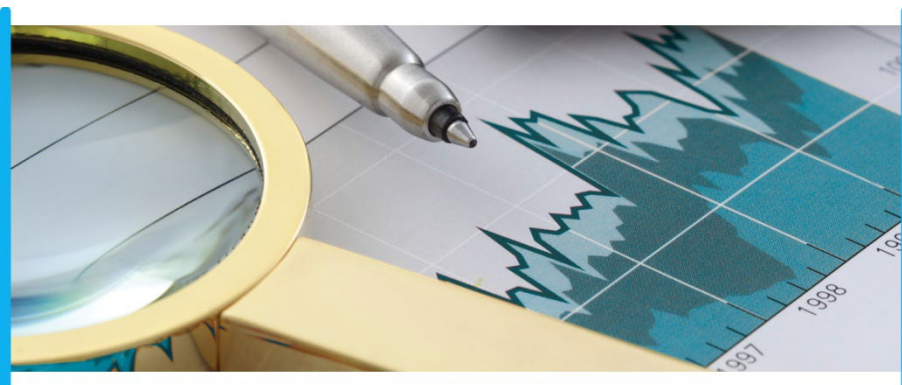


## Metals Magnifier

# China's planned grid spending to power copper demand



- The weakening in leading demand indicators implies a softening in the short-term outlook for base metals demand growth. In January, Barclays' global manufacturing confidence fell the most in 1.5 years. Base metals prices have, however, held up relatively well, given the series of negative emerging market growth surprises, and China's appetite for raw materials has gotten off to a strong start, with copper imports soaring to a record high in January. Nevertheless, we think macro worries will be a headwind for prices through the early part of 2014.
- China's ambitious plans to grow investment spending on the power grid by 10% this year should support robust copper consumption. Our analysis suggests that if the spending target is met, it could imply some modest upside to our current copper demand forecast, which we discuss in this month's Focus. Renewable power and distribution network upgrades are copper intensive, which we think will provide a strong baseline of demand even as China's economic growth stabilises at a slower pace.
- Gold prices proved resilient in the absence of the Chinese market, and while weaker-than-expected macro data have provided a boost to prices, to retain these gains, investor sentiment needs to shift more meaningfully. The macro environment is yet to lend greater support, while healthy above-ground stocks have weighed upon the PGMs, despite strike action. Palladium trading around and below \$700/oz presents a good buying opportunity, in our view.

	Aluminium US\$/t	Copper US\$/t	Lead US\$/t	Nickel US\$/t	Tin US\$/t	Zinc US\$/t	Gold US\$/oz	Silver US\$/oz	Platinum US\$/oz	Palladium US\$/oz
Forecasts										
2014	1,850	7,125	2,263	15,000	26,000	2,138	1,205	19.0	1,539	768
Q1	1,750	7,100	2,200	14,750	25,000	2,000	1,220	19.0	1,450	730
Q2	1,850	7,300	2,200	15,000	25,500	2,100	1,150	18.0	1,520	750
Q3	1,850	7,100	2,300	15,000	26,500	2,200	1,190	18.5	1,575	780
Q4	1,950	7,000	2,350	15,250	27,000	2,250	1,260	20.5	1,610	810
2015	2,150	8,000	2,513	17,000	30,000	2,400	1,150	17.0	1,650	850
Cycle Averages	2,130	6,950	2,700	18,200	18,000	2,975	1,125	16.0	1,850	650

Source: Barclays Research

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## CHINA GRID SPENDING AND COPPER DEMAND

## What does China's power grid build-out mean for copper demand?

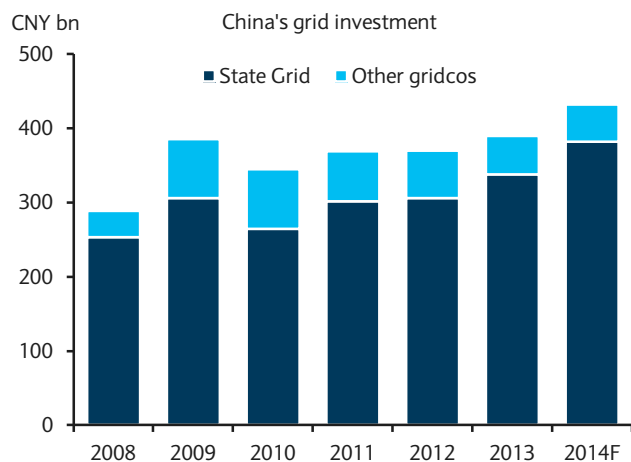
- We expect increased power grid investment to support robust growth in Chinese copper consumption in 2014. Since the power sector accounts for 40% of Chinese copper demand, we think it is a good proxy for copper consumption; historical trends show that periods of strength in power spending coincide with periods of strength in copper consumption.
- Our analysis suggests that the planned 10% increase in national power grid spending this year could generate copper consumption growth of 8-9%, although this does not account for changes in non-power related demand. If grid spending meets this target, it could imply some modest upside to our current Chinese copper demand forecast of 7.5%. In this analysis, we dissect the key areas of grid spending and consider their implications for copper demand.
- Government environmental initiatives would require the grid to connect to more renewable energy. With large hydro, wind, and solar energy projects far from the populated coastline, connecting them to the grid would mean more investment in long-distance transmission lines.
- Distribution networks would also need to be upgraded to accommodate renewable power sources, such as rooftop solar panels, as well as rising energy needs in city centers. The State Grid plans to roll out a large-scale upgrade of urban distribution networks in 2014.
- Both renewable power and distribution network upgrades are copper-intensive, which we think will provide a strong baseline of demand even as China's economic growth stabilises at a slower pace. However, certain grid projects are still subject to policy uncertainty.

## Ambitious grid investment to power copper demand

## Grid investment to speed up

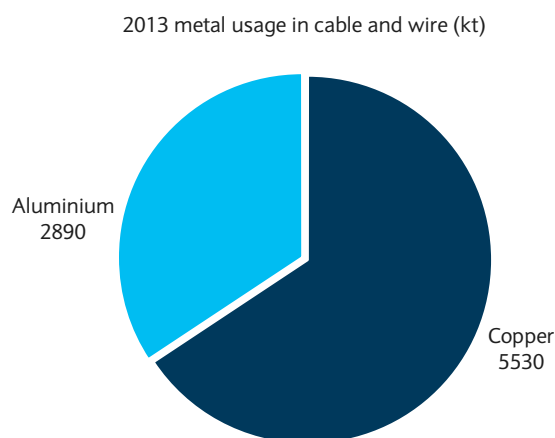
We expect copper demand to be underpinned by an acceleration of copper-intensive grid spending in 2014 (see *China copper demand could surprise to the upside on ambitious grid target*, 8 January 2014). Last year, grid spending rose to an all-time high of CNY389bn, up

FIGURE 1  
2014 grid investment targets an all-time high



Source: CEIC, media reports, Barclays Research

FIGURE 2  
Copper and aluminium usage in cable and wire



Source: SECRI, Barclays Research

5.4% y/y. The State Grid Corporation of China, which is the dominant gridco with more than 80% of the market share, announced plans last week to invest CNY381bn in 2014, up 13% y/y, although weaker investment by the smaller Southern Grid could partially offset this. With 2014 grid spending growth estimated at 10%, it is set to be the fastest in five years. In 2011 the State Grid forecast that it would invest a total of CNY1.7trn in 2011-15, a flow of CNY340bn each year. After falling short of this target in 2011-12, it appears that the gridco is back on track. If the gridco strives to realize the CNY1.7trn target, the implied spending in 2015 would be CNY373bn, a small dip from 2014, though still robust compared with previous years.

*Copper is the biggest beneficiary of an aggressive grid investment target, aluminium second*

Copper demand is the most direct beneficiary of an aggressive grid investment target because the power sector as a whole accounts for more than 40% of Chinese copper consumption. Aluminium could also receive a boost, but to a lesser extent. According to the Shanghai Electric Cable Research Institute (SECRI), 5.5Mt of copper and 2.9Mt of aluminium were used in cables and wires in 2013 (including electronics, auto and telecommunications wiring), which is approximately 60% of China's refined copper and 12% of aluminium consumption. We note, however, that some copper wires are manufactured directly from scrap. Accelerated investment could support copper demand and, to a lesser extent, aluminium demand, even when the overall economy grows at a slower pace.

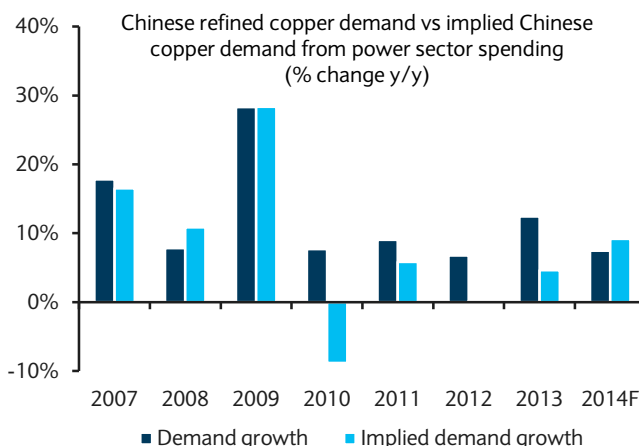
*We look at what drives grid spending*

We aim to dissect the headline number by looking at what is driving grid investment. First, the aggressive grid build-out is in part fuelled by China's need to integrate more renewable power into the grid. Renewable power is often large hydro plants and wind and solar farms located far from consumption centers, as well as distributed power generation in urban areas. In addition, providing power to increasingly energy-intensive population areas calls for upgrading the distribution network, and the State Grid is planning to launch a large-scale upgrade in 30 major cities this year. As the new leadership has vowed to combat pollution, efforts to connect more renewable power and upgrade urban networks have received explicit policy support. These copper-intensive developments could ensure a high baseline of investment.

*Renewable policy is behind the push, but UHVs are still controversial*

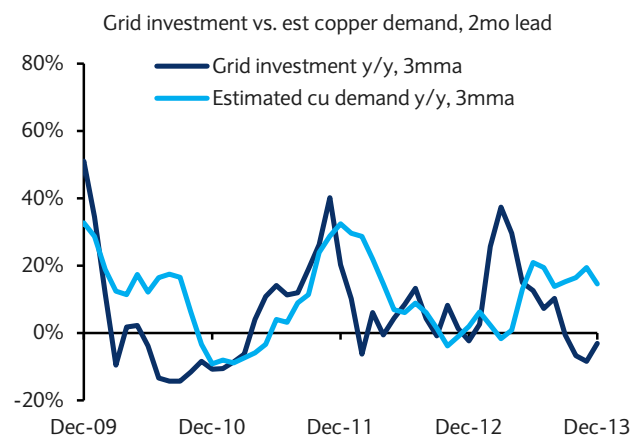
On the other hand, some of the projects envisioned by the State Grid remain controversial, and it is not clear if policies have swung in their favour. If government reviews of ultra-high-voltage (UHV) projects continue to drag on, the delay of these multi-billion dollar projects could dent grid spending. We are more positive on China's grid outlook and power-sector copper demand, but certain segments of the investment plan are still subject to policy changes.

FIGURE 3  
2014 grid spend growth of 10% implies copper demand growth of 8-9%



Source: CEIC, Barclays Research

FIGURE 4  
Grid investment tends to lead copper demand



Source: CEC, CEIC, Barclays Research

*A 10% increase in grid spending in 2014 implies 8-9% copper demand growth*

Translating what the planned increase in power grid spending could mean for copper demand is complicated by the lack of information on the timing and areas of spending. However, because the power sector is the single largest consumer of refined copper, we believe it is a good proxy for total copper consumption. Indeed, historical trends show that strength in power spending has tended to coincide with periods of strength in Chinese copper consumption growth. However, the relationship is highly volatile on a monthly, quarterly, and annual basis and does not account for changes in non-power related demand.

*Restocking could skew the relationship between grid investment and copper demand*

Smoothing for this volatility we can calculate 'implied' copper demand from grid spending based on the historical sensitivity of copper demand growth to power grid spending. The results are shown in Figure 3. There have been three years since 2006 in which Chinese copper demand growth has differed significantly from the 'implied' copper demand growth, which highlights the imperfectness of this analysis. Perhaps tellingly, these years correspond to periods in which there were also known large-scale stocking cycles. These cycles can greatly skew China's copper imports and therefore readings of apparent consumption. Indeed, we believe this is one of the reasons Chinese demand growth in 2013 was higher than the 'implied' figure. Tight scrap availability is another important factor. Scrap and stocking could again result in a divergence between the outturn of China's copper consumption and that implied by our analysis. Nevertheless, ceteris paribus, our analysis suggests that the planned 10% increase in national power grid spending this year could generate copper consumption growth of 8-9%. This suggests potential modest upside risk to our current Chinese copper demand forecast of 7.5%.

*New government favors environmental agenda...*

## Connecting renewable power requires grid spending

In part because of public pressure, the new government has vowed to cut emissions and increase renewable energy consumption. Severe smog conditions spread across China in 2013, sparking anger among China's middle class. The government quickly passed an action plan in September 2013, targeting a 10% reduction in fine particulate matter (PM2.5) levels by 2017 and more for first-tier cities. As coal, which contributes to PM2.5 emissions, still accounts for two-thirds of Chinese energy usage, first-tier cities are advised to purchase more electricity from other regions rather than building new coal-fired power plants. Natural gas and renewable energy should also take up a bigger share of energy consumption. While new coal-fired power plants are still needed, they should be located in the coal-rich west rather than the densely populated east. The government acted swiftly also because environmental policies could help galvanize support for economic reforms. The leadership wants to rely less on investment-driven growth and more on consumption, and a populist environmental agenda could help overcome opposition to difficult reforms.

*... but renewable sources are far away from consumption centers*

But accommodating new energy sources requires grid investment. This push for more renewable energy usage started during the previous administration, but grid integration has been a bottleneck. Much of China's renewable energy sources are located far from population centers on the coast. There are large hydropower projects in the southwest and wind and solar farms across northern China. Electricity generated by these projects has to be transmitted to consumption centers, as the local power market tends to be too small to absorb all the power. For example, a UHV project just completed in January 2014 from Kumul, Xinjiang, to Henan spanned 2,200km, the distance between New York and Dallas.

*Wind power poses challenges to gridcos*

Connecting wind power is particularly problematic for the grid, and not just because of the distance. By the end of 2012, China had installed 75.3GW of wind power, the largest in the world, but only 62.6GW was connected to the grid (China Wind Energy Association). Curtailment was also common, estimated at 20bn kwh in 2012 or 22% of total wind power output. Wind power generation is much more volatile than other power sources. Because they are often concentrated in the windy north, local grid networks can be overwhelmed. In

*Price incentive used  
to be lacking...*

February 2011, hundreds of wind turbines in Gansu were suddenly disconnected from the local grid when box transformers malfunctioned, almost knocking out the regional grid.

More important, the gridcos lacked incentives to absorb expensive wind and solar power. As the government regulates both on-grid tariffs and retail tariffs but not wheeling charges, the gridcos get their margins from purchasing and selling electricity at regulated prices. Hydropower is priced low, which makes it attractive for the grid, but wind and solar power are priced higher than electricity by coal-fired power plants, eroding grid margins. The gridcos were therefore reluctant to invest heavily to integrate wind and solar power.

*... but government policy  
has turned*

But firmer government policies have increasingly pushed gridcos toward better integration. In the energy five-year plan released in 2012, China plans to connect a total of 100GW of wind power to the grid by 2015 and 200GW by 2020, up from 75.4GW by the end of 2013. The ramp-up in solar capacity is even more aggressive, from 10GW in 2013 to 35GW by 2015. To achieve these goals, the energy regulators have drafted a quota system for both generators and gridcos, mandating a minimum percentage of renewable energy in generation and grid purchases, and may pass it soon. Wind and solar tariffs have also become more competitive as efficiency improved. In 2013, wind power generation was 2.3% of total power output, higher than previous years. Utilization hours also rose 151 hours to 2,080 hours, indicating that not only were more wind farms connected to the grid, but also that utilization for the whole sector was rising steadily.

*Distributed generation also key*

Aside from these large projects that require long-distance transmission, the government's renewable push also envisions a build-up of distributed generation in cities. Distributed generation uses small power sources at the point of consumption, rather than centralized generation at big power plants. Of the 35GW solar target for 2015, 20GW is expected to be in the form of distributed stations or rooftop projects in urban areas, which have the option to sell excess power back to the grid. The National Development and Reform Commission (NDRC) has proposed to add 6GW of distributed solar power in 2014 alone. The government also projects to build 1,000 gas-fired distributed power sources by 2015.

These targets are not binding, but they stand a better chance of being implemented now. Previously, the lack of subsidies made rooftop solar projects uncompetitive, and the gridcos were reluctant to invest in additional capacity in order to buy power from decentralized sources. But as the government now realizes that cities need both outside power transmission and local power sources for a stable load, the initiative has gone forward more quickly. In summer 2013, the Ministry of Finance and NDRC passed new measures to

FIGURE 5  
The share of renewable power is growing quickly

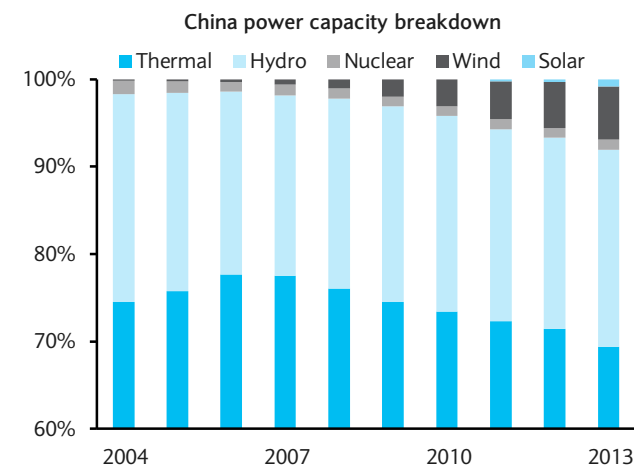
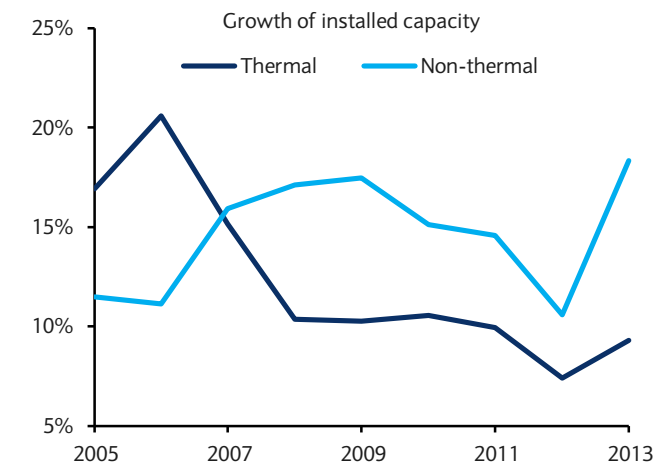


FIGURE 6  
Wind capacity growth has overtaken thermal for years



subsidize rooftop solar projects at USD 7c/kwh. The State Grid has specified at the same time that it would bear the cost of connecting these projects to the grid. Obstacles still remain, however. Projects need to be approved, and the government and gridcos keep a cap on total capacity in each region. But policies point to faster implementation than before.

*Subsidies help  
Connecting renewable energy  
is copper intensive*

This renewable push is copper-intensive. Onshore wind turbines use an estimated 6t of copper per MW of generating capacity, most of which is used in the cabling to connect the turbines to substations, and the rest is in the turbine and its transformer. To reach the target of 100GW by 2015 for wind power, an estimated 150Kt copper would be added in the space of two years, and that is before the subsidiary projects such as UHVs are taken into account. Although the overhead wires in UHV projects are aluminium, UHV projects would need large and multiple substations that are copper-intensive. The government also hopes to push for more offshore wind power farms, although the ambitious target of 5GW by 2015 appears out of reach. By the end of 2012, offshore wind farms stood at 390MW of total capacity. If development accelerates for offshore wind farms, copper use is likely to receive an additional boost as they contain an estimated 10t copper per MW.

### Low-voltage distribution investment could step up in 2014

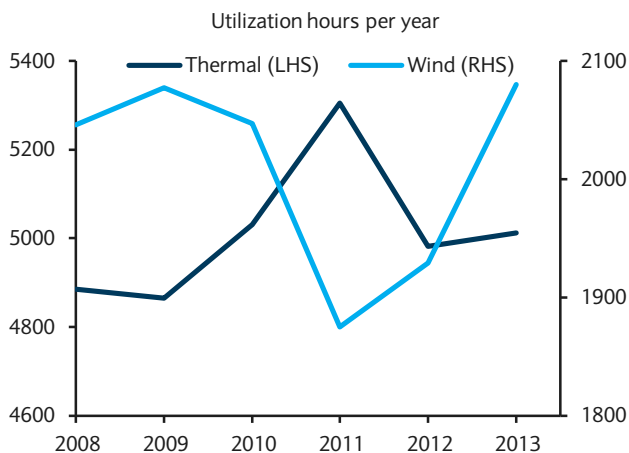
*Government favors  
distribution upgrades*

Investment in low-voltage distribution networks could also step up in 2014, according to the two major gridcos. In addition to the need to connect more distributed power sources to the grid, the energy intensity of urban centers is also on the rise. The majority of China's electricity still feeds its factories, but the Chinese service sector and households are more power-hungry than before, thanks to higher living standards and continued urbanization. The State Grid is expected to release a nationwide standard for distribution network upgrades in Q1 2014, which would signal the start of another round of spending.

*Gridcos are already spending  
more on distribution*

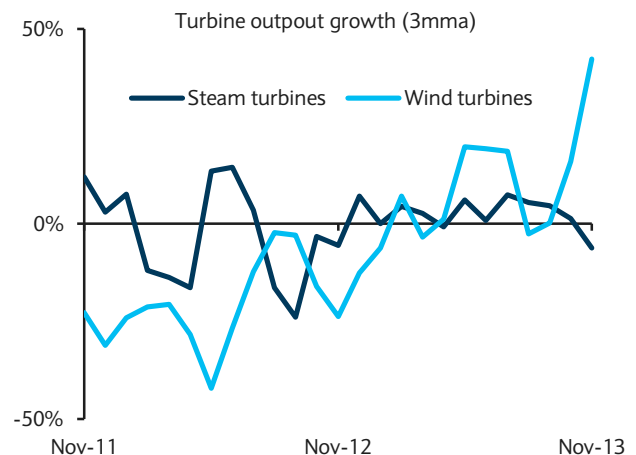
The gridcos have been investing more in the distribution end of the grid in recent years, as attention shifts from conventional high-voltage trunk lines to distribution networks. The State Grid directed 62% of total spending to lower voltage (<220kv), compared with 47% in 2006. The smaller Southern Grid likewise spent 61% of total investment on distribution, up from 38% in 2006. As China's power generation capacity was expanding very rapidly in 2004-2008, the grid first invested heavily in high-voltage transmission lines. But after more 220Kv and 500Kv lines were built, urban areas still experienced power shortages or blackouts due to weak distribution capacity. Rural grids were even less developed, and the government pushed for two rounds of investment to upgrade the rural grid in 1998-2002 and 2010-2013.

FIGURE 7  
Utilization hours rising for wind power



Source: SERC, Barclays Research

FIGURE 8  
Wind turbine production is gaining speed



Source: Barclays Research



### State Grid to roll out national standard

The gridcos now aim to make urban networks more reliable and efficient. In addition to conventional upgrades such as building more circuits and taking cables and wires underground in crowded cities, the gridcos also plan to adopt smart grid technologies. The State Grid said that it would spend CNY77.5bn in 2014 to that end. Smart grid technologies collect information from producers and consumers through various interfaces such as smart meters and deliver power more efficiently. The gridcos argue that these technologies could help minimize blackouts and allow for a better incorporation of distributed generation. In a key difference with its American counterparts, the State Grid's blueprint for the smart grid also emphasizes the importance of building a strong national network with the UHV projects as its backbone.

### Distribution networks also copper intensive

While low-voltage power cables use higher share of aluminium (12%, conductivity equivalent) than high-voltage cables (1.6%), according to SERCI, the substations and underground cables in urban distribution networks are highly copper intensive. One of the largest cable and wire producers in China told us that low-voltage cable orders saw stronger growth than higher-voltage orders in 2013. While China's regulators are reportedly drafting an industry standard for aluminium alloy wires, which could help the material gain more traction, the cable producer we spoke with expected a marginal impact as adoption would be very gradual and much of the easiest substitution has been done.

## Government policy key to implementation

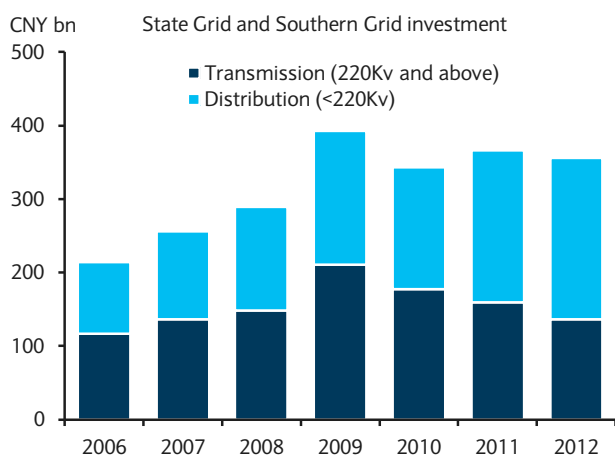
### Overall policy is supportive...

The government supports the idea of upgrading the grid, but certain UHV projects remain controversial. In July 2013, when economic growth appeared to be losing momentum, the cabinet named urban distribution networks as one of the preferred areas of infrastructure spending that could both improve people's quality of life and help put a floor under growth. Therefore, we expect the government to support the gridcos' plans to upgrade distribution in particular. As renewable energy gets a firm mandate, grid investment to incorporate more renewable sources is also encouraged.

### ... but questions remain on UHV adoption

On the other hand, the government still appears cautious about UHV projects, especially alternate-current (AC) projects. The State Grid has pushed for an extensive web of UHV lines, stretching from the west to the east coast and north to south. Top officials, such as China's vice premier Zhang Gaoli, have said that long-distance UHV could help connect renewable energy projects to consumption centers. But specific projects proposed by the State Grid have been slow to pass through the approval process. Critics argue that AC

FIGURE 9  
Distribution now more than 60% of total spending



Source: SERC, Barclays Research

FIGURE 10  
Fresh approvals for UHV projects needed

UHV project	Status	Completion
Shanxi-Jingmen	Completed	Q4 2008
Xiangjiaba-Shanghai	Completed	Q3 2010
Jinping-Jiangsu	Completed	Q2 2012
Anhui-Shanghai	Completed	Q3 2013
Yunan-Jiangmen	Completed	Q3 2013
Kumul-Zhengzhou	Completed	Q1 2014
Xiluodu-Jinhua	Under construction	Q2 2014
Zhejiang-Fuzhou	Under construction	Q4 2014

Source: Barclays Research



projects are more expensive and less stable than direct-current (DC) projects, and some also question the idea of building new coal-fired power plants in the thirsty west as power sources for proposed UHV lines. The government has not yet approved the State Grid's five-year plan for 2011-2015, reflecting the unresolved debates over UHV.

*Final investment will depend on UHV policy*

Whether the government approves projects as hoped can sway final investment. At the beginning of 2013, the State Grid had hoped to get final approval on seven UHV projects, but in the end the NDRC only granted one. For 2014, the State Grid plans to get final approval on ten UHV projects, four of which are AC. There are two UHV projects currently under construction, but the pipeline of future projects has not passed through quickly, so new construction may run dry soon. Of the ten, two short-distance AC lines are said to be likely, and DC projects are less controversial and may be approved more easily. However, this is still an ambitious list, and it remains to be seen how many the government will approve. If the government decides to move forward on UHV projects, we expect the aggressive target for the State Grid to be more plausible.

## CONSUMPTION INDICATORS

FIGURE 1

Barclays Research macroeconomic forecasts

	Q1 13	Q2 13	Q3 13	Q4 13	2013E	Q1 14E	Q2 14E	Q3 14E	Q4 14E	2014E	2015E
<b>US</b>											
GDP (% y/y)	1.3	1.6	2.0	2.7	1.9	3.1	3.1	2.7	2.5	2.8	2.6
IP (% y/y)	2.4	2.0	2.5	3.6	2.6	3.8	4.8	5.4	5.0	4.8	5.0
Fed Funds (%)	0-0.25	0-0.25	0-0.25	0-0.25	n/a	0-0.25	0-0.25	0-0.25	0-0.25	n/a	n/a
<b>Euro area</b>											
GDP (% y/y)	-1.2	-0.6	-0.3	0.4	-0.4	0.9	1.0	1.3	1.5	1.2	1.4
IP (% y/y)	-2.2	-0.9	-1.1	1.4	-0.7	1.3	0.9	1.4	1.5	1.3	2.1
Refi Rate (period end-%)	0.75	0.50	0.50	0.25	0.25	0.10	0.10	0.10	0.10	0.10	0.10
<b>China</b>											
GDP (% y/y)	7.7	7.5	7.8	7.7	7.7	7.7	7.4	7.0	7.0	7.2	7.4
IP (% y/y)	9.5	9.1	10.1	10.0	9.7	9.3	8.6	7.7	7.6	8.3	8.5
Monetary policy benchmark (%)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
<b>Global</b>											
GDP (% y/y)	2.5	2.8	3.1	3.4	2.9	3.7	3.5	3.5	3.5	3.5	3.8

FIGURE 2

Barclays Research FX forecasts (versus USD)

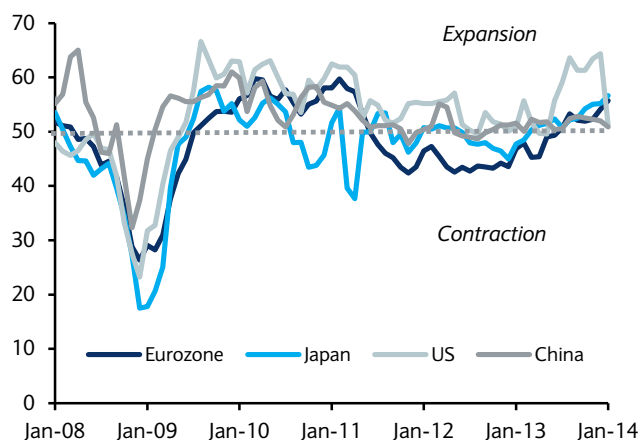
	Spot	1 mth	3 mth	6 mth	1 year
EUR/USD	1.38	1.35	1.32	1.30	1.27
USD/JPY	102.9	102	107	107	107
GBP/USD	1.65	1.65	1.65	1.65	1.65
USD/CAD	1.06	1.07	1.12	1.12	1.12
AUD/USD	0.91	0.9	0.88	0.84	0.8
NZD/USD	0.83	0.82	0.8	0.79	0.77
USD/ZAR	10.36	10.10	10.20	10.50	10.50
USD/CNY	6.11	6.07	6.05	6.02	5.95

Source for all figures unless otherwise indicated: Barclays Research

### Key economic indicators

FIGURE 3

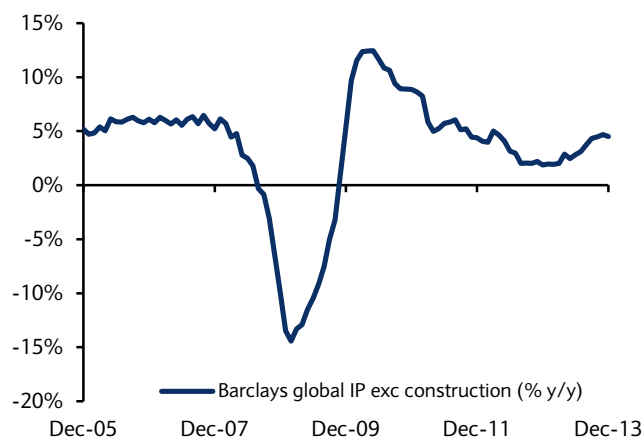
US New Orders plummeted in January, partially due to weather effects. China New Orders weakened too.



Source: Thomson Datastream, Haver Analytics, Barclays Research

FIGURE 4

Global IP grows above 4% y/y for four consecutive months



Source: Thomson Financial, Barclays Research

## Consumption-weighted global leading indicators for base metals

Barclays' composite leading indicators point towards a slowdown in demand growth across the base metals. The weaker short-term outlook is driven by a sharp drop in the US manufacturing PMI, especially in new orders. It is important to note, however, that the impact of weather effects should be temporary. Indeed, our expected purchasing index was almost flat m/m and stocks of finished goods continued to contract. The Chinese manufacturing PMI also fell sharply, led by new orders. Our economists believe the combination of weaker new orders, slower raw material purchases and increased inventories points to further slowdown in production activities ahead. By contrast, new orders in the euro zone PMI improved for the fourth consecutive month and our expected purchasing index was the highest since May 2012.

FIGURE 6

Barclays copper composite leading indicator

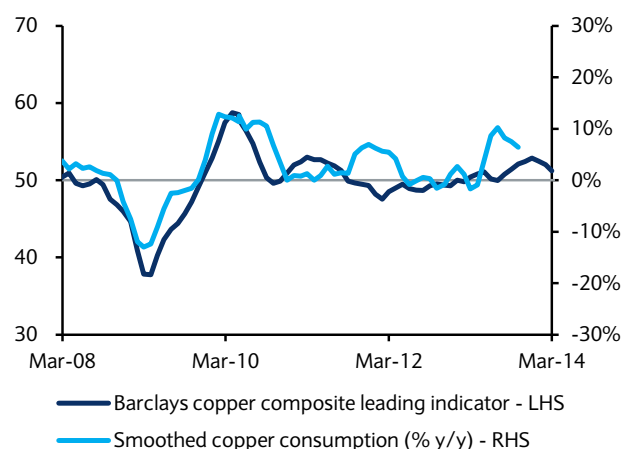


FIGURE 8

Barclays zinc composite leading indicator

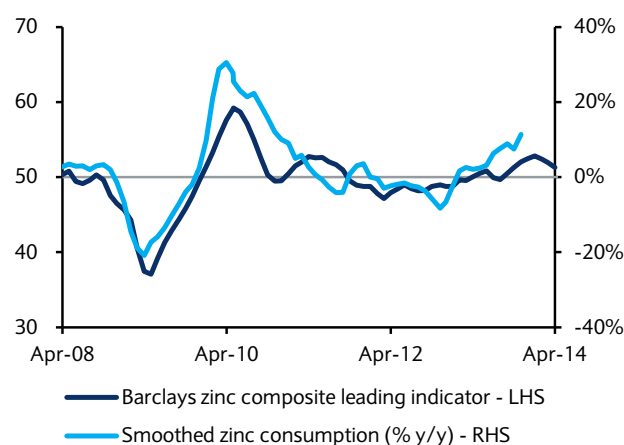


FIGURE 5

Barclays aluminium composite leading indicator

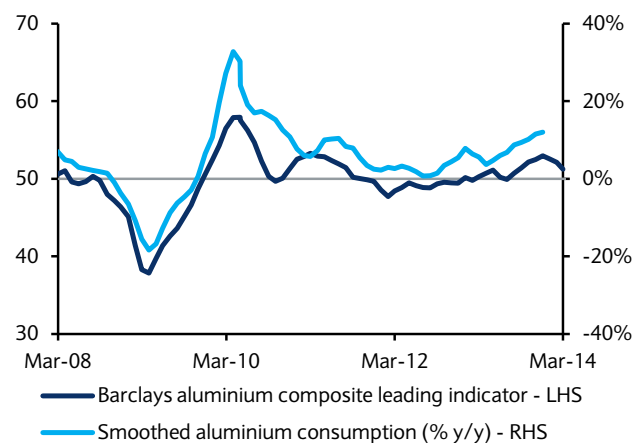


FIGURE 7

Barclays nickel composite leading indicator

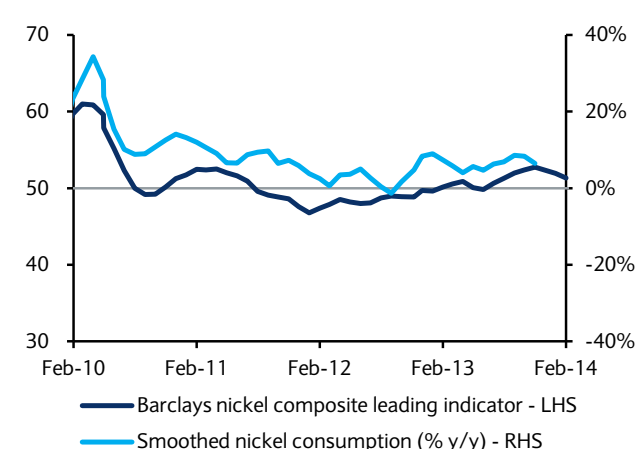
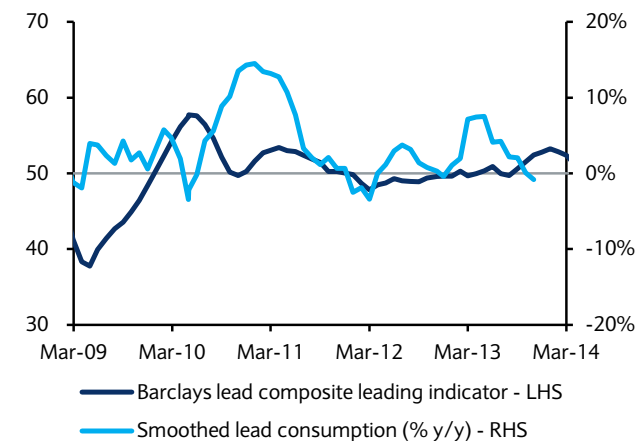


FIGURE 9

Barclays lead composite leading indicator



Source for all charts: Barclays Research

## Global forecasts

	Weight*	Real GDP				Real GDP				Consumer prices			Consumer prices			
		% over previous period, saar				% annual change				% over a year ago			% annual change			
		3Q13	4Q13	1Q14	2Q14	2012	2013	2014	2015	4Q13	1Q14	2Q14	2012	2013	2014	2015
<b>Global</b>	<b>100.0</b>	3.8	3.8	3.3	3.0	3.1	2.9	3.5	3.8	2.6	2.6	3.1	2.8	2.6	2.9	3.0
Advanced	51.1	2.5	2.4	2.3	1.4	1.4	1.2	2.1	2.1	1.2	1.1	1.6	1.9	1.3	1.5	1.8
Emerging	48.9	5.3	5.2	4.5	4.6	4.9	4.7	5.0	5.4	5.2	5.2	5.5	4.6	4.8	5.3	4.9
BRIC	30.7	6.7	5.7	5.3	5.3	5.9	5.8	5.8	6.0	4.3	4.0	4.3	4.0	4.2	4.2	4.2
<b>Americas</b>	<b>32.8</b>	3.1	3.0	2.3	2.5	2.7	2.0	2.7	2.9	3.2	3.2	3.6	3.2	3.1	3.5	3.7
United States	22.1	4.1	3.2	2.5	2.5	2.8	1.9	2.8	2.6	1.2	1.1	1.5	2.1	1.5	1.5	2.1
Canada	2.0	2.7	2.0	2.0	2.0	1.7	1.7	2.2	2.5	1.0	1.2	1.6	1.5	0.9	1.5	1.9
Latin America	8.8	0.7	2.5	1.9	2.5	2.7	2.3	2.4	3.6	10.1	10.8	10.9	7.5	9.0	10.8	9.3
Argentina	1.0	-4.6	-3.2	-3.1	-2.0	-0.4	2.1	-1.5	4.5	26.0	27.2	28.5	23.7	24.4	29.5	29.5
Brazil	3.2	-1.9	1.2	2.0	2.4	1.0	2.2	1.9	2.6	5.8	5.8	5.8	5.4	6.2	6.0	5.5
Chile	0.4	6.1	5.6	4.5	4.5	5.6	4.4	4.8	4.7	1.8	2.0	3.0	3.0	1.7	2.7	3.0
Colombia	0.7	5.4	5.0	4.0	4.0	4.2	4.2	4.8	4.5	2.3	3.0	3.1	3.1	2.1	3.0	3.0
Mexico	2.4	3.4	5.5	3.9	3.5	3.9	1.3	3.7	3.8	3.7	4.2	3.5	4.1	3.8	3.8	3.7
Peru	0.5	5.6	3.8	5.6	4.6	6.3	5.0	5.1	5.7	3.1	3.2	2.9	3.7	2.8	2.5	2.5
Venezuela	0.5	-0.8	1.0	-6.4	0.8	5.6	1.1	0.3	3.0	56.8	62.1	64.0	21.1	40.8	59.3	42.6
<b>Asia/Pacific</b>	<b>39.8</b>	6.3	5.8	5.2	4.0	5.3	5.3	5.4	5.6	2.8	2.8	3.6	2.3	2.4	3.3	3.2
Japan	6.2	1.1	3.5	4.1	-4.1	1.4	1.7	1.6	1.4	1.1	1.3	3.2	-0.1	0.4	2.7	2.1
Australia	1.3	2.3	3.4	1.3	1.4	3.6	2.4	2.2	3.3	2.7	3.2	3.5	1.8	2.4	2.9	2.7
Emerging Asia	32.4	7.4	6.3	5.5	5.7	6.2	6.1	6.2	6.4	3.5	3.3	3.7	3.4	3.2	3.5	3.6
China	17.5	9.3	7.0	6.6	6.6	7.7	7.7	7.2	7.4	2.9	2.6	3.1	2.6	2.6	3.1	3.5
Hong Kong	0.5	2.1	3.2	3.2	3.2	1.5	2.8	3.1	3.8	4.1	4.5	4.5	4.1	4.3	4.2	4.0
India	6.6	6.8	5.3	4.7	4.9	5.1	4.7	5.4	5.9	7.0	6.5	7.1	7.5	6.3	6.3	5.6
Indonesia	1.7	5.2	6.8	3.5	4.2	6.3	5.8	5.0	5.2	8.4	7.9	7.5	4.3	7.0	6.7	5.7
South Korea	2.2	4.3	3.7	4.5	4.1	2.0	2.8	4.1	4.2	1.0	1.1	1.5	2.2	1.2	1.8	2.0
Malaysia	0.7	6.8	9.8	3.5	3.5	5.6	4.8	5.4	5.3	3.0	3.0	3.4	1.7	2.1	3.2	2.0
Philippines	0.6	4.2	5.0	8.1	8.0	6.8	7.2	6.5	6.5	3.5	4.1	4.7	3.2	3.0	4.3	3.5
Singapore	0.4	2.2	-2.5	5.0	3.0	1.3	3.7	3.5	3.4	2.2	1.7	3.6	4.6	2.4	2.8	2.6
Taiwan	1.2	1.1	10.1	1.6	4.5	1.5	2.2	4.0	4.5	1.1	1.9	2.2	1.9	0.9	1.8	1.6
Thailand	0.9	5.2	5.5	4.0	4.0	6.5	3.0	4.3	4.0	1.7	1.8	2.5	3.0	2.2	2.4	2.5
<b>Europe and Africa</b>	<b>27.3</b>	1.1	1.8	1.9	2.0	0.5	0.6	1.9	2.0	1.8	1.7	2.0	2.9	2.2	1.9	2.0
Euro area	14.8	0.5	0.7	1.2	1.6	-0.6	-0.4	1.2	1.4	0.8	0.7	1.0	2.5	1.4	0.9	1.1
Belgium	0.6	1.2	0.4	0.8	1.1	-0.1	0.1	0.9	1.3	0.9	1.2	1.2	2.6	1.2	1.3	1.7
France	3.0	-0.5	0.8	1.2	1.5	0.0	0.2	1.1	1.5	0.8	0.7	1.0	2.2	1.0	1.0	1.1
Germany	4.3	1.3	1.0	2.1	2.6	0.9	0.5	2.0	1.6	1.3	1.1	1.4	2.1	1.6	1.5	2.0
Greece	0.4	0.9	-6.1	2.2	3.2	-6.4	-3.2	0.4	1.7	-2.2	-2.3	-2.2	1.0	-0.9	-2.2	-1.8
Ireland	0.3	6.1	0.8	0.9	1.6	0.2	0.0	2.0	2.3	0.2	0.3	0.4	1.9	0.5	0.5	1.3
Italy	2.4	-0.1	0.6	1.0	1.2	-2.6	-1.8	0.8	1.0	0.7	0.5	0.5	3.3	1.3	0.5	0.7
Netherlands	0.9	0.8	0.6	0.4	0.4	-1.3	-1.0	0.5	1.1	1.3	0.7	0.9	2.8	2.6	0.8	0.6
Portugal	0.3	0.9	0.5	0.5	0.6	-3.2	-1.5	0.8	1.0	0.1	-0.2	-0.1	2.8	0.4	-0.2	-0.5
Spain	1.8	0.5	1.2	0.8	1.2	-1.6	-1.2	1.0	1.2	0.2	0.1	0.3	2.4	1.5	0.1	0.0
United Kingdom	3.1	3.1	2.8	2.4	2.2	0.3	1.9	2.6	2.4	2.1	1.8	1.9	2.8	2.6	1.8	1.9
Switzerland	0.5	2.1	1.6	1.8	1.8	1.0	1.9	1.8	1.7	0.0	0.2	0.4	-0.7	-0.2	0.5	0.9
Sweden	0.5	0.3	2.1	3.3	3.2	1.3	0.9	2.4	3.0	0.0	0.0	0.5	0.9	-0.1	0.7	2.2
Norway (mainland)	0.4	1.9	2.4	2.6	2.4	3.3	1.9	2.3	2.6	2.4	2.3	1.9	0.7	2.4	1.9	2.2
Denmark	0.3	1.4	1.6	2.0	2.0	-0.4	0.4	1.9	2.3	0.4	0.9	1.1	2.4	0.7	1.2	2.3
EM Europe & Africa	7.8	1.5	3.4	2.9	2.6	2.5	1.9	2.7	2.8	5.2	5.2	5.3	5.4	5.4	5.1	4.6
Czech Repub.	0.4	0.9	1.9	1.4	1.4	-0.9	-1.4	1.4	2.1	1.3	0.9	0.3	3.3	1.4	0.7	1.4
Hungary	0.3	3.6	1.4	2.4	2.4	-1.7	1.1	2.2	2.5	0.7	0.2	0.5	5.7	1.6	0.9	2.3
Poland	1.1	2.4	3.8	2.9	2.7	2.1	1.5	2.9	3.3	1.0	1.6	2.1	3.6	1.0	2.1	2.6
Russia	3.4	1.8	4.0	3.3	2.5	3.4	1.4	2.6	2.1	6.3	6.0	5.8	5.1	6.7	5.5	4.9
Turkey	1.5	0.0	2.7	2.6	2.5	2.2	3.8	3.3	4.1	7.5	7.9	8.6	8.9	7.5	8.1	6.5
Israel	0.4	2.2	3.2	3.0	3.0	3.5	3.4	3.0	3.2	2.1	2.3	2.0	1.6	1.7	1.7	1.8
South Africa	0.8	0.7	3.3	2.8	3.0	2.5	1.9	2.7	3.2	5.4	5.7	6.1	5.7	5.8	6.2	5.9

Note: Arrows appear next to numbers if current forecasts differ from that of the previous week by 0.5pp or more for quarterly annualized GDP, by 0.2pp or more for annual GDP and by 0.2pp or more for Inflation. Weights used for real GDP are based on IMF PPP-based GDP (5yr centred moving averages). Weights used for consumer prices are based on IMF nominal GDP (5yr centred moving averages)". \* IMF PPP-based GDP weights for 2013. Source: Barclays Research

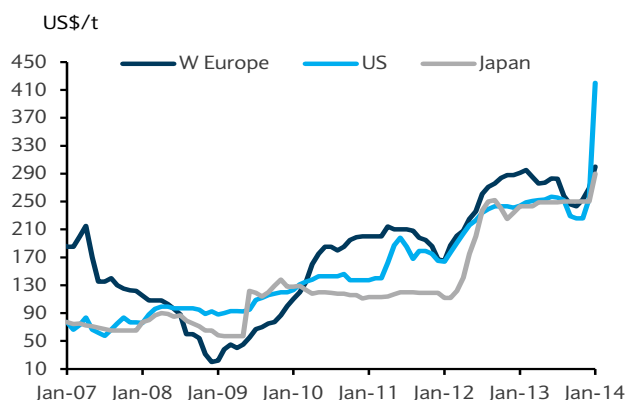
## Base Metals

## ALUMINIUM

- Price dynamics have been the main focus in the aluminium market over the past month. Regional physical premiums surged to record levels by the end of January then stabilised over the past week. The US Midwest premium has appeared to peak at close to 21 cents/lb (\$460/t) versus closer to 14 cents/lb (\$300/t) in Q4 2013. Conversely, over the same period, the LME cash price has also come under pressure trading beneath the \$1,700/t level down to a 5 year low.
- In our view, both of these price trends will be reversed. Here, our expectation assumes the increase in ingot physical premiums ultimately will be viewed as a brief spike, before trending back towards levels justified by current queues at key LME warehouses in the US and Europe. From this perspective, there should be little basis for believing our ex-China deficit projection for 2014/15 will be affected by smelters re-thinking their closure decision or sustained negative demand effects. This bolsters our view that deficit conditions will contribute to a declining stock-to-consumption ratio over the next two years that will support a sustained move higher in the LME cash price.
- Why do we believe premiums will turn lower? We have covered the basic drivers of premiums in detail in *Aluminium: Navigating the premia storm*. However, since December last year, a significant short position in the premia swap market appears to have been covered aggressively. That correction is finite and once complete (with stabilising premia a sign of this already), downward pressure should resume with a retracement to levels justified by the current length of LME delivery queue. We expect another round of pressure on premia once the new LME rules are applied from April onwards, which should reduce delivery queue length over time.

FIGURE 1

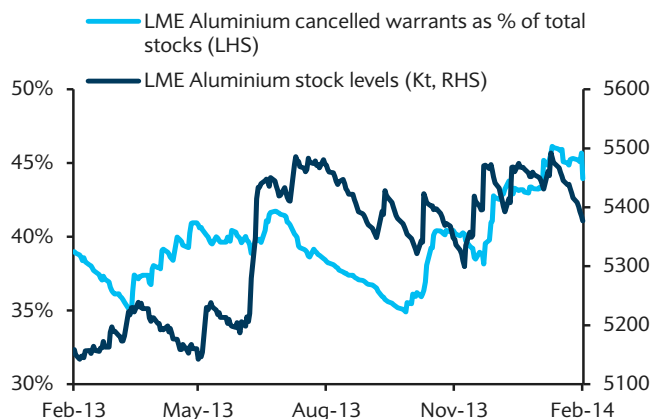
Regional ingot premiums have surged higher over the past month to new record levels



Source: Brook Hunt, CRU, IAI, Barclays Research

FIGURE 2

LME warrant cancellations remain high as the move to off-warrant for financing continues



Source: Ecwin, Barclays Research

FIGURE 3

Global supply and demand balance

(Kt)	Q1 13	Q2 13	Q3 13	Q4 13F	2013F	Q1 14F	Q2 14F	Q3 14F	Q4 14F	2014F	2015F
China	5,472	5,565	5,812	6,089	22,939	6,233	6,233	6,301	6,233	25,000	27,000
W.Europe	944	968	988	982	3,883	1,011	1,008	1,019	1,008	4,047	4,107
North America	1,238	1,257	1,235	1,179	4,909	1,083	1,087	1,196	1,184	4,550	4,723
Rest of the World	4,439	4,460	4,439	4,365	17,703	4,371	4,577	4,626	4,627	18,200	18,678
Global Production	12,093	12,251	12,475	12,616	49,434	12,698	12,905	13,143	13,051	51,797	54,509
y/y Change (%)	4.1%	3.8%	4.0%	4.2%	4.0%	5.0%	5.3%	5.4%	3.5%	4.8%	5.2%
China	5,150	5,696	6,095	6,266	23,207	5,536	6,123	6,552	6,736	24,947	26,721
W.Europe	1,707	1,709	1,620	1,612	6,649	1,759	1,760	1,669	1,661	6,848	6,985
North America	1,445	1,542	1,499	1,529	6,015	1,474	1,573	1,529	1,560	6,135	6,319
Rest of the World	3,483	3,641	3,578	3,958	14,660	3,592	3,756	3,690	4,080	15,118	15,737
Global Consumption	11,785	12,588	12,792	13,365	50,530	12,361	13,212	13,440	14,036	53,049	55,763
y/y Change (%)	5.5%	5.9%	9.2%	12.3%	8.3%	4.9%	5.0%	5.1%	5.0%	5.0%	5.1%
Balance	308	-337	-317	-749	-1,096	337	-307	-297	-985	-1,252	-1,254
Total Reported Stocks	7,304	7,315	7,008	7,012	7,012	7,349	7,042	6,745	5,760	5,760	4,891
Stock-to-consumption Ratio (wks)	8.1	7.6	7.2	6.9	6.9	7.9	7.2	6.8	5.6	5.6	4.6
LME Cash Price (US\$/t)	2,003	1,835	1,781	1,769	1,847	1,750	1,850	1,850	1,950	1,850	2,150
LME Cash Price (USc/lb)	91	83	81	80	84	79	84	84	88	84	98

Source: Brook Hunt, CRU, IAI, Barclays Research

## Aluminium production

FIGURE 4

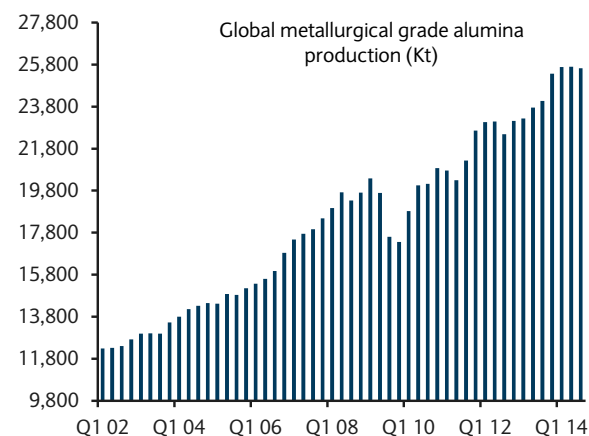
Reported primary aluminium production (Kt)

	Afr	N.Am	L.Am	Asia	W.Eur	Aus	China	CIS	E.Eur	Global	Daily
10 yr average	1,645	5,282	2,377	3,335	4,467	2,236	9,313	4,166	442	33,262	91
An. Av % change	4.0%	-2.5%	0.6%	10.7%	0.2%	0.8%	19.9%	1.7%	2.1%	5.8%	
2012	1,811	4,909	1,919	7,362	3,883	2,105	22,939	4,042	465	49,434	135
% change	7.7%	3.2%	-23.5%	58.4%	-11.4%	-8.8%	22.2%	-2.9%	0.0%	2.5%	
Q2_12	384	1,201	513	1,803	992	555	5,142	1,094	116	11,801	130
Q3_12	415	1,207	512	1,802	988	521	5,342	1,091	117	11,996	130
Q4_12	439	1,247	506	1,821	971	525	5,393	1,083	117	12,103	132
Q1_13	437	1,238	491	1,827	944	518	5,472	1,052	115	12,093	134
Q2_13	450	1,257	481	1,853	968	522	5,565	1,038	116	12,251	135
Q3_13	462	1,235	480	1,848	988	531	5,812	1,001	117	12,475	136
Q4_13	462	1,179	467	1,833	982	534	6,089	952	117	12,616	137
y/y change	5.2%	-5.5%	-7.7%	0.7%	1.1%	1.7%	12.9%	-12.1%	0.0%	4.2%	
Dec 13	156.0	395.0	158.0	627.1	326.4	179.0	2016.9	319.9	39.5	4217.8	136.1
y/y change	2.0%	-6.8%	-7.1%	1.6%	-0.3%	-0.6%	9.2%	-12.3%	0.0%	2.3%	
Year to Dec 13	1811.0	4909.0	1919.0	7361.6	3883.1	2105.0	22939.0	4041.6	464.9	49434.1	135.4
YTD y/y change	10.2%	1.2%	-6.5%	1.7%	-2.0%	-2.9%	10.5%	-8.6%	-0.3%	4.0%	

Source: IAI, Barclays Research

FIGURE 5

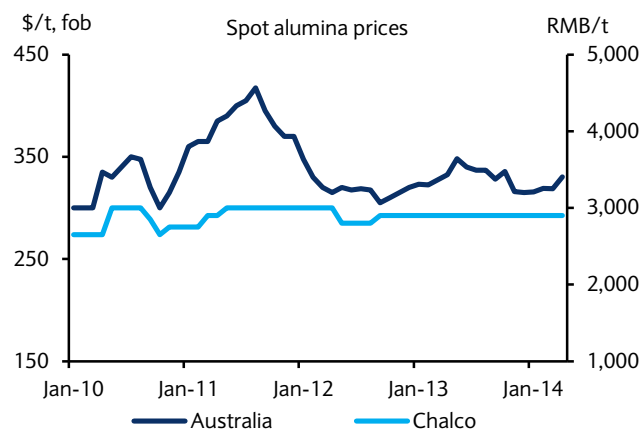
Global alumina output



Source: International Aluminium Institute, CRU, Barclays Research

FIGURE 6

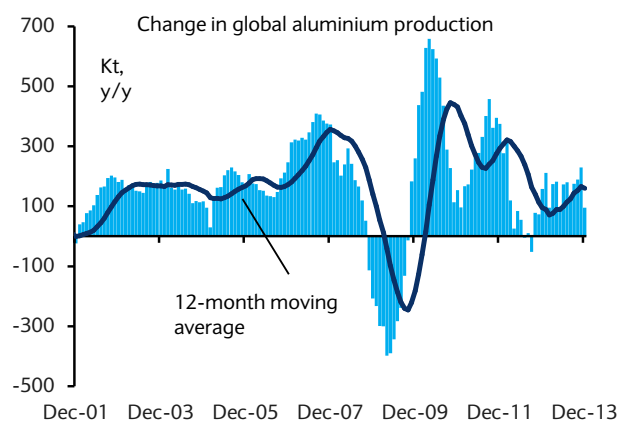
Alumina prices



Source: CRU, Antaika, Barclays Research

FIGURE 7

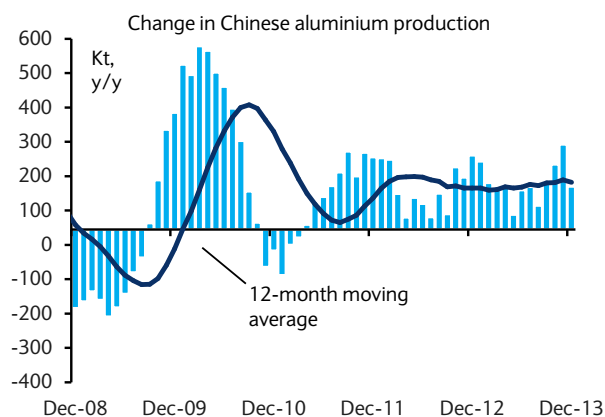
Global production trends



Source: International Aluminium Institute, Barclays Research

FIGURE 8

Change in Chinese output



Source: CNIA, Barclays Research



## Aluminium consumption

FIGURE 9

### Primary aluminium consumption (Kt)

	Europe	Africa	N.Am	L.Am	China	Asia	CIS	ROW	Global
10 yr average	6,499	438	6,541	1,308	9,131	4,366	1,015	3,483	32,780
An. Av % change	0.9%	5.5%	-2.5%	5.4%	18.3%	0.9%	4.0%	13.4%	5.5%
2012	6,422	601	6,018	1,799	20,082	7,065	1,223	3,452	46,662
% change	-2.8%	-1.8%	3.6%	1.1%	4.9%	5.3%	-1.4%	-1.2%	2.8%
Q2 12	1,609	159	1,578	459	5,185	1,742	316	835	11,883
Q3 12	1,580	148	1,491	466	5,183	1,724	299	825	11,716
Q4 12	1,573	155	1,426	423	5,077	2,001	321	920	11,896
Q1 13	1,707	149	1,445	474	5,150	1,713	303	844	11,785
Q2 13	1,709	175	1,542	466	5,696	1,869	325	806	12,588
Q3 13	1,620	155	1,499	465	6,095	1,830	301	827	12,792
Q4 13	1,612	161	1,529	464	6,266	2,061	323	949	13,365
y/y change	2.5%	3.5%	7.2%	9.7%	23.4%	3.0%	0.6%	3.2%	12.3%
Dec 13	554	54	437	161	2,104	727	104	362	4,503
y/y change	3.0%	0.0%	6.1%	8.1%	18.4%	3.0%	-1.9%	5.8%	10.3%
Year to Dec 13	6,649	640	6,015	1,869	23,207	7,473	1,252	3,426	50,530
YTD y/y change	3.5%	6.4%	0.0%	3.9%	15.6%	5.8%	2.4%	-0.8%	8.3%

Source: IAI, Barclays Research

FIGURE 10

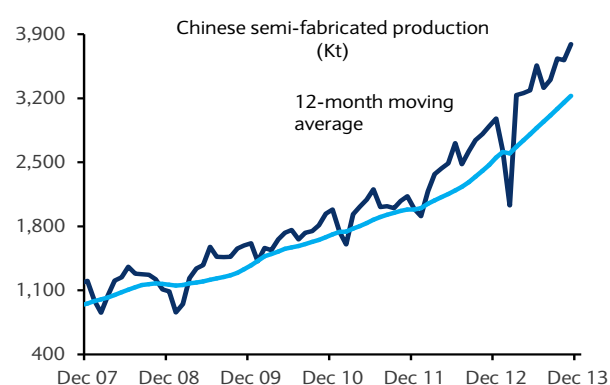
### Global aluminium consumption



Source: CNIA, China Customs, CRU, Barclays Research

FIGURE 11

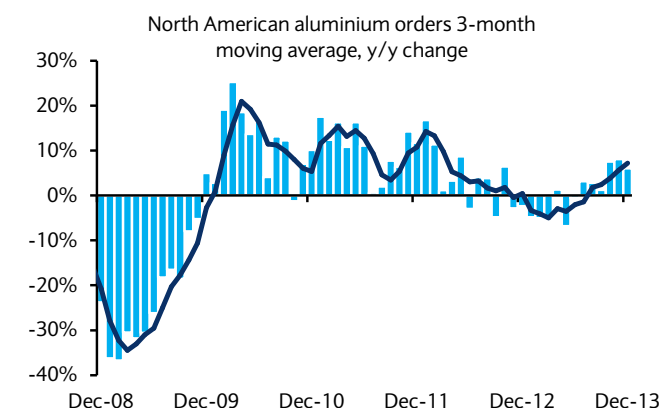
### Chinese semis output



Source: CNIA, Barclays Research

FIGURE 12

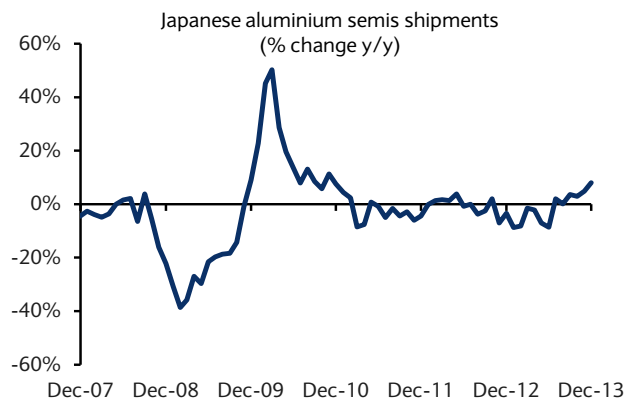
### North American fabricator orders



Source: Aluminium Association, Barclays Research

FIGURE 13

### Japanese aluminium semis shipments



Source: Japanese Aluminium Association, Barclays Research

## Supply development

FIGURE 14

New and major expansions to aluminium smelters, 2012-15 (Kt)

Smelter	Country	Net change in capacity	2012	2013	2014	2015
Wujiaqu City	China	899	650	902	1201	1550
Changji	China	755	20	150	451	775
Ras Az Zawr	Saudia Arabia	736	4	248	431	740
Changji	China	710	90	370	600	800
Weiqiao	China	700	1750	2046	2300	2450
Longxi County	China	691	613	800	1025	1304
Yulin	China	580	20	214	454	600
Taweelah	UAE	539	784	801	1066	1324
Qinghai	China	513	500	600	752	1013
Shihezi	China	503	236	357	530	738
Changji	China	485	15	120	300	500
Changjimanasi	China	450	0	104	300	450
Chenggong County	China	449	639	758	900	1088
Huilinguole	China	425	0	10	219	425
Zhongzhe	China	423	65	177	280	488
Mahan	India	360	0	39	247	360
Jharsuguda	India	355	508	536	625	863
Qijiang District	China	330	0	25	138	330
Qitai County	China	318	0	0	50	318
Korba	India	305	247	251	379	553

Source: Brook Hunt

### Recent production news

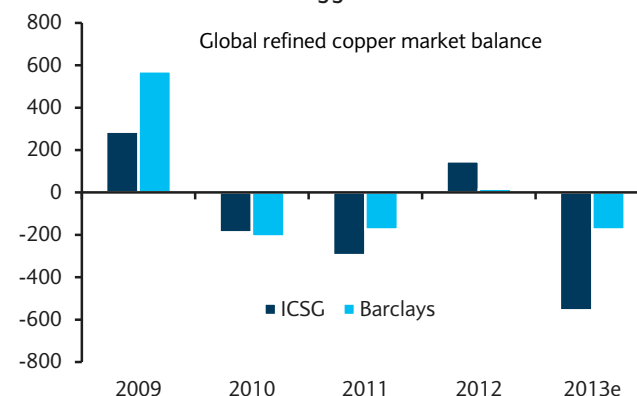
- Rusal has announced that it is evaluating plans to partially close its 128Kty Sunndsväl smelter in Sweden.
- Century Aluminium announced that a power agreement had been reached that will allow it to purchase market-based power for its 205Kty Sebree smelter in the US from February 2014.

## COPPER

- From the start of 2014 the ICSG has been adjusting its refined copper balance to reflect changes in Chinese bonded stocks. We have been doing this for some time so the ICSG's changes do not affect our balance. Our balance has, though, tightened slightly following stronger-than-expected Chinese consumption and weaker refined production in December. Record high copper imports in January also suggest that China's copper appetite was strong in early 2014. However, at a 175Kt deficit, it is still significantly smaller than the ICSG's 556Kt deficit because while we use similar adjustments for bonded stocks (a 325Kt draw in the year to October), we made further adjustments to account for our estimates of a build in domestic Chinese stocks.
- Another reason for the small tightening in our market balance is weaker refined production. There have been technical difficulties at Chinese smelters (Tongling and Jinchuan) and the two-week strike at Chuquicamata. Smelter disruptions have contributed to the tightness in spot cathode availability, as has the Chilean port strike and lack of exports from Indonesia. We estimate that around 45Kt of cathode and concentrate has been lost to the international market as a result of there being no exports from Indonesia in January. With the market forecast to be in deficit in H1 14 a sustained loss of Indonesian exports will keep the spot market feeling even tighter.
- These temporary disruptions aside, the rise in TC/RCs suggest that refined production should grow strongly in the year ahead as the chart opposite shows. This is in line with our forecast for growth to speed up from 4.6% in 2013 to 5.7% this year.

FIGURE 1

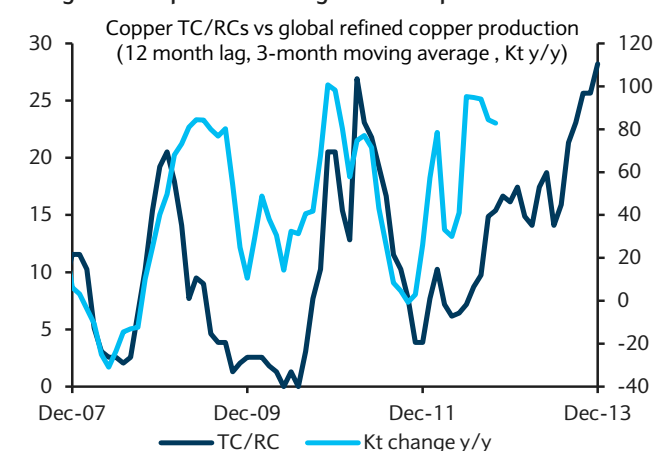
The ICSG estimate a much bigger deficit in 2013 than we do



Source: ICSG, Barclays Research

FIGURE 2

Rising TC/RCs point to stronger refined production ahead



Source: ICSG, CRU, Barclays Research

FIGURE 3

Global supply and demand balance

(Kt)	Q1 13	Q2 13	Q3 13	Q4 13F	2013F	Q1 14F	Q2 14F	Q3 14F	Q4 14F	2014F	2015F
Chile	692	688	657	725	2,762	702	699	667	736	2,804	2,804
China	1,424	1,633	1,655	1,851	6,564	1,754	1,963	1,865	2,061	7,644	8,424
USA	252	254	253	271	1,031	263	265	264	282	1,073	1,097
Global total	5,028	5,206	5,259	5,653	21,146	5,534	5,730	5,655	6,032	22,950	23,862
Disruption allowance	0%	0%	0%	2%	0%	3%	3%	3%	3%	3%	3%
Global production	5,028	5,206	5,259	5,559	21,052	5,368	5,558	5,485	5,851	22,262	23,146
y/y change	1.8%	5.8%	4.9%	5.7%	4.6%	6.8%	6.8%	4.3%	5.3%	5.7%	4.0%
N. America	574	588	566	533	2,261	588	602	581	546	2,318	2,406
Europe	871	897	910	848	3,526	886	913	926	863	3,588	3,665
China	1,948	2,609	2,396	2,367	9,320	2,182	2,739	2,516	2,580	10,017	10,668
Japan	228	245	254	247	974	236	254	263	256	1,008	1,039
ROW	1,282	1,290	1,280	1,293	5,146	1,307	1,316	1,306	1,320	5,249	5,362
Global consumption	4,904	5,629	5,406	5,288	21,227	5,200	5,825	5,591	5,565	22,181	23,140
y/y change	-1.6%	9.1%	7.9%	6.6%	5.5%	6.0%	3.5%	3.4%	5.2%	4.5%	4.3%
Global balance	124	-423	-147	270	-175	167	-267	-106	286	81	6
Total reported stocks	1,675	1,681	1,479	1,273	1,273	1,440	1,173	1,067	1,354	1,354	1,360
Stock/consumption ratio (wks)*	4.4	3.9	3.6	3.1	3.1	3.6	2.6	2.5	3.2	3.2	3.1
Chinese bonded stocks	770	425	450	525	525						
LME cash price (US\$/t)	7,931	7,148	7,073	7,153	7,326	7,100	7,300	7,100	7,000	7,125	8,000
LME cash price (USc/lb)	360	324	321	324	332	322	331	322	318	323	363

Note: \*Reported stocks/consumption ratio, exclude Chinese-bonded stocks. Source: ICSG, Barclays Research

## Copper mine production

FIGURE 4

## Reported mine production

(Kt, recoverable Cu)	Codelco	Escondida	Grasberg	Kazakhmys	Antamina	Morenci	Pelambres	Others	Total
2012	1,758	1,076	315	300	431	287	404	3,892	8,323
y/y change	-2.1%	31.6%	-17.8%	-1.5%	34.1%	2.9%	-2.0%	-1.8%	1.8%
2013	1,792	1,194	415	315	427	301	405	N/A	N/A
y/y change	1.9%	10.9%	31.7%	4.7%	-0.1%	5.0%	0.4%	N/A	N/A
Q1 12	391	240	56	72	91	69	96	891	1,879
y/y change	-8.0%	2.8%	-56.7%	-0.7%	24.1%	6.6%	5.1%	-0.7%	-4.1%
Q2 12	413	293	78	77	103	69	101	1,025	2,134
y/y change	-1.5%	35.0%	-33.5%	-5.4%	55.1%	-4.4%	0.1%	-5.1%	0.1%
Q3 12	451	254	90	79	119	73	99	958	2,086
y/y change	0.1%	72.4%	-14.6%	0.8%	32.7%	1.5%	-5.8%	-1.2%	4.9%
Q4 12	504	289	91	74	117	76	108	1,017	2,224
y/y change	0.0%	31.4%	194.5%	-0.3%	28.2%	8.4%	-5.9%	0.0%	6.3%
Q1 13	428	306	99	80	75	74	101	1,058	2,084
y/y change	9.4%	27.2%	78.2%	11.5%	-18.4%	5.9%	5.5%	18.7%	10.9%
Q2 13	415	310	63	78	103	73	103	1,083	2,173
y/y change	0.6%	5.8%	-19.7%	1.6%	0.0%	5.5%	1.2%	5.7%	1.8%
Q3 13	467	286	115	79	124	73	100	1,172	2,358
y/y change	3.6%	12.5%	27.1%	0.3%	4.2%	0.7%	0.9%	22.3%	13.0%
Q4 13	482	293	138	78	125	82	102	N/A	N/A
y/y change	-4.3%	1.3%	52.0%	6.3%	7.0%	7.7%	-5.4%	N/A	N/A

Source: Company reports

FIGURE 5

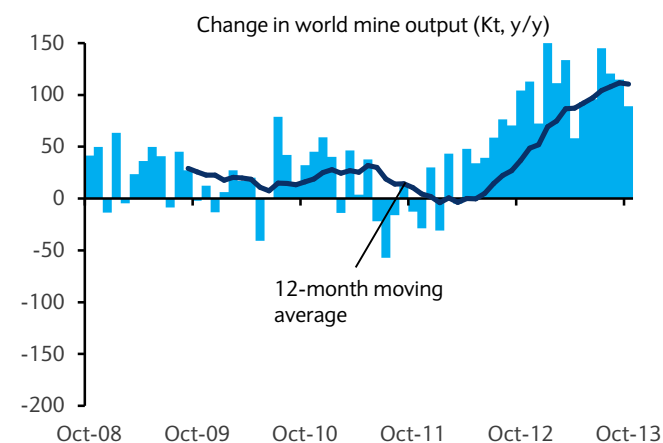
## Global mine production data (Kt)

(Kt)	Chile	Peru	Australia	China	US	ROW	Total	Concs	SXEW
2012	5,434	1,302	876	1,642	1,194	6,292	16,740	13,080	3,660
% change	3.3%	5.4%	-5.5%	26.4%	4.8%	2.2%	4.5%	4.3%	5.4%
Q1'12	1279	296	201	307	284	1483	3850	2946	904
Q2'12	1347	315	215	366	283	1587	4113	3200	913
Q3'12	1340	333	226	388	297	1637	4221	3309	912
Q4'12	1469	354	231	428	331	1701	4514	3575	939
Q1'13	1378	288	238	388	310	1671	4272	3346	926
Q2'13	1396	338	229	401	306	1697	4367	3407	960
Q3'13	1462	378	225	388	324	1825	4601	3674	927
y/y change	9.2%	13.4%	-0.4%	-0.1%	9.1%	11.5%	9.0%	11.0%	1.7%
Oct 13	504	122	76	129	109	638	1579	1265	314
y/y change	6.1%	6.5%	-2.6%	-8.6%	2.1%	11.3%	6.0%	7.8%	-0.8%
Year to Oct 13	4740	1126	767	1307	1049	5830	14820	11692	3127
y/y change	6.8%	6.3%	6.6%	8.6%	8.1%	10.4%	8.4%	10.0%	2.7%

Source: ICSG, Barclays Research

FIGURE 6

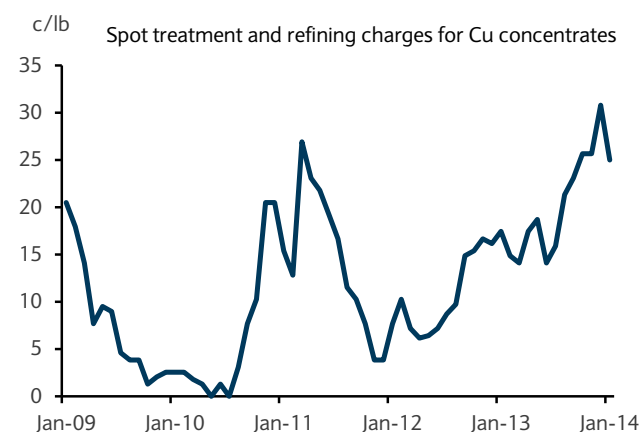
## Change in world mine output



Source: ICSG, CRU, Barclays Research

FIGURE 7

## Copper concentrate charges



Source: CRU, Barclays Research

## Copper refined production

FIGURE 8

### Reported refined production

(Kt)	China	Chile	EU-27	USA	Russia	ROW	Total	Electrowin	Primary	Secondary
10 yr average	3,648	2,988	2,533	1,200	903	7,366	18,638	3,074	12,848	2715
An. Av % change	12.8%	1.2%	1.2%	-7.9%	3.5%	-2.8%	0.4%	2.5%	-1.0%	5.8%
2012	5,824	2,902	2,780	1,001	891	6,720	20,118	3,659	12,883	3,572
% change	12.1%	-6.2%	1.0%	-3.0%	-2.3%	0.8%	2.4%	5.4%	1.5%	2.5%
Q1'12	1378	738	683	249	215	1675	4938	904	3174	858
Q2'12	1421	736	692	221	225	1626	4921	913	3101	905
Q3'12	1450	700	700	253	222	1690	5013	912	3212	889
Q4'12	1577	728	705	278	229	1744	5261	939	3391	930
Q1'13	1424	692	694	252	215	1751	5028	926	3291	929
Q2'13	1633	688	683	254	221	1726	5206	960	3270	1010
Q3'13	1655	657	663	253	222	1809	5259	927	3424	985
y/y change	14.2%	-6.2%	-5.3%	0.1%	0.4%	7.1%	4.9%	1.7%	6.6%	10.7%
Oct 13	618	239	227	83	74	616	1857	314	1186	382
y/y change	25.1%	-1.0%	-3.1%	-11.5%	-3.1%	7.5%	8.4%	-0.8%	9.0%	23.3%
Year to Oct 13	5331	2276	2266	843	732	5903	17351	3127	11171	3305
y/y change	12.4%	-5.8%	-1.9%	3.2%	-0.8%	6.1%	4.6%	2.7%	5.6%	11.6%

Source: ICSG, Barclays Research

FIGURE 9

### Changes in world refined copper output

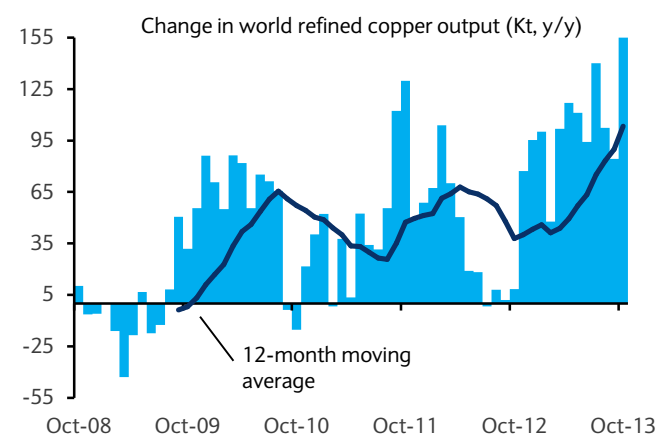


FIGURE 10

### Changes in refined copper production

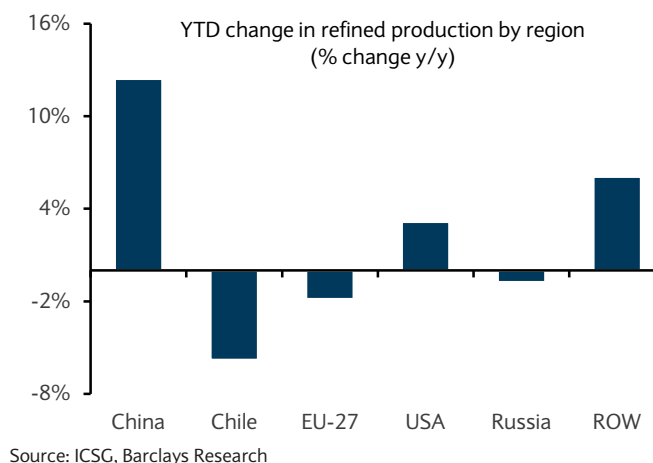


FIGURE 11

### Share of secondary in global refined output

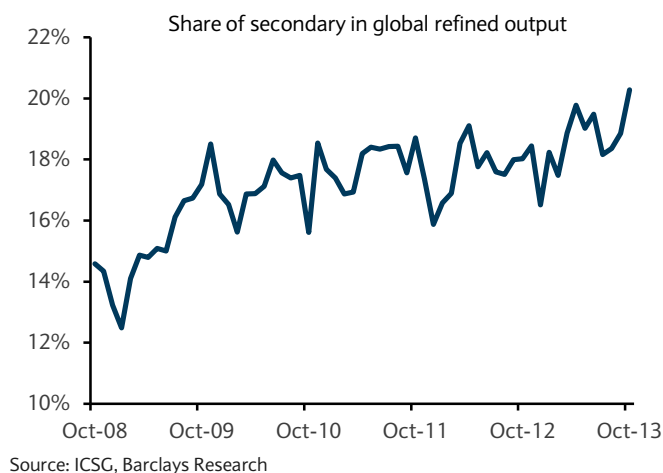
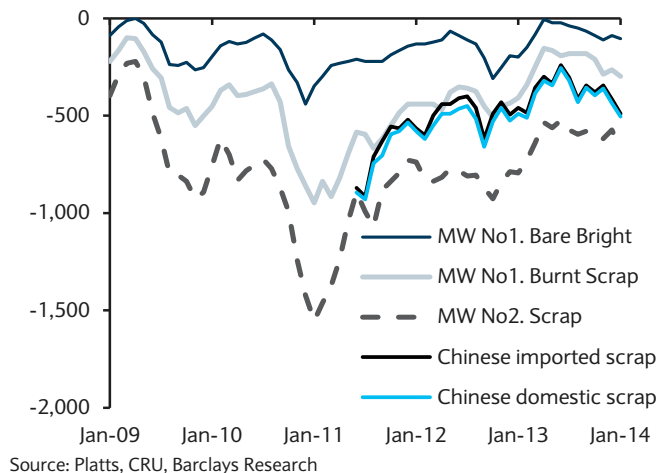


FIGURE 12

### US and Chinese copper scrap discounts



## Copper refined consumption

FIGURE 13

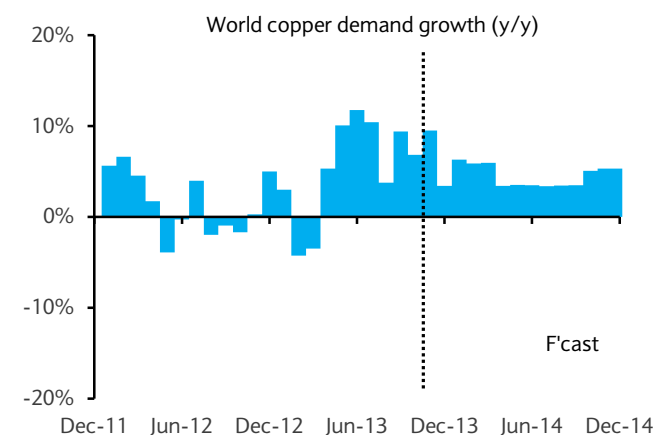
### Reported refined consumption

(Kt)	China	EU-27	USA	Japan	S.Korea	Russia	India	ROW	Total
10 yr average	5,402	3,535	2,015	1,129	832	589	497	3,981	17,980
An. Av % change	12.3%	-1.5%	-3.8%	-0.8%	0.0%	6.3%	8.3%	1.3%	2.7%
2012	8,291	3,097	1,760	985	723	650	609	3,962	20,077
% change	6.8%	-6.7%	-0.1%	-1.8%	-4.2%	-8.8%	1.5%	1.2%	1.3%
Q1 12	1982	791	457	244	208	148	154	997	4981
Q2 12	2160	805	447	253	193	139	151	1012	5161
Q3 12	2079	758	448	243	161	175	152	996	5012
Q4 12	2070	724	407	245	161	184	152	1017	4961
Q1 13	1948	748	457	228	174	173	155	1021	4904
Q2 13	2609	768	469	245	165	163	162	1047	5629
Q3 13	2396	787	448	254	164	158	158	1041	5406
y/y change	15.2%	3.9%	-0.1%	4.4%	1.9%	-9.6%	3.8%	4.5%	7.9%
Oct 13	739	253	148	88	52	58	52	360	1751
y/y change	17.0%	2.3%	3.0%	1.0%	-5.5%	-18.5%	2.6%	2.4%	6.8%
Year to Oct 13	7692	2557	1522	815	555	552	528	3469	17689
y/y change	12.3%	-1.7%	1.7%	-1.5%	-10.1%	3.5%	3.9%	3.3%	5.3%

Source: ICSG, Barclays Research

FIGURE 14

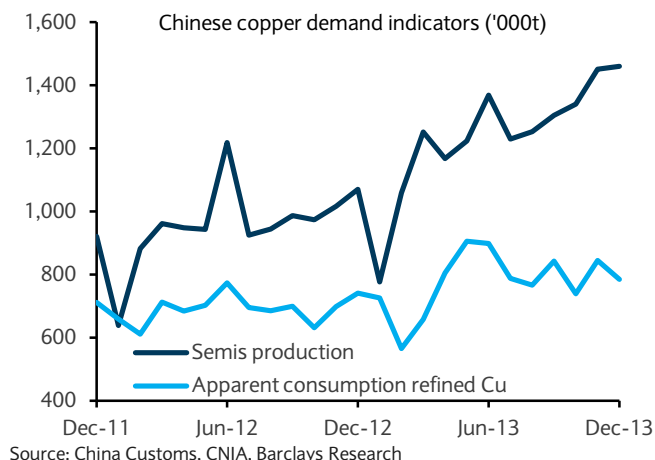
### Actual and forecast global copper demand growth



Source: ICSG, Barclays Research

FIGURE 15

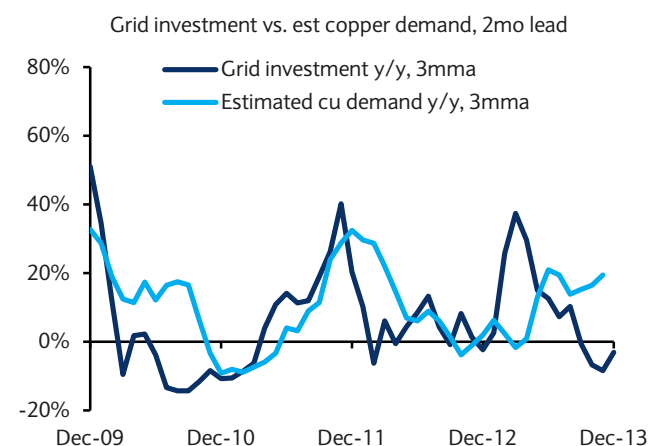
### Chinese copper consumption indications



Source: China Customs, CNIA, Barclays Research

FIGURE 16

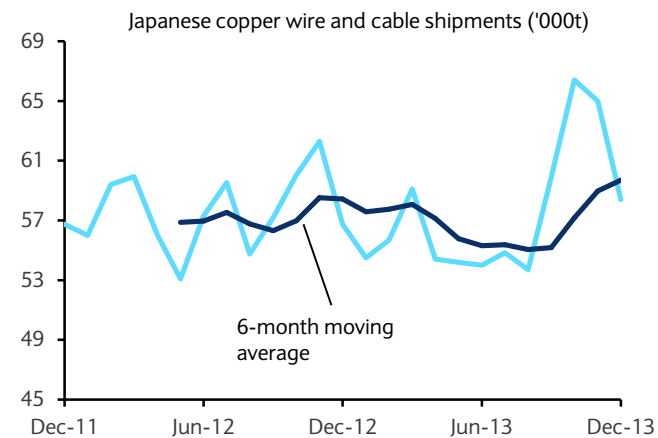
### Chinese copper consumption indicators



Source: CEIC, Barclays Research

FIGURE 17

### Japanese copper consumption indicators



Source: JWCMA, Barclays Research

## Supply development

FIGURE 18

New and major expansions to copper mines, 2012-15 (kt)

Mine	Country	net change in capacity	2012	2013	2014	2015
PT Freeport Indonesia	Indonesia	373	327	425	530	700
Las Bambas	Peru	250	0	0	0	250
Toromocho Project	Peru	225	0	0	125	225
Mina Ministro Hales	Chile	215	0	20	210	215
Collahuasi	Chile	200	245	395	445	445
Oyu Tolgoi	Mongolia	190	0	78	165	190
Batu Hijau	Indonesia	179	71	70	137	250
Salobo	Brazil	162	13	65	125	175
Caserones (ex Regalito)	Chile	160	0	0	110	160
Antapaccay	Peru	155	5	150	170	160
Escondida	Chile	153	767	890	880	920
KOV Restart and Expansion	DR Congo	149	58	100	195	207
Mutanda SxW	DR Congo	118	82	140	205	200
Sierra Gorda - Quadra	Chile	108	0	0	73	108
Buenavista (Cananea) SxW	Mexico	104	66	70	129	170
Frontier	DR Congo	90	0	40	85	90
Sentinel	Zambia	90	0	0	0	90
Morenci SxW	USA	90	203	218	253	293
Chuquibambilla	Chile	85	370	350	400	455
Bisha	Eritrea	80	0	18	90	80

Source: Brook Hunt

### Recent production news

- The Pasar smelter and refinery in the Philippines which had been damaged by a typhoon are ready to restart. However, power supply is intermittent and is preventing a full ramp up. At its peak, the smelter can produce 175Ktpy.
- Jinchuan's new 400Ktpy Fangchenggang smelter in Guangxi province in China has delayed full commissioning again. Technical issues are the cause, with the company undergoing optimisation of product quality.
- The OK Tedi mine in Papua New Guinea may have to stop production if a court order banning the disposal of waste in the local river is granted. The mine produced 120Kt copper concentrate in 2013.
- Rio Tinto's Bingham Canyon mine produced 211kt of copper concentrate in 2013. Despite a pit wall failure earlier in the year and preliminary estimates of a loss of 120Kt of concentrate production, output actually increased 29% y/y due to an increase in ore head grades.
- Concentrate production at Escondida increased 16% y/y to 886Kt in 2013 due to increased ore head grades and the completion of de-bottlenecking. SXEW production, however, fell to 305Kt from 310Kt in 2012.
- First Quantum's Cobre Panama project in Panama has been delayed by almost two years from the initial planned start date and is now scheduled to begin in late 2017. Under the new plans production will be 20% higher than previously planned with copper concentrate output averaging 320Ktpy over the mine's life. Capital costs, however, have increased to \$6.4bn from \$6.2bn.

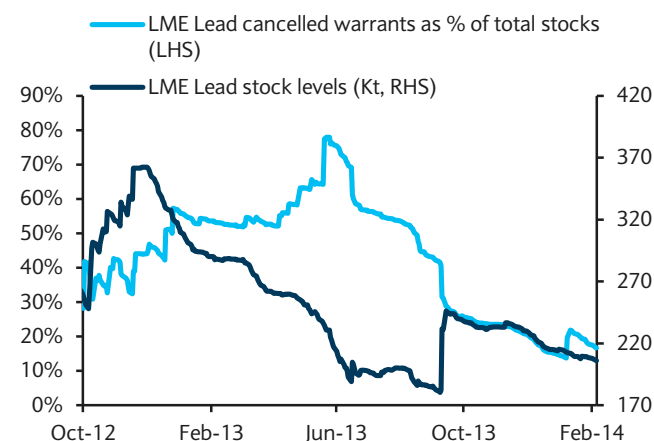


## LEAD

- The lead market continues to offer a story of tangential regional fundamental trends, namely tightness in the US set against softness in China, which has so far limited the sustainability of upside flat price moves. However, in the broadly positive fundamental context of the ex-China deficit reported by ILZSG in 2013 that is projected to continue in 2014, there has been a noticeable trend of modest tightening in LME lead time spreads.
- The tightest region in the supply-demand equation remains the US. Regional LME stocks have essentially been depleted and the regional deficit – which is projected to be 568Kt for 2014 (after 464Kt deficit in 2013) – will have to be addressed by off-warrant metal and elevated imports. Although extreme regional winter weather conditions over the past two months will have clearly bolstered battery replacement rates, spot premia have largely traded sideways year-to-date. This suggests that battery producers were relatively well stocked going into the ‘cold’ period, although the longevity of the cold spell may well start to drive more spot market purchases in February.
- If US market conditions point to potentially tighter-than-expected regional fundamentals, the Chinese market will have had the seasonal slowdown around the New Year holiday to complement its pre-existing softness. SHFE stock levels have remained unchanged thus far and the SHFE-LME ratio remains the weakest of the all the base metals by some distance. Indeed even with the 10% tax, the current ratio points to a breakeven on refined exports from China. Demand conditions have been soft year-to-date and after a 2% y/y contraction in lead consumption last year, the domestic market lacks a catalyst to suggest any significant improvement near term. Battery use in the mobile communication sector – rather than e-bikes – will likely offer the most significant upside demand risk given the 4G network construction anticipated this year.

FIGURE 1

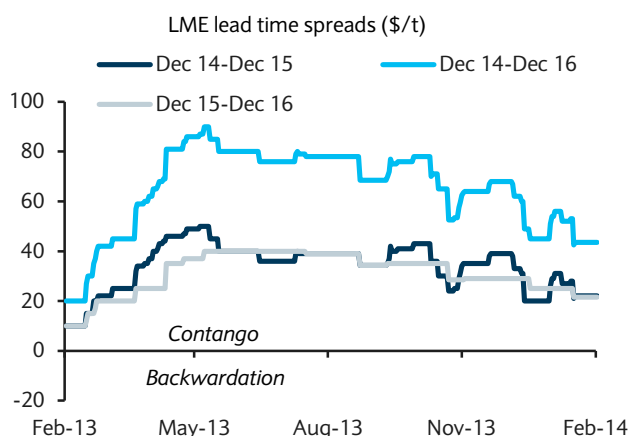
Lead LME stocks continue to trend lower with depletion at warehouses in the US



Source: Ecwin, Barclays Research

FIGURE 2

Longer dated LME time spreads continue to trend in a tightening direction amidst falling stocks



Source: Bloomberg, Barclays Research

FIGURE 3

Global supply and demand balance

(Kt)	Q1 13	Q2 13	Q3 13F	Q4 13F	2013F	Q1 14F	Q2 14F	Q3 14F	Q4 14F	2014F	2015F
China	1,048	1,190	1,140	1,135	4,514	1,111	1,262	1,220	1,215	4,808	5,096
Europe	466	444	454	458	1,821	473	450	461	465	1,848	1,867
USA	331	304	322	315	1,271	308	283	299	293	1,182	1,182
ROW	723	742	755	772	2,992	763	783	796	814	3,155	3,242
Global production	2,568	2,680	2,671	2,680	10,598	2,654	2,777	2,776	2,786	10,993	11,387
y/y change (%)	5.9%	0.9%	1.0%	-2.5%	1.2%	3.4%	3.6%	3.9%	3.9%	3.7%	3.6%
China	985	1,212	1,165	1,132	4,494	1,029	1,285	1,235	1,200	4,749	5,010
Europe	442	403	419	404	1,668	449	409	425	410	1,693	1,736
USA	467	404	431	433	1,735	470	408	435	437	1,750	1,768
ROW	697	684	678	704	2,764	726	713	714	737	2,890	2,970
Global consumption	2,591	2,702	2,694	2,673	10,660	2,674	2,815	2,810	2,784	11,083	11,483
y/y change (%)	7.6%	4.2%	2.1%	-3.2%	2.5%	3.2%	4.2%	4.3%	4.1%	4.0%	3.6%
Global balance	-23	-22	-23	7	-62	-20	-37	-34	2	-90	-97
Total reported stocks	677	602	611	593	593	573	536	502	503	503	407
Stock-to-consumption ratio	3.4	2.9	3.0	2.9	2.9	2.8	2.5	2.3	2.4	2.4	1.9
LME cash price (US\$/t)	2301	2,053	2,102	2,111	2,142	2,200	2,200	2,300	2,350	2,263	2,513
LME cash price (USc/lb)	104	93	95	96	97	100	100	104	107	103	114

Source: Brook Hunt, ILZSG, Barclays Research

## Lead mine production

FIGURE 4

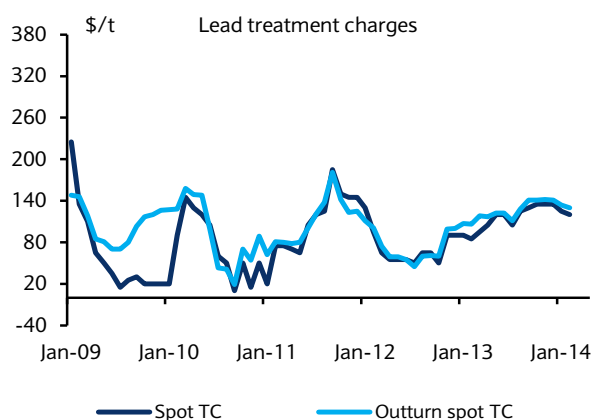
### Global mine production

(Kt, recoverable Pb)	Europe	US	Americas	China	Asia	Africa	Oceania	Global
10 yr average	275	407	592	1,339	208	107	627	3,555
An. Av % change	-0.8%	-1.5%	0.2%	11.2%	-5.6%	-6.3%	-0.3%	3.1%
2012	373	345	686	2,838	324	107	559	5,232
% change	3.5%	1.0%	4.2%	20.4%	15.7%	3.1%	-2.9%	11.8%
Q1'12	95	86	170	572	84	29	140	1,175
Q2'12	94	85	180	773	77	26	148	1,382
Q3'12	94	88	170	769	72	25	138	1,357
Q4'12	90	87	166	724	91	28	133	1,318
Q1'13	90	80	163	581	89	24	123	1,149
Q2'13	98	87	163	784	87	23	176	1,418
Q3'13	97	88	165	749	85	25	160	1,369
Q3 13 y/y change	2.8%	0.1%	-3.2%	-2.7%	18.2%	0.0%	16.2%	0.9%
Nov 13	31	29	57	285	30	8	57	496
y/y change	1.7%	0.7%	3.5%	15.4%	5.0%	-7.8%	43.0%	13.3%
Year to Nov 13	348	313	603	2,644	321	89	572	4,889
YTD y/y change	1.3%	-0.7%	-4.1%	1.3%	10.5%	-9.1%	12.3%	2.0%

Source: ILZSG, Barclays Research

FIGURE 5

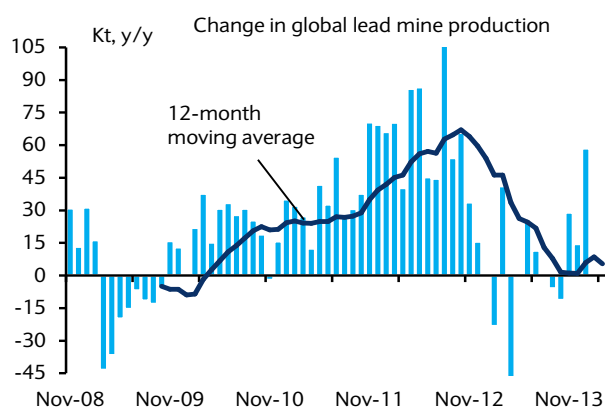
### Lead concentrate treatment charges



Source: CRU, Barclays Research

FIGURE 6

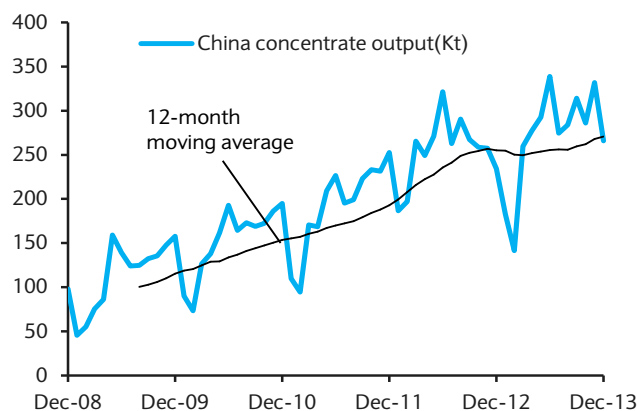
### Change in global lead mine output



Source: ILZSG, Barclays Research

FIGURE 7

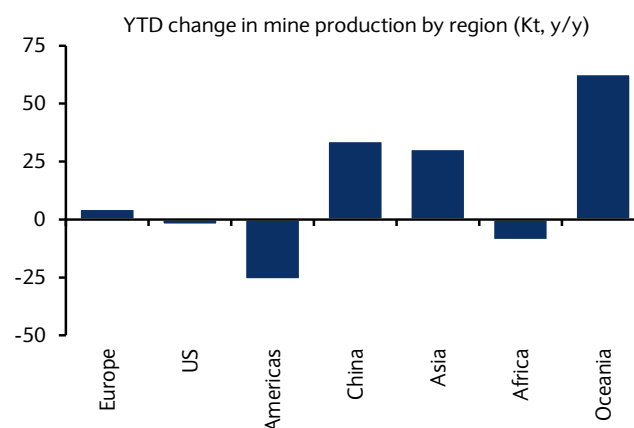
### Chinese mine output



Source: CNIA, China Customs, Barclays Research

FIGURE 8

### Regional trends in lead mine production



Source: ILZSG, Barclays Research

## Lead refined production

FIGURE 9

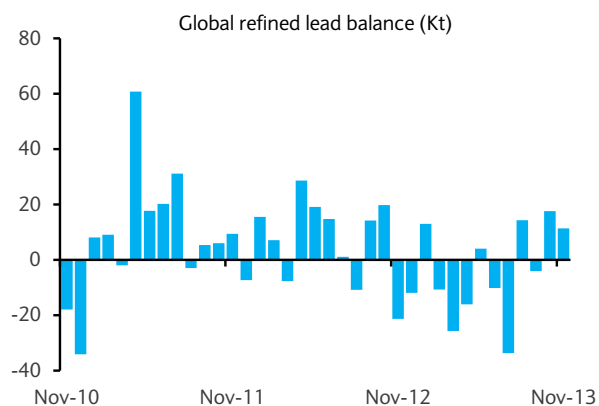
### Reported refined production

	Europe	Africa	US	Americas	China	Asia	Oceania	Global
10 yr average	1,775	121	1,305	778	2,485	1,215	265	7,987
An. Av % change	-2.2%	-2.5%	-1.3%	1.9%	19.3%	4.5%	-0.6%	4.7%
2012	1,756	102	1,221	940	4,646	1,704	203	10,473
% change	0.0%	-12.3%	-2.1%	-2.0%	0.0%	7.7%	-13.8%	-0.7%
Q1'12	451	28	306	243	946	425	58	2,424
Q2'12	436	29	305	239	1,195	430	57	2,657
Q3'12	432	23	302	228	1,243	414	35	2,644
Q4'12	437	22	308	231	1,262	435	54	2,749
Q1'13	466	24	331	239	1,048	414	46	2,568
Q2'13	444	24	304	246	1,190	418	54	2,680
Q3'13	454	24	322	249	1,140	435	47	2,671
y/y change	5.0%	5.2%	6.5%	9.3%	-8.3%	5.2%	34.7%	1.0%
Nov 13	154	8	105	81	387	147	21	902
y/y change	5.9%	11.0%	1.8%	2.9%	-8.0%	2.9%	27.1%	-1.3%
Year to Nov 13	1,672	89	1,166	895	4,184	1,557	189	9,752
YTD y/y change	3.8%	-6.3%	4.2%	3.4%	-1.0%	0.1%	3.2%	2.0%

Source: ILZSG, Barclays Research

FIGURE 10

### Global lead market balance



Source: ILZSG, Barclays Research

FIGURE 11

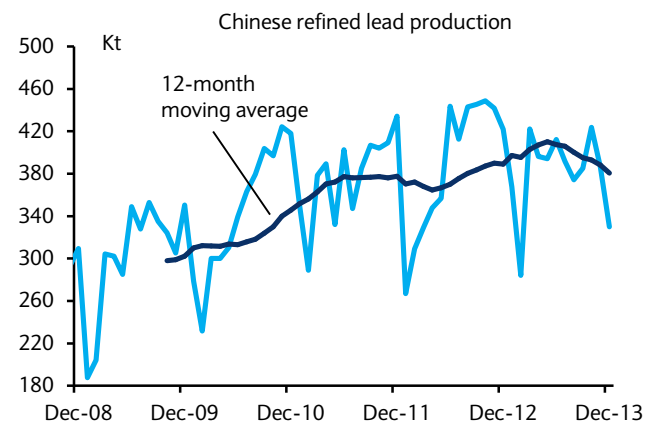
### Change in global refined production



Source: ILZSG, Barclays Research

FIGURE 12

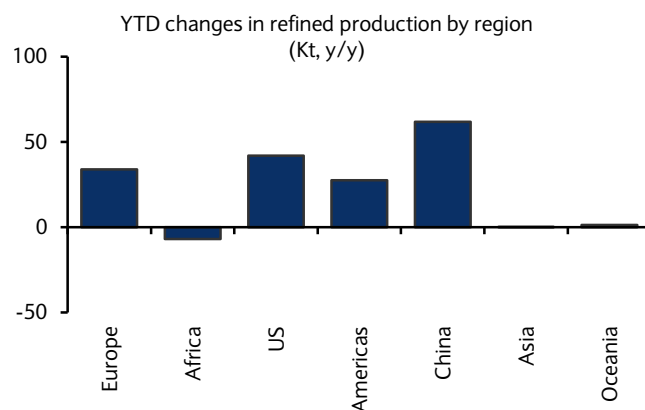
### Chinese refined lead output



Source: CNIA, China Customs, Barclays Research

FIGURE 13

### Regional trends in refined output



Source: ILZSG, Barclays Research

## Lead refined consumption

FIGURE 14

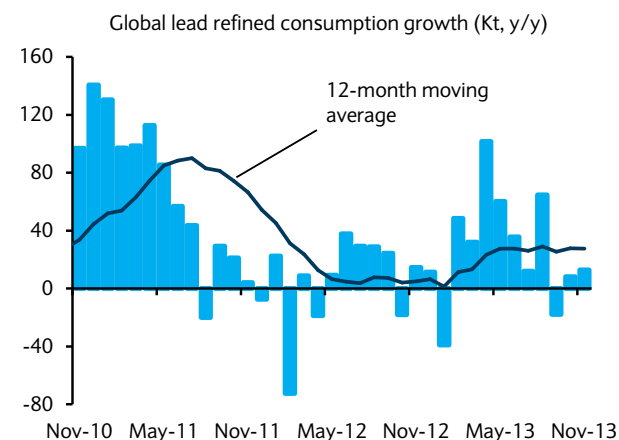
### Reported consumption

	Europe	Africa	US	Americas	China	Asia	Oceania	Global
10 yr average	1,914	107	1,538	571	2,240	1,689	34	7,989
An. Av % change	-2.6%	-3.1%	-2.2%	2.1%	20.1%	2.1%	-4.2%	3.9%
2012	1,604	100	1,499	628	4,629	2,035	22	10,404
% change	-0.9%	3.2%	-2.1%	-3.6%	0.9%	7.2%	-0.4%	0.1%
Q1 12	419	24	375	163	963	493	6	2,409
Q2 12	383	24	360	157	1,212	486	7	2,594
Q3 12	382	26	345	162	1,243	511	5	2,639
Q4 12	420	27	419	146	1,212	546	4	2,762
Q1 13	442	29	467	153	985	511	5	2,591
Q2 13	403	25	404	141	1,212	511	7	2,702
Q3 13	419	23	431	147	1,165	504	5	2,694
Q3 13 y/y change	9.8%	-11.0%	25.0%	-9.1%	-6.2%	-1.3%	-5.9%	2.1%
Nov 13	134	8	141	53	384	169	2	891
y/y change	-8.0%	-22.6%	-0.8%	9.2%	-5.1%	-7.1%	12.5%	-4.7%
Year to Nov 13	1,532	93	1,583	547	4,164	1,852	20	9,791
YTD y/y change	4.9%	-0.2%	17.5%	-5.8%	-1.7%	0.1%	2.0%	3.3%

Source: ILZSG, Barclays Research

FIGURE 15

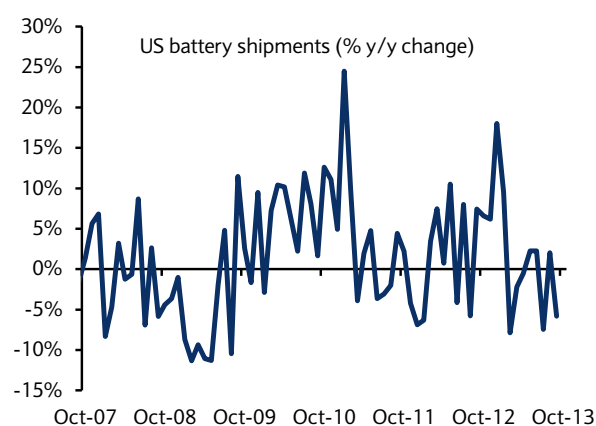
### Global lead consumption



Source: ILZSG, Barclays Research

FIGURE 16

### US battery shipments



Source: CRU, Barclays Research

FIGURE 17

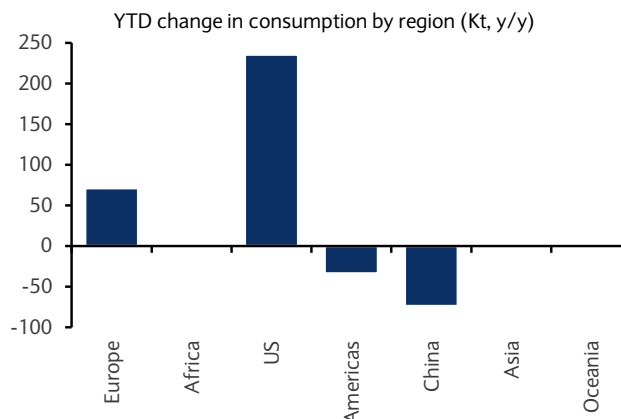
### Chinese lead apparent consumption



Source: CNIA, China Customs, Barclays Research

FIGURE 18

### Regional trends in refined lead consumption



Source: ILZSG, Barclays Research

## Supply development

FIGURE 19

New and major expansions to lead mines, 2012-15 (Kt)

Mine	Country	net change in capacity	2012	2013	2014	2015
Paroo Station / Magellan	Australia	90	0	55	90	90
Mount Isa Pb/Zn	Australia	77	153	200	230	230
Lucky Friday	US	28	0	13	28	28
Zawar	India	26	0	0	21	26
Doe Run	US	23	173	184	188	196
Altintopkan	Tajikistan	20	14	18	18	33
Changba (Baiyin)	China	18	12	24	30	30
Garpenberg	Sweden	17	25	28	28	42
Rampura-Agucha	India	17	60	70	76	77
Broken Hill	Australia	14	54	55	68	68
Duddar	Pakistan	14	1	6	12	14
Kyzyl Tashtygskoe	Russia	13	0	13	13	13
Pachapaqui	Peru	12	1	9	9	13
Khandiza	Uzbekistan	12	6	17	18	18
Santander	Peru	11	0	6	9	11
Escobal	Guatemala	10	0	2	9	10
Del Toro	Mexico	10	0	3	10	10
Cannington	Australia	9	21	43	39	30

Source: Brook Hunt, Barclays Research

### Recent production news

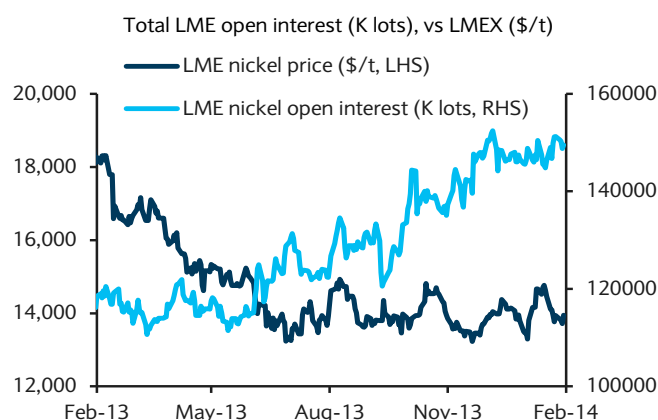
- Ivonia announced that it has met its 2013 production guidance (released on 13 May 2013) for its Paroo Station lead mine in Western Australia. The mine produced 17,896t of lead in concentrate in the final quarter of 2013 and 44,004t in the full year. Operations have achieved record levels of production in the past two quarters, having restarted in April 2013. The company added that heavy rainfall in January has not affected production at the mine, but that shipments to the port of Fremantle have been disrupted by a temporary 2-3 weeks suspension of a railway line from Leonora to Kalgoorlie that is used to transport the lead concentrate.

## NICKEL

- The nickel market has entered a period of post-Indonesian ban flux, with scepticism about the sustainability of its application, combined with limited signs of physical market effect, constraining conviction towards the metal. In this context, we expect a modestly higher trading range to take hold in H1 14 as it becomes clearer that the ban will not be reversed and constraints on NPI RKEF activity become more visible. Significant net short CTA positioning remains in the market and we believe that if it trades above \$15,000/t for several sessions, the risks of a short covering rally will rise.
- There have been some physical market signals in the Chinese nickel sector that can legitimately be linked to the Indonesian ban. Since mid-Q4 13, there has been a clear-cut increase in high grade (2%) ore prices, which has largely been sourced from Indonesia. SMM has reported that ore port stocks have fallen modestly (down close to 200Kt) since the middle of January, although they are still significantly elevated relative to historical levels. NPI prices have so far remained unchanged in January, with stainless mills slowing activity and a related moderation in raw material purchases ahead of the Chinese New Year. However, we believe it is only a matter of time before the rise in ore prices starts to feed into cost inflation in the NPI sector and, in turn, NPI prices.
- China aside, another area of focus has been improving sentiment in the stainless steel sector, particularly in Europe, which comes amid consecutive years of regional nickel demand contraction. Set against January being the strongest manufacturing PMI for Europe since May 2011, anecdotal evidence points to modest supply chain restocking, an effect largely absent in recent years. In this context, Aperam, a major European stainless producer, noted a pick-up in capital goods/auto sector demand and some stock builds.

FIGURE 1

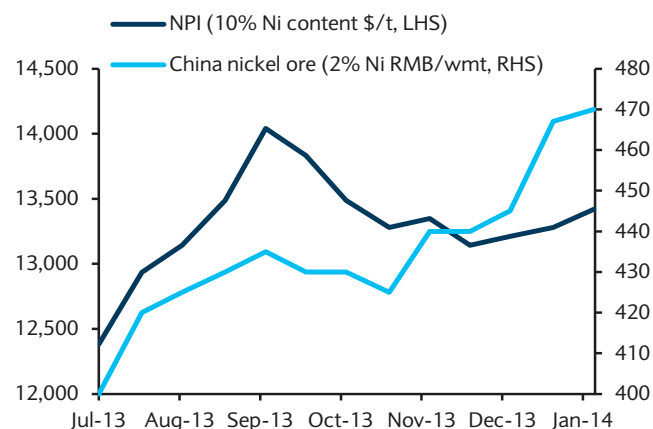
LME OI data point to significant short positioning in the market, thus far unmoved by the Indo ban price effects



Source: EcoWin, Barclays Research

FIGURE 2

Chinese nickel ore prices have moved modestly higher since early Q4 but have yet to support an increase in NPI prices



Source: SMM, Barclays Research

FIGURE 3

Global supply and demand balance

(Kt)	Q1 13	Q2 13	Q3 13	Q4 13F	2013F	Q1 14F	Q2 14F	Q3 14F	Q4 14F	2014F	2015F
China (total)	173	153	178	226	730	208	160	170	180	718	674
China NPI	109	104	122	125	455	120	110	105	95	430	380
Russian Federation	59	57	63	63	242	59	57	63	63	242	242
Global Production	480	460	490	546	1,976	513	467	480	502	1,962	1,972
y/y change (%)	11.6%	8.6%	13.5%	16.7%	12.7%	7.1%	1.5%	-2.0%	-8.2%	-0.7%	0.5%
China	218	213	226	245	902	247	230	244	264	985	1,064
US	33	33	33	34	133	34	34	34	35	138	144
Europe	91	86	78	85	339	93	88	79	86	346	353
Global Consumption	438	432	438	461	1,769	479	459	466	491	1,894	2,007
y/y change (%)	6.0%	4.8%	8.7%	7.2%	6.6%	9.2%	6.1%	6.5%	6.5%	7.1%	5.9%
Global Balance	41	28	52	86	207	35	8	14	11	68	-35
Total stocks	264	288	333	366	366	401	409	423	434	434	394
Stocks-to-consumption Ratio (wks)	7.2	8.0	9.1	9.5	9.5	10.1	10.7	10.9	10.6	10.6	9.1
LME Cash Price (US\$/t)	17,314	14,963	13,916	13,909	15,025	14,750	15,000	15,000	15,250	15,000	17,000
LME Cash Price (USc/lb)	785	679	631	631	682	669	680	680	692	680	771

Source: Antaike, Brook Hunt, CRU, INSG, Barclays Research

## Nickel production

FIGURE 4

### Global mine production

(JKt, recoverable Ni)	Africa	Canada	America	Asia	Russia	Europe	Australia	Oceania	World
10 yr average	78	200	231	347	266	49	186	113	1,470
An. Av % change	1.6%	-1.8%	0.6%	11.3%	1.4%	8.2%	0.1%	1.0%	3.0%
2012	89	204	287	870	270	74	246	137	2,178
% change	11.7%	-6.9%	8.6%	25.2%	0.0%	-0.8%	14.4%	4.5%	11.7%
Q1'12	19	51	74	179	68	17	60	24	491
Q2'12	22	54	72	237	68	17	63	31	564
Q3'12	23	45	71	219	68	20	62	41	551
Q4'12	25	54	69	235	68	20	61	41	572
Q1'13	26	59	69	190	60	20	59	36	517
Q2'13	29	59	68	276	60	18	62	36	608
Q3'13	28	48	67	262	60	20	62	42	589
Q3 13 y/y change	19.1%	6.2%	-5.9%	19.6%	-11.1%	-4.1%	-1.0%	2.0%	6.9%
Nov 13	10	18	22	91	20	7	21	17	204
Nov 13 y/y change	15.7%	-1.4%	-6.3%	8.8%	-11.1%	4.8%	1.5%	12.1%	3.5%
Year to Nov 13	101	204	248	909	220	70	224	149	2125
YTD y/y change	25.6%	9.9%	-6.1%	14.6%	-11.1%	4.4%	0.1%	15.4%	6.8%

Source: International Nickel Study Group, Barclays Research

FIGURE 5

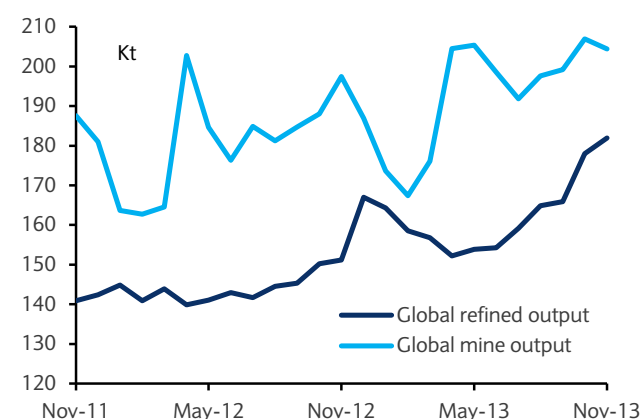
### Reported primary nickel production

(Kt)	Africa	Canada	Americas	China	Asia	Russia	Europe	Oceania	World
10 yr average	48	141	148	185	179	261	223	161	1,346
An. Av % change	-3.3%	-2.4%	0.4%	20.3%	1.9%	1.7%	2.8%	-0.9%	2.9%
2012	41	140	155	519	209	256	259	174	1,753
% change	12.7%	-1.9%	20.6%	19.3%	7.6%	-3.2%	-0.1%	15.9%	8.8%
Q1'12	9	41	41	112	49	66	68	44	430
Q2'12	9	41	40	118	50	63	59	43	424
Q3'12	11	28	38	125	56	62	66	45	432
Q4'12	12	29	36	164	54	65	66	42	468
Q1'13	13	40	34	173	53	59	63	45	480
Q2'13	16	36	36	153	56	57	63	44	460
Q3'13	14	28	35	178	59	63	65	48	490
Q3 13 y/y change	28.3%	-0.4%	-7.9%	42.7%	5.5%	0.6%	-2.5%	7.2%	13.5%
Nov 13	5	11	11	74	20	21	22	18	182
Nov 13 y/y change	22.3%	16.0%	-1.6%	39.5%	18.1%	-0.6%	0.7%	43.6%	20.4%
Year to Nov 13	52	126	128	646	209	222	235	173	1790
YTD y/y change	39.5%	-3.4%	-10.4%	42.0%	10.1%	-5.3%	-1.1%	8.5%	12.8%

Source: International Nickel Study Group, Barclays Research

FIGURE 6

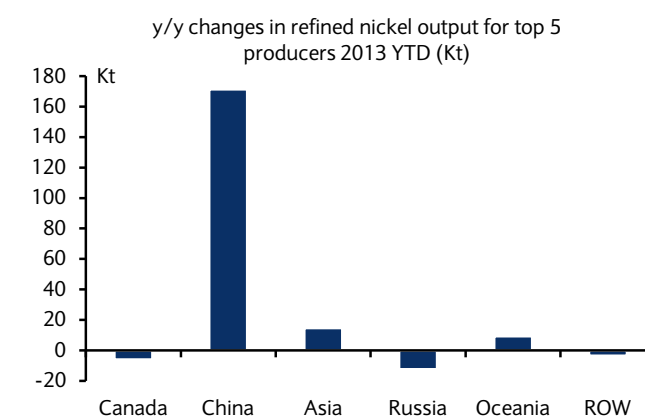
### Global mine output and refined output



Source: International Nickel Study Group, Barclays Research

FIGURE 7

### Refined nickel production by region



Source: International Nickel Study Group, Barclays Research



## Nickel refined consumption

FIGURE 8

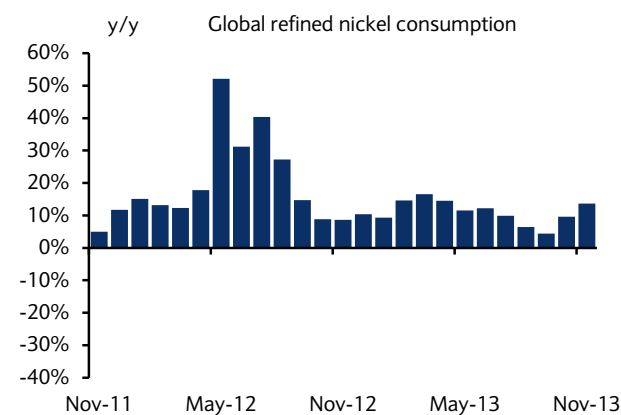
### Refined nickel consumption

(Kt)	US	America	China	Japan	Asia	Europe	ROW	World
10 yr average	125	37	260	169	212	431	38	1,272
An. Av % change	-2.1%	-3.2%	24.9%	-2.9%	0.1%	-1.5%	-0.9%	2.8%
2012	136	31	755	132	200	363	27	1,659
% change	2.4%	-5.5%	7.2%	-13.0%	2.6%	-0.6%	2.6%	3.2%
Q1 12	34	8	167	34	51	96	8	413
Q2 12	34	8	187	34	49	94	7	413
Q3 12	34	8	186	32	50	87	6	403
Q4 12	34	8	215	32	50	86	6	430
Q1 13	33	8	218	29	53	91	7	438
Q2 13	33	8	213	32	52	86	7	432
Q3 13	33	8	226	36	51	78	6	438
Q3 13 y/y change	-2.7%	-0.6%	21.5%	13.6%	3.0%	-11.2%	-3.2%	8.7%
Nov 13	11	3	80	11	17	28	2	151
Nov 13 y/y change	-2.7%	3.3%	9.6%	-1.0%	0.0%	-2.0%	-22.7%	3.9%
Year to Nov 13	121	29	817	120	189	311	24	1609
YTD y/y change	-2.7%	1.5%	19.8%	-1.8%	3.3%	-7.3%	-7.8%	6.2%

Source: International Nickel Study Group, Barclays Research

FIGURE 9

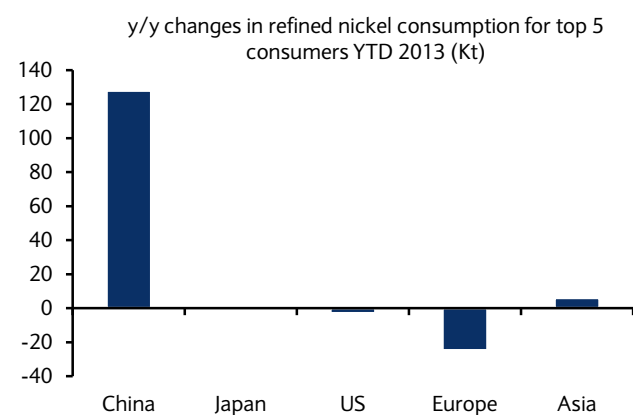
### Global refined nickel consumption growth



Source: International Nickel Study Group, Barclays Research

FIGURE 10

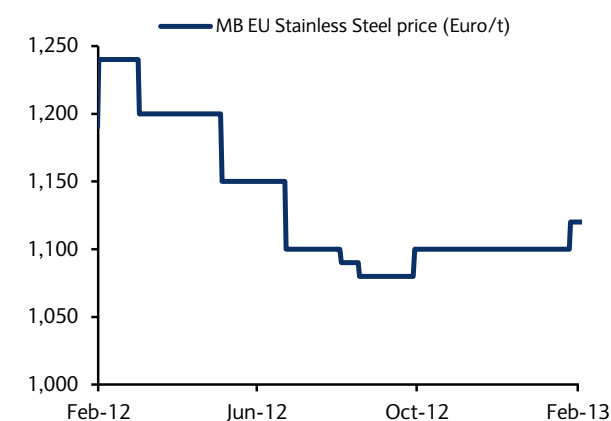
### Refined nickel consumption by region



Source: International Nickel Study Group, Barclays Research

FIGURE 11

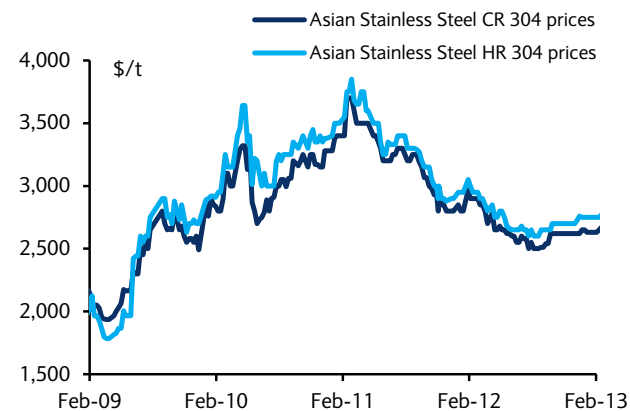
### European base stainless steel prices



Source: Thomson Datastream, Barclays Research

FIGURE 12

### Asian base stainless steel prices



Source: EcoWin, Barclays Research

## Supply development

FIGURE 13

New and major expansions to nickel mines, 2012-15 (units kt)

Mine	Country	Net change in capacity	2012	2013	2014	2015
Ambatovy	Madagascar	51	7	33	53	59
Koniambo	New Caledonia	39	0	16	26	39
Philippines Ore	Philippines	33	193	204	223	226
Indonesian Ore	Indonesia	31	354	418	385	385
Taganito	Phillipines	28	0	4	17	28
VNC	New Caledonia	23	15	14	32	38
Soroaka	Indonesia	22	74	86	94	97
Ramu	PNG	18	7	13	22	25
Tagaung Taung	Myanmar	16	2	13	17	19
Codemin (Niquelandia)	Brazil	11	0	5	11	11
Nunavik	Canada	10	0	3	8	10
Trojan	Zimbabwe	9	0	3	8	9
Totten	Canada	8	0	0	6	8
Kevitsa	Finland	7	4	10	10	11
Vale Sudbury	Canada	6	4	7	9	9
Guaxilan - Garnierite	China	5	3	8	8	8
Raglan	Canada	5	29	34	34	34

Source: Brook Hunt, Barclays Research

### Recent production news

- Norilsk Nickel has reported that total production in 2013 fell 5% y/y, to 285Kt. The contraction was attributed to lower nickel ore grades at the Botswana operations, closure of Lake Johnston operations, technological problems at the Boliden smelter, and operational issues at the Talvivaara mine.
- Sheritt has announced that its Ambatovy HPAL nickel operation in Madagascar has reached commercial operation levels, having surpassed its 70% ore throughput (of nameplate capacity) over a 30-day period. Ambatovy nameplate capacity is 60Kty.
- First Quantum Minerals has reported record production at its HPAL Ravensthorpe operation in Q4 13 of 10.2Kt, as higher ore grades and throughput levels strengthened.

## TIN

- The tin market has started 2014 with a significant surprise contraction in Indonesian refined export levels in January. Following the surge in exports to a two-year high in December (13.6Kt) levered to the increase in ICDX trading participation, last month exports fell almost 50% y/y to 4.6Kt. The ITRI attribute this decline to two factors: lower production in Indonesia owing to the effect of monsoon season conditions and, more significant, a reduction in ICDX trading participation due to the premium in ICDX price versus LME. This certainly supports the trend of continued draws in LME stocks, which at 8.8Kt are at the lowest level since February 2009.
- The Indonesian government has released its production forecasts for the year, which place refined tin output at 88Kt in 2014, effectively flat with 2013. If fully exported, this points to an average 7Ktm export level through the year, with ICDX-LME price differentials likely to create significant monthly swings in export levels, as witnessed over the past two months. Flat production levels in 2014 from the world's largest refined tin exporter are certainly a key component in deficit expectation for the global tin market this year.
- If Indonesia has provided a tightening dynamic to the refined tin market so far in 2014, China continues to offer a counterbalancing softening force. Net imports in Q4 13 were at the weakest level since mid-2007, as record strength in domestic refined production combined with still-ample domestic inventories (ITRI estimates these were close to 20Kt at the beginning of the year) effectively to erase refined import needs. There are few signs that this has changed early in 2014 with the import arbitrage window firmly shut. On the current trend, it is difficult to see China becoming a tightening dynamic on the refined market this year. Much will hinge on whether global growth conditions convert into improved electronics demand (and product exports), which could accelerate the tin destocking cycle in China.

FIGURE 1

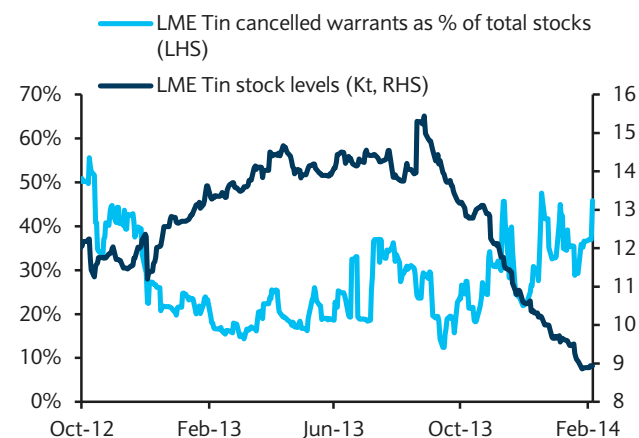
Indonesian refined exports fell sharply in January as the monsoon and ICDX-LME premium weighed on trade



Source: Reuters, Barclays Research.

FIGURE 2

Despite ongoing Chinese import weakness, LME stock draws have benefitted from Indonesian export fall



Source: Ecwin, Barclays Research

FIGURE 3

Global supply and demand balance

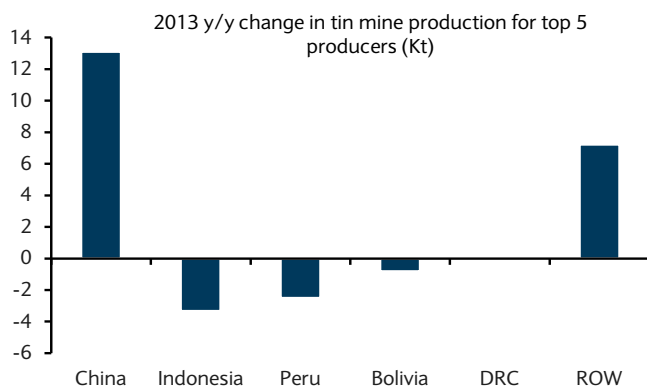
(Kt)	2007	2008	2009	2010	2011	2012	2013F	2014F	2015F
Global production	354	340	340	354	356	335	341	345	352
y/y change (%)	-0.9%	-4.0%	0.0%	4.3%	0.4%	-5.7%	1.7%	1.2%	2.0%
Global consumption	373	351	325	362	360	338	344	350	356
y/y change (%)	1.3%	-5.9%	-7.3%	11.4%	-0.7%	-6.0%	1.8%	1.7%	1.7%
US stockpile sales	8	4	0	0	0	0	0	0	0
Global balance	-11	-7	15	-8	-4	-3	-3	-5	-4
Total reported stocks	32	31	46	36	35	31	25	20	16
Stocks-to-consumption ratio (wks)	4.4	4.5	7.4	5.2	5.1	4.8	3.8	3.0	2.3
LME cash price (US\$/t)	14542	18500	13579	20407	26122	21085	22312	26000	30000
LME cash price (USc/lb)	660	839	616	926	1182	941	996	1160	1339

Source: CRU, ITRI, Barclays Research

## Tin supply and demand

FIGURE 4

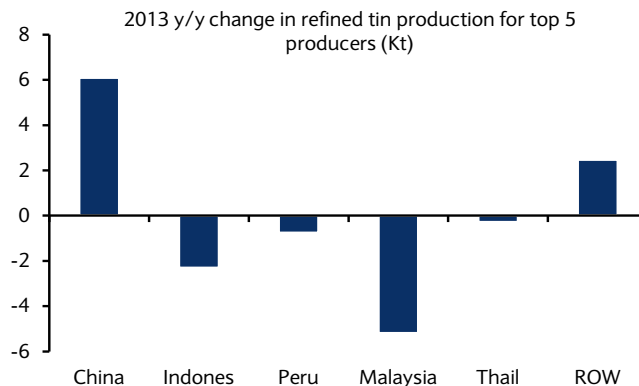
### Regional tin mine production



Source: ITRI, Barclays Research

FIGURE 5

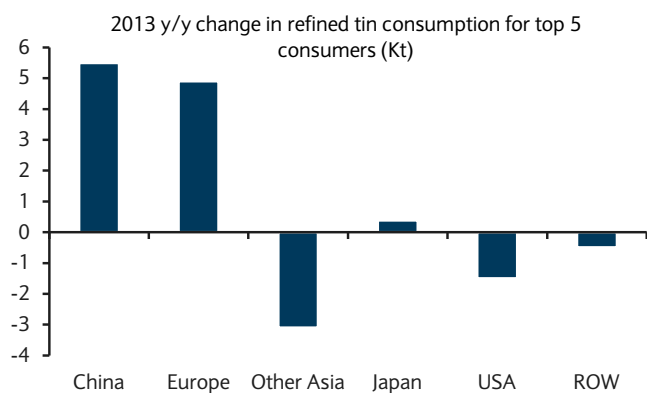
### Regional refined tin production



Source: CRU, ITRI, Barclays Research

FIGURE 6

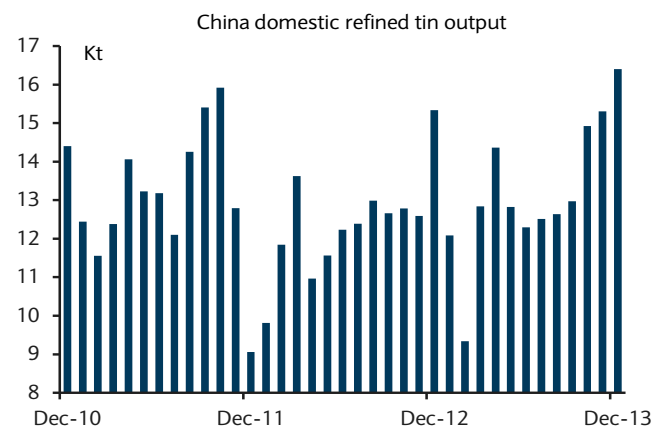
### Regional refined tin consumption



Source: CRU, ITRI, Barclays Research

FIGURE 7

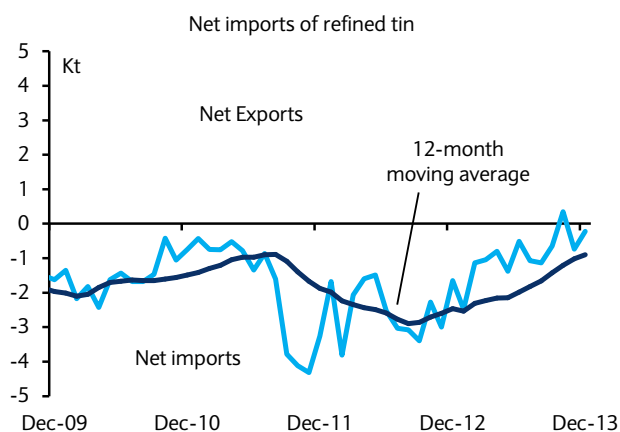
### Chinese refined tin production



Source: Antaika, Reuters, Barclays Research

FIGURE 8

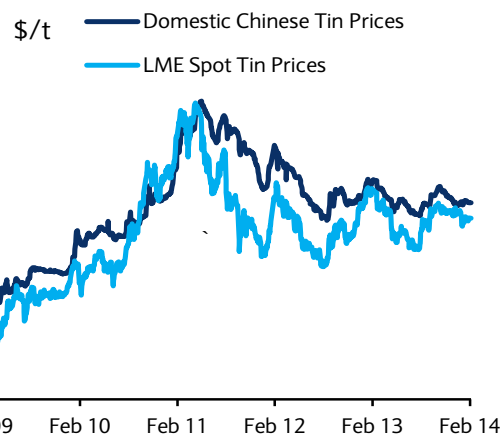
### China refined tin trade balance



Source: China Customs, Barclays Research

FIGURE 9

### Chinese vs LME price spread



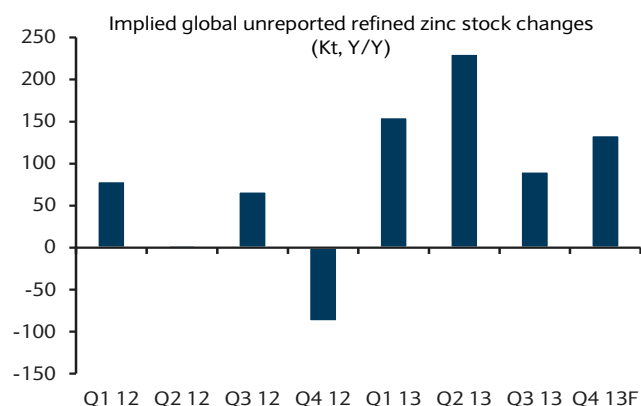
Source: Antaika, EcoWin, Barclays Research

## ZINC

- Our leading demand indicators are signalling a slowdown in the pace of demand growth in Q1 14. Although galvanised production in key regions has been strong, especially in China, slower overall industrial activity levels and macro worries could be temporary headwinds to prices in early 2014. Similarly, the recent tightening in nearby spreads is likely to be temporary, as it should attract unreported material into exchange warehouses.
- With the final production and consumption data almost in for 2013 (ILZG data are until November), we believe that the big decline in LME stocks in 2013 was not reflective of the true underlying stock trends and that real stock levels are higher than the reported figures suggest. Our market balance suggests a sizeable build of ~600Kt in global unreported stocks with some of this in China following strong imports, most of which were used in financing.
- ILZG data revisions for 2013 previously showed Chinese mine production growth of 1.1% y/y in Q1-Q3. However, the data have subsequently been revised higher with January-November production growing almost 5% y/y. Regardless of this volatility a clear pattern has emerged – the momentum in Chinese mine production slowed. Aside from the financial crisis of 2008/09, it looks as though it was the slowest since 2002, a trend we expect to continue.
- There was also a notable difference in relative performance of ex-China refined production and consumption; production was almost flat, yet consumption grew 3%. This resulted in a smaller ex-China surplus than the previous year and is a trend that we expect to continue to contribute to the expected tightening in the market balance.

FIGURE 1

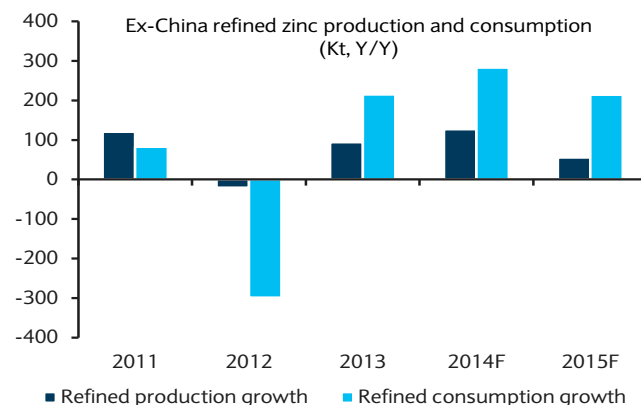
We estimate global unreported stocks built by 600Kt in 2013



Source: ILZG, LME, SHFE, Barclays Research

FIGURE 2

Ex-China supply growth to consistently fall short of demand



Source: ILZG, Barclays Research

FIGURE 3

Global supply and demand balance

Balance	Q1 13	Q2 13	Q3 13	Q4 13F	2013F	Q1 14F	Q2 14F	Q3 14F	Q4 14F	2014F	2015F
China	1,240	1,320	1,332	1,443	5,335	1,340	1,426	1,438	1,558	5,762	5,992
Total Europe	602	588	609	613	2,411	602	588	609	613	2,411	2,411
North America	225	220	223	230	899	228	224	227	234	912	912
ROW	1,119	1,129	1,150	1,156	4,554	1,147	1,157	1,179	1,185	4,667	4,722
Production (Kt)	3,186	3,257	3,314	3,441	13,199	3,317	3,394	3,453	3,589	13,753	14,038
y/y Change (%)	1.5%	4.5%	9.8%	4.9%	5.1%	4.1%	4.2%	4.2%	4.3%	4.2%	2.1%
China	1,298	1,373	1,445	1,616	5,733	1,389	1,469	1,546	1,729	6,134	6,533
Total Europe	584	593	588	572	2,338	596	605	600	584	2,384	2,444
North America	261	286	277	268	1,092	271	296	287	277	1,131	1,179
ROW	914	934	972	955	3,774	961	983	1,022	1,005	3,971	4,077
Consumption (Kt)	3,057	3,187	3,282	3,411	12,937	3,217	3,354	3,455	3,595	13,621	14,233
y/y Change (%)	2.5%	3.2%	8.9%	9.5%	6.0%	5.2%	5.2%	5.3%	5.4%	5.3%	4.5%
Global Balance (Kt)	129	71	33	31	262	100	41	-3	-6	132	-195
Total Reported Stocks	1,971	1,811	1,752	1,649	1,649	1,749	1,789	1,787	1,781	1,781	1,586
Stock-to-consumption Ratio	8.3	7.4	7.0	6.4	6.4	7.0	6.9	6.8	6.5	6.5	5.8
LME Cash Price	2,033	1,840	1,859	1,907	1,910	2,000	2,100	2,200	2,250	2,138	2,400
LME Cash Price	92	83	84	86	87	91	95	100	102	97	109

Source: ILZSG, Brook Hunt, Barclays Research

## Zinc mine production

FIGURE 4

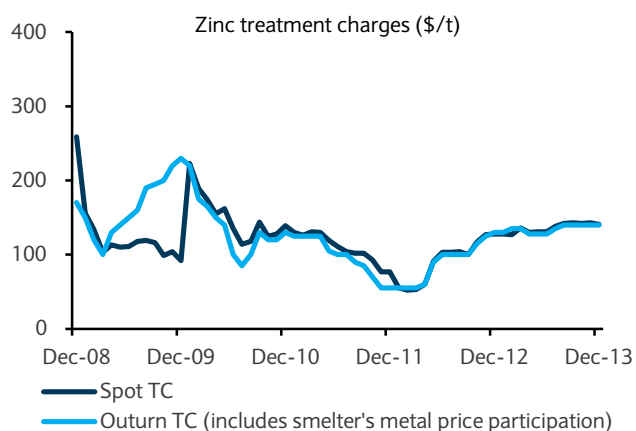
### Global mine production

(Kt)	Europe	Canada	US	Peru	Americas	China	Asia	Oceania	Africa	Global
10 yr average	1,037	676	741	1,332	1,062	3,246	1,480	1,410	324	11,307
An. Av % change	-0.4%	-4.7%	-0.5%	3.7%	5.1%	6.9%	7.0%	-0.1%	2.7%	3.0%
2012	1,043	648	739	1,281	1,307	4,930	1,854	1,518	294	13,614
% change	0.9%	5.9%	-3.9%	2.0%	-2.8%	21.7%	0.3%	3.1%	-6.4%	7.2%
Q1'12	274	166	179	317	334	860	450	362	61	3,003
Q2'12	267	166	182	327	339	1,242	434	400	71	3,428
Q3'12	257	145	181	331	326	1,195	450	355	69	3,309
Q4'12	236	164	197	306	314	1,243	445	416	63	3,384
Q1'13	263	141	180	331	309	997	470	338	74	3,102
Q2'13	256	111	197	366	319	1,226	470	387	76	3,408
Q3'13	266	91	201	319	343	1,242	472	350	90	3,374
y/y change	3.7%	-37.1%	11.1%	-3.5%	5.3%	3.9%	4.7%	-1.4%	30.8%	2.0%
Nov 13	89	35	63	107	111	416	159	123	30	1,134
y/y change	11.9%	-37.7%	-6.2%	7.2%	7.7%	2.6%	2.3%	-9.2%	39.3%	0.8%
Year to Nov 13	964	413	705	1,234	1,193	4,281	1,730	1,322	300	12,142
YTD y/y change	0.8%	-29.6%	5.6%	5.0%	-1.1%	4.1%	5.9%	-5.2%	23.3%	1.4%

Source: ILZSG, CNIA, Barclays Research

FIGURE 5

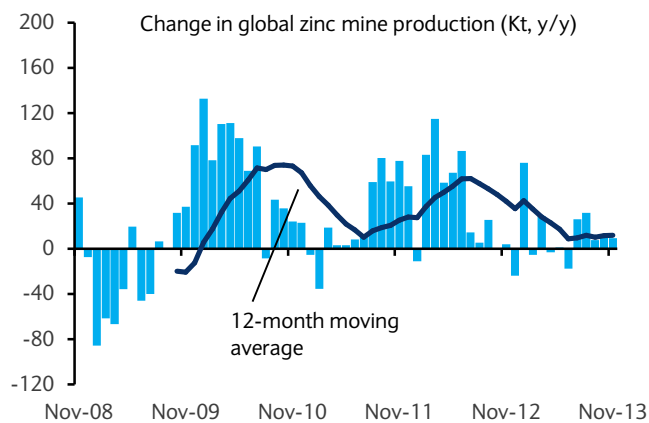
### Zinc concentrate treatment charges



Source: CRU, Barclays Research

FIGURE 6

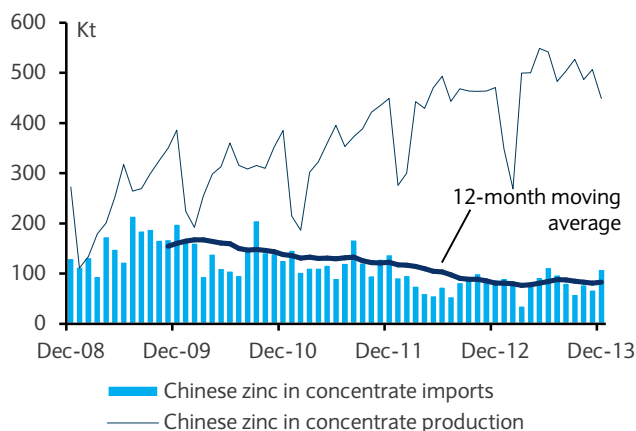
### Changes in global zinc mine output



Source: ILZSG, CNIA, Barclays Research

FIGURE 7

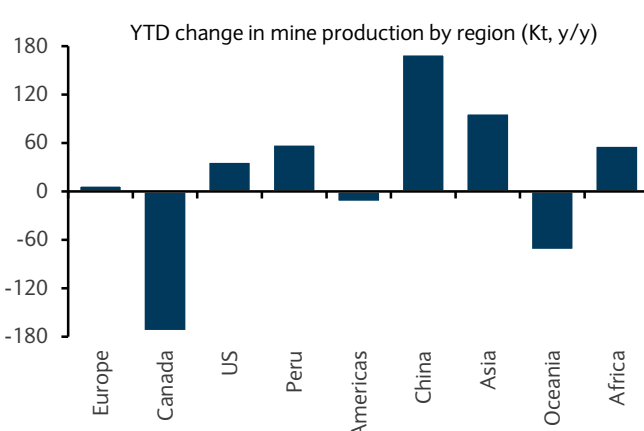
### Chinese concentrate output and imports



Source: CNIA, China Customs, Barclays Research

FIGURE 8

### Change in regional mine output



Source: ILZSG, CNIA, Barclays Research

## Zinc refined production

FIGURE 9

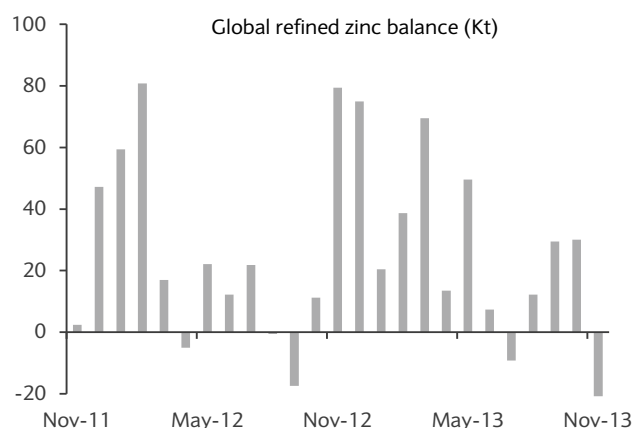
### Reported refined production

(Kt)	Europe	Africa	N.Am	L.Am	China	Asia	Oceania	Global
10 yr average	2,480	248	1,010	831	3,798	2,495	500	11,362
An. Av % change	-1.2%	6.8%	-1.3%	3.3%	13.7%	5.9%	5.0%	5.1%
2012	2,404	172	905	948	4,829	2,865	498	12,621
% change	-1.4%	-28.8%	0.2%	-1.5%	-7.5%	1.0%	-3.3%	-3.8%
Q1'12	613	45	229	233	1,158	735	126	3,139
Q2'12	596	42	224	232	1,176	720	126	3,117
Q3'12	594	43	225	230	1,127	677	122	3,018
Q4'12	609	41	236	234	1,325	709	128	3,281
Q1'13	602	41	225	232	1,240	731	115	3,186
Q2'13	588	39	220	242	1,320	719	128	3,257
Q3'13	609	40	223	249	1,332	738	123	3,314
y/y change	2.4%	-7.0%	-0.7%	8.0%	18.2%	9.0%	1.3%	9.8%
Nov 13	203	14	74	80	503	243	44	1,160
y/y change	1.3%	3.8%	-5.1%	4.2%	15.2%	3.9%	0.8%	7.2%
Year to Nov 13	2,205	148	816	886	4,893	2,677	454	12,079
YTD y/y change	-0.1%	-5.1%	-1.9%	4.0%	13.5%	3.1%	-1.0%	5.8%

Source: ILZSG, Barclays Research

FIGURE 10

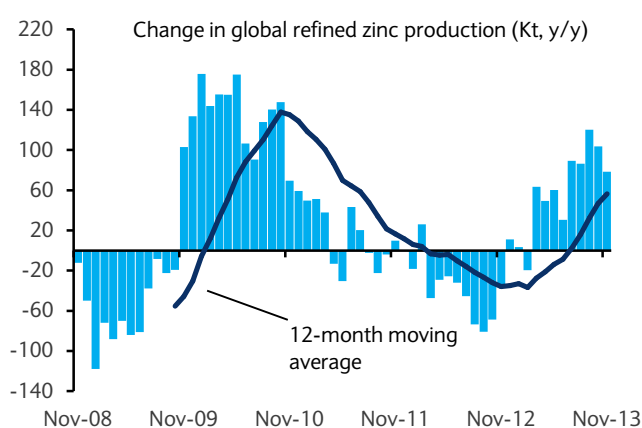
### Global refined zinc market



Source: ILZSG, Barclays Research

FIGURE 11

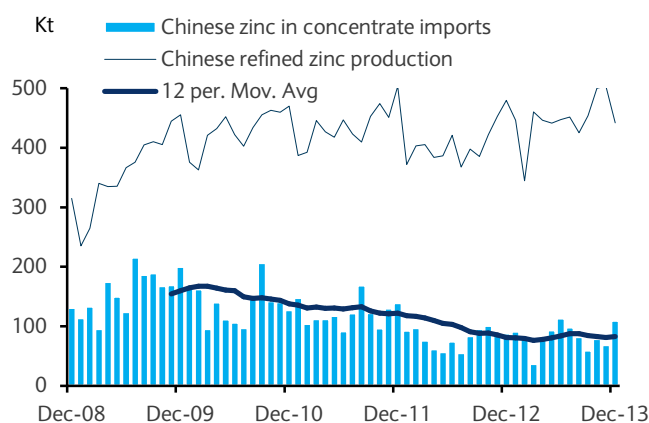
### Changes in global refined output



Source: ILZSG, Barclays Research

FIGURE 12

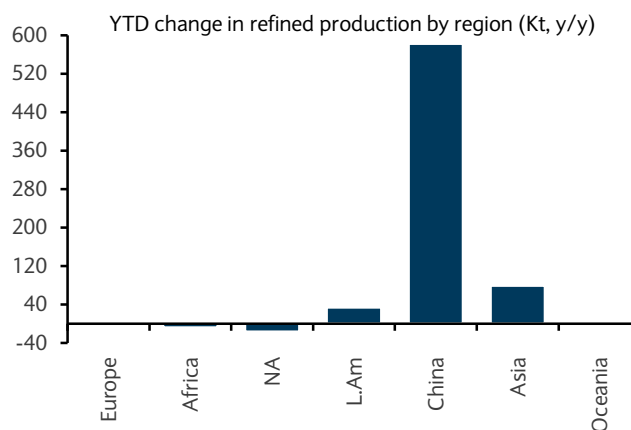
### Chinese refined output and concentrate imports



Source: CNIA, China Customs, Barclays Research

FIGURE 13

### Regional changes in refined output



Source: ILZSG, Barclays Research

## Zinc refined consumption

FIGURE 14

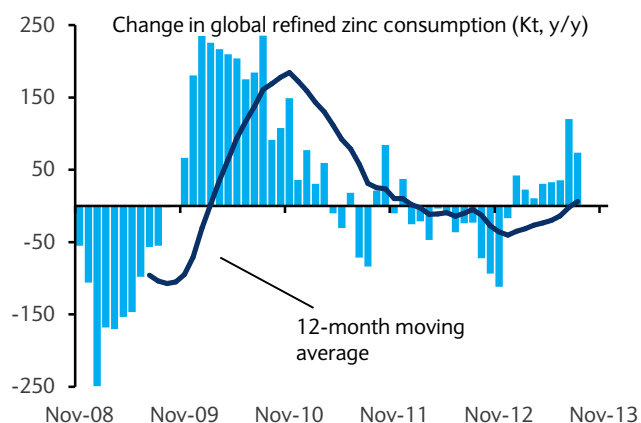
### Global refined zinc consumption

(Kt)	Europe	Africa	N.Am	L.Am	China	Asia	Oceania	Global
10 yr average	2,603	188	1,201	646	3,794	2,551	222	11,214
An. Av % change	-0.5%	1.4%	-3.1%	2.9%	19.5%	2.8%	-1.5%	4.8%
2012	2,363	154	1,025	625	5,211	2,655	214	12,247
% change	-6.4%	-12.0%	-4.5%	-6.6%	-3.5%	0.8%	1.4%	-3.5%
Q1 12	572	44	252	155	1,256	649	54	2,982
Q2 12	595	33	265	168	1,314	661	53	3,088
Q3 12	600	42	243	141	1,277	658	54	3,014
Q4 12	587	39	264	157	1,364	650	54	3,116
Q1 13	584	35	261	152	1,298	673	54	3,057
Q2 13	593	32	286	151	1,373	697	54	3,187
Q3 13	588	34	277	161	1,445	724	53	3,282
y/y change	-2.0%	-19.0%	14.1%	13.8%	13.2%	10.0%	-1.6%	8.9%
Nov 13	194	12	83	49	592	242	18	1,190
y/y change	-4.5%	-12.0%	-2.8%	-7.7%	40.1%	17.3%	0.4%	18.8%
Year to Nov 13	2,151	124	1,000	562	5,237	2,577	197	11,848
YTD y/y change	-0.9%	-14.6%	7.0%	-1.6%	11.0%	7.5%	0.6%	6.4%

Source: ILZG, Barclays Research

FIGURE 15

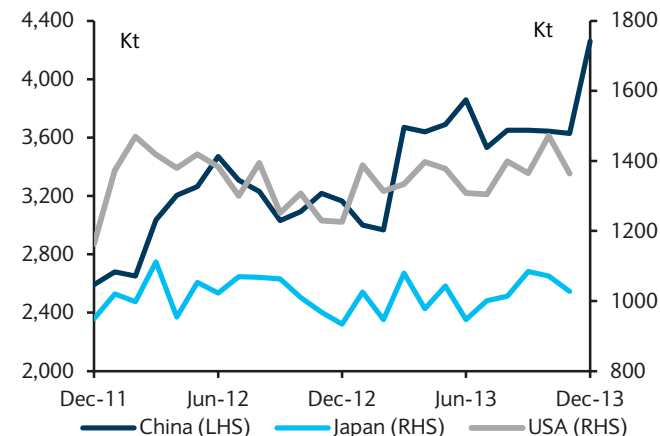
### Global refined zinc consumption



Source: ILZG, Barclays Research

FIGURE 16

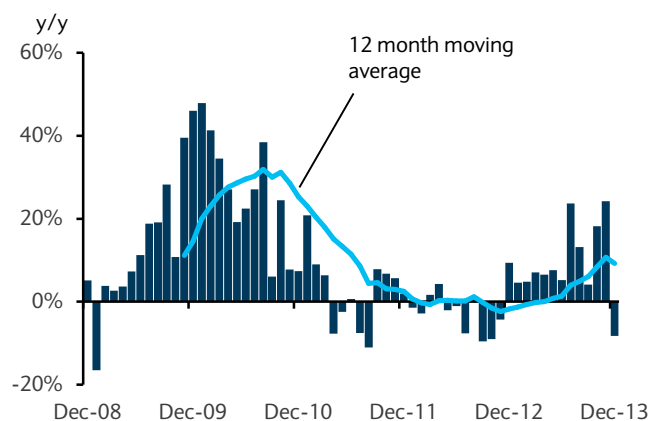
### Galvanised steel output



Source: CRU, Brook Hunt, Barclays Research

FIGURE 17

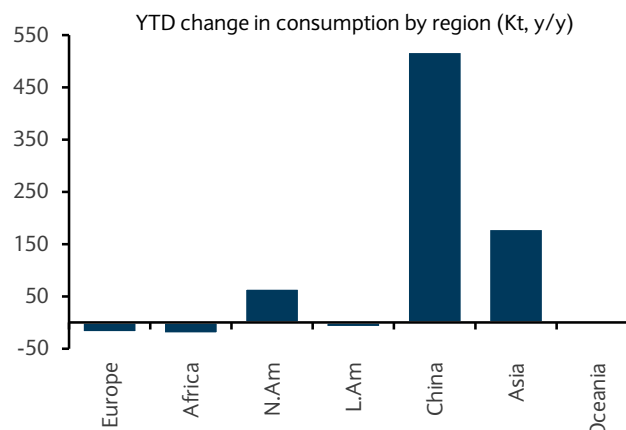
### Chinese apparent consumption



Source: CNIA, China Customs, Barclays Research

FIGURE 18

### Regional consumption trends



Source: ILZG, Barclays Research



## Supply development

FIGURE 19

New and major expansions to zinc mines 2012-15 (units kt)

Mine	Country	Net change in capacity	2012	2013	2014	2015
McArthur River - Bulk Conc	Australia	118	172	148	165	290
Mount Isa Pb/Zn	Australia	110	390	418	500	500
Perkoa	Burkina Faso	99	0	35	99	99
Bracemac McLeod	Canada	90	0	40	105	90
Velardeña	Mexico	90	0	46	90	90
Kyzyl Tashtygskoe	Russia	90	0	16	40	90
Cerro Lindo	Peru	66	108	151	160	174
Lalor Lake	Canada	64	6	37	40	70
Sanguikou	China	56	24	45	65	80
Rampura-Agucha	India	52	648	735	700	700
Neves Corvo	Portugal	50	30	53	65	80
McArthur River	Australia	50	30	60	60	80
Zawar Mines	India	48	0	0	40	48
Santander	Peru	48	0	6	24	48
Pachapaqui	Peru	45	3	7	23	48
Garpenberg	Sweden	45	75	72	94	120
Kektale	China	45	0	15	40	45
Tayahua	Mexico	43	23	21	30	66
Duddar	Pakistan	43	2	5	15	45
Aguas Tenidas	Spain	42	33	38	45	75

Source: Brook Hunt, Barclays Research

### Recent production news

- Production at Vedanta's Skorpion zinc mine in Namibia fell during the final three months of 2013 due to an unplanned maintenance shutdown following a tank failure. The mine produced 23Kt during October-December, down 37% y/y. Production at the mine has since been ramping back up. The mine produced 160Kt in 2012.

## Precious metals

## GOLD

- Gold prices have trekked higher thus far in 2014, drawing support from short covering activity as well as strong demand from China ahead of the Lunar New Year. In our view, despite patches of improvement in investor demand, this alone does not constitute a meaningful shift in market dynamics, and we believe prices are likely to struggle to retain their recent gains.
- Gold prices will depend more on macro data in terms of the catalyst to shift prices; however, alongside this price resilience, it bodes well for prices that investor sentiment has shown signs of stabilising. Notably, speculative positioning in Comex gold has risen for six straight weeks, posting its largest weekly increase since the end of October. Most of the move in positioning has been driven by short covering activity, yet fresh gross longs have been established and are at their highest level since October. Furthermore, physically backed ETPs have recorded select days of inflows, with the 17 January recording the largest daily inflow in almost a year; however, flows for January are still down 29 tonnes. Despite a daily inflow in the first week, flows for February so far are flat. Retail interest in terms of coin sales have had a strong start to the year, but the BullionVault Gold Investor Index, which measures the number of private investor buyers compared with sellers, revealed a drop to 51.9, the lowest level since July 2012. However, we note that a level above 50 indicates the number of buyers outweighs sellers.
- Outside of investor sentiment, the key factor to watch will be the trade restriction developments in India. Discussions as to whether India will relax its trade restrictions now signal no decision will be made until after the end of the fiscal year, and perhaps more likely after the elections. Such a move would provide the next cushion of support, in our view.

FIGURE 1

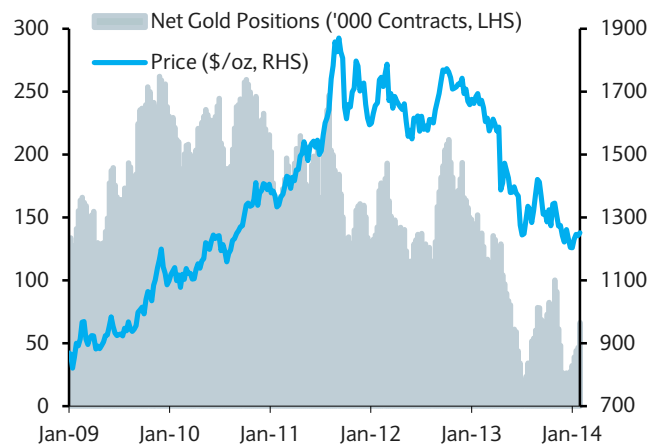
Outflows continue into 2014, albeit at a slower pace

Gold ETPs (tonnes)	Holdings	Monthly change
SPDR	793.2	-5.1
ZKB	170.1	-8.6
iShares	161.9	-0.5
ETFS - UK	109.0	0.7
GBS - UK	95.1	-2.2
Julius Baer	64.8	-6.9
Open end (other)	333.8	-4.6
Closed end	120.3	-2.6
<b>Total</b>	<b>1848.2</b>	<b>-29.8</b>

Source: Various ETP issuer websites, Bloomberg, Barclays Research

FIGURE 2

Changing sentiment? Speculative positioning rises to November highs



Source: CFTC, Barclays Research

FIGURE 3

Global supply and demand balance

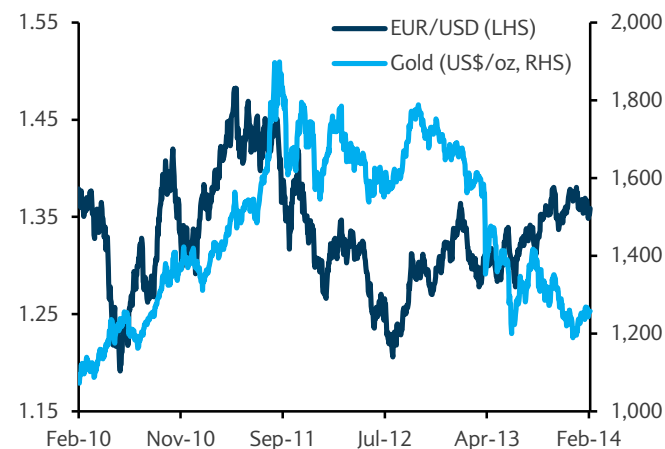
tonnes	2009	2010	2011	2012	2013E	2014F	2015F
Mine production	2,555	2,583	2,621	2,641	2,731	2,787	2,838
% change y/y	6.6%	1.1%	1.5%	0.8%	3.4%	2.1%	1.8%
Gold scrap	1,695	1,719	1,605	1,580	1,356	1,275	1,211
Official Sector net sales	41	6	-	-	-	-	-
<b>Total physical supply</b>	<b>4,291</b>	<b>4,307</b>	<b>4,226</b>	<b>4,221</b>	<b>4,087</b>	<b>4,062</b>	<b>4,049</b>
% change y/y	8.8%	0.4%	-1.9%	-0.1%	-3.2%	-0.6%	-0.3%
Jewellery	1,814	2,017	1,963	1,896	2,108	2,134	2,196
% change y/y	-21.3%	11.2%	-2.7%	-3.4%	11.2%	1.2%	2.9%
Official Sector net purchases	-	-	450	470	300	300	175
Other demand	695	766	785	714	706	702	688
<b>Total fabrication demand</b>	<b>2,509</b>	<b>2,782</b>	<b>3,198</b>	<b>3,079</b>	<b>3,113</b>	<b>3,136</b>	<b>3,059</b>
<b>Implied physical balance</b>	<b>1,782</b>	<b>1,525</b>	<b>1,028</b>	<b>1,142</b>	<b>973</b>	<b>926</b>	<b>990</b>
ETP flows	636	421	197	279	-886	-100	50
Net producer hedging	-246	-100	12	-25	-40	20	30
<b>Implied surplus/ (deficit)</b>	<b>900</b>	<b>1,004</b>	<b>843</b>	<b>838</b>	<b>1,819</b>	<b>1,046</b>	<b>970</b>
Gold price (US\$/oz)	973	1,227	1,572	1,668	1,410	1,205	1,150

Note: ETPs include closed-end products. Source: CRU, VM Group, Barclays Research

## Gold – Correlation

FIGURE 4

## Gold and EUR/USD



Source: EcoWin, Barclays Research

FIGURE 5

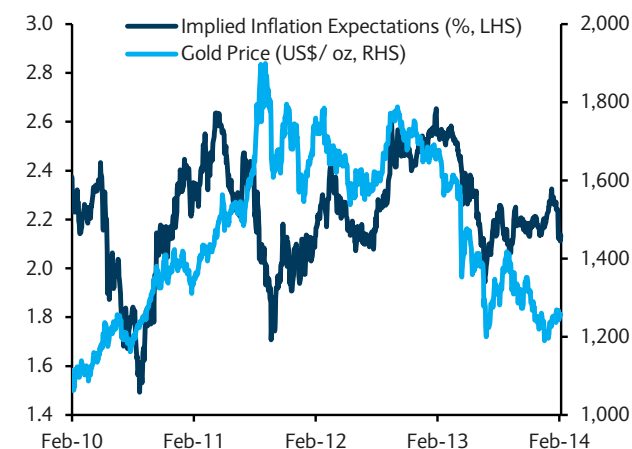
## Gold and the trade-weighted dollar



Source: EcoWin, Barclays Research

FIGURE 6

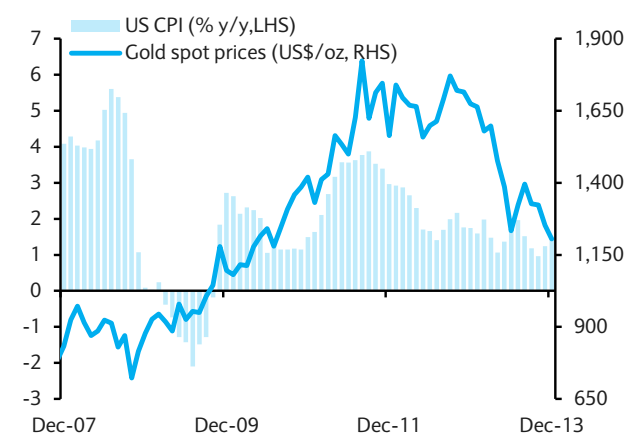
## Gold and inflation expectations



Note: Implied inflation expectations refer to the difference between yields on 10y US government bonds and 10y inflation-indexed bonds. Source: see figure 7.

FIGURE 7

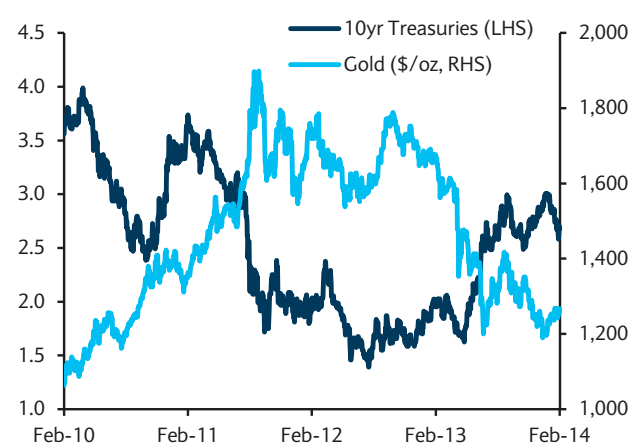
## Gold and US CPI



Source: EcoWin, Barclays Research

FIGURE 8

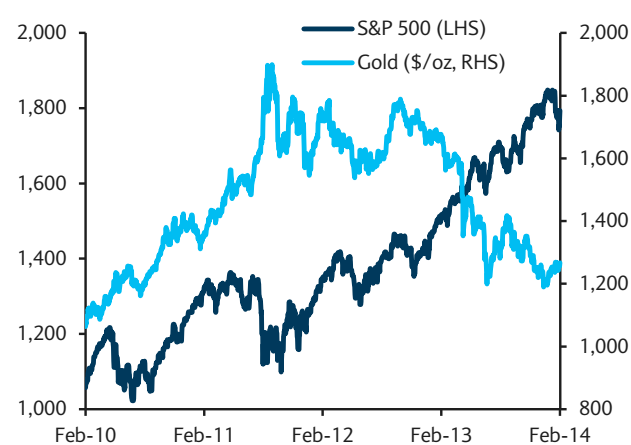
## Gold and US 10y Treasuries



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 9

## Gold and S&amp;P 500



Source: Thomson Reuters Eikon, Barclays Research

## Gold – Physical and financial demand

FIGURE 10

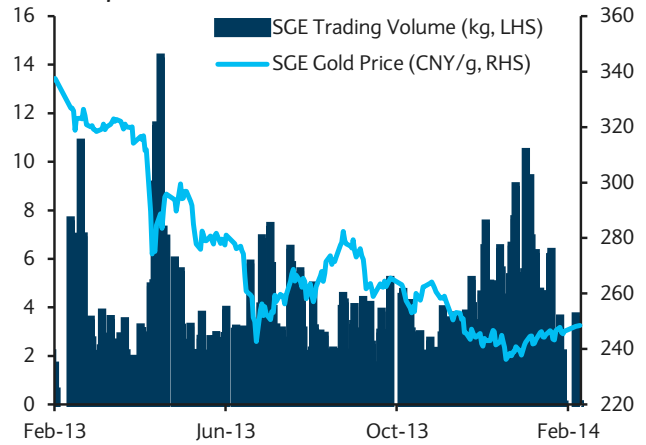
### Global jewellery demand (tonnes)



Source: CRU, Barclays Research

FIGURE 11

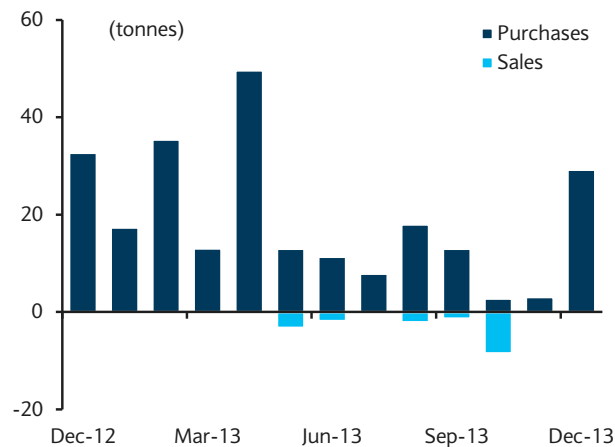
### Chinese spot demand



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 12

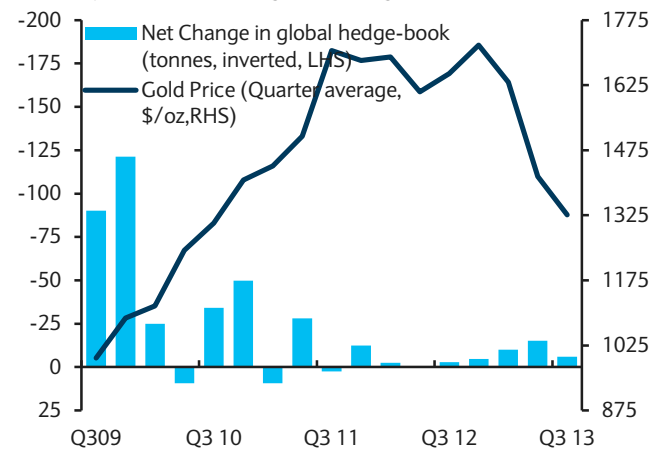
### Net official sector activity



Note: Excludes Turkey, not all have reported. Source: IMF Statistics, WGC, Barclays Research

FIGURE 13

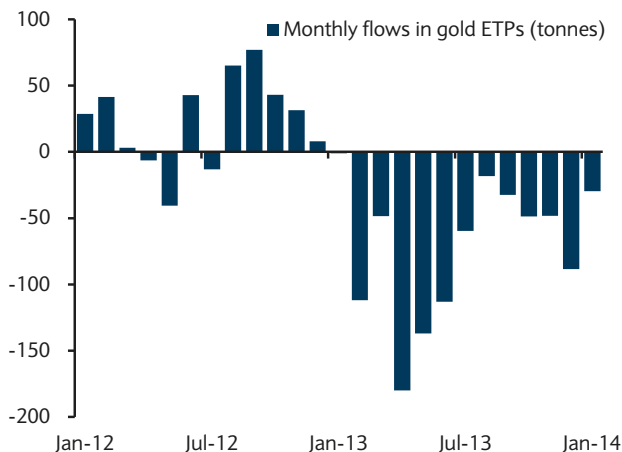
### Quarterly movements in global hedge book



Source: VM Group, Thomson Reuters GFMS, Barclays Research

FIGURE 14

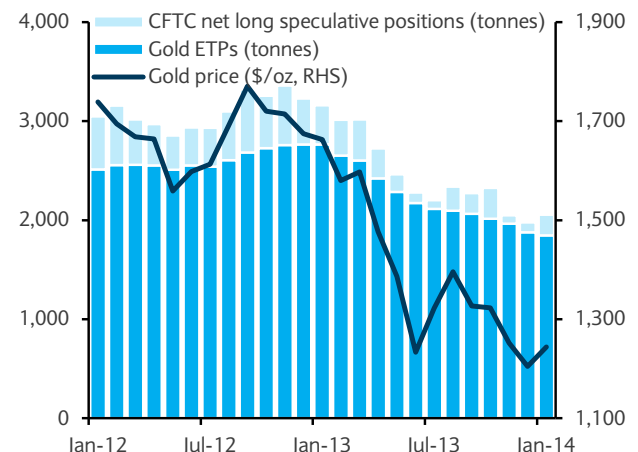
### Monthly change across all physically backed gold ETPs



Note: Includes closed-end products. Source: various ETP issuer websites, Bloomberg, Barclays Research

FIGURE 15

### Total investment holdings across ETPs and futures



Note: Includes closed-end products. Source: EcoWin, CFTC, various ETP issuer websites, Bloomberg, Barclays Research

## Gold – Physical supply

FIGURE 16

## Reported mine production

000s oz	Grasberg	Yanacocha	Nevada	Goldstrike	Lagunas Norte	Kupol	Lihir	Driefonte	Kalgoorlie	Total
2006	1,911	2,571	2,534	1,865	1,084	-	650	1,074	676	9,156
2007	2,425	1,531	2,343	1,629	1,085	-	701	1,012	608	8,382
2008	1,283	1,809	2,260	1,706	1,175	627	771	830	604	7,575
2009	2,833	2,056	1,986	1,355	1,007	926	853	805	688	8,910
y/y change	120.8%	13.7%	-12.1%	-20.6%	-14.3%	47.7%	10.6%	-3.0%	13.9%	17.6%
2010	1,970	1,784	1,735	1,241	807	739	711	712	788	7,729
y/y change	-30.5%	-13.3%	-12.6%	-8.4%	-19.9%	-20.2%	-16.6%	-11.5%	14.5%	-13.3%
2011	1,403	1,281	1,741	1,087	763	802	653	645	796	6,973
y/y change	-28.8%	-28.2%	0.3%	-12.4%	-5.5%	8.6%	-8.2%	-9.5%	1.0%	-9.8%
2012	951	1348	1748	1174	754	771	589	935	604	7923
y/y change	-32.2%	5.2%	0.4%	8.0%	-1.2%	-3.9%	-9.8%	44.9%	-24.1%	13.6%
Q2 13	145	292	383	187	131	162	201	145	150	1651
Q3 13	328	354	457	232	135	201	195	170	174	1918
y/y change	63.2%	0.0%	0.0%	-33.7%	-30.4%	-3.3%	50.6%	21.9%	31.8%	4.7%

Note: Total reported mine production refers to approximately 10% 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 Research

FIGURE 17

## 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
2008	5,600	6,880	5,561	3,880	1,513	2,030	25,464
2009	4,972	6,278	5,719	4,116	3,295	2,004	26,385
y/y change	-11.2%	-8.8%	2.8%	6.1%	117.8%	-1.3%	3.6%
2010	4,906	7,006	6,486	3,677	2,837	2,137	27,048
y/y change	-1.3%	11.6%	13.4%	-10.7%	-13.9%	6.7%	2.5%
2011	4,557	7,359	6,134	3,016	1,726	2,426	25,218
y/y change	-7.1%	5.0%	-5.4%	-18.0%	-39.2%	13.5%	-6.8%
2012	4055	7243	5905	2982	1013	2299	23498
y/y change	-11.0%	-1.6%	-3.7%	-1.1%	-41.3%	-5.2%	-6.8%
Q2 13	969	1750	1518	641	156	498	5531
Q3 13	1057	1786	1496	699	343	548	5930
y/y change	-3.9%	3.7%	12.6%	-11.8%	60.2%	1.8%	4.1%

Note: Total reported mine production refers to approximately 32% of global production. Source: Company reports, Barclays Research

FIGURE 18

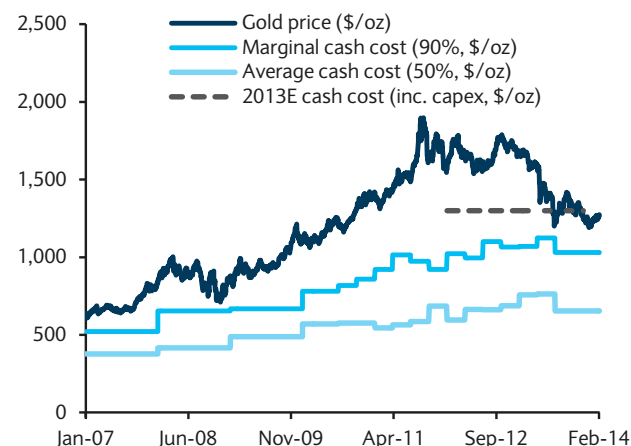
## Major gold expansions and contractions, 2013-14 (tonnes)

Mine	Country	2014 y/y	2015 y/y
Oyu Tolgoi	Mongolia	21	-12
Kibali	Congo	7	8
Detour Lake	Canada	7	2
Prosperity	Canada	6	1
Tropicana	Australia	5	5
Jundee	Australia	-3	-2
La Coipa	Chile	-3	0
Cadia Hill	Australia	-2	0
Bisha	Eritrea	-2	0
Sao Francisco	Brazil	-2	-1
Barclays estimated global mine production		2,787	2,838

Source: CRU, Barclays Research

FIGURE 19

## Average cash cost and marginal cash cost



Source: Company reports, Barclays Research

## SILVER

- Rather than take their cue from sister metal gold, silver prices have endured the same volatility as the other industrially biased precious metals. Silver prices dipped below \$19/oz in late January but since then have rebounded back above \$20/oz, while gold prices have steadily trekked higher.
- On the one hand, silver has been able to take advantage of firmer gold prices and the trade restrictions in India hindering gold consumption. But, perhaps more importantly, silver is yet to exhibit a decisive firming of industrial demand or garner substantial support from ETP investors. The latest trade data for India reveal the continued price sensitivity of silver imports but they have held up well relative to gold. Import duty on silver has also risen but the cheaper option has seen a shift in consumer preferences. The Times of India reported silver imports into Gujarat reached 1,526 tonnes from April 2013 to January 2014, the highest over that period since 2008-2009, albeit the recent hike in duty is taking its toll with the bulk of the imports pre-dating the hike. In terms of industrial demand, semi-conductor shipments have continued to grow across all regions with the exception of Japan. Given our growth outlook, we expect industrial demand to firm as the year unfolds and in turn provide a better floor for prices; however, the upside and volatility of prices continues to rest with the investment community.
- ETP holdings suffered more days of outflows than inflows in January, but a handful of sessions with large inflows tipped the flow into positive territory. We continue to expect prices to remain vulnerable in the near term.

FIGURE 1

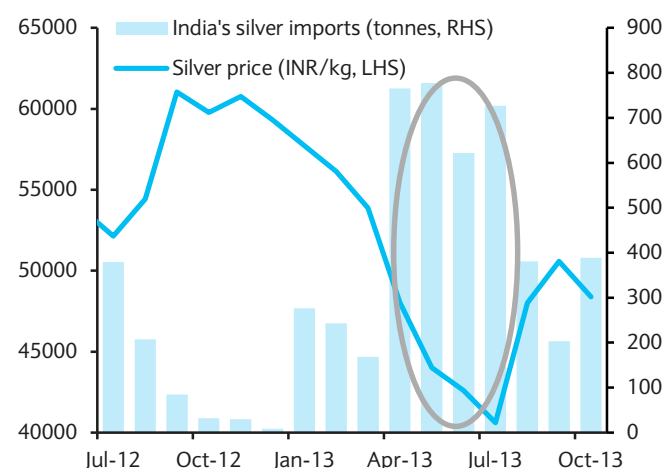
## Silver ETP outflows accelerate into year end

Silver ETPs (tonnes)	Holdings	Monthly change
iShares	10095.0	136.4
ZKB	2615.7	-30.6
ETFS - UK	1011.6	-63.1
ETFS - US	552.4	-0.2
Julius Baer	498.8	-5.4
Open ended: other	970.7	-9.3
Closed ended products	4024.6	0.0
<b>Total</b>	<b>19,769</b>	<b>27.9</b>

Source: Various ETP Issuer websites, Barclays Research

FIGURE 2

## India's demand for silver has risen given the gold trade restrictions



Source: CRU, Barclays Research

FIGURE 3

## Global supply and demand balance

tonnes	2009	2010	2011	2012	2013E	2014F	2015F
Mine production	22,976	23,688	24,004	25,064	25,349	25,669	25,809
Net Official Sector Sales	425	1,300	750	600	300	200	100
Scrap Recovery	6,125	7,020	7,844	7,495	7,247	6,955	6,348
<b>Total Physical Supply</b>	<b>29,526</b>	<b>32,008</b>	<b>32,598</b>	<b>33,159</b>	<b>32,895</b>	<b>32,824</b>	<b>32,257</b>
% change	1.8%	8.4%	1.8%	1.7%	-0.8%	-0.2%	-1.7%
Industrial demand	12,050	14,930	14,570	13,890	14,270	14,672	15,218
Photography	2,660	2,200	2,110	1,900	1,840	1,770	1,705
Jewellery & Silverware	7,170	7,270	7,290	7,180	7,437	7,772	8,032
Official Coins	2,430	3,080	3,650	2,860	3,003	2,378	1,673
<b>Total Fabrication</b>	<b>24,310</b>	<b>27,480</b>	<b>27,620</b>	<b>25,830</b>	<b>26,550</b>	<b>26,591</b>	<b>26,628</b>
% change	-10.0%	13.0%	0.5%	-6.5%	2.8%	0.2%	0.1%
<b>Implied Physical Balance</b>	<b>5,216</b>	<b>4,528</b>	<b>4,978</b>	<b>7,329</b>	<b>6,345</b>	<b>6,232</b>	<b>5,629</b>
ETP flows	4,591	4,225	-738	1,633	134	-250	200
Net Hedging	-500	1,500	250	-1,000	0	0	0
<b>Implied Surplus/Deficit</b>	<b>125</b>	<b>1,803</b>	<b>5,966</b>	<b>4,696</b>	<b>6,211</b>	<b>6,482</b>	<b>5,429</b>
Silver Price (US\$/oz)	14.6	20.2	35.2	31.1	23.8	19.0	17.0

Source: CRU, Barclays Research

## Silver – Fundamentals

FIGURE 4

### Reported mine production

tonnes	Cannington	Antamina	Uchucchacua	Escondida	Mount Isa*	Peñasquito	Total
2006	863	288	302	176	195	-	1,824
2007	1,167	313	307	211	235	-	2,233
2008	1,077	336	356	164	318	-	2,249
2009	1,052	428	329	146	243	-	2,197
y/y change	-2.3%	27.4%	-7.5%	-10.7%	-23.6%	-	-2.3%
2010	1,202	399	290	170	211	433	2,705
y/y change	14.3%	-6.8%	-11.9%	16.3%	-13.1%	-	23.1%
2011	1,002	336	316	119	204	536	2,513
y/y change	-16.6%	-15.8%	9.1%	-29.8%	-3.4%	23.6%	-7.1%
2012	1,070	392	351	101	214	1,244	3,371
y/y change	6.7%	16.6%	11.1%	-15.2%	5.1%	132.3%	34.2%
Q2 13	284	120	85	28	90	162	723
Q3 13	198	111	91	48	-	170	664
y/y change	-17.3%	27.0%	4.7%	154.6%	-	-19.1%	-4.2%

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

FIGURE 5

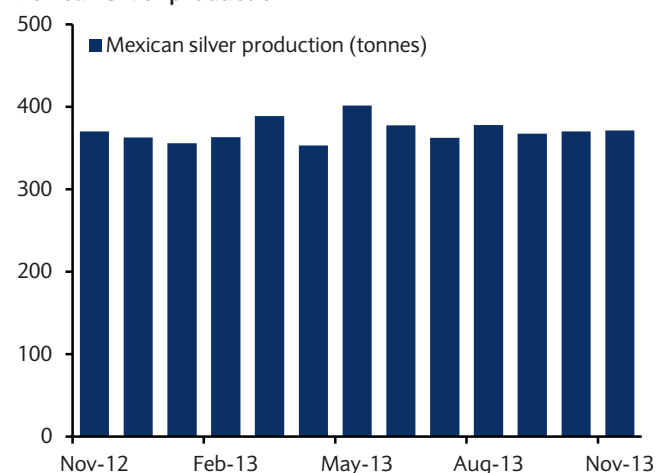
### Major silver production expansions and contractions

Mine (tonnes)	Country	2014 y/y	2015 y/y
Fresnillo	Mexico	58	-27
Marlin	Guatemala	93	41
Pueblo Viejo	Dom Rep	139	-25
El Cocheño	Mexico	140	75
Ministro Hales	Chile	150	100
Toromocho	Peru	150	75
Escobal	Guatemala	375	175
Cannington	Australia	-226	-35
Omolon	Russia	-70	-12
Bellekeno	Canada	-50	0
Bathurst	Canada	-49	0
Alamo Dorado	Mexico	-39	-7
Century	Australia	-34	-19
Antamina	Peru	-26	-8
<i>Barclays estimated global mine production</i>		<i>25,669</i>	<i>25,809</i>

Source: CRU, Barclays Research

FIGURE 6

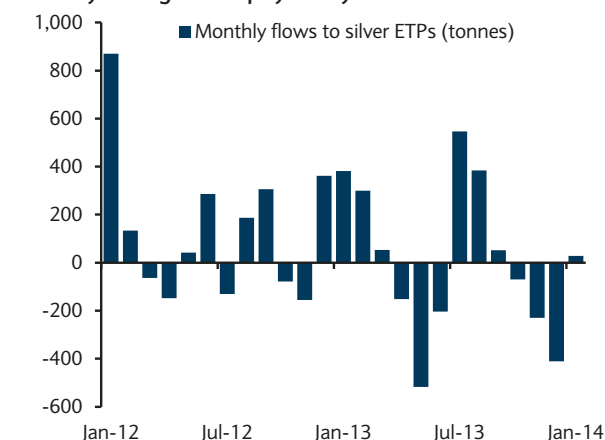
### Mexican silver production



Source: EcoWin, Barclays Research

FIGURE 7

### Monthly change in all physically backed silver ETPs

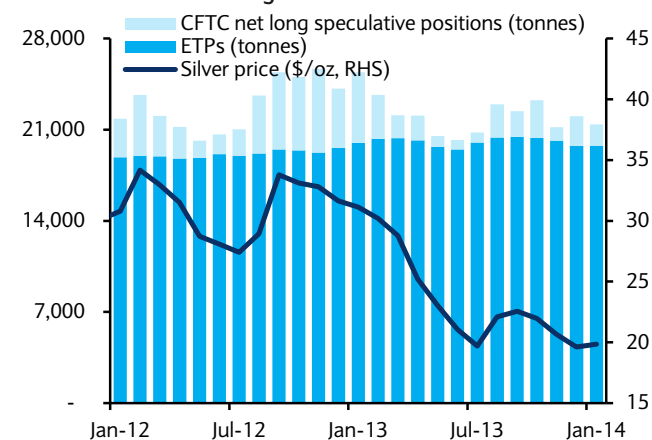


Note: Includes closed-ended products.

Source: iShares, ETF Securities, ZKB, JB, Bloomberg, Barclays Research

FIGURE 8

### Total investment holdings across ETPs and futures



Source: EcoWin, CFTC, iShares, ETF Securities, ZKB, JB, Bloomberg, Barclays Research



## PLATINUM

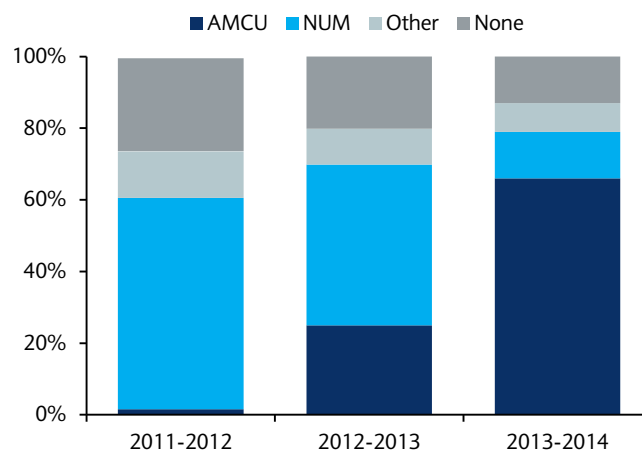
- With the start of 2014 has come notable volatility in platinum prices, as platinum has largely sidestepped the widespread labour strike across the South African platinum industry, which accounts for more than 70% of global platinum mine supply. We are still positive on platinum this year, but it will likely take the back seat to palladium in terms of price gains across the precious metals complex.
- Wage negotiations at South African platinum producers have not resulted in any resolution. In fact, on 5 February, platinum producers, via the Chamber of Mines, released a statement saying that negotiations between producers and the AMCU had broken down without any resolution. The three largest platinum producers (Anglo American Platinum, Impala, and Lonmin) have yet to reach final agreements; across these producers, the AMCU has taken on an increasingly important role in labour negotiations, accounting for 66% of unionised platinum miners (Figure 2). The AMCU rejected the latest offer from producers for 7.5-9% wage increases, and there has yet to be any move towards a resolution.
- Investor demand proved strong in 2013 with ETP holdings rising about 930koz last year as the ABSA Capital NewPlat ETF became the single-largest platinum ETF. ETP holdings will likely be steady as holdings in January fell a mere 9koz. However, the potential launch of a palladium ETF could result in a slight drawdown in the platinum ETF. Outside of investor demand, we also expect physical demand to remain strong, given an expected recovery in European auto demand and continued strength in Chinese platinum jewellery demand.

FIGURE 1  
Platinum holdings fell slightly in January

Platinum ETPs (koz)	Holdings	Monthly change
ABSA NewPlat	901.2	-8.3
ETFS - US	522.2	-14.9
ETFS - UK	343.8	5.7
ZKB	318.1	-4.5
UBS	204.8	1.4
Open end: other	348.5	13.7
Closed end	79.9	-2.0
<b>Total</b>	<b>2718.5</b>	<b>-8.9</b>

Source: Various ETP issuer websites, Bloomberg, Barclays Research

FIGURE 2  
Change in recognised South African union membership



Source: Chamber of Mines, Company reports, Barclays Research

FIGURE 3  
Global supply and demand balance

('000 oz)	2010	2011	2012	2013E	2014F	2015F
South Africa	4,635	4,860	4,090	4,120	4,230	4,380
Russia	825	835	800	780	770	770
North America	200	350	310	315	330	350
Others	390	440	450	525	509	510
Primary Supply	6,050	6,485	5,650	5,740	5,839	6,010
% change y/y	0.4%	7.2%	-12.9%	1.6%	1.7%	2.9%
Scrap Supply	1,830	2,060	2,040	2,075	2,015	2,156
% change y/y	30.2%	12.6%	-1.0%	1.7%	-2.9%	7.0%
Total Supply	7,880	8,545	7,690	7,815	7,854	8,166
% change y/y	6.1%	8.4%	-10.0%	1.6%	0.5%	4.0%
Autocatalyst: gross	3,075	3,185	3,190	3,125	3,271	3,451
Jewellery	2,420	2,475	2,780	2,740	2,775	2,805
Industrial	1,755	1,975	1,605	1,790	1,858	1,746
Investment flows	655	460	455	853	120	120
Total Demand	7,905	8,095	8,030	8,508	8,024	8,122
% change y/y	16.3%	2.4%	-0.8%	6.0%	-5.7%	1.2%
Movement in stocks	-25	450	-340	-693	-171	44
Platinum Price (US\$/oz)	1,610	1,716	1,547	1,483	1,539	1,650

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

## Platinum – Fundamentals

FIGURE 4

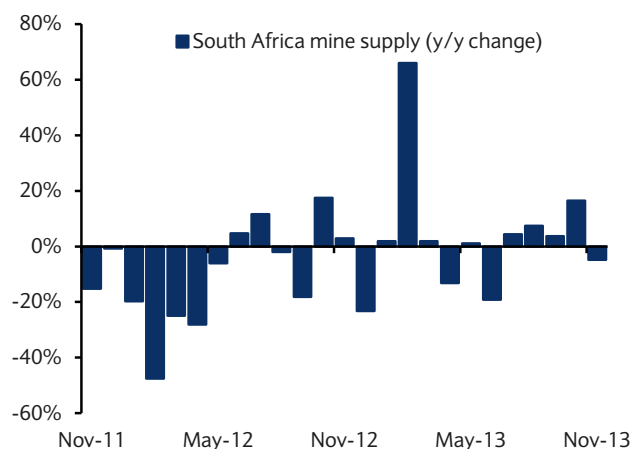
### Reported mine production

000s oz	Impala Platinum	Marikana	Rustenburg	Amandelbult	Union	Total
2006	1,079	865	942	648	327	3,861
2007	1,086	746	732	574	310	3,447
2008	984	646	700	461	309	3,100
2009	867	611	730	444	292	2,944
2010	940	688	557	448	292	2,924
y/y change	8.3%	12.6%	-23.7%	0.9%	0.0%	-0.7%
2011	930	697	561	446	273	2,907
y/y change	-1.0%	1.2%	0.8%	-0.3%	-6.5%	-0.6%
H212	368	331	277	221	115	1312
2012	628	683	522	371	213	2416
H113	342	328	367	236	121	1393
y/y change	31.2%	-6.8%	49.5%	58.0%	23.5%	26.1%

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 Research

FIGURE 5

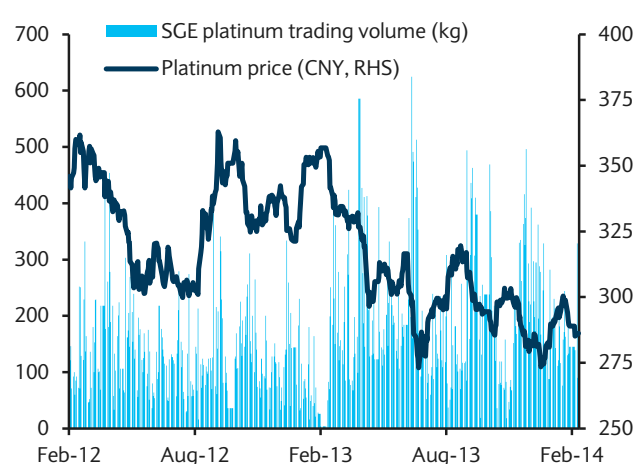
### South African PGM production



Source: Statistics South Africa, Barclays Research

FIGURE 6

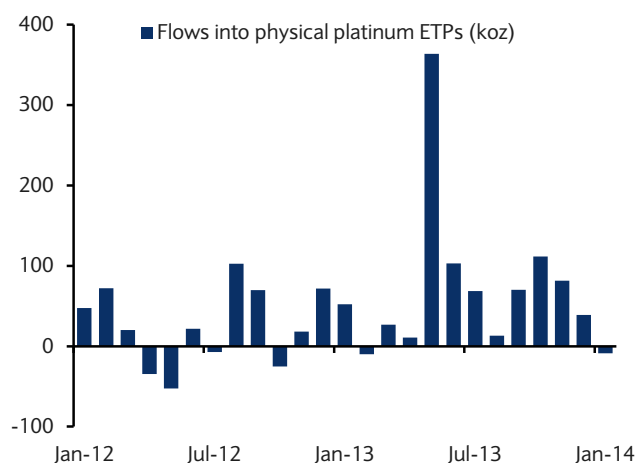
### Chinese spot interest in platinum



Source: EcoWin, Barclays Research

FIGURE 7

### Monthly change across all physically backed platinum ETPs

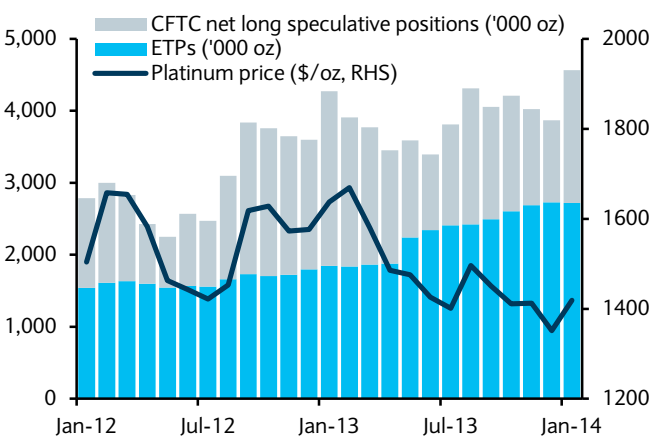


Note: Includes closed end products.

Source: ZKB, ETF Securities, JB, Bloomberg, Barclays Research

FIGURE 8

### Total investment holdings across all ETPs and futures



Note: Includes closed-end products.

Source: CFTC, ZKB, ETF Securities, JB, EcoWin, Bloomberg, Barclays Research

## PALLADIUM

- Palladium has had a volatile start to 2014, falling from nearly \$750/oz in late January to just over \$700/oz at the beginning of February. We view this price level as an opportunity to buy, as we expect prices to average \$768/oz in 2014. Despite a tumultuous start to the year, we expect gains to be modest and steady, given current elevated stock levels and the lack of a decisive catalyst to drive prices higher. Overall, we still expect a sizable deficit this year amid steadily low Russian state stock shipments, especially given December's low shipments (6.3koz), a month that in some years has seen a spike in shipments.
- One possible positive catalyst for 2014 remains the potential launch of a physically backed palladium ETP in South Africa, which could deepen our projected deficit for 2014. In our view, should local investors replicate the PGM basket, there could be inflows of about 200-300koz of palladium. ETP holdings have held steady but are currently about 250koz shy of their peak. Meanwhile, speculative positioning as a percentage of open interest has fallen from a peak of 72%, and is now at 50%; thus, there remains room for growth in investment demand
- On the industrial demand side, while we expect auto demand from the US and China to provide a solid backdrop given our auto analysts' projections of continued growth this year, vehicle sales in January were an annualised 15.2mn (Autodata), far below expectations. Given that much of the weakness was likely due to bad weather, the rest of the year will likely be positive for auto demand, a boon for industrial demand for palladium.

FIGURE 1

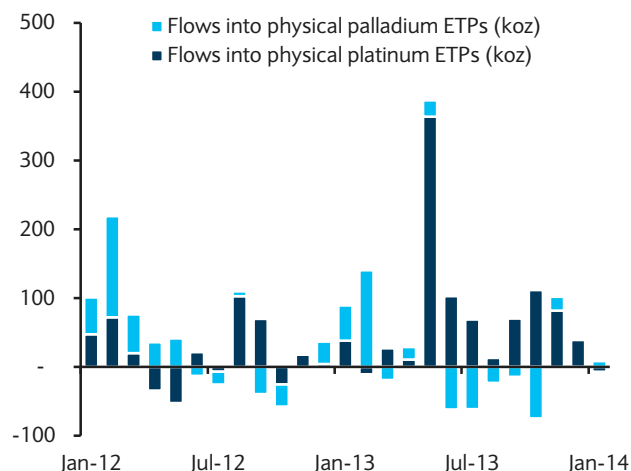
### A modestly positive start to the year for palladium

Palladium ETPs (koz)	Holdings	Monthly change
ETFS - US	717.5	-0.4
ETFS - UK	461.0	-6.0
ZKB	286.3	-1.7
Julius Baer	196.0	8.3
Sprott	182.6	-4.5
Source	169.1	2.8
Open end: other	211.4	5.5
<b>Total</b>	<b>2223.9</b>	<b>4.0</b>

Source: Various ETP Issuer websites, Bloomberg, Barclays Research

FIGURE 2

### The launch of a palladium ETP could be a catalyst



Source: Issuer websites, Bloomberg, Barclays Research

FIGURE 3

### Global supply and demand balance

('000 oz)	2010	2011	2012	2013F	2014F	2015F
South Africa	2,640	2,560	2,320	2,350	2,393	2,493
Russia	2,720	2,705	2,630	2,600	2,592	2,584
Russia stock sales	1,000	775	260	100	100	0
North America	590	900	895	930	945	970
Others	405	420	425	450	431	441
<b>Primary Supply</b>	<b>7,355</b>	<b>7,360</b>	<b>6,530</b>	<b>6,430</b>	<b>6,462</b>	<b>6,488</b>
% change y/y	3.6%	0.1%	-11.3%	-1.5%	0.5%	0.4%
Scrap Supply	1,850	2,385	2,290	2,460	2,625	2,735
% change y/y	29.4%	28.9%	-4.0%	7.4%	6.7%	4.2%
<b>Total Supply</b>	<b>9,205</b>	<b>9,745</b>	<b>8,820</b>	<b>8,890</b>	<b>9,087</b>	<b>9,223</b>
% change y/y	7.9%	5.9%	-9.5%	0.8%	2.2%	1.5%
Autocatalyst	5,580	6,155	6,705	6,970	7,185	7,400
Industrial	2,465	2,465	2,350	2,195	2,265	2,315
Jewellery	595	505	445	390	320	250
Investment	1,095	-565	470	75	100	70
<b>Total Demand by End Use</b>	<b>9,735</b>	<b>8,560</b>	<b>9,970</b>	<b>9,630</b>	<b>9,870</b>	<b>10,035</b>
% change y/y	24.0%	-12.1%	16.5%	-3.4%	2.5%	1.7%
<b>Movement in stocks</b>	<b>-530</b>	<b>1,185</b>	<b>-1,150</b>	<b>-740</b>	<b>-783</b>	<b>-812</b>
<b>Palladium price (US\$/oz)</b>	<b>526</b>	<b>729</b>	<b>641</b>	<b>723</b>	<b>768</b>	<b>850</b>

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

## Palladium – Fundamentals

FIGURE 4

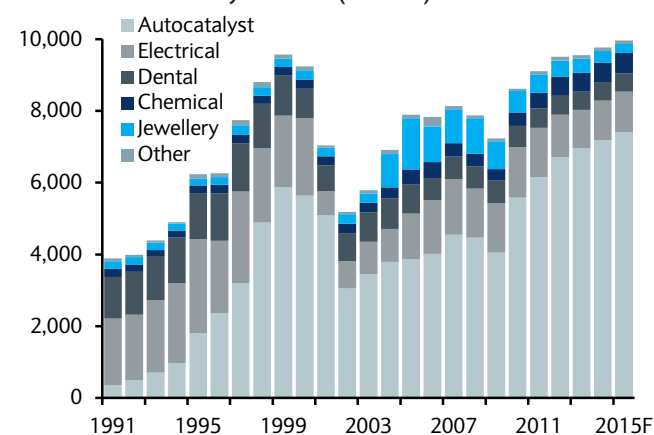
### Reported mine production

000s oz	Norilsk	Impala Platinum	Rustenberg	Marikana	Amandelbult	Total
2006	3164	469	466	383	298	4780
2007	3113	485	386	338	280	4601
2008	2821	379	352	298	217	4066
2009	2677	416	289	284	201	3867
2010	2721	495	288	314	213	4030
y/y change	1.6%	19.1%	-0.3%	10.3%	5.8%	4.2%
2011	2704	530	278	323	202	4037
y/y change	-0.6%	7.1%	-3.5%	2.9%	-4.8%	0.2%
H2 12	1309	195	141	127	103	1875
2012	2627	353	265	295	172	3712
H113	1298	351	99	157	63	1969
y/y change	-1.5%	122.0%	-20.2%	-5.6%	-7.9%	7.3%

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 Research

FIGURE 5

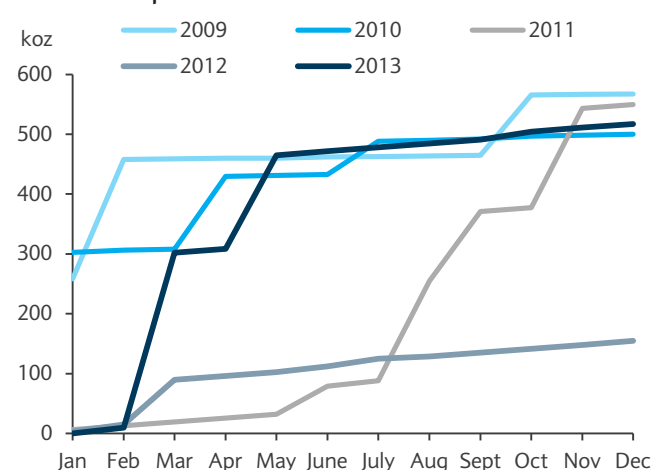
### Palladium demand by end use ('000 oz)



Source: Johnson Matthey, Barclays Research

FIGURE 6

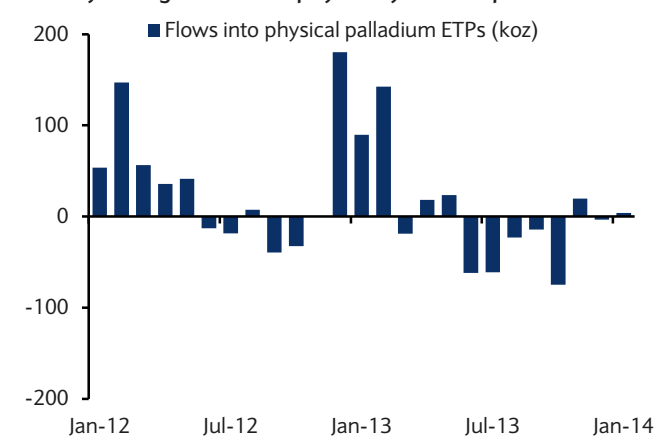
### Palladium shipments to Switzerland from Russia



Source: Swiss FCA, Barclays Research

FIGURE 7

### Monthly change across all physically backed palladium ETPs

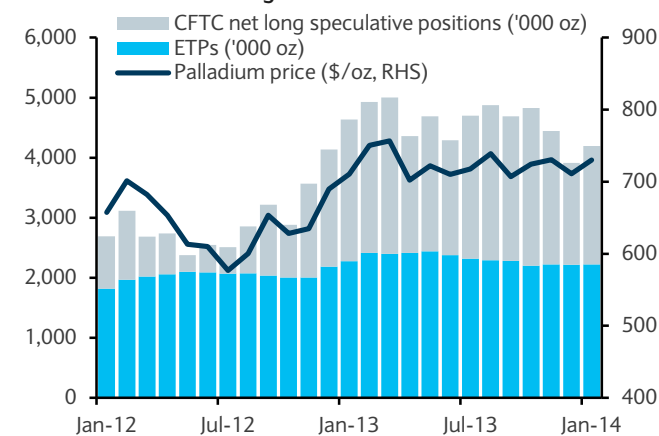


Note: Includes closed end products.

Source: ZKB, ETF Securities, JB, Bloomberg, Barclays Research

FIGURE 8

### Total investment holdings across ETPs and futures



Note: Includes closed end products.

Source: CFTC, ZKB, ETF Securities, JB, EcoWin, Bloomberg, Barclays Research

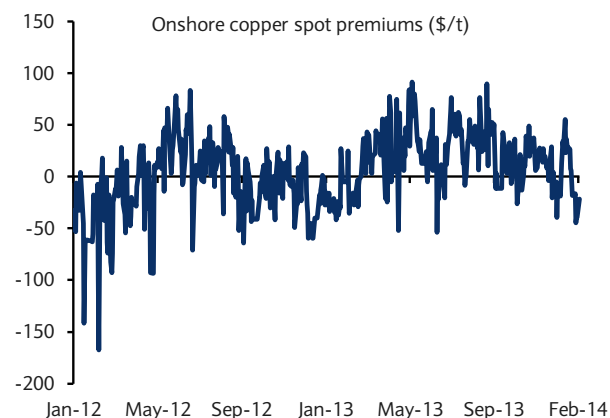
# Data

## CHINESE PHYSICAL MARKET

- Physical trading grinded to a halt ahead of the Chinese New Year, which fell on 31 January this year. Downstream buying was soft, and market participants described mixed but generally muted holiday restocking, on a similar level to last year's. Tight credit conditions were cited as one reason for this softness, as buyers did not have cash to stockpile more than immediate needs.
- Import losses narrowed for metals in the second half of the month as LME prices corrected from highs, but Shanghai prices still lagged London prices. Spot copper continued to trade at a discount to SHFE future price in the week before the Chinese New Year as physical buying dried up. Zinc premiums, on the other hand, registered a small but steady premium of \$11/t in the past month. Import premiums were mostly steady, with copper premiums at \$170/t and zinc premiums at \$173/t.
- As Shanghai prices weakened but imports were still robust due to financing demand, bonded warehouse stocks built ahead of the holidays. We estimate warehouse stocks at about 600Kt, rising steadily from the low of 425Kt in June-July 2013. The rise was partly seasonal, as a dip in industrial activities usually reduces appetite for material and leads to a pileup in bonded warehouses. However, weak Shanghai prices and high arrivals likely also played a role.
- We estimate that 41% of refined copper imports in November 2013 were destined for bonded areas, an uptick from a low of 24% in July. As an indicator of financing activities in bonded warehouses, the rise of these levels reflected significant demand for financing as well as temporary easing of government policies that made financing difficult in mid-2013. If bonded warehouse levels creep up further, the stock overhang could weigh on premiums.
- Indonesia's ore export ban failed to trigger a price rally in Chinese nickel ore and nickel pig iron prices, as the effect is cushioned by ample ore stocks and not yet felt by the producers. Physical demand was also at a low point ahead of the holidays, and restocking by stainless steel mills was already completed.

FIGURE 1

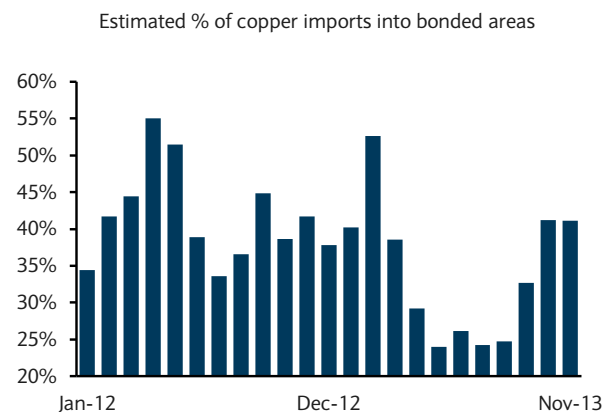
Onshore premiums now negative



Source: EcoWin, Bloomberg, Barclays Research

FIGURE 2

Financing gained in Q4, could continue



Source: CEIC, Barclays Research

FIGURE 3

Import premiums softened but are still elevated



Source: Bloomberg, Barclays Research

## China trade

Kt	Dec-13	% change Y/Y	Nov-13	Oct-13	% change YTD	2013 monthly average	2012 monthly average	5 year monthly average
<b>Aluminium</b>								
Bauxite imports	5,216	47%	5,370	6,973	79%	5,967	3,339	2,675
Alumina imports	348	-10%	546	460	-24%	319	418	347
Alumina production	N/A	N/A	3,801	3,736	8%	3,375	3,134	2,449
Primary imports	76	429%	38	50	-28%	31	43	43
Primary exports	24	259%	6	9	-8%	10	10	9
Net trade	-52	573%	-32	-40	-35%	-21	-33	-34
Primary output	N/A	N/A	2,036	2,036	1%	1,745	1,727	1,381
Primary app. consumption	N/A	N/A	2,082	2,080	2%	1,783	1,740	1,409
Semis imports	39	-8%	40	39	-9%	40	44	48
Semis exports	240	4%	270	260	10%	256	233	188
Net semis trade	201	7%	230	221	14%	215	189	140
Semis output	N/A	N/A	3,792	3,618	17%	2,979	2,552	1,757
Semis app. consumption	N/A	N/A	3,562	3,397	18%	2,780	2,363	1,617
<b>Copper</b>								
Concentrate imports (gross weight)	1,040	11%	921	944	29%	840	653	534
Conc. imports (est. metal content 28%)	291	11%	258	264	29%	235	183	150
Concentrate output	N/A	N/A	172	158	-4%	136	142	99
Refined imports	312	31%	329	293	-6%	267	284	230
Refined exports	25	-2%	23	15	7%	24	23	11
Net trade	-287	35%	-306	-278	-7%	-243	-261	-219
Refined output	N/A	N/A	654	638	8%	515	478	393
Refined app. consumption	N/A	N/A	844	739	3%	711	691	582
Scrap imports	397	-10%	430	357	-10%	365	405	391
<b>Lead</b>								
Concentrate imports (gross weight)	130	12%	105	205	-18%	125	152	132
Conc. imports (est. metal content 55%)	72	12%	57	113	-18%	68	83	73
Concentrate output	N/A	N/A	332	286	-3%	249	255	162
Refined imports	0	-61%	0	0	-89%	0	1	4
Refined exports	3	491%	2	3	707%	2	0	2
Net trade	2	3011%	2	3	-557%	2	0	-2
Refined output	N/A	N/A	386	424	-9%	353	389	335
Refined app. consumption	N/A	N/A	382	422	-9%	350	386	331
<b>Nickel</b>								
Concentrate imports (gross weight)	6,460	-14%	7,824	7,352	10%	5,932	5,417	2,771
Refined imports	15	-6%	11	15	7%	14	13	15
Refined exports	2	-51%	6	1	33%	4	3	3
Net trade	-13	11%	-5	-14	-1%	-10	-10	-13
Refined output	N/A	N/A	31	27	0%	21	21	15
Refined app. consumption	N/A	N/A	36	41	0%	28	28	24
<b>Tin</b>								
Refined Imports	1	-66%	1	0	-54%	1	3	2
Refined Exports	0	27%	0	1	99%	0	0	0
Net trade	0	-86%	-1	0	-63%	-1	-2	-2
Refined output	N/A	N/A	15	15	-5%	12	12	12
Refined app. consumption	N/A	N/A	16	15	-14%	13	15	14
<b>Zinc</b>								
Concentrate Imports (gross weight)	220	24%	138	159	2%	166	162	241
Conc. imports (est. metal content 50%)	110	24%	69	79	2%	83	81	120
Concentrate output	N/A	N/A	507	487	1%	435	432	320
Refined Imports	61	-9%	74	74	21%	52	43	34
Refined Exports	0	-96%	0	0	-54%	0	1	3
Net trade	-61	-8%	-74	-74	22%	-52	-42	-31
Refined output	N/A	N/A	503	500	1%	410	407	392
Refined app. consumption	N/A	N/A	589	534	0%	442	443	401
<b>Precious metals</b>								
Platinum Imports (000 ounces)	369	90%	261	249	24%	263	213	175
Palladium Imports (000 ounces)	71	70%	81	64	9%	60	55	67
Silver Imports (tonnes)	214	-6%	220	231	-11%	214	241	373
Silver Exports (tonnes)	132	-25%	143	125	51%	109	72	194
Net Silver exports	-83	54%	-77	-105	-38%	-105	-169	-179

Note: Net trade (negative values denote net exports, positive values denote net imports). Primary aluminium production is adjusted higher using Barclays Research estimates to account for smelters not included in the data. Apparent consumption is calculated using this higher production figure.

Source: China Customs, CNIA, Barclays Research

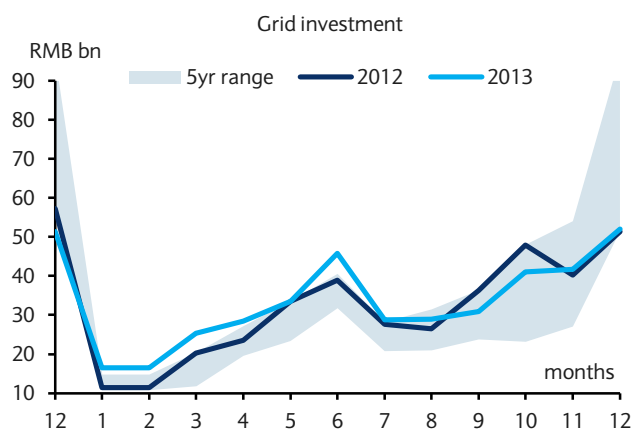
## China end-use sector data

Production	Dec-13	% change Y/Y	Nov-13	Oct-13	% change YTD	2012	2011	5 year monthly average	Unit
						monthly average	monthly average		
Auto	2,298	20%	2,284	2,085	16%	1,719	1,599	1,374	K unit
E-bikes	N/A	N/A	N/A	N/A	N/A	1,663	1,222	1,068	K unit
Generators	12,519	-31%	11,594	12,037	-16%	11,662	12,504	11,463	MW
A/C motors	27,754	15%	25,857	24,512	10%	20,790	20,939	18,605	MW
Transformers	132,901	-1%	130,994	133,941	6%	119,189	125,166	111,775	MvA
Power cables	4,070	-3%	3,870	3,657	2%	3,557	2,646	2,387	Mn metres
Lead batteries	19,441	22%	18,560	18,235	14%	14,663	11,725	11,518	MvA
Fridge	7,355	-4%	7,340	6,989	9%	7,342	7,200	5,931	K unit
Air conditioners	13,024	27%	10,694	10,663	11%	11,155	12,188	9,484	K unit
Washing machines	6,806	9%	7,080	6,340	8%	5,589	5,568	4,791	K unit
Zinc galvanized sheets (large)	-14,535	-12	1,305	1,332	8%	1,239	1,189	934	K unit
Integrated circuits	7,470	3%	7,700	7,350	-9%	8,216	6,617	5,600	Mn unit
<b>Exports</b>									
Stainless utensils	27	-22%	26	31	-1%	27	28	27	Kt
Generators	274	0%	272	253	0%	258	281	275	Mn unit
Transformers	228	2%	211	195	-5%	217	227	222	Mn unit
Power cables	190	12%	180	160	5%	155	151	142	Kt
Lead batteries	15	20%	13	13	-5%	13	N/A	N/A	Mn unit
Fridge	2,710	11%	2,920	2,670	7%	2,770	2,727	2,420	K unit
Air conditioners	1,920	-9%	1,640	1,550	2%	3,652	3,729	3,302	K unit
Washing machines	1,800	2%	1,990	1,830	14%	1,903	1,758	1,507	K unit

Source: CEIC, Barclays Research

FIGURE 4

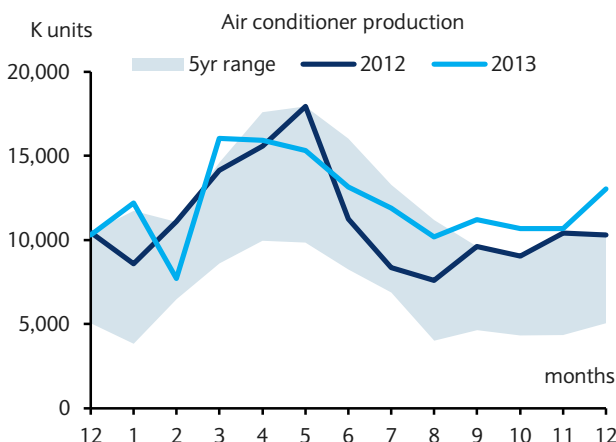
## China power grid investment



Source: CEC, Barclays Research

FIGURE 5

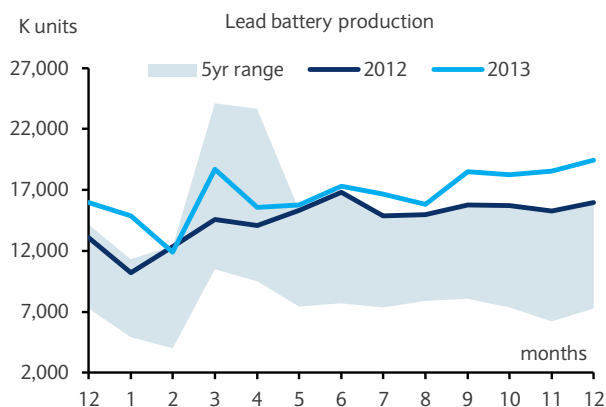
## China air conditioner production



Source: NBS, Barclays Research

FIGURE 6

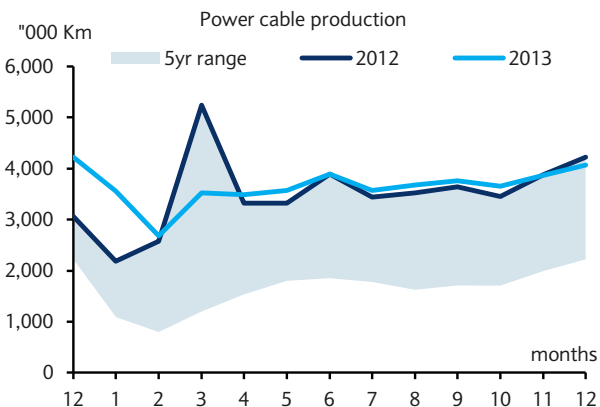
## China lead battery production



Source: NBS, Barclays Research

FIGURE 7

## China power cable production



Source: NBS, Barclays Research



## COST INDICATORS

FIGURE 1

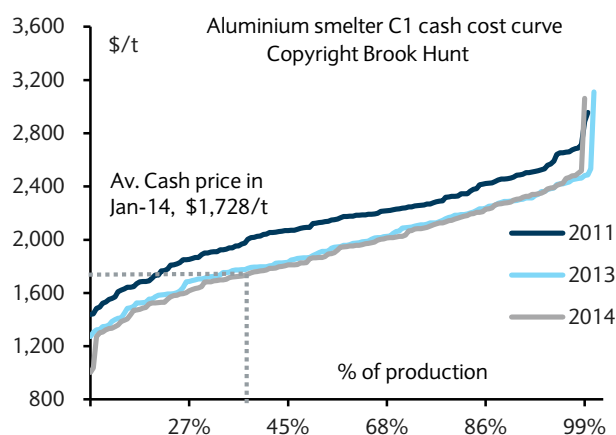
### Current costs

Energy	Current price	One month ago price	Monthly change	One year ago price	Yearly change
EEX Electricity (Peak load, 1-Pos, EUR/MWh)	44.5	49.2	-9.6%	53.5	-16.8%
Coal (API2 Futures 1-Pos, USD/Tonne)	85.3	87.7	-2.7%	96.9	-11.9%
Diesel (Heating oil, NYMEX, US\$/Gallon)	3.0	3.0	1.3%	3.2	-6.3%
Natural Gas (Henry Hub, NYMEX, \$/mmbtu)	5.0	4.3	17.0%	3.3	53.1%
Carbon (ECX CFI Phase 2 Futures 1-Pos, ICE)	6.1	4.7	30.0%	4.1	49.3%
<b>Transport</b>					
Baltic Dry freight index	1,086.0	1,876.0	-42.1%	740	46.8%
Baltic Panamax freight index	1,307.0	1,692.0	-22.8%	657	98.9%
<b>FX costs</b>					
USD/EUR	0.74	0.74	0.4%	0.74	-0.1%
USD/CLP	558.05	529.25	5.4%	472.20	18.2%
USD/CAN	1.11	1.06	4.2%	1.00	11.3%
USD/AUS	1.12	1.12	0.4%	0.97	15.9%
USD/ZAR	11.09	10.65	4.1%	8.90	24.6%

Source: EcoWin, Barclays Research

FIGURE 2

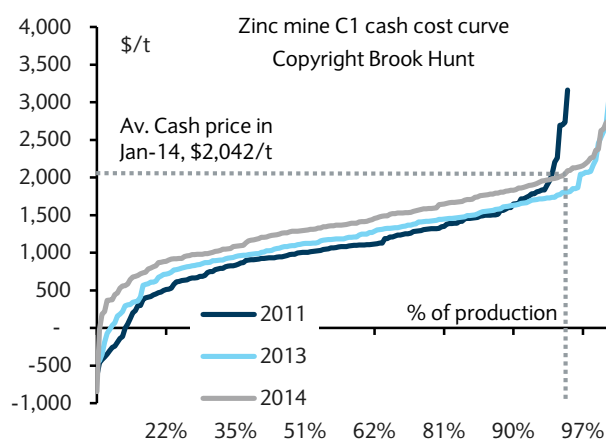
### Marginal cost of production – Aluminium



Source: Brook Hunt, Barclays Research

FIGURE 3

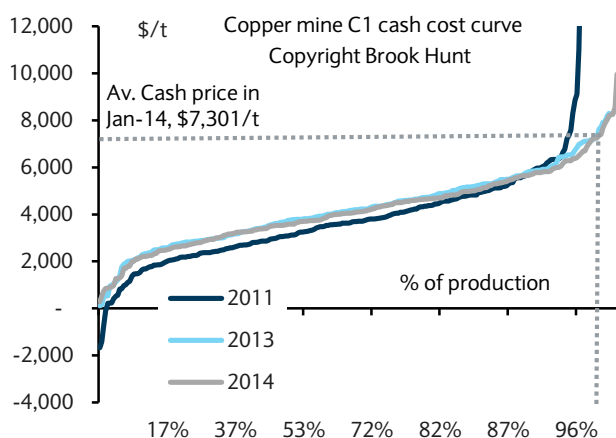
### Marginal cost of production – Zinc



Source: Brook Hunt, Barclays Research

FIGURE 4

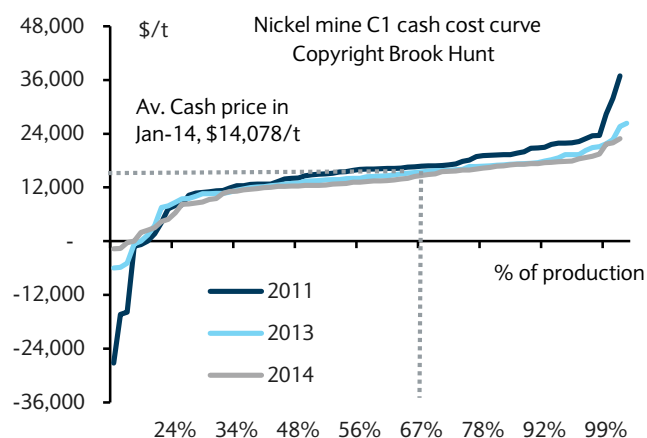
### Marginal cost of production – Copper



Source: Brook Hunt, Barclays Research

FIGURE 5

### Marginal cost of production – Nickel



Source: Brook Hunt, Barclays Research

## BASE METAL STOCKS

FIGURE 1

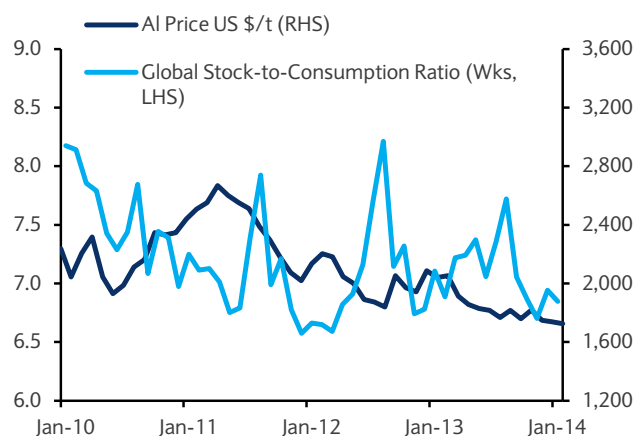
### Aluminium stocks

	Stocks (Kt)				Global stock to consumption ratio
	Exchange	Japan Port	Producer		
Feb 13	5,655	286	1,285	7,226	7.7
Mar 13	5,733	268	1,233	7,234	7.1
Apr 13	5,621	279	1,223	7,122	6.9
May 13	5,636	273	1,192	7,101	6.7
Jun 13	5,850	273	1,179	7,303	6.9
Jul 13	5,829	234	1,173	7,236	6.8
Aug 13	5,689	261	1,178	7,128	6.6
Sep 13	5,588	242	1,099	6,930	6.6
Oct 13	5,580	263	1,099	6,942	6.7
Nov 13	5,595	270	1,099	6,964	6.8
Dec 13	5,640	284	1,175	7,099	6.6
Jan 14	5,631	284	1,175	7,090	6.9

Source: IAI, LME, Comex, Reuters, SHFE

FIGURE 2

### Aluminium global stock-to-consumption ratio



Source: IAI, LME, Reuters, SHFE, EcoWin

FIGURE 3

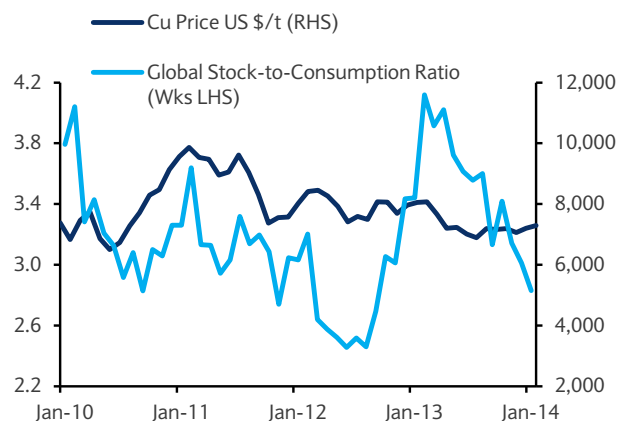
### Copper stocks

	Stocks (Kt)				Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer	Merchant		
Feb 13	741	701	68	9	1,520	4.1
Mar 13	895	694	64	7	1,660	3.9
Apr 13	917	819	68	8	1,813	4.0
May 13	875	798	68	7	1,747	3.7
Jun 13	915	773	64	9	1,761	3.6
Jul 13	839	750	59	9	1,656	3.6
Aug 13	783	726	62	7	1,579	3.6
Sep 13	715	698	61	6	1,480	3.1
Oct 13	672	698	61	6	1,436	3.4
Nov 13	586	698	61	6	1,351	3.1
Dec 13	509	698	61	6	1,273	3.0
Jan 14	483	698	61	6	1,247	2.8

Source: ICSG, LME, SHFE, Comex

FIGURE 4

### Copper global stock-to-consumption ratio



Source: ICSG, SHFE, LME, Comex, EcoWin, Comex

FIGURE 5

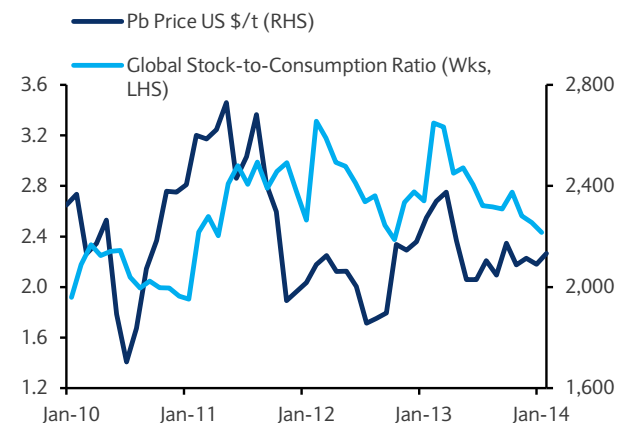
### Lead stocks

	Stocks (Kt)				Total stock	Global stock to consumption ratio
	Exchange	Producer	Consumer	Merchant		
Feb 13	418	148	120	0.7	686	3.3
Mar 13	402	148	127	0.7	678	2.9
Apr 13	386	143	129	0.7	658	2.9
May 13	338	153	132	0.7	624	2.8
Jun 13	313	151	138	0.7	603	2.6
Jul 13	310	149	128	0.7	587	2.6
Aug 13	285	156	126	0.7	568	2.6
Sep 13	325	157	126	0.7	609	2.8
Oct 13	319	158	126	0.7	604	2.6
Nov 13	318	159	126	0.7	604	2.5
Dec 13	305	159	126	0.7	591	2.4
Jan 14	296	159	126	0.7	582	2.8

Source: ILZSG, LME, SHFE

FIGURE 6

### Lead global stock-to-consumption ratio



Source: ILZSG, LME, EcoWin

FIGURE 7

## Nickel stocks

	Exchange	Stocks (Kt)			Global stock to consumption ratio
		Producer	Consumer		
Feb 13	160	87	14	261	7.2
Mar 13	167	86	14	267	7.3
Apr 13	178	89	14	281	7.8
May 13	180	87	14	281	7.7
Jun 13	189	92	14	294	8.3
Jul 13	204	91	14	309	8.6
Aug 13	213	91	14	319	8.8
Sep 13	227	90	14	331	8.7
Oct 13	238	90	14	342	9.0
Nov 13	253	90	14	357	9.1
Dec 13	262	90	14	366	9.4
Jan 14	266	90	14	370	9.4

Source: INSG, CRU, LME

FIGURE 9

## Tin stocks

	Exchange	Stocks (Kt)			Global stock to consumption ratio
		Producer	Consumer		
Feb 13	14	7	12	32	5.0
Mar 13	14	7	12	33	5.1
Apr 13	14	7	12	33	4.9
May 13	14	7	12	32	4.9
Jun 13	14	7	12	33	5.0
Jul 13	13	7	12	32	4.7
Aug 13	15	7	12	33	4.9
Sep 13	13	6	10	29	4.3
Oct 13	12	6	10	28	4.3
Nov 13	11	6	10	27	4.1
Dec 13	10	6	10	26	3.9
Jan 14	9	6	10	25	3.8

Source: CRU, LME

FIGURE 11

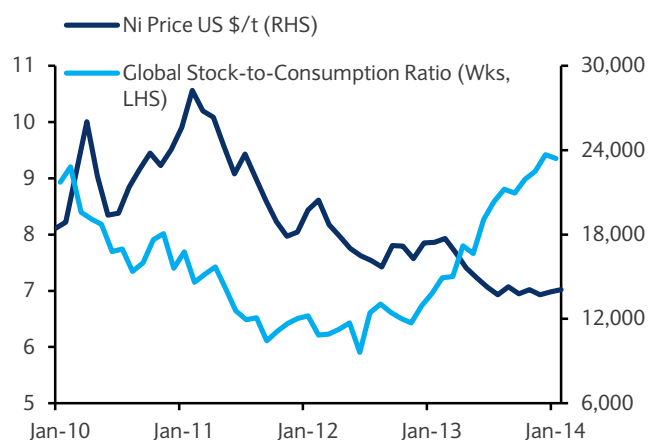
## Zinc stocks

	Exchange	Stocks (Kt)				Global stock to consumption ratio
		Producer	Consumer	Merchant	Total stock	
Feb 13	1528	342	129	13	2011	8.1
Mar 13	1494	334	129	13	1969	7.5
Apr 13	1364	333	135	13	1846	7.0
May 13	1379	342	135	13	1869	7.1
Jun 13	1327	345	135	13	1820	6.7
Jul 13	1307	337	138	13	1794	6.6
Aug 13	1260	325	139	13	1736	6.3
Sep 13	1277	321	140	13	1751	6.5
Oct 13	1274	312	140	13	1739	6.3
Nov 13	1203	313	140	13	1669	6.4
Dec 13	1172	313	140	13	1638	5.9
Jan 14	1096	313	140	13	1563	5.8

Source: ILZG, LME, SHFE

FIGURE 8

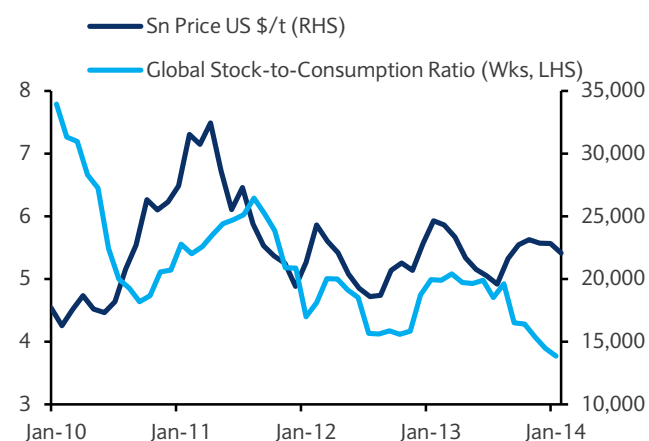
## Nickel global stock-to-consumption ratio



Source: INSG, CRU, LME, EcoWin

FIGURE 10

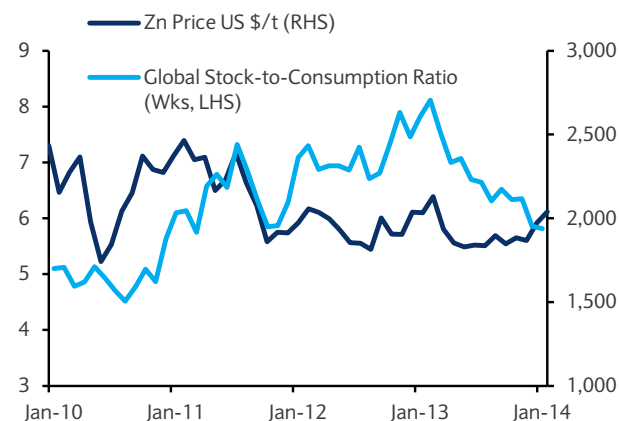
## Tin global stock-to-consumption ratio



Source: CRU, LME, EcoWin

FIGURE 12

## Zinc global stock-to-consumption ratio

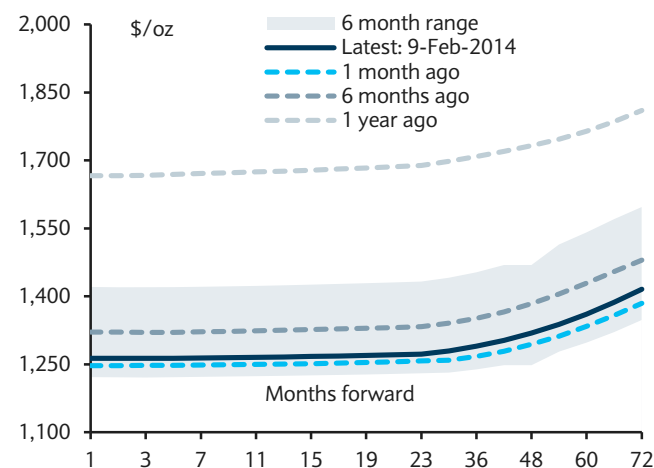


Source: ILZSG, LME, SHFE, EcoWin

## PRECIOUS METALS DATA: GOLD AND SILVER

FIGURE 1

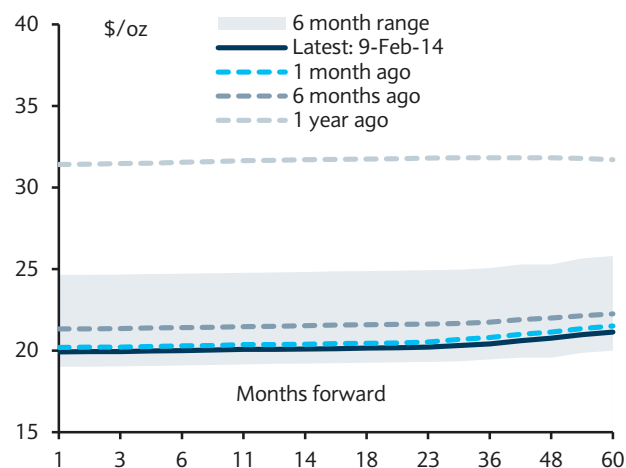
## Gold futures curve (COMEX)



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 2

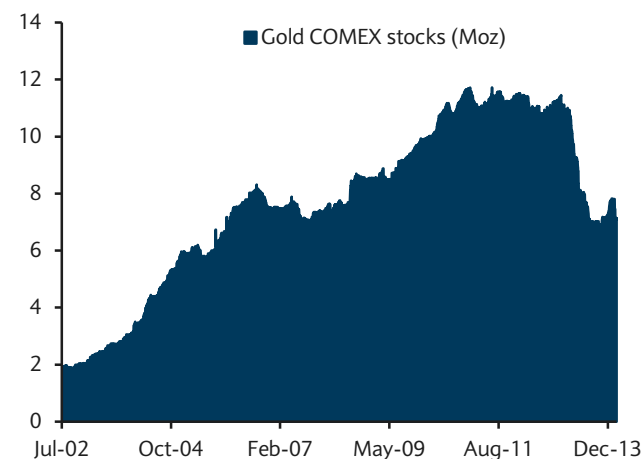
## Silver futures curve (COMEX)



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 3

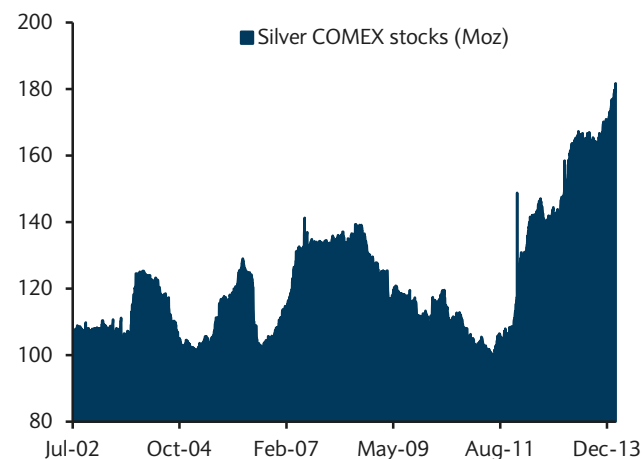
## Gold COMEX stocks



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 4

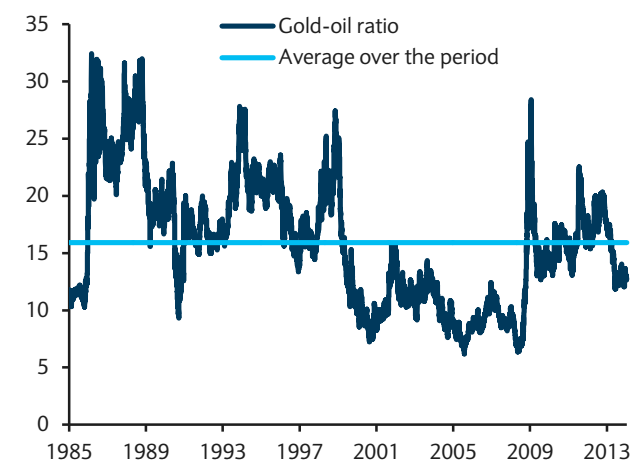
## Silver COMEX stocks



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 5

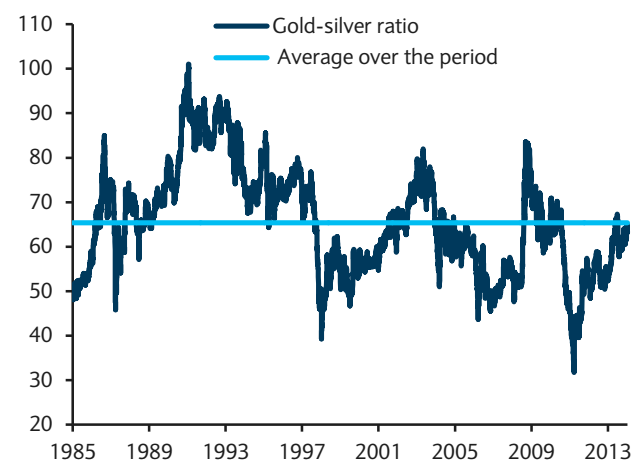
## Gold – oil ratio



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 6

## Gold – silver ratio

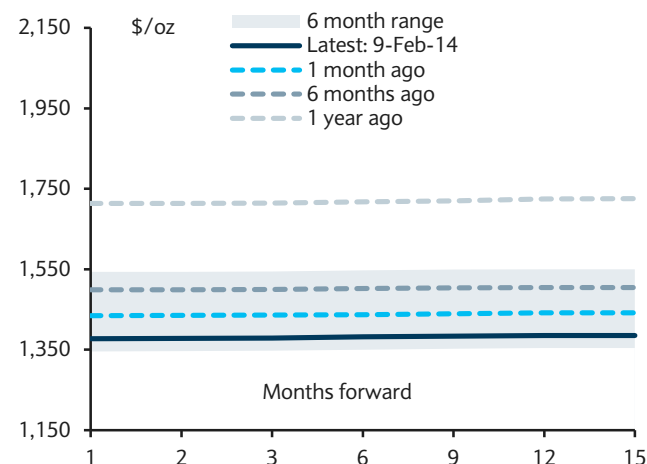


Source: Thomson Reuters Eikon, Barclays Research

## PRECIOUS METALS DATA: PLATINUM AND PALLADIUM

FIGURE 1

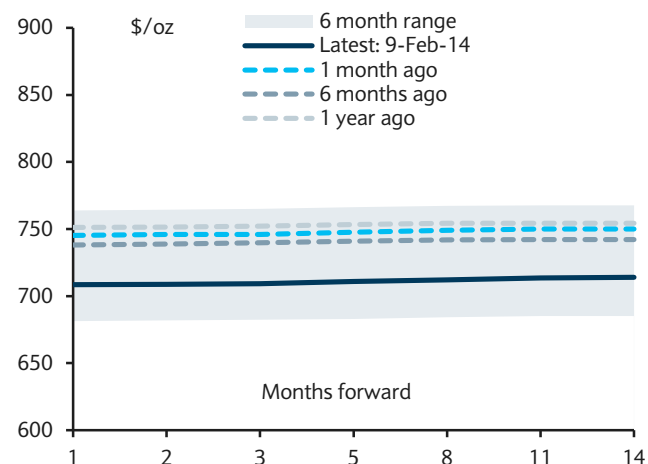
## Platinum futures curve (NYMEX)



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 2

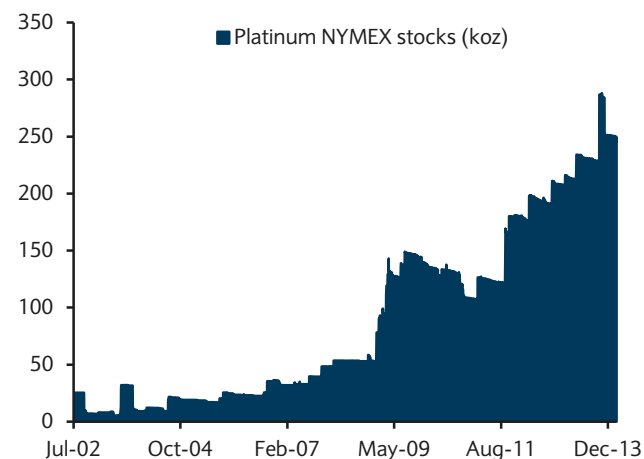
## Palladium futures curve (NYMEX)



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 3

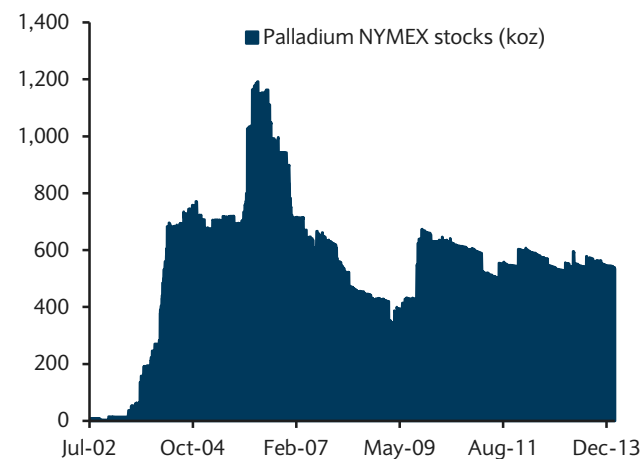
## Platinum NYMEX stocks



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 4

## Palladium NYMEX stocks



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 5

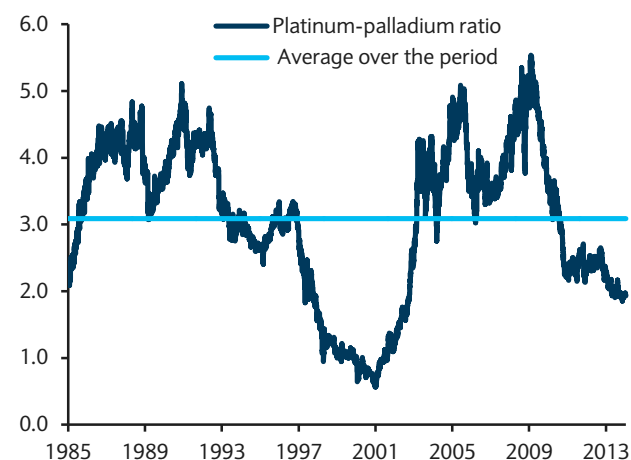
## Platinum – gold ratio



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 6

## Platinum – palladium ratio



Source: Thomson Reuters Eikon, Barclays Research

## PRICES

FIGURE 1

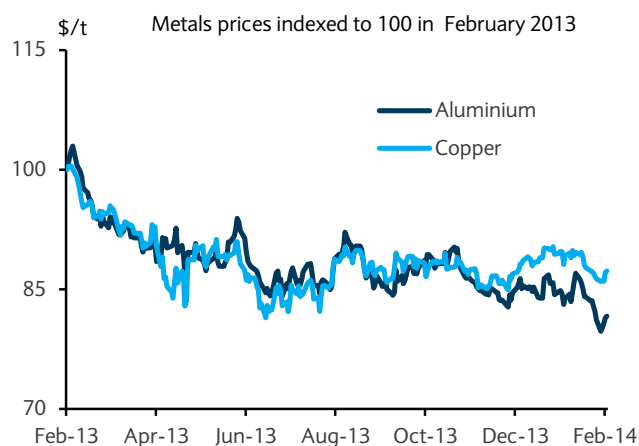
LME, SHFE and TOCOM metal prices

Commodity	Units	10 February 14	13 January 14		12 November 13		11 February 13	
		Close	Close	% chge	Close	% chge	Close	% chge
<b>Base Metals: LME 3M Prices</b>								
Aluminium	\$/t	1,701	1,780	-4.4%	1,800	-5.5%	2,103	-19.1%
Copper	\$/t	7,095	7,329	-3.2%	7,120	-0.4%	8,199	-13.5%
Lead	\$/t	2,103	2,166	-2.9%	2,107	-0.2%	2,389	-12.0%
Nickel	\$/t	14,200	14,210	-0.1%	13,630	4.2%	18,165	-21.8%
Tin	\$/t	22,200	22,150	0.2%	22,700	-2.2%	24,850	-10.7%
Zinc	\$/t	2,010	2,064	-2.6%	1,885	6.6%	2,191	-8.3%
<b>Base Metals: SHFE Prices</b>								
SHFE Aluminium	RMB/t	13,255	13,790	-3.9%	14,375	-7.8%	14,860	-10.8%
SHFE/LME Aluminium spread	\$/t	411	522	-21.3%	565	-27.3%	264	55.3%
SHFE Copper	RMB/t	51,030	51,910	-1.7%	51,520	-1.0%	58,930	-13.4%
SHFE/LME Copper spread	\$/t	1,077	1,310	-17.7%	1,477	-27.1%	1,219	-11.6%
SHFE Zinc	RMB/t	15,045	15,085	-0.3%	14,890	1.0%	15,625	-3.7%
SHFE/LME Zinc spread	\$/t	453	430	5.3%	558	-18.9%	297	52.5%
<b>Precious Metals: Spot Prices</b>								
Gold	\$/oz	1,274	1,253	1.7%	1,268	0.5%	1,649	-22.7%
Silver	\$/oz	20	20	-1.6%	21	-3.2%	31	-35.4%
Platinum	\$/oz	1,381	1,440	-4.1%	1,430	-3.4%	1,686	-18.1%
Palladium	\$/oz	715	737	-3.0%	737	-3.1%	756	-5.5%
<b>Precious Metals: TOCOM Prices</b>								
TOCOM Gold	yen/g	4,192	4,177	0.4%	4,105	2.1%	5,030	-16.7%
TOCOM Silver	yen/10g	67	67	-0.6%	68	-2.1%	94	-29.4%
TOCOM Platinum	yen/g	4,618	4,852	-4.8%	4,651	-0.7%	5,188	-11.0%
TOCOM Palladium	yen/g	2,365	2,492	-5.1%	2,408	-1.8%	2,244	5.4%
SHFE Gold	RMB/g	249	246	1.4%	255	-2.1%	340	-26.8%

Source: EcoWin, Barclays Research

FIGURE 2

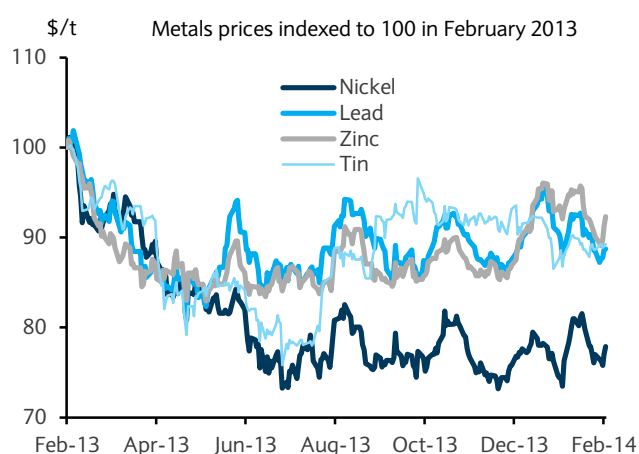
Copper and aluminium indexed prices



Source: Barclays Research

FIGURE 3

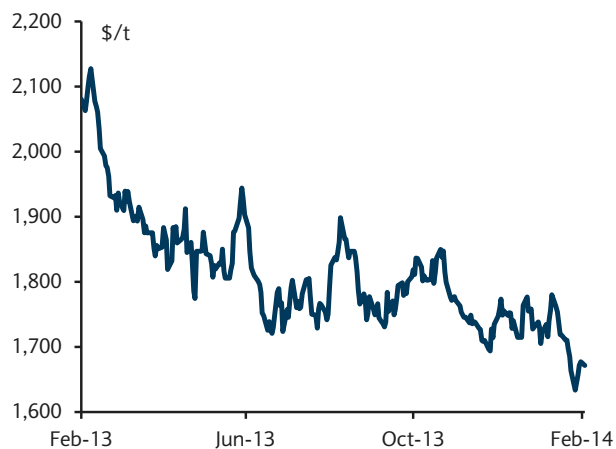
Tin, nickel, lead and zinc indexed prices



Source: Barclays Research

## LME cash prices (up to and including 10 February 2014)

FIGURE 4  
**Aluminium**



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 5  
**Copper**



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 6  
**Lead**



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 7  
**Nickel**



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 8  
**Tin**



Source: Thomson Reuters Eikon, Barclays Research

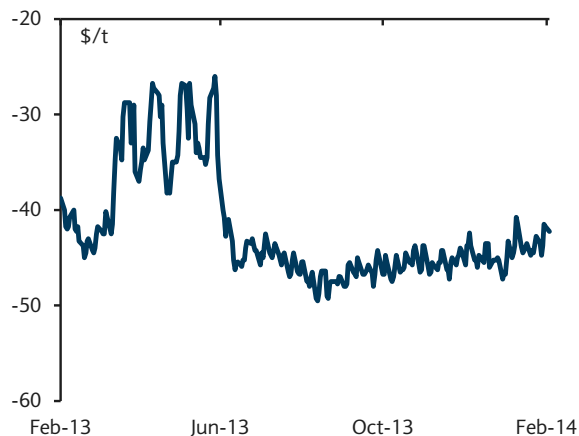
FIGURE 9  
**Zinc**



Source: Thomson Reuters Eikon, Barclays Research

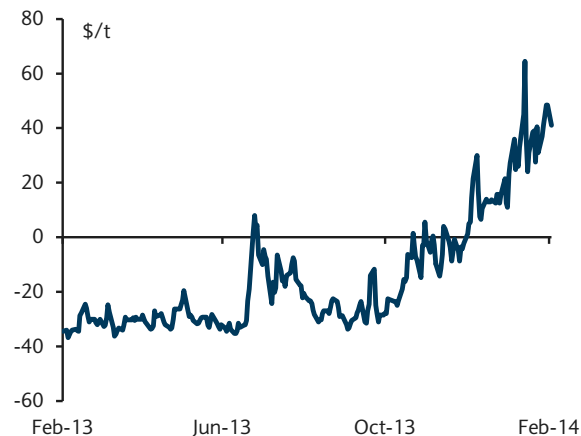
## LME cash-3m spread (up to and including 10 February 2014)

FIGURE 10  
Aluminium



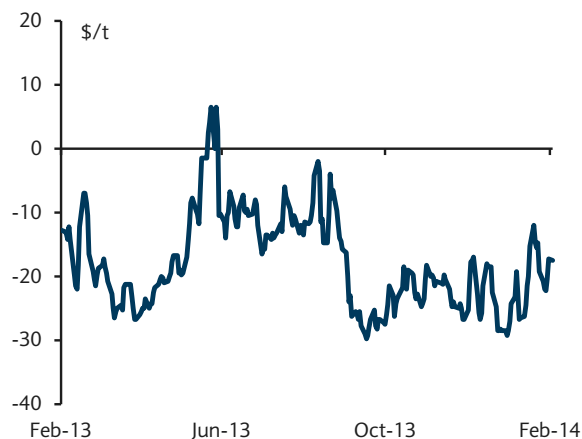
Source: Thomson Reuters Eikon, Barclays Research

FIGURE 11  
Copper



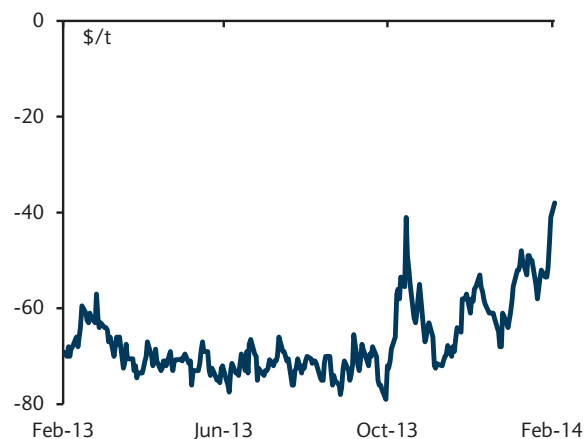
Source: Thomson Reuters Eikon, Barclays Research

FIGURE 12  
Lead



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 13  
Nickel



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 14  
Tin



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 15  
Zinc



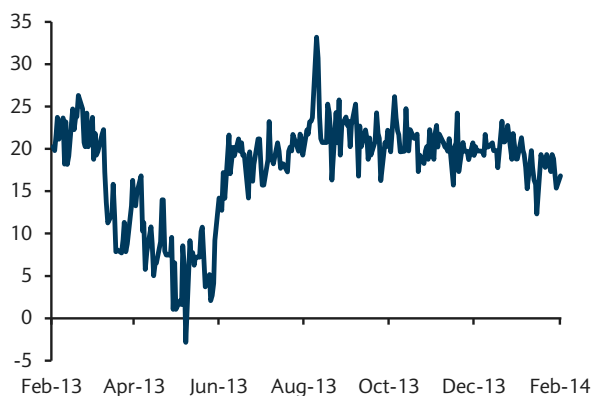
Source: Thomson Reuters Eikon, Barclays Research



## Warehousing profit/loss 3m basis (\$/t)

FIGURE 16

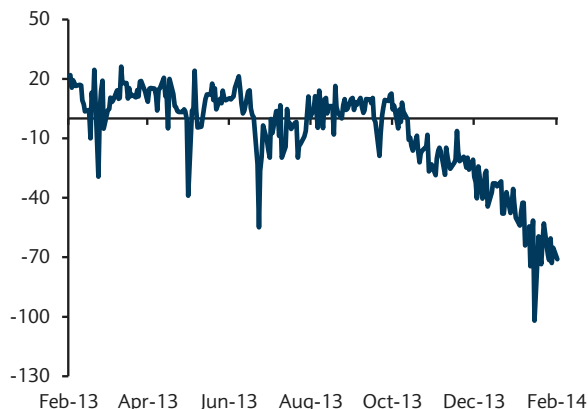
### Aluminium



Note: Calculated using federal funds rate and estimates of discounted warehousing rents. Source: Barclays Research

FIGURE 17

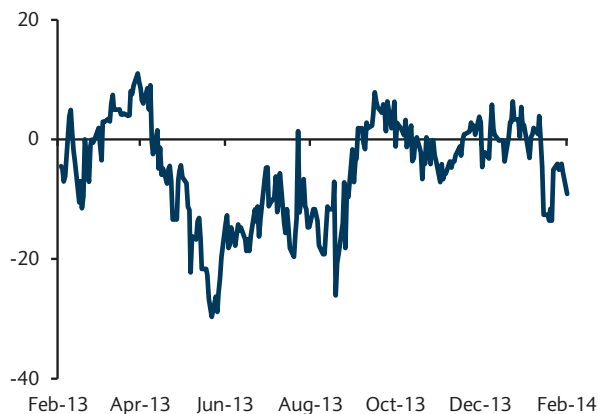
### Copper



Note: Calculated using federal funds rate and estimates of discounted warehousing rents. Source: Barclays Research

FIGURE 18

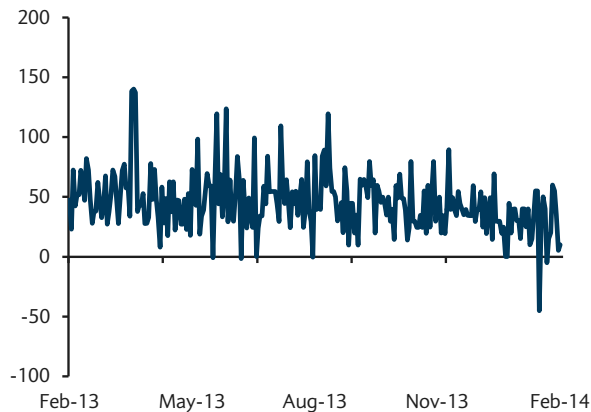
### Lead



Note: Calculated using federal funds rate and estimates of discounted warehousing rents. Source: Barclays Research

FIGURE 19

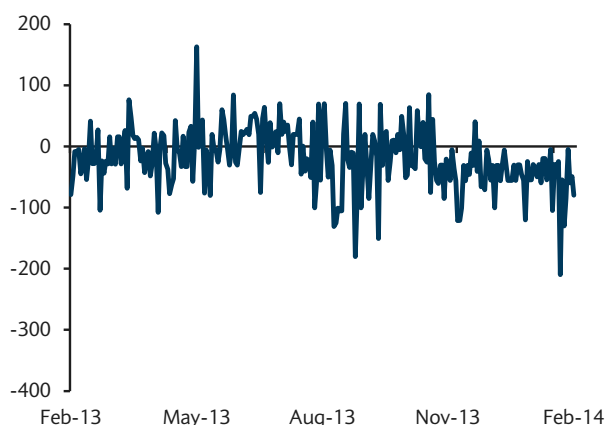
### Nickel



Note: Calculated using federal funds rate and estimates of discounted warehousing rents. Source: Barclays Research

FIGURE 20

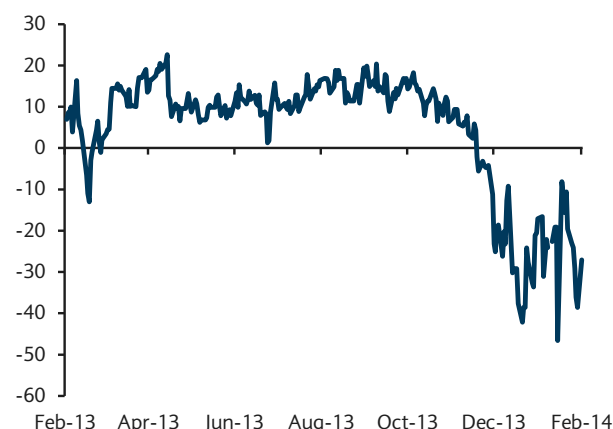
### Tin



Note: Calculated using federal funds rate and estimates of discounted warehousing rents. Source: Barclays Research  
All theoretical profit/loss levels are for indicative purposes only.

FIGURE 21

### Zinc

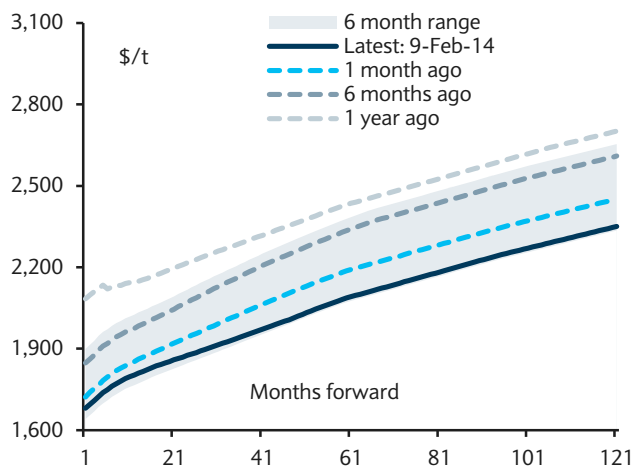


Note: Calculated using federal funds rate and estimates of discounted warehousing rents. Source: Barclays Research

## LME forward prices

FIGURE 22

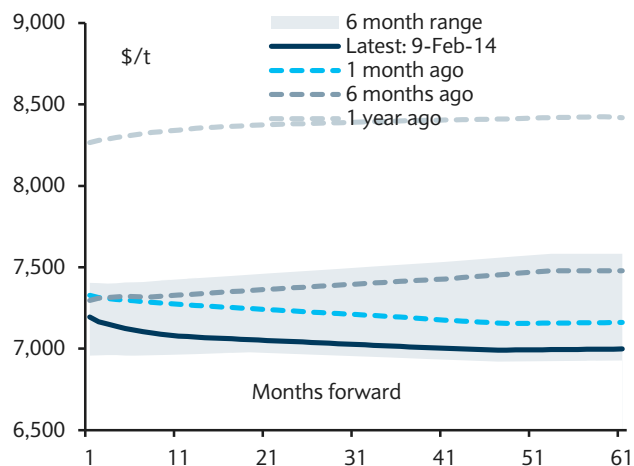
## Aluminium



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 23

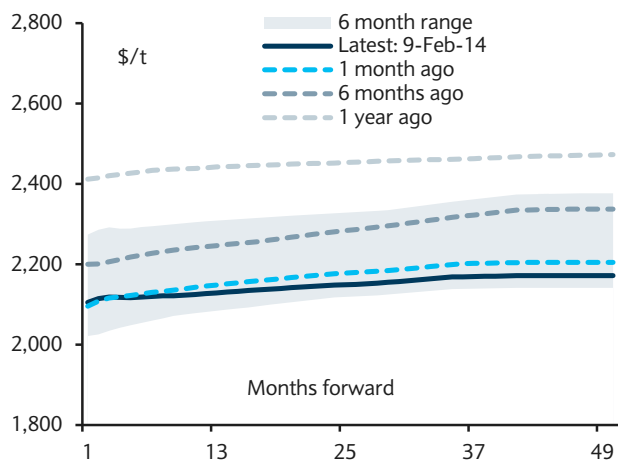
## Copper



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 24

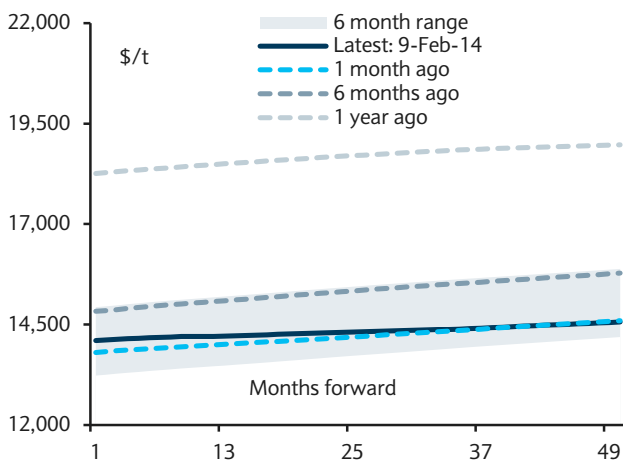
## Lead



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 25

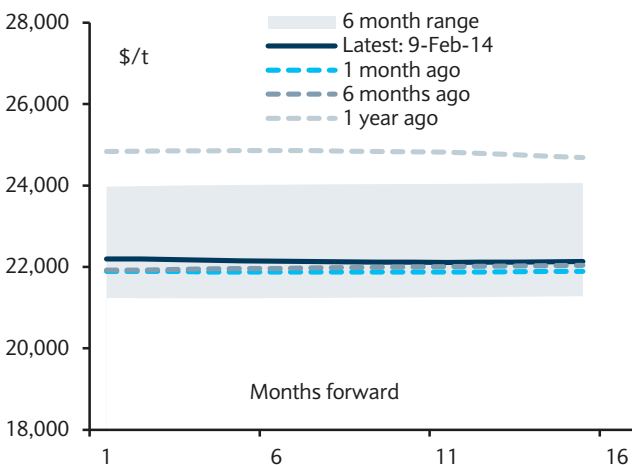
## Nickel



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 26

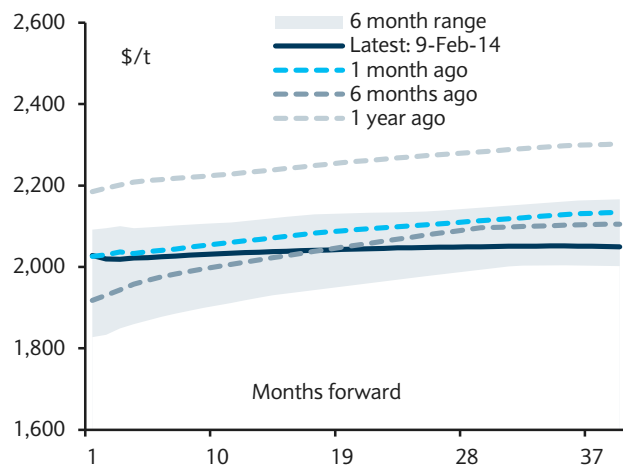
## Tin



Source: Thomson Reuters Eikon, Barclays Research

FIGURE 27

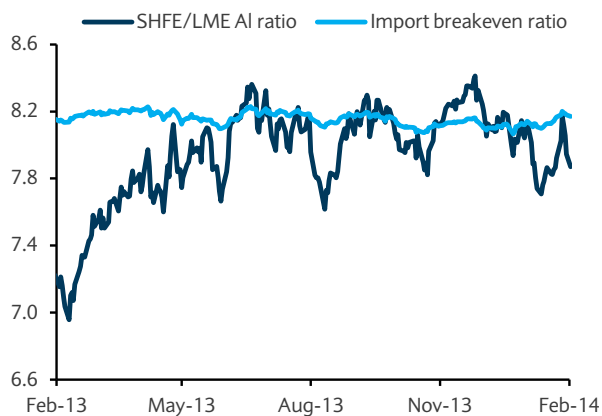
## Zinc



Source: Thomson Reuters Eikon, Barclays Research

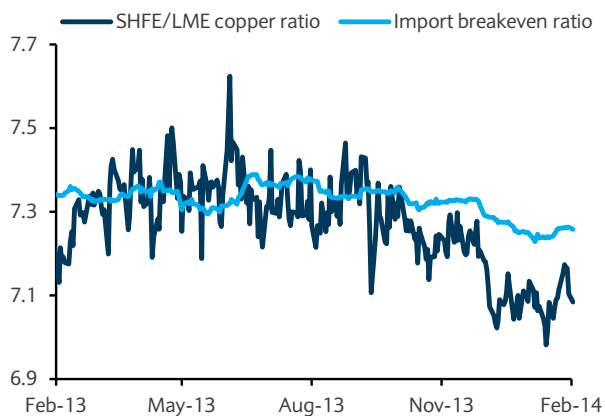
## SHFE/LME import breakeven ratios

FIGURE 28  
Aluminium



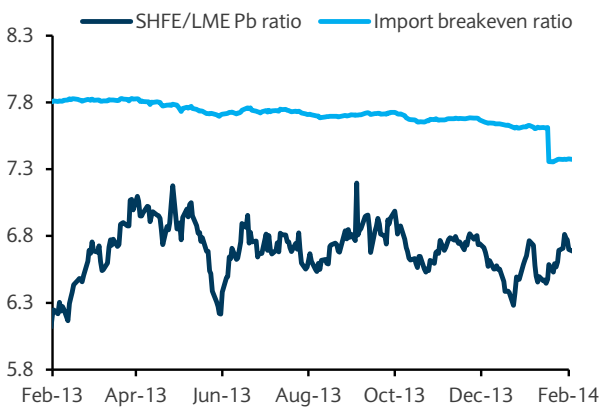
Source: SHFE, Barclays Research

FIGURE 29  
Copper



Source: SHFE, Barclays Research

FIGURE 30  
Lead



Source: Antaike, SHFE, Barclays Research

FIGURE 31  
Nickel



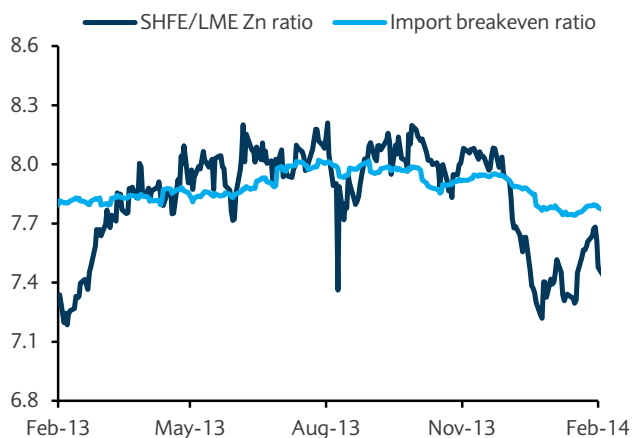
Source: Antaike, Barclays Research

FIGURE 32  
Tin



Source: Antaike, Barclays Research  
All ratios are for indicative purposes only.

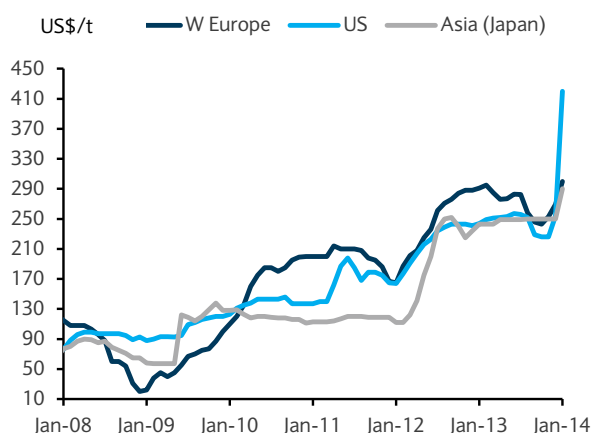
FIGURE 33  
Zinc



Source: SHFE, Barclays Research

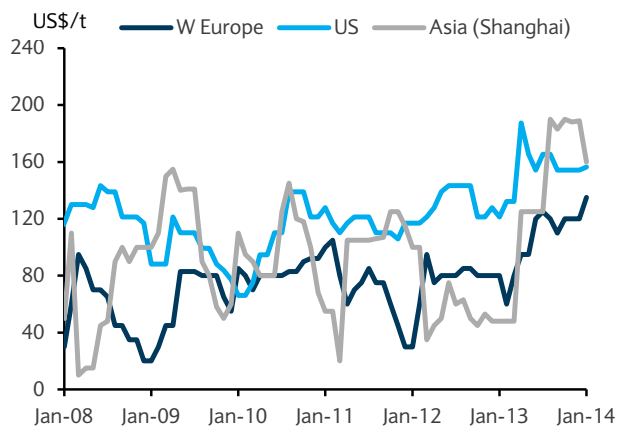
## Premiums (regional physical market above LME cash prices)

FIGURE 34  
Aluminium



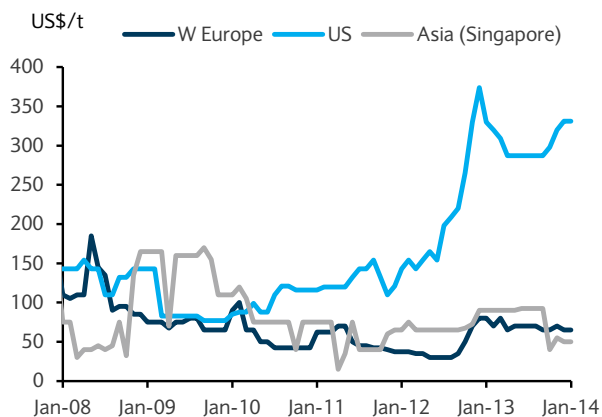
Source: Brook Hunt, Barclays Research

FIGURE 35  
Copper



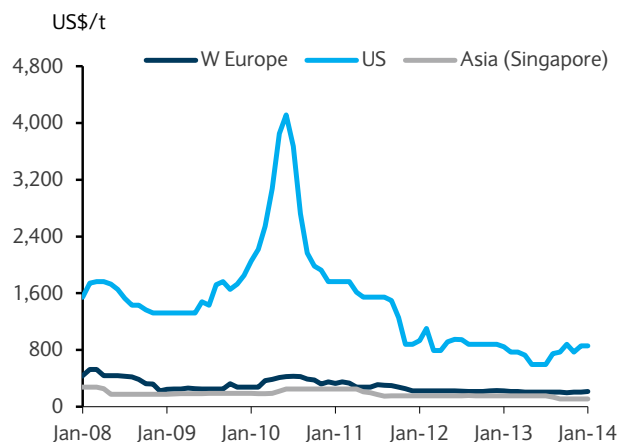
Source: CRU, Barclays Research

FIGURE 36  
Lead



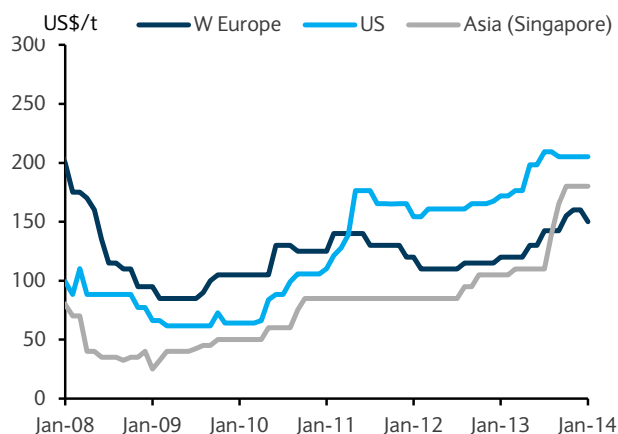
Source: Brook Hunt, Barclays Research

FIGURE 37  
Nickel



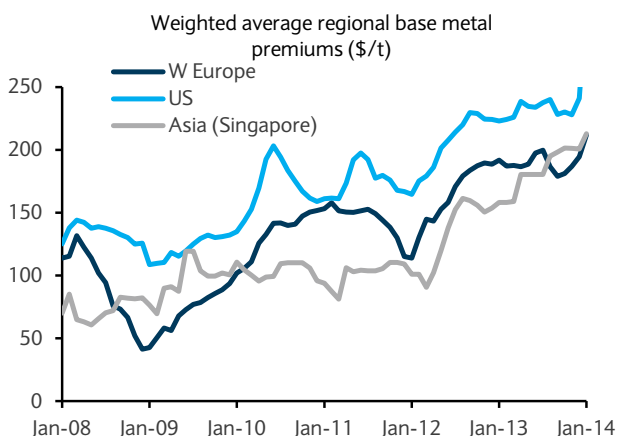
Source: Brook Hunt, Barclays Research

FIGURE 38  
Zinc



Source: Brook Hunt, Barclays Research

FIGURE 39  
Weighted average



Source: Brook Hunt, Barclays Research

## TRADE RECOMMENDATIONS

FIGURE 1

## Key recommendations

	Contract	Entry Date	Entry price	Current Price	Unit	Gain/Loss	
				11-Feb-14		\$	%
Long LME nickel	Mar-14	12/9/2013	13963.00	14137.50	\$/t	174.50	1.2%
Rationale: At current price levels, downside is limited since almost 30% of global producers are unable to cover cash costs. Meanwhile, upside price risk is provided by the export ban on nickel-bearing iron ore due to come into effect in Indonesia in early 2014, potentially depriving the Chinese nickel-pig iron sector of crucial raw material feed.							
Short Brent WTI spread	May-14	12/9/2013	-11.47	-9.38	\$/bbl	-2.09	18.2%
Rationale: We see oil prices weakening a little in early 2014, but instead of going outright short, a less risky trade in our view is to be short Brent relative to WTI. This is predicated not only on the potential for weakness in Brent but also a firmer WTI market due to the early 2014 start-up of substantial take-away capacity in the form of the southern part of TransCanada's 700kbpd seaway pipeline and the adjustment to US crude oil differentials that will result.							
Short COMEX gold	Dec-15	12/9/2013	1235.50	1290.20	\$/oz	-54.70	-4.4%
Rationale: The risk is for further price downside ahead, in our view. The physical market is struggling to offset investor liquidation, even during recent festival seasons when physical demand is usually strong. Moreover with investors having accumulated a lot of gold at around the \$1000/oz level, liquidation is likely to accelerate should prices look like breaking below this point.							
Long LME tin	Mar-14	10/1/2013	23067.00	22183.00	\$/t	-884.00	-3.8%
Rationale: Although we believe tin has the weakest demand outlook among all base metals, its constrained supply outlook means that the market is still facing a deficit, and we forecast further price upside in 2014 to \$26,000/t.							
Long Brent crude oil	Dec-15	1/27/2011	98.15	99.93	\$/bbl	1.78	1.8%
Rationale: We see the medium-term crude oil price risks as being to the upside, due mainly to strong EM demand growth, lack of spare capacity and constraints on non-OPEC supply. We expect far-forward prices to benefit, with our 2015 price forecast for Brent pegged at \$115/bbl.							

Note: From January 2013, a stop loss of -7.5% and a profit target of 15% has been applied to all trades. Trades will be shut automatically if either of these thresholds is breached, unless there are exceptional circumstances that suggest a trade should be kept open. Source: Reuters, Barclays Research

FIGURE 2

## Closed trades

Closed Trades	Contract	Entry Date	Exit Date	Entry price	Exit price	Unit	Gain/Loss	
							\$	%
Directional trades								
Long NYMEX platinum	Jan-14	4/30/2013	1/29/2014	1511	1406	\$/oz	-105.00	-6.9%
Short LME copper	Dec-13	8/27/2013	11/6/2013	7321	7113	\$/t	208.0	2.8%
Short LME aluminium	Dec-13	6/7/2013	10/1/2013	1976	1820	\$/t	156.3	7.9%
Long NYMEX palladium	Dec-13	1/18/2013	8/27/2013	725	751.25	\$/oz	26.45	3.6%
Short LME nickel	May-13	2/15/2013	3/21/2013	18380	16872	\$/t	1508	8.2%
Short LME aluminium	Mar-13	10/1/2012	3/18/2013	2144	1893.5	\$/oz	251	11.7%
Long COMEX gold	Feb-13	10/1/2012	1/22/2013	1786	1693.2	\$/oz	-92.3	-5.2%
Long NYMEX palladium	Dec-12	2/29/2012	12/31/2012	710	703.35	\$/oz	-7	-0.9%
Long LME copper	Dec-12	5/17/2012	8/24/2012	7639	7642	\$/t	-1373	-14.3%
Long LME aluminium	Dec-15	3/29/2011	7/20/2012	2884	2193	\$/t	-691	-24.0%
Short US nat gas Henry Hub	Oct-13	11/21/2011	12/20/2011	4.4	4.1	\$/mmbtu	0.3	6.6%
Long COMEX gold**	Dec-12	11/21/2011	12/20/2011	1694	1628	\$/oz	-66	29.3%
Long Carbon EUA	Dec-11	2/24/2011	6/30/2011	15.4	13.5	€/t	-1.9	-12.1%
Long UK natural gas	Q3-11	3/29/2011	5/26/2011	63.9	58.5	p/therm	-5.4	-8.5%
Long LME nickel	Jun-11	2/24/2011	5/26/2011	27501	22821	\$/t	-4680	-17.0%
Long European delivered coal (API2)**	Apr-11	1/27/2011	3/29/2011	114.5	125.7	\$/t	16	14.4%
Short Comex silver	Dec-11	1/27/2011	2/24/2011	27.1	33.1	\$/oz	-6	-22.4%
Spread trades								
Short 3.5% fuel oil Rotterdam-Brent crack spread		4/30/2013	5/31/2013	-10.79	-11.74	\$/bbl	0.95	-
US natural gas spread widening		3/21/2013	3/26/2013	0.095	0.086	\$/mmbtu	-0.01	-
Short front month Brent time spread		2/15/2013	3/8/2013	90.0	76.0	c/b	14.0	-
Short US gasoline crack spread		1/18/2013	1/24/2013	27.8	30.0	\$/b	-2.2	-
UK nat gas spread widening		8/24/2012	11/29/2012	0.01	0.58	p/therm	0.57	-
Fuel oil versus gasoil differentials		2/29/2012	10/1/2012	-30.54	-30.01	\$/b	0.54	-
Short European gasoil crack spreads		6/25/2012	7/20/2012	0.50	-0.41	\$/b	0.91	-
US gasoline (RBOB) spread tightening		12/20/2011	5/17/2012	3.0	3.8	\$/b	0.9	-
Copper spreads tightening		11/21/2011	3/21/2012	-17.3	14.5	\$/t	14.0	-
WTI contango widening		7/19/2011	2/29/2012	0.38	0.41	\$/b	0.03	-
Crude oil spread tightening**		4/20/2011	5/26/2011	-0.36	-0.37	\$/b	0.34	-

Note: Entry and exit prices reference closing prices on the day of publication. \*\*These trades include gains/losses from previous trades.

Source: Reuters, Barclays Research

## 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
<b>Forecasts</b>												
2014	1,850	84	7,125	323	2,263	103	15,000	680	26,000	1,179	2,138	97
Q1	1,750	79	7,100	322	2,200	100	14,750	669	25,000	1,134	2,000	91
Q2	1,850	84	7,300	331	2,200	100	15,000	680	25,500	1,156	2,100	95
Q3	1,850	84	7,100	322	2,300	104	15,000	680	26,500	1,202	2,200	100
Q4	1,950	88	7,000	317	2,350	107	15,250	692	27,000	1,224	2,250	102
2015	2,150	98	8,000	363	2,513	114	17,000	771	30,000	1,361	2,400	109
Cycle Averages	2,130	97	6,950	315	2,700	122	18,200	825	18,000	816	2,975	135
<b>History</b>												
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
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
2010	2,172	99	7,533	342	2,146	97	21,809	989	20,407	925	2,158	98
Q1	2,165	98	7,243	328	2,219	101	20,078	911	17,225	781	2,288	104
Q2	2,092	95	7,013	318	1,944	88	22,382	1,015	17,844	809	2,018	92
Q3	2,088	95	7,243	328	2,031	92	21,178	960	20,559	932	2,013	91
Q4	2,343	106	8,634	392	2,390	108	23,598	1,070	26,001	1,179	2,315	105
2011	2,398	109	8,813	400	2,399	109	22,853	1,036	26,063	1,182	2,191	99
Q1	2,503	114	9,646	437	2,605	118	26,899	1,220	29,950	1,358	2,393	109
Q2	2,600	118	9,137	414	2,550	116	24,165	1,096	28,694	1,301	2,250	102
Q3	2,399	109	8,982	407	2,459	112	22,043	1,000	24,757	1,123	2,224	101
Q4	2,090	95	7,489	340	1,983	90	18,303	830	20,853	946	1,897	86
2012	2,017	91	7,948	360	2,060	93	17,520	795	21,085	956	1,946	88
Q1	2,176	99	8,310	377	2,093	95	19,651	891	22,941	1,040	2,025	92
Q2	1,975	90	7,869	357	1,974	90	17,146	778	20,565	933	1,928	87
Q3	1,921	87	7,706	349	1,975	90	16,317	740	19,275	874	1,885	86
Q4	1,996	91	7,909	359	2,199	100	16,967	769	21,560	978	1,947	88
2013	1,847	84	7,326	332	2,142	97	15,025	681	22,312	1,012	1,910	87
Q1	2,003	91	7,931	360	2,301	104	17,314	785	24,125	1,094	2,033	92
Q2	1,835	83	7,148	324	2,053	93	14,963	679	20,905	948	1,840	83
Q3	1,781	81	7,073	321	2,102	95	13,916	631	21,268	965	1,859	84
Q4	1,769	80	7,153	324	2,111	96	13,909	631	22,948	1,041	1,907	86

Note: Cycle average denotes cost-driven estimate of the minimum sustainable price over a business cycle. Source: Ecwin, Barclays Research

## PRECIOUS METAL SPOT PRICE FORECASTS

	Gold US\$/oz	Silver US\$/oz	Platinum US\$/oz	Palladium US\$/oz
<b>Forecasts</b>				
2014	1,205	19.0	1,539	768
Q1	1,220	19.0	1,450	730
Q2	1,150	18.0	1,520	750
Q3	1,190	18.5	1,575	780
Q4	1,260	20.5	1,610	810
2015	1,150	17.0	1,650	850
Cycle average	1,125	16.0	1,850	650
<b>History</b>				
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
2008	872	15.0	1,569	348
2009	972	14.6	1,205	262
Q1	1,110	16.9	1,562	440
Q2	1,196	18.3	1,630	492
Q3	1,227	18.9	1,550	493
Q4	1,370	26.5	1,697	678
2010	1,226	20.2	1,610	526
Q1	1,387	31.9	1,789	788
Q2	1,508	38.4	1,781	756
Q3	1,705	38.8	1,766	747
Q4	1,682	31.8	1,527	626
2011	1,571	35.2	1,716	729
Q1	1,387	31.9	1,789	788
Q2	1,508	38.4	1,781	756
Q3	1,705	38.8	1,766	747
Q4	1,682	31.8	1,527	626
2012	1,668	31.1	1,547	641
Q1	1,690	32.6	1,604	680
Q2	1,611	29.4	1,495	625
Q3	1,653	29.9	1,493	609
Q4	1,717	32.5	1,593	650
2013	1,412	23.8	1,483	723
Q1	1,631	30.1	1,628	738
Q2	1,416	23.2	1,464	712
Q3	1,329	21.4	1,449	721
Q4	1,271	20.8	1,392	722

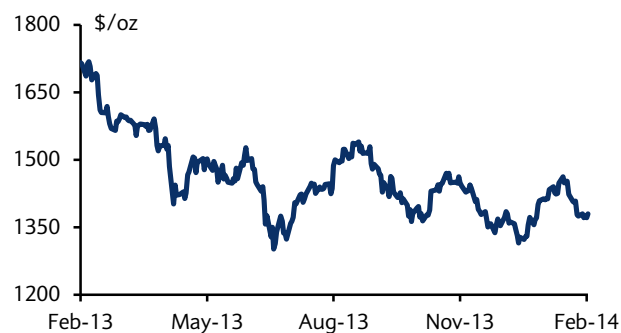
Gold



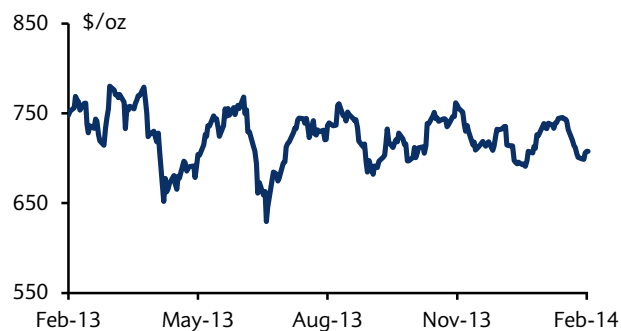
Silver



Platinum



Palladium



Note: Cycle average denotes cost-driven estimate of the minimum sustainable price over a business cycle. Source for all figures: EcoWin, Barclays Research