21 January 2016

Plumbing the depths…

Precious Metals: Platinum tide slowly turning

- The US interest rate environment should not be much of a threat to **gold** in 2016 but conversely we don't believe there is a convincing argument why the four year downtrend should be reversed either.
- We would be biased long gold into Chinese New Year but only up to around $1,140. We expect the current rally to fade after that the metal to post a new low for the current down-cycle in Q3, followed by a sluggish recovery into year end.
- **Silver** remains a derivative of gold. Trading opportunities are tactical and technical, not fundamental. We recommend buying silver volatility when one-month implied dips below 23%. We would rather own puts than calls.
- In the short-term we expect **platinum** to trade below $800 and potentially test the global financial crisis low of $744. The medium-term outlook is improving, however, and we think platinum's long period of underperformance relative to both gold and palladium will begin to reverse during H2.
- Relative to spot prices we are most bearish **palladium**. That's counter to consensus and recent history. But the demand outlook has deteriorated, supply is inelastic, inventories are large, and investor conviction is shaky. Palladium is more likely to trade in the $300s than $600s this year.

Base Metals: Dr Copper and Mr Hyde

- 2016 is looking like a particularly intriguing year as "Dr Copper" and the weak macroeconomic environment interacts with the rougher and more down at heel physical aspect of its character. We remain bullish towards the metal particularly for H2-16 and expect ongoing physical tightness to see prices snap back.
- Zinc concentrate tightness is here already, and it is only a matter of time before the refined market reacts… We don't expect to see meaningful refined deficits appear until next year, however spread and outright price opportunities will present themselves
- Nickel will continue to struggle with further production cutbacks needed to help underpin prices. In the meantime the metal will continue to grind sideways with further weakness perhaps on the cards if producers continue to try and wait things out in the hope Chinese NPI producers vanish.
- Aluminium prices look set to remain weak, with Western World deficits being offset by Chinese surpluses. Opportunities instead are opening up in premia and spreads, helped by the continuing and perhaps worsening opacity with regards to inventory levels and real availability of material.

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Plumbing the depths: Where are we in the cycle?

The weakness in global trade, and the refusal of final demand for goods and services to rebound anywhere close to potential are problems for all asset classes. For central banks, managing deflation is proving much hard than controlling inflation. Seven years on from the global financial crisis, throwing more liquidity at the problem may postpone solvency crises but will not solve the structural issues. It is not the supply or price of credit from the centre that is holding back consumption; it is a lack of demand for it, which feeds back into increasing caution by commercial lenders of all types. The increased regulatory cost of capital and of lending for banks is having unintended and damaging pro-cyclical consequences.

China, of course, as the primary source of demand growth remains the focus for commodities. A strong pick-up in growth is unlikely. Few in the commodities world complained when Chinese policymakers threw Rmb4 trillion into investment in fixed assets in 2009 but miners are paying for it now. Further stimulus in the form of infrastructure investment this year is likely but that alone cannot turn the tide. The residential property market has already received several injections of adrenaline in the form of interest rate cuts, deposit cuts, and relaxation of criteria for second mortgages but a record high inventory of unsold apartments remains.

That does not mean we expect outright contraction of demand for most basic materials but growth will be slower and inventory cycles will be longer. However, it is not all doom and gloom. Price is forcing supply to respond, and the fact that the pace of that response differs from commodity to commodity offers both outright and relative opportunities. Metals with the lowest stock to consumption ratios and the steepest cost curves will turn first.

On that basis we are most positive towards copper, followed by zinc. At the other end of the spectrum are aluminium and palladium. The hybrid commodity/currency that is gold lies trapped somewhere in the middle: sufficient concern about economic stability and FX depreciation in emerging markets to provide periodic support, but insufficient fear of inflation or financial Armageddon in developed markets to fully turn the tide.

So to answer the question posed by the title, we are close to but not yet at the bottom of the commodity cycle. This year will be one of further write-downs, asset sales, credit events, equity dilution and distressed M&A. That will impose more supply discipline but even for those commodities that turn first the recovery in price is unlikely to be 'V'-shaped.

Tom Kendall

Precious metals

Forecast summary

All of our price forecasts have been cut materially to reflect a reduction in global growth assumptions and a prolonged supply-side restructuring. On the basis of quarterly averages we don't foresee much more than 5% additional downside for either gold or silver from spot levels, though of course the absolute lows will be lower.

Over the year as whole we see most upside for platinum as supply finally responds more materially to decade-low US-dollar prices. Palladium is our least preferred metal – that is a non-consensus view but we think the fundamental outlook is one of loosening, not tightening, balances over the medium term.

	Annual						Quarterly				
	Actual			Forecast (nominal)			Actual	Forecast (nominal)			
PRECIOUS METALS	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Q4 '15**	**Q1 '16**	**Q2 '16**	**Q3 '16**	**Q4 '16**
Gold	1,411	1,265	1,160	1,060	1,125	1,200	1,104	1,080	1,070	1,040	1,050
% chg from previous forecast				*-16.9%*	*-18.2%*		*-6.8%*	*-14.3%*	*-18.3%*		
% change from spot								*-1.8%*	*-2.7%*	*-5.4%*	*-4.5%*
Silver	23.90	24.00	15.71	13.55	14.10	14.30	14.77	13.70	13.50	13.40	13.60
% chg from previous forecast				*-20.8%*	*-19.4%*		*-9.9%*	*-18.0%*	*-23.7%*		
% change from spot								*-2.4%*	*-3.8%*	*-4.5%*	*-3.1%*
Platinum	1,487	1,385	1,055	860	1,000	1,150	909	815	830	875	920
% chg from previous forecast				*-31.2%*	*-29.8%*		*-21.0%*	*-32.1%*	*-35.2%*		
% change from spot								*-0.3%*	*1.6%*	*7.1%*	*12.6%*
Palladium	720	803	691	440	490	525	605	440	420	440	460
% chg from previous forecast				*-43.2%*	*-44.0%*		*-17.1%*	*-41.3%*	*-46.5%*		
% change from spot								*-11.0%*	*-15.0%*	*-11.0%*	*-6.9%*

ICBC Standard Bank forecasts

Gold: unconvincing

Key points

The US interest rate environment should not be much of a threat to gold in 2016; it is improbable that the FOMC will be able to vote for more than two 25bp increases this year and two may be a challenge. Consequently the rate of liquidation of legacy positions by US investors is likely to slow.

Pockets of elevated global macro-economic and geopolitical risk plus FX volatility will be supportive of defensive buying, particularly in emerging markets.

That's the good news but it is already largely priced in to gold, and there is bad news too:

- Jewellery demand in a number of key locations is struggling for growth, notably China.
- For Chinese importers the interest rate advantage of borrowing gold offshore and lending onshore has been narrowing, and that trend is set to continue.
- Scrap flows in western markets have already fallen to multi-year lows and are unlikely to drop much further, while scrap sales in several emerging markets have been stimulated by high prices in local currency terms (Turkey, for example).
- Mine supply has not yet begun to contract and is only a meaningful influence on price over the long term.

The net result for gold this year is likely to be a new low for the down cycle – a short sharp dip below $1,000 is possible – followed by the beginnings of a sluggish recovery towards the back end of the year if/when the US dollar rally runs out of steam.

Deflationary shadows

The deflationary effects of falling energy prices will persist in year-on-year figures for some months to come. Central banks should view the effects as transient but if they start to affect longer-term inflation expectations that (as St Louis Fed president Bullard noted last week) would be a concern.

The lack of wages growth in the US is also a problem for the FOMC. It is improbable that the US labour market will tighten sufficiently to drive a marked acceleration of wage inflation this year, particularly if the tick up in the participation rate seen in December is repeated.

Given that, and the fact that December's rate rise was a close call, we think that at best the FOMC will be able to vote for two 25 basis point increases this year. That fits with the 64% Fed funds futures implied probability of rates being 50bp higher by year end and suggests that the FOMC dot plots of members' rates forecasts will continue to shift down.

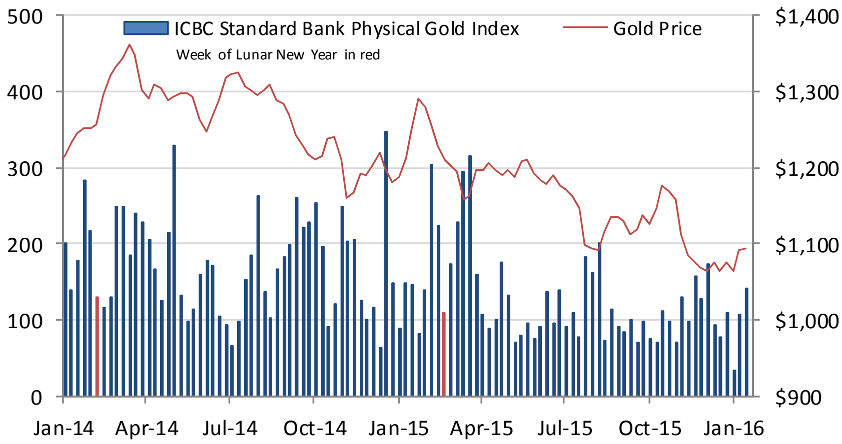
So in our view the US real rates environment for gold will be relatively benign this year and the pace of ETF liquidation will be considerably slower than in 2015, when around 4.45 million oz (138 tonnes) of metal exited funds.

Gold bulls go further and float the possibility of the Fed having to reverse course and cut rates back to the zero bound again. That, however, is also unlikely this year – it would require a marked deceleration in the global economy and under that scenario gold would almost certainly be dragged down with almost all other assets as the need for cash would outweigh the need for collateral. Deflation and US recessions have not historically been good for gold.

Jewellery: mixed messages

Physical bullion demand from key jewellery markets remains very mixed. As reflected in our Physical Gold Index, Asian demand has improved over the last two months (Thailand being a highlight) but remains a long way below the volumes seen in the approach to previous Chinese New Year holidays. **The sustainability of demand above $1,100 is not proven**.

ICBC Standard Bank Physical Gold Index



Source: ICBC Standard Bank

Middle Eastern issues

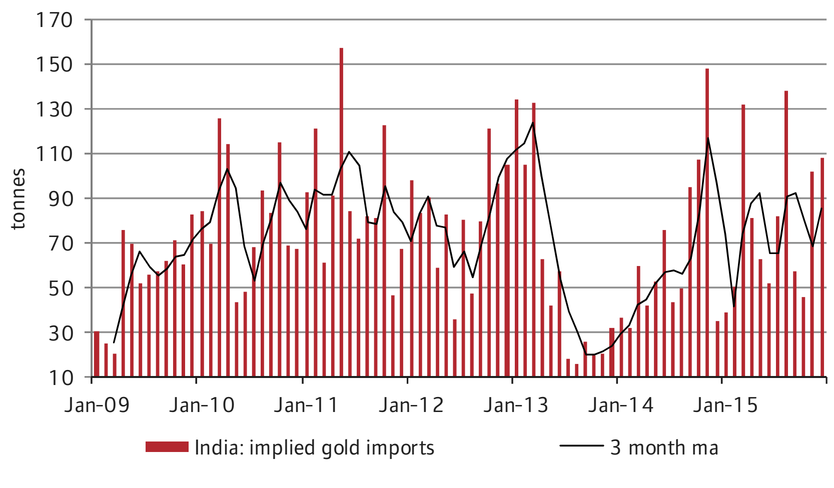
Taken in isolation a slower pace of ETF liquidation could be interpreted as bullish but the effect of sharply lower energy prices and conflict in the Middle East on jewellery demand and retail level investment in and around the region has been significant. Slowing local economies, reduced tourist traffic through Dubai and Abu Dhabi, plus the choppy, downward trending price have affected demand across the UAE, while reports suggest the prolonged fall in energy prices is also starting to affect spending on jewellery in Saudi Arabia. The Turkish market also suffered a depressed 2015 as far as new demand was concerned, with imports collapsing to a 5-year low of less than 50 tonnes. The sharp depreciation of the Turkish lira during the first nine months of the year took local gold prices to record highs, stimulating a notable increase in sales of gold back to the market.

Indian uncertainty

In terms of its "call" on the global market, India had reasonable 2015: Implied imports at around 840 tonnes (derived from the dollar value) were 13% up yoy for January through November. With the final figure for December also expected to exceed 100 tonnes, gross imports (before netting off value added exports) increased by more than 20%.

Importantly, however, the pace of imports was very price sensitive: August, November and December when prices dipped below Rs70,000 / oz (Rs22,000/10 grams) were strong; buying during the rest of the year was running at an annualized rate of a bit less than 800 tonnes. The Indian market has always been one of the more price sensitive sources of demand but the delta between the peaks and troughs has become more pronounced over the past year and a half. That makes it harder for the retail end of the market to manage inventory and price risk and leads to greater volatility in premiums.

Implied Indian gold imports



Source: Bloomberg; ICBC Standard Bank

The value of gold imports increased at a slower rate of around 12% yoy thanks to the fall in price. Nevertheless the increase was unwelcome for a government that is committed to maintaining its annual borrowing target, in part to help offset a sharp slow-down in exports.

That will probably reinforce efforts to moderate gold demand via central policy. Results of the gold monetization scheme and the sovereign gold bond program have been disappointing to date: each has attracted less than 1 tonne of gold deposits. The second tranche of 8-year bonds will be issued on February 8th with a coupon of 2.75% - that's before tax and is still a long way below term deposit rates and the rate of inflation. There is pressure on commercial banks to improve the uptake but with their commission set at just 1% of the principal invested their motivation to aggressively market the bonds is not great. The gold monetization scheme is also under review, with one proposal to broaden access via jewellers. We remain sceptical about the near-term impacts of both policies but if they remain minor side-shows and the gold import bill continues on an upward track then the risk of more direct intervention (via taxation or duties) will also increase.

According to World Bank forecasts, the outlook for the Indian economy in 2016 is good, with GDP forecast to increase from 7.3% (estimated) in 2015 to 7.8% this year. That would tend to be supportive of jewellery demand. However, recently momentum in industrial output has slowed and both the services and manufacturing purchasing managers' indices have softened. It seems unlikely that government spending and investment can fully insulate the manufacturing economy from external weakness. In addition, rural incomes have suffered as a result of two successively disappointing monsoon seasons and expected yields for the spring harvest are below average. The first half of this year, therefore, is likely to be relatively subdued, with hopes for a stronger H2 resting on an improvement in rural income growth and government policy towards the gold sector

Chinese fragility

The Chinese jewellery market has also been struggling for growth as consumers cut back discretionary spending on luxury goods. Reduced profits at jewellery retailers has translated into a reduced rate of new store openings, with a knock on effect on gold demand as the volume of additional inventory required falls. Tighter credit conditions have affected the entire supply chain, while manufacturers are producing lighter weight products to meet lower price points, more 18-carat white and yellow gold for the younger/fashion end of the market, and more gem-set jewellery to try and support their own margins. On the positive side, lower gold borrowing costs have helped eased some of the balance sheet stresses for the more established jewellery fabricators.

On balance, our sense is that the local market will enter Chinese New Year well stocked and any disappointment in retail sales could lead to a very slack end to Q1. Certainly recent comments from the major listed jewellery groups in the region have been rather downbeat about the near-term prospects.

What about Chinese interest rates?

Falling Chinese interest rates and a more volatile depreciating currency have a mixed effect on gold demand. For banks with a licence to import physical, the profitability of arbitraging off shore / on shore rates and prices falls as Chinese interest rates drop and FX hedging costs and spreads rise. On-shore demand for borrowing gold has weakened as the opportunities to invest in high-yield investment trusts (whose returns were typically linked to property or commodities) have diminished.

Narrowing rate spreads reduce arbitrage possibilities

Source: Bloomberg, ICBC Standard Bank

Those negative factors have not yet gathered sufficient mass to cause imports to fall, and there has been a moderate increase in defensive retail buying of gold as confidence in the currency and equities has weakened. That though has been expressed far more in short-term speculation and day-trading.

US dollar bears to the rescue?

FX market consensus (judging by Bloomberg's summary of around 40 forecasters) is for the dollar index to move essentially sideways this year, strengthening marginally versus euro (average for the year of 1.055 versus spot around 1.085), rebounding versus the yen but losing a bit of ground against sterling and the Canadian dollar.

On balance then, FX forecasters believe the dollar bull market has reached, or is in the process of reaching, a plateau. That consensus is based on a dovish FOMC and limits (both political and practical) to how much additional easing the ECB and Band of Japan can undertake. There's nothing in that scenario to get excited about for gold or commodities in general.

But what if the inflation outlook worsens and the Fed not only doesn't increase rates as fast as anticipated but has to reverse December's hike, would that not be bearish the dollar and potentially very bullish gold? There are at least two problems with that line of reasoning: the kind of global macro-economic environment that would force the Fed into reverse would most likely be one that would see substantial flows of money into US Treasuries and, assuming gold would also benefit, the financial crisis of 2008 suggests it would be doing so from a level well below where we are today.

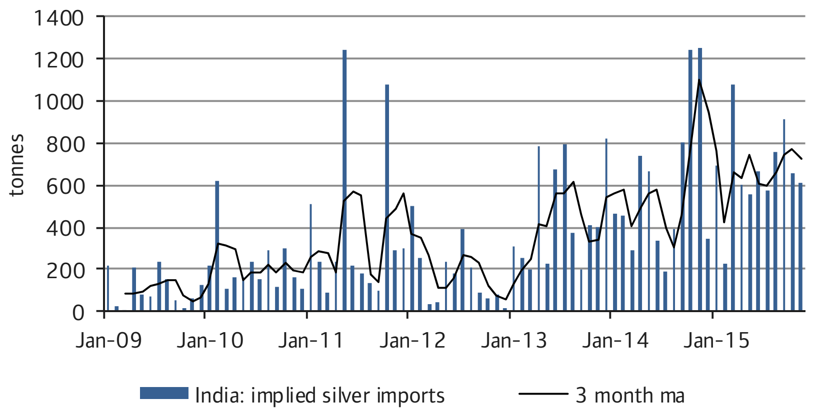
Silver: a reflection of the Indian market

There is very little science to forecasting the silver price. Creating detailed models of primary and secondary supply; projecting future investment in solar energy under various oil price scenarios; modelling growth in global ethylene oxide capacity; extrapolating silver use in electronics from global semiconductor shipment data… those are all worthwhile endeavours and provide employment to a good number of analysts and consultants. Those efforts are, however, of very little use in determining where the price might be in 6, 12 or 24 months' time.

In 2015 India imported almost one quarter of the world's entire silver production. The majority of that 8,000 tonnes was not used in industrial applications – it was bought as jewellery or for investment purposes (the two are often interchangeable).

Indian imports of silver have surged over the last two years. That has more to do with the metal's relative appeal to gold than its own intrinsic attributes. It is no coincidence that Indian silver imports began to pick up after the gold price started to fall and the Indian government introduced increasing layers of regulation and taxation on the import of gold.

Indian silver imports surge: can it be sustained?



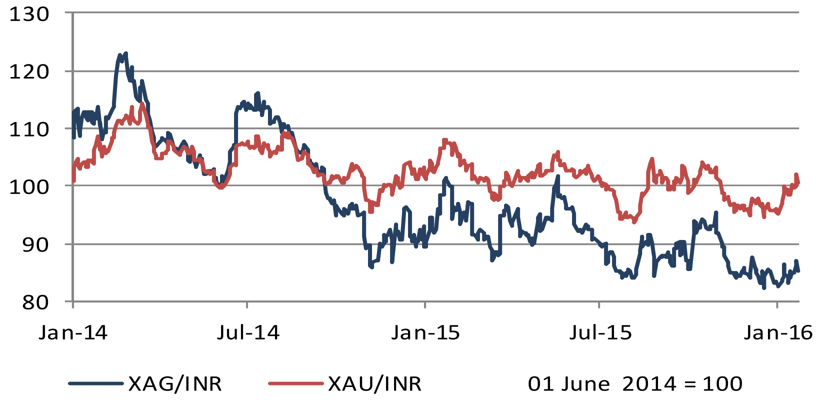
Source: Bloomberg, ICBC Standard Bank

The Indian precious metals market in its broadest sense is pragmatic: if profit margins in silver for importers, fabricators, wholesalers and retailers are attractive, and if the public believe it is good value at current prices relative to gold, then demand for the white metal will increase. It is no coincidence that Indian silver imports jumped in 2014 after local gold premiums surged to over $100/oz following the introduction of the 80:20 import: value-added export rule for gold, and restrictions on gold consignments and financing.

Given the price differential between the two metals, it only needs a very small proportion of the rupees allocated to gold to be diverted to silver to have a meaningful impact on volume. A fall in rural income growth over the last 12 months, as well as has also increased the appeal of the white metal.

Indian government policy towards gold is unlikely to be relaxed any time soon. That should be supportive of continued strong silver imports, as would any further hit to rural incomes. But we do have some concern about saturation; 15,000 tonnes of silver imported over the last two years is a lot of metal to absorb, even for a population of 1.25 billion. It is also worth bearing in mind that in rupees gold has performed rather steadily over the last 18 months (the price is almost unchanged from mid-2014) whereas silver has lost around 14%.

In rupees gold has held its value better than silver since mid-2014



Source: Bloomberg

On balance we expect the gold to silver ratio to fluctuate within a 75:1 to 80:1 range this year – with global growth slowing there's no compelling reason why silver should sustainably outperform gold. In dollars we expect the silver price to trade between $13:40 and $14:00 for much of the year but would not be surprised to see it briefly dip below $13:00.

If the dynamics of the Indian market shift against silver, and that shift is combined with an acceleration of western liquidation of ETF holdings, the outlook would become much more bearish.

Platinum Group Metals: changing fortunes

Key points – Platinum

The conundrum of a 7-year low US dollar price, negative cash margins for many mines, yet still rising supply is likely to be resolved in 2016 but probably not until the back end of the year. By then, if the price and South African currency have remained anywhere close to current levels, we expect to see a more meaningful supply response. In the meantime it remains a war of attrition between producers and a battle to stem the negative diesel headlines for the auto industry. Consequently for platinum the low of the global financial crisis ($744) is almost in sight and we expect it to be tested this year.

The medium term outlook, however, is actually brightening. Despite all of the negative headlines surrounding diesel at present, stricter control of emissions, particularly from commercial vehicles in China and India, will drive the next round of growth in platinum demand. Most of the growth will come from 2018 onwards but in the interim average loadings in Europe are also set to edge higher as the full implementation of Euro 6 legislation feeds through. We expect only a very slow shift from diesel cars to gasoline in Europe and at the same time platinum is making a tentative come-back into the latest gasoline cars emissions systems.

As long as the Chinese platinum jewellery market doesn't collapse, and the Indian jewellery market can sustain a double-digit rate of growth from what is still a very low base, the market should move from balance this year into moderate but increasing deficits from 2017 onwards.

So in our view long term investors (are there any left?) and industrial hedgers should scale in to long platinum positions between $750 and $800.

Summary platinum supply/demand forecasts

000 oz		actual		forecast			
Platinum Supply	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
South Africa - mined	4,365	3,199	4,275	4,217	4,269	4,404	4,539
Russia	725	715	725	710	750	760	780
North America	318	342	323	333	340	345	350
Zimbabwe	410	401	395	410	420	420	420
Others	170	160	160	120	120	120	120
Primary supply	**5,988**	**4,817**	**5,878**	**5,790**	**5,899**	**6,049**	**6,208**
SA producer stock sales (build)	-60	365	61	0	0	0	0
Total supply	**5,928**	**5,182**	**5,939**	**5,790**	**5,899**	**6,049**	**6,208**
Platinum Demand							
Autocatalyst (gross)	3,306	3,297	3,413	3,467	3,531	3,643	3,764
Autocat recycle	-1,215	-1,286	-1,260	-1,382	-1,291	-1,330	-1,328
Jewellery	2,106	2,134	1,963	1,916	1,939	2,040	2,119
Chemical	546	581	548	571	579	587	595
Electronics (inc fuel cell)	204	217	214	214	215	216	216
Glass	217	242	282	262	275	286	300
Medical	220	222	221	228	237	246	255
Petroleum refining	159	159	136	152	175	182	188
Other	387	373	378	384	390	396	402
Total net demand	**5,930**	**5,939**	**5,896**	**5,812**	**6,048**	**6,265**	**6,512**
Primary balance	**-2**	**-757**	**43**	**-23**	**-149**	**-216**	**-303**
Physical investment	731	213	-250	10	0	0	0
Movement of stock	**-733**	**-971**	**293**	**-33**	**-149**	**-216**	**-303**

Source: Johnson Matthey Platinum Reviews, company financial reports, ICBC Standard Bank forecasts

Key points – palladium

Palladium is a by-product; there are no meaningful cost curves or incentive price models and supply is inflexible. That was an advantage when demand growth was rapid and the market was extrapolating that pace of growth a long way into the future. With demand growth from the largest market – the Chinese auto industry – now slowing and future growth in question the inability of the market to force a supply response is a clear disadvantage.

Automakers are either largely covered under term supply contracts or are well hedged (or both). What industrial buying there has been from the market has not been of sufficient size or duration to put a floor under prices or to tighten the availability of sponge.

Industrial (i.e. non-investment) demand exceeded supply (mined and scrap) in each of the past four years. The logical result was that the price climbed to incentivize holders of inventory to release it, reaching a new cycle high of $912 in 2014 long after other metals had entered secular decline. But one problem with small markets like palladium is that when the price does reach a level sufficient to draw out long-held inventory from investors, the rush to exit can overwhelm underlying industrial demand. That was the story of 2015.

The outlook for 2016 does not appear to be any better. True, if investors do not liquidate any palladium, other (stickier) holders of inventory will have to fill a gap amounting to 433k oz. But that represents a small proportion of above ground stocks of refined metal (anywhere between 6 and 16 million oz, depending on whose guess you believe). The best analogy is nickel and that is a sobering comparison.

Our modelling suggests the draw on inventories will diminish over the next three years and the market is likely to be in surplus by the end of 2018. If the fundamental outlook for the metal is for supply-demand tension to ease over time, why should investors hold on to or increase existing length? Palladium's period of sustained outperformance relative to platinum and to most other metals is at an end.

The price could easily overshoot to the downside: palladium is more likely to trade with a number starting with a 3 than a 6 this year.

Summary palladium supply/demand forecasts

000 oz		actual			forecast		
Palladium Supply	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
South Africa	2,464	2,127	2,535	2,501	2,532	2,612	2,692
Russia	2,618	2,628	2,598	2,620	2,746	2,789	2,873
of which stock sales	*100*	*0*	*0*	*0*	*0*	*0*	*0*
North America	935	1,050	985	1,003	1,058	1,058	1,058
Zimbabwe	323	328	305	317	324	324	324
Others	148	125	120	121	122	124	125
Total primary supply	**6,488**	**6,258**	**6,544**	**6,561**	**6,783**	**6,906**	**7,072**
Palladium demand							
Autocatalyst (gross)	6,991	7,318	7,424	7,685	7,895	8,168	8,398
Autocat recycle	-1,910	-2,060	-2,194	-2,341	-2,556	-2,808	-3,085
Electronics	612	612	547	514	514	504	491
Chemical	561	498	432	442	453	463	474
Dental	457	466	449	432	416	401	386
Jewellery	198	190	160	148	129	109	101
Other	104	106	105	105	105	105	104
Total net demand	**7,013**	**7,130**	**6,922**	**6,986**	**6,955**	**6,942**	**6,869**
Primary balance	**-525**	**-872**	**-379**	**-425**	**-172**	**-36**	**202**
Physical investment	-8	932	-800	0	0	0	0
Movement of stock	**-517**	**-1,804**	**421**	**-425**	**-172**	**-36**	**202**

Source: Johnson Matthey Platinum Reviews, company financial reports, ICBC Standard Bank forecasts

PGM supply – a war of attrition

Why hasn't platinum supply responded to the collapse in metal prices and when will it? Those are probably the two most common questions investors ask. To which our answers are: "it has but only slowly so far", and "we expect to see a more material supply response developing in Q4 this year".

Commodity supply cycles turn slowly: cash flows need to be maintained to repay capital already spent on projects that were approved in better times; lenders are incentivized to roll-over rather than remove credit lines; after cutting capex the focus of producers turns to cash costs, which are a volume game; shareholders become unwilling to realize losses at what looks like the bottom of the cycle and support recapitalization plans; local currency depreciation slows margin compression; managements fear the opportunity costs of being the first to cut output, etc. Those considerations apply equally to platinum as they do to oil, iron ore, nickel, etc.

In platinum those structural factors are compounded by the geographic concentration of supply in Southern Africa, where the socioeconomic conditions also restrain producers from suspending production at loss-making operations as quickly as they might otherwise do.

Marginal production has been removed over the last four years: Smokey Hills, Crocodile River, Eland, Marikana (Aquarius), Everest South; but in aggregate the impact has been small. Those four operations produced a combined total of less than 150k oz/year. Restructuring of the primary lease areas of Anglo American Platinum (Rustenburg), Impala and Lonmin has taken another 180k oz/year of potential supply from the market so far and will remove a further 100k oz or so over the next 12 months. But at the same time Anglo has increased production from its Mogalakwena open pit operation, Northam has brought its Booysendal mine into production, and Tharisa Minerals and Sedibilo Platinum have increased output from their respective operations.

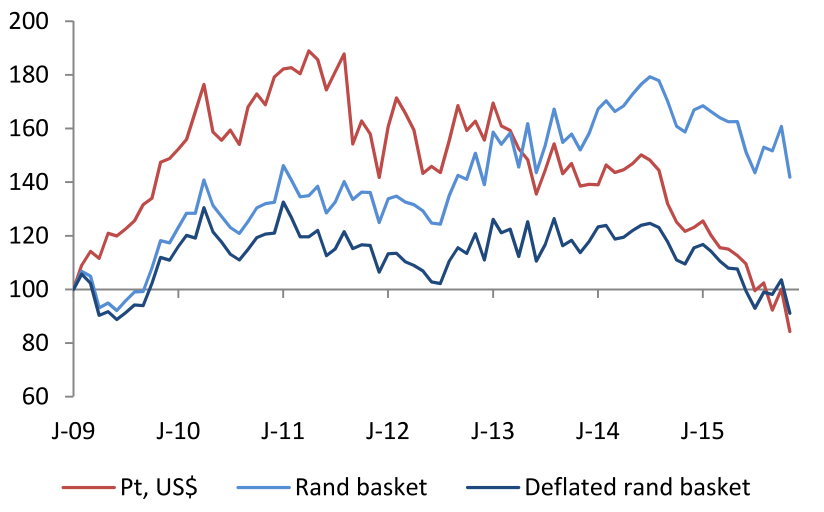
It's a similar story in Zimbabwe where the expansion program at Zimplats has added close to 50k oz of production over the last four years.

The net result is that South African production in 2016 is forecast to be only 120k oz less than it was back in 2012, when the US dollar platinum price was 85% higher.

The end-game is approaching – but slowly

The South African currency has lost half its value versus the dollar since 2012, outweighing the fall in the US dollar platinum price, and the price of the basket of metals produced. Taken at face value that would imply that, with the majority of costs denominated in rand, operating margins for producers have remained relatively healthy. However, that ignores the effects of cost inflation. If we deflate the basket price by South African CPI the picture looks a lot less encouraging – see chart below. And CPI understates the true rate of mine cost inflation by a significant amount: labour typically represents 40 to 45% of fixed costs for PGM miners and wage settlements have been in the 8 to 12% per annum range whereas CPI has fluctuated between 4% and 6.5%.

Rand PGM basket price versus USD platinum, Jan '09 = 100



Source: Bloomberg, ICBC Standard Bank

Much of the industry will embark on 3-year wage negotiations towards the middle of this year. We don't anticipate labour disruption on the scale seen in 2014: negotiations will not be easy but some degree of pragmatism is likely to prevail. We also believe the major producers have sufficient process flexibility and refined stock to fulfil customer commitments for at least two months in the unlikely event of another major dispute. But ultimately a settlement well in excess of South African CPI is also likely – in October last year the gold industry had to settle for basic wage increases of 10% to 13% p.a. for entry level employees and 6% p.a. for other workers plus additional non-wage benefits.

Electricity also represents a greater proportion of mine costs (typically ~5%) than its weighting in the CPI basket, and electricity tariffs have increased by an average of 20% p.a. over the last 7 years.

In real terms then, the South African PGM industry is dealing with prices in rand that are around the lows of the global financial crisis and fixed costs will continue to grow.

We do not expect a rapid improvement: at the spot ZAR exchange rate of 16.6 our forecasts result in a basket price that is still below Zar11,500/oz in Q4.

Are balance sheets and shareholder resolve are strong enough to withstand another 12 months of depleting cash resources? Unfortunately the answer is, in most cases, probably. And identifying those shafts most at risk of closure is largely a guessing game: we know which operations should be suspended based on their relative position on a cost curve but corporate strategy, political, black economic empowerment and other local considerations derails that approach.

So we have taken a conservative view of producers' stated medium-term production targets but have not removed any operations from our forecast completely. A more aggressive restructuring would give some upside to our forecast averages from Q4 onwards.

What does this all mean for palladium?
The answer is not very much. The metal is a by-product – of platinum in Southern Africa and nickel in Russia – and so marginal cost of production and incentive pricing models do not apply.

In South Africa the one asset in the Anglo American Platinum portfolio that has been expanding production is the large open pit operation at Mogalakwena, by far the biggest contributor to Amplats' cash flow. That also happens to have a high proportion of palladium relative to platinum compared to the conventional narrow reef underground mines that make up the bulk of South African output. Each additional ounce of platinum produced at Mogalakwena also generates between 1.06 and 1.13 oz of palladium, whereas one ounce of platinum output lost from conventional mines takes just 0.52 oz of palladium out of the supply chain.

Russian palladium output is a function of Norilsk Nickel's base metal production. The group's nickel mines are at the bottom of the global cost curve and there is no realistic prospect of production cuts in response to decade-low nickel prices – particularly given that rouble depreciation has supported local margins. We discount entirely the influence of the potential sale or transfer of ownership of palladium believed to be held by the Central Bank of Russia: that metal will not be hitting the market any time soon.

The only primary palladium mine is North American Palladium's Lac des Isles operation in Canada, which produces around 165k oz of palladium a year. At the end of Q3 2015 the mine reported cash costs of $522/oz and losses from mining for the quarter of C$3.2 million. At that point the company stated that it would both need to seek additional financing as well as renew or replace its existing credit facility. If the company were freely floating the market might question shareholders' appetite to refinance and start to consider the removal of a significant source of supply. As the result a previous recapitalization back in June, however, the company became 92% owned by its debt holder, Brookfield Asset Management. In December North American Palladium announced that the private equity arm of Brookfield had agreed to provide a US$25 million secured term loan, and an extension to an existing operating credit facility to November 2017 had also been agreed. So breathing room has been provided.

PGM demand - autocatalysts
It's fair to say that recently diesel vehicles (the main industrial source of demand for platinum) have taken more than their fair share of the blame for air quality and emission problems in numerous locations. The Volkswagen emissions debacle has made the sector an easy target for politicians and NGOs.

But looking past the headlines the impact on light duty diesel sales and market share has been limited and very hard to distinguish from the effect of falling fuel prices (which dampen the fuel economy arguments for buying both diesels and gasoline hybrids).

In the USA Volkswagen's market share dropped as sales of diesel variants were suspended in Q4 but the group sells less than 80,000 diesels a year there. In Europe the group lost market share towards the end of the year but we have not seen any statistics to suggest that European consumers are moving en-masse away from diesel vehicles. Differential tax rates based on CO2 emissions still favour diesels, as does the driving experience (mainly higher torque) for larger cars and SUVs.

There are also large economic and practical barriers that would prevent a rapid shift in the composition of new car sales: new car models are planned, tested and certified on a 3 to 4 year forward cycle; there would be a significant capital cost to manufacturers and their suppliers to make large shifts in the proportions of engine type (particularly hybrids) over that time frame.

In 2016, the key factor for platinum will be how many diesel light vehicles are produced and sold in Europe. In Europe the outlook is for a much slower pace of growth for light vehicle sales as a whole, after a very strong 2015. Full year registrations in Germany, the UK, France, Italy and Spain rose 5.6%, 6.3% 6.8%, 16% and 21% yoy to 3.2m, 2.6m, 1.9m, 1.6m and 1.0m respectively. Total western European sales climbed 8.9% to 13.2m thanks primarily to a combination of low interest rates, attractive payment terms, improved consumer confidence, and in Spain a government-backed scrappage scheme.

LMC Automotive is forecasting a further 3% growth in sales 2016. We are taking an even more conservative view of production, projecting total output of light vehicles in the EU to increase by 2.7%, with gasoline models up 3.3% and diesel variants falling by 2.0%, with the diesel share of production slipping from 49.2% to 47%.

The effects of that on platinum demand will be partially offset by a modest increase in average loadings thanks to the first full year of Euro 6b emissions standards for cars. Based on those assumptions, our forecast of European autocatalyst platinum demand falls by a very modest 30k oz in 2016.

Over the medium-term the effects a tougher global emissions regime on platinum demand in diesel exhaust treatment systems are far more likely to be positive than negative:

- In Europe – by far the largest market for diesel cars – a move to test cycles more representative of real world driving cycles will be positive, resulting in an increase in average loading levels, albeit a small one.
- A reduction in fleet average CO2 emissions, mandated under EC legislation, favours diesels and there are significant financial penalties for automakers that do not meet the limit (95g/km CO2 by 2020).
- Any shift from smaller diesel cars to the most fuel efficient gasoline cars, those with lean-burn gasoline direct injection (GDI) engine technology, would also tend to be positive for platinum. GDI engines require the addition of catalysts to remove nitrous oxides (NOx traps). NOx traps, unlike most current gasoline car emissions systems, contain platinum.
- The European light commercial vehicle sector will fall under Euro 6 regulations from September 2016, which will result in a further increase in overall platinum loading levels.
- In India (the world's second largest diesel car market) an incentive scheme to get owners of older diesel vehicles (without any catalysts) to trade them in for new would, if approved, be positive.

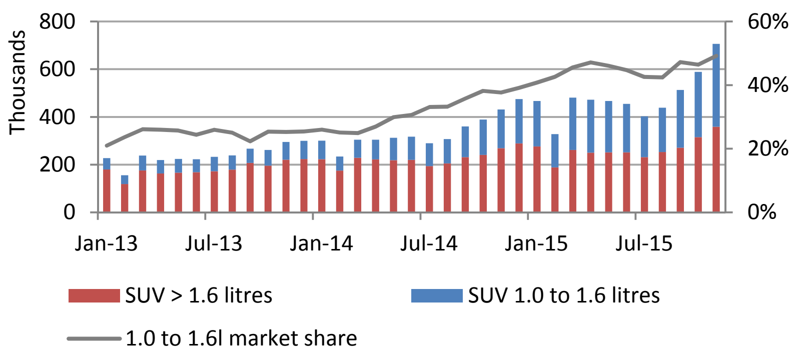
- Also in India the early introduction of Bharat VI emissions regulations (skipping straight from Bharat IV standards) will increase the use of catalysed particulate filters on both passenger and commercial vehicles there quite significantly by 2020.
- On the heavy duty diesel side China is accelerating the phased introduction of regulations that will require the installation of particulate filters on diesel trucks, starting with Beijing from end 2017onwards.

For **palladium** the outlook for automotive demand growth is largely a function of Chinese and US light vehicle sales. For the first nine months of 2015 growth in Chinese auto sales was on a falling trend, and contracted for three months in succession between June and August. For a market that had grown accustomed to annualized growth in the range of 6% to 15% that was a shock and coincided with a collapse in the palladium price from more than $750 to less than $550.

The halving of the sales tax on new vehicles with engine displacement of less than 1.6 litres in October jolted sales back to life. However, the effects of fiscal stimuli are always temporary; demand has been brought forward, the level of the total potential market has not been raised. We forecast Chinese light vehicle production will increase by 4% this year to 23.5 million but growth is likely to be skewed towards the first half – by the summer the effects of the tax cut are expected to be fading. For the year as a whole that would generate palladium demand growth of around 90k oz.

From a PGM perspective, the effects of the tax cut are muted by the fact that it applies only to smaller-engine vehicles. Headlines about surging SUV sales are somewhat misleading – many SUVs are actually compact models that fall into the smaller car bracket (to generalize, smaller cars = smaller catalysts containing less PGM). The SUV sector as a whole is still growing in popularity but almost half the vehicles sold in November were compact variants.

Compact Chinese SUVs in the ascendency



Source: Wind, ICBC Standard Bank

Overall, 1.6 litre and below vehicles accounted for 70.9% of total Chinese passenger car sales in November, up from 65.6% in September prior to the tax cut. The shift in market share in favour of smaller cars will offset some of the increase in loadings due to the nationwide implementation of China 5 emissions standards.

Over the medium term the Chinese passenger vehicle market faces a number of structural challenges: slowing wage and income growth and falling job security in the manufacturing half of the economy, congestion, pollution, and shifting policy on "new energy" vehicles. Consequently the sector's growth trajectory is likely to be lower than the potential implied by the per capita level of car ownership. The forecasts of a 30 million/year Chinese car market by 2020 that were common a couple of years back now look rather too optimistic.

What of the US market? The consensus amongst automotive analysts is that light vehicle sales will continue to build on last year's record-breaking total of 17.4 million over the next two years, reaching 18 million in 2017. Given the collapse in fuel prices, still cheap financing terms and healthy growth in the construction sector (which drives a significant proportion of pickup truck sales) that is probably achievable and we have incorporated a similar growth profile into our PGM model.

But the growth in gross autocatalyst demand for palladium will not translate into an increased call on the market for the metal as it will almost certainly be outweighed by continued growth in recovery of metal from scrap autocatalysts. The peak of historical palladium demand by the US auto industry was 2006/07. With the average age of the light duty vehicle fleet at a little over 11 years, it is reasonable to expect recycling volumes to continue to build through to at least 2019. By the time US scrap flows peak, Chinese recycling is expected to be picking up the pace.

Jewellery: needs ongoing support

China remains by far the largest market for platinum jewellery. Recent trends have not been encouraging: slowing sales growth across the sector as a whole, falling platinum prices (in both USD and CNY) and platinum falling to a discount to gold, and increased competition for a limited budget for platinum market development.

That has resulted in gross demand for platinum falling from more than 2 million oz in 2013 to an estimated 1.62 million oz in 2015. We forecast a further drop to 1.55 million oz this year, which would be the smallest figure since the 2008 financial crisis.

For the market to improve materially the price first needs to stop falling and the discount to gold needs to stop widening and ideally both trends would reverse. That would help restore both manufacturer and consumer confidence in the metal as a premium product. In our model we assume Chinese demand stabilises at between 1.50 and 1.65 million oz over the next two to three years. A sharper slowing of the Chinese economy and spending would put that at risk.

The brightest hope for platinum jewellery demand is India. An increased marketing spend and building of brand awareness over the last five years has started to pay dividends, with the market growing from less than 100k oz in 2010 to around 175k oz in 2014 and an estimated 220k oz last year. That kind of pace of growth is unlikely to be sustained, even though market penetration by platinum remains very small. Nevertheless, as long as the marketing support is maintained we think it reasonable to forecast growth over the next several years in excess of nominal Indian GDP and the rate of overall retail sales growth (unless the Indian economy begins to slow much more quickly). Consequently we project Indian platinum jewellery consumption could reach 350k oz in 2019.

Tom Kendall

Base metals

Forecast summary

Our base metal forecasts have been cut to reflect the deterioration in global growth and growth assumptions and the negative sentiment surrounding China's economy. That said however Q1 looks like being the nadir for prices, exacerbated by a late Chinese New Year, with the base metals picking themselves up slowly heading into the second half of 2016.

Metals with a decent physical markets and low stock levels like copper and lead, and metals with a stronger fundamental narrative such as zinc should on balance be stronger than the likes of aluminium and nickel which will continue to struggle and need further painful supply-side restructuring.

Base metal price forecasts

	Actual 2013	2014	2015	Forecast 2016	Nom 2017	Nom 2018	Nom 2019	Nom 2020	Actual Q4:15F	Forecast Q1:16	Q2:16	Q3:16	Q4:16
Aluminium ($/mt)	1,847	1,869	1,682	1,463	1,580	1,820	1,850	1,900	1,557	1,480	1,490	1,430	1,450
Copper ($/mt)	7,332	6,871	5,558	5,010	5,500	6,750	7,000	7,250	5,043	4,410	5,030	4,900	5,700
Lead ($/t)	2,139	2,098	1,784	1,663	1,850	1,770	1,730	1,700	1,654	1,600	1,670	1,650	1,730
Nickel ($/mt)	15,034	16,922	12,006	8,550	9,000	10,500	13,500	14,000	9,918	8,250	8,500	8,400	9,050
Tin ($/t)	22,277	21,914	16,124	15,175	16,000	17,300	18,000	22,000	15,297	14,500	15,300	15,000	15,900
Zinc ($/t)	1,910	2,160	1,937	1,575	1,750	2,100	2,350	2,200	1,616	1,475	1,560	1,500	1,765

Source: ICBC Standard Bank Plc

Aluminium – GFC Redux

Aluminium has started 2016 grinding sideways, trading amid 6-year lows. Large re-warranting of LME aluminium inventory again points to history repeating itself, as does other moves to stockpile metal and support producers. There is little scope for a Chinese-led revival this time, with the attritional battle between producers that should have taken place following the Global Financial Crisis is finally heating up.

In simple terms, 2016 looks like seeing an ex-China deficit of something approaching 2.3Mt, which ordinarily should drain LME warehouses and send prices and premia soaring. China however looks like it is on course for a record surplus of 2.5Mt, thanks to its ailing economy and lack of producer discipline, with that material more than offsetting the rest of the world deficit. Stockpiling by the SRB might absorb some of that surplus, but more likely will see stockpiles of existing Chinese material changing hands, rather than have a meaningful impact on the physical market.

Further production cuts are on the way and are starting to feed through, though without Chinese cuts – something deferred even more by reported stockpiling activities – and with slowing demand growth, it looks like the aluminium market will take an extended period of time to get back on its feet. LME warehouse rule changes are meanwhile adding to the sense of uncertainty, with the likelihood of increased spread volatility and even more opacity with regards to aluminium inventories.

Spread behaviour looks set to change following LME warehouse rule changes and there is scope for some regional to head north as rent deals start soaking up spot material. Overall however, aluminium prices look like remaining depressed with the sideways grind continuing into next year.

LME Warehouse changes… Terminal market

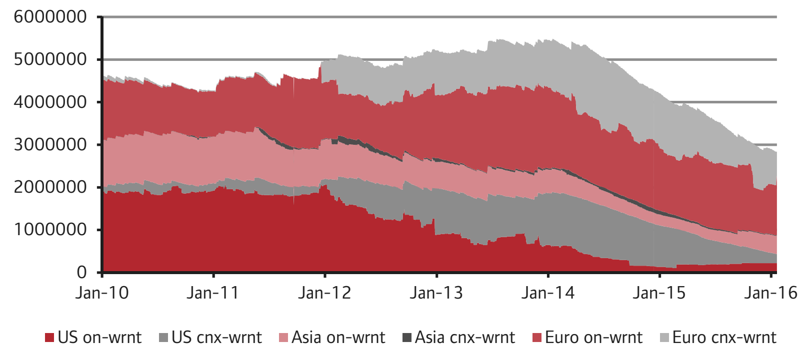
Aside from the collapse in both premia and prices, the market has been adapting to the forthcoming LME warehouse rule changes that are due to be implemented shortly, including linked load-in & load out rates (LILO) and queue-based rent-capping (QBRC).

The LILO and QBRC rules were designed to curb long exit queues that had developed at certain warehouse locations, and to prevent that sort of behaviour reoccurring in the future. Unfortunately the rule changes do little to reconnect the forward market from the physical market and arguably make things even more opaque from an inventory perspective. They also have important implications for how the near-term forward curve might behave, while doing little to keep a lid on physical premia longer term.

Warehouse companies are reacting to the rule changes, in several cases by raising rent and FOT charges to counteract the loss of income. The issue of excess aluminium inventory remains a problem however, with that that material having to be financed whether it is in LME warehouse, in an LME warehouse but on a rent deal – so visible but not attainable – or held off-warrant.

Warehouses are still incentivised to have as full a shed as possible, with the emergence of rent-deals (on or off warrant) absorbing significant tonnages of metal. Going forward it is likely there will only be a small amount of floating warrants in clearing, earning full rent but vulnerable to be lifted. Either way, there remains significant background borrowing interest, which combined with a lack of length, will continue to see sporadic tightness in the spreads.

Regional LME aluminium inventory



Source: LME

With little incentive to maintain a queue, and faced with higher storage costs, participants will be less willing to hold material in the face of a backwardated forward curve, leading to greater volatility in the very nearby spreads but perhaps not the sustained backwardations we have seen in the recent past.

The absolute amount of aluminium warrants in clearing is also uncertain however, with LME data not able to differentiate available units vs. units that are visible from an LME data perspective but are in fact tied up and not available through the clearing system (though physical premia should to be able to give a sense of real availability).

In terms of where the spreads should trade however, nearby, and assuming you are talking about warrants in clearing, then "full finance" should reflect the higher cost structure, at say Metro Detroit and Vlissingen, leading to a steeper nearby contango. Farther forward however, and the "full finance" curve should settle on warehouse break-even levels, leading to a flatter forward curve than has traditionally been the case, resulting in a forward curve that rapidly plateaus after around 4 months or so.

Supply/demand balance for aluminium

Key forecasts (thousand of tonnes)

	2009	2010	2011	2012	2013	2014	2015	2016F	2017F	2018F
Production										
Africa	1,681	1,742	1,808	1,620	1,776	1,747	1,674	1,698	1,698	1,698
North America	4,758	4,691	4,971	4,851	4,918	4,571	4,448	4,108	4,083	4,083
Latin America	2,508	2,305	2,184	2,088	1,912	1,545	1,319	1,281	1,315	1,543
Asia (ex. China)	2,636	2,691	2,836	3,002	2,817	3,332	3,725	4,276	4,513	5,475
Western Europe	3,723	3,800	4,027	3,599	3,435	3,382	3,389	3,401	3,425	3,425
Eastern/Central Europe	4,400	4,532	4,744	4,719	4,589	4,322	4,285	4,450	4,631	4,919
Australasia	2,211	2,277	2,306	2,186	2,106	1,995	1,969	1,972	1,972	1,972
China	13,444	16,132	18,047	21,279	24,292	27,469	31,429	34,250	36,521	36,821
Middle East	2200	2796	3374	3759	3936	4835	5105	5207	5207	5527
Total	37,561	40,966	44,297	47,103	49,781	53,198	57,343	60,643	63,365	65,463
Year-on-year % change	-4.8%	9.1%	8.1%	6.3%	5.7%	6.9%	7.8%	5.8%	4.5%	3.3%
Consumption										
North America	4,220	4,628	4,803	5,363	5,324	5,831	6,128	6,368	6,577	6,709
Latin America	1,838	1,927	2,102	2,194	2,092	1,980	1,868	1,915	2,013	2,093
Asia (ex. China)	7,208	8,376	8,892	9,104	9,219	9,637	10,054	10,576	11,127	11,698
Western Europe	4,844	6,423	6,597	6,246	6,151	6,489	6,562	6,788	6,979	7,118
China	13,951	16,414	18,630	20,991	23,894	27,200	29,457	31,725	33,946	36,017
Others	2,711	3,090	3,116	3,160	2,992	3,003	3,006	3,051	3,138	3,250
Total	34,772	40,858	44,140	47,058	49,672	54,140	57,075	60,423	63,780	66,885
Year-on year % change	-7.8%	17.5%	8.0%	6.6%	5.6%	9.0%	5.4%	5.9%	5.6%	4.9%
Implied surplus (deficit)	2,789	108	157	45	109	(942)	268	220	(415)	(1,422)

Source: ICBC Standard Bank Plc; IAI; WBMS; LME

Supply and demand

We are actually fairly positive on ex-China demand and even with weakness from Brazil and Russia, demand growth should be positive for the third consecutive year. China is a source of concern, though aluminium demand has held up pretty well considering the slowdown in the wider economy. It's also worth remembering that while the 6.9% GDP growth recorded in 2015 was the slowest rate since 1990, it's also occurring from a much larger base. Nevertheless, we are forecasting an ongoing slowdown in growth rates of Chinese aluminium consumption over the 2016-18 period. Rates will slow from 8.3% in 2015 to 7.7% in 2016, 7.0% in 2017 and 6.1% in 2018.

We are less positive on supply. The world primary aluminium market ex-China is in a technical deficit and has been since 2012, it's just that Chinese production, be it primary or semis, has been able to sate that demand. In fact, since 2010 - the last time prices were trading at current levels - the global market has actually recorded a cumulative primary aluminium deficit of only 255kt, arguably justifying the current malaise.

Excluding China, and the market looks like it is heading for a record deficit of 2.3Mt in 2016 as production cuts and curtailments bite, particularly from North and South America. Once you factor in Chinese supply and a growth estimate of 9.0% in 2016 (well down on the 14.4% expansion seen in 2015), and the fact that domestic Chinese demand is faltering, and you come up with a record Chinese surplus of 2.5Mt, more than offsetting the ex-China deficit.

Genuine global production-consumption deficits are forecast to arrive in 2017, albeit only on account of further capacity rationalization outside China. Those deficits are also likely to be modest, with a 400 kt deficit in a 63 Mt market something approaching a rounding error rather than a meaningful number. Only by 2018 do we model a significant global deficit of 1.4m tonnes, but that is also rather speculative and relies on Chinese supply growth slowing to a virtual standstill amid low prices, high debt levels and government pledges to cut overcapacity. Whether those sorts of cuts emerge remain to be seen.

Copper – Dr Copper and Mr Hyde

Chinese economic weakness and copper's exposure to the Chinese economy, has seen the metal sink to price levels not seen since 2009. Macroeconomic fears along with weak commodity prices generally have seen the metal, referred to by some economists as "Dr Copper" come under further pressure heading into 2016 and with a 0.5% change in Chinese consumption growth equivalent to a 2% move in North American demand, China and its economic woes will remain the focal point for the market.

We actually remain fairly bullish in terms of the metal's prospects, based on the fact that despite copper's woes, the physical market remains tight and the associated market dynamics remain supportive. As such 2016 is looking like a particularly intriguing year as "Dr Copper" and the weak macroeconomic environment interacts with the rougher and more down at heel physical aspect of its character.

Overall we expect the refined copper market to be broadly balanced in 2016. It's worth highlighting however that exchange and shanghai bonded stocks of copper are only around 50-75kt above recent cycle lows. This is reflected in a flat to backwardated forward curve, which in turn makes it harder for merchants and consumers to position themselves ahead of seasonal demand strength, fuelling volatility in spreads and premia.

With another strong El Nino year likely to impact on mine supply (droughts in central Africa and Indonesia/PNG) and with cost pressures bearing down on development spending and mining operations generally, 2016 is looking like suffering a similar magnitude of disruptions to the record 1.6 Mt seen in 2015.

Nevertheless and perhaps because of copper's tighter fundamentals, the metal still hasn't sliced too deeply into the cost curve, with that perhaps another reason why some participants seem happy to remain bearish towards the metal's prospects. While we expect the metal to make a slow start to the year, exacerbated by a late Chinese New Year holiday, all it takes to give copper a lift is a stabilisation in Chinese growth and only a very modest pick-up in demand.

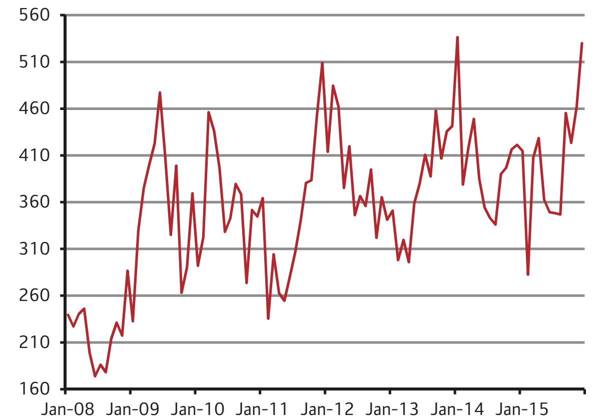
Macro weakness and physical strength

The SHFE-LME arbitrage window is still open sporadically, helping drive a near record level of December unwrought copper import and likely to keep January imports elevated too. This is helping keep a lid on LME inventory, while the emergence of two dominant holders of LME warrants – not a difficult undertaking given current stock levels - has seen the very nearby LME spreads tighten significantly.

Bonded premia are on the rise, while the SRB stepped in, seemingly on a mercy mission, to scoop up 150kt of domestic refined copper directly from the smelters, helping to tighten the domestic Chinese refined market. This recent SRB purchase is unusual given their preference for certain international brands of copper and is likely to be in addition/parallel to their normal ventures into the global copper market. With the dramatic falls in copper price, further and more traditional SRB activity may well emerge.

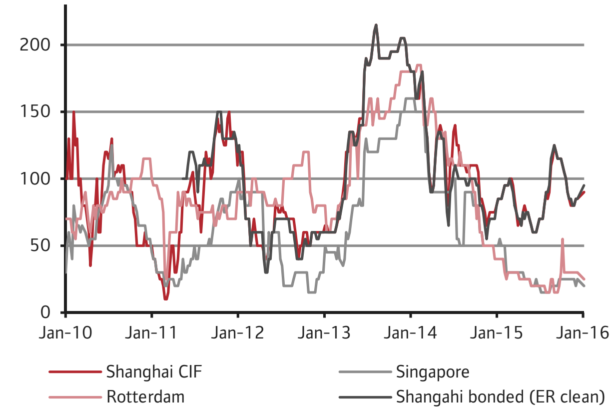
Chinese smelters are able to process concentrate inventory and can re-fill the stocks that the SRB has hoovered up. While arbitrage conditions a favourable to imports, they are not conducive to the export of tolling material into bond. This will likely keep domestic physical premia depressed but bonded premia elevated. It also means that in the event of an LME backwardation, LME deliverable copper units in China are at least two steps away from being able to be delivered.

Chinese imports of unwrought copper – arb is open



Source: China Customs

Regional physical premia - China and the rest



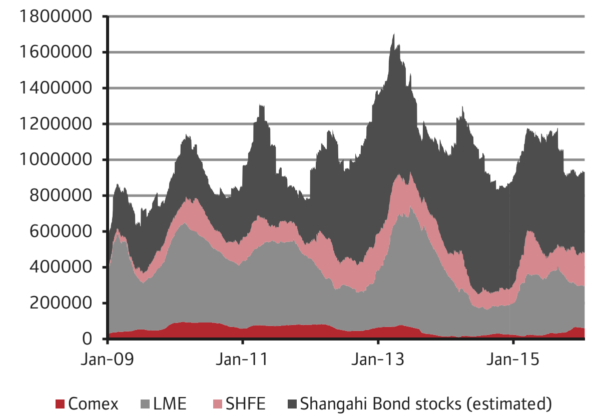
Source: ICBC Standard Bank Plc, MBR

The macro picture still seems pretty dire however, with copper's sensitivity to China weighing on prices. Reasonably high levels of concentrate, low levels of refined inventory and, anecdotally at least, high levels of finished goods give the market an unbalanced and opaque feel and jar with an open arbitrage window and relatively stable SHFE inventory levels.

Uncertain times

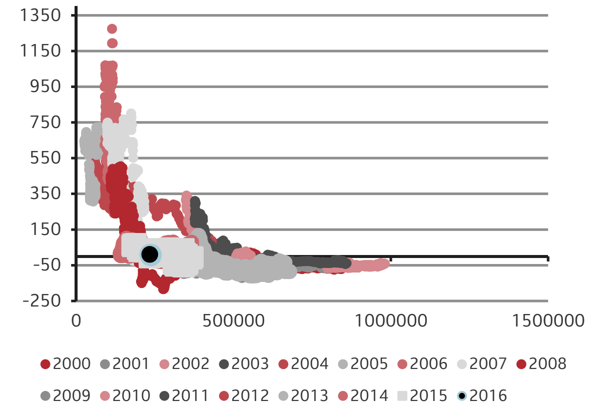
Where this leaves the refined market is unclear. For physical traders, there doesn't seem to be much spare metal about, and even if you did have it, with nearby spreads tightening up again you wouldn't be able to hold it for too long. Global refined copper inventory (including estimates for bonded stocks) are meanwhile only 50-75kt above recent cycle lows. Stocks measured as weeks of consumption are also amongst the lowers of the base metals complex. Low stocks, volatility in spreads and premia spikes will likely give misleading signals and will at times suggest the copper market is in better shape than demand conditions justify, with the key being able to differentiate between positioning-related episodes of tightness (premia and spreads) and a genuine pick-up in activity.

Copper exchange inventory including Shanghai bond



Source: LME; COMEX; SHFE; ICBC Standard Bank estimates

LME Copper 3m-15m spread vs. LME stocks – very benign



Source: LME; ICBC Standard Bank Plc

In a weak demand environment, low stocks do little to boost prices unless they get down to critical levels. Should demand pick up however, then the transition to even only a moderate demand environment should have a very positive impact on prices and indeed spreads. Overall therefore, and liquidity allowing, borrowing the farther-dated copper spreads seems the most obvious way to play the current copper market. The alternative is waiting for the tightness in the physical market (perhaps exacerbated by mine supply problems) to feed through and combine with seasonal demand, yielding a strong, but perhaps only short term rally in prices.

We are not forecasting an imminent and sustained rally in prices yet, though we believe that will come in the next 18-24 months as the impact of the current depressed price environment and reduced mine project development, along with cuts to project op-ex and cap-ex start to bite and lay the foundations for another run higher in prices. Stock cover remains low and shows little sign of improving unless there is a further marked deterioration in Chinese demand.

Copper isn't doomed, but is overly reliant on China with that impacting on its short term outlook. Nevertheless even with a further contraction in Chinese apparent refined demand to 2.9% in 2016 from 3.1% in 2015 the market is still in a small deficit, with larger deficits on the horizon in 2017 and 2018. Overall we expect copper to find its feet during early 2016 before stabilising and grinding higher as deficits beckon and the physical side of the copper market starts to make its presence felt.

Supply/demand balance for copper

Key forecasts (thousand of tonnes)

	2009	2010	2011	2012	2013	2014	2015	2016F	2017F	2018F
Mine production										
Total	15,954	16,044	16,053	16,775	18,272	18,716	19,203	19,606	20,194	20,679
Year-on year % change	2.5%	0.6%	0.1%	4.5%	8.9%	2.4%	2.6%	2.1%	3.0%	2.4%
Refined production										
Africa	705	870	960	1,057	1,275	1,369	1,424	1,400	1,600	1,680
North America	1,753	1,664	1,725	1,682	1,732	1,811	1,833	1,800	1,836	1,873
Latin America	3,948	3,877	3,697	3,413	3,366	3,351	3,257	3,200	3,213	3,245
Asia (ex. China)	3,889	3,943	3,780	3,910	3,838	4,017	4,010	4,100	4,174	4,249
China	4,051	4,540	5,163	5,864	6,651	7,640	8,075	8,470	8,894	9,338
Australasia	446	424	477	460	481	509	448	495	502	505
Europe	3,461	3,649	3,797	3,820	3,677	3,798	3,821	3,852	3,891	3,929
Total	18,253	18,967	19,599	20,206	21,020	22,495	22,867	23,317	24,109	24,819
Year-on year % change	0.2%	3.9%	3.3%	3.1%	4.0%	7.0%	1.7%	2.0%	3.4%	2.9%
Refined consumption										
North America	2,063	2,176	2,218	2,205	2,308	2,270	2,340	2,392	2,440	2,488
Latin America	521	656	599	624	594	575	569	558	602	639
Asia (ex. China)	3,954	4,235	4,121	4,157	4,311	4,500	4,253	4,377	4,561	4,725
China	7,119	7,393	7,885	8,885	9,645	10,986	11,327	11,650	12,116	12,630
Europe	3,833	4,225	4,495	4,201	4,150	4,280	4,023	4,115	4,193	4,256
Other	427	416	402	373	333	269	264	256	263	271
Total	17,917	19,101	19,720	20,445	21,341	22,880	22,776	23,347	24,175	25,009
Year-on year % change	0.4%	6.6%	3.2%	3.7%	4.4%	7.2%	-0.5%	2.5%	3.5%	3.4%
Implied surplus (deficit)	336	(134)	(121)	(239)	(321)	(385)	91	(30)	(67)	(190)

Source: ICBC Standard Bank Plc; ICSG; WBMS; LME

Lead - still on track

Lead is trading at a premium again to zinc, a little sooner than we expected perhaps but nevertheless justified given lead's more supportive near-term fundamentals. Lead's relative lack of liquidity, especially compared to zinc has also helped to isolate it from the wider commodity malaise during Q4, with a strong close to 2015 seeing lead prices touch $1,800/tonne by year-end – a 16% gain from the November lows. Zinc was up 11% over the same period.

Our fundamental view on lead has changed very little since our LME Week report, and so we continue to forecast a near-balanced market, just leaning towards small annual deficits this year and next. Against a backdrop of already very low visible stocks, which also appear to be tightly held, this outlook stands lead in good stead to once again be among the better performing base metals in 2016, though it may not quite manage to be top dog two years in a row.

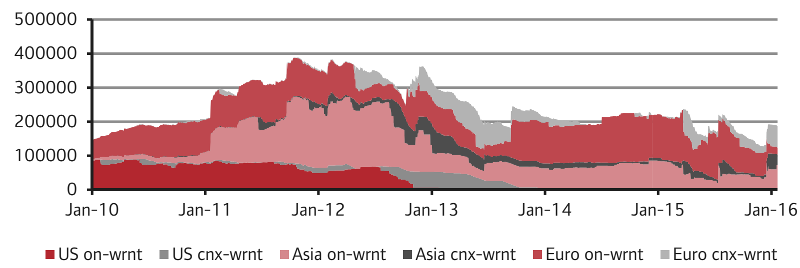
The relative strength in lead is not surprising as it has considerably tighter fundamentals than zinc, in that stocks are low and the market is closer to balance at the moment. In addition, scrap supply tends to be more price-elastic at the lows than mine supply, and with over half of refined lead coming from recycling, this has been a big factor helping to keeping availability relatively tight in the physical lead market. The flip side to this is that as prices rise, hoarded scrap is likely to flood back into the supply chain, and that may serve to cap the upside for prices this year too.

Watch out for weak demand

The weak part of the lead's fundamental story is demand, which has been hit hard by the slowdown in emerging market auto sales and the end of the e-bike boom in China. Overcapacity in battery manufacturing in recent years also led to a build-up of inventory, which in turn has cut capacity utilisation and promoted an extended phase of destocking. This is responsible for two consecutive years of contraction in Chinese refined lead apparent consumption, at around -5% in both 2014 and 2015. We would suggest that destocking has all but run its course by now, however.

Although industrial batteries are a growth market for back-up and energy storage, lead is facing more and more competition from lithium-ion batteries. Where these batteries used to be more expensive to install, unit costs are now much lower. The competition for lead-acid batteries thus far is in the industrial and e-bike sectors, but not yet meaningfully in the automotive sector.

Regional LME lead inventory



Source: LME

Overall, an already-destocked lead-acid battery market could experience some restocking in 2016 if a bottom to the price cycles is perceived to be in place. This is especially so if auto sales in China, Europe and the US remain strong, which low oil prices could help to promote.

A wild card, however, is China's new 4% consumption tax on lead-acid batteries imposed by the government from January 1, 2016. The latest data we have for domestic lead-acid battery production is for the January-September period, when a year-on-year decline of 10.5% was reported. We think the tax may have exaggerated the final throws of this sectors long destocking phase late last year, and we wait to see how the market adjusts to the new tax this year. To some extent it may accelerate the exit of smaller, less-efficient battery makers, which is consistent with the government's long-standing remit to clean up and consolidate this industry, but larger established players are likely to take the tax change in their stride.

Supply/demand balance for lead

Key forecasts (thousand of tonnes)

	2009	2010	2011	2012	2013	2014	2015	2016F	2017F	2018F
Mine production										
Total	3,810	4,161	4,631	4,921	5,320	5,022	4,922	4,976	5,085	5,182
Year-on year % change	-0.2%	9.2%	11.3%	6.3%	8.1%	-5.6%	-2.0%	1.1%	2.2%	1.9%
Refined production										
Africa	98	116	120	98	96	99	100	100	100	100
North America	1,801	1,777	1,878	1,743	1,832	1,645	1,596	1,600	1,596	1,591
Latin America	274	268	319	353	424	372	359	363	372	383
Asia (ex. China)	1,306	1,463	1,663	1,715	1,732	1,932	1,942	2,006	2,046	2,087
China	3,773	4,158	4,604	4,591	5,000	4,740	4,527	4,844	5,134	5,442
Australasia	259	229	246	203	232	226	221	226	225	225
Europe	1,645	1,737	1,799	1,820	1,838	1,853	1,844	1,835	1,833	1,831
Total	9,156	9,748	10,629	10,523	11,154	10,867	10,588	10,973	11,305	11,658
Year-on year % change	0.1%	6.5%	9.0%	-1.0%	6.0%	-2.6%	-2.6%	3.6%	3.0%	3.1%
Refined consumption										
North America	1,490	1,642	1,551	1,517	1,877	1,775	1,740	1,740	1,729	1,719
Latin America	360	365	388	419	406	389	408	425	450	477
Asia (ex. China)	1,689	1,793	1,933	2,048	2,047	2,082	2,121	2,185	2,218	2,284
China	3,925	4,171	4,588	4,574	4,977	4,745	4,508	4,801	5,089	5,343
Europe	1,503	1,644	1,660	1,660	1,711	1,725	1,708	1,716	1,711	1,706
Others	116	125	119	119	118	117	117	119	122	124
Total	9,083	9,740	10,239	10,337	11,136	10,833	10,602	10,986	11,319	11,654
Year-on year % change	-0.4%	7.2%	5.1%	1.0%	7.7%	-2.7%	-2.1%	3.6%	3.0%	3.0%
Implied surplus (deficit)	73	8	390	186	18	34	(14)	(13)	(14)	4

Source: ICBC Standard Bank Plc; ILZSG; WBMS; MBR

Available stocks shrinking

With nearly 60% of LME warrants cancelled, available tonnage stands at about 80,000 tonnes – the lowest level since June 2013, when prices were around $2,080/tonne. Meanwhile, SHFE stocks have continued to decline in January, and were last reported at 9,925 tonnes (Jan 15). They started 2015 at 56,937 tonnes having come down from a peak of around 140,000 tonnes in early 2013.

This depletion could create domestic Chinese tightness that results in more lead being imported, as it seems domestic smelters are unwilling, or indeed unable (due to low prices, tighter environmental regulations etc) to ramp up production after three years of negative growth in the last four, including in both 2014 and 2015.

Obviously the supply chain still has some slack in it, however in many respects lead looks very promising indeed. The problem with lead though is a lack of liquidity in the forward structure which means that any sizeable speculative positions quickly become the market and becomes rather cumbersome and unwieldy. That shouldn't prevent lead from putting in a decent performance over the next couple of years, it's just one's ability to participate might be rather limited.

Nickel – picking up the pieces

Nickel has been absolutely decimated, halving in value in under 18 months. This is in spite of an enduring ban on the export of laterite ores from Indonesia which had seen some participants look for a sustainable push back towards $25,000.

The reality is that the combination of oversupply and weak demand has turned a half decent fundamental picture into a mess. The mistaken belief that Chinese NPI production is swing supply led to a rather attritional approach by more traditional producers to the weakening demand conditions, with the hope that the NPI sector would shutdown. While NPI plants have closed, it has been nowhere near enough and has instead seen stockpiles of refined nickel surge, further weighing on sentiment and prices.

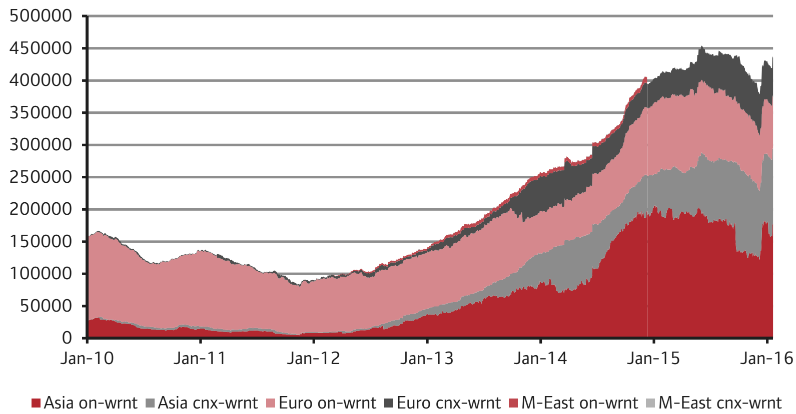
Significant production cuts are starting to be made as we speak, with closures taking place in Brazil and Australia. Arguably therefore prices should start to find some support around current levels, though with a stock:consumption ratio of over 16 weeks, nickel's rehabilitation will be a very slow process indeed.

Financing fun and games

Before we get into the wrist slitting reality of nickel's fundamental picture, it's worth highlighting some interesting anomalies in the physical market; in particular the premium differential between briquettes and full plate cathode in China. The premium for nickel briquettes in Shanghai is between $0 and $35/mt. Briquettes are normally a premium nickel product and this is a good reflection of real industrial demand for nickel in the country. This seems low considering that the arbitrage window has been sporadically open. It's even more out of line when you consider that the premium for full plate cathodes is $150-$170/mt at the moment… So why the discrepancy?

Firstly it is because the main brands of full plate cathodes are SHFE deliverable, whereas briquettes are not, so immediately there is a liquidity differential between the two forms of nickel. Secondly, given that real demand for nickel is poor (as evidenced by weak briquette premia) it seems likely there is some sort of financing element to it as well, not dissimilar to the well reported copper financing activity that has been a feature of the market in the recent past.

Regional LME nickel inventory – Asian chop and change



Source: LME

With large scale warrant cancellations of nickel inventory in LME Asian locations such as Taiwan (Briquettes and likely headed for another warehouse location) and Singapore (full plate cathodes – likely on route to China), in addition to the regular warrant cancellation and re-warranting activity in Malaysia, the picture seems rather artificial and not related to "real" supply-demand dynamics.

Supply-demand balance revisions

A common feature of the nickel market in recent years has been consistently disappointing supply-demand data requiring bearish revisions to supply-demand balances. This is because consumption has regularly underperformed expectations and output has repeatedly proven to be far more resilient, both in China's NPI sector and elsewhere among traditional nickel producers. These patterns characterised 2015 too, we have recently revised up our supply-demand surplus for the year to 69kt from 38kt at the time of LME Week.

Specifically, we have revised up our production estimates for Africa, Canada, Asia (ex-China) and Australasia, offsetting downward revisions to Europe and Latin America. The slight net increase to our global nickel supply estimates for last year is at odds with supply-side revisions we have made elsewhere across the base metals complex. In other metals, producers are cutting back as they adjust to a lower-price, lower-demand environment. In nickel, generally, they are not doing this on the same scale yet, which is setting this market apart from the rest.

The lack of action so far is largely because traditional nickel producers have been playing chicken with NPI producers, who were expected to capitulate first. Many traditional nickel producers have also been reluctant to cut back because they are burdened with the task of still nursing expensive, troublesome and temperamental HPAL and ferronickel projects towards full capacity to improve economies of scale and reduce unit costs, boosting nickel output rather than curtailing it. NPI closures have occured to some extent; the latest data we have from Antaike suggests Chinese NPI production was down 18.1% year-on-year in January-October. But this is much less of a contraction than the still-oversupplied market needs, especially when netting out NPI additions taking place in Indonesia.

While there is a case that the recent production adjustments in copper, zinc and even aluminium have started to put a floor under those markets, only very recently have producers started to respond. That should help nickel prices start to build a floor around current levels albeit rather belatedly. We continue to believe that there will be further casualties this year however. This is factored into our forecasts for 2016, which we have lowered to 1.948m tonnes – a 0.4% contraction versus our previous outlook for a 2.5% increase.

As for demand, the main change we have made to our base year 2015 is to lower our Chinese numbers, which now shows growth of 3.6% last year – not dissimilar to the INSG's 3.4% for January-November. That halves our global growth estimate for 2015 to 1.3%, from 2.6% in our last quarterly report. We also have trimmed back our outlook for 2016 to 3.9%, from 5% previously.Overall, the net effect of these supply-demand revisions is a 12kt global nickel market deficit this year, widening to 34kt and 68kt in 2017 and 2018, respectively.

Nothing to be bullish about

At face value, that series of deficits is not a bad outlook. Nickel's problem is its starting point. After four years of crippling oversupply between 2012 and 2015 that saw a cumulative 468kt of excess metal being amassed, global nickel inventories are in excess of 16 weeks of consumption and way more than any other base metal, including even zinc and aluminium. These deficits we forecast for nickel are not big enough to make a serious dent in this glut; by the end of 2018 stocks will still be close to 12 weeks of consumption. This is why we expect prices need to go lower still, or stay lower for longer, to force more supply cuts.

The main risk to our outlook, therefore, is that supply ends up far weaker than expected as producers finally capitulate and capacity closures snowball, creating a far deeper global deficit. But even this is unlikely to drive a significant recovery in prices until stocks have been eroded to much lower levels. Nickel looks set for a very long and slow rehabilitation process, with weak prices likely to remain a feature of the market for some time to come.

Supply/demand balance for nickel

Key forecasts (thousand of tonnes)	2009	2010	2011	2012	2013	2014	2015	2016F	2017F	2018F
Mine production										
Total	1,356	1,637	2,216	2,364	2,613	2,134	2,089	2,169	2,255	2,330
Year-on year % change	-12.5%	20.7%	35.4%	6.7%	10.5%	-18.3%	-2.1%	3.8%	4.0%	3.3%
Refined production										
Africa	36	36	36	41	59	75	85	93	89	86
North America	117	105	142	152	153	150	158	161	164	167
Latin America	117	118	126	154	140	146	140	148	163	180
Asia (ex. China)	178	205	196	209	229	243	282	304	329	355
China	254	332	435	519	694	691	624	580	595	600
Australasia	168	141	150	174	190	199	207	205	213	226
Europe	444	503	516	510	498	483	460	456	460	465
Total	1,314	1,440	1,601	1,759	1,963	1,987	1,956	1,948	2,014	2,079
Year-on year % change	-4.6%	9.6%	11.2%	9.9%	11.6%	1.2%	-1.6%	-0.4%	3.4%	3.2%
Refined consumption										
North America	98	130	141	145	153	160	164	166	167	169
Latin America	24	23	24	22	22	22	22	23	25	27
Asia (ex. China)	318	354	347	340	335	353	358	365	376	387
China	443	575	704	770	899	956	990	1,050	1,113	1,191
Europe	318	356	365	364	351	354	335	339	349	355
Others	34	27	27	27	25	23	23	24	25	26
Total	1,236	1,465	1,607	1,668	1,785	1,867	1,891	1,966	2,055	2,155
Year-on year % change	-3.9%	18.6%	9.7%	3.8%	7.0%	4.6%	1.3%	3.9%	4.5%	4.9%
Implied surplus (deficit)	78	(25)	(4)	94	181	124	69	(12)	(34)	(68)

Source: ICBC Standard Bank Plc; INSG; WBMS; MBR

Zinc – lots of potential

Zinc has the potential for a really strong and sustained rally in prices as mine production cuts and looming concentrate tightness feed through to the refined market. The market narrative is certainly there and refined deficits are on the way, which should lend background support to prices and attract the more speculative elements of the market. The problem however is one of timing.

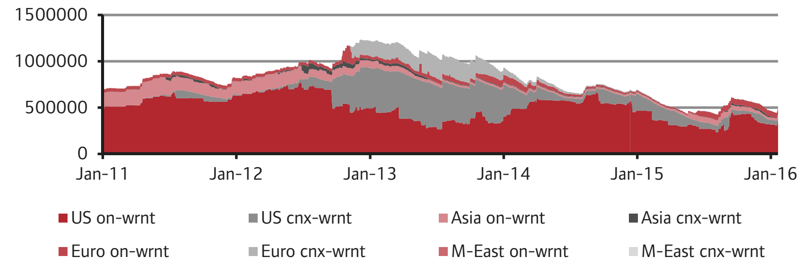
TC/RC and premia watching will be key this year, as will concentrate stocks at smelters. TC/RCs have already fallen dramatically with smelters appearing to be chasing the market lower. The key will be at what point do concentrate stocks hit critically low levels and kick start a drawdown in refined stocks. That then leads onto the question of how much refined inventory is lurking out there and does that get drawn down first.

Unreported stocks still on the rise?

Latest ILZSG data out this week, shows the group's estimates for the January-November period of 2015. The data suggests a 176,000-tonne surplus over the period, yet reported inventories (LME, SHFE, SRB, producer, consumer and merchant) declined by 5,000 tonnes. Of course, the data is subject to revision – and often those revisions are significant – but, taken at face value, the key figure from the apparent anomaly in this report is that unreported zinc stocks are inferred to have risen by 181,000 tonnes over the first 11 months of 2015.

In other words, in order for this surplus not to show up in the supply-demand surplus, it must have been absorbed either as material in transit or as other unreported stock. We have said many times before that one of the clouds hanging over the zinc outlook is that there is a large buffer of invisible, off-market inventory lurking in the shadows, much of it likely to be in New Orleans.

Regional LME zinc inventory



Source: LME

Moreover, the re-emergence of this metal will soften any bullish effect on prices and premiums as the global market eventually swings into a meaningful period of deficit in the coming few years following the recent big mine closures and cutbacks. Indeed, we noted in our LME Week report that since 2009 (the start of both the large zinc surpluses and the warehousing boom in the aftermath of the global financial crisis), global off-market zinc stocks have risen by more than 800kt. Given the latest ILZSG data for 2015, that accumulation continued last year.

The statistical agencies are not immune from making errors, with the ICSG over-reporting Chilean port stocks of copper. Arguably therefore there could also be a statistical trend error in the ILZSG methodology. As such a focus on the physical zinc market is even more important this year as we approach what looks like being the inflection point in the zinc market.

Deficit emerged in Q4, but not likely to last, yet

According to ILZSG estimates, and in spite of the stock increase, the global zinc market was actually running a deficit in October and November (19.3kt tonnes and 27.4kt tonnes, respectively) as demand saw a seasonal up-tick and supply appears to have plateaued (pending revisions). That may signal that the global refined zinc market balance was at least starting to move in the right direction in Q4 last year, though we need more confirmation before getting carried away just yet. For 2016, we are still forecasting a refined surplus of 100kt tonnes overall, with deficits not arriving sustainably until 2017-18.

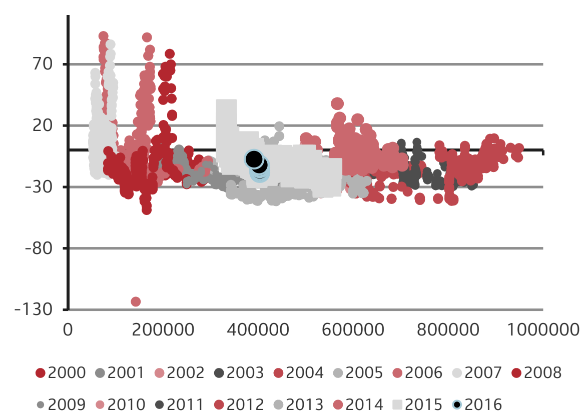
Demand has been weak, but apparent rebound can't be ruled out in 2016

One of the main depressing factors in zinc is the weak backdrop for demand in China. ILZSG data indicates apparent consumption expanded by 2.1% in January-November, which warns that our full year forecast of a 2.5% expansion may turn out to be a bit of the ambitious side.

Nevertheless, we stand by our expectations for an uptick in Chinese apparent zinc demand this year, to a 4.9% pace. We are starting to see Beijing's stimulus and easing measures bearing fruit, and we expect policymaker tinkering to continue. Given likely destocking activity in 2015 while Chinese economic activity slumped, a rebound in real demand may translate into an even bigger boost to apparent demand with destocking at some point needing to give way, if not to restocking, then at least hand-to-mouth buying.

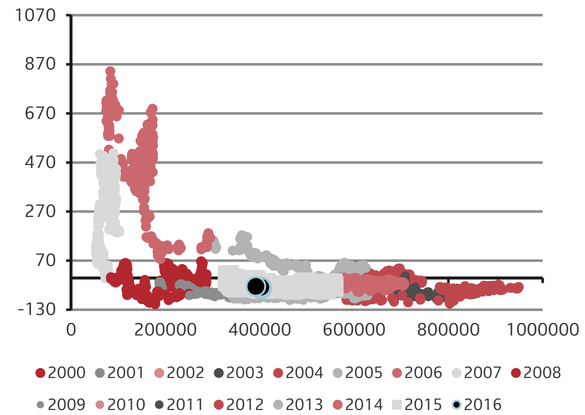
Europe was a rare bright spot on the demand side of the zinc market, with a strong auto sector and weak euro key factors behind a 2.7% year-on-year increase in refined zinc consumption over the January-November period last year. Strength here and in China offset most of the negative growth in the likes of India, Japan, Korea and the US, to result in global growth of a meagre 1% over the first 11 months.

Zinc cash-3m spread vs. stock- all over the place



Source: LME; ICBC Standard Bank Plc

Zinc 3-15m spread vs. stock - 200 kt from lift off



Source: LME; ICBC Standard Bank Plc

Zinc spreads; opportunities await

The zinc cash-3m spread is basically showing a succession of episodic tightness at various stock levels. This is likely a function of imbalances between borrowers of the spreads and natural length owing to financing-type deals and a lack of speculative length. This has also to a certain extent been impacted by warehouse wars and inventory queues. We caution therefore about getting too carried away in terms of outright price expectations on the basis of spread tightness.

Looking at historical stock levels it seems that zinc needs to see on-warrant LME stocks fall to around 200 kt to justify significant tightness in the nearby spreads.

Looking further along the curve at the 3-15-month spread and zinc needs a reduction of perhaps 150kt on on-warrant inventory before you can justify a significant tightening in the forwards. Looking ahead therefore, zinc has potential, but while its farther dated spreads offer good value, it is a slower burn and needs tightness to start to be felt in the concentrates market with that needing to feed through to refined stock levels.

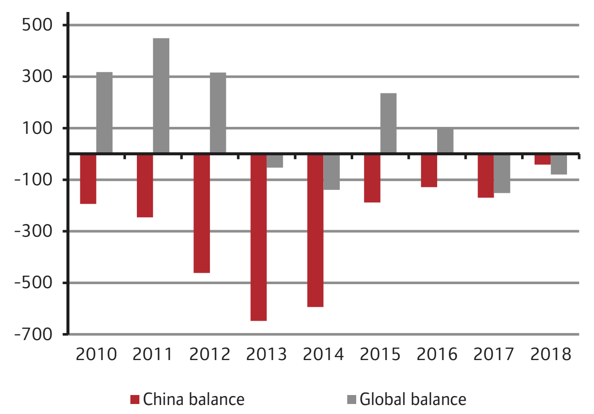
TC's already reflecting concs tightness

On the supply side of the zinc market, ILZSG data for Australia up to November is yet to show clear evidence of Century's closure and, in fact, total production in the country was up 7% or 99kt year-on-year in those 11 months. Even so, global output only increased marginally over the period. And with no production from Century and Lisheen in 2016, along with the cutbacks announced by Glencore, Nyrstar and others, we continue to think global mine supply will contract this year. In fact, the risks to our mine supply forecast are very much to downside now.

Chinese spot zinc TC

Source: MBR

Global and Chinese refined zinc balances



Source: ICBC Standard Bank Plc; ILZSG; WBMS; MBR

Emerging tightness in concentrate supply is already starting to be seen in spot TCs, which have fallen back smartly to around $158/tonne as of the end of December, from $190 a month earlier and highs of around $210 from January to July 2015. The move down may have even been accelerated by smelters chasing the market lower to restock, which suggests that there is real concern about dwindling concentrate supplies. This may be the case in China especially, as domestic mine production reportedly shrank 3.7% or 174kt last year.

Concs deficit here already, sustainable refined deficit still a year away

So while the zinc concentrate market may have entered a genuine supply deficit already, and one that is likely to run for a while, the refined market has a little longer before meaningful, sustainable deficits to materialise. At the moment, we don't see these until 2017-18 and even then there is a large cushion of off-market stocks to run down before tightness really starts to bite.

Nevertheless there are opportunities in the farther-dated spreads now, and as signals from the physical market start to mount there will be further opportunities to position for what looks to be a decent recovery in prices.

Leon Westgate

Supply/demand balance for zinc

Key forecasts (thousand of tonnes)

	2009	2010	2011	2012	2013	2014	2015	2016F	2017F	2018F
Mine production										
Total	11,601	12,360	12,582	12,898	12,977	13,349	13,866	13,802	14,461	14,880
Year-on year % change	-2.4%	6.5%	1.8%	2.5%	0.6%	2.9%	3.9%	-0.5%	4.8%	2.9%
Refined production										
Africa	270	273	246	167	146	137	111	100	95	70
North America	1,224	1,261	1,232	1,233	1,207	1,154	1,166	1,171	1,177	1,183
Latin America	427	554	642	564	628	608	614	620	626	633
Asia (ex. China)	2,526	2,712	2,806	2,839	2,898	2,851	2,911	2,969	3,028	3,059
China	4,286	5,209	5,212	4,881	5,100	5,610	6,171	6,541	6,834	7,312
Australasia	519	499	515	501	498	488	490	492	482	472
Europe	2,050	2,355	2,398	2,385	2,367	2,452	2,464	2,452	2,315	2,384
Total	11,302	12,863	13,051	12,570	12,844	13,300	13,927	14,346	14,558	15,114
Year-on year % change	-3.1%	13.8%	1.5%	-3.7%	2.2%	3.6%	4.7%	3.0%	1.5%	3.8%
Refined consumption										
North America	1,144	1,184	1,221	1,177	1,233	1,270	1,275	1,298	1,311	1,324
Latin America	340	432	428	347	384	388	392	411	436	462
Asia (ex. China)	2,381	2,669	2,604	2,665	2,832	2,911	2,946	3,034	3,095	3,157
China	4,659	5,403	5,458	5,343	5,748	6,204	6,359	6,670	7,004	7,354
Europe	1,939	2,489	2,513	2,355	2,347	2,325	2,351	2,456	2,481	2,506
Others	375	368	378	367	353	341	368	376	383	391
Total	10,838	12,545	12,602	12,254	12,897	13,439	13,691	14,246	14,710	15,194
Year-on year % change	-5.8%	15.8%	0.5%	-2.8%	5.2%	4.2%	1.9%	4.1%	3.3%	3.3%
Implied surplus (deficit)	464	318	449	316	(53)	(139)	236	100	(152)	(80)

Source: ICBC Standard Bank Plc; ILZSG; WBMS; MBR

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