

Global Petrochemistry State of the Industry

Sustaining Growth after Recovery



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Fukuoka, Japan



has
acquired



Singapore

Shanghai

Bangkok

Houston

New York

London

Düsseldorf

Dubai

Current State of the Global Industry

Global Markets are focused on emerging economies and are absorbing a “spread out” wave of new supply. Large divergence in cost position is inflating profits for some as the rest are forced (by the market) to maintain strict price discipline.

**Conventional Wisdom is that...
...there is no Conventional Wisdom in
Markets such as these!**

- Oil prices have risen at an alarming rate;
 - but Chemical Sector earnings continue to excel
- Capacity additions reach record proportions;
 - but demand and operating performance match up
- Significant Surpluses in developed markets;
 - but production levels remain disciplined
- Demand growth centered in one region (*Asia*);
 - but its import pull remedies weakness elsewhere

Presentation Outline

Recovery Over – Sustained Growth?

Price Takers vs. Price Makers

Regional Earnings Diversity



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Petrochemical Value-Chain Dynamics

Consumers



Retail



Converters



Recent and ongoing events are causing concern for consumers and impacting oil supply expectations

Energy



There are several risks to continued economic growth...

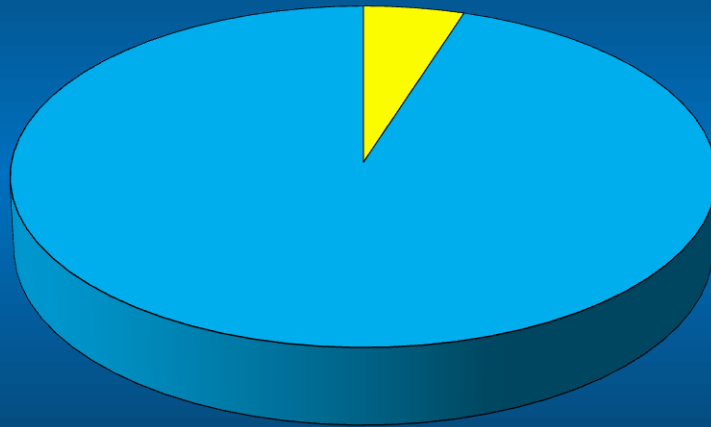


- Debt levels appear structurally high
- Excess government stimulus in play
- Europe's financial struggles continue
- Unemployment remains elevated
- Inflation is rising
- **Earthquake reverberations**
- **Beginning of *Change* in the Middle East & North Africa**

Middle East & North Africa – The Economic Impact is Oil Prices

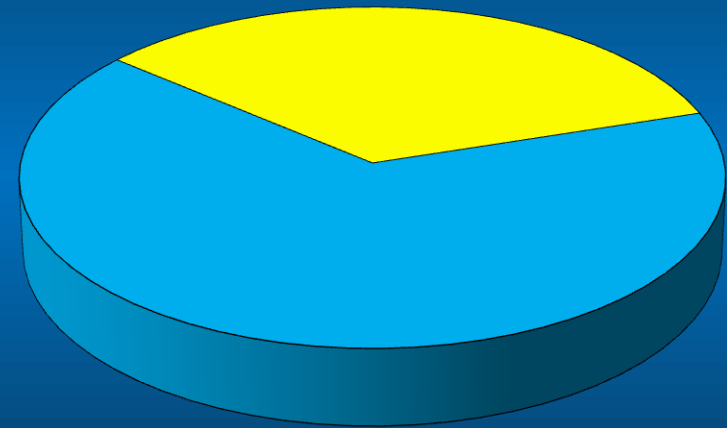
GDP

5%



Global Oil Production

34%



Middle East and North Africa



Rest of the World

Global GDP Growth 3.0% – 4.0% Unless...



- \$115 crude oil would slow the current expansion by a few tenths on average.
- \$135 crude oil would cause growth to stop in the U.S. and perhaps cause a mild recession in Europe.
- A severe run-up in oil prices (*like 2008*) would cause a near term recession in the U.S. but only a pullback in emerging countries such as China.

Consequences of an uncertain political future in the Middle East & Northern Africa

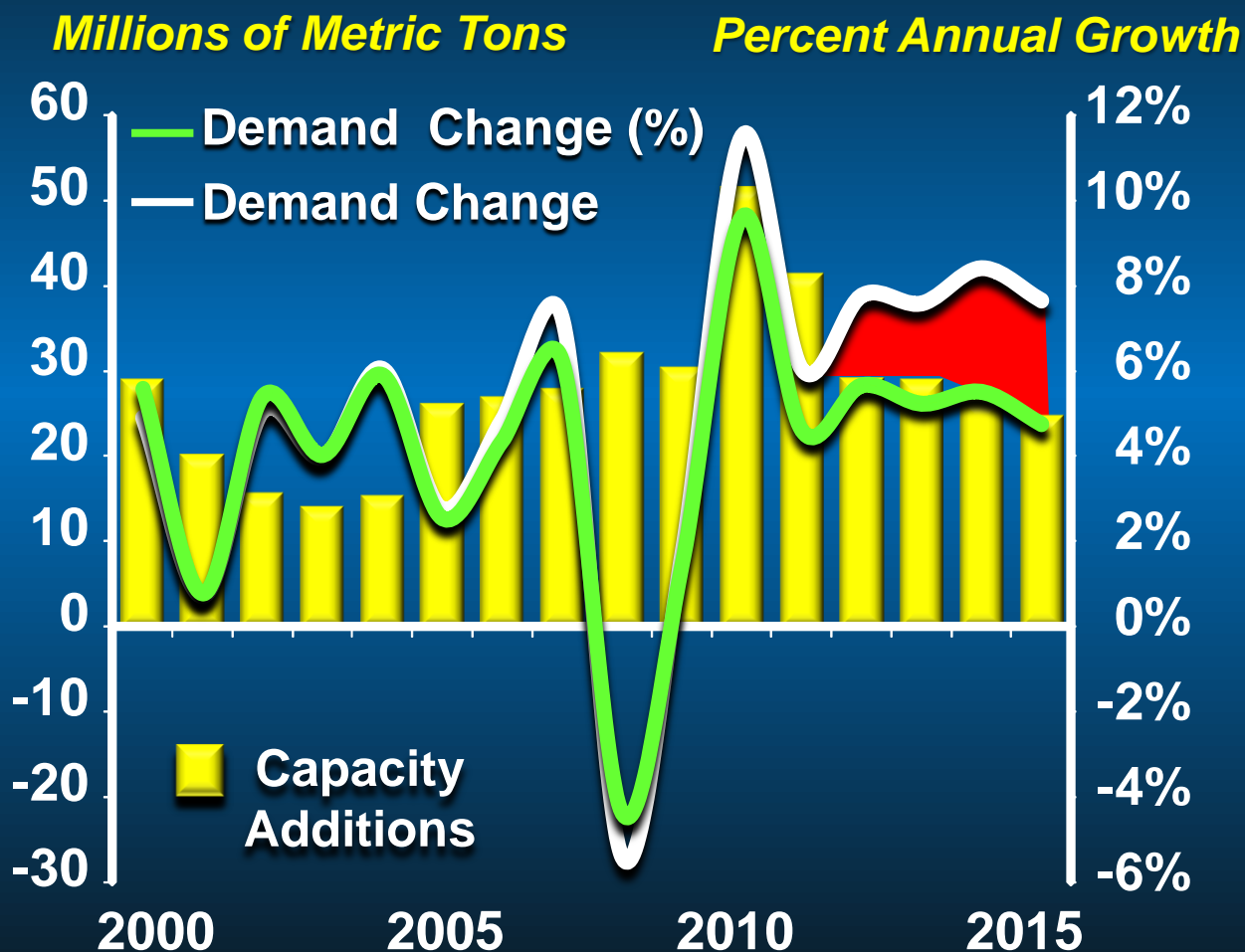
- Resource rich region of our petrochemical world ~ 30 percent of new Capacity.
- Pace of investment will slow as companies take a *wait-and-see* posture.
- Required ROI goes higher as risk premiums inflate, making JVs with public sector companies more difficult to execute.



Basic Chemicals & Plastics

Global Demand Recovery and Growth are Impressive

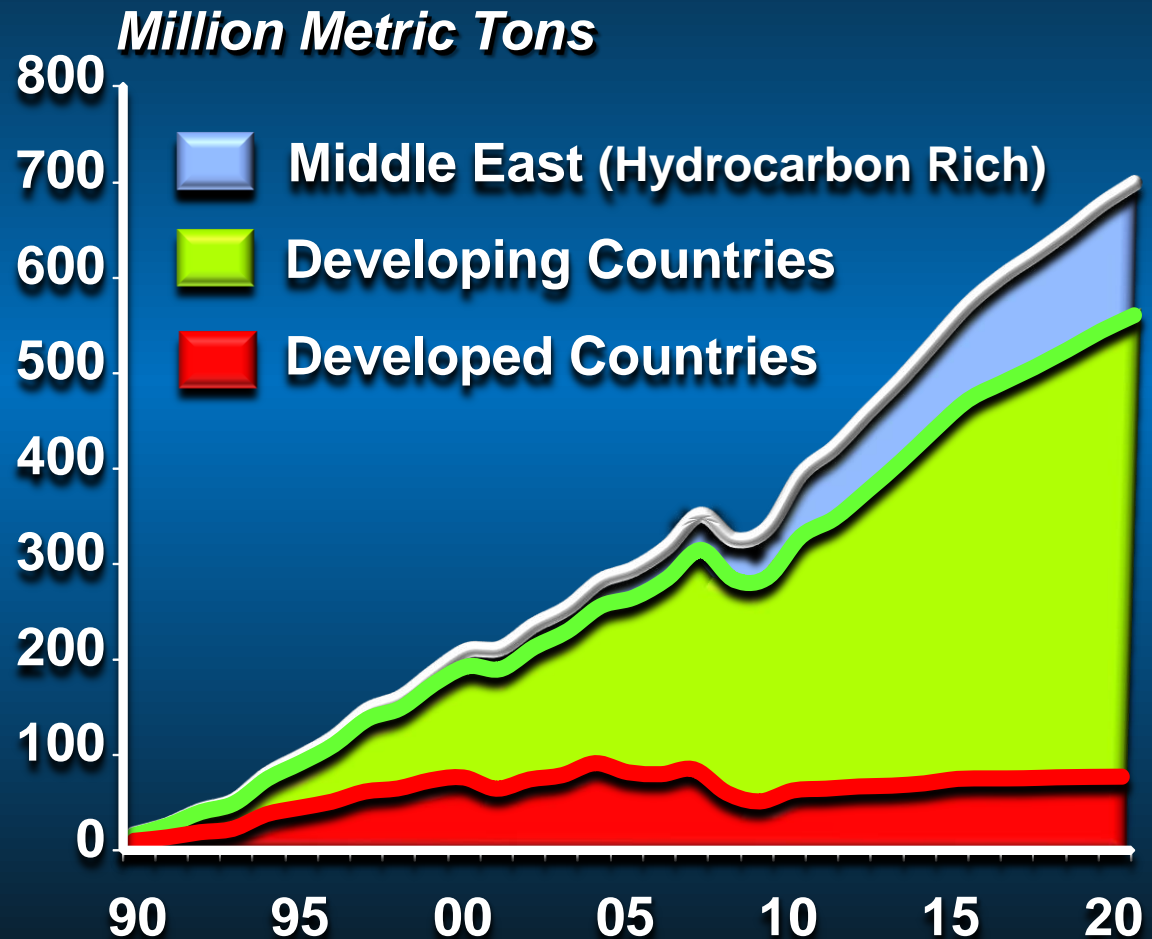
- Sharp decline followed by a sharp recovery in the Developing World (*BRICs*)
- New spending supports growth:
 - Consumption levels rising
 - Especially in China
- Concern about capacity overhang delays future investment plans



Production Growth Favors An Advantage

- Production growth is indicative of economic development and/or relative cost position
- Mature Economies need an export cost advantage to advance production
- Developing economies attract local investment to support local demand
- International Markets are the perfect remedy for a slow or less-developed domestic environment
- if you can compete

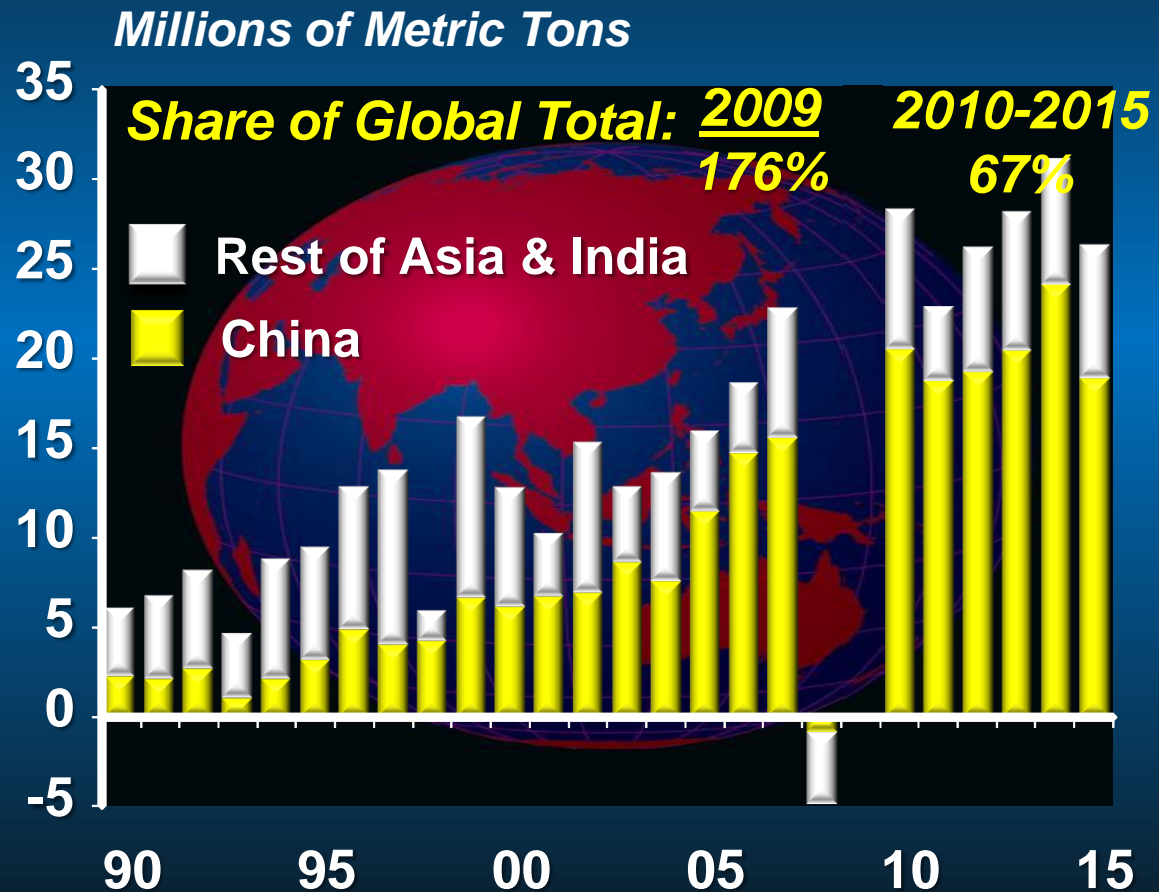
Cumulative Production Growth



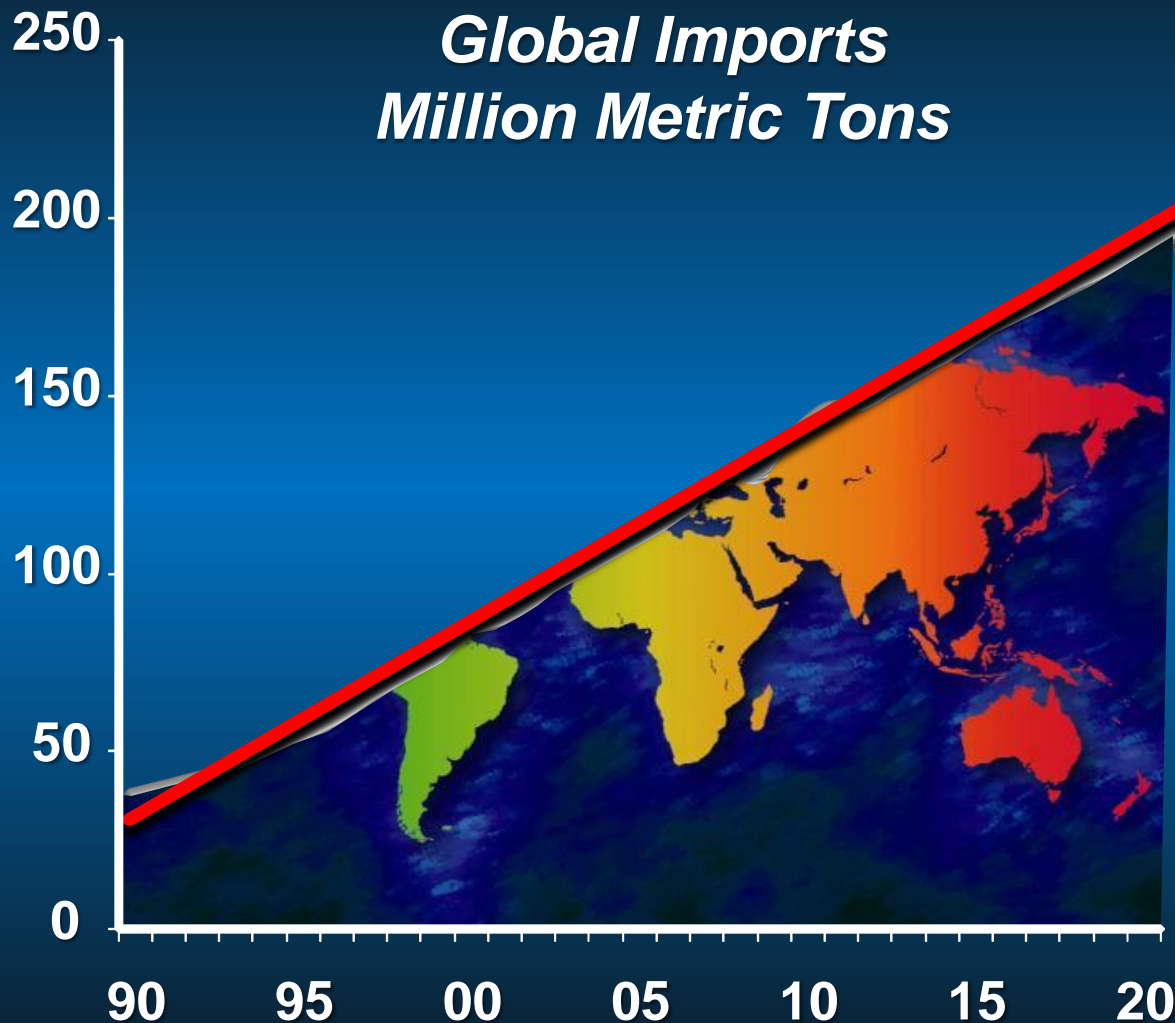
Asia & India Demand Growth Critical to Recovery and Sustained Growth...

Annual Demand Growth

- Recovery in 2009 was confined to Asia & India
- *Developed world was still searching for a real stimulus...*
- Region represents majority of future demand growth - **absorbs capacity around the globe**

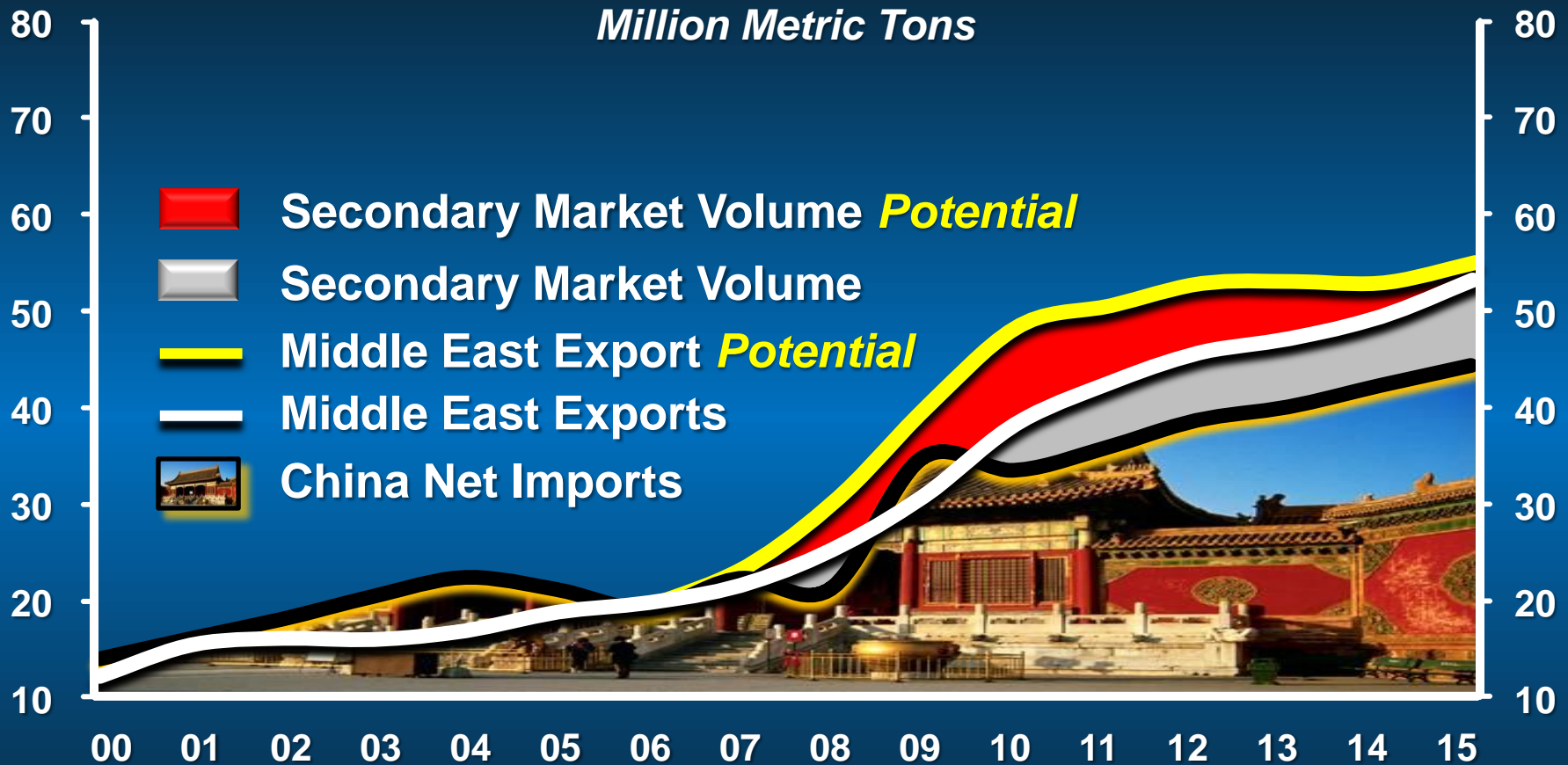


Trade Position is a Strategic Consideration...



- Volume of Basic Chemicals & Plastics trade continues a steady climb
- Emergence of demand ahead of local scale creates opportunity
- Trade is the perfect antidote for a mature, domestic market that has a cost advantage

Middle East Export potential much higher...



Other Exporters Benefit from these “Operating Challenges”

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What About Global Competition?

Secret to Success in Commodity Petrochemicals

It is not all about who has the biggest plant

The next plant built will be the Biggest Plant...



It is not all about who has the best technology

Technology has become readily available...



It is not all about who traded there first

Competitive conditions dictate decisions...



It is literally about the cost



As much as 70% of integrated cash costs are hydrocarbon based!

Price Maker

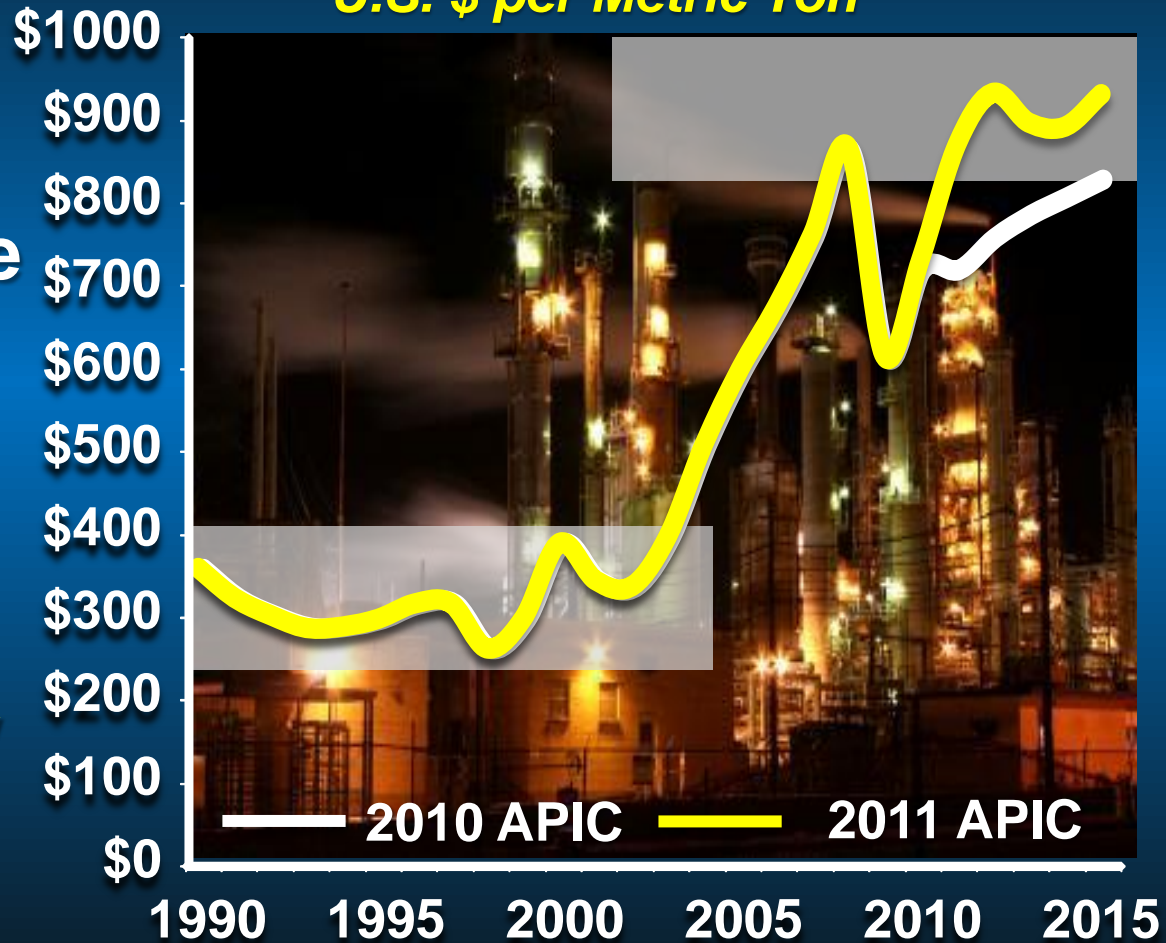
Since hydrocarbon prices are such an important component of production costs, in our industry the “Price Makers” are the highest cost component of supply ultimately satisfying demand. In other words, *producers high on the “flat portion” of the cost curve setting the clearing price.*

Price Taker

A producer that can alter (increase) its rate of production and sales without significantly affecting the market clearing price of its product. In other words, *producers low on the cost curve enjoying the best margins.*

Inflated Prices Reflect 3X Higher Costs

Global Cash Cost of Production U.S. \$ per Metric Ton



- Hyper Oil Markets lead to Record Cash Costs
- Negative Influence on Demand Growth
- Higher Prices are Necessary to:
 - Cover rising “Raw Materials”
 - Justify Capacity

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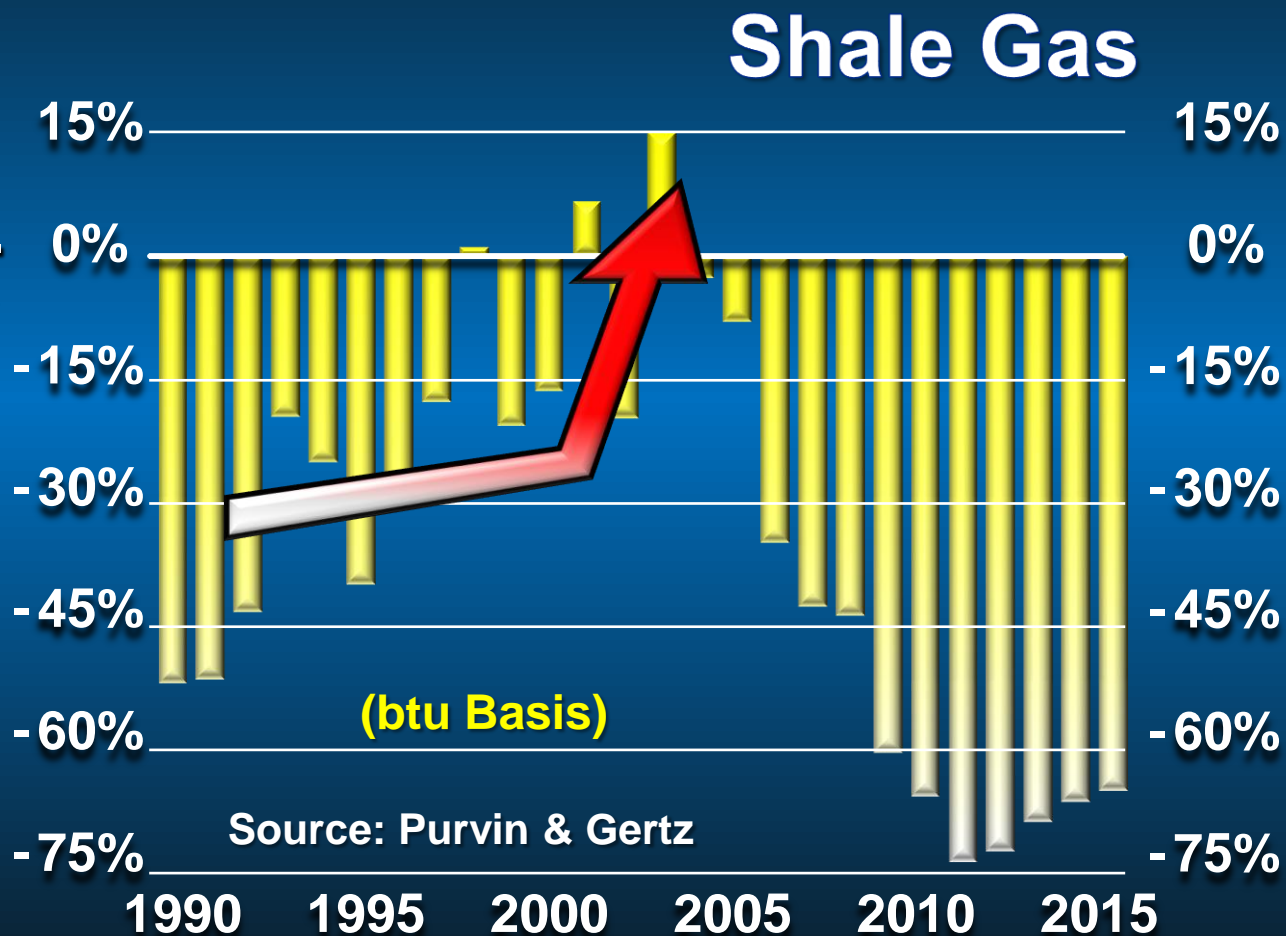


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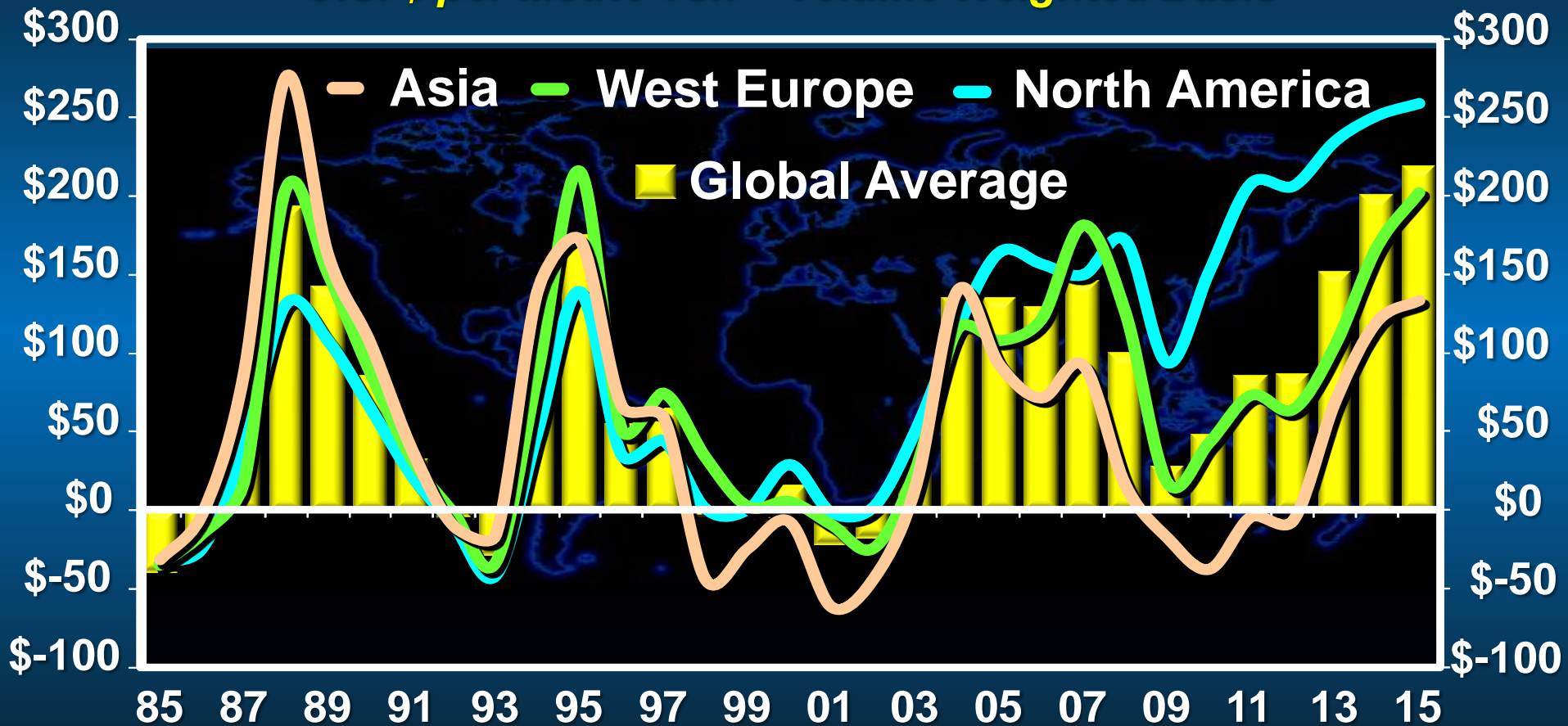
Price Difference U.S. Natural Gas vs. Brent Crude Oil

- U.S. and Alberta petchem industry was built on “**advantaged gas**”.
- A clear reversal of fortune has occurred.
- Opportunity to leverage a significant cost advantage and a challenge for C3s and C4s



Basic Chemicals & Plastics EBIT Comparison

U.S. \$ per Metric Ton – Volume Weighted Basis



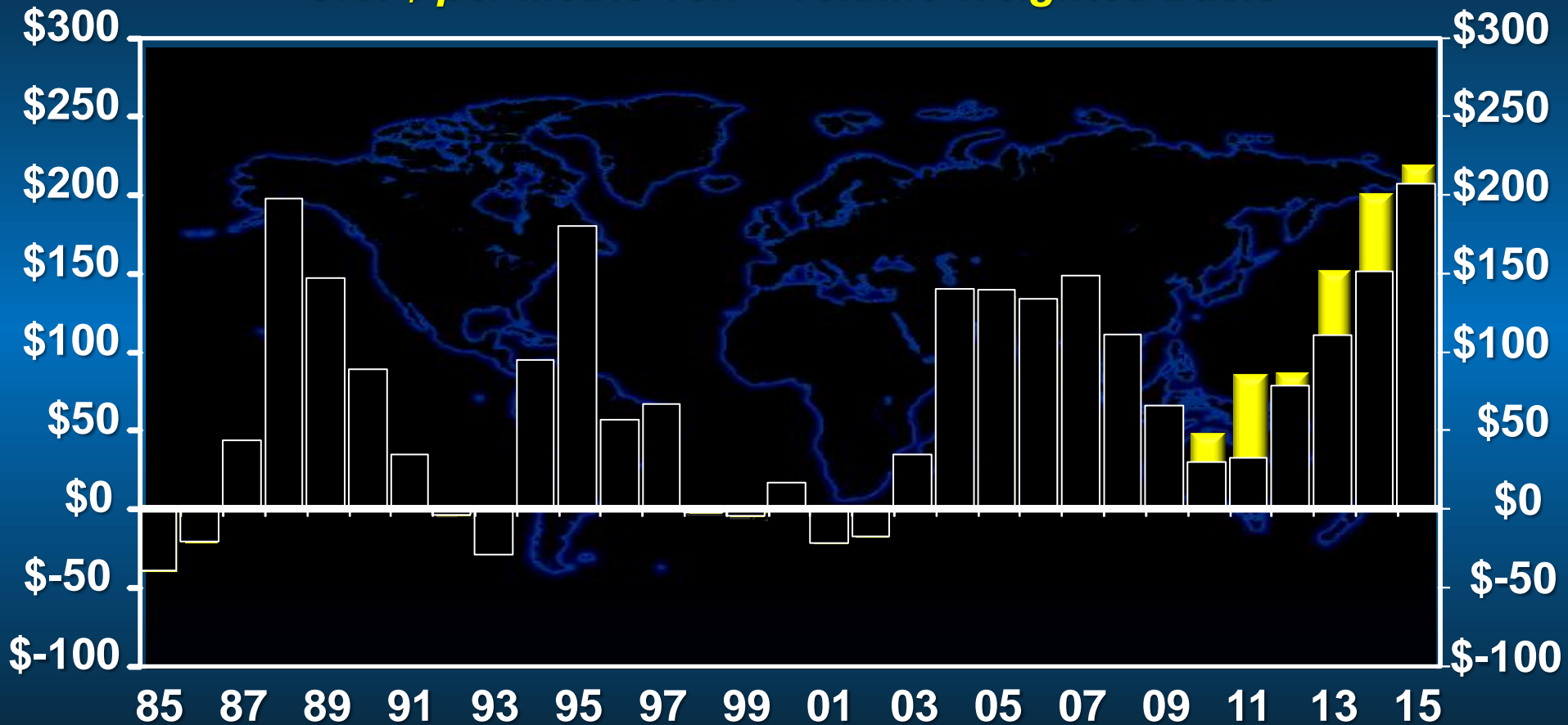
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Basic Chemicals & Plastics

Global EBIT APIC-to-APIC Comparison

U.S. \$ per Metric Ton – Volume Weighted Basis



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Companies that thrive will leverage **Cost Advantaged Raw Materials** and/or **Winning Relationships...**

Strategic Focus

Raw Material Advantage

and/or

Customer Relationships

Franchise:

- *Product*
- *Market*

Clear Understanding of Current Position

Align Business Model Accordingly:

- **Value Proposition**
- **Business Portfolio**
- **Asset and Raw Material Base**

(Product, Technology, Geography, Customers, etc.)

“Old World” & “New World” Competitors will have Differing Strategic Priorities...

Conclusions For Mid Term Analysis

- Real demand growth has resumed.
- Operating performance in the Middle East (*Iran*) and Asia (*China*) defines surplus.
- Absorbing large capacity increase but watch out for near term inventory gains.
- “High” crude & “low” gas prices separate ethane users from the rest –



- but non-Asian expansion requires export strategy

“Global Chemicals” Summary Perspectives

Developed World Matures

- *Lower Demand*
- *Higher Imports
(Finished Goods)*

Developing World Expands

- *More Capacity*
- *Higher Imports
(Raw Materials)*

New Gulf (ME) Advantage Remains

- *Higher Exports*
- *Diverse Capacity*

Renewed Gulf (GOM) Reemerges

- *Wide Oil vs Gas Gap*
- *Higher Exports*