Base Metals Outlook

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Ring Dealing Member of the LME

LME
Futures and Options and Clearing

COMEX
OTC / Swap FX and Bullion

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- LME, COMEX
  - Other Futures

- Market Commentary
  - Market Outlook

- Hedge Analytics
  - Data Support

- Hedge Seminars
  - Hedge Consulting

**Research Reports**

- *Hedge Admin and Control*
  - FASB Issues, w PWC
  - Producer Hedge Survey

- *Forecasting Methodologies*
  - Technical Analysis
  - Funds and the LME
Metals Group

MF Global Metals Offices

MF Global Metals Strategic Partners

- New York
- Toronto
- London
- Hamburg
- Monte Carlo
- Milan
- Madrid
- Hong Kong
- Mumbai
- Seoul
- Singapore
- Sydney
- Taipei
- Santiago
Metals Business Distribution

- Funds: 31%
- Europe: 25%
- America: 11%
- ABCM: 4%
- Dealing: 17%
- Far East: 12%

**International survey of corporate risk managers**

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<td>MF Global #2</td>
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**Risk**

CURRENCIES . INTEREST RATES . EQUITIES . COMMODITIES . CREDIT
Metals Outlook
Factors Underpinning Current Prices

Fundamentals Constructive

- Global Economic Expansion
- Chinese and Indian Demand
- Production Losses
- & Critically Low Stocks
But...

**Fundamentals**

Don’t Fully Explain Current High Prices
Structural Model for Metals Prices

Economic Growth
Substitutes, Tech, Econ Cycle,
PRICE

Capacity, Costs, Startups/Idled
Scrap, E-W Trade,
PRICE

Demand, Economic Cycle

Supply

Stocks, Stock Change, & Stocks Ratio

PRICE

?
Structural Model for Metals Prices

Economic Growth, Substitutes, Tech, Econ Cycle, PRICE

Capacity, Costs, Startups/Idled, Scrap, E-W Trade, PRICE

Demand, Economic Cycle

Supply

Stocks, Stock Change, & Stocks Ratio

PRICE

FUNDS
Structural Model for Metals Prices

Economic Growth
Substitutes, Tech, Econ Cycle, PRICE

Capacity, Costs, Startups/Idled Scrap, E-W Trade, PRICE

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Stocks, Stock Change, & Stocks Ratio

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Structural Model for Metals Prices

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Substitutes, Tech, Econ Cycle, PRICE

Capacity, Costs, Startups/Idled Scrap, E-W Trade, PRICE

Demand, Economic Cycle

Supply

Stocks, Stock Change, & Stocks Ratio

PRICE

FUNDS
Factors Underpinning Current Prices

• **Fundamentals Constructive**
  - Global Economic Expansion,
  - Metals Demand Rebound
  - Production Losses & Critically Low Stocks

• **Surge in Speculative Demand**
  - Macro/Hedge Funds,
  - CTAs/Specialist Funds
  - Passive/Index Funds
Our Outlook...
Base Metals Market Outlook…

• **Fundamentals Are Reasonably Constructive**
  - prices still overbought, but moving into seasonal strength
  - economy slowing in 2008 but rebound in 2009
  - continued strength in China & India demand
  - high prices lead to production builds but losses expected
  - stocks critically low, reasonably tight conditions expected

• **Price vs Stocks/Physical Demand Nexus**
  - structurally altered by fund buying

• **Speculative Demand Will Only Grow**
  - diversification theme, commodity super cycle
### Base Metals, *Price Outlooks*

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<tr>
<th></th>
<th>Copper</th>
<th>Alum</th>
<th>Zinc</th>
<th>Lead</th>
<th>Nickel</th>
<th>Tin</th>
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<td>2008 Q1</td>
<td>$7,400</td>
<td>$2,524</td>
<td>$2,621</td>
<td>$2,555</td>
<td>$31,172</td>
<td>$16,933</td>
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<td>2008 Q2</td>
<td>$7,500</td>
<td>$2,600</td>
<td>$2,500</td>
<td>$2,150</td>
<td>$31,000</td>
<td>$16,500</td>
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<td>2008 Q3</td>
<td>$6,700</td>
<td>$2,400</td>
<td>$2,300</td>
<td>$2,500</td>
<td>$28,000</td>
<td>$14,500</td>
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<td>2008 Q4</td>
<td>$6,250</td>
<td>$2,200</td>
<td>$2,200</td>
<td>$2,200</td>
<td>$25,000</td>
<td>$15,500</td>
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<tr>
<td><strong>2008 Avg</strong></td>
<td><strong>$6,963</strong></td>
<td><strong>$2,431</strong></td>
<td><strong>$2,405</strong></td>
<td><strong>$2,351</strong></td>
<td><strong>$28,793</strong></td>
<td><strong>$15,858</strong></td>
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<td>2009 Q1</td>
<td>$6,550</td>
<td>$2,300</td>
<td>$2,100</td>
<td>$2,100</td>
<td>$26,000</td>
<td>$15,500</td>
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<tr>
<td>2009 Q2</td>
<td>$6,600</td>
<td>$2,300</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$26,000</td>
<td>$15,750</td>
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<tr>
<td>2009 Q3</td>
<td>$6,350</td>
<td>$2,100</td>
<td>$1,900</td>
<td>$2,100</td>
<td>$22,000</td>
<td>$14,750</td>
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<td>2009 Q4</td>
<td>$6,850</td>
<td>$1,900</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$23,000</td>
<td>$15,000</td>
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<tr>
<td><strong>2009 Avg</strong></td>
<td><strong>$6,588</strong></td>
<td><strong>$2,150</strong></td>
<td><strong>$2,000</strong></td>
<td><strong>$2,050</strong></td>
<td><strong>$24,250</strong></td>
<td><strong>$15,250</strong></td>
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**Reuters Poll (Jan 2008)**

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<th>Lead</th>
<th>Nickel</th>
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<td>2008 Avg</td>
<td>$6,779</td>
<td>$2,516</td>
<td>$2,481</td>
<td>$2,520</td>
<td>$28,496</td>
<td>$15,387</td>
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<td>2009 Avg</td>
<td>$6,118</td>
<td>$2,527</td>
<td>$2,271</td>
<td>$1,982</td>
<td>$25,046</td>
<td>$12,906</td>
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Economic Outlook
Global IP, economic growth stabilizes
Global IP, *moderate rebound 2008 and 2009*
Industrial Production Outlook: *rebound 2008/2009*

<table>
<thead>
<tr>
<th>Year</th>
<th>US</th>
<th>WE</th>
<th>JA</th>
<th>W World</th>
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<tbody>
<tr>
<td>2005</td>
<td>3.2%</td>
<td>1.3%</td>
<td>1.5%</td>
<td>2.0%</td>
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<tr>
<td>2006</td>
<td>3.6%</td>
<td>3.9%</td>
<td>4.2%</td>
<td>3.9%</td>
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<tr>
<td>2007</td>
<td>2.1%</td>
<td>3.3%</td>
<td>2.6%</td>
<td>2.6%</td>
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<tr>
<td>2008</td>
<td>2.0%</td>
<td>2.0%</td>
<td>3.2%</td>
<td>2.4%</td>
</tr>
<tr>
<td>2009</td>
<td>2.8%</td>
<td>1.9%</td>
<td>4.2%</td>
<td>3.0%</td>
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<tr>
<td>Year '07</td>
<td>US</td>
<td>WE</td>
<td>JP</td>
<td>FW</td>
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<tr>
<td>---------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>07 Q1</td>
<td>2.2%</td>
<td>2.3%</td>
<td>2.5%</td>
<td>2.4%</td>
</tr>
<tr>
<td>07 Q2</td>
<td>2.0%</td>
<td>2.9%</td>
<td>2.8%</td>
<td>2.6%</td>
</tr>
<tr>
<td>07 Q3</td>
<td>2.0%</td>
<td>3.0%</td>
<td>2.4%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Oct-07</td>
<td>2.1%</td>
<td>3.0%</td>
<td>2.3%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Nov-07</td>
<td>2.1%</td>
<td>3.3%</td>
<td>2.5%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Dec-07</td>
<td>2.1%</td>
<td>3.4%</td>
<td>2.7%</td>
<td>2.7%</td>
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</tbody>
</table>

<table>
<thead>
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<th>Year '08</th>
<th>US</th>
<th>WE</th>
<th>JP</th>
<th>FW</th>
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<tr>
<td>07 Q1</td>
<td>3.2%</td>
<td>2.1%</td>
<td>2.9%</td>
<td>2.7%</td>
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<tr>
<td>07 Q2</td>
<td>3.0%</td>
<td>2.3%</td>
<td>3.1%</td>
<td>2.7%</td>
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<tr>
<td>07 Q3</td>
<td>2.8%</td>
<td>2.4%</td>
<td>3.2%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Oct-07</td>
<td>2.7%</td>
<td>2.2%</td>
<td>3.1%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Nov-07</td>
<td>2.5%</td>
<td>2.1%</td>
<td>3.0%</td>
<td>2.5%</td>
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<tr>
<td>Dec-07</td>
<td>1.9%</td>
<td>2.1%</td>
<td>2.7%</td>
<td>2.2%</td>
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</table>
Global IP: moderate rebound in 2.5% to 3.0% range
Copper Market Review
Copper Spreads, *Spreads Tighten than Ease*

![Graph showing Copper Spreads, Spreads Tighten than Ease](image-url)
Copper Prices vs Spread
High Prices, Backwardations; Low Prices, Contangos

- **Current:**
  - $6,750/tonne
  - c-3m: $80c
  - 3m-15m: $50b

- **3m equilibrium:**
  - $1,800 - $2,000
Copper Consumption vs IP Growth
Copper Consumption to be Supported by Economic Recovery

DD - IP  Consumption  G3 IP
Production Slowdown

high prices lead to restarts, new capacity & expan
BUT labor problems and lower grade ores curtail output
New / Expanded Copper Capacity, kt

- **Chile Projects**
  (Escondida, Chuquicamata, Pelambres, Collahausi, Abra, Radomiro, Teniente, Candelaria)

- **United States Projects**
  (Morenci & Bingham)

- **Indonesian Projects**
  (Grasberg & Batu Hijau)

- **Future Chile, Zambia & Mongolia Startups**
China Copper, Supply-Demand, kt
SRB sales in '06 curtails “imports & consumption”; rebound in 2007 & 2008
Copper East to West Trade Improves
significant structural shift with China

- FSU exports increase
- Chinese rebound
- Net East to West trade improves after weak 2006
Global Copper Inventories

- exchange stocks increase since 2005
- producer, consumer well managed
Global Copper Inventories

- exchange stocks still critically low
- producer, consumer well managed
Copper Stocks and Weeks Use
ratio drops to 2 weeks, recent increases to 3 weeks
## Copper Quarterly Supply-Demand Balance

<table>
<thead>
<tr>
<th></th>
<th>07Q3</th>
<th>07Q4</th>
<th>08Q1</th>
<th>08Q2</th>
<th>08Q3</th>
<th>08Q4</th>
<th>09Q1</th>
<th>09Q2</th>
<th>09Q3</th>
<th>09Q4</th>
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<tbody>
<tr>
<td><strong>Refined Consumption</strong></td>
<td>2,908</td>
<td>2,785</td>
<td>2,929</td>
<td>3,129</td>
<td>2,940</td>
<td>2,844</td>
<td>3,015</td>
<td>3,247</td>
<td>3,092</td>
<td>3,031</td>
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<tr>
<td>Change (%)</td>
<td>-5.2%</td>
<td>-1.4%</td>
<td>-0.9%</td>
<td>0.7%</td>
<td>1.1%</td>
<td>2.1%</td>
<td>2.9%</td>
<td>3.8%</td>
<td>5.2%</td>
<td>6.6%</td>
</tr>
<tr>
<td><strong>East to West Trade</strong></td>
<td>-46</td>
<td>-91</td>
<td>-121</td>
<td>-121</td>
<td>-126</td>
<td>-131</td>
<td>-131</td>
<td>-131</td>
<td>-136</td>
<td>-141</td>
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<tr>
<td><strong>Total Supply</strong></td>
<td>2,890</td>
<td>3,135</td>
<td>3,049</td>
<td>3,024</td>
<td>2,950</td>
<td>3,197</td>
<td>3,118</td>
<td>3,116</td>
<td>3,038</td>
<td>3,298</td>
</tr>
<tr>
<td>Change (%)</td>
<td>-7%</td>
<td>0%</td>
<td>3%</td>
<td>4%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Reported Balance</strong></td>
<td>-10</td>
<td>42</td>
<td>107</td>
<td>-126</td>
<td>-56</td>
<td>230</td>
<td>59</td>
<td>-147</td>
<td>-103</td>
<td>158</td>
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<tr>
<td><strong>Stocks</strong></td>
<td>630</td>
<td>673</td>
<td>780</td>
<td>654</td>
<td>598</td>
<td>828</td>
<td>886</td>
<td>739</td>
<td>636</td>
<td>794</td>
</tr>
<tr>
<td><strong>Stocks Usage Ratio</strong></td>
<td>2.8</td>
<td>3.0</td>
<td>3.5</td>
<td>2.9</td>
<td>2.6</td>
<td>3.6</td>
<td>3.9</td>
<td>3.2</td>
<td>2.7</td>
<td>3.3</td>
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</table>
## Copper Supply-Demand Balance

<table>
<thead>
<tr>
<th>Year</th>
<th>Refined Consumption</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>
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<tbody>
<tr>
<td>2004</td>
<td>12,247</td>
<td>11,856</td>
<td>-249</td>
<td>11,326</td>
<td>-691</td>
<td>498</td>
<td>2.1</td>
</tr>
<tr>
<td>2005</td>
<td>11,810</td>
<td>12,307</td>
<td>-150</td>
<td>11,698</td>
<td>32</td>
<td>530</td>
<td>2.3</td>
</tr>
<tr>
<td>2006</td>
<td>12,177</td>
<td>12,234</td>
<td>276</td>
<td>12,437</td>
<td>156</td>
<td>686</td>
<td>2.9</td>
</tr>
<tr>
<td>2007</td>
<td>11,756</td>
<td>12,676</td>
<td>-485</td>
<td>11,870</td>
<td>-13</td>
<td>673</td>
<td>3.0</td>
</tr>
<tr>
<td>2008</td>
<td>11,842</td>
<td>13,085</td>
<td>-500</td>
<td>12,220</td>
<td>155</td>
<td>828</td>
<td>3.6</td>
</tr>
<tr>
<td>2009</td>
<td>12,385</td>
<td>13,410</td>
<td>-540</td>
<td>12,570</td>
<td>-33</td>
<td>794</td>
<td>3.3</td>
</tr>
</tbody>
</table>
Copper Price vs Stocks/Consumption Ratio

Current Stocks-Current Prices: overbought to fairly valued…

- current ratio:
  - 3 weeks
- current price
  - $7,000
- copper overvalued
- slight surplus expected
Copper Price Seasonals

![Seasonal Trend Adj Graph]

- **Seasonal**
- **Trend Adj**
Copper Stocks Ratio vs Spread
low ratio, backwardations; high ratio, contangos

Current: 3 weeks
  c-3m: $80c
  3-15m: $50 b

Equilibrium: 4 to 5 wks

Forecast wks use:
price:

...backwardations to contangos
Copper Outlook

• Copper consumption falls, to rebounds late 2008, 2009
• Significant mine capacity builds in 07 & 08, but output restrained w/ likely losses
• China imports recover with econ growing, strategic sales down
• Inventories up but still critically low, balanced market in 2007, moderate builds in 08, but stocks still low
• Price strength near term, then easing with surplus; prices to remain relatively high with speculative demand.
Copper Prices, Spot & Deflated
annual averages, CPI/GNP deflated
Aluminum Market Review
Aluminum Price Review

![Graph showing the price of aluminum from 2000 to 2008. The graph indicates a upward trend with peaks in 2006 and a decline in 2008.]
Aluminum Spreads
spreads tighten over last few years, then collapse
Aluminum Consumption, by Region
China, RoW firm, US, Europe, JP soft
Aluminum Shipments vs IP Growth
aluminum shipments slow but bolstered by econ rebound
IAI Alum Planned Capacity Builds

large in ’07-’08-’09, but below ’04-’05 builds
New/Expanded Aluminum Capacity, kt

- **Alba Project in Bahrain**
- **BHP/Billiton Projects** (Hillside & Mozal)
- **Australia Comalco’s Projects** (Boyne Island, Portland & Tomago)
- **Canada Projects** (Baie Comeau, Alma & Alouette)
- **Latin America Projects** (Venezuela – San Felix, Brazil- Belem & San Luis, Argentina Puerto Madryn)
Primary Output Recovers after ‘06 Slowdown
some restarts, greenfield and brownfield builds

Cap
Prod
China, Production & Consumption

consumption keeps pace with production
Net East to West Trade Balance
Russian exports slow, Chinese exports steady
Exchange Stocks Build, After Recent Decline

- LME stocks build in ‘07
- IAI stocks decline
Aluminum: Stocks/Shipments Ratio

stocks/shipments ratio at 5.9 wks still critically low
## Aluminum Supply-Demand Outlook, kt

expect balanced market

<table>
<thead>
<tr>
<th></th>
<th>Shipments K Tons</th>
<th>% Chg</th>
<th>Production Prod-kt</th>
<th>% Chg</th>
<th>Inventories K Tons</th>
<th>Chg</th>
<th>Wks Use</th>
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<td>19,638</td>
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<td>4.5%</td>
<td>2,182</td>
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<td>5,499</td>
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<td>2009</td>
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## Aluminum Supply-Demand Outlook, kt

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<tr>
<th>Year</th>
<th>Total Consumption</th>
<th>Total Production</th>
<th>Net E-W Balance</th>
<th>Total Supply</th>
<th>Reported Balance</th>
<th>Reported Stocks</th>
<th>Weeks Use</th>
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<td>2007</td>
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<td>2009</td>
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<td>4,533</td>
<td>4,289</td>
<td>4,176</td>
<td>4,119</td>
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<td>24,120</td>
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<td>92</td>
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Aluminum Stocks Ratio vs Price
stocks below equil, expected to remain tight

- current: 5.9 wks
- price: $2,450
- equil: 7 to 9 wks
- Forecast: 6-7 weeks
Aluminum Stocks Ratio vs Price
stocks below equil, expected to remain tight

- current: 5.9 wks
- price: $2,450
- equil: 7 to 9 wks
- Forecast: 6-7 weeks
Aluminum Stocks Ratio vs Spread
low ratio, backwardations; high ratio, contangos

Current: 5.9 weeks
c-3m: $80 c
3-15m: $125 c

Equilibrium: 6 to 7 wks
Forecast wks use:
price:
...backwardations
Aluminum Spreads vs 3 Months
high prices, backwardations; low prices, contangos

Current:
$2,435

c-3m: $80c

3-15m: $125c

Equilibrium:
~$1,700
Aluminum Price Seasonals

*Graph showing aluminum price seasonals from 1980s, 1990s, 2000s, and average for each month from January to December.*
Aluminum Prices, 1973 to present
Aluminum Outlook

- aluminum consumption slows with economy, rebounds in 2008
- significant primary capacity builds in 2007 & 2008
- China consumption firm, offsetting production builds
- inventories up but still critically low, surplus in 2008; stocks still low
- prices expected to remain firm in early 2008 with inventories low, but then ease later in the year.
Aluminum Prices, Spot & Deflated
Annual Averages, CPI/GNP Deflated

Spot Alum
$06 Alum
Current
Aluminum Prices, 1973 to present
2006 constant dollar average ($2,500)
Zinc Market Review
Zinc Price Review

![Graph showing zinc price trends from 2000 to 2008. The graph indicates a significant increase in prices from 2004 onwards, peaking in 2007 and 2008.]
Zinc Spreads
spreads tighten than ease over last year
Zinc Consumption, by Region
mixed trends, slowing in the West, strength in China
Zinc Consumption vs IP Growth

Zinc consumption slows then bolstered by econ rebound
Zinc Mine, Refined Output
mine production, refined output gains
New/Expanded Zinc Capacity, kt
large capacity builds planned

- **Australian Projects**
  (Century, George Fisher, MacArthur River, Cannington, Alura, Blendavale & Scuddles)

- **North American Projects**
  (Red Dog, Brunswick, & Kidd Creek)

- **Ireland Projects**
  (Tara & Lisheen)

- **Peru Projects**
  (Antamina & Iscaycruz)
Net East to West Trade, Chinese Exports
rebound in late 2006, 2007

- surge in 1990s,
- slowdown in 2000s,
- rebound last few quarters
Zinc Inventories, declines over past year

- LME stocks fall sharply
- producer, consumer stocks also declining
Zinc Stocks and Weeks Usage

- both stocks and weeks use fall from mid 2004 highs
- stocks-use ratio at: 4 wks
### Zinc Supply-Demand Outlook

<table>
<thead>
<tr>
<th></th>
<th>07Q4</th>
<th>08Q1</th>
<th>08Q2</th>
<th>08Q3</th>
<th>08Q4</th>
<th>09Q1</th>
<th>09Q2</th>
<th>09Q3</th>
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<td>1,871</td>
<td>1,850</td>
<td>1,834</td>
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<td>2.1%</td>
<td>2.9%</td>
<td>3.8%</td>
<td>4.7%</td>
<td>5.6%</td>
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<tr>
<td><strong>Production</strong></td>
<td>1,827</td>
<td>1,794</td>
<td>1,875</td>
<td>1,849</td>
<td>1,897</td>
<td>1,852</td>
<td>1,920</td>
<td>1,883</td>
<td>1,931</td>
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<tr>
<td></td>
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<td>6%</td>
<td>5%</td>
<td>5%</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
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<tr>
<td><strong>E/W Trade</strong></td>
<td>129</td>
<td>124</td>
<td>119</td>
<td>114</td>
<td>109</td>
<td>109</td>
<td>109</td>
<td>109</td>
<td>109</td>
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<tr>
<td><strong>Supply</strong></td>
<td>1,818</td>
<td>1,849</td>
<td>1,836</td>
<td>1,873</td>
<td>1,873</td>
<td>1,901</td>
<td>1,882</td>
<td>1,914</td>
<td>1,911</td>
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<tr>
<td><strong>Reported Bal</strong></td>
<td>13</td>
<td>(11)</td>
<td>14</td>
<td>68</td>
<td>(10)</td>
<td>(10)</td>
<td>(10)</td>
<td>8</td>
<td>(69)</td>
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<td><strong>Stocks</strong></td>
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<td>541</td>
<td>555</td>
<td>623</td>
<td>613</td>
<td>602</td>
<td>592</td>
<td>600</td>
<td>532</td>
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<tr>
<td><strong>Weeks Use</strong></td>
<td>3.9</td>
<td>3.8</td>
<td>3.9</td>
<td>4.4</td>
<td>4.3</td>
<td>4.2</td>
<td>4.1</td>
<td>4.2</td>
<td>3.7</td>
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## Zinc Supply-Demand Outlook

<table>
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<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tr>
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<td>7,066</td>
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<td>4.2%</td>
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<tr>
<td><strong>Production</strong></td>
<td>6,500</td>
<td>6,736</td>
<td>6,707</td>
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<td>7,414</td>
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<td>-0.4%</td>
<td>5.3%</td>
<td>5.0%</td>
<td>2.3%</td>
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<td><strong>E/W Trade</strong></td>
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<td>432</td>
<td>582</td>
<td>466</td>
<td>436</td>
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<tr>
<td><strong>Supply</strong></td>
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<td>6,783</td>
<td>6,943</td>
<td>7,229</td>
<td>7,430</td>
<td>7,609</td>
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<tr>
<td><strong>Reported Balc</strong></td>
<td>(161)</td>
<td>(207)</td>
<td>(279)</td>
<td>4</td>
<td>61</td>
<td>(81)</td>
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<td><strong>Stocks</strong></td>
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<td>828</td>
<td>549</td>
<td>552</td>
<td>613</td>
<td>532</td>
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<td><strong>Weeks Use</strong></td>
<td>7.3</td>
<td>6.1</td>
<td>3.9</td>
<td>3.9</td>
<td>4.3</td>
<td>3.7</td>
</tr>
</tbody>
</table>
Zinc Stocks Ratio vs. Price
stocks below equilibrium, slight surplus market expected

- Current:
  - 4 weeks
  - $2,563/tonne
- Equilibrium
  - 5.5 to 6.5 wks
- Forecast
  - 3.8/4.5 wks
Zinc Stocks Ratio vs. Spread

low ratio, backwardations; high ratio, contangos

Current: 4 weeks
  c-3m: $8 b
  3-15m: $10 b

Equilibrium: 6 to 7 wks

Forecast wks use:
  price:
  ...backwardations
Zinc Spreads vs. 3 Months
high prices, backwardations; low prices, contangos

Current:
$2,560

c-3m: $8 b
3-15m: $10 b

Equilibrium:
~$1,200
Zinc Price Seasonals

J F M A M J J A S O N D
Zinc Price Outlook

The graph shows the price of zinc from 1992 to 2008, indicating significant fluctuations over the years.
Zinc Outlook

- Zinc consumption stabilizes then firms in late 2008
- Significant primary capacity builds in 07 & 08
- Chinese exports rebound in 2006, to grow in 2007 & 2008 despite strong internal demand
- Inventories critically low, slight surplus in 2008,
- Stocks remain low
- Prices expected to remain firm
Zinc Prices, Spot & Deflated
Annual Averages, CPI/GNP Deflated
Lead Market Review
Lead, Price Review
Lead Spreads
spreads tighten, then ease over last few months
Western World Lead Consumption Growth
West weakens, China steady
Lead Consumption vs. IP Growth

lead consumption slows then bolstered by econ rebound
New/Expanded Lead Capacity, kt
production builds expected

- Australian Projects
  (Broken Hill, Cannington, Mt Isa, Magellan, George Fisher, Century)

- Cominico Alaska’s Red Dog Project

- Canadian Projects
  (Caribou, Brunswick & Faro)
Net East to West Trade, Chinese Exports

- surge in 1990s,
- slowdown in 2000s,
- steady
Lead Inventories, … recent declines

- LME stocks fall
- producer declines, consumer well managed
• stocks-use ratio drops to 2.7 weeks
• stocks critically low
## Lead Supply-Demand Outlook

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tr>
<td><strong>Consumption</strong></td>
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<td>5,425</td>
<td>5,456</td>
<td>5,475</td>
<td>5,313</td>
<td>5,320</td>
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<td><strong>Mine</strong></td>
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<td>1,979</td>
<td>2,105</td>
<td>2,012</td>
<td>1,973</td>
<td>2,071</td>
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<td><strong>Refrined</strong></td>
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<td>483</td>
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<td><strong>Supply</strong></td>
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<td>5,138</td>
<td>5,307</td>
<td>5,400</td>
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<td>300</td>
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<td>2.9</td>
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<td>2.6</td>
<td>2.9</td>
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# Lead Supply-Demand Outlook

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<th>E-W Trade</th>
<th>Balance</th>
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<th>Weeks Use</th>
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<td>483</td>
<td>1,185</td>
<td>72</td>
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<td>1,262</td>
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<tr>
<td>08Q2</td>
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<tr>
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<td>1,231</td>
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<td>2.9</td>
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<td>549</td>
<td>1,308</td>
<td>57</td>
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<td>1,285</td>
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<td>-2</td>
<td>344</td>
<td>3.3</td>
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<td>09Q3</td>
<td>1,357</td>
<td>527</td>
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<td>09Q4</td>
<td>1,385</td>
<td>509</td>
<td>1,254</td>
<td>47</td>
<td>-44</td>
<td>300</td>
<td>2.9</td>
</tr>
</tbody>
</table>

- **Consumption**
  - Percentage changes: -2.4%, -1.4%, -0.3%, 1.1%, 1.1%, 1.4%, 1.8%, 2.2%, 2.6%

- **Mine**
  - Values: 483, 535, 510, 522, 504, 549, 519, 527, 509

- **Refined**
  - Values: 1,185, 1,262, 1,248, 1,231, 1,231, 1,308, 1,285, 1,260, 1,254

- **E-W Trade**
  - Values: 72, 67, 62, 62, 57, 57, 52, 52, 47

- **Supply**
  - Percentage changes: -7.0%, 2.2%, -2.8%, 2.8%, 2.5%, 2.7%, 2.1%, 1.5%, 1.0%

- **Balance**
  - Values: 10, 33, 3, 21, -29, 51, -2, 0, -44

- **Stocks**
  - Values: 268, 301, 304, 325, 296, 347, 344, 344, 300

- **Weeks Use**
  - Values: 2.6, 3.0, 3.0, 3.2, 2.9, 3.3, 3.3, 3.3, 2.9
Lead Stocks Ratio vs Price
stocks below equilibrium, moderate surplus forecast

- **Current:**
  - 2.7 weeks
  - $2,665/tonne

- **Equilibrium**
  - 5 to 6 wks

- **Forecast**
  - 2.9 to 3.4 wks
Lead Stocks Ratio vs Spread
low ratio, backwardations; high ratio, contangos

Current: 2.7 weeks
  c-3m: $5c
  3-15m: $7b

Equilibrium: 4 to 5 wks

Forecast wks use:
  price:
  ...backwardation
Lead Spreads vs 3 Months
high prices, backwardations; low prices, contangos

Current:
$2,665
c-3m: $5c
3-15m: $7b
Equilibrium:
~ $650
Lead Price Seasonals

[Bar chart showing monthly price variations from January to December with significant peaks in July and August, and troughs in February and March.]
Lead, Long Term Prices
Lead Outlook

• Lead consumption slow with economy, rebound in late 2008 expected
• Significant primary capacity builds in 2007 and 2008
• Chinese exports high in 2006, to grow in 2007 and 2008 despite strong internal demand
• Inventories critically low, balance market in 2007, moderate surplus in 2008; but stocks remain low
• Prices overbought, market in relative balance, but inventories low. Prices expected to weaken, then stabilize in 2008
Nickel Market Review
Nickel Prices

$10,000 $15,000 $20,000 $25,000 $30,000 $35,000 $40,000 $45,000 $50,000

'04 '05 '06 '07 '08
Nickel Spreads
spreads tighten over last few years, then collapse
Consumption Growth: firming except Europe and RoW
nickel consumption softens but to be supported by economic recovery
Primary and Refined Output
primary production builds in '06/'07

- Mine
- Refined
New/Expanded Nickel Capacity, kt

- **Australian Projects** (Honeymoon Well, Mt Keith, Murrin, Leinster)
- **Inco’s Indonesian Project** (Soroako)
- **Billton’s Columbian Project** (Doniambo)
- **Canada Projects** (Sheritt, Sudbury, Manitoba, Raglan)
- **New Caledonia Projects** (Eramet-SLN)
East to West Trade Still High, but Improving
Chinese imports firm, Russian sales ease
Reported Nickel Stocks
LME stocks increase, producer/consumer low
Nickel Stocks and Weeks Usage

weeks usage critically low

- global stocks critically low
- stock - shipments at 7 weeks use
<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td><strong>Consumption</strong></td>
<td></td>
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<tr>
<td>Consumption</td>
<td>1,096</td>
<td>1,118</td>
<td>1,085</td>
<td>1,127</td>
<td>1,188</td>
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<tr>
<td>%</td>
<td>3.3%</td>
<td>2.1%</td>
<td>-3.0%</td>
<td>3.9%</td>
<td>5.5%</td>
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<tr>
<td><strong>Mine Production</strong></td>
<td></td>
<td></td>
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<tr>
<td>Mine Production</td>
<td>935</td>
<td>995</td>
<td>1,088</td>
<td>1,127</td>
<td>1,194</td>
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<td><strong>E to W Trade</strong></td>
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<tr>
<td>E to W Trade</td>
<td>161</td>
<td>158</td>
<td>90</td>
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<td><strong>Total Supply</strong></td>
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<td></td>
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<tr>
<td>Total Supply</td>
<td>1,039</td>
<td>1,050</td>
<td>1,026</td>
<td>1,074</td>
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<td><strong>Reported Stock Chng</strong></td>
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<td>Reported Stock Chng</td>
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<td><strong>Reported Stocks</strong></td>
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<td>Reported Stocks</td>
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<td>116</td>
<td>148</td>
<td>162</td>
<td>187</td>
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<td><strong>Weeks Consumption</strong></td>
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</tr>
<tr>
<td>Weeks Consumption</td>
<td>6.7</td>
<td>5.4</td>
<td>7.1</td>
<td>7.5</td>
<td>8.2</td>
</tr>
</tbody>
</table>

consumption to firm, mine prod up in '08/'09
EW trade tightens with China up, market in slight surplus
Nickel Price vs Stocks/Consumption Ratio
Current Stocks below Equilibrium

- Current Ratio
  - 7 wks use
- Prices:
  - $29,500
- Equil: 9/10 wks
- Forecasts:
  
  \textbf{\sim 7.5 to 8 wks}
Nickel Stocks Ratio vs Spread
low ratio, backwardations; high ratio, contangos

Current: 7 weeks
  c-3m: $310 c
  3-15m: $75 b

Equilibrium: 8 wks

Forecast wks use:
  price:
  ...backwardations to contango

spread

stocks-consumption ratio (in weeks)
Nickel Spreads vs. 3 Months
high prices, backwardations; low prices, contangos

Current:
- $29,500

c-3m: $310 c
3-15m: $75 b

Equilibrium: ~ $8,000

spread

three-months prices
Nickel Prices, Longer Term Outlook

economic recovery offset by production builds
Nickel Outlook

- Nickel consumption to firm with economy expanding
- Significant primary capacity builds in 08 & 09
- China consumption firm, imports expanding
- Inventories critically low, but surplus in ’08/09
- Prices expected to remain steady firm in 2008 with inventories low but ease from 2007 levels
Nickel Prices, Spot & Deflated
Annual Averages, CPI/GNP Deflated
Tin Market Review
Tin Spreads
spreads tighten over last few years, ease recently
Refined Consumption of Tin
consumption growth slows, except China & RoW
Tin Consumption vs. IP Growth

Tin consumption correction in ’07, rebound in ’08 and ’09

The chart above shows the comparison between Tin Consumption and IP Growth from 1997 to 2009. The consumption figures show a significant correction in 2007, followed by a rebound in 2008 and 2009.
Mine and Refined Production

production stabilizes
Chinese Production, Consumption

Consumption grows faster than production
LME Stocks, LME stocks rise, *then steady*
## Tin Supply-Demand Outlook

Consumption slows/recovers, EW trade up, prod slips ’07, steady in ’08 & ’09

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</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>
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<tbody>
<tr>
<td>2003</td>
<td>218</td>
<td>146</td>
<td>170</td>
<td>21</td>
<td>10</td>
<td>202</td>
<td>-11</td>
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<td>9.1</td>
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<td>231</td>
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<td>-5</td>
<td>8</td>
<td>225</td>
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<td>9</td>
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<td>10</td>
<td>215</td>
<td>6</td>
<td>34</td>
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<tr>
<td>2008</td>
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<td>195</td>
<td>7</td>
<td>9</td>
<td>211</td>
<td>3</td>
<td>37</td>
<td>9.4</td>
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<tr>
<td>2009</td>
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<td>198</td>
<td>7</td>
<td>9</td>
<td>214</td>
<td>-7</td>
<td>30</td>
<td>7.2</td>
</tr>
</tbody>
</table>
Total Stocks, Weeks Usage
stocks tight:’08 -’09

total stocks, kt

weeks use

- Total
- LME
- Weeks
Weeks Usage vs. Price
stocks ratio outlook: 9 to 7 wks
LME Stocks vs Price, current: $16,500; 12,000 tonnes
Tin Price Outlook
low stocks support price

$3,000 $5,000 $7,000 $9,000 $11,000 $13,000 $15,000 $17,000 $19,000

'90 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07

MF Global
Tin Outlook

• Tin consumption to rebound in 2008, after 2007 correction
• Moderate primary capacity builds in 07 & 08, prod steady
• China consumption firm, offsetting production builds
• Inventories low, surplus then deficit markets in ’08 & ’09
• Prices expected to remain firm in 2007 and 2008 with inventories low.