METALS MAGNIFIER
Peering through the gloom

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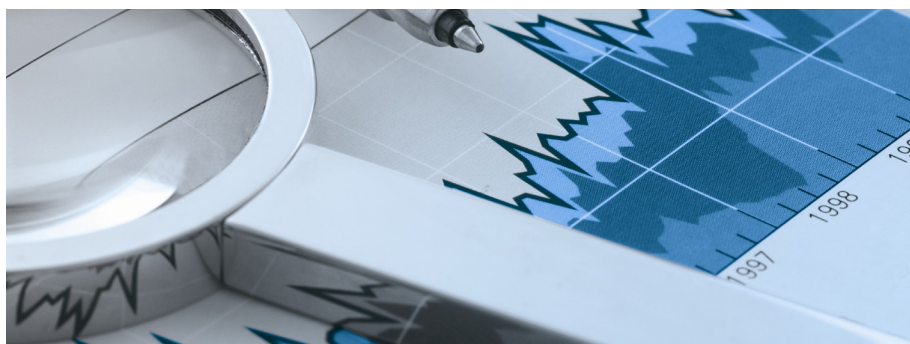
■ In this issue, we are releasing our disaggregated supply-demand balances for 2011. For some metals, there is a clear fundamental signal for even higher prices than we had previously forecast, such as for copper, tin and lead, while for other metals, such as zinc and aluminium, we have downgraded our price expectations. We expect consumption growth in 2011 to slow from this year's fast pace, but on the whole we expect growth to be above trend, supported by slower, but still strong economic growth. China's voracious demand for metals is unlikely to abate in 2011, driven by 9% GDP growth and continued strong infrastructure investment. While the OECD will not benefit in the same way from restocking as it did this year, we expect end-demand conditions to continue improving, albeit at a slower pace, in line with a sustained economic recovery.

■ We expect the supply side to be an important differentiator of price performance, with copper and lead facing amongst the biggest challenges, in our view. Copper mine production growth is likely to struggle, which suggests there will have to be large draws in metal inventories to keep up with even a modest rate of demand growth. As such, we see the potential for copper prices to reach a new record high. For lead, mine supply looks tight going into 2011, so without another large jump in secondary production, which we see as doubtful, refined production growth will be constrained. The outlook for aluminium prices is relatively benign with excess smelting capacity and ample raw material supply pointing to strong production growth, while costs will provide downside support. We have downgraded our price expectations for zinc in 2011 on the basis of stronger refined production. That said, we see potential for significant upside to prices later next year and onwards as mine supply begins to tighten. We see some short-term softness for nickel as stainless demand wanes, but this will be temporary as the supply-demand balance improves through 2011. Mine supply growth looks likely to be weak since we are not optimistic about high pressure acid leach projects.

■ In the precious metals, we expect many of the dynamics that are currently in play to continue to take centre stage in 2011. Although we expect gold's implied physical surplus to fall, excess supply will need to be met by investment demand where, for now, appetite is set to remain robust as fears of inflation and the desire to hold a hard asset supports interest.

Price forecasts

		2010F	2011F
Base Metals (LME cash)			
Aluminium	US$/t	1,989	2,150
Copper	US$/t	6,752	7,763
Lead	US$/t	2,066	2,350
Nickel	US$/t	20,303	22,375
Tin	US$/t	17,592	19,500
Zinc	US$/t	2,014	2,250
Precious metals (spot prices)			
Gold	US$/oz	1,195	1,180
Silver	US$/oz	18.2	17.5
Platinum	US$/oz	1,623	1,660
Palladium	US$/oz	469	480

Source: Barclays Capital

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FOCUS

From royalties to rents: Shifts in global mineral taxation policy

Opposition to Australia's RSPT demonstrates to other governments the pitfalls associated with mine tax reform

The issue of mineral taxation policy and its impact on companies' investment plans is always pertinent to the potential evolution in base metal supply-side fundamentals. In 2010 however, it has come right to the fore in terms of topical issues with the proposal in May by Australia's government (under the leadership of Kevin Rudd) of a Resource Super Profit Tax (RSPT). Rudd's proposed tax was ultimately devolved into the Mineral Resource Rent Tax (which the base metals sector was excluded from), following fairly voracious and well-publicised opposition campaigns from major mining companies, such as BHP Billiton, Rio Tinto and Xstrata. This successfully sparked a broader populist reaction against the potential employment mal-effects, which was further invigorated by the negative wealth effects from the subsequent decline in the Australian stock market of which resource companies comprise 20% While we would not stand oblivious to the effect Rudd's ultimate resignation will have had on politicians in other countries considering similar policy options, it has still inevitably raised the spectre of changes in mining tax regimes as one possible component of the solution for governments seeking to resolve their current fiscal burdens. While there has yet to be a first mover in the base metals sector – Australia and then Chile have come close – the trend of such proposed policies is unlikely to end there.

*Higher mining taxes could lead to marginal projects being cancelled or delayed*

In turn for base metals market participants, it has magnified this issue as a factor in determining how supply-side performance will develop over the next few years. For metals such as copper and zinc, which face near-term supply-side constraints, the sensitivity of prices to project cancellations or early closures is acute. This was seen in Australia where Xstrata initially announced that, due to the proposed mine tax, it was halting copper exploration in Queensland, as well as halting expansion work on the Ernest Henry copper mine with a potential loss of 275Kt during 2013-24. The basic fact is that any such new tax, whether in Australia or elsewhere, will raise future costs for located projects in the country, which will further fuel cost inflation. This will then contribute to the need for higher equilibrium prices to incentivise producers to invest in enough such projects for supply growth to meet demand.

Figure 1: The debt-to-GDP ratio dictates that governments will look for an "easy" source of tax revenues
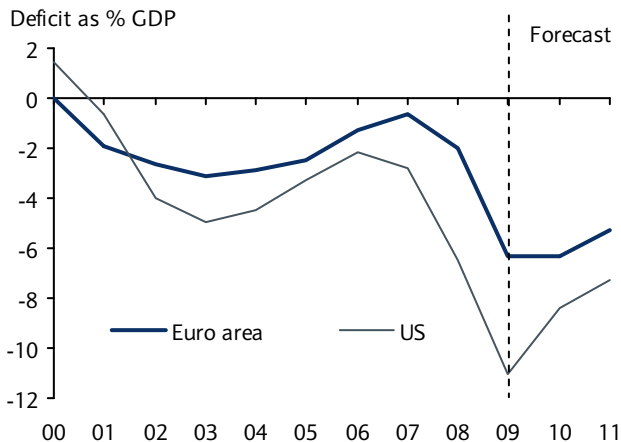
Source: Barclays Capital

Figure 2: Even without project cancellations, the copper mine supply outlook indicates decline from 2013 onwards
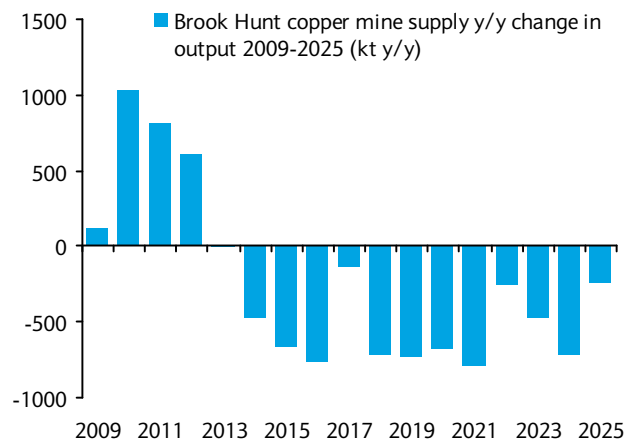
Source: Brook Hunt, Barclays Capital

Fiscal constraints and higher commodity prices present strong support for higher rents

We would not, however, over-emphasise the immediacy of such potential policy changes in the second half 2010. The ongoing uncertainties regarding the sustainability of the global economic recovery offer a rebuttal to any policy seemingly causing job losses. As we saw in Australia, the perceived unemployment effects of the RSPT, rather than affecting mining company profit levels per se, were the key drivers of the populist reaction. However, given that we expect greater macroeconomic stability and sustained growth in 2011, with our current forecast for global GDP at 4.3%, confidence will likely grow towards enacting such policies from this perspective. Moreover, in our view, it seems almost inevitable that some changes will be made for two key reasons; first and foremost, in a period where fiscal deficits remain a prime constraint for governments, higher taxes for all sectors of the economy must be considered a policy option. By way of example, our economists forecast Australia's fiscal deficit at 4.4% of GDP in 2010 and 2.9% for 2011. Second, increasing taxes on the natural resource sector would appear to offer a relatively attractive option for politicians, given the relative strength in base metals prices, which are at relatively historically high levels. As such, there is a view that mining companies are achieving more than "adequate" profit levels and that it is "fair" for the state to increase taxes, as long as it does not cause more than a revenue-offsetting reduction in activity. Moreover, mining companies are expecting such policies to be enacted. Rio Tinto recently stated that "mining nationalism may spread" as governments will want to "increase their revenue share" and "to have more control of who develops their natural resources".

Supply-side outlook remains tight in many countries and tax changes could weigh

Given the current elevated relevance of mineral taxation – which is unlikely to dissipate based on our bullish forecasts for prices over 2011-12 – it is important for market participants to gain a greater understanding of the issue and its implications. First and foremost, what is mining taxation, how is it formulated and what are the different options? Second, what are the current systems employed in the major mining locations globally and, in turn, the way mining companies currently perceive the required "internal rate of return" to invest in those locations? Finally, focussing on the individual country level, are there any current developments of note and, in turn, which major projects face possible effects if taxes are changed?

Global Minerals taxation: Basic economic theory

While participants in the base metals are ultimately concerned over where and whether there might be mining tax changes and the possible effect of supply-side fundamentals resulting from that, it is also of benefit to gain some basic understanding of the economics of minerals taxation, the different alternative tax regimes and, finally, what exists in the major countries globally. On that basis, there is a better possibility of fully grasping how the overall picture for mining taxation could change.

The generation of economic rents provides the basic justification for mining taxation

First and foremost, what is the logic of minerals taxation? The basic economics of mine taxation comes from the idea that an economic rent is created when a mineral is extracted, which is, in essence, the price of the commodity (eg, the LME copper price) minus the opportunity cost of extracting and supplying the commodity. The opportunity cost concept captures the cost of exploring and developing the mine project, production, capital and the risk premium (which will, of course, vary between projects and countries). The essence of a mining tax is that the generated economic rent is more sizeable than the incentive required to undertake the necessary work, so a "pure rent" exists, which is excess to the required rate of return from a mining company to undertake a project. In essence therefore, a mining tax could pertain to the entire "pure rent" without leading the company to turn its back on

investing in a project. The problem though is that some of the inputs into this theoretical calculation of potential taxable amount (the "pure rent") are either subjective, for example, one company's risk premium attached to investment in Africa's copper belt may be very different to another's, or simply 'unknowable', as they are based on future events and decisions by other parties. For example, different mining companies may react very differently to different tax levels.

Ultimately then, there are various pitfalls for a government to determine its optimal level of taxation – namely, the level at which revenues are maximised without discouraging exploration, investment and production, which will support revenue generation. Moreover, it is also important to bear in mind that tax revenues are not the only benefit from mine sector growth – for example, mining companies may support infrastructure expansion or build schools/towns to support mine workers. There is also, in essence, a trade off between higher tax levels now, which will increase revenues in the short run but discourage investment and, thus, reduce longer-term receipts, versus low tax levels now, which will have the reverse effect. Finally, one has to build into this picture the notion that mining companies are choosing between locations in different countries, so, in essence, there is competition. All of these factors complicate the decision-making process of which mine tax to employ.

Figure 3: Different types of mining tax – Unit versus revenue based

Tax type	Basis for tax	Goal of the tax
In rem taxes (unit/value based)	**Tax on mine processes**	**Focused on production/operation**
Unit-based royalty	Set charge per unit produced	Provides stable and certain revenues as commodity price movements have no effect
Ad valorem-based royalty	% of mineral's value (definition of value may vary)	Provides at least some revenue
Sales and excise tax	% of value of sales	Provides revenue based on volume of economic activity
Property or capital tax	% of value of property or capital	Provides revenue based on the value of the physical plant
Import duty	% of value of imports (usually)	Provides revenue to support domestic producers
Export duty	% of value of exports	Provides revenue and incentive to serve domestic demand
Withholding on remitted loan interest	% of loan interest value	Provides revenue and encourages equity
In personam taxes (net revenue based)	**Tax on revenue stream**	**Focused on revenues of project**
Income tax	% of income	Provides revenue on ability to pay
Capital gains tax	% of profit on disposal of capital assets	Captures profits on disposal of assets
Additional profits tax	% of additional profits	Captures parts of exceptionally high profits
Excess profits tax	% of excess profits	Captures parts of exceptionally high profits
Net profits royalty or net value royalty	% of mineral's value less allowable costs	Provides revenue based on ability to pay
Withholding on remitted profits or dividends	% of remitted value	Provides revenue based on ability to pay and

Source: World Bank (2006), Barclays Capital

Various different forms of minerals taxation options exist for governments

Given the basic notion of an economic rent and its basic pitfalls, what are the different types of mine taxation? As Figure 3 demonstrates, there is a large variety of mining taxes, thus, even once a government has decided on the proportion of economic rents it wishes to collect in taxes, there are a variety of tax types that can be employed to achieve the desired tax level. The basic distinction as offered in the title of this piece is between a royalty "production" based tax system and profit based "rent" taxes. This is perhaps

oversimplifying the set of tax types though, and it needs to be expanded to be considered as the difference between *in rem* taxes – which are focussed on the deposit and processes used up to and including production – and *in personam* – which are focussed on the net revenues of the mine. The basic goal of government in designing a mineral tax regime is, as discussed, to maximise its tax revenues in line with its goals regarding investment in the sector. This is where the most basic divide between *in rem* and *in personam* becomes apparent – an *in rem* tax essentially guarantees tax revenues, even without a profit being made at the mine, thus offering an attractive, less variable revenue base (often a major issue for countries dependent on commodities for export revenues). On the other hand, it acts as a disincentive to investment in projects as fixed costs need to be discounted into the opportunity cost of the undertaking the project. *In personam* taxes, on profits as it were, allow for companies to achieve just that before facing a tax burden but conversely do not offer an immediate stable revenue stream for governments.

Figure 4: Various countries' mineral taxation regimes, estimated effective tax rate and investors IRR

	World Bank "paying taxes" ranking	Effective tax rate (%)	Combination of corporate and royalty tax types	World Bank/James Otto projected foreign investors IRR at model Cu mine
Western Australia	47/183	36.4	30% corporate tax, 1.25-7.5% of realized value royalty tax	12.7
Canada (Ontario)	28/183	63.8	38% corporate tax less provincial abatement provincial rate of 4% for Ontario, 10-18% royalty tax	10.1
Chile	45/183	36.6	15% corporate income tax coupled with 35% dividend withholding tax, 4-5% royalty tax	15
China	125/183	41.7	33% corporate income tax, 2% gross revenue royalty tax	12.7
DRC	157/183	N/A	N/A	N/A
Indonesia	127/183	46.1	30% corporate income tax, Royalty tax rates based on gross ore production and commodity type	11.2
Kazakhstan	52/183	46.1	30% corporate income tax with an excess profit tax applies if the IRR on net income is greater than 20%, 2% royalty tax on gross revenue	12.9
Mexico	106/183	49.9	35% corporate income tax if profits are reinvested, 5% of such investment may be deferred, NO royalty tax	11.3
Mongolia	69/183	55.0	N/A	10.6
Papua New Guinea	96/183	42.7	35% corporate income tax and an excess profit tax applies to certain leases when profit threshold is reached, 2% ad valorem royalty tax on cu and ni	13.3
Peru	86/183	46.5	30% corporate income tax and mandatory profit sharing 8% of net profit, 1-3% royalty tax on gross sales	11.7
Poland	151/183	49.6	22% corporate income tax and 3% royalty tax on ore value based on copper/zinc LME	11
South Africa	23/183	45.0	30% corporate income tax, 3% royalty tax on gross sales	13.5
Zambia	36/183	N/A	35% corporate income tax and 2% royalty tax on net smelter return	N/A

Source: World Bank, Otto (2000, 2004), Barclays Capital

Obviously, cost benefits of both types – and the sub-divisions within them – mean that the reality in most countries is that a combination of different mine taxation types is employed, Figure 4. The exact configuration varies because not all countries are the same whether in terms of economic development, importance of commodity as a revenue generator, efficiency of tax system and relative evolution in the mining sector itself (in terms of the need to attract investment). Moreover, such conditions change within a country and, hence, policymaker's views on the "correct" tax regime change through time – most notably that drive for change may come from government budgetary pressures or higher commodity prices (or indeed a newly-elected government). This was the case recently in Australia where the fiscal pressures on the government, facing a deficit representing 4.4% of GDP in 2010, provided the catalyst for potential tax reforms. Similarly in Chile, the recently-elected government's proposal in July to revamp mining royalties was driven by the need to raise up to $1bn to support a $8.4bn package aimed at aiding construction efforts in the wake of the earthquake earlier in 2010. Conversely, the Zambian government introduced a windfall tax in 2008 to take advantage of higher prices, which was later rescinded in light of the lower price environment, as well as leadership change. In terms of broader trends on tax policy selection, while the majority of countries employ a combination of types, it is fair to say that there has been a general shift from *in rem* taxes to *in personam* – the majority of countries have reduced or removed import/export duties, while royalty taxes have typically been lowered or in the case of *ad valorem,* royalties are adjusted non-production related expenses, such as a net smelter return, which is characterised as a fixed or variable percentage of the sales price, or gross revenue, the mining operator receives from the sale of mineral product from the property.

It is perhaps also worth considering that mining taxes do not tend to exist independent of each other. For example, generally, an income tax system allows for the deduction of royalties in computing taxable income. For example, in a country that imposes a 30% income tax rate and a 2% royalty, in years when no income taxes are payable, the royalty rate will be 2%. However, when profits are achieving and deducting fully realised, the net royalty tax burden will be adjusted downwards. Moreover, in most countries, companies are allowed to carry forward losses from one year to another, and deductible royalty payments in early years will, thus, further reduce income tax liability later in the project.

Overall, the effective tax rate is the combination of the different taxes employed, based on broad World Bank estimates of effective tax on the mining sector of which there are extreme variations, Figure 4. Commensurately, there is a direct feed through into investors' perceived calculation of the IRR in a certain country. Otto (2004) analyses the potential IRR of a model copper mine under different countries' tax regimes, and it is no coincidence countries with the highest effective tax rates are also those with the lowest IRR.

Global Minerals taxation: Some current issues

While the basic theory and approximate state of mine tax systems in various countries has been laid out, the key question beyond the basic theory is given current tax regimes, are there any countries likely to offer the potential for changes in the near term?

Australia – Low risk

Australia is the country which has sparked this debate in 2010 and, thus, offers a good starting point. Faced by a substantial fiscal deficit, the initial proposal of mineral tax revision involved the imposition of a 40% Resource Super Profit Tax (RSPT) that would go into effect for the mining industry on 1 July 2012 (fiscal 2012-13). The tax was essentially a replication of that applied to the oil sector and was to be combined with a corporate tax rate

that would reduce from 30% now to 29% in fiscal 2013-14 and 28% starting in fiscal 2014-15. Mining companies would get rebates from the Federal Government for the state-based royalties that they would continue to pay (which average about 6%). Barclays Capital's metals and mining equity analysts have calculated that the resulting effective tax rate (taxes plus royalties) for the major miners in Australia would have been an increase from approximately 34% today to almost 57% by fiscal 2014-15 and that earnings for Australia's most profitable mining operations would fall by more than 34% as a result of this plan.

Ultimately, this tax was not employed due to unpopularity with the public, although it did lead to a review of projects by companies in the country and demonstrate how future investment plans can change as a result of such decisions. BHP Billiton described the tax as "deeply flawed", Rio Tinto agreed with that statement, and both indicated that they were reviewing all projects in the country. Xstrata went one step further and announced that it will not be extending its Ernest Henry copper and gold mine from 2012 onwards (with lost copper production of 275Kt over 2012-24).

Figure 5: Australia mine production

Australia base metals mine production (Kt)						
Major Copper mines	2010	2011	2012	2013	2014	2015
Mount Isa Cu	163	159	148	140	136	136
Olympic Dam	150	180	180	180	180	180
Prominent Hill	110	100	100	70	85	82
Ernest Henry	80	95	60	50	50	50
Nifty Mill	55	65	70	70	70	70
Total copper mine production	872	844	825	770	790	742
Proportion of total global output	5.5%	4.1%	3.9%	3.6%	3.8%	3.7%
Major Zinc mines	2010	2011	2012	2013	2014	2015
Broken Hill	72	75	75	75	75	75
Century	505	510	510	510	289	0
McArthur River - Bulk Conc	175	175	175	200	200	200
Mount Isa Pb/Zn	348	360	360	375	390	390
Cannington	70	80	80	80	80	80
Total zinc mine production	1505	1603	1581	1605	1277	979
Proportion of total global output	12.5%	12.4%	11.9%	12.2%	10.2%	8.1%
Major Lead mines	2010	2011	2012	2013	2014	2015
Broken Hill	55	55	55	55	55	55
Cannington	236	230	230	230	230	200
Endeavor (Elura)	27.5	36	30	30	30	30
Magellan	57	90	82	79	86	86
Mount Isa Pb/Zn	156	169	169	178	192	192
Total lead mine production	651	713	703	716	691	638
Proportion of total global output	17.2%	17.9%	17.4%	17.8%	17.4%	16.8%
Major Nickel mines	2010	2011	2012	2013	2014	2015
Leinster (Agnew)	30	30	30	30	30	30
Kambalda	30	31	32	31	38	32
Mt Keith	30	30	30	30	30	30
Forrestania/Flying Fox	20	25	26	25	20	19
Murrin Murrin	36	38	40	38	36	36
Total nickel mine production	168	179	181	178	172	161
Proportion of total global output	10.8%	10.6%	10.0%	9.7%	9.4%	8.8%

Source: Brook Hunt, Barclays Capital

Canada – Low risk

The reaction here to the Australian mining tax was one of opportunism to attract investment rather than a move to increase taxes. Indeed, the Canadian Finance Minister commented that "If it is what it appears to be, a significant tax increase, that's another competitive advantage for Canada. We're reducing our corporate taxes." As inferred, the ruling conservatives in Canada are lowering corporate taxes. The basic corporate rate is to fall to 15% in 2012, from 22% in 2007, and is the lowest among major industrial countries. The combined federal and provincial tax rate will be below 25% in most of the 10 provinces. The government has also sought to attract investment by streamlining the approval of mining and other resource projects, including environmental assessments. A new major project management office coordinates relations between investors and various federal agencies.

Figure 6: Canada mine production

Canada base metals mine production (Kt)						
Major Copper mines	2010	2011	2012	2013	2014	2015
Gibraltar (including SxEw)	40	55	55	55	55	55
Highland Valley Copper	100	105	135	125	125	125
Inco	55	115	115	115	115	115
Kidd	49	48	50	50	41	41
Voisey's Bay	20	40	40	39	33	33
Total copper mine production	493	573	621	587	557	524
Proportion of total global output	3.1%	2.8%	2.9%	2.7%	2.7%	2.6%
Major Zinc mines	2010	2011	2012	2013	2014	2015
Brunswick	200	200	100	0	0	0
Flin Flon	49	48	48	48	48	48
Kidd	130	128	120	120	105	105
Perseverance	110	110	110	110	55	0
Wolverine	15	40	45	41	41	44
Total zinc mine production	705	746	634	423	314	241
Proportion of total global output	5.8%	5.8%	4.8%	3.2%	2.5%	2.0%
Major Lead mines	2010	2011	2012	2013	2014	2015
Brunswick	68	68	34	0	0	0
Proportion of total global output	1.8%	1.7%	0.8%	0.0%	0.0%	0.0%
Major Nickel mines	2010	2011	2012	2013	2014	2015
Raglan	30	30	30	30	30	30
Sudbury	18	52	67	74	64	47
Manitoba	30	30	30	30	30	30
Voisey's Bay	15	49	54	53	44	50
Xstrata (Sudbury)	12.8	16.6	18.9	18.9	18.9	18.9
Total nickel mine production	121	189	215	221	202	186
Proportion of total global output	7.8%	11.2%	11.9%	12.0%	11.0%	10.2%

Source: Brook Hunt, Barlcays Capital

Chile – Medium/high risk

After Australia, Chile is the other mining nation to see a policy push by the government towards a new mining tax. This arose in respect to the necessary funding needs for the government's plan to build a reconstruction fund, with a view to an increase in mining sector tax revenues to raise $1bn towards this goal. Ministers had wanted to raise the 4-5% royalty to 3.5-9.0% based on the price of copper, the backbone of Chile's economy, and to enforce the scheme for three years. In a move that appeared designed to keep the miners, who were promised no changes to the tax regime until 2018 when the royalty was introduced in 2005, on its side, the government promised tax stability until 2025. However, in early July, Chile's Congress rejected the government proposal to revamp mining royalties as it was considered not tough enough on mining companies, which was a major political blow for the conservative president, Sebastian Pinera. The centre-left opposition coalition had wanted the government to make the short-term royalty increase permanent. Subsequently, the government will likely be forced to plug the financing gap through other sources. Conversely, there is apparently not a risk of the opposition introducing tougher mining regulations as Chilean law did not allow Congress to introduce bills to change tax codes.

It appears that the mining sector will not face this new royalty tax system in the near term – although, there is still some risk of it reappearing, given that no party is opposed to the idea of a copper-indexed royalty system. Moreover, the majority of current royalty contracts are expected to expire 2017 when a new fixed rate may be employed, which is arguably less attractive to mining companies than the proposed variable rate. Interestingly, there were very few murmurings from mining companies based in Chile when the proposal was being passed through, unlike in Australia – no project reviews were announced for example. Part of this is due to the promise of tax stability until 2025 as part of the bill, second, the size of increase was on a much lower scale than in Australia, and, finally, new copper mine deposits are in short supply, and Chile is one of the few countries where such deposits are found in an attractive operating environment.

Figure 7: Chile mine production

Chile base metals mine production (Kt)						
Major Copper mines	2010	2011	2012	2013	2014	2015
Codelco Norte (Chuqui)	475	445	380	355	355	380
Collahuasi (including SxEw)	547	524	490	473	467	467
El Teniente	417	432	467	477	477	467
Escondida (including SxEw)	1125	1050	1125	1310	1270	1150
Los Pelambres	415	435	425	445	430	415
Los Bronces	234	293	497	481	465	413
Total copper mine production	5734	5949	6179	6231	6106	5762
Proportion of total global output	36.3%	29.2%	29.1%	29.2%	29.5%	29.1%

Source; Brook Hunt, Barclays Capital

DRC – high risk

The DRC has been one of the high risk locations for changes in government policy over the past few years. The main focus there has been upon the issues regarding unresolved contract disputes, as well as concerns over the illicit exploitation and trade in conflict minerals. The key dispute has been between the DRC government and the Canadian mining company, First Quantum Minerals, stems back to the contract review on 61 mine projects

that began in 2007, which included their $750mn Kolwezi copper and cobalt project. The Congolese government decided in August 2009 that FQM had failed to respect the terms of the contract, having not started production by the pre-agreed April 2009 deadline, with the resulting cancellation of their contract for the mine site. The way the DRC has behaved towards First Quantum – whether justified or not – would appear to indicate that they would not fear the reaction of the international community to imposing new rules on the mining sector.

Perhaps the key development recently relates to an announcement from the Ministry of Mines stated on June 12 that it wants state-owned mining firms such as Gecamines or Sodimico to hold a 35% stake in all future mining joint ventures, in contrast to a wide range of shareholdings in existing ventures. However, they were also at pains to point out that this principle would not be applied retrospectively to joint ventures that have already been negotiated. In addition, it also stated that companies would be required to pay a 1% signing-on bonus of the total value of the deposit determined in the feasibility study and a 2.5% royalty on gross sales. We believe it remains a distinct possibility that further changes will be made to the mining sector tax burdens, particularly given that President Kabila may not want to be seen to allow foreign mining companies to take more than their 'fair share' of profits, which may become an issue with the high copper prices we are expecting in H1 11.

Figure 8: DRC mine production

DRC base metals mine production (Kt)						
Major Copper mines	2010	2011	2012	2013	2014	2015
Frontier	100	100	95	90	80	70
Kamoto	76	76	61	66	68	71
Kinsevere-Nambulwa	10	35	55	60	60	60
Ruashi Etoile	35	45	45	45	45	45
Tenke Fungurume	105	115	115	120	130	130
Total copper mine production	411	488	537	574	571	543
Proportion of total global output	2.6%	2.7%	2.9%	3.1%	3.2%	3.1%

Source: Brook Hunt, Barclays Capital.

Indonesia – Low risk

Mine tax reform here has not really been raised as a spectre. Indeed, the Australian proposed tax reform has been perceived as a opportunity to attract investment. Moreover, the last tax reform came in September 2008, when the government passed a long-awaited tax reform legislation. The legislation reduced corporate and personal income tax rates as of January 1, 2009. Corporate income tax rates fell from 30% to 28% in 2009 and will decline to 25% in 2010. The only noise on the issue recently is slanted towards tougher oversight of taxation collection rather than the actual levels, with the government stating that it plans to issue new rules this year that will require companies to report where and in which banks they expect to put their export earnings, as it seeks to monitor capital flows and improve tax collection.

Figure 9: Indonesian mine production

Indonesia base metals mine production (Kt)						
Major Copper mines	2010	2011	2012	2013	2014	2015
Batu Hijau	250	160	100	90	100	100
Grasberg	660	575	545	590	550	550
Total copper mine production	910	735	645	680	650	650
Proportion of total global output	5.8%	3.6%	3.0%	3.2%	3.1%	3.3%
Major nickel mines	2010	2011	2012	2013	2014	2015
PT Aneka Tambang	76	91	99	101	103	105
PT Inco	82	85	90	99	101	102
Total nickel mine production	248	235	226	200	204	207
Proportion of total global output	16%	14%	13%	11%	11%	11%

Source: Brook Hunt, Barclays Capital.

Zambia – Medium-to-high risk

The messages regarding mine tax reform in Zambia are mixed. The incumbent government has certainly gone to some lengths to state that mining taxes will neither be increased nor lowered for the foreseeable future despite saying that long-term development agreements with mining companies would be cancelled (which had offered companies exceptions from existing tax levels). In April, the government stated that Zambia will not reduce the higher mining taxes it introduced in 2009 after cancelling the long-term development agreements it had previously held with foreign mining firms. The government expected the firms to accept the existing taxes, especially after previously scrapping a controversial mining windfall tax. In 2008, Zambia increased company income tax from 25% to 30%, raised mineral royalty from 0.6% to 3%, and introduced a 25% windfall tax. But following protests from mining companies, the government last year removed the windfall tax but kept the other taxes. Sensitivity to jeopardizing foreign investment remains a key issue though, and the government also emphasised that it will not reintroduce the controversial mining windfall tax it scrapped in 2009 when copper prices rose sharply, despite pressure from opposition parties. The introduction of the windfall tax had been backed by the World Bank to help Zambia raise badly-needed funds required to build schools, roads and provide health and education services.

Once again, opposition politicians are arguing for higher taxes in the mining sector, as in Chile – Zambia's main opposition leader Michael Sata said that the country was forfeiting revenue after the tax was scrapped and that "the government should listen to the cry of the people of Zambia and reintroduce the tax for the benefit of the country…we need the revenue to improve the lives of the Zambian people". The Miners Union in Zambia have also argued that the windfall tax should be re-introduced. The government's reaction to such populist sentiment has been to emphasise the necessity to implement key provisions of the amended Mines and Minerals Development Act to enable communities to benefit from mineral royalties and to clearly define policy on the use of the resources to promote national development. The Zambian government has maintained that it will not re-introduce the windfall tax because it was retrogressive to the development of the mining industry, which aims to increase production from 680Kt in 2009 to 1Mt by 2011.

Figure 10: Zambian mine production

Zambia base metals mine production (Kt)						
Major Copper mines	2010	2011	2012	2013	2014	2015
Kansanshi (including SxEw)	250	260	260	250	238	200
Konkola Deep	35	160	185	187	190	190
Lumwana	135	165	160	160	135	125
Mufulira (Including SxEw)	90	95	105	105	105	105
Nchanga (Including SxEw)	125	145	140	105	29	0
Total copper mine production	857	1056	1085	1036	912	785
Proportion of total global output	5.4%	5.8%	5.8%	5.6%	5.1%	4.5%

Source: Brook Hunt, Barclays Capital

Taxing conclusions

Given that the proposed heavier mining tax regimes have been rejected in Australia and Chile, one could be forgiven for believing the momentum for changes in other countries had faltered. We would disagree albeit with the caveat that some pause for thought is inevitable, given the blows politicians have taken in those two countries. The fiscal constraints on governments and rising base metals prices offer the irrefutable logic of governments increasing their share of tax revenues, particularly if their current system fails to take advantage of how higher prices increase revenue flow (as such, a move towards greater flexibility and price participation seems likely). It is very difficult to pinpoint where exactly the next move in this process will come from – we have surveyed only a few countries in the last section of this focus piece – although, arguably, logic would dictate that those with the most severe fiscal difficulties, highest leverage to commodity prices or current tax systems lacking participation in higher prices, offer the best opportunities in that respect.

Perhaps what the rejection of tax proposals in Chile and Australia shows most though is how difficult it is to achieve an optimal tax regime and, indeed, have one pass smoothly in a democracy, given how divided and extreme opinion is on the topic. However, it is difficult to believe that if copper prices, for example, rise, to the levels we expect in 2011, there will not be pressure on governments to create tax systems which capture the additional economic rent being created in that environment. In turn, if we do see such announcements, the upwards pressure on costs will very likely contribute to the need for higher equilibrium prices to incentivise producers to invest in enough new projects for supply growth to meet demand. In conclusion, the issue of mining tax reform remains very much an open issue and one which will not go away in near term, given the current dynamics.

CONSUMPTION INDICATORS

The headline leading indicators for the key economies fell in June, suggesting that confidence in the strength of global recovery remains highly volatile. While mixed data from within the euro area and everywhere else leads us to discount a double dip, we remain cautious on the strength of the recovery and expect global growth to moderate in Q3. There have been small changes to the components of our global growth forecast in June, and we still expect global growth to exceed 4% this year and next.

Figure 11: Barclays Capital macroeconomic forecasts

	Q1 10	Q2 10F	Q3 10F	Q4 10F	2010F	Q1 11F	Q2 11F	Q3 11F	Q4 11F	2011F
US										
GDP (%, y/y)	2.4	3.4	3.8	2.6	3.2	3.4	3.5	3.4	3.4	3.4
IP (%, y/y)	2.2	6.7	6.9	4.9	5.8	6.4	6.1	5.6	5.4	5.9
Fed Funds (%)	0-0.25	0-0.25	0-0.25	0-0.25	n/a	0-0.25	0.75	1.25	1.75	n/a
Euro area										
GDP (%, y/y)	0.6	1.3	1.2	1.5	1.2	1.6	1.4	1.7	1.9	1.8
IP (%, y/y)	1.1	4.3	2.7	0.4	5.6	0.4	0.1	0.3	0.4	1.1
Refi Rate (period end-%)	1.00	1.00	1.00	1.00	1.00	1.00	1.25	1.50	1.75	1.75
China										
GDP (%, y/y)	11.9	10.3	9.5	9.0	10.1	9.0	9.1	9.0	8.9	9.0
IP (%, y/y)	19.7	15.9	16.4	11.5	15.9	11.3	11.3	11.5	14.9	12.2
Monetary policy benchmark (%)	5.31	5.31	5.31	5.31	5.31	5.31	5.31	5.31	5.31	5.31
Global										
GDP (%, y/y)	4.5	5.0	4.7	4.4	4.7	4.1	3.9	4.1	4.3	4.3

Source: Barclays Capital

Figure 12: Barclays Capital FX forecasts (versus USD)

	Spot	1 mth	3 mth	6 mth	1 year
EUR	1.27	1.20	1.20	1.25	1.25
JPY	88	92	94	96	98
GBP	1.52	1.48	1.52	1.60	1.60
CHF	1.05	1.13	1.17	1.14	1.16
CAD	1.04	1.00	1.00	1.03	1.07
AUD	0.88	0.90	0.90	0.84	0.82
NZD	0.71	0.72	0.72	0.69	0.67
ZAR	7.57	7.75	7.73	7.59	7.63
CNY*	6.78	6.76	6.71	6.63	6.48

Source: Barclays Capital

Key economic indicators

Global

Figure 13: Regional June PMIs moderated across the board
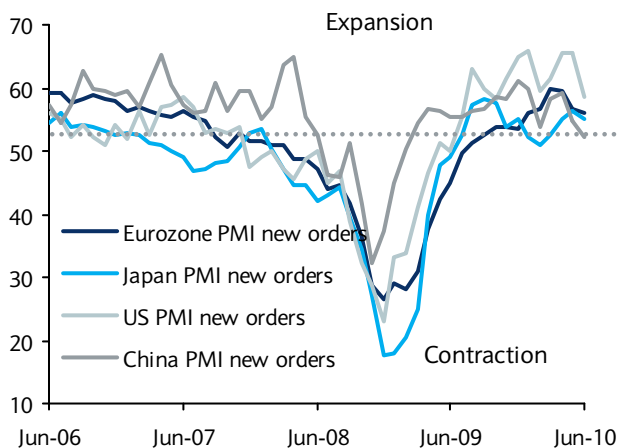
Source: Thomson Datastream, Haver Analytics, Barclays Capital

Figure 14: Global IP momentum slowed in May
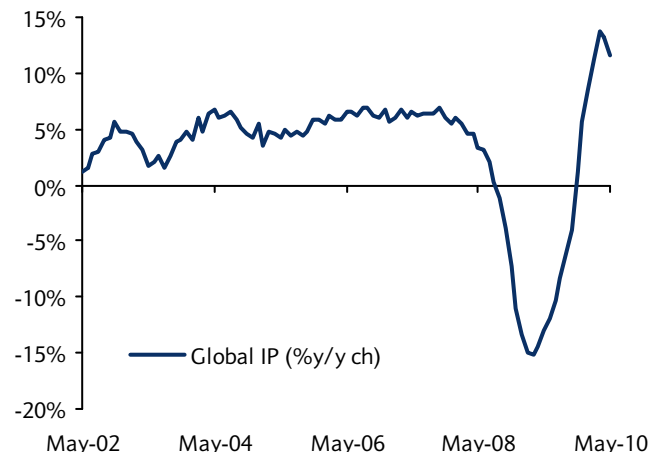
Source: Thomson Financial, Barclays Capital

Consumption-weighted global leading indicators for base metals demand

Considerable volatility in metals demand in the past two years means the importance of correctly anticipating turning points has increased.

Our consumption-weighted global leading indicators for base metals demand, published here for the first time, are chain-weighted composite indices of manufacturing activity in the US, Europe and China. The indices are constructed using new orders of manufacturing goods, backlog of orders and inventories for the US, Europe and China, and weighting the resulting indices by the respective region's metals consumption.

The constructed indicators lead metals consumption with a correlation of near 70%, and the lead time varies for each metal – five months for aluminium, four months for copper, three months for nickel and two months for lead and zinc. The charts capture the lead time by pushing forward the indicator series on the horizontal axis.

By including the order book – new and unfilled orders – and inventories, the indices are designed to capture the interactions between three cycles: the business cycle, the broader macroeconomic cycle and the stocks cycle.

Our composite leading indicators suggest aluminium consumption slowdown could potentially be the largest across the base metals complex…

The index is 61% correlated with the y/y change in aluminium consumption lagged five months

Figure 15: Leading indicator suggests aluminium demand growth may have peaked
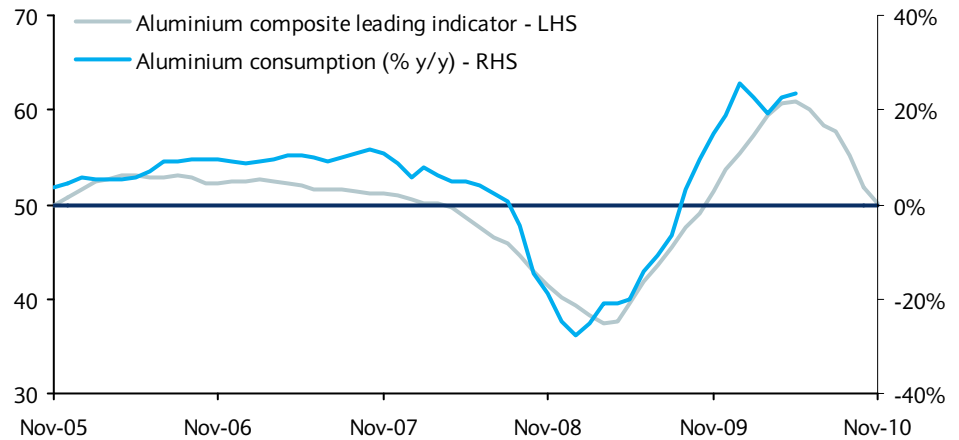
Source: Barclays Capital

Our copper composite leading indicator fell in June to 50.1 and points to an imminent slowing of the growth momentum in copper consumption over Q3

At 67%, the correlation between the leading indicator and the y/y change in copper consumption lagged four months is very strong

Figure 16: Copper consumption set to moderate significantly over the coming months
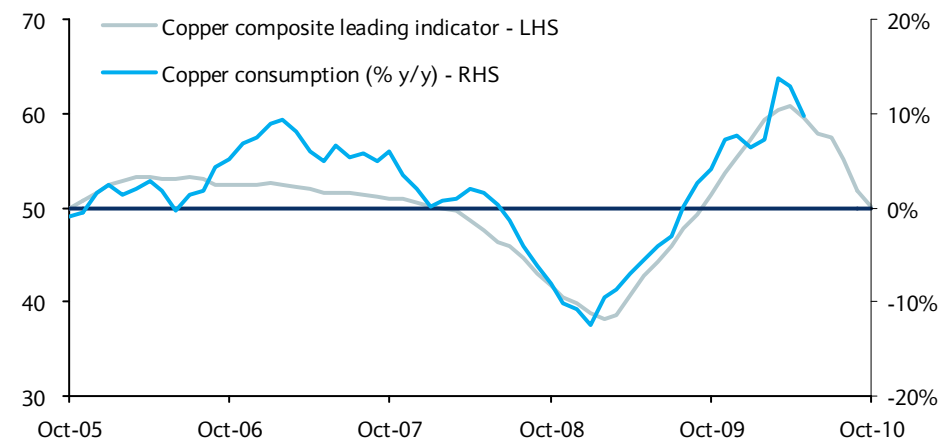
Source: Barclays Capital

At 68%, the correlation between the leading indicator and nickel consumption lagged three months is very strong

Figure 17: Slowing of nickel demand has already begun
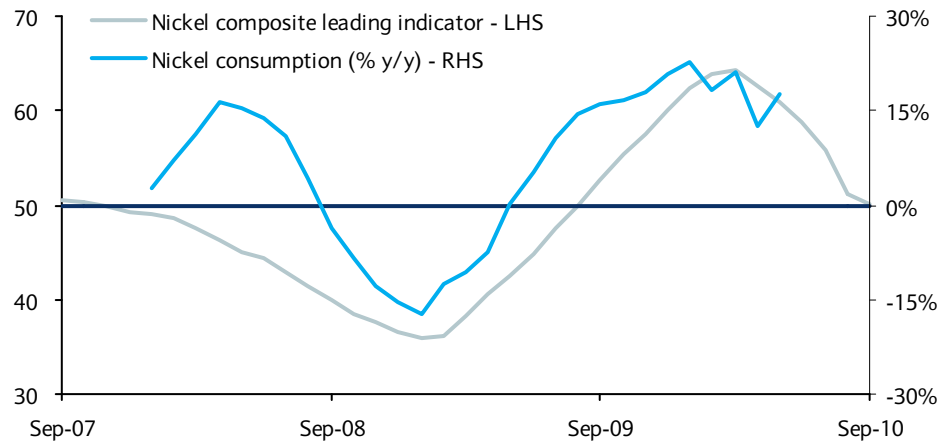
Source: Barclays Capital.

The June reading for our zinc composite leading indicator suggests weakening will continue

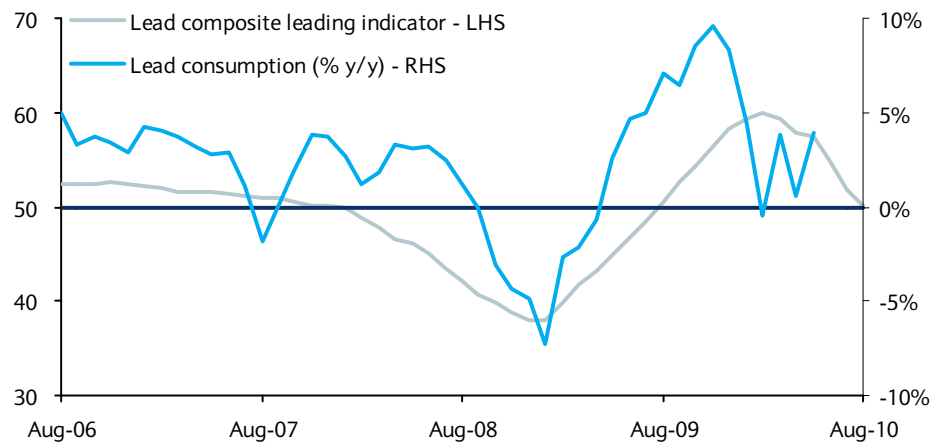*The index fell to 50.1 from 51.8 in May and 55.3 in April, pointing to a further slowdown*

Figure 18: Steep decline in zinc consumption growth to continue
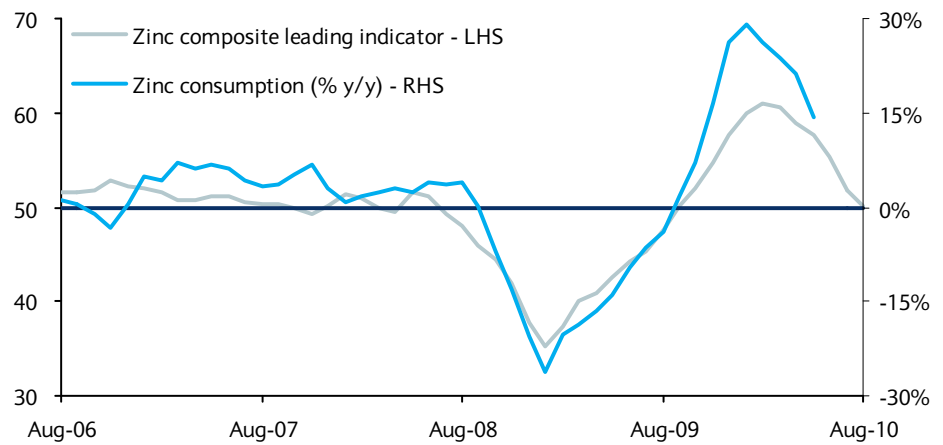
Source: Barclays Capital.

Our composite leading indicators point to a more moderate slowdown in lead consumption than in the rest of base metals

Figure 19: Slowing in lead demand growth is already advanced

Source: Barclays Capital.

GLOBAL FORECASTS

	Real GDP % over previous period, saar							Real GDP % annual chg			Consumer prices % over a year ago			
	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11	2009	2010	2011	1Q10	3Q10	1Q11	3Q11
Global	5.0	4.9	4.4	4.0	4.0	3.8	4.2	-0.7	4.7	4.2	2.5	2.6	2.6	2.6
Developed	3.5	2.4	3.0	2.5	2.7	1.8	2.5	-3.4	2.5	2.5	1.5	1.4	1.5	1.5
Emerging	6.7	7.9	6.1	5.8	5.6	6.3	6.3	2.5	7.4	6.4	4.9	5.5	5.3	5.1
BRIC	6.5	9.2	6.9	7.4	6.7	7.1	7.3	5.2	8.8	7.8	4.0	4.7	4.3	4.1
America	5.8	3.3	3.8	3.8	3.7	3.3	3.7	-2.5	3.8	3.6	3.3	3.0	3.0	3.1
United States	5.6	2.7	3.0	4.0	3.5	3.0	3.5	-2.4	3.2	3.4	2.4	1.5	1.5	1.7
Canada	4.9	6.1	4.0	3.5	3.5	3.0	3.0	-2.5	3.8	3.1	1.6	2.0	2.5	2.0
Latin America	6.4	4.4	5.7	3.4	4.3	4.2	4.3	-2.5	5.3	4.1	7.7	9.0	9.1	8.7
Argentina	0.1	4.7	7.0	6.7	6.1	5.0	4.0	-4.0	6.1	3.8	20.0	25.8	26.8	24.1
Brazil	9.3	11.4	4.0	2.8	3.5	4.0	5.5	-0.2	7.3	4.4	5.2	5.6	5.7	5.4
Chile	6.2	-5.9	15.0	7.0	7.0	6.0	6.0	-1.5	4.2	6.6	-0.3	2.5	3.3	3.9
Colombia	4.5	5.3	5.0	3.0	4.5	4.5	4.5	0.8	4.5	4.3	2.0	2.3	2.7	3.3
Mexico	7.9	-1.4	9.5	3.5	3.5	3.5	3.0	-6.5	5.0	3.6	4.8	3.8	3.4	4.0
Peru	6.1	10.1	5.3	6.3	7.1	7.0	5.4	0.9	7.1	6.4	0.8	2.3	2.9	2.8
Venezuela	-3.7	-10.6	-8.4	-2.9	4.6	3.5	0.9	-3.3	-5.4	2.0	26.1	33.2	33.1	30.1
Asia/Pacific	6.7	9.2	6.3	5.7	6.1	5.8	6.6	3.8	7.6	6.2	1.9	2.3	2.2	2.3
Japan	4.6	5.0	3.9	0.5	2.1	-1.8	1.2	-5.2	3.5	0.8	-1.2	-1.1	-0.9	-0.2
Australia	4.4	2.0	6.0	2.3	3.7	3.3	4.9	1.3	3.4	3.9	2.9	3.2	3.2	3.0
Emerging Asia	7.3	10.5	6.8	7.1	7.1	7.8	8.0	6.1	8.8	7.6	3.5	4.1	3.8	3.6
China	11.0	9.2	8.4	9.3	9.3	8.9	8.9	9.1	10.1	9.0	2.2	3.4	3.7	3.6
Hong Kong	10.0	10.0	-1.4	1.2	1.2	5.9	5.9	-2.8	5.1	4.0	1.9	3.1	2.3	2.8
India	-2.9	13.4	8.0	8.0	7.0	8.0	8.0	6.7	8.8	8.3	10.2	9.3	5.8	5.5
Indonesia	6.6	5.3	6.6	7.8	6.1	4.9	6.1	4.5	6.3	6.2	3.4	4.6	5.7	5.8
Korea	0.7	8.8	5.5	2.3	3.1	5.5	5.4	0.2	5.7	4.0	2.7	2.4	1.8	1.4
Malaysia	13.3	6.9	4.7	2.8	4.1	5.5	7.2	-1.7	7.5	5.0	1.3	1.7	1.6	1.9
Philippines	7.2	13.2	2.6	1.8	3.1	7.4	7.8	1.1	6.0	5.0	4.4	4.7	3.6	3.7
Singapore	-1.0	45.9	26.0	-15.4	1.7	5.8	8.6	-1.3	14.5	4.0	1.1	3.3	3.1	1.3
Taiwan	16.7	11.3	0.5	0.5	1.4	6.1	6.6	-1.9	7.5	4.0	1.3	1.0	2.2	1.5
Thailand	17.0	16.0	-13.3	4.1	2.0	5.5	7.6	-2.2	6.0	4.0	3.7	3.4	3.2	2.3
Europe and Africa	1.9	1.3	2.7	2.0	1.6	1.8	1.8	-4.4	2.0	2.5	2.2	2.5	2.5	2.3
Euro area	0.5	0.8	2.3	1.3	1.6	1.2	1.5	-4.1	1.2	1.8	1.1	1.7	1.9	1.5
Germany	0.7	0.6	5.4	2.3	2.2	2.1	2.0	-4.9	2.2	2.5	0.8	1.3	1.5	1.3
France	2.3	0.5	1.8	1.0	1.5	1.5	2.1	-2.5	1.3	1.8	1.5	1.8	1.6	1.5
Italy	-0.3	1.7	1.5	1.8	2.9	0.7	0.8	-5.1	1.2	1.6	1.3	1.5	1.6	1.4
Spain	-0.6	0.3	-0.9	-1.7	-1.3	-2.1	-1.0	-3.6	-0.9	-1.1	1.2	2.4	2.8	1.5
Netherlands	2.2	1.0	2.1	1.8	2.0	2.2	2.2	-3.9	1.5	2.1	0.5	1.0	0.9	0.7
United Kingdom	1.7	1.3	2.8	2.1	2.4	2.2	2.3	-4.9	1.3	2.3	3.3	3.0	3.1	3.3
EM Europe & Africa	5.1	2.0	3.6	3.4	1.2	2.9	2.3	-5.0	4.1	4.3	6.0	5.3	5.0	5.5
Czech Repub.	2.2	2.0	0.6	3.2	3.1	2.9	1.6	-4.1	1.1	2.8	0.4	1.9	1.5	1.4
Hungary	1.0	1.4	1.2	0.8	1.0	3.2	3.3	-6.3	1.1	3.6	5.7	3.1	2.4	3.1
Poland	8.4	-4.1	7.7	1.6	2.4	5.3	0.8	1.7	2.9	3.3	2.6	2.4	2.1	2.0
Russia	0.9	0.1	1.7	3.2	-1.3	1.4	1.7	-7.9	4.5	5.0	6.5	5.8	6.5	6.6
Turkey	15.8	10.0	6.0	5.5	4.0	4.0	4.0	-4.7	6.3	4.0	9.6	8.6	5.7	7.4
South Africa	3.2	4.6	4.4	4.3	4.2	4.2	4.3	-1.8	3.3	4.3	5.7	4.3	5.4	5.8

Note: Weights used for real GDP are based on IMF PPP-based GDP (2008). Weights used for consumer prices are based on IMF nominal GDP (2008).
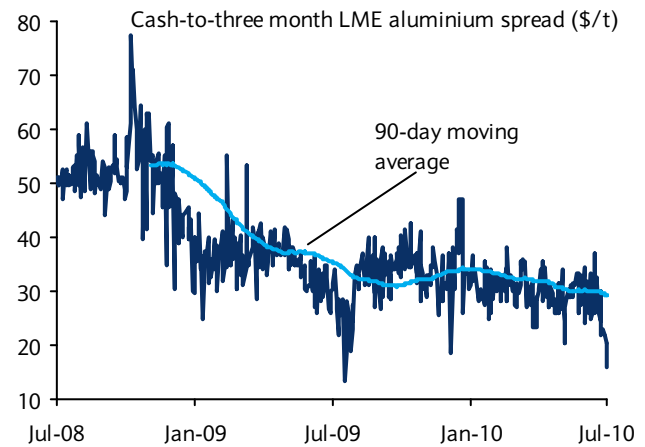Source: Barclays Capital

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BASE METALS

ALUMINIUM

- Nearby aluminium spreads have tightened sharply over the past month, with the cash-to-three month contango the tightest in a year. This suggests there is spread borrowing and reflects limited availability of spot material, which, in the case of aluminium, is in part due to financing deals. This tightening of the nearby spreads also reflects what we believe is an improvement in fundamentals, with demand continuing to recover, but with prices focused on macro developments this has not always been reflected in flat prices. The improvement in demand was noted by delegates at AMM's Aluminum & its Markets conference who reported particularly robust demand from the packaging and transportation sectors. The pace of growth has begun to slow, however, which is in line with our forecasts, and we expect this to continue through the rest of the year.

- Production growth has also begun to slow with global output in May falling to an annualised rate of 42.5Mt from 42.6Mt largely due to cuts in Chinese production. As we opined last month, prices have fallen deep into the cost curve, and this has spurred 700Ktpy of capacity to be cut in Henan province in China and 20% cut at Shandong Chiping Xinfa Aluminium (capacity 1Mtpy).

- This is the kind of collar-and-cap market dynamic we expect to characterise the aluminium market over the coming years, with strong demand being countered by rapid, largely unconstrained, growth in production. However, high and still rising production costs prices will provide a downside for prices not too far away. This should make for a relatively benign medium-term price outlook.

Figure 20: Nearby spreads are the tightest in a year

Source: Ecowin, Barclays Capital

Figure 21: Global aluminium consumption growth is slowing
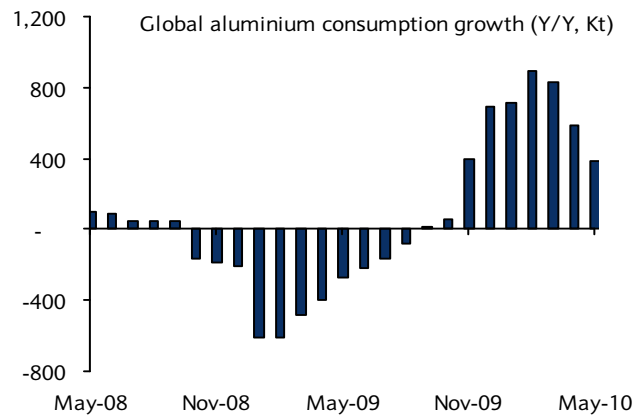
Source: Brook Hunt, Barclays Capital

Figure 22: Global supply and demand balance

(Kt)	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q3 11	Q4 11	2011
China	13,164	4,098	4,158	4,285	4,365	16,907	4,262	4,512	4,763	4,963	18,500
W.Europe	4,080	998	975	953	953	3,879	978	989	1,000	1,000	3,966
North America	4,759	1,164	1,164	1,177	1,177	4,681	1,150	1,163	1,176	1,176	4,664
Rest of the World	15,676	4,005	4,075	4,154	4,174	16,409	4,422	4,471	4,520	4,520	17,933
Global Production	37,679	10,266	10,372	10,569	10,669	41,875	10,811	11,135	11,458	11,658	45,063
y/y Change (%)	-5.5%	15.1%	15.3%	10.1%	4.9%	11.1%	5.3%	7.4%	8.4%	9.3%	7.6%
China	13,927	4,041	4,023	4,050	4,195	16,309	4,364	4,398	4,524	4,824	18,110
W.Europe	5,744	1,676	1,634	1,477	1,480	6,267	1,676	1,672	1,551	1,554	6,453
North America	5,624	1,384	1,429	1,506	1,746	6,064	1,411	1,500	1,657	1,921	6,489
Rest of the World	11,255	3,109	3,090	2,844	3,310	12,353	3,261	3,281	3,063	3,539	13,145
Global Consumption	36,550	10,210	10,175	9,877	10,731	40,993	10,712	10,852	10,794	11,838	44,197
y/y Change (%)	-4.4%	31.4%	14.0%	5.7%	2.1%	12.2%	4.9%	6.7%	9.3%	10.3%	7.8%
Balance	1,129	56	197	692	-63	882	99	283	664	-180	866
Total Reported Stocks	6,307	6,368	6,565	7,256	7,194	7,194	7,293	7,576	8,240	8,060	8,060
Stock-to-consumption Ratio (wks)	7.9	8.2	8.5	9.7	8.8	8.8	6.4	6.7	7.3	6.6	6.6
LME Cash Price (US$/t)	1,664	2,165	2,092	1,800	1,900	1,989	2,100	2,200	1,950	2,350	2,150
LME Cash Price (Usc/lb)	75	98	95	82	86	90	95	100	88	107	98

Source: Brook Hunt, CRU, IAI, Barclays Capital

Aluminium production

Figure 23: Reported primary aluminium production

	Afr	N.Am	L.Am	Asia	W.Eur	Aus	China	CIS	E.Eur	Global	Daily
10 yr average	1,463	5,589	2,263	2,469	4,320	2,163	5,725	3,891	414	28,297	77.5
An. Av % change	5.1%	-0.5%	1.9%	7.0%	3.0%	2.5%	19.9%	3.5%	2.3%	5.9%	
2009	1,681	4,759	2,508	4,647	4,080	2,211	13,164	4,164	465	37,679	103.2
% change	-2.0%	-17.7%	-5.7%	17.4%	-18.0%	-3.7%	-1.1%	-11.5%	-0.3%	-5.5%	
Q3_08	432	1,444	676	1,017	1,243	576	3,565	1,183	117	10,253	111.4
Q4_08	439	1,410	668	1,019	1,232	570	3,093	1,188	117	9,737	105.8
Q1_09	404	1,256	634	1,097	1,095	541	2,696	1,078	115	8,916	99.1
Q2_09	416	1,179	625	1,147	992	549	2,955	1,019	116	8,998	98.9
Q3_09	428	1,152	627	1,183	998	557	3,510	1,026	117	9,599	104.3
Q4_09	433	1,172	622	1,220	994	564	4,002	1,042	117	10,166	110.5
Q1_10	425	1,164	568	1,314	998	555	4,098	1,029	115	10,266	114.1
y/y change	5.2%	-7.3%	-10.4%	19.8%	-8.9%	2.6%	52.0%	-4.5%	0.0%	15.1%	
May 10	146	402	195	483	353	193	1,435	367	39	3,613	116.6
y/y change	3.5%	-0.2%	-7.6%	23.4%	4.4%	3.2%	43.4%	6.1%	0.0%	18.2%	
Year to May 10	713	1,955	952	2,254	1,689	934	6,942	1,751	192	17,382	115.1
YTD y/y change	4.9%	-4.9%	-9.5%	20.9%	-4.3%	2.8%	50.7%	-0.7%	0.0%	16.8%	

Source: IAI, Barclays Capital

Figure 24: Global alumina output
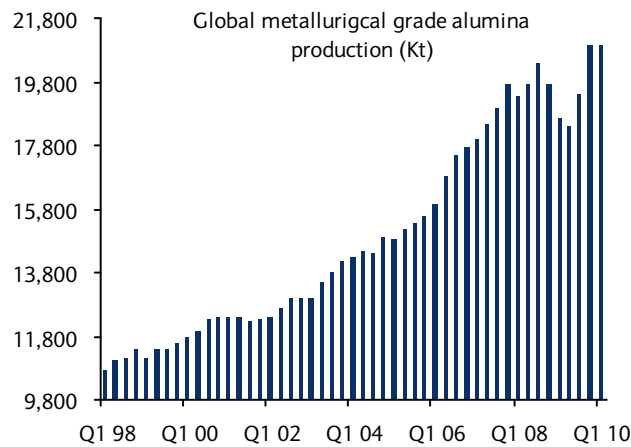
Source: International Aluminium Institute, CRU, Barclays Capital

Figure 25: Alumina prices
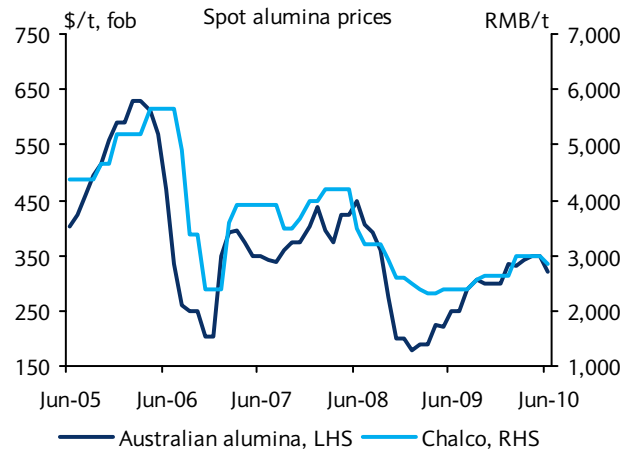
Source: CRU, Antaike, Barclays Capital

Figure 26: Global production trends
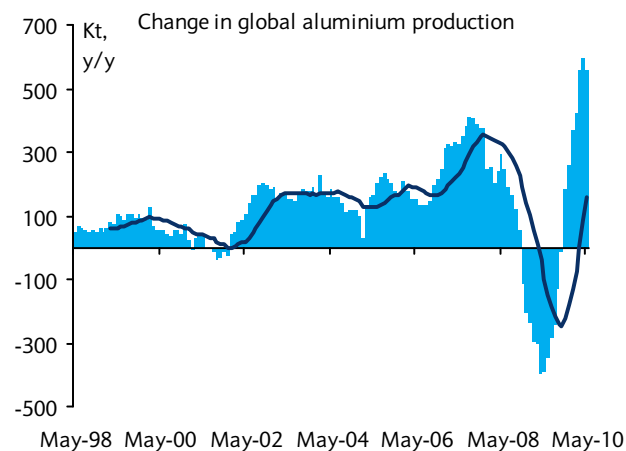
Source: International Aluminium Institute, Barclays Capital

Figure 27: Change in Chinese output
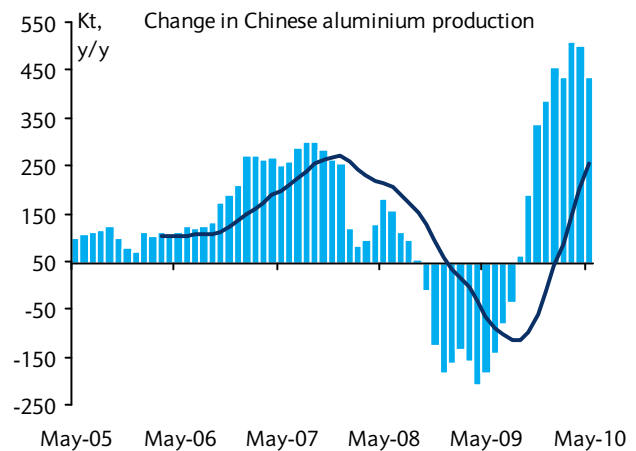
Source: CNIA, Barclays Capital

Aluminium consumption

Figure 28: Primary aluminium consumption

	Europe	Africa	N.Am	L.Am	China	Asia	CIS	ROW	Global
10 yr average	**6,463**	**391**	**6,992**	**1,180**	**6,558**	**4,320**	**934**	**3,015**	**29,853**
An. Av % change	**1.9%**	**6.7%**	**0.2%**	**5.0%**	**17.9%**	**0.9%**	**8.2%**	**15.5%**	**5.7%**
2009	**5,744**	**496**	**5,624**	**1,478**	**13,927**	**5,160**	**1,056**	**3,065**	**36,550**
% change	-16.9%	-13.8%	-15.8%	-9.3%	10.4%	3.9%	-12.9%	-15.7%	-4.4%
Q3 08	1,730	145	1,643	403	3,271	1,217	292	879	9,580
Q4 08	1,510	148	1,758	416	2,987	1,321	312	914	9,365
Q1 09	1,380	130	1,170	329	2,692	1,104	253	713	7,771
Q2 09	1,450	113	1,260	348	3,558	1,193	263	737	8,922
Q3 09	1,434	129	1,448	379	3,682	1,273	253	748	9,346
Q4 09	1,480	124	1,746	423	3,995	1,590	286	867	10,511
Q1 10	1,676	134	1,384	365	4,041	1,440	285	886	10,210
y/y change	21.4%	2.8%	18.3%	11.2%	50.1%	30.5%	12.3%	24.3%	31.4%
May 10	539	41	482	156	1,358	486	116	280	3,458
y/y change	10.0%	20.0%	12.0%	30.0%	8.0%	20.0%	30.0%	14.9%	12.7%
Year to May 10	2,760	223	2,350	650	6,744	2,396	505	1,455	17,083
YTD y/y change	18.5%	9.2%	16.9%	16.8%	33.5%	26.2%	17.6%	21.8%	24.9%

Source: IAI, Barclays Capital

Figure 29: Global aluminium consumption

Global monthly primay aluminium consumption
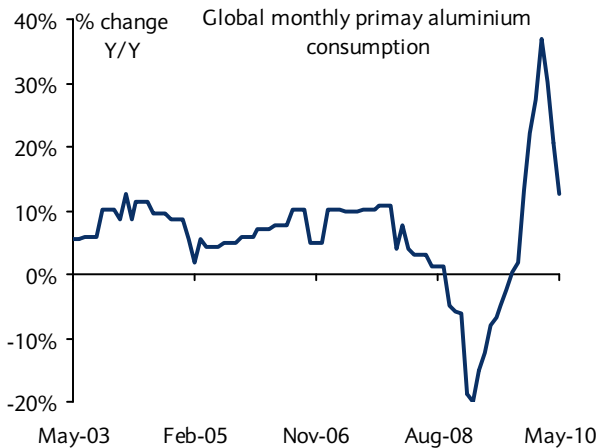
Source: CNIA, China Customs, Barclays Capital

Figure 30: Chinese semis output

Chinese semi-fabricated production (Kt)
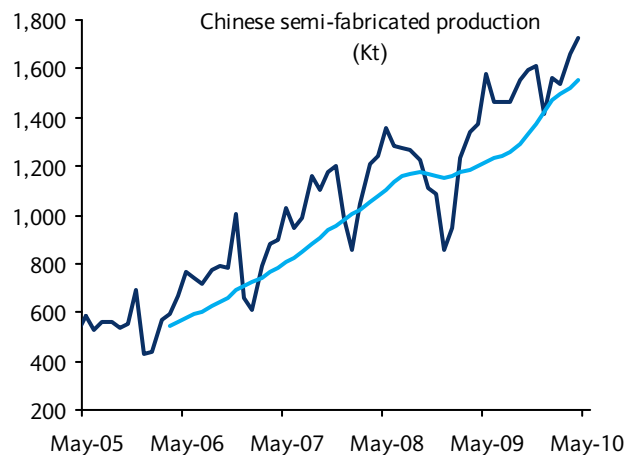
Note: NBS data used for Jan and Feb. Source: CNIA, Barclays Capital

Figure 31: North American fabricator orders

North American aluminium orders 3-month moving average, y/y change
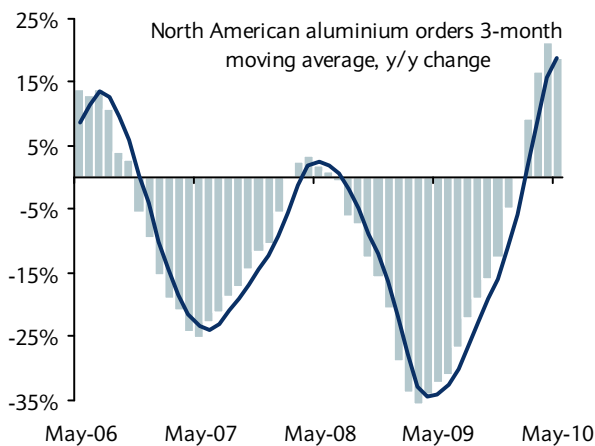
Source: Aluminium Association, Barclays Capital

Figure 32: Japanese aluminium semis shipments

Japanese aluminium semis shipments

(% change y/y)
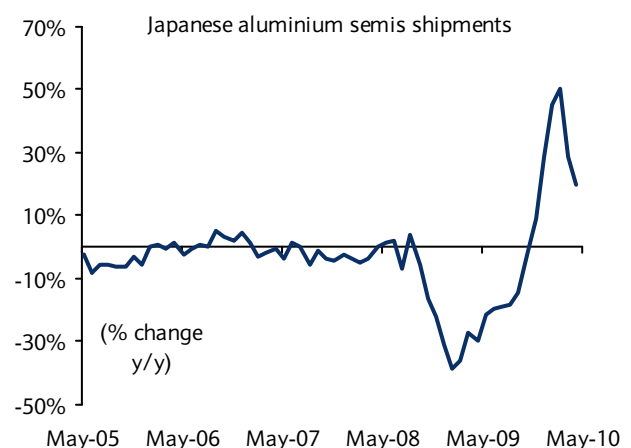
Source: Japanese Aluminium Association, Barclays Capital

Supply development

Figure 33: Capacity losses due to smelter closures/cutbacks (Kty, August 2008 onwards)

Year/ Region	North America	South America	Oceania	China	Asia (excl China)	Europe	Africa	Unallocated	Total
2008	336	41	14	1135	170	235	0	350	2282
2009	914	73	53	542	101	1520	0	743	3946
2010	909	260	53	850	101	1476	0	565	4214

Note: Unallocated represents companies that have not allocated capacity cuts geographically. Includes restarts of idled capacity.
Source: Media reports, Brook Hunt, CRU

Figure 34: New and major expansions to aluminium smelters, 2009-11 (units kt)

Smelter	Country	Net change in capacity	2009	2010	2011
Taweelah	Abu Dhabi	695	0	340	695
Dohar	Qatar	588	0	309	588
Henan Wanji	China	334	496	725	830
Laibin Yinhai	China	299	151	450	450
Jjharsuguda	China	270	230	428	500
Weiqiao	China	258	492	600	750
Yinchuan	China	243	57	250	300
Gongyi	China	235	210	303	445
Dongyuan Aluminium	China	206	176	285	383
Linzhou	China	205	150	278	355
Qinghai	China	196	54	231	250
Fushun	China	180	140	260	320
Shenhuo	China	173	477	630	650
Huomei Hongjun	Inner Mongolia	170	450	603	620

Source: Brook Hunt

Recent production news

■ Alcoa has temporarily idled its 93Ktpy smelter in Aviles in Spain as a result of flooding. Force majeure has been called on shipments from the smelter, and it is as yet unknown how long it will be closed for.

■ Rio Tinto Alcan's Laterriere smelter in Quebec has idled half of the plant's 235Ktpy capacity for four to six months following a major power outage. We estimate a potential production loss of up to 61Kt.

■ Smelters in China's Henan province have closed 700Ktpy of capacity due to low costs and high power prices. 13 smelters in total have cut production, which could remove up to 350Ktpy of supply from the market this year if the cuts are maintained for the rest of the year.

■ Shandong Chiping Xinfa Aluminium in China (capacity 1Mtpy) has been instructed to cut production 20% for the city to meet its energy saving targets, which could reduce output by 200Ktpy.

COPPER

- This past month there was a real lack of direction in copper prices. Directional conviction has been blurred by positive fundamental data – not least the steady declines in LME inventories and poorly performing mine output – against some (though by no means all) worse-than-expected economic data that has fuelled concerns about the global economic recovery faltering. Ultimately, this has stranded copper in the mid-$6000s, essentially awaiting a catalyst to provide a sustained price trend, whether it be the overwhelming persuasiveness of market fundamentals or greater clarity on the macroeconomic outlook. In our view, we consider the market as having been oversensitive to macroeconomic risks and that fundamentals offer an increasingly constructive picture. Mine supply underperformance remains endemic and is struggling to match demand growth, particularly with Chinese import demand stronger than expected – hence our expectation for a market deficit of 132Kt.

- This magnifier also marks the release of our 2011 quarterly copper market balance. The picture for this year ultimately reinforces the observation that dips in Q3 10 should be viewed as prime buying opportunities, given that we expect an even deeper market deficit next year. Despite moderate improvement in the supply-side performance, a sizeable market deficit (386Kt) should be achieved due to renewed voracity in Chinese copper demand – infrastructure expansion continues apace – as well as moderate OECD recovery. Underlying this is the view that the global economic recovery will remain intact with our forecast GDP growth of 4.2% in 2011.

Figure 35: Exchange copper stocks continue to fall, supporting the view that the market is currently in deficit…
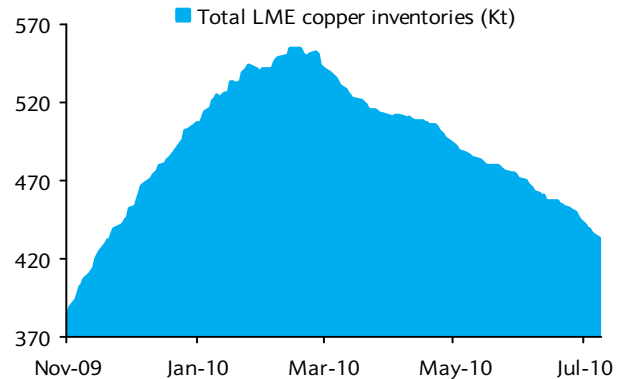
Source: ICSG, Barclays Capital

Figure 36: … while we now forecast only 15.8Mt mine output in 2010, falling way behind demand growth
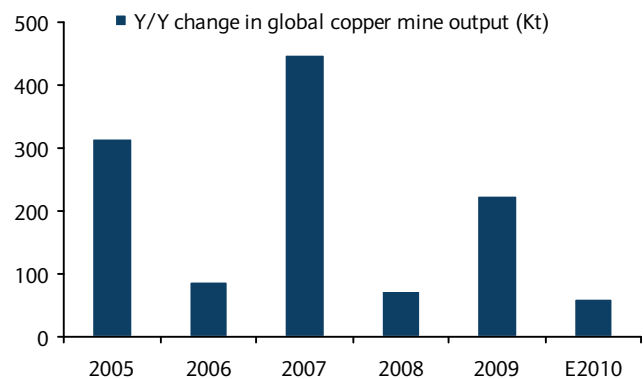
Source: ICSG, Barclays Capital

Figure 37: Global supply and demand balance

(Kt)	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q3 11	Q4 11	2011
Chile	3,272	778	839	853	831	3,301	796	857	871	849	3,373
China	4,121	1,083	1,105	1,180	1,232	4,600	1,218	1,220	1,215	1,247	4,900
USA	1,161	284	285	301	312	1,182	304	300	306	312	1,222
Global total	18,256	4,577	4,800	4,921	5,011	19,309	4,806	5,013	5,053	5,127	19,999
Disruption allowance	0%	0%	3%	3%	3%	2%	3%	3%	3%	3%	3%
Global production	**18,256**	**4,577**	**4,656**	**4,773**	**4,861**	**18,867**	**4,662**	**4,863**	**4,902**	**4,973**	**19,399**
y/y change	0.1%	4.2%	3.7%	3.1%	2.4%	3.3%	1.8%	4.4%	2.7%	2.3%	2.8%
N. America	2,048	542	553	518	480	2,093	549	563	533	497	2,142
Europe	3,489	894	953	887	913	3,646	903	963	903	930	3,698
China	6,663	1,770	1,970	1,659	1,757	7,155	1,858	2,088	1,791	1,933	7,670
Japan	876	258	280	297	245	1,080	265	288	306	253	1,112
ROW	4,724	1,179	1,317	1,267	1,262	5,024	1,209	1,353	1,302	1,297	5,162
Global consumption	**17,800**	**4,642**	**5,072**	**4,628**	**4,657**	**18,999**	**4,785**	**5,255**	**4,836**	**4,909**	**19,785**
y/y change	-1.4%	12.3%	10.6%	4.1%	0.5%	6.7%	3.1%	3.6%	4.5%	5.4%	4.1%
Global balance	**456**	**-65**	**-417**	**145**	**204**	**-132**	**-123**	**-393**	**66**	**64**	**-386**
Total stocks	1,335	1,271	854	1,000	1,203	1,203	1,080	688	753	818	818
Stock/consumption ratio (wks)	3.7	3.6	2.2	2.8	3.4	3.4	2.9	1.7	2.0	2.2	2.2
LME cash price (US$/t)	5,148	7,243	7,013	6,250	6,500	6,752	7,200	8,150	7,900	7,800	7,763
LME cash price (Usc/lb)	234	329	318	283	295	306	327	370	358	354	352

Source: ICSG, Barclays Capital

Copper mine production

Figure 38: Reported mine production

(Kt, recoverable Cu)	Codelco	Escondida	Grasberg	Kazakhmy	Antamina	Morenci	Pelambres	Others	Total
2006	1,783	1,276	612	459	388	367	341	3,663	8,890
2007	1,664	1,507	576	412	334	309	305	3,650	8,758
Q1 08	366	340	100	86	75	66	83	977	2,093
Q2 08	350	396	111	100	96	70	89	1,015	2,227
Q3 08	392	276	127	106	88	73	95	1,052	2,209
Q4 08	440	261	189	109	84	74	90	1,111	2,357
2008	1,548	1,273	527	400	343	283	357	4,155	8,887
y/y change	-7.6%	-15.5%	-7.9%	0.5%	2.7%	-8.7%	17.0%	2.0%	-3%
Q1 09	371	237	183	87	76	51	84	880	1,970
Q2 09	412	290	182	91	78	47	77	915	2,092
Q3 09	427	271	150	92	72	49	74	892	2,027
Q4 09	466	319	124	91	78	48	80	943	2,149
y/y change	5.9%	22.1%	-34.1%	-16.2%	-7.5%	-35.2%	-11.0%	-4.8%	-4%
2009	1,676	1,117	640	361	304	194	316	3,631	8,242
y/y change	8.3%	-12.2%	21.4%	-9.8%	-11.6%	-31.3%	-11.5%	-12.6%	-7.2%
Q1 10	383	249	127	81	66	45	84	845	1,879
y/y change	3.2%	5.1%	-30.9%	-7.3%	-12.8%	-13.2%	-1.1%	-4.0%	-4.6%

Source: Company reports

Figure 39: Global mine production

	Chile	Peru	Australia	China	US	ROW	Total	Concs	SXEW
2009	5,389	1,275	858	1,029	1,204	6,003	15,758	12,497	3,261
% change	1.2%	0.5%	-2.9%	-5.8%	-9.8%	6.8%	1.5%	0.4%	5.6%
Q3'08	1277	322	235	280	352	1411	3877	3106	770
Q4'08	1373	339	225	284	351	1531	4102	3278	824
Q1'09	1232	309	198	196	306	1479	3720	2925	795
Q2'09	1347	317	230	265	303	1533	3994	3187	807
Q3'09	1344	315	214	287	301	1479	3940	3102	839
Q4'09	1466	334	212	281	294	1512	4099	3280	820
Q1'10	1267	295	191	262	281	1452	3748	2939	808
y/y change	2.8%	-4.5%	-3.5%	33.9%	-8.4%	-1.8%	0.7%	0.5%	1.6%
Mar 10	449.6	99.2	65.8	90.7	95.1	499.0	1299.4	1017.1	282.3
y/y change	5.7%	-5.0%	-3.6%	27.3%	-12.6%	-2.6%	0.7%	-0.4%	5.0%
Year to Mar 10	1267	295	191	262	281	1452	3748	2939	808
y/y change	2.8%	-4.5%	-3.5%	33.9%	-8.4%	-1.8%	0.7%	0.5%	1.6%

Source: ICSG, Barclays Capital

Figure 40: Change in world mine output
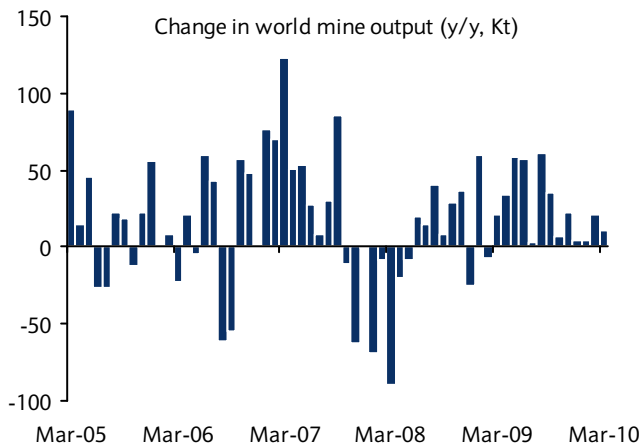
Source: ICSG, CRU, Barclays Capital

Figure 41: Copper concentrate charges
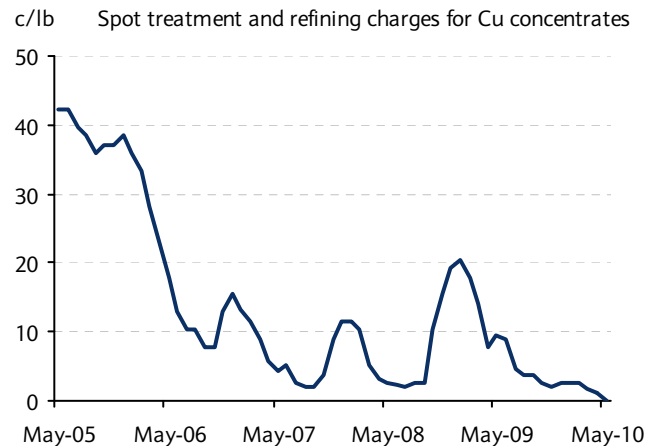
Source: CRU, Barclays Capital

Copper refined production

Figure 42: Reported refined production

(Kt)	China	Chile	EU-27	USA	Russia	ROW	Total	Electrowin	Primary	Secondary
10 yr average	1,923	2,712	2,364	1,691	837	7,971	17,499	2,506	12,863	2130
An. Av % change	9.9%	3.3%	0.5%	-6.2%	4.0%	0.4%	1.7%	5.5%	0.7%	2.6%
2009	4,121	3,272	2,545	1,161	874	6,404	18,377	3,261	12,205	2,911
% change	8.7%	7.0%	-2.2%	-9.4%	1.4%	-3.5%	0.8%	5.5%	-1.8%	7.1%
Q3'08	970	765	664	311	216	1692	4618	771	3168	679
Q4'08	938	815	665	335	213	1646	4611	825	3120	666
Q1'09	950	802	569	298	193	1580	4392	795	2988	609
Q2'09	985	821	569	276	225	1612	4488	807	3033	687
Q3'09	1060	835	618	289	226	1600	4628	839	3049	780
Q4'09	1127	813	637	298	230	1643	4748	820	3135	835
Q1'10	1083	778	595	284	215	1623	4577	808	3024	783
y/y change	14.1%	-3.1%	4.6%	-4.7%	10.9%	2.7%	4.2%	1.6%	1.2%	28.4%
Mar 10	366	276	203	99	76	557	1577	282	1029	278
y/y change	13.1%	-0.2%	4.4%	3.1%	9.1%	3.8%	5.3%	5.3%	2.4%	24.6%
Year to Mar 10	1083	778	595	284	215	1623	4577	808	3024	783
y/y change	14.1%	-3.1%	4.6%	-4.7%	10.9%	2.7%	4.2%	1.6%	1.2%	28.4%

Source: ICSG, Barclays Capital

Figure 43: Change in world refined copper output
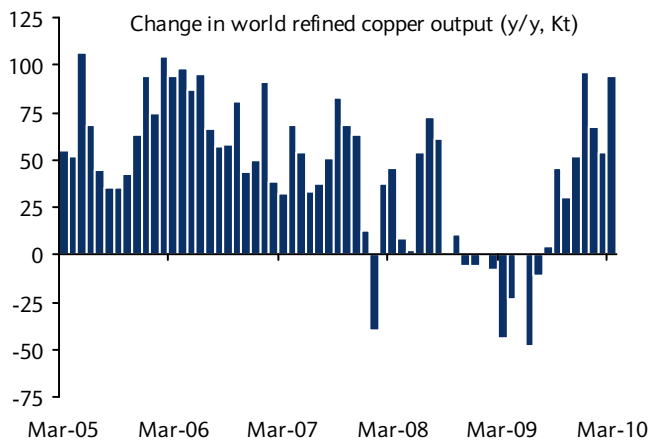
Source: ICSG, Barclays Capital

Figure 44: Changes in refined copper production
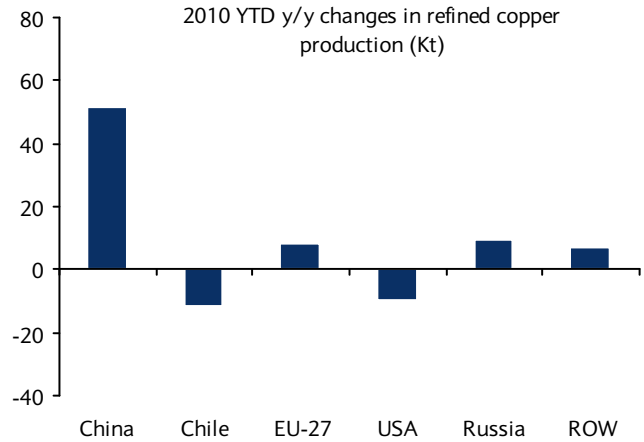
Source: ICSG, Barclays Capital

Figure 45: Share of secondary in global refined output
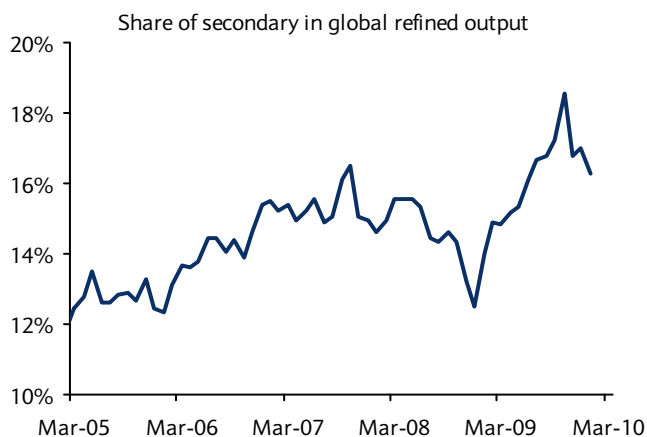
Source: ICSG, Barclays Capital

Figure 46: US copper scrap discounts
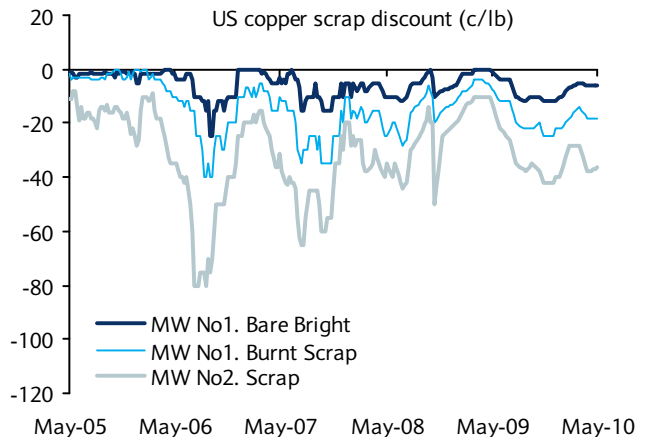
Source: Platts, Barclays Capital

Copper refined consumption

Figure 47: Reported refined consumption

(Kt)	China	EU-27	USA	Japan	S.Korea	Russia	India	ROW	Total
10 yr average	2,742	4,059	2,540	1,263	811	389	330	3,411	15,545
An. Av % change	14.3%	0.6%	-2.6%	-1.4%	2.8%	15.4%	11.9%	3.1%	3.3%
2009	6,663	3,128	1,629	876	901	376	706	3,522	17,800
% change	29.6%	-18.0%	-19.4%	-26.0%	15.5%	-42.1%	14.6%	-8.2%	-1.4%
Q3 08	1280	1030	521	324	198	188	152	1004	4697
Q4 08	1256	948	510	284	201	171	156	972	4499
Q1 09	1287	831	422	276	183	145	159	893	4197
Q2 09	1551	752	424	162	187	88	170	799	4133
Q3 09	1762	779	415	215	225	106	173	912	4587
Q4 09	1610	774	414	241	245	86	183	893	4446
Q1 10	1740	823	376	258	244	97	180	917	4634
y/y change	35.2%	-1.0%	-11.1%	-6.7%	33.0%	-33.0%	13.2%	2.7%	10.4%
Mar 10	626.8	273.2	115.0	81.1	79.0	29.8	59.0	293.6	1557.5
y/y change	44.6%	16.5%	-3.8%	5.9%	37.5%	-39.3%	10.7%	7.0%	20.0%
Year to Mar 10	1740	823	376	258	244	97	180	917	4634
y/y change	35.2%	-1.0%	-11.1%	-6.7%	33.0%	-33.0%	13.2%	2.7%	10.4%

Source: ICSG, Barclays Capital

Figure 48: Actual and forecast global copper demand growth
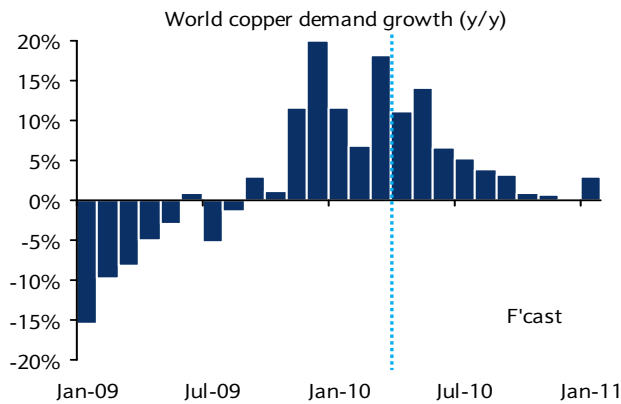
Source: ICSG, Barclays Capital

Figure 49: Chinese copper consumption indications
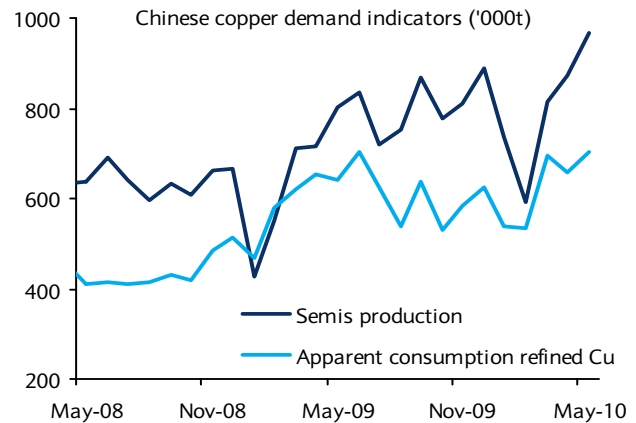
Source: China Customs, CNIA, Barclays Capital

Figure 50: US copper consumption indications
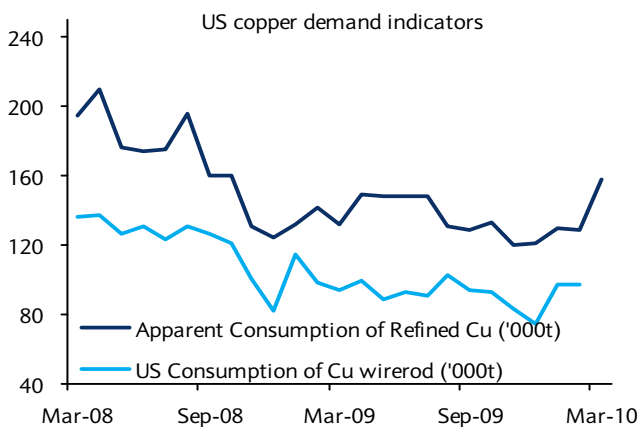
Source: ABMS, Barclays Capital

Figure 51: Japanese copper consumption indicators
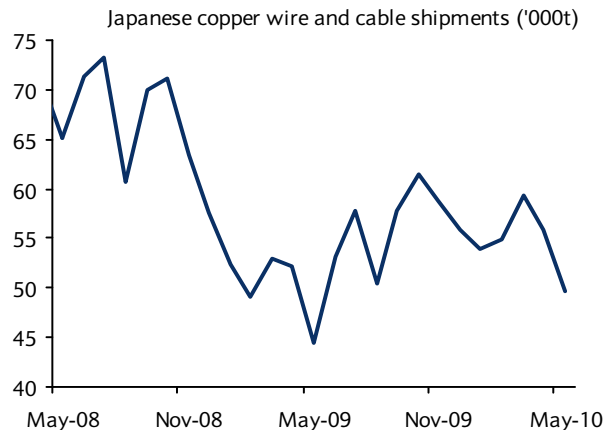
Source: JWCMA, Barclays Capital

Supply development

Figure 52: Production losses due to mine closures/cutbacks (Kt, August 2008 onwards)

Year/Region	North America	South America	Oceania	Asia	Europe	Africa	Total
2008	176	272	18	70	0	59	595
2009	293	181	146	0	10	198	834
2010	95	50	75	0	0	13	233

Source: Media reports, Brook Hunt, CRU

Figure 53: New and major expansions to copper mines, 2009-11 (units kt)

Mine	Country	net change in capacity	2009	2010	2011
Konkola Deep	Zambia	160	0	35	160
Esperanza	Chile	180	0	25	180
Cananea	Mexico	120	0	30	120
Andacollo	Chile	79	0	59	79
Lumwana	Zambia	56	109	135	165
Inco	Canada	72	43	55	115
Las Cruces SxEw	Spain	61	11	50	72
Los Bronces	Chile	60	180	185	240
Tenke-Fungurume SxEw	DRC	45	70	105	115
Olympic Dam	Australia	50	130	150	180
Nchanga SxEw	Zambia	45	50	80	95
Aitik	Sweden	43	50	80	93
Chino SxEw	US	42	18	25	60
Gibraltar	Canada	35	40	52	75
Kamoto Restart	DRC	30	46	76	76
Salobo	Brazil	30	0	0	30
Franke SxEw	Chile	24	6	25	30

Note: These figures exclude mines that increase production in 2010 only to fall in 2011. The key exclusion given this, is Grasberg mine in Indonesia which is forecast to produce 755Kt in 2009, then 660Kt in 2010, and finally 575Kt in 2011. Source: Brook Hunt

Recent production news

- Anglo American stated that it has agreed to a new wage deal with workers at its small Mantoverde copper mine in Chile, easing worries of supply disruptions. The mine produces about 60Kt of copper per year. The company had earlier signed a collective agreement with workers at its Mantos Blancos copper mine, which produces 90,000Kt per year (1 July 2010).

- Xstrata reinstated about AUD600mn ($508mn) copper mining and exploration projects in Australia after the government restructured its proposed mining tax. Work would now start to extend the company's Ernest Henry mine in Queensland state by at least 12 years to 2024 (1 July 2010).

- Vale announced it had reached a tentative contract agreement with workers at its Sudbury, Ontario nickel and copper mining operation, signalling the end of a bitter, year-long strike. It struck a deal with the United Steelworkers Local 6500 and 6200 representing production and maintenance employees at the company's operations in Sudbury and Port Colborne, Ontario. About 3,000 workers went on strike in Sudbury last July in a dispute regarding pensions, bonus issues and contract language. Sudbury had previously produced close to 80Kty, and we expect output to ramp up to full capacity by Q4 10 (4 July 2010).

- Rio Tinto's Q2 10 results showed a 19% y/y drop in copper output owing mainly to lower ore head grades at Kennecott Utah Copper (302Ktpy in 2009) and Grasberg (771Ktpy in 2009). Kennecott Utah Copper concentrate output fell by 36% y/y and 11% q/q, while Grasberg production fell by 45% y/y but was up by 3% q/q. Lower snow and rain falls in the Saguenay region of Quebec during H1 10 resulted in reduced power generation and the need to purchase power or curtail aluminium production. Rio expects an EBITDA hit of $100mn in H2 10. Total aluminium production was up by 1% y/y and 2% q/q, driven by higher production at Tiwai Point (355Ktpy) in New Zealand as it returned to production after last year's transformer failure and the gradual return to full operating capacity at its UK smelters (aside from the cessation of production at Anglesey, 120Ktpy). Finally, Rio has been granted final environmental approval for the Kennecott Eagle nickel and copper mine in Michigan. First production is expected in late 2013 (14 July 2010).

LEAD

- Supply-side dynamics are becoming increasingly supportive for lead. A recent *Metal Bulletin* article cited sources as expecting Chinese production to continue to fall in the coming months due to a concentrate shortage, and smelter closures. Cuts to smelter production are likely if treatment charges remain low. Furthermore, smelter closures due to droughts, as well as environmental reasons continue to be another factor. Currently, we are forecasting Chinese production to grow over the rest of the year and even with that China is expected to turn into a net importer, so further supply side difficulties would pose an upside risk to our positive outlook on lead. Please see the *Commodity Daily Briefing, 6 July 2010.*

- The demand recovery in North America seems to be well underway, and US lead demand has been much stronger than European demand, as it is far more leveraged to the auto sector, which has performed strongly. Battery shipments have picked up recently, and where previously only original equipment shipments were improving as a result of strong auto sales spurred by various government incentive schemes, replacement shipments have also begun to pick up now. This is a positive sign, as replacement demand accounts for the majority of battery demand.

- We expect the market to be balanced in 2011, as demand growth slows but still remains firm in China, and continues to improve in the rest of the world. Supply is set to grow at a slightly faster pace, as China continues to increase smelter capacity, but concentrate market tightness will be the limiting factor.

Figure 54: Supportive supply side dynamics pose an upside risk to our lead outlook
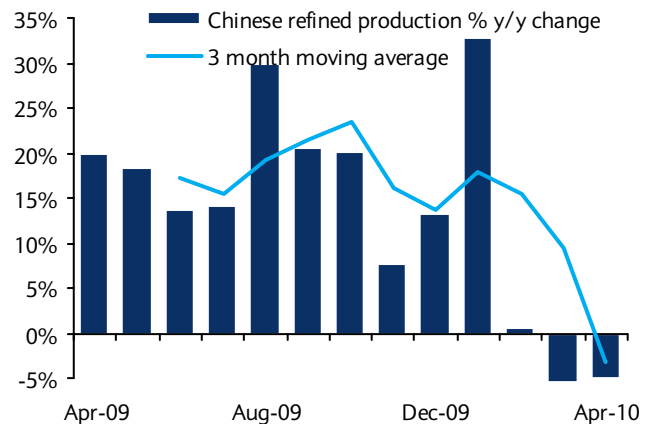
Source: ILZSG, Barclays Capital

Figure 55: The recovery in North American lead demand is well underway
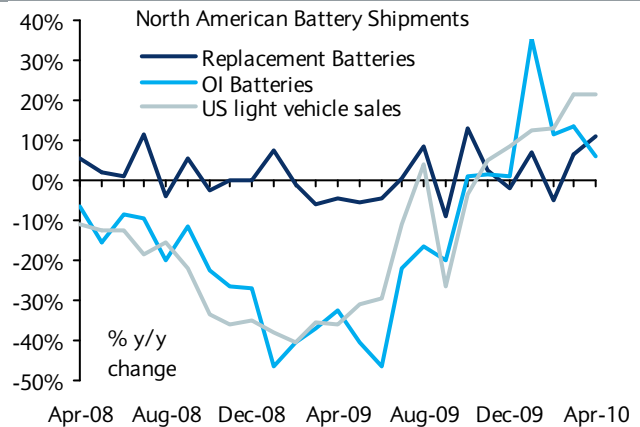
Source: CRU, Barclays Capital

Figure 56: Global supply and demand balance

(Kt)	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q3 11	Q4 11	2011
China	3,708	837	1,019	1,066	1,107	4,029	883	1,105	1,194	1,262	4,444
Europe	1,652	419	411	412	429	1,670	427	417	417	433	1,695
USA	1,197	312	303	304	307	1,226	317	308	305	308	1,238
ROW	2,159	546	553	534	575	2,208	560	568	549	593	2,270
Global production	**8,716**	**2,114**	**2,285**	**2,316**	**2,418**	**9,132**	**2,186**	**2,398**	**2,466**	**2,597**	**9,648**
y/y change (%)	2.4%	2.9%	4.5%	5.3%	6.2%	4.8%	3.5%	4.9%	6.5%	7.4%	5.6%
China	3,710	833	1,106	1,103	1,127	4,169	888	1,200	1,180	1,240	4,507
Europe	1,528	389	376	384	397	1,546	389	381	396	413	1,580
USA	1,380	366	359	346	364	1,434	375	371	363	382	1,491
ROW	1,864	494	461	486	536	1,977	1,007	1,297	1,294	1,395	4,993
Global consumption	**8,482**	**2,082**	**2,302**	**2,319**	**2,424**	**9,126**	**2,160**	**2,429**	**2,450**	**2,603**	**9,643**
y/y change (%)	0.1%	8.9%	9.0%	5.4%	7.2%	7.6%	3.8%	5.6%	5.7%	7.4%	5.7%
Global balance	**234**	**32**	**-16**	**-3**	**-6**	**6**	**26**	**-31**	**16**	**-7**	**5**
Total reported stocks	428	416	400	397	391	391	417	386	402	395	395
Stock-to-consumption ratio (wks)	2.6	2.6	2.3	2.2	2.1	2.2	2.5	2.1	2.2	2.0	2.1
LME cash price (US$/t)	1,721	2,219	1,944	2,000	2,100	2,066	2,200	2,300	2,400	2,500	2,350
LME cash price (Usc/lb)	78	101	88	91	95	94	100	104	109	113	107

Source: Brook Hunt, ILZSG, Barclays Capital

Lead mine production

Figure 57: Global mine production

(Kt, recoverable Pb)	Europe	US	Americas	China	Asia	Africa	Oceania	Global
10 yr average	282	438	563	830	176	141	639	3,070
An. Av % change	-2.0%	-0.2%	-0.3%	9.9%	2.2%	-2.9%	2.0%	2.8%
2009	317	403	656	1,610	233	107	525	3,851
% change	-5.0%	1.7%	9.1%	-4.2%	-3.0%	-0.9%	13.1%	1.2%
Q3'08	75	109	188	416	56	28	144	1,016
Q4'08	75	93	191	397	62	23	154	995
Q1'09	76	98	168	253	60	25	113	794
Q2'09	83	103	156	412	63	27	133	977
Q3'09	78	102	167	454	53	27	141	1,021
Q4'09	80	99	165	491	57	28	138	1,059
Q1'10	83	95	169	311	63	27	143	890
y/y change	8.7%	-3.4%	0.4%	22.9%	4.2%	7.1%	26.9%	12.2%
Apr 10	28	35	56	138	21	9	48	334
y/y change	1.1%	-1.4%	13.7%	16.6%	11.1%	7.5%	2.1%	9.9%
Year to Apr 10	111	129	225	449	84	36	190	1,224
YTD y/y change	6.7%	-2.9%	3.4%	20.9%	5.8%	7.2%	19.7%	11.5%

Source: ILZSG, Barclays Capital

Figure 58: Lead concentrate treatment charges
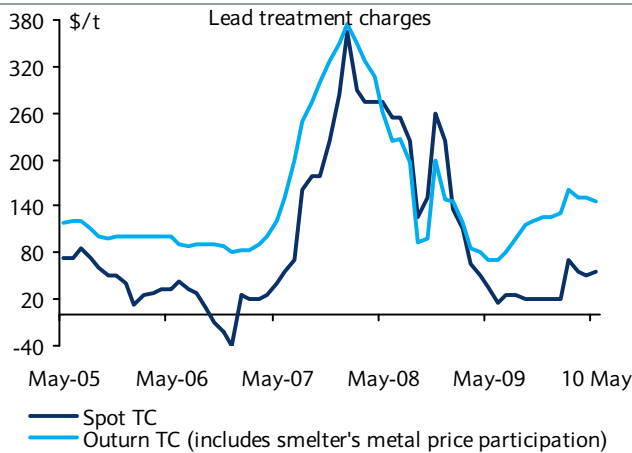
Source: CRU, Barclays Capital

Figure 59: Change in global lead mine output
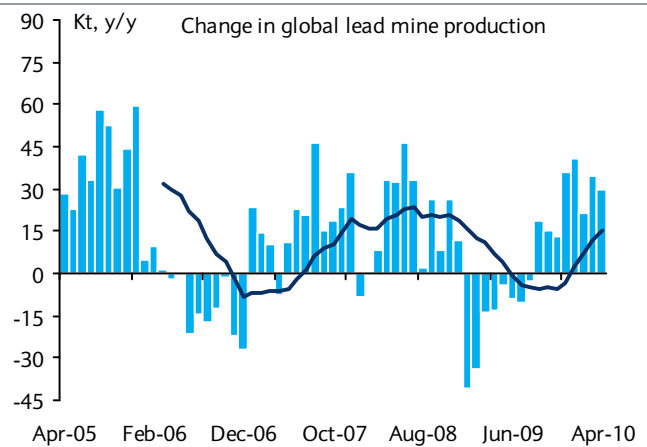
Source: ILZSG, Barclays Capital

Figure 60: Chinese mine output
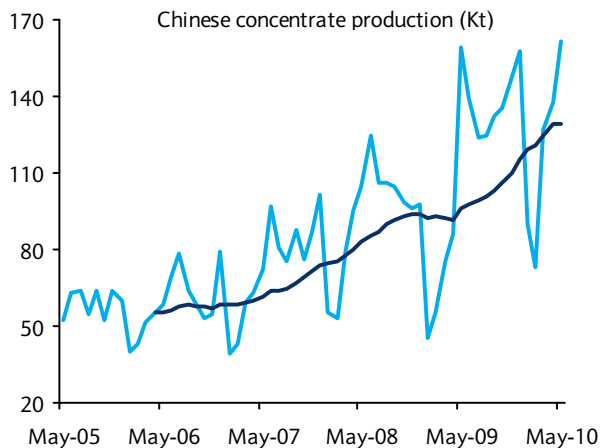
Source: CNIA, China Customs, Barclays Capital

Figure 61: Regional trends in lead mine production
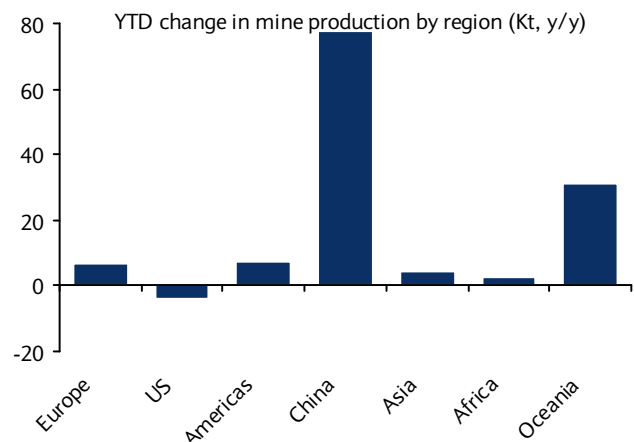
Source: ILZSG, Barclays Capital

Lead refined production

Figure 62: Reported refined production

	Europe	Africa	US	Americas	China	Asia	Oceania	Global
10 yr average	1,871	129	1,368	734	1,584	1,094	263	7,042
An. Av % change	-1.2%	0.3%	-0.9%	0.0%	14.6%	1.6%	0.4%	2.7%
2009	1,652	96	1,197	682	3,708	1,130	251	8,716
% change	-8.8%	-17.6%	-6.5%	-14.0%	18.6%	1.4%	-7.8%	2.4%
Q3'08	445	29	313	191	804	223	69	2,074
Q4'08	434	29	315	198	883	290	69	2,216
Q1'09	418	26	310	179	783	281	56	2,054
Q2'09	409	21	288	166	949	285	69	2,187
Q3'09	405	23	298	162	974	274	63	2,199
Q4'09	420	26	301	176	1,002	290	63	2,277
Q1'10	419	28	312	177	837	279	63	2,114
y/y change	0.2%	6.9%	0.7%	-1.2%	6.8%	-0.9%	11.4%	2.9%
Apr 10	140	9	105	58	300	93	21	726
y/y change	-1.7%	32.9%	11.6%	10.2%	-5.0%	0.4%	-9.9%	-0.2%
Year to Apr 10	558	37	418	235	1,137	371	84	2,840
YTD y/y change	-0.3%	12.4%	3.2%	1.4%	3.4%	-0.6%	5.2%	2.1%

Source: ILZSG, Barclays Capital

Figure 63: Global lead market balance

Source: ILZSG, Barclays Capital

Figure 64: Change in global refined production
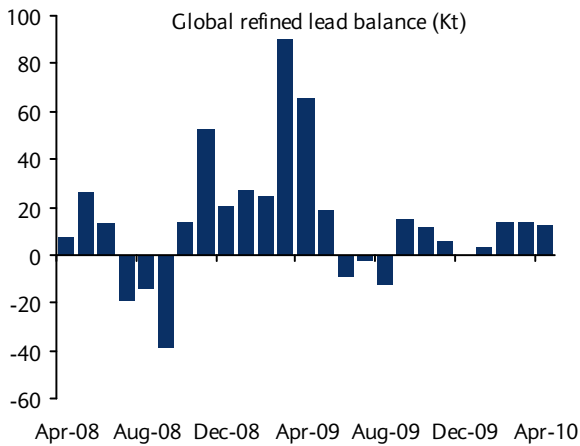
Source: ILZSG, Barclays Capital

Figure 65: Chinese refined lead output
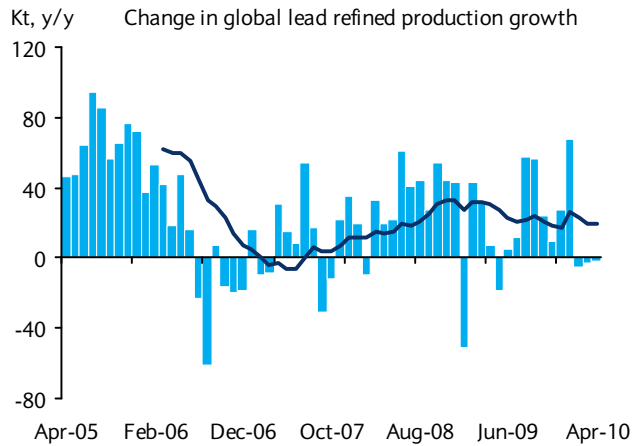
Source: CNIA, China Customs, Barclays Capital

Figure 66: Regional trends in refined output
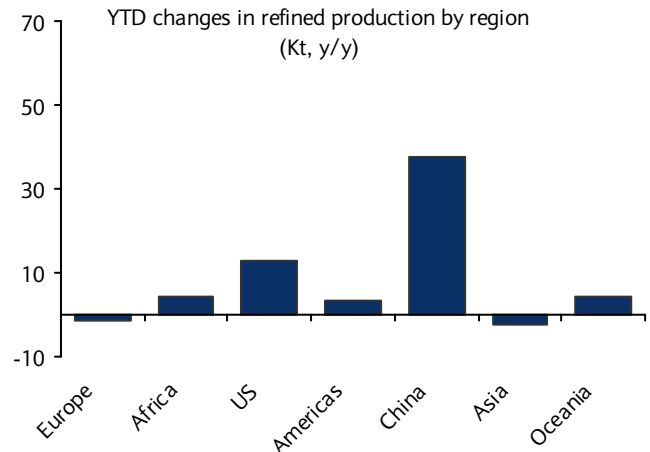
Source: ILZSG, Barclays Capital

Lead refined consumption

Figure 67: Reported consumption

	Europe	Africa	US	Americas	China	Asia	Oceania	Global
10 yr average	2,022	116	1,628	515	1,193	1,408	45	6,926
An. Av % change	-0.8%	-1.5%	-0.9%	1.3%	17.3%	2.0%	-8.4%	3.1%
2009	1,528	89	1,380	428	3,710	1,325	22	8,482
% change	-23.2%	-28.8%	-12.8%	-20.9%	13.7%	-14.8%	-19.2%	-6.6%
Q3 08	455	30	367	130	791	367	6	2,146
Q4 08	420	28	333	121	786	343	4	2,035
Q1 09	385	26	340	122	750	285	5	1,911
Q2 09	370	23	348	93	960	310	7	2,111
Q3 09	384	20	343	108	994	346	5	2,199
Q4 09	389	21	350	105	1,006	385	5	2,261
Q1 10	389	26	366	113	833	349	5	2,082
y/y change	1.1%	-0.8%	7.7%	-6.9%	11.2%	22.8%	10.2%	8.9%
Apr 10	130	8	126	38	301	110	2	713
y/y change	4.8%	9.6%	9.3%	15.8%	5.9%	12.7%	5.9%	7.8%
Year to Apr 10	519	34	492	151	1,134	459	7	2,795
YTD y/y change	2.0%	1.5%	8.1%	-2.1%	9.7%	20.2%	9.1%	8.6%

Source: ILZG, Barclays Capital

Figure 68: Global lead consumption
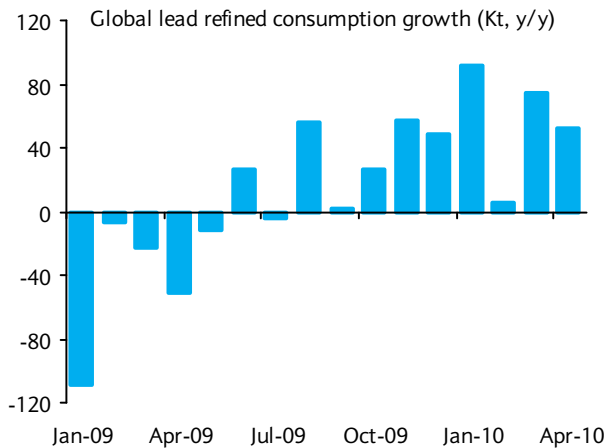
Source: ILZG, Barclays Capital

Figure 69: US battery shipments
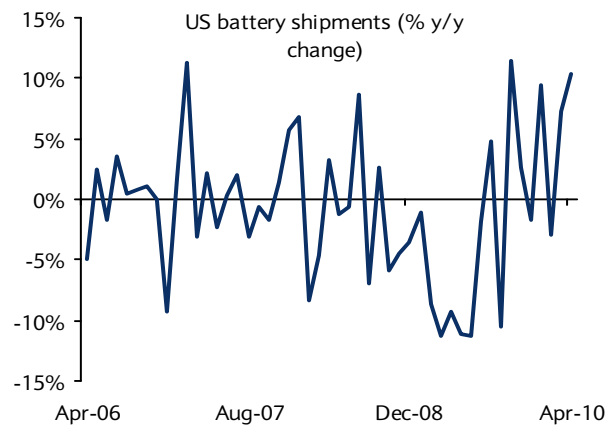
Source: CRU, Barclays Capital

Figure 70: Chinese lead apparent consumption
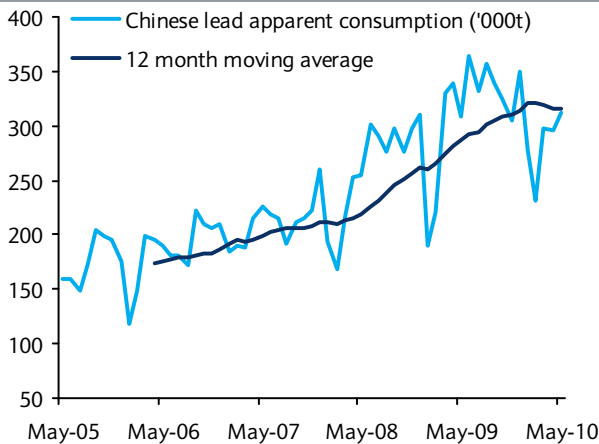
Source: CNIA, China Customs, Barclays Capital

Figure 71: Regional trends in refined lead consumption
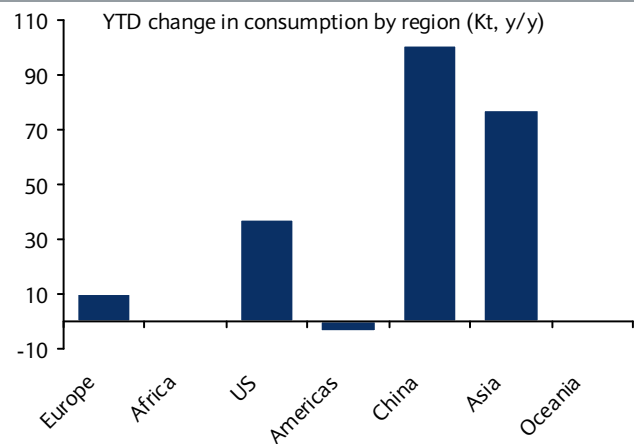
Source: ILZG, Barclays Capital

Supply development

Figure 72: Production losses due to mine closures/cutbacks (Kt, August 2008 onwards)

Year/Region	North America	South America	Oceania	Asia	Europe	Africa	Totals
2008	8	0	25	0	0	0	33
2009	63	8	83.25	0	73	0	226
2010	40	3	25	0	73	0	141

Source: Media reports, Brook Hunt, CRU

Figure 73: New and major expansions to lead mines, 2009-11 (units kt)

Mine	Country	net change in capacity	2009	2010	2011
Magellan	Australia	90	0	57	90
Penasquito	Mexico	86	4	35	90
Mount Isa	Australia	43	126	156	169
Lanping	China	25	5	5	30
Sindesar Khurd	India	20	0	0	20
Endeavor	Australia	19	17	28	36
Rampura-Agucha	India	18	55	67	73
Century	Australia	16	16	27	32
Mt Garnet	Australia	16	1	12	17
Rubtsovsky	Russian Federation	15	0	10	15
Novoshirokinskoye	Russian Federation	14	1	7	15
Fresnillo	Mexico	12	11	11	23
Atacocha	Peru	11	9	15	20
Iscaycruz	Peru	10	1	7	11
Zletovo-Toranica	Macedonia	10	10	20	20
Bellekeno	US	10	0	5	10

Source: Brook Hunt, CRU, Barclays Capital

Recent production news

- The local government in Henan Province China has ordered that three of the smelters in Jiyuan city shut down last year for environmental reasons are to remain closed permanently (total 2009 production: 240Kt). These will, however, be replaced by newer, more efficient capacity, which has already been started, or is due to start by the end of the year, so the loss of capacity will not be permanent.

- A restart at Doe Run Peru's La Oroya smelter, which has been idled since June 2009, is looking increasingly unlikely. Following talks between the company and government officials, the Peruvian government announced that Doe Run Peru's La Oroya smelter could be permanently closed if it does not restart operations by 24 July. The Ministry said that Doe Run's demands, which include greater protection against environmental liability, the elimination of past environmental fines, and to pay its $270mn tax debt in instalments, are 'unacceptable' (CRU). However, workers have begun protesting, demanding more flexibility in allowing the restart of the plant.

- Breakwater Resources Estatuas mine at its El Toqui operations has been given regulatory approval to reopen by Chilean officials. Estatuas mine was idled on 1 May 2010 following a fatality. El Toqui priced 1Kt of lead in 2009.

NICKEL

■ Nickel prices continued to drift lower through June and early July, weighed by a combination of macroeconomic uncertainties and expectations of a slowing in the global stainless sector in Q3 10. Some additional weight came with the 5 July announcement of a tentative agreement to end a year-long strike at Vale's Sudbury mine (capacity 72Kty), although this was generally expected during Q3, and speculation that Voisey's Bay (capacity 56Kty) will follow suit shortly. Providing some counterbalance and relative constraint on price declines has been the continued draw in LME inventories, which have now fallen 23% YTD (36Kt). Until this LME inventory trend changes, the case for prices falling sustainably beneath $19,000/t will be difficult to argue.

■ In our view, Q3 10 will though witness moderate weight on nickel prices. Mine restarts were generally priced in, but what is not and will ultimately be the catalyst for a change in LME stock trends is the slow down in the global stainless sector during this period. Following global production of 7.5Mt in Q1 and a similar figure in Q2, we expect the influence of a period of destocking in China, as well as the seasonally slower summer period in Europe and the US, to contribute to a drop-off in demand for nickel. Combined with a trickle of Sudbury output coming back to the market, LME stock trends should turn less supportive and hence prices soften. From that perspective, in the short term, nickel offers the most persuasive downside position in Q3. We would hesitate, however, in extending that view more than temporally as we believe the stainless sector will ramp back up in Q4 (as China restocks). The failure of the Goro HPAL mine so far means the market will remain tight in 2011, when we forecast an essentially balanced market.

Figure 74: LME inventories continue to decline, a counter argument to emerging bearish sentiment towards nickel…
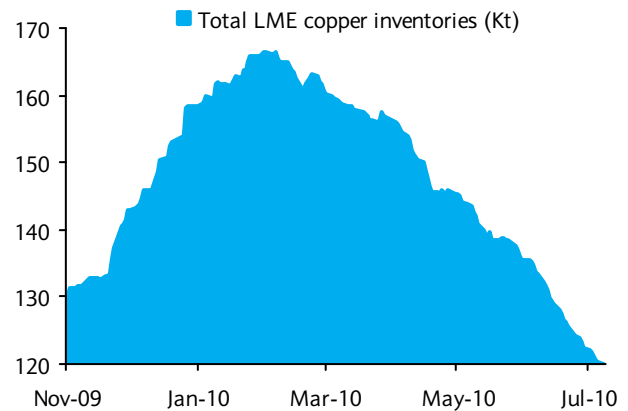
Source: LME, Barclays Capital

Figure 75: … however, a softening in global stainless production in Q3 is expected to help stabilize stock trends
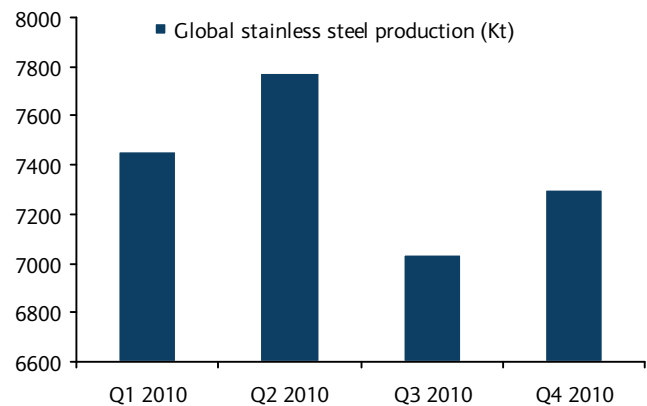
Source: CRU, Brook Hunt, Barclays Capital

Figure 76: Global supply and demand balance

(Kt)	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q3 11	Q4 11	2011
China	254	72	87	88	86	333	81	97	99	96	373
Russian Federation	254	65	64	63	63	255	65	64	63	63	255
Global Production	1,329	339	355	360	370	1,423	374	389	401	407	1,571
y/y change (%)	-3.5%	4.5%	4.0%	13.4%	6.7%	7.1%	10.2%	9.8%	11.5%	10.1%	10.4%
China	395	113	115	104	111	443	119	127	123	125	493
US	90	28	28	26	29	111	28	29	30	33	121
Europe	316	88	101	86	94	369	86	103	92	98	380
Global Consumption	1,232	345	373	365	372	1,455	367	402	404	402	1,574
y/y change (%)	0.5%	32.5%	19.1%	8.4%	15.5%	18.1%	6.4%	7.7%	10.6%	8.1%	8.2%
Global Balance	97	-6	-18	-6	-2	-32	7	-13	-3	5	-3
Total stocks	268	266	232	226	224	224	231	219	216	221	221
Stocks-to-consumption Ratio (wks)	11.0	9.9	8.1	8.1	7.9	7.9	8.1	7.1	7.0	7.2	7.2
LME Cash Price (US$/t)	14,604	20,078	22,382	19,000	19,750	20,303	21,000	22,500	23,500	22,500	22,375
LME Cash Price (Usc/lb)	662	911	1,015	862	896	921	953	1,021	1,066	1,021	1,015

Source: Brook Hunt, CRU, INSG, Barclays Capital

Nickel production

Figure 77: Global mine production

(JKt, recoverable Ni)	Africa	Canada	America	Asia	Russia	Europe	Australia	Oceania	World
10 yr average	75	199	218	249	257	40	179	110	1328
An. Av % change	0.0%	-3.1%	1.0%	9.7%	1.1%	6.6%	3.3%	-1.7%	2.3%
2009	73	137	180	383	262	37	165	93	1329
% change	-3.4%	-47.4%	-16.3%	6.8%	-2.2%	-39.5%	-17.4%	-9.5%	-13.8%
Q3'08	20	62	55	87	66	18	52	30	389
Q4'08	18	66	47	73	61	12	48	28	353
Q1'09	17	55	45	74	65	8	45	17	325
Q2'09	19	44	45	99	65	9	38	23	344
Q3'09	18	17	44	116	66	9	40	25	336
Q4'09	18	21	46	93	66	11	41	28	324
Q1'10	20	23	49	110	66	11	45	28	353
Q1 10 y/y change	17.3%	-57.3%	9.5%	48.8%	2.3%	29.8%	0.5%	63.1%	8.5%
Apr 10	6.8	9.2	16.9	39.1	22.0	4.2	16.0	11.8	126.0
Apr 10 y/y change	1.8%	-49.4%	12.4%	26.1%	2.3%	36.5%	23.8%	42.5%	8.0%
Year to Apr 10	27	33	66	149	88	15	61	40	479
YTD y/y change	12.9%	-55.3%	10.3%	42.1%	2.3%	31.6%	5.7%	56.3%	8.4%

Source: INSG, Barclays Capital

Figure 78: Reported primary nickel production

(Kt)	Africa	Canada	Americas	China	Asia	Russia	Europe	Oceania	World
10 yr average	52	142	145	112	170	253	209	161	1243
An. Av % change	-3.8%	-0.6%	0.7%	18.9%	2.2%	1.1%	0.4%	3.0%	2.6%
2009	36	117	122	254	178	254	200	168	1329
% change	-13.5%	-30.3%	-10.6%	21.2%	0.1%	-1.4%	-20.9%	18.1%	-3.5%
Q3'08	11	43	35	50	48	64	65	23	334
Q4'08	9	46	30	42	42	61	64	39	339
Q1'09	8	42	29	50	37	63	54	41	325
Q2'09	9	34	31	62	46	63	53	43	341
Q3'09	10	19	30	68	47	63	41	39	317
Q4'09	9	22	32	75	48	63	52	45	346
Q1'10	9	20	30	72	52	65	51	40	339
Q1 10 y/y change	8.5%	-52.0%	3.3%	45.7%	41.3%	1.6%	-6.1%	-1.2%	4.5%
Apr 10	3.0	7.2	10.6	30.0	17.7	21.5	16.6	12.9	119.5
Apr 10 y/y change	3.4%	-52.4%	4.6%	54.9%	16.4%	1.6%	-0.6%	-1.4%	5.1%
Year to Apr 10	12	28	41	102	70	86	67	53	459
YTD y/y change	7.2%	-52.1%	3.6%	48.3%	34.1%	1.6%	-4.8%	-1.3%	4.7%

Source: INSG, Barclays Capital

Figure 79: Global mine output has improved in 2010, boosted by improving Indonesian production
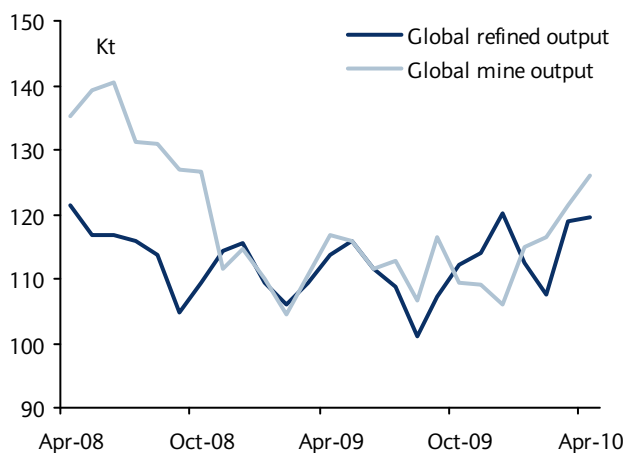
Source: International Nickel Study Group, Barclays Capital

Figure 80: Refined nickel output has surged higher y/y in China and Japan, although still strained in Canada
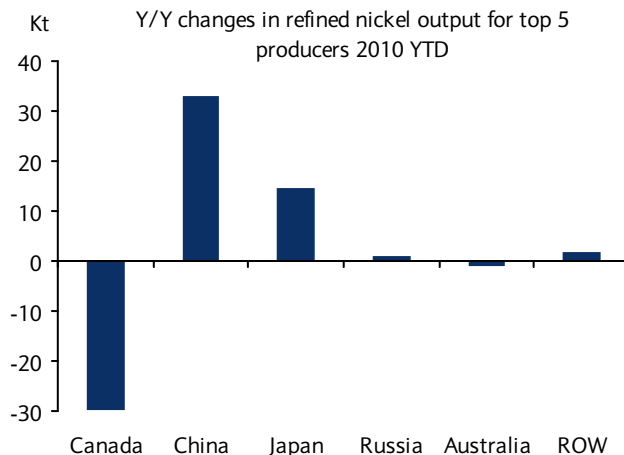
Source: International Nickel Study Group, Barclays Capital

Nickel refined consumption

Figure 81: Refined nickel consumption

(Kt)	US	America	China	Japan	Asia	Europe	ROW	World
10 yr average	134	40	182	179	215	438	32	1,221
An. Av % change	-3.0%	0.3%	23.0%	-2.5%	0.8%	-2.6%	-3.7%	1.3%
2009	112	43	368	143	218	325	24	1,232
% change	-26.2%	-4.9%	21.3%	-23.0%	12.3%	-24.3%	-181.1%	-3.6%
Q3 08	39	11	72	45	47	102	54	305
Q4 08	36	10	75	41	45	82	49	281
Q1 09	27	8	79	25	43	77	33	260
Q2 09	23	8	103	30	51	77	42	313
Q3 09	24	9	110	35	57	79	47	337
Q4 09	21	9	104	35	50	85	47	322
Q1 10	28	9	113	37	53	88	46	345
Q1 10 y/y change	5.7%	3.6%	43.9%	48.8%	22.6%	13.9%	40.4%	32.5%
Apr 10	10	3	39	12	17	33	14	117
Apr 10 y/y change	33.3%	11.5%	25.8%	61.0%	9.2%	35.0%	18.9%	21.3%
Year to Apr 10	38	12	152	49	70	121	60	462
YTD y/y change	11.8%	5.5%	38.8%	51.7%	19.1%	19.0%	34.8%	29.5%

Source: INSG, Barclays Capital

Figure 82: Global refined nickel consumption has rebounded strongly in early 2010…
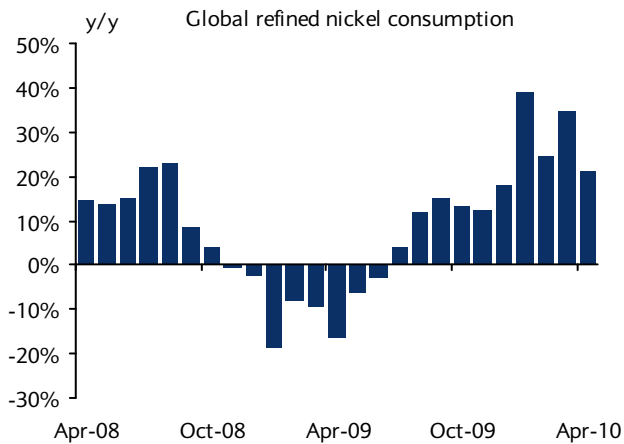
Source: International Nickel Study Group, Barclays Capital

Figure 83: … with all major regions achieving positive y/y improvements in demand levels
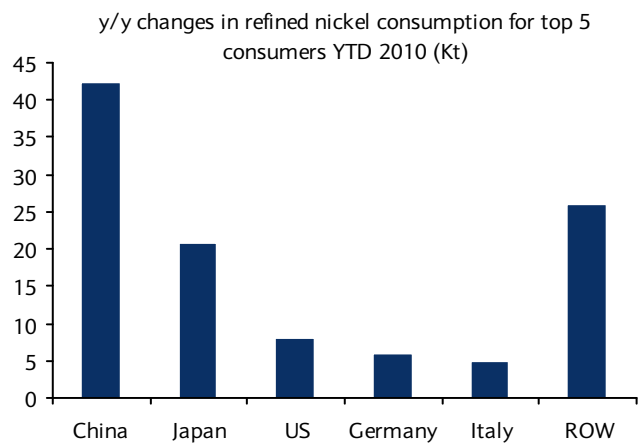
Source: International Nickel Study Group, Barclays Capital

Figure 84: European base prices remain firm…
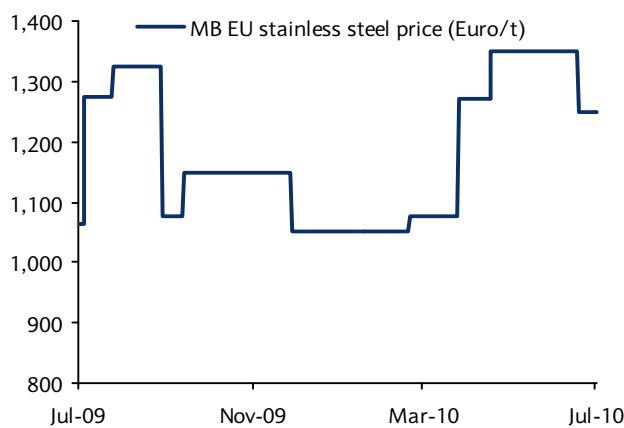
Source: Thomson Datastream, Barclays Capital

Figure 85: … though Asian stainless prices mixed in July
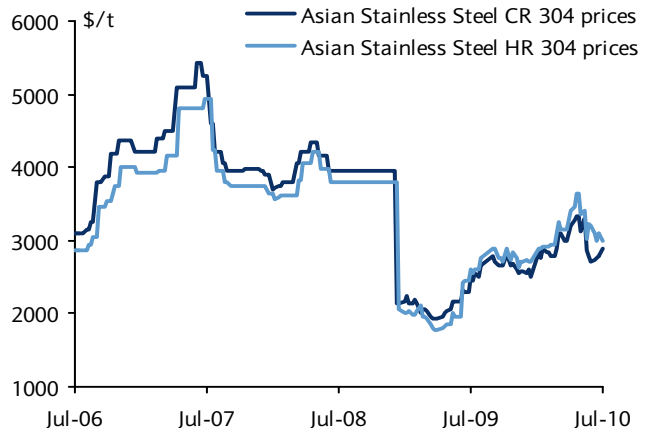
Source: Ecowin, Barclays Capital

Supply development

Figure 86: Production losses due to mine closures/cutbacks (Kt, August 2008 onwards)

Year/Region	North America	South America	Oceania	Asia	Europe	Africa	Total
2008	20	3	49	0	2	5	79
2009	127	52	106	17	32	11	342
2010	116	5	89	0	0	6	216

Source: Media reports, Brook Hunt, CRU

Figure 87: New and major expansions to nickel mines, 2009-11 (units kt)

Mine	Country	Net change in capacity	2009	2010	2011
R Tuba/Tag'ito/Hina. etc	Philippines	32	57	90	89
Talvivaara	Finland	30	8	34	38
Sudbury	Canada	29	43	22	72
Goro	New Caledonia	26	0	16	26
Voiseys Bay	Canada	20	36	24	56
Forrestania	Australia	16	9	20	25
Santa Rita	Brazil	15	2	10	16
PT Aneka Tambang	Indonesia	13	66	77	79
PT Inco	Indonesia	13	72	82	85
Onca Puma	Brazil	11	0	0	11
Nkomati	South Africa	11	5	8	16
SMSP/Posco	New Caledonia	10	20	27	30
Niquel Tocantins	Brazil	8	27	34	35
Xstrata (Sudbury)	Canada	7	9	13	17
Cosmos/C. Deeps	Australia	6	10	15	17

Source: Brook Hunt, Barclays Capital

Recent production news

■ Based on new exploration findings, Australia's Miitel nickel mine could be bigger than previously estimated, owner Mincor Resources announced. It said the work has led to the discovery of a possible second nickel deposit in the west Australian mine site, which is being reactivated following a suspension to operations due to depressed nickel prices (15 June 2010).

■ Vale has reached a tentative five-year labour agreement with United Steelworkers negotiators to end a strike at its nickel operations in Ontario that has lasted nearly a year The two sides signed memorandums of agreement, and the agreement was also positively voted upon by union members Wednesday and Thursday. Vale said on its website that it had reached a tentative agreement with United Steelworkers (USW) Locals 6500 and 6200 representing production and maintenance employees at the company's operations in Sudbury and Port Colborne, Ontario. The company did not comment on the agreement or on plans to resume production until union members vote. However, Vale stated that they "definitely want [the operations] to be back to normal" (5 July 2010).

TIN

■ Tin continues to provide the most robust picture across the base metals complex. While not exempt from the price turbulence over the past month, it is just about the only base metal that has achieved year-to-date price appreciation (albeit extremely modest). This reflects, in our view, the fact that the tin market is in the clearest global market deficit (8Kt deficit). LME inventories continue to decline at a fast pace – down 37% YTD from close to 27Kt down to 17Kt – and as our new 2011 forecast indicates (20Kt deficit), these inventory draws are unlikely to abate next year either. If anything, in our view, the current level of tin prices (trading at $17-18,000/t) will come to be seen as a "bargain" as fundamental conditions are only set to tighten over the next 18 months, hence our 2011 forecast of $19,500/t.

■ The constructive fundamental picture for now and 2011 is a consequence of continued supply-side constraint and a robust recovery in demand levels. On the supply side, production in the world largest supplier – Indonesia – continues to underperform. Exports in May fell 26% y/y and 16% YTD. Likely continued underperformance over the rest of the year has been reinforced by the mid-June closure of one of the largest independent smelters in the country. The smelter, responsible for 6% of total exports, closed due to squeezing of profit margins. In addition, mine supply over the next 1-2 years at least offers few new projects to boost output. On the demand side, robust import data for Japan and sustained demand in Europe (despite hefty warehouse transfers from Asia) point towards firm OECD performance, while in China soldering demand should remain supported by the household appliance replacement scheme that is being enlarged to 28 new cities and provinces. The tin story is undoubtedly bullish, in our view.

Figure 88: LME inventories have continued to fall in July as market fundamentals remain price supportive
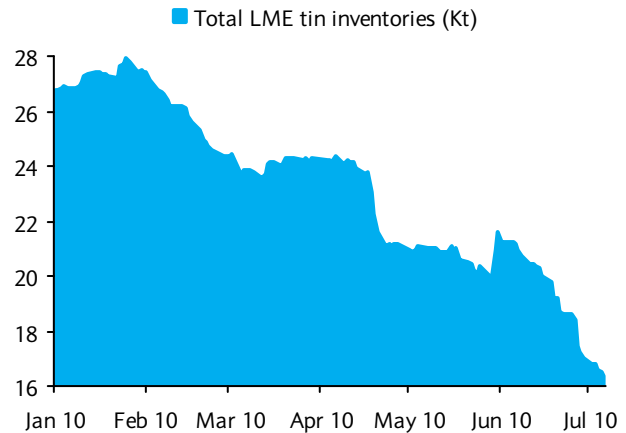
Source: LME, Ecowin, Barclays Capital

Figure 89: We expect the market to be in an 8kt deficit in 2010 followed by a 20Kt deficit in 2011
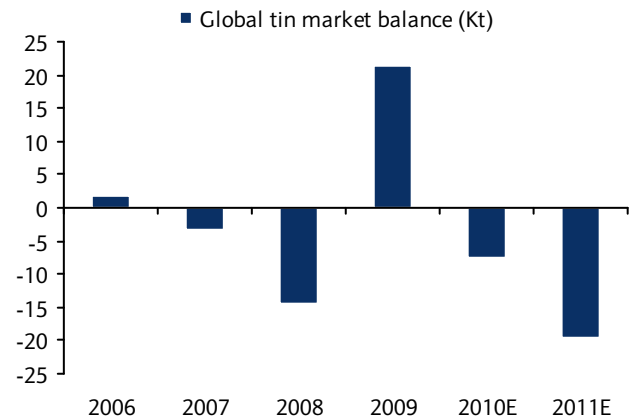
Source: CRU, ITRI, Barclays Capital

Figure 90: Global supply and demand balance

(Kt)	2004	2005	2006	2007	2008	2009	2010E	2011E
Global production	**308**	**347**	**355**	**345**	**322**	**326**	**325**	**328**
y/y change (%)	11.7%	12.5%	2.3%	-2.7%	-6.8%	1.4%	-0.6%	0.9%
Global consumption	**322**	**333**	**362**	**356**	**340**	**305**	**333**	**349**
y/y change (%)	8.6%	3.4%	8.8%	-1.7%	-4.5%	-10.3%	9.2%	4.8%
US stockpile sales	9	8	9	8	4	0	1	2
Global balance	**-5**	**22**	**2**	**-3**	**-14**	**21**	**-8**	**-20**
Total stocks	31	52	54	51	36	58	50	31
Stocks-to-consumption ratio (wks)	5.0	8.2	7.8	7.4	5.5	9.8	7.8	4.5
LME cash price (US$/t)	8,484	7,375	8,761	14,542	18,500	13,579	17,592	19,500
LME cash price (Usc/lb)	385	335	397	660	839	616	798	885

Source: CRU, ITRI, Barclays Capital

Tin supply and demand

Figure 91: Only Chinese mine output is expected to rise across main producers in 2010

2010 expected y/y change in tin mine production for top 5 producers (Kt)

China, Indonesia, Peru, Bolivia, DRC, ROW
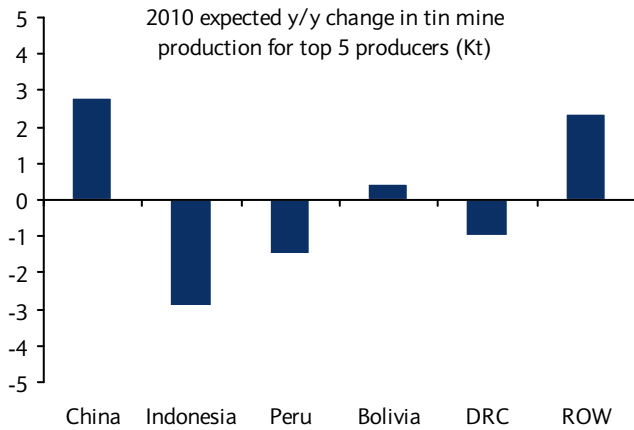
Source: ITRI, Barclays Capital

Figure 92: Refined production picture is similarly weak across major producers in 2010

2010 y/y change in tin refined production for top 5 producers (Kt)

China, Indonesia, Peru, Malaysia, Thailand, ROW
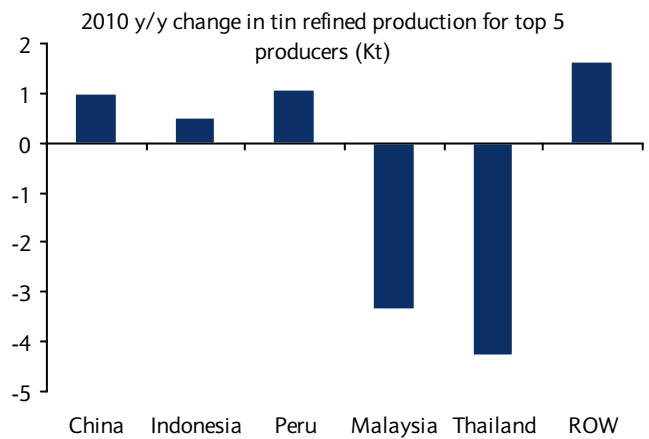
Source: CRU, ITRI, Barclays Capital

Figure 93: Tin demand has strengthened across the board

2010 expected y/y change in tin refined consumption for top 5 consumers (Kt)

China, Europe, Other Asia, Japan, USA, ROW
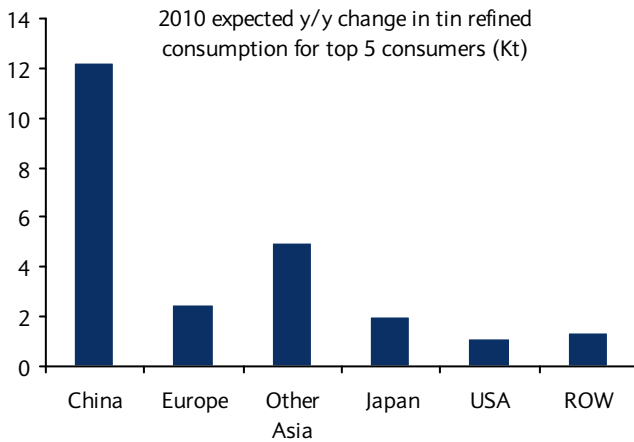
Source: CRU, ITRI, Barclays Capital

Figure 94: China's tin output remains robust in H1 10

Kt   China domestic refined tin output

May-08, Nov-08, May-09, Nov-09, May-10
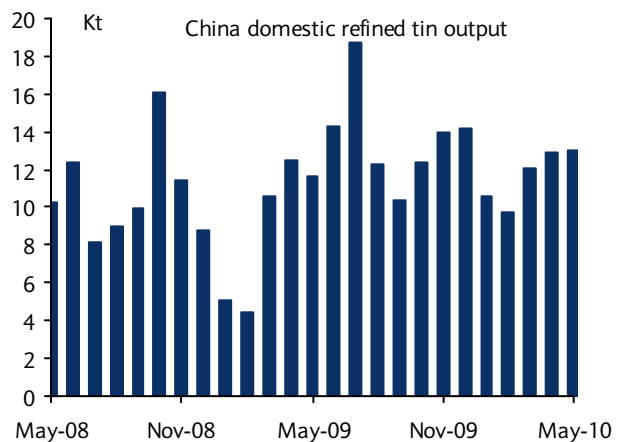
Source: Antaike, Reuters, Barclays Capital

Figure 95: China retained its net importer status in H1 10

Kt   China net trade position in refined tin

Net Exports

12-month moving average

Net imports

May-06, Jan-07, Sep-07, May-08, Jan-09, Sep-09, May-10
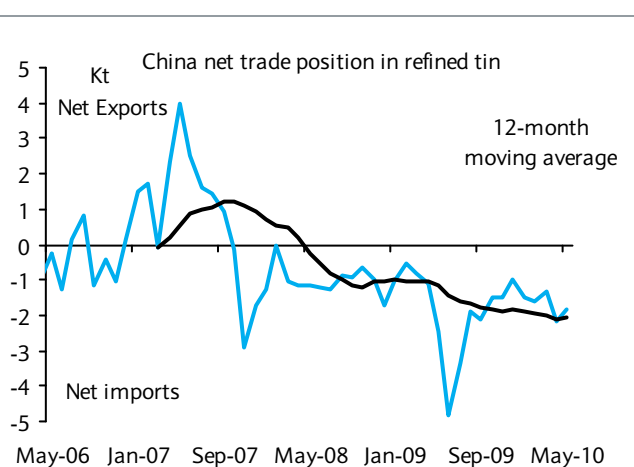
Source: China Customs, Barclays Capital

Figure 96: Chinese domestic prices have picked up and are trading at a firm premium to LME so far in 2010

US$/t

Jul-08, Nov-08, Mar-09, Jul-09, Nov-09, Mar-10, Jul-10

Domestic Chinese Tin Prices — LME Spot Tin Prices

Source: Antaike, Ecowin, Barclays Capital

ZINC

■ Lower zinc prices have sparked a supply response, with smelters in China reducing production recently. These cuts should help to slow fast production growth and prevent a build in stocks over the summer. While spot buying in China is soft at the moment, the demand outlook received a boost from news that the government will increase infrastructure spending 45%; galvanised steel is frequently used in large-scale infrastructure projects. Recent policy measures will cool growth in the private construction sector, but we expect demand for galvanised steel from construction in China to be softer but still robust. Global demand growth is slowing – in line with our expectations – yet remains very strong. We expect demand growth to continue to slow, though at greater than 6% in 2011, we expect it to remain above trend, driven in large part by China and Latin America.

■ Production growth is expected to remain strong over the next few quarters, but in 2011 we see a number of potential constraints. The biggest swing factor will be Chinese mine output. We are sceptical that the recent fast pace of growth can be sustained. More investment spending is needed with mines likely to encounter lower ore grades and having to go deeper underground.

■ With a sizeable slowdown in consumption growth expected in H2, along with continued robust production growth, we expect prices to remain under pressure. But as 2011 progresses, we expect a tightening in raw material supply to create a more price positive environment.

Figure 97: We expect consumption growth to slow but remain above trend
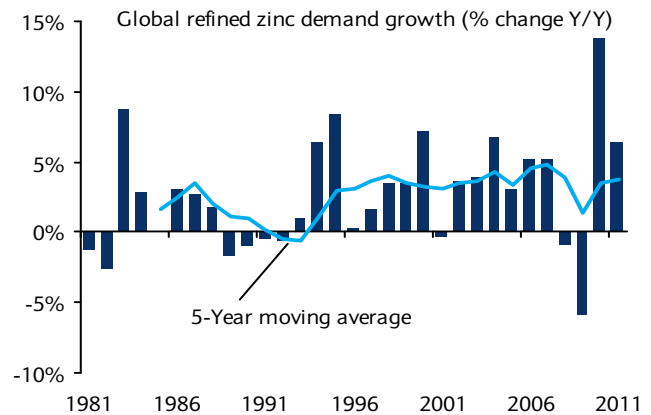
Source: ILZG, Barclays Capital

Figure 98: Can strong Chinese mine output be sustained?
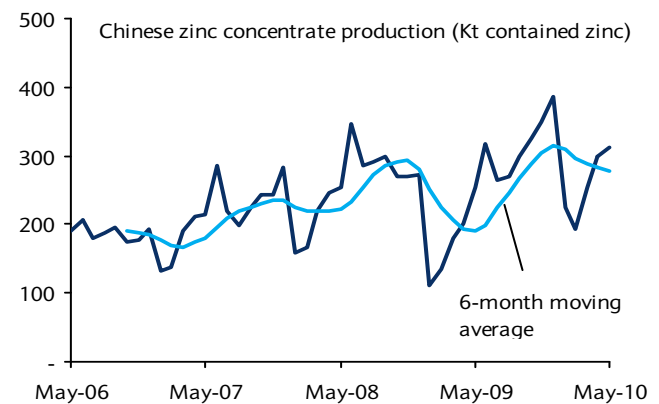
Source: Antaike, Barclays Capital

Figure 99: Global supply and demand balance

Balance	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q3 11	Q4 11	2011
China	4,358	1,176	1,223	1,209	1,342	4,949	1,234	1,333	1,318	1,463	5,348
Total Europe	2,044	593	584	588	580	2,345	605	595	588	580	2,369
North America	889	253	249	246	258	1,007	253	249	246	258	1,007
ROW	3,992	1,040	1,047	983	1,037	4,107	1,069	1,076	1,015	1,071	4,231
Production (Kt)	**11,283**	**3,062**	**3,102**	**3,026**	**3,218**	**12,407**	**3,161**	**3,253**	**3,167**	**3,373**	**12,954**
y/y Change (%)	-3.2%	19.4%	12.1%	5.7%	4.1%	10.0%	3.3%	4.9%	4.7%	4.8%	4.4%
China	4,380	1,144	1,322	1,219	1,339	5,024	1,190	1,402	1,364	1,540	5,495
Total Europe	1,946	583	577	546	566	2,273	583	588	573	594	2,339
North America	1,051	274	281	279	282	1,116	280	289	291	295	1,155
ROW	3,126	910	862	876	886	3,534	917	884	932	993	3,726
Consumption (Kt)	**10,503**	**2,912**	**3,042**	**2,920**	**3,073**	**11,947**	**2,969**	**3,163**	**3,160**	**3,423**	**12,715**
y/y Change (%)	-5.8%	30.4%	18.1%	5.8%	4.7%	13.7%	2.0%	4.0%	8.2%	11.4%	6.4%
Global Balance (Kt)	**780**	**150**	**61**	**106**	**144**	**460**	**192**	**90**	**7**	**-50**	**239**
Total Reported Stocks	1,085	1,224	1,320	1,425	1,570	1,570	1,761	1,851	1,858	1,808	1,808
Stock-to-consumption Ratio (wks)	5.4	5.4	5.6	6.4	6.7	6.9	7.6	7.6	7.7	6.9	7.4
LME Cash Price	**1,654**	**2,288**	**2,018**	**1,850**	**1,900**	**2,014**	**2,000**	**2,200**	**2,350**	**2,450**	**2,250**
LME Cash Price	**75**	**104**	**92**	**84**	**86**	**91**	**91**	**100**	**107**	**111**	**102**

Source: ILZSG, Brook Hunt, Barclays Capital

Zinc mine production

Figure 100: Global mine production

	Europe	Canada	US	Peru	Americas	China	Asia	Oceania	Africa	Global
10 yr average	987	865	741	1,076	810	2,183	1,034	1,306	291	9,292
An. Av % change	1.6%	-5.2%	2.3%	5.6%	2.4%	7.6%	6.7%	3.9%	4.7%	4.0%
2009	977	699	736	1,509	1,254	3,092	1,554	1,270	291	11,382
% change	-9.8%	-2.4%	-5.5%	-5.9%	11.5%	-3.0%	7.3%	-14.1%	2.6%	-2.7%
Q3'08	260	179	214	413	292	876	358	358	71	3,020
Q4'08	264	193	176	408	286	826	364	384	68	2,968
Q1'09	242	174	187	369	314	433	393	288	72	2,473
Q2'09	258	182	176	366	311	758	407	348	73	2,879
Q3'09	245	180	188	369	311	843	367	364	75	2,943
Q4'09	232	163	184	405	318	1,057	387	270	72	3,087
Q1'10	253	171	186	359	351	696	413	347	71	2,848
y/y change	4.6%	-1.7%	-0.8%	-2.7%	11.7%	60.6%	5.0%	20.4%	-0.7%	15.1%
Apr 10	84.2	59.0	62.5	117.8	117.1	281.6	141.3	115.6	23.8	1002.9
y/y change	-2.3%	-2.4%	10.1%	-3.8%	12.3%	40.3%	9.8%	3.1%	-4.0%	11.9%
Year to Apr 10	337	230	248	477	468	978	554	462	95	3,851
YTD y/y change	2.8%	-1.9%	1.7%	-3.0%	11.8%	54.2%	6.2%	15.6%	-1.6%	14.3%

Source: ILZSG, CNIA, Barclays Capital

Figure 101: Zinc concentrate treatment charges
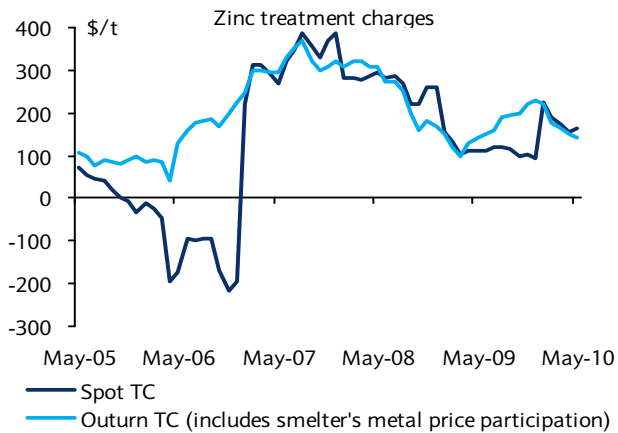
Source: CRU, Barclays Capital

Figure 102: Change in global zinc mine output
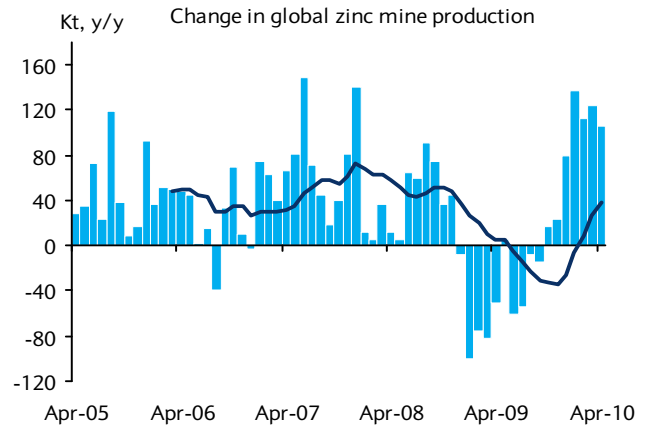
Source: ILZSG, CNIA, Barclays Capital

Figure 103: Chinese concentrate output and imports
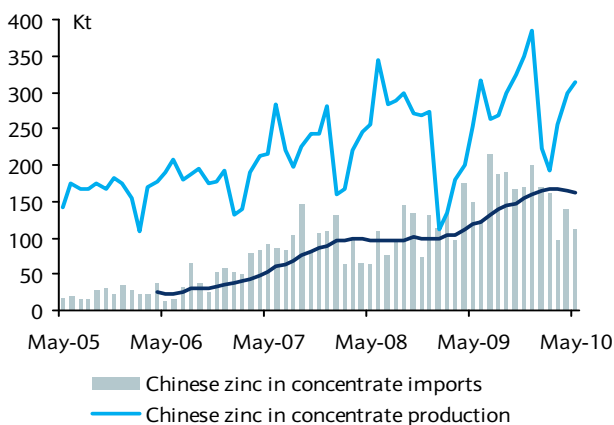
Source: CNIA, China Customs, Barclays Capital.

Figure 104: Change in regional mine output
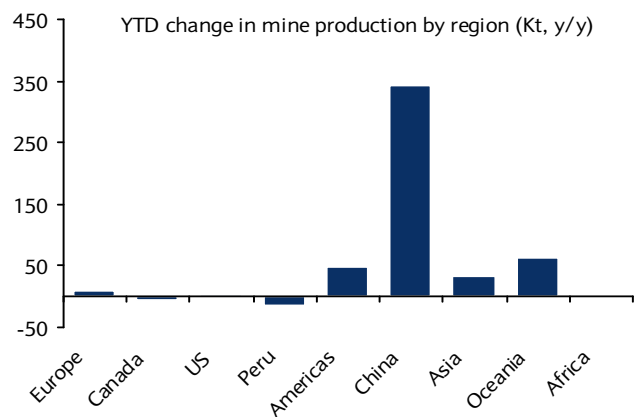
Source: ILZSG, CNIA, Barclays Capital

Zinc refined production

Figure 105: Reported refined production

	Europe	Africa	N.Am	L.Am	China	Asia	Oceania	Global
10 yr average	2,610	254	1,083	792	2,914	2,275	491	10,419
An. Av % change	-0.6%	7.3%	0.1%	2.2%	10.1%	4.8%	5.1%	3.8%
2009	2,044	262	890	759	4,358	2,452	519	11,284
% change	-17.4%	-2.4%	-15.1%	-4.0%	11.4%	-8.0%	4.0%	-3.2%
Q3'08	630	69	261	203	1,012	638	122	2,935
Q4'08	585	67	246	195	980	676	126	2,876
Q1'09	484	64	211	189	851	642	124	2,563
Q2'09	497	67	213	190	1,054	614	131	2,767
Q3'09	519	66	221	187	1,162	572	136	2,862
Q4'09	544	66	244	194	1,291	625	128	3,092
Q1'10	593	68	253	193	1,176	649	130	3,062
y/y change	22.6%	6.1%	20.0%	2.5%	38.2%	1.2%	4.6%	19.4%
Apr 10	195	22	84	68	432	215	43	1,060
y/y change	17.2%	-2.7%	18.2%	6.6%	28.8%	7.9%	2.1%	17.6%
Year to Apr 10	789	89	337	261	1,608	864	174	4,121
YTD y/y change	21.3%	3.9%	19.5%	3.6%	35.5%	2.8%	4.0%	19.0%

Source: ILZSG, Barclays Capital

Figure 106: Global refined zinc market
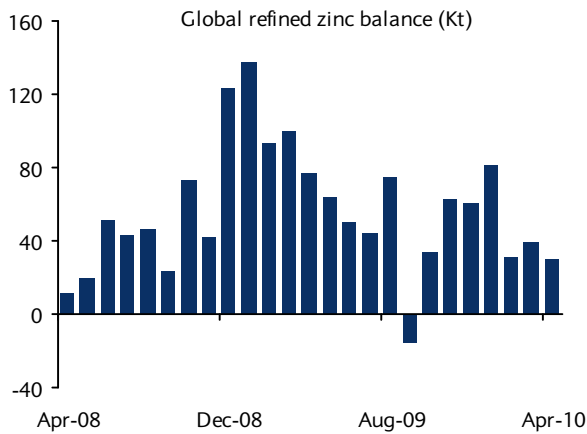
Source: ILZSG, Barclays Capital

Figure 107: Change in global refined output
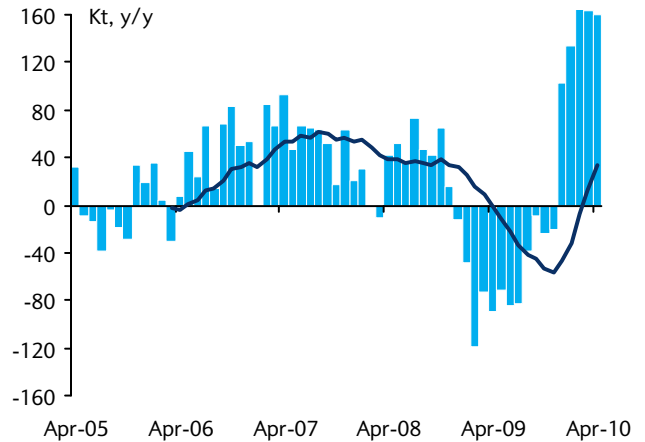
Source: ILZSG, Barclays Capital

Figure 108: Chinese refined output and concentrate imports
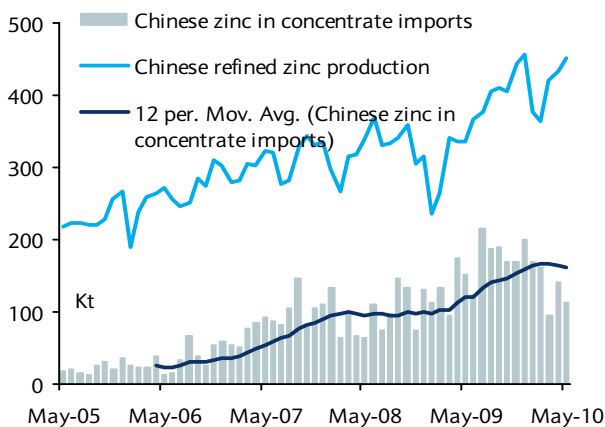
Source: CNIA, China Customs, Barclays Capital.

Figure 109: Regional changes in refined output
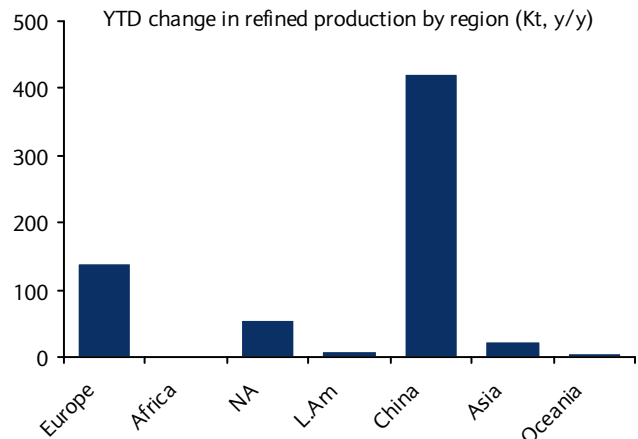
Source: ILZSG, Barclays Capital

Zinc refined consumption

Figure 110: Global refined zinc consumption

	Europe	Africa	N.Am	L.Am	China	Asia	Oceania	Global
10 yr average	2,812	149	1,318	648	2,787	2,545	236	10,495
An. Av % change	0.8%	3.0%	-1.8%	3.4%	14.7%	2.4%	0.4%	3.7%
2009	1,946	171	1,052	556	4,380	2,224	167	10,496
% change	-26.9%	-13.2%	-10.5%	-20.8%	16.8%	-10.1%	-13.9%	-5.9%
Q3 08	676	49	280	186	942	650	49	2,831
Q4 08	648	48	296	164	975	614	46	2,790
Q1 09	485	44	265	142	805	459	43	2,243
Q2 09	453	42	259	135	1,056	501	40	2,486
Q3 09	472	43	264	136	1,112	600	45	2,672
Q4 09	544	43	262	146	1,253	613	44	2,906
Q1 10	561	48	272	151	1,182	639	45	2,898
y/y change	15.5%	10.7%	2.8%	6.3%	46.8%	39.2%	4.6%	29.2%
Apr 10	198	17	97	59	420	218	15	1,024
y/y change	28.1%	19.6%	14.1%	22.8%	29.6%	32.8%	4.9%	27.3%
Year to Apr 10	759	65	369	211	1,601	857	60	3,922
YTD y/y change	18.5%	12.8%	5.6%	10.5%	41.9%	37.5%	4.7%	28.7%

Source: ILZG, Barclays Capital

Figure 111: Global refined zinc consumption
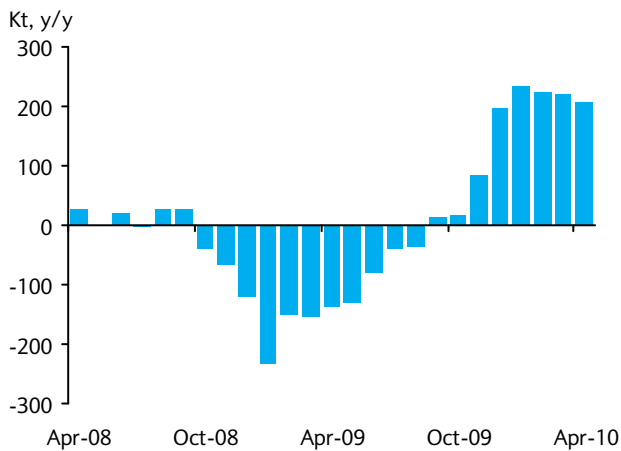
Source: ILZG, Barclays Capital

Figure 112: Galvanised steel output
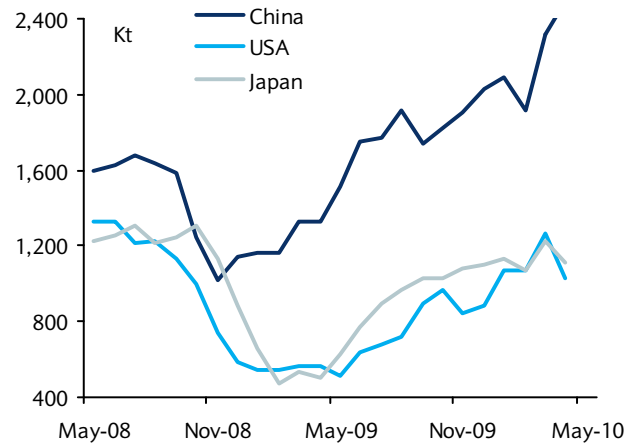
Source: CRU, Reuters, Barclays Capital

Figure 113: Chinese apparent consumption
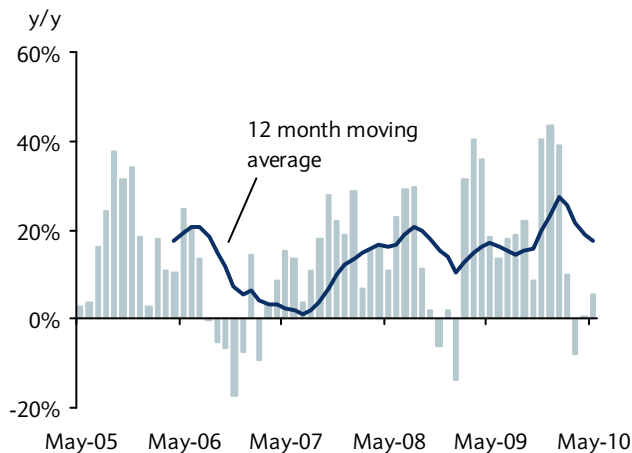
Source: CNIA, China Customs, Barclays Capital

Figure 114: Regional consumption trends
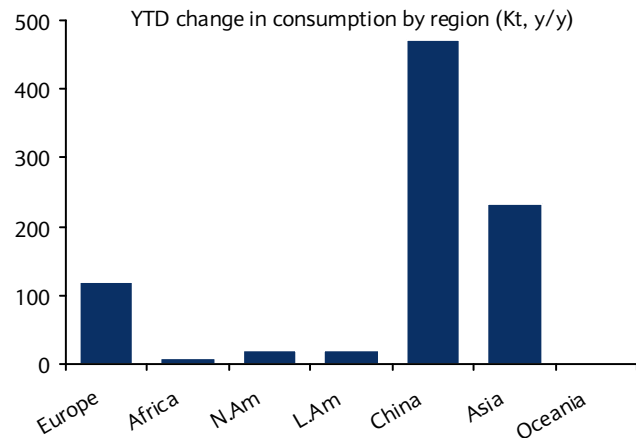
Source: ILZG, Barclays Capital

Supply development

Figure 115: Production losses due to mine closures/cutbacks (Kt, August 2008 onwards)

Year/Region	North America	South America	Oceania	Asia	Europe	Africa	Total
2008	52	5	128	0	7	0	192
2009	272	205	365	13	283	0	1138
2010	250	136	318	13	283	0	1000

Source: Media reports, Brook Hunt, CRU

Figure 116: New and major expansions to zinc mines 2009-11 (units kt)

Mine	Country	Net change in capacity	2009	2010	2011
Century	Australia	140	370	505	510
Pensaquito	Mexico	124	26	100	150
Rampura-Agucha	India	69	581	570	650
Angouran	Iran	69	41	110	110
Lanping	China	60	160	200	220
Talvivaara	Finland	58	2	20	60
Jabali	Yemen	56	0	15	56
Castellanos	Cuba	55	0	10	55
Kyzyl Tashtygskoe	Russia	55	0	25	55
East Tennessee Mines	USA	50	5	25	55
Gordonsville (MTM)	USA	46	2	28	48
Aguas Tenidas	Spain	41	10	49	51
Mount Isa Pb/Zn	Australia	40	320	348	360
Wolverine	Canada	40	0	15	40
Mungana	Australia	38	0	0	38

Source: Brook Hunt, Barclays Capital

Recent production news

- The Peruvian government has warned that Doe Run's 55Ktpy La Oroya smelter could be closed permanently if it does not restart by 24 July.

PRECIOUS METALS

GOLD

■ Gold was the best performing precious metal over the month of June, gaining 2.1% to finish the month at $1241/oz, having closed at an all-time high mid month at $1256/oz, as well as setting a fresh intraday high at $1264.9/oz. Safe haven buying kept gold prices elevated with ETP inflows in June coming in at a strong 75 tonnes following the second strongest month ever. US coin sales also slowed m/m but rose by a third y/y. Of significant note has been the divergence in short-term speculative interest in Comex gold, which showed during the week ended 6 July, non-commercial positions suffered their largest weekly drop since July 2007. Indeed non commercial positions as a percentage of open interest fell to 36%, the lowest since 2008. Although tactical interest has slowed, longer-term appetite remains robust.

■ Recovering jewellery demand has provided a cushion for prices on the downside, but upward momentum has recently been capped by softer investor interest. We expect elevated prices to dampen consumer interest during the seasonally slower summer period.

■ For the year as a whole, we expect the implied physical balance to improve in 2010 and 2011, as mine supply continues to grow, albeit at a slower pace but scrap supply eases from its record high set in 2009. On the demand side, we expect jewellery demand and industrial demand to improve y/y; however, the excess supply will still need to be consumed by the investor community where for now demand looks set to remain robust as fears of inflation and the desire to hold a hard asset continue to support investor interest.

Figure 117: Non-commercial positions as a percentage of open interest falls to its lowest since 2008…
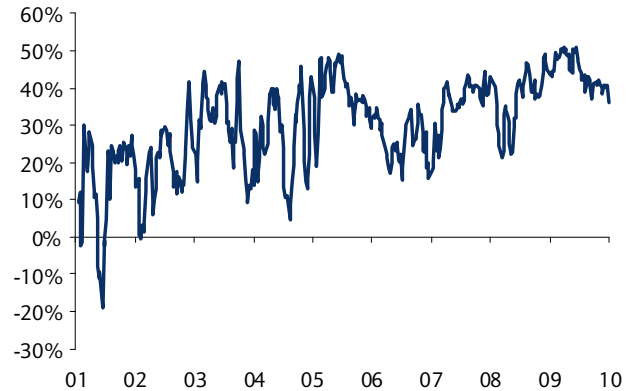
Source: CFTC, Barclays Capital

Figure 118: …while jewellery demand is providing a rising floor
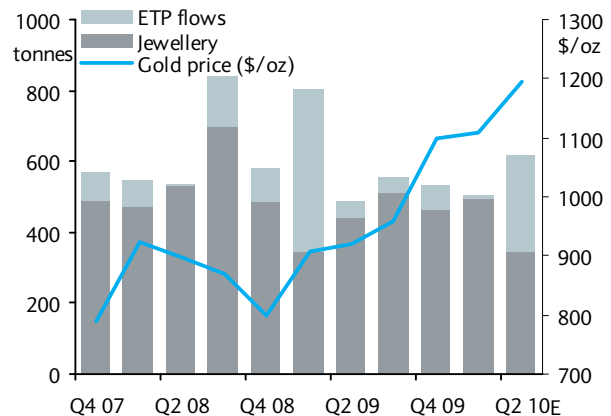
Source: CRU, WGC, GFMS, Various ETP Issuers, EcoWin, Barclays Capital

Figure 119: Global supply and demand balance

(tonnes)	2005	2006	2007	2008	2009E	2010F	2011F
Mine production	2,445	2,441	2,435	2,369	2,510	2,530	2,536
% change y/y	*-1.5%*	*-0.2%*	*-0.2%*	*-2.7%*	*5.9%*	*0.8%*	*0.2%*
Gold scrap	900	1,133	982	1,316	1,668	1,525	1,400
Official Sector net sales	593	365	484	232	41	15	-20
Total physical supply	3,938	3,939	3,901	3,917	4,219	4,070	3,916
% change y/y	*0.8%*	*0.0%*	*-1.0%*	*0.4%*	*7.7%*	*-3.5%*	*-3.8%*
Jewellery	2,700	2,298	2,417	2,193	1,759	1,780	1,880
% change y/y	*3.4%*	*-14.9%*	*5.2%*	*-9.3%*	*-19.8%*	*1.2%*	*5.6%*
Other demand	587	650	663	688	658	687	712
Total fabrication demand	3,287	2,948	3,080	2,881	2,417	2,467	2,592
% change y/y	*4.0%*	*-10.3%*	*4.5%*	*-6.5%*	*-16.1%*	*2.1%*	*5.1%*
Implied physical balance	651	991	821	1,036	1,802	1,603	1,324
ETP flows	203	257	252	321	613	525	300
Net producer hedging	-142	-395	-444	-341	-249	-70	-55
Implied surplus/ (deficit)	305	339	125	374	940	1,008	969
Gold price (US$/oz)	445	604	697	872	972	1,195	1,180

Source: CRU, VM Group, Barclays Capital

Gold – correlation

Figure 120: Gold and EUR/USD
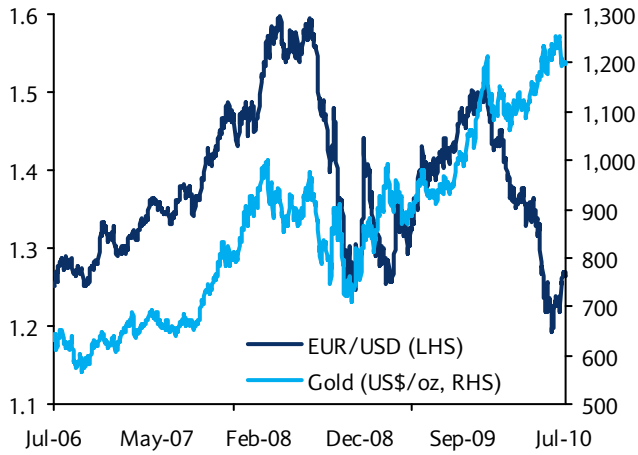
Source: EcoWin, Barclays Capital

Figure 121: Gold and trade-weighted dollar

Source: EcoWin, Barclays Capital

Figure 122: Gold and inflation expectations
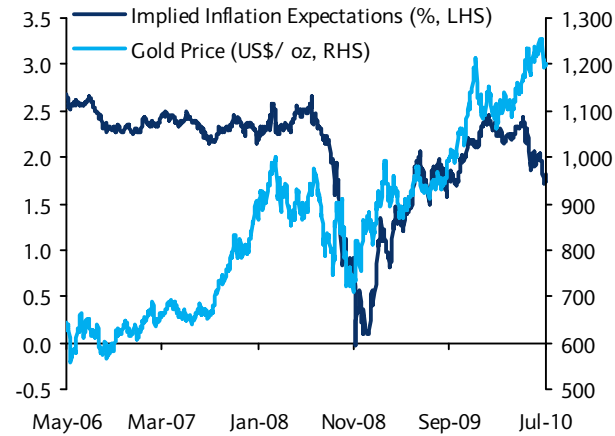
Note: Implied inflation expectations refer to the difference between yields on 10y US government bonds and 10y inflation-indexed bonds.
Source: EcoWin, Barclays Capital

Figure 123: Gold and US CPI
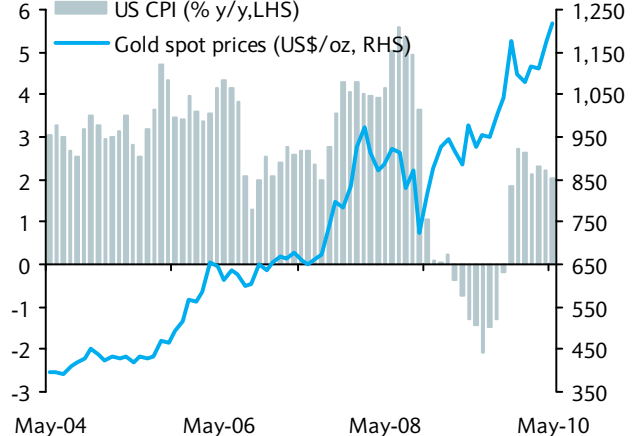
Source: EcoWin, Barclays Capital

Figure 124: Gold-Silver ratio
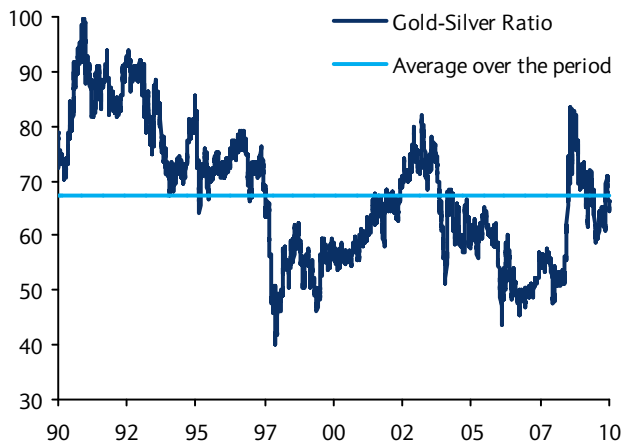
Source: EcoWin, Barclays Capital

Figure 125: Gold-Oil ratio
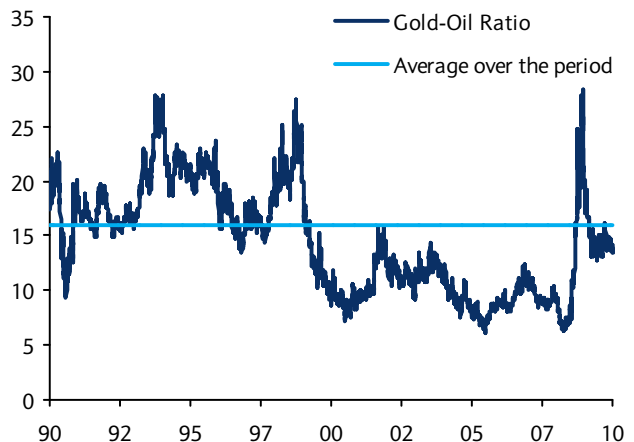
Source: EcoWin, Barclays Capital

Gold – physical and financial demand

Figure 126: Global jewellery demand (tonnes)
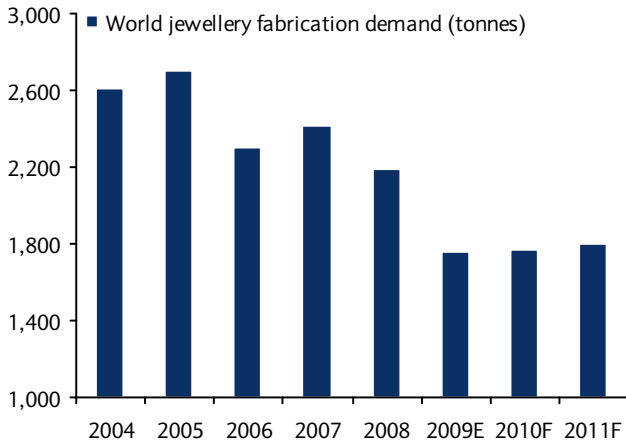
Source: CRU, Barclays Capital

Figure 127: Chinese spot demand
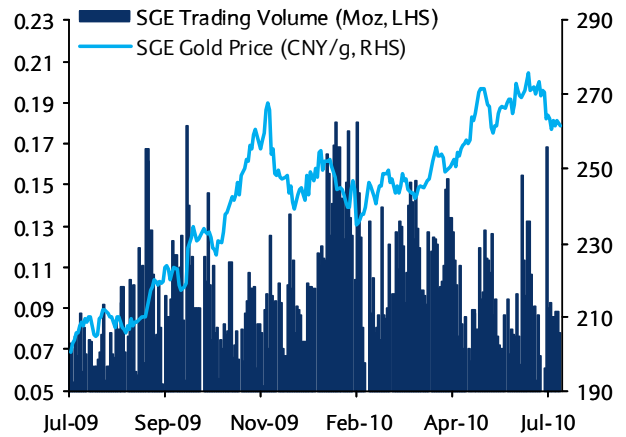
Source: EcoWin, Barclays Capital

Figure 128: Monthly settled sales under EcbGA (tonnes)
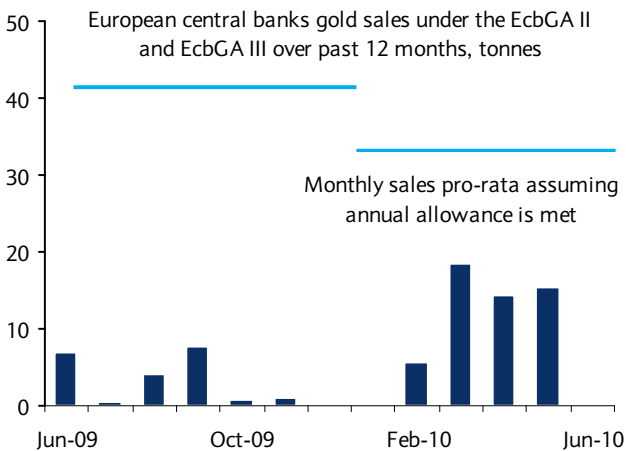
Note: Includes IMF open market sales to May 2010. Source: ECB, SNB, Svergis Riksbank, Barclays Capital

Figure 129: Quarterly movements in global hedge book
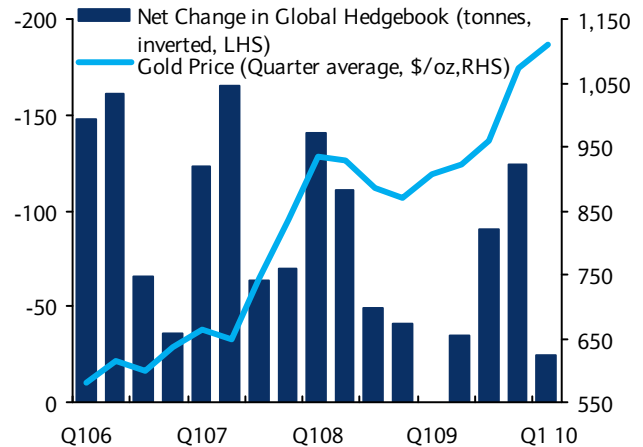
Source: VM Group, Barclays Capital

Figure 130: Monthly change in physically-backed gold ETPs
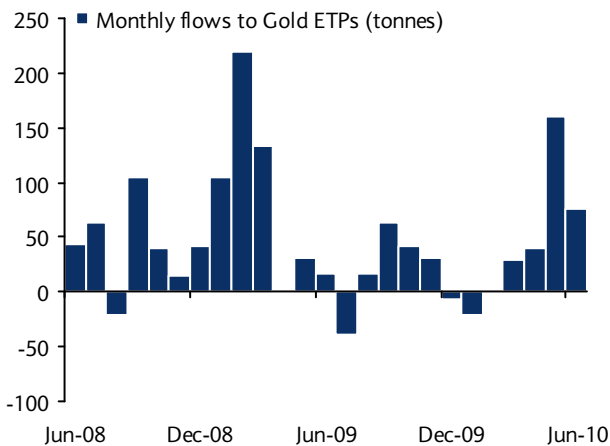
Source: Various ETP Issuer websites, Barclays Capital

Figure 131: Total investment holdings across ETPs and futures
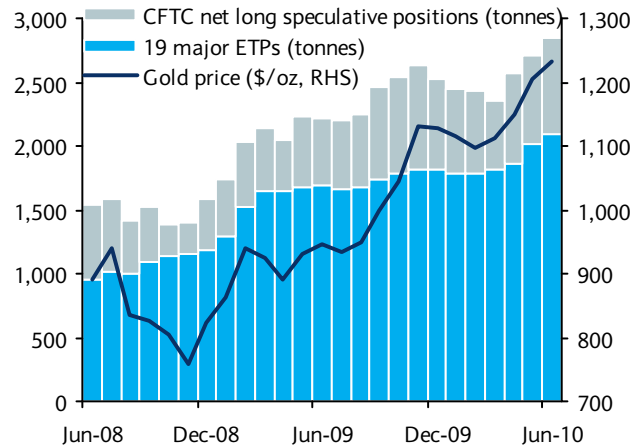
Source: EcoWin, CFTC, Various ETP issuer websites, Barclays Capital

Gold – physical supply

Figure 132: Reported mine production

000s oz	Grasberg	Yanacocha	Goldstrike	Lagunas Norte	Kupol	Lihir	Driefonte	Total
2006	**1,911**	**2,571**	**1,865**	**1,084**	**-**	**650**	**1,074**	**9,156**
2007	**2,425**	**1,531**	**1,629**	**1,085**	**-**	**701**	**1,012**	**8,382**
y/y change	26.9%	-40.5%	-12.7%	0.1%	-	7.7%	-5.8%	-8.4%
Q3 08	291	448	463	353	275	216	207	2514
Q4 08	477	419	575	326	283	247	195	2667
2008	**1,283**	**1,809**	**1,706**	**1,175**	**627**	**771**	**830**	**7,575**
y/y change	-47.1%	18.2%	4.7%	8.3%	-	10.1%	-18.0%	-9.6%
Q1 09	629	499	399	237	257	247	215	2372
Q2 09	858	516	408	261	234	219	213	2269
Q3 09	756	543	341	303	215	169	190	2246
Q4 09	590	499	207	206	220	218	187	2102
2009	**2,833**	**2,056**	**1,355**	**1,007**	**926**	**853**	**805**	**8,910**
y/y change	120.8%	13.7%	-20.6%	-14.3%	47.7%	10.6%	-3.0%	17.6%
Q1 10	473	423	279	330	193	180	147	1985
y/y change	-24.7%	-15.2%	-30.1%	39.2%	-25.0%	-26.9%	-31.6%	-16.3%

Note: Total reported mine production refers to approximately 12% of global production. Data refer to total mine output for the calendar year, and, if required, equity production is grossed up. Total numbers and y/y change exclude Kupol. Source: Company reports, Barclays Capital

Figure 133: Global mine production

000s oz	South Africa	US	Australia & New Zealand	Peru	Indonesia	Ghana	Total
2006	**7,370**	**7,600**	**6,434**	**4,569**	**2,464**	**1,792**	**30,228**
2007	**7,048**	**7,120**	**6,182**	**3,541**	**2,885**	**1,843**	**28,620**
y/y change	-4.4%	-6.3%	-3.9%	-22.5%	17.1%	2.8%	-5.3%
Q3 08	1426	1684	1480	994	352	544	6481
Q4 08	1352	1931	1406	1016	548	507	6759
2008	**5,600**	**6,596**	**5,561**	**3,880**	**1,513**	**2,030**	**25,179**
y/y ch	-20.5%	-7.4%	-10.1%	9.6%	-47.6%	10.1%	-12.0%
Q1 09	1330	1596	1376	956	680	470	6408
Q2 09	1319	1530	1400	1027	960	507	6743
Q3 09	1367	1567	1348	1118	931	525	6855
Q4 09	1306	1585	1452	978	724	502	6546
2009	**5,322**	**6,278**	**5,574**	**4,078**	**3,295**	**2,004**	**26,552**
y/y ch	-5.0%	-4.8%	0.2%	5.1%	117.8%	-1.3%	5.5%
Q1 10	1094	1729	1394	1008	639	468	6332
y/y ch	-17.7%	8.3%	1.3%	5.4%	-6.0%	-0.5%	-1.2%

Note: Total reported mine production refers to approximately 39% of global production. Source: Company reports, Barclays Capital

Figure 134: Largest gold expansions, 2009-10 (tonnes)

Mine	Country	2009 y/y	2010 y/y
Grasberg	Indonesia	36	-10
Yanacocha	Peru	8	-6
Boddington	Australia	8	17
Kupol	Russia	6	-5
Buzwagi	Tanzania	6	2
Pioneer	Russia	6	2
Paracatu/Brasilia	Brazil	5	3
Sabodola	Senegal	5	1
Barcap estimated global mine production		*2,510*	*2,530*

Figure 135: Lihir quarterly production data

Lihir quarterly production (000oz)
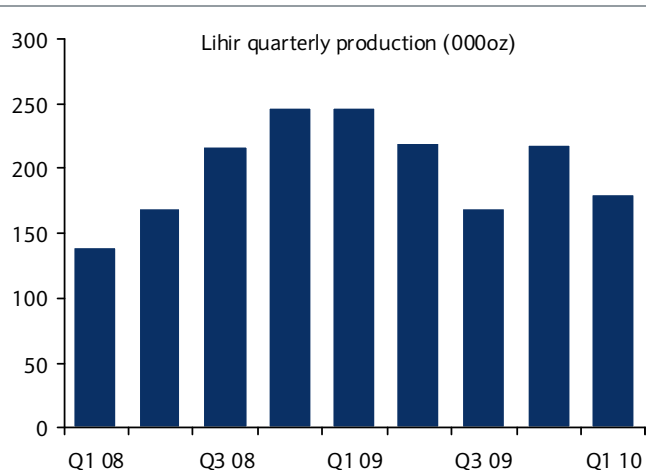
Source: CRU, Barclays Capital

Source: Company reports, Barclays Capital

SILVER

- Silver prices continued to ride on the positive sentiment towards gold. While underlying industrial demand continues to improve, softer investor interest has limited upside momentum in prices. Silver prices gained 0.1% over the month of June testing highs above $19/oz but underperforming sister metal gold. As prices have come under pressure in early July, silver has fallen further relatively to gold, dipping below the $18/oz mark. Investor interest remains mostly positive with ETP flows slowing in June but staying positive at a modest 45 tonnes compared to May's 533 tonnes. However, total metal held across the six products we track hit a new peak during the month at 12,738 tonnes, and holdings have hit a new high in July so far. Speculative interest shows a similar trend, whereby net fund length rose by 937 tonnes – a significantly greater increase than ETP interest – however, net length came under pressure in early July when non-commercial positions dropped by 6.9k lots (1068 tonnes) in one week to a one-month low on the back of long liquidation. Retail interest remains positive in silver, while US coin sales rose by a third in June – they have already exceeded 1Moz in July so far.

- From a fundamental perspective, we continue to expect a market surplus this year and in 2011 driven by both an increase in mine output and scrap supply. However, although we expect growth in fabrication demand to outpace supply, the market is set to remain in hefty surplus through 2011, leaving upside potential for prices dependent upon investor interest, which for now remains supportive.

Figure 136: Comex speculative length falls to one month low
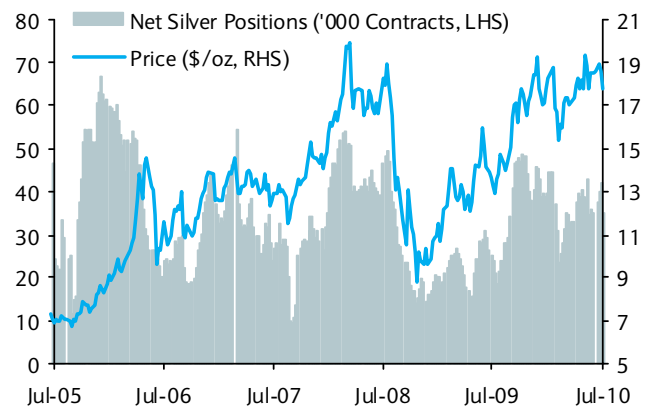
Source: CFTC, EcoWin, Barclays Capital

Figure 137: US coin sales remain elevated
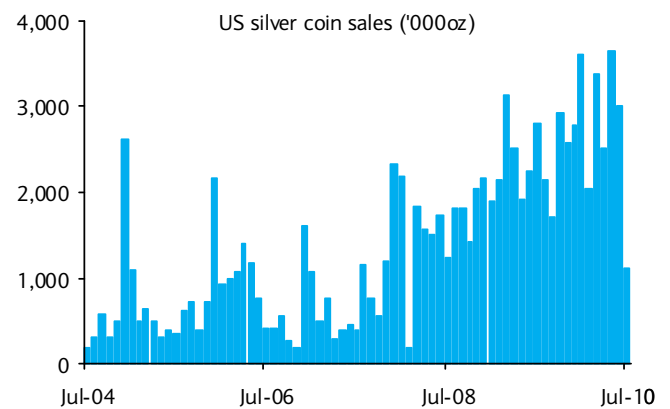
Source: US Mint, Barclays Capital

Figure 138: Global supply and demand balance

tonnes	2005	2006	2007	2008	2009	2010F	2011F
Mine production	20,556	20,731	21,747	22,266	23,288	23,862	24,351
Net official sector sales	2,314	1,696	1,449	900	800	500	200
Scrap recovery	5,800	5,850	5,650	5,500	5,434	5,637	5,868
Total physical supply	28,670	28,277	28,846	28,666	29,522	30,000	30,418
% change	*4.4%*	*-1.4%*	*2.0%*	*-0.6%*	*3.0%*	*1.6%*	*1.4%*
Industrial demand	12,160	12,720	13,560	13,380	10,930	12,369	13,149
Photography	5,050	4,510	3,940	3,330	2,780	2,626	2,510
Jewellery & Silverware	7,610	7,120	6,980	6,590	6,690	6,922	7,325
Official coins	700	1,220	1,220	1,990	2,390	2,102	1,767
Total fabrication	25,520	25,570	25,700	25,290	22,790	24,020	24,750
% change	*0.7%*	*0.2%*	*0.5%*	*-1.6%*	*-9.9%*	*5.4%*	*3.0%*
Implied physical balance	3,150	2,707	3,146	3,376	6,732	5,980	5,668
ETP flows	na	3,768	2,146	2,339	4,112	1,500	500
Net hedging	350	-200	-500	-250	-500	0	0
Implied surplus/deficit	3,500	-1,261	500	787	2,120	4,480	5,168
Silver price (US$/oz)	7.30	11.55	13.37	14.95	14.6	18.2	17.5

Source: CRU, Barclays Capital

Silver – fundamentals

Figure 139: Reported mine production

tonnes	Cannington	Antamina	Uchucchacua	Escondida	Mount Isa*	Total
2006	863	288	302	176	195	1,824
2007	1,167	313	307	211	235	2,233
y/y change	35.2%	8.6%	1.6%	20.4%	20.1%	22.4%
Q1 08	293	74	90	43	-	583
Q2 08	224	92	90	44	164	532
Q3 08	261	86	80	36	-	541
Q4 08	298	84	95	40	154	594
2008	1,077	336	356	164	318	2,249
y/y change	-7.8%	7.5%	15.9%	-22.7%	35.4%	0.7%
Q1 09	212	92	90	36	-	498
Q2 09	268	114	84	37	133	570
Q3 09	281	96	77	28	-	536
Q4 09	291	125	78	45	110	593
2009	1,052	428	329	146	243	2,197
y/y change	-2%	27%	-8%	-11%	-24%	-2%
Q1 10	299	99	63	43	-	505
y/y change	41%	8%	-30%	18%	-	17%

Note: Data for Mount Isa are only available on a half yearly basis. Q1 10 y/y change excludes Mount Isa. Data refer to total mine output for the calendar year. Total refers to approximately 10% of global production. Source: Company reports

Figure 140: Silver projects and expansions, 2009-10 (tonnes)

Mine (tonnes)	Country	2009E	2010F
Cannington	Australia	1,083	1,049
Fresnillo/Proano	Mexico	1,038	1,038
San Cristobal	Bolivia	773	744
Antamina	Peru	451	342
Mt Isa / Hilton	Australia	340	421
Uchucchacua	Peru	330	392
Arcata	Peru	275	210
San Bartolome	Bolivia	274	245
Barclays estimated global mine production		*23,288*	*23,862*

Source: CRU, Barclays Capital

Figure 141: Mexican silver production

Source: EcoWin, Barclays Capital

Figure 142: Monthly change in physically-backed silver ETPs
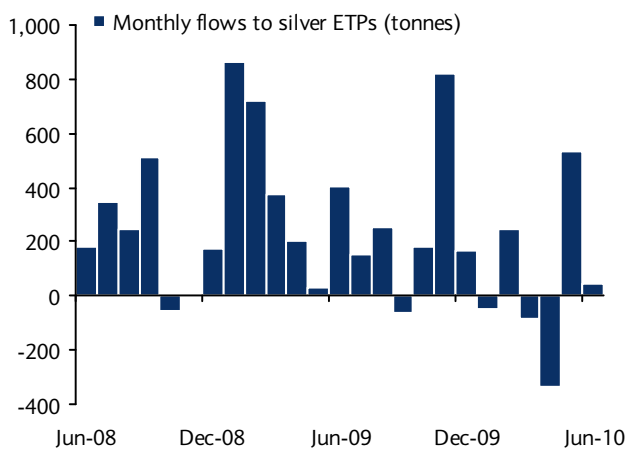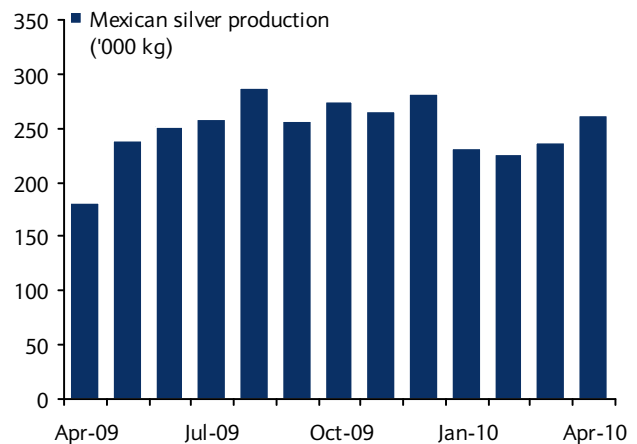
Source: iShares, ETF Securities, ZKB, JB, Barclays Capital

Figure 143: Total investment holdings across ETPs and futures
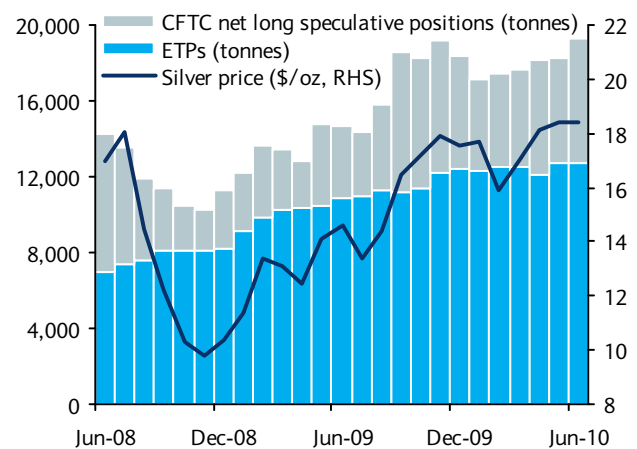
Source: EcoWin, CFTC, iShares, ETF Securities, ZKB, JB, Barclays Capital

PLATINUM

■ After sharp losses in May, platinum prices traded mostly within a $100 range in June and closed the month almost 2% lower. Although dips below $1500/oz have been met with rising fabrication demand, prices have struggled to gain traction above $1600/oz. Prices remain vulnerable to bearish sentiment and concerns about the shape of the economic recovery; however, longer-term investor interest has proved to be a stable force in recent weeks. Furthermore, the drop in speculative interest bodes well for prices to form a stronger base.

■ Although we expect jewellery demand to slow this year, particularly as much of the sector restocked across the chain in China last year, a positive response has materialised to price dips in the platinum market. Trading on the Shanghai Gold Exchange has continued to pick up upon prices easing below 350CNY/g. China's platinum imports rose a staggering 116% to 204koz, with May being only the sixth month in which imports have exceeded 200koz, and all six of those months have materialised in the past year. Auto sales in the key European market softened for the second consecutive month, yet tighter emissions legislation coupled with a shift back towards diesel should support platinum demand this year.

■ We expect many of the fundamental trends of 2010 to continue into 2011, setting the scene for another year in deficit; however, the most significant swing could come from ETP flows, which we forecast to slow yet remain positive next year.

Figure 144: EU new car registrations slow for a second month
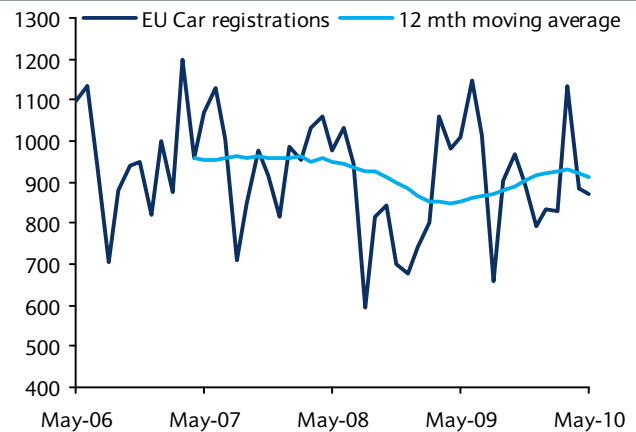
Source: Datastream, Barclays Capital

Figure 145: Speculative interest in Nymex platinum slows
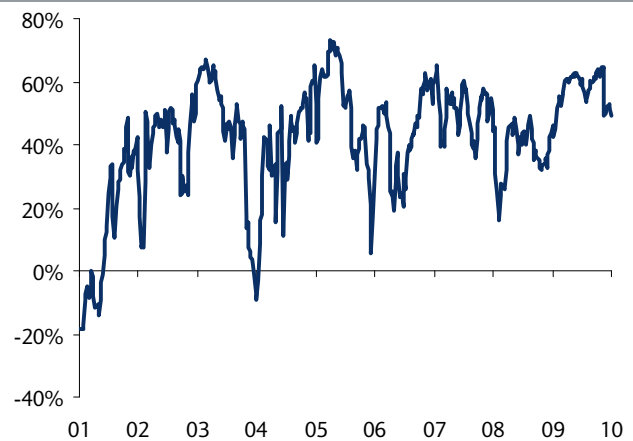
Source: CFTC, Barclays Capital

Figure 146: Global supply and demand balance

('000 oz)	2006	2007	2008	2009	2010F	2011F
South Africa	5,295	5,070	4,515	4,530	4,622	4,738
Russia	920	915	805	785	795	805
North America	345	325	325	260	305	335
Others	270	290	295	345	349	352
Primary supply	6,830	6,600	5,940	5,920	6,071	6,230
% change y/y	*2.9%*	*-3.4%*	*-10.0%*	*-0.3%*	*2.5%*	*2.6%*
Scrap Supply	1,415	1,590	1,830	1,405	1,571	1,760
% change y/y	*11.4%*	*12.4%*	*15.1%*	*-23.2%*	*11.8%*	*12.0%*
Total supply	8,245	8,190	7,770	7,325	7,642	7,990
% change y/y	*4.2%*	*-0.7%*	*-5.1%*	*-5.7%*	*4.3%*	*4.6%*
Autocatalyst: gross	3,905	4,145	3,655	2,230	2,810	3,320
Jewellery	2,195	2,110	2,060	3,010	2,710	2,765
Industrial	1,830	1,845	1,720	1,140	1,530	1,630
Investment flows	-40	170	555	660	625	326
Total demand	7,890	8,270	7,990	7,040	7,675	8,041
% change y/y	*-0.9%*	*4.8%*	*-3.4%*	*-11.9%*	*9.0%*	*4.8%*
Movement in stocks	355	-80	-220	285	-33	-51
Platinum price (US$/oz)	1,139	1,304	1,569	1,205	1,623	1,660

Note: Investment flows include exchange-traded product flows. Scrap includes auto, jewellery and electrical. Source: Johnson Matthey, Barclays Capital

Platinum – fundamentals

Figure 147: Reported mine production

000s oz	Impala Platinum	Marikana	Rustenburg	Amandelbult	Union	Total
H107	510	385	382	266	142	1685
H207	576	360	350	308	168	1762
2007	1,086	746	732	574	310	3,447
H108	468	313	294	186	136	1397
H208	516	333	406	275	173	1703
2008	984	646	700	461	309	3,100
H109	435	292	266	178	124	1294
H209	432	320	464	266	168	1650
2009	867	611	730	444	292	2,944
y/y change	-11.8%	-5.3%	4.2%	-3.8%	-5.5%	-5.0%

Note: Data refer to total mine output for the calendar year. AngloPlat has revised its reporting of refined mine supply from Q2 09 and no longer includes third-party purchases within individual mines. Rustenburg includes purchases. Total refers to approximately 53% of global production. Source: Company reports, Barclays Capital

Figure 148: South African PGM production
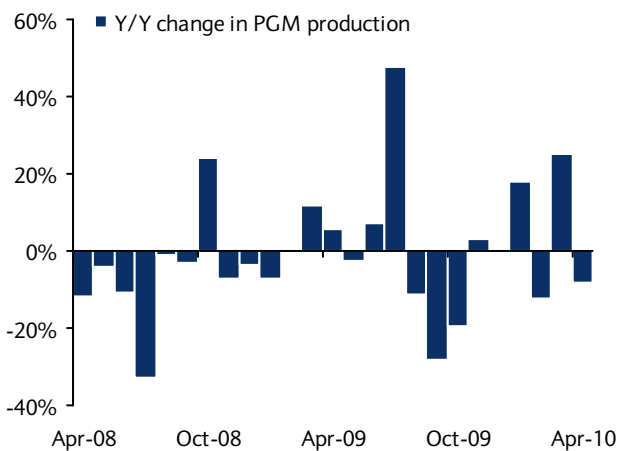
Source: Statistics South Africa, Barclays Capital

Figure 149: Chinese spot interest in platinum
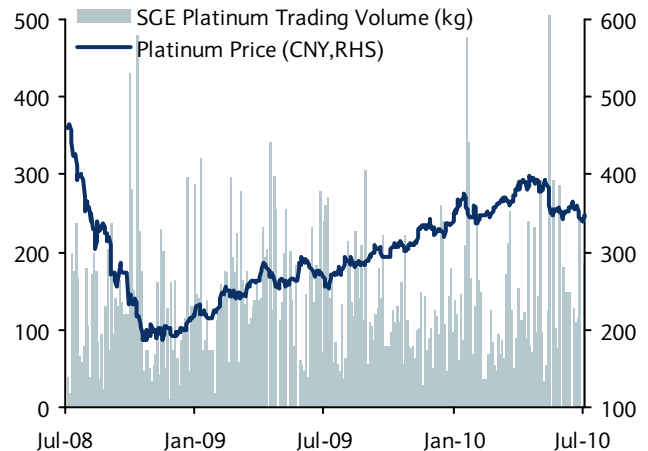
Source: EcoWin, Barclays Capital

Figure 150: Monthly change in physically-backed platinum ETPs
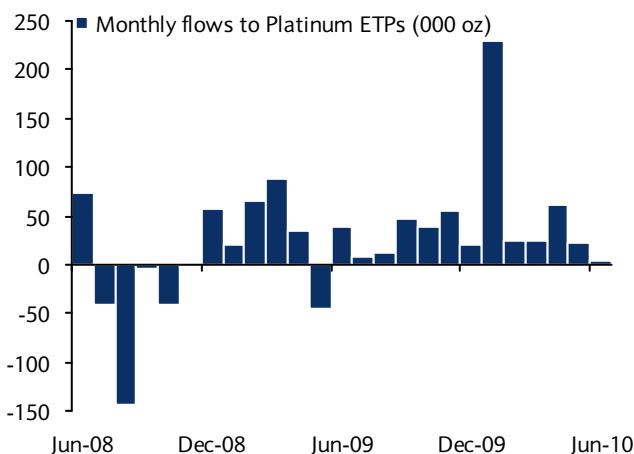
Source: ZKB, ETF Securities, JB, Barclays Capital

Figure 151: Total investment holdings across ETPs and futures
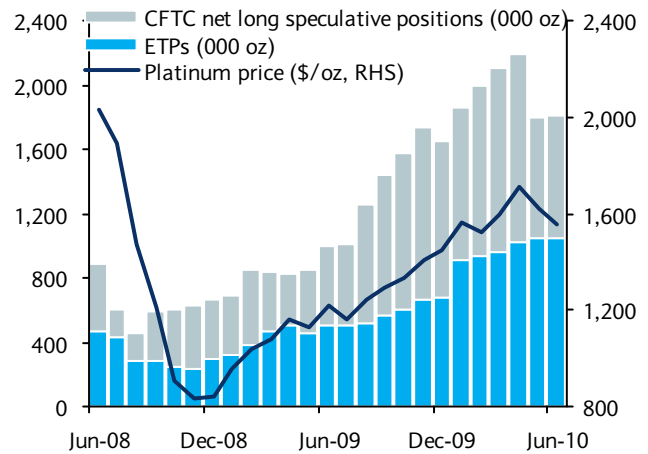
Source: CFTC, ZKB, ETF Securities, JB, EcoWin, Barclays Capital

PALLADIUM

- Palladium was the weakest performing precious metal during June after suffering a 5% drop in May. Prices closed the month at $442/oz but have started trending higher so far in July. Speculative interest in Nymex palladium has fallen to its lowest level since January this year; however, non-commercial positions as a percentage of open interest remain elevated at 61%, close to the peak at 65%. Longer-term investor interest expressed through physically backed ETPs continued to grind higher in June, gaining another 7.7koz. Total metal held across the five products remains above 1.8Moz but closed June some 5koz shy of its peak, and holdings have trickled lower in July so far.

- China's palladium imports rose a modest 2% y/y in May while China's auto sales showed an increase of 24% y/y to 1.412mn units in June, declining 1.8% m/m. Although the growth rate was the slowest since March last year, sales remain elevated. We would expect continued growth, even at a slower pace, to continue to support palladium demand in the sector, given its bias towards gasoline vehicles and the implementation of tighter emissions legislation.

- The slowing pace of exports from Russia adds support to the longer-term structure of the market, although we would deem it too premature to conclude stock releases have finished. Certainly our forecast for 2011 assumes slower releases, yet next year this could be offset by a slowdown in growth of fresh ETP demand; however, if investment demand continues apace, the market could tighten on an annual basis.

Figure 152: Russian palladium imports slow
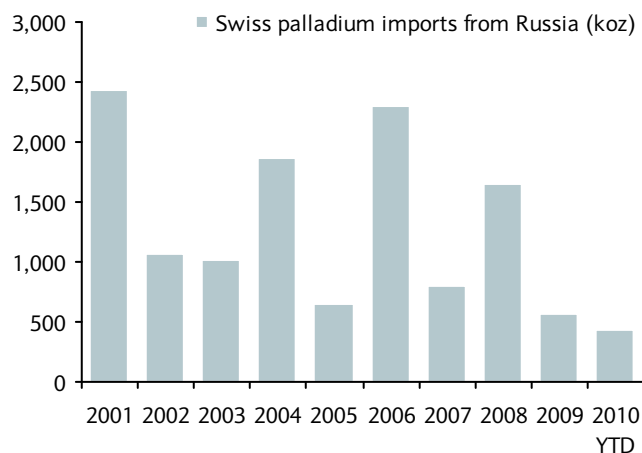
Source: CRU, Barclays Capital

Figure 153: Auto sales in China remain elevated
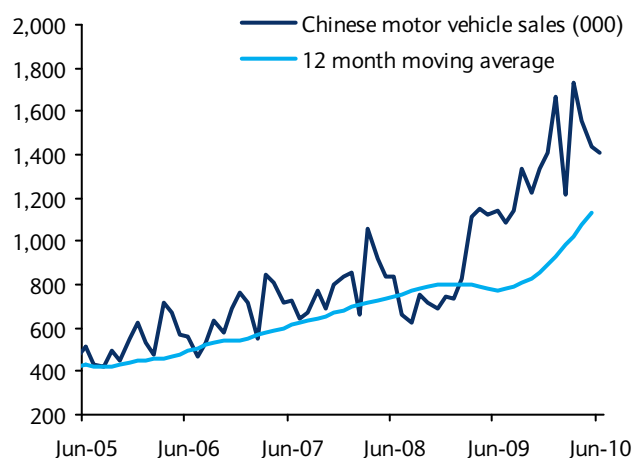
Source: EcoWin, Barclays Capital

Figure 154: Global supply and demand balance

('000 oz)	2006	2007	2008	2009	2010F	2011F
South Africa	2,775	2,765	2,430	2,370	2,420	2,495
Russia	3,920	4,540	3,660	3,635	3,595	3,351
North America	985	990	910	755	940	1,045
Others	270	285	310	340	333	332
Primary supply	7,950	8,580	7,310	7,100	7,288	7,223
% change y/y	*-5.4%*	*7.9%*	*-14.8%*	*-2.9%*	*2.6%*	*-0.9%*
Scrap supply	1,230	1,565	1,615	1,430	1,625	1,905
% change y/y	*28.8%*	*26.1%*	*12.3%*	*-15.4%*	*22.3%*	*23.7%*
Total supply	9,180	10,145	8,925	8,530	8,913	9,128
% change y/y	*-2.3%*	*10.5%*	*-12.0%*	*-4.4%*	*4.5%*	*2.4%*
Autocatalyst	4,015	4,545	4,465	4,050	4,500	4,795
Industrial	2,640	2,640	2,420	2,280	2,400	2,460
Jewellery	1,140	950	985	815	860	795
Investment	50	260	420	625	905	350
Total demand by end use	7,845	8,395	8,290	7,770	8,665	8,400
% change y/y	*-6.0%*	*7.0%*	*-1.3%*	*-6.3%*	*11.5%*	*-3.1%*
Movement in stocks	1,335	1,750	635	760	248	728
Palladium price (US$/oz)	320	354	348	262	469	480

Note: Investment includes ETPs. Scrap includes autocatalyst, jewellery and electrical. Source: Johnson Matthey, Barclays Capital

Palladium – fundamentals

Figure 155: Reported mine production

000s oz	Norilsk	Impala Platinum	Rustenberg	Marikana	Amandelbult	Total
H107	1548	222	196	174	128	2267
H207	1565	264	190	164	152	2334
2007	**3,113**	**485**	**386**	**338**	**280**	**4,601**
H108	1438	173	143	144	88	1986
H208	1383	206	209	154	129	2080
2008	**2,821**	**379**	**352**	**298**	**217**	**4,066**
H109	1355	219	131	135	81	1922
H209	1394	196	158	141	120	2009
2009	**2,677**	**415**	**289**	**284**	**201**	**3,866**
y/y change	-5.1%	9.7%	-17.8%	-4.5%	-7.5%	-4.9%

Note: Data refer to total mine output for the calendar year. AngloPlat has revised its reporting of refined mine supply from Q2 09 and no longer includes third-party purchases within individual mine data. Total refers to approximately 54% of global production. Source: Company reports, Barclays Capital

Figure 156: Palladium demand by end use
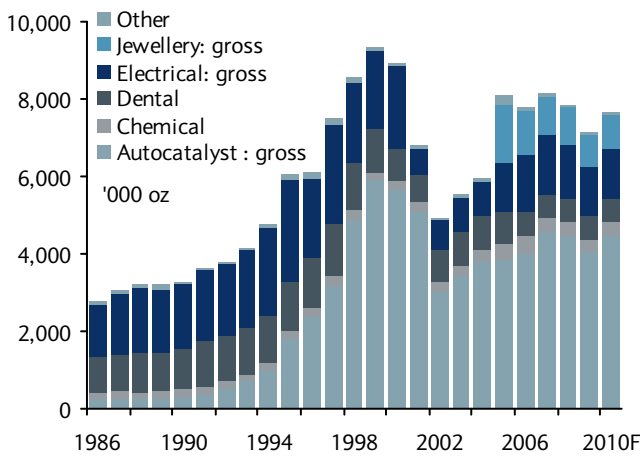
Source: Johnson Matthey, Barclays Capital

Figure 157: Platinum-palladium spread
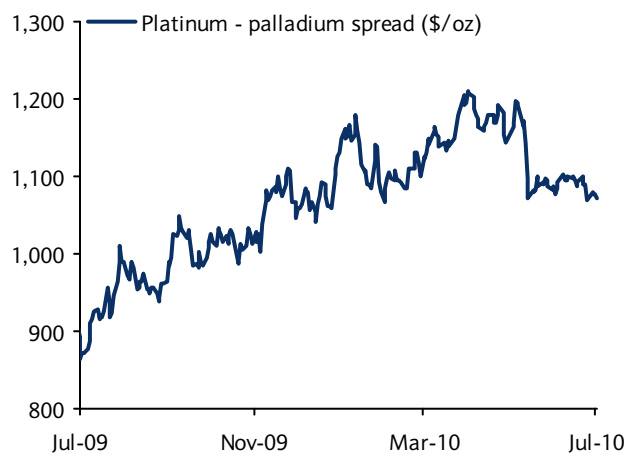
Source: EcoWin, Barclays Capital

Figure 158: Monthly change in physically-backed palladium ETPs
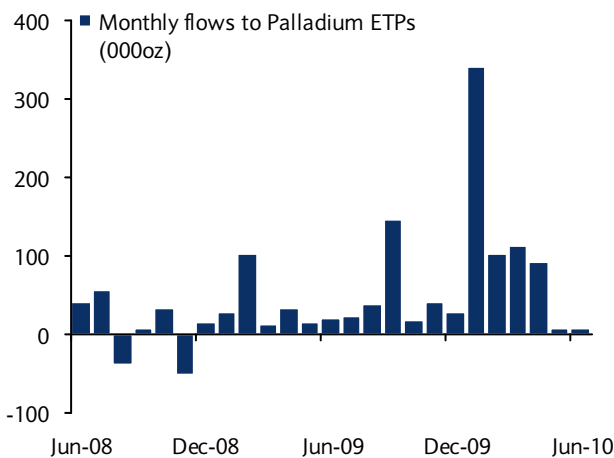
Source: ZKB, ETF Securities, JB, Barclays Capital

Figure 159: Total investment holdings across ETPs and futures
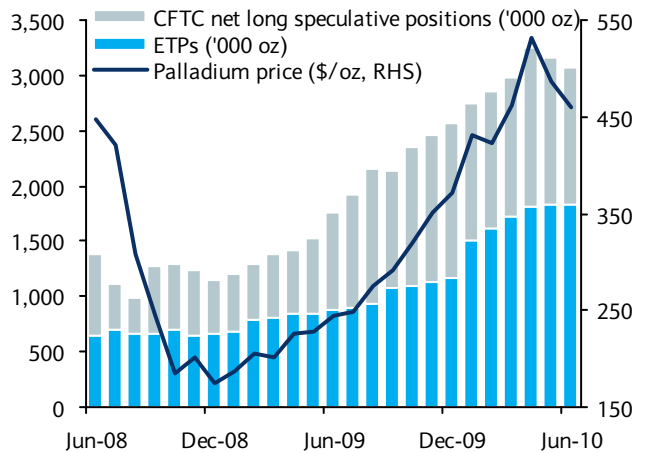
Source: CFTC, ZKB, ETF Securities, JB, EcoWin, Barclays Capital

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DATA

CHINA TRADE

- Preliminary Chinese trade data for June showed a 17% m/m drop in unwrought copper imports. This decline is in line with seasonal trends and unattractive SHFE/LME arbitrage, but nevertheless the number is strong by historical comparison. Copper scrap imports meanwhile increased to 350Kt from 320Kt. Primary aluminium, alloys and products imports fell 21% m/m to 75Kt; with an unfavourable arbitrage and plentiful domestic supply, we expect imports to remain weak.

- China switched back to being a net importer of primary aluminium in May, but volumes are still small (2.8Kt). This stemmed mainly from a 23Kt decline in gross exports from April, although this was accompanied by increases in the exports of semis (20Kt) and alloy (7Kt). Net refined copper imports fell for the second straight month, but at 275Kt are still above last year's monthly average. Scrap tightness has continued, with scrap imports falling 12% m/m to 327Kt, and domestic scrap discounts remain narrow.

- Net imports of refined nickel declined sharply in May, by 85% y/y, their lowest level since July 2005, while tin refined imports were 1.6Kt in May, which represented declines of 33% m/m and 51.6% y/y.

- China returned to being a net importer of lead in May for the first time in six months, as domestic refined supply continues to slow but demand remains firm. China's net imports of refined zinc fell slightly m/m in May but remained high by recent standards.

Figure 160: Copper imports have fallen m/m but remain high by historical standards
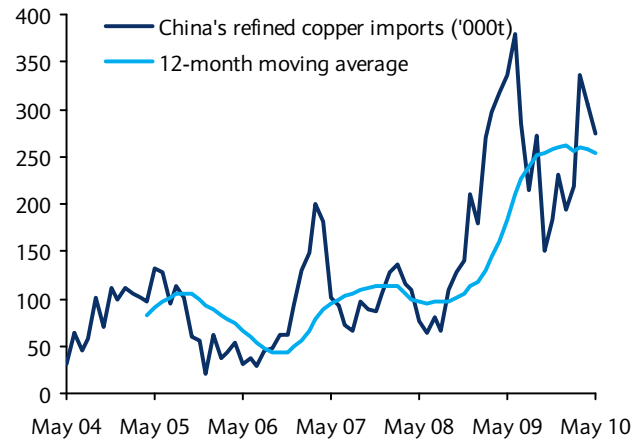
Source: China Customs, Barclays Capital

Figure 161: China turned into a net importer of lead for the first time in six months

Source: China Customs, Barclays Capital

Aluminium

(Kt)	Alumina imports	Alumina output	Primary imports	Primary exports	Net exports	Primary output	Primary app. consumption	Semis imports	Semis exports	Net semis exports	Semis output	Semis app. consumption
2008	**4,496**	**22,603**	**122**	**110**	**-12**	**13,129**	**13,128**	**619**	**1,896**	**1,278**	**13,942**	**12,664**
2008 y/y ch	-12%	16%	9%	-32%	-	4%	5%	-10%	2%	-	22%	23%
Q1 09	1,026	4,910	116	4	-112	2,699	2,794	109	231	123	3,149	3,027
Q2 09	1,653	5,562	889	3	-886	2,942	3,802	151	310	159	4,291	4,132
Q3 09	1,421	6,142	366	5	-361	3,459	3,761	170	420	250	4,395	4,145
Q4 09	1,041	7,164	126	34	-92	3,989	4,011	154	447	292	4,761	4,469
2009	**5,141**	**23,779**	**1,497**	**46**	**-1,451**	**13,089**	**14,367**	**584**	**1,408**	**824**	**16,596**	**15,772**
2009 y/y ch	14%	5%	1130%	-58%	-	-0.3%	9%	-6%	-26%	-	19%	25%
Q1 10	2,208	12,348	144	90	-54	6,859	6,715	242	820	579	7,906	7,327
Q1 10 y/y ch	115%	151%	25%	2345%	-	154%	140%	122%	254%	-	151%	142%
Feb 10	411	2,358	19	5	-14	1,303	1,277	35	110	75	1,563	1,488.3
Mar 10	507	2,516	28	2	-26	1,394	1,384	54	190	136	1,540	1,404.5
Apr 10	154	2,544	29	49	20	1,392	1,345	51	170	119	1,657	1,537.8
May 10	461	2,423	28	25	-3	1,418	1,360	55	190	135	1,728	1,592.6
May 10 y/y ch	-4%	29%	-89%	9693%	-	42%	8%	11%	90%	-	26%	20%
2010 YTD	**2,208**	**12,348**	**144**	**90**	**-54**	**6,859**	**6,715**	**242**	**820**	**579**	**7,906**	**7,327**
2010 YTD y/y ch	3%	45%	-80%	2118%	-	49%	27%	19%	95%	-	35%	30%

Copper

(Kt)	Concentrate imports (gross weight)	Concentrate imports (est. metal content 28%)	Concentrate output	Refined imports	Refined exports	Net imports	Refined output	Refined app. consumption	Scrap imports
2008	5,196	1,455	918	1,458	96.3	1,362	3,798	5,168	5,577
2008 y/y ch	15%	15%	12%	-2%	-24%	-	10%	46%	0%
Q1 09	1,412	395	175	748	0.8	747	931	1,669	732
Q2 09	1,684	471	247	1,034	0.3	1,034	997	2,000	1,006
Q3 09	1,597	447	260	795	23.8	771	1,070	1,800	1,252
Q4 09	1,452	407	264	608	42.8	565	1,174	1,740	1,007
2009	6,144	1,721	946	3,185	68	3,117	4,173	7,209	3,997
2009 y/y ch	18%	18%	3%	118%	-30%	-	10%	39%	-28%
Q1 10	1,705	478	230	755	6.4	413	1,081	1,770	979
Q1 10 y/y ch	21%	21%	32%	1%	720%	-	16%	6%	34%
Feb 10	567	159	75	221	2	219	365	535	277
Mar 10	541	151	84	337	2	0	366	696	365
Apr 10	606	170	91	310	5	305	388	658	372
May 10	479	134	97	280	5	275	384	691	327
May 10 y/y ch	-6%	-6%	17%	-17%	2827%	-	15.7%	7%	0%
2010 YTD	2,791	781	418	1,344	16	993	1,852	3,119	1,678
2010 YTD y/y ch	14%	14%	27%	-4%	1345%	-	16%	5%	15%

Lead

(Kt)	Concentrate imports (gross weight)	Concentrate imports (est. metal content 55%)	Concentrate output	Refined imports	Refined exports	Net exports	Refined output	Refined app. consumption
2008	1,445	794	1,122	31	34	3	3,137	3,135
2008 y/y ch	-5%	-5%	27%	23%	-86%	-	14%	23%
Q1 09	329	181	176	48	5.0	-43	696	739
Q2 09	385	212	385	79	4.3	-75	936	1,011
Q3 09	483	266	381	23	11	-12	1,016	1,028
Q4 09	410	225	441	6.9	6.9	-0	980	980
2009	1,608	883	1,382	157	27	-130	3,628	3,758
2009 y/y ch	11%	11%	23%	408%	-20%	-	16%	20%
Q1 10	312	171	290	3.1	8.2	5	811	805
Q1 10 y/y ch	-5%	-5%	65%	-94%	65%	-	16%	9%
Feb 10	102	56	73	0.4	1.6	1.2	232	231
Mar 10	102	56	127	1.1	3.8	2.7	300	298
Apr 10	90	50	138	0.3	4.3	4.1	300	296
May 10	82	45	161	3.1	1.3	-1.8	310	312
May 10 y/y ch	-25%	-25%	1%	-88%	-23%	-	9%	1%
2010 YTD	484	266	589	6.5	13.9	7.4	1,421	1,414
2010 YTD y/y ch	-12%	-12%	40%	-94%	102%	-	11%	2%

Nickel

(Kt)	Concentrate imports (gross weight)	Refined imports	Refined exports	Net imports	Refined output	Refined app. consumption
2008	12,350	101	6	112	126	238
2008 y/y ch	-21%	-4%	-67%	-	10%	17%
Q1 09	1,697	33	1	32	37	68
Q2 09	3,839	114	5	109	42	157
Q3 09	6,500	91	12	79	41	120
Q4 09	4,665	39	19	20	46	66
2009	15,576	250	34	216	164	388
2009 y/y ch	26%	112%	414%	-	30%	63%
Q1 10	3,740	48	15	33	37	70
Q1 10 y/y ch	120%	45%	1127%	-	1%	3%
Feb 10	950	12	2.8	9	11.9	21
Mar 10	1,636	19	7.3	12	12.5	24
Apr 10	1,847	17	7.7	9	13.0	22
May 10	2,015	11	7.1	4	13.7	17
May 10 y/y ch	114%	-57%	1632%	-	-4%	-59%
2010 YTD	7,602.3	75.0	29.5	45.6	63.8	109.4
2010 YTD y/y ch	105%	-5%	1358%	-	0%	-24%

Tin

(Kt)	Refined Imports	Refined Exports	Net Exports	Refined output	Refined app. consumption
2008	**13**	**1**	**-13**	**127**	**140**
2008 y/y ch	-22%	-98%	-	-13%	0%
Q1 09	4.4	0.0	-4.4	20.1	24.5
Q2 09	10.1	0.0	-10.1	38.5	48.5
Q3 09	5.7	0.6	-5.1	41.3	46.4
Q4 09	4.2	0.1	-4.6	40.5	44.6
2009	**24**	**1**	**-24**	**140**	**164**
2009 y/y ch	84%	27%	-	10%	17%
Q1 10	5.4	0.0	-5.4	32.2	37.5
Q1 10 y/y ch	22%	-100%	-	60%	53%
Feb 10	2.2	0.0	-2.2	9.7	11.8
Mar 10	1.8	0.0	-1.8	12.0	13.9
Apr 10	2.4	0.0	-2.4	12.9	15.3
May 10	1.6	0.0	-1.6	13.1	14.7
May 10 y/y ch	-52%	-52%	-	11%	-3%
2010 YTD	**9**	**-9,404**	**-9**	**58**	**68**
2010 YTD y/y ch	-25%	-25%	-	31%	19%

Zinc

(Kt)	Concentrate Imports (gross weight)	Concentrate Imports (est. metal content 50%)	Concentrate output	Refined Imports	Refined Exports	Net Exports	Refined output	Refined app. consumption
2008	**2,395**	**1,194**	**3,075**	**182**	**71**	**-111**	**3,892**	**4,003**
2008 y/y ch	11%	11%	19%	22%	-74%	-	5%	12%
Q1 09	688	343	424	211	4	-207	840	1,047
Q2 09	900	449	771	269	2	-267	1,037	1,304
Q3 09	1,186	592	832	122	3	-120	1,191	1,310
Q4 09	1,078	537	1,061	68	21	-48	1,305	1,353
2009	**3,852**	**1,921**	**3,088**	**670**	**29**	**-641**	**4,373**	**5,015**
2009 y/y ch	61%	61%	0%	267%	-59%	-	12%	25%
Q1 10	857	428	671	61	21	-40	1,160	1,200
Q1 10 y/y ch	25%	25%	58%	-71%	444%	-	38%	15%
Feb 10	325	162	192	14	5.8	-8	363	371
Mar 10	192	96	255	18	5.4	-13	421	434
Apr 10	282	140	298	31	4.3	-27	432	459
May 10	224	112	313	31	4.3	-26	452	479
May 10 y/y ch	-26%	-26%	24%	-68%	42400%	-	35%	11%
2010 YTD	**1,363**	**680**	**1,282**	**123**	**30**	**-93**	**2,044**	**2,138**
2010 YTD y/y ch	2%	2%	46%	-70%	605%	-	35%	11%

Precious metals

(Kt)	Platinum Imports (000 ounces)	Palladium Imports (000 ounces)	Silver Imports (tonnes)	Silver Exports (tonnes)	Net Silver exports
2008	**1,205**	**685**	**6,153**	**4,186**	**-1,967**
2008 y/y ch	10%	23%	6%	-11%	-
Q1 09	328	113	768	878	110
Q2 09	325	193	1,076	857	-219
Q3 09	543	259	1,467	1,081	-386
Q4 09	544	244	1,325	915	-410
2009	**1,740**	**808**	**4,636**	**3,730**	**-906**
2009 y/y ch	44%	23%	-25%	-11%	-
Q1 10	767	259	1,250	369	-881
Q1 10 y/y ch	134%	130%	63%	-58%	-
Feb 10	196	99	337	76	-261
Mar 10	378	104	544	129	-415
Apr 10	207	69	443	141	-302
May 10	204	73	483	129	-354
May 10 y/y ch	117%	1%	67%	-44%	-
2010 YTD	**1,178**	**401**	**2,176**	**639**	**-1,537**
2010 YTD y/y ch	116%	73%	49%	-53%	-

Source for all tables: China Customs, Barclays Capital

COST INDICATORS

Figure 162: Current costs

Energy	Current price	One month ago price	Monthly change	One year ago price	Yearly change
EEX Electricity (Peak load, 1-Pos, EUR/MWh)	59.8	54.5	9.6%	47.8	25.1%
Coal (API2 Futures 1-Pos, USD/Tonne)	93.1	95.9	-2.9%	67.5	37.9%
Diesel (Heating oil, NYMEX, USc/Gallon)	2.0	2.0	2.1%	1.7	20.5%
Natural Gas (Henry Hub, NYMEX, $/mmbtu)	4.4	4.8	-8.9%	3.7	17.5%
Carbon (ECX CFI Phase 2 Futures 1-Pos, ICE)	13.8	15.8	-12.6%	14.6	-5.7%
Transport					
Baltic Dry freight index	1,790.0	3,115.0	-42.5%	3,455	-48.2%
Baltic Panamax freight index	1,946.0	3,283.0	-40.7%	3,412	-43.0%
Raw materials					
Coke (Chinese export price, USD/tonne)	450.0	370.0	21.6%	200	125.0%
Capital costs					
Steel Rebar (China, USD/Tonne)	554.0	542.0	2.2%	490	13.1%
FX costs					
USD/EUR	0.8	0.8	-3.8%	0.72	11.0%
USD/CLP	538.0	537.0	0.2%	548.7	-2.0%
USD/CAN	1.0	1.0	0.4%	1.15	-9.9%
USD/AUS	1.1	1.2	-2.9%	1.28	-10.6%
USD/ZAR	7.6	7.6	-0.3%	8.22	-7.4%

Source: EcoWin, Barclays Capital

Figure 163: Marginal cost of production – aluminium
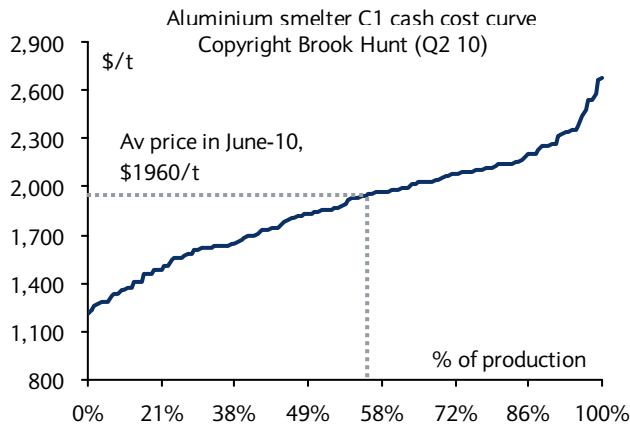
Source: Brook Hunt, Barclays Capital

Figure 164: Marginal cost of production – zinc
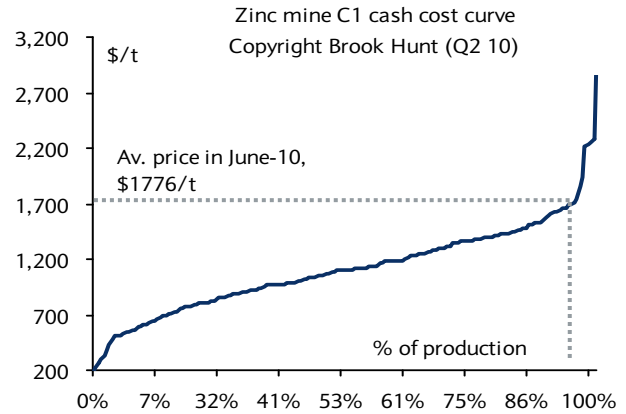
Source: Brook Hunt, Barclays Capital

Figure 165: Marginal cost of production – copper
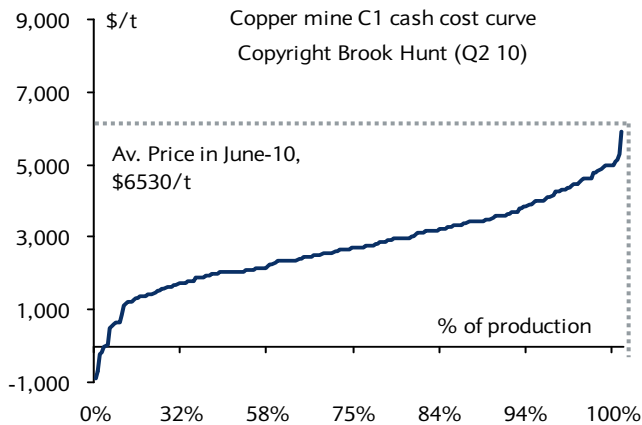
Source: Brook Hunt, Barclays Capital

Figure 166: Marginal cost of production – nickel
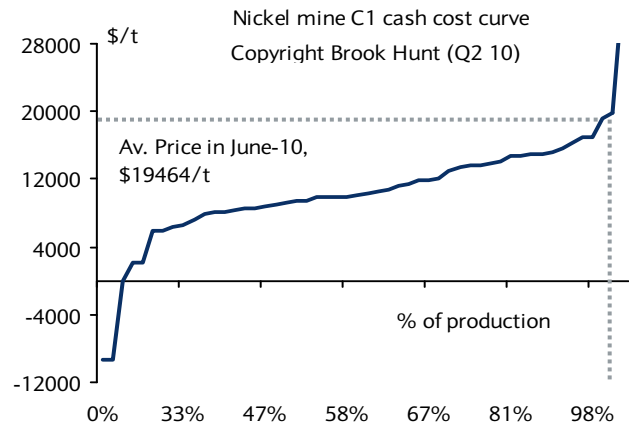
Source: Brook Hunt, Barclays Capital

BASE METAL STOCKS

Figure 167: Aluminium stocks

	Stocks (Kt)			Total stock	Global stock to consumption ratio
	Exchange	Japan Port	Producer		
Aug 09	4,838	167	1,233	6,238	7.9
Sep 09	4,809	170	1,209	6,188	7.9
Oct 09	4,813	171	1,207	6,192	7.7
Nov 09	4,862	181	1,125	6,168	7.2
Dec 09	4,884	193	1,203	6,280	6.6
Jan 10	4,945	199	1,265	6,409	7.7
Feb 10	4,941	201	1,226	6,368	7.7
Mar 10	5,001	193	1,174	6,368	7.1
Apr 10	4,964	191	1,210	6,364	7.5
May 10	5,051	205	1,250	6,506	7.5
Jun 10	4,919	202	1,250	6,370	7.7

Source: IAI, LME, Comex, Reuters, SHFE

Figure 168: Aluminium global stock-to-consumption ratio
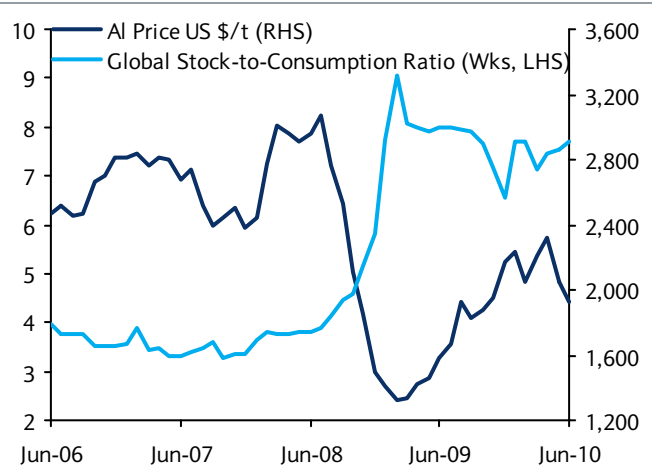
Source: IAI, LME, Comex, Reuters, SHFE, EcoWin

Figure 169: Copper stocks

	Stocks (Kt)				Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer	Merchant		
Aug 09	438	533	104	18	1,093	3.0
Sep 09	492	567	109	18	1,185	3.1
Oct 09	531	572	98	18	1,220	3.2
Nov 09	620	604	88	17	1,329	3.4
Dec 09	689	591	102	15	1,397	3.6
Jan 10	739	609	92	15	1,455	3.9
Feb 10	795	592	96	14	1,497	4.1
Mar 10	760	584	90	17	1,451	3.4
Apr 10	778	584	90	17	1,470	3.5
May 10	720	584	90	17	1,412	3.5
Jun 10	666	584	90	17	1,357	3.3

Source: ICSG, LME, SHFE, Comex

Figure 170: Copper global stock-to-consumption ratio
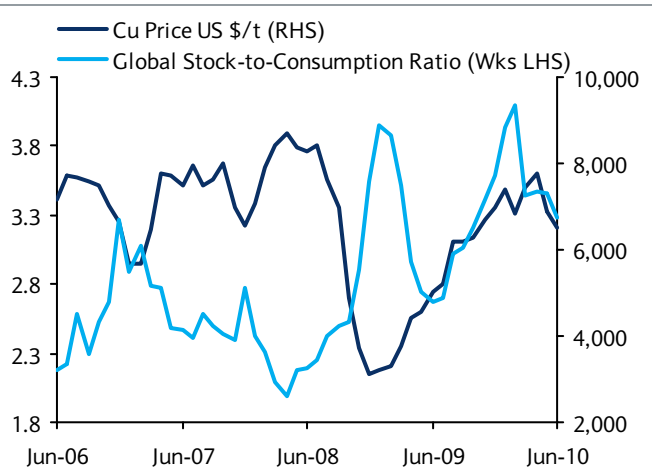
Source: ICSG, SHFE, LME, EcoWin, Comex

Figure 171: Lead stocks

	Stocks (Kt)				Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer	Merchant		
Aug 09	121	134	100	0.3	355	1.9
Sep 09	128	132	98	0.3	357	2.0
Oct 09	130	136	98	0.4	364	2.0
Nov 09	138	132	103	0.6	374	2.0
Dec 09	147	135	106	0.7	388	2.0
Jan 10	158	140	102	0.6	400	2.3
Feb 10	167	138	103	0.6	408	2.5
Mar 10	176	141	99	0.2	417	2.3
Apr 10	193	144	99	0.2	436	2.4
May 10	190	144	99	0.2	433	2.3
Jun 10	190	144	99	0.2	433	2.1

Source: ILZSG, LME

Figure 172: Lead global stock-to-consumption ratio
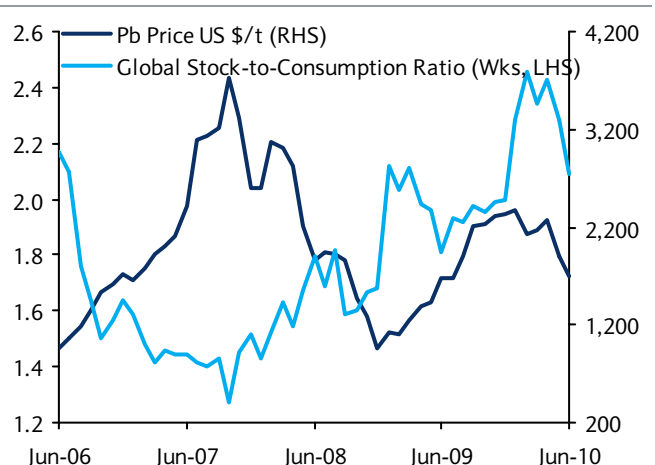
Source: ILZSG, LME, EcoWin

Figure 173: Nickel stocks

	Stocks (Kt)			Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer		
Aug 09	116	90	23	229	8.1
Sep 09	120	89	23	231	8.1
Oct 09	129	89	21	238	8.6
Nov 09	137	88	21	246	9.4
Dec 09	158	89	21	268	10.1
Jan 10	166	89	19	274	9.8
Feb 10	163	89	19	271	9.7
Mar 10	158	89	19	266	8.8
Apr 10	146	89	19	254	8.8
May 10	138	89	19	246	8.2
Jun 10	124	89	19	232	7.2

Source: INSG, CRU, LME

Figure 174: Nickel global stock-to-consumption ratio
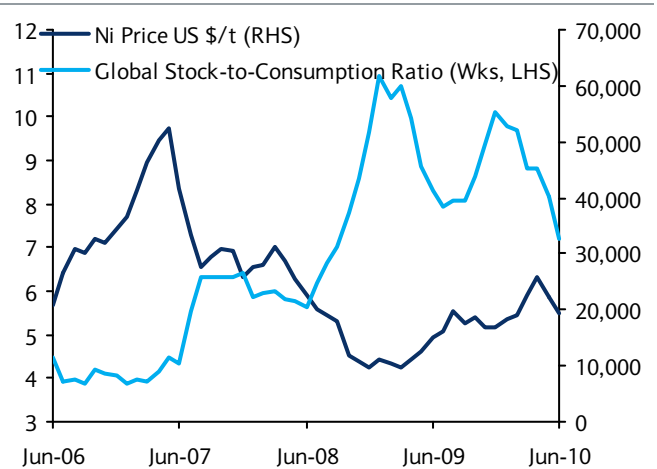
Source: INSG, CRU, LME, EcoWin

Figure 175: Tin stocks

	Stocks (Kt)			Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer		
Aug 09	20	10	12	42	7.9
Sep 09	25	10	12	47	8.7
Oct 09	26	8	12	46	8.3
Nov 09	27	8	12	46	8.2
Dec 09	27	8	12	46	8.1
Jan 10	28	8	12	48	8.3
Feb 10	25	8	12	45	7.6
Mar 10	24	8	12	44	7.4
Apr 10	21	8	12	41	6.8
May 10	20	8	12	40	6.6
Jun 10	18	8	12	38	6.2

Source: CRU, LME

Figure 176: Tin global stock-to-consumption ratio
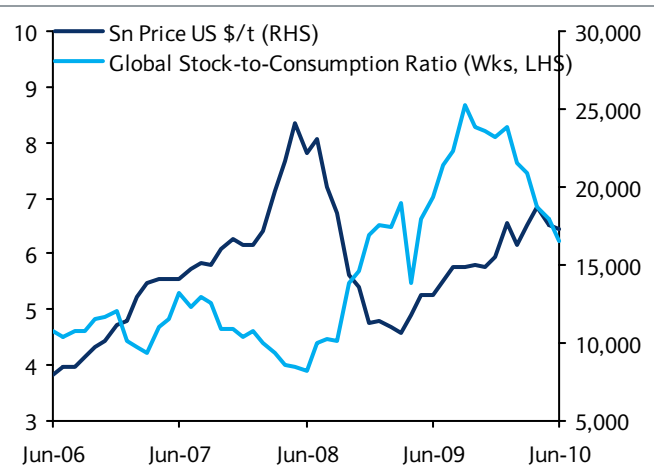
Source: CRU, LME, EcoWin

Figure 177: Zinc stocks

	Stocks (Kt)				Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer	Merchant		
Aug 09	551	323	113	15	1002	4.5
Sep 09	541	313	113	15	982	4.0
Oct 09	569	303	114	15	1001	4.2
Nov 09	617	313	107	13	1050	4.3
Dec 09	650	317	105	13	1085	4.3
Jan 10	720	336	102	14	1172	5.1
Feb 10	764	329	102	12	1207	5.0
Mar 10	785	320	101	12	1218	4.9
Apr 10	818	305	101	12	1236	5.1
May 10	915	305	101	12	1333	5.4
Jun 10	881	305	101	12	1299	5.1

Source: ILZG, LME, SHFE

Figure 178: Zinc global stock-to-consumption ratio
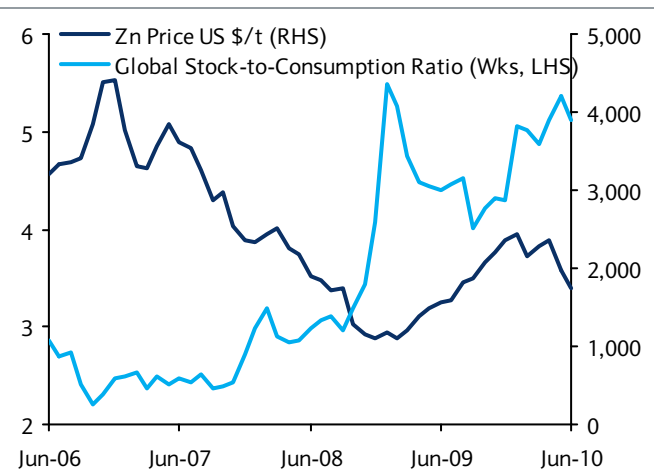
Source: ILZG, LME, SHFE, EcoWin

PRICES

Figure 179: LME, SHFE and TOCOM metal prices

Commodity	Units	13 July 10	14 June 10		14 April 10		13 July 09	
		Close	Close	% chge	Close	% chge	Close	% chge
Base Metals: LME 3M Prices								
Aluminium	$/t	1,995	1,966	1.5%	2,462	-19.0%	1,655	20.5%
Copper	$/t	6,685	6,446	3.7%	7,950	-15.9%	5,260	27.1%
Lead	$/t	1,825	1,764	3.5%	2,360	-22.7%	1,635	11.6%
Nickel	$/t	19,550	19,800	-1.3%	26,395	-25.9%	15,940	22.6%
Tin	$/t	18,000	17,745	1.4%	18,845	-4.5%	13,300	35.3%
Zinc	$/t	1,865	1,765	5.7%	2,460	-24.2%	1,542	20.9%
Base Metals: SHFE Prices								
SHFE Aluminium	RMB/t	14,650	14,350	2.1%	16,385	-10.6%	13,610	7.6%
SHFE/LME Aluminium spread	$/t	168	135	24.4%	-62	-373.6%	337	-50.1%
SHFE Copper	RMB/t	53,640	51,700	3.8%	61,490	-12.8%	41,980	27.8%
SHFE/LME Copper spread	$/t	1,236	1,125	9.9%	1,059	16.7%	885	39.6%
SHFE Zinc	RMB/t	14,900	14,050	6.0%	18,820	-20.8%	13,150	13.3%
SHFE/LME Zinc spread	$/t	335	292	14.7%	297	12.8%	383	-12.4%
Precious Metals: Spot Prices								
Gold	$/oz	1,211	1,244	-2.7%	1,154	4.9%	938	29.0%
Silver	$/oz	18	19	-2.5%	18	-1.0%	13	37.4%
Platinum	$/oz	1,525	1,574	-3.1%	1,726	-11.7%	1,156	31.9%
Palladium	$/oz	463	480	-3.4%	546	-15.2%	245	89.4%
Precious Metals: TOCOM Prices								
TOCOM Gold	yen/g	3,424	3,633	-5.8%	3,482	-1.7%	2,794	22.5%
TOCOM Silver	yen/10g	51	55	-5.9%	56	-7.4%	392	-86.9%
TOCOM Platinum	yen/g	4,347	4,651	-6.5%	5,164	-15.8%	3,441	26.3%
TOCOM Palladium	yen/g	1,309	1,388	-5.7%	1,613	-18.8%	735	78.1%
SHFE Gold	RMB/g	265	273	-3.1%	254	4.3%	206	28.8%

Source: Ecowin, Barclays Capital

Figure 180: Copper and aluminium prices remain volatile…
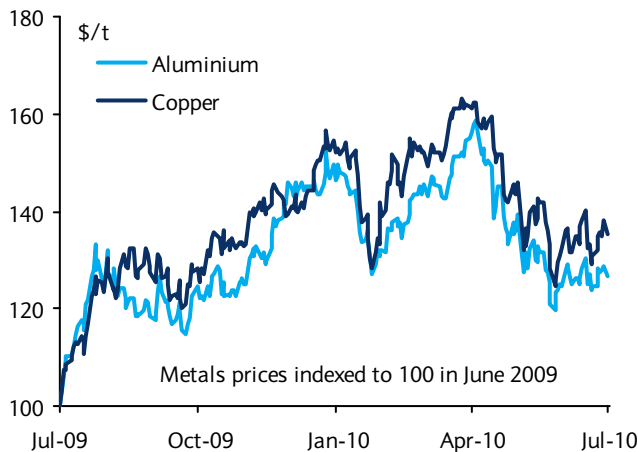
Source: Barclays Capital

Figure 181: … as do prices for the rest of the base metals
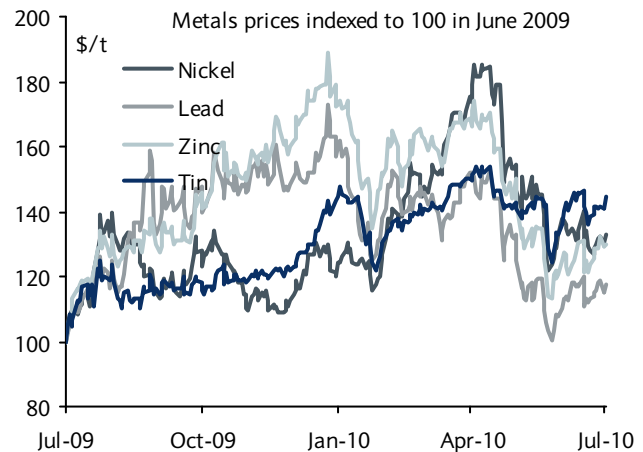
Source: Barclays Capital

LME cash prices (up to and including 13 July 2010)

Figure 182: Aluminum

Source: Barclays Capital

Figure 183: Copper

Source: Barclays Capital

Figure 184: Lead
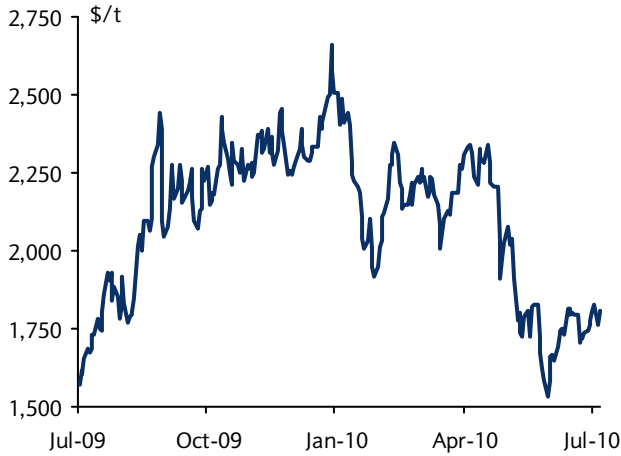
Source: Barclays Capital

Figure 185: Nickel

Source: Barclays Capital

Figure 186: Tin

Source: Barclays Capital

Figure 187: Zinc
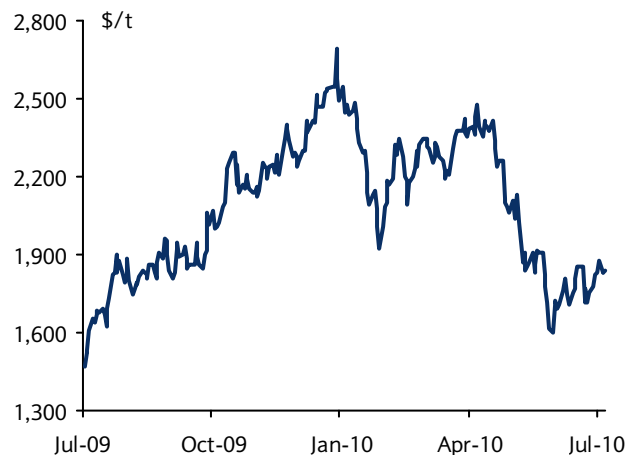
Source: Barclays Capital

LME Cash-3mth spread (up to and including 13 July 2010)

Figure 188: Aluminum
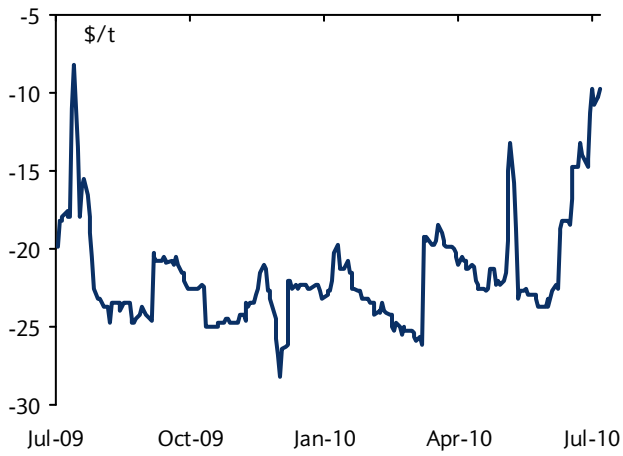
Source: Barclays Capital

Figure 189: Copper
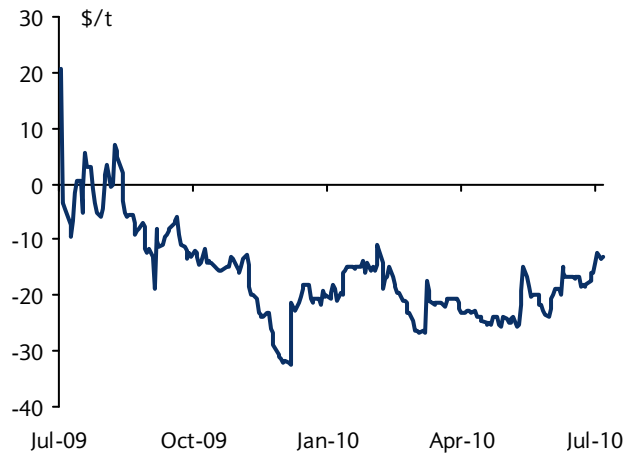
Source: Barclays Capital

Figure 190: Lead
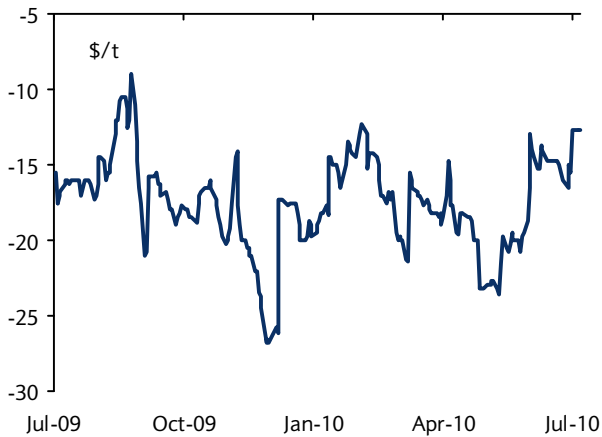
Source: Barclays Capital

Figure 191: Nickel
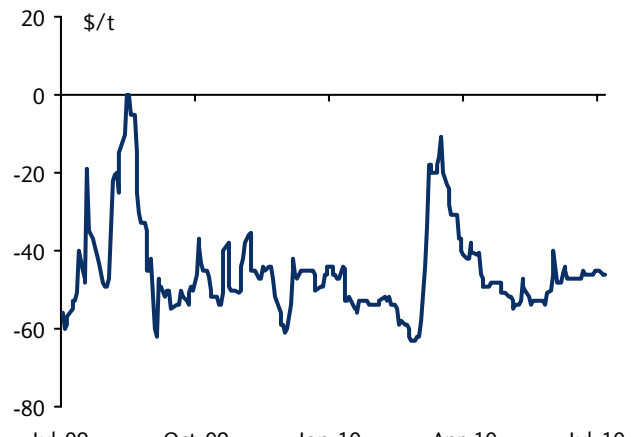
Source: Barclays Capital

Figure 192: Tin
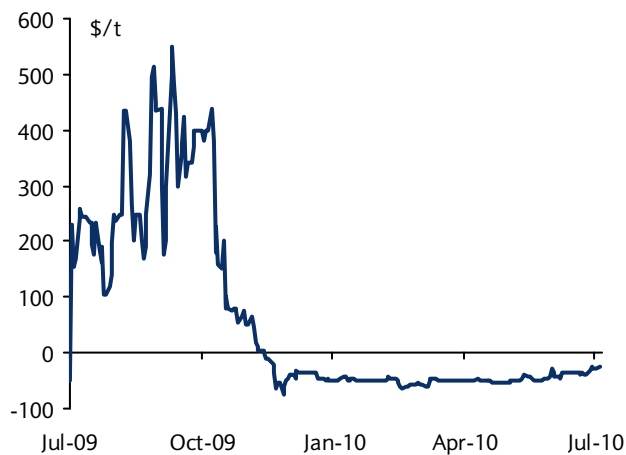
Source: Barclays Capital

Figure 193: Zinc
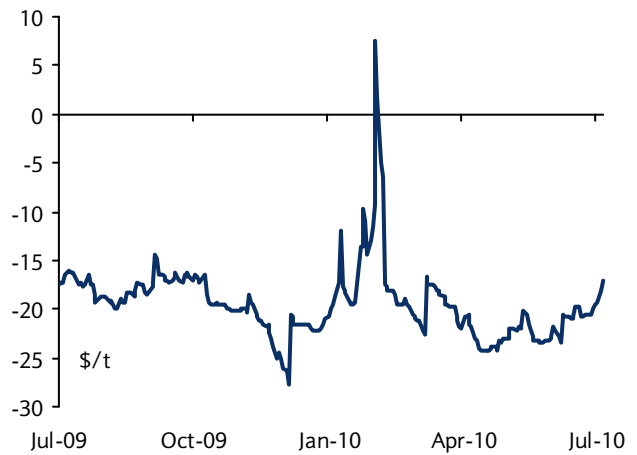
Source: Barclays Capital

Warehousing profit/loss 3mth basis ($/t)

Figure 194: Aluminum
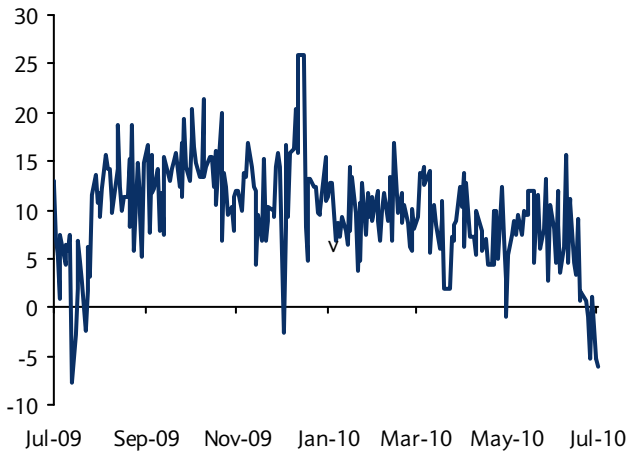
Note: Calculated using Federal Funds rate and estimates of discounted warehousing rents. Source: Barclays Capital

Figure 195: Copper
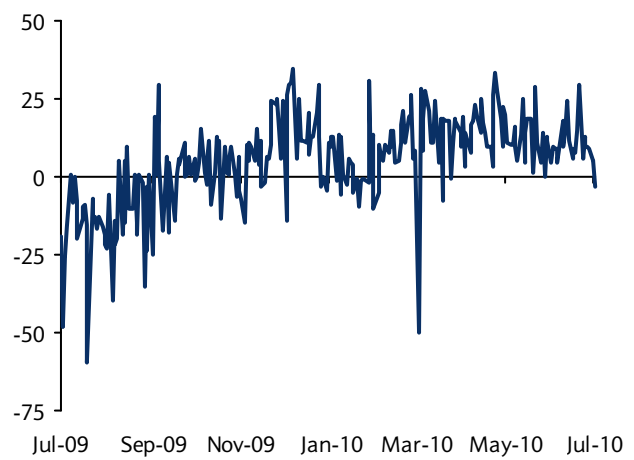
Note: Calculated using Federal Funds rate and estimates of discounted warehousing rents. Source: Barclays Capital

Figure 196: Lead
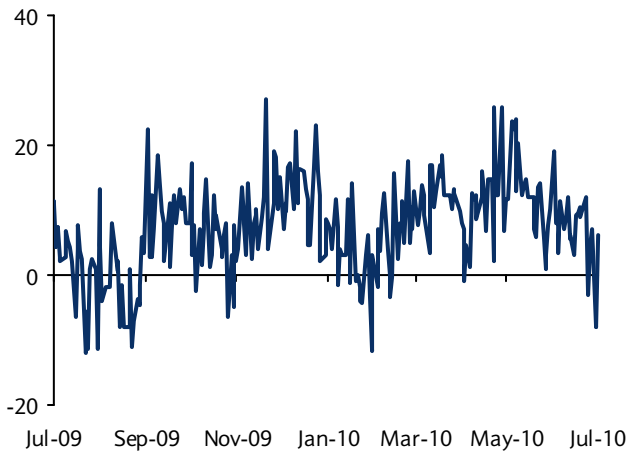
Note: Calculated using Federal Funds rate and estimates of discounted warehousing rents. Source: Barclays Capital

Figure 197: Nickel
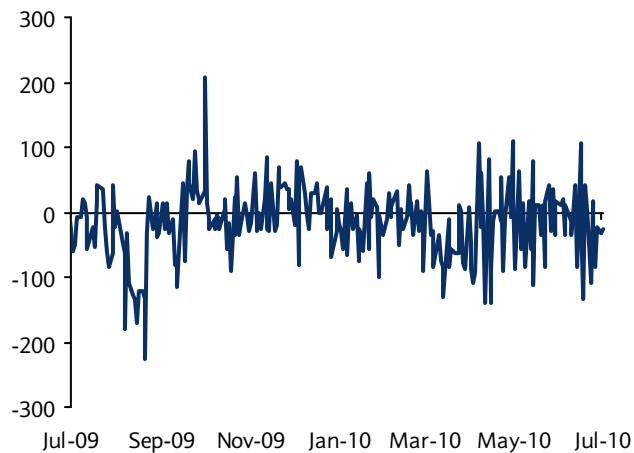
Note: Calculated using Federal Funds rate and estimates of discounted warehousing rents. Source: Barclays Capital

Figure 198: Tin
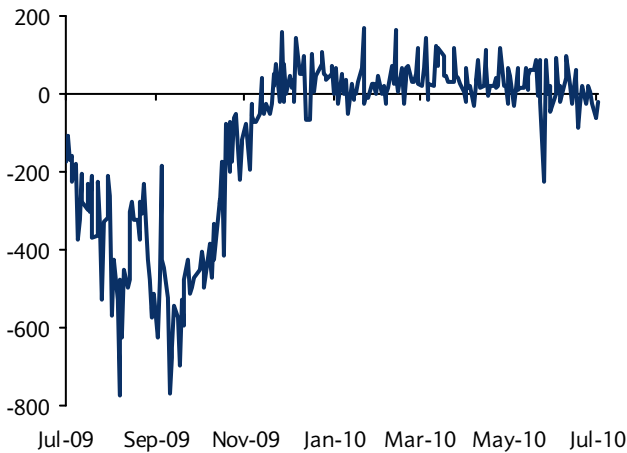
Note: Calculated using Federal Funds rate and estimates of discounted warehousing rents. Source: Barclays Capital

Figure 199: Zinc
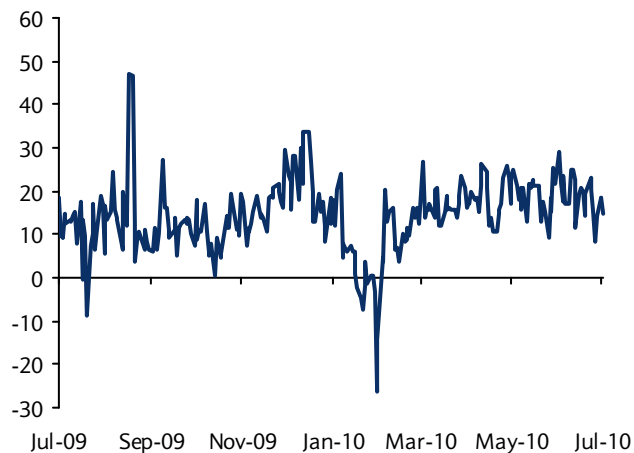
Note: Calculated using Federal Funds rate and estimates of discounted warehousing rents. Source: Barclays Capital

LME forward prices (as at 13 July 2010)

Figure 200: Aluminum
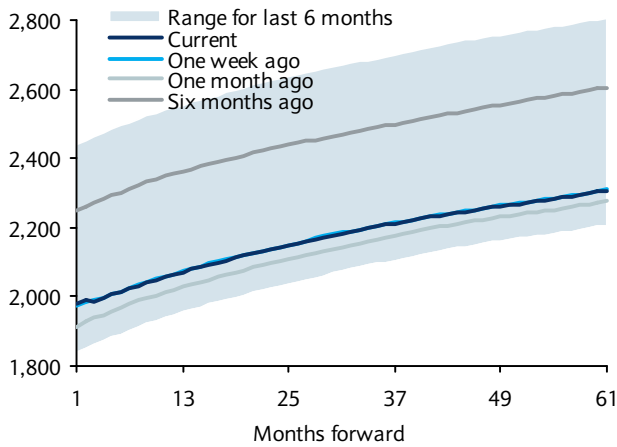
Source: Barclays Capital

Figure 201: Copper
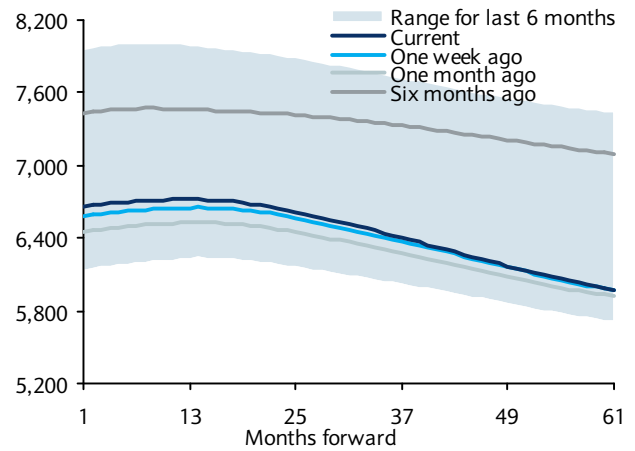
Source: Barclays Capital

Figure 202: Lead
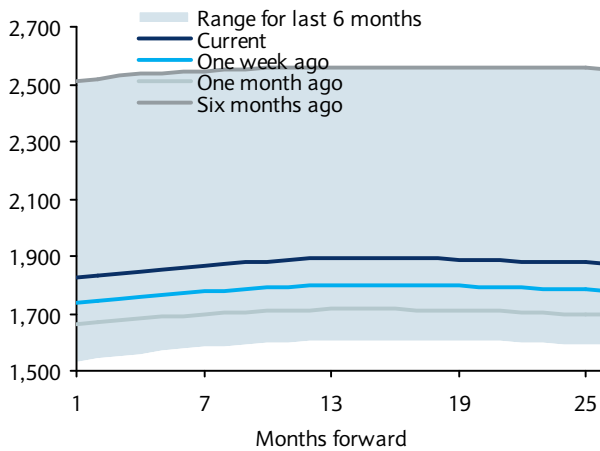
Source: Barclays Capital

Figure 203: Nickel
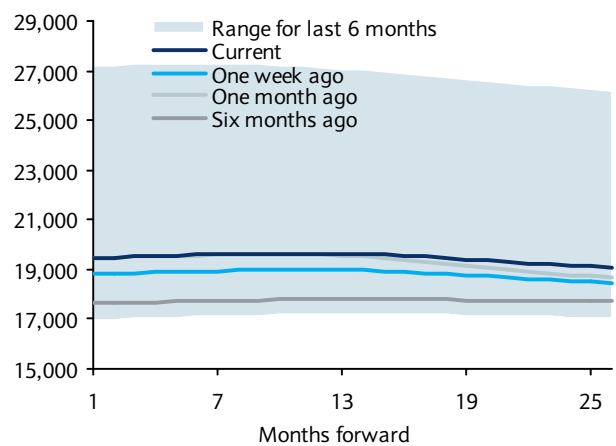
Source: Barclays Capital

Figure 204: Tin
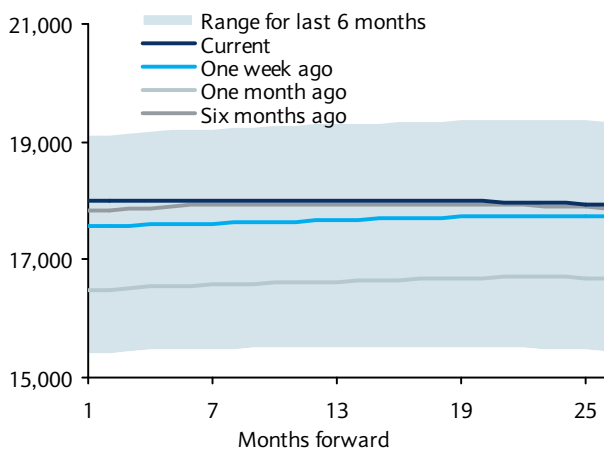
Source: Barclays Capital

Figure 205: Zinc
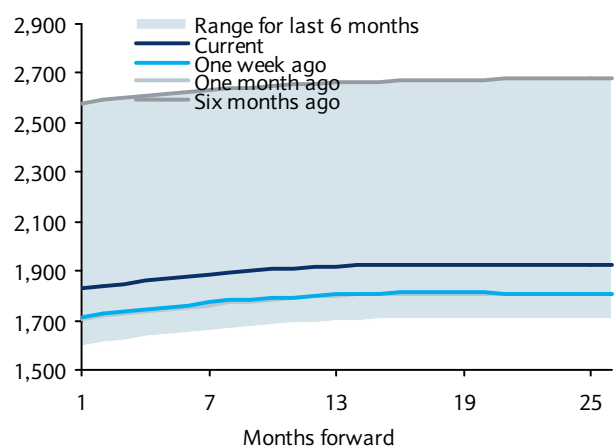
Source: Barclays Capital

SHFE/LME spreads (up to and including 13 July 2010)

Figure 206: Aluminum

Shanghai Futures Exchange/LME aluminium cash price differential
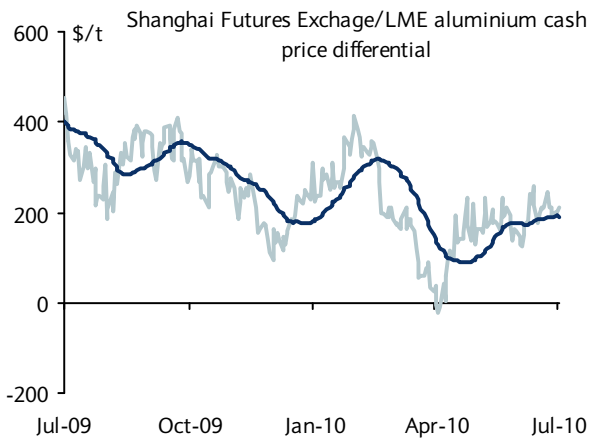
Source: SHFE, Barclays Capital

Figure 207: Copper

Shanghai Futures Exchange/LME copper cash price differential

Source: SHFE, Barclays Capital

Figure 208: Lead

Domestic Chinese/LME lead cash price differential
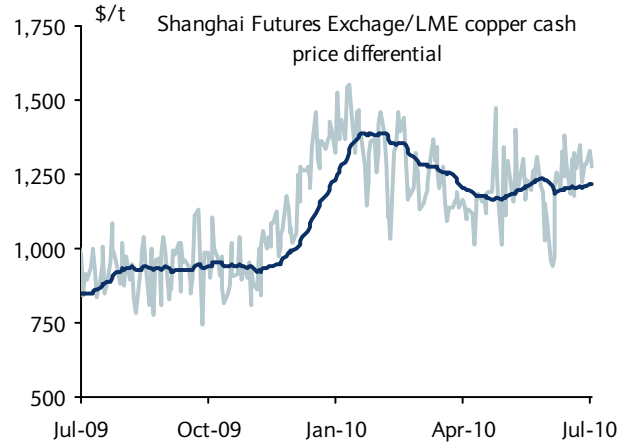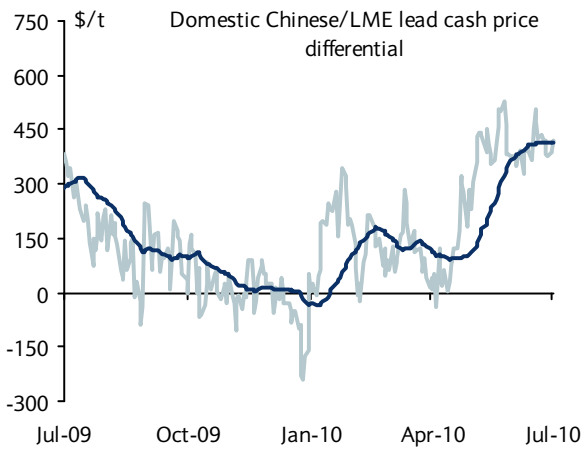
Source: Antaike, Barclays Capital

Figure 209: Nickel
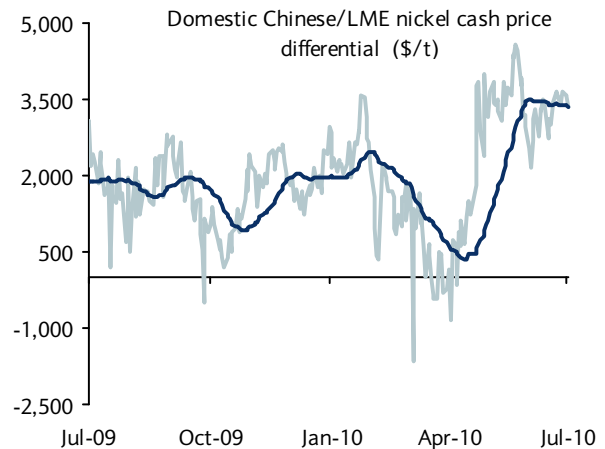
Domestic Chinese/LME nickel cash price differential ($/t)

Source: Antaike, Barclays Capital

Figure 210: Tin

Domestic Chinese/LME tin cash price differential ($/t)
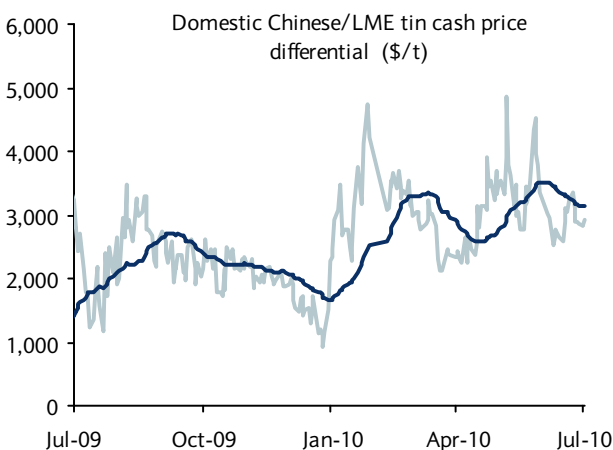
Source: Antaike, Barclays Capital

Figure 211: Zinc

Shanghai Futures Exchange/LME zinc cash price differential
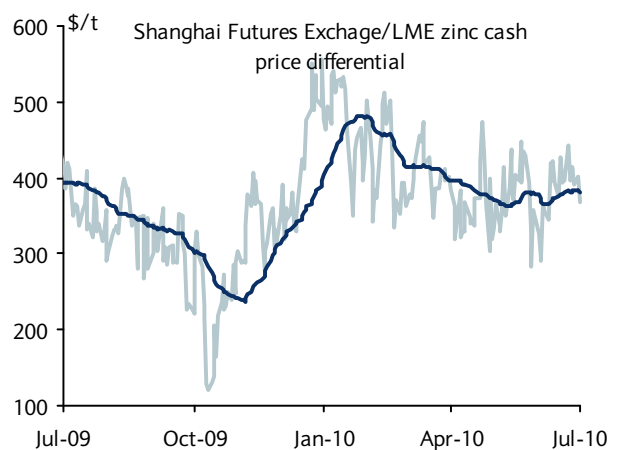
Source: Antaike, Barclays Capital

Premiums (regional physical market above LME cash prices)

Figure 212: Aluminum
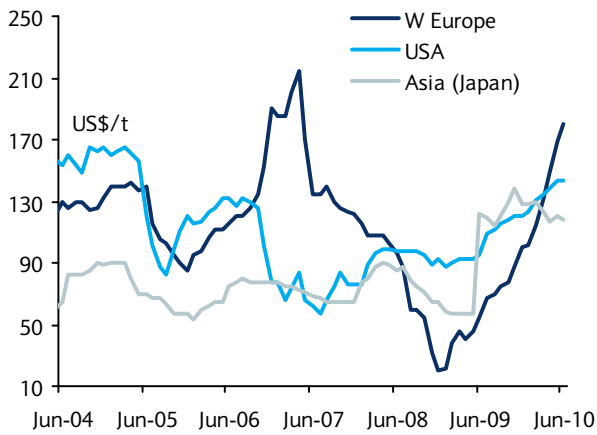
Source: Brook Hunt, Barclays Capital

Figure 213: Copper
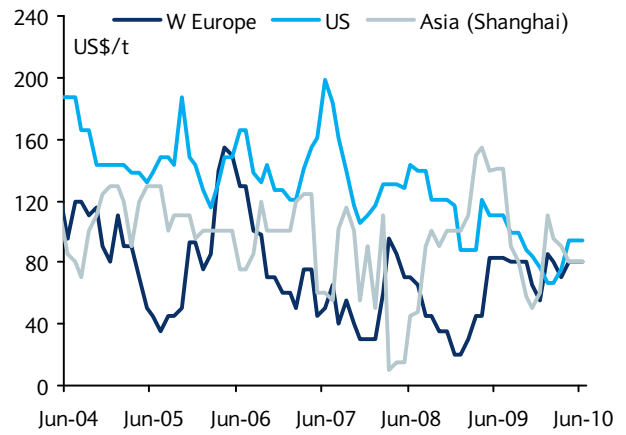
Source: CRU, Barclays Capital

Figure 214: Lead
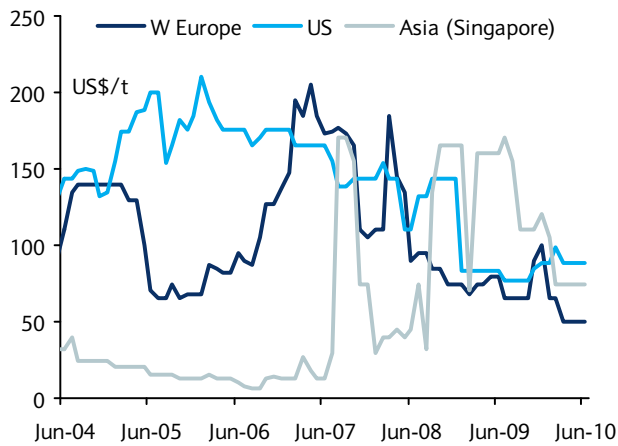
Source: Brook Hunt, Barclays Capital

Figure 215: Nickel
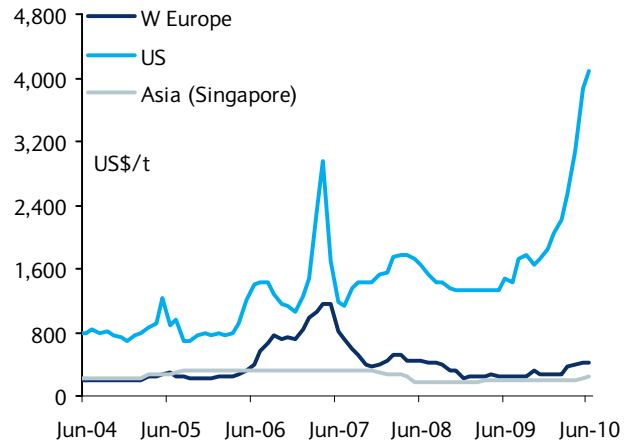
Source: Brook Hunt, Barclays Capital

Figure 216: Zinc
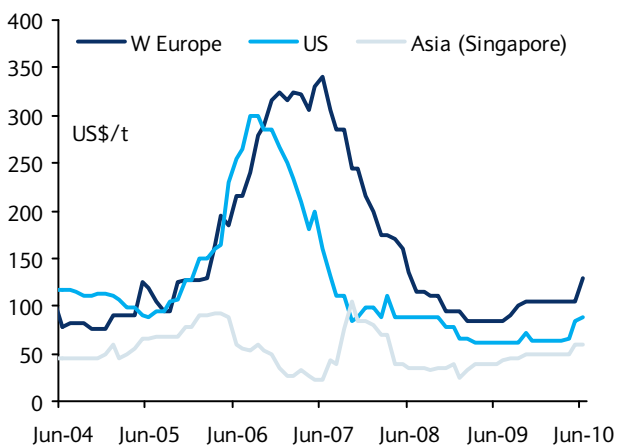
Source: Brook Hunt, Barclays Capital

Figure 217: Weighted average
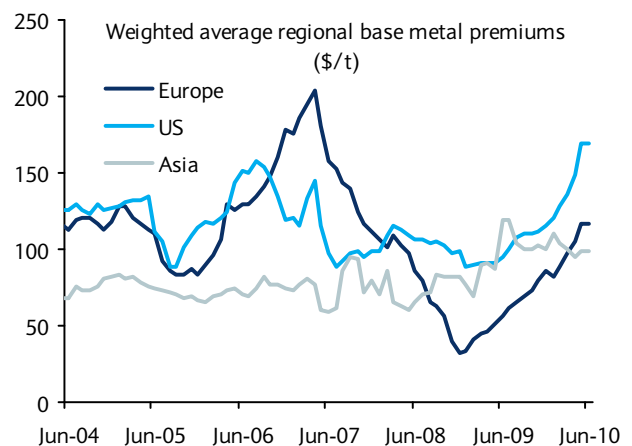
Source: Brook Hunt, Barclays Capital

BASE METAL LME CASH PRICE FORECASTS

	Aluminium		Copper		Lead		Nickel		Tin		Zinc	
	US$/t	Usc/lb	US$/t	Usc/lb	US$/t	Usc/lb	US$/t	Usc/lb	US$/t	Usc/lb	US$/t	Usc/lb
Forecasts												
2010	1,989	90	6,752	306	2,066	94	20,303	921	17,592	798	2,014	91
Q1 actual	2,165	98	7,243	328	2,219	101	20,078	911	17,225	781	2,288	104
Q2 actual	2,092	95	7,013	318	1,944	88	22,382	1,015	17,844	809	2,018	92
Q3	1,800	82	6,250	283	2,000	91	19,000	862	17,800	807	1,850	84
Q4	1,900	86	6,500	295	2,100	95	19,750	896	17,500	794	1,900	86
2011	2,150	98	7,763	352	2,350	107	22,375	1,015	19,500	884	2,250	102
Q1	2,100	95	7,200	327	2,200	100	21,000	952	18,500	839	2,000	91
Q2	2,200	100	8,150	370	2,300	104	22,500	1,020	19,250	873	2,200	100
Q3	1,950	88	7,900	358	2,400	109	23,500	1,066	19,750	896	2,350	107
Q4	2,350	107	7,800	354	2,500	113	22,500	1,020	20,500	930	2,450	111
2012	2,500	113	8,500	385	2,500	113	30,000	1,361	20,000	907	3,500	159
Long Term	3,200	145	6,000	272	1,700	77	17,500	794	14,500	658	2,000	91
History												
1989	1,952	89	2,845	129	672	30	13,313	604	6,605	300	1,711	78
1990	1,640	74	2,662	121	809	37	8,881	403	6,200	281	1,518	69
1991	1,303	59	2,337	106	557	25	8,162	370	5,593	254	1,117	51
1992	1,254	57	2,282	103	542	25	7,001	318	6,099	277	1,240	56
1993	1,139	52	1,913	87	406	18	5,296	240	5,157	234	962	44
1994	1,478	67	2,308	105	547	25	6,337	287	5,461	248	998	45
1995	1,805	82	2,935	133	631	29	8,230	373	6,217	282	1,031	47
1996	1,507	68	2,296	104	774	35	7,501	340	6,163	279	1,025	46
1997	1,598	72	2,275	103	624	28	6,916	314	5,641	256	1,314	60
1998	1,358	62	1,654	75	529	24	4,632	210	5,536	251	1,024	46
1999	1,361	62	1,572	71	502	23	6,016	273	5,400	245	1,076	49
2000	1,548	70	1,813	82	454	21	8,638	392	5,432	246	1,128	51
2001	1,444	65	1,578	72	476	22	5,959	270	4,481	203	886	40
2002	1,350	61	1,558	71	453	21	6,763	307	4,057	184	778	35
2003	1,431	65	1,778	81	515	23	9,637	437	4,894	222	828	38
2004	1,716	78	2,865	130	886	40	13,846	628	8,484	385	1,049	48
2005	1,900	86	3,682	167	977	44	14,750	669	7,375	334	1,383	63
2006	2,568	116	6,731	305	1,286	58	24,271	1,101	8,761	397	3,274	148
2007	2,640	120	7,129	323	2,592	118	37,276	1,691	14,542	659	3,251	147
Q1	2,800	127	5,941	269	1,787	81	41,448	1,880	12,723	577	3,460	157
Q2	2,761	125	7,637	346	2,182	99	47,982	2,176	14,104	640	3,667	166
Q3	2,552	116	7,714	350	3,141	142	30,226	1,371	14,980	679	3,237	147
Q4	2,448	111	7,224	328	3,259	148	29,448	1,336	16,359	742	2,640	120
2008	2,573	117	6,961	316	2,093	95	21,115	958	18,500	839	1,876	85
Q1	2,729	124	7,763	352	2,891	131	28,863	1,309	17,695	803	2,426	110
Q2	2,941	133	8,448	383	2,316	105	25,730	1,167	22,612	1,025	2,115	96
Q3	2,792	127	7,693	349	1,912	87	18,980	861	20,567	933	1,773	80
Q4	1,830	83	3,940	179	1,251	57	10,885	494	13,127	595	1,189	54
2009	1,664	75	5,148	233	1,721	78	14,604	662	13,579	616	1,654	75
Q1	1,361	62	3,435	156	1,160	53	10,459	474	11,024	500	1,173	53
Q2	1,488	67	4,676	212	1,506	68	12,800	580	13,551	615	1,476	67
Q3	1,806	82	5,840	265	1,925	87	17,614	799	14,576	661	1,757	80
Q4	2,001	91	6,643	301	2,292	104	17,543	796	15,164	688	2,211	100

Source: Barclays Capital

PRECIOUS METAL SPOT PRICE FORECASTS

	Gold US$/oz	Silver US$/oz	Platinum US$/oz	Palladium US$/oz
Forecasts				
2010	1,195	18.2	1,623	469
Q1 actual	1,110	16.9	1,562	440
Q2 actual	1,196	18.3	1,630	492
Q3	1,215	18.5	1,610	450
Q4	1,260	19.2	1,690	495
2011	1,180	17.5	1,660	480
Q1	1,300	19.5	1,650	430
Q2	1,225	18.0	1,600	460
Q3	1,145	17.0	1,665	480
Q4	1,050	15.5	1,725	550
2012	1,010	14.3	1,550	490
Long Term	850	11.4	1,500	400

	Gold	Silver	Platinum	Palladium
History				
1989	382	5.5	509	144
1990	384	4.8	472	115
1991	362	4.1	376	88
1992	344	3.9	360	88
1993	360	4.3	374	122
1994	384	5.3	405	143
1995	384	5.2	424	151
1996	388	5.2	397	128
1997	331	4.9	395	177
1998	294	5.5	372	285
1999	279	5.2	377	359
2000	279	5.0	545	682
2001	271	4.4	530	603
2002	310	4.6	539	337
2003	364	4.9	692	200
2004	410	6.7	844	229
2005	445	7.3	896	202
2006	604	11.6	1,139	319
2007	697	13.4	1,304	354
Q1	650	13.3	1,188	341
Q2	667	13.3	1,287	366
Q3	680	12.7	1,289	347
Q4	790	14.2	1,450	360
2008	872	15.0	1,569	348
Q1	923	17.5	1,862	438
Q2	897	17.2	2,021	441
Q3	869	15.0	1,531	326
Q4	797	10	859	186
2009	972	14.6	1,205	262
Q1	908	12.6	1,023	198
Q2	921	13.7	1,171	233
Q3	960	14.7	1,231	271
Q4	1,100	18	1,394	348

Source: Barclays Capital

Figure 218: Gold
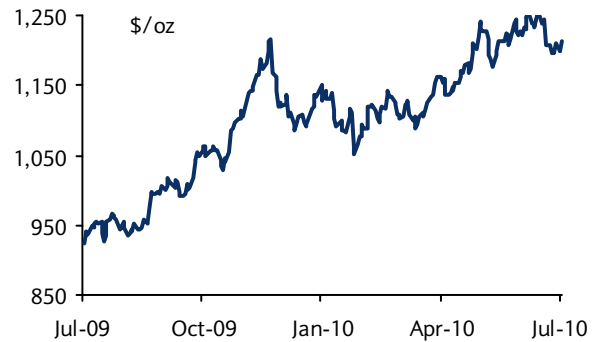
Figure 219: Silver
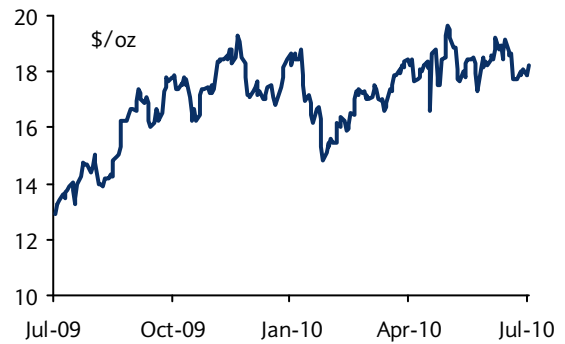
Figure 220: Platinum

Figure 221: Palladium
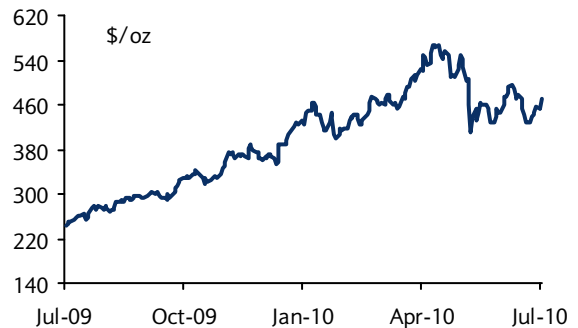
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