



Stronger signals of weaker oil prices

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LEHMAN BROTHERS

Oil market puzzle: high prices now, but weakness ahead

“New fundamental factors” have buoyed oil prices this year, but physical and financial indicators point to weakness ahead

- ◆ We revised up our 2008 Brent forecast to \$93 from \$86 primarily because financial demand for oil and commodities has been stronger than anticipated
 - Current oil market is seasonal and volatile and \$50 trading range (i.e. between \$70-120) may repeat itself just as in 2007
- ◆ Although the case for financial demand is compelling, we do not see it as sustainable in the medium term
- ◆ Turning point in oil markets is coming, borne out by leading indicators:
 - Oil increasing looking less of an effective hedge against the dollar/inflation
 - Reduced outlook for global demand growth, particularly in US
 - Growing inventory builds through 2009
 - Longer term indicators point to upstream and downstream supply response

Lehman Brothers Oil Price Outlook

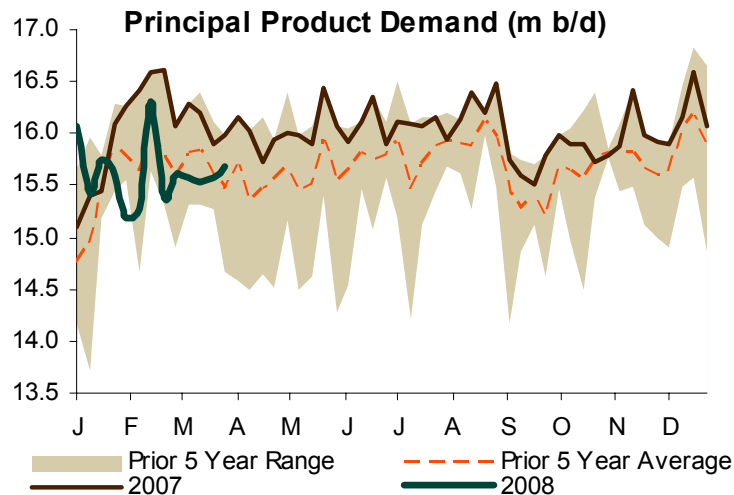
	1Q07A	2Q07A	3Q07A	4Q07A	1Q08E	2Q08E	3Q08E	4Q08E	2006A	2007A	2008E	2009E
Brent (\$ per barrel)	58.62	68.66	74.61	88.53	96.31	90.00	105.00	80.00	66.15	72.60	93.00	83.00
WTI-Brent differential	-0.16	-3.45	0.47	1.98	1.51	-1.00	1.00	-1.00	0.34	-0.29	0.00	0.00

Short-term fundamentals have weakened

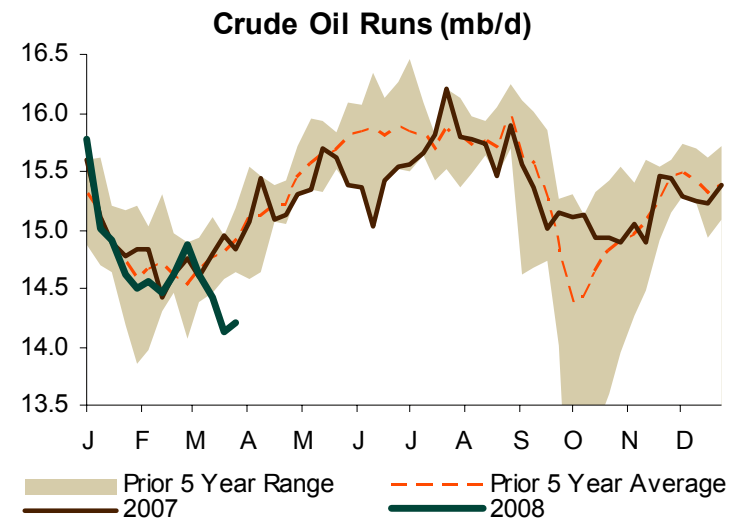
Lower US and OECD demand leave global consumption growth at only 1.1m b/d

- ◆ Weekly statistics show US principal product demand 420k b/d lower y-o-y in 1Q08, half of which is gasoline, distillate and jet
- ◆ Refinery runs depressed in the US, Europe and Asia in large part due to economic run cuts
 - But despite US runs 140k b/d lower y-o-y in 2008, principal product production is running 10k b/d higher
- ◆ US/Europe distillate demand drops 500k b/d from February to March and by another 700k b/d from March to April
- ◆ *We have revised down our 2008 US demand growth from flat to -300k b/d*
- ◆ *We now see non-OECD growth of 1.2m b/d entirely driving global growth of 1.1m b/d, revised down from 1.5m b/d originally*

US principal product demand down



US crude demand has dropped as well



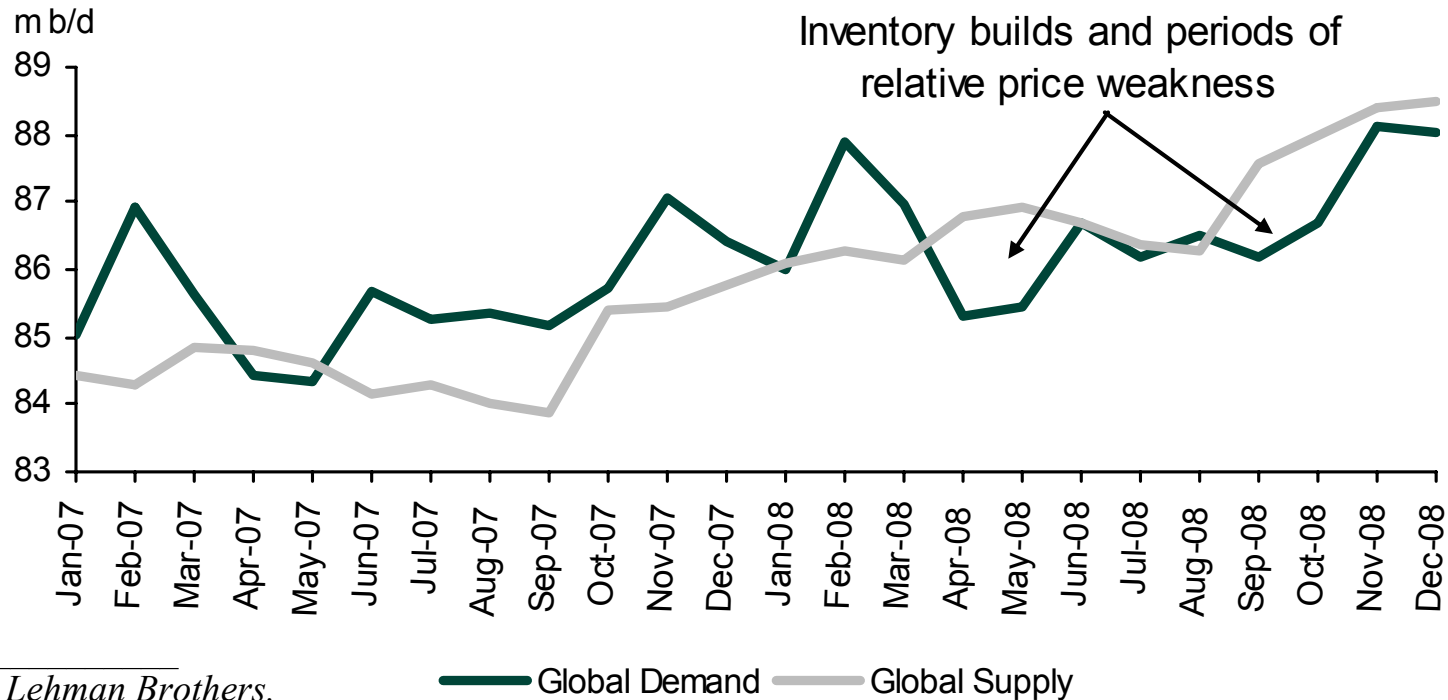
Source: EIA

Stock builds characterize much of the remaining year

Unless OPEC decides to cut output, 2008 inventories should build by 300k b/d

- ◆ But Q3 prices may still spike with active hurricane season, Middle East summer power needs, and geopolitical tensions in Iraq or Iran bubbling up

Lehman Brothers monthly oil supply-demand balance



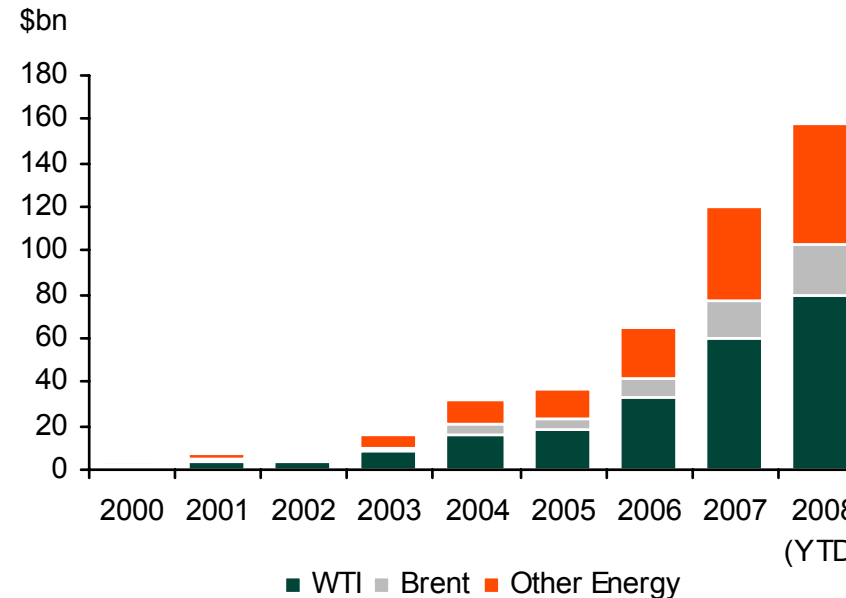
Source: Lehman Brothers.

So, why then revise prices *up*?

Passive fund flows into oil and energy have accelerated this year

- ◆ Legitimate demand for oil exists for things other than end use:
 - For portfolio diversification
 - As a store of value
 - As a hedge against inflation
- ◆ We estimate index flows into energy have totaled about \$40 billion YTD, almost equal to flows for all of 2007
- ◆ However, enthusiasm retreated somewhat over past month with tougher margins and profit taking prevailing
- ◆ Remains to be seen if new index investors such as sovereign wealth funds of countries with physical long exposure to oil will remain “double expose” if prices retreat further

YTD fund flows have been strong

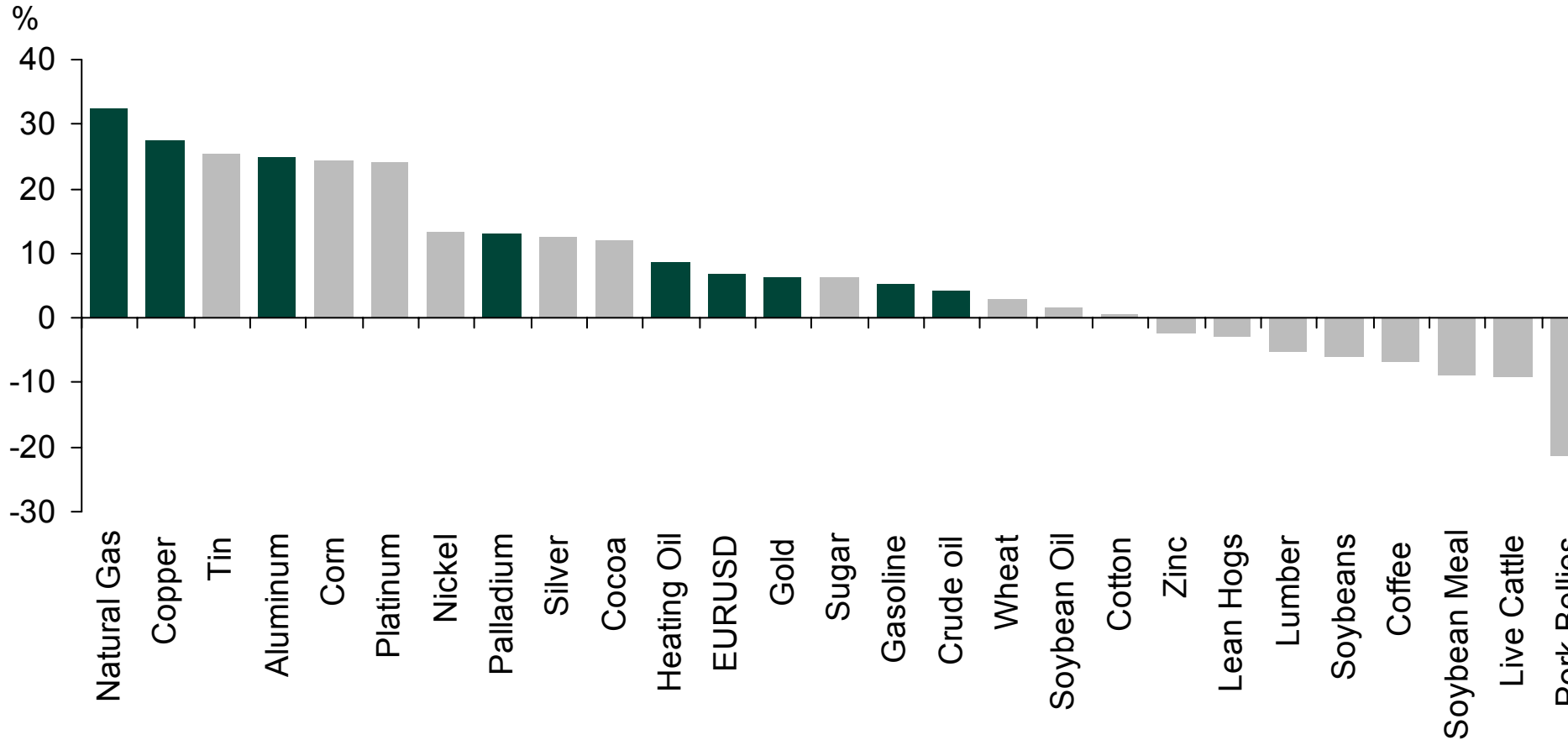


Source: Lehman Brothers Estimates

WTI performance is only in the middle of the pack

S&P, which owns the GSCI, has indicated that \$40 billion of new money has flowed into commodities since January 1, 2008

Individual Commodity Returns (% from Dec. 31 to Mar 31, 2008)

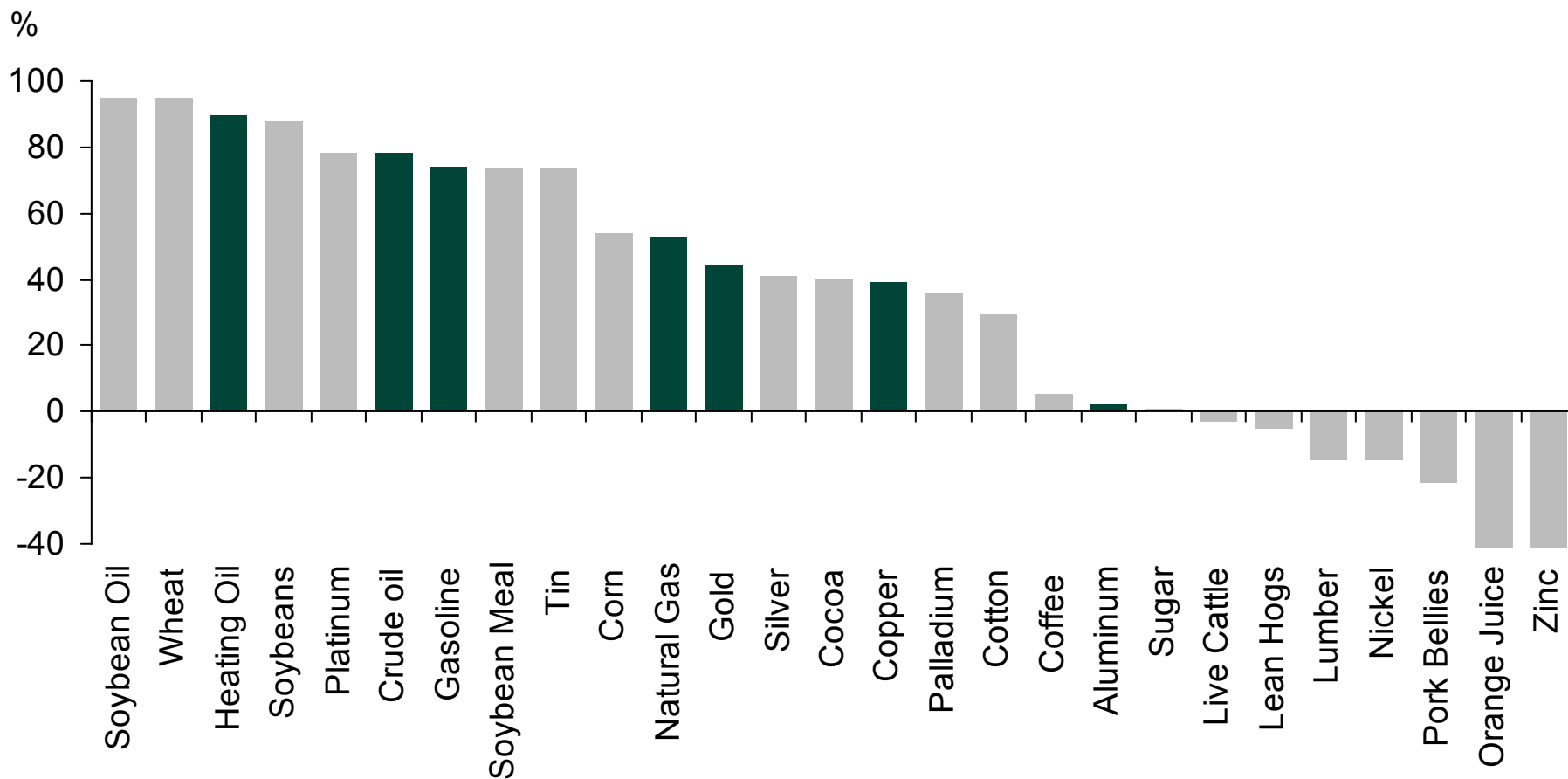


Source: Bloomberg

well since 2007

Energy has led returns since the beginning of 2007. We approximate \$40bn in all of 2007, equal to new flows in 2008.

Individual Commodity Returns (% from Dec. 31, 2007 to Mar 31, 2008)

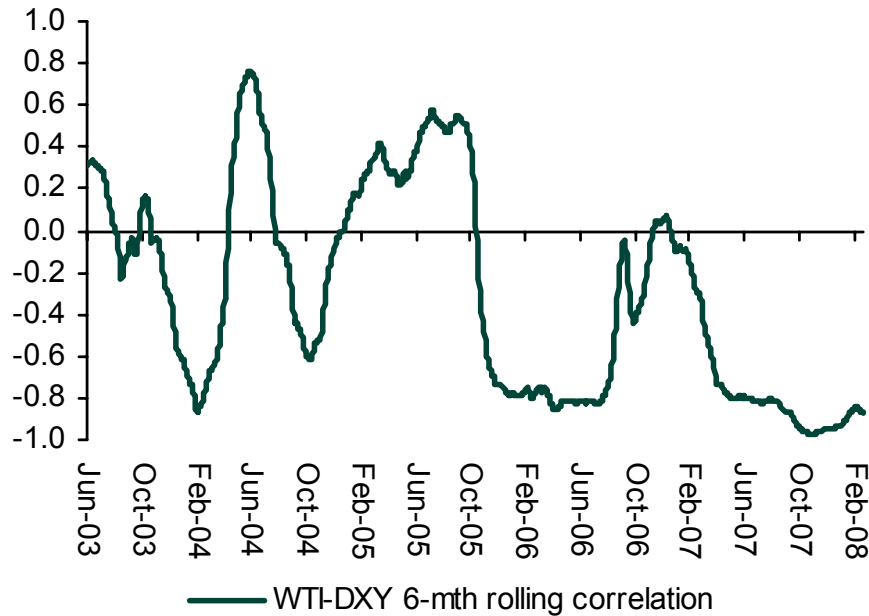


Source: Bloomberg

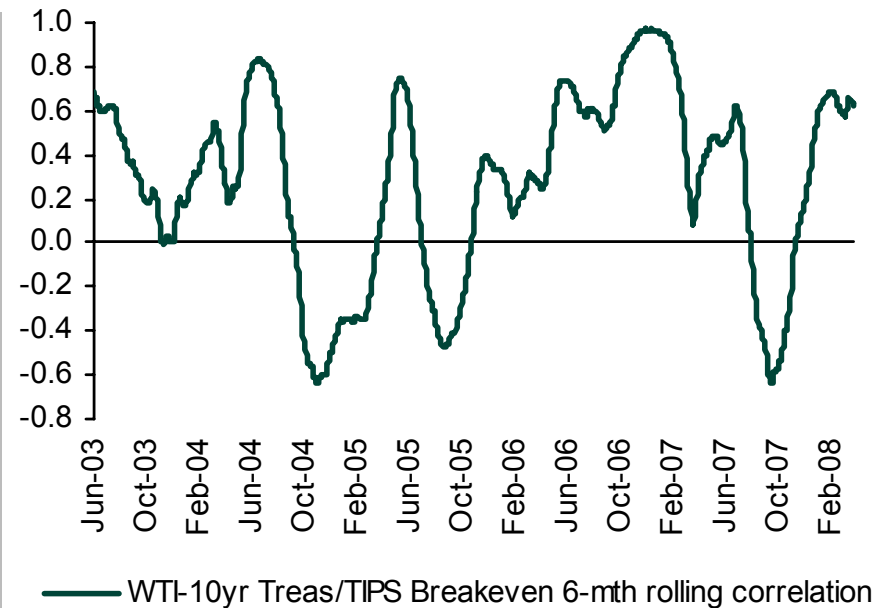
As oil is used to hedge against dollar/inflation

Strengthening rolling correlations between oil/dollar and oil/inflation expectations have created a self-fulfilling prophecy

WTI 1M vs. DXY Index



WTI 1M vs. Inflation*



**Inflation compensation as measured by the difference between 10-year treasuries and 10-year TIPS*

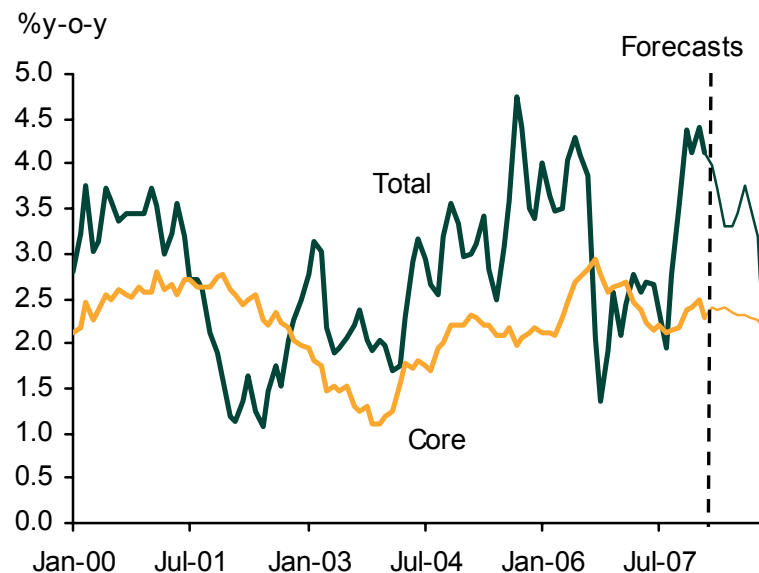
Source: Bloomberg, Lehman Brothers Estimates

But oil versus dollar/inflation hedge likely temporary

Besides weak historical basis, dollar appreciation and inflation tempering could cause oil prices to sell off

- ◆ Lehman Economics see further 2008 rate cuts of 100bp by the Fed, impeding dollar strength for a period
- ◆ But, this could give way for the European Central Bank to cut rates by mid-year, and our FX team forecasts the dollar to gain slowly against the Euro
- ◆ Oil and gold, raw materials that would show limited pass-through effect to core CPI, should not rise in lockstep with a basket of consumer goods
 - As investors realize the correlation weakness, or as inflation threats ebb, usefulness of hedge should wane
- ◆ Meanwhile:
 - High commodity prices may add pressures on the economy and aggravate the US recession and lower physical demand further
 - High commodity prices may spur transmission of US economic weakness to the rest of the OECD as well as emerging market economies

US core CPI looks contained

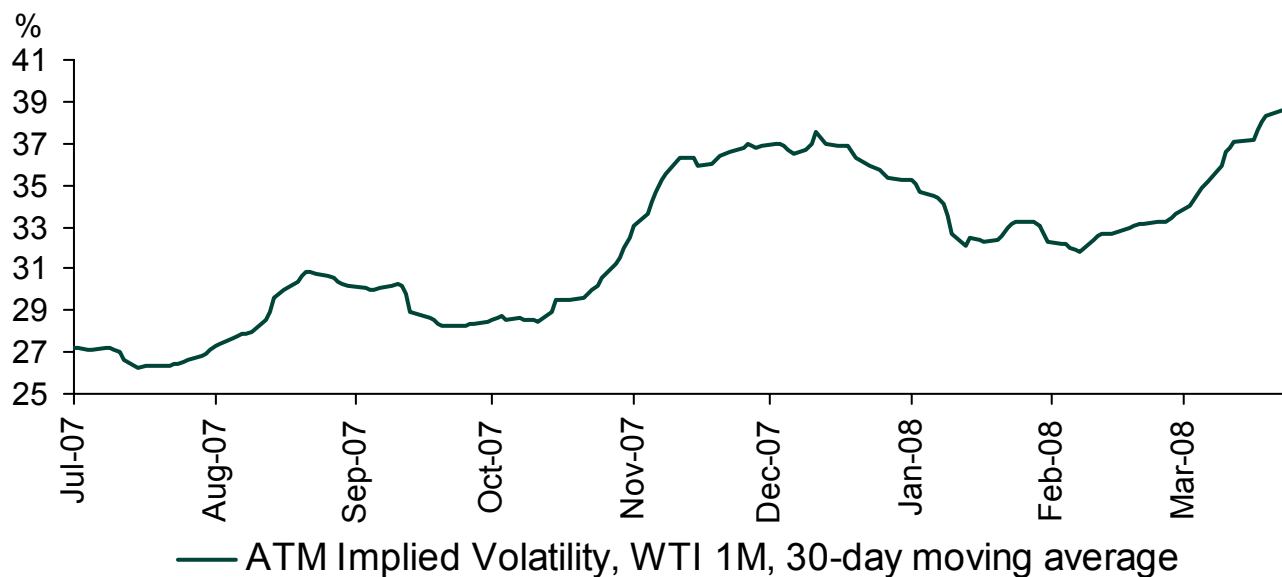


Source: Bureau of Labor Statistics and Lehman Brothers US Economics

Beyond flows, volatility to continue for fundamental reasons

- ◆ Tight markets become more volatile as demand runs up against supply limits, then retreats with additions of new capacity
- ◆ OPEC rift is widening, leading to Saudi stealth unilateralism
- ◆ OPEC barrels increasingly are moving east, taking OECD data reporting out of the equation and making both incremental supply and demand difficult to quantify

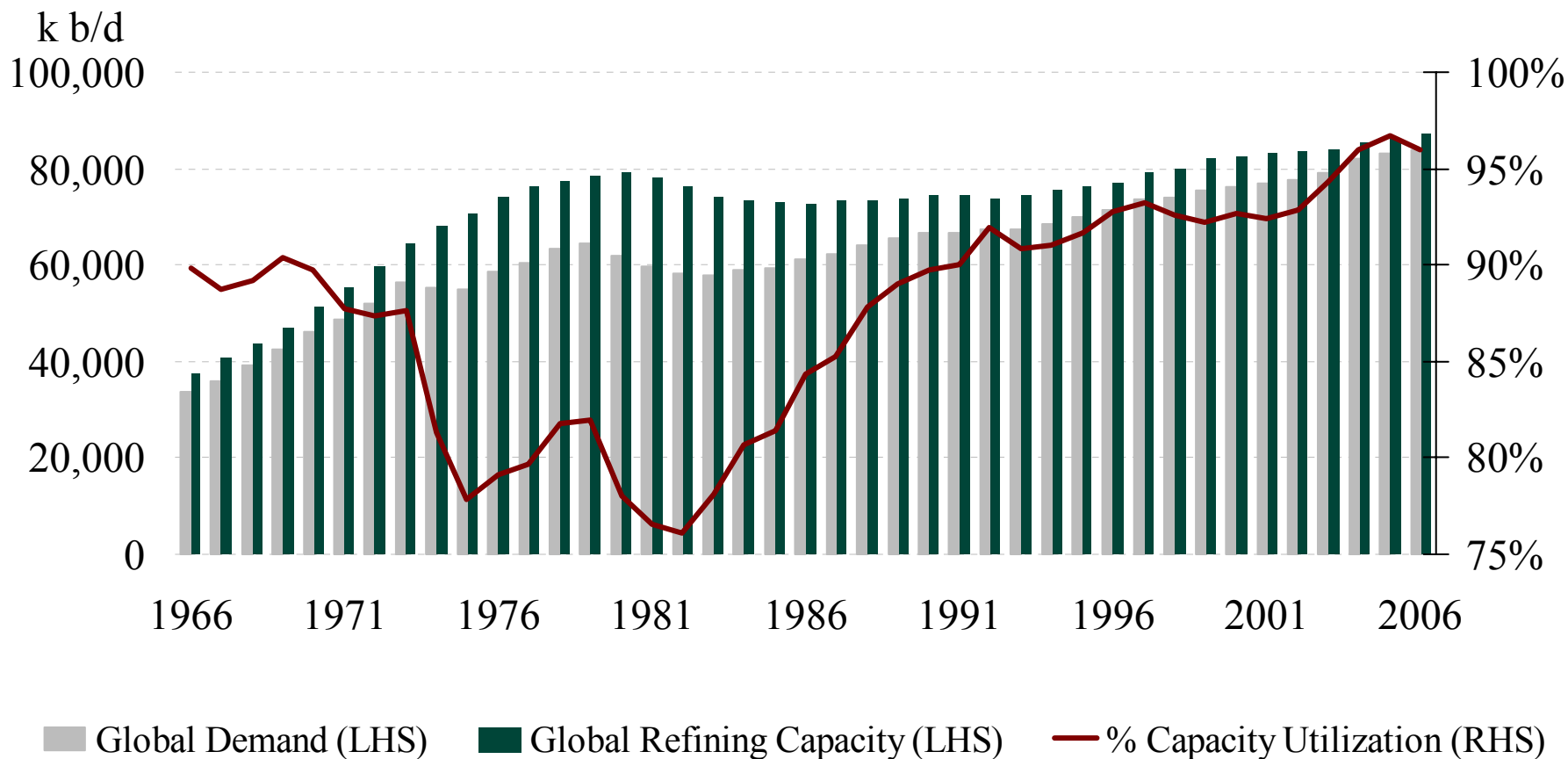
1M WTI Implied ATM Volatility (30-day rolling average to March 26, 2008)



Source: Bloomberg

Refinery bottlenecks look to be first to ease

Global refining utilization, 1966-2006 (in k b/d and as a percent)

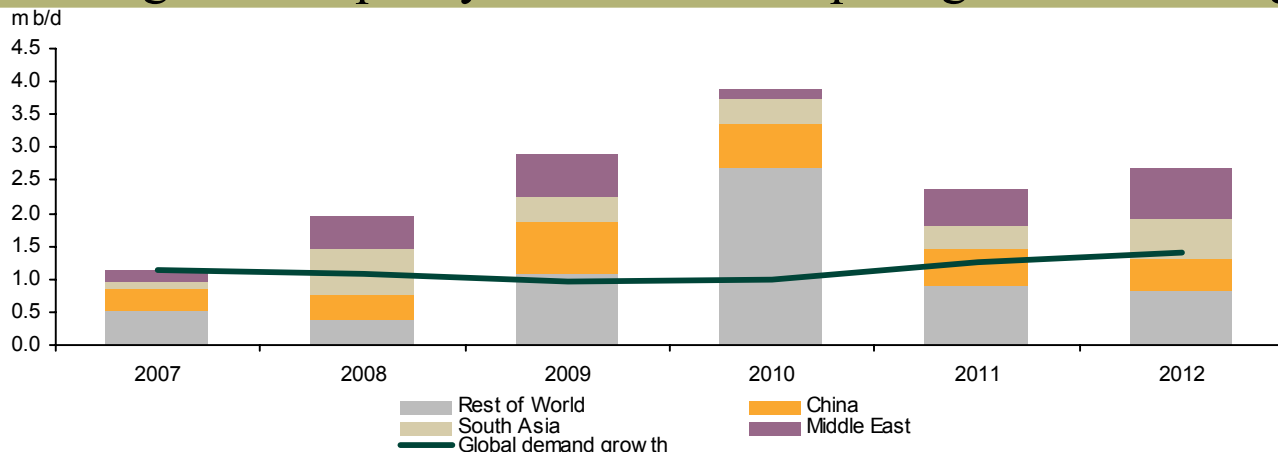


Source: BP Statistical Review of World Energy 2007.

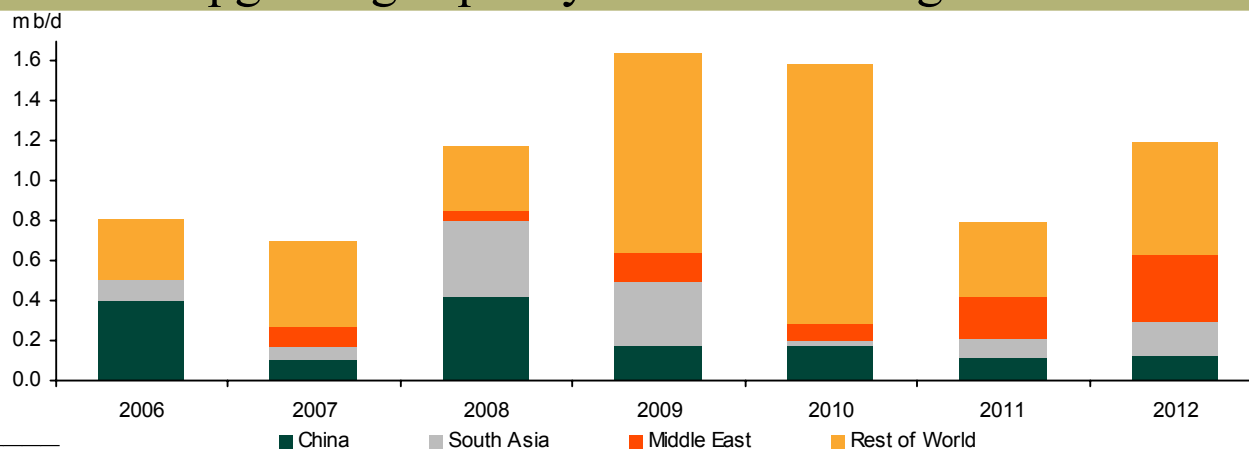
Leading indicators suggest longer-term supply relief

Surge in refining construction outpacing global demand growth should bring greater competition to product markets

Refining CDU capacity additions to outpace global demand growth



Upgrading capacity additions strong as well ⁽¹⁾



1. Includes coking, thermal cracking, cat cracking, hydrocracking. Source: Lehman estimates

And ebbing resource nationalism could attract more investment

Russia, largest producer in world, is lowering taxes to increase incentives for investment forcing others to follow suit

◆ Russia:

- Proposing to cut mineral extraction tax for oil producers by 100 billion rubles (\$4.2 billion) by raising non-taxable threshold from \$9.0/bbl to \$15.00/bbl; do not renew tax hike on mineral extraction suit
- Would reduce tax payments by 8%, includes possible tax holiday for companies exploring offshore areas
- Putin promises better investment climate for foreign investors
- Foreign investment in Russia last year totalled \$121 billion, twice '06 levels
- Plan to double state spending to replace resources (\$11.5 billion allocation)
- From 2006-2008, Russian state oil company spending up 30+% y-o-y. International service companies up on same order from a very small base.

◆ West Africa:

- The worst has already come, stabilizing new tax regimes. Passage of new oil laws.
- Algeria lures 64 companies to bid on 15 offshore blocks, signifying changing environment

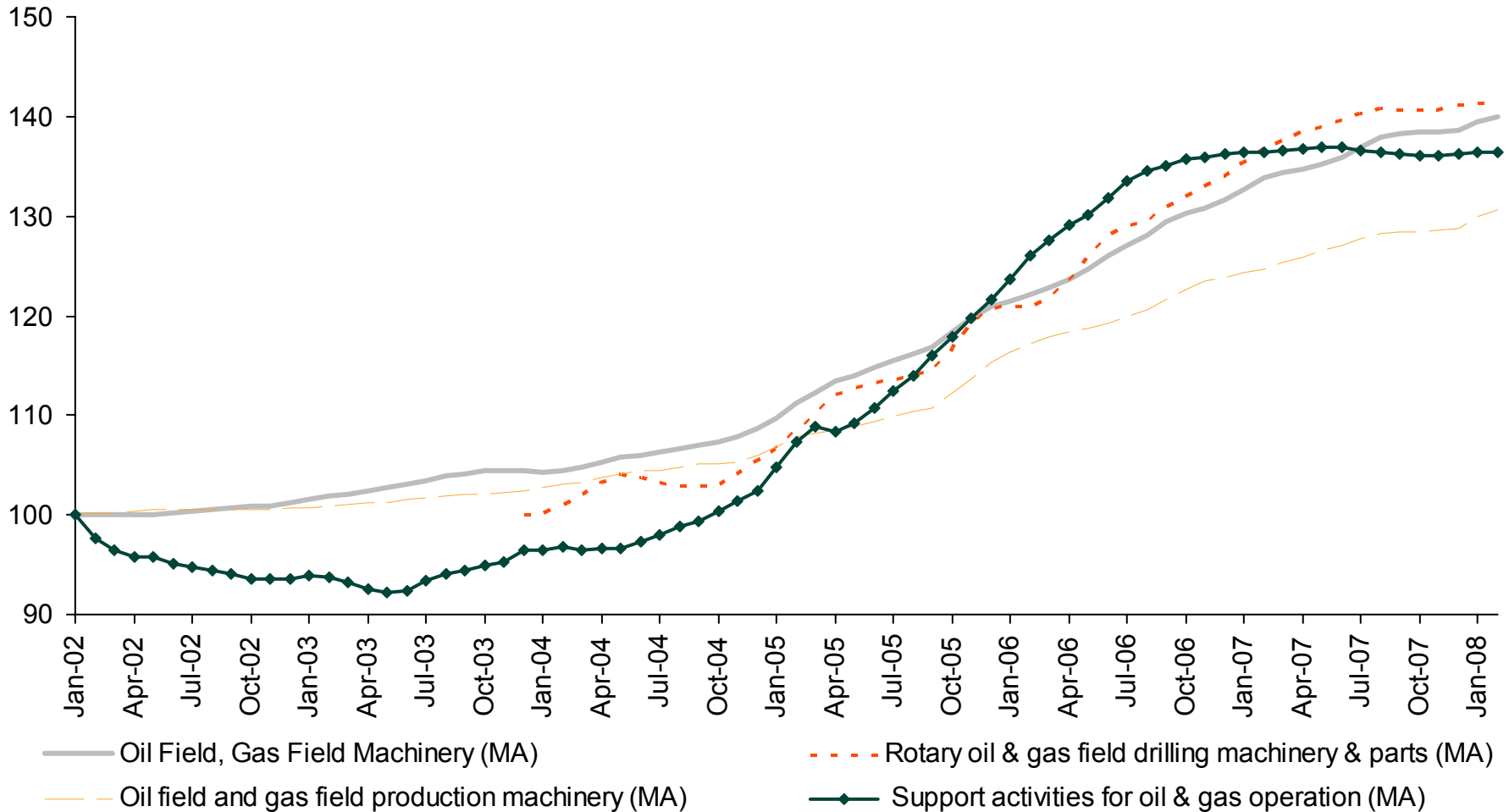
◆ Venezuela:

- Court discharges \$12 bn injunction against PDVSA that freezes their assets
- Approve new windfall tax that will take advantage of “sudden increase” in prices, taxing exporters at marginal rate of 60% if Brent crude averages above \$100 and 50% of marginal rate above \$70, will this stand?
- But, ONGC spending 450 million in E&P at San Cristobal, acquiring 40% stake
- ENI has entered into a joint venture to explore the Orinoco basin, again with 40% stake

Resource Nationalism appears to be peaking and competition for capital as Russia liberalizes could tip the balance.

Some have argued higher prices are justified by costs

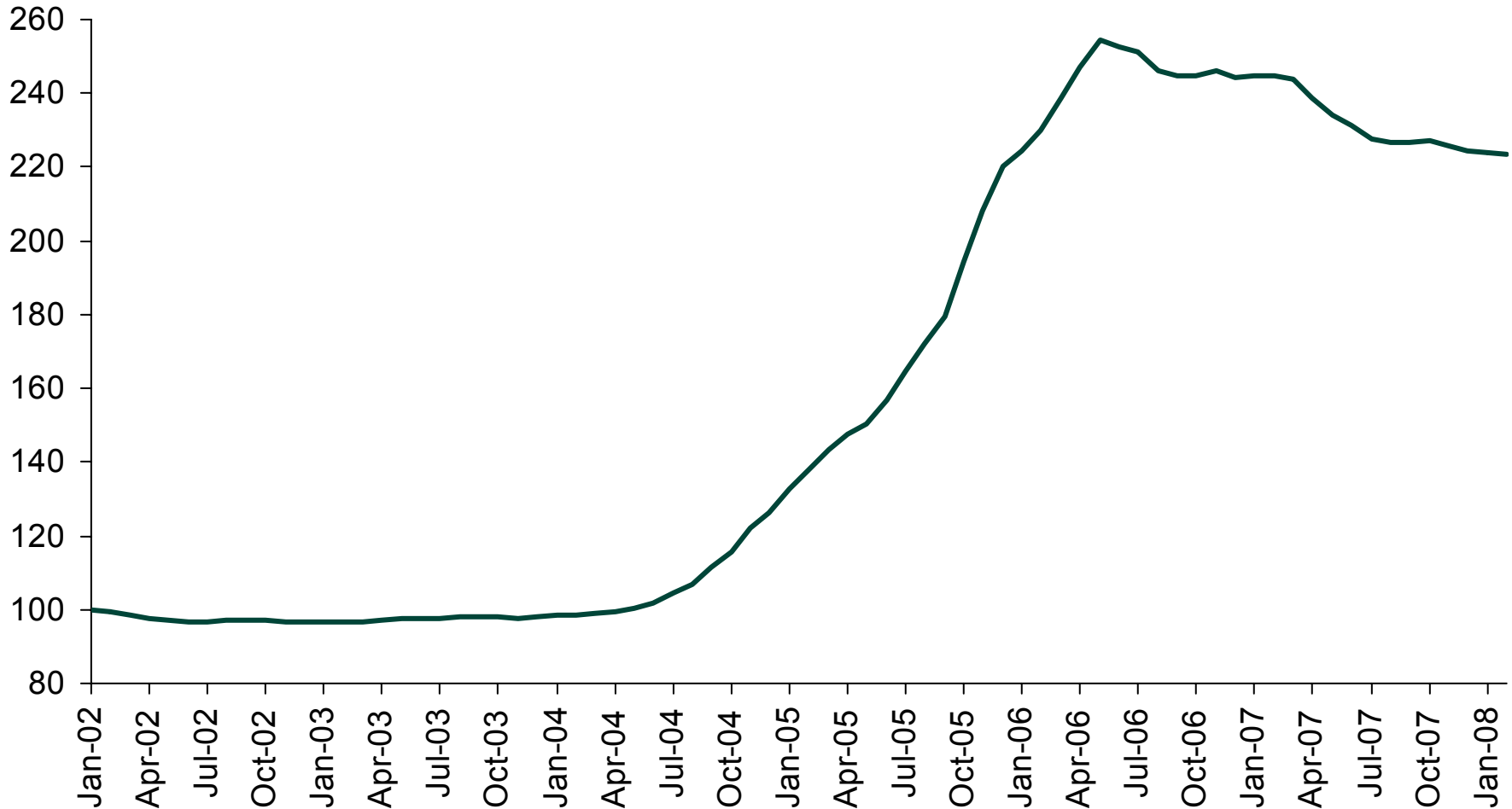
But US PPI Oil Producer Cost Indices are flattening (3-month moving average)



Source: US Bureau of Labor Statistics

US drilling cost rise and fall even more stark

US Drilling cost PPI (3-month moving average)

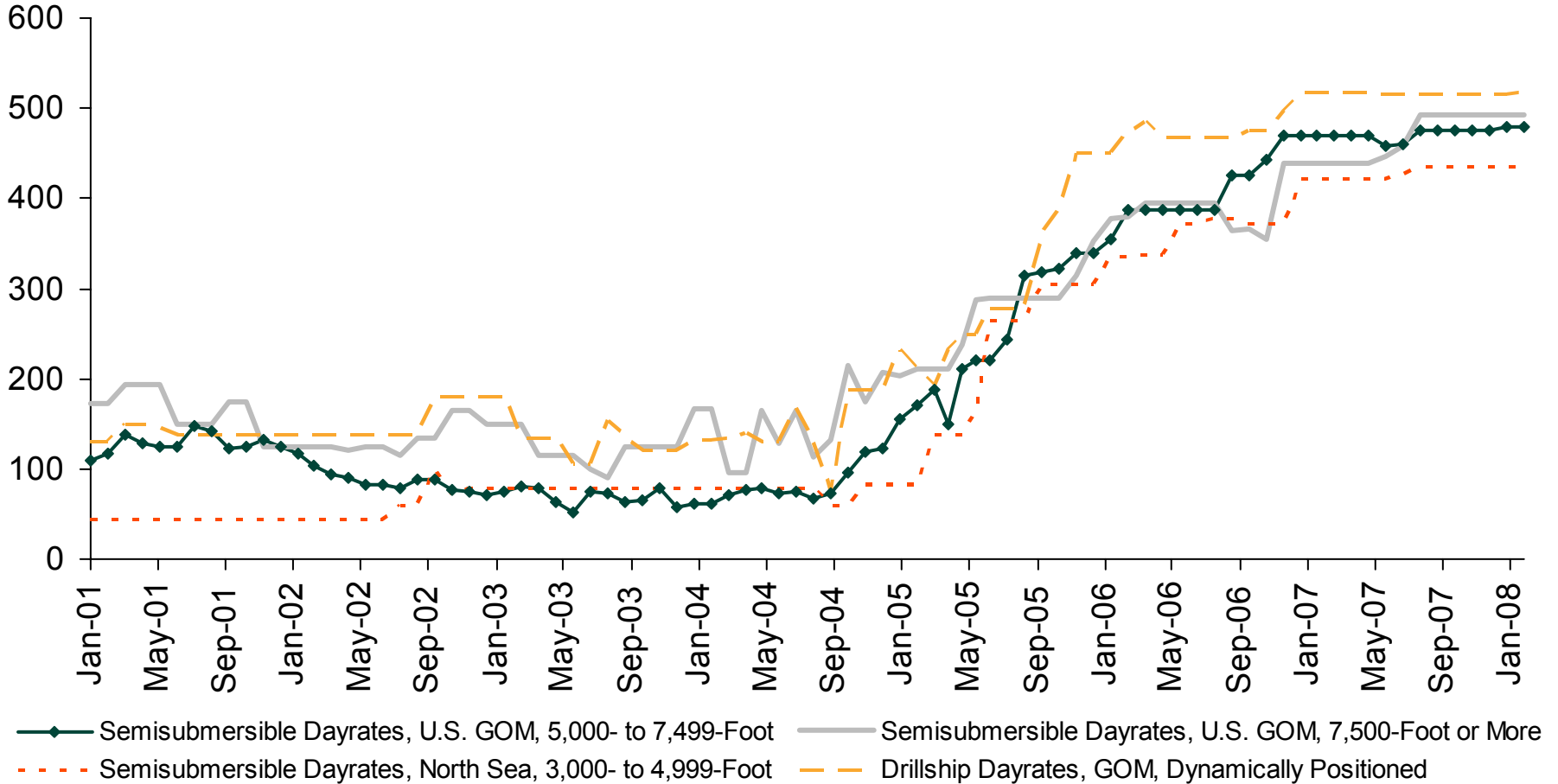


Source: US Bureau of Labor Statistics

Even deepwater drilling costs are flattening

Deepwater Rig Day-Rates

Avg dayrates in '000 dollars

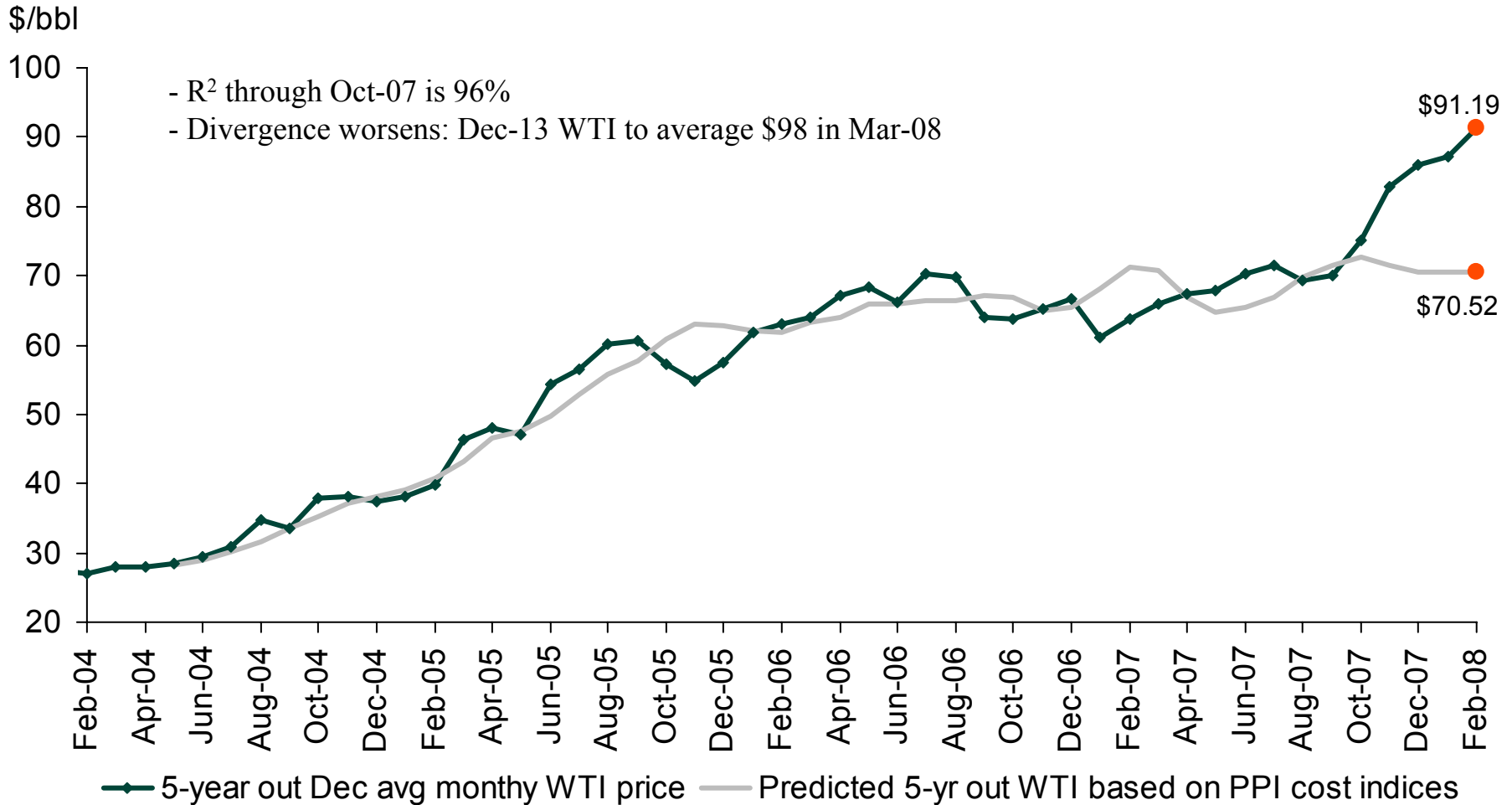


Source: ODS-Petrodata and Lehman Brothers Estimates

That costs have flat-lined is a problem for NYMEX WTI

Higher US costs appear to explain much of the rise in long-dated WTI prices until the divergence in October 2007.

US monthly PPI data regressed against average monthly 5-yr out WTI prices



What may explain the breakdown?

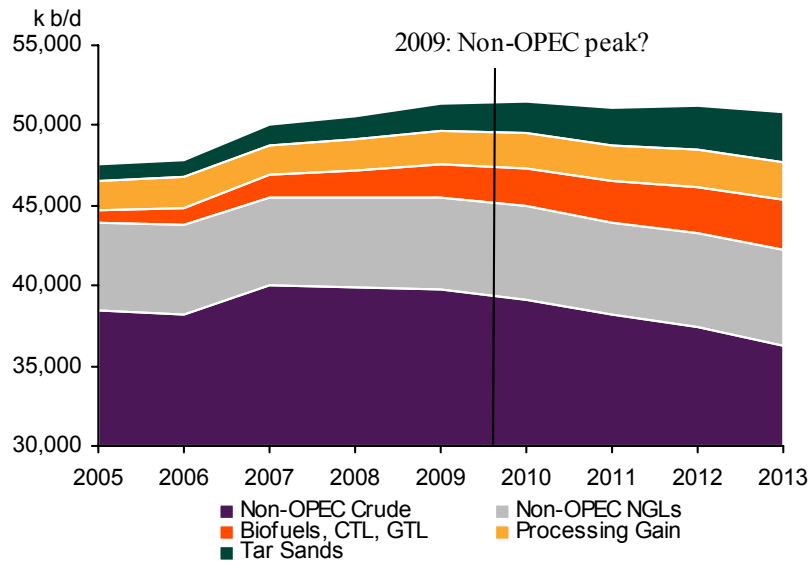
- ◆ Relationship b/w US costs and WTI held in the past because US costs reflected most of the change in costs globally
 - Rigs and machinery (and even engineers) are globally integrated markets
- ◆ However, costs of the global marginal producer can go up in ways that are not globalized and thus not reflected in the US PPI
 - Tax regime changes
 - Unskilled workers and other locally denominated costs
- ◆ Or long-dated WTI prices may be rising for fundamental reasons unrelated to costs of finding and developing conventional crude
 - Risks of supply disruption/expropriation in the marginal basin have increased, with producers requiring a higher hurdle rate of return before they'll continue to invest there
 - There may not be enough oil in the marginal conventional basin to satisfy the marginal barrel demanded at current prices and higher prices may be required to incentivize investment in new higher cost basins / unconventional supplies and substitutes
 - While those basins are opened up, even higher prices may be needed in the meantime to curtail demand

Non-OPEC supply is not optimistic

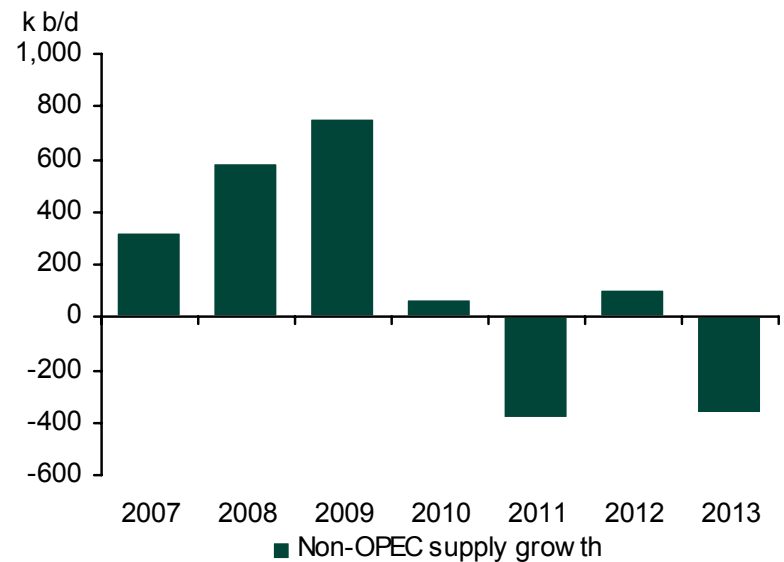
OPEC dependence will almost certainly grow

- ◆ Non-crude sources (biofuels, NGLs, processing gains) account for 70% of non-OPEC supply growth in 2008
- ◆ FSU growth of 400k b/d, makes strong crude contribution, but merely offsets declines in the North Sea (-260k b/d) and Mexico (-280k b/d)
- ◆ Deepwater, tar sands crucial as Brazil grows 350k b/d, Canada tar sands 270k b/d
- ◆ One potential offset: Non-OPEC NGLs/condensates could add another 400-500k b/d of incremental annual growth

A growing role for non-conventionals



Non-OPEC supply growth, 2007-2013



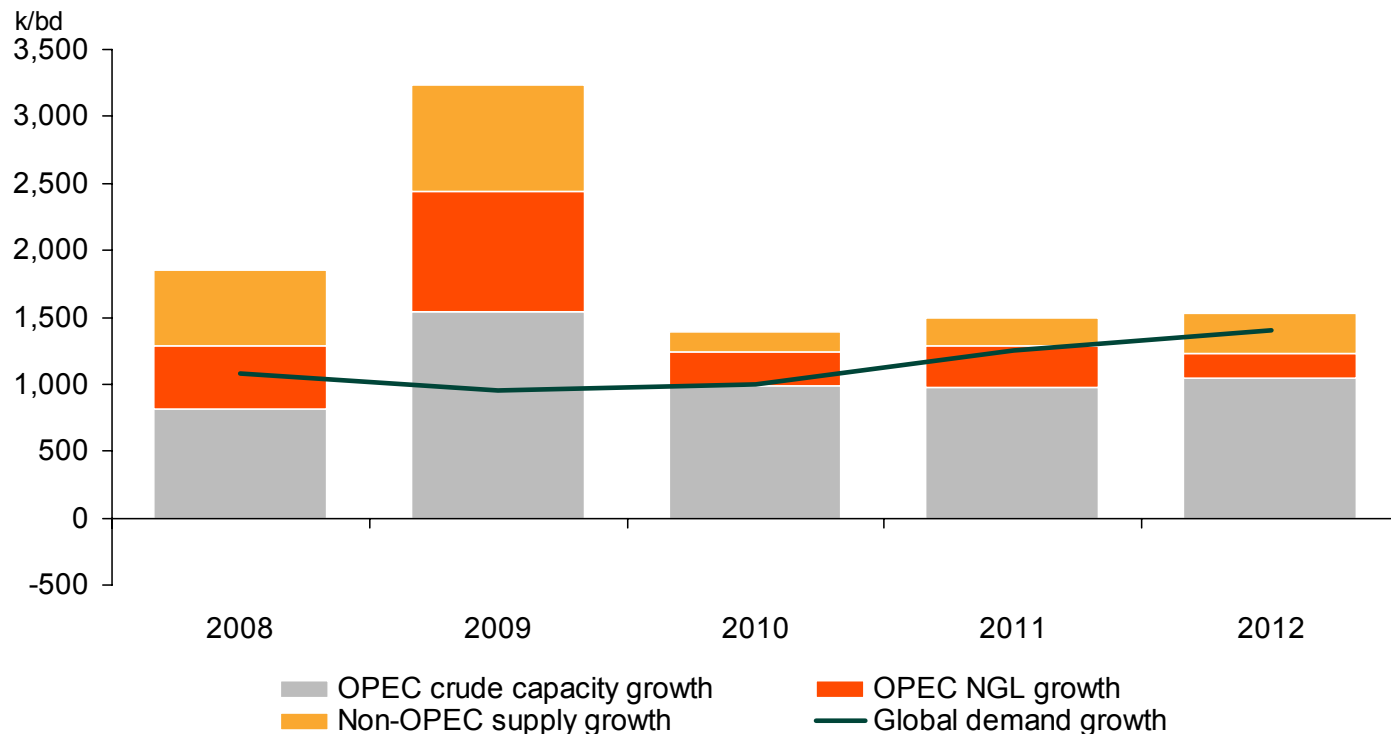
Source: Lehman estimates

But OPEC capacity to grow faster than demand, for now...

Major upstream producers show response to higher prices

- ◆ Saudi Arabia's capacity expansion through 2011-12 should underpin capacity additions outpacing demand
- ◆ Further upside potential from Russia, deepwater, NGLs could leave non-OPEC supply growth underestimated by 300-500k b/d beyond 2010

Global production capacity growth vs. global oil demand growth



Source: Lehman Brothers estimates

Decoupling thesis to be challenged by 4Q08

Via the trade and financial market channels, a period of extended US weakness could spread to emerging markets by 4Q08

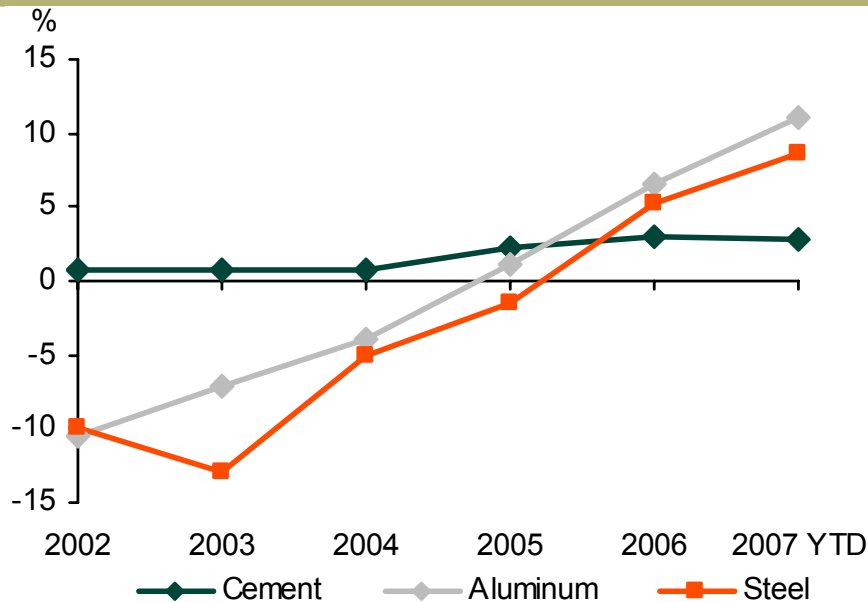
- ◆ Oil prices at \$100+ assume demand growth won't slow in Asia
- ◆ While fundamentals of Asian economies look strong now, they may be approaching a tipping point, esp. if US recession deepens
- ◆ Trade Channel:
 - Exports make up 55% of Asian GDP, grew 15-20% in 2007
 - Multiplier effects on income/capex cannot be ignored
 - Insofar as US businesses have global supply chains, China cannot cut prices (or subsidize) to defend against OECD demand drop
- ◆ If US recession deepens, effect on Asia ex-Japan likely to be non-linear, with growth dropping from 7.5% to 4-5%

China to turn bearish versus expectations?

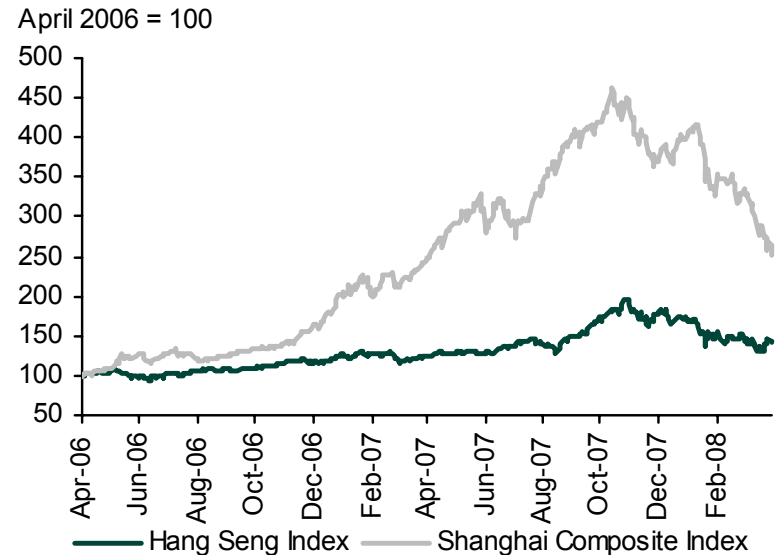
As China liberalizes and export markets shrink, oil demand growth should slow in 2008-09

- ◆ We expect 340k b/d (4.5%) oil demand growth in 2008, 300k b/d (3.8%) in 2009
- ◆ 40% of Chinese oil demand is from industry
 - Another 15-20% moves coal, raw materials, and finished goods to and from industrial plants
- ◆ China is vulnerable to an OECD economic slowdown, but lags exist
 - A weak currency, fixed energy prices and loose loans to industrial firms cause lags
- ◆ Government policy around the Olympics will help to eliminate overcapacities and slow oil demand growth

China net exports as % of production



China stock market fall may be weakness signal



Source: Bloomberg, China General Administration of Customs, Rosen and Houser, China Strategic Advisory.

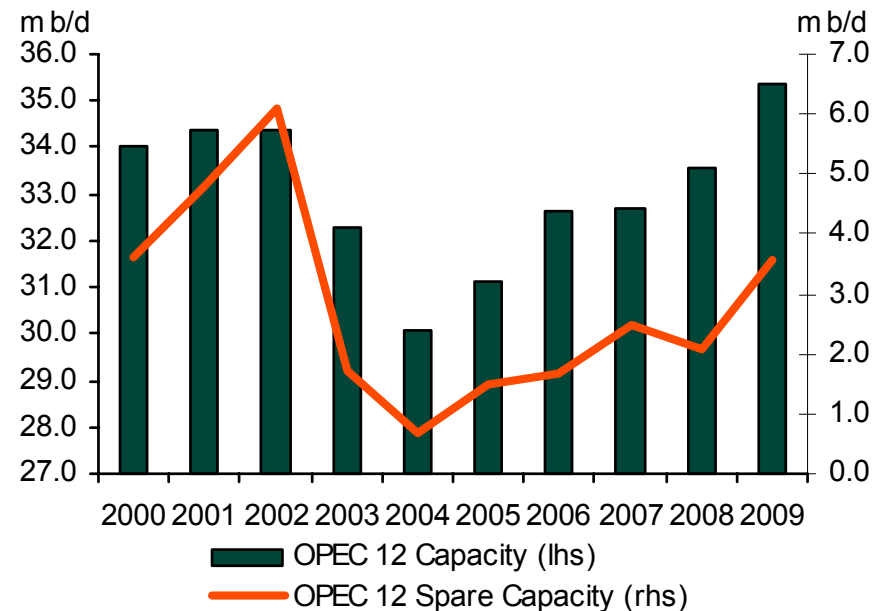
Supply unknowns and timing may still frustrate

Although overarching trends point to 3+ year respite in prices, supply disruptions, politics still remain variables

- ◆ **OPEC capacity has robust potential**
 - Capacity may grow 5+m b/d, 2008-12
 - 80% from Saudi Arabia, Nigeria, Angola
- ◆ **However, capacity downside risk exists**
 - Precarious Nigeria political situation
 - 1.9m b/d OPEC quota on Angola
 - Iraq Kirkuk/Basra reversal with violence
 - Iran/Venezuela declines

◆ **And what's left after completion of Saudi expansion plans in 2012?**

Spare capacity expansion as decade ends?
And who steps up next?



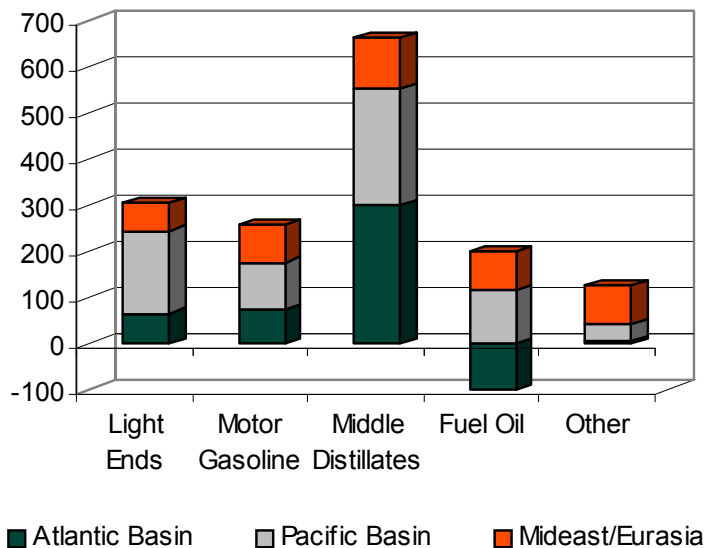
Source: EIA, Lehman estimates

2008 oil products outlook: Distillate to lead

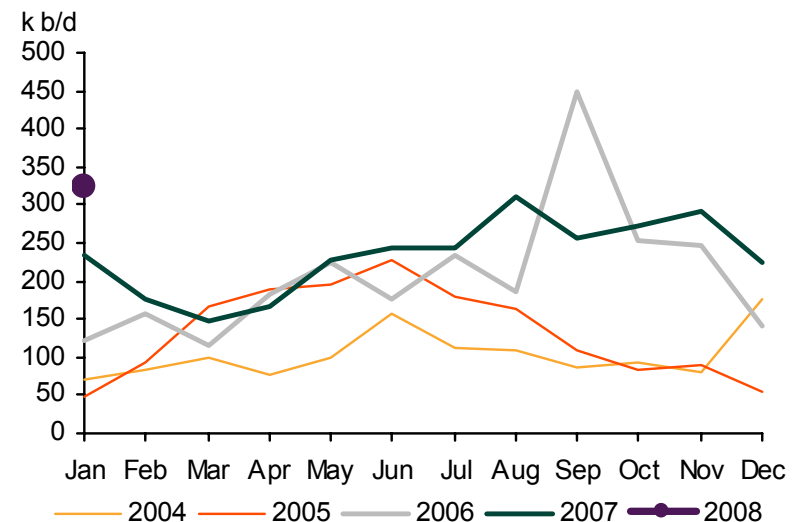
Global distillate refinery margins strong, lead oil markets in '08

- ◆ Recent explosion in heating oil and gasoil cracks might taper off as winter ends...
 - But downstream bottlenecks, demand pull from non-OECD markets (Southern Cone) and constricted Middle East exports should strongly support summer cracks
- ◆ Distillates are 50% of global oil demand growth in 2008
- ◆ Diesel specs tighten from 50ppm to 10ppm in Europe 1/1/09, putting further strain on refiners
- ◆ European and US distillate margins to outperform Asian margins in 2008
 - New refineries East of Suez: Reliance (580k b/d), Rabigh (400k b/d), Qingdao (200k b/d)

2008 demand growth by product/region



US distillate exports into Atlantic Basin



Source: EIA, Lehman Brothers estimates

Lehman Brothers Oil Outlook

Lehman Brothers Oil Price Outlook

	1Q07A	2Q07A	3Q07A	4Q07A	1Q08E	2Q08E	3Q08E	4Q08E	2006A	2007A	2008E	2009E
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WTI-Brent differential	-0.16	-3.45	0.47	1.98	1.51	-1.00	1.00	-1.00	0.34	-0.29	0.00	0.00

Lehman Brothers Oil Supply-Demand Balance

	1Q07	2Q07	3Q07	4Q07	1Q08	2Q08	3Q08	4Q08	2006	2007	2008	2009
Global Demand	85.9	84.8	85.3	86.4	86.9	85.8	86.3	87.6	84.4	85.6	86.7	87.6
OECD	49.4	47.9	48.4	49.4	49.4	47.6	48.2	49.4	49.0	48.7	48.6	48.5
USA	20.9	20.7	20.8	20.8	20.5	20.5	20.5	20.7	20.7	20.8	20.5	20.6
Europe	15.2	15.0	15.4	15.6	15.4	15.0	15.5	15.6	15.6	15.3	15.4	15.3
Non-OECD	36.5	37.0	36.9	37.0	37.6	38.2	38.1	38.2	35.5	36.8	38.0	38.9
China	7.4	7.6	7.4	7.6	7.7	8.1	7.7	8.0	7.0	7.5	7.9	8.2
Middle East	6.6	6.7	7.1	6.6	6.9	7.0	7.4	6.9	6.4	6.7	7.1	7.5
Global Supply	84.5	84.5	84.1	85.5	86.2	86.8	86.7	88.3	84.8	84.7	87.0	89.0
Total Non-OPEC	50.5	50.2	49.7	49.9	50.3	50.5	50.6	51.1	49.7	50.1	50.6	51.4
OECD	20.1	19.9	19.5	19.6	19.7	19.6	19.5	19.8	20.0	19.8	19.6	19.6
N. America	14.3	14.3	14.1	13.9	14.0	14.1	14.0	14.1	14.1	14.1	14.1	14.4
Europe	5.3	5.0	4.7	5.0	4.9	4.7	4.6	4.7	5.3	5.0	4.7	4.3
Non-OECD	28.1	28.0	27.9	28.0	28.2	28.5	28.7	28.9	27.5	28.0	28.6	29.1
FSU	12.8	12.7	12.8	12.8	12.9	13.1	13.3	13.6	12.2	12.8	13.2	14.0
Other (1)	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.2	2.3	2.4	2.7
OPEC Crude	29.8	30.0	29.9	31.1	31.2	31.7	31.2	31.9	31.0	30.2	31.5	31.8
OPEC NGLs	4.2	4.4	4.4	4.6	4.6	4.6	4.9	5.3	4.1	4.4	4.9	5.8
Inventory Change	-1.3	-0.3	-1.2	-0.9	-0.8	1.0	0.5	0.7	0.4	-0.9	0.3	1.4
Call on OPEC	31.1	30.3	31.2	31.9	32.0	30.7	30.8	31.2	30.7	31.1	31.2	30.4

Source: Lehman estimates; (1) Other includes global processing gains, biofuels outside US, Brazil and Europe, GTL, CTL and unaccounted for new projects

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