Copper market outlook
Market fundamentals and Chinese commodity financing deals

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GS Global Copper Demand Indicator and the LME copper price

% yoy change – 3-mo moving average (lhs), $/t LME copper price (rhs)

Sources: CEIC, LME, WBMS, Goldman Sachs Global Investment Research.
Recent copper mine supply growth has been the strongest since the 1990s

'000t (lhs), % change yoy, 3mo moving average (rhs)

## Global refined copper supply and demand balance

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Global mine supply</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% change</td>
<td>1.4</td>
<td>-0.5</td>
<td>3.6</td>
<td>6.4</td>
<td>2.2</td>
<td>5.1</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Including disruption allow. (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>4.3</td>
<td>7.5</td>
<td>9.9</td>
<td>14.9</td>
</tr>
<tr>
<td><strong>Global refined supply</strong></td>
<td>19017</td>
<td>19683</td>
<td>19812</td>
<td>20639</td>
<td>21796</td>
<td>22768</td>
<td>23258</td>
<td>24040</td>
</tr>
<tr>
<td>% change</td>
<td>3.9</td>
<td>3.5</td>
<td>0.7</td>
<td>4.2</td>
<td>5.6</td>
<td>4.5</td>
<td>2.2</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Global refined consumption</strong></td>
<td>19258</td>
<td>19763</td>
<td>19666</td>
<td>20594</td>
<td>21412</td>
<td>22314</td>
<td>23243</td>
<td>24152</td>
</tr>
<tr>
<td>% change</td>
<td>10.2</td>
<td>2.6</td>
<td>-0.5</td>
<td>4.7</td>
<td>4.0</td>
<td>4.2</td>
<td>4.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Of which China</td>
<td>7416</td>
<td>7941</td>
<td>8179</td>
<td>8997</td>
<td>9537</td>
<td>10014</td>
<td>10514</td>
<td>11040</td>
</tr>
<tr>
<td>% change</td>
<td>13.7</td>
<td>7.1</td>
<td>3.0</td>
<td>10.0</td>
<td>6.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Of which World ex-China</td>
<td>11842</td>
<td>11823</td>
<td>11487</td>
<td>11597</td>
<td>11875</td>
<td>12301</td>
<td>12729</td>
<td>13112</td>
</tr>
<tr>
<td>% change</td>
<td>8.1</td>
<td>-0.2</td>
<td>-2.8</td>
<td>1.0</td>
<td>2.4</td>
<td>3.6</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Balance</strong></td>
<td>-241</td>
<td>-81</td>
<td>146</td>
<td>45</td>
<td>385</td>
<td>454</td>
<td>15</td>
<td>-112</td>
</tr>
<tr>
<td><strong>LME Price ($/t)</strong></td>
<td>7544</td>
<td>8814</td>
<td>7958</td>
<td>7328</td>
<td>6850</td>
<td>6600</td>
<td>7000</td>
<td>7500</td>
</tr>
<tr>
<td><strong>LME Price (c/lb)</strong></td>
<td>342</td>
<td>400</td>
<td>361</td>
<td>332</td>
<td>311</td>
<td>299</td>
<td>318</td>
<td>340</td>
</tr>
</tbody>
</table>

**Sources:** Goldman Sachs Global Investment Research, CEIC, Wood Mackenzie, Reuters.
Copper prices touched the 75%ile of the total cash cost curve in the mid-1990s

$/t (lhs, top chart), surplus/deficit in weeks of copper consumption (bottom chart)

Copper is now setting the stage for the next boom -- less than half of the top 60 copper project volumes meet their incentive price at or below $6,600/t

To meet the c.4-5mt incremental refined copper demand required by 2020, incentive price needed to balance the market is c.$6,700-7,300/t ($3-3.30/lb)

At $6,600/t copper <half of projects would/should be built

At $6,200/t copper <25% of projects would/should be built

Source: Goldman Sachs Global Investment Research.
Copper producer margins including sustaining capital costs are now under pressure, SRB could buy

RMB/t (lhs), % premium or discount to 90%ile of costs

Chinese commodity financing deals
‘Hot money’ inflows accounted for over 1.3\textsuperscript{rd} of the growth in China’s monetary base in 2013

Source: CEIC, Haver, Goldman Sachs Global Investment Research.
Copper is not alone in facilitating hot money inflows in to China

<table>
<thead>
<tr>
<th>Inventory (million tons)</th>
<th>Total</th>
<th>precious metals and jewelry</th>
<th>Copper</th>
<th>Iron ore</th>
<th>Soybean</th>
<th>Natural rubber</th>
<th>Palm oil</th>
<th>Nickel</th>
<th>Zinc</th>
<th>Aluminum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price ($/t)</td>
<td>7300</td>
<td>115</td>
<td>515</td>
<td>2500</td>
<td>850</td>
<td>14000</td>
<td>2000</td>
<td>1800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of circulations (low)</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of circulations (high)</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>10</td>
<td>10</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of circulations (base)</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2.5</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total notional value (bn USD, low)</td>
<td>81</td>
<td>50</td>
<td>13.8</td>
<td>6.9</td>
<td>5.2</td>
<td>2.3</td>
<td>2.0</td>
<td>0.7</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Total notional value (bn USD, high)</td>
<td>160</td>
<td>80</td>
<td>46.0</td>
<td>13.8</td>
<td>10.3</td>
<td>5.3</td>
<td>3.1</td>
<td>1.4</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Total notional value (bn USD, base)</td>
<td>109</td>
<td>60</td>
<td>23.0</td>
<td>10.4</td>
<td>7.7</td>
<td>3.8</td>
<td>2.6</td>
<td>1.0</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Source: Goldman Sachs Global Investment Research.
Chinese copper financing deals act to raise the level of the copper price and tighten copper spreads.

CCFD unwind would likely lower the level of overall price curve as well owing to physical market being less able to absorb the supply than the futures market to absorb the buying.

Source: Goldman Sachs Global Investment Research.
There is empirical evidence of a tightening in copper market ‘spreads’ since CCFDs began

LME cash-3m as % of cash price; inventory as weeks of global consumption

Source: LME, SHFE, COMEX, Bloomberg, Goldman Sachs Global Investment Research.
Chinese copper financing deals and the new LME rules have seen copper move from ‘visible’ to ‘invisible’ storage facilities

kt;

Source: Bloomberg, Goldman Sachs Global Investment Research.
While CCFDs use up to 1mt of copper at present, rising copper use for financing hasn’t stopped the copper price from falling >35% since its peak in 2011.

Copper price has steadily fallen by 8-10% since 2011, despite higher volume of copper used in CCFDs.
Chinese commodity financing deals are still profitable, but their days are likely numbered

$/t of copper profit on CCFD per annum as% of copper price


Number of circulations of warrants = 5

The recent CNY depreciation has not been to offset the CNY/USD interest rate differential.

% interest rates and % change of CNY against USD

Source: Bloomberg, Goldman Sachs Global Investment Research.
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