

# Base Metals Outlook



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*Moody's: A-, S&P: BBB+, Fitch: BBB+*

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Energy, Agricultural,  
**and Metals**

Equities, CFDs, Stock Indices  
Cash Bonds, Funds Clearing,  
Locals, Professional, & Retail

USFE

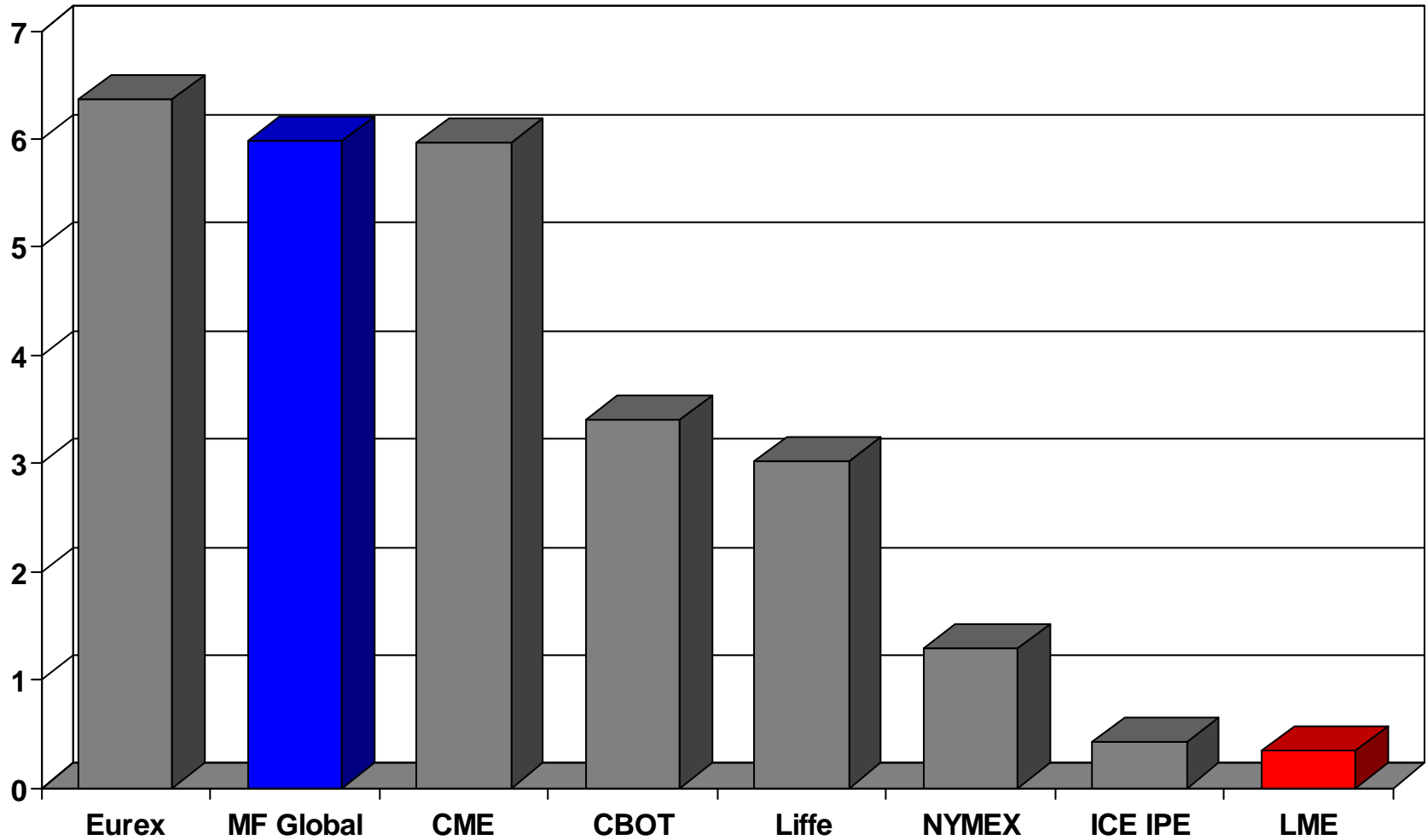
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# Trading Volumes (millions; lots/day)



# Ring Dealing Member of the LME

**LME**

**Futures and Options  
and Clearing**

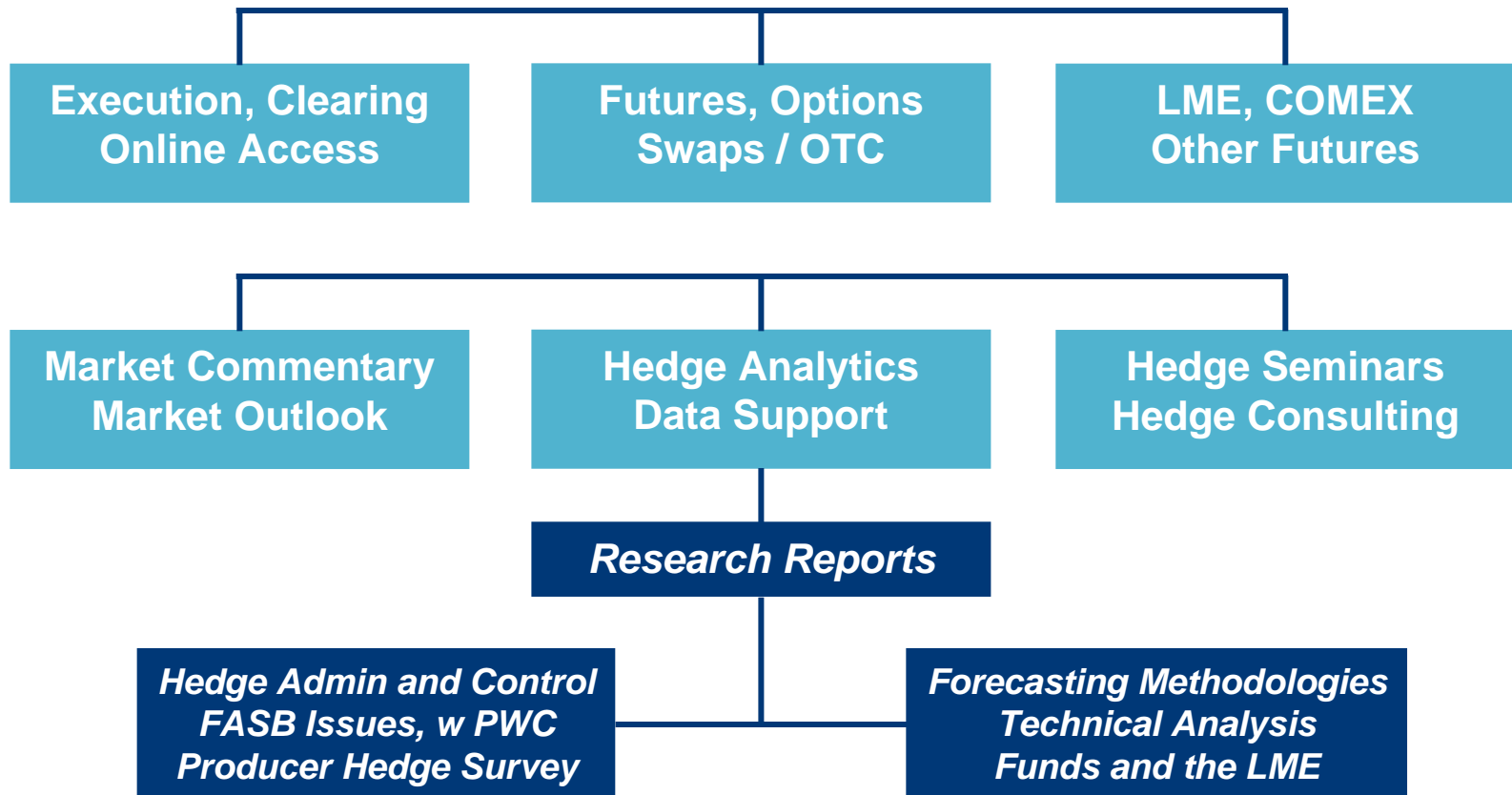
**COMEX**

**OTC / Swap  
FX and Bullion**



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# Metals Division, *Metals Services*



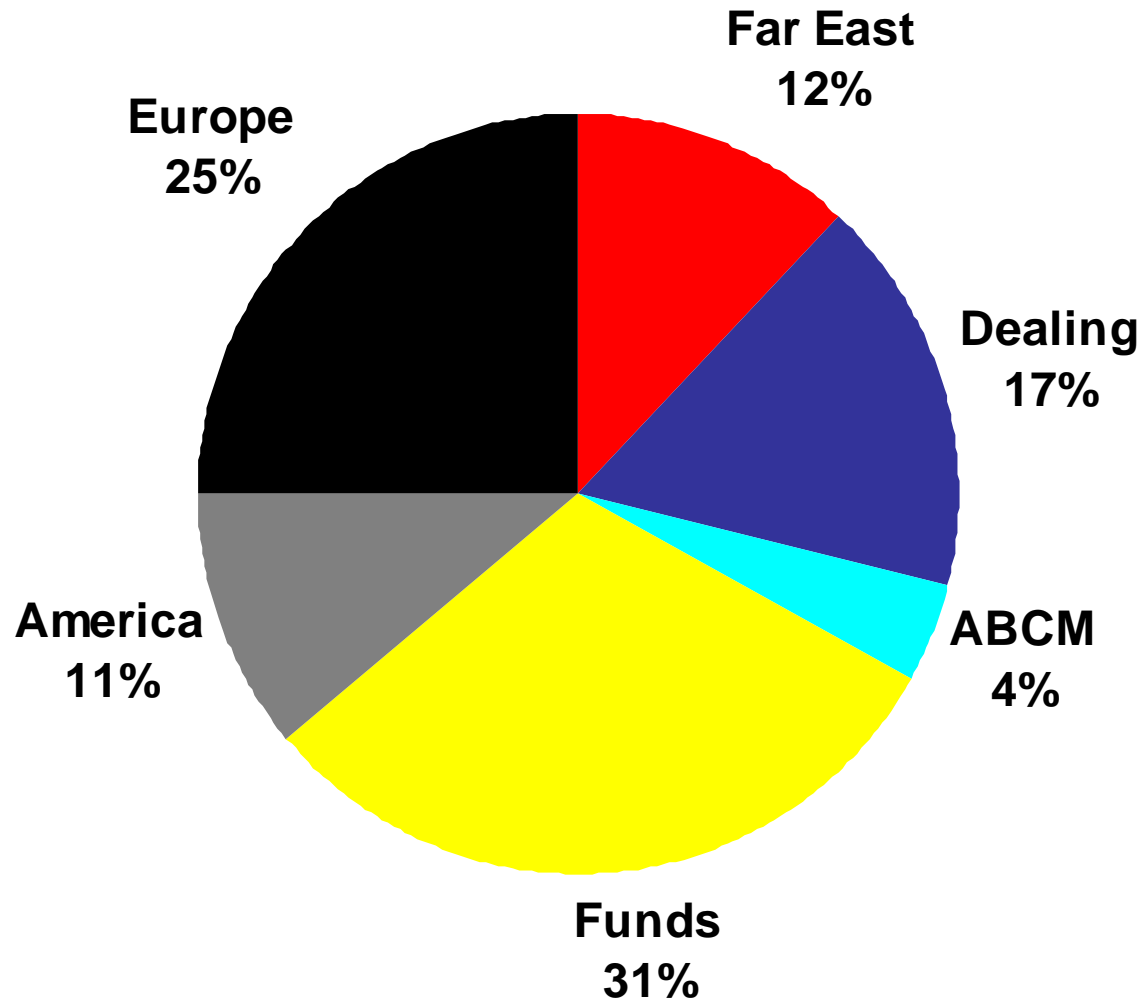
# Metals Group

## MF Global Metals Offices

## MF Global Metals Strategic Partners



# Metals Business Distribution



# Risk

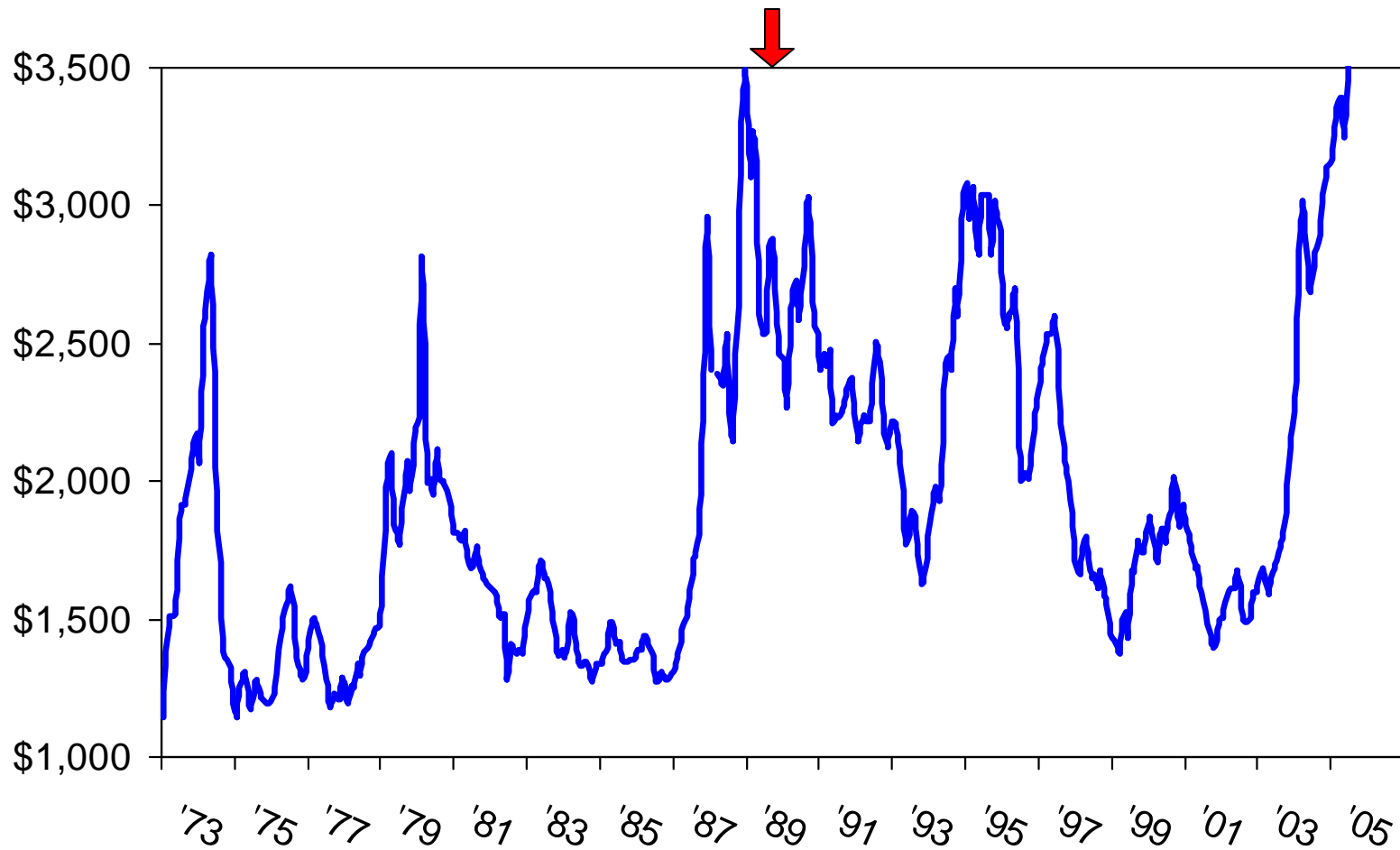
CURRENCIES . INTEREST RATES . EQUITIES . COMMODITIES . CREDIT

2004, 2005, 2006, 2007 **Broker Rankings**  
*international survey of  
 corporate risk managers*

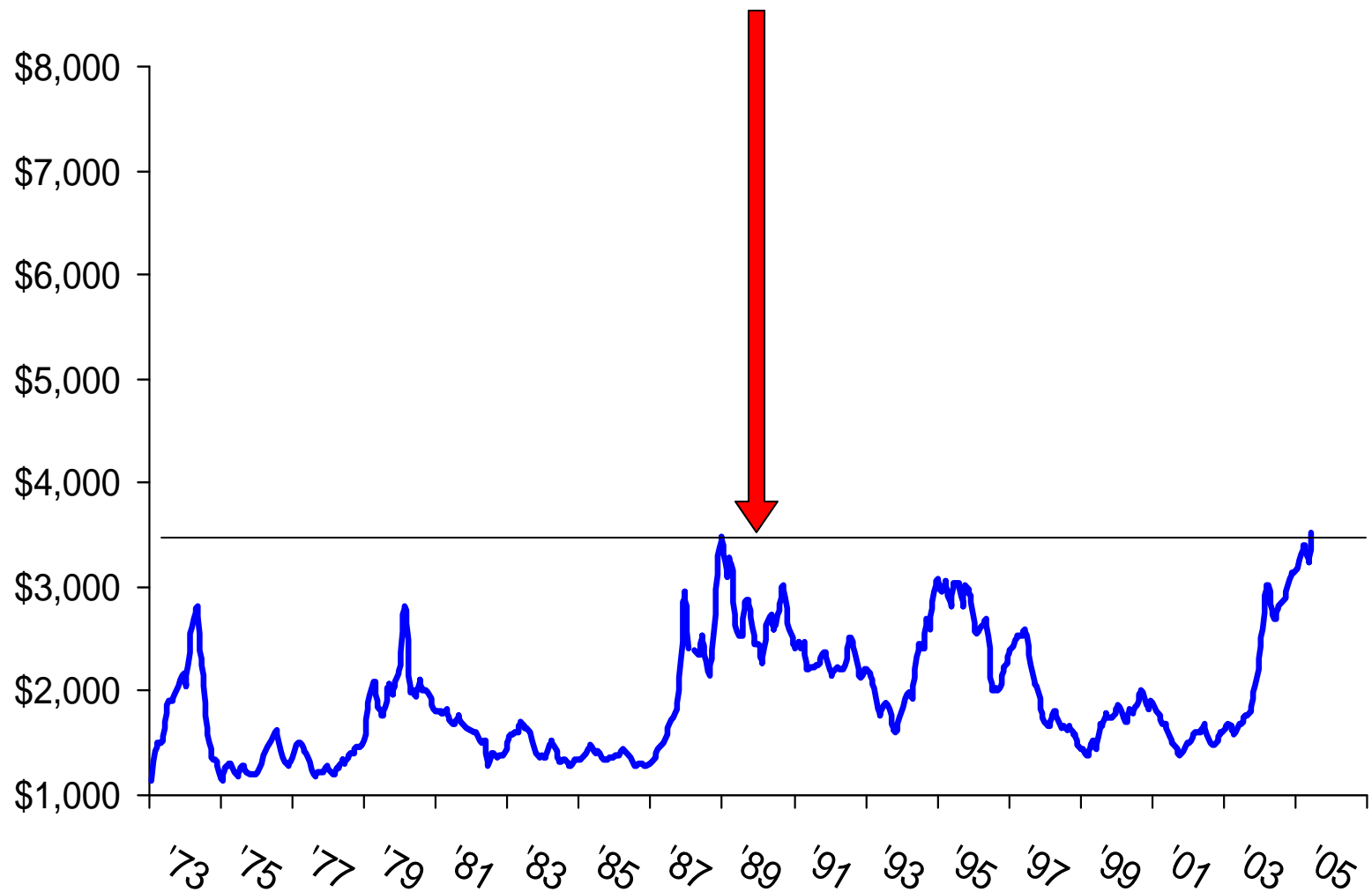
		<u>2004 Rank</u>	<u>2005 Rank</u>	<u>2006 Rank</u>	<u>2007 Rank</u>
<b>COPPER</b>	Cash	MF Global #1	MF Global #1	MF Global #1	MF Global #1
	Forwards	MF Global #1	MF Global #1	MF Global #1	MF Global #1
	Options	MF Global #1	MF Global #2	MF Global #1	MF Global #1
<b>ALUMINUM</b>	Cash	MF Global #1	MF Global #1	MF Global #1	MF Global #1
	Forwards	MF Global #2	MF Global #1	MF Global #1	MF Global #1
	Options	MF Global #1	MF Global #1	MF Global #1	MF Global #1
<b>OTHER BASE METALS</b>	Cash	MF Global #1	MF Global #2	MF Global #1	MF Global #2
	Forwards	MF Global #1	MF Global #1	MF Global #1	MF Global #2
	Options	MF Global #1	not surveyed	MF Global #1	MF Global #3
<b>BASE METALS</b>	Structure	not surveyed	not surveyed	MF Global #1	MF Global #2

# Metals Outlook

# Copper Prices, \$/metric tonne

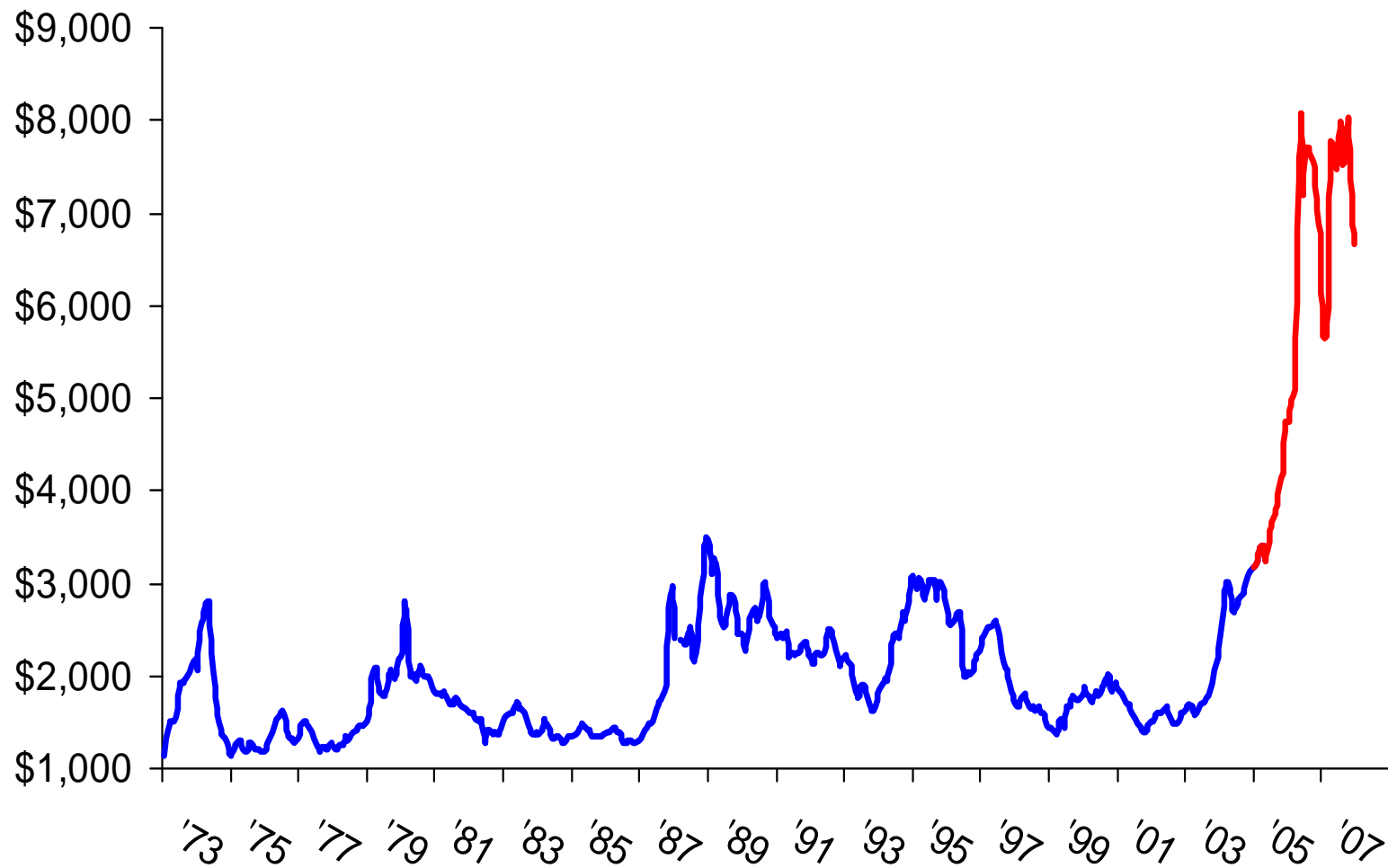


# Copper Prices, \$/metric tonne





# Copper Prices, \$/metric tonne



## **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**

Demand,  
Economic  
Cycle



Stocks,  
Stock  
Change,  
&  
**Stocks  
Ratio**

**PRICE**



?

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

Supply





# Structural Model for Metals Prices

Economic Growth  
Substitutes, Tech,  
Econ Cycle,  
**PRICE**

Demand,  
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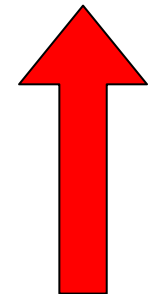
Stocks,  
Stock  
Change,  
&  
**Stocks  
Ratio**



**PRICE**

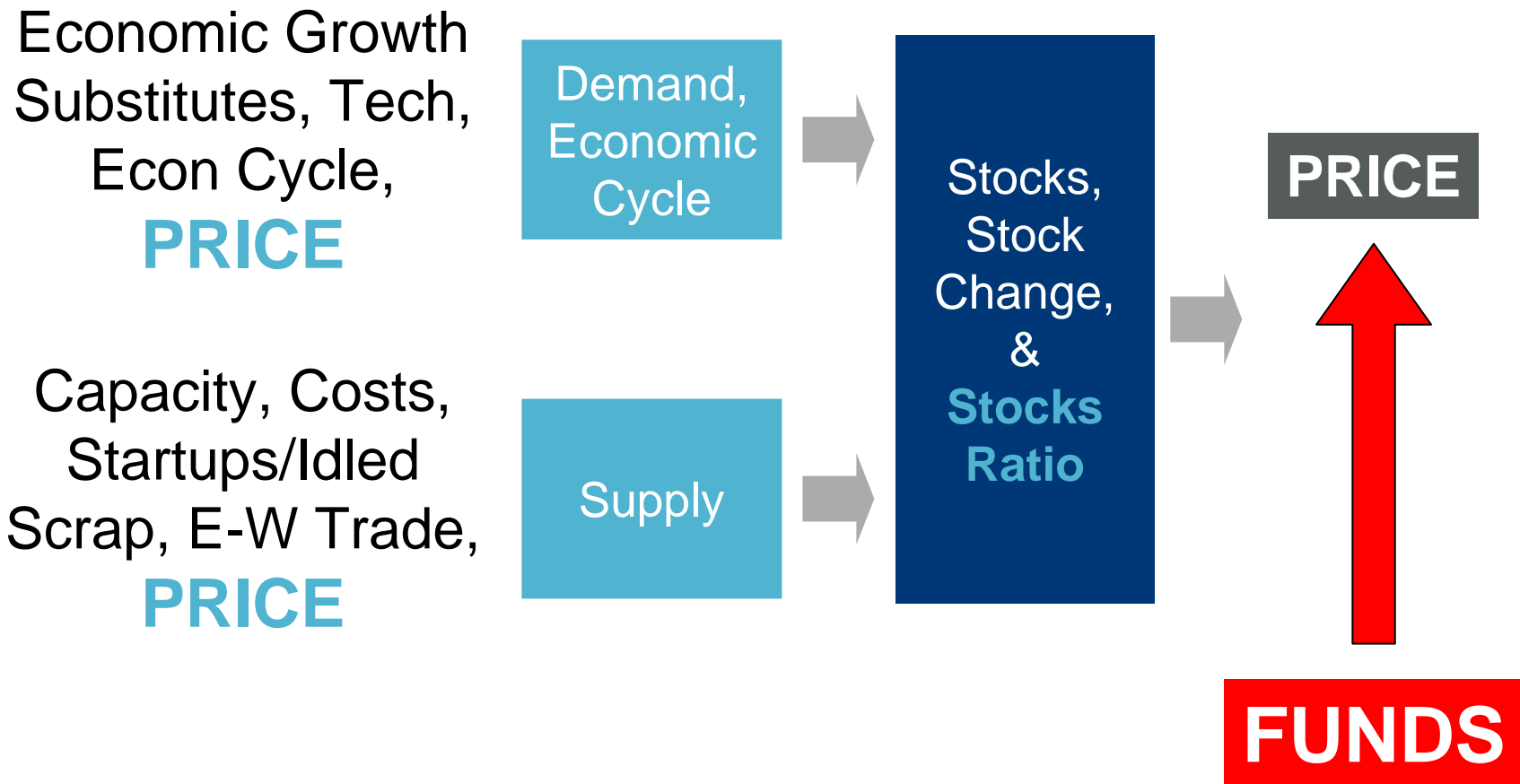
Capacity, Costs,  
Startups/Idled  
Scrap, E-W Trade,  
**PRICE**

Supply

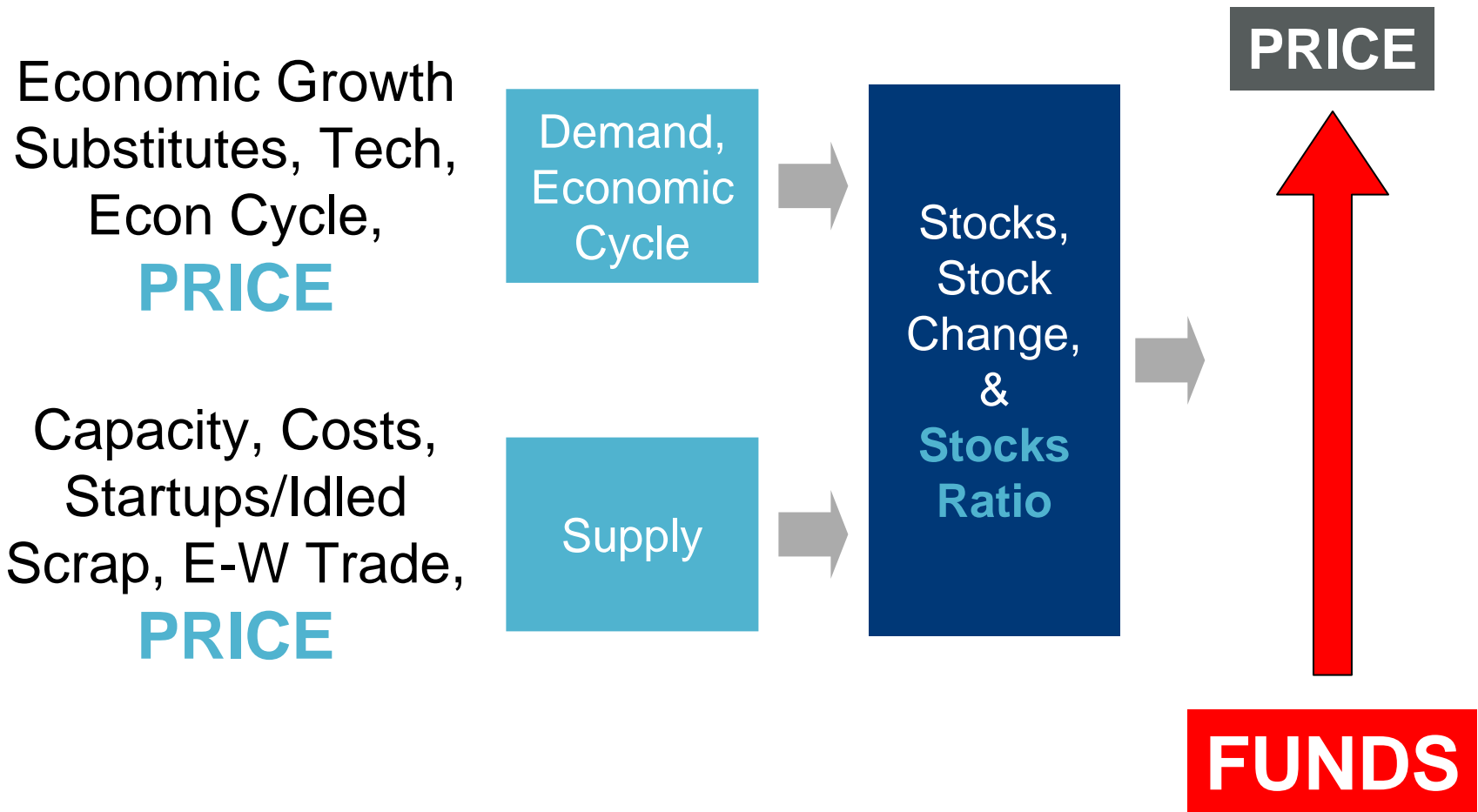


**FUNDS**

# Structural Model for Metals Prices



# Structural Model for Metals Prices



# 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...

- **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*

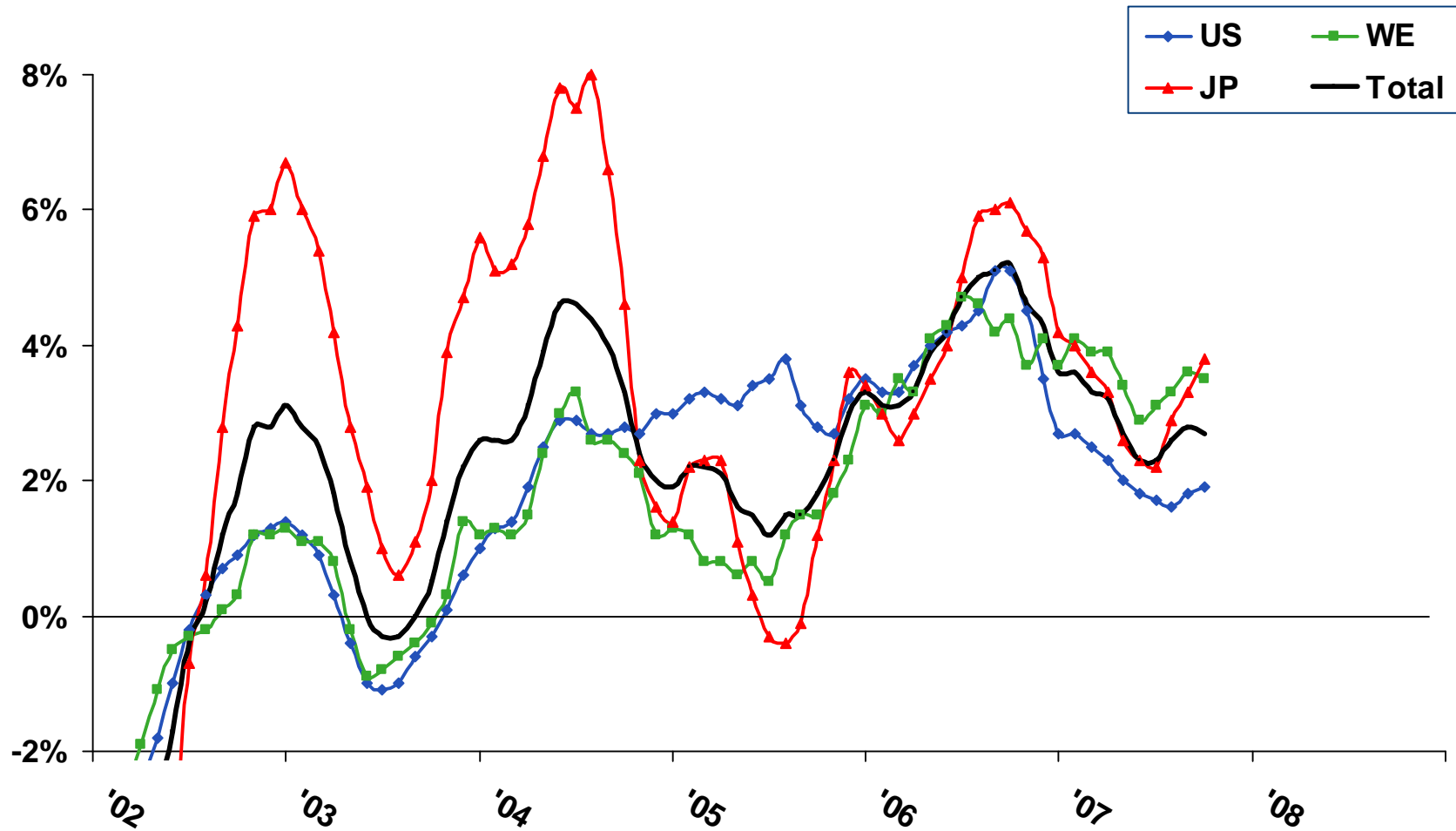
	<u>Copper</u>	<u>Alum</u>	<u>Zinc</u>	<u>Lead</u>	<u>Nickel</u>	<u>Tin</u>
2008 Q1	\$7,400	\$2,524	\$2,621	\$2,555	\$31,172	\$16,933
2008 Q2	\$7,500	\$2,600	\$2,500	\$2,150	\$31,000	\$16,500
2008 Q3	\$6,700	\$2,400	\$2,300	\$2,500	\$28,000	\$14,500
<u>2008 Q4</u>	<u>\$6,250</u>	<u>\$2,200</u>	<u>\$2,200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

## Reuters Poll (Jan 2008)

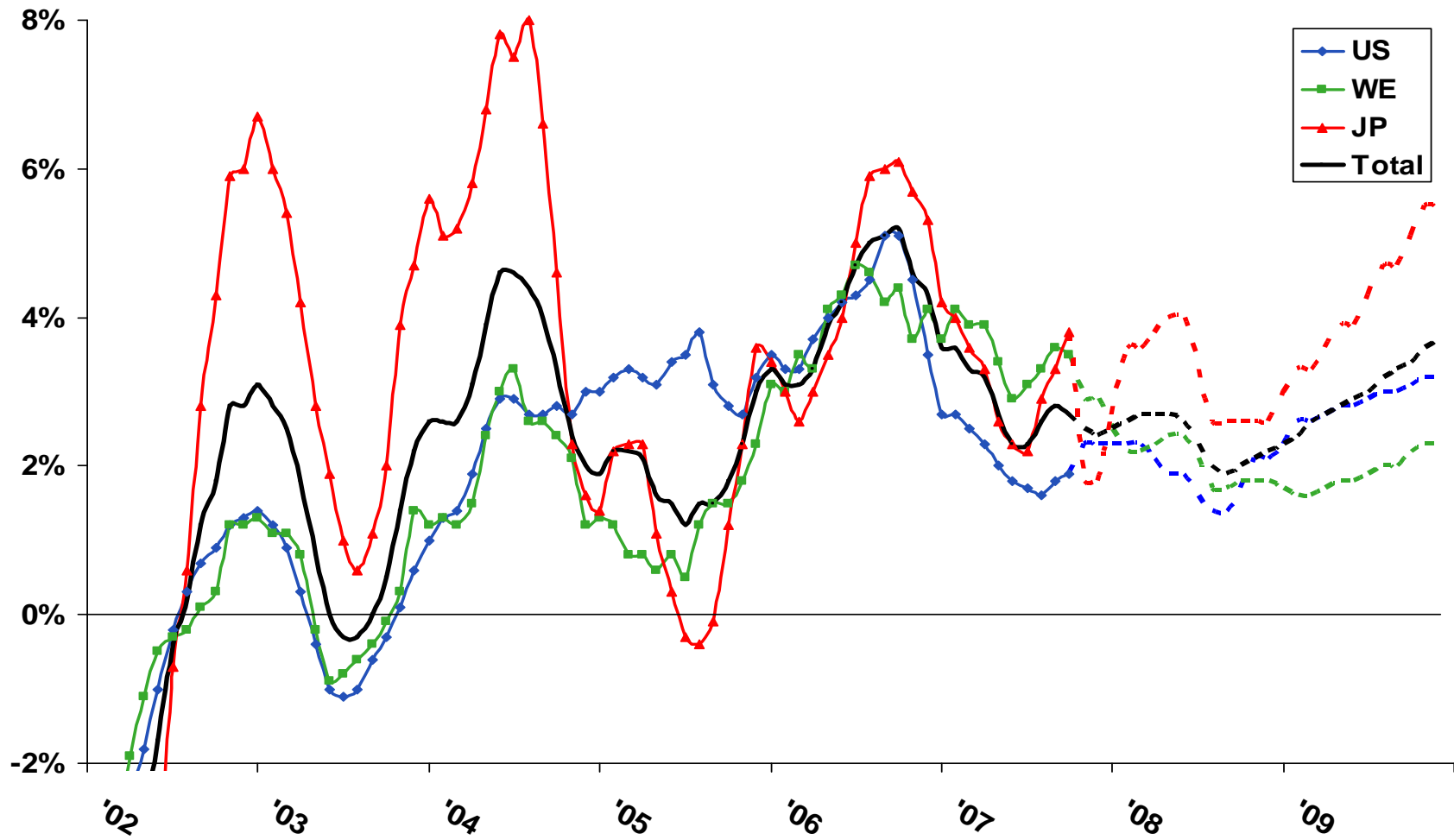
2008 Avg	\$6,779	\$2,516	\$2,481	\$2,520	\$28,496	\$15,387
2009 Avg	\$6,118	\$2,527	\$2,271	\$1,982	\$25,046	\$12,906

# Economic Outlook

# Global IP, *economic growth stabilizes*

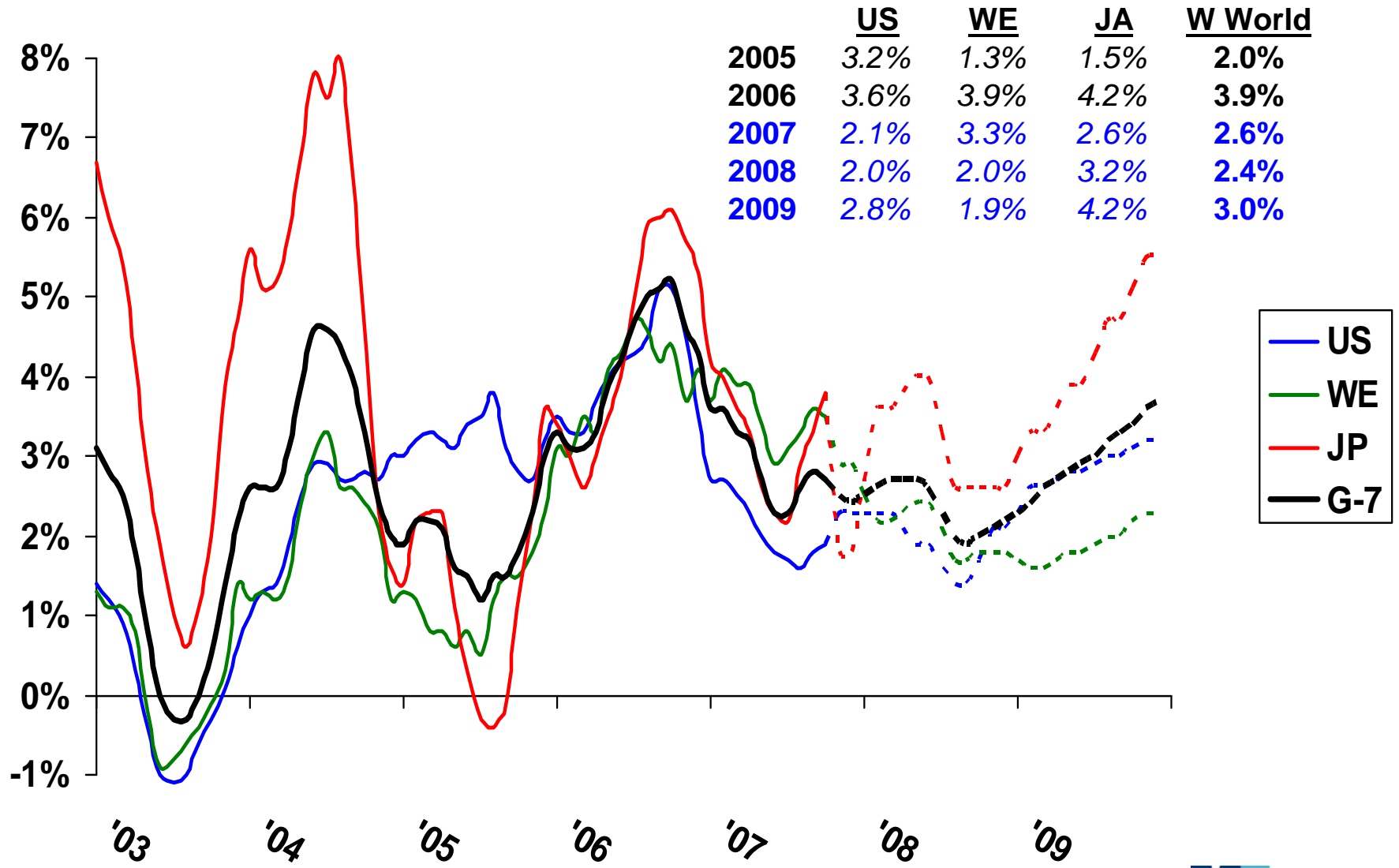


# Global IP, *moderate rebound 2008 and 2009*





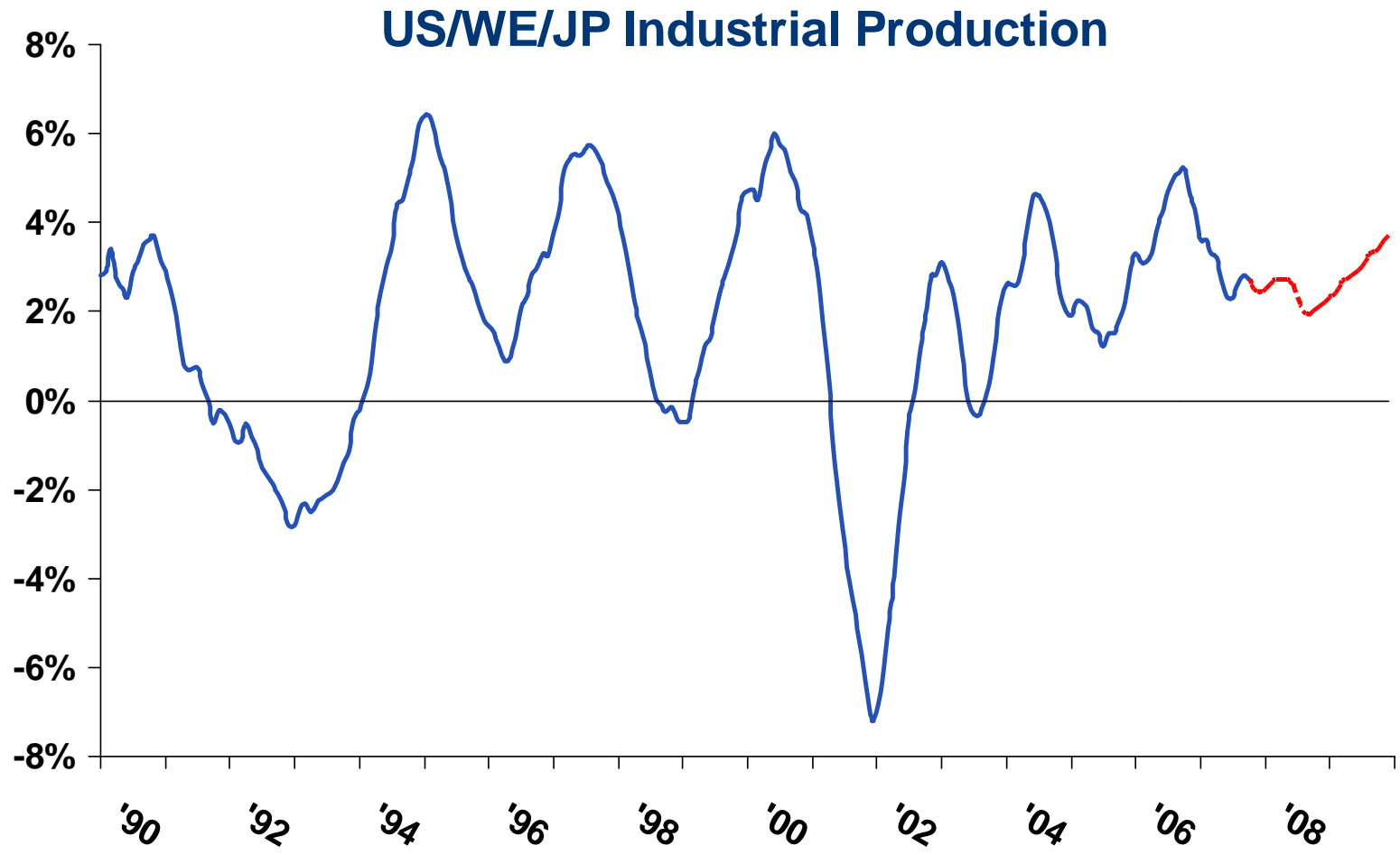
# Industrial Production Outlook: *rebound 2008/2009*



# Consensus Economics IP Forecasts, '07 steadies, '08 eases

<u>Year '07</u>	<u>US</u>	<u>WE</u>	<u>JP</u>	<u>FW</u>
<i>07 Q1</i>	2.2%	2.3%	2.5%	<b>2.4%</b>
<i>07 Q2</i>	2.0%	2.9%	2.8%	<b>2.6%</b>
<i>07 Q3</i>	2.0%	3.0%	2.4%	<b>2.5%</b>
<i>Oct-07</i>	2.1%	3.0%	2.3%	<b>2.5%</b>
<i>Nov-07</i>	2.1%	3.3%	2.5%	<b>2.6%</b>
<i>Dec-07</i>	2.1%	3.4%	2.7%	<b>2.7%</b>
<u>Year '08</u>	<u>US</u>	<u>WE</u>	<u>JP</u>	<u>FW</u>
<i>07 Q1</i>	3.2%	2.1%	2.9%	<b>2.7%</b>
<i>07 Q2</i>	3.0%	2.3%	3.1%	<b>2.7%</b>
<i>07 Q3</i>	2.8%	2.4%	3.2%	<b>2.8%</b>
<i>Oct-07</i>	2.7%	2.2%	3.1%	<b>2.7%</b>
<i>Nov-07</i>	2.5%	2.1%	3.0%	<b>2.5%</b>
<i>Dec-07</i>	1.9%	2.1%	2.7%	<b>2.2%</b>

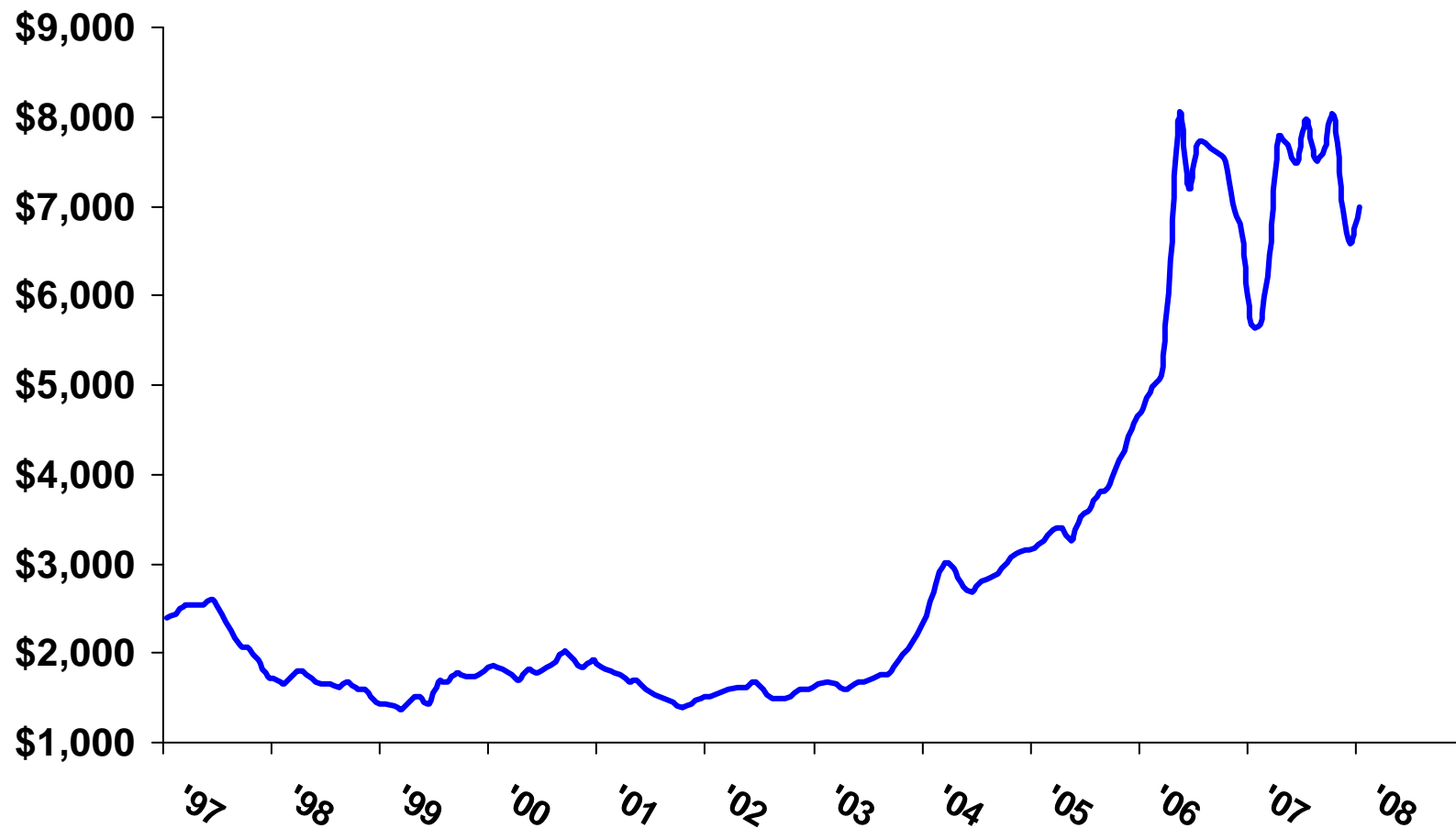
# Global IP: *moderate rebound in 2.5% to 3.0% range*



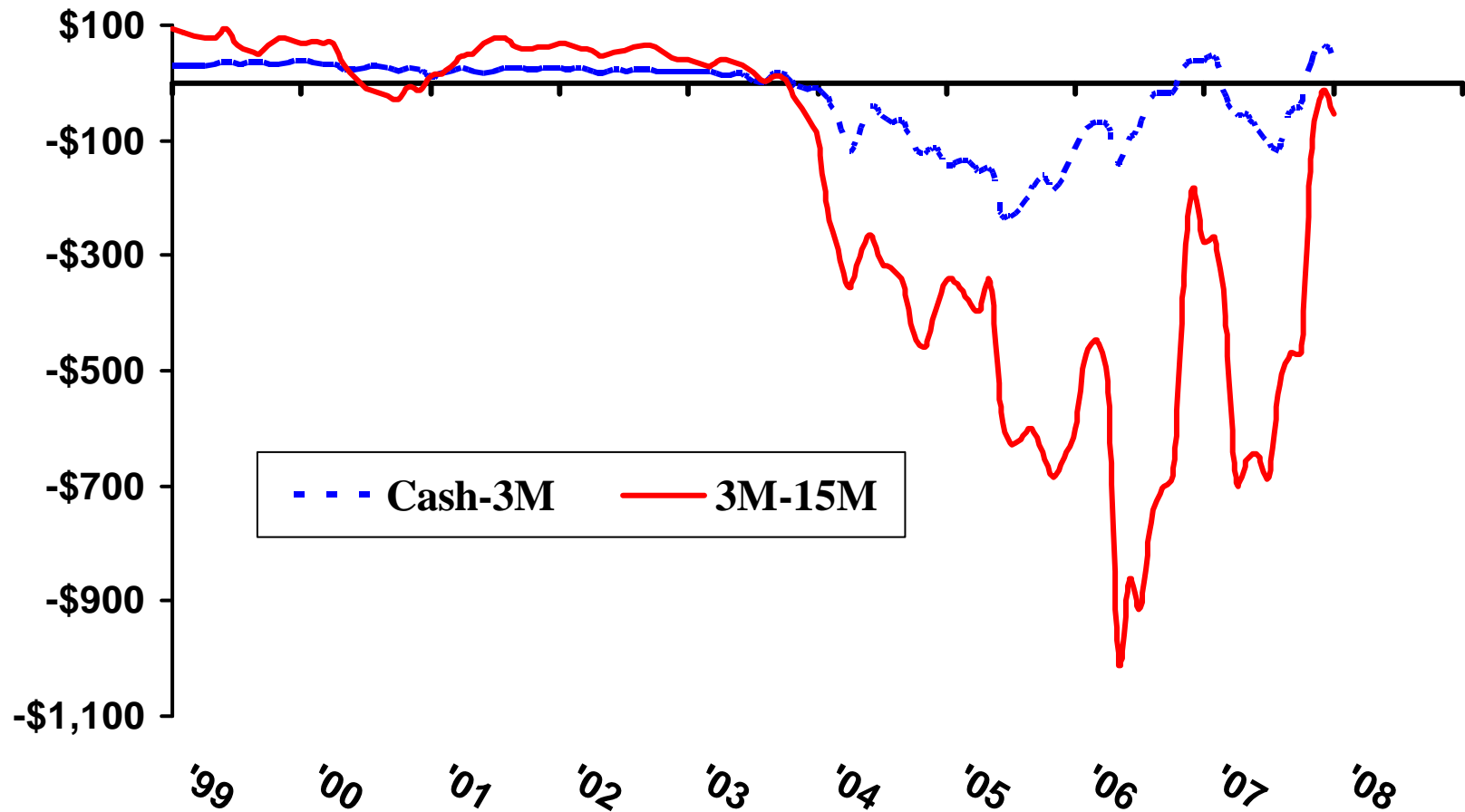
# Copper Market Review



# Copper Prices, \$/metric tonne



# Copper Spreads, *Spreads Tighten than Ease*



# Copper Prices vs Spread

High Prices, Backwardations; Low Prices, Contangos

- **Current:**

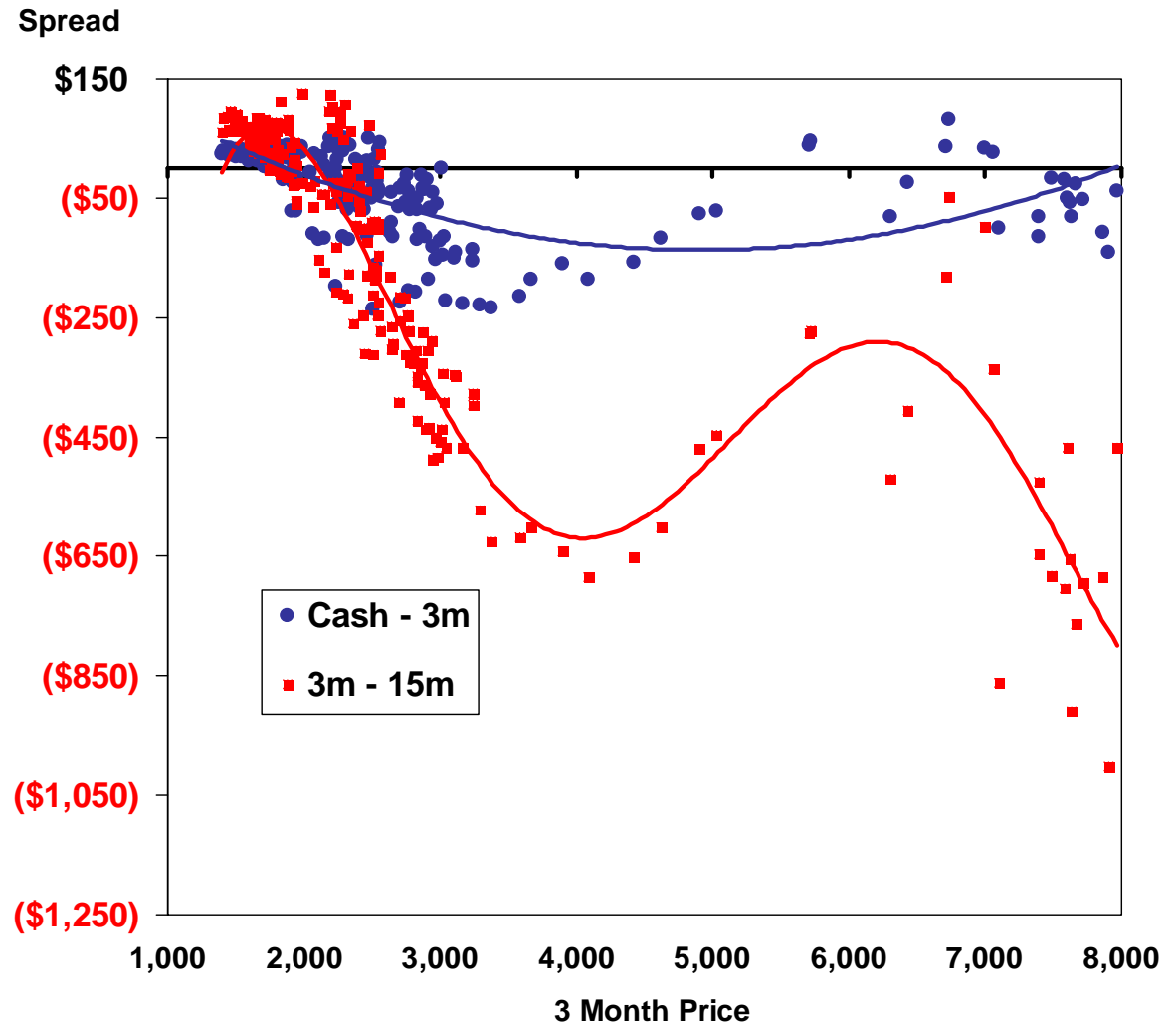
- \$6,750/tonne

- c-3m: \$80c

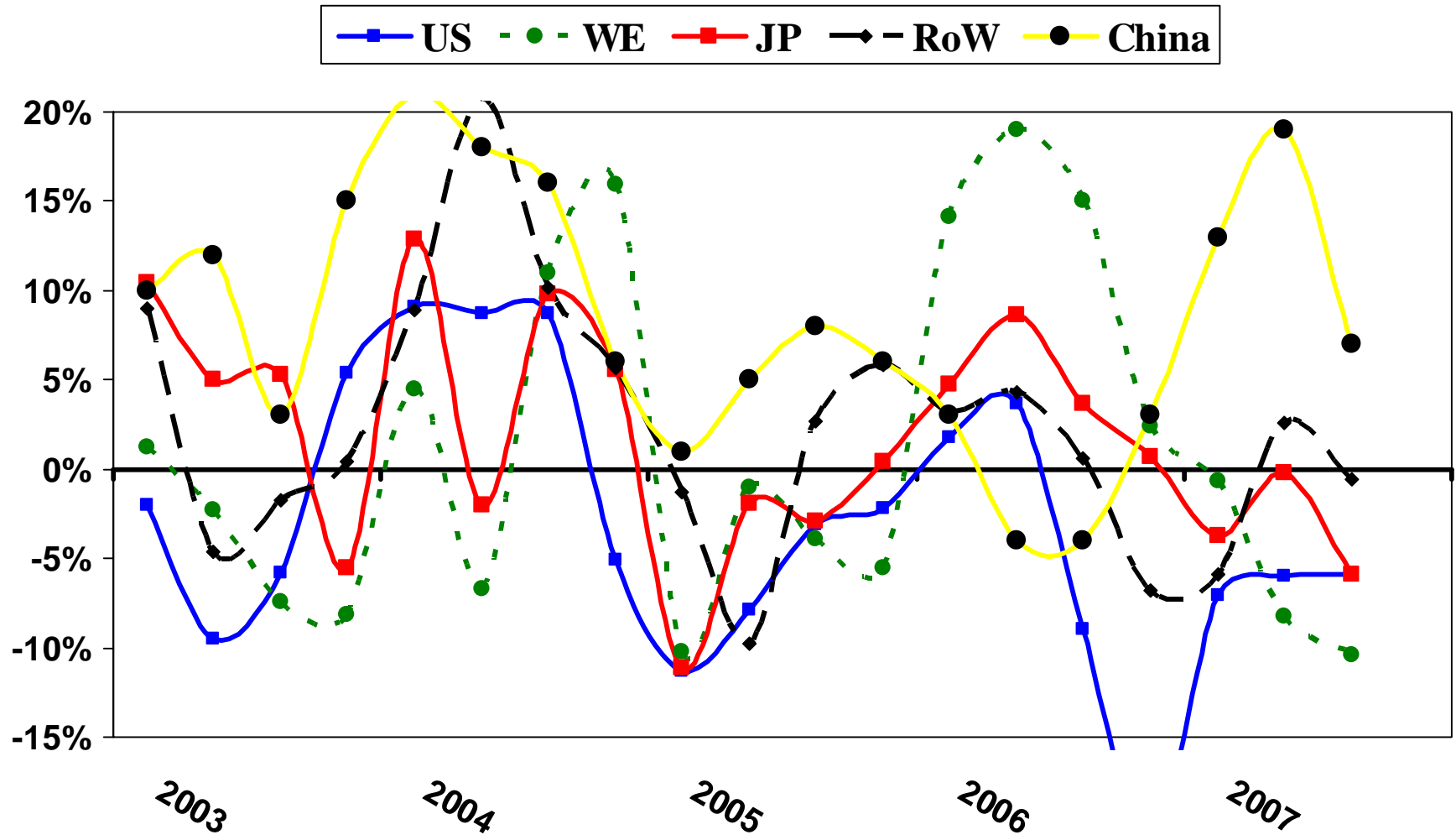
- 3m-15m: \$50b

- **3m equilibrium:**

- **\$1,800 - \$2,000**

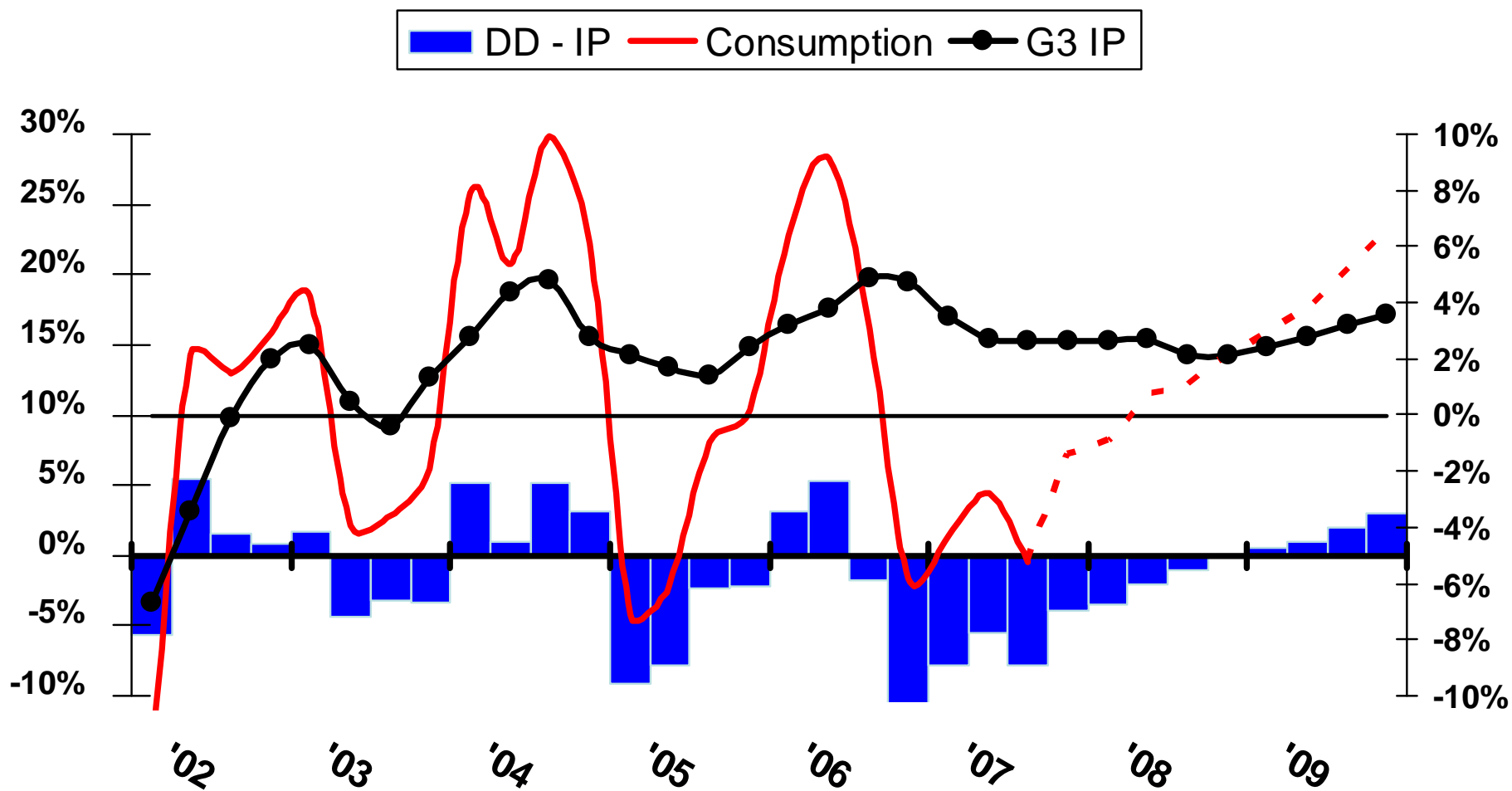


# Copper Consumption, by Region



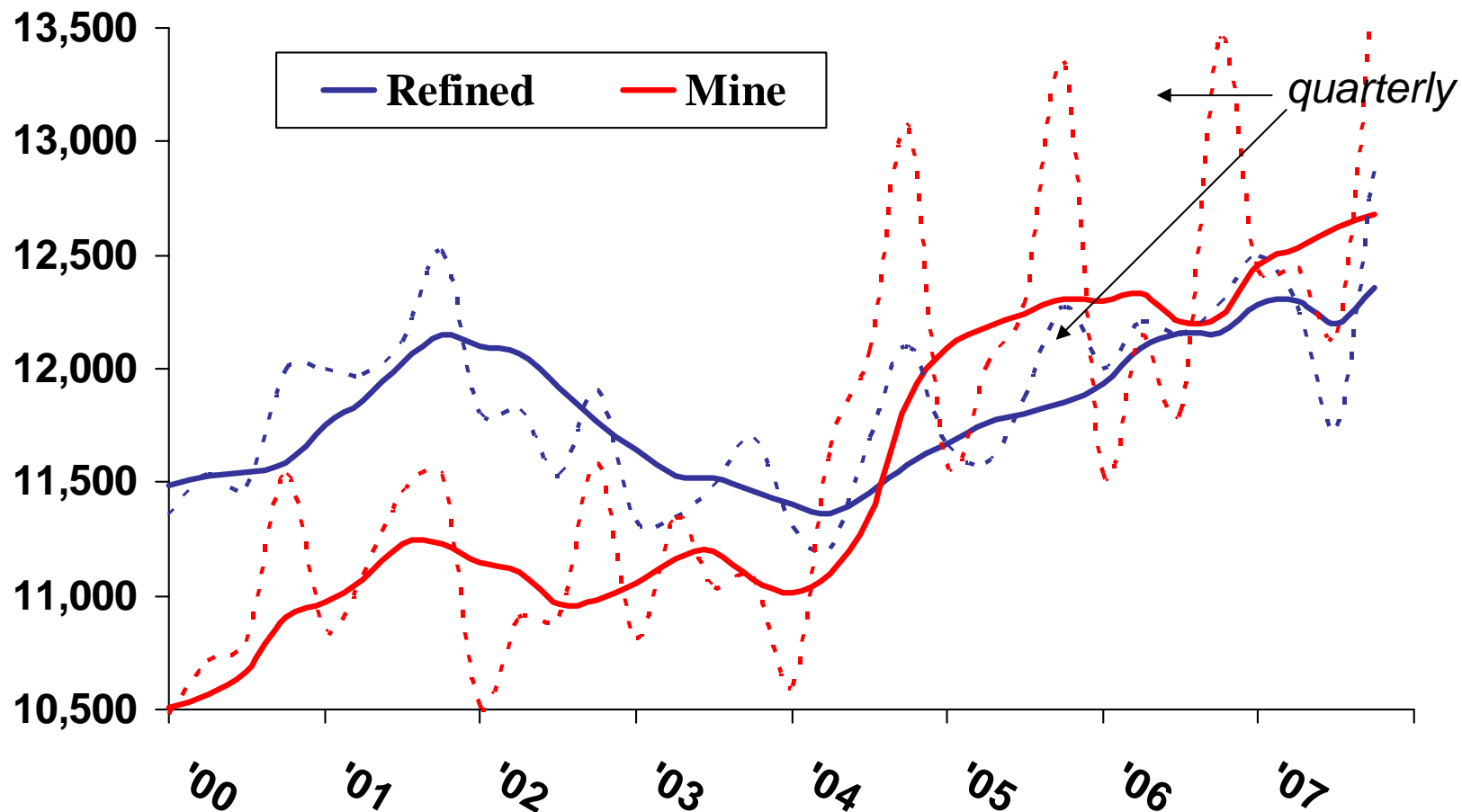
# Copper Consumption vs IP Growth

Copper Consumption to be Supported by Economic Recovery



# Production Slowdown

high prices lead to restarts, new capacity & expn  
BUT labor problems and lower grade ores curtail output



# New / Expanded Copper Capacity, kt

- **Chile Projects**

(Escondida, Chuquibambilla, Pelambres, Collahuasi, Abra, Radomiro, Teniente, Candelaria)

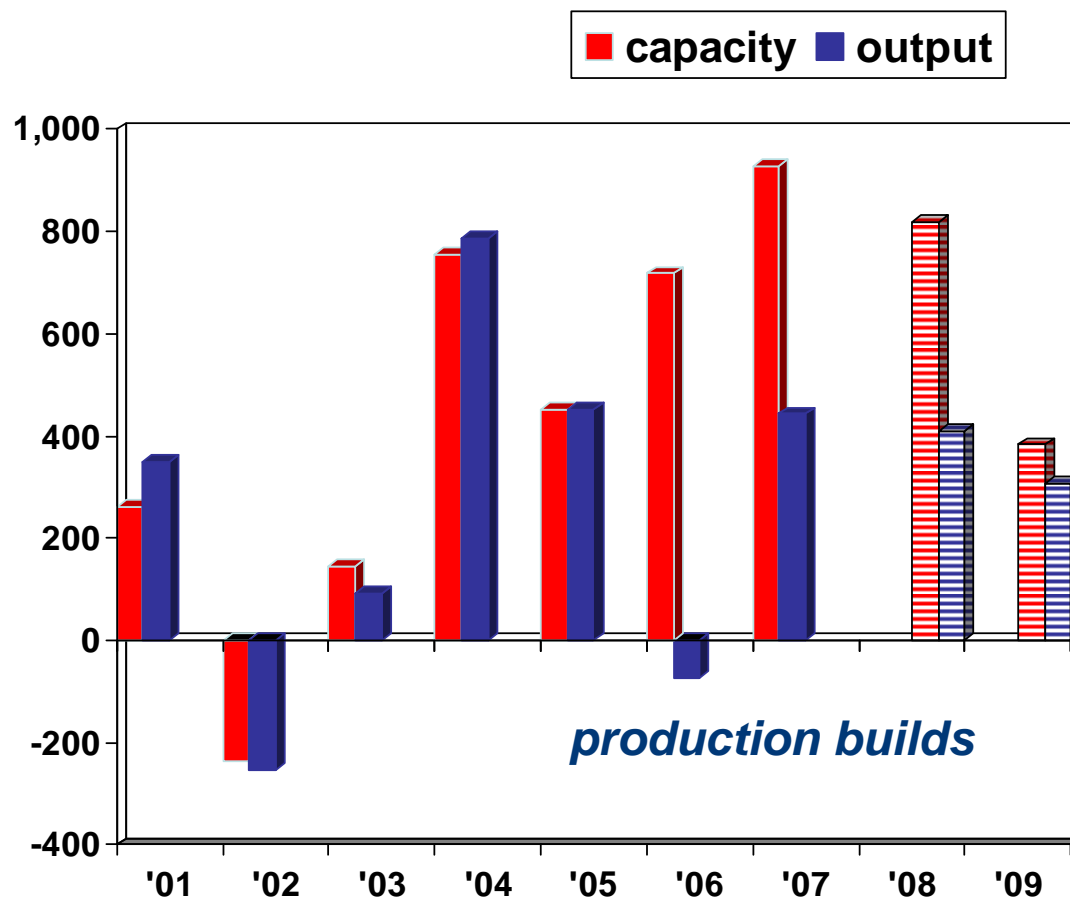
- **United States Projects**

(Morenci & Bingham)

- **Indonesian Projects**

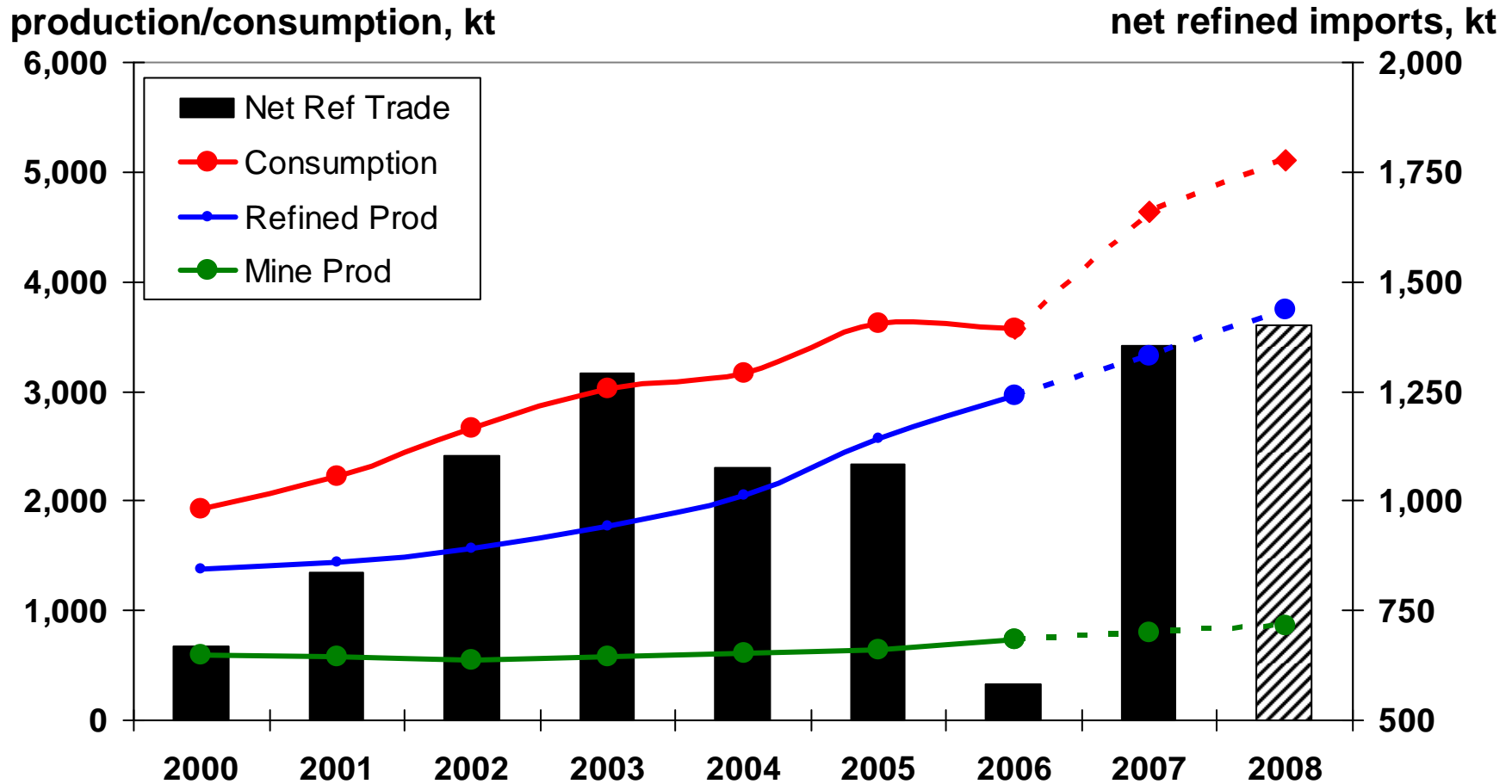
(Grasberg & Batu Hijau)

- **Future Chile, Zambia & Mongolia Startups**



# China Copper, Supply-Demand, kt

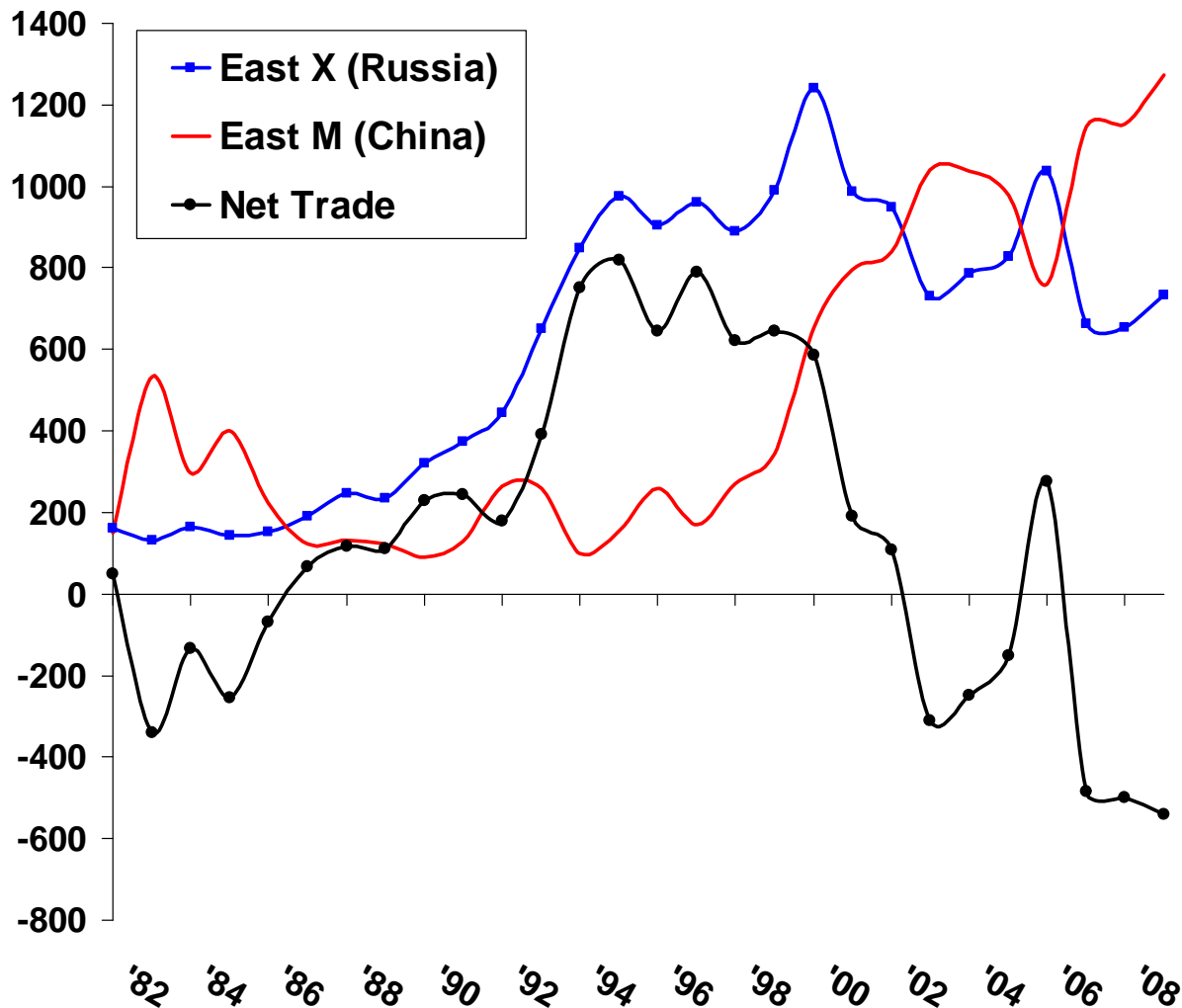
SRB sales in '06 curtails "imports & consumption"; rebound in 2007 & 2008



# Copper East to West Trade Improves

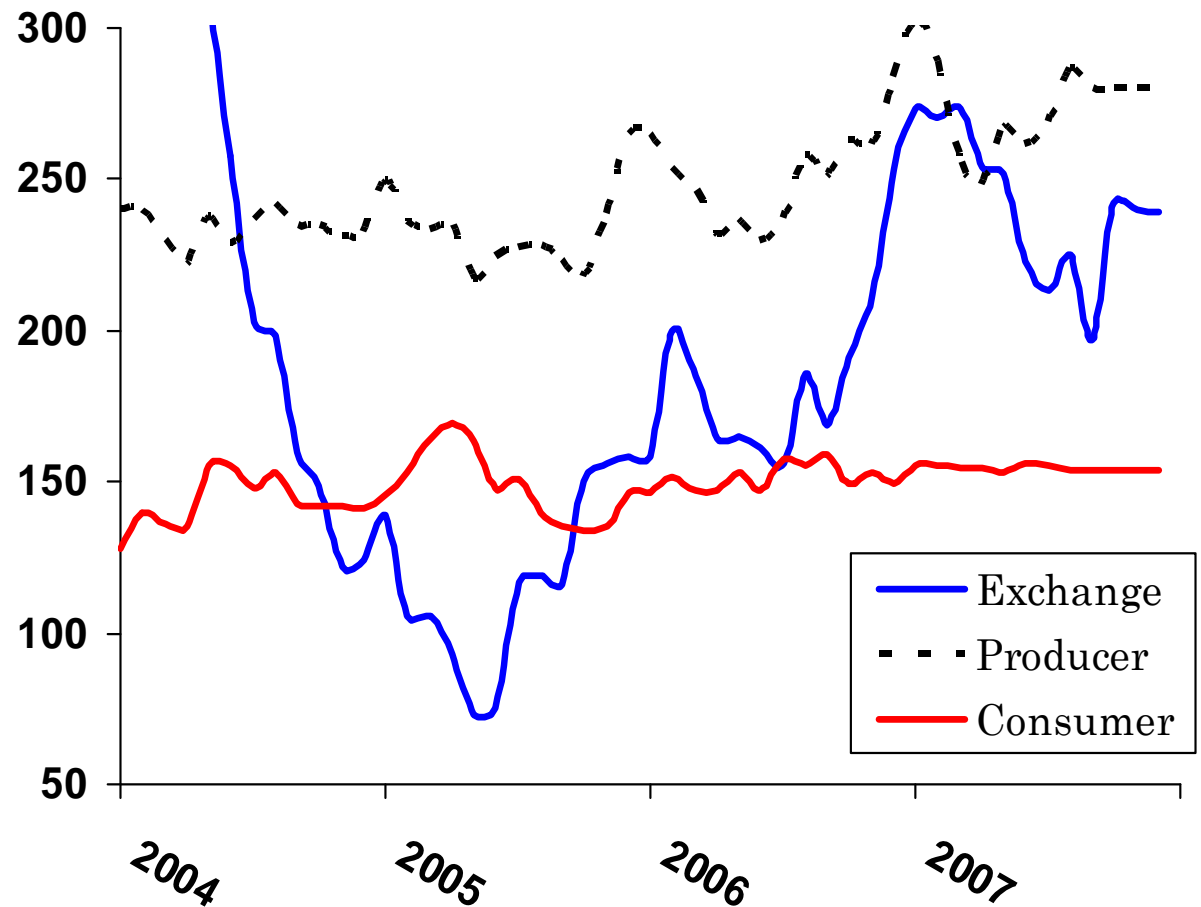
significant structural shift with China

- FSU exports increase
- Chinese **rebound**
- Net East to West trade **improves** after weak 2006



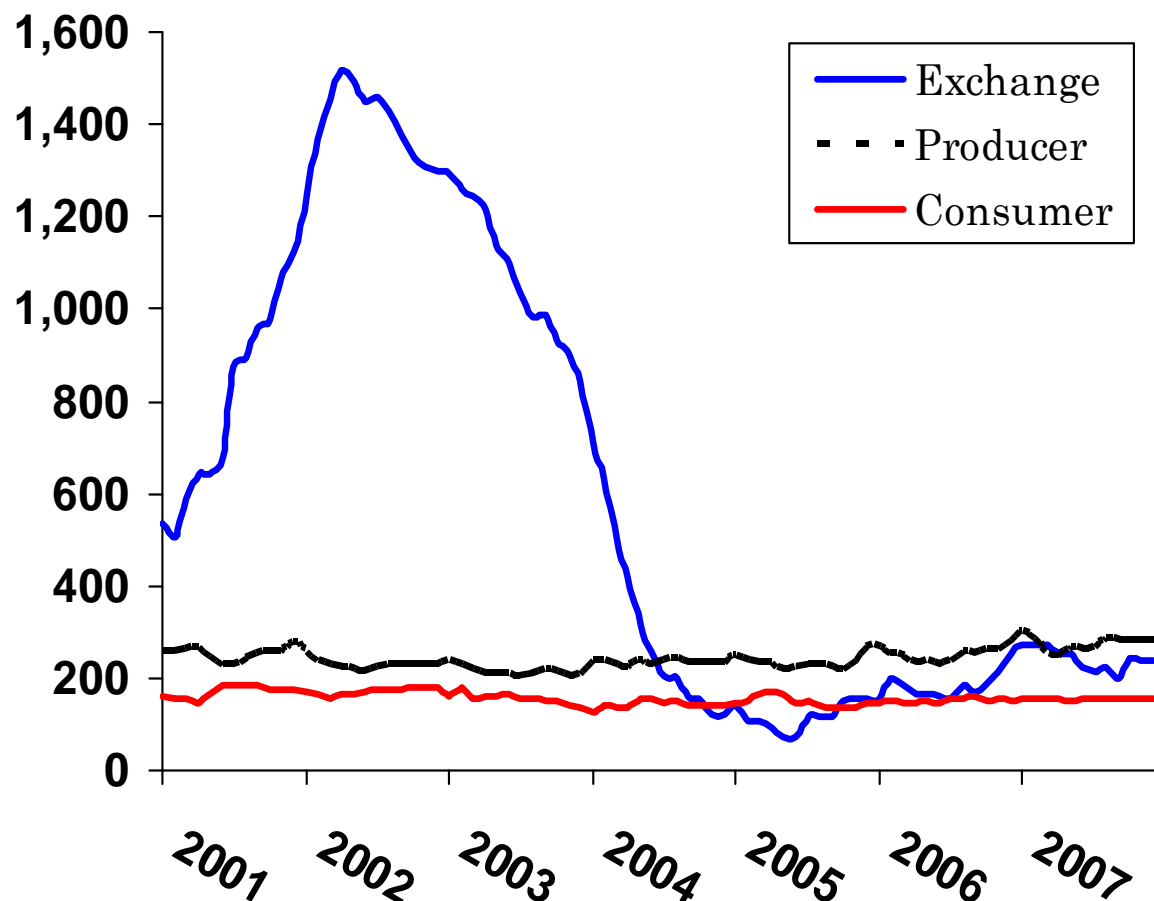
# Global Copper Inventories

- exchange stocks increase since 2005
- producer, consumer well managed



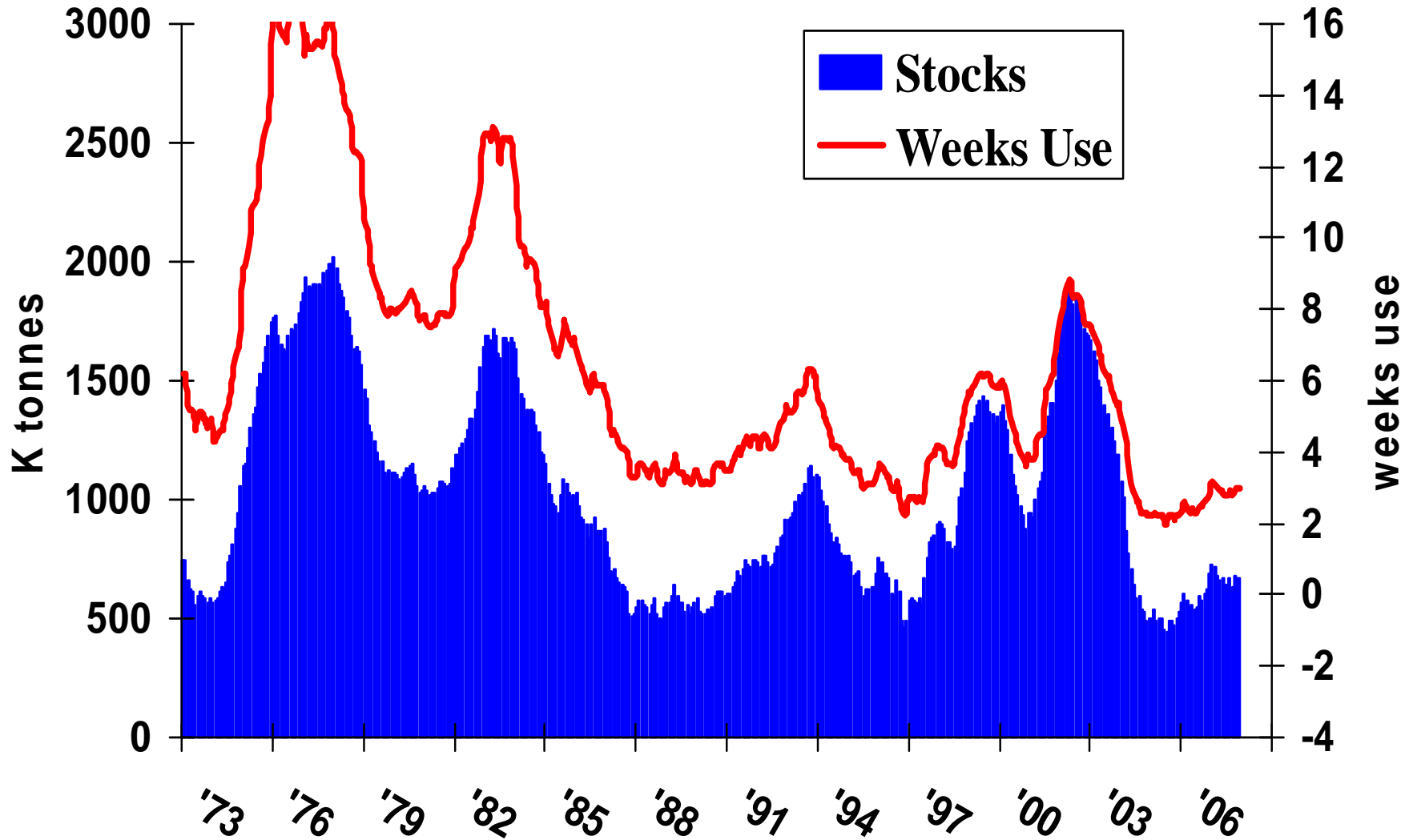
# Global Copper Inventories

- 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

	<u>07Q3</u>	<u>07Q4</u>	<u>08Q1</u>	<u>08Q2</u>	<u>08Q3</u>	<u>08Q4</u>	<u>09Q1</u>	<u>09Q2</u>	<u>09Q3</u>	<u>09Q4</u>
<u>Refined Consumption</u>	<u>2,908</u>	<u>2,785</u>	<u>2,929</u>	<u>3,129</u>	<u>2,940</u>	<u>2,844</u>	<u>3,015</u>	<u>3,247</u>	<u>3,092</u>	<u>3,031</u>
	-5.2%	-1.4%	-0.9%	0.7%	1.1%	2.1%	2.9%	3.8%	5.2%	6.6%
Mine Production	3,040	3,417	3,210	3,213	3,142	3,519	3,291	3,295	3,224	3,601
<u>East to West Trade</u>	<u>-46</u>	<u>-91</u>	<u>-121</u>	<u>-121</u>	<u>-126</u>	<u>-131</u>	<u>-131</u>	<u>-131</u>	<u>-136</u>	<u>-141</u>
Total Supply	2,890	3,135	3,049	3,024	2,950	3,197	3,118	3,116	3,038	3,298
	-7%	0%	3%	4%	2%	2%	2%	3%	3%	3%
Reported Balance	-10	42	107	-126	-56	230	59	-147	-103	158
Stocks	630	673	780	654	598	828	886	739	636	794
Stocks Usage Ratio	2.8	3.0	3.5	2.9	2.6	3.6	3.9	3.2	2.7	3.3

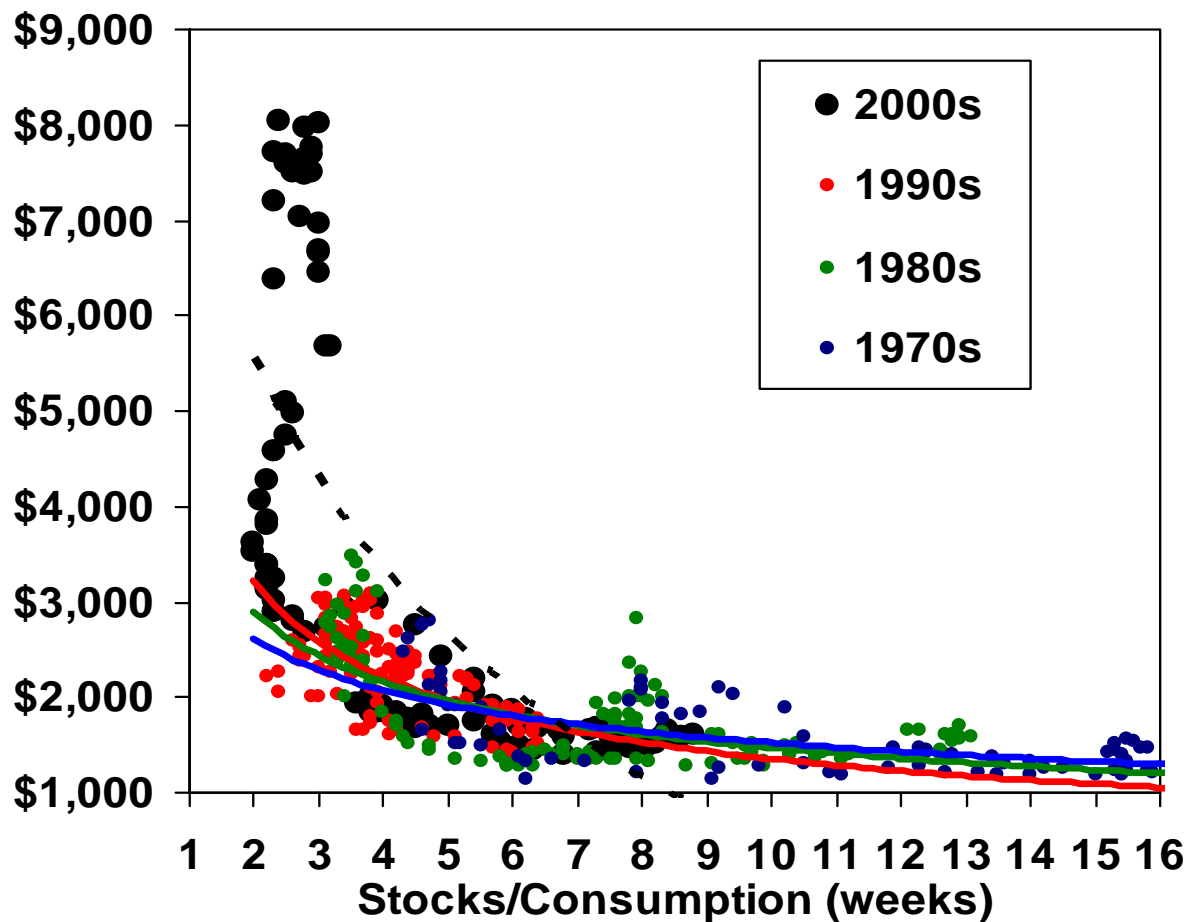
# Copper Supply-Demand Balance

	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<u>Refined Consumption</u>	<u>12,247</u> 7.8%	<u>11,810</u> -3.6%	<u>12,177</u> 3.1%	<u>11,756</u> -3.5%	<u>11,842</u> 0.7%	<u>12,385</u> 4.6%
Mine Production	11,856	12,307	12,234	12,676	13,085	13,410
<u>East to West Trade</u>	<u>-249</u>	<u>-150</u>	<u>276</u>	<u>-485</u>	<u>-500</u>	<u>-540</u>
<u>Total Supply</u>	<u>11,326</u> 2.1%	<u>11,698</u> 3.3%	<u>12,437</u> 6.3%	<u>11,870</u> -4.6%	<u>12,220</u> 2.9%	<u>12,570</u> 2.9%
Reported Balance	-691	32	156	-13	155	-33
Stocks	498	530	686	673	828	794
<u>Stocks Usage Ratio</u>	<u>2.1</u>	<u>2.3</u>	<u>2.9</u>	<u>3.0</u>	<u>3.6</u>	<u>3.3</u>

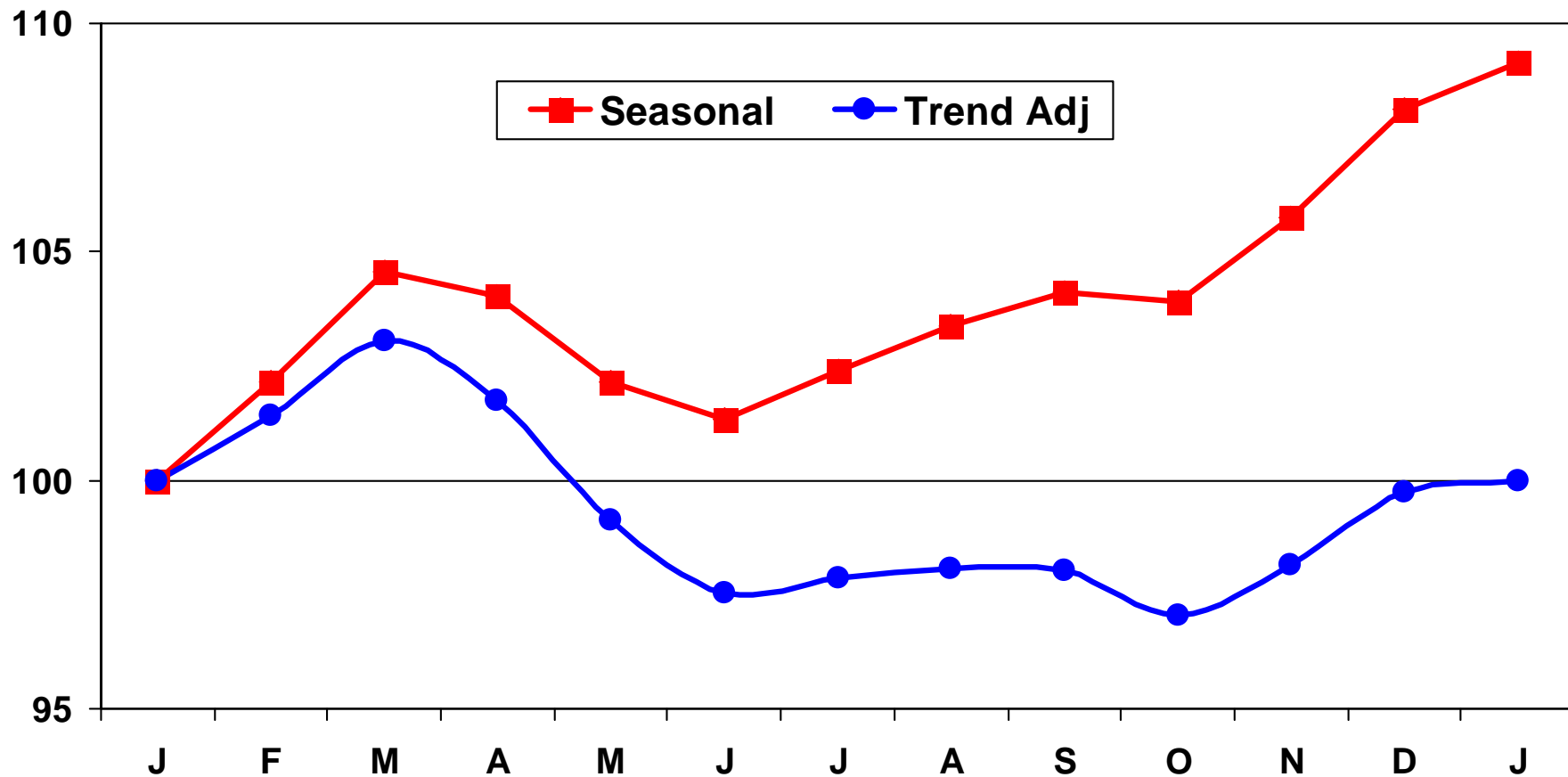
# Copper Price vs Stocks/Consumption Ratio

Current Stocks-Current Prices: overbought to fairly valued...

- current ratio:
  - 3 weeks
- current price
  - \$7,000
- *copper overvalued*
- slight surplus expected



# Copper Price Seasonals



# Copper Stocks Ratio vs Spread

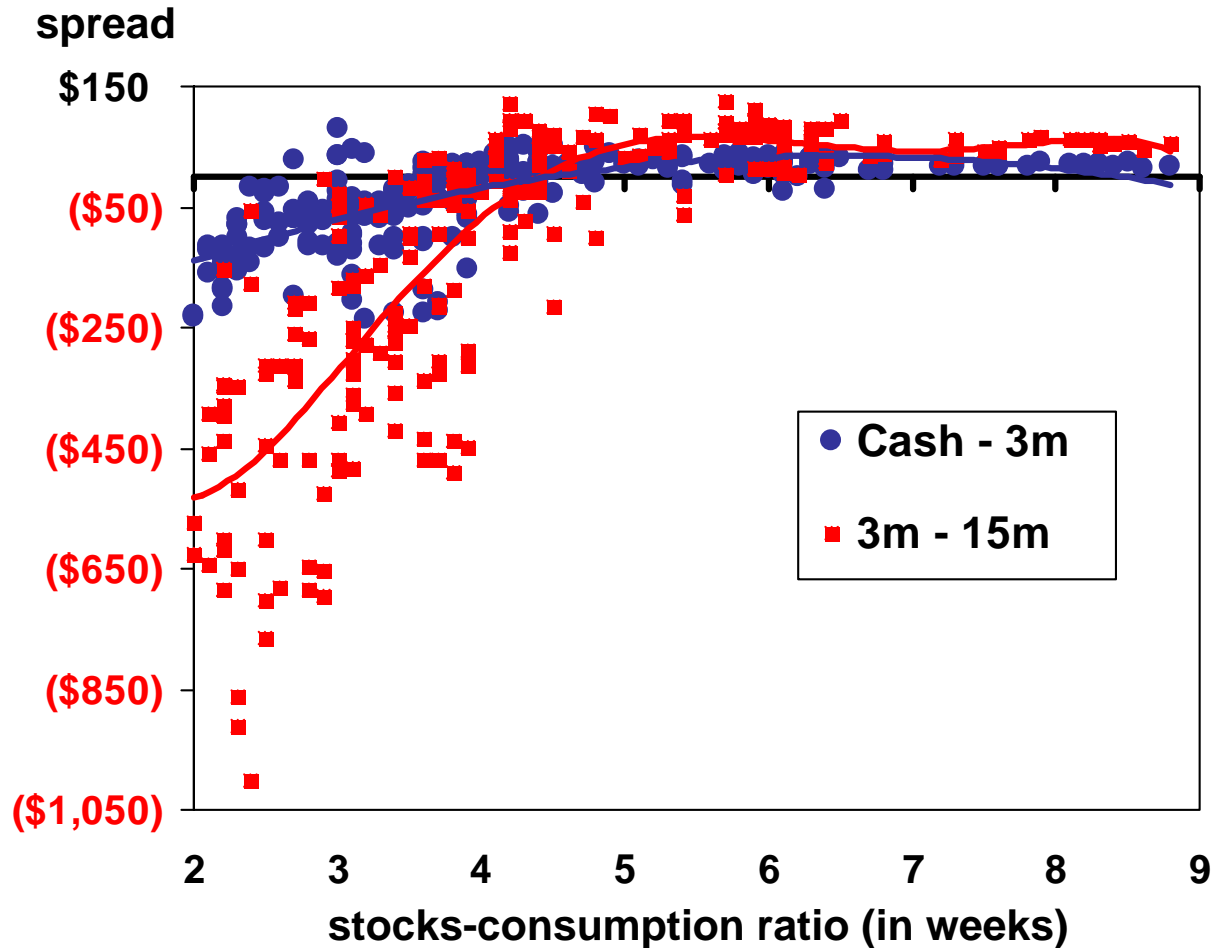
low ratio, backwardations; high ratio, contangos

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

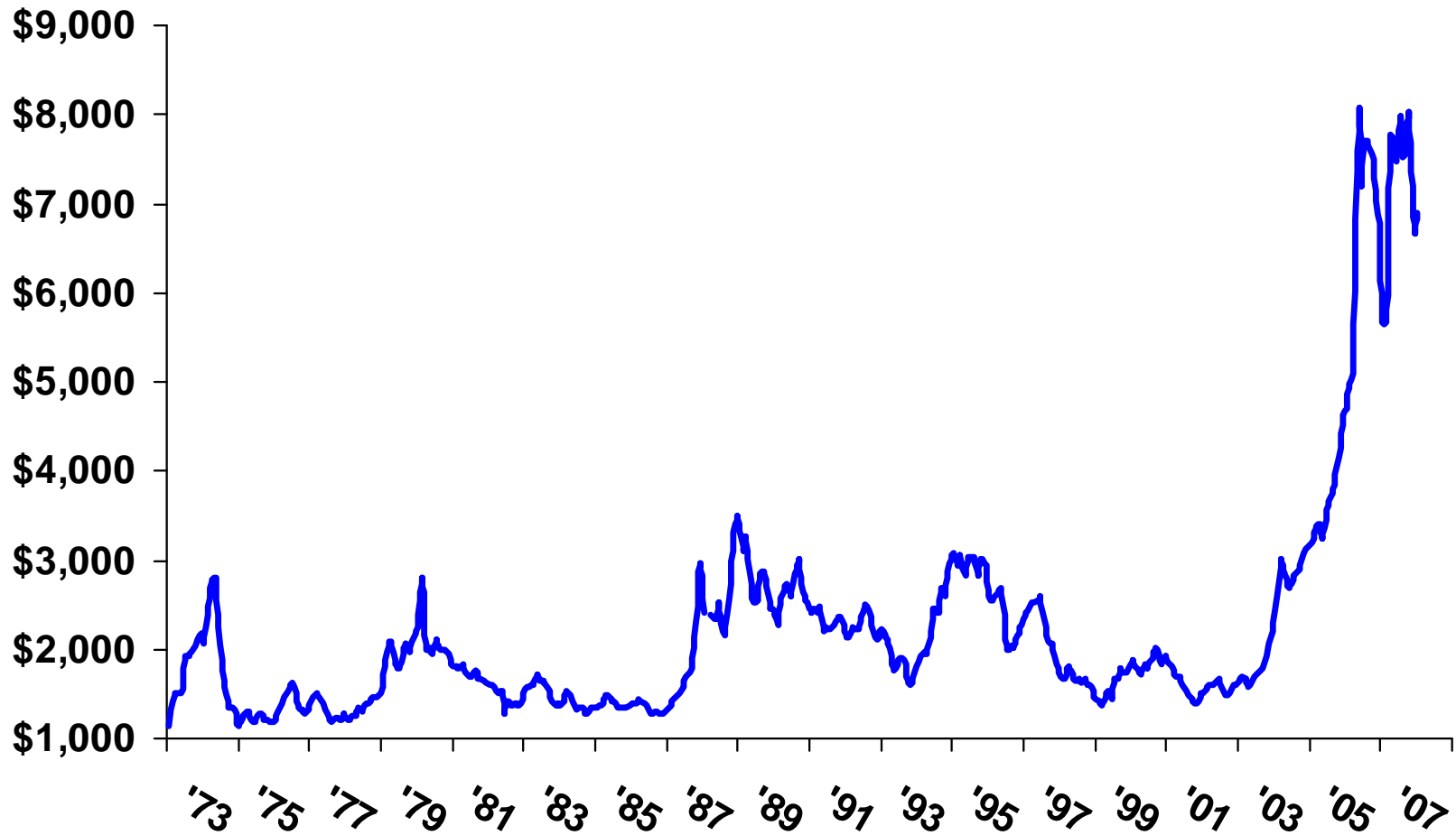
Equilibrium: 4 to 5 wks

Forecast wks use:  
price:

...backwardations to  
contangos



# Copper Prices, \$/metric tonne

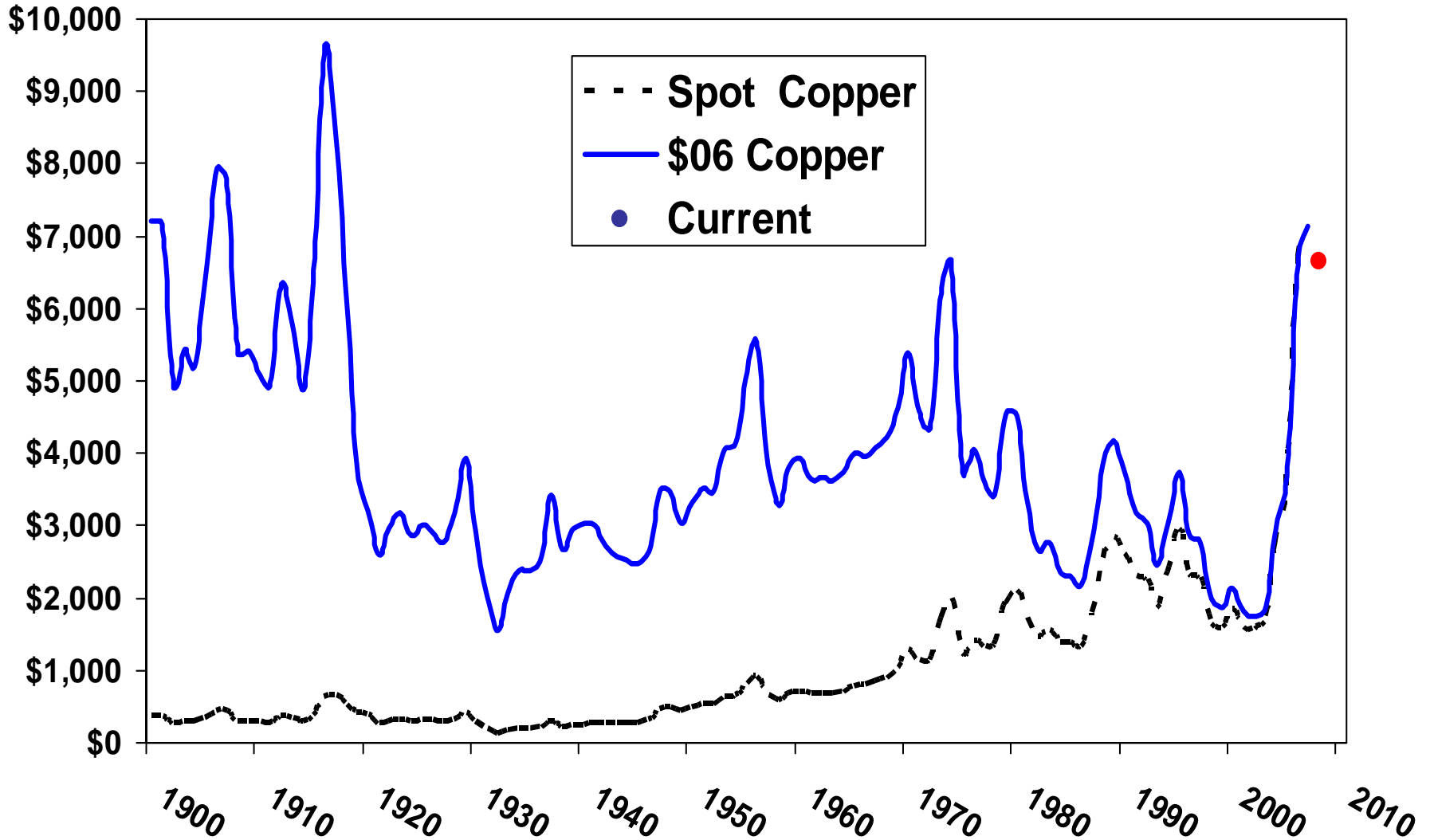


# Copper Outlook

- 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.

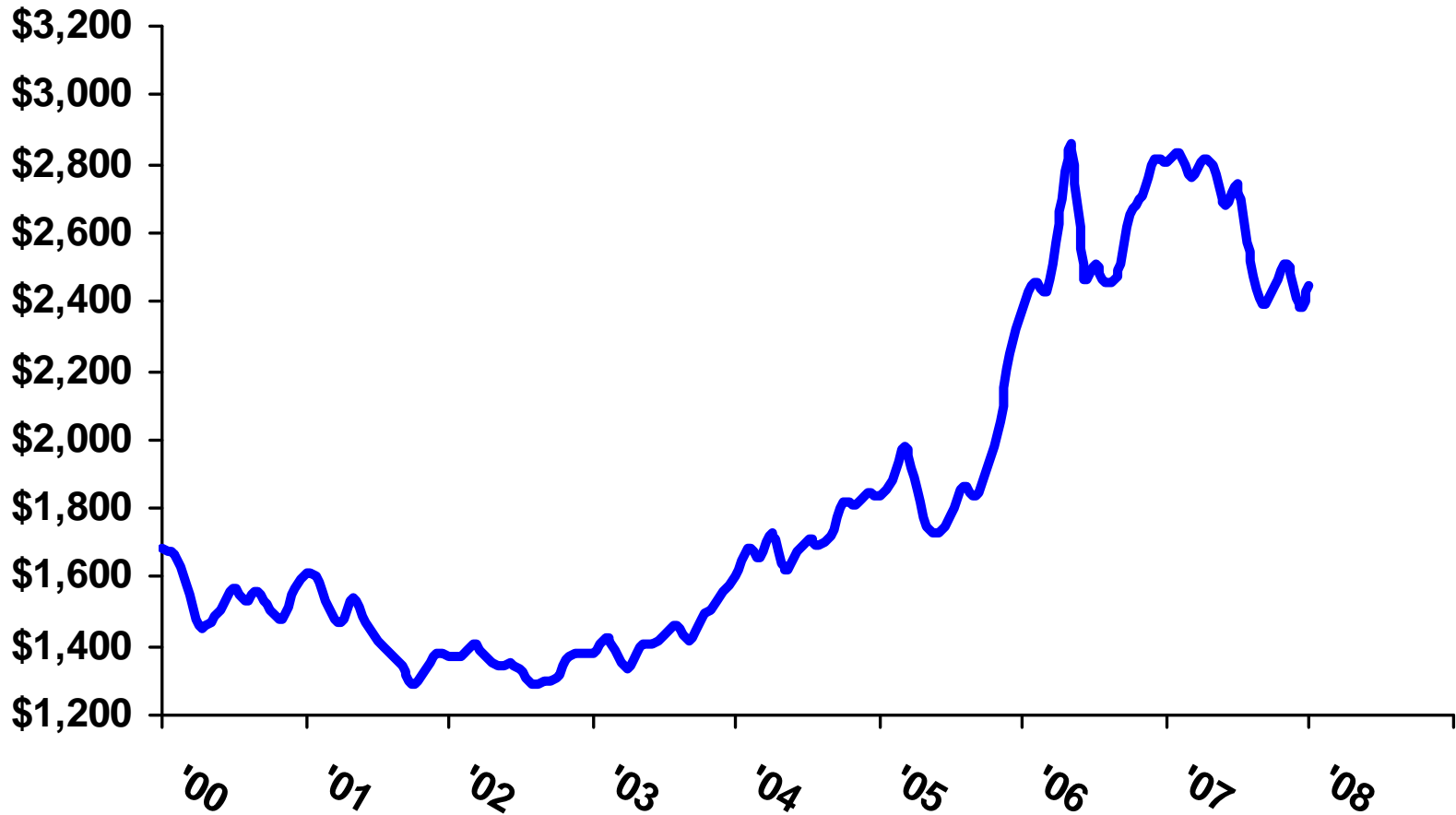
# Copper Prices, Spot & Deflated

annual averages, CPI/GNP deflated



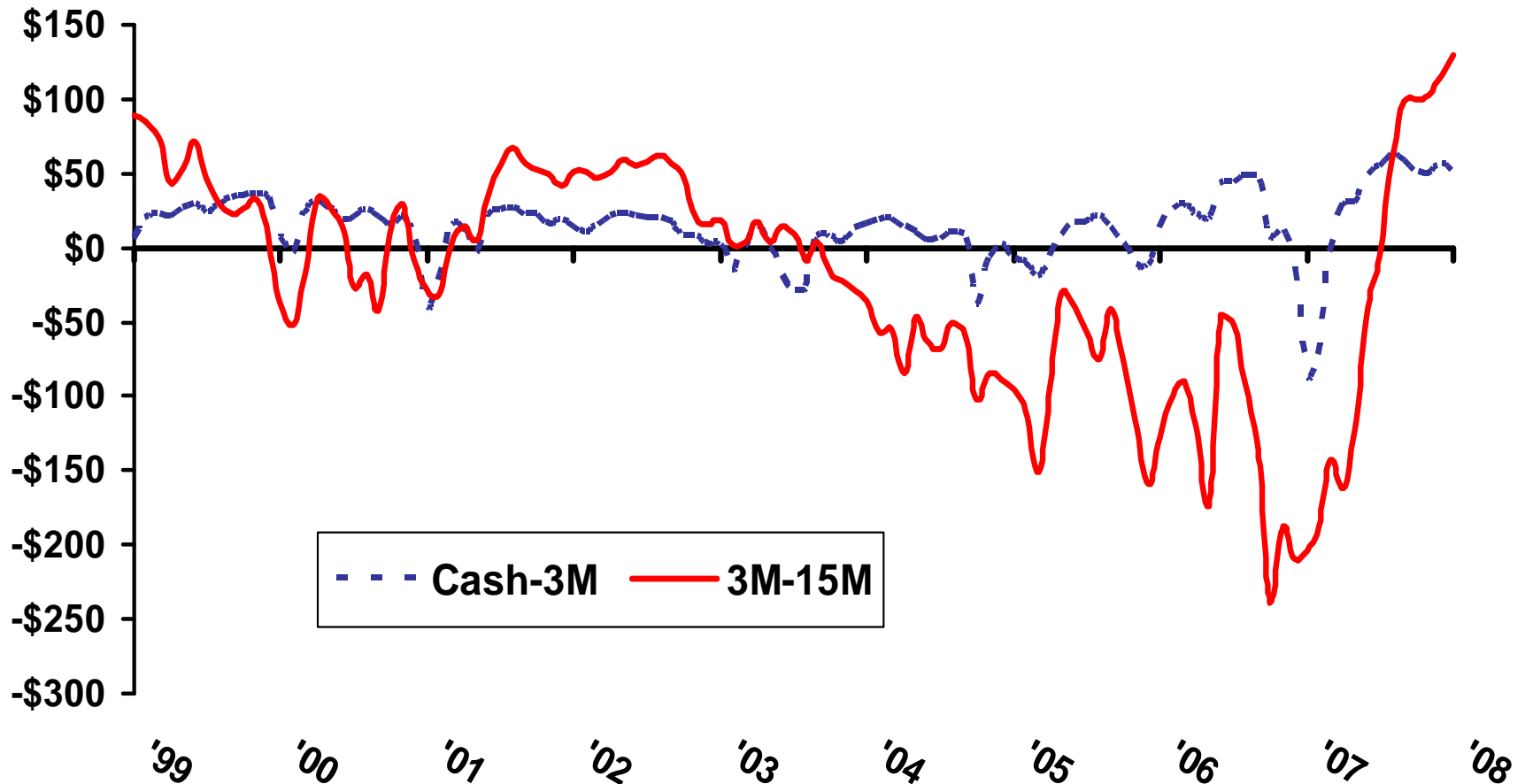
# Aluminum Market Review

# Aluminum Price Review



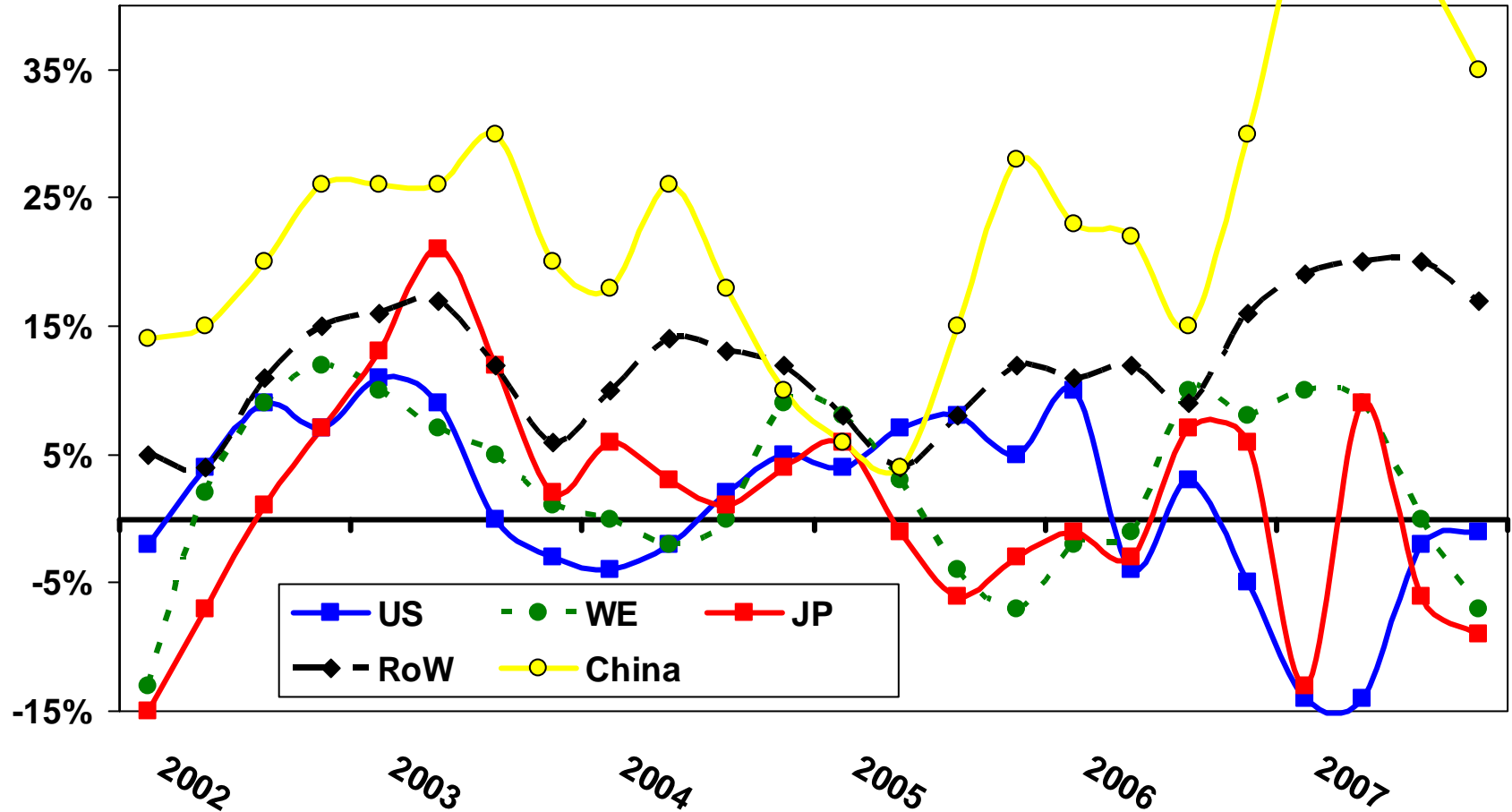
# Aluminum Spreads

spreads tighten over last few years, then collapse



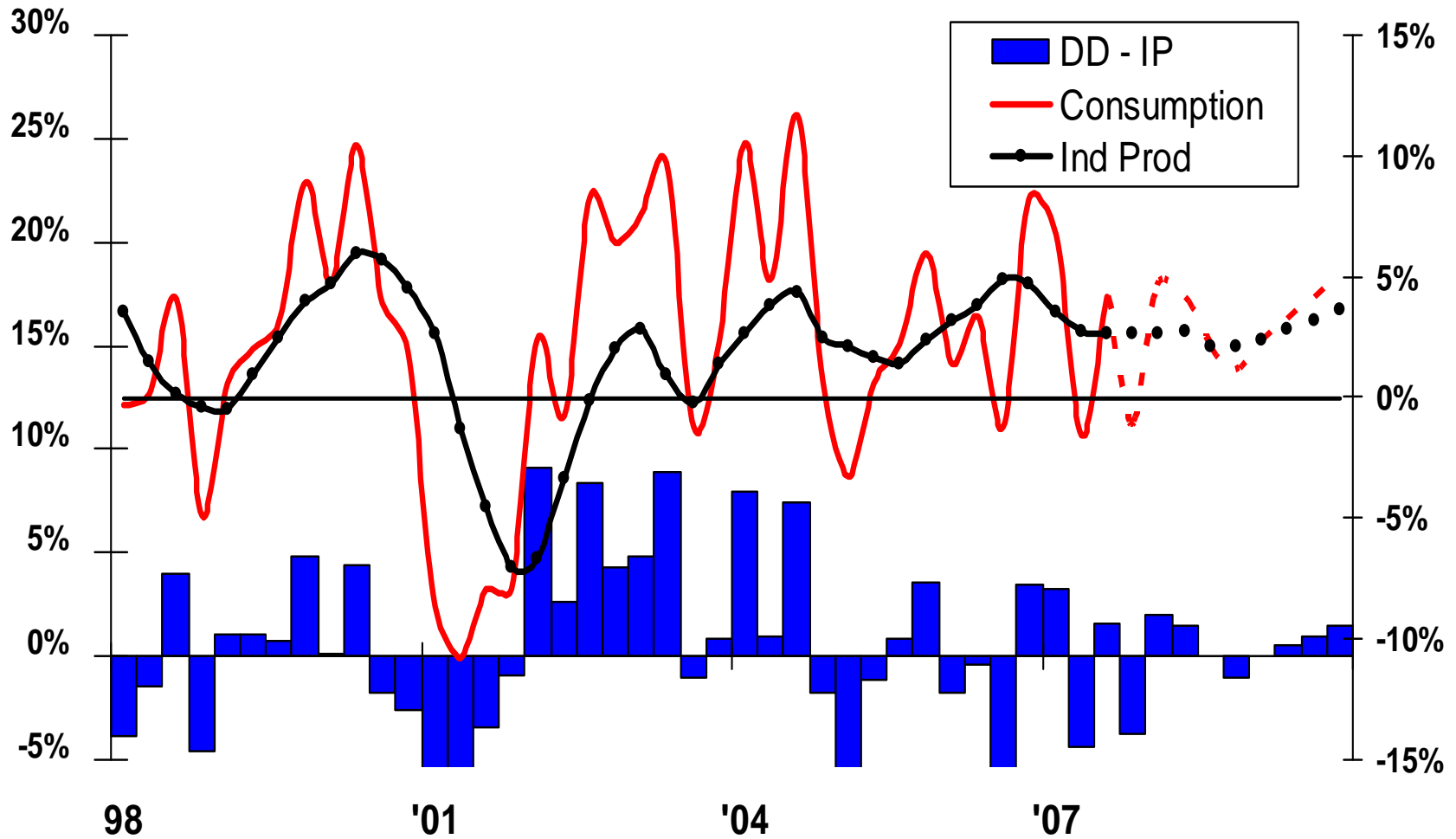
# Aluminum Consumption, by Region

China, RoW firm, US, Europe, JP soft



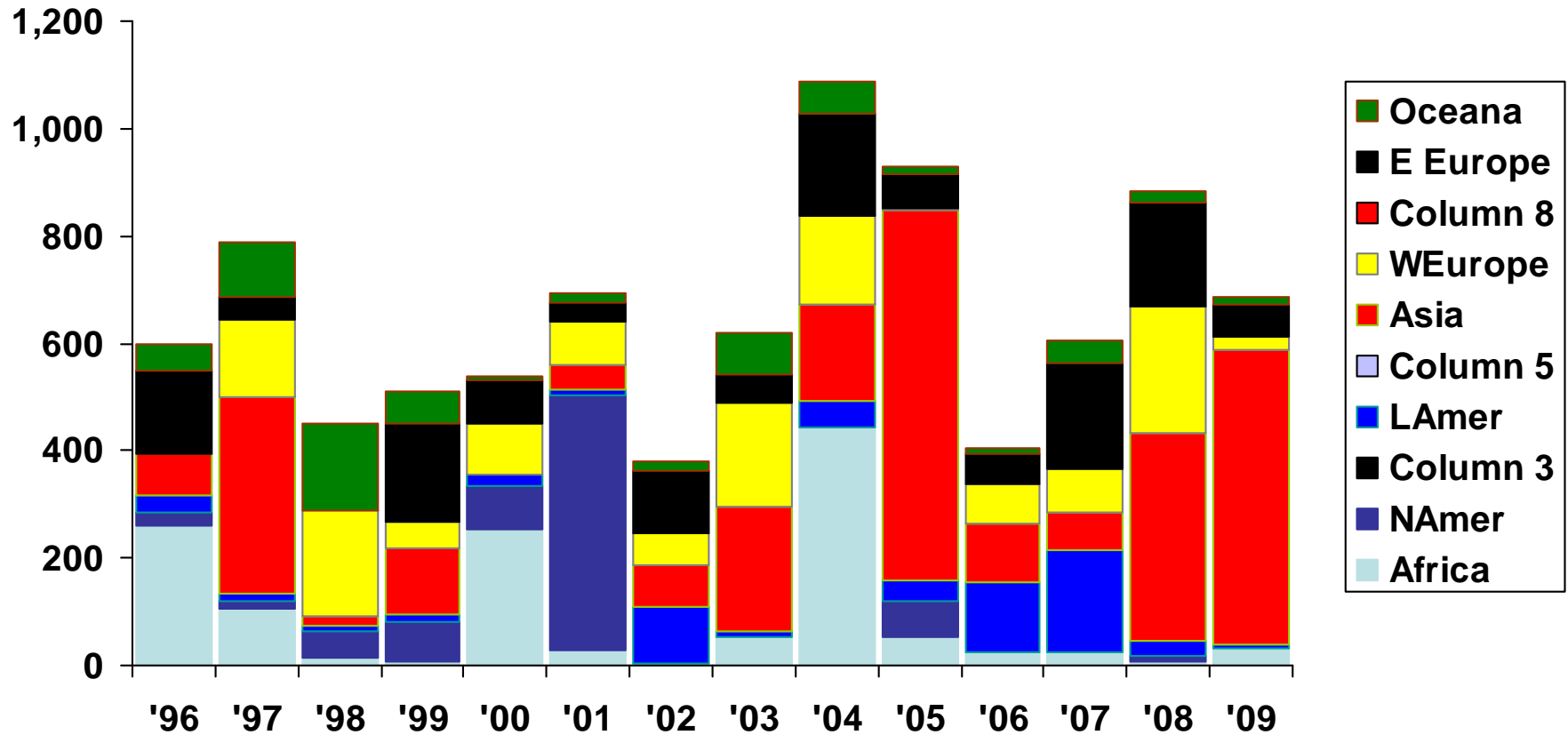
# Aluminum Shipments vs IP Growth

aluminum shipments slow but bolstered by econ rebound



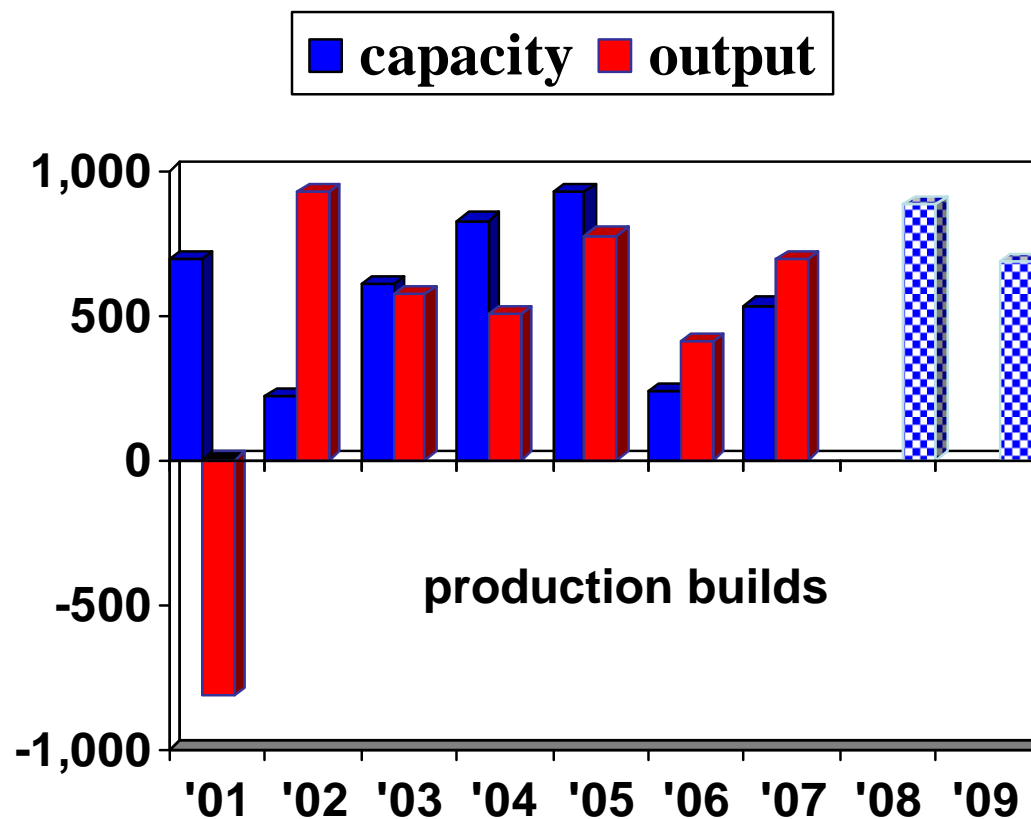
# IAI Alum Planned Capacity Builds

large in '07-'08-'09, but below '04-'05 builds



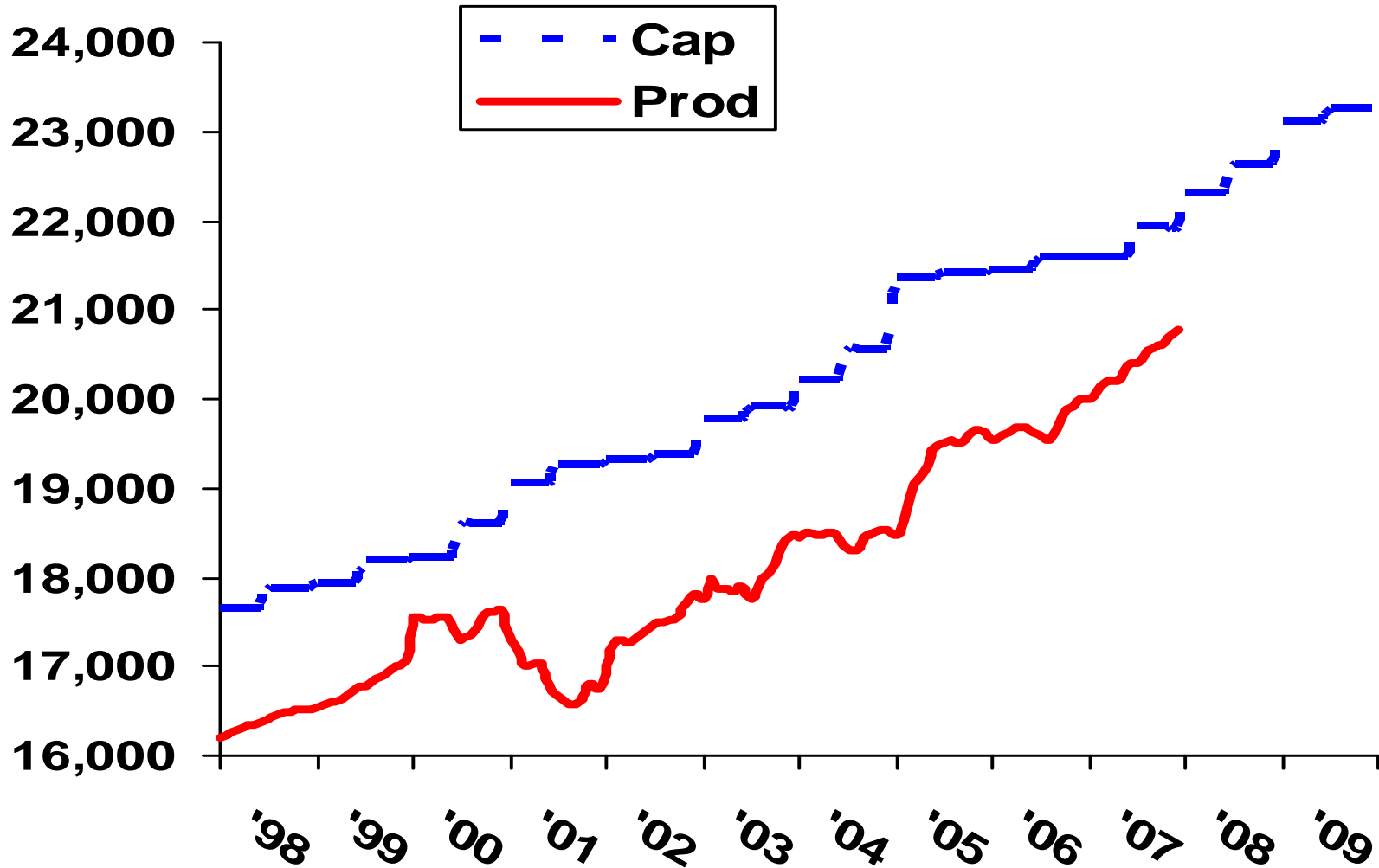
# New/Expanded Aluminum Capacity, kt

- **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)



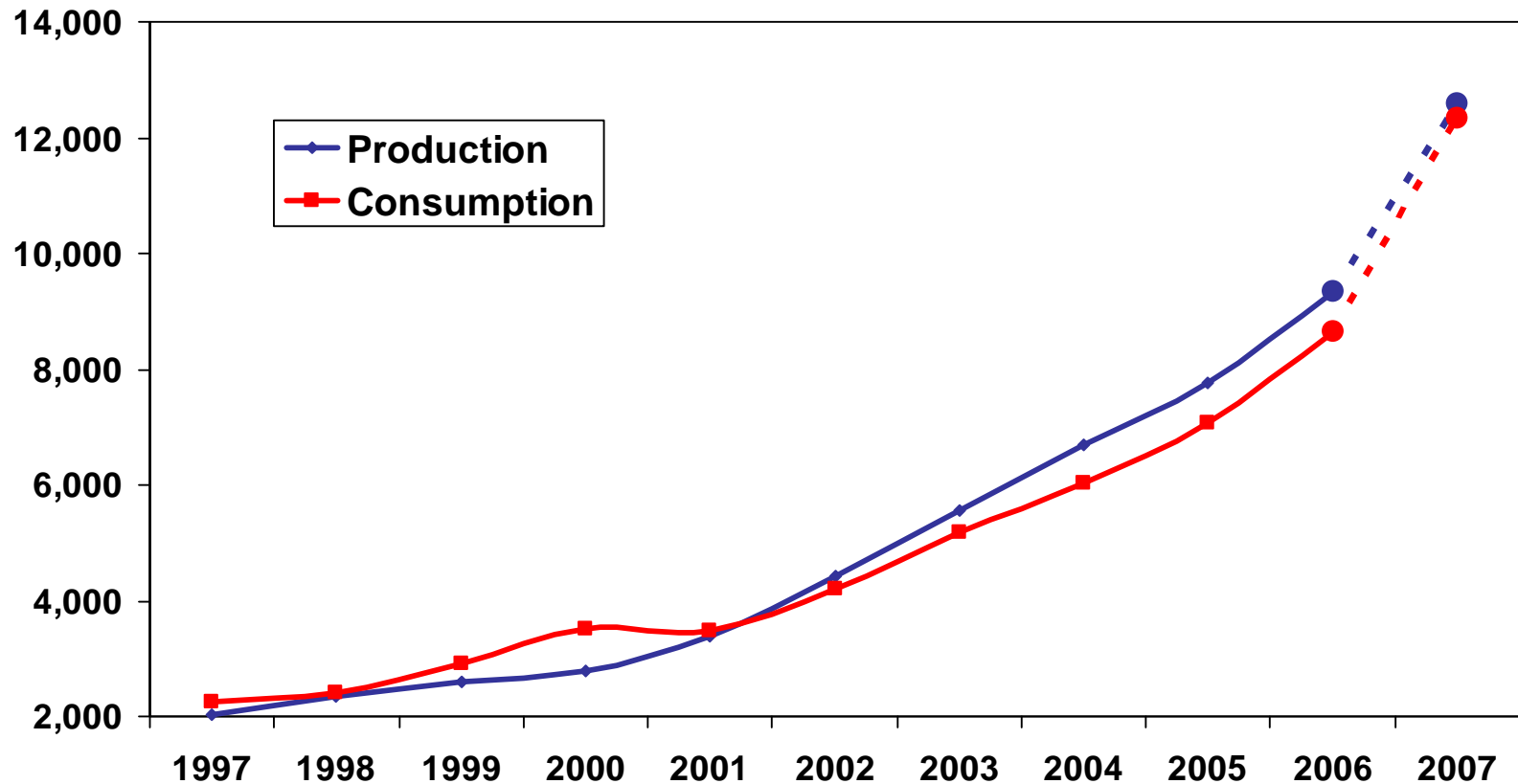
# Primary Output Recovers after '06 Slowdown

some restarts, greenfield and brownfield builds



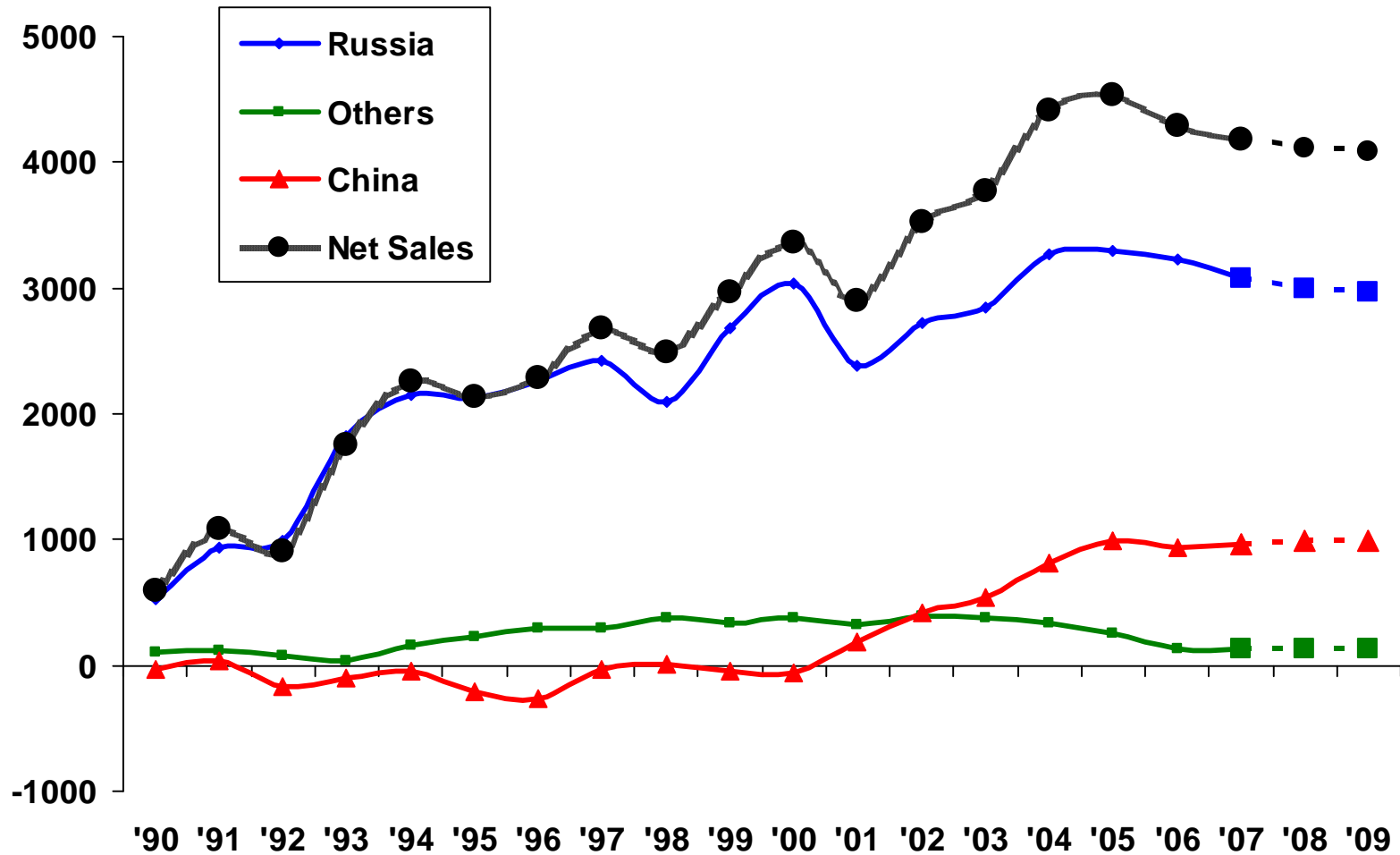
# China, Production & Consumption

consumption keeps pace with production



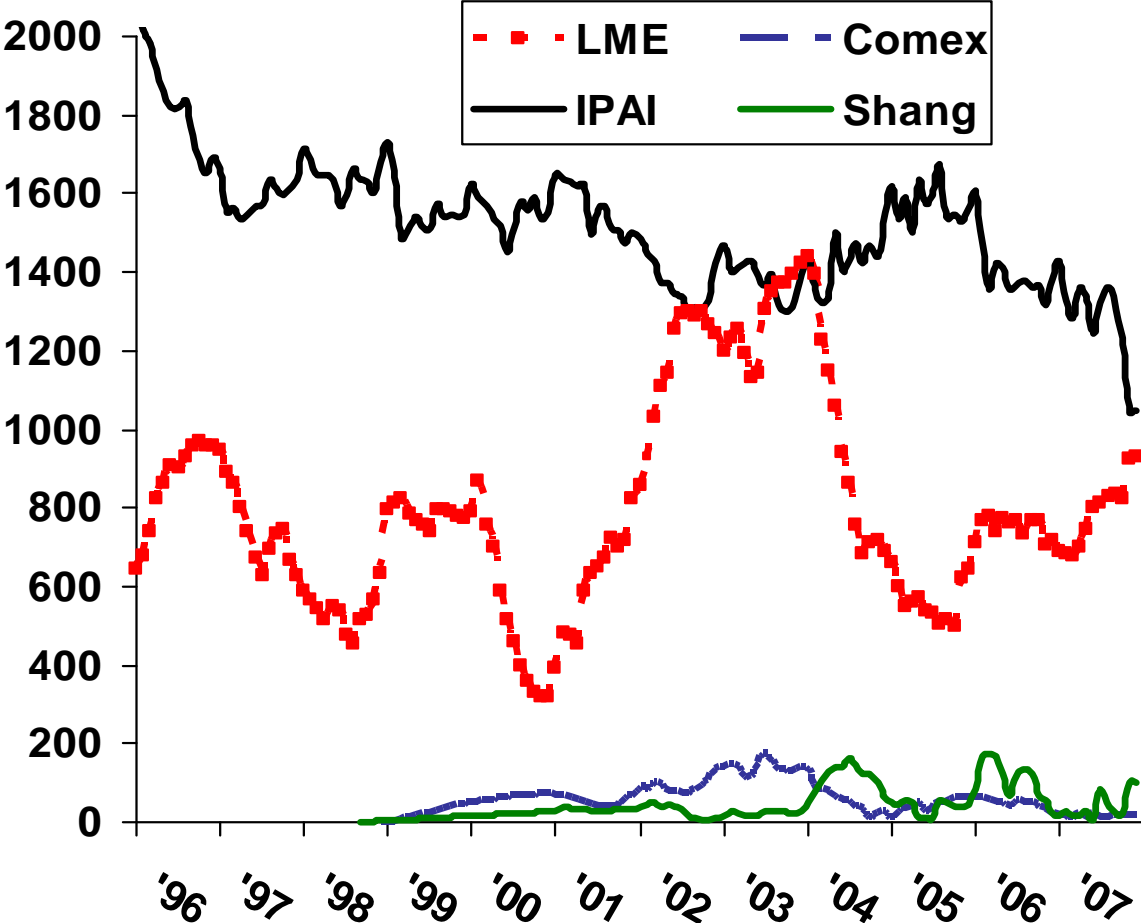
# Net East to West Trade Balance

Russian exports slow, Chinese exports steady



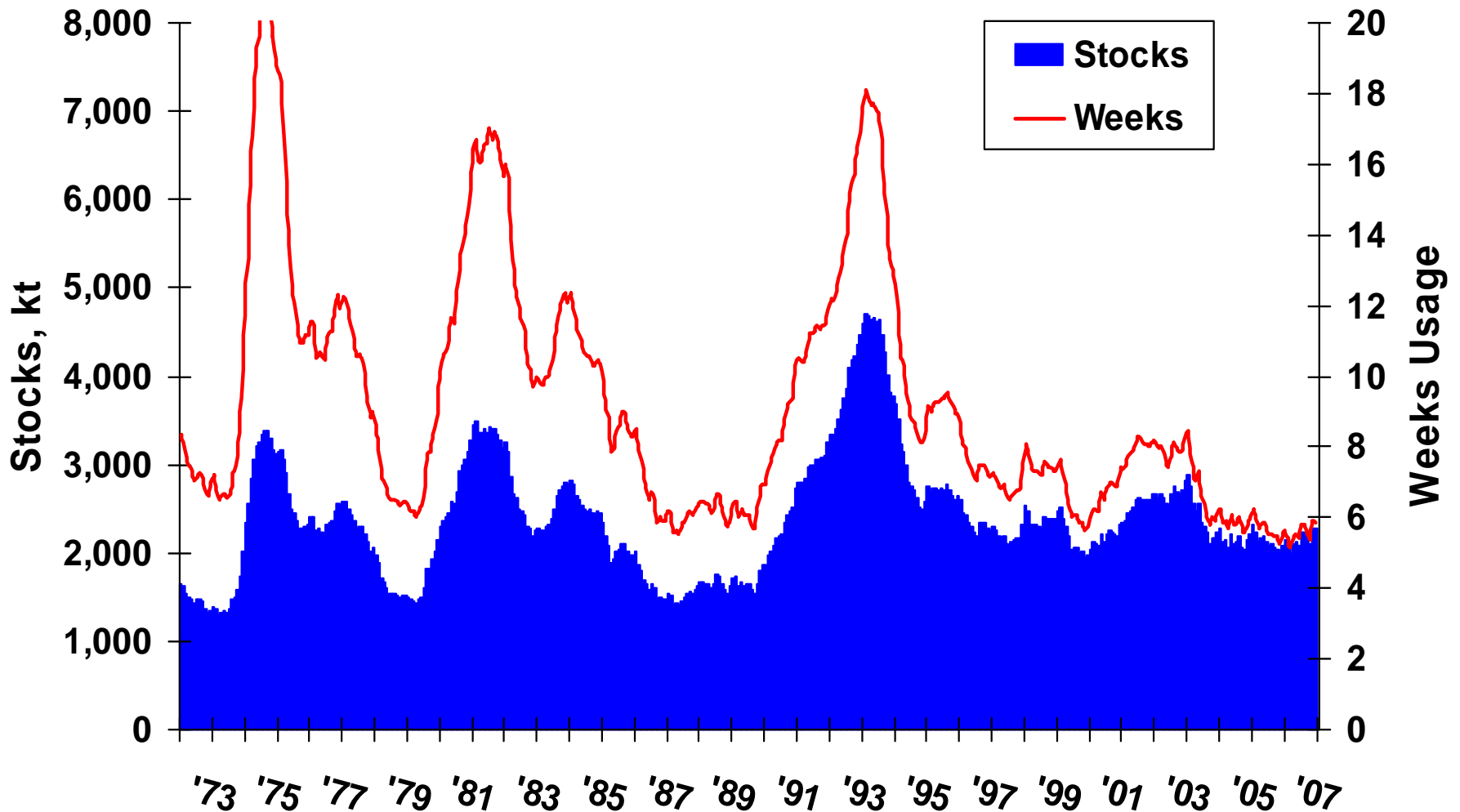
# Exchange Stocks Build, After Recent Decline

- 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

	Shipments		Production		Inventories		Wks
	<u>K Tons</u>	<u>% Chg</u>	<u>Prod-kt</u>	<u>% Chg</u>	<u>K Tons</u>	<u>Chg</u>	<u>Use</u>
<b><u>2006</u></b>	<b><u>19,810</u></b>	<b><u>2.9%</u></b>	<b><u>19,638</u></b>	<b><u>2.1%</u></b>	<b><u>2,144</u></b>	<b><u>(172)</u></b>	<b><u>5.6</u></b>
2007Q1	5,092	6.8%	4,938	2.5%	1,990	(154)	5.1
2007Q2	4,954	-1.6%	5,041	3.1%	2,077	87	5.4
2007Q3	5,043	4.2%	5,148	4.5%	2,182	105	5.6
<b><u>2007Q4</u></b>	<b><u>5,109</u></b>	<b><u>-1.1%</u></b>	<b><u>5,203</u></b>	<b><u>4.0%</u></b>	<b><u>2,275</u></b>	<b><u>94</u></b>	<b><u>5.9</u></b>
<b><u>2007</u></b>	<b><u>20,198</u></b>	<b><u>2.0%</u></b>	<b><u>20,330</u></b>	<b><u>3.5%</u></b>	<b><u>2,275</u></b>	<b><u>132</u></b>	<b><u>5.9</u></b>
2008Q1	5,326	4.6%	5,243	6.2%	2,192	(83)	5.5
2008Q2	5,162	4.2%	5,283	4.8%	2,313	121	5.8
2008Q3	5,149	2.1%	5,321	3.4%	2,484	172	6.2
<b><u>2008Q4</u></b>	<b><u>5,166</u></b>	<b><u>1.1%</u></b>	<b><u>5,358</u></b>	<b><u>3.0%</u></b>	<b><u>2,676</u></b>	<b><u>192</u></b>	<b><u>6.7</u></b>
<b><u>2008</u></b>	<b><u>20,804</u></b>	<b><u>3.0%</u></b>	<b><u>21,205</u></b>	<b><u>4.3%</u></b>	<b><u>2,676</u></b>	<b><u>401</u></b>	<b><u>6.7</u></b>
2009Q1	5,483	2.9%	5,413	3.2%	2,606	(70)	6.3
2009Q2	5,357	3.8%	5,468	3.5%	2,718	111	6.5
2009Q3	5,415	5.2%	5,484	3.1%	2,787	69	6.7
<b><u>2009Q4</u></b>	<b><u>5,454</u></b>	<b><u>5.6%</u></b>	<b><u>5,499</u></b>	<b><u>2.6%</u></b>	<b><u>2,831</u></b>	<b><u>45</u></b>	<b><u>6.8</u></b>
<b><u>2009</u></b>	<b><u>21,709</u></b>	<b><u>4.4%</u></b>	<b><u>21,864</u></b>	<b><u>3.1%</u></b>	<b><u>2,831</u></b>	<b><u>155</u></b>	<b><u>6.8</u></b>

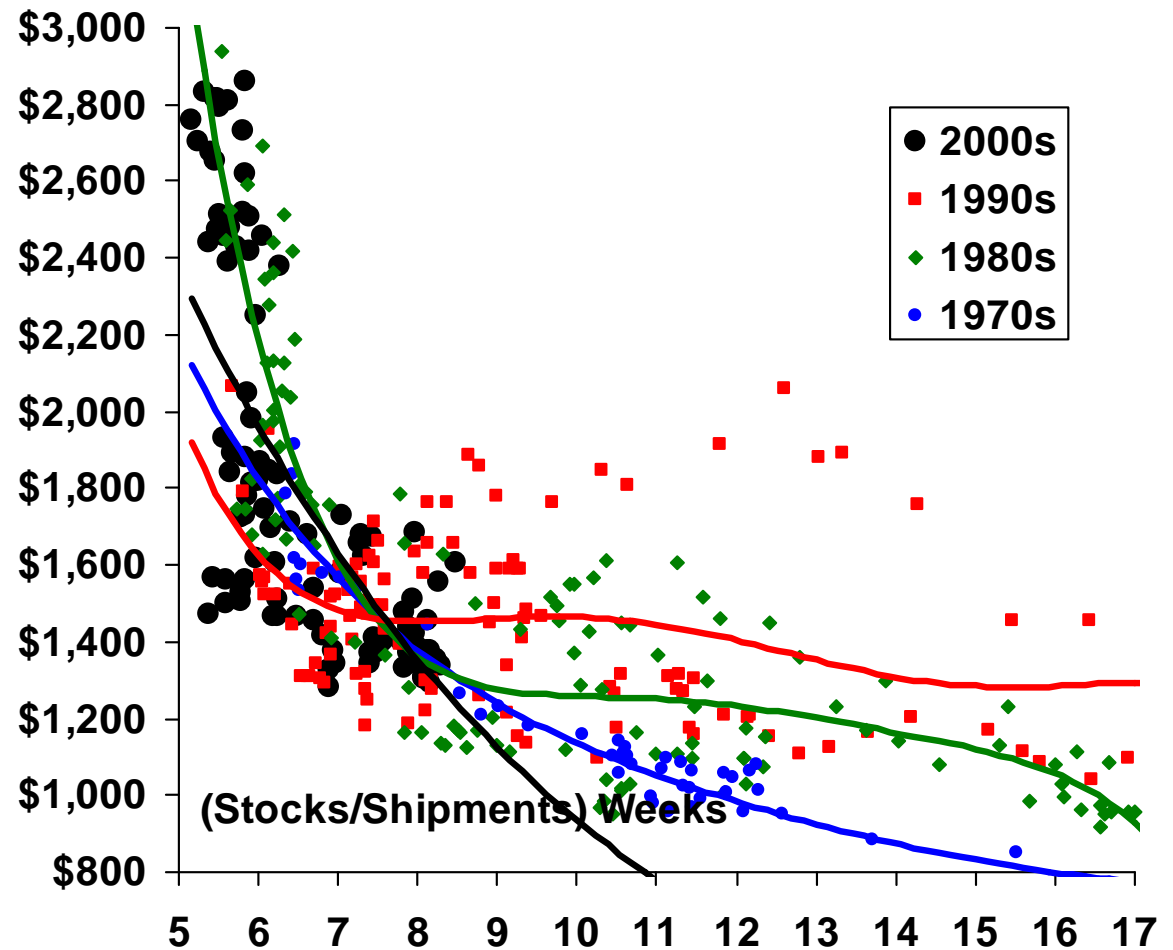
# Aluminum Supply-Demand Outlook, kt

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<b>Total Consumption</b>	<b>22,640</b> 2.6%	<b>23,254</b> 2.7%	<b>22,706</b> -2.4%	<b>23,386</b> 3.0%	<b>24,404</b> 4.4%
<b>Total Production</b>	<b>19,587</b> 4.9%	<b>19,932</b> 1.8%	<b>20,483</b> 2.8%	<b>21,358</b> 4.3%	<b>22,018</b> 3.1%
<b><u>Net E-W Balance</u></b>	<b><u>4,533</u></b>	<b><u>4,289</u></b>	<b><u>4,176</u></b>	<b><u>4,119</u></b>	<b><u>4,089</u></b>
Total Supply	24,120	24,221	24,659	25,477	26,107
<b><u>Reported Balance</u></b>	<b><u>-23</u></b>	<b><u>-246</u></b>	<b><u>92</u></b>	<b><u>401</u></b>	<b><u>155</u></b>
<b>Reported Stocks</b>	3,010	2,764	2,856	3,257	3,412
<b>Weeks Use</b>	<b>6.3</b>	<b>5.6</b>	<b>5.9</b>	<b>6.7</b>	<b>6.8</b>

# Aluminum Stocks Ratio vs Price

stocks below equil, expected to remain tight

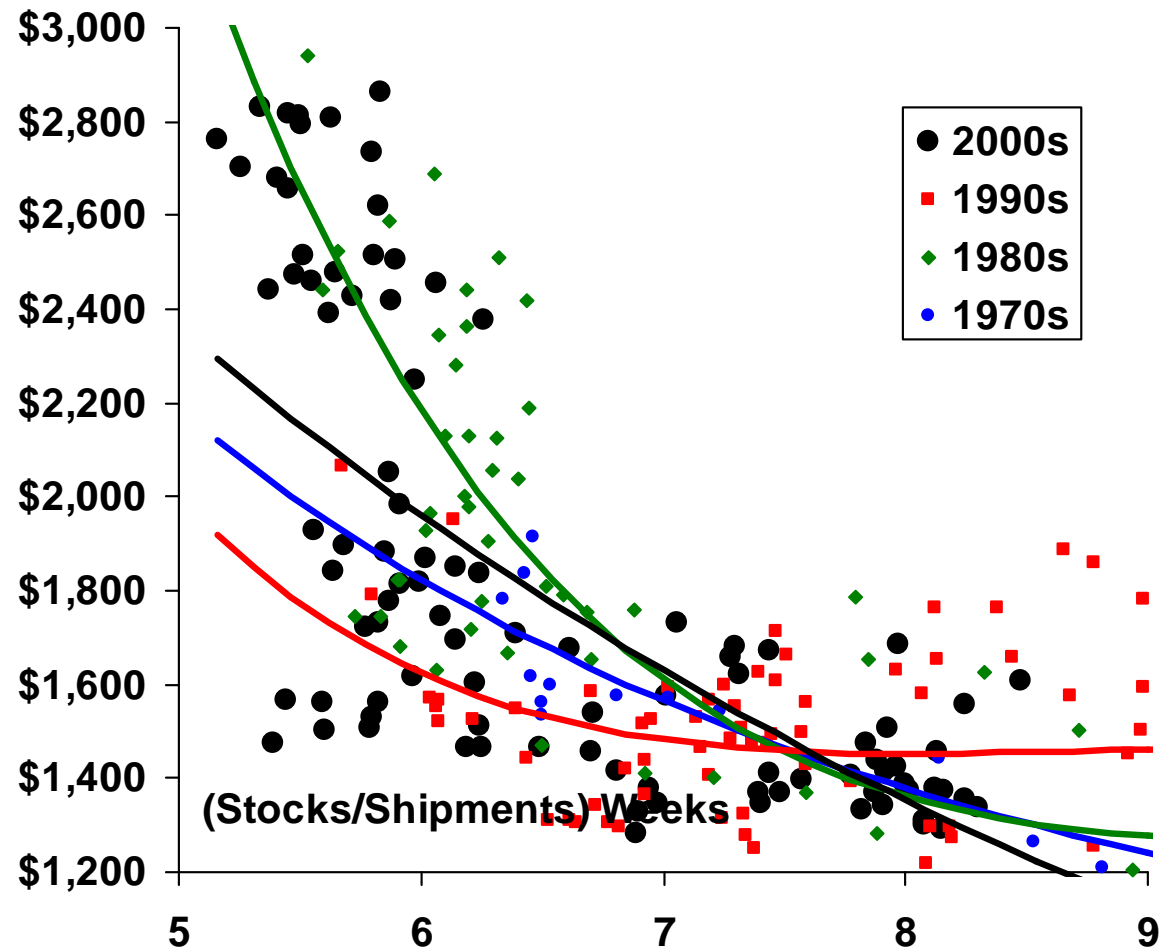
- current: 5.9 wks
- price: \$2,450
- equil: 7 to 9 wks
- Forecast: 6-7 weeks



# 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



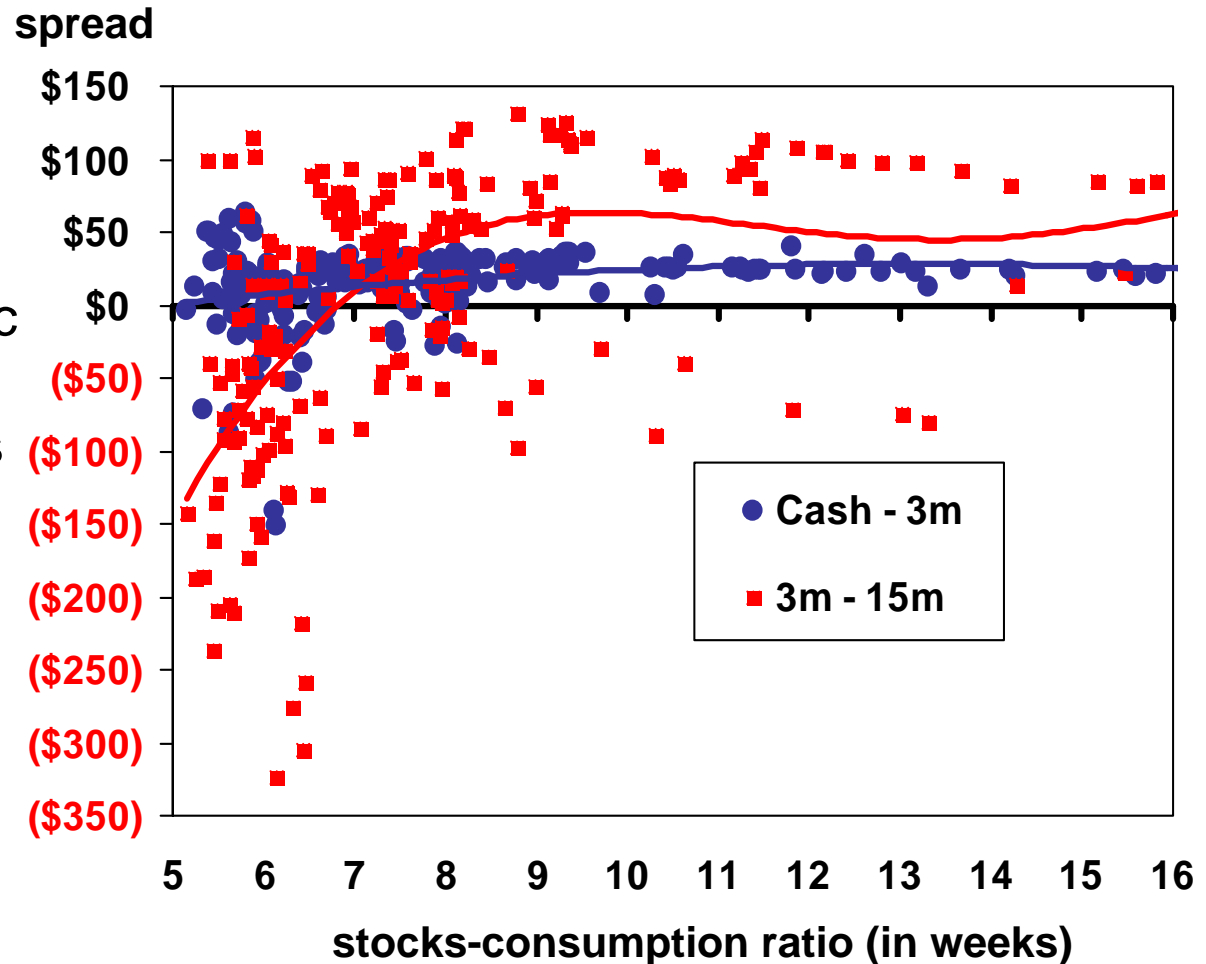
# Aluminum Stocks Ratio vs Spread

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*



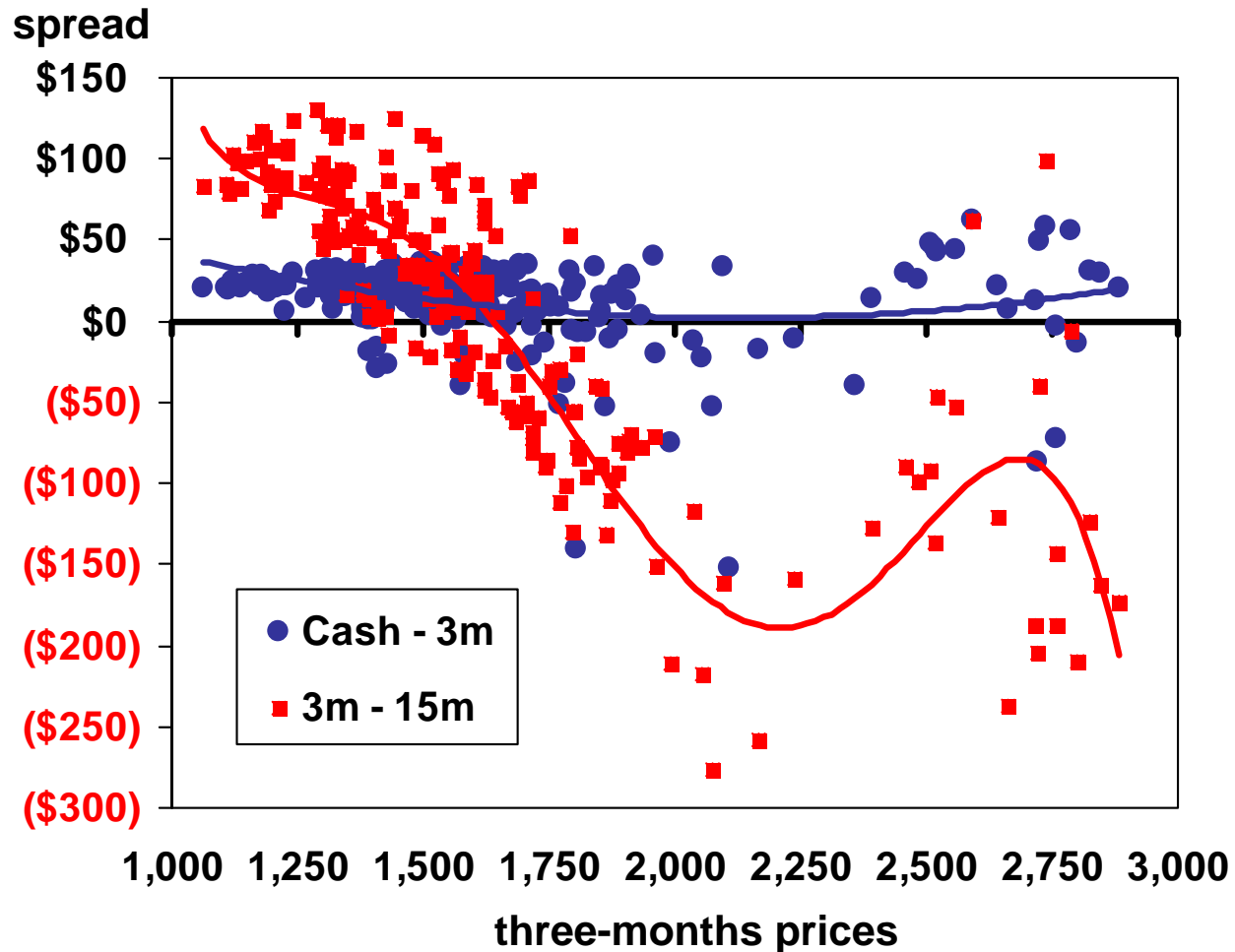
# Aluminum Spreads vs 3 Months

high prices, backwardations; low prices, contangos

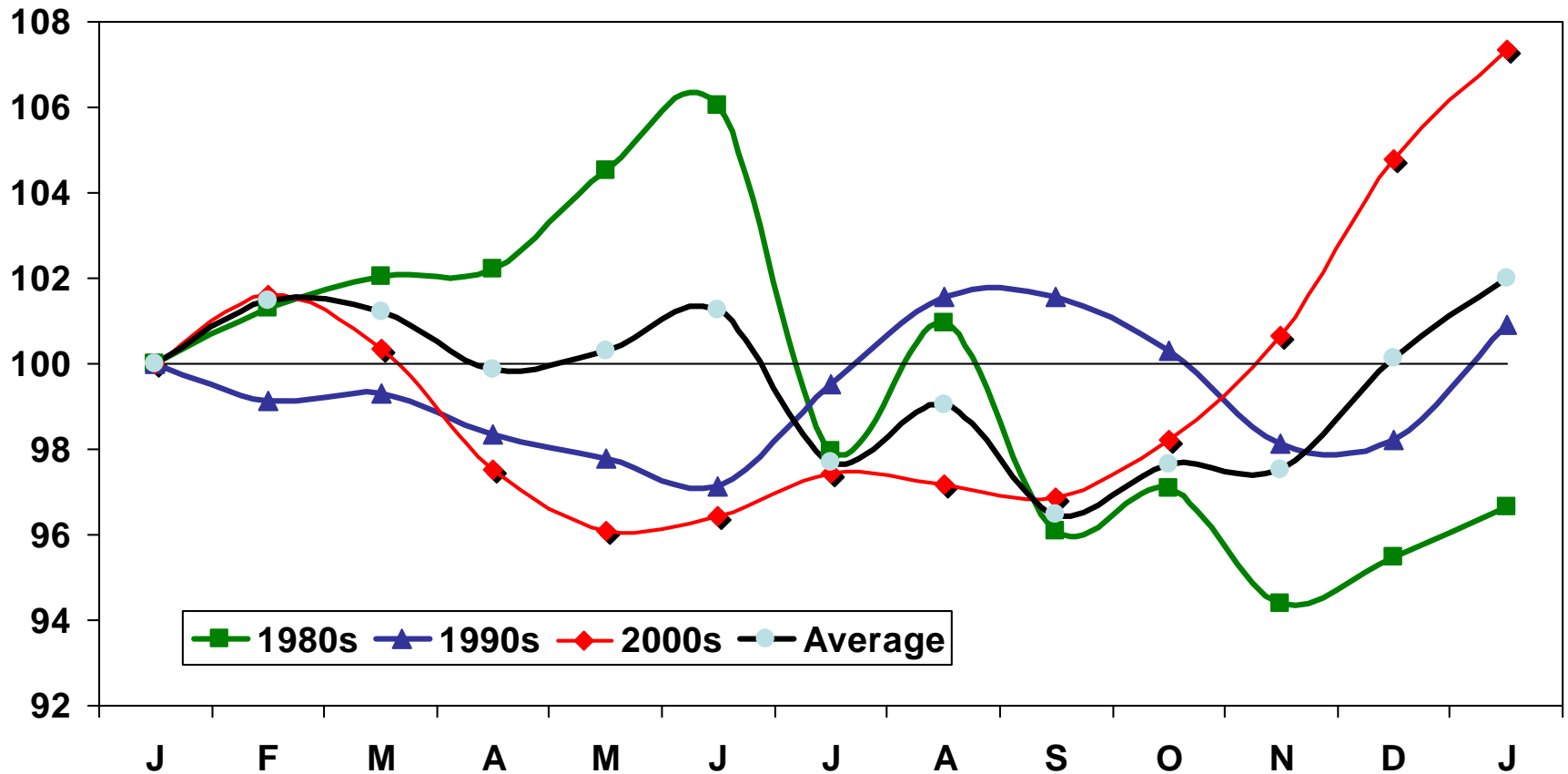
Current:  
\$2,435

c-3m: \$80c  
3-15m: \$125c

Equilibrium:  
~\$1,700



# Aluminum Price Seasonals



# Aluminum Prices, 1973 to present

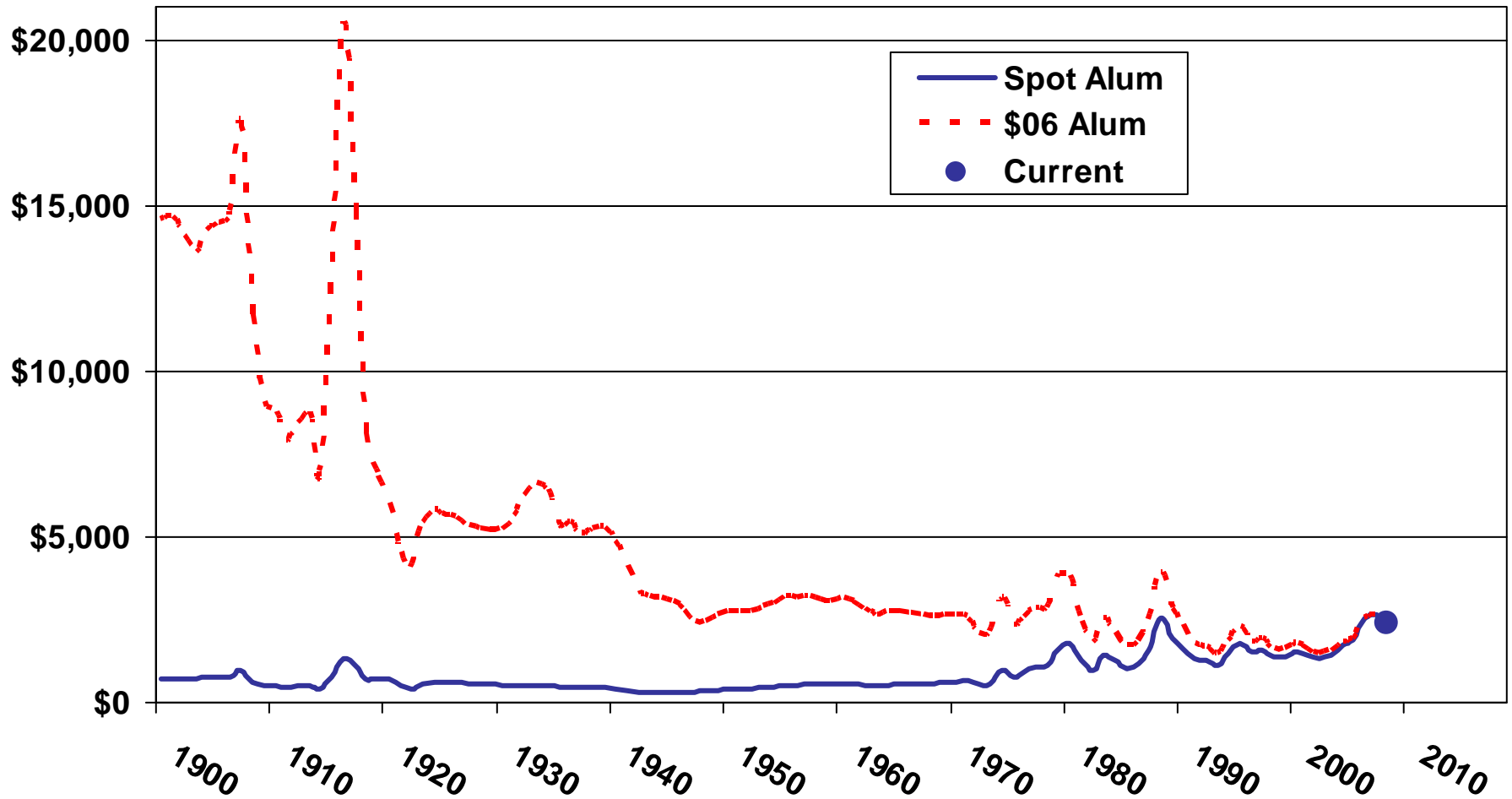


# Aluminum Outlook

- 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.

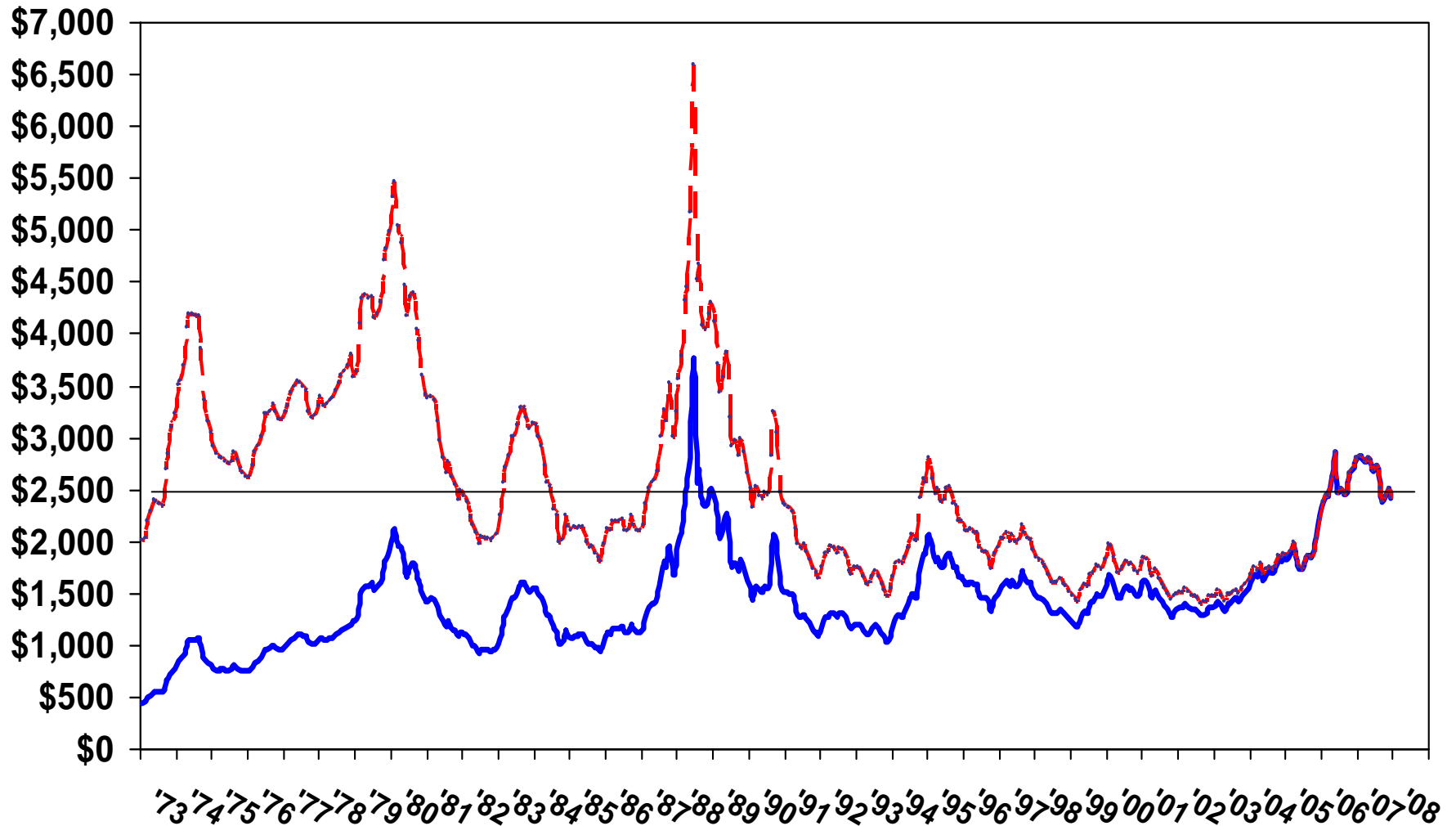
# Aluminum Prices, Spot & Deflated

Annual Averages, CPI/GNP Deflated



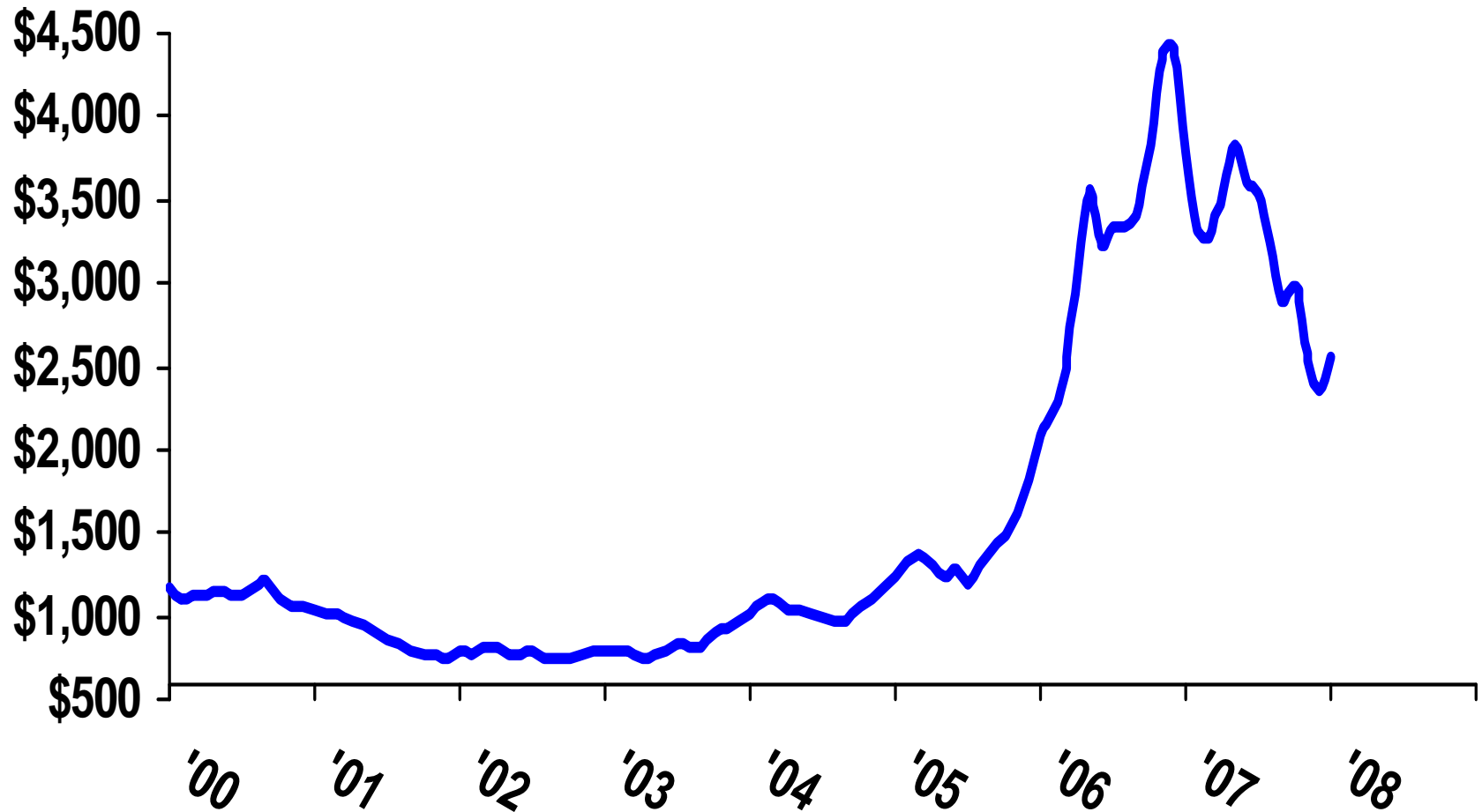
# Aluminum Prices, 1973 to present

2006 constant dollar average (\$2,500)



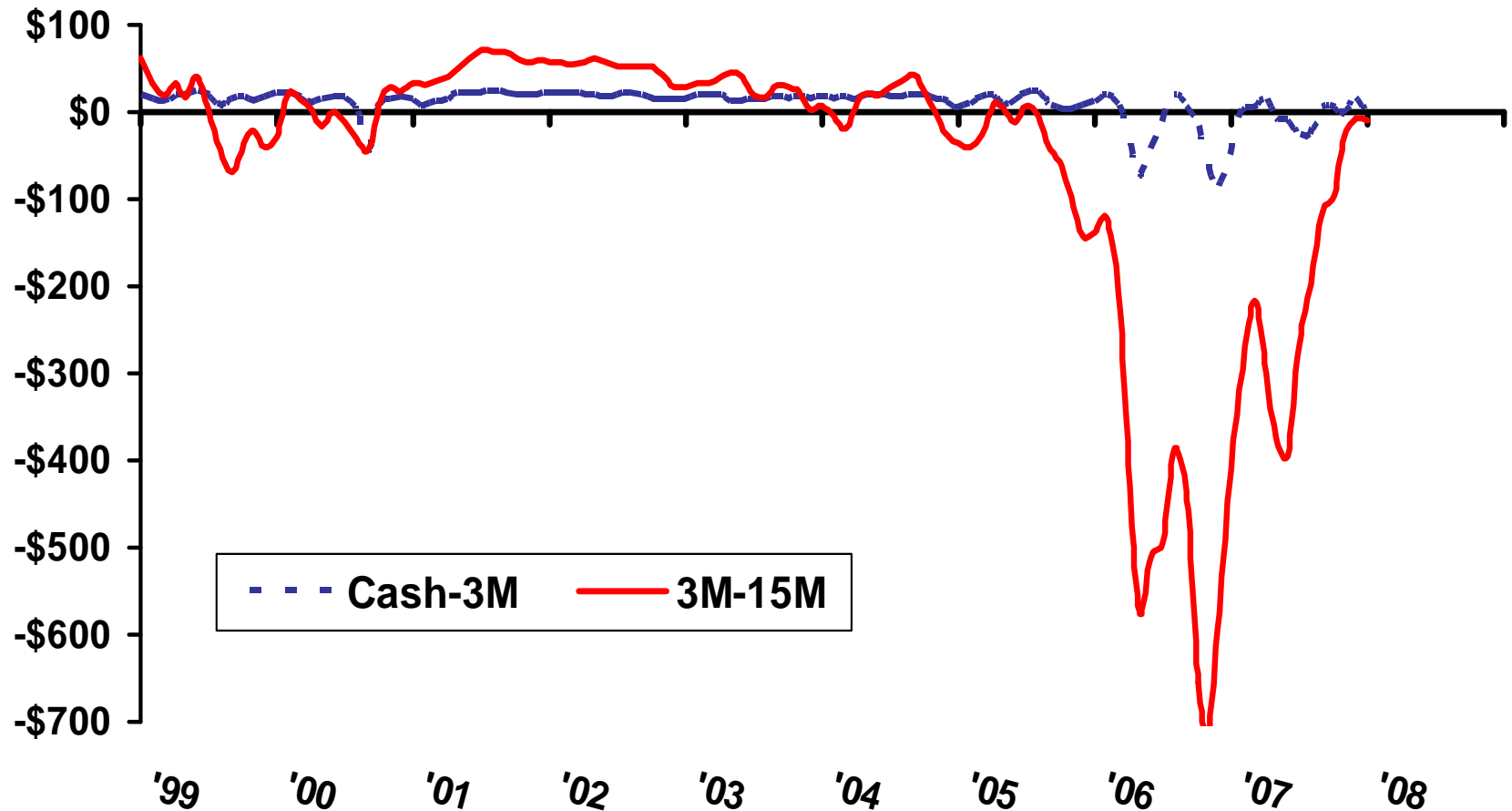
# Zinc Market Review

# Zinc Price Review



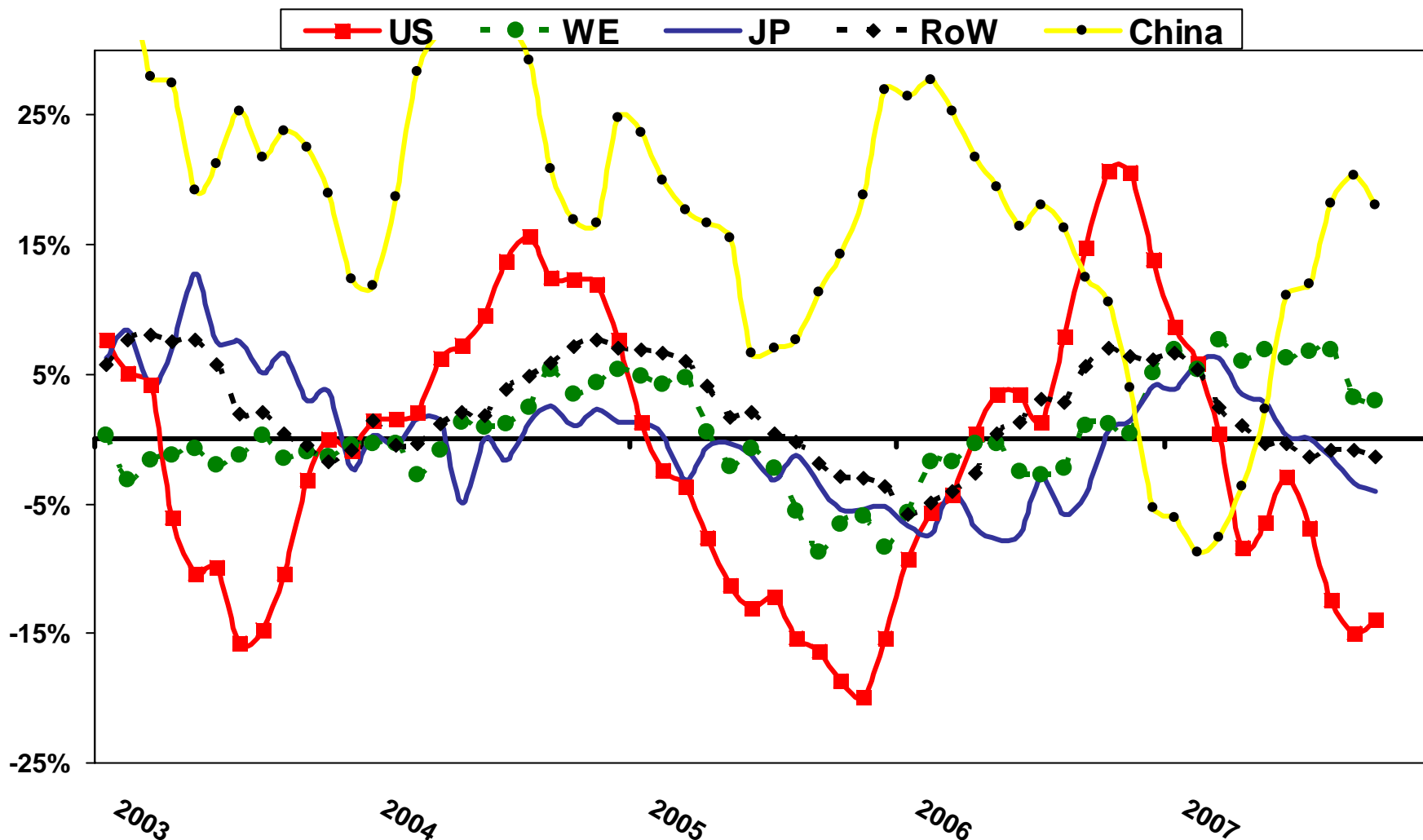
# Zinc Spreads

spreads tighten than ease over last year



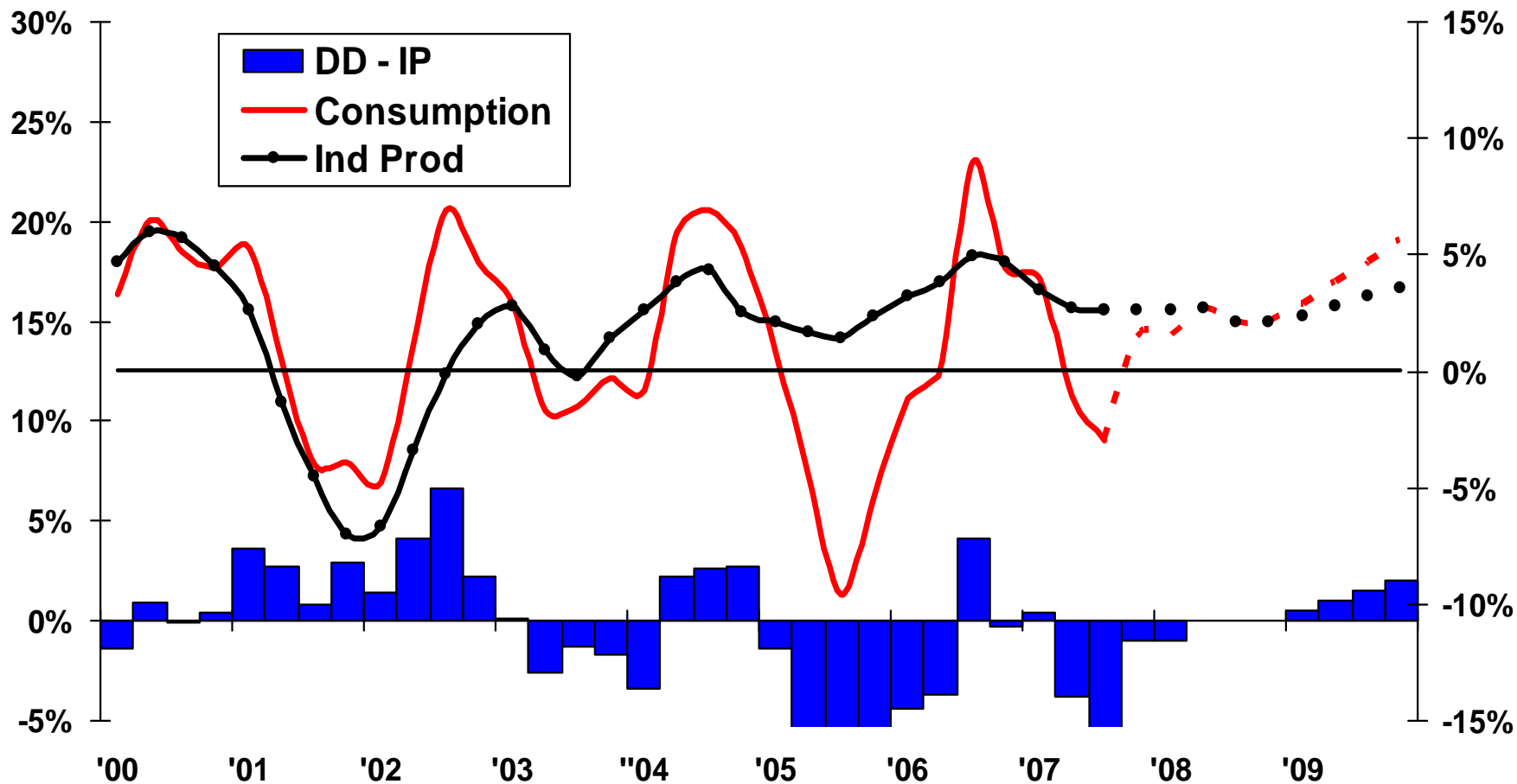
# Zinc Consumption, by Region

mixed trends, slowing in the West, strength in China



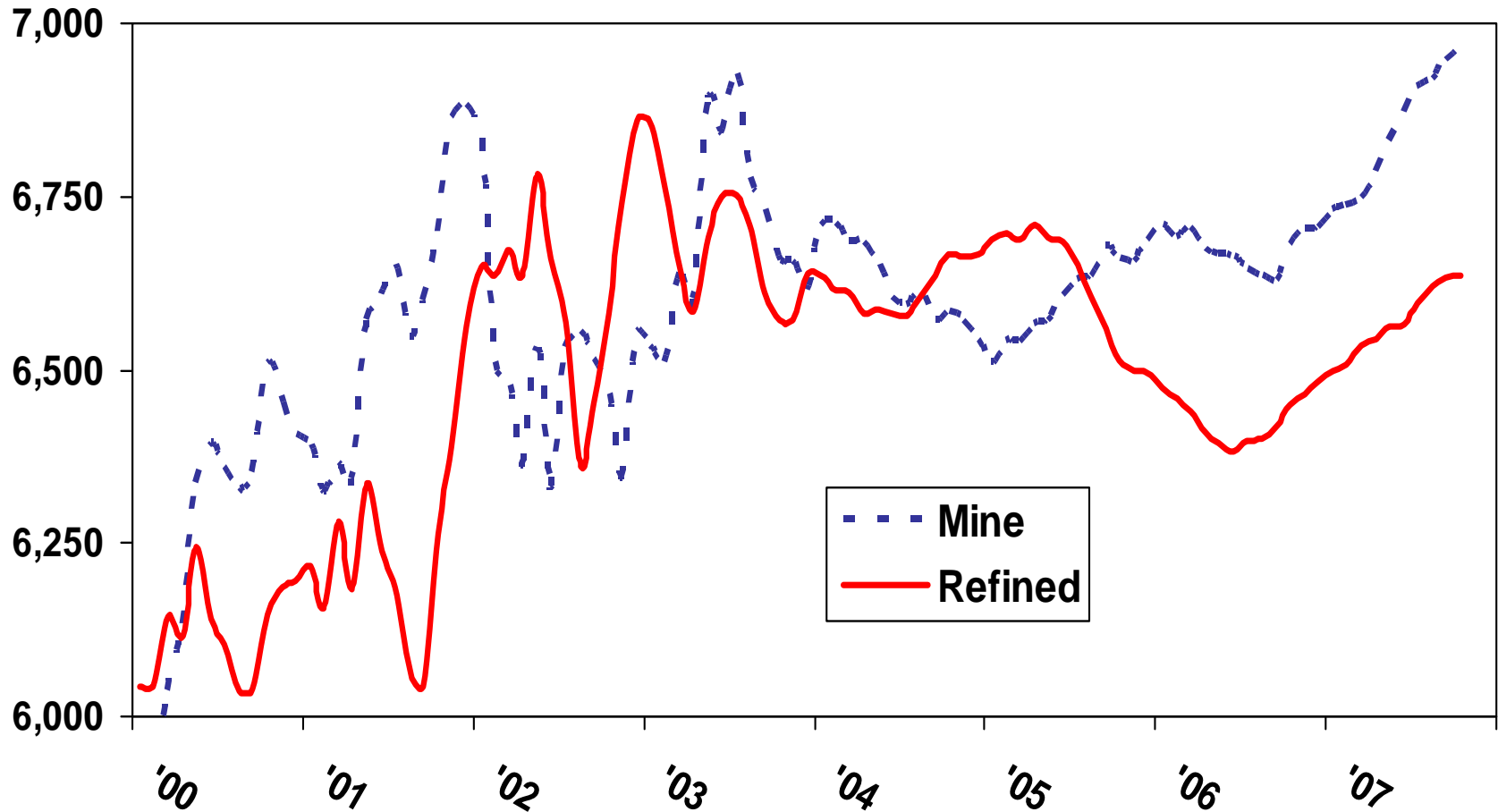
# Zinc Consumption vs IP Growth

zinc consumption slows then bolstered by econ rebound



# Zinc Mine, Refined Output

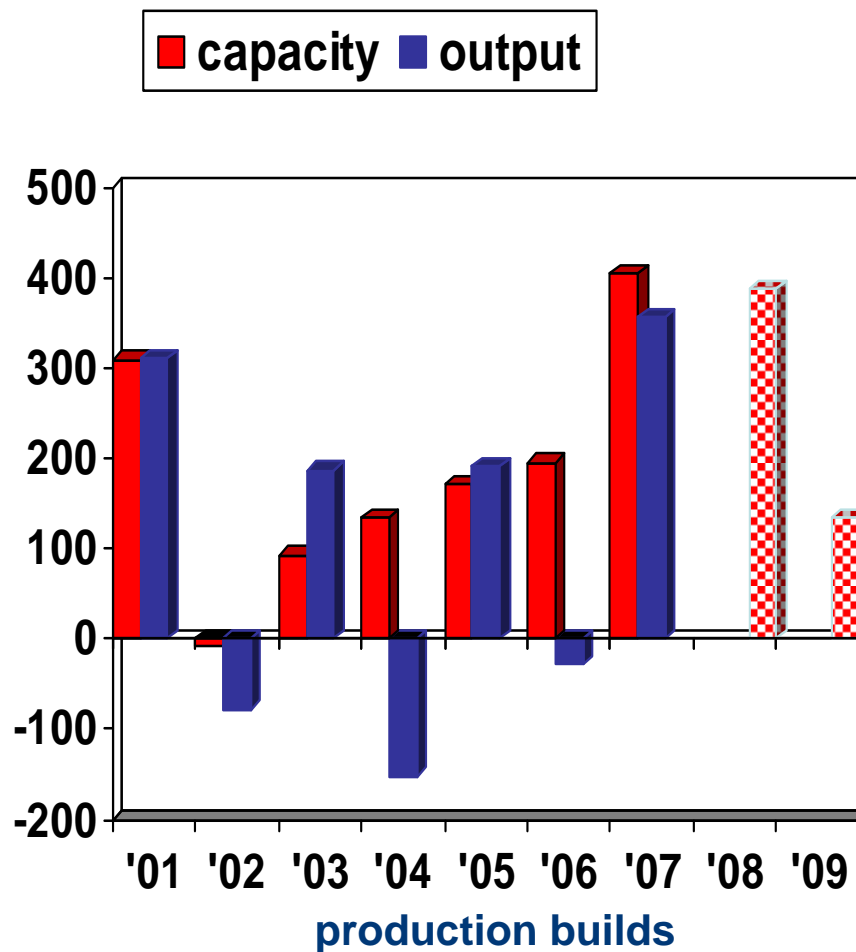
mine production, refined output gains



# New/Expanded Zinc Capacity, kt

large capacity builds planned

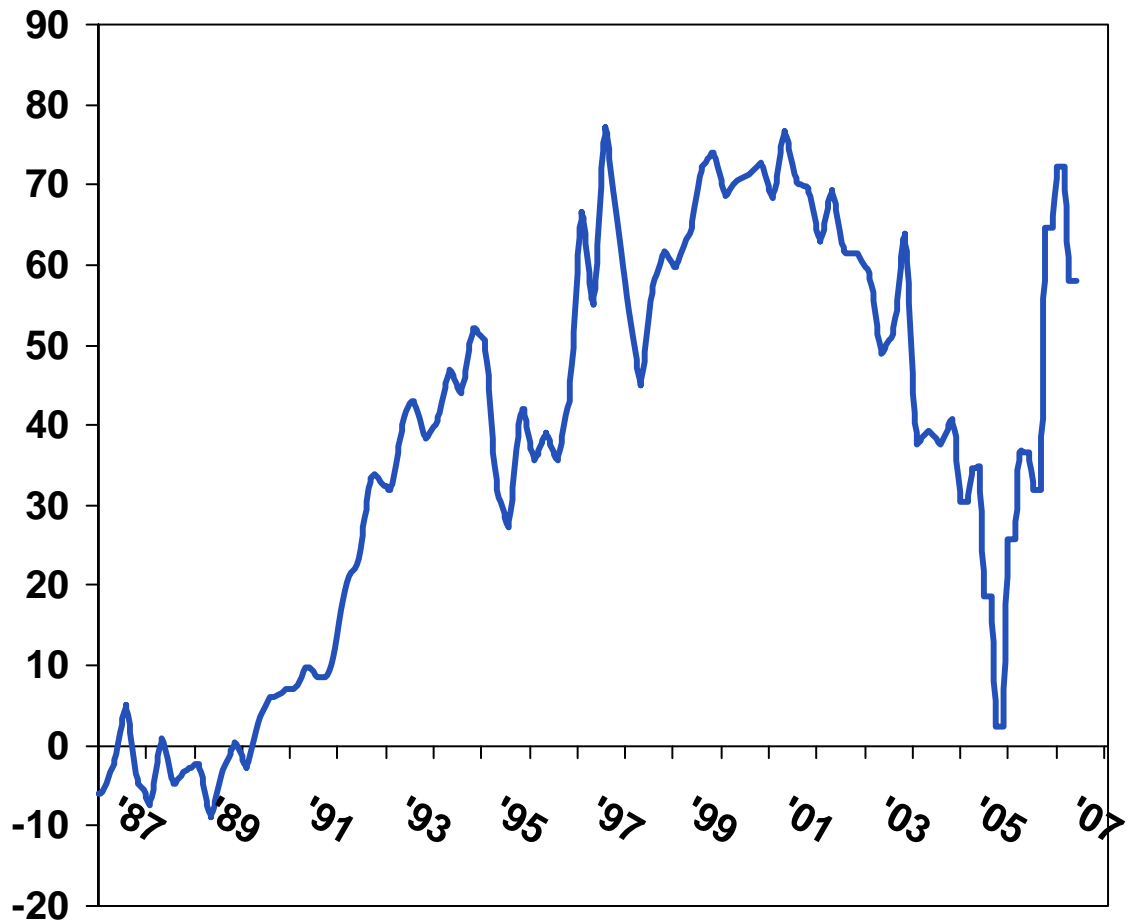
- **Australian Projects** (Century, George Fisher, MacArthur River, Cannington, Alura, Blendavale & Scuddles)
- **North American Projects** (Red Dog, Brunswick, & Kidd Creek)
- **Ireland Projects** (Tara & Lisheen)
- **Peru Projects** (Antamina & Iscaycruz)



# Net East to West Trade, Chinese Exports

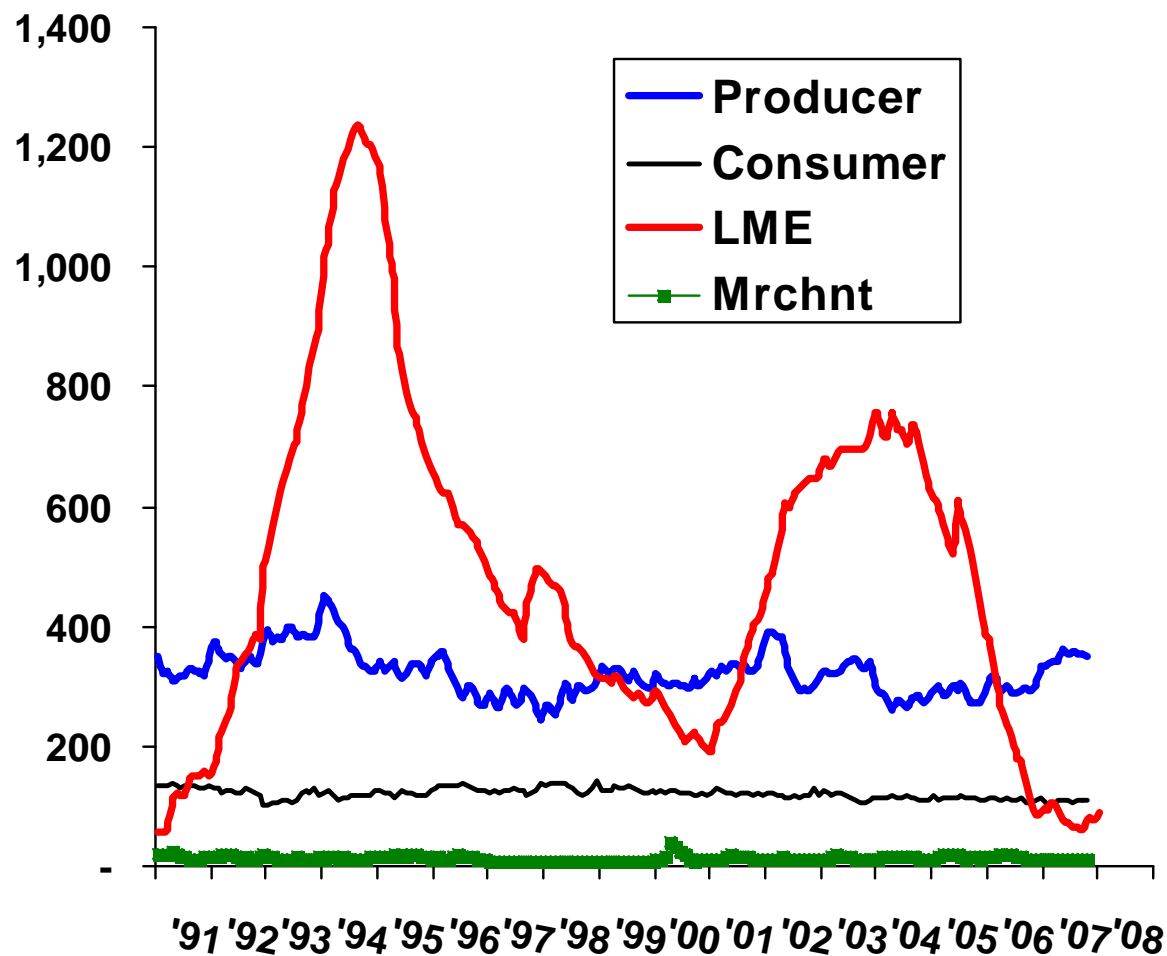
rebound in late 2006, 2007

- surge in 1990s,
- slowdown in 2000s,
- rebound last few quarters



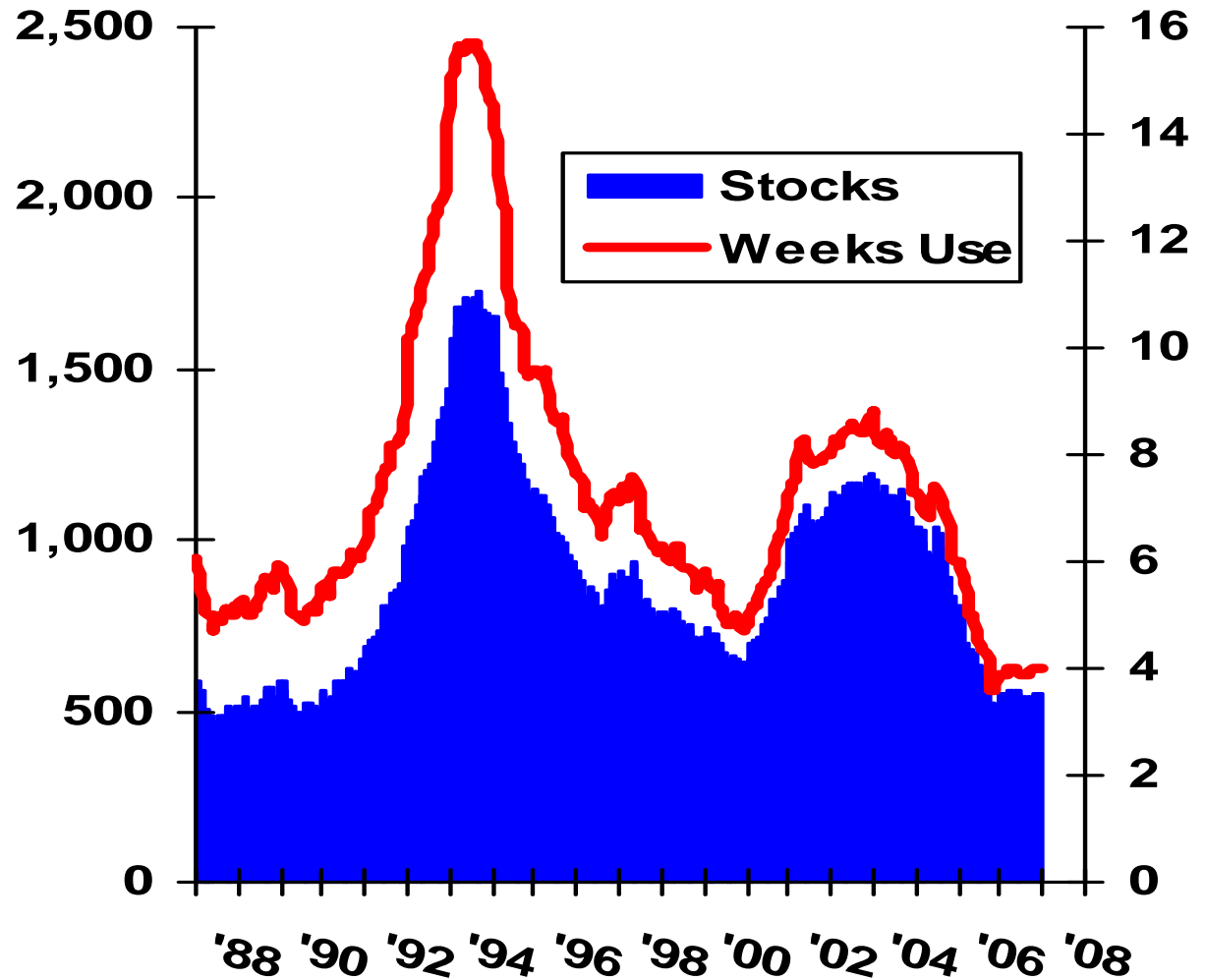
# Zinc Inventories, declines over past year

- 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

	<u>07Q4</u>	<u>08Q1</u>	<u>08Q2</u>	<u>08Q3</u>	<u>08Q4</u>	<u>09Q1</u>	<u>09Q2</u>	<u>09Q3</u>	<u>09Q4</u>
<b>Consumption</b>	1,860	1,871	1,850	1,834	1,899	1,926	1,919	1,919	2,005
	<b>1.5%</b>	<b>1.6%</b>	<b>2.7%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.9%</b>	<b>3.8%</b>	<b>4.7%</b>	<b>5.6%</b>
<b>Production</b>	1,827	1,794	1,875	1,849	1,897	1,852	1,920	1,883	1,931
	<b>7%</b>	<b>6%</b>	<b>5%</b>	<b>5%</b>	<b>4%</b>	<b>3%</b>	<b>2%</b>	<b>2%</b>	<b>2%</b>
<b><u>E/W Trade</u></b>	<u>129</u>	<u>124</u>	<u>119</u>	<u>114</u>	<u>109</u>	<u>109</u>	<u>109</u>	<u>109</u>	<u>109</u>
<b>Supply</b>	1,818	1,849	1,836	1,873	1,873	1,901	1,882	1,914	1,911
<b>Reported Bal</b>	<b>13</b>	<b>(11)</b>	<b>14</b>	<b>68</b>	<b>(10)</b>	<b>(10)</b>	<b>(10)</b>	<b>8</b>	<b>(69)</b>
<b>Stocks</b>	552	541	555	623	613	602	592	600	532
<b>Weeks Use</b>	<b>3.9</b>	<b>3.8</b>	<b>3.9</b>	<b>4.4</b>	<b>4.3</b>	<b>4.2</b>	<b>4.1</b>	<b>4.2</b>	<b>3.7</b>

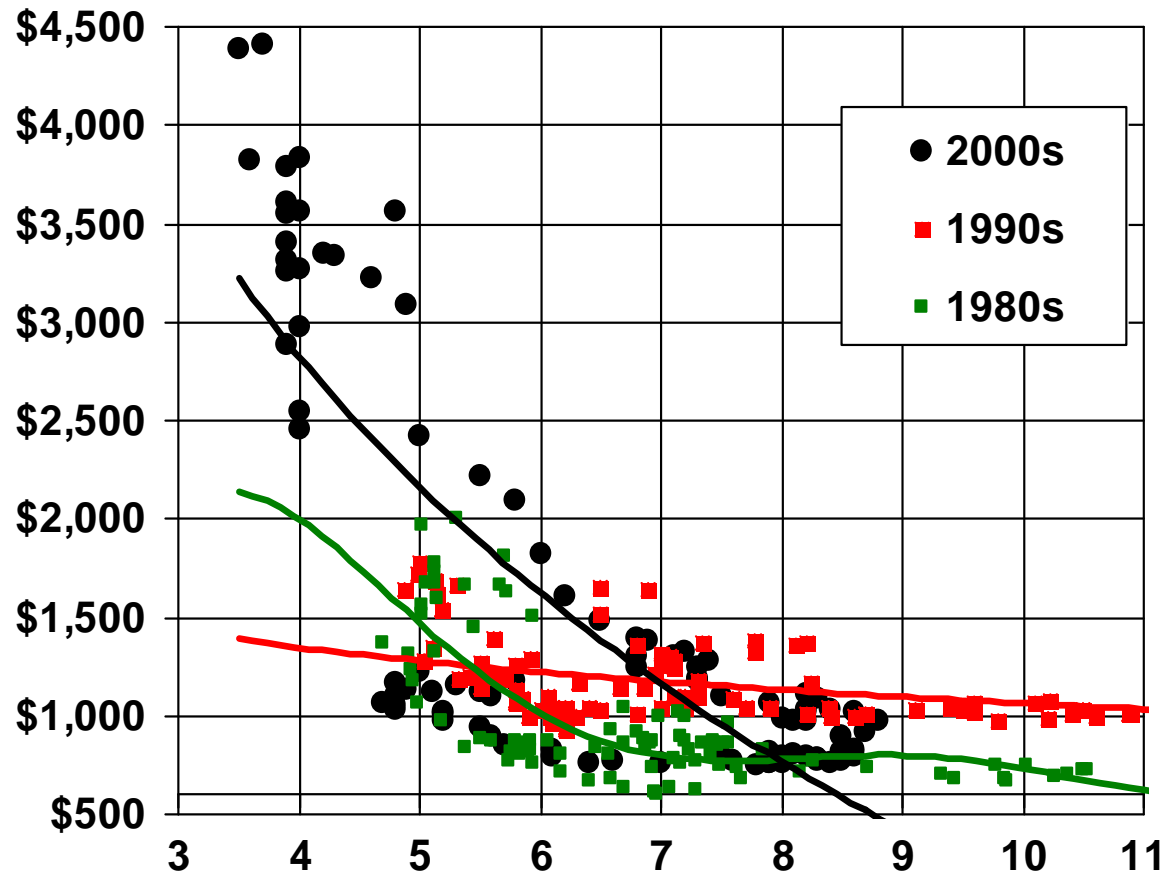
# Zinc Supply-Demand Outlook

	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<b>Consumption</b>	7,422	7,066	7,276	7,298	7,453	7,770
	<b>4.3%</b>	<b>-4.8%</b>	<b>3.0%</b>	<b>0.3%</b>	<b>2.1%</b>	<b>4.2%</b>
<b>Production</b>	6,500	6,736	6,707	7,064	7,414	7,585
	<b>-3.1%</b>	<b>3.6%</b>	<b>-0.4%</b>	<b>5.3%</b>	<b>5.0%</b>	<b>2.3%</b>
<b><u>E/W Trade</u></b>	<u>466</u>	<u>258</u>	<u>432</u>	<u>582</u>	<u>466</u>	<u>436</u>
<b>Supply</b>	7,169	6,783	6,943	7,229	7,430	7,609
<b>Reported Balc</b>	<b>(161)</b>	<b>(207)</b>	<b>(279)</b>	<b>4</b>	<b>61</b>	<b>(81)</b>
<b>Stocks</b>	1,035	828	549	552	613	532
<b>Weeks Use</b>	<b>7.3</b>	<b>6.1</b>	<b>3.9</b>	<b>3.9</b>	<b>4.3</b>	<b>3.7</b>

# 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

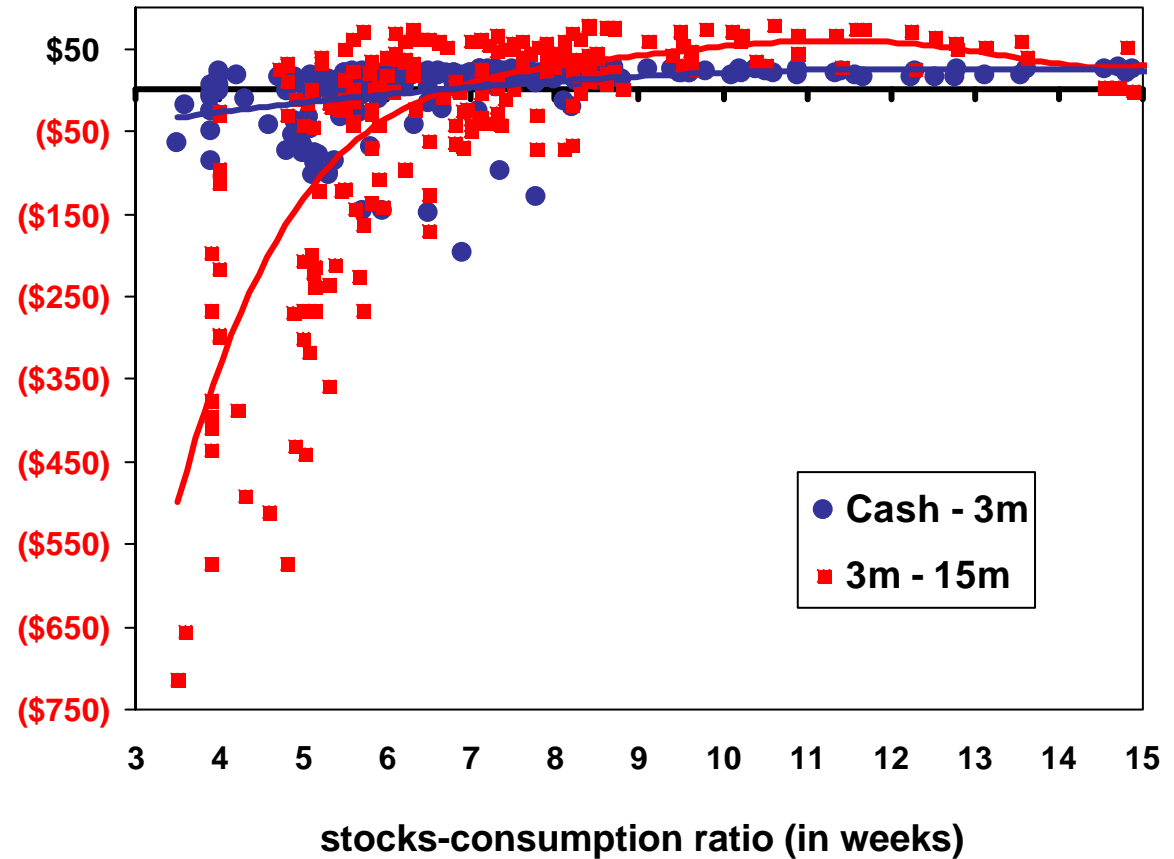
Equilibrium: 6 to 7 wks

Forecast wks use:

price:

...backwardations

spread



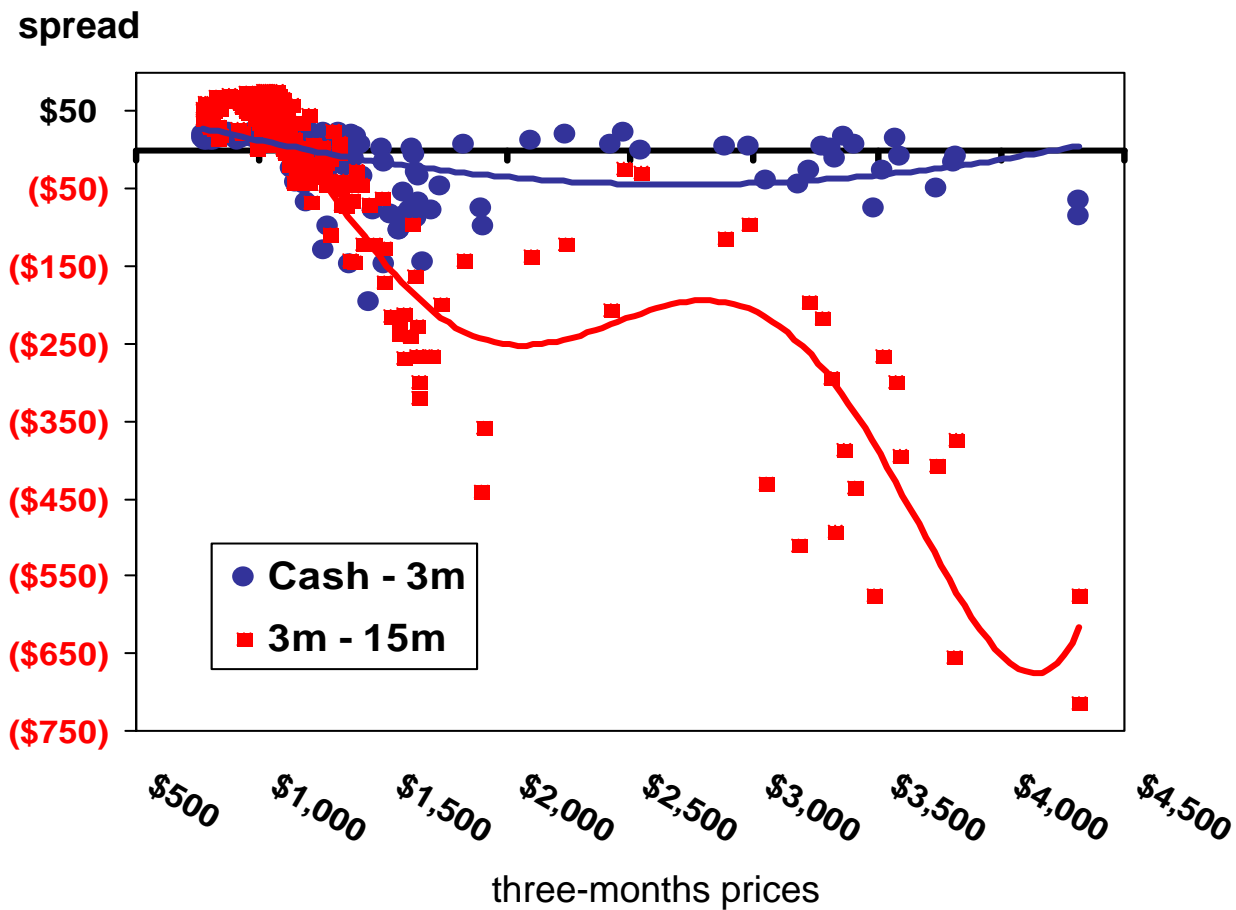
# Zinc Spreads vs. 3 Months

high prices, backwardations; low prices, contangos

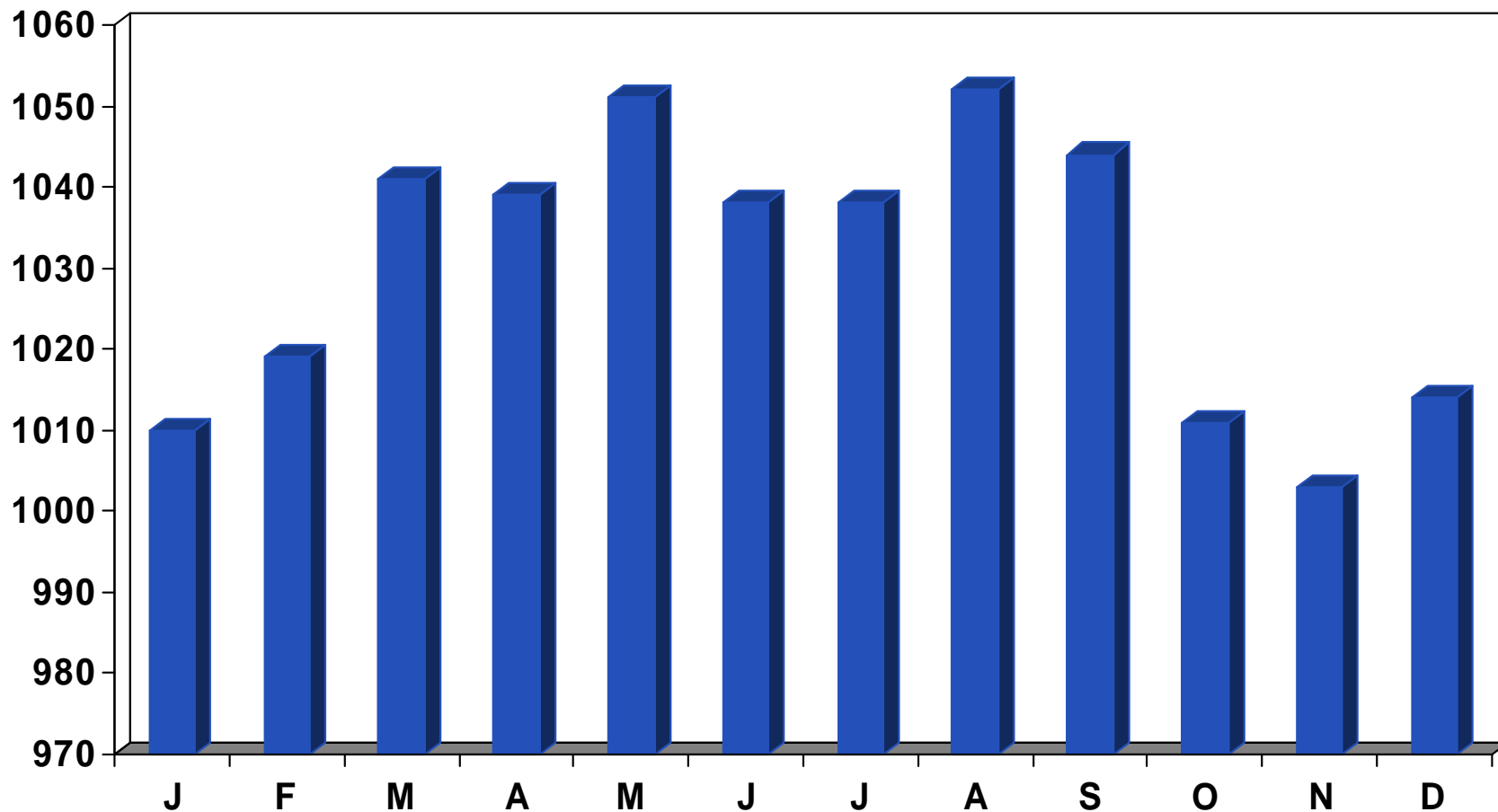
Current:  
\$2,560

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

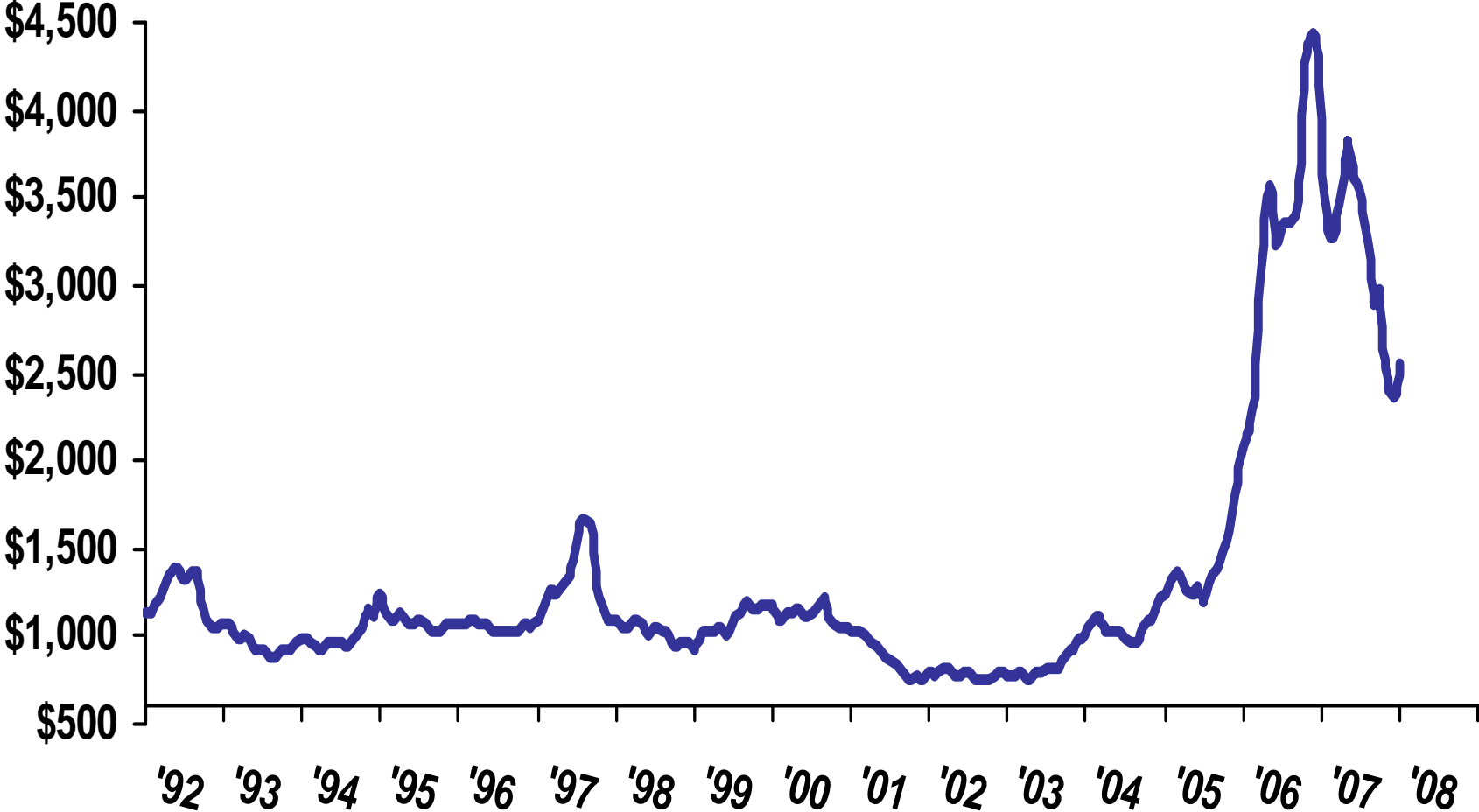
Equilibrium:  
~\$1,200



# Zinc Price Seasonals



# Zinc Price Outlook

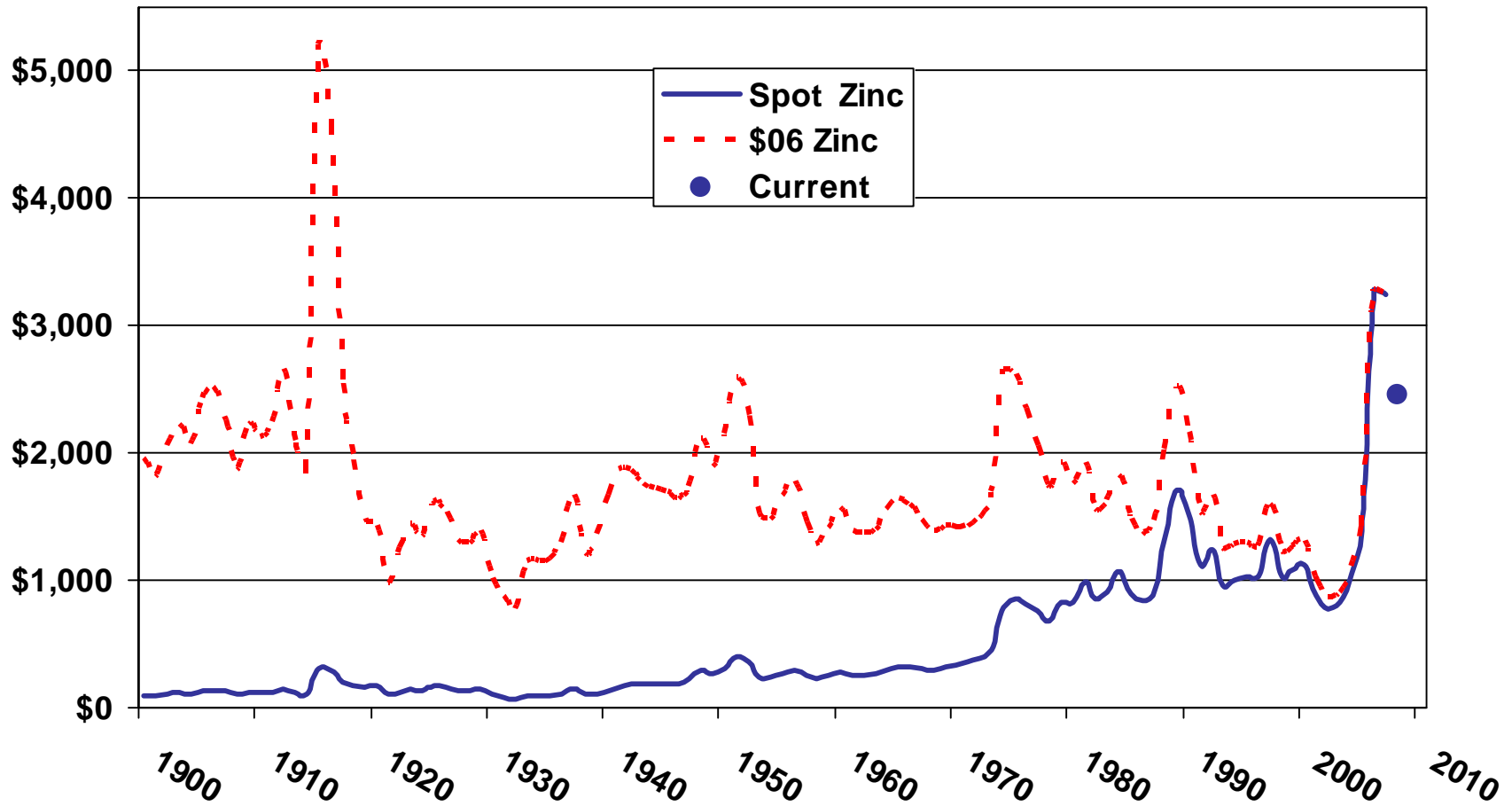


# Zinc Outlook

- 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

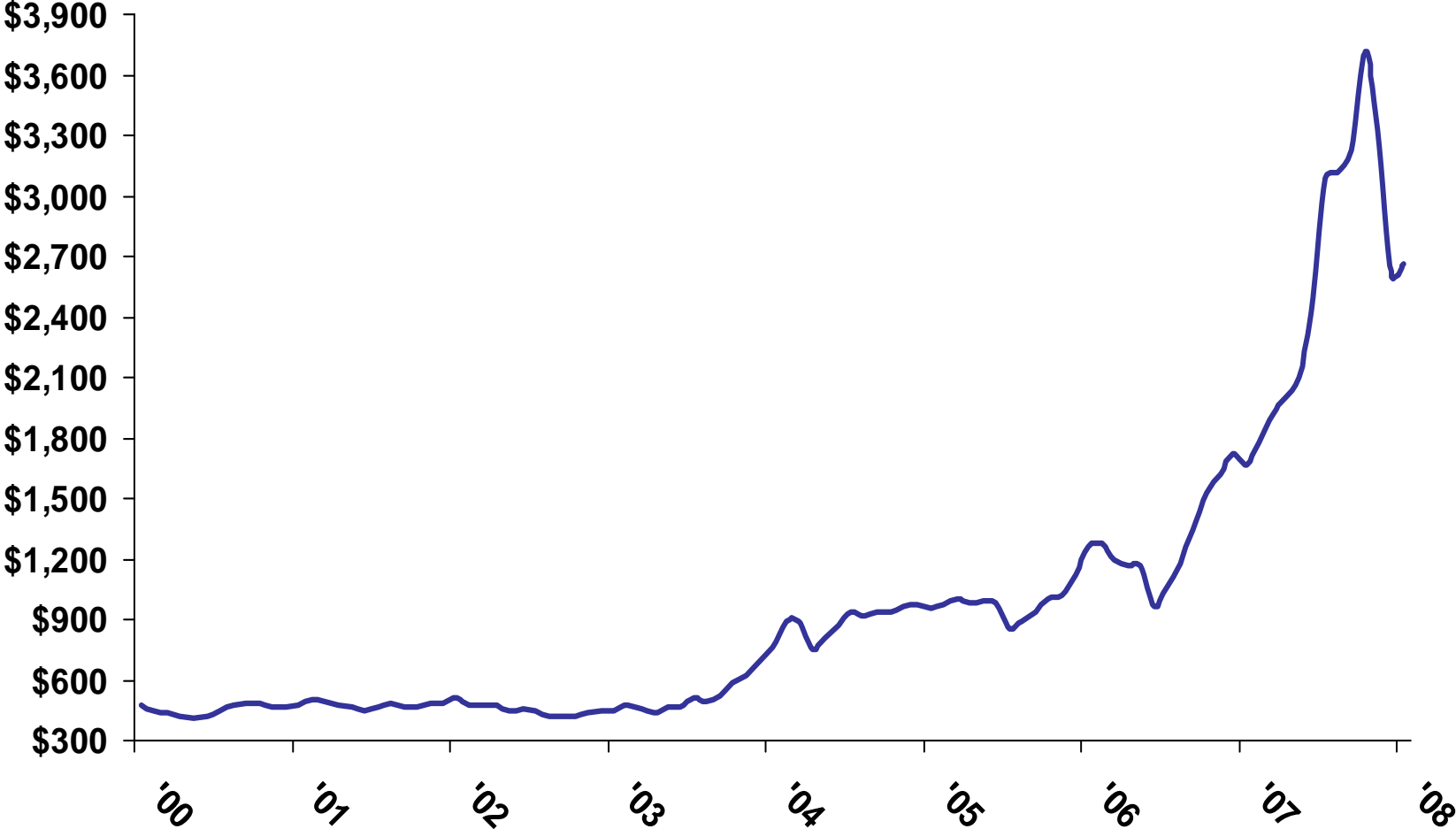
# Zinc Prices, Spot & Deflated

Annual Averages, CPI/GNP Deflated



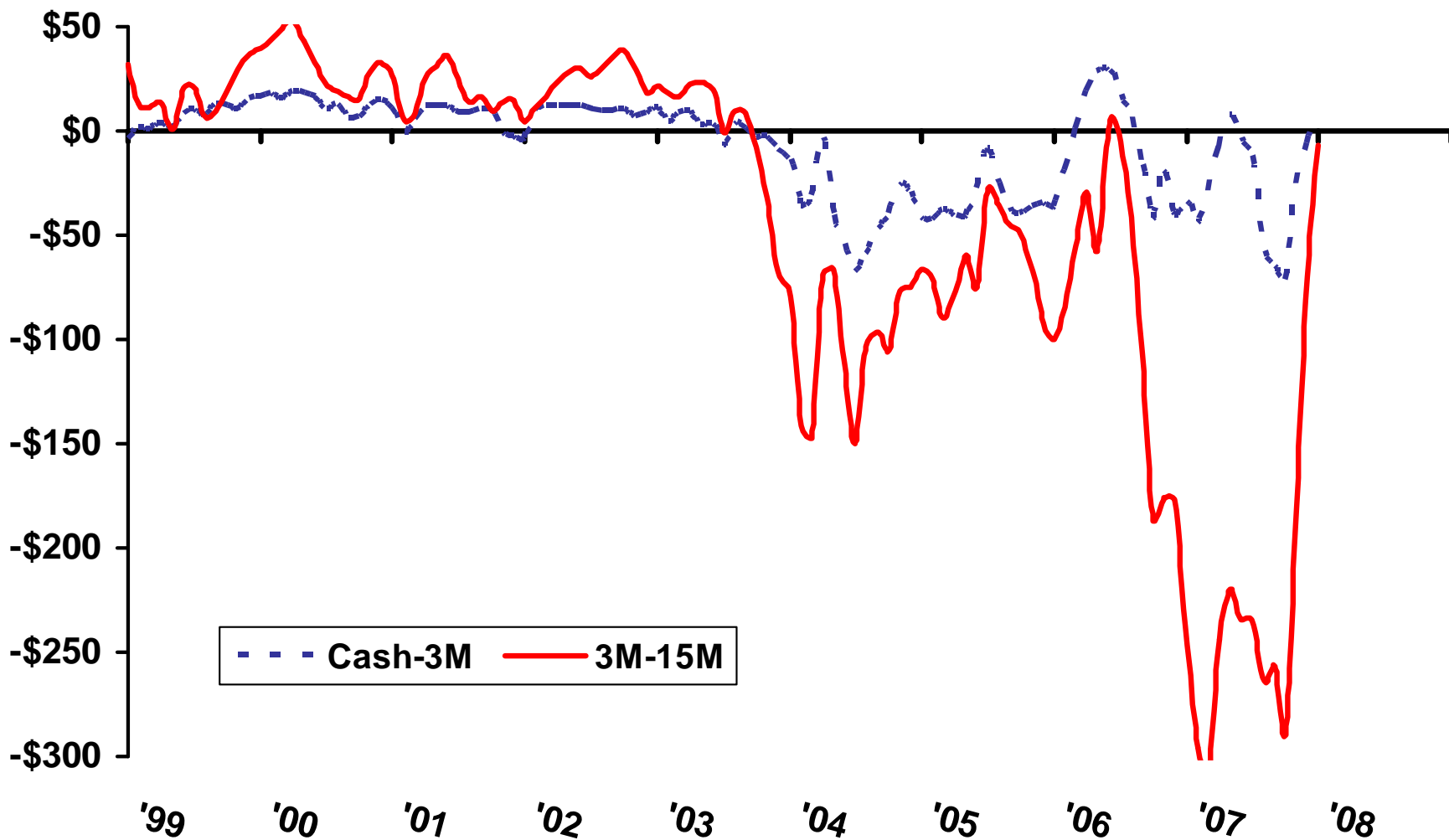
# Lead Market Review

# Lead, Price Review



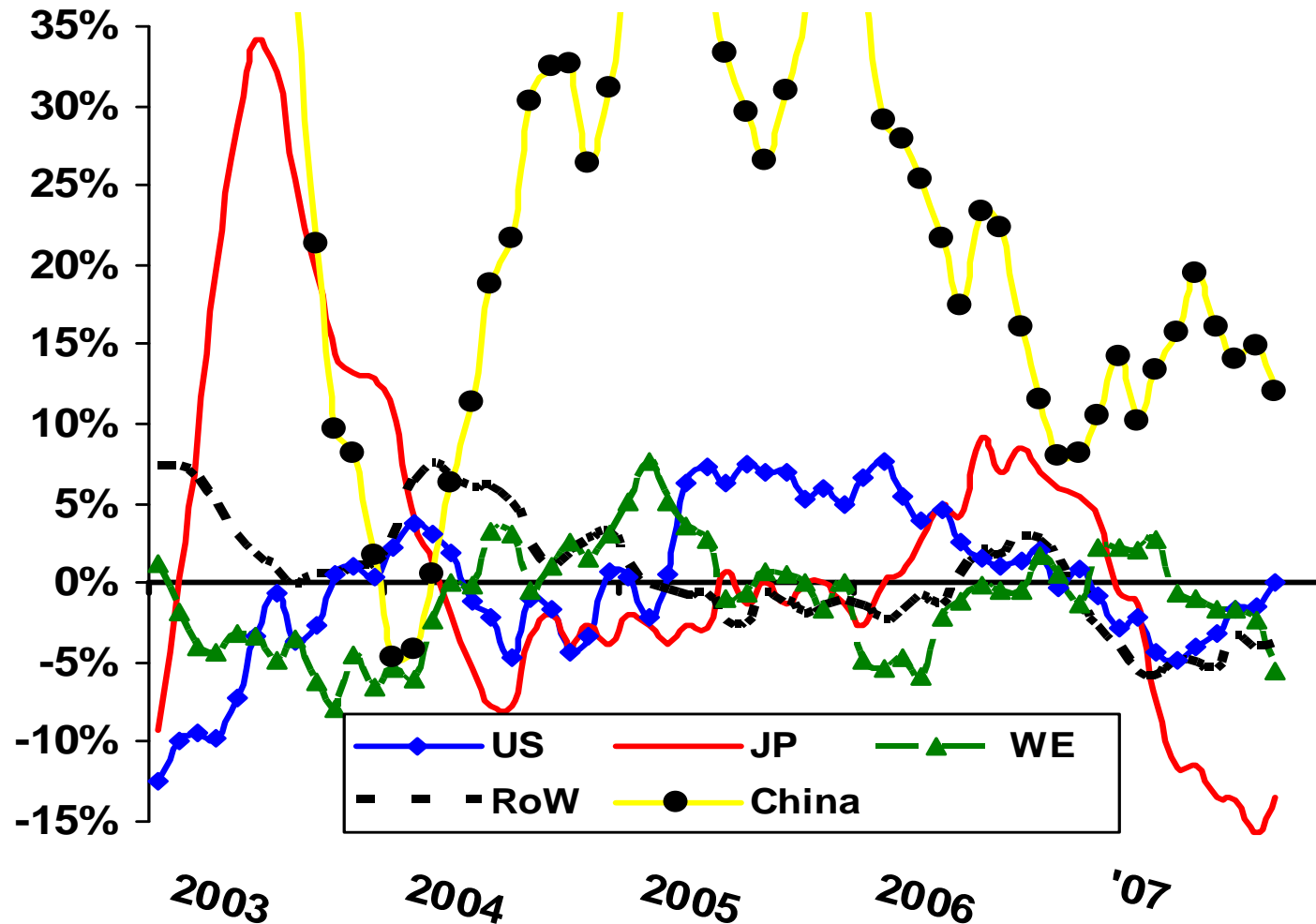
# Lead Spreads

spreads tighten, then ease over last few months



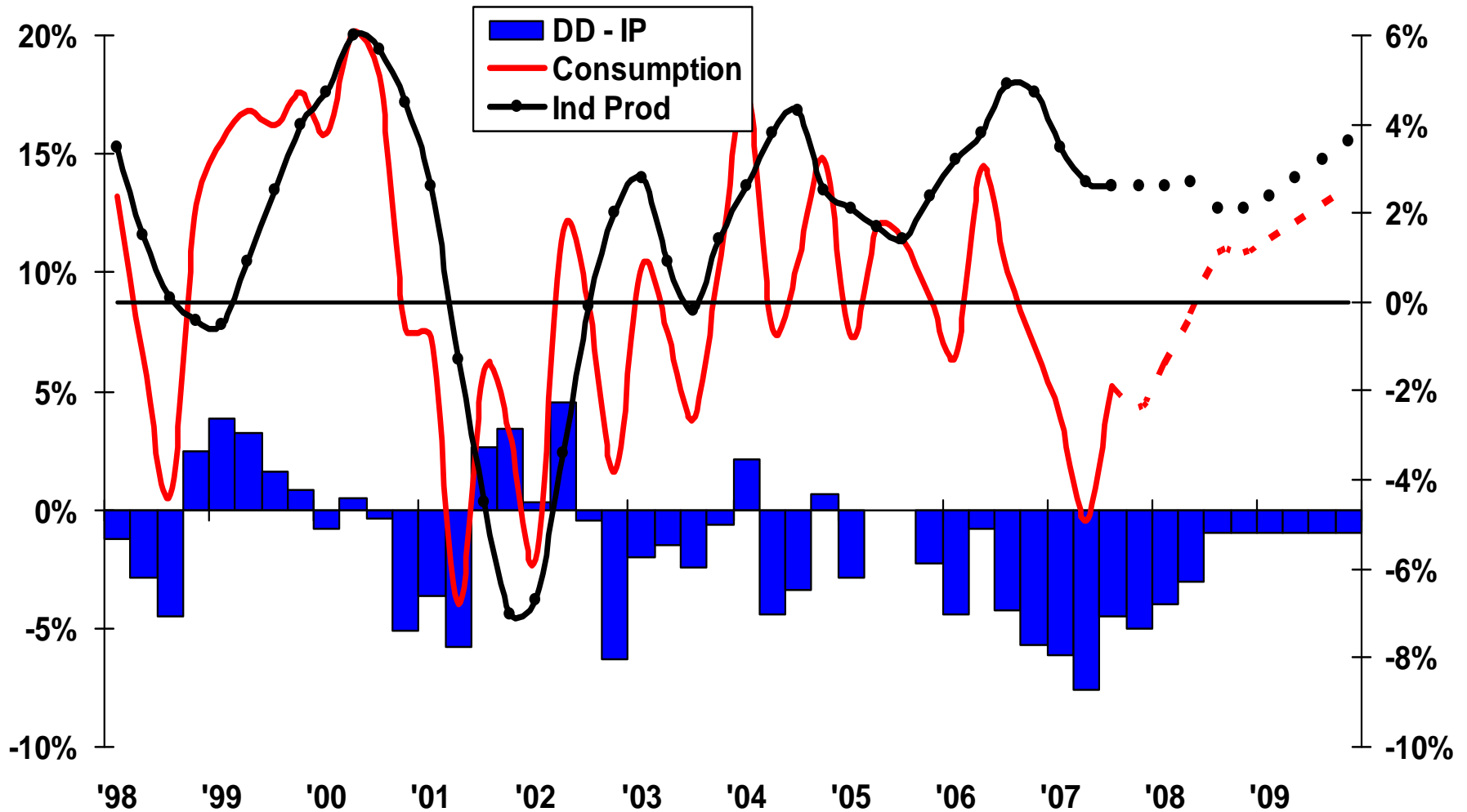
# Western World Lead Consumption Growth

West weakens, China steady



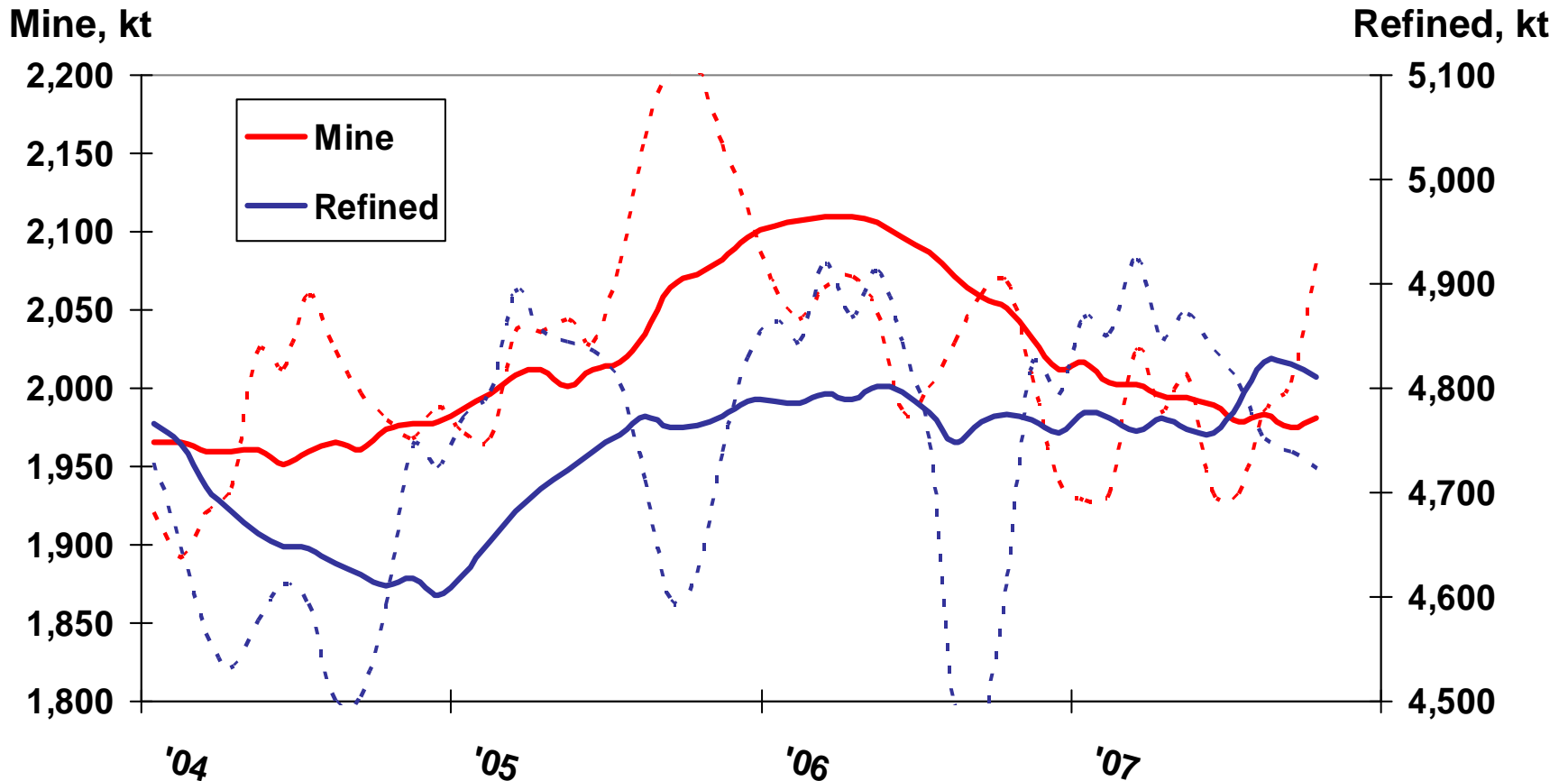
# Lead Consumption vs. IP Growth

lead consumption slows then bolstered by econ rebound



# Lead Mine, Refined Output

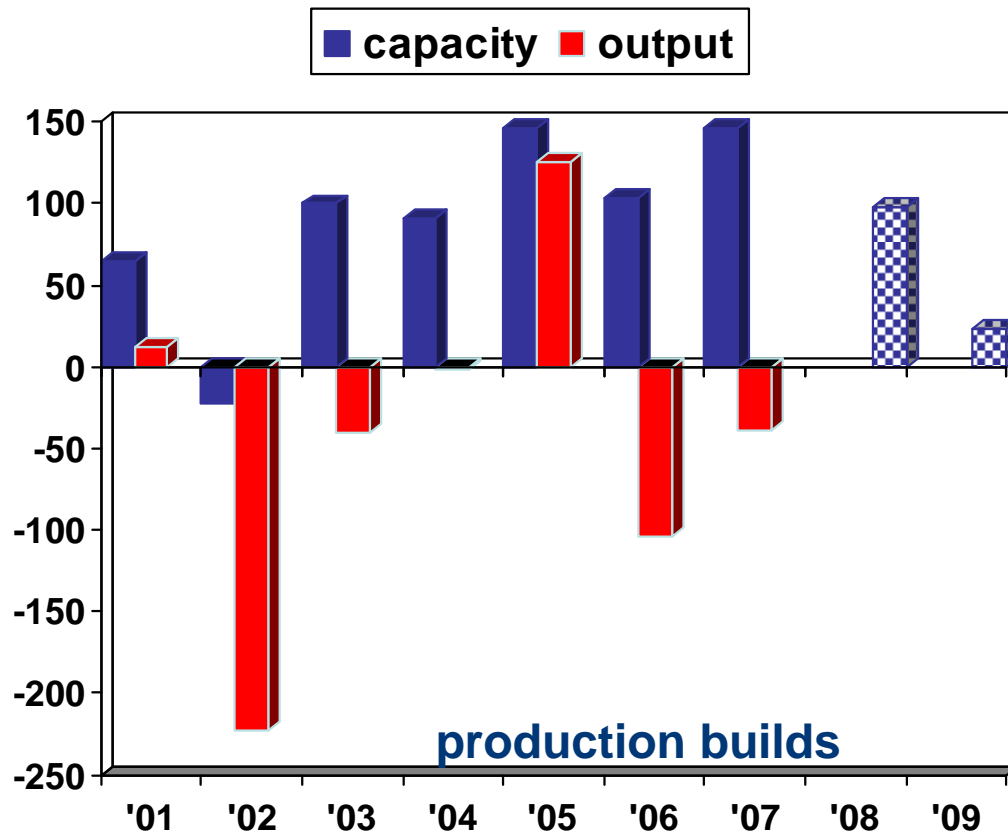
mine production firms, refined eases



# New/Expanded Lead Capacity, kt

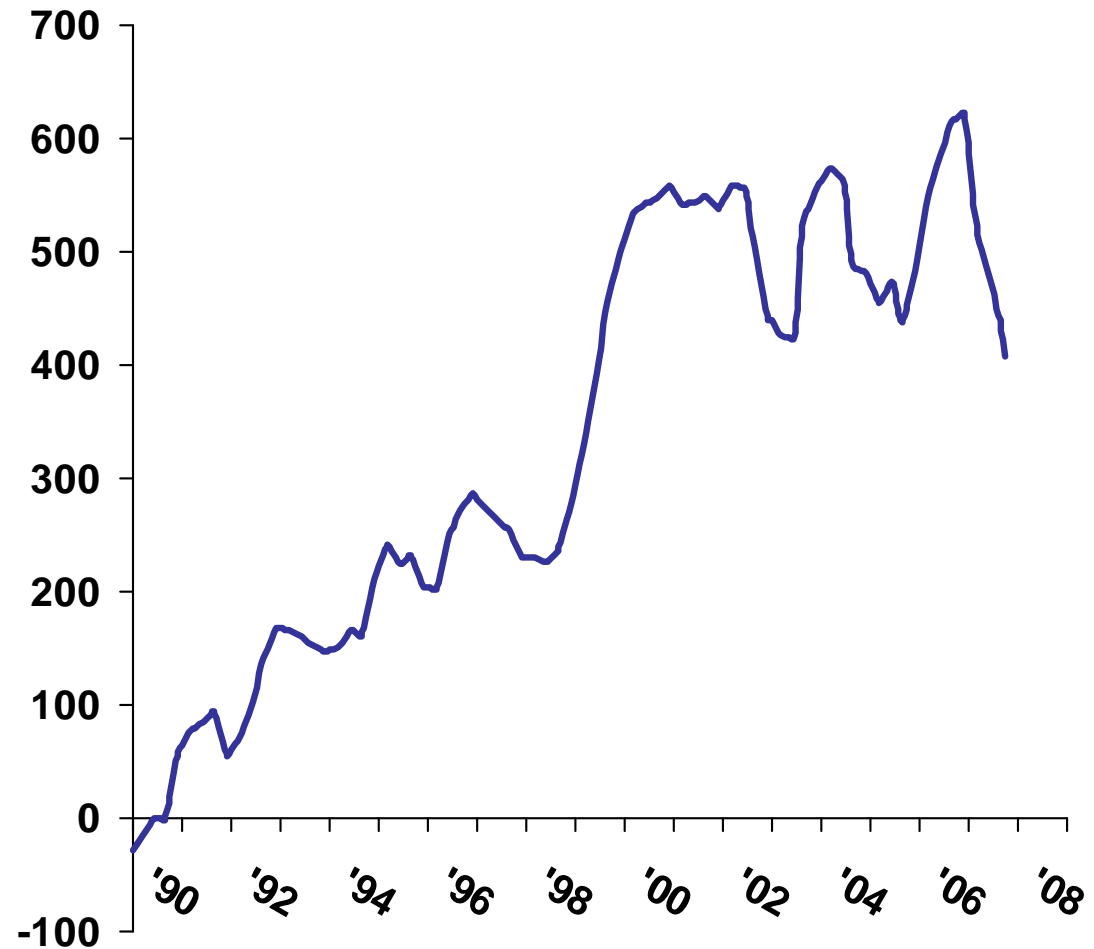
production builds expected

- Australian Projects  
(Broken Hill, Cannington, Mt Isa, Magellan, George Fisher, Century)
- Cominco Alaska's Red Dog Project
- Canadian Projects  
(Caribou, Brunswick & Faro)



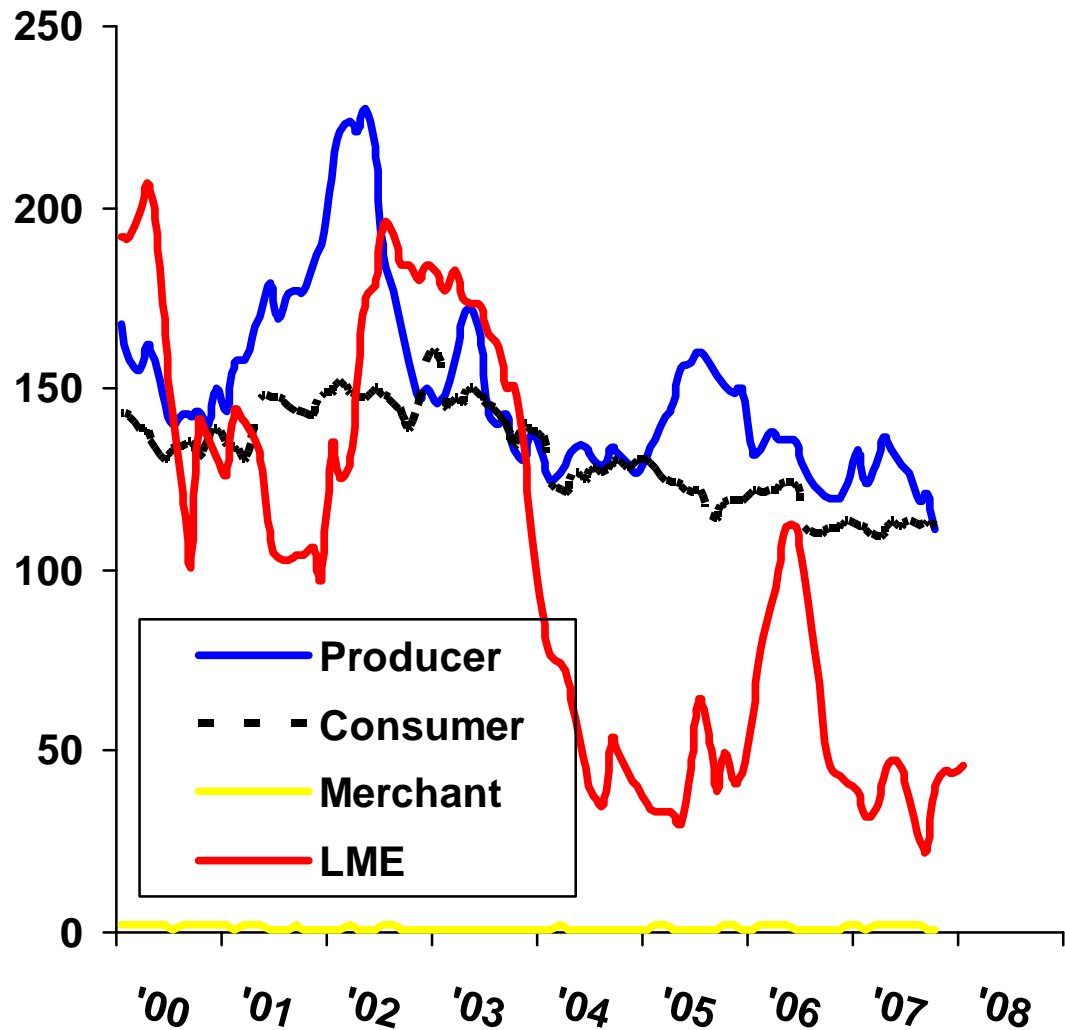
# Net East to West Trade, Chinese Exports

- surge in 1990s,
- slowdown in 2000s,
- steady



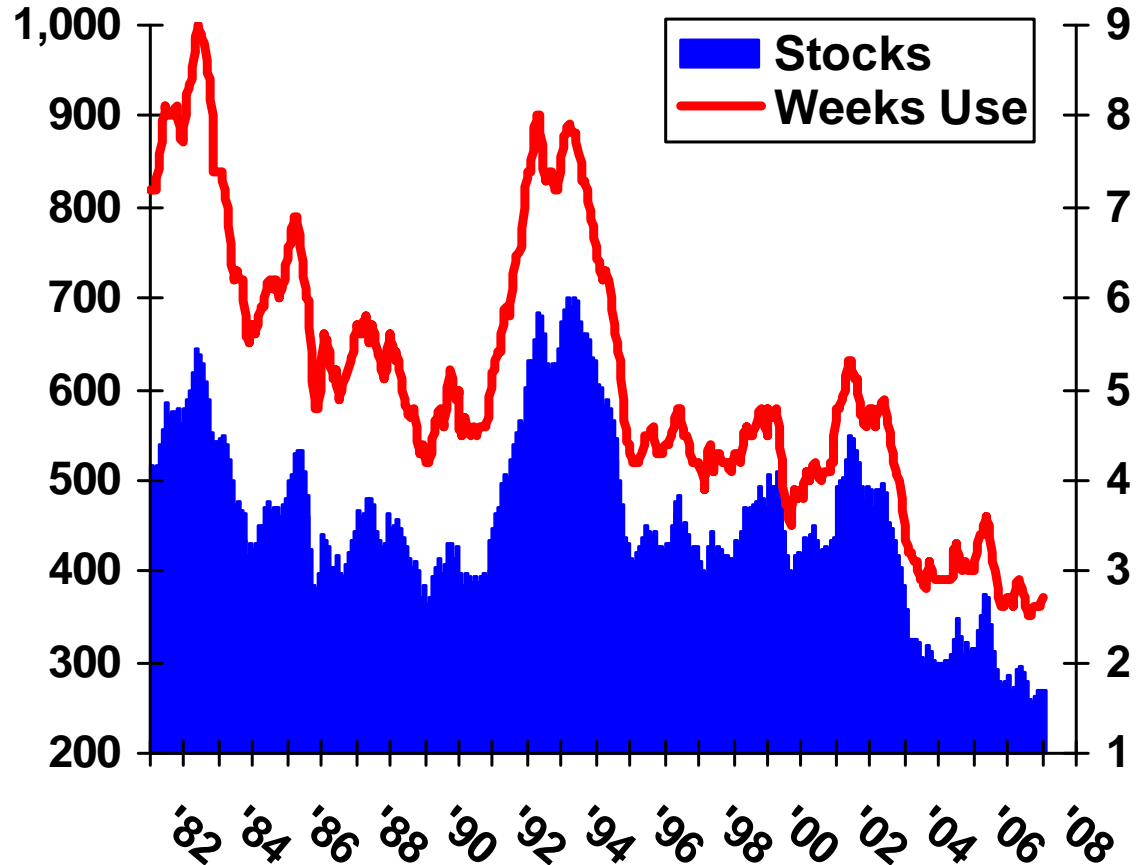
# Lead Inventories, ... recent declines

- LME stocks fall
- producer declines, consumer well managed



# Lead Stocks and Weeks Usage

- stocks-use ratio drops to 2.7 weeks
- stocks critically low



# Lead Supply-Demand Outlook

	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<b>Consumption</b>	5,315	5,425	5,456	5,475	5,313	5,320	5,426
	<b>-0.4%</b>	<b>2.1%</b>	<b>0.6%</b>	<b>0.3%</b>	<b>-3.0%</b>	<b>0.1%</b>	<b>2.0%</b>
<b><i>Mine</i></b>	1,980	1,979	2,105	2,012	1,973	2,071	2,105
<b><i>Refined</i></b>	4,781	4,601	4,788	4,758	4,810	4,972	5,107
<b><u>E-W Trade</u></b>	<u>557</u>	<u>481</u>	<u>483</u>	<u>623</u>	<u>353</u>	<u>248</u>	<u>208</u>
<b><i>Supply</i></b>	5,399	5,138	5,307	5,400	5,163	5,220	5,315
		<b>-4.8%</b>	<b>3.3%</b>	<b>1.8%</b>	<b>-4.4%</b>	<b>1.1%</b>	<b>1.8%</b>
<b><i>Balance</i></b>	<b>-76</b>	<b>-109</b>	<b>4</b>	<b>-23</b>	<b>-12</b>	<b>28</b>	<b>4</b>
<b><i>Stocks</i></b>	407	299	303	280	268	296	300
<b><i>Weeks Use</i></b>	<b>4.0</b>	<b>2.9</b>	<b>2.9</b>	<b>2.7</b>	<b>2.6</b>	<b>2.9</b>	<b>2.9</b>

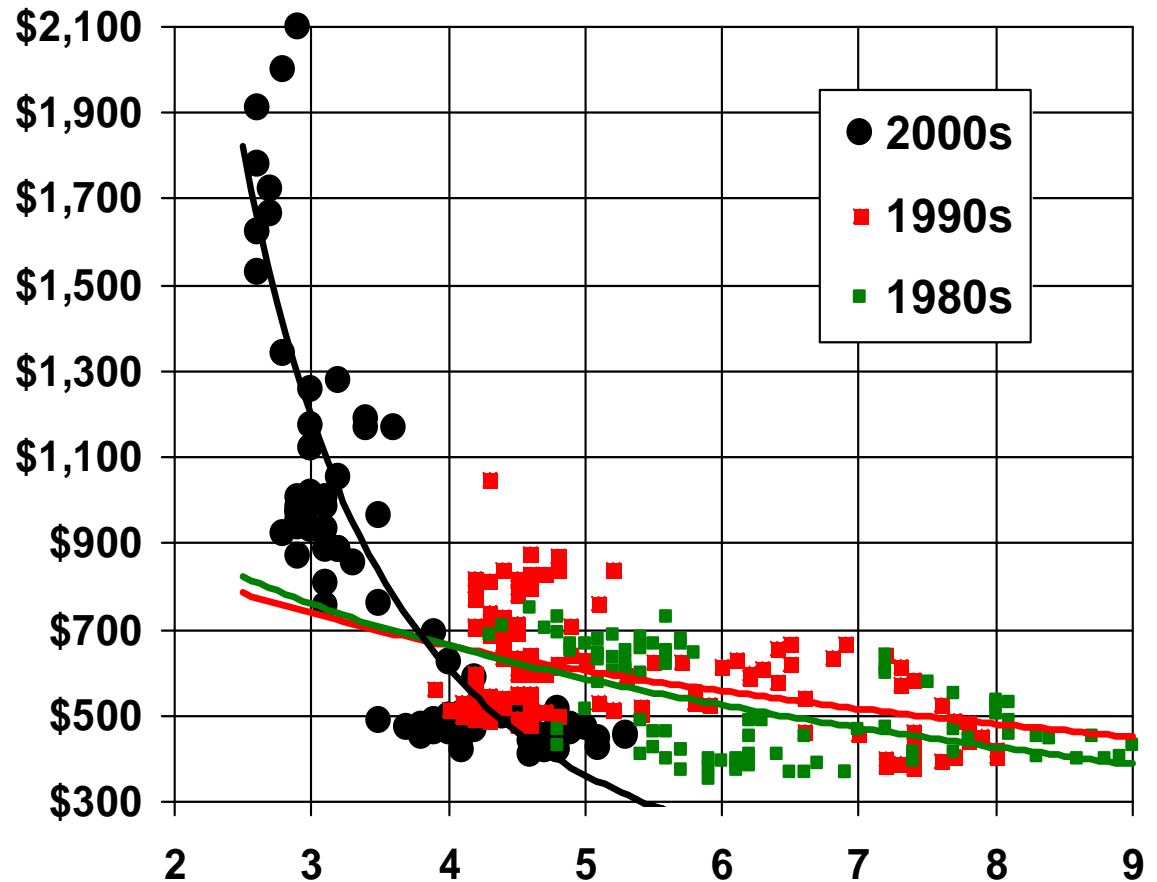
# Lead Supply-Demand Outlook

	<u>07Q4</u>	<u>08Q1</u>	<u>08Q2</u>	<u>08Q3</u>	<u>08Q4</u>	<u>09Q1</u>	<u>09Q2</u>	<u>09Q3</u>	<u>09Q4</u>
<b>Consumption</b>	1,335	1,315	1,326	1,328	1,350	1,334	1,350	1,357	1,385
	-2.4%	-1.4%	-0.3%	1.1%	1.1%	1.4%	1.8%	2.2%	2.6%
<i>Mine</i>	483	535	510	522	504	549	519	527	509
<i>Refined</i>	1,185	1,262	1,248	1,231	1,231	1,308	1,285	1,260	1,254
<u><i>E-W Trade</i></u>	<u>72</u>	<u>67</u>	<u>62</u>	<u>62</u>	<u>57</u>	<u>57</u>	<u>52</u>	<u>52</u>	<u>47</u>
<b>Supply</b>	1,257	1,329	1,310	1,293	1,288	1,365	1,337	1,312	1,301
	-7.0%	2.2%	-2.8%	2.8%	2.5%	2.7%	2.1%	1.5%	1.0%
<b>Balance</b>	10	33	3	21	-29	51	-2	0	-44
<b>Stocks</b>	268	301	304	325	296	347	344	344	300
<b>Weeks Use</b>	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



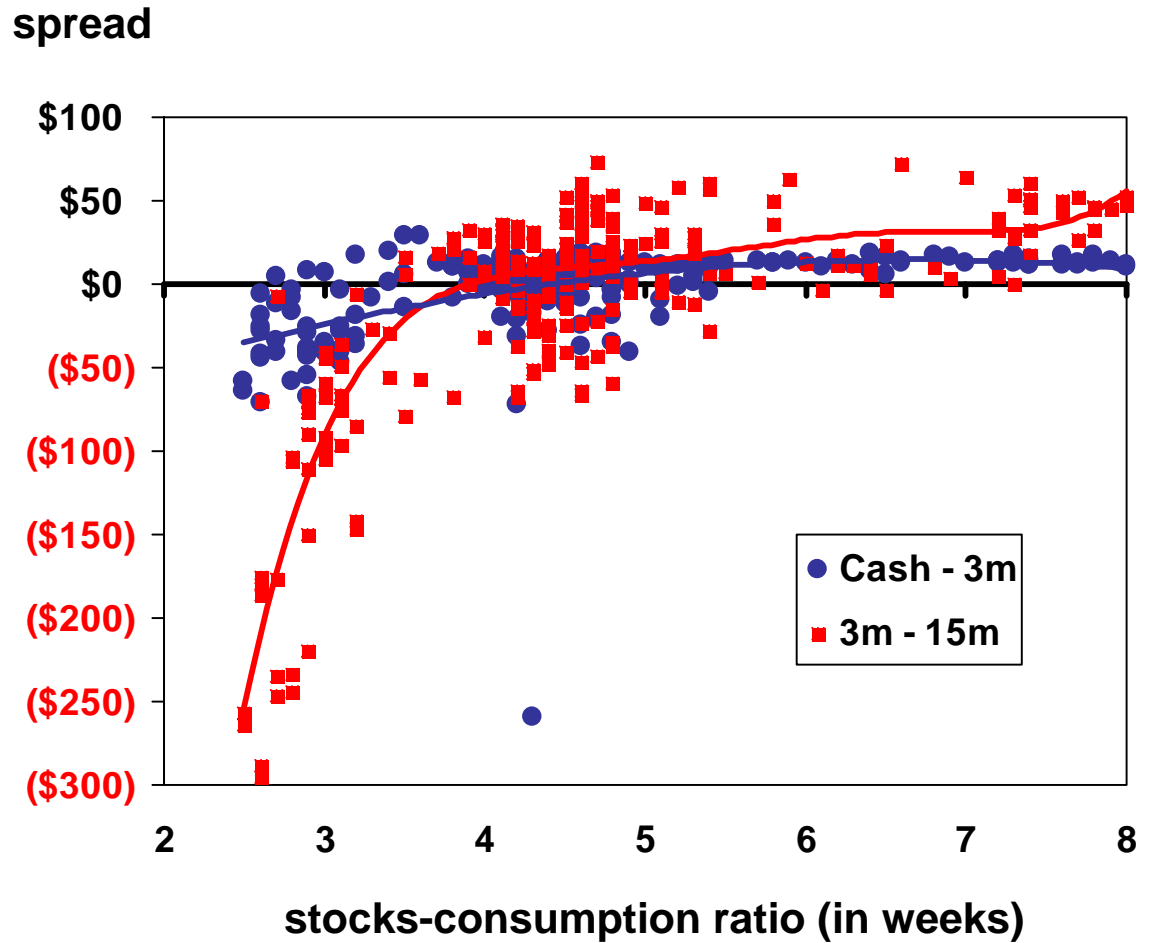
# Lead Stocks Ratio vs Spread

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



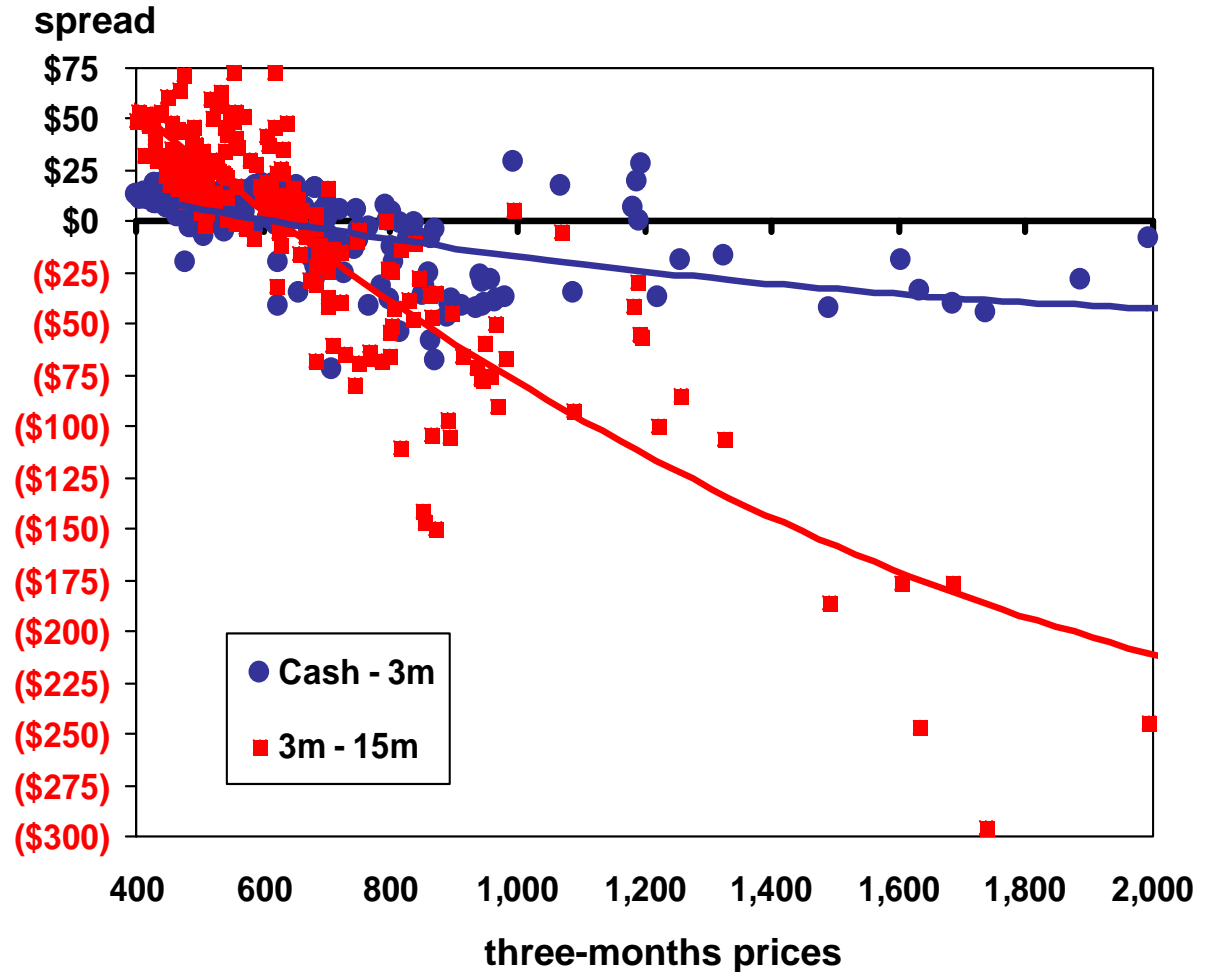
# Lead Spreads vs 3 Months

high prices, backwardations; low prices, contangos

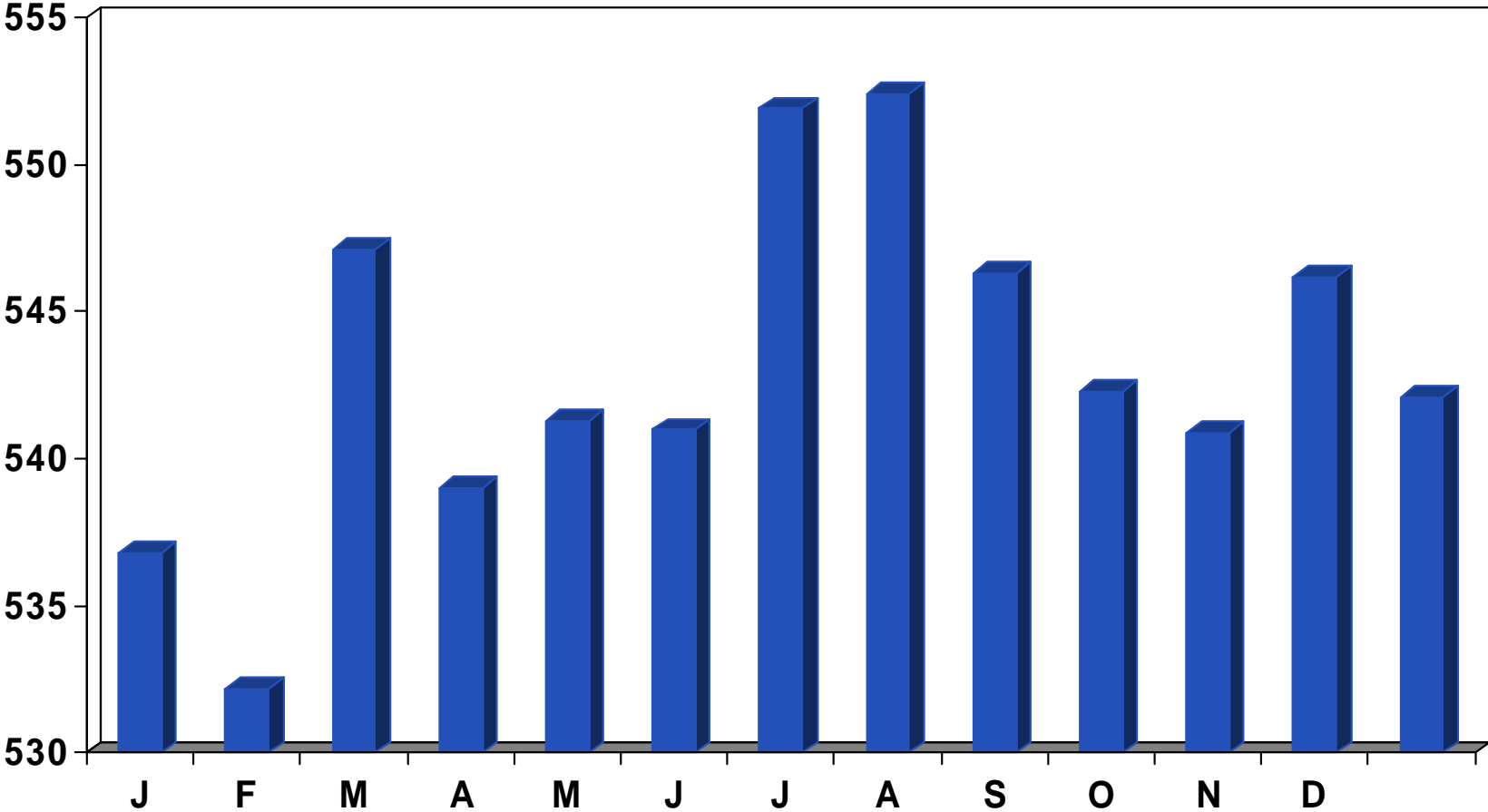
Current:  
\$2,665

c-3m: \$5c  
3-15m: \$7b

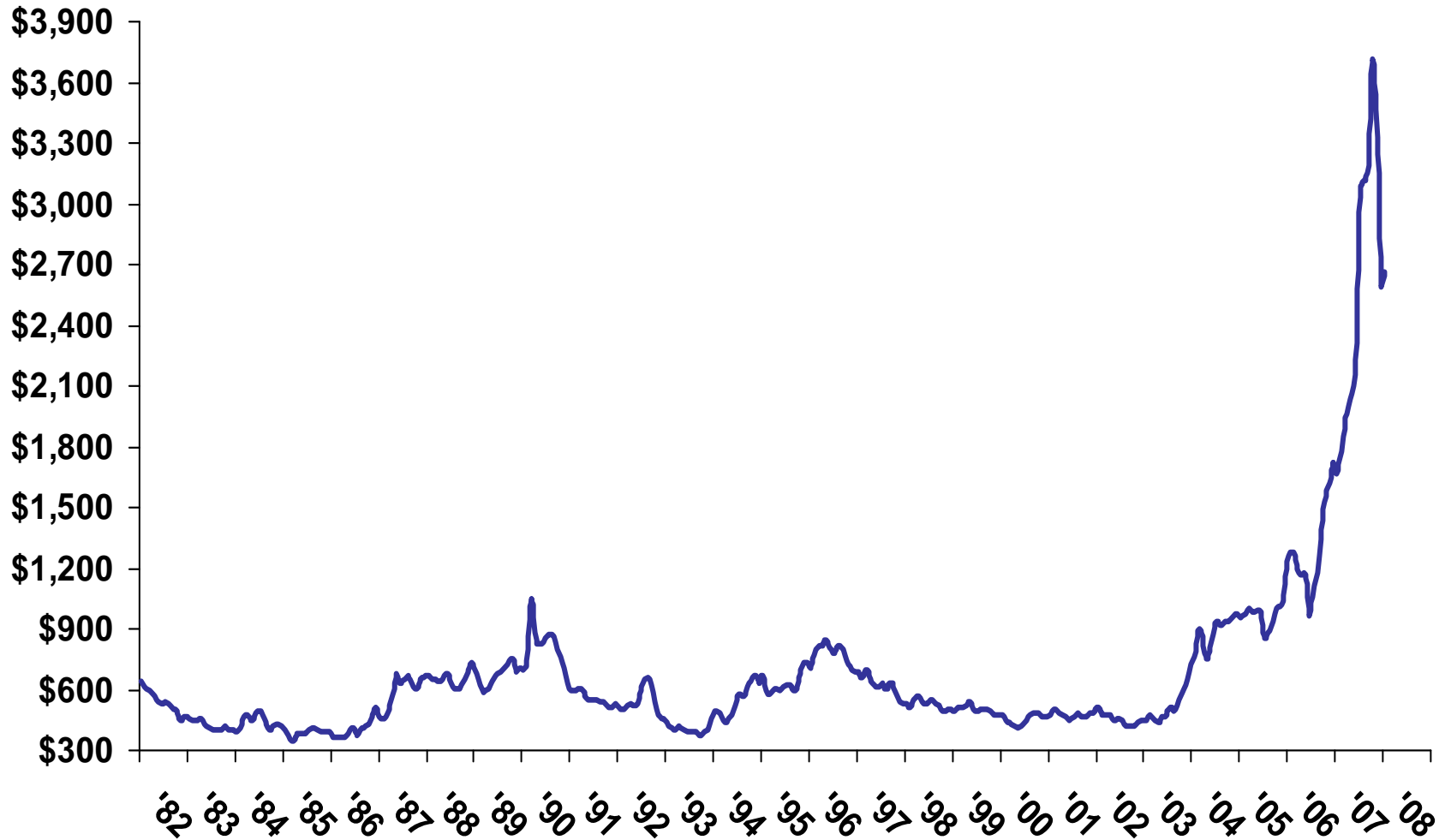
Equilibrium:  
~ \$650



# Lead Price Seasonals



# Lead, Long Term Prices

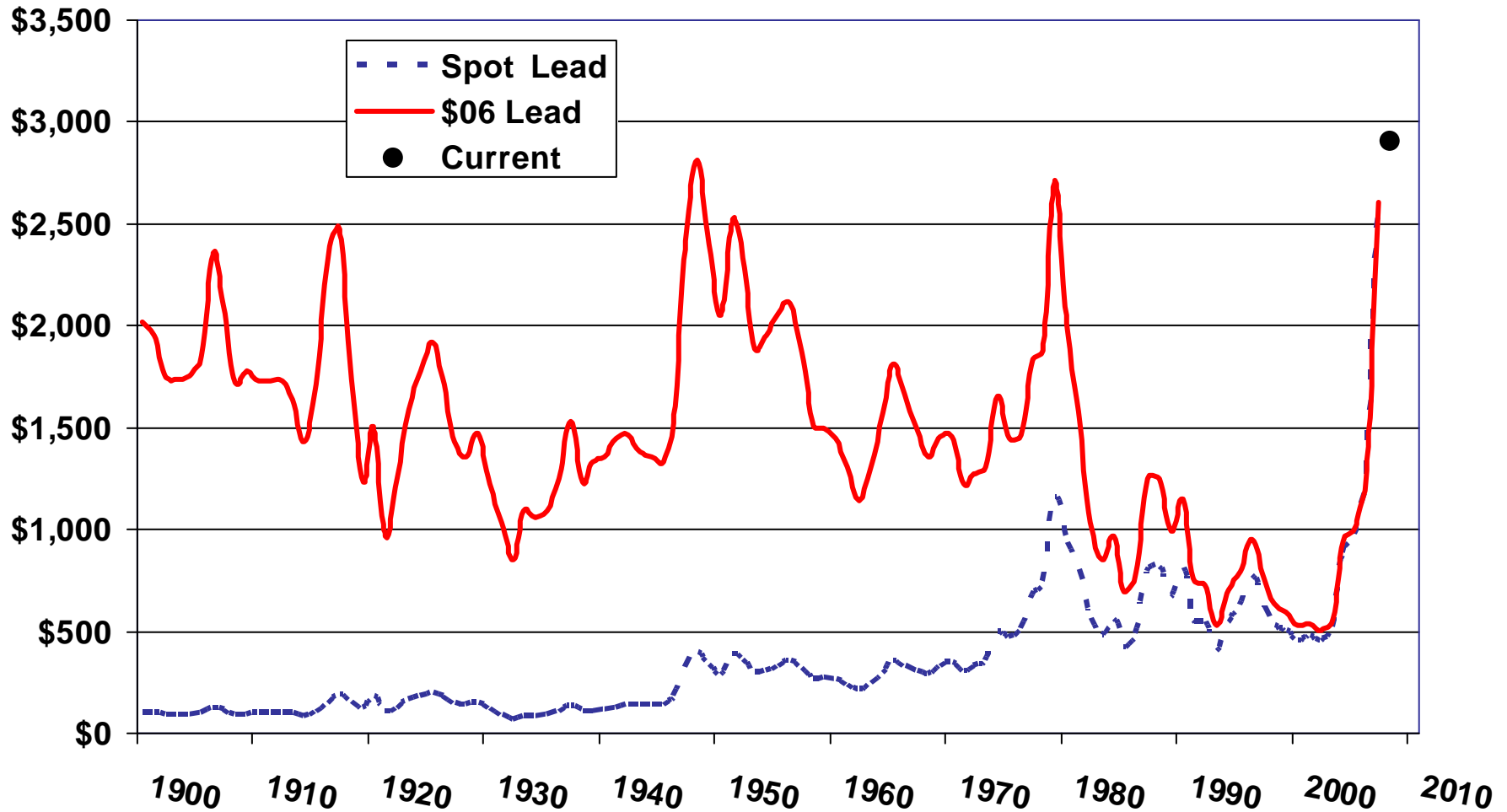


# Lead Outlook

- 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

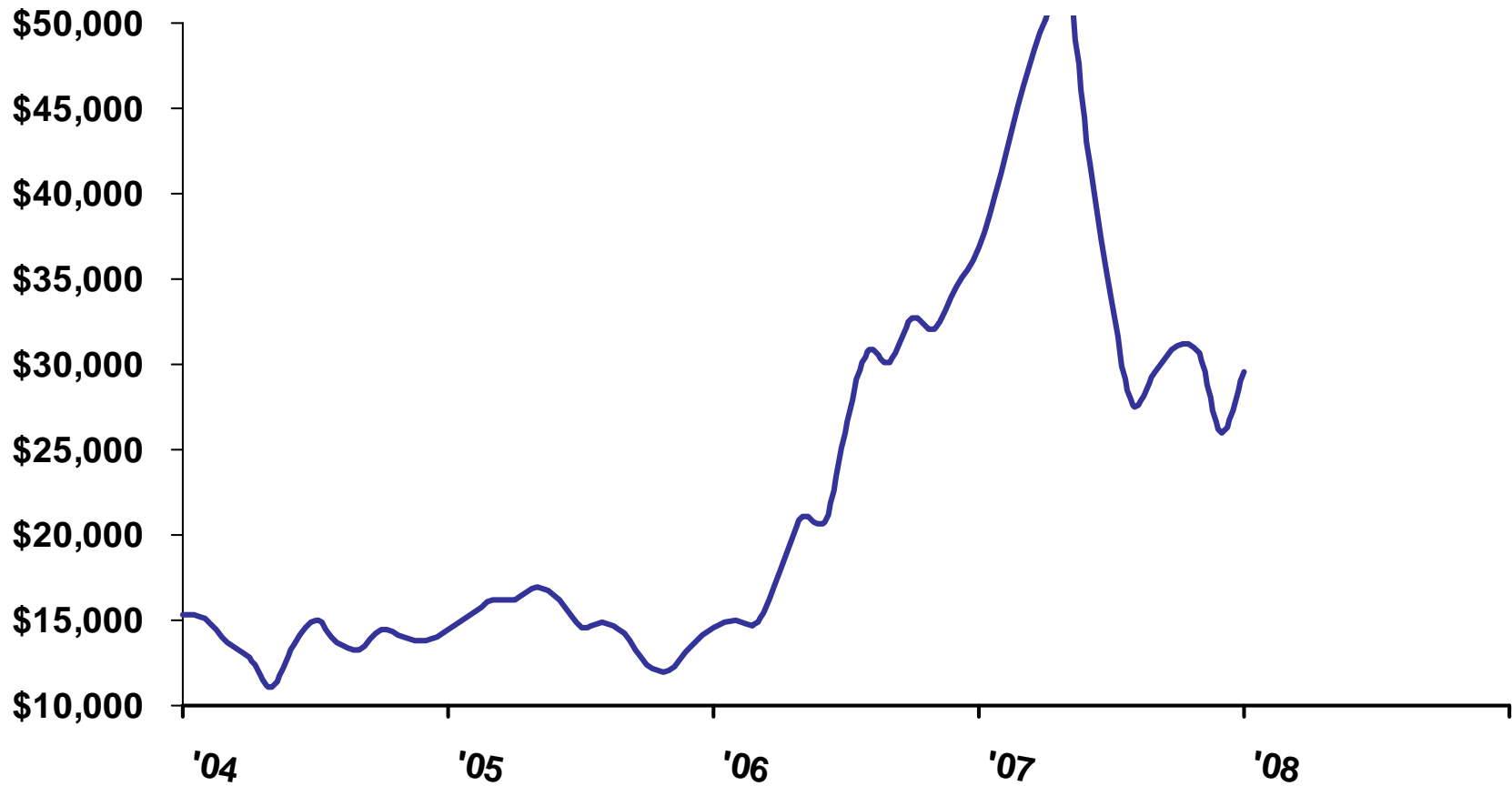
# Lead Prices, Spot & Deflated

Annual Averages, CPI/GNP Deflated



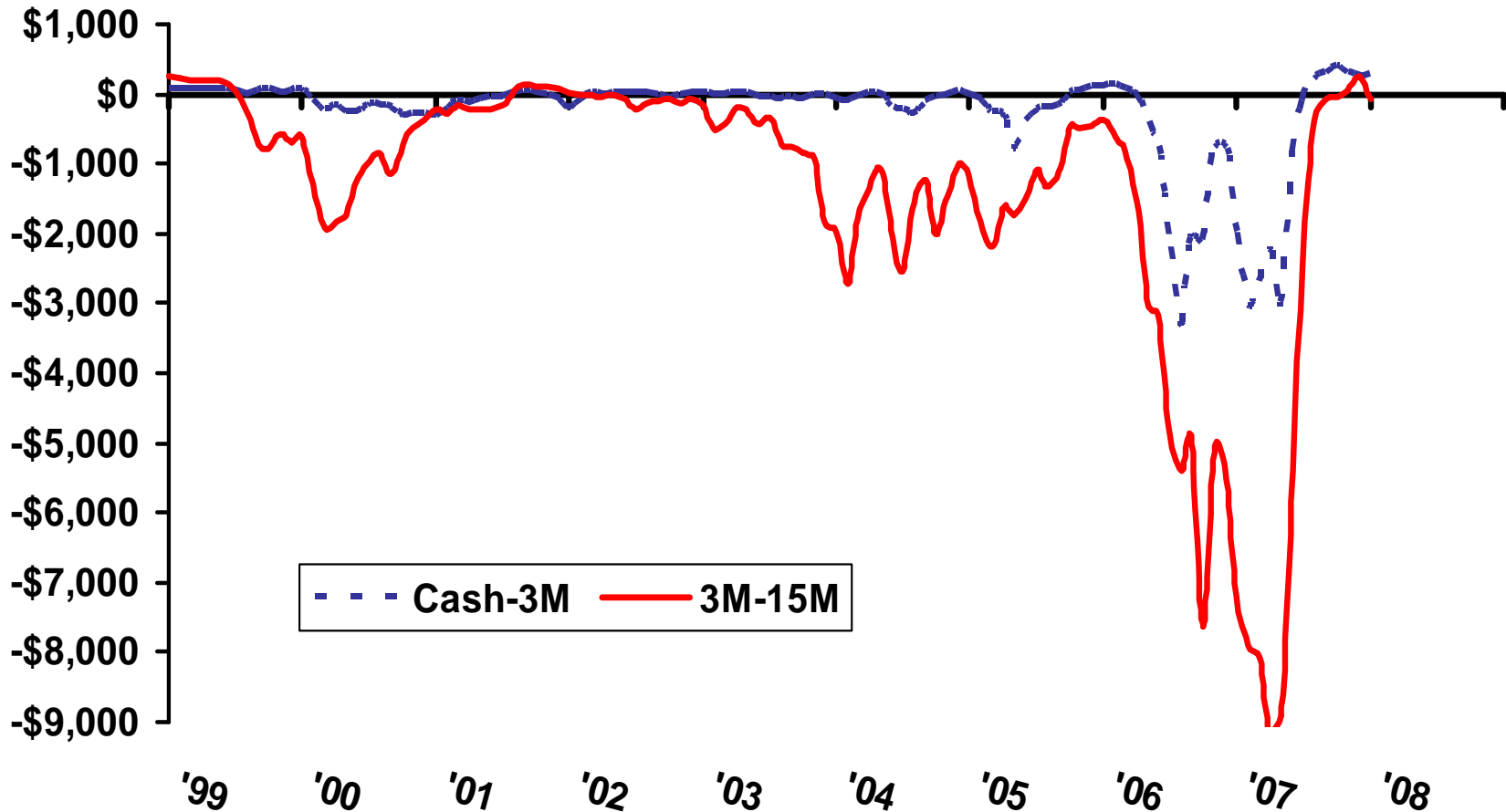
# Nickel Market Review

# Nickel Prices

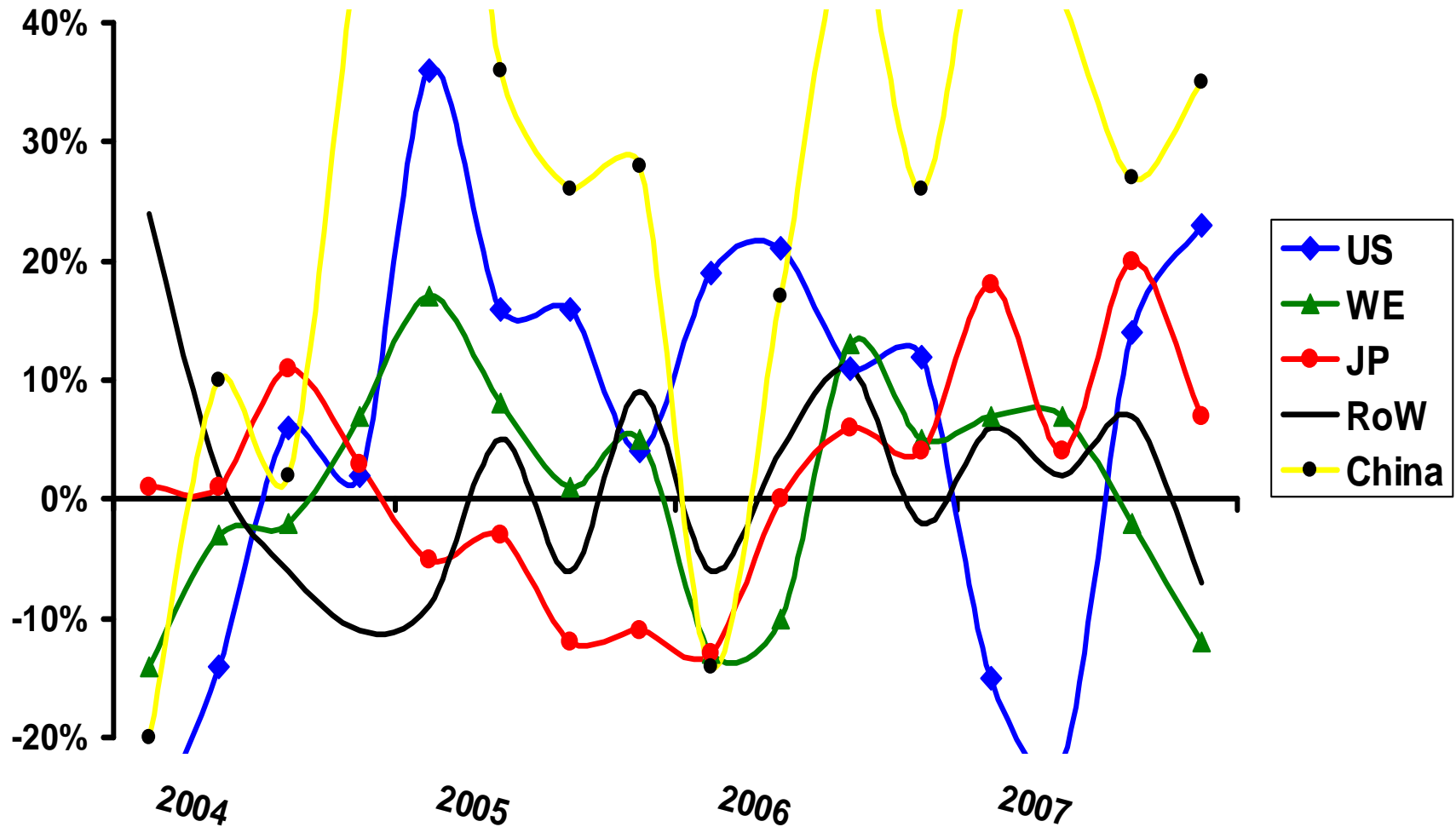


# Nickel Spreads

spreads tighten over last few years, then collapse

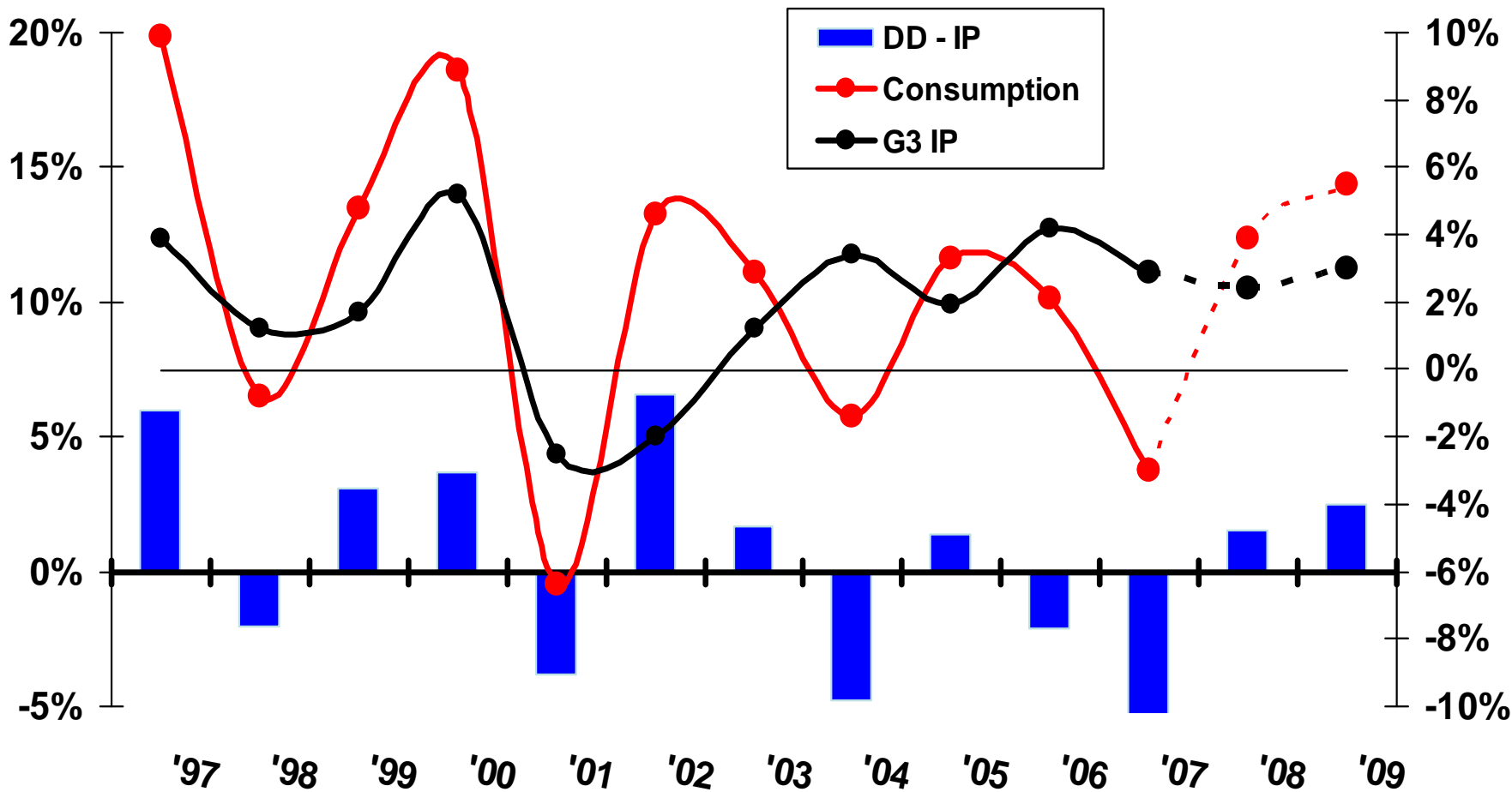


# Consumption Growth: firming except Europe and RoW



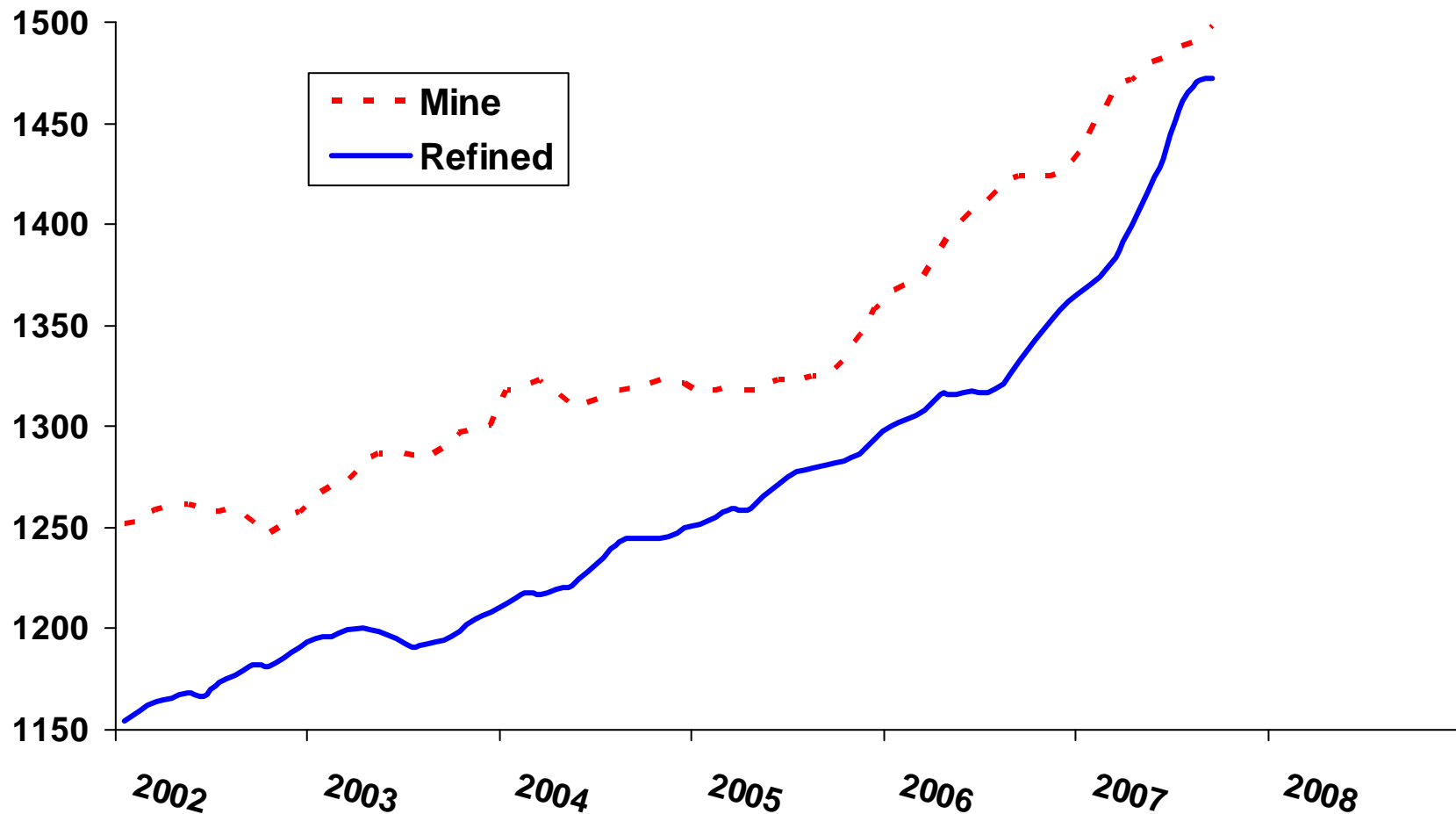
# Nickel Consumption vs. IP Growth

nickel consumption softens but to be supported by economic recovery



# Primary and Refined Output

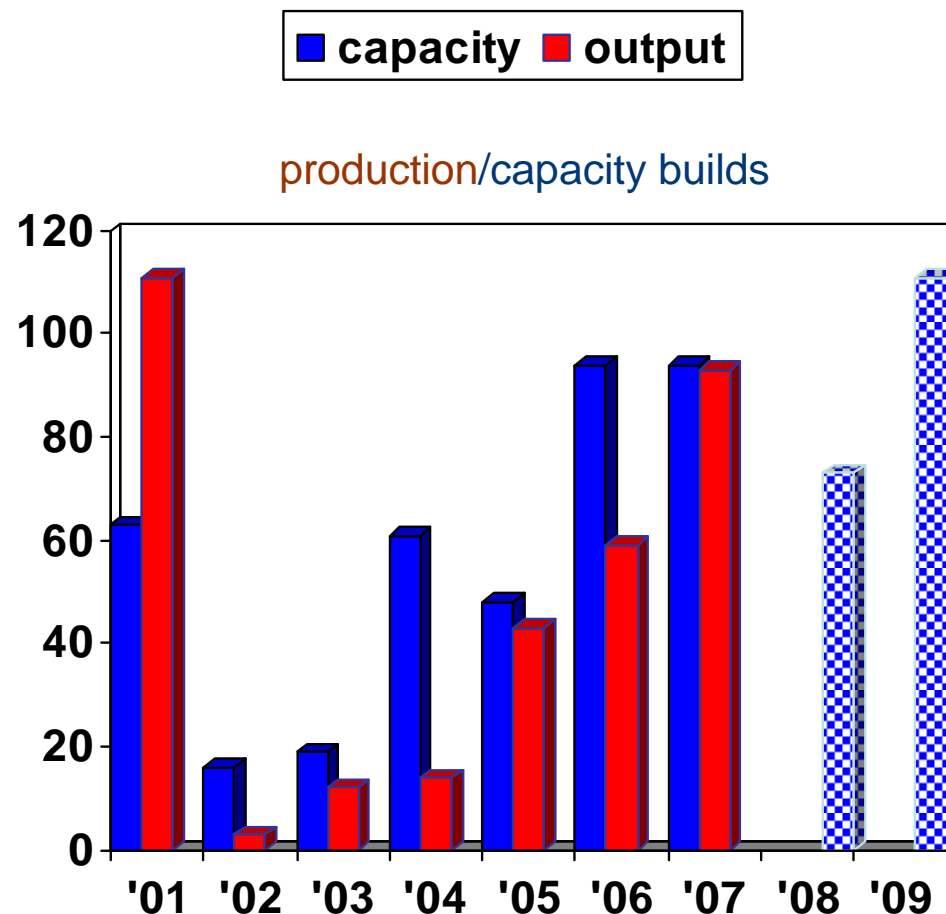
primary production builds in '06/'07





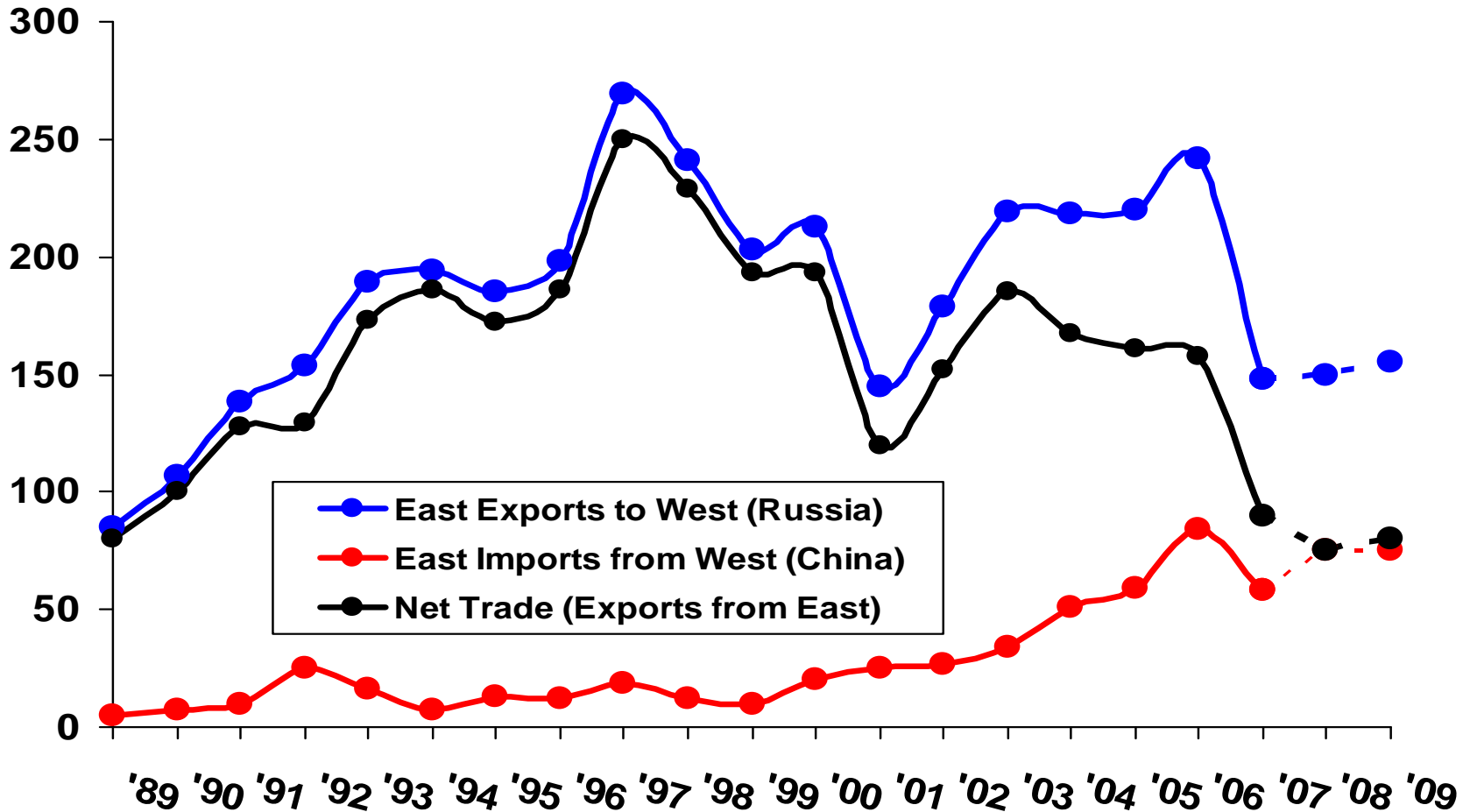
# New/Expanded Nickel Capacity, kt

- **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)



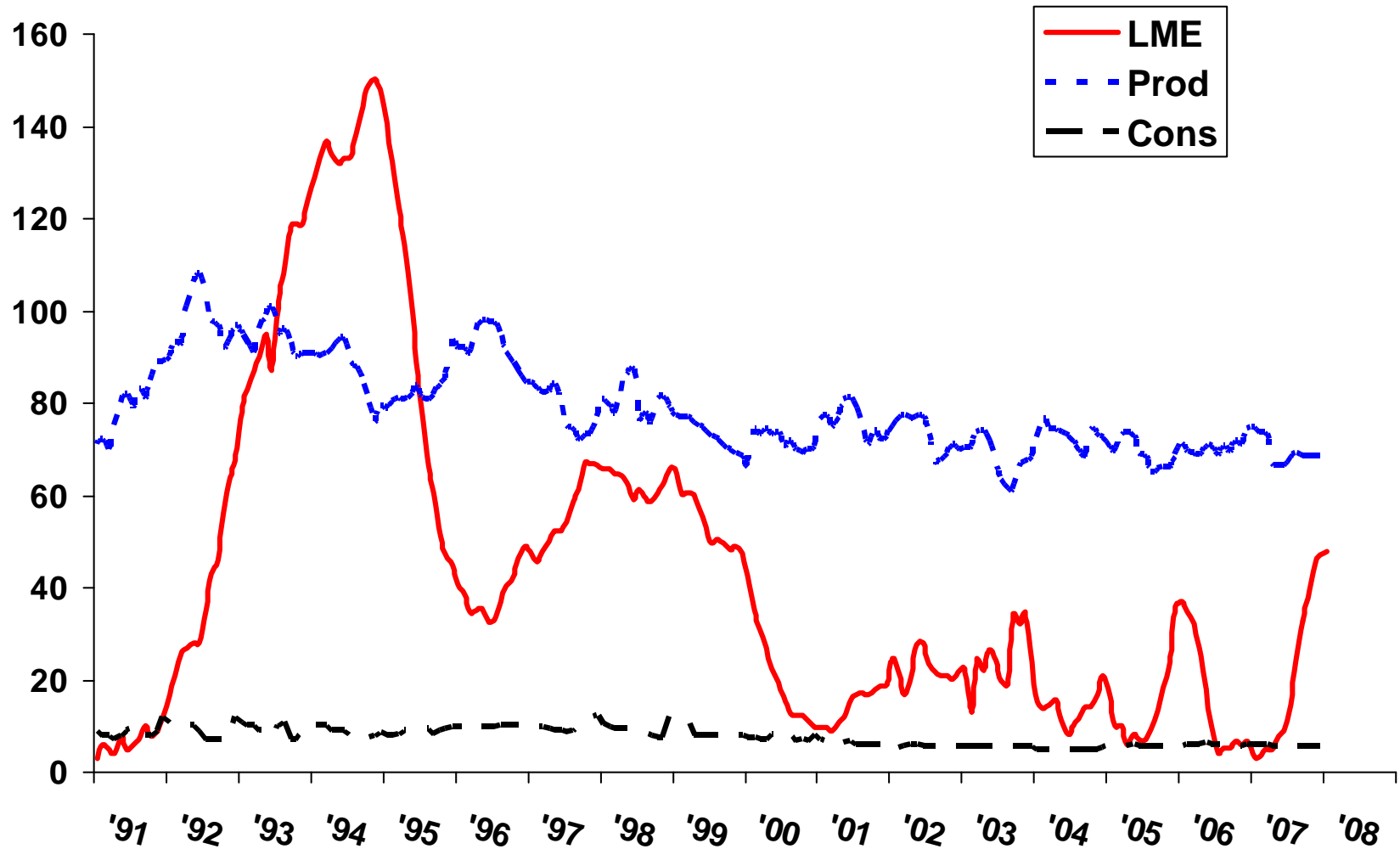
# East to West Trade Still High, but Improving

Chinese imports firm, Russian sales ease



# Reported Nickel Stocks

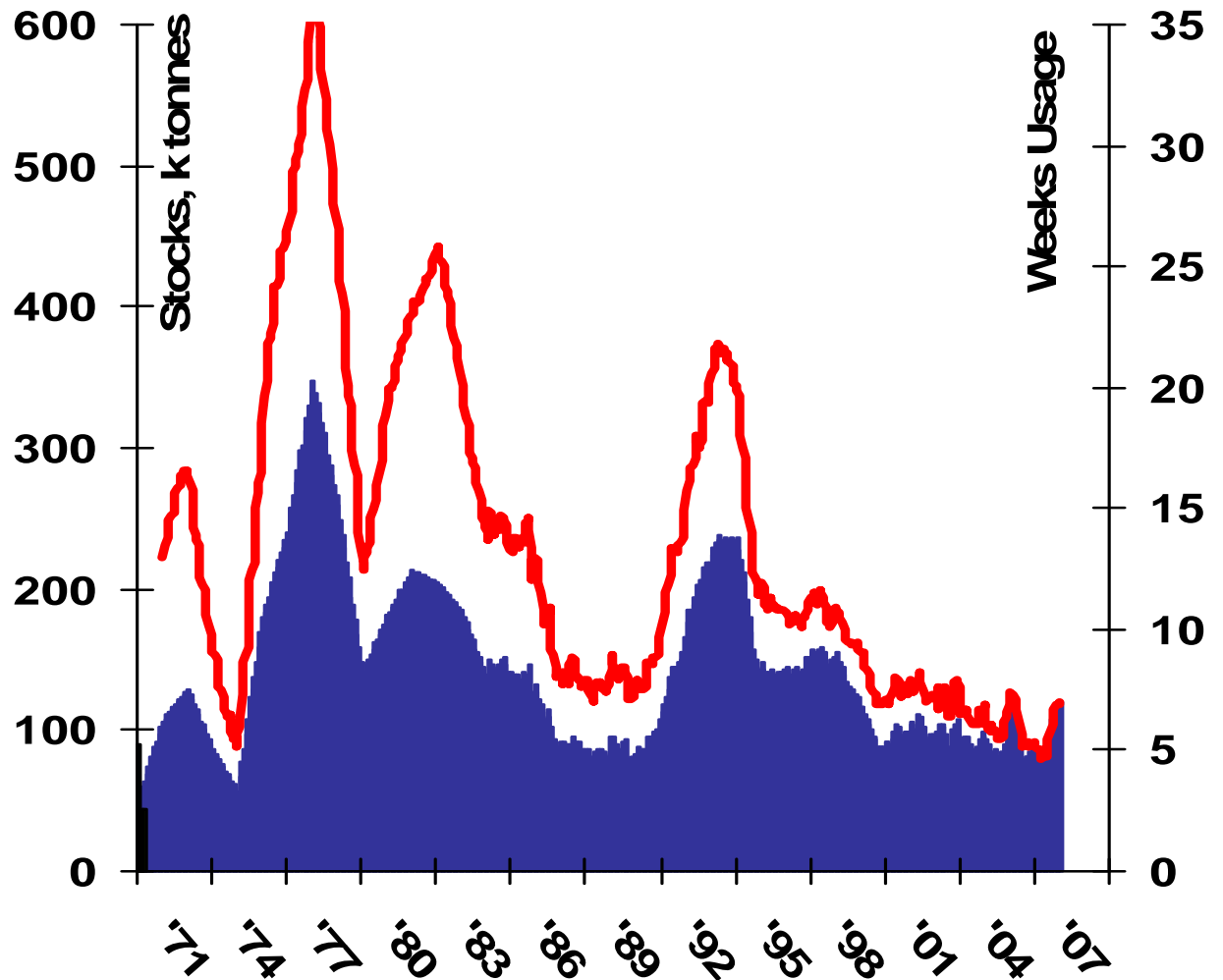
LME stocks increase, producer/consumer low



# Nickel Stocks and Weeks Usage

weeks usage critically low

- global stocks critically low
- stock - shipments at 7 weeks use



# Nickel Supply-Demand Balance

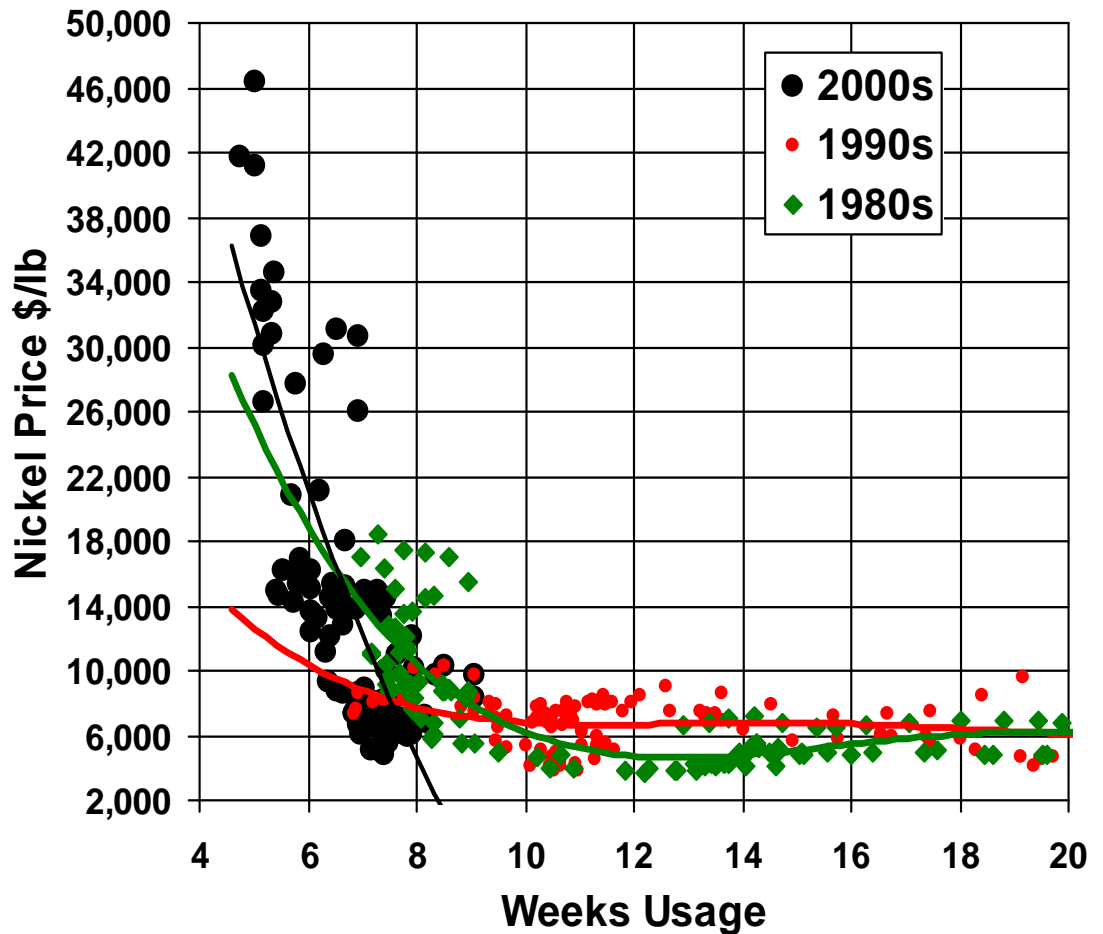
consumption to firm, mine prod up in '08/'09  
EW trade tightens with China up, market in  
slight surplus

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<b>Consumption</b>	1,096	1,118	1,085	1,127	1,188
	3.3%	2.1%	-3.0%	3.9%	5.5%
<b>Mine Production</b>	935	995	1,088	1,127	1,194
<b><u>E to W Trade</u></b>	<u>161</u>	<u>158</u>	<u>90</u>	<u>75</u>	<u>80</u>
<b>Total Supply</b>	1,039	1,050	1,026	1,074	1,134
<b><i>Reported Stock Chng</i></b>	<b>13</b>	<b>-25</b>	<b>32</b>	<b>14</b>	<b>24</b>
<b>Reported Stocks</b>	<b>141</b>	<b>116</b>	<b>148</b>	<b>162</b>	<b>187</b>
<b><i>Weeks Consumption</i></b>	<b>6.7</b>	<b>5.4</b>	<b>7.1</b>	<b>7.5</b>	<b>8.2</b>

# Nickel Price vs Stocks/Consumption Ratio

Current Stocks below Equilibrium

- Current Ratio
  - 7 wks use
- **Prices:**
  - **\$29,500**
- Equil: 9/10 wks
- Forecasts:
  - ~7.5 to 8 wks***



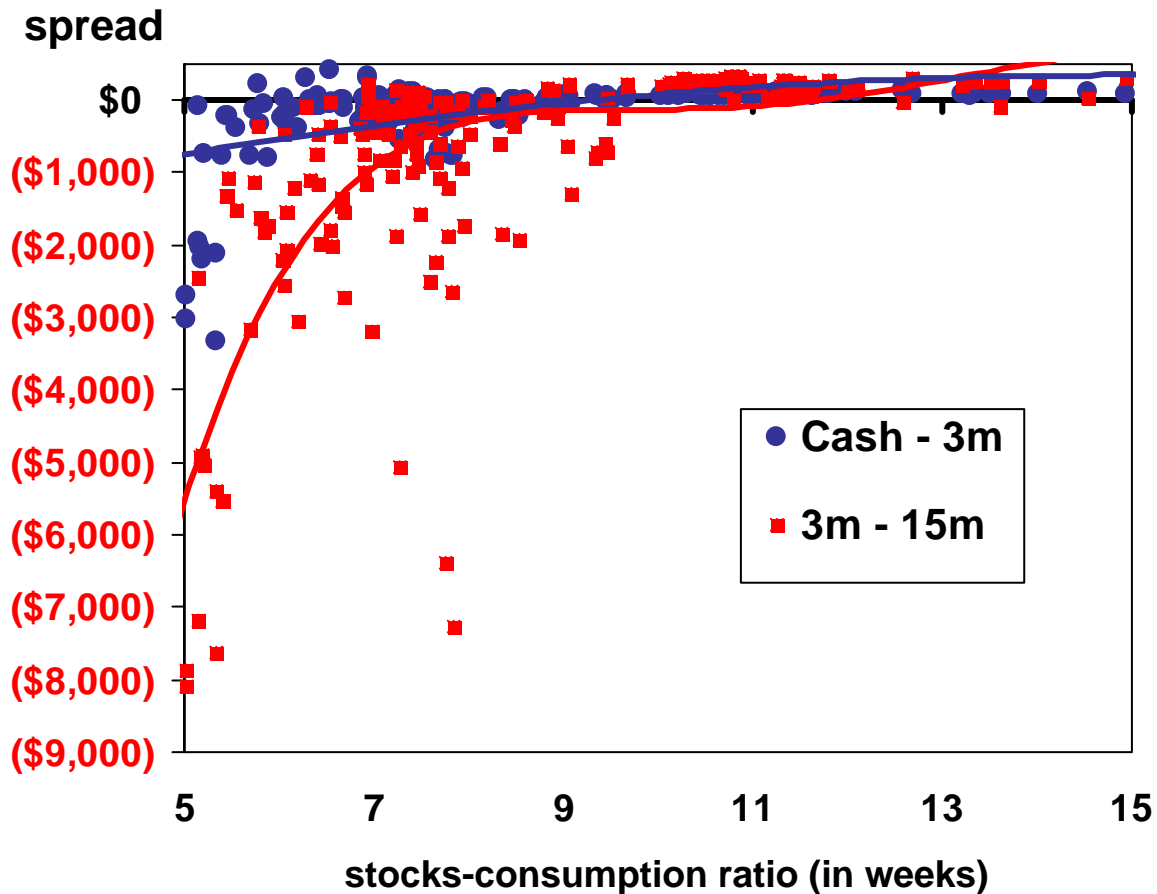
# Nickel Stocks Ratio vs Spread

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



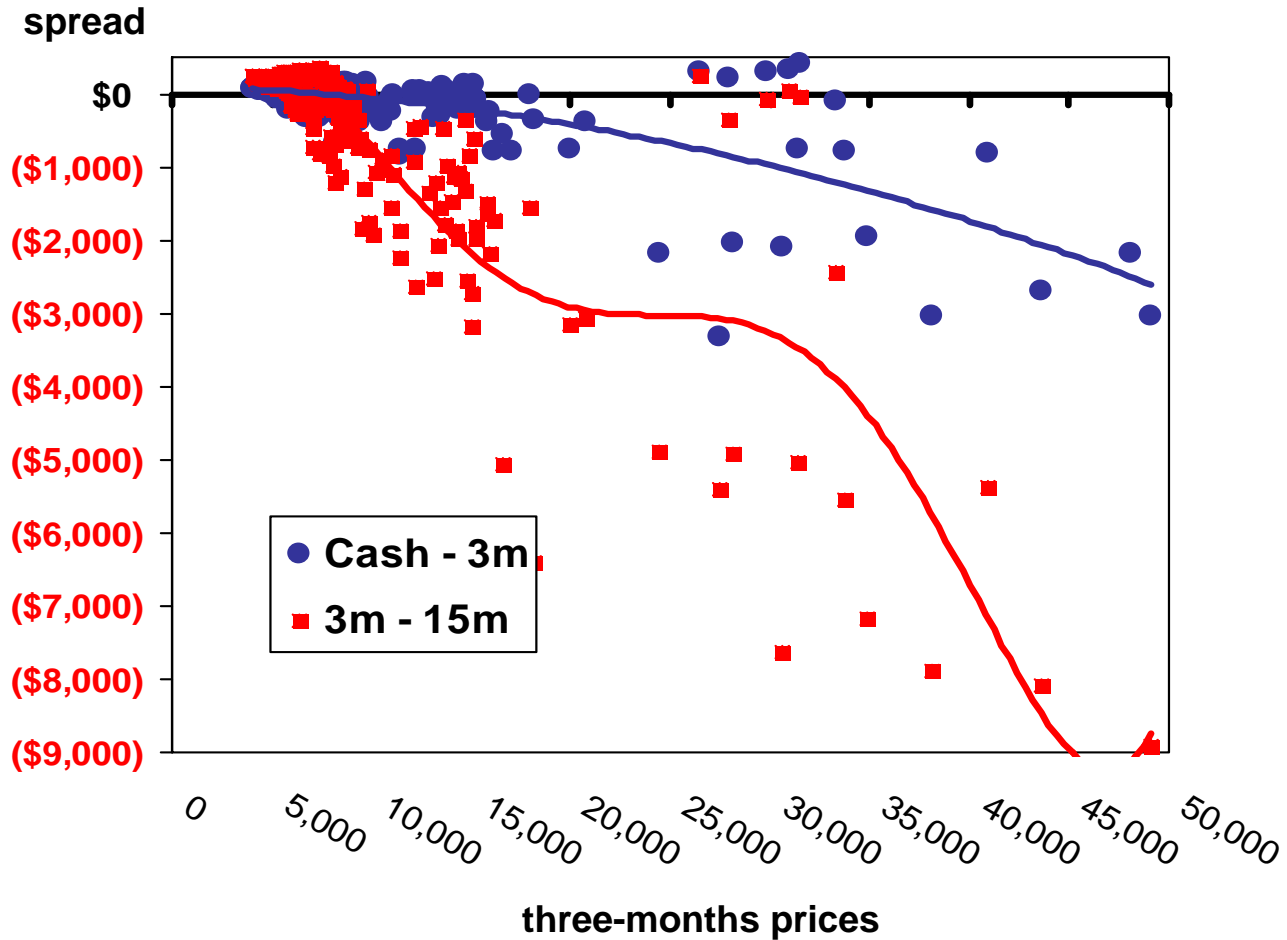
# Nickel Spreads vs. 3 Months

high prices, backwardations; low prices, contangos

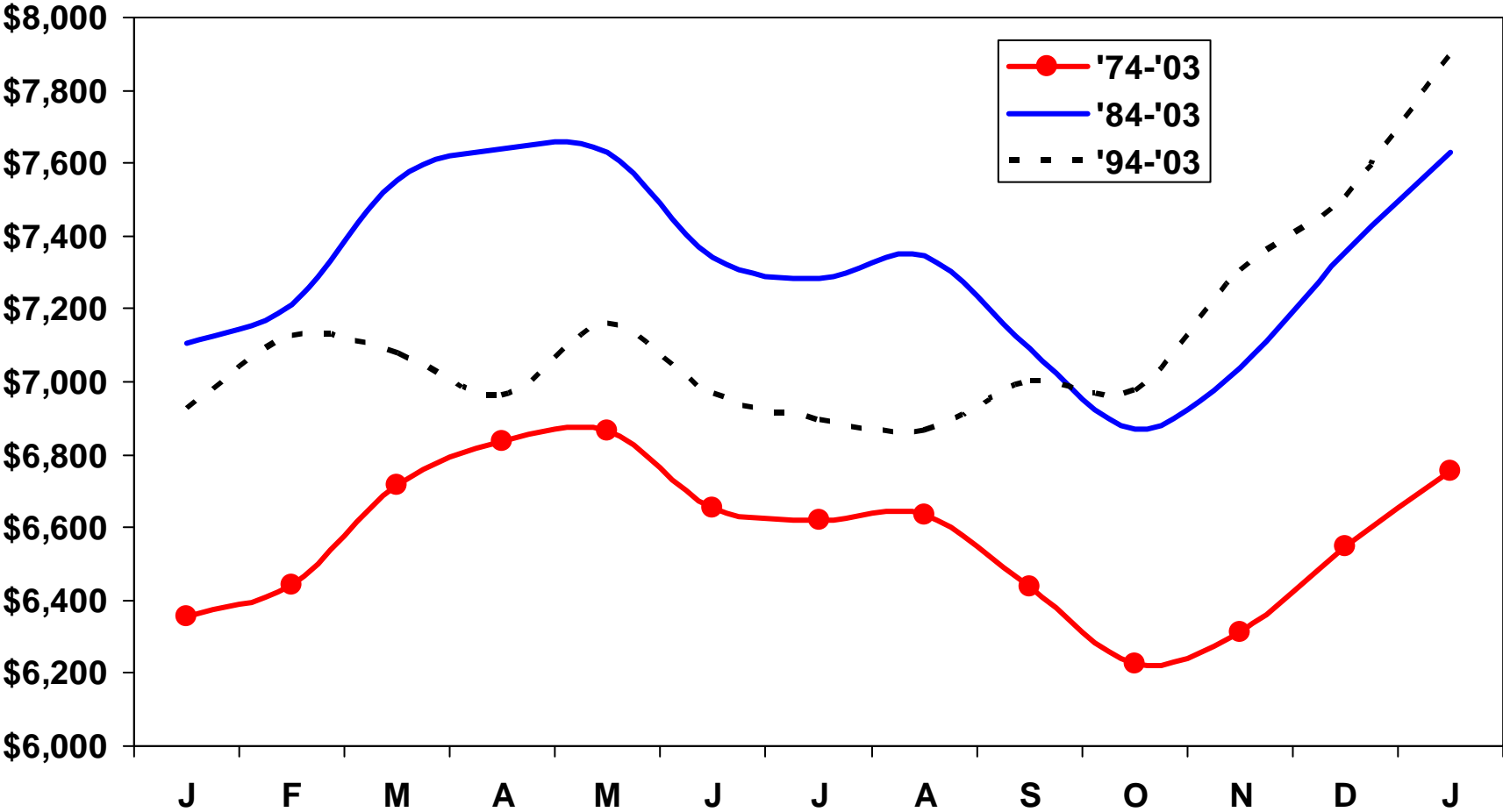
Current:  
\$29,500

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

Equilibrium: ~  
\$8,000

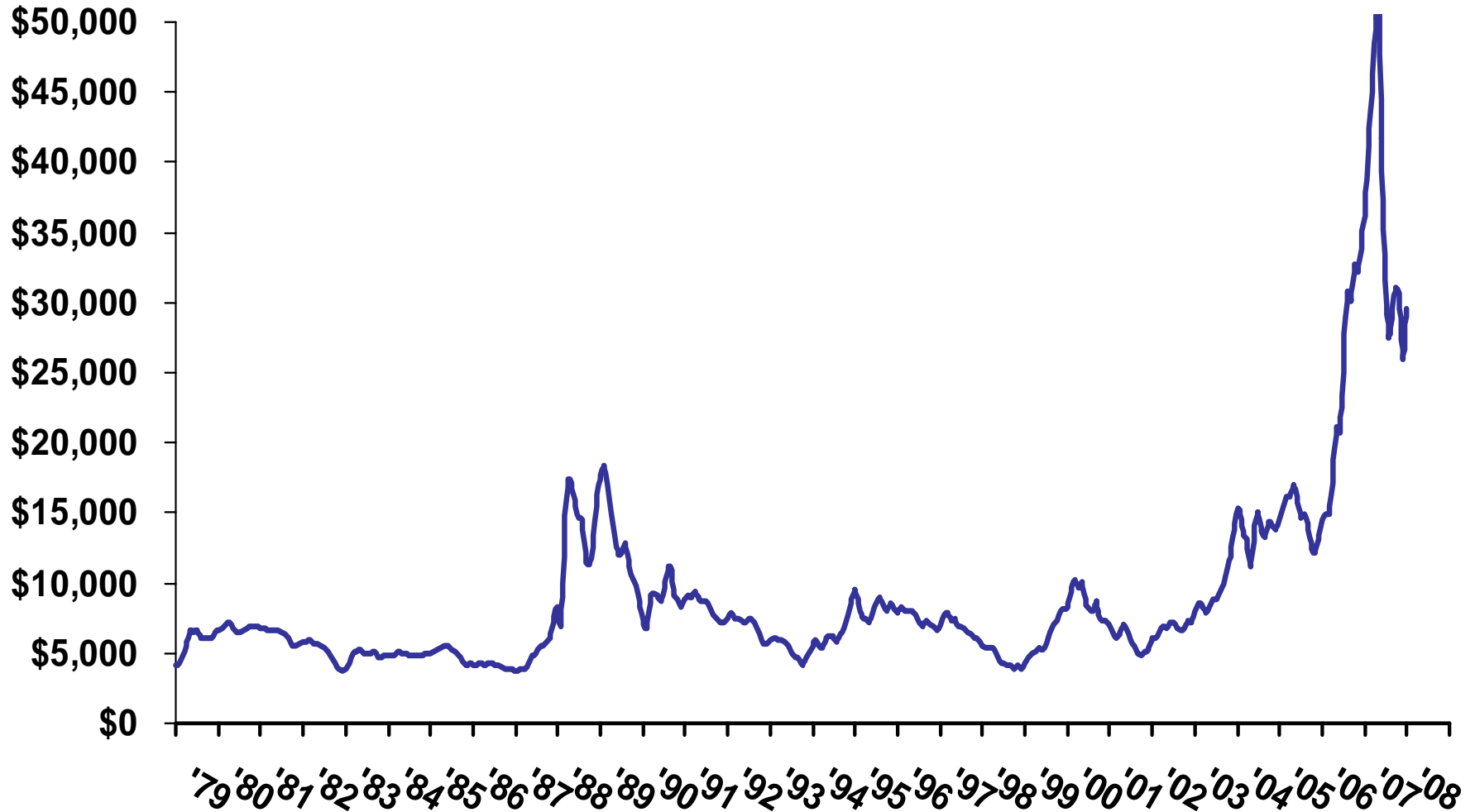


# Nickel Price Seasonals



# Nickel Prices, Longer Term Outlook

economic recovery offset by production builds

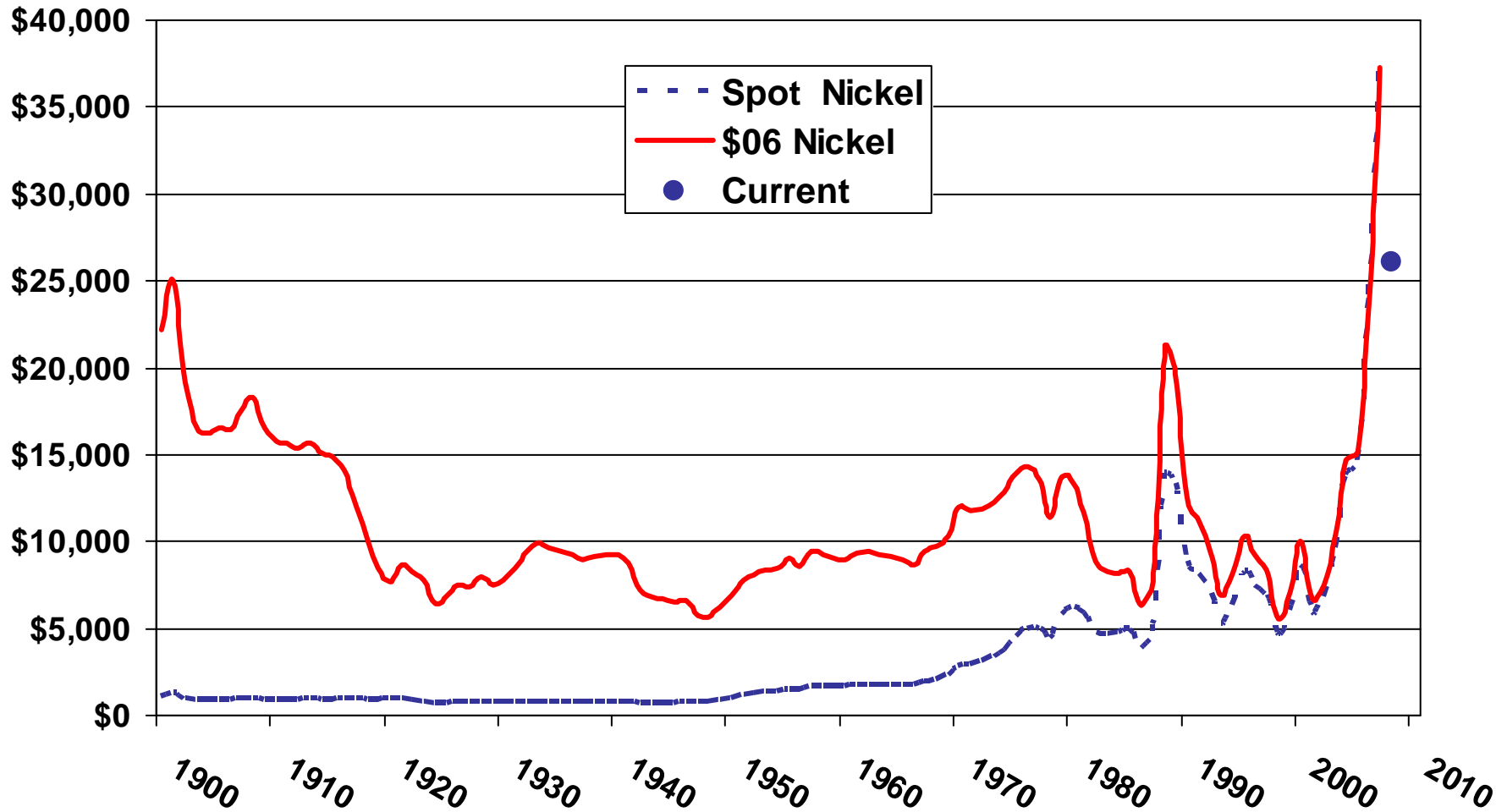


# Nickel Outlook

- 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

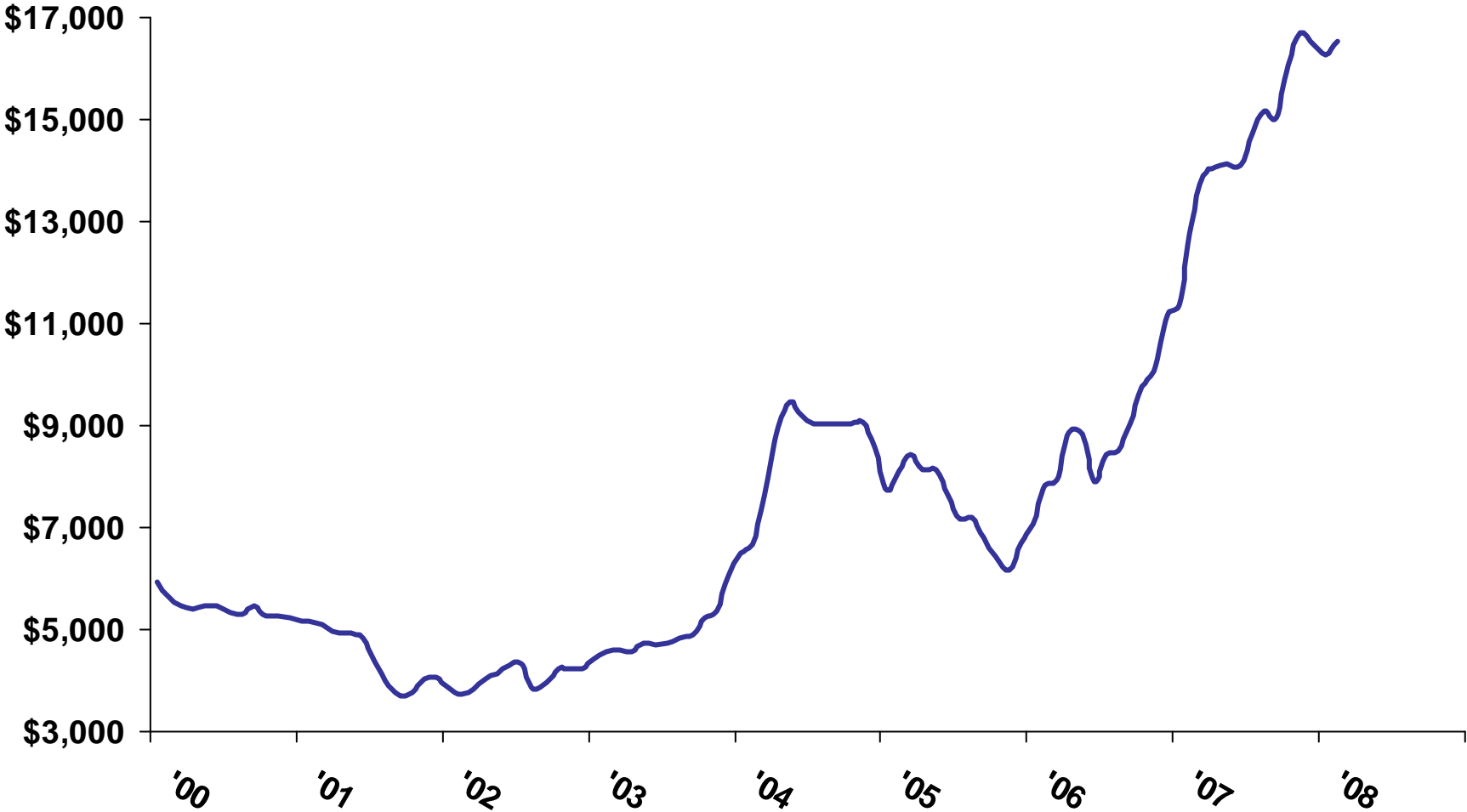
# Nickel Prices, Spot & Deflated

Annual Averages, CPI/GNP Deflated



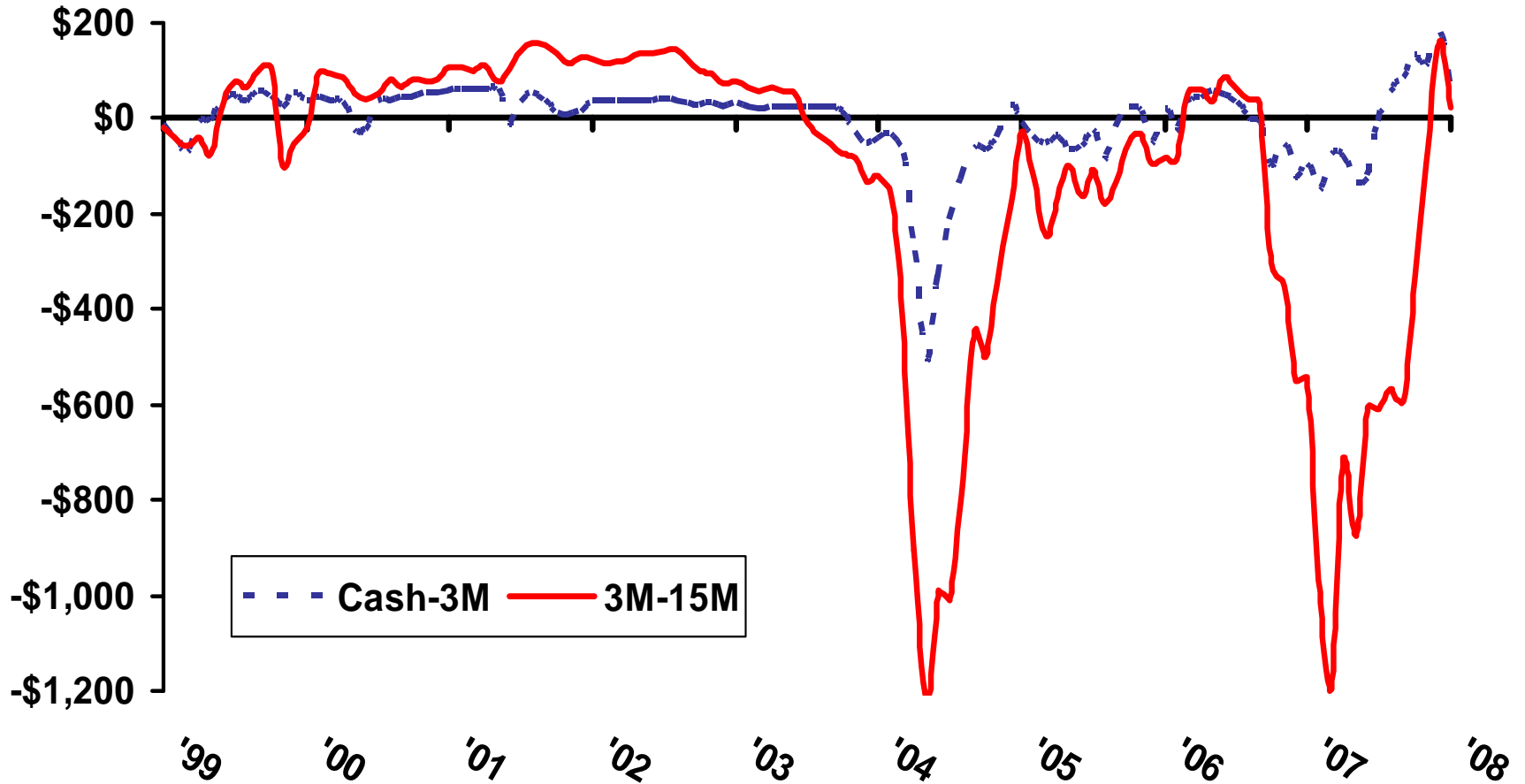
# Tin Market Review

# Tin Price Review



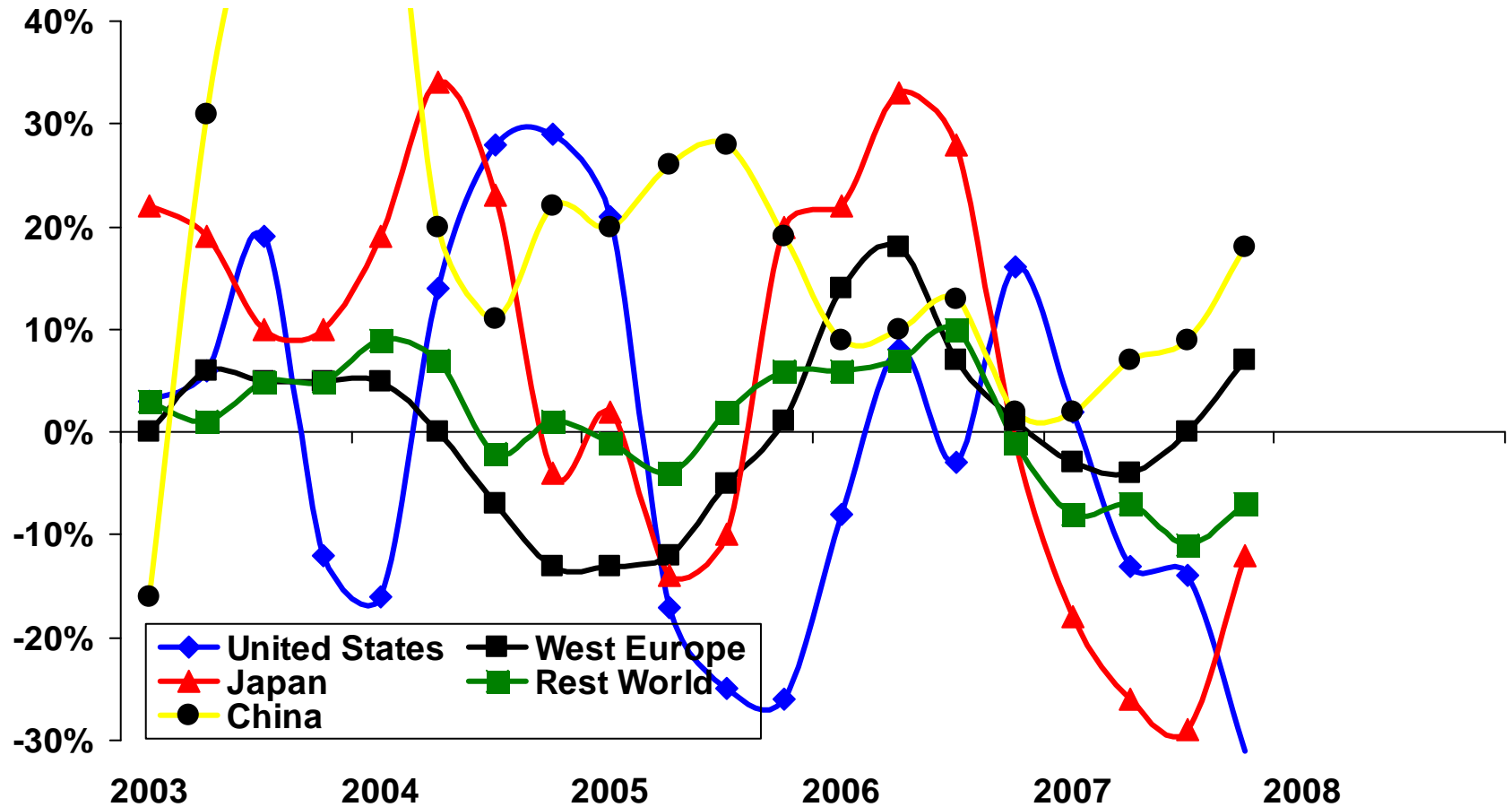
# Tin Spreads

spreads tighten over last few years, ease recently



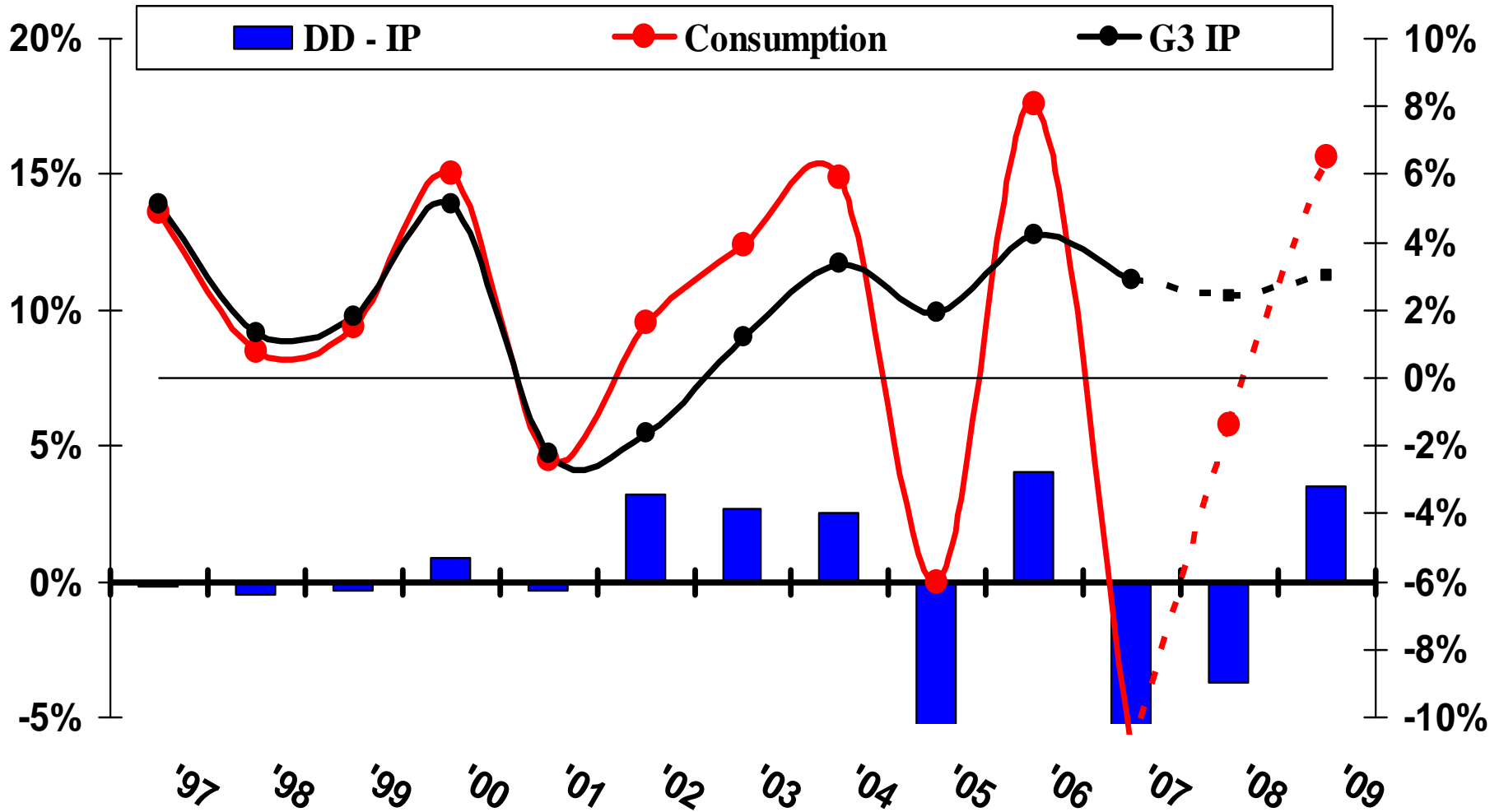
# Refined Consumption of Tin

consumption growth slows, except China & RoW



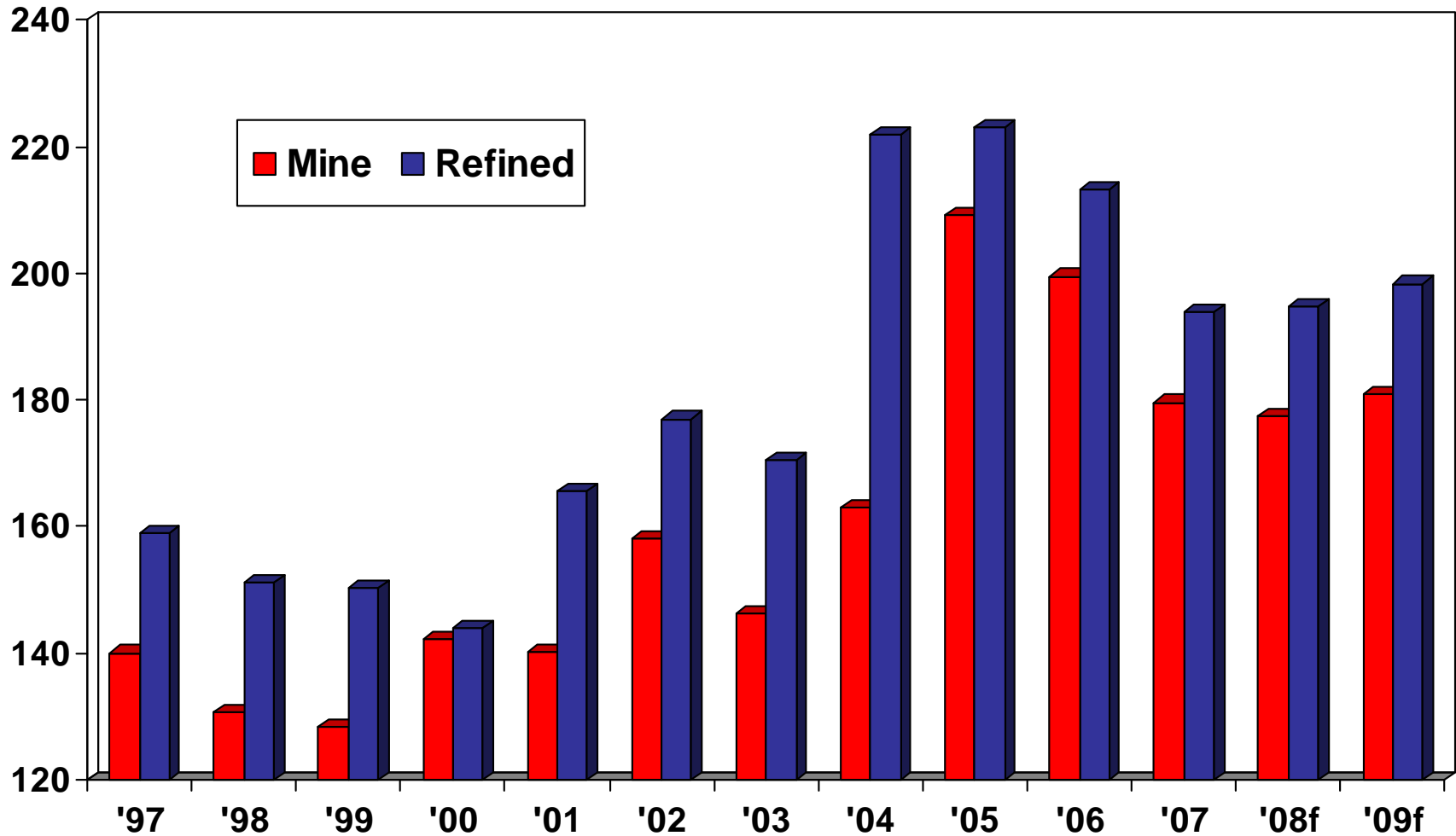
# Tin Consumption vs. IP Growth

tin consumption correction in '07, rebound in '08 and '09



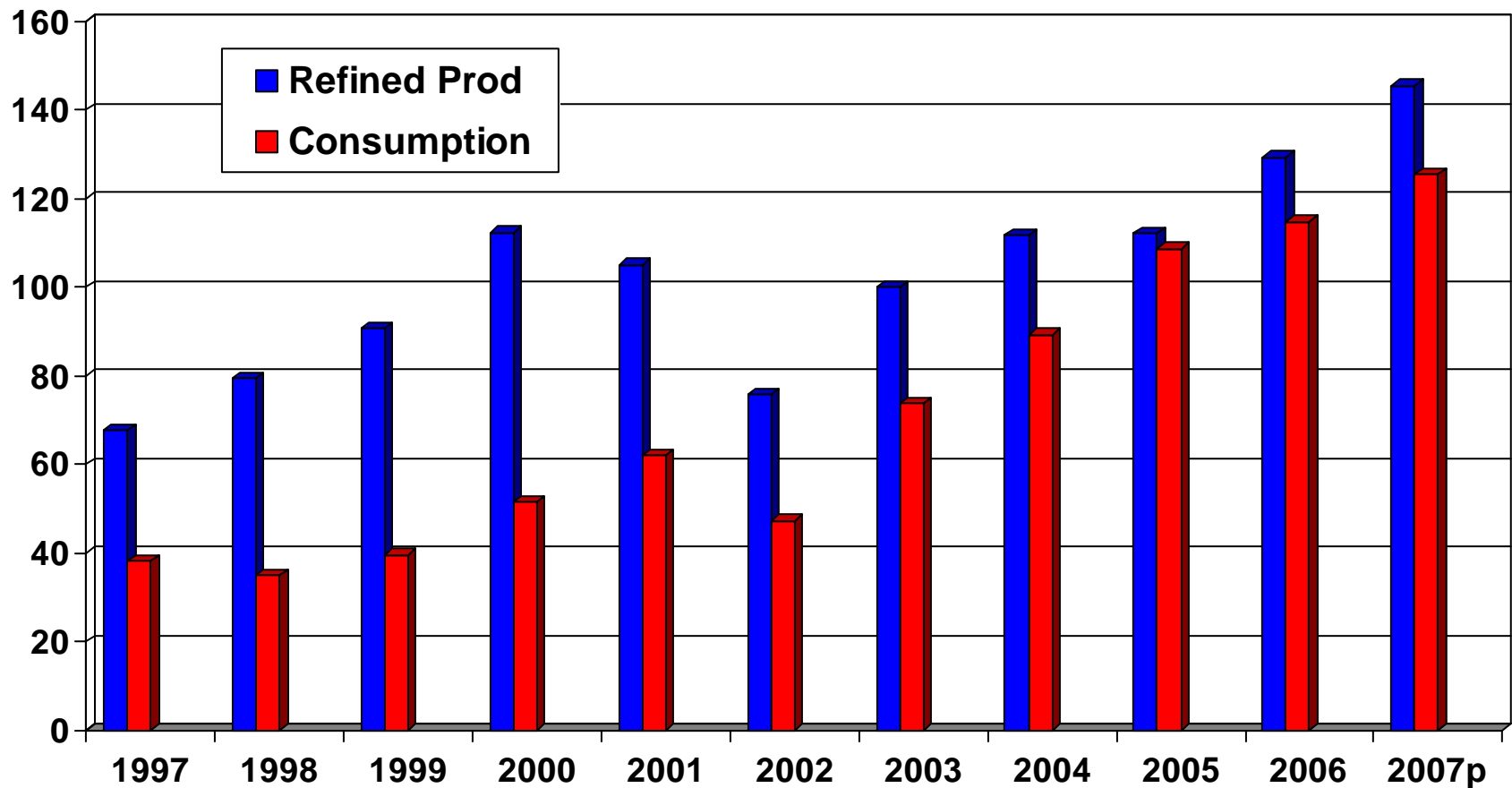
# Mine and Refined Production

production stabilizes

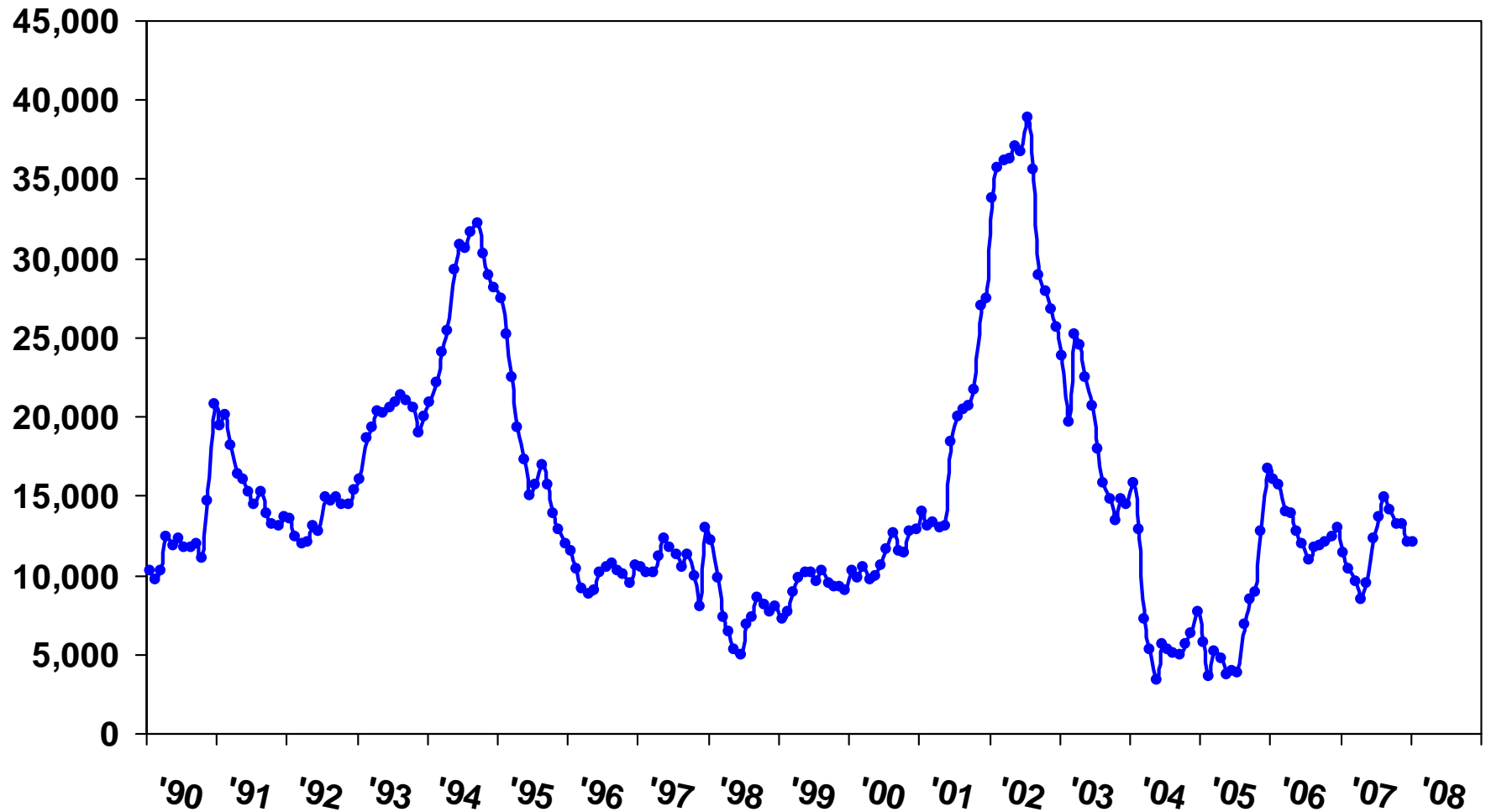


# Chinese Production, Consumption

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

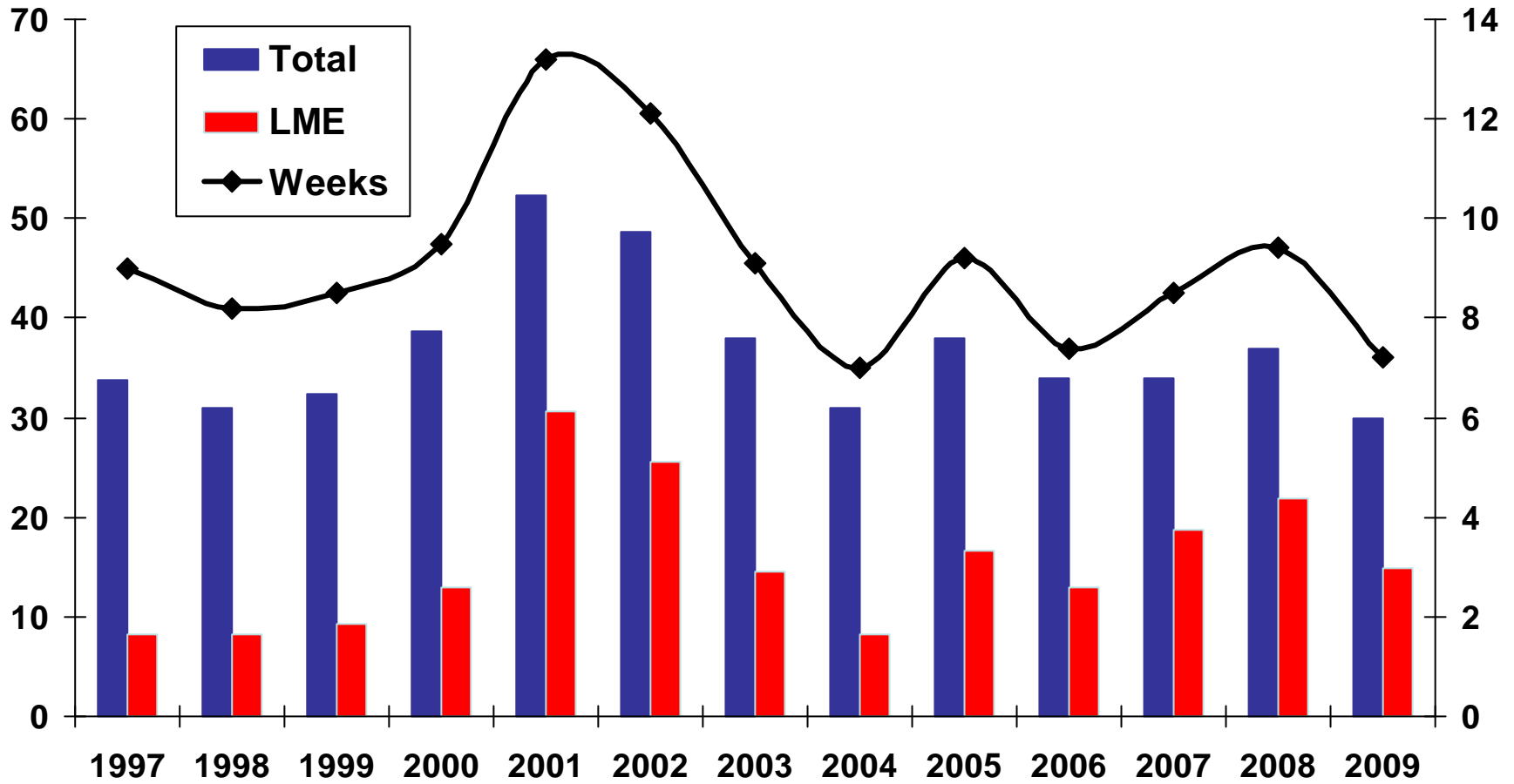
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007p</u>	<u>2008</u>	<u>2009</u>
<b>Consumption</b>	<b>218</b>	<b>231</b>	<b>217</b>	<b>235</b>	<b>209</b>	<b>206</b>	<b>219</b>
	4%	6%	-6%	8%	-11%	-1%	6%
Mine	146	163	209	200	180	177	181
Refined	170	222	223	213	194	195	198
East to West Trade	21	18	-5	6	12	7	7
<u>Government Sales</u>	<u>10</u>	<u>9</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>9</u>	<u>9</u>
<b>Total Supply</b>	<b>202</b>	<b>249</b>	<b>225</b>	<b>228</b>	<b>215</b>	<b>211</b>	<b>214</b>
<b>Reported Balance</b>	<b>-11</b>	<b>-7</b>	<b>8</b>	<b>-5</b>	<b>6</b>	<b>3</b>	<b>-7</b>
Total Stocks	38	31	38	34	34	37	30
<i>Weeks Usage</i>	9.1	7.0	9.2	7.4	8.5	9.4	7.2

# Total Stocks, Weeks Usage

stocks tight: '08 - '09

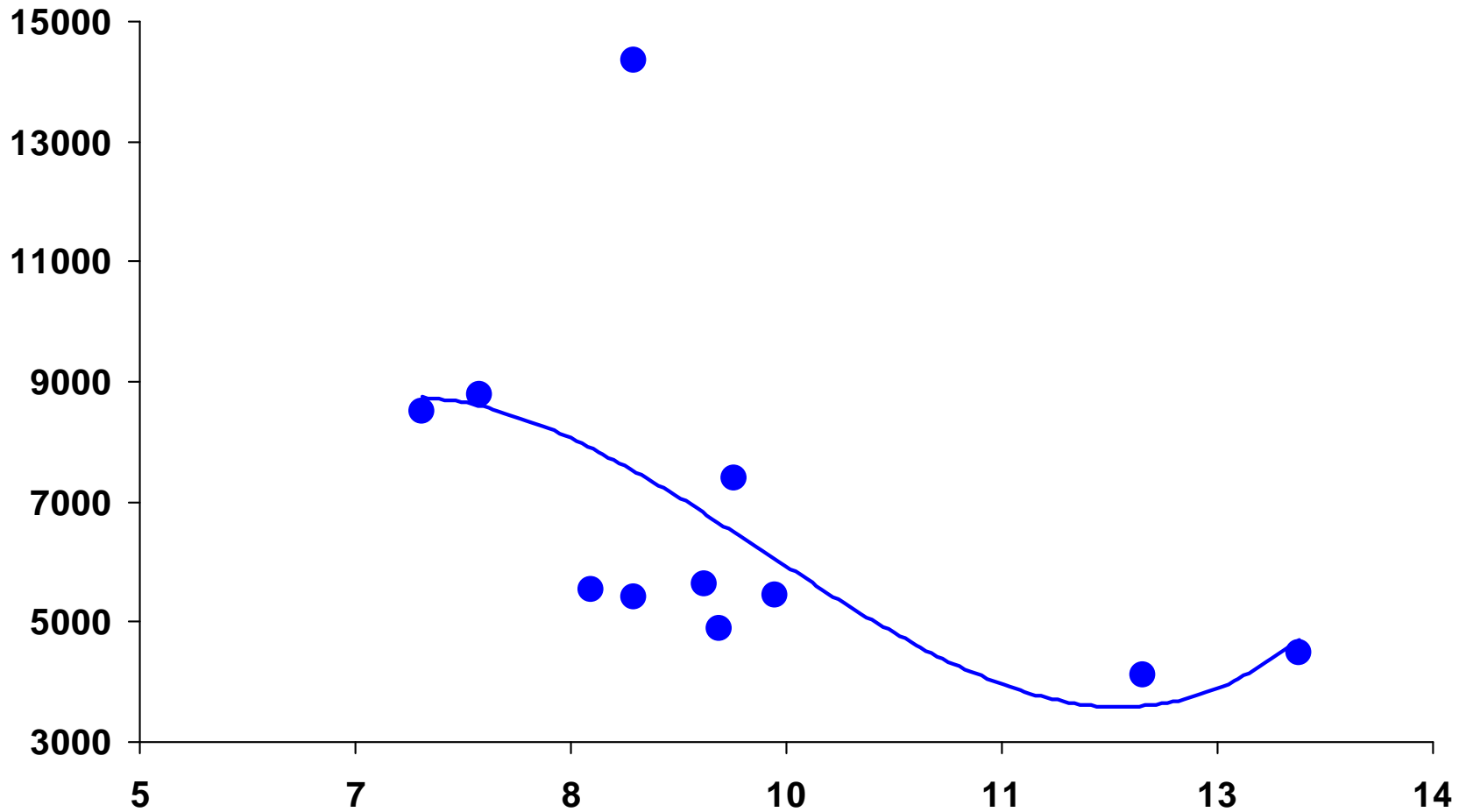
total stocks, kt

weeks use

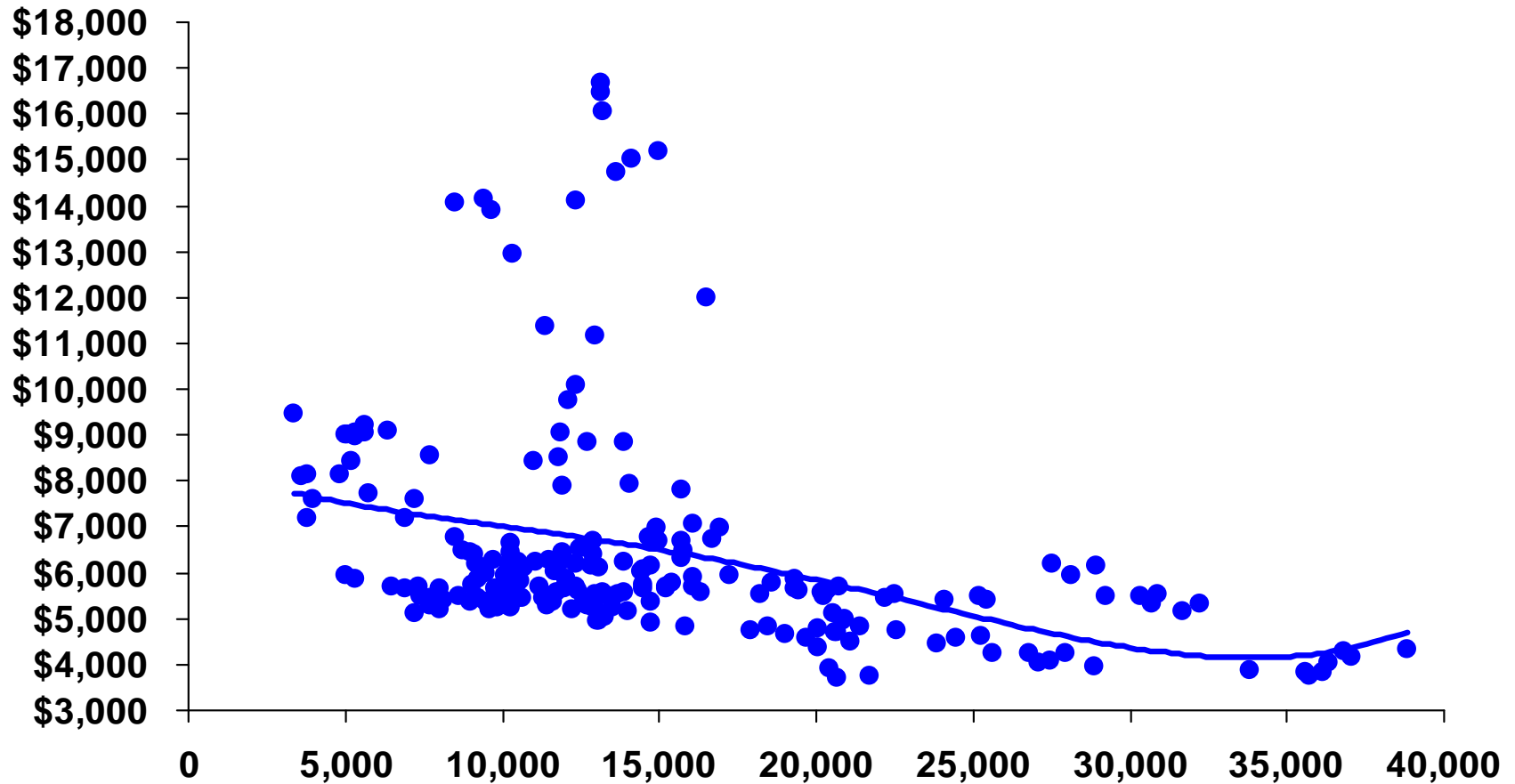


# Weeks Usage vs. Price

stocks ratio outlook: 9 to 7 wks

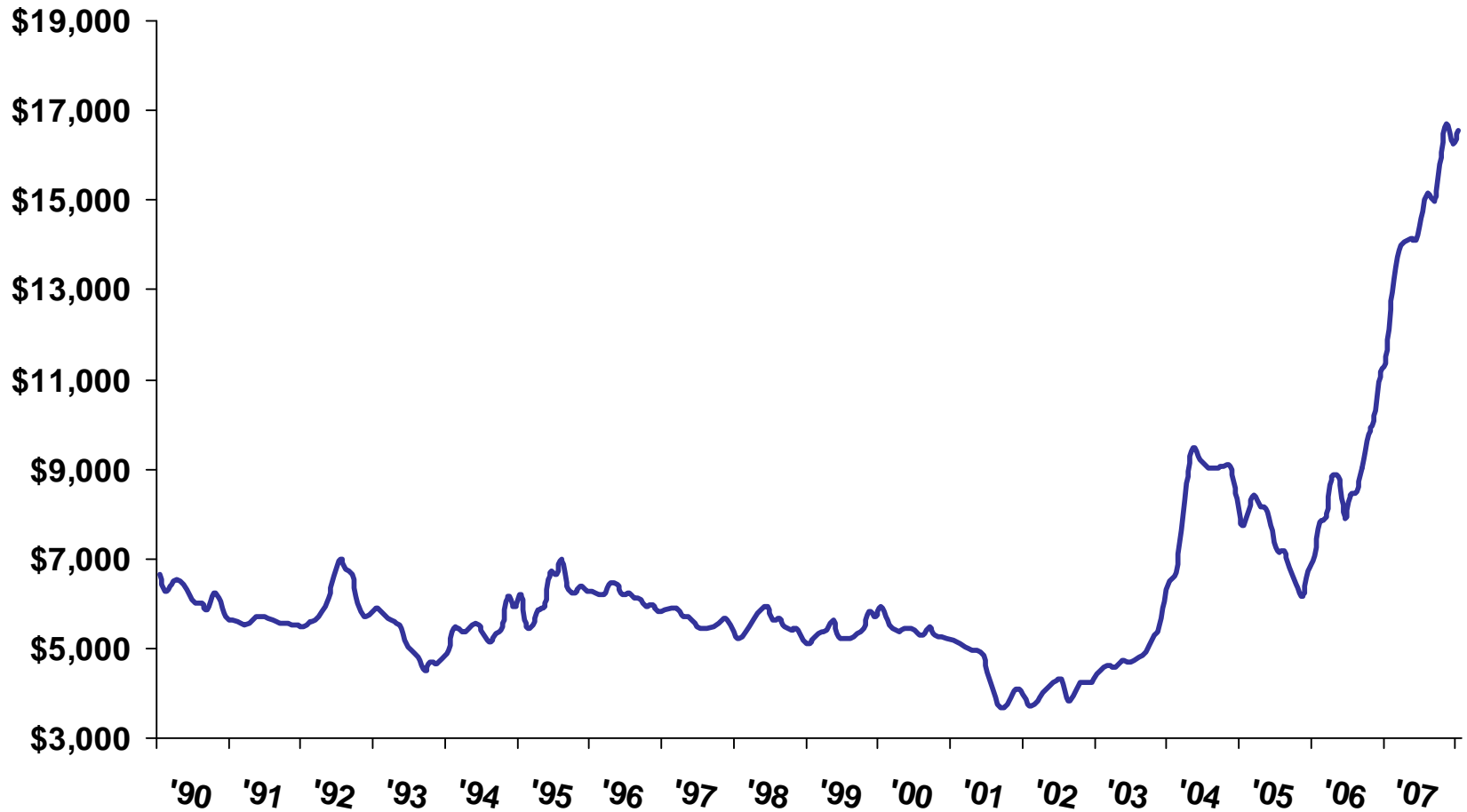


# LME Stocks vs Price, current: \$16,500; 12,000 tonnes



# Tin Price Outlook

low stocks support price



# 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.

# Tin Prices, Spot & Deflated

Annual Averages, CPI/GNP Deflated

