Fortis metals monthly
July 2007

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

VM Group
Tel. +44 20 7487 3600
info@vmgroup.co.uk
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Fortis Metals Monthly is an exclusive precious and base metals research joint venture between Fortis Bank SA/NV and Virtual Metals Research and Consulting.
Metals and plastics – Strategic view

Introduction
With the USA Federal Reserve chairman Ben Bernanke judging the country’s inflation level to be within what he called the “comfort zone” there seemed to be less chance of imminent interest rate rises. Most of this year so far has been spent without a clear direction for the US economy, with a variety of contradictory data keeping metals’ markets guessing. China’s trade surplus in June was a fresh record, $26.9bn.

Gold
Newmont’s closing of its hedge book – it bought back 1.85 Moz in June – and the surprise announcement of new sales by the Swiss National Bank helped cap enthusiasm for higher prices in June. The gold-backed ETFs have played their part in helping lift the price above $600/oz – but much more will be needed to reach the magical $700/oz.

Silver
Silver continued to drift in gold’s uncertain wake; we expect a considerable overall market surplus in 2007 to keep a lid on upward price movements.

Platinum
July and August could be testing months for platinum, with a rash of potential wage-related strikes on the cards in South Africa.

Palladium
As with other precious metals, palladium drifted sideways in June. Investor interest in palladium futures on Nymex bounced back, partly on the threat of a possible strike (and interrupted supply) at Stillwater, but given the substantial market surplus the market could cope with even an extended stoppage.

Aluminium
A dull market in June and likely to continue to be so in July.

Copper
Industrial action in Chile and Canada, together with shrinking LME stocks, gave cause to drive prices up in June; but this could go pop quite easily if Chile’s miners roll over. This is still a very volatile market.

Nickel
Nickel investors dumped their long positions in June, forcing the metal to give up all its gains so far this year. More stainless steel producers switching to lower grades is depressing news for nickel bulls – but given the uncertainty of some big nickel projects they may return later this year.

Lead and zinc
Lead prices continued their inexorable rise in June on supply-side concerns, while zinc prices scarcely moved, as investors grappled to comprehend an uncertain outlook for Chinese supply and demand.

Tin
Tin prices eased as tin finally fed through to LME stockpiles after the end of a crackdown on illegal mining in Indonesia. Fresh strikes in Bolivia, which broke out early July, may pep up prices again.

Plastics
The LME’s contracts’ re-launch had little immediate obvious impact on traded volumes. Crude oil prices back up at around $70/barrel should start to feed into plastic production costs in Q3.
## Forecasts

### Price forecasts

<table>
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<tr>
<th>Material</th>
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<th>1-month</th>
<th>2-month</th>
<th>3-month</th>
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### 2-years | 3-years | 4-years | 5-years | 6-years
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<tr>
<td>Zinc (3-month) ($ per tonne)</td>
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<td>1,300</td>
<td>1,200</td>
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<td>1,300</td>
<td>1,200</td>
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<td>1,200</td>
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Source: Virtual Metals
Analysis

LME steels itself
After years of talk, the London Metal Exchange (LME) has finally taken the plunge. It said in June that, as of April 2008, it would offer trades in two steel contracts. By an odd coincidence, the previous front-runner in the steel futures game – the Dubai Gold and Commodities Exchange (DGCX) – also made an announcement in June. It said that it had decided to postpone, briefly, the launch of its own steel futures contract. The DGCX now hopes to launch this by the end of August, but, hedging its bets, says this date is not guaranteed. The LME is proposing to start two contracts in steel billet, used to make rebars, one of the steel world’s basic products – rebars are used primarily to reinforce concrete in the construction industry. One of the LME’s contracts will be for delivery in Dubai, North Africa, Italy and Turkey; the other in Vietnam and South Korea. Dubai’s plans also focus on a contract for billet. There’s clearly a lot of exchange interest in giving birth to steel futures’ contracts; in April the New York Mercantile Exchange (Nymex) said it too was looking into the introduction of steel contracts, perhaps by the end of 2007, and there are also reports that the Shanghai Futures Exchange is considering contracts for billet and steel wire. The LME’s contract will be physically-delivered with initial trading out to 15 months. The exchange says that production of the specification of the billet used in the contract is about 160 Mt/year with much of this already physically traded internationally and with merchants trading about 30 Mt/year.

Heavyweight opponents
But while the exchanges are energetically enthused about their steel plans, some of the customers they need to attract remain unconvinced. Two of the biggest major steel-makers, Arcelor Mittal and ThyssenKrupp, have expressed outright public hostility to the idea of steel futures. One of their concerns is that the contracts could introduce a degree of volatility into the steel price spot market, but the greater worry is that a benchmark price for the contracts may make it much more difficult for them to enforce regional pricing. They maintain that steel, even billet, is not a global commodity, with one set price like base metals. The steel-makers have a point – but probably less than they would like the world to believe. While there certainly are countless grades of steel, often in the form of various alloys, their complaint that input costs vary in different locations, whether it be varying tax, labour or fuel costs, is no different from the production of any other metal.

Steel producers also argue that there is a quality control issue, saying that if steel sits about in warehouses its quality can degenerate. Against that, the LME insists that billet can be stored without damage, and the LME certainly has a good track record of maintaining high quality control over the other commodities it trades. The exchanges also aver that construction companies and re-rollers – end-users of their proposed billet contracts – will be only too glad to have a mechanism that allows them to hedge steel prices. Trading companies and banks are keen to see the introduction of such contracts too, and maintain that, given a fair wind and good support from the exchange, the LME steel contracts should be viable.

A discouraging example
It’s hard to escape the feeling that there is a little bit of ‘me-too’ going on here among the various exchanges that have floated the idea of steel billet futures. There is a temptation that the competing exchanges may do their best to get first-mover advantage – the idea, which has some empirical support, that the first contract launched in a commodity becomes the most dominant and heavily-traded, the benchmark. The risk is that a new steel contract may be launched prematurely, at the cost of actually properly preparing the ground so that all sides in a market are willing to throw their weight behind a new contract.
There is, in the case of the LME and its steel idea, a discouraging precedent, in the form of its plastics contracts. Volumes traded in the two plastics contracts have been disappointing. Since the LME launched its plastics contracts at the end of May 2005, the average daily volume traded has been 65 lots for PP, 55 for LLDPE; over the same period the daily average number of lots traded in aluminium has been 142,371 and, for copper, 77,772. While banks have naturally backed the plastics contracts, and the contracts have gained the support of some producers and end-users, it is now self-evident that many more have not. How will the LME – or any other exchange – ensure that a new steel contract becomes more like aluminium than plastic?

The LME puts an understandably brave face on the trading so far of its plastics contracts and shows no sign of pulling the plug on them; it is adopting the same posture regarding its steel plans. As with plastics, the exchange says it does not anticipate large volumes of steel contracts traded from the outset, but believes that time will, eventually, bring all the sceptics round to its point of view. This is either very sensible or very hubristic – and only time will tell which.
Focus

China’s zinc exports dwindle – for now

The zinc market has been closely watching developments in China for the past few months, looking for signs as to whether or not the country is poised to become a much bigger exporter of refined zinc. As yet, the available data remains inconclusive – but its exports of the metal are running much lower than was anticipated at the start of the year, while it is gobbling up zinc concentrates at a furious rate.

China became a net importer of refined zinc in 2004, the first time since 1988. Much of last year’s rise in the zinc price – up by 122%, year-on-year – was a belated response to events in China, whose net imports of the metal rose in 2005 to 270,000t, against just 15,000t in 2004. As China continued absorbing refined zinc throughout much of last year, zinc stocks on the LME fell precipitously, in the context of a global refined zinc supply deficit of some 330,000t. At some points mid-way in 2006 it appeared that China’s demand for refined metal was almost insatiable. A 3-month price of $5,000/t began to be realistically discussed.

And then – as so often – China threw a spanner in the works and blew apart the $5,000/t-plus fantasy. As Q4 2006 drew to its close, it became apparent that China had surreptitiously shifted from being a net importer to a net exporter of refined zinc. In January and February this year China exported almost 120,000t of zinc metal – 400% more than it had exported in the same two months of 2006. Since then, China’s exports of refined zinc have been slowing; in May, it exported a net 10,500t of refined zinc, compared to a net 13,000t in April.

This reversal of the previous trade flow tendency has not been seen in China’s imports of the raw material to produce the metal – zinc concentrates. Quite the opposite. While China’s refined zinc exports have been slowing, volumes of its imports of zinc concentrate have been rising massively – up by more than 600% alone in May this year, measured against the same month in 2006, at more than 183,000t. So far this year (January-May) China’s imports of zinc concentrate have been almost 200% higher than the same period in 2006, at 717,000t. In 2006, China imported 46% more zinc concentrates than the previous year. This substantial increase in imports of zinc concentrates has only one obvious destination – to feed China’s growing domestic production of, and need for, refined zinc.

Simultaneously as China’s refined zinc exports have fallen, its domestic refined zinc production is rising, up by almost 17% in April compared with April 2006. In the year to date, China’s refined zinc production has risen about 23%, year-on-year. Last year, China’s output of refined zinc grew more than 30%, and this growth in production looks set to be repeated or even outstripped in 2007.

Zinc’s primary end-use is for galvanising steel – about 50% of the metal goes into that sector, while 18% is used in alloys, 18% in brass and bronze, 6% in semis and chemicals and 3% in other areas. Rising internal Chinese demand for zinc – not least for China’s rapidly growing car sales market, which is currently rising at an annual rate of some 30% - is eating into its exports. The slowdown in the country’s refined zinc exports has been further compounded by the removal of the VAT rebate on some grades, together with a 5% tax on exports of zinc that does not meet the high-grade purity specifications of London Metal Exchange delivery requirements. There had been some expectations that China’s plans to remove its VAT rebate on exports of a number of zinc metal grades might have led to a blip up in the country’s refined zinc shipments in May, as exporters raced to beat the changes, introduced on 1st June. China has also increased the export tax on non-SHG (special high grade) refined zinc, from 5% to 10%. But the expected increase in exports failed to materialise.
A delicate balance

Searching for the main thrust of China’s export/import pattern is currently the nature of the game for refined zinc, as what China does with its own refined zinc production this year and next will have a profound impact on international zinc prices. One possibility is that China’s position in the zinc market will come more and more to resemble that of its influence in aluminium – a rapid expansion of domestic primary metal production which will, eventually, grow to a position of global dominance. Aluminium prices have been in the doldrums now for some time, weighed down by the prospect of massive capacity expansions sprouting up in new locations, despite the fact that demand for aluminium is higher than ever before. The threat of substantial new supplies of zinc concentrates – and ultimately, refined metal – overshadowing strongly growing demand for zinc metal is real. According to the International Lead and Zinc Study Group (ILZSG), refined zinc usage in 2007 will rise by 4%, while output of zinc concentrates will be more than double that, at 9.4%. Chinese zinc mine output will climb 28%, Australia’s by 14% and output from Peruvian miners by 11%. The production of zinc metal will rise slightly less this year, at 7.2% – but within that, 32% of the increase will come from Chinese producers, 8% from Canadian, 6% from South Korean and 5% from Japanese plants, according to the ILZSG. This does not bode well for the zinc prices in the medium term. Moreover, the global zinc market has moved swiftly and sharply into surplus this year, again according to the ILZSG, which said in June that the global refined zinc market had a surplus of 53,000t between January-April this year. This surplus was both bigger and arrived earlier in the year than had been expected. The ILZSG said output of the metal used to galvanise steel increased to 3.77 Mt, from 3.42 Mt in the same period a year earlier. Total consumption in the period rose 4.4% to 3.72 Mt.

Chinese refined zinc trade, tonnes

![Graph showing Chinese refined zinc trade, tonnes]

Source: Chinese customs office

Chinese refined zinc exports may again creep higher later this year, not least because there is a suspicion that the widely anticipated removal of the tax rebate on SHG zinc, one of the most popular export grades, will, not after all, happen. At the same time, as China’s economy keeps growing, its own domestic needs for refined zinc will remain strong for at least a year or two more – and more of this need will probably be met by China’s own zinc refiners, rather than imports. But if China’s refined metal exports do not rise significantly, then we can expect higher international prices than currently – which will, in turn, eventually correct itself, as Chinese traders move to cash in on the consequent price differential between the domestic and export market prices. This opportunity may, however, be short lived, because the zinc market is moving further and faster into surplus. It is a delicate balance right now and far too early to predict the outcome.

More metal headed your way

What is fairly predictable is that more metal is coming – and quite quickly. The ILZSG said zinc mine production in Q1 2007 of this year was 2.65 Mt, compared to 2.52 Mt for the same period of 2006, while metal production in the
same period was 2.83 Mt. Asian mine output, including that of China, was 1.11 Mt, American 889,000t and European 307,000t. Metal production in Asia was 1.52 Mt, in America 467,000t and in Europe 651,000t. According to the ILZSG, global mine production was 10.35 Mt in 2006, up from 10.13 Mt in 2005, and we can expect even higher mine production of zinc concentrates this year and next. Zinc metal production in 2006 was 10.71 Mt, an increase from 10.23 Mt in 2005. Consumption has been growing steadily. In Q1 2007 it was 2.74 Mt, against 2.71Mt in the same quarter last year. Total consumption in 2006 was 11.01 Mt and, while this might rise globally by 5% in 2007, to 11.56 Mt, a rise of 7% in zinc metal production would mean total output of 11.46 Mt – a tiny deficit in global terms and one that may in any case disappear entirely by the end of the year. We expect actual refined zinc production this year to rise more like 10% – giving a 221,000t global surplus. Next year – barring unforeseen long-term supply interruptions – the refined zinc market is likely to move further into surplus, particularly as demand in more mature economies seems to be slowing. Demand in Europe was strong in 2006, when there was a strong rise in imported zinc sheets, particularly from China. However, these shipments have slipped this year (and in the context of lower, and more important, expectations of yet lower, prices), falling 24% in Q1 2007 compared with EU imports in Q4 2006. In March, Chinese galvanised sheet output was up by 20.3% over March 2006. US demand fell away at the end of last year but appears to be stabilising now.

Where does that leave the prospect for prices? We see zinc prices remaining robust at least until Q4 2007, as the market senses that the progressive shift into a global refined zinc surplus is not a mirage, but is actually underway. The wild card in the equation remains China. There is an expectation that it will continue to be a net exporter of zinc metal in Q3, although at relatively low levels. If, however, its apparently rapacious demand for zinc sees it pulling in larger quantities of refined metal and if the country continues to soak up large volumes of zinc concentrates, then metal stocks could slip further on the LME and zinc prices, dependent on there being no drastic slow down in growth either in the developing economies of those of Europe or North America, may push prices up past the 2007 high seen in May, of $4,166/t. Zinc stock levels on the LME, which were rising again earlier this year, have dropped back substantially and contributed to the unexpected fresh price spike in May, when the 3-month contract ended the month at $3,675/t. With LME stock levels currently tight – in early June stocks fell to their lowest in 16 years, at 73,125t – zinc prices could move up again in the near term.
Gold

- July 6th: Newmont said it had in June closed its entire hedge book of 1.85 Moz, spending $578m to do so.
- June 28th: Trade unions at DRDGold’s three mines in South Africa threatened to strike unless the company holds joint pay talks for all the mines rather than separate negotiations.
- June 26th: The International Monetary Fund will in July consider selling some gold and investing the proceeds in interest bearing accounts.
- June 14th: The Swiss National Bank (SNB) announced that it plans to sell another 250t before September 2009 as part of the European Gold Agreement (EGA).
- June 8th: China approved five foreign banks to trade the metal on the Shanghai Gold Exchange.
- June 7th: Gold production in China, the world’s fourth biggest producer, rose 9.1% in April (year-on-year) to 21.6 Mt.

Analysis

- Switzerland surprises

The surprise news that Switzerland will sell more gold – the SNB has already sold 1,300t between 1999-2005 – showed the market that large sales in the past were no barrier to more in the future, and its rationale – that gold’s share of its reserves was too high – suggested other central banks could follow suit (see table). In June the gold price declined for the second successive month, weighed down by continued expectations of improving US economic growth and muted American inflation. The SNB affirmation of more sales and the IMF’s possible shift towards sales did not help matters. The USA’s Federal Reserve’s benchmark measure of the inflation rate declined to 1.9% in May, the first time it has been in the “comfort zone” of 1% to 2% since Ben Bernanke took the post of chairman at the Fed 16 months ago. Still, with the Fed holding interest rates unchanged this month and saying that the decline in inflation is yet to be “convincingly demonstrated”, there seems little chance of an imminent loosening of American monetary policy. Some inflationary factors were around, not the least of which was the strong crude oil price, back up at around $70/barrel and showing every intention of staying there. Pay talks with trade unions in South Africa, the biggest producer, got off to a bad start, pointing to possible industrial action and supply interruptions in coming weeks.

Outlook

Summer months do not usually see much movement in the gold price and this season is unlikely to be much different. Even if pay talks in South Africa reach deadlock and result in a strike, gold has traditionally been less sensitive to supply disruptions than most metals. The lower price is playing its part in boosting physical demand – Turkey’s imports in June, when the price averaged a relatively low $656/oz, soared by 178%, year-on-year. How much of this demand is short-term speculation is however open to question.

Silver

News

- June 29th: Workers at Poland’s KGHM, which produces silver as a by-product of its main interest, copper, threatened their first strike in 15 years over a pay dispute. However, the union failed to attract the 50% attendance it needed to call the strike, although the dispute rumbles on.
- June 14th: The London Bullion Market Association approved the Japanese trading company, Mitsui, as a market maker for silver and gold.
- June 11th: Bolivia proposed an increase in mining taxes, potentially boosting its revenue from the sector up to $150m from about $100m. Taxes are to be increased to 37.5% of profits, from 25% currently.
- June 6th: Coeur d’Alène Mines will complete its takeover of the Palmarejo silver project in Mexico, at a cost of about $1.1bn, in August.
- June 6th: Pan American Silver will boost output at its Bolivian mine, San Vicente, by 25%, bringing the mine’s annual silver output to 2.8 Moz.

Analysis

- Silver slides

Silver spot prices in June posted their biggest monthly decline since September last year, falling 7.6%, as investors shunned precious metals generally. With companies such as Peru’s Hochschild and Pan American Silver announcing the start up of new mines and planned expansions, the spectre of increased supply does not encourage hopes for much higher prices in the long term, while in the short term silver’s fate is bound up with events beyond its control, not the least of which is more tempting investments elsewhere. The biggest contributor to silver’s recent fall has been the rise in yields on US government bonds. The yield on the 10-year note rose as high as 5.295% on 12th June, well above the 4.89% it closed at in May. Our estimate for the global silver market in 2007 puts the market in overall surplus of 5,636t, against a 5,471t surplus in 2006. We expect total demand in 2007 to be 29,381t, with jewellery and silverware at around 30% of the total, with electronics (18%) and photography (21%) other major contributors. Total supply this year we estimate to be 35,017t, with mine supply comprising 60%, due to more poly-metallic mines coming on-stream. The supply of mined silver will remain relatively unaffected by movements in the price, as silver is a by-product of copper, lead, zinc and gold mining. Total mine supply in 2007 is seen at 20,896t, with close to 40% sourced from Mexico, Peru and Chile.

Outlook

Silver prices in June fell to their lowest since January, with the London fix dropping to $12.26/oz on 27th June, having started the month off at $13.53/oz. With optimism about the US economy spurred by restrained inflation and a forecast of “moderate” growth, the background macro-economics are not supportive of higher silver prices, which are likely to remain subdued. In the week ending 3rd July speculative silver investors on Comex had cut their net long positions by 14% compared to the previous week, to 24,003 lots, according to the CFTC’s weekly Commitment of Traders report. Short-term London daily fix: $12.25/oz-$13.00/oz.

Market data (June unless stated)

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<th>p/oz</th>
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<td>690.2</td>
<td>Japan (May)</td>
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<td>0.49</td>
<td>0.96</td>
<td>3-month: 24.50</td>
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<tr>
<td>Low</td>
<td>1,226.0</td>
<td>911.5</td>
<td>613.1</td>
<td>China (May)</td>
<td>408,607</td>
<td>(0.07)</td>
<td>0.07</td>
<td>0.30</td>
<td>0.46</td>
<td>6-month: 24.75</td>
</tr>
</tbody>
</table>

Source: Prices: London Bullion Market Association, Others: Virtual Metals
Platinum

News

- June 29th: Anglo Platinum, the world’s biggest platinum producer, raised its pay offer to workers to between 8%-10% depending on the grade of worker. Trade unions cut their own demands to 12%, possibly reducing the chance of a strike.
- June 27th: South Africa’s National Union of Mineworkers (NUM) lodged a formal dispute, the preliminary step to outright strike action after state mediation, concerning Impala Platinum (Impalts). The union rejected Impala’s offer to raise pay by between 7.5%-9%. The NUM wants 15%.
- June 27th: Zimbabwe’s President, Robert Mugabe, said he may seize foreign owned assets, including mines, shortly after a Bill was tabled in the country’s parliament that could introduce local control over all foreign-based businesses.
- June 22nd: Anglo Platinum closed shafts at its biggest mine, Rustenburg, for between five days and a week at a time in a staggered schedule, after the death of 12 workers in accidents this year. The stoppage will trim production by as much as 15,000 oz this year.

Analysis

- Industrial action looms

There are some fraught pay talks currently underway in South Africa, which accounts for more than 75% of world platinum output, with unions apparently in the mood for strikes to get their wage demands. The fragmented nature of South Africa’s platinum pay talks makes their outcome difficult to predict. While most of the country’s mineral producers hold joint talks under the umbrella of the Chamber of Mines, the platinum companies conduct their own set of negotiations. The biggest producer, Anglo Platinum, appears to be making progress, with unions lowering their demands, but labour relations at its biggest rival, Impala Platinum, have taken a nosedive. Impala now faces state mediation and a possible strike after it refused to raise its offer above a range of 7.5%-9%. The much smaller producer, Northam, has also had its offer spurned while Lonmin, the world’s third biggest producer, is due to start what might be difficult wage talks in late July. South Africa’s trade unions have shown particular militancy this year; the Confederation of South African Trade Unions (Cosatu) is asserting its political importance in the year when the ruling African National Congress (ANC) is likely to choose South Africa’s next president. Already government workers have been on strike for close to four weeks, the longest ever strike by state workers in the country.

Outlook

June was a dull month for platinum traders with the price fluctuating around a fairly fixed point. Prices might shift higher in the next month or so, depending on the outcome of difficult wage talks in South Africa. These pay talks, held every two years for most companies, tend to rumble on. An outright strike is at this stage remote – but if it happened it could be bitter. London daily pm fix short-term: $1,280/oz-$1,340/oz.

Market data (June unless stated)

<table>
<thead>
<tr>
<th>Prices</th>
<th>US$/oz</th>
<th>Lease rates</th>
<th>1m</th>
<th>3m</th>
<th>6m</th>
<th>12m</th>
<th>Trade (kg)</th>
<th>Imports</th>
<th>Exports</th>
<th>ETF offtake (oz)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>US$/oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>1,286</td>
<td>Average</td>
<td>1.8</td>
<td>2.3</td>
<td>3.0</td>
<td>3.5</td>
<td>USA (Aor)</td>
<td>7,574</td>
<td>3,576</td>
<td>UK*</td>
</tr>
<tr>
<td>High</td>
<td>1,301</td>
<td>High</td>
<td>1.8</td>
<td>2.4</td>
<td>3.0</td>
<td>3.5</td>
<td>Japan (May)</td>
<td>4,363</td>
<td>1,906</td>
<td>Swiss</td>
</tr>
<tr>
<td>Low</td>
<td>1,266</td>
<td>Low</td>
<td>1.8</td>
<td>2.3</td>
<td>3.0</td>
<td>3.4</td>
<td>Hong Kong (Aor)</td>
<td>1,781</td>
<td>865</td>
<td>6-month</td>
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<td>3,966</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Source Price: London Platinum and Palladium Market, Others: Virtual Metals

* Includes "basket" ETF
**Palladium**

**News**

- June 29th: Stillwater Mining, the US producer, extended talks with workers until 11th July; it warned that if no agreement is reached production may be affected.
- June 20th: Palladium’s global surplus will narrow to between 200,000-300,000 oz from 1.5 Moz last year, according to Implats.
- June 20th: Implats plans to double spending over the next five years to 25bn rand ($3.5bn) to boost platinum group metals’ output to 2.8 Moz after 2012.
- June 1st: North American Palladium said drilling at its Narkaus exploration concession in Finland showed that metal grades are likely to be higher than those in the adjacent Suhanko property, boosting the likelihood of developing a mine covering both properties.

**Analysis**

- Prices hold firm

Palladium prices held firm in June, with the possibility of strike action at Stillwater and in South Africa and consequent supply interruptions propping up a market that otherwise remains in considerable surplus. Although palladium is largely a by-product of platinum output in South Africa, Anglo Platinum and Impala Platinum in particular are nevertheless important suppliers. A more direct threat to palladium supplies may come in the form of the inability of the management of Stillwater to agree a new labour contract with the USW International Union. The parties missed an initial deadline to conclude talks and have now set midday on 11th July as the final time for a new contract to be agreed. Stillwater, which is owned by Russia’s Norilsk, the world’s biggest palladium producer, says production is currently unaffected but it warned that its operations could be affected. The company sold 431,000 oz of palladium from its two mines in Montana in 2006 and recycled a further 349,000 oz of platinum group metals.

**Outlook**

A flippant response to a possible strike at Stillwater might be – so what? We estimate that in 2006 the global palladium market was in surplus by more than 1 Moz. While we foresee this shrinking to 864,000 oz in 2007, scrap recycling from autocatalysts is growing strongly, from about 1.1 Moz in 2006 to perhaps 1.355 Moz in 2007, and this upward trend will continue as a consequence of ever-tighter emissions’ controls. Impala Platinum’s forecast that the global palladium surplus will fall to as low as 200,000 oz in 2007 seems extremely optimistic, unless the recently-launched palladium exchange traded funds really take off – and so far their total offtake is about 215,000 oz, not enough to convince us that they will do as much for palladium as the gold and silver ETFs did for their respective metals. If a Stillwater strike goes ahead it will make headlines, but should not really rock any boats. London daily pm fix short-term: $360/oz-$380/oz.

---

**Market data (June unless stated)**

<table>
<thead>
<tr>
<th>Prices</th>
<th>US$/oz</th>
<th>Lease rates</th>
<th>1m</th>
<th>3m</th>
<th>6m</th>
<th>12m</th>
<th>Trades (kg)</th>
<th>Imports</th>
<th>Exports</th>
<th>ETF offtake (oz)</th>
<th>Holdings</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>366.8</td>
<td>Average</td>
<td>0.20</td>
<td>0.24</td>
<td>0.52</td>
<td>0.59</td>
<td>USA (Apr)</td>
<td>7,941</td>
<td>7,498</td>
<td>UK</td>
<td>29,080</td>
<td>7,083</td>
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<tr>
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<td>High</td>
<td>0.20</td>
<td>0.26</td>
<td>0.54</td>
<td>0.66</td>
<td>Japan (May)</td>
<td>256</td>
<td>2,134</td>
<td>Switzerland</td>
<td>1,852</td>
<td>4,408</td>
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<tr>
<td>Low</td>
<td>360.8</td>
<td>Low</td>
<td>0.19</td>
<td>0.23</td>
<td>0.51</td>
<td>0.53</td>
<td>Hong Kong (Apr)</td>
<td>3,056</td>
<td>253</td>
<td>China (May)</td>
<td>871</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: London Platinum and Palladium Market, Others: Virtual Metals
Aluminium

News

- June 30th: India’s Tata Steel may sell the aluminium unit of Corus, the British steel-maker that it bought for $1bn.
- June 26th: Global aluminium stocks, excluding those in Russia and China, fell 2.2% to 1.55 Mt in May, the International Aluminium Institute (IAI) said. Earlier in the month the IAI reported that average global daily output of aluminium in May was 99,700t, 600t less than April but total production, at 3.09 Mt, was 11% higher than May 2006.
- June 25th: Rusal began constructing a $2bn aluminium plant in the Irkutsk region of Russia, adding eventually 750,000t to its annual production capacity.
- June 19th: Alcan gave Rio Tinto and BHP Billiton access to financial data to try and encourage them to table takeover bids that would top the $27bn bid made by Alcoa, according to the Sydney Morning Herald. Earlier media reports suggested BHP Billiton may bid $40bn for Alcoa.

Analysis

- Price hostage to takeover battle

Aluminium prices and stocks on the LME were little changed in June, for a second successive month as the industry’s attention was fixed on the yet to be resolved $27bn hostile bid by Alcoa for its rival, Alcan. Christel Bories, the head of Alcan’s engineered products unit, was reported as saying that Alcan may seek to ally itself with BHP Billiton in an effort to stave off the predatory approach from Alcoa. Until this particular battle is resolved major price movement seems unlikely as it is unclear what impact any of a number of corporate combinations would have on the supply scenario. China’s biggest aluminium producer, Chalco, is continuing to gobble up local competitors, buying Baotou Aluminum for more than $1.6bn in early July. Chalco, in which Alcoa has an 8% stake, is now the world’s fourth-biggest aluminium producer, and Baotou’s acquisition will add about 10% (some 300,000t/year) production capacity to Chalco.

Demand is probably lagging rapidly growing production capacity; the IAI estimates global production rose 11% in the first four months of this year. Global demand for primary aluminium has been growing at an annual average of about 5.5% since 2000 – more than double the rate for the prior two decades – but rising production capacity in China, Russia and the Middle East still threatens to produce a substantial surplus by 2010, on current trends.

Outlook

It comes to something when the price of little-loved lead shifts higher than that for high-tech aluminium – but that happened to the comparative spot prices for a few days in late June. June’s official settlement price of $2,736/t (3-month), the lowest monthly close this year so far, could be an augury of further weakness in the months ahead. LME 3-month contract short-term: $2,680/t - $2,890/t.

Market data (June 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>Tonnes</th>
<th>Prod (kt)</th>
<th>April</th>
<th>May</th>
<th>LME Open Interest contracts</th>
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<tbody>
<tr>
<td>Average</td>
<td>2,676</td>
<td>2,727</td>
<td>2,688</td>
<td>2,555</td>
<td>May-07</td>
<td>833,525</td>
<td>Europe</td>
<td>707</td>
<td>738</td>
<td>Aluminium 551,960</td>
</tr>
<tr>
<td>High</td>
<td>2,775</td>
<td>2,812</td>
<td>2,725</td>
<td>2,602</td>
<td>Jun-07</td>
<td>623,625</td>
<td>Americas</td>
<td>672</td>
<td>691</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>2,625</td>
<td>2,676</td>
<td>2,648</td>
<td>2,508</td>
<td>Total</td>
<td>3,008</td>
<td>Asia</td>
<td>301</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>China</td>
<td>991</td>
<td>1,002</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>Other</td>
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<td></td>
<td></td>
<td>Total</td>
<td>3,008</td>
<td>3,092</td>
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</table>

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

News

- June 29\textsuperscript{th}: Anglo American and Xstrata exercised a legal right to extend pay talks at their Collahuasi mine in Chile, delaying the start of a strike planned for 3\textsuperscript{rd} July to a week later. The mine produced some 60,000t of refined copper and 380,000t of concentrates in 2006.
- June 28\textsuperscript{th}: Southern Copper in Peru, the world’s third-biggest producer, settled a five-day strike.
- June 27\textsuperscript{th}: The International Copper Study Group estimated global refined copper demand exceeded supply by 143,000t in Q1 2007, against a surplus of 57,000t in Q1 2006.
- June 25\textsuperscript{th}: Contract workers at Chile’s Codelco, the world’s largest copper miner, began a strike.
- June 25\textsuperscript{th}: Norddeutsche Affinerie, the German-based refiner, offered to buy the Belgian-based Cumerio for €777m ($1.05bn).
- June 4\textsuperscript{th}: Zambia’s annual copper production will rise to 1 Mt by 2009 from about 600,000t now, according to Maxwell Mwale, the country’s deputy mines minister.

Analysis

- Latin American labour strife

Actual strikes and threats of more in Chile, the world’s biggest source of copper, rumbled on into July, giving an unexpected prop to the copper price. While a pay accord was reached between most workers at Chile’s state-owned Codelco towards the end of June, uncertainty ahead of the agreement and a strike in the last week of June by the company’s contract workers raised concerns about supply. Added to that was a five-day stoppage at the operations of Southern Copper in Peru. The dispute with Codelco’s contractors lingers on, while the threat of another strike from 9\textsuperscript{th} July at Chile’s Collahuasi mine are putting fresh life into what was threatening to be a much weaker outlook. LME stocks gave additional price support – they fell to their lowest monthly close since July last year. As of 29\textsuperscript{th} June LME warehouses had 114,700t in stock, down from 211,875t at the end of January. Shanghai stockpiles also drifted lower, ending the month at 90,617t from 95,254t at the end of May.

Outlook

Copper bulls should offer a toast to striking South American copper miners – without their help the price would certainly have been much weaker than its end-June final settlement of $7,520/t. China’s copper imports (including semi-finished products) in 1H 2007 rose 52.3% compared to the same period of 2006, at 1.514 Mt, but much of this rise was packed into the early months of the year and its imports have been trending down – June’s figure of 212,471t was 4% lower than April, and its refined copper imports in May fell 37% against April, to 116,749t, the lowest level since December 2006. Its net refined imports are likely to be still lower in July and August. If the strikes get settled quickly, further weakness will ensue, but it’s clear that speculators are still keen on copper and this makes it a high-risk bet at these levels. LME 3-month contract short-term: $7,500/t - $8,000/t.

Market data (June 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>Tonnes</th>
<th>LME Open Interest (contracts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>7,476</td>
<td>7,390</td>
<td>6,749</td>
<td>6,014</td>
<td>May-07</td>
<td>127,450</td>
<td>Copper</td>
</tr>
<tr>
<td>High</td>
<td>7,665</td>
<td>7,580</td>
<td>6,915</td>
<td>6,160</td>
<td>Jun-07</td>
<td>112,600</td>
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<tr>
<td>Low</td>
<td>7,260</td>
<td>7,150</td>
<td>6,520</td>
<td>5,790</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Source: London Metal Exchange
Nickel

News
- June 29th: Norilsk Nickel said it had secured control of 90% of Canada’s LionOre.
- June 20th: China may produce less stainless steel than expected this year because of domestic oversupply, the country’s biggest producer, Shanxi Taigang Stainless Steel, said.
- June 11th: Brazil’s CVRD said it will double annual nickel production to more than 500,000t within five years.
- June 7th: Eramet will spend $2bn to open its Weda Bay nickel mine in Indonesia by the end of 2012. Annual production will be 60,000t.

Analysis
- Nickel goes pop

LME nickel prices plunged 21% in June, their biggest monthly decline since February 1995, as concerns grew that stainless steel producers have tired of the metal’s meteoric price rise and are cutting their use. LME stocks rose to their highest level in 11 months, ending June 13% up at 8,910t, having previously touched a high of 9,288t on 18th June. Despite this month’s spectacular decline prices are still well over double the level they were two years ago, leaving ample room for further declines. The surge in ferrochrome contract prices, agreed between chrome producers and stainless steel mills, to a record $1/pound for Q3 2007 is a testament to the levels steel-makers are willing to go to use substitutes for nickel to keep their costs down. The partial switch from production of austenitic varieties of stainless steel, types that use more nickel, to chrome-dependent ferritic varieties is a trend that may catch on for cheaper stainless steel varieties. Samancor, which supplies about 25% of the world’s ferrochrome needs from its South African operations, was reported to have raised costs for customers (including ThyssenKrupp and Arcelor Mittal) by 22% in the third-quarter contracts. In the short term there are few indications of interruptions to nickel supplies, although possible strikes in South Africa’s platinum sector could reduce output of the metal, produced as a by-product at those operations.

Outlook
The higher they rise, the harder they fall, and nickel got a terrific bruising in June as some investors fled for the exit, finally taking seriously the threats by big stainless steel producers to churn out more low-grade varieties. Whether or not the speculative froth has all been sliced away is an open question – although a drop of $11,785/t from the start of June to the end (3-month settlement price) was spectacular. CVRD’s promise to double its nickel output to 500,000t in five years sounds ominous for nickel bulls, but it may have blindsided some investors – most of this growth will be by acquisition rather than totally fresh projects. The scarcity of viable new large nickel projects remains as true as it has been for a long time. The high nickel price has irked stainless producers – but many key industrial applications still demand high-grade, nickel rich stainless. LME 3-month contract short term: $32,000/t-$38,000/t.
Lead and zinc

News

• June 28th: Ivernia, which produces some 3% of the world’s lead, expects to get approvals to resume exports from its Magellan mine by the end of the year. Exports were halted on 12th March because of suspected pollution at the port of Esperance.

• June 28th: Baosteel, China’s largest steel-maker, will double purchases of zinc to 140,000t by 2012 to cope with domestic demand for galvanised steel.

• June 21st: Boliden, Europe’s second largest zinc producer, said it will contest an order by a Spanish court allowing the seizure of €141m ($191m) of assets to compensate for the collapse of a dam wall nine years ago.

• June 19th: Global zinc production rose 10% in the first four months of 2007 to 3.77 Mt, 53,000t more than consumption, the International Lead & Zinc Study Group (ILZSG) said. Lead production rose 1% to 2.717 Mt, 4,000t less than demand.

Analysis

• Lead price dances upward

Lead prices posted a strong performance during the month, rising to records on the LME on concerns over supply. The 3-month contract climbed to a peak settlement price of $2,679/t on 26th June but eased back slightly to end the month at $2,645/t. By 9th July it was trading just a hair’s breadth from $3,000/t, the 3-month contract closing that day at $2,950/t. Underpinning the gain is the as-yet unknown impact of a 10% export tax on refined lead imposed by China, which – if the precedent of similar fiscal disincentives for primary aluminium exports is any indicator – should see China’s exports drop quite sharply. Low lead stocks on the LME – down by 10% since mid-May and about two days of global consumption – have encouraged speculative investment in the metal.

Zinc, meanwhile, was depressed by data from the ILZSG showing that the market is currently in a small but probably widening surplus. LME stock movements – they fell to 73,000t during June, from 75,625t at the end of May – are very low still but this factor has acted to prevent a further price slump, rather than encourage investors to take a more bullish view of the metal’s prospects. LME zinc stocks so far this year have not risen above the 22nd March peak of 110,250t.

Outlook

While lead prices fell from their fresh record in the last few days of June, it felt rather more like a pause for breath than a real change of heart. Supply-side concerns remain at the heart of the lead story right now, with the likely fall in Chinese exports this year being very supportive. Zinc faces a very different prospect, one of a widening global surplus this year and next of both refined metal and zinc concentrates, even though China’s refined metal exports have been trending down for the past two months.

LME 3-month short-term: zinc $3,000/t-$3,400/t, lead $2,700/t- $3,250/t.

Market data (June unless stated)

<table>
<thead>
<tr>
<th>Prices ($/t)</th>
<th>Cash Lead</th>
<th>Cash Zinc</th>
<th>3-month Lead</th>
<th>3-month Zinc</th>
<th>LME stocks Lead</th>
<th>LME stocks Zinc</th>
<th>LME Open Interest (contracts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>2,426</td>
<td>3,603</td>
<td>2,423</td>
<td>3,594</td>
<td>May-07 47,600</td>
<td>Jun-07 45,125</td>
<td>Lead 64,996</td>
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<tr>
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<td>3,811</td>
<td>2,679</td>
<td>3,795</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Low</td>
<td>2,255</td>
<td>3,301</td>
<td>2,257</td>
<td>3,326</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: London Metal Exchange except Option volatility: Virtual Metals
Tin

News

- June 27th: Peru’s Minsur, the world’s third largest tin producer, agreed to raise pay and bonuses for the 2,100 workers at its San Rafael mine. A strike in 2005 lost the company 3,500t of output.
- June 21st: Indonesia’s PT Timah, the world’s second largest tin producer, boosted its forecast for tin production to more than 50,000t in 2007, from an earlier estimate of 48,000t. A crackdown on illegal mining by the government increased its access to ore, the company said.
- June 11th: Indonesian authorities awarded two more tin export licenses, bringing to 14 the number of companies allowed to export refined tin.
- June 4th: Three Koba Tin directors pleaded not guilty in an Indonesian court to buying tin ore from illegal miners.

Analysis

- Price eases, stocks rise

LME tin prices eased down, as metal from Indonesia finally began to make its way back into inventories after being halted earlier by a crackdown on illegal mining. From 9,445t at the start of June LME tin stockpiles rose to 12,335t, their highest level since January this year, and against 7,995t in May, their lowest since September 2005. Inventories may continue rising, perhaps exceeding 15,000t in the next month or two. Indonesia’s top producer, PT Timah, raised its forecast for production this year to over 50,000t from 48,000t earlier and said it has already sold 28,000t this year.

As Indonesia appears to be coming off the boil, Bolivia has once again taken up the baton. The government’s stated intention of raising its take of mining profits from the current 35% to 50% is more alarming for silver producers than the country’s tin miners, but Bolivia’s independent tin miners around the Huanuni tin mine, in the Oruro region some 160 miles south of the country’s administrative capital La Paz, are again up in arms. Several hundred unemployed independent miners began protesting outside the mine in early July, angry at becoming unemployed since the state took control of the site late last year. On 2nd July a strike began and by the 7th July all production had ceased. The government has brushed the protest aside as a “political provocation” but it could turn ugly. On 9th July the government started negotiations to try to end the strike. The mine produces about 10,000t of tin-in-concentrate a year, and output was badly – if briefly – affected last October during violent clashes between independent miners and those working for the state-controlled union Comibol.

Outlook

Tin prices drifted gently downwards in June, ending at $13,900/t (3-month contract) from $14,100/t at the beginning of the month. If the resumption of Indonesian supply continues to add to LME stocks we expect the price to lose more ground in July. Against that must be set the possibility of the tension in Bolivia, which has been simmering for months, getting worse.

LME 3-month contract short term: $13,400/t-$13,800/t.

Market data (June 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>LME Open Interest (contracts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>14,107</td>
<td>13,988</td>
<td>13,385</td>
<td>May-07</td>
<td>9,445 Tin</td>
</tr>
<tr>
<td>High</td>
<td>14,450</td>
<td>14,200</td>
<td>13,510</td>
<td>Jun-07</td>
<td>12,560</td>
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<tr>
<td>Low</td>
<td>13,800</td>
<td>13,705</td>
<td>13,125</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: London Metal Exchange except Option volatility; Virtual Metals
Plastics

News

• June 25th: Basell will end polypropylene production in Sarnia, Ontario, in mid-2008. Annual production had averaged only 100,000t in the past two years and the company said operating costs were no longer competitive.

• June 12th: BASF signed a memorandum of cooperation with Chongqing Chemical and Pharmaceutical Holding about the possible construction of a 400,000t/year polyurethane intermediate, MDI plant.

• June 11th: The Dubai Gold and Commodities Exchange (DGCX) plans to launch four plastics futures contracts, although no date for the start-up of trading has been given. In January this year the DGCX said it was considering HDPE, LDPE, LLDPE and PET contracts, but PET has now been replaced by PP.

Analysis

• LME pins hopes on re-launch

When in doubt, re-launch. That is probably too harsh a view of the LME’s decision to re-structure its plastics contracts, which has made following the market a trifle more complicated by introducing regional versions of the polypropylene (PP) and linear low-density polythene (LLDPE) contracts. The revamp introduces six regional contracts, with two each for Europe, Asia and North America. The exchange’s justification for this is that regional prices will more accurately reflect the realities of plastics trading, rather than the “one size fits all” approach of the original contracts. The LME argues that key to ensuring the success of the regional contracts will be that they reflect prices accurately enough to allow the contracts to be used as a credible regional hedge. But this raises the question of why, if this step makes sense, it was not considered back in May 2005, when the original two plastics contracts were launched. The LME might in any case soon feel the hot breath of the Dubai Gold and Commodities Exchange (DGCX) down its neck – the DGCX is continuing to promise its own plastics’ futures contracts and, given the rising importance of Gulf States in plastics’ production, it may have greater regional success than the LME does in teasing out trading volumes, which have been disappointingly low for the London exchange.

Outlook

The impact of the LME’s new contracts will only start to become visible in July although it is already clear that European prices for both PP and LL will exceed those quoted in the Asian and North American contracts. PP prices averaged $1,204/t in June, with a high of $1,220/t and low of $1,180/t. The average price for LL in the month was $1,205/t, the high $1,220/t and the low $1,950/t. Higher crude oil prices – back up to around $70/barrel – will encourage producers to push for higher prices but with volumes remaining so low on the LME it is difficult to ascertain how much these contracts represent an industry benchmark. Our report in future will, as here, give short-term forecasts for the front month European contract, which for PP we currently estimate will next month rise to $1,590/t, and for PP to $1,490/t.

Market data (June unless stated)

<table>
<thead>
<tr>
<th>Contract</th>
<th>LLDPE</th>
<th>PP</th>
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<tbody>
<tr>
<td>First position</td>
<td>1,213.57</td>
<td>1,218.33</td>
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<tr>
<td>Daily av.</td>
<td>38.29</td>
<td>24.62</td>
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<td></td>
<td>25</td>
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Source: Virtual Metals from LME

<table>
<thead>
<tr>
<th>Contract</th>
<th>LLDPE</th>
<th>PP</th>
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<tbody>
<tr>
<td>First position</td>
<td>1,213.57</td>
<td>1,218.33</td>
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<tr>
<td>Open Interest (contracts) (End June)</td>
<td>LLDPE</td>
<td>PP</td>
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<td></td>
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Source: LME
### Indices

#### Precious and base metal prices

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<thead>
<tr>
<th>(1999 Avg.=base 100)</th>
<th>Change from</th>
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<tbody>
<tr>
<td>29th June 2007</td>
<td>1 M</td>
</tr>
<tr>
<td>Gold (spot)</td>
<td>233</td>
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<tr>
<td>Silver (spot)</td>
<td>240</td>
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<tr>
<td>Platinum (spot)</td>
<td>336</td>
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<tr>
<td>Palladium (spot)</td>
<td>101</td>
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<tr>
<td>Aluminium (cash)</td>
<td>197</td>
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<tr>
<td>Aluminium (3m)</td>
<td>197</td>
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<tr>
<td>Aluminium (15m)</td>
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<tr>
<td>Aluminium (27m)</td>
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<tr>
<td>Copper (cash)</td>
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<tr>
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<td>Copper (15m)</td>
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<td>Copper (27m)</td>
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<td>Nickel (cash)</td>
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<td>Nickel (27m)</td>
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<td>Zinc (cash)</td>
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<td>Zinc (15m)</td>
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<td>Zinc (27m)</td>
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<td>Tin (cash)</td>
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<td>Tin (3m)</td>
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<td>Tin (15m)</td>
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#### LME base metals stocks

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<th>(1999 Avg.=base 100)</th>
<th>Change from</th>
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<td>29th June 2007</td>
<td>1 M</td>
</tr>
<tr>
<td>Aluminium</td>
<td>105</td>
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<tr>
<td>Copper</td>
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<tr>
<td>Lead</td>
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<tr>
<td>Nickel</td>
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<tr>
<td>Tin</td>
<td>135</td>
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<tr>
<td>Zinc</td>
<td>25</td>
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#### USD exchange rates

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<tr>
<th>(1999 Avg.=base 100)</th>
<th>Change from</th>
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<tbody>
<tr>
<td>29th June 2007</td>
<td>1 M</td>
</tr>
<tr>
<td>European euro</td>
<td>79</td>
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<tr>
<td>Canadian dollar</td>
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<td>Great British pound</td>
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<td>Japanese yen</td>
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<td>South African rand</td>
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</tr>
<tr>
<td>Australian dollar</td>
<td>76</td>
</tr>
</tbody>
</table>

Source: Virtual Metals & London Metal Exchange
Prices

Gold ($/oz)

- Jul-06: 550
- Oct-06: 575
- Jan-07: 600
- Apr-07: 625
- Jul-07: 650

Silver (cents/oz)

- Jul-06: 1,000
- Oct-06: 1,025
- Jan-07: 1,050
- Apr-07: 1,075
- Jul-07: 1,100

Platinum ($/oz)

- Jul-06: 1,375
- Oct-06: 1,350
- Jan-07: 1,325
- Apr-07: 1,300
- Jul-07: 1,275

Palladium ($/oz)

- Jul-06: 275
- Oct-06: 300
- Jan-07: 325
- Apr-07: 350
- Jul-07: 375

Aluminium ($/tonne)

- Jul-06: 2,100
- Oct-06: 2,300
- Jan-07: 2,500
- Apr-07: 2,700
- Jul-07: 2,900

Copper ($/tonne)

- Jul-06: 4,000
- Oct-06: 4,500
- Jan-07: 5,000
- Apr-07: 5,500
- Jul-07: 6,000

Nickel ($/tonne)

- Jul-06: 12,000
- Oct-06: 17,000
- Jan-07: 22,000
- Apr-07: 27,000
- Jul-07: 32,000

Lead & zinc ($/tonne)

- Jul-06: 800
- Oct-06: 1,200
- Jan-07: 1,600
- Apr-07: 2,000
- Jul-07: 2,400

Tin ($/tonne)

- Jul-06: 7,500
- Oct-06: 8,500
- Jan-07: 9,500
- Apr-07: 10,500
- Jul-07: 11,500

Source: London Bullion Market Association

Source: London Platinum & Palladium Market

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.

Demonstration of PCA graph

Source: Fortis Modelling
Aluminium

Future curve analysis

Aluminium error term is significant

The level has risen after June 26th, following the announcement from the IAI that global aluminium stocks had been decreasing. This however had no impact on the slope which remained constant. Indeed, the long lasting trend is still one of rising supply, with an 11% production increase compared to the year before.

Curvature remained rather flat in June while the error term has risen significantly. It is statistically very likely (94%) that this term will decrease and come back toward its one-year average.

Fundamental outlook

After a sharp flattening of the aluminium curve at the beginning of June, the movement of the curve has been mostly level-based. The flattening, which started in mid-April, is most likely due to the perception of a stable increase in production capacity in coming years. During the rest of June the slope stayed more or less constant while the market waits for further development of the Alcoa Alcan story.
Copper
Future curve analysis

Copper does not tilt despite Latin American strikes

![Future Contract Chart]

**Fundamental outlook**
The copper future curve is almost perfectly back to its May 10th situation.

**Principal component analysis**

Although strikes pushed prices higher in June, the curve has been flattening since June 19th which is rather unusual in these circumstances. The copper market is poised right now between supply-side worries (strikes in Chile and Canada) and uncertainty over the future trajectory for Chinese refined metal and concentrates imports.

**Source:** Fortis Modelling, Bloomberg

---

**Level (t)**

**Slope (t)**

**Curvature (t)**

**Error (t)**

**Source:** Fortis Modelling
Nickel
Future curve analysis

**Fundamental outlook**

Prices are going down, the future curve is flattening: obviously, concerns about short-term nickel supply are gone for a while. This bearish outlook clearly follows the June 11th announcement by the Brazilian mining company CVRD, forecasting that it will double its output to 500,000t in five years.

The slope is particularly low and is in fact a lot lower than it is has been during last year. Given that the 500,000t announcement not only concerns new projects but partly comprises acquisitions, we might well be seeing an over-reaction and more backwardation might well be on the chart next month.

As pointed out last month, nickel curvature was very high and has decreased sharply in June.

**Principal component analysis**

**Level (t)**

- 221,819
- 211,819
- 201,819
- 191,819
- 181,819
- 171,819
- 161,819

**Slope (t)**

- 3,264
- 1,264
- 0.264
- 0.164
- 0.064
- 0.064
- 0.064

**Curvature (t)**

- -278.00
- -178.00
- -78.00
- 0.00

**Error (t)**

- 192
- 8
- 0.8
- 0.08

Source: Fortis Modelling
Fundamental outlook
Not surprisingly, the lead future curve is going up following suspicions that China’s refined metal exports will drop sharply as a consequence of a 10% export tax which kicked in on 1st June.

What is more surprising is the evolution of the slope and curvature. The slope decreased and the curvature increased sharply, resulting in a parallel upward shift of the curve.

If low lead stocks on LME persist while China’s exports decrease, we should see more backwardation on the lead curve next month.
**Zinc**

**Forward curve analysis**

**Fundamental outlook**

The zinc curve slid downward from May 10th to June 9th while backwardation increased. From June 9th onward, the zinc curve reverted from more backwardation to more flattening.

The recent flattening of the curve is more in line with the small but probably widening surplus which we are forecasting for 2007.

**Future contract**

![Graph showing the zinc curve with price in USD from JUL 07 to JUL 09, with different dates and price levels.](image)

Source: Fortis Modelling, Bloomberg

**Principal component analysis**

**Level (t)**

![Graph showing level analysis with dates 6/4/07 to 6/7/07 and different price levels.](image)

Source: Fortis Modelling

**Slope (t)**

![Graph showing slope analysis with dates 6/4/07 to 6/7/07 and different slope levels.](image)

Source: Fortis Modelling

**Curvature (t)**

![Graph showing curvature analysis with dates 6/4/07 to 6/7/07 and different curvature levels.](image)

Source: Fortis Modelling

**Error (t)**

![Graph showing error analysis with dates 6/4/07 to 6/7/07 and different error levels.](image)

Source: Fortis Modelling
**Fundamental outlook**

Tin ends up on July 9th roughly unchanged but higher compared to June 9th, except for the front month contract which has aligned itself with the other contracts.

Compared to mid-May, the curve has flattened, which is in line with rising Indonesian supply.

---

**Principal component analysis**

**Level (t)**

**Slope (t)**

**Curvature (t)**

**Error (t)**

Source: Fortis Modelling
Notes
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Virtual Metals Research & Consulting
85 Albany Street
London NW1 4BT

Tel: +44 20 7487 3600
Fax: +44 (0)870 051 2261

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

### Commodities
- **Ian Downes (Head)** +44 20 7444 8741  
- **John King (Head of Base & Precious Metals)** +44 20 7444 8330  
- **Gerry Schubert (Director, Precious Metals)** +44 20 7444 8600  
- **Jonathan Parkman (Director, Agricommodities)** +44 20 7444 8407  

### Global Commodities Group
- **Piet-Hein Ingen Housz (Global Head of Metals)** +31 10 401 67 93  
  - Rotterdam: Silvan Doornenspeet +31 10 401 97 83  
  - London: Michael Rolfe +44 20 7444 8450  
  - New York: Edward Aldrich +1 203 705 57 25  

### Structured Commodity Finance
- **Carl Shipman** +44 20 7444 8785  
  - Singapore: Ng Chuey Peng +65 65 394 923  
  - Hong Kong: Lee Mei +852 28 47 84 20  
  - Shanghai: Steven Jin +862 15 049 88 33
Global Markets Sales Contacts

Johan Beckers
(Global Head Sales & Marketing Group)

Investment Products Sales
Paul Wagner (Head Investment Products Sales)  +32 2 565 98 93

Institutionals
- Belgium: Marc Solle  +32 2 565 74 70
- The Netherlands: Bert Veenstra  +31 20 535 74 54
- Luxembourg: Paul Wagner  +32 42 10 44 50
- France: François Girod  +33 1 55 67 90 56
- Uk-Ireland: Steven Harrie  +32 2 565 86 35
- Italy: Franco Mora  +39 02 57 53 24 61
- Spain: Jean-Louis Degand  +34 91 438 56 27

Retail and Private Banking
- Belgium: Alain Cadron  +32 2 565 75 50
- The Netherlands: Bert Veenstra  +31 20 535 74 54

Equities Sales
Johan van Megesen (Head)

Institutionals
- Belgium: Alain Adam  +32 2 565 86 22
- France: Philippe Barroso  +33 1 55 67 90 82
- Luxembourg: André Wagner  +32 42 10 49 07
- The Netherlands: Nils Ten Berg  +31 20 535 73 32
- Spain (Domestic Sales): Manuel Torres  +34 91 438 56 51
- Spain (International Sales): Luis Broto  +34 91 438 56 52
- United Kingdom: Nils Ten Berg  +31 20 535 73 32
- United States: Francis Grevers  +1 212 418 67 14

Fixed Income/New Issues
Katherine Dior (Head)  +32 2 565 63 08

Syndication
- Belgium: Alain Cadmen  +32 2 565 76 50
- France: Philippe Barroso  +33 1 55 67 90 82
- Luxembourg: André Wagner  +32 42 10 49 07
- The Netherlands: Nils Ten Berg  +31 20 535 73 32
- Spain (Domestic Sales): Manuel Torres  +34 91 438 56 51
- Spain (International Sales): Luis Broto  +34 91 438 56 52
- United Kingdom: Nils Ten Berg  +31 20 535 73 32
- United States: Francis Grevers  +1 212 418 67 14

Structured Products
Ludovic Plas (Head)  +33 1 55 67 90 56

Interest Rate Derivatives
Bernard Van Gils (Head)  +32 2 565 74 70

Forex Derivatives
Johann Barchechath (Head)  +32 2 565 12 27

Equity Derivatives
Fabian de Prey (Head)  +32 2 565 81 05

Credit Derivatives Structuring
Frédéric Monneret (Head)  +33 1 55 67 90 58

Structured Product Services
Emmanuel Grime (Head)  +32 2 565 98 93

Sales Treasury Products
Kris De Zeure (European Head Sales Treasury)  +32 2 565 80 81

Corporate
Matthias Locker (Head)  +32 2 565 65 64
- Belgium: Alfonso Vera Evertman  +31 20 535 71 66
- Luxembourg: Manfred Hawelka  +32 42 10 49 42
- France: David Allardini  +33 1 55 67 90 05
- Italy: Francesco Scotto  +39 02 57 53 24 64
- Spain: Louis Veldman  +34 91 23 48 726
- United Kingdom: Tim Kirkham  +44 20 73 98 93 53
- Norwegian: Bjorn Kaaber  +47 23 11 49 60

Financial Institutions
Laurent Leveque (Head)  +33 1 55 67 90 67
- Belgium: Alex Devroye  +32 2 565 61 03
- The Netherlands: Ronald Riko  +32 2 565 72 70
- Luxembourg: Dominique Chauma  +352 42 10 47 00
- Italy: Francesco Scotto  +39 02 57 53 24 64

Mid-Caps
Belgium: Conrad Freerens  +32 2 565 19 77
- O/W Vasanderen: Gerrit Bauwens  +32 2 565 78 57
- Sud: Stéphane Casteens  +32 2 565 78 56
- Brussels/Public: Filip Moens  +32 2 565 70 40
- VL Brabant/Limburg: Henric Jaspers  +32 2 565 73 10
- Antwerpen/Kempen: Jeff Van Camp  +32 2 565 78 48
- The Netherlands: Bart Solleveld  +31 20 535 71 84
- Luxembourg: Thomas Kraemer  +352 42 10 46 00
- Germany: Reinhold Beiser  +49 22 11 61 12 25
- Austria: Alfred Buder  +43 181 10 43 81 58
- Rest of Europe: Geert Blancke  +32 2 565 16 05
- France: Muriel Flasse  +33 1 55 67 80 84
- Spain: Jose Bravo Galisteo  +34 91 43 26 767
- Portugal: Rui Lopes  +35 12 13 13 93 03
- Italy: Marco Toja  +39 02 57 53 23 72
- Poland: Ag D 66 99 04
- Hungary: Attila Toth  +36 14 83 81 09
- Czech Republic: Tomas Blazko  +42 02 54 43 90 10
- Denmark: Flemming Warbur-Rasmussen  +45 32 71 19 09
- Sweden: Mats Cardemo  +46 732 02 08 59
- Greece: Marinos Daralatos  +30 210 864 370
- Switzerland: Patrick Schaerer  +41 58 322 09 70
- Turkey: Bahar Bezmez  +90 212 274 42 80
- United Kingdom: Tim Kirkham  +44 20 73 98 93 53

Automated Trade and Service Desk
Marc Vittis  +32 2 565 71 10
- ATS Desk  +32 2 565 73 00
- Service Desk  +32 2 565 74 90
- Netherlands: Wim Verwaal  +31 20 535 72 39

Energy & Environmental Markets
Philippe Arkiv (Head)
- Energy Europe, Brussels  +32 2 565 75 60
- Energy Europe, Amsterdam  +31 20 535 73 67
- Carbon Banking  +31 20 535 72 02
Global Markets Research Contacts

Paul Gennart
+32 2 565 60 45
(Global Head Research & Strategy)

The Netherlands
Guy Verberne (Head) +31 20 535 73 25
Joost Beaumont +31 20 535 74 31
Peter de Bruin +31 20 535 70 38
Nick Kounis +31 20 535 71 06
Aline Schulling +31 20 535 71 31

Spain
Estefania Ponte (Head) +34 91 436 55 37
Diego Fernandez +34 91 436 55 00

Strategy
Francoise Bernard (Head) +32 2 565 83 02
Fredéric Atlan (Fixed Income) +33 1 55 67 72 81/+32 2 565 86 06
Amaud Bomet (Forex & Money Markets Quant) +32 2 565 83 27
Alexandre Dieudonné (Forex & Money Markets) +32 2 565 69 67
Sébastien Gils (Fixed Income) +32 2 228 69 47
Bart Robinek (Forex & Money Markets) +32 2 312 08 31

Technical Analysis
Francoise Bernard (Head) +32 2 565 83 02
Karel De Bie (Fixed Income/Forex/Commodities) +32 2 565 85 46

Modelling
Peter Cauwels, Ph.D. (Head) +32 2 565 47 90
Philippe Bittmer +32 2 565 40 29
Alain Gram +32 2 565 60 52
Philippe Gjesels (Equities) +32 2 565 16 37
Sébastien Gils (Fixed Income) +32 2 228 69 47
Bart Robinek (Forex & Money Markets) +32 2 312 08 31

Credit Research
Hélène Séré (Head Utilities & Energy) +33 1 55 67 72 83/+32 2 565 75 67
Benoit Felho (Banks) +31 1 55 67 72 96
Sabrina Marchal (ABS/CDO) +32 2 565 68 82
Christine Passieux (Banks) +33 1 55 67 72 87
Karine Petitjean (Consumer Non-Cyclical) +33 1 55 67 72 88
Bertrand Rocher (Automotive) +31 1 55 67 72 64
Olga Zubiakova (Building & Basics/Utilities & Energy) +33 1 55 67 72 80

Equity Research
Marc Pauwels (Head) +31 20 527 13 55

Benelux
Michel Aupers (Head) +31 20 527 28 62
Wim Levie, CFA (Co-ordinator Belgium) +32 2 565 62 61
Felix Oberdorfer (Co-ordinator The Netherlands) +31 20 527 23 28
Paul Andriessen (Mid & Small Caps) +31 20 527 21 82
Maarten Bakker (Mid & Small Caps) +31 20 527 23 32
Koen Curt Daniël, Ph.D. (Biotech) +31 20 527 34 17
Kurt De Baens (Banks/Retail) +32 2 565 60 42
Jutus De Meersman (Shipping) +32 2 565 12 45

Spain
Ana Alzuyeta (Mid & Small Caps) +33 1 55 67 72 48
Séverine Blé (Transport/Consumer Goods/Retail) +33 1 55 67 72 43

France
Philippe Ezejian (Head) +33 1 55 67 72 29
Thomas Alzuyeta (Mid & Small Caps) +33 1 55 67 72 48
Severine Béle (Food) +33 1 55 67 72 43
Clare Deray (Transport/Consumer Goods/Retail) +33 1 55 67 72 43
Marc Huberty (Industrials) +33 1 55 67 72 30
Bertrand Laport (IT Hardware) +33 1 55 67 72 31
Oliver Macquet (Industrials & Services) +33 1 55 67 72 42
Oliver Moral (Media) +33 1 55 67 72 32
Gilles Raffort (Luxury & Services) +33 1 55 67 72 45

US
David Garrett (Biotech) +1 212 340 54 94
Patrick Moriarty, Ph.D. (Biotech) +1 212 340 54 97
Biju Perincheril (Energy) +1 212 340 54 76

Retail Banking and Private Banking Research
Koen Van de Steene (Head/Healthcare) +32 2 565 68 14
Christel Bosch (Energy/Industrials/Utilities) +32 2 565 82 34
Bart Ingels (Basic Materials/Consumer Non-Cyclical) +32 2 565 44 07
Geert Ruysschaert (Co-ordinator Top-Down/Telecom/Media) +32 2 565 19 58
Alain Servais (Editor) +32 2 228 92 30
Kristof Wauters (Fixed Income/Forex) +32 2 565 51 35

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