to ensure sufficient metal to feed its own rapidly growing lead-acid battery market. One of the least noticed but more intriguing developments in base metal applications in 2007 was the explosive growth in electric bicycles in China. As many as 25m new battery-powered bicycles were produced in China in 2007, satisfying the demand for powered transport from Chinese citizens unable to

afford the price of a car. With a typical 'e-bike' using almost 10 kg of lead, this relatively new market represents a previously untapped source of lead demand to the tune of some 250,000t/year. This new market, together with an inevitable reduction in Chinese refined lead exports – which prior to the new export tariff had been running at about 500,000t/year – imposed an entirely new and unexpected constraint on the metal's availability. Little wonder that investors piled in.

**Copper's** gain in 2007 of 8.29%, with an average price of \$7,097.27/t, was disappointing compared to its advance of 43% in 2006, but reflects copper's traditional position as a barometer of overall economic strength. That is supported by the fact that while it did quite well in 1H 2007 (thanks largely to a resurgence in China's refined copper imports), it crashed by more than 10% in 2H 2007, as investors took fright over the outlook for the US economy. Nevertheless copper producers, 90% of whom are profitable with a price above \$3,000/t, are still very comfortable. The price oscillated wildly, hitting a low of \$5,270.50/t on 2<sup>nd</sup> February and recording a high of \$8,230/t on 4<sup>th</sup> May (against the 2006 peak of \$8,590/t), as investors struggled to interpret conflicting data, such as relatively low exchange stocks (LME warehouse stocks fell to a low of 97,550t on 12<sup>th</sup> July from a high of 216,100t at the end of January) versus signs that Chinese import demand was slackening, and the global market likely to return to a small surplus in 2008.

**Aluminium** narrowly avoided being 2007's worst performer, losing almost 15% over the year, dropping to a low of \$2,375/t on 18<sup>th</sup> September – a poor result given its respectable gain of 23% in 2006, but aluminium meandered for much of last year and never demonstrated any fundamental news that might have set investors alight. The price recovered somewhat by the end of the year, at \$2,405.50/t but that felt rather dismal considering the 2007 peak of \$2,914/t and a high of \$3,240/t in 2006. Aluminium traded in a very narrow \$538t range, the narrowest of all the base metals, itself a reflection of its becalmed state. In the absence of any fundamental driver the biggest news was the slowly rising LME stocks' level, climbing from slightly more than 690,000t mid-January to a high of more than 940,000t in late September.

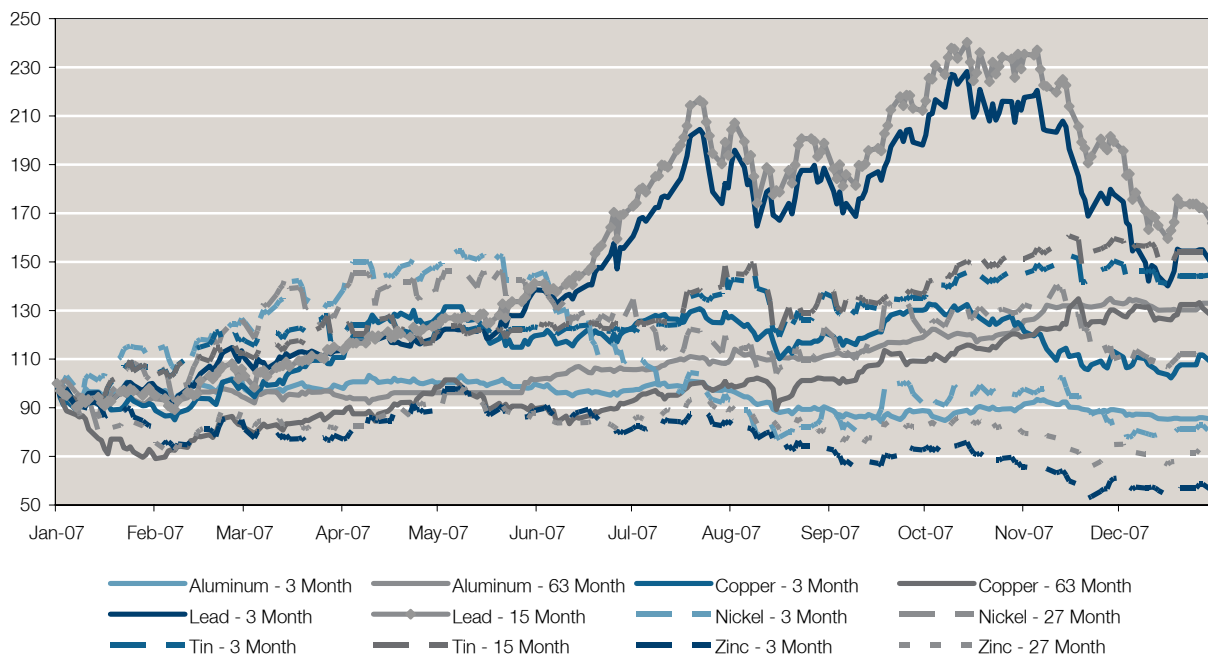
Another outstanding performer of 2006 tumbled in 2007 – **zinc** crashed by more than 44% in 2007, the worst of all the metals we cover in this report. From May 2007 it was pretty much downhill for the zinc price with the odd (and short-lived) recovery. The metal started the year at \$4,179.5/t (its peak for the year) and averaged \$3,247.23/t. In November it hit a low of \$2,206/t. Once again, supply-demand fundamentals drove investors away. By June the International Lead and Zinc Study Group reported that the global refined zinc market had been in surplus during January-April to the tune of 53,000t – a drop in the ocean given the probable global output of almost 11.5 Mt in 2007 as a whole, but nevertheless this was taken by the market as a sign of a changed trend, away from the substantial deficit of more than 300,000t in 2006 and sharply back into surplus, by perhaps as much as 221,000t in 2007 overall. What took the market by surprise was the changed nature of the Chinese zinc trade, switching from being a net importer to a net exporter.

Of the precious metals the stand-out success was **platinum**, and this too was largely an example of investors picking up on supply-side problems amid strong demand. The world's biggest platinum producers, in South Africa, all downgraded their production forecasts through the year, meaning that from an anticipated small surplus at the start of the year the platinum market will have registered a significant deficit, which we expect will be at least 300,000 oz. The platinum price closed the year at \$1,544/oz, its peak, although it has since shied away from that in the first few days of January. **Palladium**, which has been in perennial over-supply for several years, understandably turned in a gain for 2007 as a whole (as it moves in tandem with palladium to some extent) but it was a

tepid market, with an extremely narrow trading range of just \$62/oz. Quite justifiably the gain was a mere 8.98%.

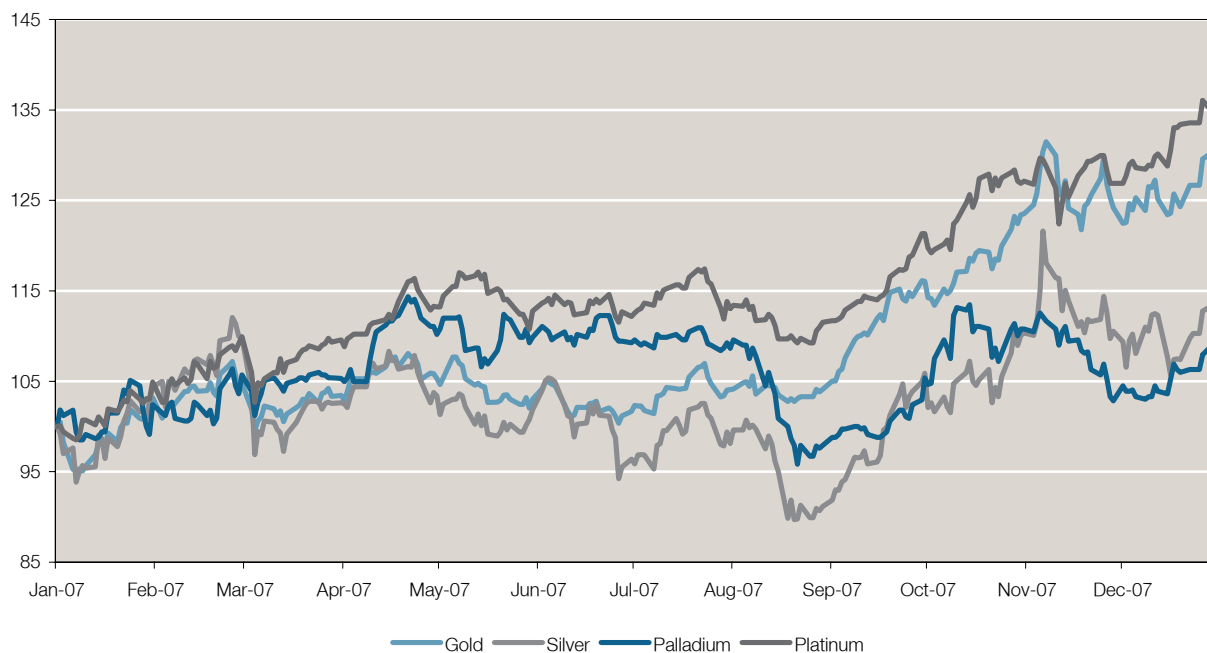
**Gold** finally showed a clean pair of heels, rising by an overall 30.32%, but almost all this came in 2H 2007, when it gained 28.17% (having risen just 1.68% in 1H 2007) and can therefore be pinned to two extraneous factors rather than anything fundamentally related to its physical supply-demand. The steady decline of the US currency plus the plethora of macro-economic bad news emerging from the US since August have propelled gold to a fresh record high on 9<sup>th</sup> January when the London pm fix was \$887.85/oz. **Silver** gained a disappointing 13.45% in 2007 after adding 46% in 2006. The silver price reached a peak of \$15.82/oz on 7<sup>th</sup> November, and averaged \$13.38/oz. This was a creditable performance but much weaker than many silver supporters had posited at the start of 2007, when \$20/oz was posited by many, (although not us), as a realistic target. Given the very largely physical surplus and the continued decline of silver's biggest market – camera film photography – the price rise owed much to stronger interest in the silver exchange traded fund, which undoubtedly helped new silver investors to enter the market.

Base Metals in 2007 (Beginning-2007 = 100)



Source: VM Group

Precious Metals in 2007 (beginning 2007 = 100)



Source: VM Group

### But will they sustain?

The prospects for 2008 must be set within a scenario in which three important macro-economic factors are likely to prevail. The first and perhaps most important is an overall slowing of global growth. The world's biggest economy, that of the US, will do very well to avoid outright recession; we expect the US Federal Reserve to cut interest rates progressively throughout the year, trimming here and there in an effort to encourage small shoots of optimism to blossom. By the end of 2008 US rates are likely to be as low as 3%, which may stave off the worst but which will inevitably bring about a much weaker dollar. The second factor is that China's governing authorities will do their level best to tighten credit further in an effort to rein-in inflation and prevent over-heating, with the risk of economic troubles and political instability. The third is that the crude oil price is likely to remain very high, trading around an average \$100/barrel throughout the year ahead, injecting a fresh dose of inflation into the global economy. On top of which 2008 is replete with political uncertainties, which add their own spice to the cauldron.

Leaving aside the fundamentals for individual metals, this backdrop, radically altered from this time last year, obviously favours a much higher **gold** price, perhaps as high as \$1,000/oz by the end of the year, and, to a lesser extent, the same holds true for **silver**, **platinum** and **palladium**. On supply-demand fundamentals alone both silver and palladium should significantly lag gold, which – although it has its own significant supply overhang, in the form of the substantial long position of central banks – has evidently returned to the top of the agenda for investors fearing both inflation and negative yields in almost every other asset class, other than some select commodities. But silver and palladium have shown, despite their discouraging physical supply-demand prospects, that they remain attractive to investors; at a time of deep uncertainty such as we have now entered they will continue to sail along in gold's wake. Platinum too, although a very illiquid market, and with its jewellery offtake very vulnerable at such elevated prices, should remain firmly on investors' target list – the supply hiccups which plagued 2007 may endure well into 2008 and autocatalyst producers still are some distance away from being able to dispense with this metal entirely. Even a severe collapse in new car sales in 2008 is unlikely to make itself immediately felt on platinum prices, but will take much longer to feed into slowing demand for the metal.

The unavoidable assumption that 2008 will see much slower overall global growth does not necessarily imply complete gloom for base metals. While it is likely to mean a slackening of base metal demand in fully industrialised economies (the US, EU, Japan), the economies of other, less industrialised nations will to some extent cushion the blow. With the best will in the world the Chinese authorities will find it difficult to slow the country's growth to much less than 10%, while India's growth this year could be as high as 8%. With GDP growth officially forecast to be 10.8%, a slight drop from expected GDP growth of 11.4% in 2007, China's economy will continue to consume large quantities of base metals, both ores and refined products.

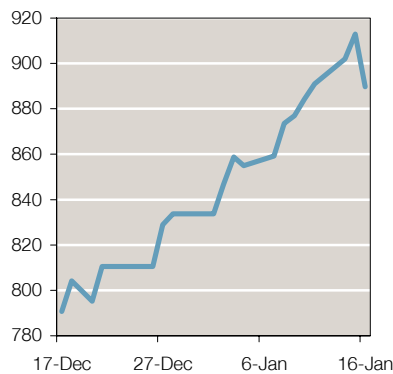
The movement in **copper** prices as a result of this will to a large extent determine the way the winds of sentiment regarding all base metals will blow in 2008. Copper has long been seen as a bellwether of macro economic growth. We said last year that we did not expect the price of the metal to fall below \$5,000/t and although there are new projects coming on stream, which will provide increased volumes of the metal (these of course could fail to deliver, boosting the price further), as long as the economies of the developing countries hold up copper prices should again remain above that level. At the same time expectations that copper will rise to the heights of the past two years are likely to prove illusory. According to the International Copper Study Group (ICSG) China's copper consumption will grow by 6% in 2008, a much slower rate than the 23% in 2007. This January China announced it had removed a 2% tariff on all refined copper imports. This, together with the continued strong domestic spot prices, will to some extent counteract its slowing rate of copper consumption and thus provide some price support, helping keep its average price above \$5,000/t in 2008.

Prospects for other base metals in the course of 2008 resist generalisation – but each has their particular obstacle against revisiting the peaks of 2007. Of last year's strong performers **lead** poses this year's greatest conundrum. From a small (10,000t) deficit global deficit in 2006 lead moved into a much sharper deficit in 2007, by perhaps as much as 80,000t. This could reverse swiftly now that the supply-side hold-ups in Australian production and exports looks to be ending, probably by Q2 2008. And certainly the investment enthusiasm that took lead almost to \$4,000/t last year will not be repeated in 2008. But there is still the question of how much refined lead will emerge out of China – inevitably less than in either 2006 or 2007, and this will keep lead traders on their toes for much of 2008. An average price of \$2,500/t – very close to that of 2007 – is currently quite conceivable, as the market grapples with the implications of strong Chinese demand combined with a return to more normal supplies from other producers.

Two of the base metals are in our view likely to be very poor performers this year – **aluminium** and **zinc**. Aluminium operated in a kind of 'steady state' during 2007 and we see this persisting in 2008 with greater downside risk in 1H 2008 as a consequence of slower economic growth. On the other hand, the rising cost of energy may pose serious difficulties for some producers of primary metal, China – which accounts for some 40% of global output – in particular. Moreover, there are growing signs that China could by 2010 emerge as an overall net importer of primary aluminium, reversing its current position as a net exporter, and this may begin to tempt some courageous investors into dipping their toes in the water. Currently we expect aluminium to average 15% lower in 2008, at around \$2,263/t, than its 2007 average of \$2,663.38/t. As for **zinc**, the prospect of a large physical surplus in 2008 – as much as 250,000t of refined metal – and that widening still further in 2009-2010, gives little scope for prices to do anything but average less than \$2,000/t in the course of 2008.

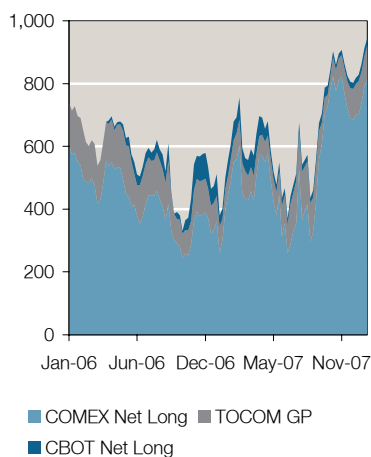
## Gold

Gold price (\$/oz)



Source: London Bullion Market Association

Comex: Non-commercial net position (tonnes)



Source: VM Group

### News

- Jan 4<sup>th</sup>: Concerns that a new law to hallmark gold jewellery in India would disrupt gold trade led to its postponement.
- Dec 21<sup>st</sup>: A major gold deposit has been found in Colombia and will need investment of more than \$2bn to develop, said the country's government. The find is in the central province of Tolima.

### Analysis

- Sharply higher but corrections inevitable

Gold has entered 2008 with a bang, fixing at several new record highs until it broke through the \$900/oz barrier to fix at \$902/oz on the afternoon of the 14<sup>th</sup> January. The old record fixing of \$850/oz was set 27 years previously and had long been a target for gold bulls. The rapid ascent from \$836.5/oz on 31<sup>st</sup> December 2007 has naturally raised concerns that current levels are not sustainable and, logically, a correction is increasingly widely expected. However, in these kind of febrile markets psychology counts as much as logic when it comes to investment decisions – and the weight of support for gold is heavily influenced by sentiment. The longer gold can sustain a price above \$875/oz the greater the chance must be that this year the price achieves \$1,000/oz, possibly even \$1,500/in the latter stages of what would become a runaway, uncontrollable bubble. The factors that have recently been supportive of gold – the weak US currency, fears of economic recession and financial difficulties – have yet to play themselves out fully and may take months in which to do so.

In such a market internal fundamentals take a back seat, and in any case present a mixed bag. There are signs that supply remains constrained. Russia's gold output fell 2% to 151.92t in the first 11 months of 2007. Central bank sales in December were relatively muted. We estimate the EGA signatories sold 22t, far short of the 41.7t/month that would keep them on track to sell 500t this EGA year. Confusingly, IMF data for November showed France added to its gold reserves by 1.9t, which is at odds with earlier ECB figures and France's gold sale policies. We believe this to have been a data error. There are also fears for demand at such high prices. In October India imported 14t, and 12t in November; the same months in 2006 saw much higher figures of 68t and 59t respectively. Abu Dhabi's gold sales in 2007 fell by 25% in volume terms and 30% in value in the same year, a direct consequence of high prices.

### Outlook

**Gold jewellery demand is unlikely to do well at these prices. Yet with investment flows strong and rumours of major hedge buybacks, the risks to this type of physical demand are of little consequence right now – this is a market dominated by the hopes and fears of investors. We expect some volatile trading over the coming months and the constant danger of a sharp correction. Short-term London daily pm fix: \$885/oz-\$925/oz.**

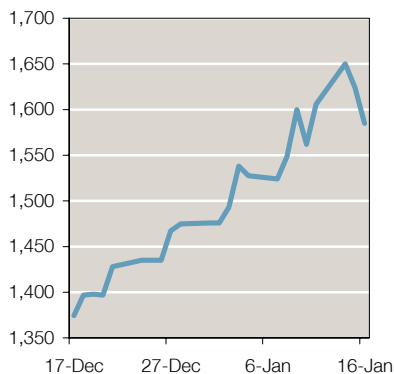
Market data (December unless stated)

Prices	US\$/oz:	Yuan/kg	Yen/gr	ETF inv.	Holdings	Monthly change	Lease rates	1m	3m	6m	12m	Option volatility (end month, %)	
Average	804	553	176,818	US (2)	695.94	26.21	Average	0.41	0.38	0.49	0.45	1-month	24.75
High	834	567	182,876	UK (2)	119.82	1.08	High	0.58	0.45	0.59	0.59	3-month	24.25
Low	784	535	170,254	Aus	16.62	0.52	Low	0.13	0.23	0.36	0.33	6-month	24.00
				S.Africa	24.33	4.54						12-month	24.00
				Swiss	27.34	1.47						24-month	24.00
				India (4)	4.43	(0.50)							

Source: Prices: London Bullion Market Association, Others: Virtual Metals. Indian ETF holdings calculated from rupee amounts and thus are approximations

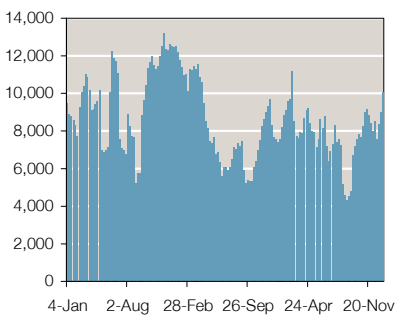
## Silver

Silver price (cents/oz)



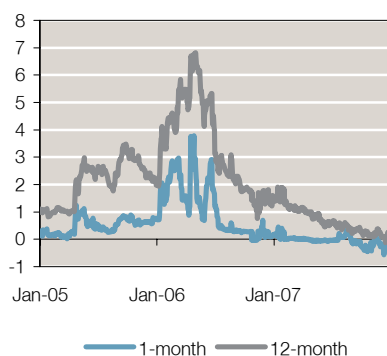
Source: London Bullion Market Association

Comex: Non-commercial net position (tonnes)



Source: Comex

Aluminium stocks (tonnes)



Source: London Metal Exchange

### News

- Jan 8<sup>th</sup>: Hochschild Mining warned that 2008 would see its gross margins “materially lower” than expectations due to higher depreciation and lower than expected grades at its Ares and Selene mine in Peru. It reported total silver production for the full year of 2007 of 13.6 Moz, forecast some 16.9 Moz for 2008, and reiterated its 2011 target of 50 Moz (silver equivalent).
- Dec 17<sup>th</sup>: Silver production in Kazakhstan fell to 1.66 Moz from 1.723 Moz in October. Total output for the first eleven months of 2007 was almost 21 Moz, 10% lower than for the same period of 2006.
- Dec 17<sup>th</sup>: Gammon Gold, a company with gold and silver mines in Mexico, said a strike at its operations meant Q4 2007 production would be up 6% rather than the 15% it had previously envisaged.

### Analysis

- Still lagging gold

The last time gold was at \$850/oz, in January 1980, silver reached the remarkable level of \$48.70/oz. So to get to \$16/oz, which it reached on 9<sup>th</sup> January 2008, when the London pm fix was \$877/oz, was singularly unimpressive by comparison; nevertheless it was the highest fix for silver since December 1980. The new year began with strange happenings in the BGI silver ETF, based in New York. The ETF, launched in April 2006, had taken 3,768t of silver by the end of 2006 but that rate of demand slowed dramatically such that it took only 861t during 2007 up to 30<sup>th</sup> December. However, data from BGI shows that on 31<sup>st</sup> December its holdings jumped by a huge 617t, making total 2007 offtake 1,478t. Even stranger, on the next trading day, 2<sup>nd</sup> January 2008, holdings *fell* by 555t, before adding another 152t in the next few days. No explanation has been given for this rather peculiar trading, which we believe is likely to have been conducted by a single source, except that it was not a mistake. Investment flows are highly important in the silver market given the huge surplus of supply over demand. This shows no signs of abating, with a steady flow of projects that will replace ounces mined and, over time, increase the amount of silver being mined. In December Santa Fe Gold raised \$13.5m from a single investor for the construction of its Summit silver-gold mine in New Mexico. In a further planned expansion, the Canadian listed China-focused silver miner, Silvercorp Metals, said its 77.5% owned company, Henan Found Mining, had started development of a new 2,000t/day mill, doubling the capacity of its existing milling operation.

### Outlook

Over the four weeks of December the non-commercial net long position on Comex rose by 1,051t and by the week ending 8<sup>th</sup> January the total long position on Comex was a massive 10,082t, with another 4,842t accounted for by the ETF. It's taken almost 15,000t of longs to get the price above \$16/oz – a sure sign that silver will increasingly lag gold in the heady weeks and months in front of us. The paradox is that at this price silver is once again very expensive for its industrial users, who will seek to reduce their demand proportionately. Short-term London daily fix: \$15.50/oz-\$17.00/oz.

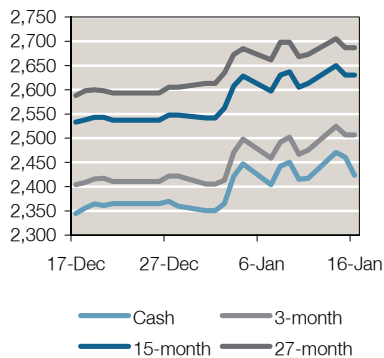
Market data (December unless stated)

Prices	c/oz	Yuan/kg	Yen/gr	Imports	kg	Lease rates	1m	3m	6m	12m	Option volatility (end month, %)	
Average	1,428.1	981.8	708.5	USA (Oct)	502,370	Average	(0.11)	0.00	0.21	0.22	1-month	29.00
High	1,475.0	1,004.0	740.1	Japan (Nov)	383,515	High	0.08	0.12	0.30	0.38	3-month	30.50
Low	1,374.5	945.1	671.0	China (Nov)	616,182	Low	(0.28)	(0.12)	0.12	0.08	6-month	31.25
											12-month	32.00

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

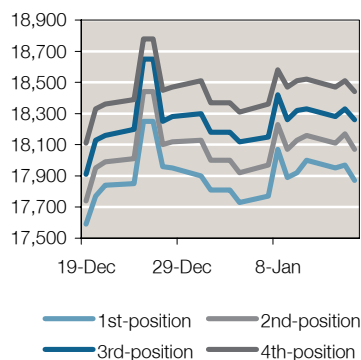
## Aluminium

### Aluminium price (\$/tonne)



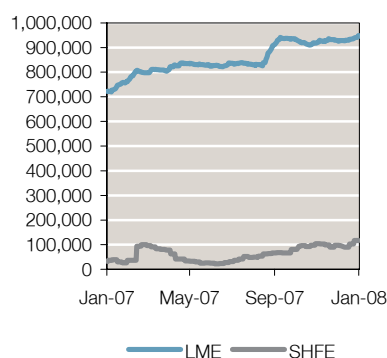
Source: London Metal Exchange

### Aluminium price, SHFE (yuan/tonne)



Source: Reuters Ecowin

### Aluminium stocks (tonnes)



Source: London Metal Exchange

### News

- Jan 15<sup>th</sup>: China's net exports of aluminium and alloys fell by 45% to 263,451t in 2007, measured year-on-year – its lowest level in five years.
- Jan 11<sup>th</sup>: US aluminium production rose by 12.2% in 2007 against 2006, to almost 2.6 Mt, according to the Aluminium Association.

### Analysis

- Short term prospects gloomy, brightening later

Data from the International Aluminium Institute (IAI) showed that daily average primary aluminium output in November 2007 (excluding China) rose to 69,200t compared to 68,900t in October. Total production including China, though, fell slightly to 3.211 Mt in November compared to a revised 3.271 Mt in October. Capacity expansions of existing aluminium refiners and smelters and construction of new ones continue to be announced. India's Ashapura Minechem plans to develop an integrated aluminium complex in the eastern Indian state of Orissa, including a 500,000t/year alumina refinery and a 150,000t/year aluminium smelter. Again in India, the state-run National Aluminium Company (Nalco) said it planned to raise the capacity of a part of its alumina refinery to 700,000t, taking the company's total annual refining capacity to 2.28 Mt. Nalco also signed a deal in January with Indonesia to build a new smelter and power generating plant on Sumatra, with an initial annual capacity of 250,000t/year with plans eventually to double that.

### Outlook

While the LME's 3-month contract for aluminium lost almost 15% in 2007, the 63-month contract showed a very strong gain of slightly more than 33% - suggesting a much more positive outlook in the long term, posited partly on the suspicion that China is rapidly moving to the point where it may become a net importer of aluminium, perhaps as early as 2010. China's consumption of primary aluminium is still rising rapidly. According to Alcoa, the pace of growth in China's consumption will slow in 2008 to a 24% rise (against 37.2% in 2007), but this compares markedly with an anticipated consumption growth rate in North America of less than 1%. The aluminium price was at a standstill at the end of 2007, the 3-month contract shedding just \$1/t between 3<sup>rd</sup> December and 3<sup>rd</sup> January when it settled at \$2,497/t. The longer-dated prices on the futures curve reflect a sense that cost pressures are building up, with average smelter costs rising by perhaps 10%/year currently. Magnesium prices have also risen very sharply, to \$4,500/t, more than double this time last year, following China's imposition of a 10% export tax (previously zero) on magnesium from 1<sup>st</sup> January – magnesium is vital for hardening aluminium in motorcar parts and computers. With the marginal cost of primary aluminium production at about \$2,000/t, the price may bottom-out in 1H 2008 – but may not climb much thereafter for the rest of this year, especially if a global economic slowdown begins to take a firmer hold. LME 3-month short-term: \$2,200/t-\$2,400/t.

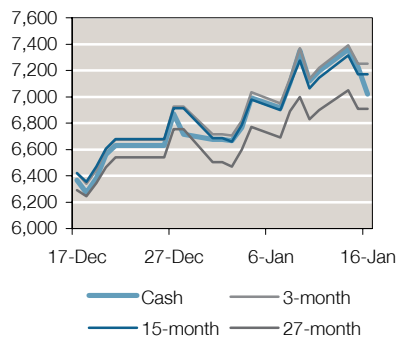
### Market data (December unless stated)

Prices (\$/t)	Cash	3-month	15-month	27-month	Stocks (tonnes)	LME	SHFE	Prod (kt)	Oct	Nov	LME Open Interest (contracts)
Average	2,378	2,433	2,560	2,619	Nov-07	929,250	95,838	Europe	730	743	Aluminium
High	2,445	2,499	2,613	2,670	Dec-07	929,450	98,433	Americas	706	688	
Low	2,345	2,404	2,533	2,588				Asia	318	307	
								China	1,136	1,135	
								Other	349	338	
								Total	3,239	3,211	

Source: London Metal Exchange, except Production: International Aluminium Association

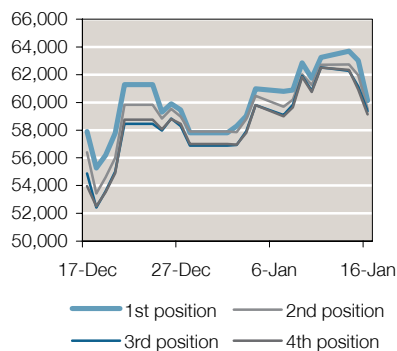
## Copper

Copper price (\$/tonne)



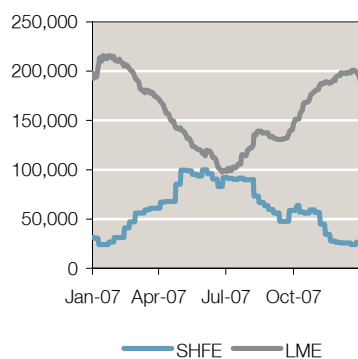
Source: London Metal Exchange

Copper price, SHFE (Yuan/tonne)



Source: Reuters Ecowin

Copper stocks (tonnes)



Source: London Metal Exchange

### News

- Dec 28<sup>th</sup>: Indonesia's refined copper output will climb 23% in 2008, with production likely to reach 1.04 Mt in 2008, against 843,460t in 2007.
- Dec 18<sup>th</sup>: South Korea and Bolivia agreed to invest \$200m as part of a joint venture to develop a copper mine in the South American country. The Corocoro mine, once Bolivia's largest copper mine, is estimated to have 15 Mt of copper reserves.

### Analysis

- Mixed messages today – and tomorrow

There are some mixed messages at work in the copper market right now. On the one hand, the growing expectation that the US economy will this year experience a severe slowdown (if not outright recession) poses a big threat to copper demand in North America and other developed economies. On the other, capital markets already have built-in expectations of a 50 basis points cut in US interest rates being just around the corner, which – if it materialises – may well fend off serious economic trouble and help keep copper prices robust. China's demand has been growing strongly – its imports of refined copper, including semi-finished products, rose almost 35% year-on-year in 2007, to 2.78 Mt. Imminent changes are expected to China's tax policy regarding scrap metal recyclers – the expectation is that China will very soon re-impose a 17% value added tax on these recyclers, which would certainly reduce volumes of imported copper scrap. China imported 5.6 Mt of scrap copper in 2007, 13% more year-on-year. Lower volumes of imported scrap could help prop up refined metal prices, as Chinese smelters had been intending to use more scrap to compensate for lower treatment fees for processing copper ore into refined metal. On top of which the global refined copper supply-demand balance is inching towards a small surplus this year, a move that stuttered into life in July/August last year. In its December bulletin, the International Copper Study Group (ICSG) estimated there was a global deficit of 265,000t between January-September in 2007, compared with a surplus of 21,000t in the same period in 2006. Within that overall picture the ICSG estimated a deficit of 57,000t in June, falling to a deficit of 20,000t in July, with a surplus of 53,000t in August and one of 26,000t in September.

### Outlook

**If the US avoids recession then the price could well rally back above \$7,000/t in Q1 2008; but the threat to copper prices from an American recession should not be underestimated. In the last US recession, in 2001, the copper price slumped by 40%. History never repeats itself exactly but an outright slump in the US would certainly dent investor enthusiasm for copper (as well as actual copper consumption). A further complication is that China's refined copper imports – probably very close to 100,000t/month currently – are unlikely to repeat the surge we saw in 1H 2007, even with the removal in January of a 2% tax on refined copper imports. A very uncertain first quarter is likely, which may keep prices bouncing around. LME 3-month short-term: \$6,900/t-\$7,200/t.**

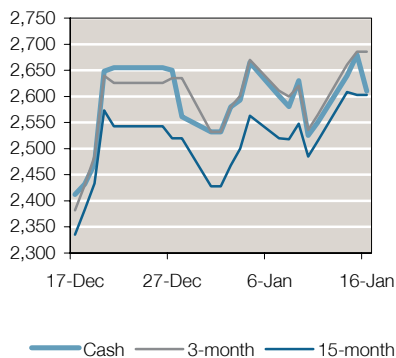
Market data (December unless stated)

Prices (\$/t)	Cash	3-month	15-month	27-month	Stocks (tonnes)	Contracts			LME Open Interest (contracts)		
						LME	SHFE	SHFE traded (average)			
Average	6,594	6,659	6,651	6,499	Nov-07	189,500	56,931	Nov-07	209,029	Copper	249,459
High	6,871	6,925	6,915	6,755	Dec-07	198,925	34,438	Dec-07	289,828		
Low	6,273	6,335	6,355	6,245							

Source: London Metal Exchange

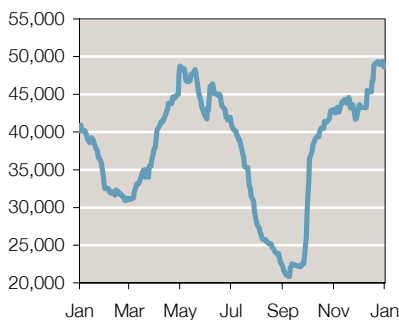
## Lead

Lead price (\$/tonne)



Source: Reuters Ecowin

LME stocks (tonnes)



Source: Virtual Metals from LME

### News

- Jan 17<sup>th</sup>: Western Australia state's environment ministry accepted recommendations that the Canadian-listed mining company Ivernia could resume shipments of lead from the port of Fremantle; about 19,000t of lead have been held up at the port for many months on environmental and health concerns.
- Dec 24<sup>th</sup>: China's total unwrought lead exports for the first 11 months of 2007 were 244,517t, more than 50% lower than for the same period of 2006, while its unwrought lead imports over the same period were slightly more than 40,000t, a fall of 21% year-on-year, according to customs data.

### Analysis

- Weaker prices but China's smelters take a breather

Both lead and zinc prices have been softening again amid fears that demand will slow in the year ahead on lowered expectations for global growth. However, the sell-off in lead was less sharp than might have been, following news in mid-December that several refiners in the Chinese city of Gejiu had temporarily suspended a total of more than 400,000t of lead refining capacity. There were also reports that refiners in Yunnan planned to take another 200,000t of lead smelting capacity off-line. The suspended capacity at Gejiu may resume operations until near the end of Q1 2008, helping prop up the price. The International Lead and Zinc Study Group (ILZSG) calculated mid-January that the global refined lead market was in a 77,000t deficit between January-November 2007, with producer stocks in Western world markets at 109,000t in November, against 124,000t at the end of 2006.

### Outlook

**The 3-month contract for lead lost \$440/t in December, settling at \$2,530/t at its end. Although lead prices have crumbled since their peak in 2007 of \$3,880/t, the fundamentals of the market have shifted less markedly in favour of increased supply than this almost 40% decline implies. Certainly much of last year's supply-side disruption has evaporated – Australia's lead shipments have recovered markedly – but refined lead exports from China have yet to recover the levels seen before last June's surprise 10% export tax. The price collapse demonstrates rather the extent to which the price had been artificially supported by investment interest. Now the ground is to some extent cleared and we can get a better picture of lead's fair value.**

**This year will still largely be a China story for lead – the degree to which the country's soaring domestic demand for lead-acid batteries plays against depressed volumes of its refined lead exports will be the main driver of the price direction. At the moment we see lead continuing to trade at levels significantly above its historic average, although with much reduced volatility. LME 3-month short-term: \$2,500/t-\$2,600/t.**

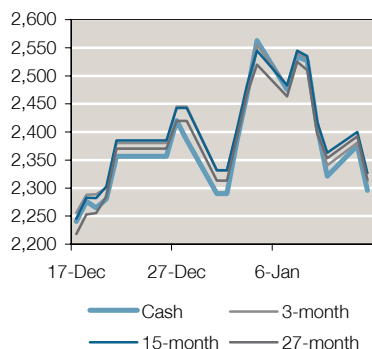
### Market data (December unless stated)

Prices (\$/t)	Cash	3-month	15-month	LME stocks	Lead	LME Open Interest (contracts)
Average	2,604	2,599	2,526	Nov-07	44,350	Lead 66,501
High	2,991	2,971	2,862	Dec-07	45,350	
Low	2,412	2,382	2,335			

Source: London Metal Exchange

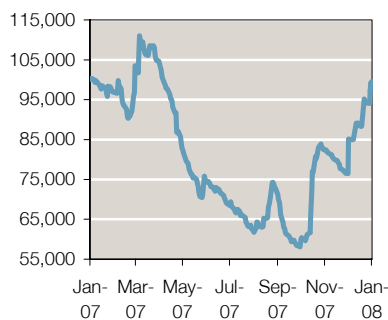
## Zinc

Zinc price (\$/tonne)



Source: London Metal Exchange

LME stocks (tonnes)



Source: Reuters Ecowin

### News

- Jan 8<sup>th</sup>: Australia's CBH Resources reported that it mined more zinc but less lead from its Endeavor mine in Q4 2007 vs. Q3, due to changed ore grades. Its zinc metal production rose 6.8% to 12,400t, while that of lead fell 5.1% to 5,500t.
- Dec 24<sup>th</sup>: Chinese exports of unwrought zinc for the first 11 months of 2007 were 263,900t, up 7.9% year-on-year, while its imports were 144,660t, down almost 47% year-on-year.

### Analysis

- China disappoints lingering zinc bulls

The pre-Christmas speculation that the Chinese authorities would impose from 1<sup>st</sup> January an export tax on super-high grade zinc (known as number zero grade in China), the most popular type in international markets, was thwarted. Not only was no export tax announced but the 5% tax rebate on exports of super-high grade was maintained. Beijing did however slap a 5% tax on exports of unwrought refined zinc with purity of less than 99.995%, known as high-grade zinc (and as number one grade in China), and a 15% export tax on zinc with purity of less than 99.99% (known as number two to five grades within China). Hopes that zinc prices might avoid crumbling still further were largely posited on China charging export duties on super-high grade – without that there is a good prospect of even greater volumes of Chinese exports this year. There's still some doubt about that - Chinese zinc smelters are still worried that Beijing may yet change the tax regime.

### Outlook

Zinc's LME 3-month zinc contract shed almost \$230/t during December, ending the month at \$2,330/t. There are strong indications that 2007's global refined zinc market will end up showing a relatively small deficit. Latest (mid-January) estimates from the International Lead and Zinc Study Group (ILZSG) calculate that the global refined zinc market was in a deficit of 35,000t between January-November 2007; this was 16,000t smaller than the deficit the ILZSG estimated for the first ten months of 2007. If the December figure shows a similar shrinking of the deficit then overall 2007 will register a 19,000t deficit, a relatively trivial volume given that world refined zinc output is running at some 105 Mt a year. Producer stocks, according to the ILZSG, were 353,000t at the end of November, 21,000t higher than at the end of 2006, while commercial stocks (Western producers, consumers, merchants and LME) were 552,600t by the same date, 4,600t more than at the end of 2006.

What these figures suggest is a trend of a gradual return to surplus in Q1 2008, widening as the year goes on. That prospect may be overturned if the Chinese authorities do decide to slap an export tax on their super high-grade zinc exports, and this would undoubtedly see a slump in those exports. This uncertainty will help keep the market on its toes and may prevent prices from suffering a rapid slump. LME 3-month short-term: \$2,100/t-\$2,300/t.

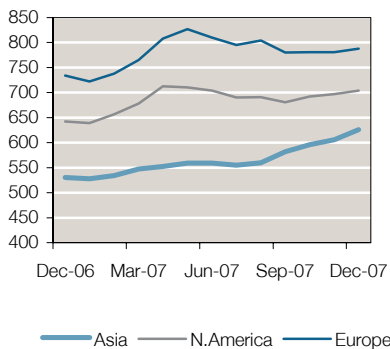
Market data (December unless stated)

Prices (\$/t)	Cash	3-month	15-month	27-month	LME stocks	Zinc	LME Open Interest (contracts)
Average	2,604	2,374	2,361	2,336	Nov-07	79,750	Zinc 182,207
High	2,991	2,560	2,528	2,493	Dec-07	88,475	
Low	2,412	2,256	2,245	2,218			

Source: London Metal Exchange

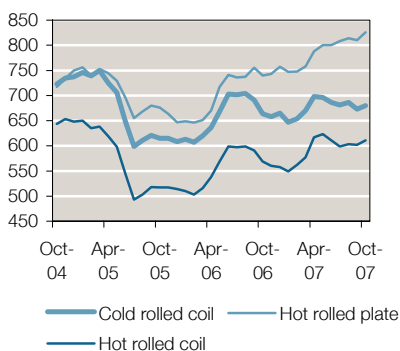
## Steel

### Composite steel price (\$/tonne)



Source: London Metal Exchange

### Steel products, world prices (\$/tonne)



Source: MEPS, Reuters Ecwin

Note: "World" is average of Asia, N. America, and Europe

### News

- Jan 10<sup>th</sup>: Germany's crude steel production in 2007 hit a record high since the country was reunified at 48.55 Mt, a 2.8% rise year-on-year.
- Jan 9<sup>th</sup>: Martin Abbott, CEO of the London Metal Exchange, said the exchange is on track to launch a trial run of its steel futures contracts in February, with a full-blown official launch on 28<sup>th</sup> April this year.
- Dec 27<sup>th</sup>: India's steel production in its financial year up to the end of March 2008 would be some 55.5 Mt, 12% higher, year-on-year, according to the government. The official estimate for the country's annual steel consumption growth is more than 10% over the next five years, with production capacity rising to more than 124 Mt by 2012.
- Dec 26<sup>th</sup>: China announced export tariffs on steel billets would increase by 10%, to 25%, from the start of 2008, while those on some steel products would rise from their current 5%-10% to 15%.

### Analysis

- China puts the squeeze on steel

China's authorities are beginning to tighten the squeeze on its massive steel production industry, partly in response to looming domestic over-supply and partly to fend off threats of anti-dumping cases being brought in the EU and the World Trade Organisation. The country's main economic planning body, the National Reform and Development Commission, said at the end of December that almost 78 Mt of steel and 89 Mt of iron capacity should be eliminated by 2010, the targets for closure being supposedly out-dated plants. There is of course a time lag in this proposal and also a question as to how far provincial government leaders will cooperate with central authorities in this programme. The increased export tariff on steel products will in any case have little noticeable impact on the country's overall steel exports, the vast bulk of which are in the form of crude steel rather than steel products. China's production of crude steel in 2007 is estimated by the China Iron and Steel Association to have been 490 Mt, a rise of 16.4% year-on-year, with exports of almost 55 Mt. The Association estimates production in 2008 will total 540 Mt, which given expected rise in domestic consumption could leave as much as 52 Mt available for export.

### Outlook

The allegations that China is "dumping" steel overseas have not disappeared but nor have we jettisoned our view that such complaints from steel producers in North America and the EU owe more to price-war fears than they might like to admit. Certainly the global steel market looks set to enjoy a period of unprecedented growth in consumption, according to the latest estimates from MEPS International, the steel specialist analyst. In early January it forecast that global steel consumption would exceed 1.45bn tonnes/year by 2011, a rise of some 28% against 2006, with two-thirds of the extra growth coming from Asian markets. Consumption growth is expected to be at a much slower pace in industrialised economies – and therein lies the heart of the complaints against China's steel exports.

### Market data (December unless stated)

Prices (\$/t)	Asia Composite	N. America Composite	Europe Composite	World Composite
May-07	596	692	781	690.00
Jun-07	606	697	781	695.00
Jul-07	626	704	788	706.00

Source: MEPS: VM Group

## Quantitative research

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### Quantitative Modelling team

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### PCA background

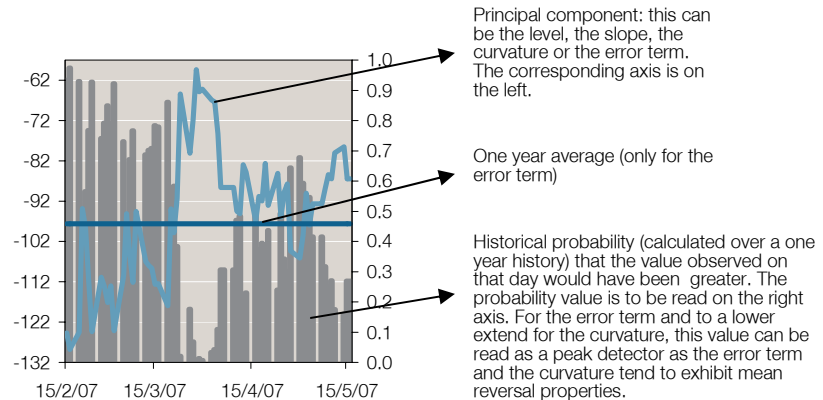
PCA stands for Principal Component Analysis. It is a standard technique used for the study of forward curve dynamics. At any point in time, a future curve can be represented by three values known as the level, the slope and the curvature. Each of these values have a physical meaning. A variation of the 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.

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### Demonstration of PCA graph



Source: Fortis Modelling

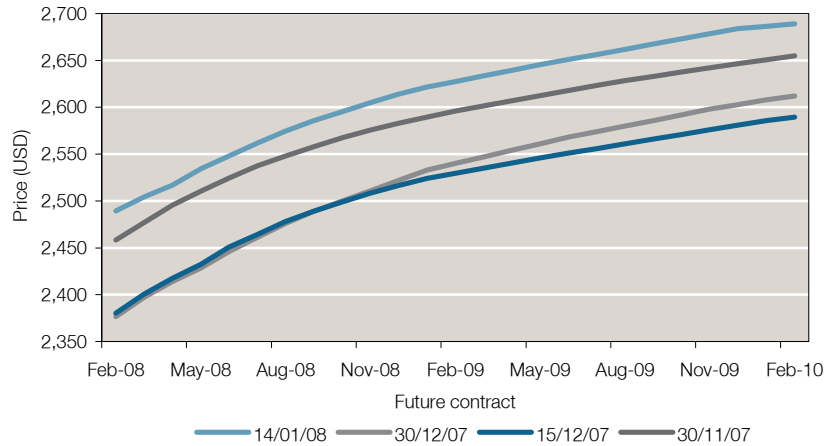
## Aluminium Future curve analysis

### Fundamental outlook

With a slight surplus in the market and LME stock warehouse levels moving little in the short term. However, China's exports of primary aluminium have been falling sharply and there are suspicions that it may be shifting towards becoming a net importer within two years; this belief will help prop up prices and encourage them to rise in 2H 2008 as continued strong Chinese demand becomes more evident.

LME 3-month short-term: \$2,200/t – \$2,400/t.

### Future contract

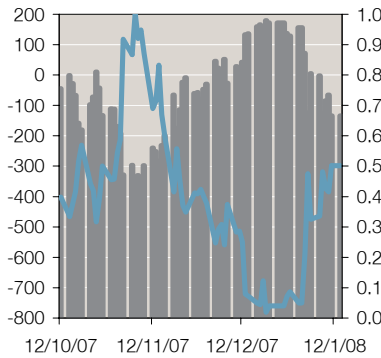


Source: Fortis Modelling, Bloomberg

### Principal component analysis (arbitrary units)

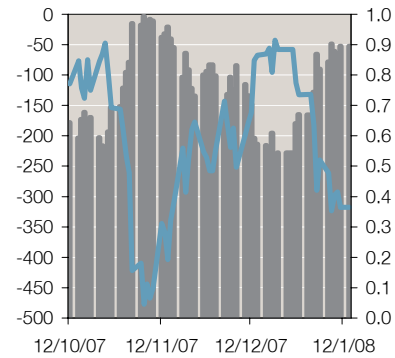
Expansion of aluminium plants and construction of new ones will in the medium term lead to a higher capacity. This should result in a flattening clockwise rotation of the futures curve (quantified as an increase in the slope component).

#### Level (t)



Source: Fortis Modelling

#### Slope (t)

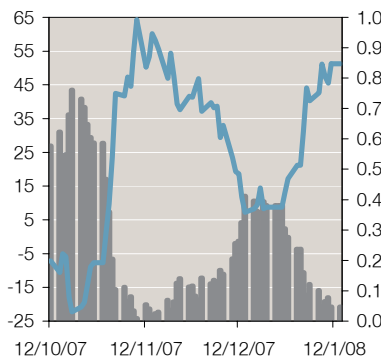


Source: Fortis Modelling

Medium term increase of capacity should change the futures curve structure from its current concave form to a more straight line. As a result of that, the curvature, which is already at a high level, could further increase.

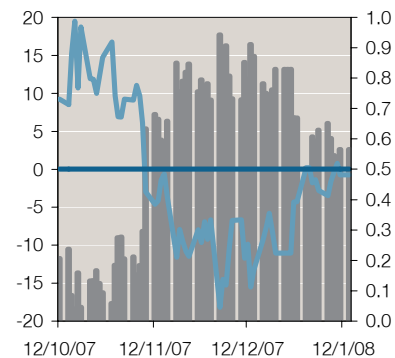
Remember that a concave curve gives a low curvature, a convex curve (like a smile) gives a high curvature.

#### Curvature (t)



Source: Fortis Modelling

#### Error (t)



Source: Fortis Modelling

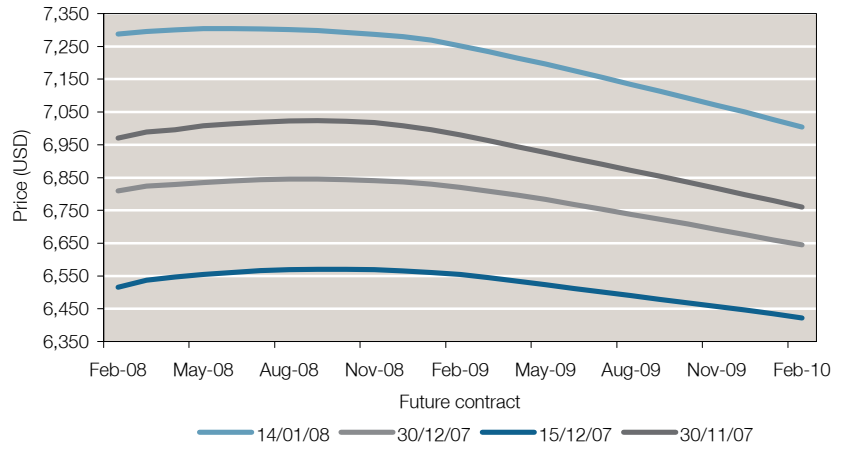
## Copper Future curve analysis

### Fundamental outlook

Higher imports from China may push the metal price up in the short term but any positive sentiment could be dashed by further depressing economic data out of the US.

LME 3-month short-term: \$6,800/t – \$7,200/t.

### Future contract

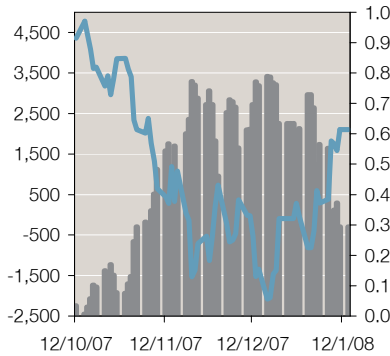


Source: Fortis Modelling, Bloomberg

### Principal component analysis (arbitrary units)

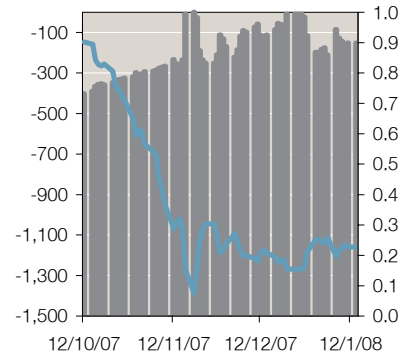
The copper futures curve movement has been mainly level driven, the curve has been moving in a parallel way. The slope component has stayed constant whereas the level component illustrates copper's end-of-year rally.

#### Level (t)



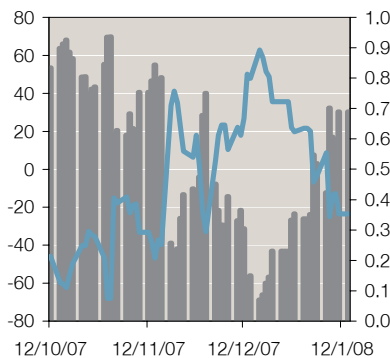
Source: Fortis Modelling

#### Slope (t)



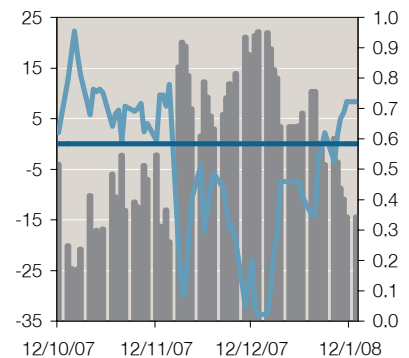
Source: Fortis Modelling

#### Curvature (t)



Source: Fortis Modelling

#### Error (t)



Source: Fortis Modelling

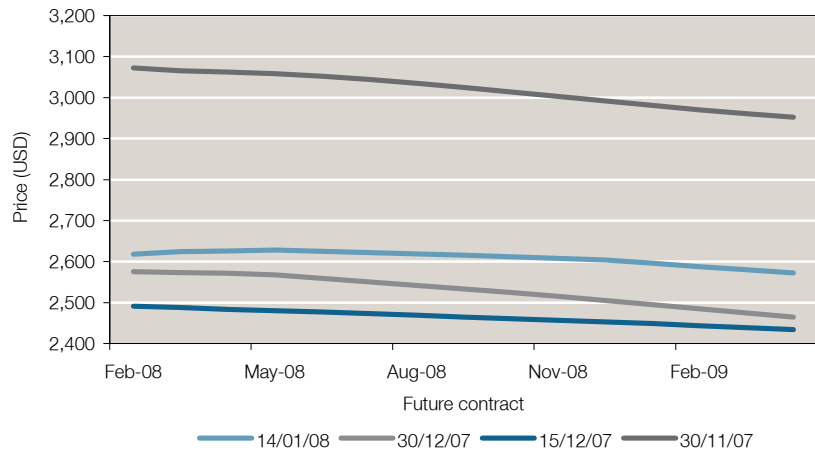
## Lead Future curve analysis

### Fundamental outlook

The lead price has weakened dramatically since the peaks of late 2007, which in part is testimony to the degree to which lead became subject to intense speculative investment interest. However, it remains the case that Chinese exports are running much lower than in the past and some Chinese refiners have suspended output as the cost of importing concentrates has eroded their margins. The reduction in the availability of Chinese refined lead exports, plus the country's own very strong growth in demand for the metal, should help keep the price at or above \$2,000/t this year.

LME 3-month short-term: \$2,500/t – \$2,600/t.

### Future contract

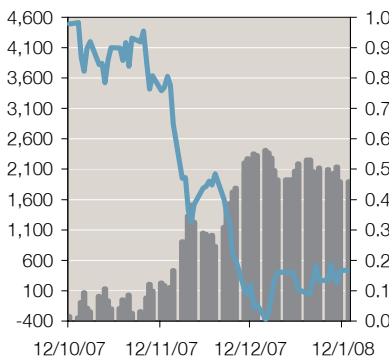


Source: Fortis Modelling, Bloomberg

## Principal component analysis (arbitrary units)

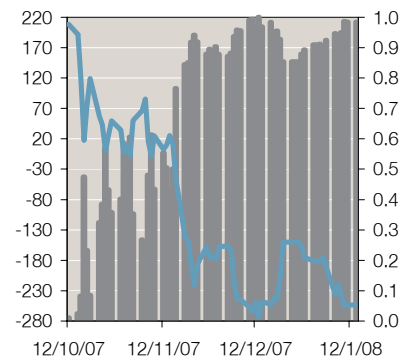
For the past year, lead's slope has been quite stable. In November the tide turned and lead started following the other base metals into contango.

### Level (t)



Source: Fortis Modelling

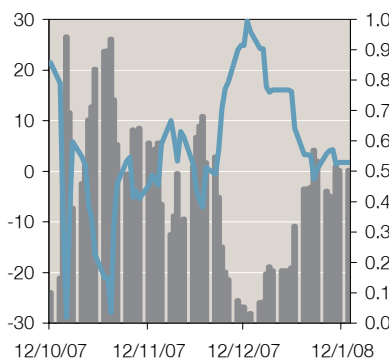
### Slope (t)



Source: Fortis Modelling

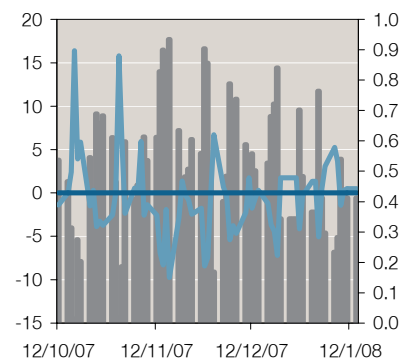
Over a one-year period it can be shown that the curvature signal is stationary, it behaves like white noise with a strong mean reversion. This offers interesting trading opportunities. If the curvature is statistically high or low proper positions can be taken to advantage from the mean reversion.

### Curvature (t)



Source: Fortis Modelling

### Error (t)



Source: Fortis Modelling

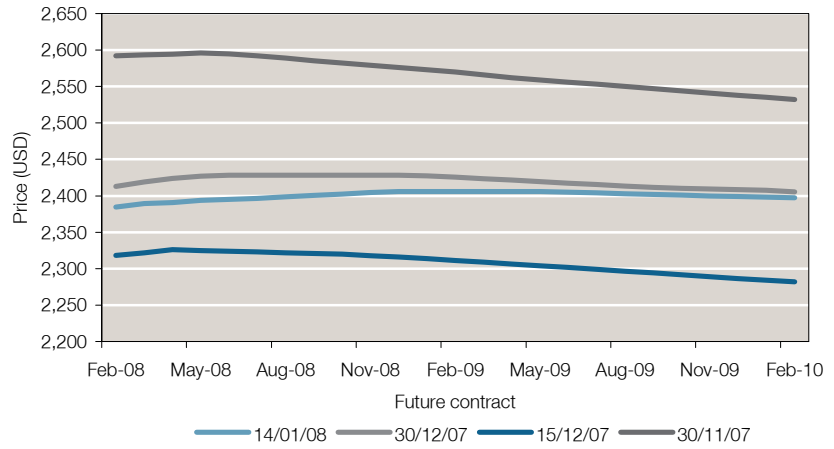
## Zinc Forward curve analysis

### Fundamental outlook

The outlook remains for the global refined zinc market in 2009 to return to significant surplus and this should depress prices further. Zinc bulls had been hoping that China would help their case by imposing export duties on the most internationally traded super-high grade refined zinc from the start of January – but that has not happened. It may do, but until then, Chinese zinc exports will probably continue to keep prices subdued.

LME 3-month short-term: \$2,100/t- \$2,300/t.

### Future contract

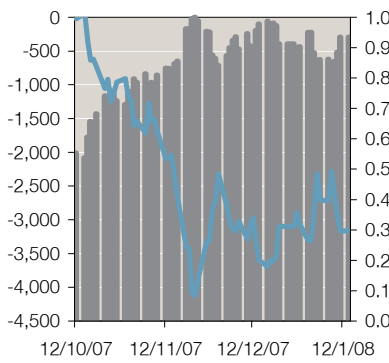


Source: Fortis Modelling, Bloomberg

### Principal component analysis (arbitrary units)

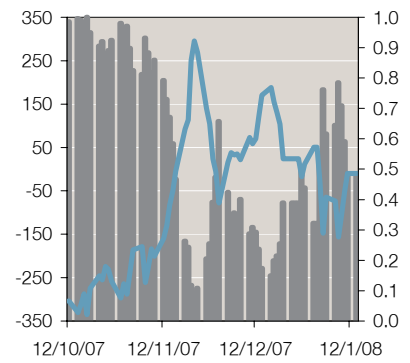
Zinc's futures curve has inverted completely into contango.

#### Level (t)



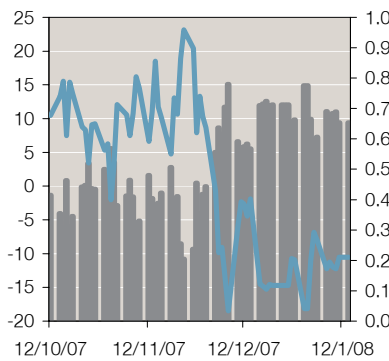
Source: Fortis Modelling

#### Slope (t)



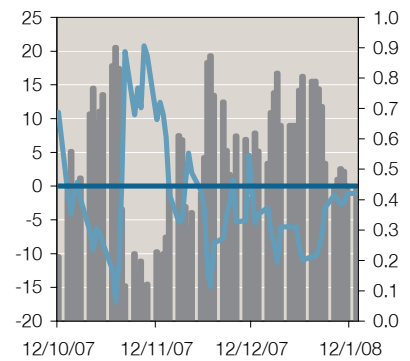
Source: Fortis Modelling

#### Curvature (t)



Source: Fortis Modelling

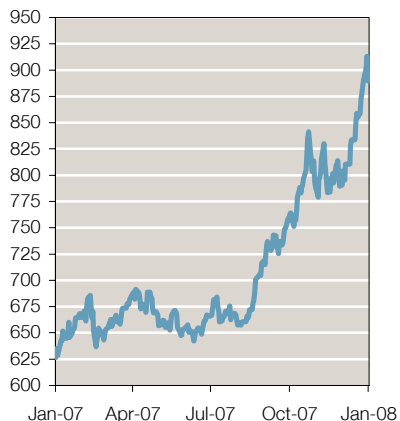
#### Error (t)



Source: Fortis Modelling

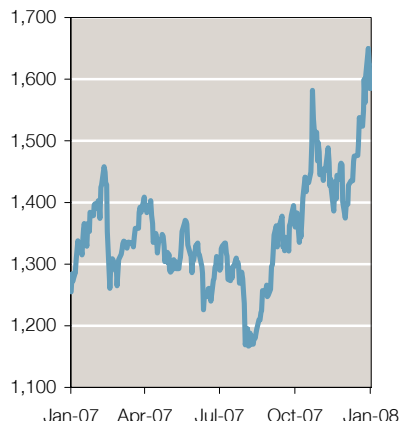
# Prices

**Gold (\$/oz)**



Source: London Bullion Market Association

**Silver (cents/oz)**



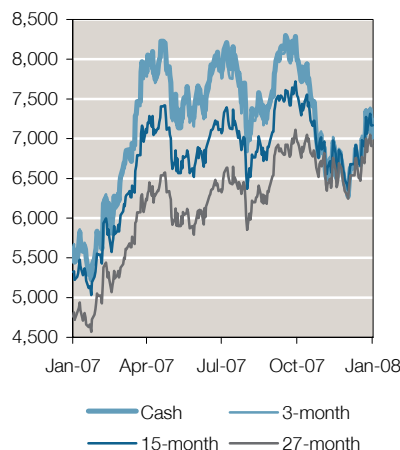
Source: London Bullion Market Association

**Aluminium (\$/tonne)**



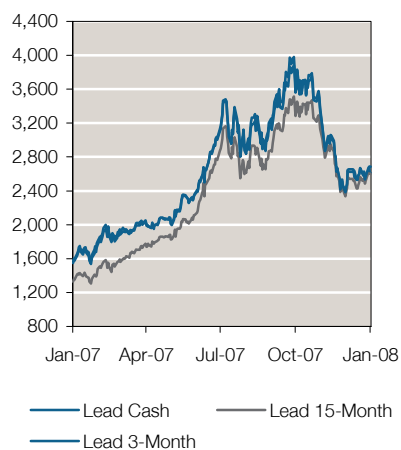
Source: London Metal Exchange

**Copper (\$/tonne)**



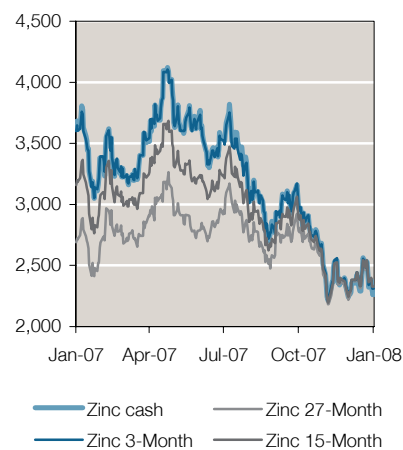
Source: London Metal Exchange

**Lead (\$/tonne)**



Source: London Metal Exchange

**Zinc (\$/tonne)**



Source: London Metal Exchange

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