ICSG Insight

IMPACT OF THE FINANCIAL CRISIS ON THE COPPER INDUSTRY

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The fourth ICSG Insight in the series examines the impact of the financial crisis on the copper industry. The paper does not analyze the causes of the crisis, but looks first at the transmission of the cooling global financial markets to the real economy in OECD countries and some developing nations. Secondly, the transmission to the Chinese economy via falling external demand is discussed. Thirdly we examine briefly the recent forecasts for 2008 and 2009 Chinese copper demand, the main driver of the market in recent years and look at the impact of falling prices on the margins of copper producing countries and the consequences on marine transport, exploration budgets and copper recycling. Industry reactions to the tightened credit environment, including recent decisions published by the industry on production and investments are then examined. Finally some conclusions are made regarding the above points.

1. Economic Impacts and Responses to the Financial Crisis

In October 2008 the United Kingdom Prime Minister Gordon Brown said "global financial markets have ceased to function", and in the US the monetary base exploded from $880 billion to close to $1.2 trillion as the US Treasury and Federal Reserve tried to restart the inter-bank borrowing system.

The impacts on US bank exposure to sub-prime housing loans were initially resisted with public funds or bailouts. The $700 billion Troubled Assets Repurchase Plan (TARP) from the US Treasury was approved, and a second request was proposed by the Federal Reserve. The Money Market Investor Funding Facility granted $540 billion in financing to bolster the money market industry in late October 2008. US bailout costs in October 2008 achieved 6% of the US GDP, but on average the historic cost of government intervention in the financial crisis has been 16% of the GDP according to the IMF Report on Financial Crisis Worldwide (2008).

The Bank of International Settlements (BIS) reports that Western European banks hold almost all the exposure to emerging market debts. They account for three-quarters of the total $4.7 trillion in cross-border bank loans to Eastern Europe, Latin America and emerging Asia extended during the global credit boom.

The lending spree of European institutions, often using dollar balance sheets, added another twist as global "de-leveraging" caused the dollar to rise in the second half of 2008, falling again when the US Federal Funds target rates approached zero in December 2008. Nowhere has the de-leveraging been more extreme than in the ex-Soviet bloc countries which have suffered a 50% rise in their debt since July.

Leverage of M1 in Relation to Central Bank Gold Holdings, Selected Countries (*)				
	US$ bn M1	M 0zs Gold Reserve (1)	US$/Ozs US$	Leverage Currency/Ozs
USA	1388	262	5.298	1,0
Switzerland	257	36	7.139	1,3
Rest of the World	2596	208	12.481	2,4
EU 13	6072	290	20.938	4,0
China+ Hong Kong	2236	20	111.800	21,1
Japan	3641	25	145.640	27,5
United Kingdom	1990	10	199.000	37,6
Total Sample 90% world	18180	851	21.363	4,0
Selected Countries	15584	643	24.236	4,6

(1) ECB+Germany France+Italy, (*) First half 2008

The spreading of foreign currency shortages in dollars, euros and swiss francs in financial institutions around Europe added a new dimension in the second half of 2008 to the liquidity crisis that started in the US credit markets in 2007. Close to $300 billion of inter-central bank foreign exchange arrangements were announced in 2008. The new demand for dollars arose partly as a result of US credit default events which triggered over $2,500 billion worth of selling in the stock and commodities markets, as 50 to 1 leveraged investment banks, hedge funds and individuals were forced to cover about $50 billion worth of credit default insurance obligations.

In the rest of the world, emerging market central banks started sales of foreign reserves to meet local demand for foreign currency, allowing devaluations in their currencies. At the same time, other measures to face potential foreign currency shortages were implemented: Korea and Indonesia widened elegibility and terms to do more flexible foreign exchange swap operations and Brazil, Chile and Poland created new swap facilities. Most major emerging market central banks have conducted outright sales of foreign reserves to help meet the local market's demand for foreign currency funding, as well as to relieve pressure on exchange rates. According to OECD data and Bloomsbury Economics' analysis, annual global industrial production fell 2.4 % in October 2008 and leading indicators have yet to rebound.

2. Impact on the Chinese Economy and Copper Demand

External demand for Chinese goods has fallen markedly amid the global financial crisis, while domestic consumption of power and industrial production has also fallen. But the country's continued industrialization and urbanization has been increasing domestic demand, which may help to shield the economy from a slowdown. China unveiled a $581 billion stimulus package in November to boost domestic demand. There is a positive impact of the financial crisis in China: the inflationary trend of early 2008 was clearly receding at the end of 2008. China's PPI and CPI figures for November showed a large decrease in inflation, with month-on-month numbers implying actual deflation. Year-on-year, the

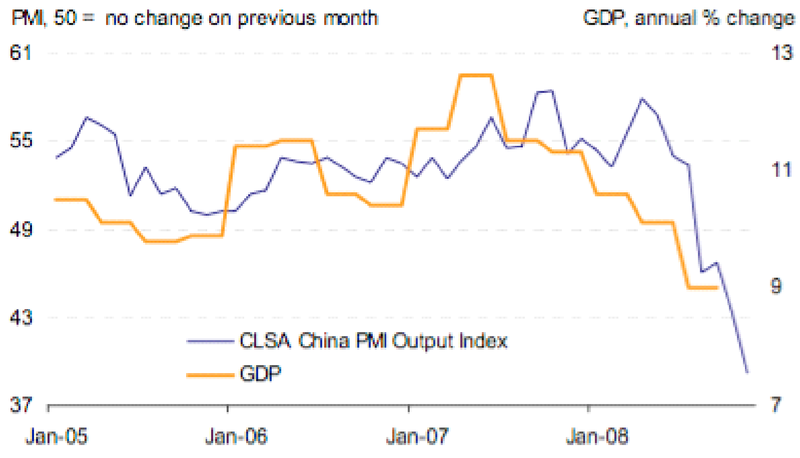
PPI rose by 2.0%, compared to 6.6% in October and expectations of around 4.5%. CPI inflation declined from 4.0% in October to 2.4% in November 2008, also well below the 3.0% expectations.

According to monetary analysts, these figures confirm that Chinese food and non-food inflation in the first half of 2008 was caused more by excessive monetary expansion than by supply constraints, mainly of food driven by a cold winter and the earthquake. The central bank's explosive creation of Chinese yuan to purchase inflowing dollars in order to avoid the appreciation of the currency caused rapid credit growth, in spite of drastic weather episodes in a period when food prices where increasing worldwide.

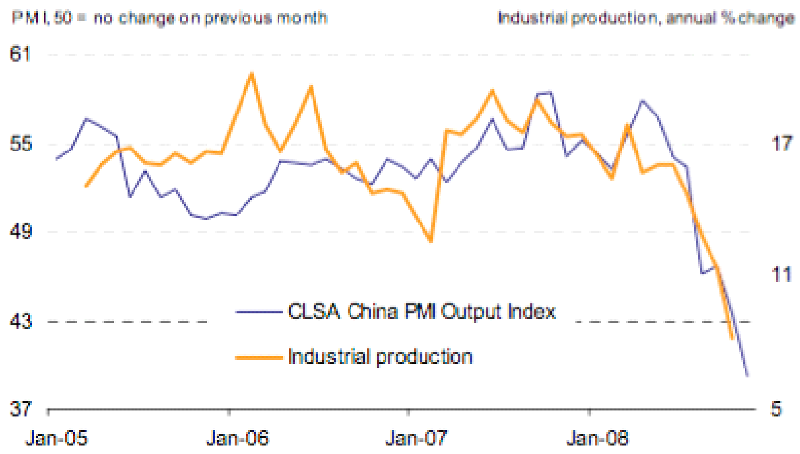
The rapid decline in food prices should have caused Chinese households to spend less on food and more on non-food consumption, but that didn't happen: from September to November the CPI for non-food items declined from 2.0% in September year-on-year to 1.6% in October to 0.6% in November, with food inflation declining from 9.7% to 5.9%: Chinese inflation has not been caused by changes in food supply, but rather by changes in the money base with M2 growing twice as fast so as to approach 200 percent of nominal GDP in 2008.

As non-food deflation is following the same pattern as food deflation in recent months, monetary factors related to demand are more relevant to explain the evolution of the Chinese economy compared with supply side behaviour. The official target of 4.9% inflation for 2009 could be met, but with a high cost in terms of employment, economic activity and copper demand. Lack of good credit data outside the People's Bank of China (and particularly in informal banking sector, the place where most of the credit inflow was directed) make it hard to measure the impact of the current credit adjustment in the economy. On 13 December 2008, China's State Council instructed local banks to provide funding to local firms that are facing financing problems.

China GDP



China industrial production



Sources: Markit Economics, National Bureau of Statistics.

3. Impact of the Crisis on Copper Markets

Chinese GDP forecasts for 2008 have been falling quickly; the case is similar for refined copper usage. Industrial output in China grew at its slowest rate in November since 2002. ICSG figures for refined copper usage show a modest growth of 2.9% in 2009 and a recovery to 3.9% in 2010. Beyond 2009, if new demand picks up for Chinese exports of semis, wire and cable, and if China continues replacing imports of these items, Chinese copper usage can grow strongly again.

China Copper Market: Production and Usage 2007 and October 2008 Forecasts for 2008-2009

Year		Mine Production				Refined Production					Refined Usage		GDP
		Conc	SX-EW	Total	Y/Y	SX-EW	Primary	Secondary	Total	Y/Y	Total	Y/Y	6/
2007		928	18	946		18	2.345	1.136	3.499		4.557		11,4%
2008	1st Half	468	10	478		10	1.306	569	1.886		2.508		
2008	2nd Half	507	10	517		10	1.397	574	1.980		2.496		
2008		975	20	995	5,2%	20	2.703	1.143	3.866	10,5%	5.004	9,8%	9,3%
2009		1.100	30	1.130	13,6%	30	2.720	1.250	4.000	3,5%	5.150	2,9%	9,5%

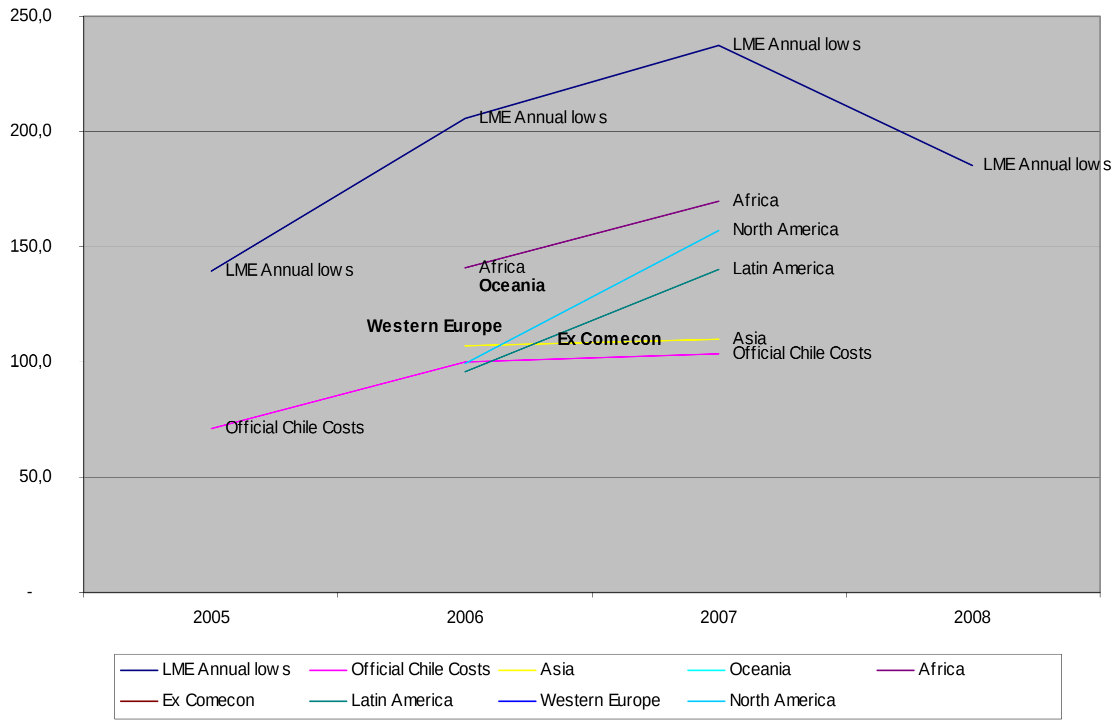
The volume of contracts traded at the LME increased by 40% year-over-year in September 2008. The public focus of the impact has been on falling prices of copper and most of the commodities, the result in part of increased regulatory scrutiny of commodity trading in banks and in part of the decline in OTC demand for hedging as metal prices fell. There were reports in October 2008 of copper scrap destined for China accumulating at Western US ports.

The letter of credit is the base of the international copper shipment business: individual importer or exporter credit risk needs to be accepted between banks to ship any container or cargo. As banks were not accepting any risk from other banks, the worldwide flow of goods and credit has slowed. Shipping cargo brokers reported in October that they chartered a 40,000 tonnes Handymax to go to the US Gulf from India for $1000 a day (well below average estimated costs of $2,000 a day plus an estimation of $2,000 a day for capital cost). The low charter rates indicate that not much was being shipped in October 2008, apart from cargoes going from one highly creditworthy entity to another. Freight rates needs to go back where owners can recover.

Financing for exploration projects obtained either by borrowing on credit or from equity investment has been disrupted by the financial crisis. With neither equity capital nor borrowing easily available, mining exploration will be curtailed as projects are either cancelled or, at best, delayed. The global economic turmoil is having a severe impact on the copper industry with most indebted and smaller firms cutting mine production, smelting, refining and in some cases exploration programs. Cuts in production could help to bring supply more into line with demand in the short term. Nevertheless a sharp drop in investment in exploration may be seen only in the medium term of 5 to 10 years as new mines will not be in the pipeline to respond to growing world demand, increasing the volatility and deepening the cycle in the copper market.

Copper mining profitability is being squeezed. As presented in the graph below, LME annual lows have been falling: the lowest LME price through November was 155.61 cents/lb. However, it is likely that unitary production costs of copper cathodes are also falling from their 2007 levels, reducing the negative impact on profitability.

Unitary Production Costs of Copper Cathode by Region vs LME Annual Low Price USc$/lb



With regard to the impact of the crisis on copper recycling it is very unlikely that 2009 scrap generation and availability will continue growing at the same rate as in recent years as scrap supply is strongly correlated to refined copper prices. As the demand for copper scrap is largely concentrated in the semis manufacturers, and particularly in the Chinese semis manufacturers, the fall in copper scrap prices is expected to reduce the availability of higher quality copper scrap worldwide in 2009, sustaining the demand for refined copper in China.

According to Brook Hunt, US scrap prices picked up a little at the end of 2008, with Chinese buyers more interested when refined copper prices showed some stabilization at lower levels in the fourth quarter of 2008. The cancellation of scrap contracts in recent months in China is probably creating some tightness in the scrap supply as revealed by inventories declining in Shanghai in December.

4. Industry Reactions to the Crisis

The copper mining industry has already seen the curtailment of some high cost operations and the credit environment is expected to limit the funding and expansion capabilities of many junior mining companies. After an acquisitions period in 2005-2007 some very large global copper corporations entered the recession with significant debt and in some cases the market capitalization is well below their net debt. Consequently liquidation of previously valuable copper assets may be anticipated for the next few months, together with significant cuts in production and capital expending in the corporations more affected by the lack of financing sources.

A summary of some of the published production and investment decision in recent months is presented below:

1. In Chile, CODELCO authorities stated that with the financial crisis the three year super cycle is over. The challenge is to increase competitiveness now, in particular through cost containment policy. On October 24 CODELCO said it would re-evaluate investments in light of plunging copper prices. On October 30 CODELCO said that a production cut at its largest division would trim 78,000 tons from overall output in 2009-2011.

2. Rio Tinto net debt, estimated at $39 billion, is well over market capitalization of $32 billion. Key Rio Tinto cost reduction initiatives announced on 10 December are summarized below:
   a. 14,000 jobs (8,500 contractors and 5,500 employees) will be cut and spending slashed in a bid to trim its debt load of $38.9 billion.
   b. Reduction of net capital expenditure guidance for 2009 from over $9 billion to $4 billion, while retaining future growth options.
   c. Capital expenditure to be reduced to sustaining levels in 2010, absent an improvement in expected commodity market conditions.
   d. Commitment to reduce controllable operating costs by at least $2.5 billion/yr in 2010.
   e. The 2008 dividend will be held at the 2007 level of US 136 cents with no 20 per cent increase in 2008 and 2009.
   f. Expanded scope of assets targeted for divestment including significant assets not previously highlighted for sale.

3. On October 24 China's Tongling Nonferrous Metals, said it had reduced its refined copper output due to low prices. A source at Jinlong Copper added that the smelter was also cutting production.

4. Xstrata market capitalization of $9 billion is well below their $15 billion of net debt according to Bloomberg.

5. Freeport Mc Moran Inc. shows a similar situation with a dramatic fall of market capitalization in recent months and announced plans to reduce its capital expenditures and costs. A large debt of FXC combined with falling prices caused a fall of more than 80% in the market value of this important US based copper corporation. The company announced on October 21 it would delay expansion plans at its Sierrita and Bagdad copper mines in Arizona and push back the restart of its Miami mine, cutting about $370 million in capital costs. The company is also seeking to defer spending at its Grasberg mine in Indonesia as well as at the El Abra mine in Chile.

6. Antofagasta Plc indicated it would continue its expansion projects, despite sinking metal prices and rising input costs. Construction on the Esperanza copper project in northern Chile, which began in September, was still on track in December, and an expansion at Los Pelambres mine in Chile announced in July as copper prices reached record highs continued to progress as planned. Feasibility studies for new projects in Chile and Pakistan also are still on schedule.

7. Anglo American announced that their project pipeline can be slowed if capital becomes more expensive. On October 24 Anglo American said it would review its capital expenditure plans due to uncertainty in the markets.

8. In Europe, Norddeutsche Affinerie (now Aurubis) plans to close a copper billets and cakes production line in Olen. Substitution products and falling demand have led to production restructuring.

9. KGHM Polska Miedź S.A. took temporary actions to decrease costs and increase productivity. Mine project integration plan halted, and their metallurgy organization restructured, while centralization of purchasing was deepened.

10. Vale is still reportedly implementing a growth strategy, with the option to manage their production and project pipeline according to the evolution of market conditions. Vale announced an agreement with African Rainbow Minerals Limited (ARM) and its 65%-owned subsidiary TEAL Exploration & Mining Incorporated (TEAL) for 81 million Canadian dollars, enhancing Vale's growth options in the copper business in Africa.

11. On October 5 Southern Copper said its planned projects in Peru and Mexico might be slowed by the global financial crisis, but it would consider dipping into its dividends to carry them out if credit markets tighten further. Southern Copper's strong financial position may permit them to continue investment projects under development to add 220,000 tons of copper by 2011. Southern Copper said in November that the crisis may not stall their plans to develop its Tia Maria copper property and to expand Toquepala.

12. Newmont Mining Corp annnounced the development decision on its Minas Conga copper-gold project in Peru which will be delayed until the first quarter of 2009.

13. El Sewedy Cables construction of its copper smelter-refinery has been delayed. On October 21 Egypt's El Sewedy Cables said it will delay a copper smelter project "for the time being" due to market conditions. The company said last year it would build an $850 million copper smelter in Ain Sokhna on the Red Sea coast to produce 300,000 tpy of copper.

14. The Russian Copper Company announced that all investment projects will be halted in 2009. On October 10 it announced a plan to optimize production costs due to the global financial crisis and falling metals prices. A project for RCC's Miheevsky concentrator has also been suspended.

15. On October 28 Kazakhstan's Kazakhmys said it had halted operations at three copper mines and stopped the Zhezkazgan copper smelter for maintenance, but a company official told Reuters that it was not going to reduce full-year output below 2007 levels.

16. On October 24 Katanga Mining (DRC) said it had started a review of capital expenditure commitments with a focus on optimizing its development program.

17. African Copper Corp's production at its Mowana copper project in Botswana is to be suspended, despite its first shipment of copper concentrate only in October.

18. Weatherly International Plc announced plans to put two more of its Namibian mines on care and maintenance, saying that the mines are no longer viable given current and forecast copper prices.

19. Imperial Metals Corp is reducing staff at one of copper mine and considering a shutdown of another in response to low metal prices.

20. CAMEC Corp has halted copper mining operations in the Democratic Republic of the Congo.

21. Nippon Mining & Metals Co. will cut copper output by about 20% in 2009.

22. Tongling Nonferrous Metals will reduce copper output this year and its smelter-refinery subsidiary, Jinlong Copper, will also reduce copper output this year.

23. Inca Pacific, a Peru-focused junior which had $17.3 million in working capital at the end of August, said it will ask the Peruvian government to extend development deadlines because tightening of credit markets are beyond its control. These decisions may impact the commencement of commercial production, as Inca Pacific has an obligation to place the Magistral property into production no later than Dec. 31, 2011.

24. Southern Copper Corp, Candente Resources, Strike Resources Ltd and Newmont Mining Corp also reported having to re-examine or delay their projects in Peru because of the global crisis.

25. In Mexico, Frontera Copper Corporation announced that in response to the recent downturn in copper prices, mining activities at its Piedras Verdes will be temporarily suspended. Copper production will continue on a gradually declining basis while leaching operations will proceed on an uninterrupted basis to recover copper from ores previously placed on the leach pads.

26. Also in November, New Dimension Resources terminated two property options in Peru (including Odilin copper-gold) as money became harder to raise and metal prices fell.

27. In December Anvil Mining Limited reported that in view of the current low copper price, it has begun the process of suspending concentrate production, postponing underground development work and initiating a care and maintenance program at its Dikulushi mine (90% owned) in Democratic Republic of Congo until the price of copper recovers.

28. On October 28 Canada's Breakwater Resources said it had decided to temporarily suspend operations at both the Langlois polymetallic mine in Quebec and the Myra Falls zinc-copper-gold mine in British Columbia.

29. Anvil Mining reported in December that in view of the current low copper price, it has begun the process of suspending concentrate production, postponing underground development work and initiating a care and maintenance program at its Dikulushi mine until the price of copper recovers.

5. Conclusions

1. A part of the global financial system has collapsed or is in risk of default under the weight of its own risk management mistakes in recent years. The lack of confidence has been seriously affected by commodity traders and hedgers of commodities.

2. Governments have been forced into domestic financial bailout decisions, rather than take actions to reduce the global macroeconomic imbalance. Public reserves are under pressure to prop up failed banks, borrowers and increasingly, commodity currencies.

3. Massive debt de-leveraging is derailing the supply chains of different commodities, including the global chain connecting copper mines and smelters with copper and copper alloy fabricators.

4. Large highly indebted commodity and copper corporations are facing huge falls in their market capitalization values. Many junior copper players relying on equity or direct debt face default and are selling mining assets to avoid default.

5. The impact on net revenues in 2008 will be significant, but cost containment plans may play a role reducing losses in 2009. Nevertheless, volatility and revenues declines may be associated with lower commodity production, usage and trade in 2009.

6. Cost control, increased efficiency and productivity measures are being implemented by copper miners to help them ride out the current crisis and to better position them to take advantage of the eventual recovery in demand.

7. Shutting down more expensive mining operations is not ruled out, and the review of long capital investment plans will intensify if the situation does not improve.

8. The pipeline of copper supply projects under development is expected to face slowdowns, delays or even cancellations.

9. If the freezing in credit and global demand remains in 2009, future copper demand recovery may face some supply bottlenecks and price squeezes, but speculative drivers would not be expected to resurface.

10. The current reductions in investment in exploration may be seen only in the medium term of 5 to 10 years as new mines will not be in the pipeline to respond to growing world demand, increasing the volatility and deepening the cycle in the copper market.

11. The role of recycled copper in the industry will be more important this time for the global copper market, as a big part of the global demand is related to semis manufacturers, mainly in Asia. Lower refined and scrap prices are expected to reduce domestic and global copper scrap availability.

12. According to some market analysts, there will be a negligible growth in total world copper consumption in 2008 and 2009, and an absolute decline in direct scrap use due to the construction sector weakness worldwide. This is considerably below the 4-5% average annual growth rates of the past few years. Fundamentals should drive the copper market again when the current de-leveraging ends.

Comments or Questions:

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