

Chemicals and Supply Chains After The Downturn

Where Are We Now, Where Are We Going?

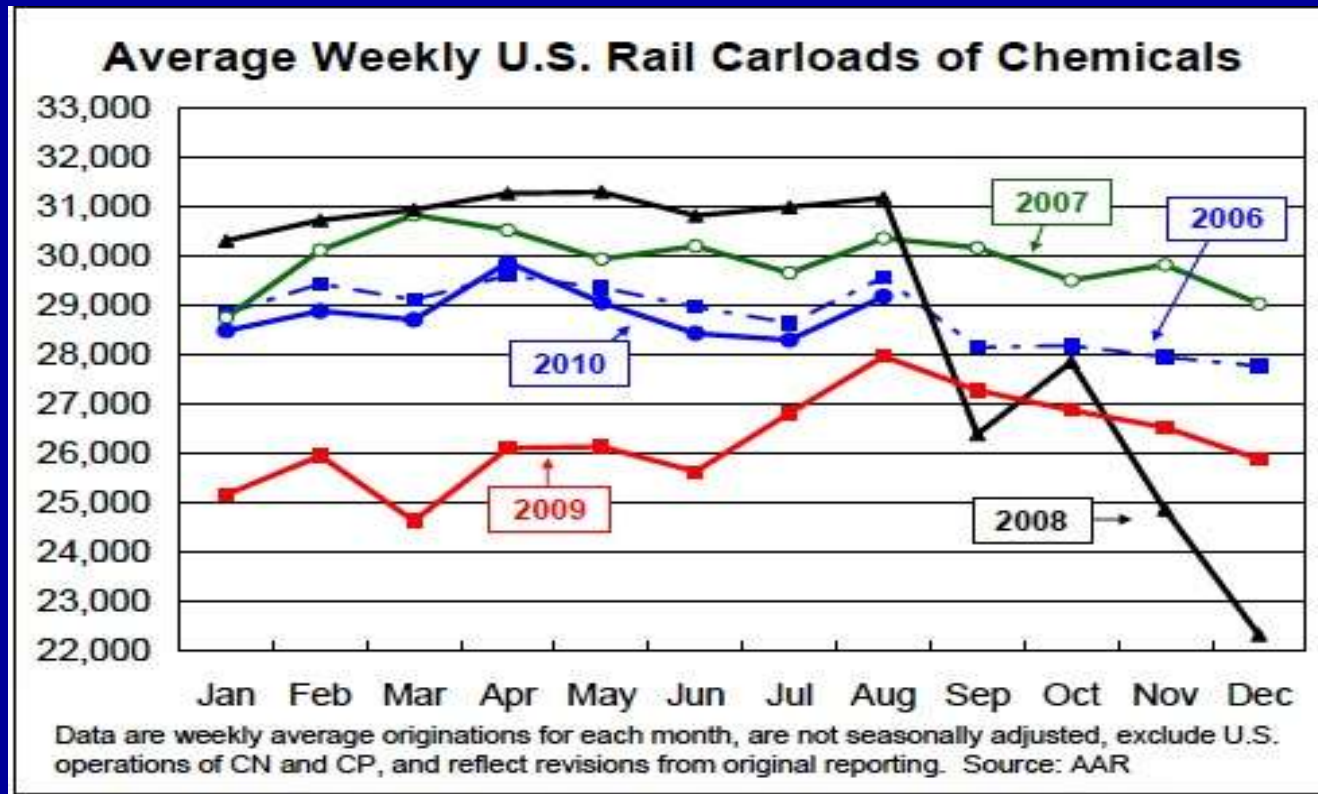
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Chemical Week

Agenda

- A review of 2010 so far.
 - Recovery is here. Is it sustainable?
 - A look at the “*New Normal*.”
- Supply chain trends through the downturn.
- Downturn (and recovery) accelerate industry’s shift to the East.
 - Production footprint is changing.
 - New suppliers are emerging.
- Pricing trends.
- Implications for CMS and industry.

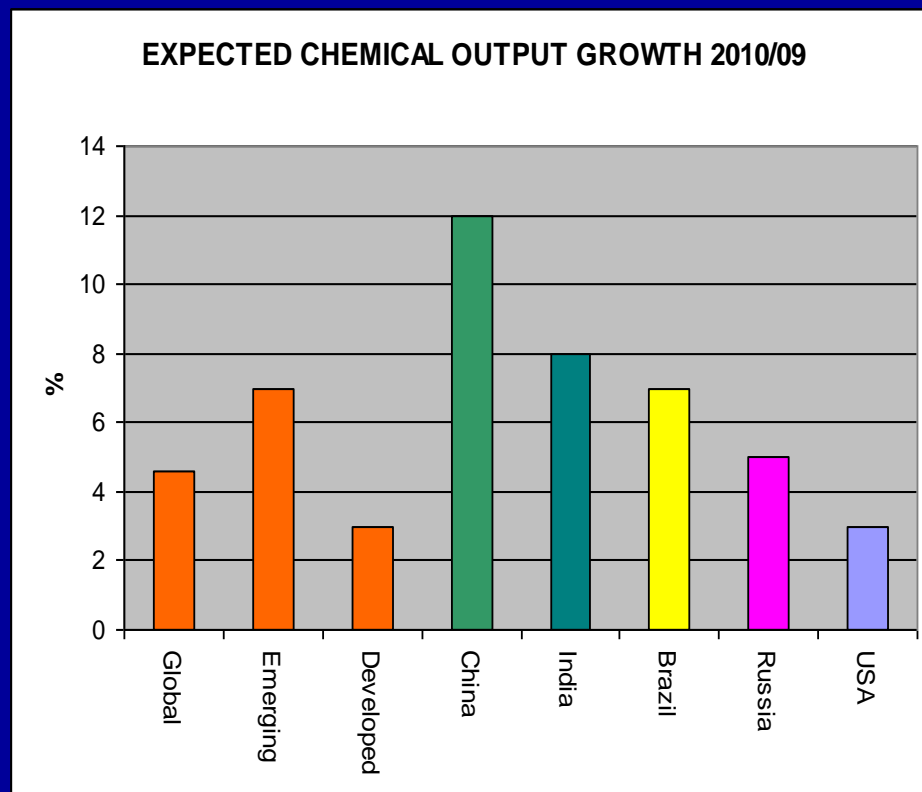
What the New Normal Looks Like

- Patterns in '06, '07, '09,'10 very, very similar.
 - But late '08 was frightful.



The New Normal: Chemical Growth is Outside U.S.

- Recovery is led by emerging markets.
- Production and investment are heading East (and South).



Source: American Chemistry Council (Washington)

Recovery Continues Through Second Quarter

company	sales	y-o-y change	net income	y-o-y change
Dow Chemical	\$13,600	20%	\$651	NA
DuPont	8,600	26	1,100	92%
PPG Industries	3,500	11	272	86
Praxair	2,500	18	371	24
Huntsman	2,343	27	114	-72
Mosaic	1,900	17	396	169
Eastman Chemical	1,700	38	148	103
Celanese	1,500	22	160	47
PotashCorp	1,400	68	472	153
Oxy Chem	1,013	25	108	6
Westlake Chemical	818.4	42	59.6	252

Europe (in millions of euros)

BASF	Û 12,369	38%	Û 1,992	124%
Bayer	4,573	24	429	95
AkzoNobel	3,907	13	354	139
Syngenta	2,433	6	NA	NA
DSM	2,406	23	149	NM
Henkel	1,890	20	222	134
Solvay	1,849	-11	57	-32
Arkema	1605	38	119	NM

source: company reports

The Company Leaderboard is Being Remade

2009		2008		1999
company	revenue	company	revenue	company
BASF	\$49.9	BASF	\$58.2	DuPont
Dow Chemical	\$44.9	ExxonMobil	\$58.0	BASF
ExxonMobil	\$40.9	Dow Chemical	\$57.1	Dow Chemical
Sabic	\$31.3	Shell	\$49.0	ICI
Sinopec	\$29.0	Ineos	\$47.0	Hoechst
Ineos	\$28.6	Sabic	\$46.7	Shell
Shell	\$26.1	LyondellBase	\$33.3	Montedison
DuPont	\$26.1	Sinopec	\$31.3	Akzo Nobel
LyondellBase	\$22.1	DuPont	\$30.6	Henkel
Total	\$21.1	Total	\$28.1	Mitsubishi Ch
*in billions of dollars based on year-end exchange rates				
source: company reports, CW estimates				

Supply Chain through the Downturn

- Chemical makers quickly shut production in early stages of downturn.
- Demand remains below 2008 levels in U.S. and Europe but shutdowns and outages have kept supply tight.
 - Paints, coatings, adhesives price pressure due to propylene shortages, phenol outages.
- Inventories are rising but below pre-crisis norms
- Producers comfortable with leaner inventories, shorter lead times (increasing supply chain volatility and risk).

Country Shipments Underscore Eastern Shift

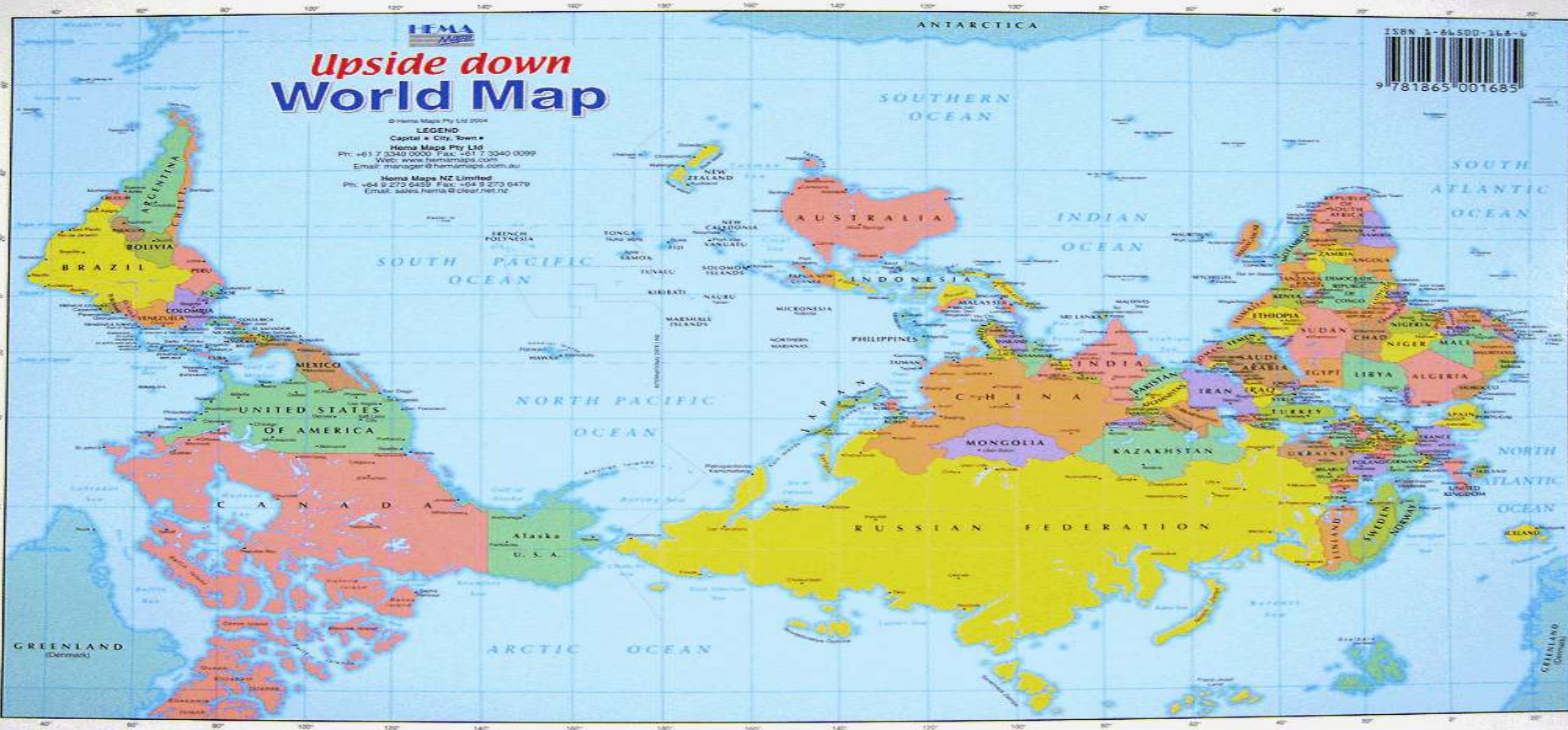
China to surpass U.S. next year

2008	shipments	1998	shipments
country	revenues	country	revenues
U.S.	\$689.3	U.S.	\$416.7
<i>China</i>	\$549.4	Japan	\$193.8
Japan	\$298.0	Germany	\$124.9
Germany	\$263.2	China	\$80.9
<i>Mideast</i>	\$160.4	France	\$79.1
France	\$158.9	UK	\$70.3
Korea	\$133.2	Italy	\$63.9
<i>Brazil</i>	\$126.7	Mideast	\$52.7
UK	\$123.4	Brazil	\$46.5
Italy	\$122.9	Korea	\$39.3

source: data compiled by ACC (Arlington, VA)

The World is Not Flat in Chemicals...

... it's actually being turned upside down.



New Leaders: China

- Sinopec: Global ambitions in commodities.
- ChemChina: Global ambitions in specialties.
 - How will they manage feedstock constraints



The New Leaders: Brazil

- Introducing Nova Braskem.
 - Brazilian petchem sector finally has been consolidated (and they won't stop there).
 - Targeting top-five global petchem position.
 - Petchem projects in Mexico, Venezuela, Ecuador, and Peru.
 - U.S. entry via Sunoco PP acquisition



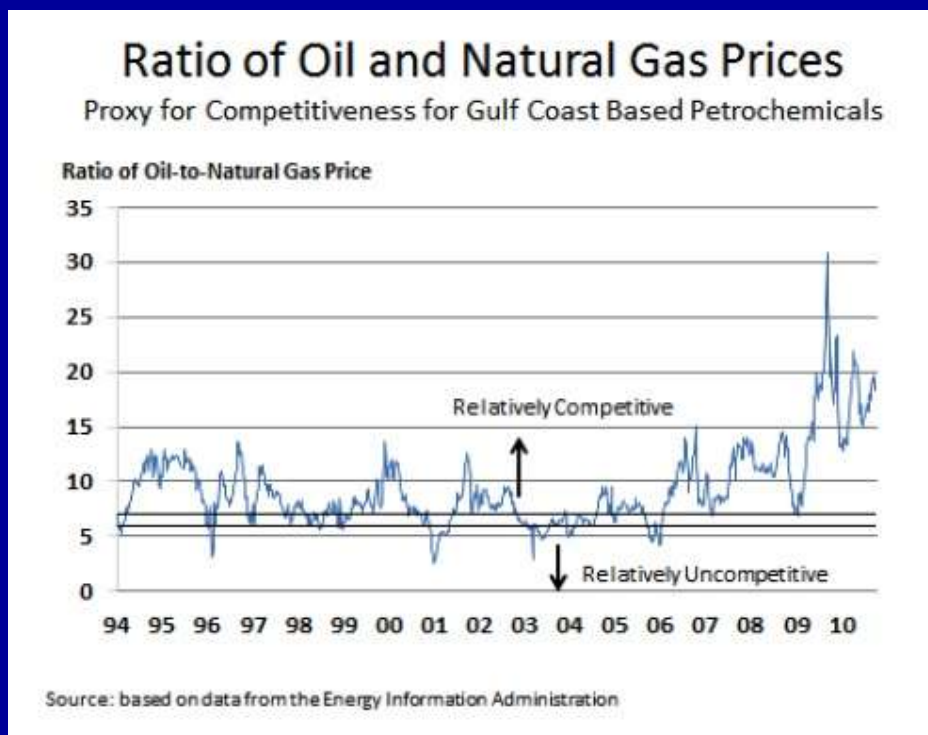
New Leaders: State-owned Resource Holders

- Aramco (Saudi Arabia)
- NPC (Islamic Republic of Iran)
- IPIC (Abu Dhabi)
- PIC (Kuwait)
- QP (Qatar)
- Oman Oil (Oman)
- Petrobras (Brazil)
- Pequiven (Venezuela)
- Libya, Algeria?

Don't Count Out the U.S. Just Yet

- Shale gas is a game changer for U.S. chemicals.
 - Ethane/NGL getting expensive but still far more advantaged than heavier feeds like naphtha.
 - Non-conventional natural gas sources are a competitive energy and feedstock source.
 - Only the Mideast has more favorable petchem economics right now.

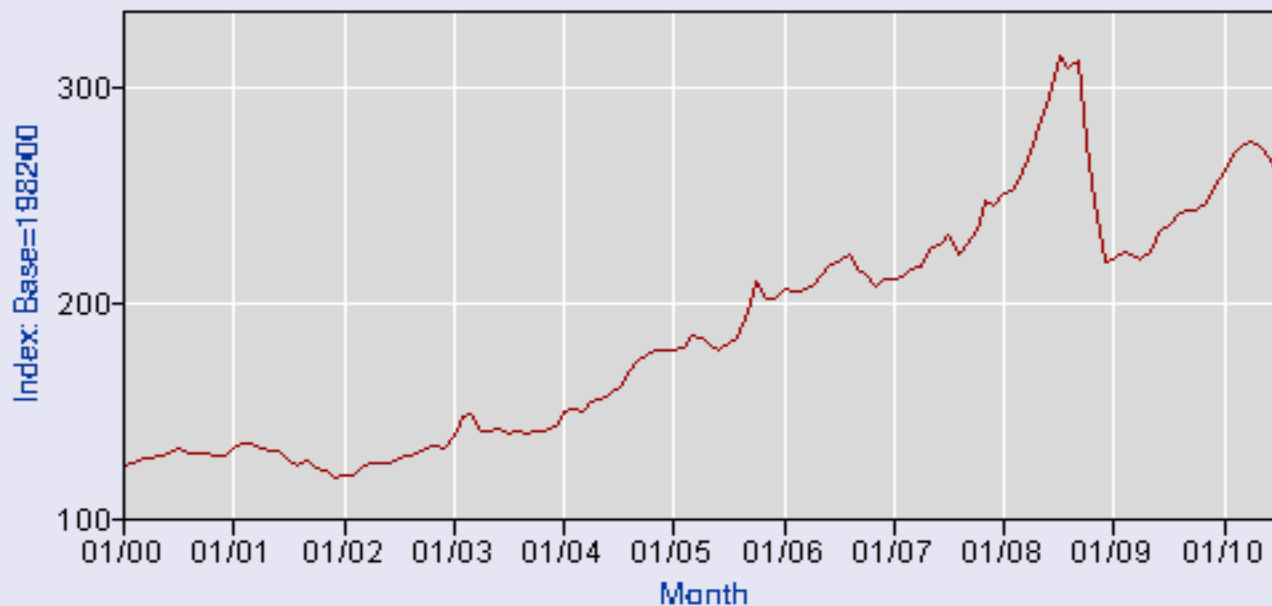
Gulf Coast Petchem Competitiveness Returns



Source: American Chemistry Council (Washington)

Chemical Pricing Has Rebounded Sharply

U.S. industrial chemical price trends



Source: Bureau of Labor Statistics U.S. Producer Price Index for Industrial Chemicals
1982=100

Re-Regulating Chemicals

- Congress
 - Chemical management (TSCA, HPV)
 - Plant Security/CFATS
- EPA
 - Climate/Regulating CO₂ as pollutant?
 - Chemical management plans
 - New air toxics source rules
- Europe
 - REACH

Sustainability, Regulatory Trends Favor CMS

- Chemical policy changes likely to increase value of CMS.
 - Risk reduction.
 - Regulatory/information management.
- Sustainability/CSR trends also positive.
 - Reducing energy, material, water use
 - Toxics, CO₂/GHG, pollutant reductions
- CMS providers well-positioned to help address these challenges

Looking Forward

- Recovery is here, but comparisons are getting tougher.
- CMS revenues, volumes are rebounding with recovery.
 - Automotive, aerospace recovery will help.
 - Regulatory, sustainability trends are favorable for CMS.
- Pricing (and costs) have moderated in mid-2010 but chemical makers are being aggressive.

Looking Forward

- Regulatory activity will continue.
 - Action on TSCA, energy and EPA initiatives (carbon/GHG, CAPs) still coming regardless of what happens in the mid-term elections.

Thank You

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