Fortis Asian metals monthly
September 2007

Gold, silver, aluminium, copper, lead, zinc, 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.
Strategic view

Introduction

The 50 basis points cut in the US Federal Reserve’s headline interest rate gave an immediate boost to some metal prices as investors grew took a more positive view of the flagging US economy, while the Reuters/Jefferies CRB commodity index swiftly rose to almost its highest point in 12 months. More US interest rate cuts before the end of the year cannot be ruled out; clearly the Fed will do whatever it takes to stave off a recession – and the dollar can fend for itself.

Gold

The gold price started to move up in September in anticipation of a US headline interest rate cut – and moved still higher after it happened. The US dollar is looking like it is headed lower, giving additional cause for gold to shift higher. It looks increasingly likely that $800/oz could be here before the end of 2007.

Silver

Silver, too, moved higher after the 18th September US rate cut, but its rate of recovery from the low points of August has been much slower than gold’s – a symptom, we believe, of heightened investor awareness of the current large physical surplus and much greater mine supply just over the horizon.

Aluminium

Becalmed for many months, aluminium stocks in LME and Shanghai Futures Exchange warehouses have been rising, and announcements of production capacity expansions by emerging economy aluminium producers a regular event for most of this year. Any hint of a serious economic slowdown in the US would dent the already under-performing price.

Copper

China’s copper fabricators have helped keep global prices firm, the $1,200/t price premium of mid-September in spot prices over LME prices making imports sufficiently profitable to keep the metal flowing into the country. A potential strike in one of Peru’s biggest producers plus the weaker dollar, counterbalanced by fears of a US recession, will help keep copper suspended at current high levels.

Lead

The rapid decline in China’s refined lead exports – probably less than half in 2007 that of the previous year – has taken over from this year’s early supply disruptions as the main factor maintaining lead’s strong price. The current tight physical balance is likely to tip over into a substantial deficit in early 2008; prices are likely to remain very firm above $3,000/t.

Zinc

All the signs are that 2008 will see a substantial surplus of refined zinc. Against that, China’s rapidly expanding zinc smelting sector – more than 1 Mt of extra capacity coming on-stream over the next 12 months – will soak up a lot of zinc concentrates. We are unlikely to see prices as high as $3,000/t in 2008.

Steel

China’s steel production and exports are both slowing although at an almost imperceptible rate. Steel demand is currently strong but steel could be one of the worst casualties of a US-led global economic slowdown.
# Forecasts

**Prices: London Metal Exchange (base) and London Bullion Market Association fix (precious)**

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<th>End-August</th>
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<th>2-month</th>
<th>3-month</th>
<th>12-month</th>
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<td>720-780</td>
<td>&lt;750 ($r)</td>
<td>&lt;750 ($r)</td>
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<tr>
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<td>12-13 ($r)</td>
<td>13 ($r)</td>
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<tr>
<td>Aluminium (3-month)</td>
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<td>2,200-2,500 ($r)</td>
<td>2,300 ($r)</td>
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<tr>
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<td>3,400 ($r)</td>
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<td>2,800 ($r)</td>
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<td>575 ($r)</td>
<td>550 ($r)</td>
<td>550 ($r)</td>
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*Source: Virtual Metals: (r) revised estimates from previous report*
Analysis

Aluminium – becalmed and adrift

For want of a nail the shoe was lost.
For want of a shoe the horse was lost.
For want of a horse the rider was lost.
For want of a rider the battle was lost.
For want of a battle the kingdom was lost.
And all for the want of a horseshoe nail.

Boeing executives could be forgiven for recalling this childhood nursery rhyme right now. In September, Jim McNerney Boeing’s CEO, implicitly blamed the aluminium behemoth Alcoa for delays in the first flight of its new 787 Dreamliner passenger airliner – apparently there has been a shortage of aluminum and titanium bolts, which are called ‘fasteners’ in the aerospace industry. It’s not only the bolts at fault; there have also been some software glitches. These niggling hold-ups caused Boeing to postpone test flights (planned for September) to mid-November at the earliest. Alcoa is Boeing’s main supplier of bolts for the 787.

Pack a parachute

There may be a shortage of highly specialised aircraft bolts but this features in few other areas of aluminium usage. Quite the reverse, as the metal’s price performance so far this year suggests. Of all the base metals traded on the London Metal Exchange only zinc has fared worse than aluminium. By late September the LME 3-month contract for zinc was down more than 33% since the start of 2007, while that of aluminium had fallen more than 15%. Copper was up almost 20%, nickel down almost 8%, and tin was up more than 30%. The best performer by far has been lead, registering a rise so far this year of almost 90%. Aluminium stocks in LME warehouses have been steadily climbing most of this year and are now at their highest for three years. Some of the biggest producers based in Russia and the Middle East – enjoying the benefits of relatively cheap energy and easily negotiated long-term power supply contracts – are expanding capacity very fast, largely at the cost of European and North American producers, where privatised electricity suppliers have far less freedom of manoeuvre to strike long-term contracts.

The biggest conundrum facing the aluminium market concerns the prospects for China. Ten years from now China will probably produce 50% of the world’s aluminium; it already accounts for more than 30% with production growth so far this year rising by more than 30%, year-on-year. Those who take a benign view of China’s rise to power as an aluminium producer point out that, unlike Russia or the Middle East, China’s aluminium smelters struggle as much as their European counterparts when it comes to securing cheap long-term energy deals. The Chinese authorities have taken steps to rein-in the rapidly expanding aluminium smelting sector, by imposing a 15% export tax on primary metal in late 2006. All that has achieved, however, is to curtail primary metal exports and drive up exports of aluminium products. The benign view also holds that China’s ambition is simply to achieve self-sufficiency, matching its own aluminium production to its consumption needs. That may be the aim of the Chinese political authorities; but the aim of its aluminium producers is that entirely admirable, old-fashioned capitalist one of turning as big a profit as possible. A less optimistic view about the global dominance by China of aluminium production – one that has, it should be added, no sinister overtones – is that in any Darwinian global economic downturn China will suffer the same if not more than any other country. And, in that eventuality, it is unlikely quietly to accept the mass closure of its world-dominating aluminium industry; instead it will do its best to do what it does best – compete at rock-bottom prices. Given the smelting capacity increases now in the pipeline, we may reach that point even without a slide towards global recession.
Focus

Hedge Funds: how important are they?

In the current commodity boom there is much suspicion that the influence of speculative money – in particular hedge funds – has driven prices far higher than would be the case if the underlying fundamentals of physical supply and demand were left to find their own balance. That ignores the point that there has always been scope for speculation in commodities, long before the emergence of hedge funds. Hedge funds have a reputation for secrecy and carelessness with investors’ money, and a few well-publicised, spectacularly huge hedge fund failures have highlighted the worst aspect of hedge fund activity – that their managers can make very gambles and get the bet catastrophically wrong. But the reality of hedge fund behaviour is essentially very simple, a familiar interplay between greed and fear.

The known – and unknown – universes

How many hedge funds are there? How much money do they control? How much of that is invested directly in commodities? How can we tell if that investment shifts commodity prices? Have the ‘real’ prices of commodities become disconnected from their prices on futures markets? Have hedge funds added to or reduced commodity price volatility? What drives their investment decisions? And is there a direct cause-and-effect relationship between the volume of money invested and the price movements of a particular commodity? There are many questions, fewer answers. Any effort to get a grip on the role of speculative investment – gambling by any other name – in commodity price movements is a bit like peering into the universe since the discovery of the Big Bang – the deeper you look, the more complex things become, and the more the known universe melts through your fingers.

There is no systematic regulatory requirement for hedge funds to report on their activity. To that extent, they escape the tight regulatory controls that exist in many parts of the world over, say the banking sector. There are some specialist research agencies that do their best to get a handle on hedge fund activity, but they depend upon the hedge funds to volunteer information. So the known universe of the hedge funds is full of dark matter – we only know about those that choose to reveal themselves. By definition, those that do report their activities are usually the ones doing well; their interest in disclosing information about their investment strategies is normally because they have produced good returns and are looking for more investors. The dark matter hedge funds may be just shyer than the others – or their reticence may stem from a reluctance to disclose that they have done little more than sucked investors’ money into a black hole, from whence it will never reappear.

In our research into this opaque universe we have turned to one of the world’s leading monitors of hedge fund activity, The Barclay Group – nothing to do with Barclays Bank – based in the US. Barclay’s database currently monitors 6,800 active hedge funds, commodity trading advisors and funds of funds. For each fund it has what it calls ‘instrument strategies’, which state what the fund invests in. According to Barclay, these funds have a total of $1.4 trillion assets management (AUM). While AUM in hedge funds is perhaps $1.4 trillion, collective borrowing by the funds, mostly from banks, is perhaps twice that. These examples give rise to the strongest argument against hedge funds – their very high fees, closely tied to performance, encourage them to take big (for which read ‘unnecessary’) risks. Within this universe described by Barclay there are 84 separate ‘instrument strategies’ that are commodity related. Some have different titles but obviously overlap – some describe themselves as investing in ‘bullion’ while others define it as ‘physical bullion’, but both will be investing in gold.

Within this universe of 6,800 different hedge funds, 740, with an estimated AUM of $179.6bn, invest at least some portion into commodities of one sort or
another. The largest single category in the Barclay database is ‘energy’ (469 investments), followed by ‘precious metals’ (362), then ‘grains’ (with 356), ‘base metals’ (303), ‘softs’ (289), 233 in ‘meats’, 88 in undifferentiated ‘commodities’, 18 in ‘agriculturals’, 12 in ‘commodity futures’, 8 in ‘metals’, and 6 in ‘oil and gas’. Only 78 of these 740 funds invest only in commodities; all the rest list at least one non-commodity investment. Only 22 of these 78 depict themselves as just a single commodity-related instrument strategy. So, the hard and fast figure we can identify is that in this known universe there is almost $180bn primarily invested in a commodity or commodity related asset. Thirty of these funds have AUM over $1bn and collectively they account for $108bn of the total AUM. The largest is Bridgewater Pure Alpha, which has $31.4bn in AUM, followed by Integrated Managed Futures and Winton Capital management (with $11.5bn and $9.3bn respectively). The extent to which these funds invest in commodities varies: for Bridgewater it is just 2% in base metals. Integrated Managed Futures has much more exposure, of 20% in grains, 16% in softs, 16% in energy, 8% in meats, 4% in base metals, and 4% in precious metals.

This percentage share that each instrument strategy is allocated is a useful guide not just to the appetite an individual hedge fund has for a particular commodity, but also to how such hedge funds perceive the relative importance a commodity has. Our estimate is that of the $179.6bn of AUM, $32bn is in commodities, $94.9bn in non-commodities, and $53bn unknown. Thus the commodity share of the hedge funds that list commodity investments is between 17.8%-25% of AUM. Of all 6,800 hedge funds reporting to Barclay, the total AUM of $1.4 trillion invested purely in commodities is therefore just 1.3%. Almost a third of the AUM invested by these funds is in energy, almost 14% in base metals, and 9% in precious metals.

This snapshot of the known universe of hedge fund investment in commodities needs to be added to the much wider investment in commodities via individuals, banks, pension funds or funds that track commodity-related indices such as the S&P GSCI or the Reuters/Jefferies CRB index. The AUM in these is vast; simply in the mainly passive, long-only commodity index funds there is some $120bn. The basket of commodities these passive funds invest in changes much more slowly; generally the blend of different commodities (more energy, less metals, for example) these funds invest in is only readjusted annually. The hedge funds, on the other hand, have a much more active style and will take both long (buying) and short (selling) positions, making adjustments often day-by-day or even hourly.
Your money or your life

These “highwaymen of the global economy” (as the former Prime Minister of Malaysia, Mahathir Mohamad, once described hedge funds) have come in for considerable criticism for the opacity of their operations. Beyond the reach of interfering government control, they resist easy definition. The term ‘hedge fund’ originates from the 1950s, when it was invented to describe collective investment vehicles that mainly specialised in two investment techniques, short-selling and leveraged buying. These early hedge funds would typically short-sell a basket of stocks as protection against a general fall in equities, and simultaneously buy on borrowed money (the leverage) to buy equities that they considered to be under-valued. This hedging of positions to benefit from whichever way the market moved gave rise to the term ‘hedge funds’.

Things have moved very far since then. The contemporary hedge fund deals in every conceivable asset and there are as many types of hedge fund and strategies as assets. They share some characteristics. They typically require investors to make a substantial upfront investment (less than $1m would probably be spurned by most hedge funds); they impose a 2% management fee; they usually take 20% of any profit they make; they frequently lock in investors for two years, imposing a fee of between 1%-3% for early redemption; and very few of them use the fundamental supply-demand balance in a commodity to make an investment decision. Most have a trading strategy based on a ‘black box’ – using a sophisticated, mathematically based software system, which means that most are trend followers. In principle, this last point should mean that hedge fund activity should add to price volatility.

Another feature of hedge funds is that we rarely get to hear of those that have failed. In the Barclay database, for example, there are 5,300 inactive hedge funds, which have ceased business – almost as many as active funds. In the words of one hedge fund manager, “the rate of attrition is worse than that of New York restaurants.” Occasionally, the collapse of a hedge fund is so big that it breaks into the mainstream business media. The most spectacular recent hedge fund collapse was that of Amaranth Advisors, a Greenwich, US-based hedge fund which lost more than $6bn in a few weeks in the autumn of 2006, essentially because a single trader gambled on natural gas prices moving higher, when in actuality they dropped dramatically. The bet was wrong and Amaranth (and its investors) paid a heavy price. The most famous recent near-collapse of a hedge fund was in 1998, when Long Term Capital Management (LTCM), based in the US, was rescued by the US Federal Reserve, which stepped in to prevent what it feared might become a systemic collapse in the banking world. Alan Greenspan, former chairman of the US Federal Reserve, wrote recently that LTCM was leveraged up to 35 times its underlying assets.

These seem like strong disincentives to place hard-won cash in the hands of what are essentially gamblers, albeit gamblers who pride themselves on the sophistication of their trading software. Yet as one hedge fund manager puts it, the dramatic growth in the number of hedge funds in the past decade “is almost entirely a function of the low interest rate environment. Rich people are as risk averse as anyone but when the real interest rates on long term bonds have fallen from above 9% in 1994 to about 1.5% in 2006, then they look for better returns elsewhere. Hedge funds are a natural place for them to take a punt with a small part of their wealth.”

A hot August

The meltdown of the derivatives trade in American sub-prime mortgage lending this past August has reverberated around the world. It has created a semi-paralysis in the wholesale inter-bank lending market and produced the unthinkable, queues of anxious small depositors outside the branch offices of Northern Rock, one of the UK’s leading mortgage providers. Inevitably it has had an impact on hedge funds. According to Barclay on 13th September, 74% of the more than 2,600 hedge funds that have so far reported an August return
turned in a loss for August, bringing to an end 13 months of successive gains. Yet this barely dents an overall return which, so far this year according to Hedge Fund Research, another research firm which monitors hedge fund performance, has averaged 8.3% up to the end of August. Naturally, those hedge funds that have seen much poorer returns or even losses will be reluctant to admit it – too many of their investors might call for their money back (or what’s left of it). We may never know the precise extent of the damage wreaked on hedge funds by the August financial crunch – those hedge funds that have done badly will not seek publicity and their investors will not wish to either. The most heavily leveraged hedge funds are in any case rarely heavily invested in commodities but instead in collateralised debt obligations or CDOs, precisely the kind of financial instrument that ultimately are related to mortgage loans of the sub-prime kind that sparked the hot August. The more traditional, equity long/short hedge funds, which dominate Asia-Pacific’s hedge fund sector, are unlikely to be as badly affected.

As far as metals – base and precious – are concerned, the hedge fund industry is clearly important, but it is impossible to know for sure to what extent its activities have so far determined prices. There may be as much as $20bn AUM directly invested in metals by hedge funds - $10bn of direct investment and another $10bn leveraged borrowing – but there is too much dark matter in the universe of hedge fund activity to be certain precisely what influence this scale of investment has. For one thing, it would be naïve to assume that all this investment acts in a concerted fashion; hedge funds will go both long and short and sometimes both in quick succession. The price charts below suggest, prima facie, that there has been considerable speculative interest in, for example, nickel, lead, copper and platinum this year, while that for aluminium suggests otherwise. Yet that would be a false assumption for two reasons. While the first four metals have all seen strong upward spikes, that has as much to do with the particular supply-demand fundamentals of the individual metal as any speculative investment – gamblers after all can only play with the cards they are dealt. And in the case of aluminium, the price of which has been falling, there are again good fundamental supply-demand reasons why that is – and, quite conceivably, there is right now a hedge fund that is shorting the metal. At the same time, the rapid rise in the number of active hedge funds, and the considerable increase in the liquidity they have pumped into commodities, means there are strong inductive reasons to assert that they have played a major part in the metals’ price boom.

But it would be a mistake to demonise hedge funds. Today, they are more closely intertwined than ever before with more established financial institutions, and expectations of annual returns have shrunk. While two decades ago investors looked for high annual returns – up to 50% – and were prepared to ride out the lean years, today the greater presence of established financial institutions in the hedge fund industry means that few investors are happy to accept such volatility; in fact pension funds who have put some portion of their assets into hedge funds are happy to accept much lower returns – 10% or slightly less, the kind of return they could once hope for from long term bonds – in exchange for much less volatility. This kind of increasingly symbiotic relationship between more established, old-school types of investment manager and the brasher world of hedge funds acts as a brake on the wilder risk-taking hedge funds once specialised in. One hedge fund manager told us: “Investors [in hedge funds] are all over us like a rash – daily calls, endless meetings, etc etc. Funds can’t hide anything much from their investors about what they are doing.” That may be true – but currently we only have the word of the hedge funds. Until financial regulators sponsored by governments decide that it is high time hedge funds were forced to report their positions in detail, this kind of opacity will remain. Meanwhile, all we can do is keep peering into outer space to watch for some more stellar explosions, mindful of the fact that when a metal falls or rises (as did nickel on the London Metal Exchange on 19th September) by more than 10%
in a single day, it has little to do with supply-demand questions, but a lot to do with a fund manager pressing a few buttons.
Gold

News

- Sept 11th: The China Securities Regulatory Commission approved the trading of gold futures on the Shanghai Futures Exchange. The exchange will start trading gold futures “in the near future”.
- Aug 30th: Chinese gold production rose 15% to 145t in the first seven months of this year, the fastest pace in a decade.
- Aug 27th: Harmony gold said fiscal fourth-quarter production fell 9% to 527,141 oz. Prior to this Bernard Swanepoel stepped down as CEO.
- Aug. 3rd: Newmont reported a Q2 loss of $2.06bn as it cancelled hedging contracts; it said its gold sales fell 9.8% to 1.25 Moz.

Analysis

- Credit crunch woes push gold higher

Spot and futures’ gold prices have risen quite strongly above $700/oz since our report in August, primarily as a consequence of reinvigorated investor appetite. When all else fails – turn to gold; at least, that’s what seems to be happening. The US dollar is weak and if – as widely expected – the US Federal Reserve has now entered a period of moderate cuts in headline interest rates then gold is almost bound to rise still further, as the dollar gets weaker still. The weaker dollar has made gold more attractive in other currencies which have remained relatively firm against it, notably the Indian rupee, where there are indications of stronger physical buying. The surge in the gold price has been boosted by the widely expected 25 basis point cut in the Federal Reserve’s benchmark interest rate, from 5.25% to 5%. With crude oil prices also once more at record highs – above $81/barrel by 18th September – there are fresh worries about rising inflation, which also benefits gold.

Outlook

In the week ending 11th September non-commercial investors in gold on Comex increased their net long positions by 31% compared to the previous week; the net long positions have now risen three successive weeks and quite substantially. Gold last reached $730/oz in May 2006 and the strong rise in September suggests there is considerable momentum to support gold above $750/oz at some point before the end of the year. The gold-backed ETFs have also attracted more investors, the market-leading US StreetTRACKS product adding 51.5t out of the total 53 put on in the second week of September. Total holdings in gold ETFs now amount to 733t, 59t more than held by investors in gold futures on Comex and Tocom. Yet from another perspective, the gold price should probably be higher than it is, given the scale of the crisis in the US credit market. In any case we expect further headline interest rate cuts by the Federal Reserve – certainly the White House will be anxious to avert an outright economic recession in the run-up to the Presidential election in November 2008. Further rate cuts will soften the dollar yet further – and should spell even higher gold prices. Short-term London daily pm fix: $720/oz-$780/oz.

Market data (August unless stated)

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

News

- Sept 18th: Hochschild reiterated its aim of becoming the world’s biggest silver producer by 2011 with 50 Moz/year. In August its first silver mine in Argentina, the San José operation, was reported by a partner in the project as incurring start-up costs of $94.1m, a fifth more than expected, because of construction delays.
- Aug 31st: Mexican silver output in June rose 24.8% to 225,580 kg compared with the same month a year earlier.
- Aug 21st: Poland’s KGHM raised its forecast for the amount of silver it expects to produce this year to 1,148t from an earlier estimate of 1,125t.
- Aug 17th: Pan American Silver said an earthquake in Peru caused it to temporarily suspend some production for safety checks.
- Aug 8th: Coeur d’Alene, the largest US silver producer, said second quarter production fell 5.6% to 3 Moz.

Analysis

- Loses out on the recovery

Silver, like most commodities in August, was a casualty of the global equity and debt market fallout; it plunged to a ten-month low as investors liquidated assets to raise cash. After touching a low of $11.67/oz, the metal rose to $11.95/oz as of 31st of August, that’s still well short of the $12.77/oz at which it started August. Based on the London fix the precious metal’s price fell 7.6% in August and while it has since recovered, it has been overshadowed by gold. The US Federal Reserve’s decision to cut its discount rate by 50 basis points in a bid to calm markets provided some support but silver has fallen far behind where it probably should be, if it were truly tracking gold.

Outlook

By the week ending 11th September silver investment both on Comex and in the Barclays Global Investors ETF was looking very fragile. During that week the silver price rose $0.48/oz to $12.57/oz, but investment interest flagged – investment on Comex rose by 169t to 4,511t, while the ETF added 29t, totalling 4,325t. The point to consider about silver is that when gold was last above $700/oz, in May 2006, silver was almost $15/oz. The fact that with gold again above $700/oz silver is more than $2/oz shy of that, suggests either that this is a great buying opportunity – or that some potential investors are concerned about the metal’s very poor fundamental prospects. Global silver supply in the past five years has been about 27,000t/year and the rapid expansion of zinc, lead and silver output should see this rise to more than 30,000/t year by the end of the current decade. We estimated earlier this year that 2007 would see a global surplus of 5,636t, allowing for an offtake of 2,000t into the silver ETF and following an ETF offtake of 3,768t in 2006. If anything, we were too generous – by almost 1,500t. The surplus this year might tip over into 6,000t-plus. London daily fix short-term: $12/oz-$13/oz.

Market data (August unless stated)

<table>
<thead>
<tr>
<th>Prices</th>
<th>c/oz</th>
<th>Yuan/kg</th>
<th>Yen/gr</th>
<th>Imports</th>
<th>kg</th>
<th>Lease rates</th>
<th>1m</th>
<th>3m</th>
<th>6m</th>
<th>12m</th>
<th>Option volatility (end month, %)</th>
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<tbody>
<tr>
<td>Average</td>
<td>1,240.4</td>
<td>3,022</td>
<td>47 USA (Jun)</td>
<td>450,869</td>
<td>Average</td>
<td>0.67</td>
<td>0.19</td>
<td>0.35</td>
<td>0.49</td>
<td>1-month: 21.00</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>1,310.0</td>
<td>3,185</td>
<td>50 Japan (Jul)</td>
<td>329,649</td>
<td>High</td>
<td>0.21</td>
<td>0.30</td>
<td>0.42</td>
<td>0.59</td>
<td>3-month: 21.50</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1,167.0</td>
<td>2,844</td>
<td>43 China (Jul)</td>
<td>435,791</td>
<td>Low</td>
<td>0.05</td>
<td>0.10</td>
<td>0.27</td>
<td>0.34</td>
<td>6-month: 24.75</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12-month: 25.00</td>
</tr>
</tbody>
</table>

Aluminium

News
- Sept 11th: China’s imports of unwrought aluminium, including primary metal, alloy and products, were 75,883t in August compared to 79,727t in July; its imports of aluminium scrap rose substantially however, to 201,099t against 115,784t in July. China exported 54,271t of primary aluminium and aluminium alloy in August, against 40,938t in July.
- Aug 29th: United Company Rusal plans to increase its primary aluminium production by 65% within five years, implying annual production of 6.6 Mt by 2012.

Analysis
- LME stocks rise, lower prices likely

Low international prices for primary aluminium are likely to see China’s primary metal imports rise in September, as Chinese fabricators buy more relatively cheaper, duty-free imported metal to make aluminium products for export. Fabricators in Guangdong have recently been increasing their imports of spot primary aluminium for the first time in about two years; this trend could be in place for the rest of this year, while weak world prices may lower still further China’s (already falling) exports of aluminium in September. Chinese output of aluminium products may exceed 10 Mt this year. Spot alumina prices in China have been recovering, although China’s alumina production in the first seven months of 2007 have risen substantially, by 55% (year-on-year) to 11.1 Mt, largely on the back of dramatically increased bauxite imports, up 158% in the same period to 12.5 Mt.

Outlook
Stocks of aluminium in LME warehouses have now risen above 900,000t, the highest level in more than three years, while in Shanghai they are more than 60,000t, 22% higher than the start of August. In one sense this is not very much metal, less than two weeks’ global consumption at current rates. But the upward trend is more significant and indicates a market which has no supply worries – which has served to depress the price, under $2,400/t (LME 3-month) as of 18th September. Aluminium is very exposed to any economic slowdown in the US and an American slowdown will have serious consequences for all. Consumer spending in the US is surprisingly resilient but American homeowners now facing serious mortgage problems will be forced to tighten their belts and could find it difficult to bounce back rapidly. This will have a knock-on effect on demand for all metals but perhaps most of all aluminium, used in a wide variety of consumer goods. It is estimated that more than 10% of aluminium products consumed in the US are now imported from China; a serious economic downturn in the US would be felt among China’s aluminium products’ exporters. With strongly rising production capacity in the Middle East, Russia and China, and weaker demand for primary aluminium and aluminium products, the outlook is for primary aluminium prices to weaken in the course of Q4 2007. LME 3-month contract short-term: $2,200/t-$2,500/t.
Copper

News

- Sept 17th: Total Chinese refined copper production between January-August rose 16% year-on-year to 2.17 Mt. China’s copper concentrate imports between January-August rose 36% year-on-year, to 3.19 Mt, according to customs import figures.
- Sept 16th: The Chinese mining company Zijin had a setback in its plans to open a large copper mine in Peru; residents of three towns in the vicinity of the planned $1.4bn Rio Blanco copper project voted against the project going ahead. The mine is nevertheless likely to go ahead as it has the backing of Peru’s federal government.
- Sept 14th: Codelco, the world’s largest copper miner, is scheduled to begin refined copper production March 2008. Its output in 2009 will now be 165,000t, 10% more than first forecast. In 2006 Codelco produced 1.676 Mt of copper, nearly a third of Chile’s national output.
- Sept 11th: China’s imports of unwrought copper and semi-finished copper products in the first eight months of 2007 rose 42.7% to 1.913 Mt, compared to the same period last year.

Analysis

- Copper stays firm

The copper price has remained very firm amid a sea of contradictory macro economic data. While threats of a US slowdown (in the wake of the credit squeeze currently gripping financial markets) should push the price lower, expectations of a cut in headline interest rates by the US Federal Reserve (and a consequent further weakness of the US currency) have helped prevent a fall. In the US there have been clear signs of a wider economic slowdown – retail sales (minus cars and automotive parts) in August fell 0.4%, the worst decline since September 2006. Payrolls for US non-farm jobs fell in August for the first time in four years. By 12th September Shanghai copper prices were still very firm, the most heavily traded November contract rising 1.1% to 65,570 yuan ($8,717) a tonne by midday. Copper inventories in LME warehouses have risen some 40% since the middle of the year and remain well above the low point in July, of 98,625t. By 20th September the LME 3-month price closed at $7,890/t

Outlook

Those who think the copper price is going higher in the short-term can point to the latest estimates from the International Copper Study Group (ICSG), which said late September that 1H 2007 saw a global refined copper deficit of 131,000t against a surplus of 208,000t for the same time last year, and threatened industrial action in October that could interrupt production at Peru’s Southern Copper, whose Cuajone and Toquepala mines’ combined output is 370,000t/year. Those who think it is headed lower can point to a declining trend in Chinese refined copper imports and fears of a US recession. Such contradictory news should see copper trade sideways at a high level for the near future. LME 3-month short-term: <$7,500/t

Market data (August unless stated)

<table>
<thead>
<tr>
<th>Prices ($/t)</th>
<th>Cash</th>
<th>3-month</th>
<th>15-month</th>
<th>27-month</th>
<th>Stocks (tonnes)</th>
<th>LME</th>
<th>SHFE</th>
<th>SHFE</th>
<th>Contracts traded (average)</th>
<th>LME Open Interest (contracts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>7,501</td>
<td>7,382</td>
<td>6,861</td>
<td>6,268</td>
<td>Jul-07</td>
<td>103,475</td>
<td>90,817</td>
<td>Jul-07</td>
<td>175,276</td>
<td>Copper</td>
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<td>High</td>
<td>8,055</td>
<td>7,910</td>
<td>7,225</td>
<td>6,515</td>
<td>Aug-07</td>
<td>139,100</td>
<td>90,089</td>
<td>Aug-07</td>
<td>135,603</td>
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<tr>
<td>Low</td>
<td>6,960</td>
<td>6,825</td>
<td>6,375</td>
<td>5,855</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: London Metal Exchange
**Lead**

**News**
- Sept 17th: The International Lead and Zinc Study Group (ILZSG) estimated the global refined lead market to have been in a 27,000t deficit between January-July this year, with consumption at 4.828 Mt and output at 4.801 Mt, on a 3.5% rise in global production of refined lead.
- Sept 5th: Doe Run Resources, the world’s second biggest lead refiner, restarted its Heculaneum smelter in Missouri.

**Analysis**
- China’s supply drying up

Exports of refined lead from China have been falling rapidly since the imposition of the 10% export tax at the start of June this year. Its exports of refined lead in July were 15,525t, almost 38% beneath the volume exported in the same month of 2006. In the first seven months of 2007 its refined lead exports have fallen nearly 50%, to 173,141t, with the plunge at its steepest trajectory since early June. If anything, the rate of decline is probably intensifying, as spot prices for refined lead in China have been about $400/t higher than the available export price, giving little incentive for exports. Chinese domestic demand is very strong as more of the global battery market goes China’s way. Lead fared better than most base metals during the August US-led credit crunch and the price is currently up almost 80% since the start of the year on the LME. Lead stocks on the LME are now the lowest since March 1990. Part of the fall in China’s refined lead exports can be explained by lower output. According to the country’s National Bureau of Statistics, China’s national refined lead production in August fell by 1.5% year-on-year to 195,200t, with cumulative production just over 1.757 Mt for the first eight months. Year-on-year growth of 7% is quite strong but less than half of the growth seen in 2006. Higher costs for imported lead concentrates have discouraged Chinese smelters, who have been receiving relatively low treatment charges.

**Outlook**
There are suggestions that the global refined lead market had already entered into deficit by the mid-point of this year, a consequence of previous supply-side disruptions, but the ILZSG suggests otherwise. More pertinent is the fast-declining trend identified by the ILZSG data; as recently as mid-August the ILZSG considered there was a 24,000t surplus between January-June this year, a surplus that had turned into a 27,000t deficit by the end of July (and more than five times bigger than the January-July 2006 deficit). Clearly 2007 is looking to end with a very big overall deficit, largely to do with the precipitous fall in Chinese exports. China has been a supplier of refined lead to the world to the tune of 500,000t/year for some time. Right now it is looking like it will struggle to export half that in 2007 and if those much lower export levels persist into 2008 we could see very much higher prices than currently. The crunch is likely to be worst in more developed economies however; the ILZSG said in September that Western world demand for refined lead was 3.099 Mt during January-July, with a deficit in this category of 258,000t. We consider this deficit is likely to widen in the months ahead. LME 3-month short-term: $3,400/t.

**Market data (July unless stated)**

<table>
<thead>
<tr>
<th>Prices ($/t)</th>
<th>Cash</th>
<th>3-month</th>
<th>15-month</th>
<th>LME stocks</th>
<th>Lead</th>
<th>LME Open Interest (contracts)</th>
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</thead>
<tbody>
<tr>
<td>Average</td>
<td>3,119</td>
<td>3,061</td>
<td>2,799</td>
<td>Jul-07</td>
<td>33,675</td>
<td>66,049</td>
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<td>3,390</td>
<td>3,330</td>
<td>3,030</td>
<td>Aug-07</td>
<td>42,475</td>
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<tr>
<td>Low</td>
<td>2,873</td>
<td>2,800</td>
<td>2,548</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: London Metal Exchange
Zinc

News
• Sept 17th: The International Lead and Zinc Study Group (ILZSG) estimated global refined lead zinc production between January-July to have been 6.553 Mt while consumption was 6.543 Mt, a surplus of 10,000t compared to a 293,000t deficit for the same period in 2006. The previous month the ILZSG had estimated the January-June global balance as showing a refined zinc surplus of 31,000t.

Analysis
• Surplus looks like widening

Although demand for refined zinc has been growing strongly in China and other parts of Asia this year, by perhaps 10% year-on-year, the same is not true of more mature economies. This fundamental aspect of the zinc market is likely to push prices much lower in 2008, as increasingly big new mine supply begins to feed into the market led by the massive San Cristobal silver-lead-zinc mine in Bolivia and operated by Apex Silver Mines, which owns 65% of the venture (the other 35% is owned by Sumitomo Corporation). San Cristobal has already begun producing zinc concentrates and it has almost 4 Mt of proven and probable reserves of zinc in concentrate form. Treatment charges for zinc processing have begun to climb again, to as high as $375/t in China, against less than $20/t in early 2006, clearly reflecting the fact that last year’s zinc concentrate shortages have been eradicated. Strong production growth from new mine projects – San Cristobal is just the biggest of a number – will increase the growing surplus of concentrates and, as with San Cristobal, many of these projects produce zinc as a by-product, silver in the case of San Cristobal. With zinc a mere by-product, new polymetallic mines will not be too troubled about a much lower zinc price. As much as 1 Mt of additional refined zinc may come onto the global market next year, which is bound to weigh on prices, barring untoward events disrupting supply. To a large extent what happens to the international zinc price is contingent on what China has in mind. So far this year China has continued the trend begun late in 2006 – a shift to exporting greater volumes of refined zinc. Its exports of refined metal have risen more than 76% in the first seven months of 2007, compared to the same period in 2006.

Outlook
Zinc prices managed to stay above $3,000/t (LME 3-month contract) in August but slipped marginally in the first days of September. $3,000/t is a level that is clearly unsustainable given the volume of new metal that will gradually make its way to the market from the numerous mine expansions now under way. Zinc has come far from the nadir of 1995, when it slumped as low as almost $1,200/t, rising to $4,500/t in 2006 on a shortage of zinc concentrates. But this sharp rise is about to be met with an equally sharp response. The only real hope for prices not slipping back towards $2,000/t over the next two years is if China becomes such a big producer and exporter of refined zinc that its central authorities impose a similar export duty as that now levied on its primary aluminium and refined lead exports. Meanwhile, the trend should be cautiously lower. LME 3-month short-term: $2,700/t-$3,000/t.

Market data (August unless stated)

<table>
<thead>
<tr>
<th>Prices ($/t)</th>
<th>Cash</th>
<th>3-month</th>
<th>15-month</th>
<th>27-month</th>
<th>LME stocks</th>
<th>Zinc</th>
<th>LME Open Interest (contracts)</th>
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</thead>
<tbody>
<tr>
<td>Average</td>
<td>3,254</td>
<td>3,228</td>
<td>3,033</td>
<td>2,820</td>
<td>Jul-07</td>
<td>66,225</td>
<td>149,325</td>
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<tr>
<td>High</td>
<td>3,590</td>
<td>3,540</td>
<td>3,290</td>
<td>3,000</td>
<td>Aug-07</td>
<td>65,375</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>3,019</td>
<td>3,010</td>
<td>2,842</td>
<td>2,655</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: London Metal Exchange
Steel

News

- Sept 18th: South Korea’s Fair Trade Commission has reportedly initiated an investigation into alleged price-fixing arrangements between some of the country’s steel producers. A report into its findings is due to be published by the end of 2007.
- Sept 11th: More than 60% of Mexico’s steel production was interrupted by sabotage attacks against natural gas pipelines.
- Sept 6th: Posco, South Korea’s leading steel producer, has started building a new steel plant in Mexico, with planned annual capacity of 400,000t, to supply the automotive sector in Mexico and North America. The plant is scheduled to begin production in 2009.

Analysis

- China output slows

Posco, South Korea’s leading steel producer and the world’s fourth biggest, said in September that it expects global steel markets will remain strong throughout 2008, supported by strong demand from shipbuilders and wider economic growth. Posco also considers that nickel prices may have bottomed-out and stainless steel production will pick up in Q4 2007. Posco is expected to increase its prices for steel plate imminently; South Korean shipbuilders have full order books. China’s National Development and Reform Commission (NDRC) said in September it expects to see a slowing of the country’s steel exports in Q4 2007 along with slowing domestic demand, as cuts in value added tax rebates begin to make themselves felt on the first, and tightening credit measures on the second. Despite this the NDRC expects China’s steel production to rise 15% in 2007 (year-on-year) to 490 Mt, while domestic demand will rise 3% more slowly, to 445 Mt. The latest figures from China’s National Bureau of Statistics imply an almost imperceptible slowdown in the country’s steel production – 41.58 Mt of crude steel and 48.27 Mt of steel products in August, against the record 42.12 Mt of crude steel and 49.19 Mt of steel products in June. Fixed asset investment in China is still growing fast, up almost 27% in the January-July period this year against the same in 2006. China’s steel billet exports between January-July this year have risen by 75% (to 3.6 Mt) against the same period in 2006.

Outlook

It might seem a long way from a sub-prime mortgage in the US to steel production, but the collapse of the first is already making itself felt on the second. The Austrian steel producer Voestalpine AG said in September that it had temporarily postponed the placing of two corporate bonds, valued at total of €1.5bn, part of which was to fund a takeover, until the current wider market unsettlement is over. Higher iron ore, coal and transport costs are all in the pipeline and are likely to discourage quite such a rapid expansion of steel production, especially in China; but a more serious threat is the much less tangible one of the current credit crisis feeding a more widespread economic slowdown.

Market data (August unless stated)

| Prices ($/t) | Asia Composite | N. America Composite | Europe Composite | World Composite |
|-------------|----------------|----------------------|------------------|----------------
| Jun-07      | 559            | 704                  | 810              | 691.00         |
| Jul-07      | 555            | 690                  | 795              | 680.00         |
| Aug-07      | 560            | 691                  | 804              | 685.00         |

Source: MEPs, VM Group
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
Quantitative research

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.
Aluminium
Future curve analysis

Fundamental outlook
Some quite distinctive dynamics were observed in aluminium’s future curve movements during the past months.
First there is a significant parallel shift downward quantified by the decrease in level. The level component is mainly driven by the spot price, which decreased sharply from 20th July until 16th August driven by the current risk repricing.
More specific however is the continued counterclockwise rotation of the curve quantified by a remarkable decrease in slope. The slope component is mainly driven by the convenience yield of the metal. The curve flipped from backwardation to contango over the past two months as a price reaction to rising production.

Slope and level are at a historic low. Historically speaking, there is a chance of 90% for the level and almost 100% for the slope to increase. Both components are however driven by fundamental economic outlook, decreased by the current risk aversion and rising aluminium production.
If the risk of overproduction recedes or there is a boost in demand, a position should be taken on the slope (long shorter maturities, short longer maturities).

The curvature has been statistically high now for some time. There is a downward pressure on price in the short and very long maturities. There is no fundamental reason why this strong curvature should hold in the long term.
**Copper**

**Future curve analysis**

**Fundamental outlook**

Just like all metals copper prices dropped steeply during the days before 16th August. Driven by strong fundamentals however it managed to recover during the last weeks of August and into September.

Around 16th August the copper futures curve was on a rollercoaster. Level dropped sharply in synchrony with spot prices. More remarkable however is the peak in slope and curvature showing intense rotation and bending during a one-week period only. This clearly shows the market stress. It is interesting to see how the copper market continues to stay high until 31st July. By then cds spreads reached a historic high (>460bps for the Itraxx Crossover, doubled during the month of July), equities had started to decline sharply and market implied volatilities showed unseen risk aversion. After that it could not hold. The decline until 16th August was triggered across all asset classes.

Copper however showed a remarkable resilience. Hence, it should not be seen as a surprise that copper prices recovered quickly after the correlation clustering across asset classes dissolved.
**Fundamental outlook**

All that glitters is not gold. Well supported by strong supply-demand fundamentals, lead has performed extremely well during the recent months. The small dent that was seen at the shorter maturities during the months of June and July has gone. The lead future curve resembles a straight line with a constant convenience yield over all maturities.

**Lead**

**Future curve analysis**

![Future contract](image)

Source: Fortis Modelling, Bloomberg

**Principal component analysis**

**Level (t)**

![Level (t)](image)

Source: Fortis Modelling

**Slope (t)**

![Slope (t)](image)

Source: Fortis Modelling

**Curvature (t)**

![Curvature (t)](image)

Source: Fortis Modelling

**Error (t)**

![Error (t)](image)

Source: Fortis Modelling
Zinc
Forward curve analysis

Fundamental outlook
Zinc prices have been falling since 24th July. Risk repricing has accelerated this process up to 16th August.

Principal component analysis

After a strong flattening up to the end of July, the zinc curve slope has stabilized during the month of August driven by more positive supply-demand fundamentals. Prices however keep declining as can be seen in the level component.
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<td>Spain (International Sales)</td>
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<tr>
<td>United States</td>
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**Equities Sales**

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<tr>
<td>United States</td>
<td>Francis Grevers</td>
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**Fixed Income/New Issues**

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