



When Structural And Cyclical Events Collided

Washington Energy Policy Conference

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Markets & Countries Group

**Strategic Advisors
in Global Energy**

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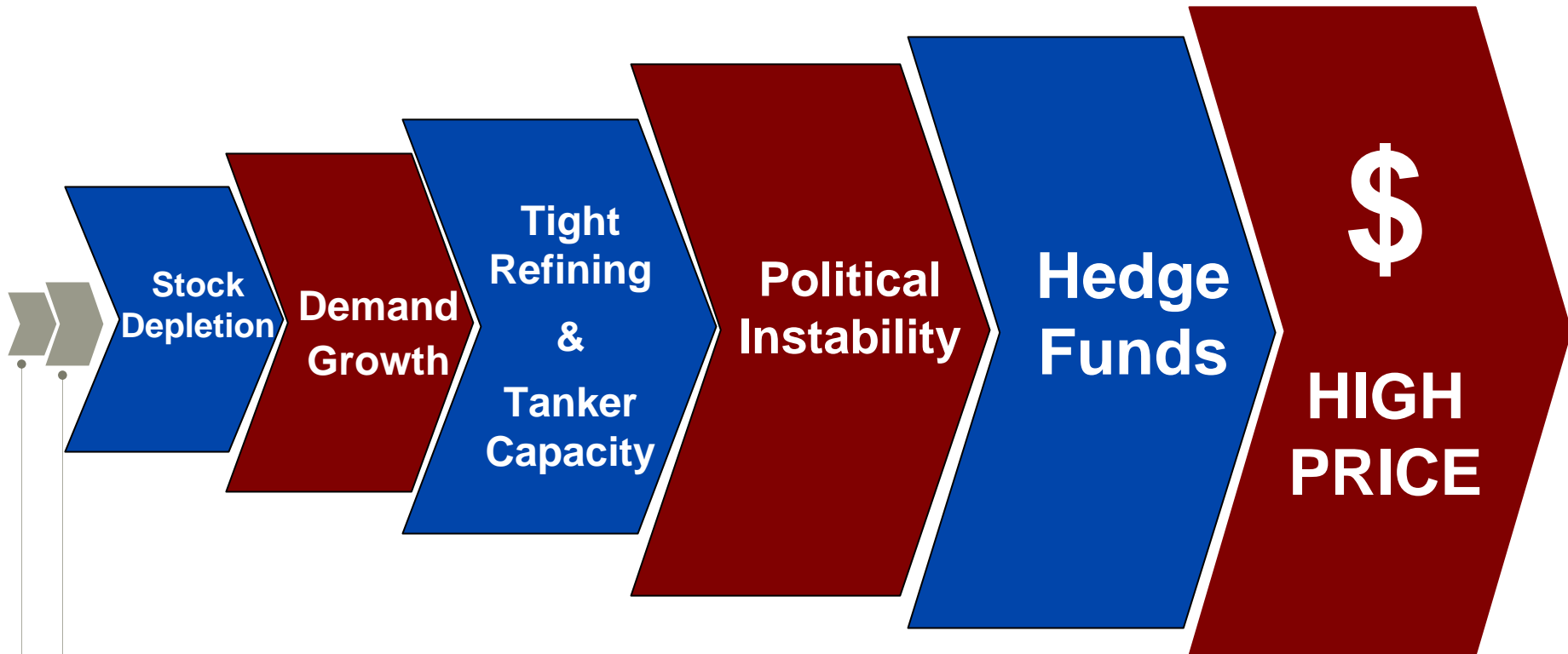


- **The world is entering an episode of higher and more volatile prices than anything witnessed in the past two decades**
- **The higher long-term prices are the result of a number of cyclical and structural factors coming together in the last two years.**
- **This new price episode is likely to last few years, or until some of the cyclical trends are impacted by higher prices.**
- **Higher prices will change the industry as profoundly as lower prices did after 1986**

- In the aftermath of 9/11, security in the Middle East has reemerged as a key global concern
- The US presence in Iraq, and the avowed goal to “democratize” the region has raised the issue of the stability of a number of regimes in the Gulf.
- Internal tensions, terrorist attacks in the GCC countries has heightened the perception of oil facilities being at risk.
- Finally, the emergence of China as a large importer of Middle Eastern crude has added to the perception that a race to secure energy sources is emerging.
- In a world dominated by security concerns rather than by globalization (pre 9/11), energy security has added a bullish factor to the perception of future prices, helping to lift the long term crude prices.
- This is unlikely to change during the second Bush Administration, which remain focused on the war on terror.

Setting the Stage in 2003 and 2004

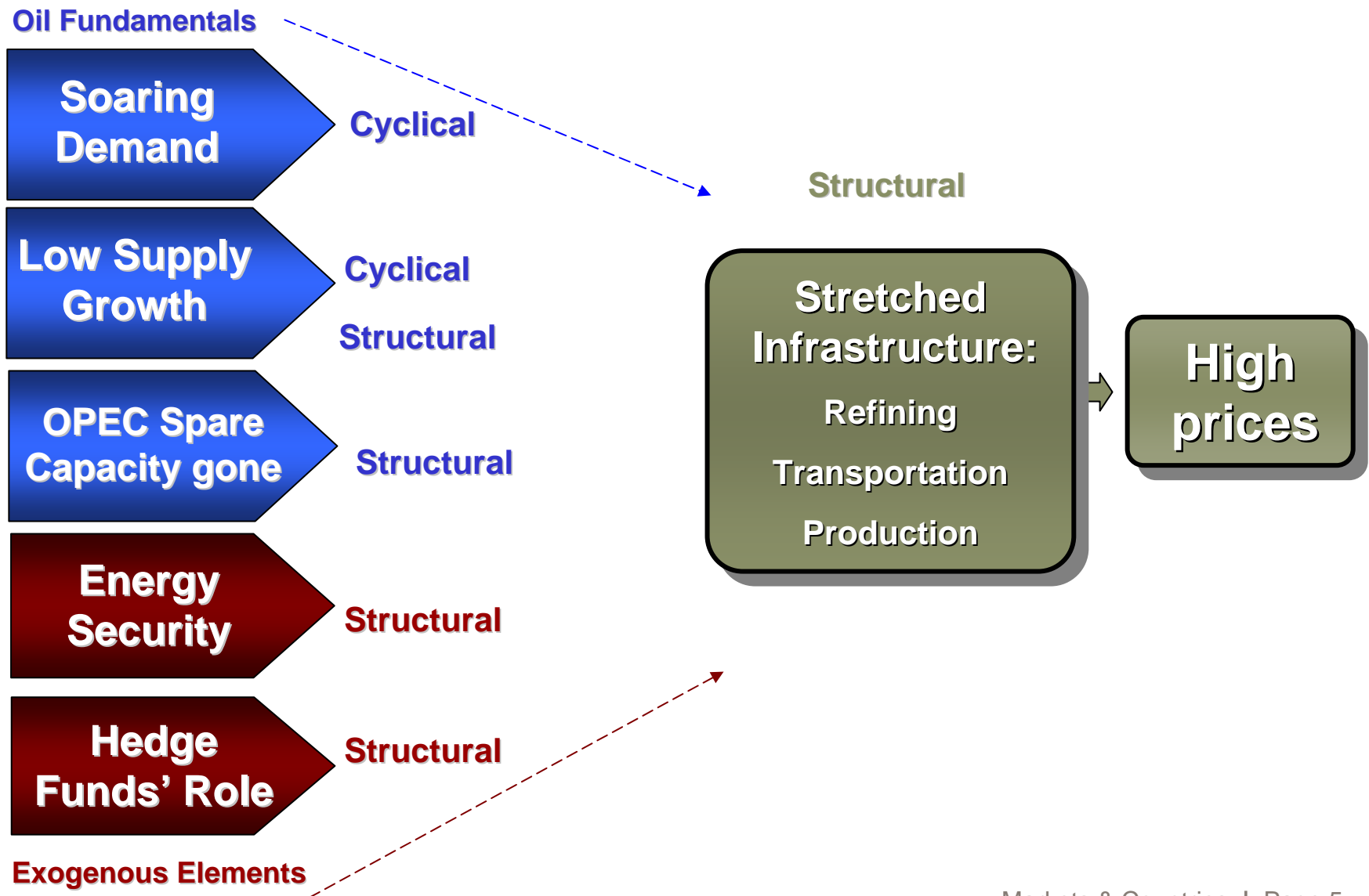
Chain Reaction In The Oil Market



Venezuela + Iraq

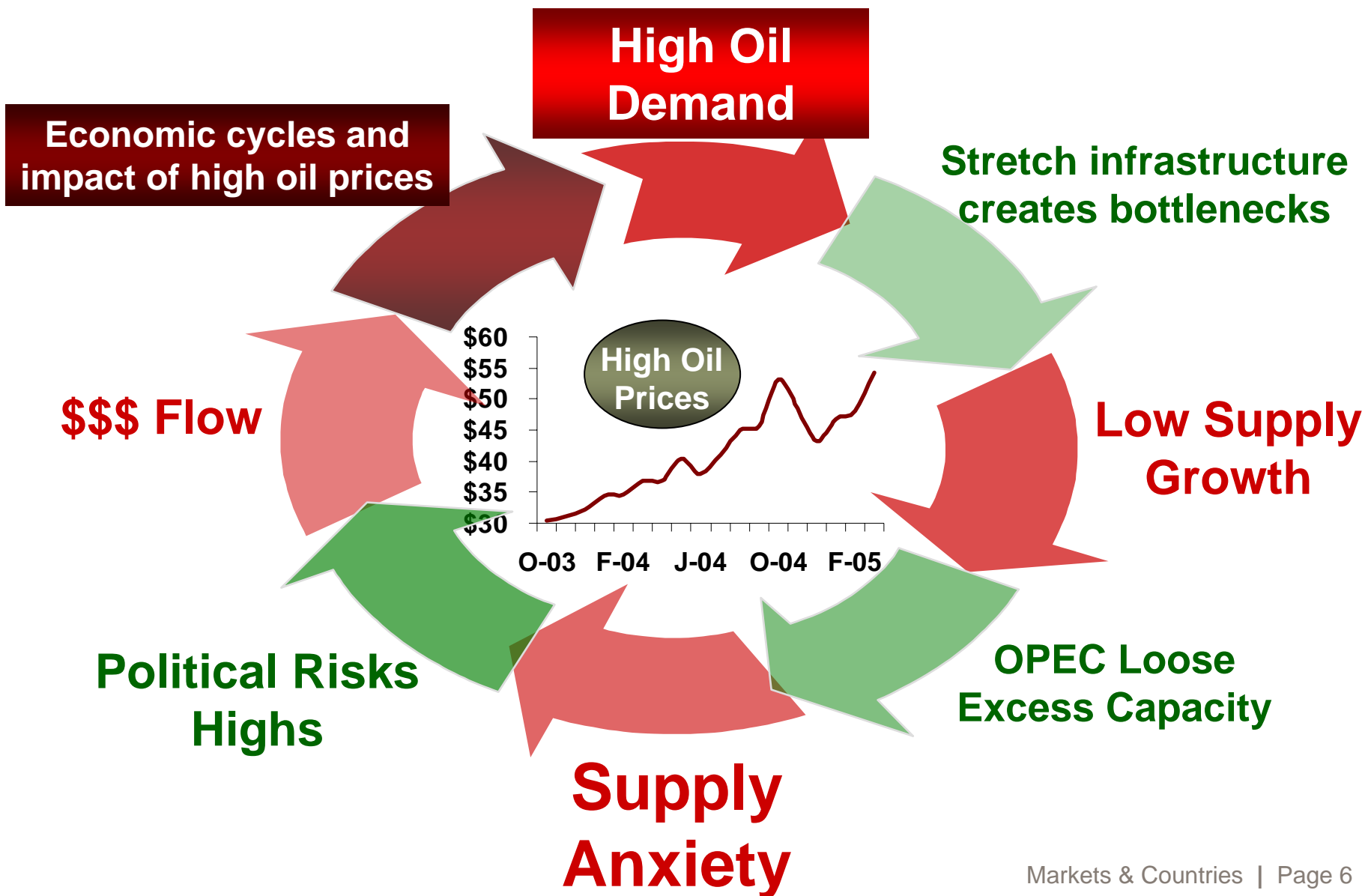
OPEC's Stock Management

When Structural And Cyclical Events Collide



Why The World Has \$50 + Oil

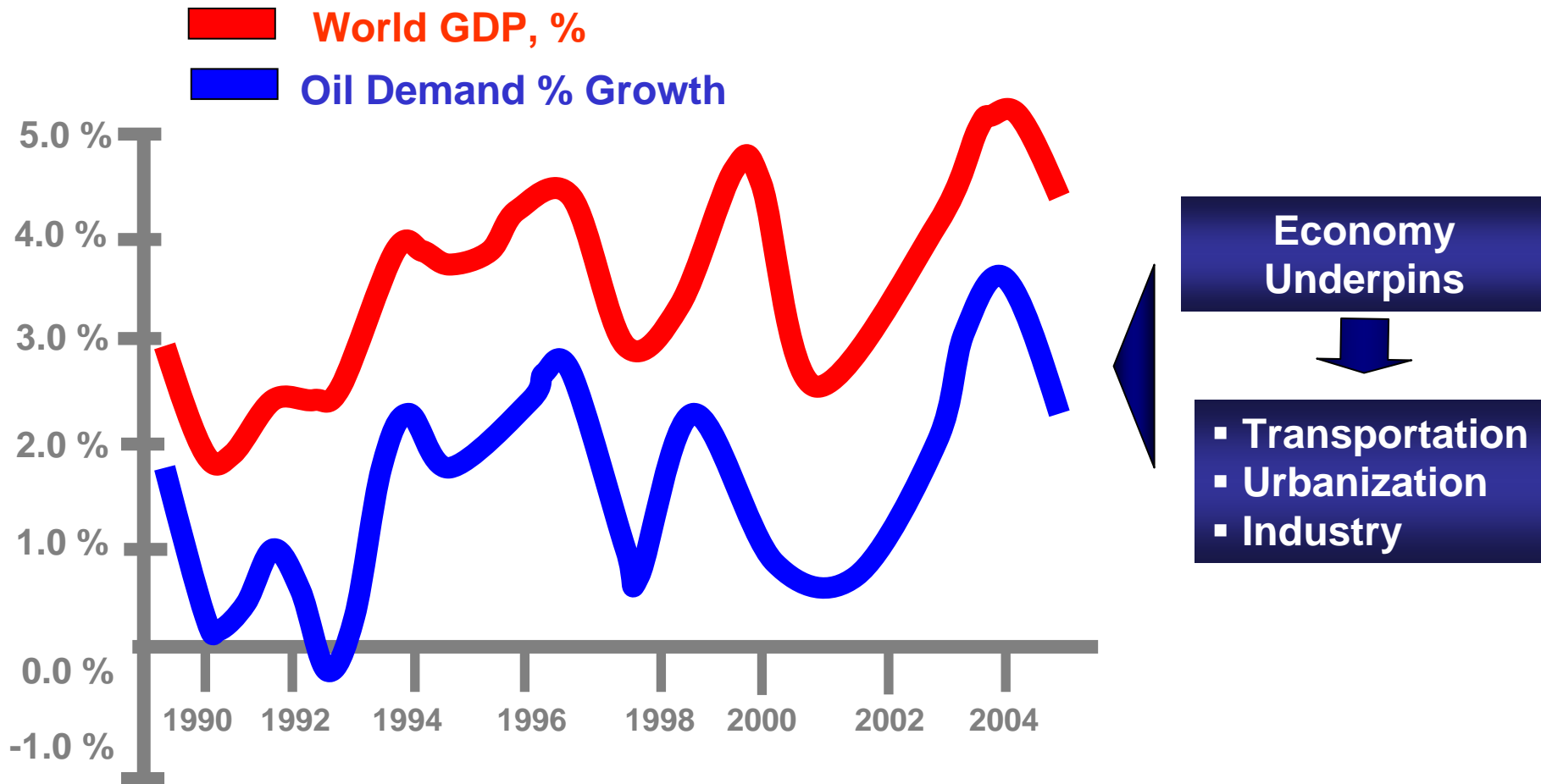
Several Factors Feeding Each Other In This New Episode



Its The Economy Stupid....

The Key Cyclical Driver

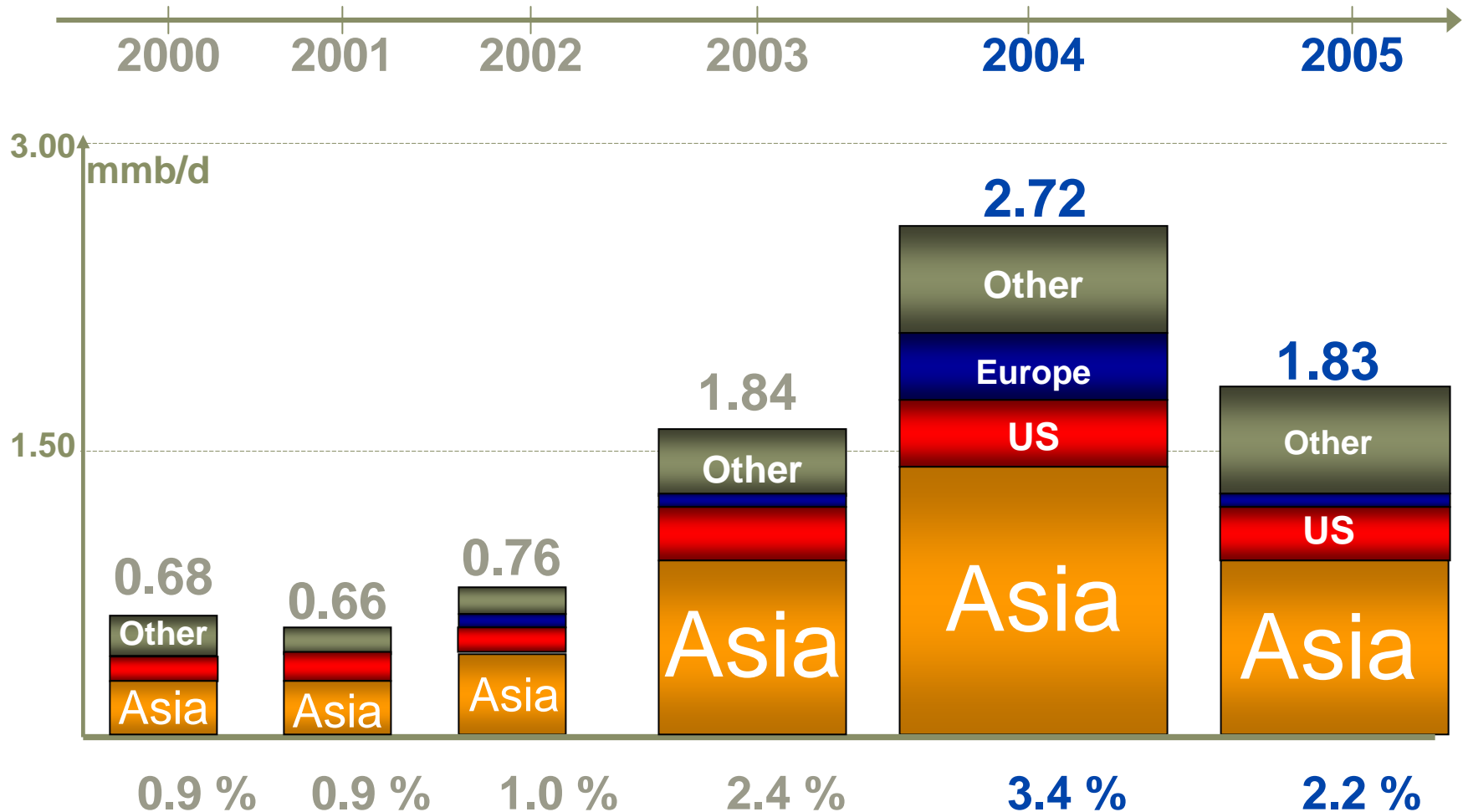
Global Economy Vs. Oil Demand



Oil demand growth remains tightly correlated to economic growth. The rise of Asian economies in the 1990's has helped re-establish this relationship.

Demand Strength Is The Key To The Problem

But Weaker Than 2004

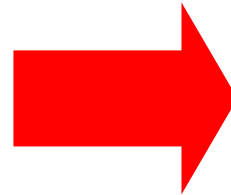


How Can The World Cope With This Growth?



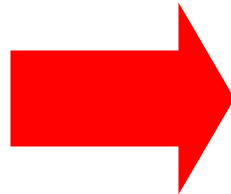
6.4 million b/d

China's Soaring Growth Impacts All Regions



Needs
Lights

- Unbalances The Sweet Crude Market, Competing With The Atlantic Basin. Contribute To Market And Price Dislocation



Needs
Diesel

- Unbalances The Product Market In Asia, Therefore Keeps Refinery Runs High Across The Region



Needs
Power

- Electricity Crunch Has Boosted Oil Demand, But For How Long?

Drivers Of Chinese Growth

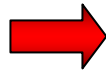
Several Sectors Underpinning Product Strength

Industry



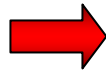
Industrial output is booming across the board

Urbanization



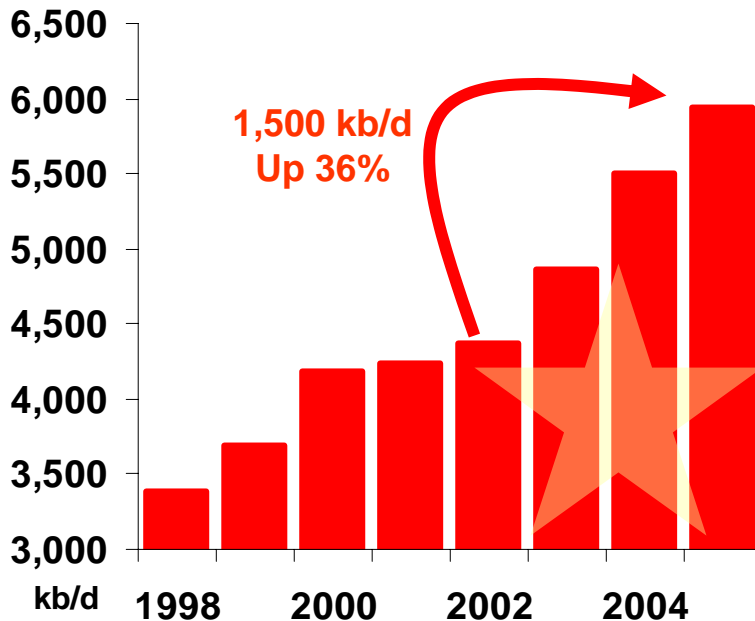
Increased household consumption

Transportation

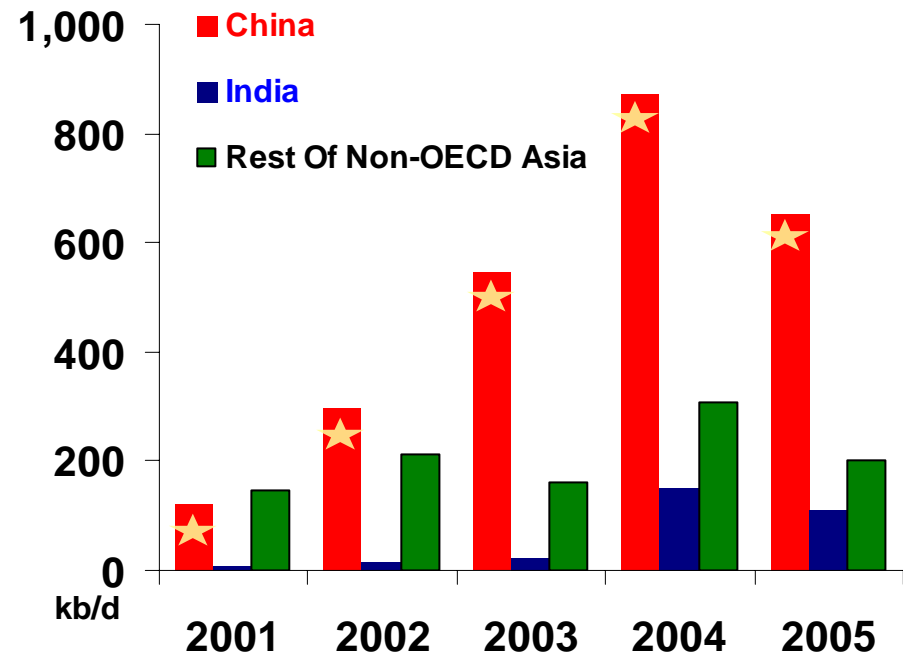


Increasing car fleet, trucks shifting to diesel

Chinese Refinery Runs



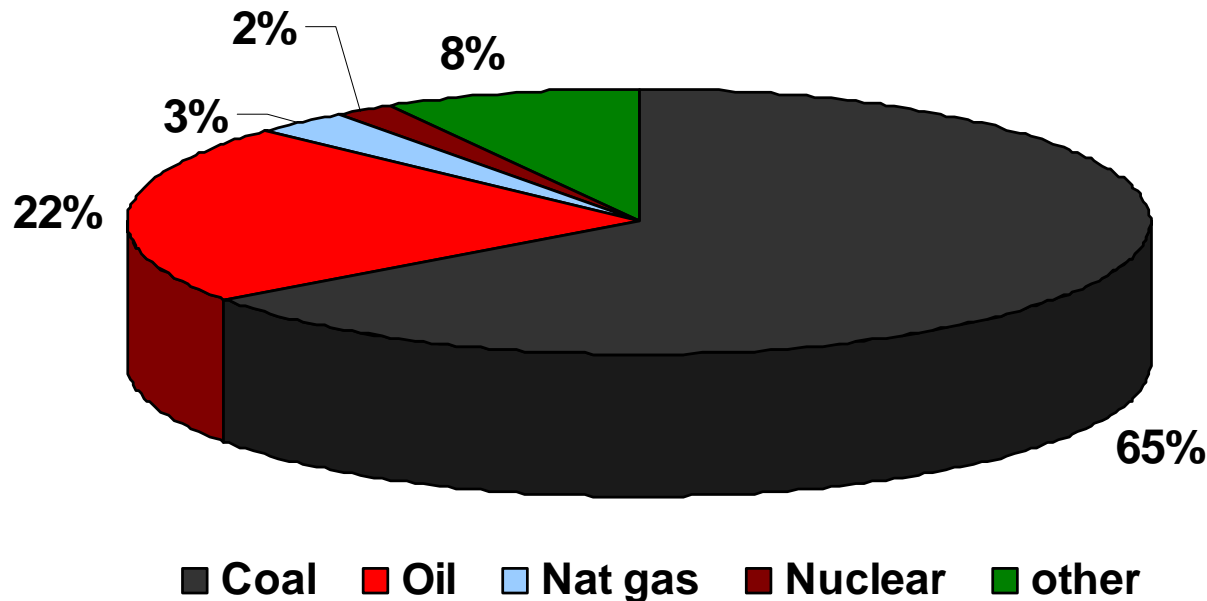
Asian Demand Growth



Oil Is Number 2 In China's Power Mix

But It Is Number 1 When There Is An Electricity Shortfall

China's Power Mix



- Shortcomings of China's electricity supply is the biggest driving force in Chinese oil demand this year, and it will remain so next year.
- The problem is two-fold: the power supply to the grid is currently inadequate, and the grid itself is rapidly expanding. As progress is made on grid expansion, it exacerbates supply shortfalls
- This Alone Should Add 350 kb/d Of Growth In 2005

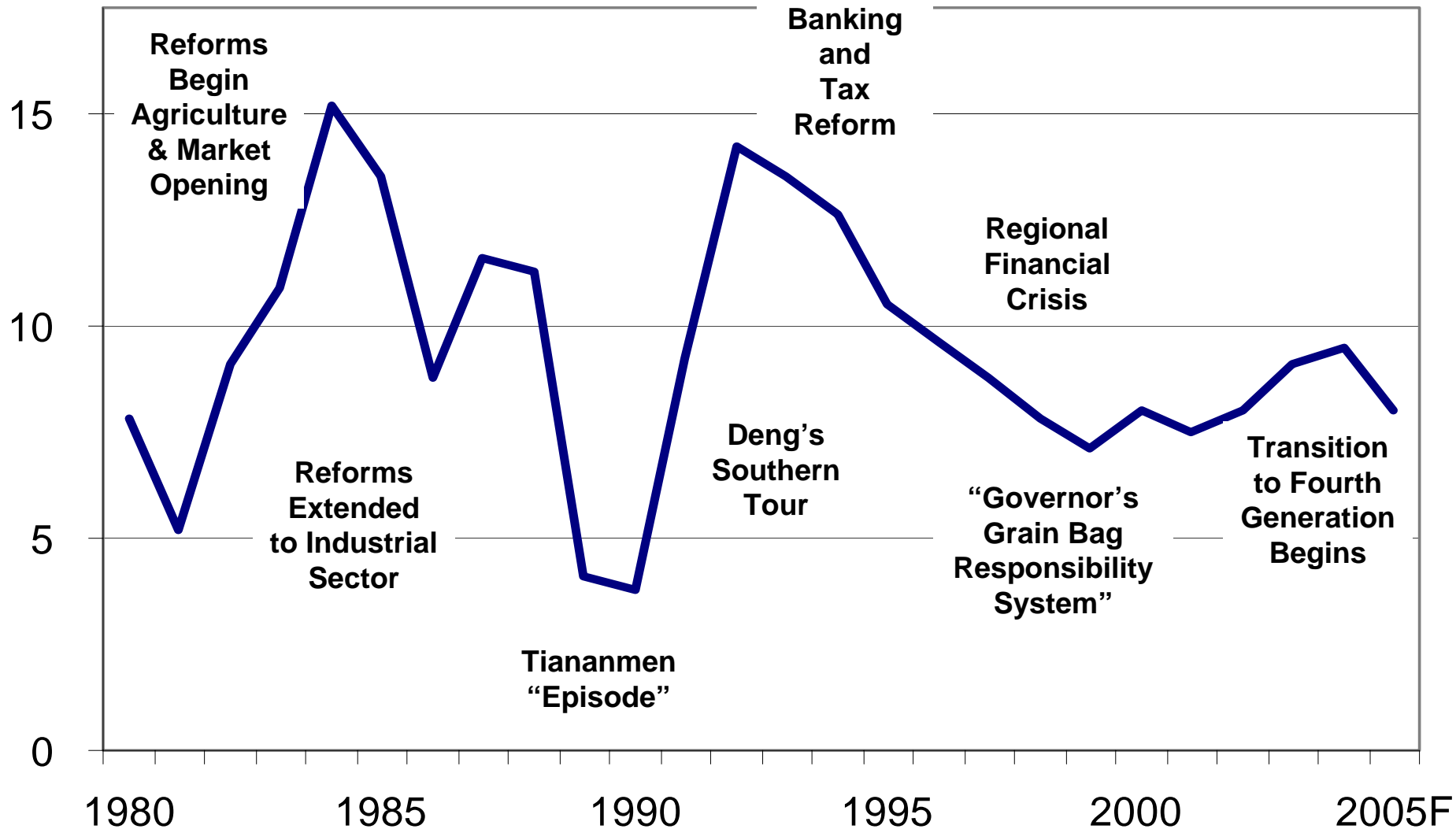
- **Economic reform underway for nearly 25 years**
 - Began with agriculture, then industry, then finance
 - China, unlike Russia, was an agricultural economy when reform began
 - Extraordinarily successful in transforming economy and key institutions
 - Process far from complete

- **Remaining challenges are substantial**
 - Continued reform / modernization of financial institutions
 - Continued reform / modernization of the state owned enterprises
 - Finding productive employment for new, displaced and surplus workers
 - Coping with the consequences of WTO
 - Overcoming the hurdles posed by regional protectionism
 - Water, air quality and energy
 - Ultimately ...capital account convertibility

- **Reform proceeding in waves, with periods of intense activity, followed by periods of consolidation**
 - Government approach similar to giant linear programming solution
 - Reforms in any one area must take account of consequences in all others
 - Overall approach highly pragmatic
 - Considerable experimentation - including structure of energy industry

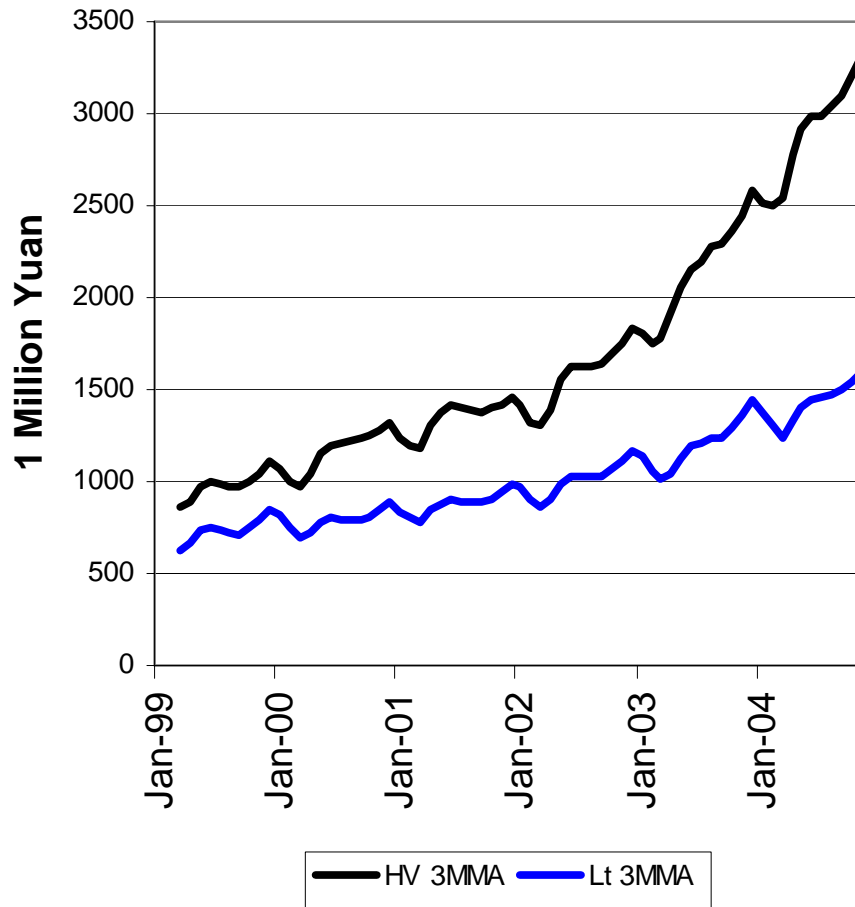
Reform Marked by Surges and Consolidations

Real GDP Growth - % per Year



Industrial Activity Remains Very Strong

Value Added by Type of Industry



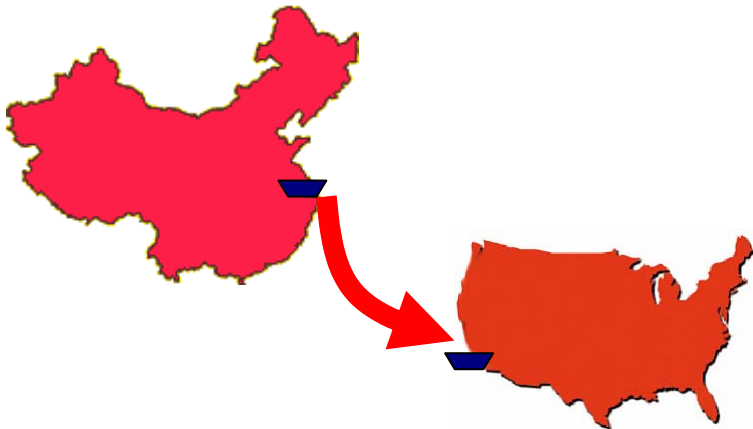
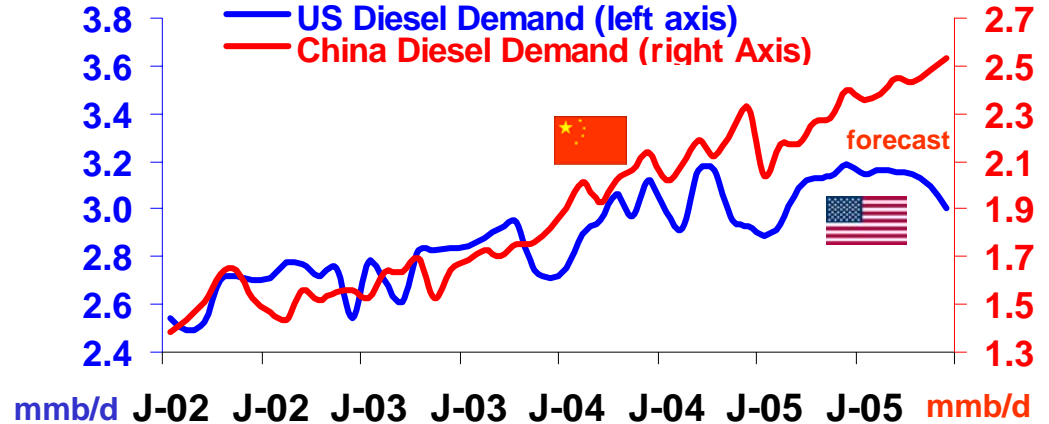
- Growth in industrial activity resumed in 2002 following several years of lack luster performance (lack luster by China standards)
- Surprisingly – but also importantly - growth in heavy industry is leading the way
- Widely anticipated (and occasionally reported) sharp slowdown in industrial activity has not yet materialized

US-Chinese Synergy Drives Up Diesel Demand

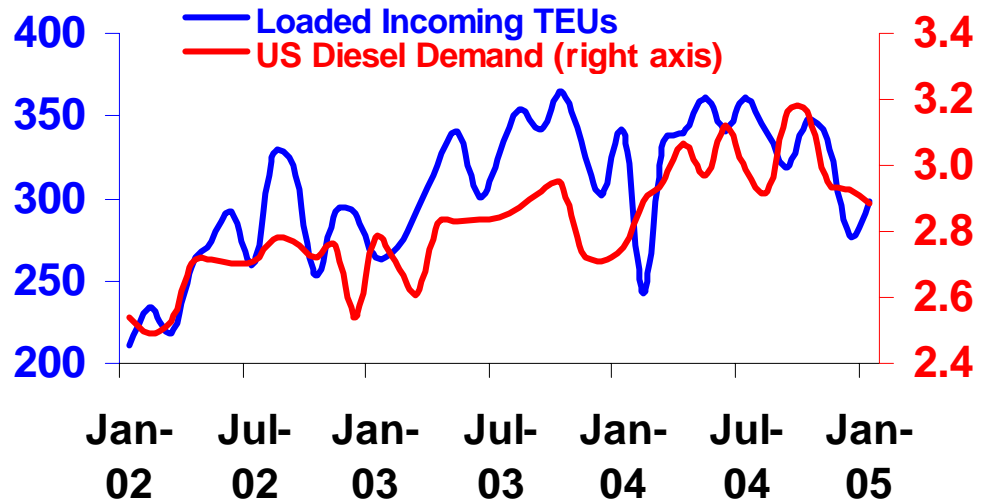
The Axis Of Diesel

More Chinese Goods Exported To The US

Diesel Demand In the United States and China



Port of LA Incoming Cargo And Diesel Demand



US Product Demand Gives a Hand

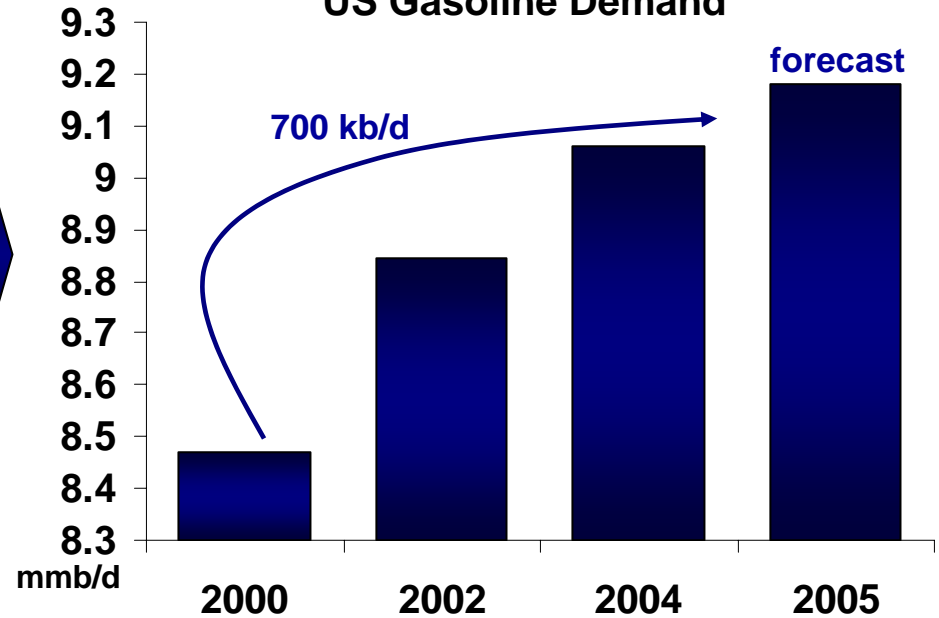
Gasoline Growth Slowing, Diesel Growth Has Created Problems

 **Gasoline demand increased 8% between 2000 and 2005**

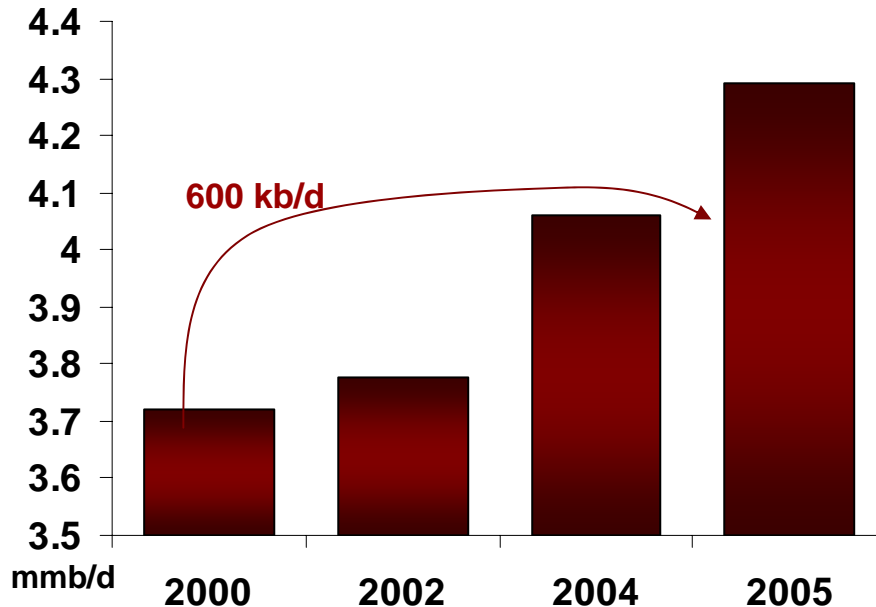
 **People lives farther away and uses bigger cars**



US Gasoline Demand



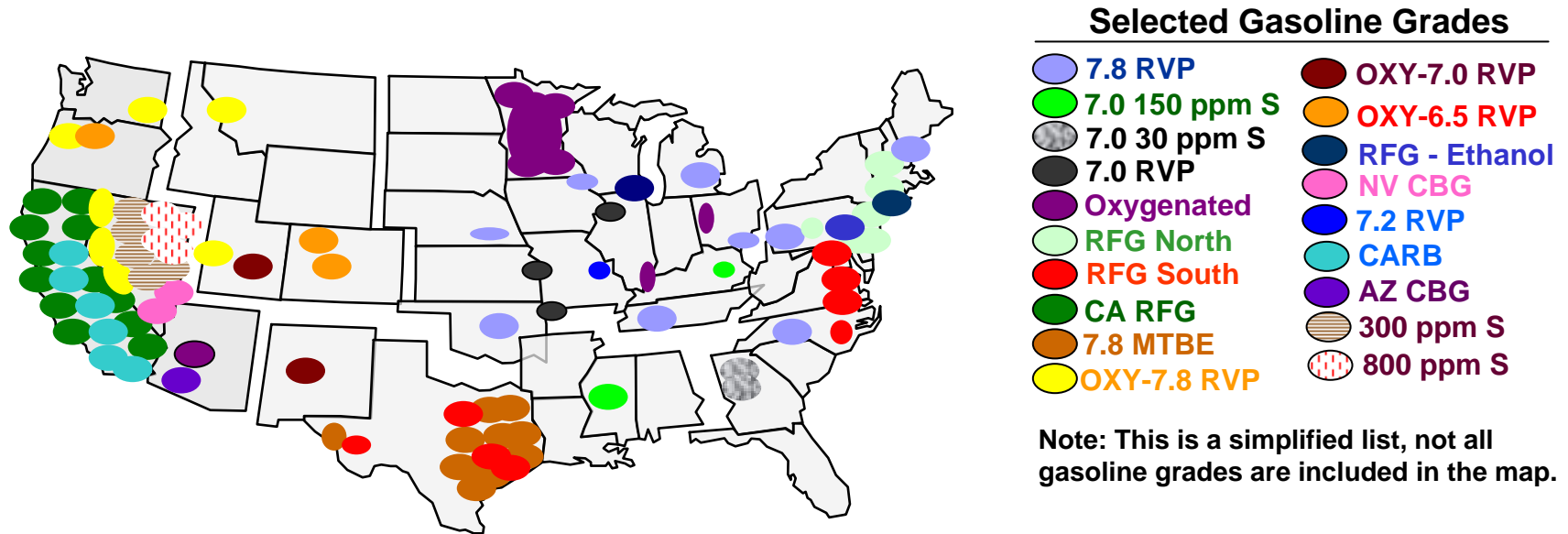
US Distillate Demand



- **Between 2000 and 2005 distillate soared with a 15% growth.**
- **Transportation of imported goods throughout the country underpins diesel consumption.**

US Gasoline Balkanization

Boutique Gasoline And Its Effect On The Market



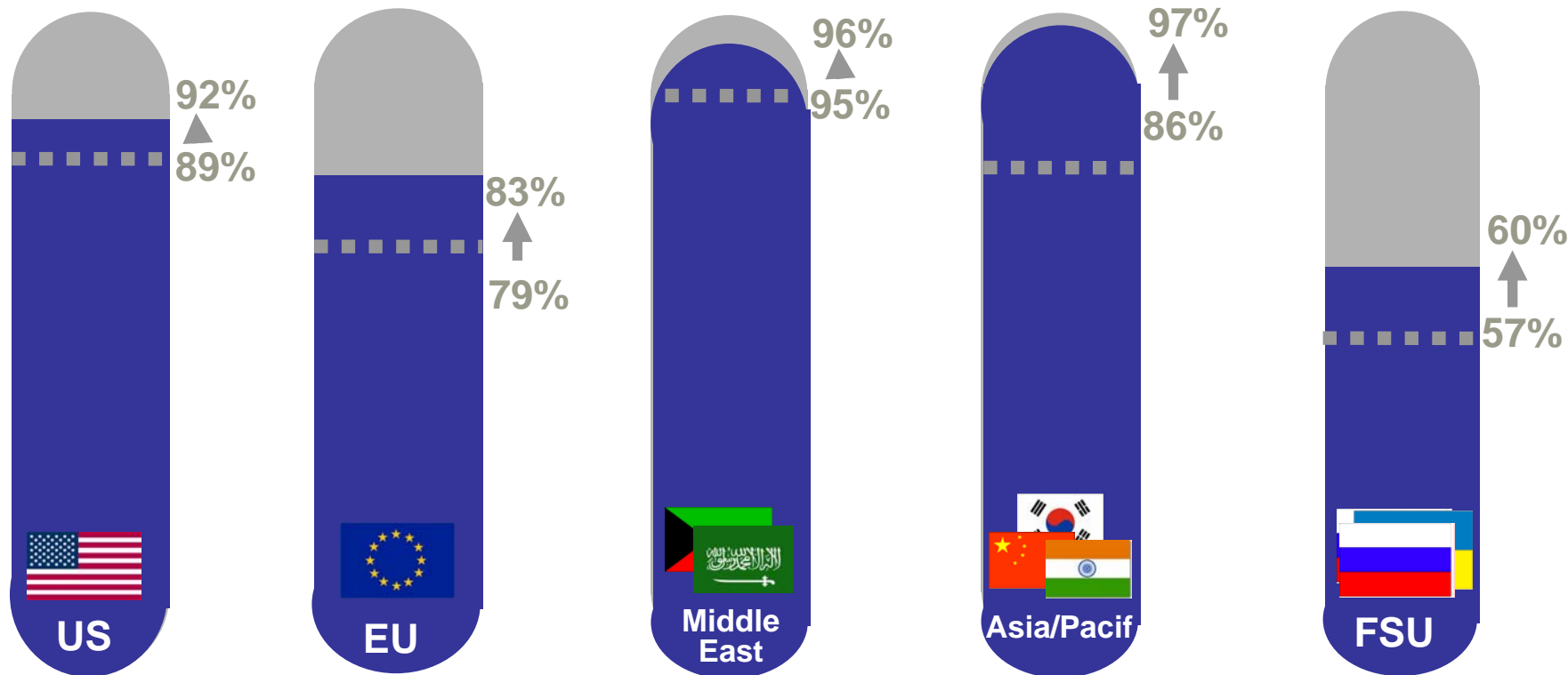
- Federal and local legislation changes have divided gasoline markets. Flows among regions are curtailed due to different specifications in different states. This exacerbates the impact of refinery accidents or supply disruptions.
- This fragmentation creates trading bottlenecks that are reflected in prices, mostly when stock levels are low.

Refinery Utilization Is Stretched

FSU IS The Only Region With Significant Spare Capacity

Average Yearly Utilization Rates In Selected Regions

2002 And 2004

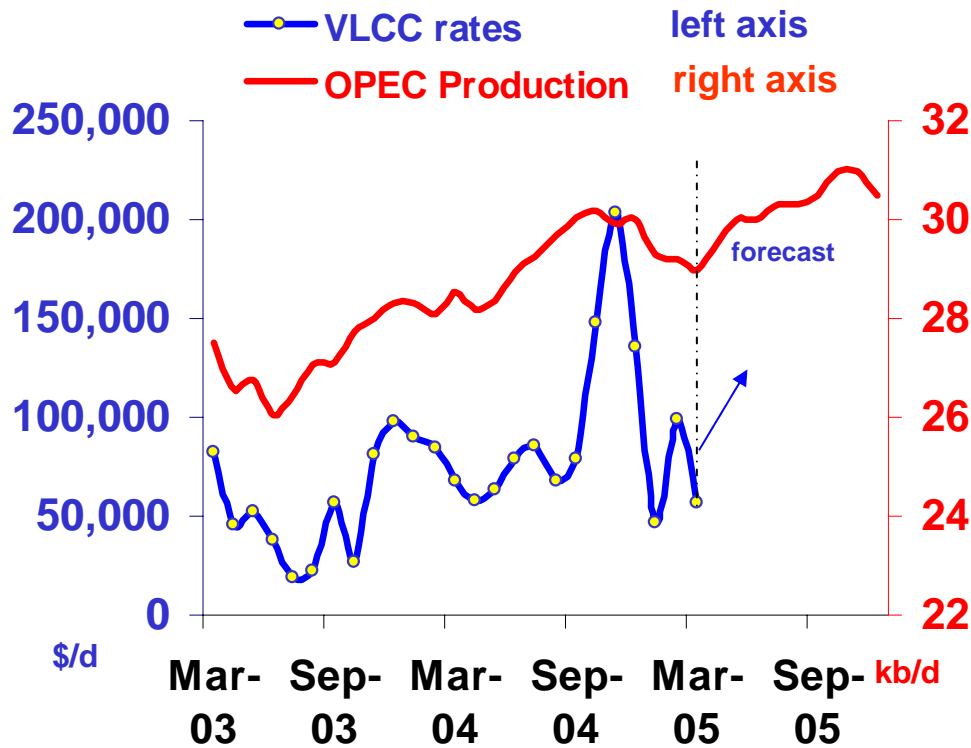


Does not include teapot capacity in China

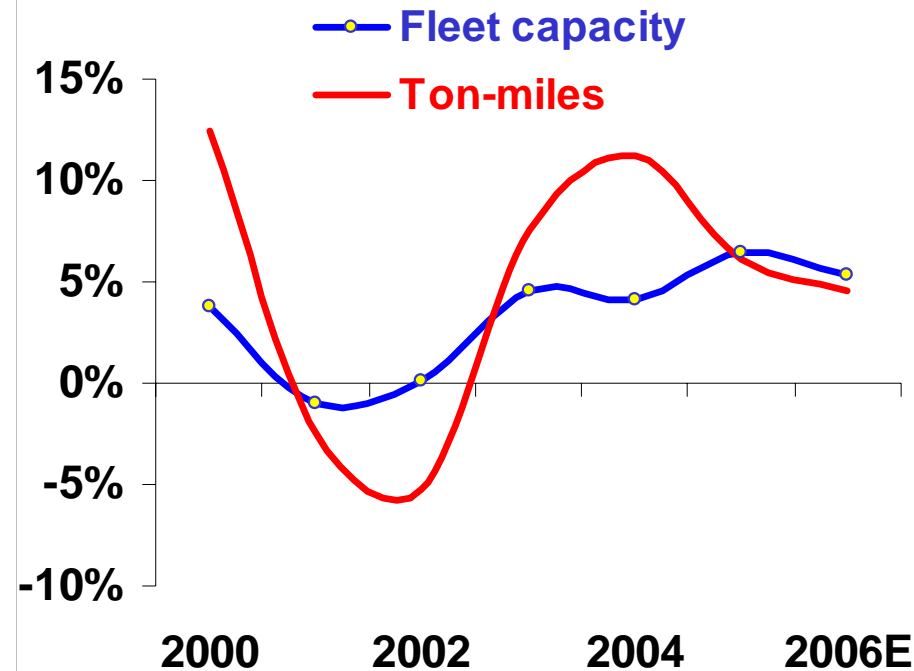
- Refinery utilization in the Asia/Pacific market is the most stretched, as refiners try to meet Chinese demand.
- Next year will see the last round of significant specification changes for distillates in the US and Asia, and its impact on production should not be underestimated.

Tankers: Higher Volumes, But Higher Capacity

OPEC Production vs. Freight Rates



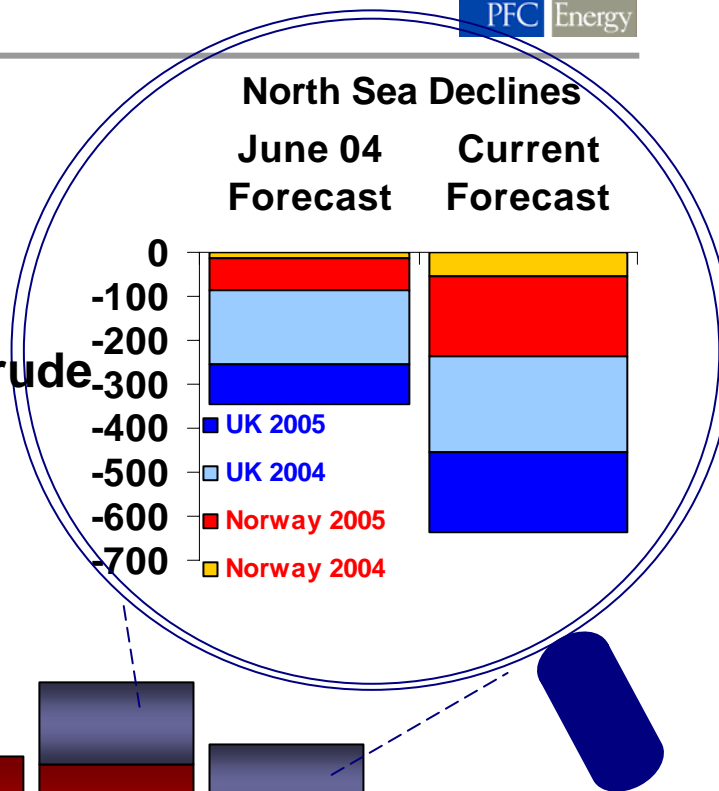
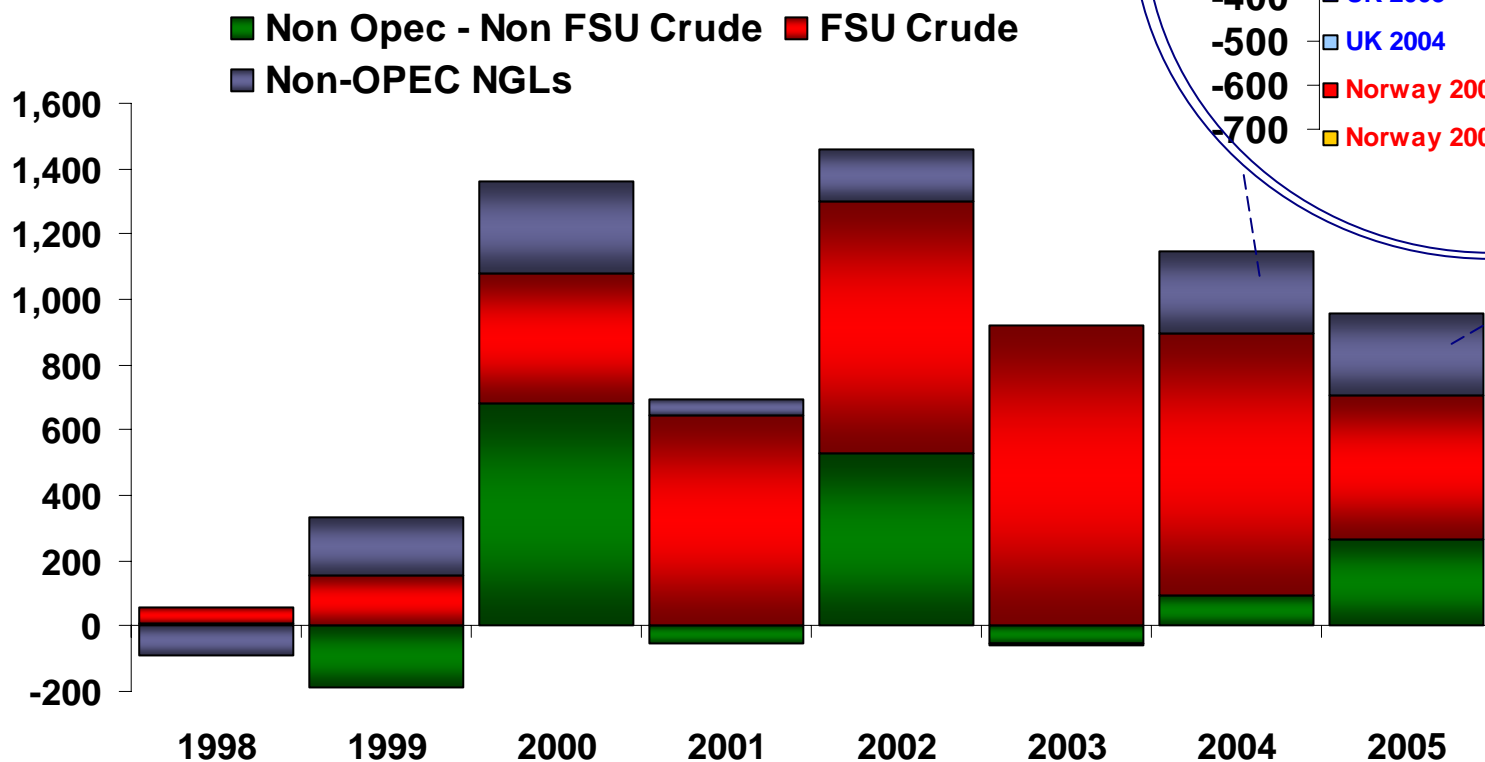
Change In Tanker Demand And Supply



Non OPEC Growth Sluggish

Decline Rates Hamper Growth

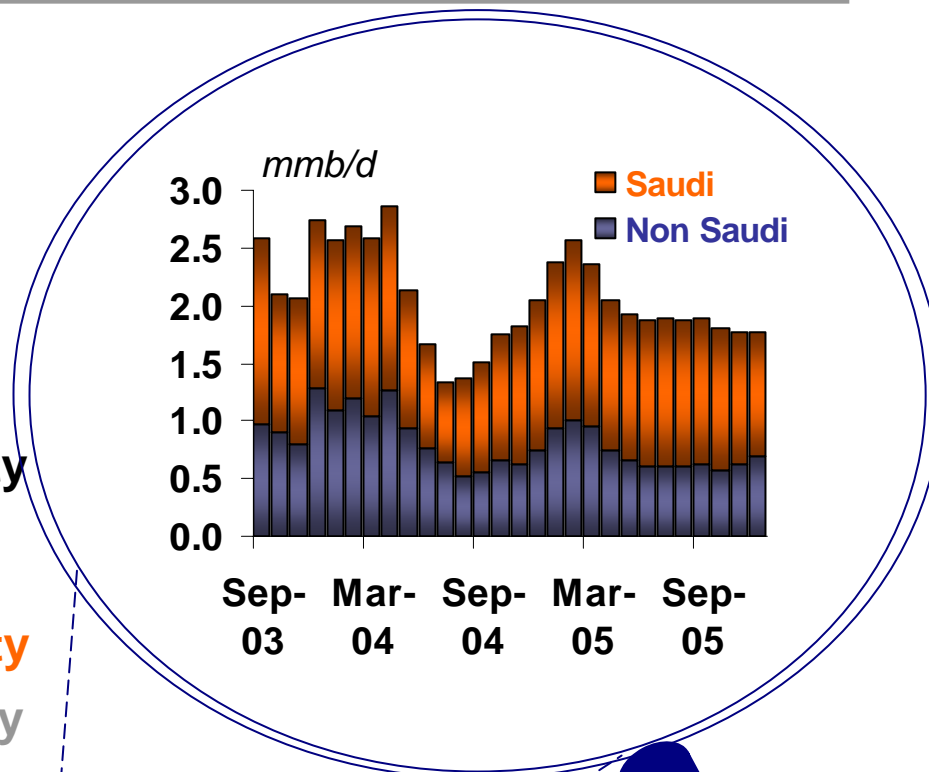
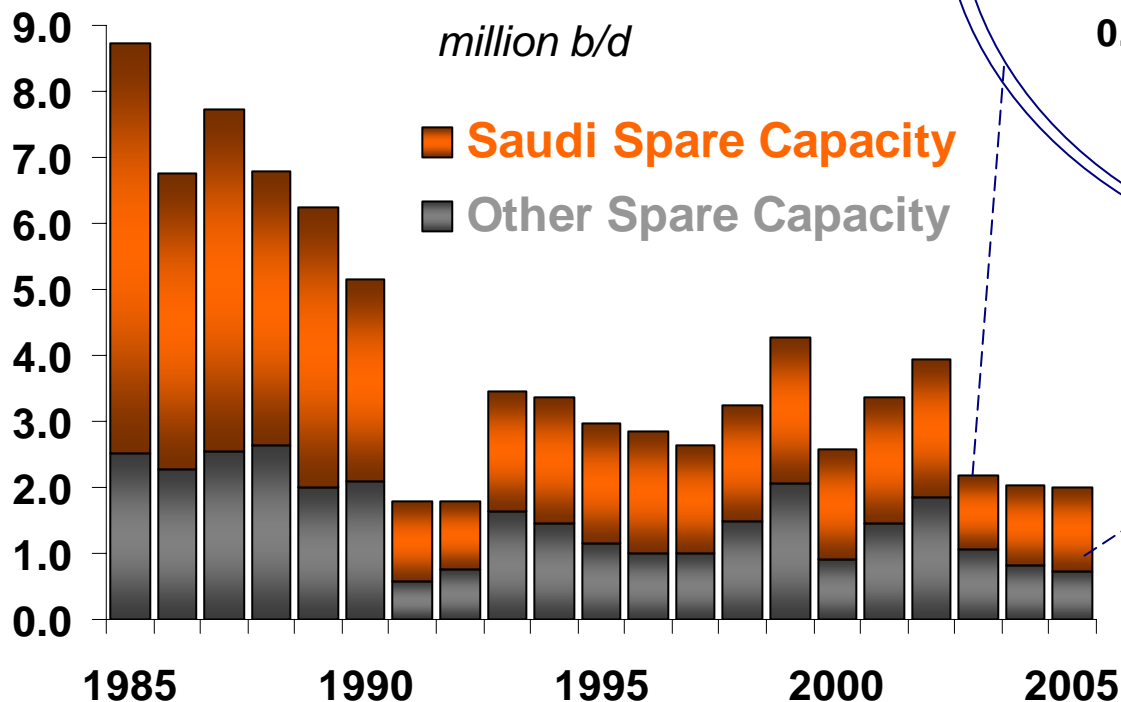
Year-on-Year Growth In Non-OPEC Crude



OPEC Has Lost Its Excess Capacity

Spare Capacity Is A Luxury

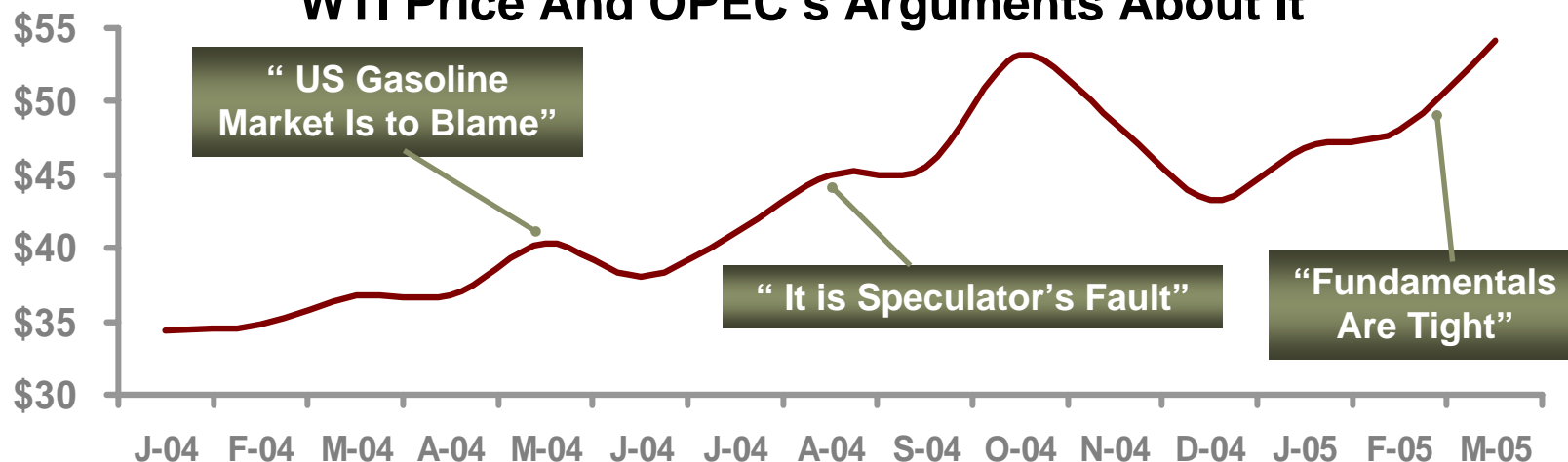
Historical Spare Production Capacity



OPEC's Mostly Talks

Saudi Arabia Acts

WTI Price And OPEC's Arguments About It



2003 – 1st Half 2004

2nd Half 2004 - 2005

**OPEC Performing
“Stock Management”
Strategy**

**OPEC Willing To Bring
Speculators To The Oil
Markets**

- OPEC Limited To Cash In High Prices
- Saudi Arabia Tries To Limit The Upside
- Losing Leverage To Control Market's Price

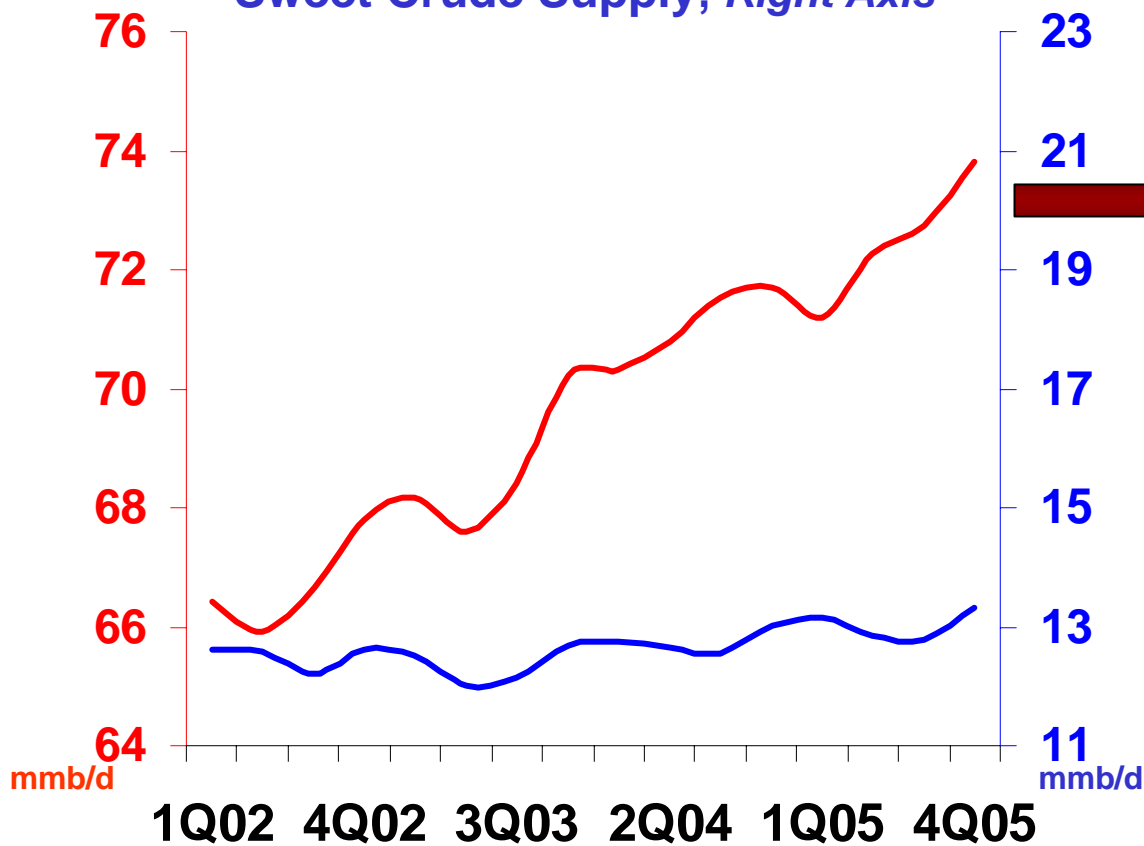
Why Is OPEC Not Able To Respond?

Not The Right Crude

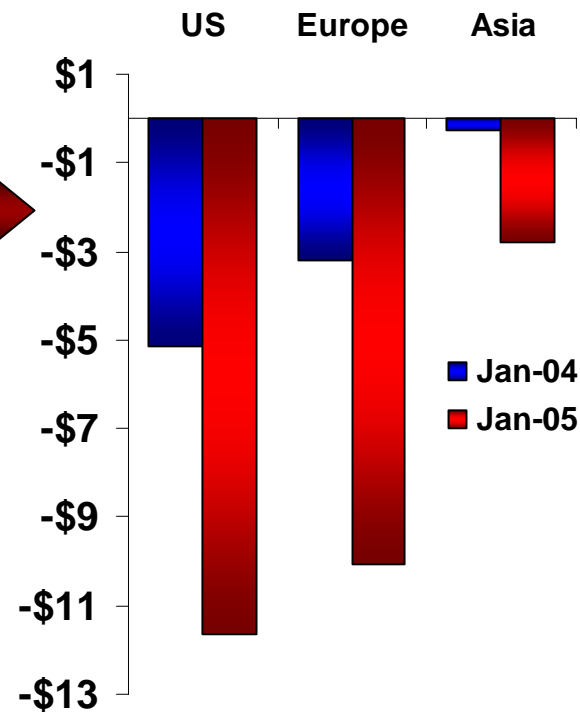
Total Crude Supply, Left Axis

vs.

Sweet Crude Supply, Right Axis



Discounts Of Arab Medium In Selected Markets



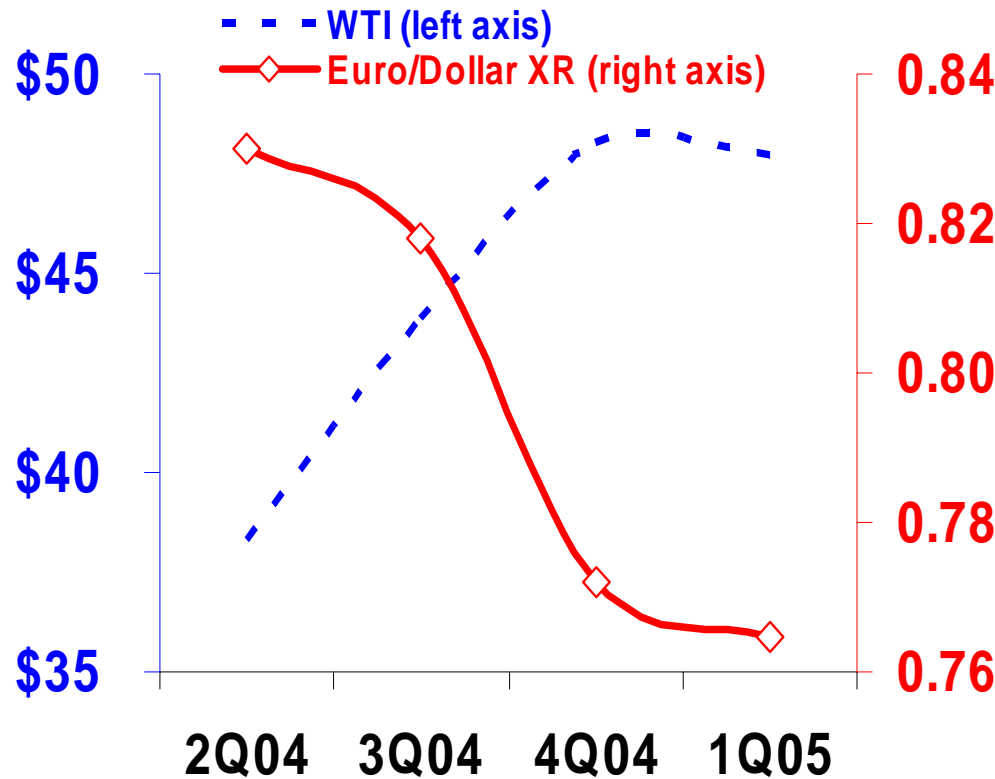
Wrong Quality Spurs Soaring Discounts

Why Hedge Funds Are Flocking In?

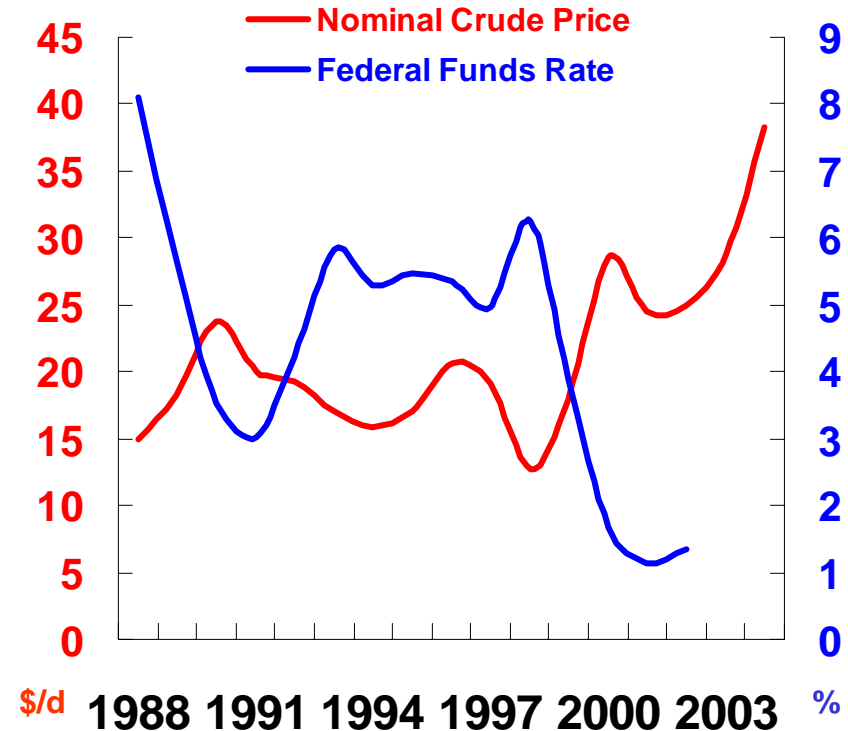
Sliding Dollar And Low Interest Rates



Falling Dollar And Rising WTI



Interest Rates and WTI



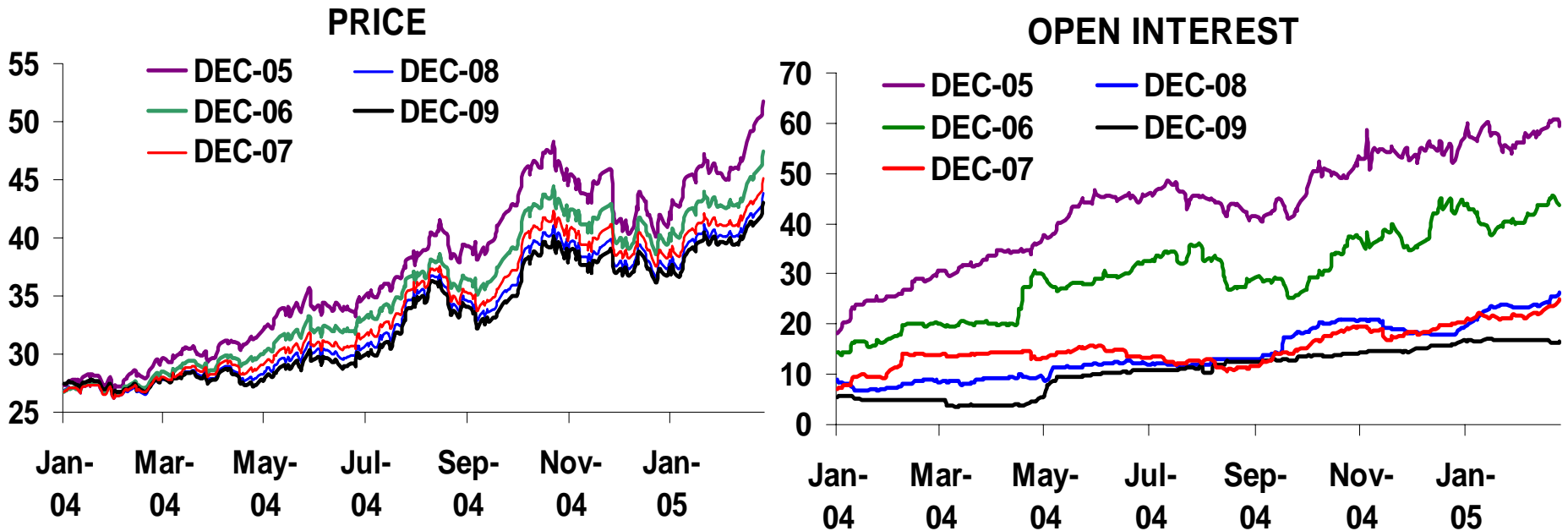
- The recent rallies of the last three months are related to pouring money into the oil futures market by all types of investors.
- Investment in commodities is a great opportunity to cash in in Asian growth, but a growing problem for the stability of oil prices

Increasing Interest In Far Out Contracts

Flattening The Price Curve



Price and Open Interest For WTI Futures

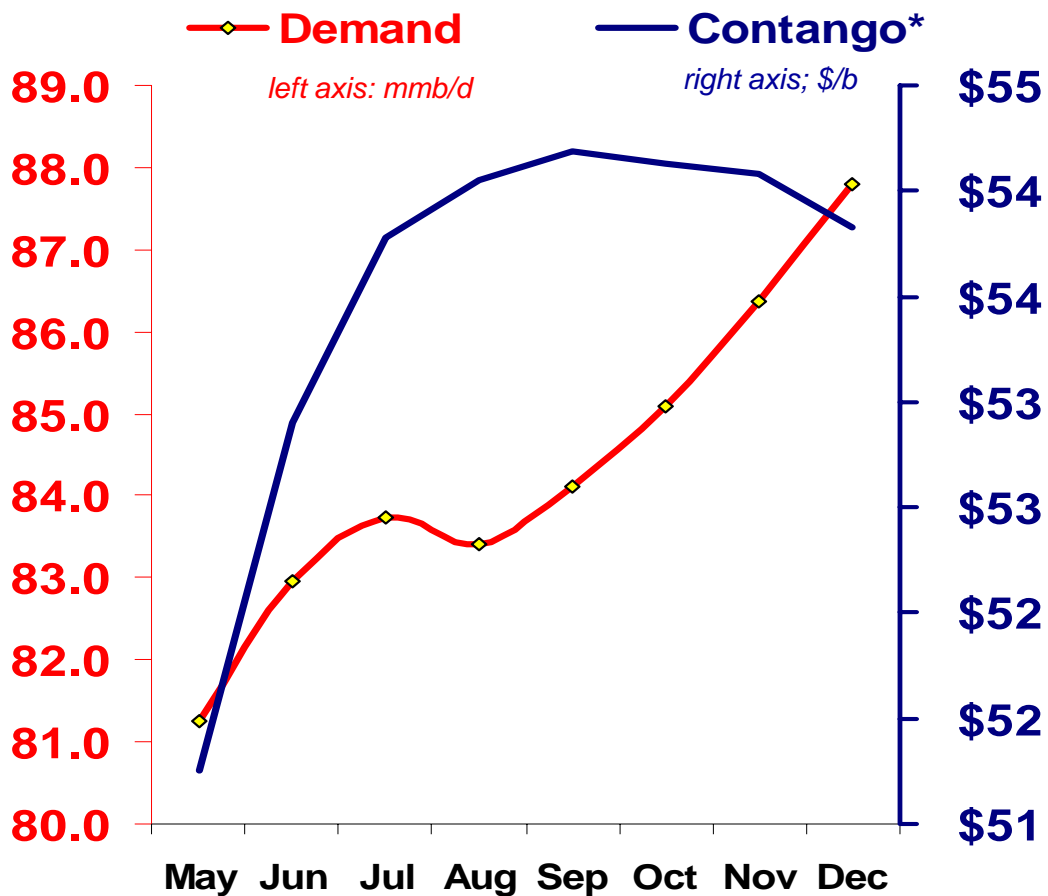


- Funds have been putting their money on far out WTI contracts
- It has pushed WTI prices well over \$40/b through the end of the decade.
- And Flattened the entire price curve, exacerbating the front-month contango in WTI and further weakening short-term fundamentals by encouraging further stock builds.

Building Stocks and Anxiety

4Q Anxiety Keep Prices Strong

2005 Oil Demand vs. Price Curve Of WTI*

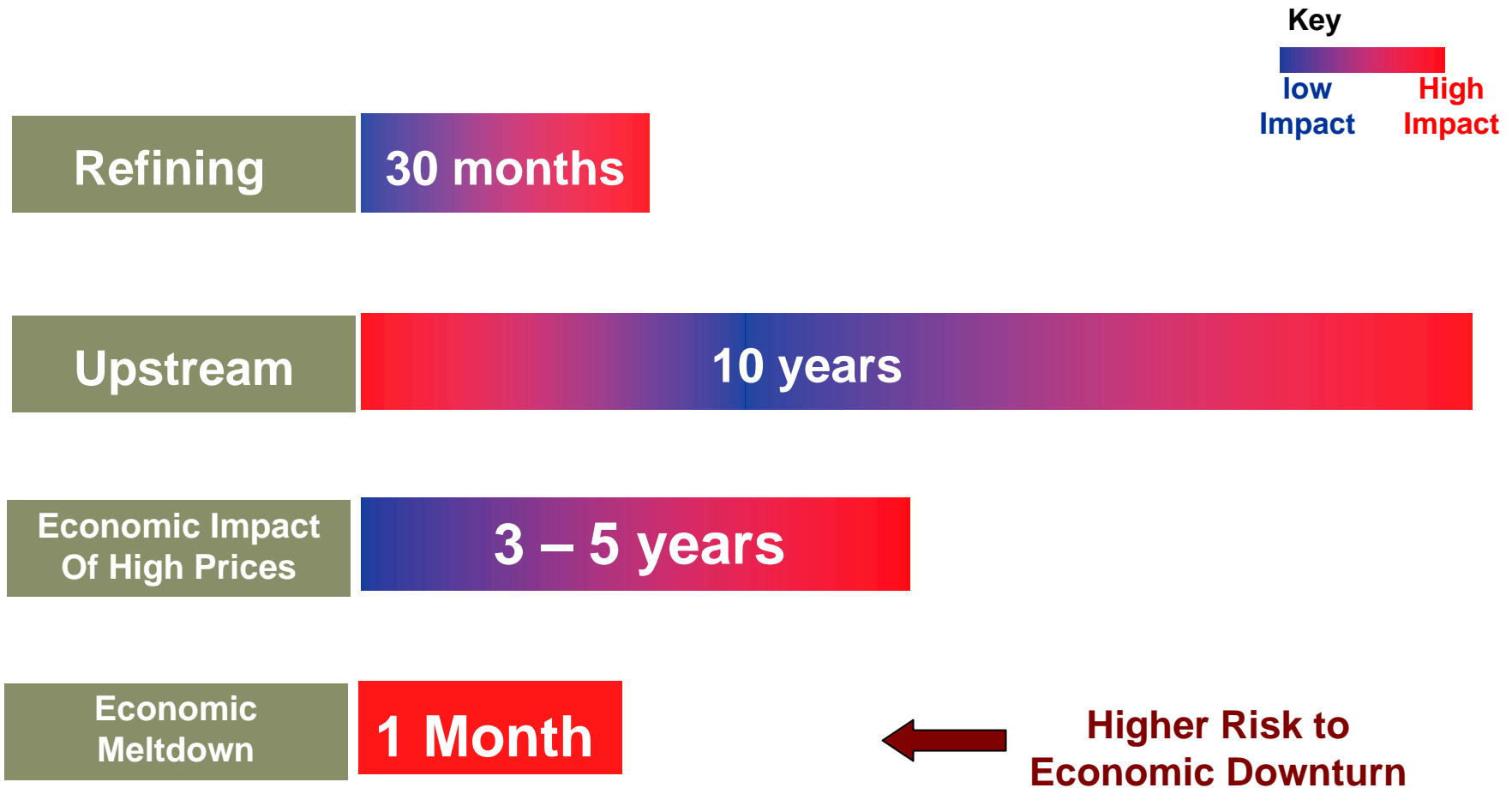


The World Might Have Problems To Cope With Oil Demand In 4Q 2005

*WTI Future Price As Of April 14th, 2005

How Long Does It Take To React To High Prices?

The Reaction Time Shows Asymmetric Risks



- Expensive oil may trigger investments in upstream or downstream, or may potentially affect demand in the long run.
- But the only short term element able to change the outlook is a potential economic meltdown.

The Economic Cycle Has Peaked

But What Next Is Difficult To Predict

Steroids Effects Waning

US Growth Is Slowing

- Inflation driving interest rates up
- trade deficit impacting \$ value

Growing By Borrowing
Not Sustainable

Asian Banks Willing To Subsidize Forever?

Adjustment of Imbalances
is Necessary

Managed
adjustment

Crisis Triggered
Adjustment

Slowdown

Meltdown

No country has managed to consume and invest 6% more than it produces for long.

Oil Demand Slowing



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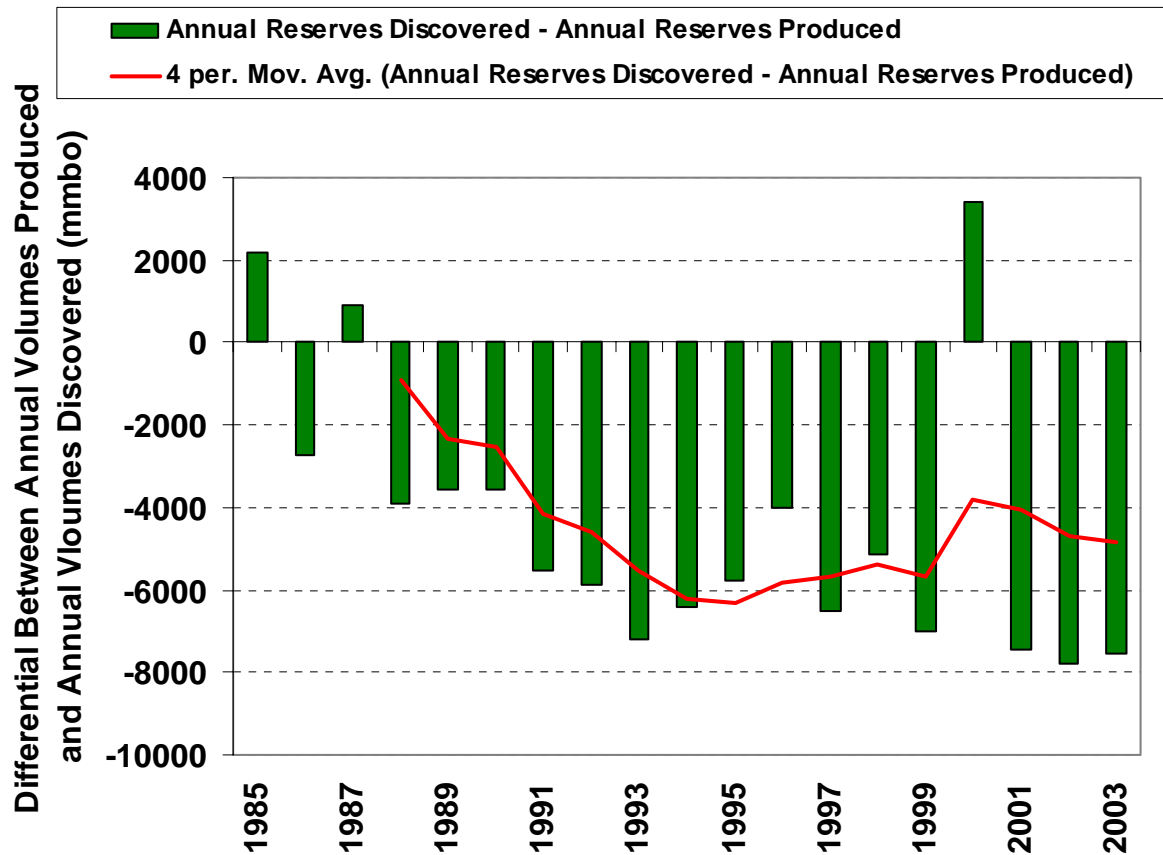
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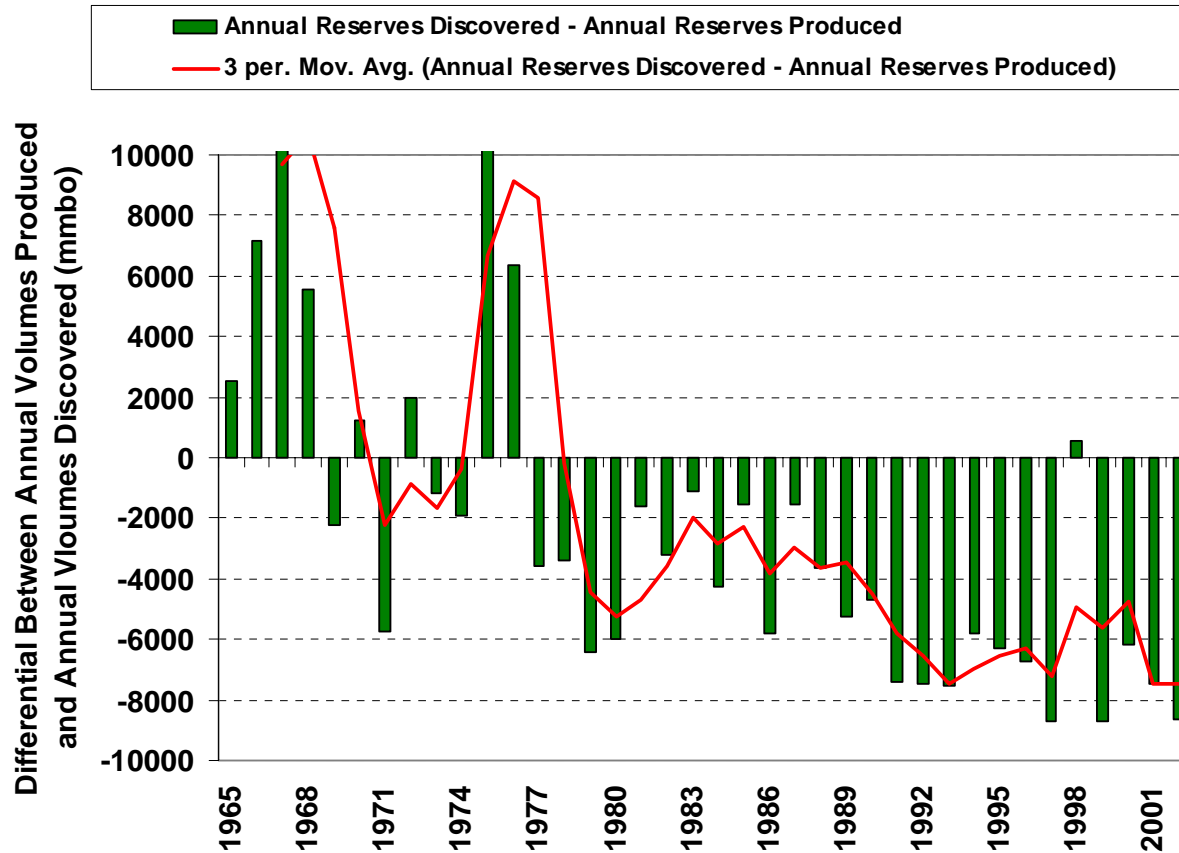


Annual Crude Oil Production Balance (Excluding OPEC, NGL and Canadian Oil Sands)



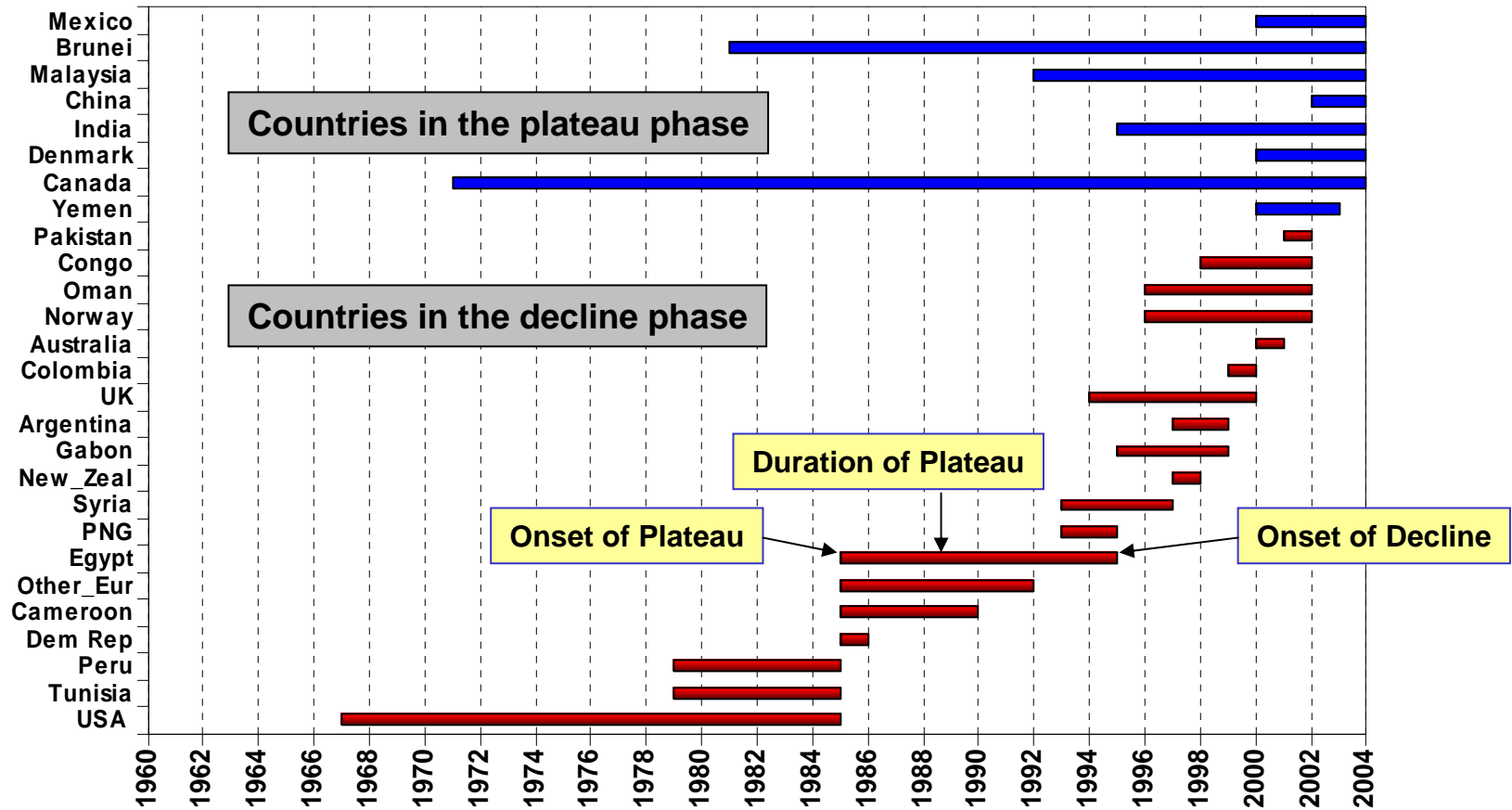
PFC Energy's data analysis indicates that Global Non-OPEC crude production is currently exceeding volumes discovered by as much as 8 billion barrels per year – *this continuing depletion of the reserve base will ultimately lead to the inability to continue growing production*

OPEC Historical Annual Crude Production Balance (OPEC)



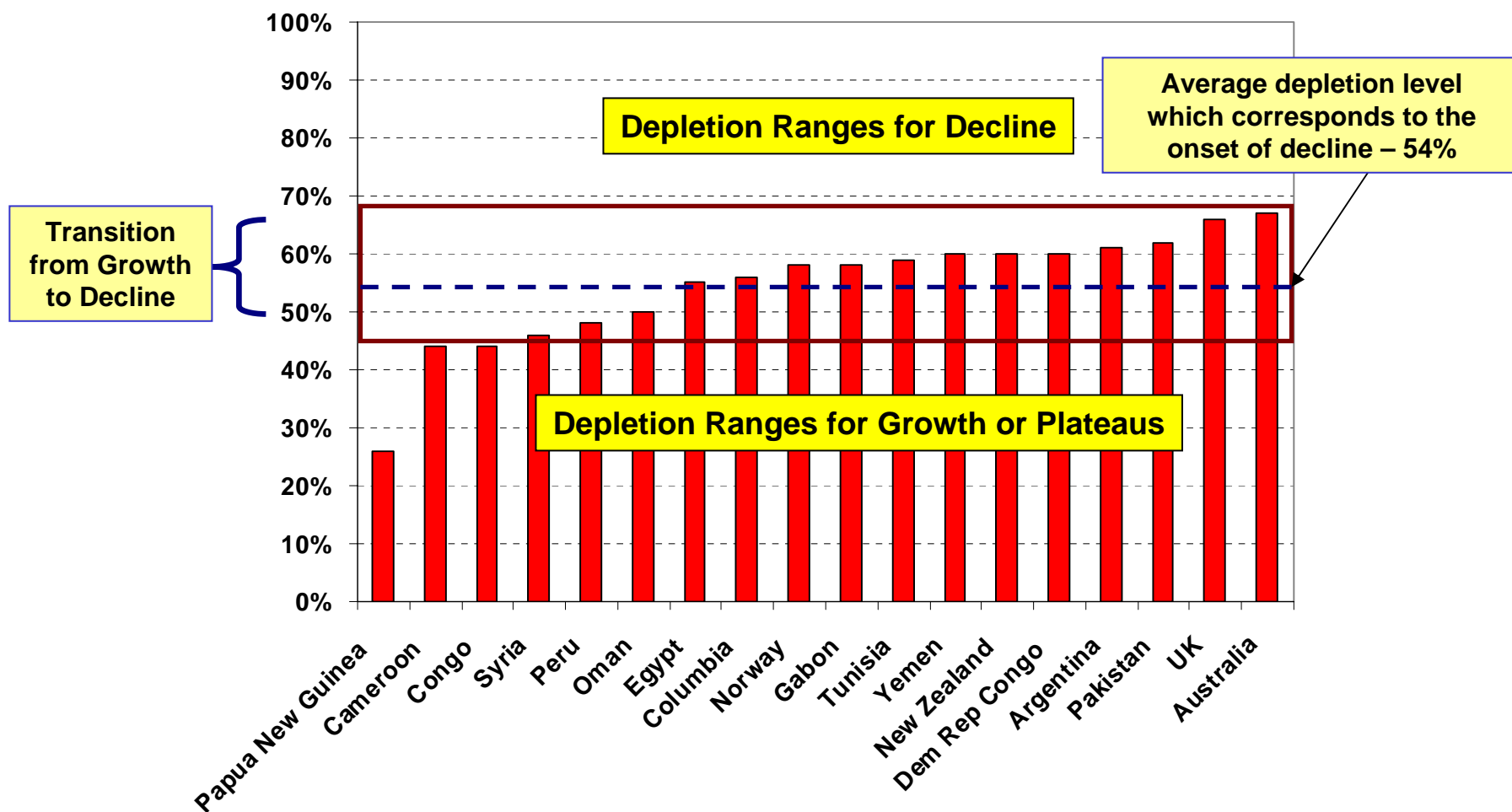
Like all other areas of the world, PFC Energy's data analysis indicates that Global OPEC crude production is currently exceeding volumes discovered. OPEC specifically is producing about 8 billion barrels per year more than it has been finding.

Non-OPEC Countries that are Either in Decline or Currently in a Plateau



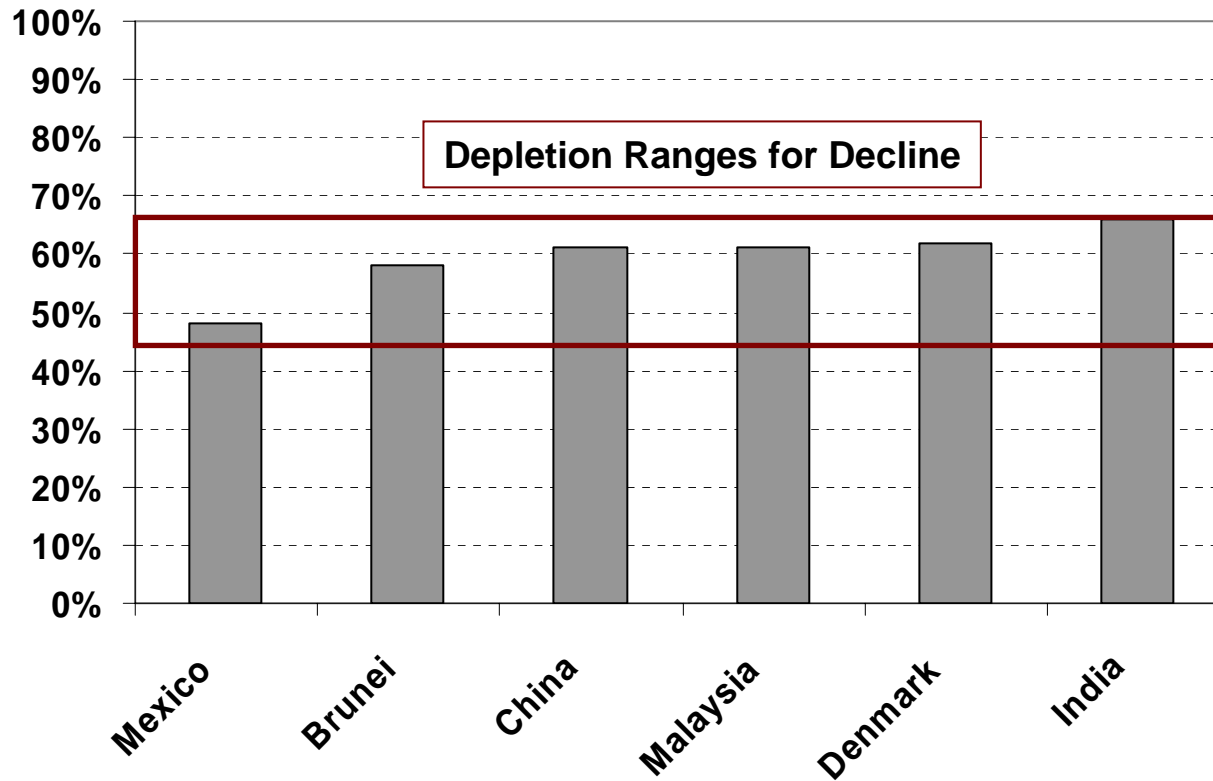
The above bars show the onset and duration of documented production peaks or plateaus – *tracking country life cycle shows an acceleration of the number of countries passing from peak to decline*

Non-OPEC Countries that are in Decline



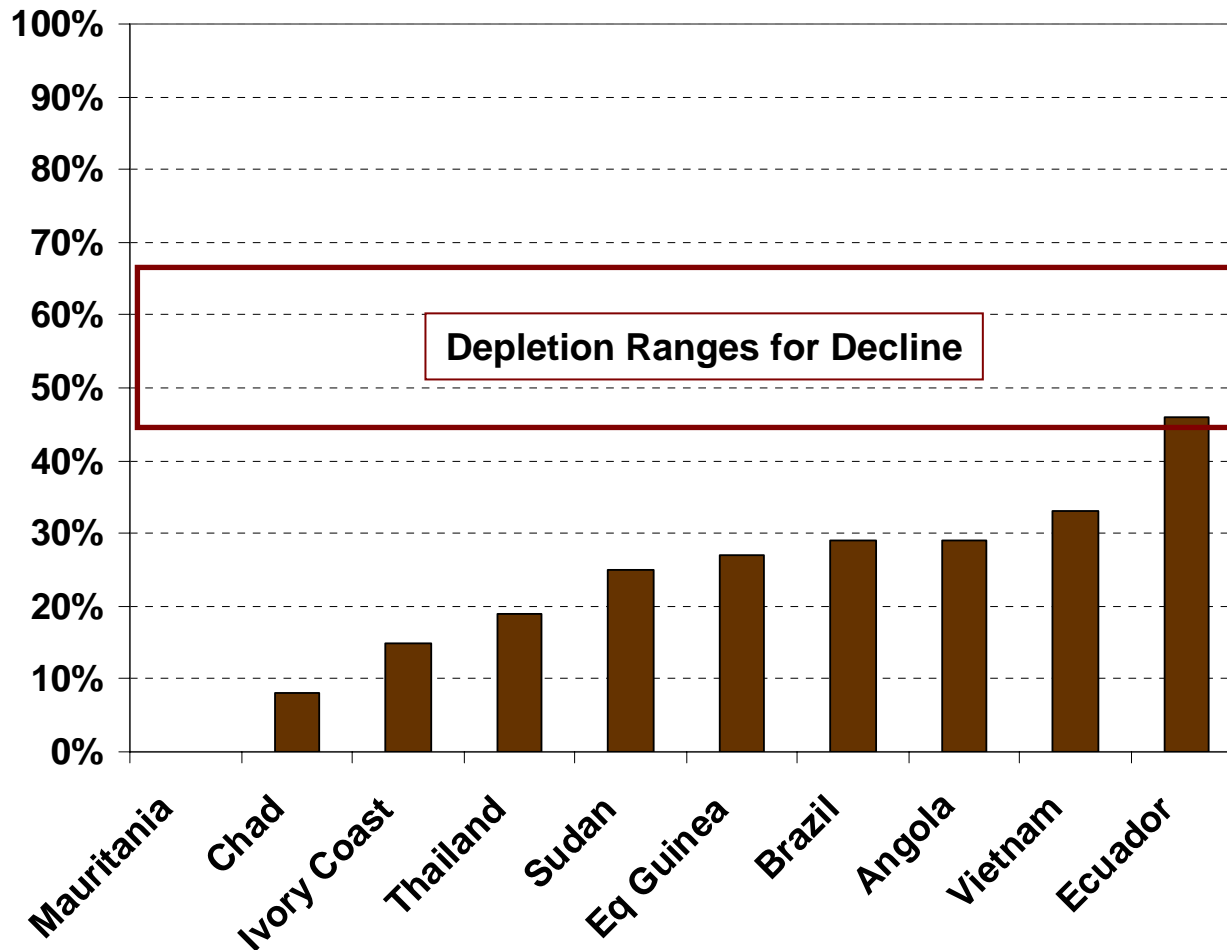
The above bars shows the depletion level at the transition from peak/plateau to decline – *tracking depletion level is a good way to anticipate the cessation of growth and the onset of decline*

Non-OPEC Countries that are in Plateau



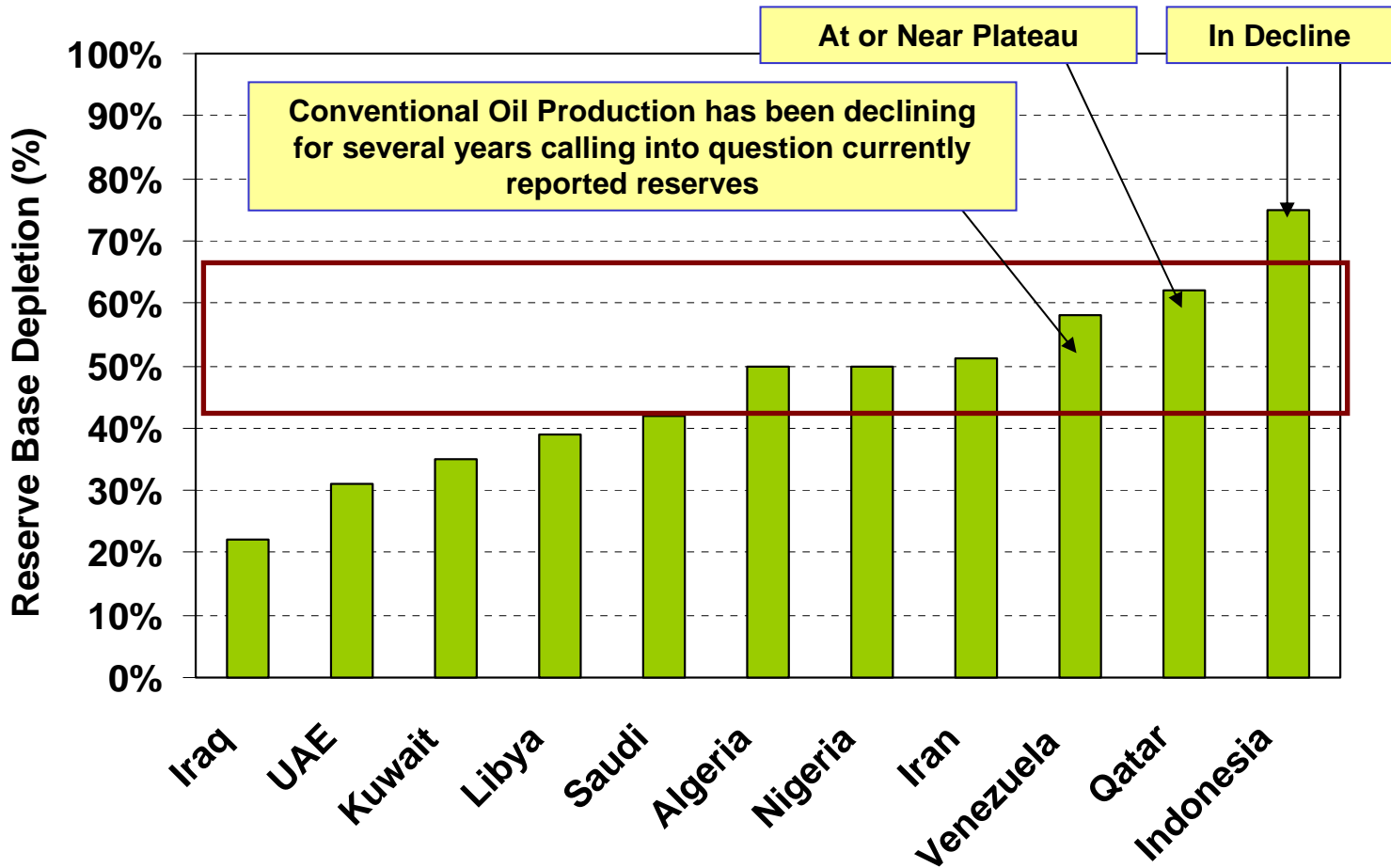
The above bars shows the depletion level of several producers which have reached a production plateau – **several significant producers are rapidly approaching critical (60 – 65%) depletion levels which typically signal the onset of production declines**

Non-OPEC, Non-FSU Countries with Production Growth Profiles



The above bars shows the depletion level of several producers which have new discoveries and are considered very likely to increase production – Azerbaijan, Kazakhstan and Russia are also expected to have growth profiles

Historical Production and Depletion Levels (OPEC)

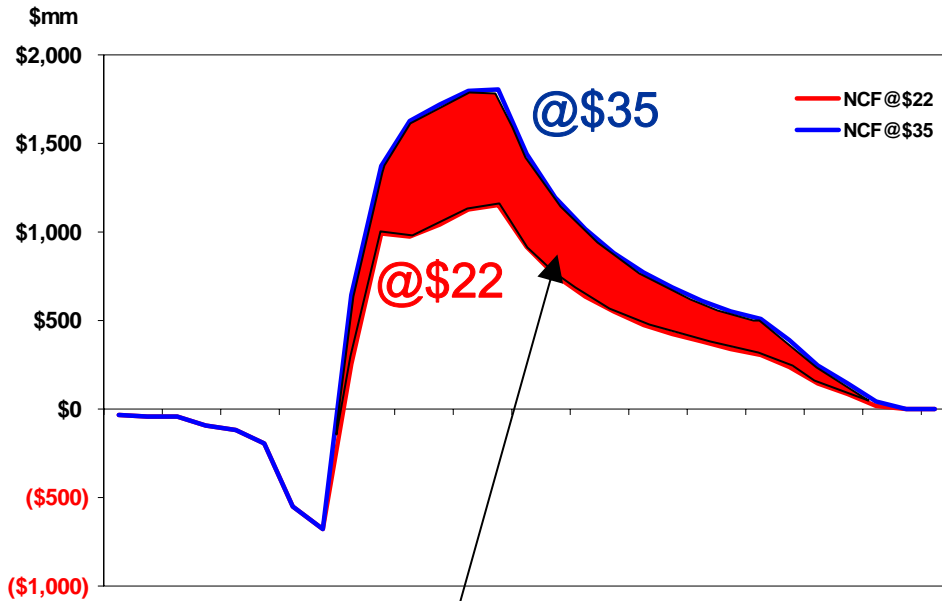


OPEC as a whole is depleting but some countries are depleting faster than others

Fiscal Terms in New Areas: Higher Prices = Less Upside

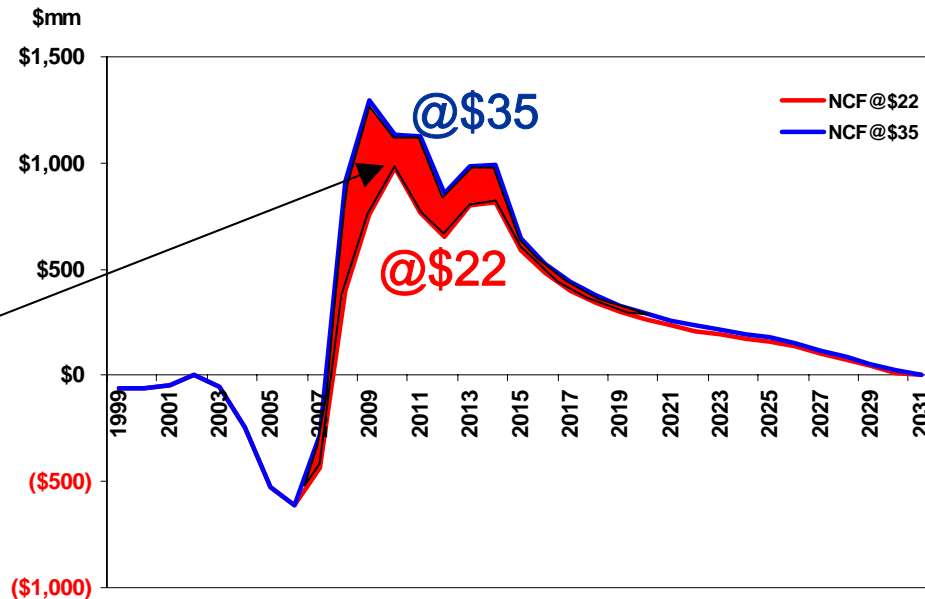
Many PSCs and risk service contracts deliver more price upside to the governments

Annual Net Cash Flow Thunder Horse, US GOM



Additional Value to Oil Company

Annual Net Cash Flow Plutonio, Deepwater Angola



Non-OPEC Supply Forecast

Assumes Exploration Reserve Additions Typical of the Last 15 Years

This production profile is based on a model which takes into account known discovered oil, historical production, all known (large and small) discoveries that are undeveloped, likely future exploratory drilling, trends in discovery sizes, and decline rates.

