Base Metals Outlook

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October 2010

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## Commodities: Core Competencies


<table>
<thead>
<tr>
<th>Energy Risk</th>
<th>Broker* Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash-3M, Options, Forwards/OTC</td>
<td>#1, #1, #1</td>
</tr>
<tr>
<td>Copper</td>
<td>#1, #1, #1</td>
</tr>
<tr>
<td>Aluminum</td>
<td>#1, #1, #1</td>
</tr>
<tr>
<td>Zinc</td>
<td>#1, #1, #1</td>
</tr>
<tr>
<td>Lead</td>
<td>#1, #1, #1</td>
</tr>
<tr>
<td>Nickel</td>
<td>#1, #1, #1</td>
</tr>
<tr>
<td>Exotic/Structures</td>
<td>#1</td>
</tr>
<tr>
<td><strong>Overall Broker</strong></td>
<td>#1 (16/16)</td>
</tr>
</tbody>
</table>

*broker is non bank, non dealer; including banks/dealers (MFG #4/#5)

### Metal Bulletin Rank

<table>
<thead>
<tr>
<th>Metal Bulletin Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Copper:</strong> Best Broker Dealer Futures (#3)</td>
</tr>
<tr>
<td><strong>Aluminum:</strong> Futures (#1), Carries (#1), Averaging (#1), Options (#1), Warrants (#1)</td>
</tr>
<tr>
<td><strong>Lead:</strong> Futures (#1), Options (#1)</td>
</tr>
<tr>
<td><strong>Nickel:</strong> Futures (#2), Carries (#1), Averaging (#3), Options (#1)</td>
</tr>
<tr>
<td><strong>Gold:</strong> Customer Service (#2)</td>
</tr>
<tr>
<td><strong>Steel:</strong> Voice (#1), Electronic (#1/#2)</td>
</tr>
<tr>
<td><strong>Services:</strong> Commissions (#2), Pricing (#2), Advisory (#1), Customer Service (#2), Warrant (#1)</td>
</tr>
</tbody>
</table>

**Overall RDM/ABCM/ABM/ACM Rank: #1**
Economic Outlook
Global IP, economic growth collapses, recent uptick
China IP and PMI, *slowing, but still strong, and evidence of turnaround*
Global Economic Outlook

Global Economy (G-3)
- Global industrial economy bottomed out in April '09 (-21%), recession deeper than expected but recovery now expected to be stronger than previously forecast; **IP forecast: +8.6% for '10 & +3.7% for '11**
- Govt stim progs help but ending, money policy limited with IR close to 0%, deficit issues, Euro financial troubles create potential global fallout; still, **rebound expected in industrial econ**, but will be "jobless"

United States
- Recovery slowing w/ job mrkt stalled, deficit looms, potential deflation, & consumer confidence down; but income/orders up, equities firm, inventories dn, biz investment soaring; **IP: +4.8% for ‘10 & +4.1% ‘11**

Japan
- Recovery slowed temporarily with mfg stalled, debt issues, exports slowing, unemployment up; but deflation improving, biz profits & consumption up; **IP forecast: +16.2% for ‘10 & +3.2% for ‘11**

Eurozone
- FR & IT recovery slowed, GR recovery picking up; all EU econ being hit as govt progs phased out; GR/IT consumption down, FR exports down, GR/FR/IT biz invest down, FR/IT unemp up, IT deficit probs, IT consumer confidence down; nonetheless, GR/FR/IT manufacturing up, GR/IT exports up, GR unemp down, GR inventories low, GR orders up
- UK recovery improving but expect to slow due to fiscal policy tightening to lower deficit; biz invest down, inflation up; nevertheless, manufacturing up; **Eurozone IP forecast: +5.3% for ‘10 & +3.7% for ‘11**

China
- **Massive stimulus measures, interior dev spending, demand up, imports up, strengthened currency**
IP Outlook: *in recovery mode with 9% to 4% growth in ’10/’11*

<table>
<thead>
<tr>
<th>Year</th>
<th>US</th>
<th>WE</th>
<th>JA</th>
<th>W World</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>3.3%</td>
<td>1.1%</td>
<td>1.4%</td>
<td>1.9%</td>
</tr>
<tr>
<td>2006</td>
<td>2.2%</td>
<td>3.7%</td>
<td>4.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>2007</td>
<td>2.7%</td>
<td>3.5%</td>
<td>3.2%</td>
<td>3.1%</td>
</tr>
<tr>
<td>2008</td>
<td>-2.4%</td>
<td>-0.9%</td>
<td>-1.5%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>2009</td>
<td>-9.7%</td>
<td>-14.8%</td>
<td>22.9%</td>
<td>-15.5%</td>
</tr>
<tr>
<td>2010</td>
<td>4.8%</td>
<td>5.3%</td>
<td>16.2%</td>
<td>8.6%</td>
</tr>
<tr>
<td>2011</td>
<td>4.1%</td>
<td>3.7%</td>
<td>3.2%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>
Global IP Forecasts: yr of downgrades, now upside revisions

US/WE/JP Industrial Production

-28% -23% -18% -13% -8% -3% 3% 8% 13%

'07 '08 '09 '10 '11

sep 08 nov 08 mar 09 may 09 sep 09 sep 10 may 10
dec 09

Concensus Economics
Pricing Review
Copper Prices, *collapse and recovery, testing highs*
Tin Price Review, sets new highs

$3,000 $8,000 $13,000 $18,000 $23,000 $28,000
'00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10
Metals Price Reviews, *uptrends but off recent highs*

- **Aluminum**
  - Prices range from $1,200 to $3,200 per tonne.
  - Trends show a general upward movement.

- **Zinc**
  - Prices range from $3,000 to $4,500 per tonne.
  - Trends show fluctuations with a recent peak.

- **Lead**
  - Prices range from $1,000 to $3,900 per tonne.
  - Trends show a steady increase.

- **Nickel**
  - Prices range from $30,000 to $55,000 per tonne.
  - Trends show significant volatility with peaks in 2007 and 2008.
Copper Spreads, \textit{Spreads Tighten then Ease, Recent Tightening}

- $1,100
- $900
- $700
- $500
- $300
- $100
$100

Cash-3M
3M-15M
Spreads Tightening

- **aluminum**
- **zinc**
- **tin**

![Graphs of spreads tightening for aluminum, zinc, and tin](image-url)
Price Seasonals, entering a generally strong period.
Long Term Prices *(High: CP, NI, SN; Avg: ZN, PB, AL)*

- **Copper**
  - Spot Copper
  - Constant $2010
  - Current

- **Zinc**
  - Spot Zinc
  - Constant $2010 Zinc
  - Current

- **Lead**
  - Spot Lead
  - Constant $2010 Lead
  - Current

- **Nickel**
  - Spot Nickel
  - Constant $2010 Nickel
  - Current

- **Tin**
  - Spot Tin
  - $06 Tin
  - Current

- **Aluminum**
  - Spot Aluminum
  - Current

*Sources: MF Global*
Supply-Demand Balances
Copper Consumption, West Improving, China Slowing

![Graph showing copper consumption trends from 2006 to 2010 for US, WE, JP, RoW, and China with percentage changes indicated.](image-url)
Consumption Rebounds, China Slows

aluminum

zinc

tin

nickel
Copper Consumption vs IP Growth
Copper Consumption: Strengthens with Economic Recovery

- DD - IP
- Consumption
- G3 IP

- Consumption

-20% -15% -10% -5% 0% 5% 10% 15% 20% 25% 30%

'02 '03 '04 '05 '06 '07 '08 '09 '10 '11

-20% -15% -10% -5% 0% 5% 10% 15% 20%

DD - IP Consumption G3 IP
Consumption Rebounds

aluminum

zinc

lead

nickel
Primary Production Starting to Build

copper

aluminum

zinc

nickel

Refined

Mine

Cap

Prod

Mine

Refined

Mine

Refined

Refined

Mine
Copper Planned Capacity, *Large Builds*

The diagram illustrates the planned capacity for copper across different regions from 2001 to 2012. The capacity is depicted for the following regions:

- **Oceana**
- **Europe**
- **Asia**
- **LAmer**
- **NAmer**
- **Africa**

The bars represent the planned capacity for each region in each year. The y-axis indicates the capacity levels ranging from -600 to 1,200, and the x-axis represents the years from 2001 to 2012.
Primary Capacity Builds

aluminum

zinc

lead

nickel
Production Costs, Price Floors (and Current Prices)

- **Copper**
- **Aluminum**
- **Zinc**
- **Nickel**

Graphs show the comparison of production costs between 2009 and 2010 for each metal.
China Balances, Copper/Aluminum (consumption up, imports surge)
China Balances, Zinc, Lead, Nickel and Tin

- **zinc exports**
- **lead exports**
- **nickel imports**
- **tin exports**

Graphs showing trends in East Exports to West (Russia), East Imports from West (China), Net Trade (Exports from East), and Ref Balc Mine, Refined, and Consumption over the years 1990 to 2010.
Inventory Trends, builds followed by balance/declines

- Copper
- Zinc
- Nickel
- Aluminum
- Lead
- Tin

MF Global
Copper Stocks, Weeks Use: *ratio drops to 4.4 wks*
Stocks-Consumption Ratios, *rise sharply, but recent declines*

- **aluminum**
- **zinc**
- **lead**
- **nickel**
Copper Inventories 2010 vs Seasonals

1980-2009 Inventories
2010 Inventories

J F M A M J J A S O N D

1980-2009 Inventories
2010 Inventories
2010 Inventory Changes vs Seasonal Averages

- **aluminum**
  - Blue: 1980-2009 Inventories
  - Red: 2010 Inventories

- **zinc**
  - Blue: 1980-2009 Inventories
  - Red: 2010 Inventories

- **lead**
  - Blue: 1980-2009 Inventories
  - Red: 2010 Inventories

- **nickel**
  - Blue: 1980-2009 Inventories
  - Red: 2010 Inventories
Supply-Demand Outlook
## Copper Supply-Demand Balance, balance to deficit

<table>
<thead>
<tr>
<th>Year</th>
<th>United States</th>
<th>Europe</th>
<th>Japan</th>
<th>Other (West)</th>
<th>Refined Consumption</th>
<th>IP</th>
<th>DD - IP</th>
<th>Mine Production</th>
<th>East to West Trade</th>
<th>Total Supply</th>
<th>Reported Balance</th>
<th>Stocks</th>
<th>Stocks Usage Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>-6.1%</td>
<td>10.8%</td>
<td>4.4%</td>
<td>0.4%</td>
<td>12,120</td>
<td>2.6%</td>
<td>-0.7%</td>
<td>12,201</td>
<td>337</td>
<td>12,502</td>
<td>156</td>
<td>686</td>
<td>3.0</td>
</tr>
<tr>
<td>2007</td>
<td>0.8%</td>
<td>-6.5%</td>
<td>-2.4%</td>
<td>1.7%</td>
<td>11,939</td>
<td>-1.5%</td>
<td>-4.6%</td>
<td>12,619</td>
<td>-879</td>
<td>11,551</td>
<td>-50</td>
<td>635</td>
<td>2.8</td>
</tr>
<tr>
<td>2008</td>
<td>-5.8%</td>
<td>-4.3%</td>
<td>-5.4%</td>
<td>1.8%</td>
<td>11,681</td>
<td>-2.2%</td>
<td>-0.5%</td>
<td>12,575</td>
<td>-833</td>
<td>11,733</td>
<td>154</td>
<td>789</td>
<td>3.5</td>
</tr>
<tr>
<td>2009</td>
<td>-18.5%</td>
<td>-18.1%</td>
<td>-26.1%</td>
<td>-4.5%</td>
<td>10,150</td>
<td>-13.1%</td>
<td>2.4%</td>
<td>12,868</td>
<td>-2,051</td>
<td>10,387</td>
<td>278</td>
<td>1,067</td>
<td>5.5</td>
</tr>
<tr>
<td>2010</td>
<td>-18.5%</td>
<td>-18.1%</td>
<td>-26.1%</td>
<td>-4.5%</td>
<td>10,687</td>
<td>5.3%</td>
<td>-3.3%</td>
<td>12,937</td>
<td>-2,001</td>
<td>10,678</td>
<td>-144</td>
<td>923</td>
<td>4.5</td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11,039</td>
<td>3.3%</td>
<td>-0.4%</td>
<td>13,590</td>
<td>-1,963</td>
<td>11,002</td>
<td>-133</td>
<td>791</td>
<td>3.7</td>
</tr>
</tbody>
</table>
Copper Price vs Stocks/Consumption Ratio, overbought …

- current ratio: 4.4 weeks
- current price $8,100

- copper overvalued

- slight surplus expected followed by deficit

- Forecast: 3.7 wks
Aluminum Outlook, *consumption rebound, deficit expected*

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Consumption</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Chg</td>
<td>-0.5%</td>
<td>-2.8%</td>
<td>-15.8%</td>
<td>15.7%</td>
<td>4.6%</td>
</tr>
<tr>
<td>IP</td>
<td>3.1%</td>
<td>-1.7%</td>
<td>-15.5%</td>
<td>8.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td>DD-IP</td>
<td>-3.6%</td>
<td>-1.1%</td>
<td>-0.2%</td>
<td>7.1%</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>Total Production</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Chg</td>
<td>3.7%</td>
<td>3.2%</td>
<td>-8.2%</td>
<td>2.7%</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Net E-W Balance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Supply</td>
<td>24,573</td>
<td>26,079</td>
<td>22,427</td>
<td>23,589</td>
<td>24,386</td>
</tr>
<tr>
<td>Reported Balance</td>
<td>196</td>
<td>1,748</td>
<td>1,777</td>
<td>(119)</td>
<td>(387)</td>
</tr>
<tr>
<td>Reported Stocks</td>
<td>2,960</td>
<td>4,709</td>
<td>6,485</td>
<td>6,366</td>
<td>5,979</td>
</tr>
<tr>
<td>Weeks Use</td>
<td>6.1</td>
<td>10.7</td>
<td>17.7</td>
<td>15.0</td>
<td>13.4</td>
</tr>
</tbody>
</table>
Aluminum Stocks Ratio vs Price, further builds expected

- current: 15.2 wks
- price: $2,320
- equil: 7 to 9 wks
- Forecast: 13.4 wks
**Zinc Supply-Demand Outlook, *surplus in ’10, deficit in ’11***

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumption</strong></td>
<td>7,204</td>
<td>6,906</td>
<td>5,724</td>
<td>6,602</td>
<td>6,914</td>
</tr>
<tr>
<td>% Chg</td>
<td>-1.2%</td>
<td>-4.1%</td>
<td>-17.1%</td>
<td>15.3%</td>
<td>4.7%</td>
</tr>
<tr>
<td><strong>IP</strong></td>
<td>3.1%</td>
<td>-1.7%</td>
<td>-15.5%</td>
<td>8.6%</td>
<td>3.7%</td>
</tr>
<tr>
<td><strong>DD - IP</strong></td>
<td>-4.3%</td>
<td>-2.5%</td>
<td>-1.6%</td>
<td>6.8%</td>
<td>1.0%</td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td>7,184</td>
<td>7,576</td>
<td>7,357</td>
<td>7,859</td>
<td>8,285</td>
</tr>
<tr>
<td></td>
<td>6.8%</td>
<td>5.5%</td>
<td>-2.9%</td>
<td>6.8%</td>
<td>5.4%</td>
</tr>
<tr>
<td><strong>E/W Trade</strong></td>
<td>582</td>
<td>401</td>
<td>(217)</td>
<td>30</td>
<td>18</td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>7,166</td>
<td>7,079</td>
<td>5,864</td>
<td>6,530</td>
<td>6,829</td>
</tr>
<tr>
<td><strong>Reported Balance</strong></td>
<td>31</td>
<td>185</td>
<td>160</td>
<td>84</td>
<td>(21)</td>
</tr>
<tr>
<td><strong>Stocks</strong></td>
<td>580</td>
<td>765</td>
<td>924</td>
<td>1,008</td>
<td>987</td>
</tr>
<tr>
<td><strong>Weeks Use</strong></td>
<td>4.2</td>
<td>5.8</td>
<td>8.4</td>
<td>8.0</td>
<td>7.4</td>
</tr>
</tbody>
</table>
Zinc Stocks Ratio vs Price, stocks in surplus, modest deficit expected

- **Current:**
  - 8.2 weeks
  - $2,230/tonne
- **Equilibrium**
  - 5.5 to 6.5 wks
- **Forecast**
  - 7.4 wks
**Lead Supply-Demand Outlook**, *surplus to deficit projected*

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
<th>% Chg</th>
<th>IP</th>
<th>DD-IP</th>
<th>Mine</th>
<th>Refined</th>
<th>E-W Trade</th>
<th>Supply</th>
<th>Balance</th>
<th>Stocks</th>
<th>Weeks Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>5,254</td>
<td>-4.6%</td>
<td>3.1%</td>
<td>-7.8%</td>
<td>2,009</td>
<td>4,832</td>
<td>372</td>
<td>5,204</td>
<td>-4</td>
<td>266</td>
<td>2.6</td>
</tr>
<tr>
<td>2008</td>
<td>5,093</td>
<td>-3.1%</td>
<td>-1.7%</td>
<td>-1.4%</td>
<td>2,140</td>
<td>4,937</td>
<td>187</td>
<td>5,124</td>
<td>40</td>
<td>306</td>
<td>3.1</td>
</tr>
<tr>
<td>2009</td>
<td>4,449</td>
<td>-12.6%</td>
<td>-15.5%</td>
<td>2.9%</td>
<td>2,030</td>
<td>4,559</td>
<td>5</td>
<td>4,564</td>
<td>83</td>
<td>389</td>
<td>4.6</td>
</tr>
<tr>
<td>2010</td>
<td>4,682</td>
<td>5.2%</td>
<td>8.6%</td>
<td>-3.3%</td>
<td>2,121</td>
<td>4,632</td>
<td>77</td>
<td>4,709</td>
<td>34</td>
<td>423</td>
<td>4.7</td>
</tr>
<tr>
<td>2011</td>
<td>4,844</td>
<td>3.5%</td>
<td>3.7%</td>
<td>-0.2%</td>
<td>2,229</td>
<td>4,747</td>
<td>57</td>
<td>4,804</td>
<td>-23</td>
<td>400</td>
<td>4.3</td>
</tr>
</tbody>
</table>
Lead Stocks Ratio vs Price, *stocks not excessive, prices overvalued*

- **Current:**
  - 4.7 weeks
  - $2,200/tonne
- **Equilibrium**
  - 3 to 4 wks
- **Forecast**
  - 4.3 wks
Nickel Supply-Demand Balance

consumption firm, mine prod to recover, China imports offset Russia exports, surplus of 80 kt in ‘09 to shift to slight deficits

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW Consumption</td>
<td>989</td>
<td>951</td>
<td>736</td>
<td>907</td>
<td>986</td>
</tr>
<tr>
<td>% Chg</td>
<td>-10%</td>
<td>-4%</td>
<td>-23%</td>
<td>23%</td>
<td>9%</td>
</tr>
<tr>
<td>IP Growth</td>
<td>3%</td>
<td>-2%</td>
<td>-16%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Consumption - IP</td>
<td>-13%</td>
<td>-2%</td>
<td>-7%</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>WW Mine Production</td>
<td>1,136</td>
<td>1,056</td>
<td>932</td>
<td>943</td>
<td>991</td>
</tr>
<tr>
<td>WW Refined Production</td>
<td>905</td>
<td>871</td>
<td>786</td>
<td>794</td>
<td>839</td>
</tr>
<tr>
<td>FFS Trade</td>
<td>138</td>
<td>129</td>
<td>2</td>
<td>84</td>
<td>122</td>
</tr>
<tr>
<td>WW Total Supply</td>
<td>1,043</td>
<td>1,001</td>
<td>788</td>
<td>879</td>
<td>960</td>
</tr>
<tr>
<td>Apparent Balance</td>
<td>54</td>
<td>50</td>
<td>53</td>
<td>-29</td>
<td>-26</td>
</tr>
<tr>
<td>Unreported Balance</td>
<td>-16</td>
<td>-19</td>
<td>27</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Reported Balance</td>
<td>38</td>
<td>30</td>
<td>80</td>
<td>-15</td>
<td>-19</td>
</tr>
<tr>
<td>Reported Stocks</td>
<td>154</td>
<td>184</td>
<td>264</td>
<td>249</td>
<td>229</td>
</tr>
<tr>
<td>Weeks Consumption</td>
<td>8.1</td>
<td>10.1</td>
<td>18.7</td>
<td>14.3</td>
<td>12.1</td>
</tr>
<tr>
<td>Weeks Deliveries</td>
<td>9.8</td>
<td>12.7</td>
<td>24.8</td>
<td>18.4</td>
<td>15.9</td>
</tr>
</tbody>
</table>
Nickel Price vs Stocks Ratio, Stocks above Equilibrium, Prices Overvalued

- **Current Ratio**
  - 17 wks use
- **Prices:**
  - $24,725
- **Equil:** 9/10 wks
- **Forecasts:**
  - ~ 18 to 15 wks
Tin Supply-Demand Outlook, consumption recovers, prod up, market deficit

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
<th>% Chg</th>
<th>IP</th>
<th>DD-IP</th>
<th>Mine</th>
<th>Refined</th>
<th>East to West Trade</th>
<th>Government Sales</th>
<th>Total Supply</th>
<th>Reported Balance</th>
<th>Total Stocks</th>
<th>Weeks Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>235</td>
<td>8%</td>
<td>3%</td>
<td>5%</td>
<td>200</td>
<td>213</td>
<td>9</td>
<td>9</td>
<td>231</td>
<td>-3</td>
<td>36</td>
<td>7.9</td>
</tr>
<tr>
<td>2007</td>
<td>212</td>
<td>-10%</td>
<td>3%</td>
<td>-13%</td>
<td>194</td>
<td>195</td>
<td>8</td>
<td>8</td>
<td>211</td>
<td>0</td>
<td>36</td>
<td>8.8</td>
</tr>
<tr>
<td>2008</td>
<td>198</td>
<td>-7%</td>
<td>-2%</td>
<td>-5%</td>
<td>188</td>
<td>198</td>
<td>-13</td>
<td>4</td>
<td>189</td>
<td>-3</td>
<td>32</td>
<td>8.6</td>
</tr>
<tr>
<td>2009</td>
<td>168</td>
<td>-15%</td>
<td>-16%</td>
<td>1%</td>
<td>178</td>
<td>194</td>
<td>-15</td>
<td>0</td>
<td>179</td>
<td>14</td>
<td>46</td>
<td>14.3</td>
</tr>
<tr>
<td>2010</td>
<td>199</td>
<td>18%</td>
<td>9%</td>
<td>10%</td>
<td>178</td>
<td>205</td>
<td>-13</td>
<td>0</td>
<td>192</td>
<td>-10</td>
<td>32</td>
<td>8.4</td>
</tr>
<tr>
<td>2011</td>
<td>211</td>
<td>6%</td>
<td>4%</td>
<td>2%</td>
<td>192</td>
<td>219</td>
<td>-13</td>
<td>0</td>
<td>206</td>
<td>-7</td>
<td>25</td>
<td>6.1</td>
</tr>
</tbody>
</table>
Tin Wks Use vs Price, *stocks ratio to decline from 9 wks to <7 wks*
Funds

LME Volumes
LME Prices
&
Releveraging
LME “Client” Volumes: Funds vs Trade
excludes broker crosses

“funds” account for 60+% of client volumes
Global Hedge/Macro Funds, $billion AUM

Hedge Funds: “hedge” equity/bond exposures, long or short
Commodity Trading Advisors: registered, trend following, F&O
**Index Funds, $billion AUM**

*Index of Commodities, Commodity Super Cycle, diversification*

<table>
<thead>
<tr>
<th>Energy</th>
<th>Agric</th>
<th>PrecM</th>
<th>IndusM</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCI</td>
<td>66%</td>
<td>21%</td>
<td>4%</td>
</tr>
<tr>
<td>DJ-UBS</td>
<td>28%</td>
<td>39%</td>
<td>14%</td>
</tr>
<tr>
<td>Rodgers</td>
<td>44%</td>
<td>35%</td>
<td>7%</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>60%</td>
<td>24%</td>
<td>4%</td>
</tr>
</tbody>
</table>

| Average | 50% | 30% | 7% | wtd avg 14% |

<table>
<thead>
<tr>
<th>Copper</th>
<th>Alum</th>
<th>Zinc</th>
<th>Nickel</th>
<th>Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSCI</td>
<td>45.1%</td>
<td>30.7%</td>
<td>7.9%</td>
<td>10.4%</td>
</tr>
<tr>
<td>DJ-UBS</td>
<td>42.5%</td>
<td>29.1%</td>
<td>13.5%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Rodgers</td>
<td>4.0%</td>
<td>4.0%</td>
<td>2.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Oppenheimer</td>
<td>2.4%</td>
<td>2.6%</td>
<td>0.1%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

| Average | 23.5% | 16.6% | 5.9% | 6.8% | 2.1% |

| Year | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | '00 | '01 | '02 | '03 | '04 | '05 | '06 | '07 | '08 | '09 | '10 |
|------|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| $0   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  |
| $20  | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33  | 34  | 35  | 36  | 37  | 38  | 39  | 40  | 41  | 42  | 43  | 44  |
| $40  | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55  | 56  | 57  | 58  | 59  | 60  | 61  | 62  | 63  | 64  | 65  | 66  |
| $60  | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77  | 78  | 79  | 80  | 81  | 82  | 83  | 84  | 85  | 86  | 87  | 88  |
| $80  | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99  | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 |

*MF Global*
SUMMARY: Fund Allocations in Industrial Metals, $ B
Funds, Assets Under Management, 2006 – Present, $Billions
Copper Prices, *Fundamental & Fund Impact*

**copper prices, fund index ($AUM, metals)**

**copper stocks, weeks use**

- Copper Prices
- Funds $ Index
- Weeks Use

Graph showing copper prices, fund index ($AUM, metals), and copper stocks, weeks use over the years from '94 to '10.
Aluminum Prices, *Fundamental & Fund Impact*

**aluminum prices, fund index ($AUM, metals)**

**aluminum stocks, weeks use**
Zinc Prices, Fund Index ($AUM, metals)

- Zinc Prices
- Funds $ Index
- Weeks Use

Zinc stocks, weeks use
Lead Prices, *Fundamental & Fund Impact*

lead prices, fund index ($AUM, metals)  lead stocks, weeks use

- Lead Prices
- Funds $ Index
- Weeks Use

'94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10

-4 -3 -2 -1 0 1 2 3 4 5 6
Nickel Prices, *Fundamental & Fund Impact*

**nickel prices, fund index ($AUM, metals)**

**nickel stocks, weeks use**

- **Blue line**: Nickel Prices
- **Red dashed line**: Funds $ Index
- **Green line**: Weeks Use
Tin Prices, **Fundamental & Fund Impact**

**Tin prices, fund index ($AUM, metals)**

- **Tin Prices**
- **Funds $ Index**
- **LME Stocks**

- **'94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10**
- **-50,000 -40,000 -30,000 -20,000 -10,000 0 10,000 20,000 30,000 40,000**

- **'94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10**
- **25,000 20,000 15,000 10,000 5,000 0 -5,000 -10,000 -20,000 -30,000 -40,000 -50,000**

**tin prices, fund index ($AUM, metals)**

**tin stocks**
1. Global economy recovers from financial crisis
   • Stimulus spending slows, deficits, Europe banking crisis, high unemployment, money policy limited, FinReg restrictions
   • China slows but evidence of recovery
   • Economic growth slows but IP remains strong

2. Metals consumption surges, capacity builds but output limited, inventories high but declining, deficits expected

3. Technical trend bullish, but overbought, spreads tightening, strong seasonals

4. Institutional demand recovers bolstering metals prices
Base Metals, *Price Outlooks*

generally bullish, favor copper, tin, and nickel

<table>
<thead>
<tr>
<th></th>
<th>Copper</th>
<th>Alum</th>
<th>Zinc</th>
<th>Lead</th>
<th>Nickel</th>
<th>Tin</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Q1</td>
<td>$7,232</td>
<td>$2,163</td>
<td>$2,289</td>
<td>$2,221</td>
<td>$19,959</td>
<td>$17,209</td>
</tr>
<tr>
<td>2010 Q2</td>
<td>$7,027</td>
<td>$2,096</td>
<td>$2,026</td>
<td>$1,950</td>
<td>$22,476</td>
<td>$17,856</td>
</tr>
<tr>
<td>2010 Q3</td>
<td>$7,243</td>
<td>$2,090</td>
<td>$2,013</td>
<td>$2,032</td>
<td>$21,191</td>
<td>$20,549</td>
</tr>
<tr>
<td>2010 Q4</td>
<td>$7,875</td>
<td>$2,257</td>
<td>$2,118</td>
<td>$2,108</td>
<td>$23,325</td>
<td>$24,517</td>
</tr>
<tr>
<td>2010 Avg</td>
<td>$7,344</td>
<td>$2,151</td>
<td>$2,112</td>
<td>$2,078</td>
<td>$21,738</td>
<td>$20,033</td>
</tr>
<tr>
<td>2011 Q1</td>
<td>$8,250</td>
<td>$2,300</td>
<td>$2,100</td>
<td>$2,100</td>
<td>$23,000</td>
<td>$25,000</td>
</tr>
<tr>
<td>2011 Q2</td>
<td>$8,750</td>
<td>$2,200</td>
<td>$2,200</td>
<td>$2,100</td>
<td>$24,000</td>
<td>$26,000</td>
</tr>
<tr>
<td>2011 Q3</td>
<td>$8,250</td>
<td>$2,100</td>
<td>$2,200</td>
<td>$2,200</td>
<td>$23,500</td>
<td>$27,000</td>
</tr>
<tr>
<td>2011 Q4</td>
<td>$8,500</td>
<td>$2,200</td>
<td>$2,100</td>
<td>$2,300</td>
<td>$23,500</td>
<td>$28,000</td>
</tr>
<tr>
<td>2011 Avg</td>
<td>$8,438</td>
<td>$2,200</td>
<td>$2,150</td>
<td>$2,175</td>
<td>$23,500</td>
<td>$26,500</td>
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</table>