International Copper Study Group
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The Collapse in Copper Consumption: How Long? How Deep? Will the Copper Industry Be Ready for the Recovery?

By Paul Dewison of Bloomsbury Minerals Economics Ltd

Summary

The past 9 months in retrospect
- Economic downturn and collapse in copper consumption
- Initial retreat of the hedge funds and collapse in copper prices
- Strong supply response, but not enough to re-balance the market
- Despite this, a strong price recovery in Q1 2009

Prospects for consumption and prices from now to 2012
- Bottom of the economic cycle mid-2009. Real recovery in copper consumption somewhat later
- Price collapse to $3,500/tonne or less probable in coming months
- Strong recovery in 2011 after slow improvement in 2010

Implications for copper miners
- H2 2009 and much of 2010 will be a fairly lean period for copper
- Production shortfall possible with consumption rebound 2010/11
The past 9 months in retrospect: The Economy

The economic downturn

Global Industrial Production fell below that in the previous year from October 2008. On a month-to-month basis, the negative figures had been evident earlier. By January-February 2009, Global IP was more than 10% lower than in the previous year, in both OECD and non-OECD countries, and still falling.
The past 9 months in retrospect: **The Economy**

All world regions are affected

While the downturn in non-OECD countries was later than in the OECD, the extent of the collapse is similar. The worst affected are countries most heavily reliant on exports, especially those in Asia. China and India are more-or-less alone in demonstrating performance close to that recorded last year.

The past 9 months in retrospect: **Consumption**

Copper consumption collapsed from H2 2008

Refined copper consumption lagged IP growth before the recent economic downturn. When the downturn really began to bite from Q3 2008, refined copper consumption also fell, but not by as much as IP.
The past 9 months in retrospect: **Supply**

Production cutbacks were nowhere near enough to balance the consumption loss.

Recent production cuts were against a backdrop of rising output, just about keeping pace with rising copper use, until mid-2008. As consumption fell away, production took several months to respond and thereafter the cuts have been several percentage points below that in copper use.

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The past 9 months in retrospect: **Copper Price**

Prices tumbled from October 2008 then, contrary to our expectation, stabilised and recovered early in 2009.

This chart shows the quarterly development of LME Cash against the raw market balance. Clearly, price is about an awful lot more than the simple balance between supply and demand. But, it is no coincidence that three successive quarterly market surpluses from Q3 and Q4 totalling 608kt and the halving of average quarterly prices occurred in tandem.

Other issues that need to be taken into consideration are (a) exactly where the extra stock lands (the exchanges or elsewhere), (b) currency movements, (c) market sentiment, (d) the involvement of the funds.
The past 9 months in retrospect: Copper Price

LME cash and the LME stock to price relationship
Prices saw a precipitous fall from October 2008, the month in which economic sentiment really turned sour. As stocks rose, prices fell further until early in 2008. Then, as stocks rose prices rose, sharply so in March and April. The reasons for this, and implications are looked at in our forecasts (below).

Prospects from now to 2012
Prospects for 2009 and beyond: Economic Recovery

Industrial production growth will remain negative through most of 2009, then recover strongly.

Country / Region Forecasts

Macroeconomic forecasts provided by CHR, show negative IP growth for four quarters starting Q4 2008, then a strong recovery led by China and other Asia outside Japan.

Prospects for 2009 and beyond: Consumption

To understand consumption prospects, we need to look at where the copper products go.

Prospects for copper use are best understood by looking at the individual products and applications, and their requirement for new copper versus scrap. The chart below illustrates the global market position. Individual countries vary substantially from this.

Share of Volume

<table>
<thead>
<tr>
<th>Share of Volume</th>
<th>Energy Cable</th>
<th>Information Cable</th>
<th>Winding Wire</th>
<th>Copper MIl Products</th>
<th>Alloy MIl Products</th>
<th>Total</th>
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<tbody>
<tr>
<td>Infrastructure</td>
<td>7.0%</td>
<td>3.7%</td>
<td>1.4%</td>
<td>1.8%</td>
<td>0.9%</td>
<td>13.5%</td>
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<td>Telecom</td>
<td>0.2%</td>
<td>3.1%</td>
<td>6.0%</td>
<td>0.9%</td>
<td>0.6%</td>
<td>4.2%</td>
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<tr>
<td>Power</td>
<td>0.3%</td>
<td>1.2%</td>
<td>1.4%</td>
<td>0.4%</td>
<td>0.3%</td>
<td>8.6%</td>
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<tr>
<td>Other</td>
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<td>1.4%</td>
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<td>Building Construction</td>
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<td>Commercial &amp; Industrial</td>
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<td>OEM &amp; General</td>
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<td>8.3%</td>
<td>14.2%</td>
<td>15.3%</td>
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<tr>
<td>Transport</td>
<td>4.5%</td>
<td>2.3%</td>
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<td>1.7%</td>
<td>11.0%</td>
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<tr>
<td>Industrial Equipment</td>
<td>0.6%</td>
<td>1.1%</td>
<td>2.4%</td>
<td>2.5%</td>
<td>6.0%</td>
<td>16.6%</td>
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<tr>
<td>Other Equipment</td>
<td>2.7%</td>
<td>5.1%</td>
<td>3.5%</td>
<td>5.6%</td>
<td>4.4%</td>
<td>19.8%</td>
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<tr>
<td>General Market</td>
<td>1.5%</td>
<td>1.1%</td>
<td>6.6%</td>
<td>0.6%</td>
<td>4.2%</td>
<td>7.9%</td>
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<tr>
<td>Total</td>
<td>35.5%</td>
<td>7.7%</td>
<td>11.1%</td>
<td>22.9%</td>
<td>34.6%</td>
<td>100.0%</td>
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Notes: The figures relate to total copper content, including scrap. All figures are BME estimates.
Prospects for 2009 and beyond: Consumption

% change in copper use in 2009 by segment: Growing infrastructure use will not compensate for loss elsewhere

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While spending on Building Construction and on Manufactures showing a dramatic downturn, government stimulus packages should ensure that spending and hence copper consumption in Infrastructure should continue to perform much better, increasing in strength.

With direct melt scrap hit much harder than cathode, the 7.0% fall in all copper use in our forecast relates to a 4.8% fall in refined metal. This is a comparatively modest decline in the context of a 6.9% fall forecast for IP.

Prospects for 2009 and beyond: Consumption

As IP picks up from 2010 refined copper use will grow even faster, across all segments.

Following a flat year overall in refined copper use in 2008, 2009 is set to be one of the worst years on record, even taking into account a major substitution of scrap by cathode.

When the economic recovery comes, from late 2009 onwards, refined copper consumption should rise quicker than IP, first through inventory build then through a rapid increase in copper intensive economic activity.

When an equilibrium market returns in 2011 and 2012, it is quite likely that copper will once again start to lose ground against IP.
Prospects for 2009 and beyond: **Consumption**

Emerging markets will continue to account for the lion’s share of new consumption

In the period of strong demand growth up to 2007, growth was focussed more or less entirely on Emerging Markets (especially China). Despite the healthy economy, the Mature Markets (W. Europe, N. America, Oceania, Japan, S. Korea, Taiwan) declined in total

The differential between Mature and Emerging Markets is expected to continue, but to narrow as the pace of the shift in global manufacturing eases. Despite this, little growth is seen in Mature Markets

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Prospects for 2009 and beyond: **Supply**

Mine production capability forecasts are lower

On the supply side, we have seen cuts in production capability totalling over 1 Mt/a from new projects, projects in an early stage of development and most noticeably in existing mines. Exploration budgets have also been cut. The cuts to date are mainly reversible, but reactivation times vary. The longer the cuts are in place, the lower will be the ability of the mining industry to stage a production rebound in the event of strong demand growth
Prospects for 2009 and beyond: **Supply**

**Smelter / refinery capacity and utilisation also forecast lower**

Announced cuts in smelting and refining are much lower than for the mines. But, cuts in the processing sector often go unannounced, especially in the secondary sector, and the commercial decision whether or not to run at high capacity plays more of a role. Anecdotal evidence suggests that mine production capability and available smelter-refinery capacity have fallen in tandem.

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Prospects for 2009 and beyond: **Supply**

**When consumption starts to pick up again, we expect the supply response to be lagged**

2009 will see a sharp fall in both refined copper output and use, but the fall in use (as seen already) is much the greater.

During the course of 2010, a stronger underlying market should combine with pipeline inventory build to create a strong market for refined copper (7.8% annual growth forecast), despite a higher use of scrap by fabricators.

We expect the supply response through much of 2010 to be muted. Though increasing, the rate of production is unlikely to much exceed that in the first half of 2008.

With slower growth in usage, stronger pricing and the passage of time, output should come to equal then exceed output from late in 2010.
Prospects for 2009 and beyond: **Market Balance**

Total accumulated stocks are set to rise by 1.0 Mt

With repeated quarterly market surpluses, we forecast that in total 1.0 Mt will be added to accumulated stocks of refined copper between mid-2008 and end-2009. We still have a very high rate of stock build to come in Q3 2009 (3.3kt per working day)

With strong consumption growth and limited supply response, the market should rebalance and return to show a modest deficit in 2010

Only in 2011 is the deficit likely to be large enough to allow a substantial stock drawdown. But, with copper usage growth weakening and prices high enough to allow a supply rebound, stocks may not fall be much more in 2012

Stronger demand, weaker prices, and a muted supply response could alter this picture substantially

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Prospects for 2009 and beyond: **Copper Price**

Why is the current price so high? A look at China

Looking at the collapse in the market for copper-containing products, few would have expected the copper price to be where they now stand at around $4,500/tonne. At least $1,000/tonne lower would be a reasonable expectation

The China charts opposite tell part of the story. Fabricated products output here has held up quite well and imports of cathode have soared. Part of the reason for this is lower scrap use by both fabricators and smelters, which is underpinning the market for refined metal in China and elsewhere

Probably more important, however, has been the intervention of the SRB in mopping up surplus copper. As well as positively affecting market fundamentals by reducing visible stocks on the exchanges, it has helped create the belief that copper is a better investment than just about anything else right now. Fund support to price is back as a result
B M E

Prospects for 2009 and beyond: **Copper Price**

**Our price forecasts: We still expect prices to fall in 2009**

There is a great deal of debate over how enduring are the factors now buoying up prices. We believe that, on balance, they are not.

We take this view as we believe that fresh SRB buying (a major factor in current pricing) will only re-emerge with much lower prices (near $3,000/tonne), current prices are causing a revival in scrap use, and the rate of copper use in fabricating will be revealed as being much lower than many are now assuming.

With the positive gloss taken off the current market, we see fund involvement weakening substantially and a fall in price to the low $3,000s in coming months.


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Prospects for 2009 and beyond: **Copper Price**

**A different strategic stock / exchange stock balance could have a material impact on price**

Higher or lower refined copper use growth or a different degree of response to output could greatly affect the market balance and price outcome. Even assuming our forecast market balance, as shown here, an alternative distribution of stock could materially affect price.
Implications for the copper industry

Conclusions

What does all of this mean for the mining industry?

- Given the macroeconomic background, copper prices right now are surprisingly high. We do not expect this to remain the case.
- 2009 overall and 2010 will not go down as good years for the copper industry. Most miners, however, will still be receiving well above their cash costs.
- The strength of the recovery after this will depend on two things – first the strength of the consumption rebound, secondly supplier response.
- With such a deep trough in consumption in 2009 as predicted, we expect a sharp rebound in 2010 and above-trend growth in 2011 and 2012.
- While supplier response to the demand downturn is not be enough to prevent a large stock build, it is stronger than in past recessions. As a result, the stock build will be modest considering the background.
- Less certain is the supplier response to the demand upturn when it occurs. It is clear that low investment now will put limits on the industry’s ability to ramp up production quickly.
- With lower prices, costs of production are falling. The reasonably strong recovery in prices predicted for 2011/2012 could mean quite high returns for the industry at lower prices than 2006-08.
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For copper
• Conventional fundamental market analysis

For exchange traded metals
• Interactive fundamental/investment based price models

For anything that has an opening, close, high and low price
• Technical analysis expert systems working from intra-day to long-term (for individual markets and arbitrage)
• Sector rotation analysis
• Black box trading systems

For more information contact Paul Dewison, Christopher Welch or Peter Hollands
or visit www.bloomsburyminerals.com

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