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Europe

Commodities Strategy

Copper - No Post Lunar New Year Party

- Commodities

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- **Clear signs of oversupply of copper in China** — it is our view that China has a significant over-availability of copper units, built up during 2012. Primary and secondary copper unit availability in China in 2012 was 10.96 mt, comprising of 3.4 mt of primary copper imports, 1.6 mt of copper contained in scrap, and domestic refined production of 5.96 mt. This points to an over-availability of copper units of between 1-1.5 mt last year alone – i.e. far more significant than the reported 600,000 tonne build in bonded warehouse inventory.

- **Chinese residential construction not a source of growth in 2013** — the Chinese property sector accounted for 20% of Chinese refined copper consumption in 2012, (1.7 million tonnes) and has been a key source of copper consumption growth. We believe increased government pressure for more restrictions on speculative property purchases will lead to continued 'softness' in rates of Chinese manufacturing growth. Our previous expectation had been for Chinese copper consumption to grow by 7.5% in 2013, but we now expect slower property and (energy) infrastructure building to reduce China's copper consumption growth to 5.9%.

- **Copper supply: growing and growing** — the bullish expectation of continued mine losses due to strike activity, ore depletion and project slippage looks difficult to maintain. During 2012 mine production for major listed miners, if assessed on a year-on-year basis, grew by 2.7% in Q2, 8.2% in Q3, and 9.7% in Q4. This trend is set to continue in 2013E and 2014E on continued brown and greenfield expansions.

- **Copper price outlook less than positive short term** — weaker-than-expected Chinese manufacturing levels, strong levels of Chinese primary copper exports, rising LME and SHFE copper inventory, and positive quarterly mine production results are weighing on sentiment. Copper traded down $7,652/t on Friday March 1st, with the next key level of support seen at $7,600/t. We believe that consumer buying will limit significant further downside moves, particularly with positive LME-SHFE arbitrage opportunities opening up for Chinese traders on Friday.

Figure 1. Copper Market demand/supply balance – growing surpluses

kt	2010	2011	2012e	2013f	2014f
Mine production (SxEw + Concentrates)	16,199	16,209	16,767	17,965	19,179
Refined production	**18,989**	**19,488**	**20,155**	**20,907**	**21,883**
% chg.	*3.7%*	*2.6%*	*3.4%*	*3.7%*	*4.4%*
Consumption/demand	**19,271**	**19,731**	**19,959**	**20,568**	**21,444**
Market balance	-282	-243	196	339	389
Stock: Consumption ratio (wks)	3.3	3.0	3.4	4.2	4.9
Price (US$/t)	7,543	8,829	7,945	7,965	7,500

Source: Wood Mackenzie, ICSG, Citi Research estimates

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Copper – no post Lunar New Year party

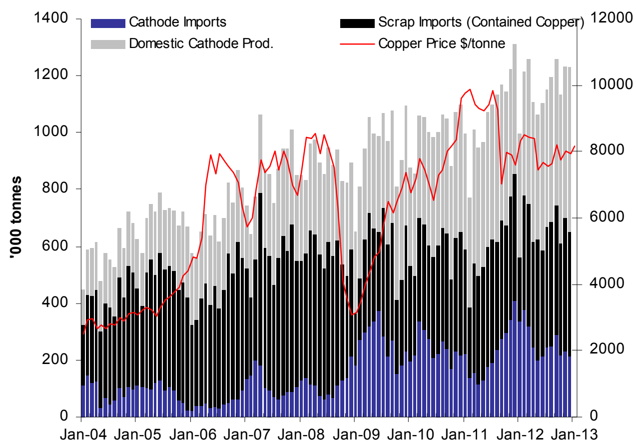
Many participants in the copper market had been hoping for a surge of Chinese copper buying after the Lunar New Year holidays. The precedent for such hopes has simply been that this has been the pattern of Chinese post Lunar New Year buying activity in recent years. However, over the last week, LME 3-month prices have fallen from $8293.5/t, to trade down do $7,954/t on Thursday 20th February. Chinese traders have been conspicuous by their absence during that week.

Clear signs of oversupply of copper in China

It is our view that China has a significant over-availability of copper units, built up during 2012 in particular. Indeed, we estimate that primary and secondary copper unit availability in China in 2012 was 10.96 million tonnes, comprising 3.4 million tonnes of primary copper imports, 1.6 million tonnes of copper contained in scrap, and domestic refined production of 5.96 million tonnes. It is worth noting that Chinese domestic copper production is growing rapidly and now accounts for 73% of total Chinese primary copper consumption compared with 57% in 2004. Indeed, China is moving its import requirements more toward copper concentrate than primary refined copper.

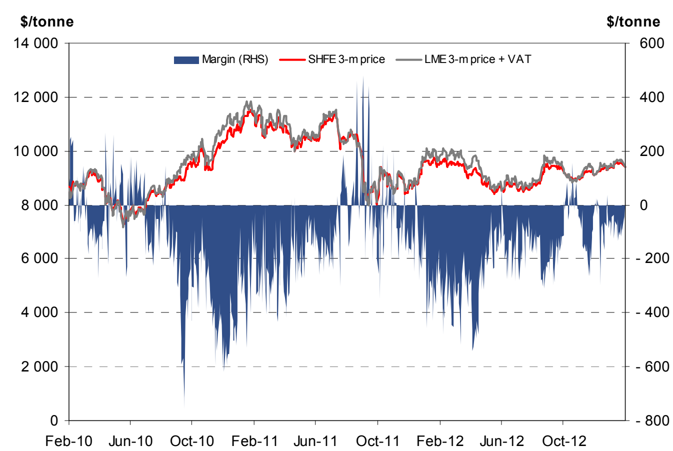
In comparison to supply, estimates of real 2012 Chinese copper consumption (including direct use by refiners of copper scrap) by analysts Wood Mackenzie, at 9.6 million tonnes, suggest in simplistic terms, an over-availability of copper units of between 1 and 1.5 million tonnes last year in China. Some of this over-supply clearly went into the Shanghai bonded warehouse network, where consensus estimates suggest volumes rose from 400,000 t at the beginning of 2012 to around 1 million tonnes by year-end, which accounts for around half of the over-availability of copper. We continue to believe that bonded warehouse estimates are on the low side, as the numbers focus solely on Shanghai, and don't tend to include estimates for other major Eastern seaboard ports.

Figure 2. China copper unit availability – surged in 2012



Source: Wood Mackenzie, ICSG, China Customs, Citi Research

Figure 3. Arbitrage for shipping copper into China largely negative in 2012

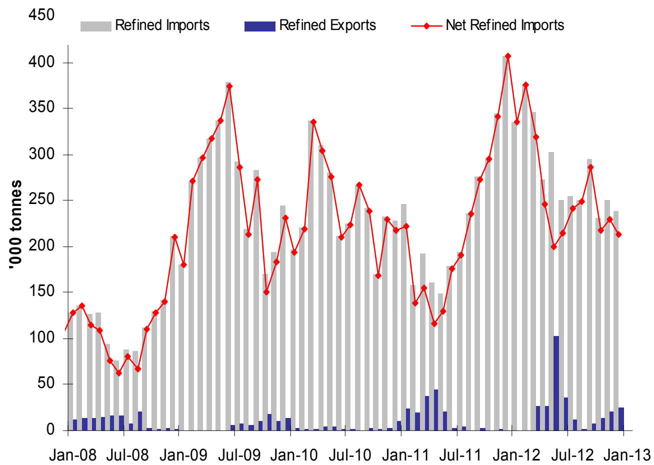


Source: LME, SHFE, Citi Research

As over-supply of copper in China grew last year, so did the re-export of metal, as a reverse 'arb' between Shanghai (SHFE) and LME markets was in place for much of 2012. Indeed, Chinese primary copper exports rose by 40% y/y in 2012, 215,000 tonnes, as traders took advantage of SHFE-LME margins. The sharp fall-off in

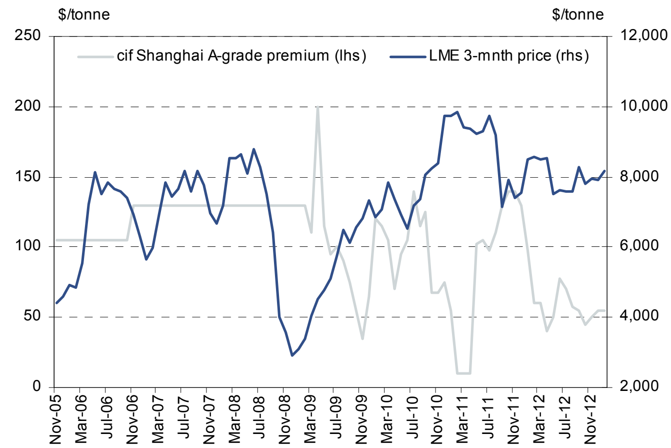
physical premiums for imported metal also support our view of a Chinese market very well supplied with metal. Recently metal from China has been flowing back into the LME warehousing network, with for example LME inventory in Johor, Malaysia, rising by 55,425 tonnes since the beginning of January 2013. Total LME inventory now stands at 462,400 tonnes, the highest level since October 2011, while total exchange inventory (LME, Comex and SHFE) is now at 756,663 tonnes, the highest level since May 2010. We expect to continue to see traders re-exporting excess metal from China through 2013. Indeed, a growing reluctance of Chinese banks to roll over copper collateralized financing deals suggests that bonded warehouse stocks are likely to become available to the wider market going through 2013. At the same time we expect to see a continued fall in monthly refined imports as Chinese domestic refined copper production continues to grow, while copper financing demand comes under pressure.

Figure 4. Chinese copper imports versus exports



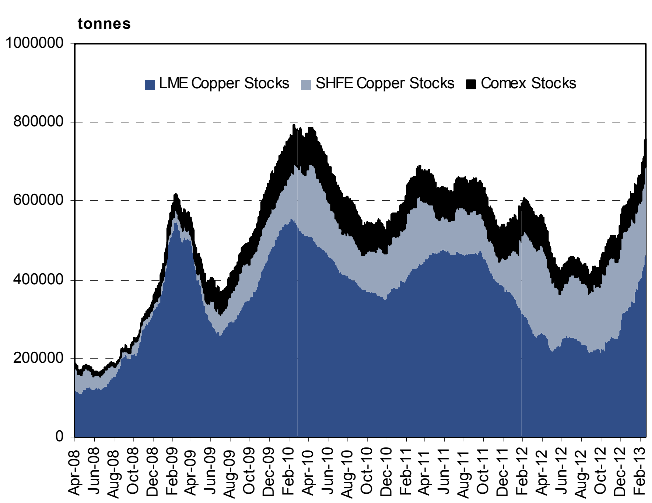
Source: Wood Mackenzie, ICSG, Citi Research

Figure 5. Shanghai physical premiums – on a downward path



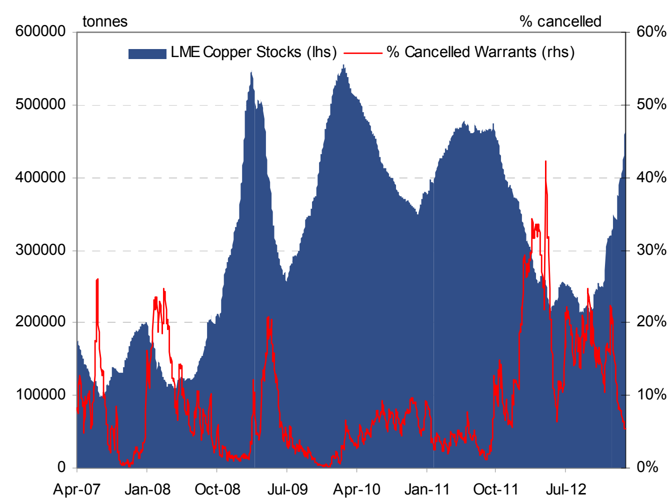
Source: LME, Bloomberg, Citi Research

Figure 6. Exchange copper inventory – sharp acceleration



Source: LME, SHFE, Comex, Citi Research

Figure 7. LME inventory vs. cancelled warrants

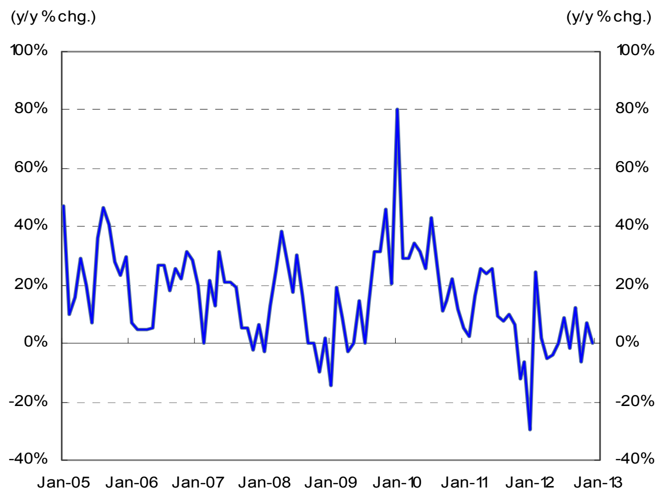


Source: LME, Citi Research

Chinese demand outlook – still rosy?

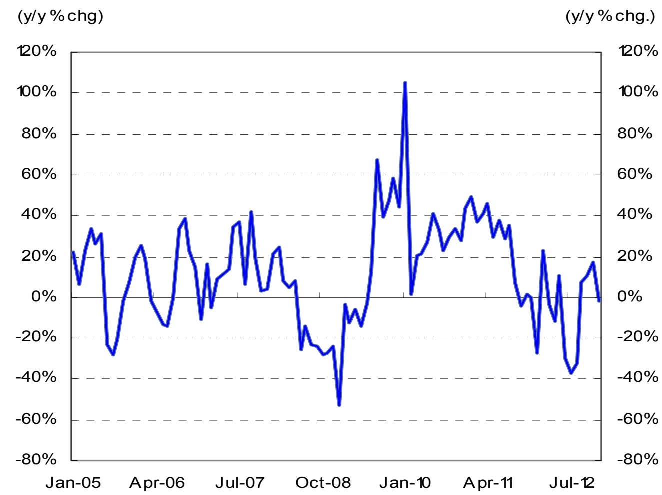
Two demand issues in China still prompt market expectations of another copper price bull run. This market view is driven first by an expectation of restocking by fabricators/copper consumers, and second by an expected rebound in residential construction activity. We believe both such expectations are misplaced.

Figure 8. Annual change in Chinese washing machine production



Source: NBS, Bloomberg, Citi Research

Figure 9. Annual change in Chinese air conditioner production



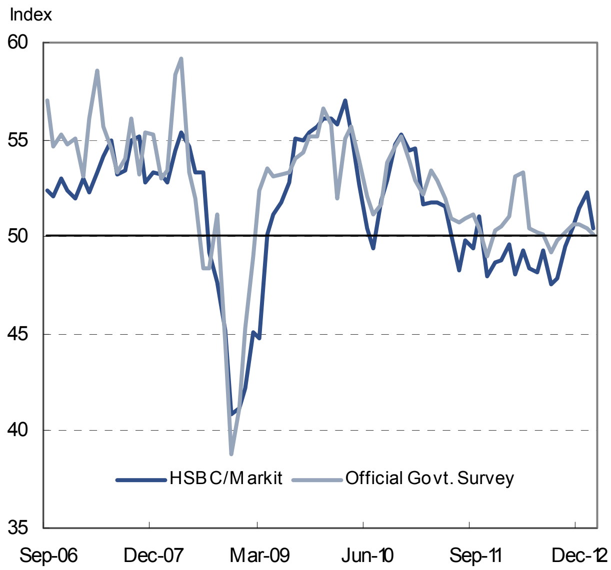
Source: NBS, Bloomberg, Citi Research

Final product restocking muted towards the end of 2012

Chinese copper consumers, notably in such sectors such as air-conditioning and white goods, heavily destocked final product through the middle of 2012; a restock appeared to take place towards end of Q3 and into Q4. However, manufacturing rates for air-conditioners and most white and electronic goods slowed appreciably in November and December of 2012. Perhaps not too much should be read into the end-of-year slowdown, given year-end accounting inventory issues and also the seasonal impact of Lunar New Year on manufacturing rates. Previous years have seen manufacturing slowdowns, with for example, December 2011 and January 2012 seeing 0.2% and 27% y-o-y contractions in air-conditioner production. Given the lateness of Lunar New Year in 2013, we should expect a continued contraction in manufacturing rates in February.

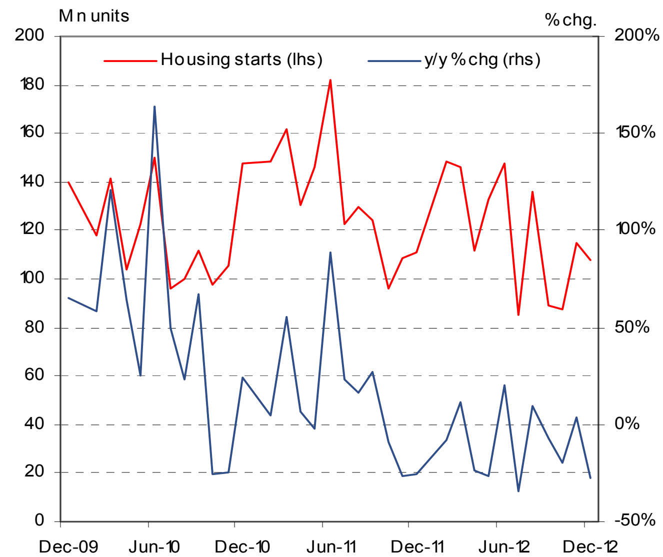
The recent flash HSBC/Markit Manufacturing PMI data for February point to a slower rate of growth, coming in at 50.4 versus consensus estimates of 52.2 and January levels of 52.3, supporting this view of further contraction. The HSBC/Markit PMI survey covers more than 400 small, medium-sized and large manufacturers, with more focus on private enterprises than the state-owned sector. What is perhaps enlightening is that the recent HSBC/Markit survey levels are now coming more into line with Official Chinese Government PMI numbers, which presents a picture of a much more modest level of manufacturing growth. The February official PMI came in at 50.1, compared to 50.4 in January, and well below consensus expectation of 50.5. Given this more muted level of manufacturing rates, we see little prospect of a dramatic restocking in 2013. In addition, any form of end-product restocking is likely to result simply in draws on the high levels of copper inventory already in China, and thus present a more limited call on copper metal from outside of China.

Figure 10. Chinese manufacturing PMI - stuttering



Source: HSBC/Markit, NBS, Bloomberg, Citi Research

Figure 11. Residential floor space under construction



Source: NBS, Bloomberg, Citi Research

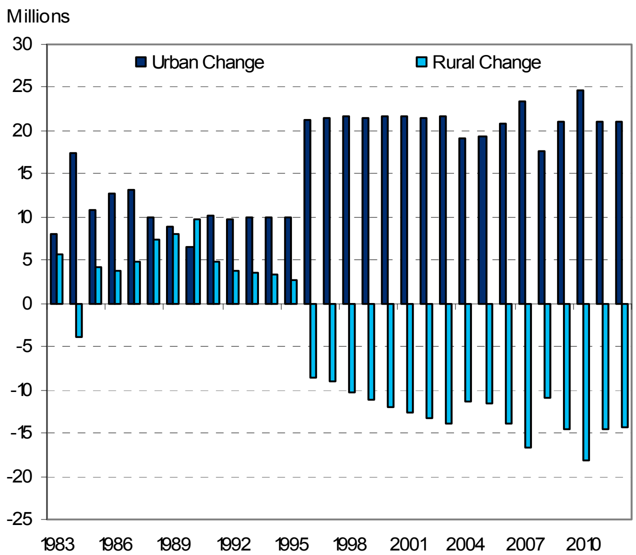
Property market sentiment less than positive…

Analysts Wood Mackenzie estimate that the Chinese property sector accounted for around 20% of Chinese refined copper consumption in 2012, roughly 1.7 million tonnes, and has been a key source of copper consumption growth. However, recent Chinese Government pronouncements regarding the property market add to the sense that manufacturing growth will be muted in 2013. Indeed, Premier Wen Jiabao's comments on February 19th at the State Council Conference urging authorities in first- and second-tier cities to curb rising house prices by restricting speculative purchases are likely to prompt continued 'softness' in Chinese manufacturing growth, in our view. A number of cities have already tightened controls on housing loans, which represents a significant change from the policy of recent years where housing loan restrictions had been eased in order to help boost the property market which was seen as important driver of the China growth story. *The Financial Times* reported on February 19th that cities Zhejiang, Jiangsu and Guandong have capped the size of loans available to home purchasers using their local housing provident funds in order to reduce property speculation. The news provider *Global Times* reported on February 21st that the size of minimum down payment deposits on first and second homes is likely to rise to 60% and 70%, respectively, while mortgage rates on second properties will be no lower than 1.3 times the benchmark interest rate, up from the current 1.1x rate, which will significantly increase monthly mortgage costs. We believe that such measures are effectively just the first wave in a raft of measures to control property markets with widespread speculation about a country-wide roll out of the current pilot property taxes seen in Shanghai and Chongqing. We expect such measures to act as a significant disincentive in terms of property investment and therefore residential construction activity, thus in turn reducing fabrication demand growth for copper.

Interestingly, it appears that urban population growth rates may have peaked in 2010, with subsequent levels being lower than average levels seen between 1997 and 2003 according to National Bureau of Statistics data. Conversely, the rate of population decline in rural areas also appears to have peaked in 2010, as shown in

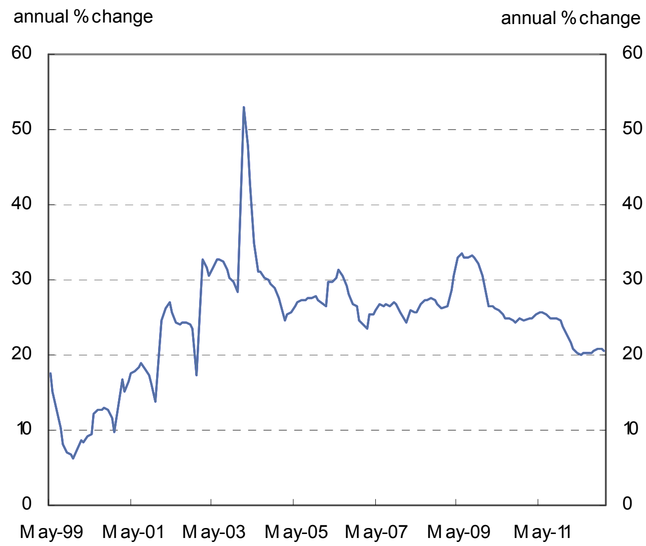
Figure 12. This suggests that there the rate of growth in urban construction and infrastructure investment demand will continue to slow, again not a positive for metals consumption growth. Indeed, the rate of growth of residential floor space under construction has been on a general downward trend since mid 2011, as shown in Figure 11 above.

Figure 12. Rural – Urban population change in China



Source: NBS, Citi Research

Figure 13. Urban fixed asset investment growth



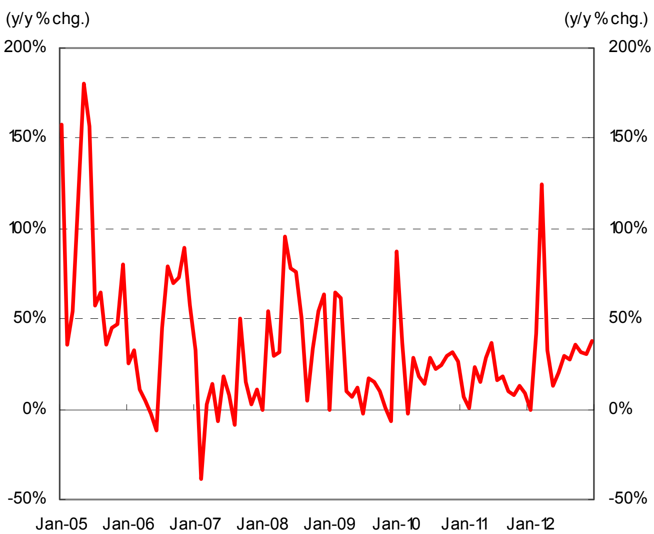
Source: NBS, Bloomberg, Citi Research

The hoped for boost to construction activity provided by targets for economic housing unit volumes continues to be overplayed. Last year, the government targeted 7 million units, while actual numbers came in at 6 million. The current targets for 2013 economic housing building are for 6.3 million new starts; however we suspect these targets are similarly ambitious. Indeed, we continue to believe that unsold property is being reclassified as economic housing in order to assist in the meeting central government volume targets.

… while investment in energy infrastructure is likely to be flat on 2012 levels…

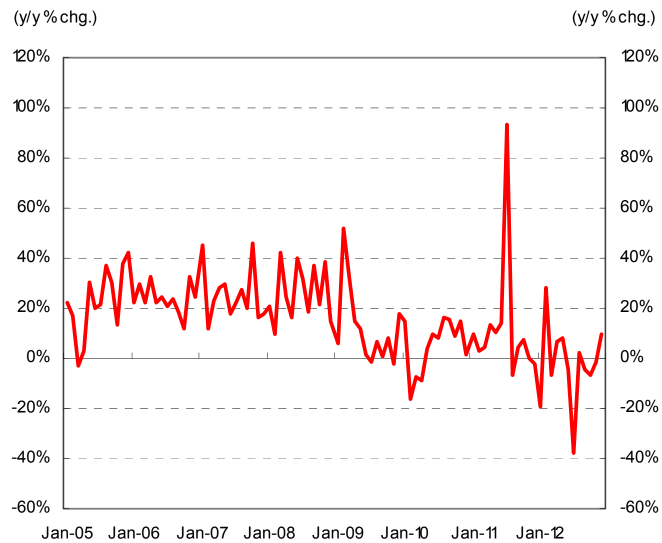
The energy sector is probably the one key Chinese copper consuming area where demand is supportive. The China State Grid Corp, one of China's two major power grid operators, last week announced plans to invest more than Rmb300bn in power grid in 2013, focussing on building ultra-high-voltage power transmission network and smart grid systems. However, it should be emphasised that these 2013 spending plans represent a flat investment profile when compared to 2012, when investment in grid infrastructure amounted to Rmb305.4 bn, rather than any form of acceleration in investment. In addition, given the acceleration in copper cable production, and to a lesser extent transformer production, in China in Q4 last year and most notably in December (see Figures 14 and 15), it would appear that some degree of power cable restocking occurred during the last quarter, which no doubt will be drawn to meet 2013 investment expectations.

Figure 14. China power cable production



Source: NBS, Bloomberg, Citi Research

Figure 15. Electricity transformer production



Source: NBS, Bloomberg, Citi Research

..leading us to reduce our Chinese 2013 copper demand expectations

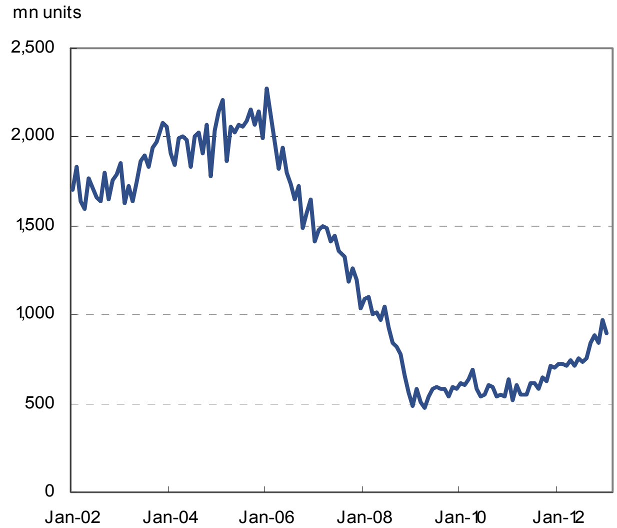
Previously we had expected Chinese copper demand to grow by 7.5% in 2013, although this was towards the bottom of 2013 estimates (analysts Wood Mackenzie forecast 8.5% growth); we now feel even we have been too optimistic. We believe that slower-than-hoped-for property and (energy) infrastructure building will reduce China's copper consumption growth to 5.9%, from 8.2 million tonnes last year to 8.65 million this year, essentially pushing the global copper market further into surplus this year after H2 surpluses seen last year. Indeed, given our expectation of a continuation of the upward copper mine supply growth trend seen during the latter three quarters of 2012, we now believe the copper market will be heading towards a surplus of almost 340,000 tonnes in 2013.

The US housing sector – a material source of copper demand growth?

Last year's strong rebound in US new housing starts, up 28% yoy, has prompted some metal market talk of the US housing market again being a major driver of copper prices. However, we believe this view is overplaying the importance of the US property construction sector as a copper market driver.

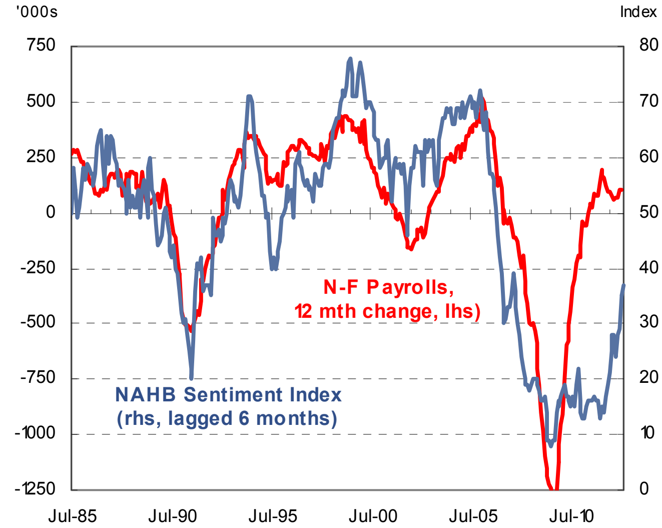
To put the US residential market in perspective, the US accounted for 9% of global primary copper consumption last year, according to analysts Wood Mackenzie, equivalent to 1.77 million tonnes of primary metal. Of that, roughly 50% was driven by construction activity, equivalent to roughly 885,000 tonnes of primary copper. Of this construction share, around one-third was related to residential construction activity, roughly 292,000 tonnes of copper. This essentially means that last year the US residential construction sector accounted for 1.5% of total global primary copper consumption. If, for the sake of argument, new housing starts were to rise by 30-40% in 2013, this would move the US residential construction sector's share of total global copper consumption to an implied 1.8-1.9% share of total global copper consumption by adding another 100,000 tonnes of primary copper consumption by the US residential construction sector., which is not really a market-moving amount.

Figure 16. US New housing starts - strong enough to drive copper?



Source: Bloomberg, Citi Research

Figure 17. Slower employment growth doesn't support a huge surge in US house building in 2013

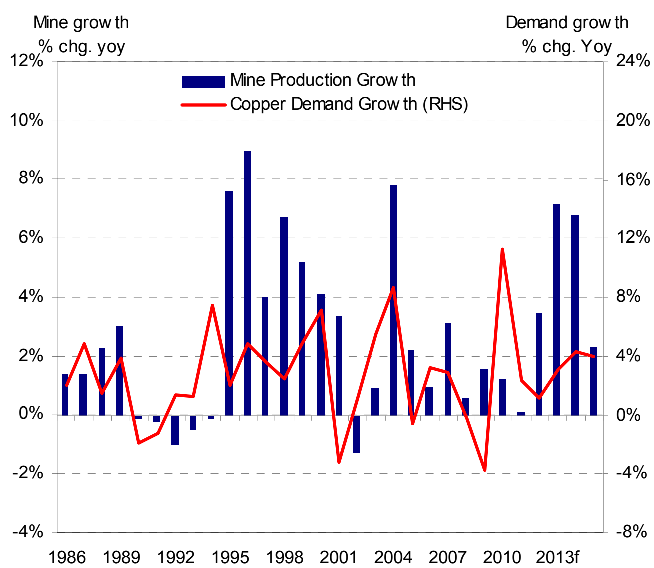


Source: Bloomberg, Citi Research

Copper supply – growing and growing

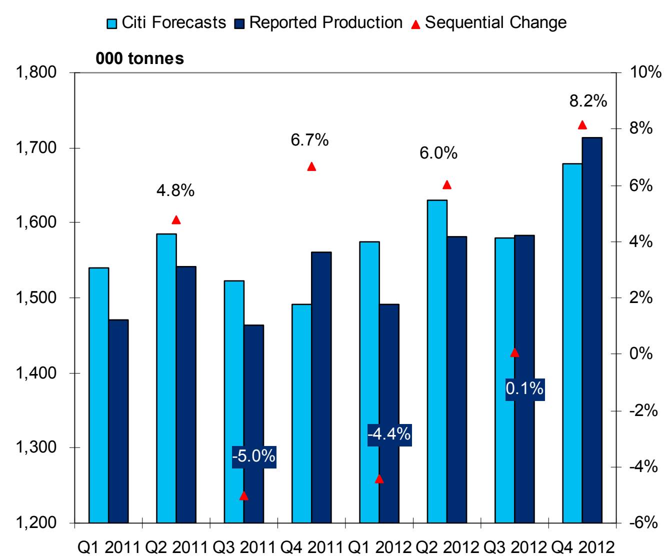
Copper bulls continue to expect that copper supply will fail to deliver in 2013, pointing to losses due to strike activity, ore depletion and project slippage as the reasons. Obviously these have been the reasons for poor performance in recent years. However, we believe that these factors will be less of an issue in 2013, leading to an expectation of total mine supply growth of 1.1 million tonnes, or 7.1%, for the year.

Figure 18. Total mine supply growth – the next wave is here



Source: Wood Mackenzie, ICSG, Citi Research Estimates

Figure 19. Quarterly growth numbers from major miners – increasingly positive



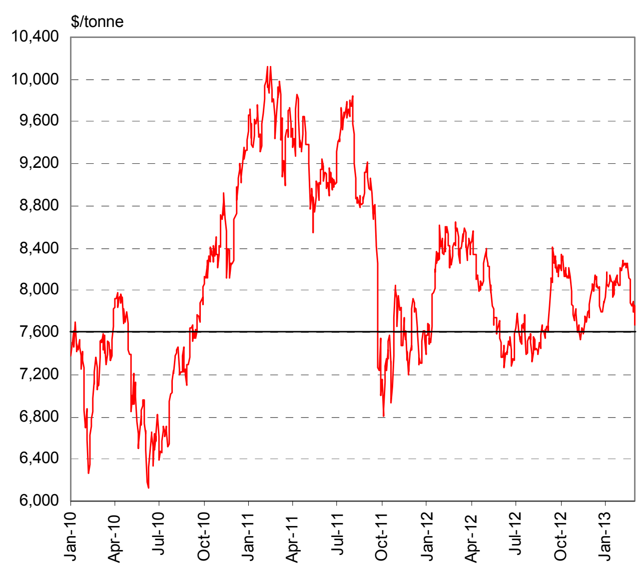
Source: Company Reports, Citi Research

During 2012, positive growth has been seen on a quarter-on-quarter basis from 10 major listed miners in both Q2 and Q4, with Q4 2012 production levels up 8.2% on Q3. If data is assessed on a year-on-year basis, the numbers are even more positive, with Q2 growth at 2.7%, Q3 8.2%, and Q4 9.7%. Growth has largely been coming from Anglo's Collahuasi and Los Bronces mines, BHP/Rio Tinto's ore upgrade program, recovering production at Freeport's Grasberg mine, and Antofagasta's Esperanza mine. We expected a continued acceleration in 2013, with continued growth from Escondida, an H2 start from Rio's Major Mongolian mine project, Oyu Tolgoi, expected 30% growth at Freeport's Grasberg mine, full ramp-up of ENRC's DRC-based Frontier mine, and continued production improvements from Anglo's operations to name but a few. We believe the mining industry is essentially facing the third wave of mine supply growth since the early 1990s, with growth surges occurring every 8-9 years.

Copper price outlook – less than positive short term

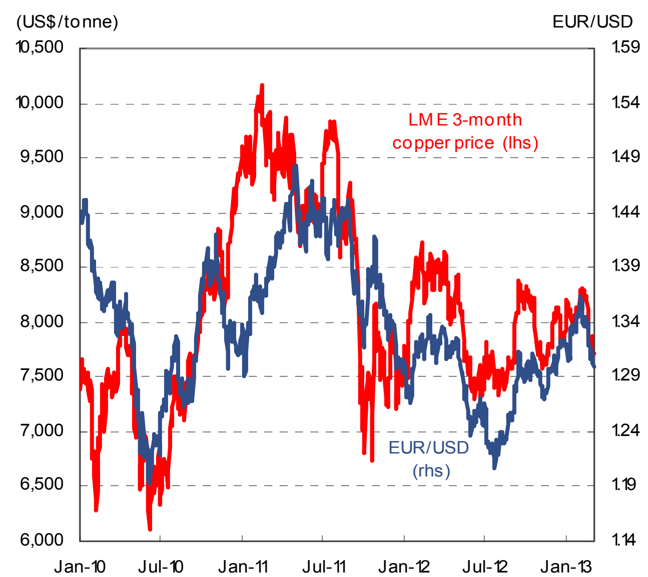
The short-term prospect for copper prices is less than positive, with the combination of US dollar strength, notably weaker-than-expected Chinese manufacturing levels, strong levels of Chinese primary copper exports, rising LME and Shanghai Exchange (SHFE) copper inventory, and positive quarterly mine production results weighing on sentiment. Copper traded down $7,652/t on Friday March 1st, with the next key level of support seen at $7,600/t. We believe that consumer buying will limit significant further downside moves through this level in the short term, particularly with positive LME-SHFE arbitrage opportunities opening up for Chinese traders on Friday March 1st. Despite this pull-back, we see little prospect of a significant rebound in prices looking further forward, and expect positive LME-SHFE arbitrage opportunities to be limited. Our current projections are for LME copper prices to average $7,850/t during the second half of 2013; however, the balance of risk to this forecast remains firmly to the downside, in our view.

Figure 20. Short-term LME price support at $7,600/t



Source: LME, Citi Research

Figure 21. Rebounding USD weighing on prices



Source: LME, Bloomberg, Citi Research

Appendix A-1

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