



# The big oil picture: We're not running out, but that doesn't mean we'll have enough

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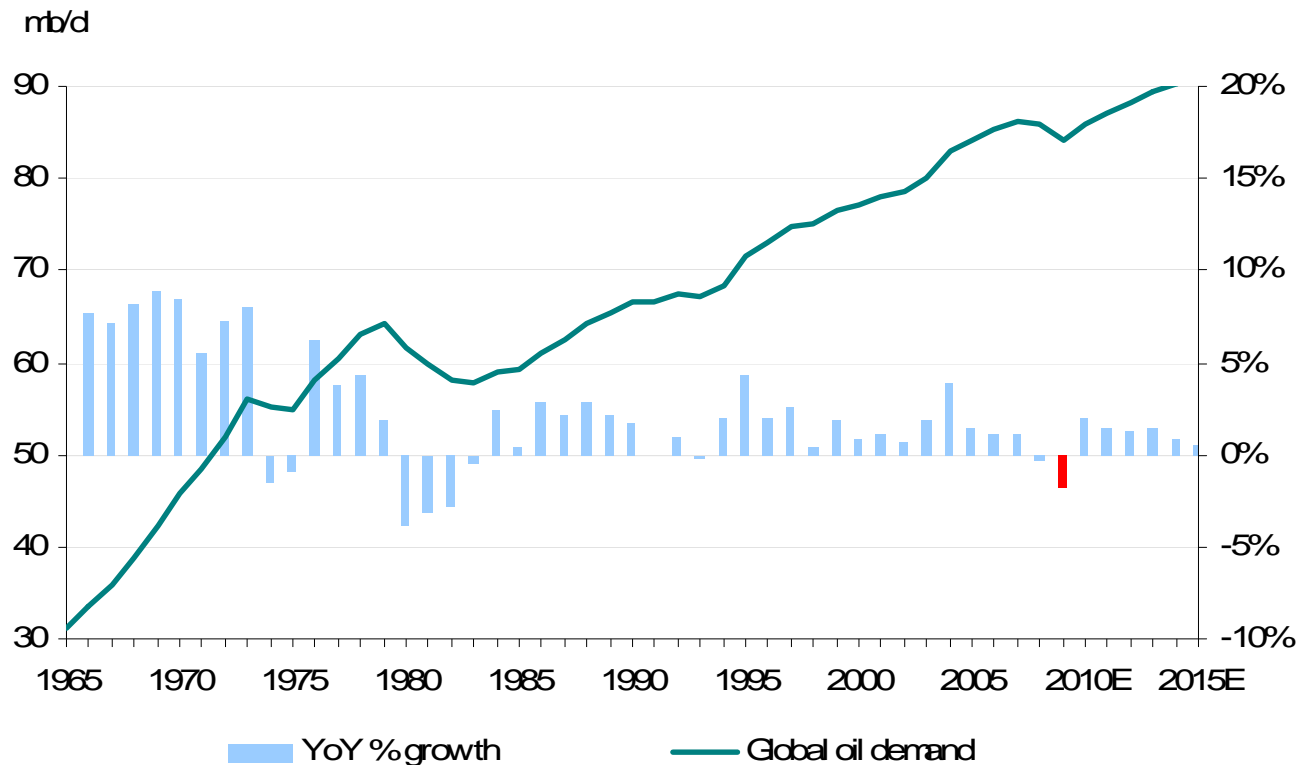
## Oil prices are a story of fundamentals & trends

- Global oil s/d balances will tighten up materially, but not until next year
- As the *Great Recession* recedes, oil demand is already poised to rebound
- ... and global demand declined no more than 3% (which is a lot to oil economists but a rounding error to most everyone else)
- So there is no end in sight to the rising trend in global oil demand
- On the supply side, the industry is not using the opportunity to add to capacity structurally
- OPEC cannot do much more either (although Saudi Arabia faces choices)
- Longer term, we expect to see demand constrained by supply again
- But that scarcity is not necessarily going to last ...



## 50 years of global oil demand

OECD oil demand propelled global totals in the 1960s and much of the 70s. A deep retrenchment in the early-1980s took years and enormous political drive to achieve. Then, emerging economies join the party in the 1990s. By 2015, the OECD economies should use less oil than EM.

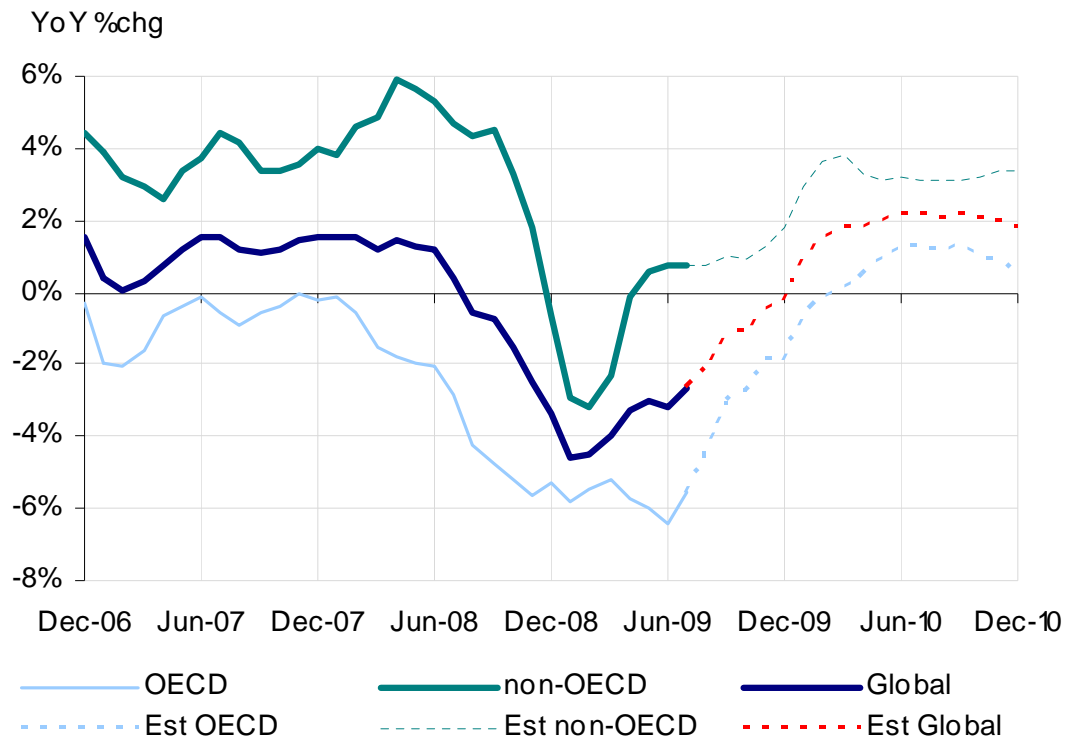


Source: BP, IEA, Macquarie Research, September 2009



## Our oil demand outlook plots V, W, L and U recoveries in key economies

Emerging markets oil demand growth collapsed in 4Q08. Earlier, the US had begun to drag down OECD oil use. While oil demand in emerging markets has begun to bounce back, oil demand in the OECD is still tracking along the bottom of a trough. Nonetheless, as industrial production begins to grow sequentially and emerging market growth gains traction, we may be forecasting too little of a recovery.



Source: Bloomberg, IEA, Macquarie Research, September 2009



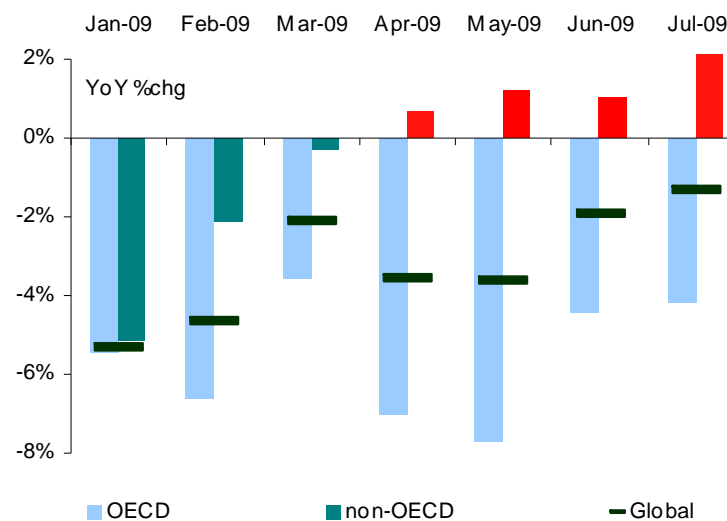
## Oil demand growth emerges

When we put this year's contraction of global oil demand in numbers (by region), things appear to be getting less bad.

In fact, oil demand in emerging markets began to grow in April and accelerated through July, but growth is lumpy, not very robust outside Asia, nor evenly distributed. We see +4% by 4Q for EM.

In the OECD, however, total declines are still more than twice as big as aggregate EM growth.

y/y 1,000 b/c	Jan	Feb	Mar	Apr	May	Jun	Jul
<b>Global</b>	<b>-4,660</b>	<b>-4,100</b>	<b>-1,820</b>	<b>-3,130</b>	<b>-3,130</b>	<b>-1,660</b>	<b>-1,160</b>
<b>OECD</b>	<b>-2,690</b>	<b>-3,300</b>	<b>-1,720</b>	<b>-3,390</b>	<b>-3,610</b>	<b>-2,060</b>	<b>-1,980</b>
NA	-1,320	-1,580	-1,240	-1,580	-1,920	-1,290	-1,200
Europe	-790	-610	40	-1,100	-970	-520	-700
Asia-Pac	-570	-1,110	-520	-710	-720	-250	-90
<b>EM</b>	<b>-1,970</b>	<b>-800</b>	<b>-110</b>	<b>270</b>	<b>480</b>	<b>410</b>	<b>830</b>
Lat Am	-30	-240	80	-20	-140	60	90
Asia	-1,060	-60	360	380	510	530	780
Mideast	-160	110	-120	140	530	260	280
FSU	-730	-630	-370	-110	-460	-460	-360

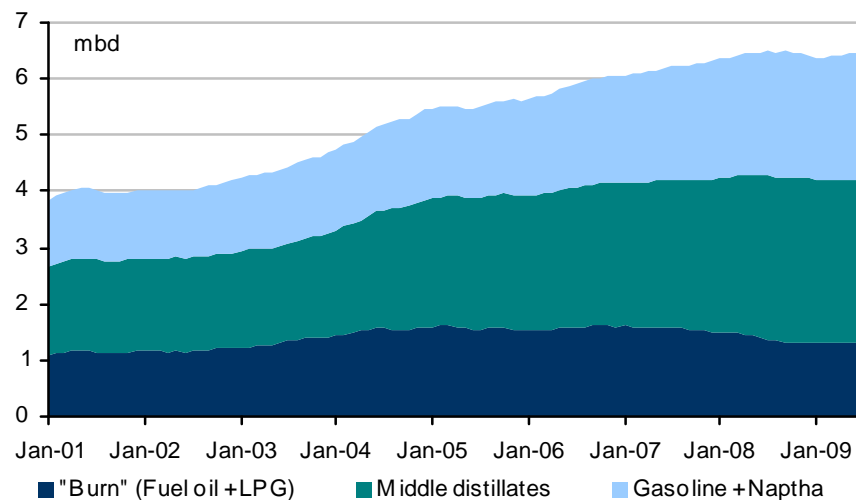


Source: International Energy Agency, US Department of Energy, national statistical agencies, national oil companies, BP's Statistical Review of World Energy, Reuters, Bloomberg, Macquarie Research, September 2009



## China's growth is real

China's oil demand is about transportation



China's oil product demand adjusted for gasoline and diesel inventory shifts

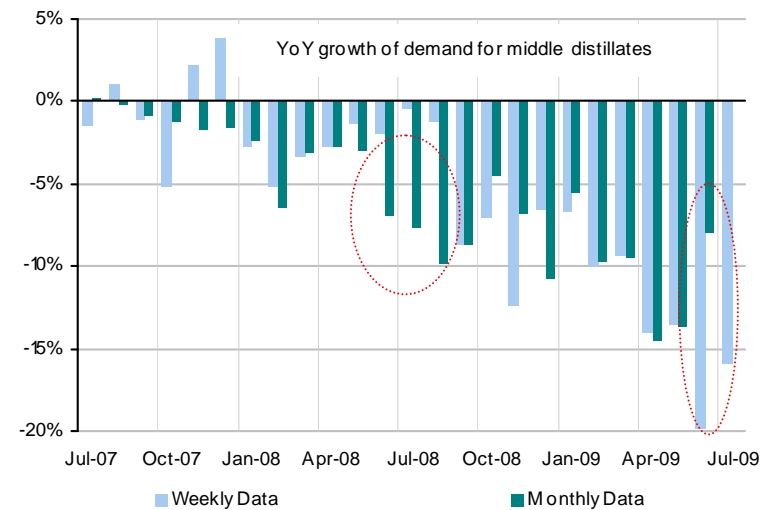
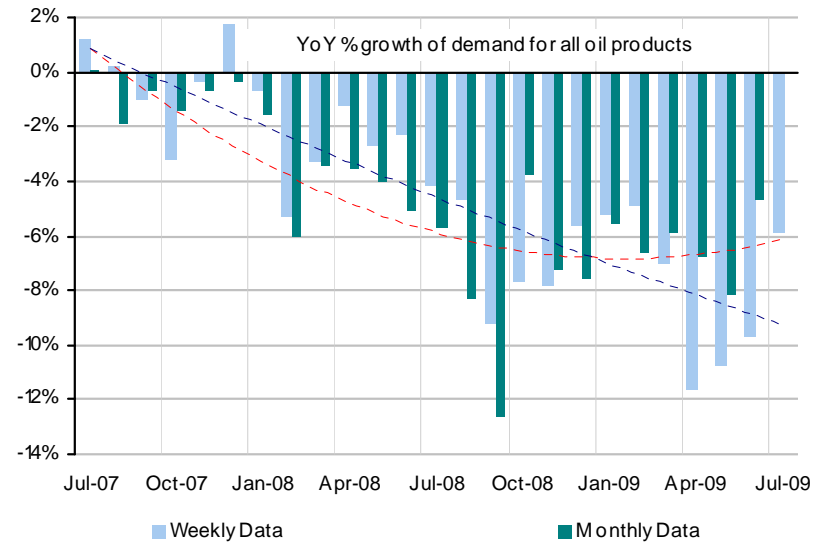
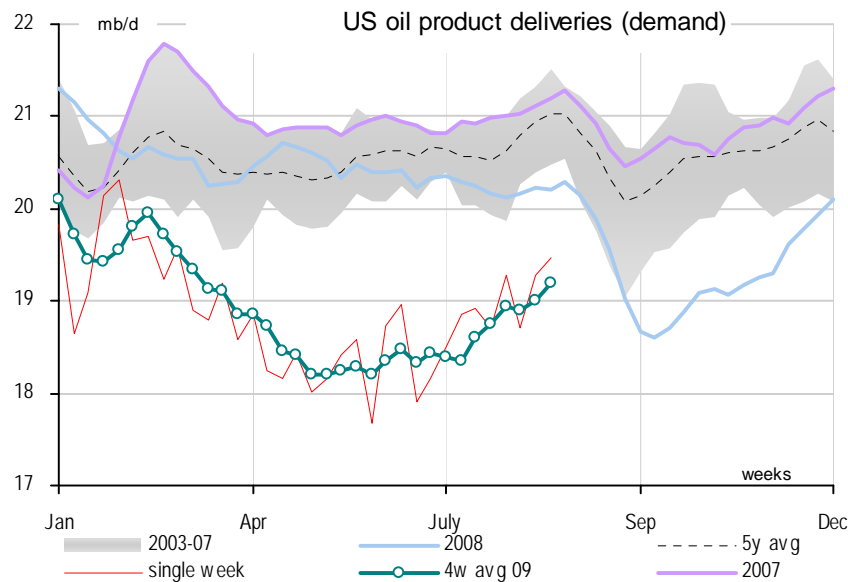
	2008	ytd'09	July*	YoY change		
				2008	ytd'09	July
(1,000 bbls/d)						
Gasoline	1,428	1,624	1,596	10.5%	13.6%	10.0%
Kerosene	267	294	316	4.3%	10.1%	26.2%
Diesel	2,662	2,640	2,800	8.2%	-3.0%	-0.2%
MD	2,928	2,934	3,116	7.8%	-18%	2.0%
Fuel oil	657	710	717	-18.5%	-12%	15%
LPG	651	684	671	-6.6%	4.9%	5.4%
Naptha	764	790	871	-6.2%	-4.5%	11.1%
"Drive"	4,356	4,558	4,712	8.7%	3.2%	4.6%
"Burn"	2,071	2,184	2,259	-10.6%	-0.7%	6.2%
<b>Total</b>	<b>6,427</b>	<b>6,742</b>	<b>6,971</b>	<b>1.6%</b>	<b>1.9%</b>	<b>5.1%</b>

\* three month rolling average. "Drive" = gasoline + diesel + kerosene

Source: National Bureau of Statistics, Macquarie Research, September 2009



## Demand is in dire straits in the world's biggest oil market



Source: US Department of Energy, IEA, Macquarie Research, September 2009

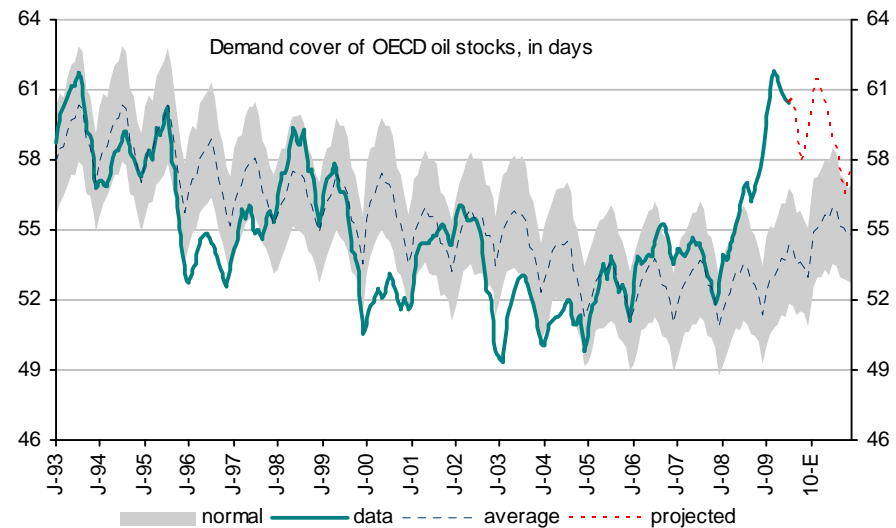
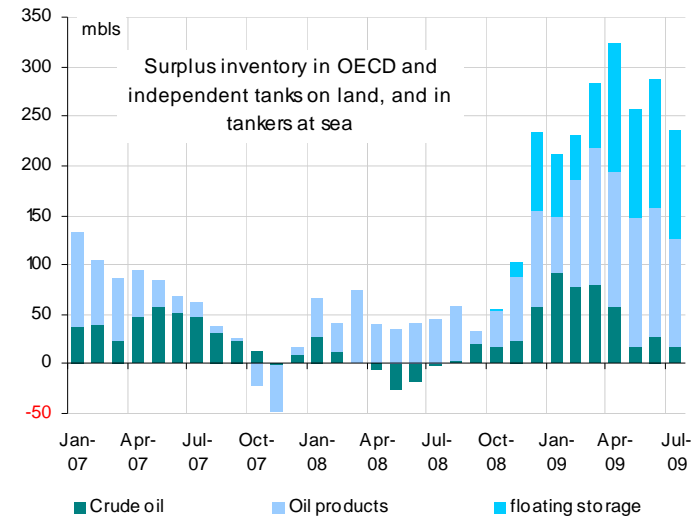




## OECD oil inventories

### Oil inventories across the OECD regions

End month	Volume			July surplus/deficit				June	
	May	Jun	Jul	YoY		5yr		YoY	5yr
	mbls	mbls	mbls	mbls	%	mbls	%	mbls	mbls
<b>OECD</b>									
Crude oil	990	988	977	26	+2.7	17	+1.8	50	27
Products	1,751	1,756	1,772	67	+4.0	82	+4.9	88	106
<b>All oil</b>	<b>2,740</b>	<b>2,745</b>	<b>2,749</b>	<b>93</b>	<b>+3.5</b>	<b>100</b>	<b>+3.8</b>	<b>138</b>	<b>133</b>
<b>N America</b>									
Crude oil	503	487	492	54	+12.3	51	+11.5	51	37
Products	865	886	899	82	+10.1	72	+8.8	82	80
All oil	1,368	1,373	1,391	136	+10.9	123	+9.7	133	117
<b>Europe</b>									
Crude oil	331	344	341	-4	-1.1	0	+0.0	9	7
Products	644	640	633	-3	-0.4	26	+4.4	16	43
All oil	975	984	973	-7	-0.7	26	+2.8	26	50
<b>Asia Pacific</b>									
Crude oil	156	157	145	-25	-14.5	-33	-18.8	-11	-18
Products	242	230	241	-12	-4.8	-16	-6.4	-10	-17
All oil	397	387	386	-37	-8.7	-50	-11.5	-20	-35



Source: International Energy Agency, US Department of Energy, OPEC, national statistical agencies, national oil companies, BP's Statistical Review of World Energy, Reuters, Bloomberg, Macquarie Research, September 2009





## Supply side: Not your average peak oil theory

- There is no lack of oil reserves
- But there are problems of access, technology and risk

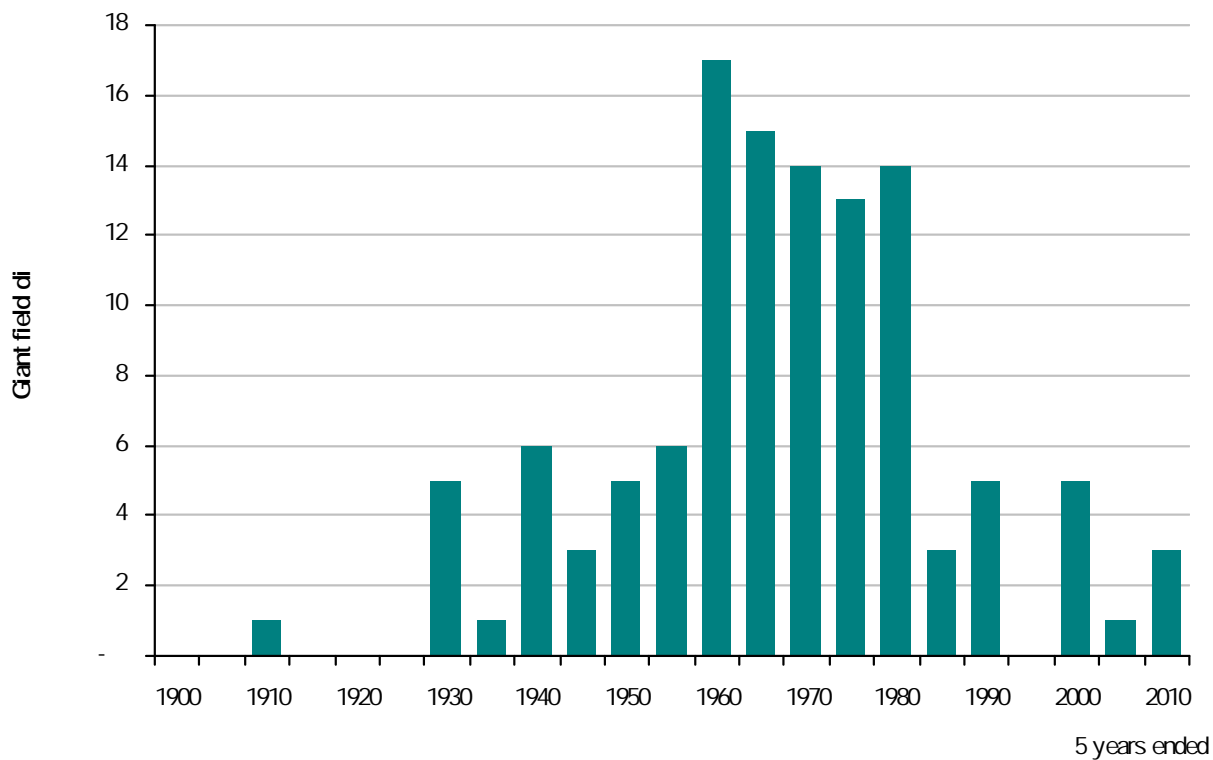
### Three recent mini-trends:

- Resource nationalism, eg, Brazil
- New reservoirs where the industry does have access tend to involve pushing technology envelopes, and thus much higher operational risks
- In general, more promising 'easy oil' is in less stable places (eg, Nigeria)



## Oil supply is the weak link

A familiar and critically significant story about not discovering as many big oil fields and growing declines in mature fields

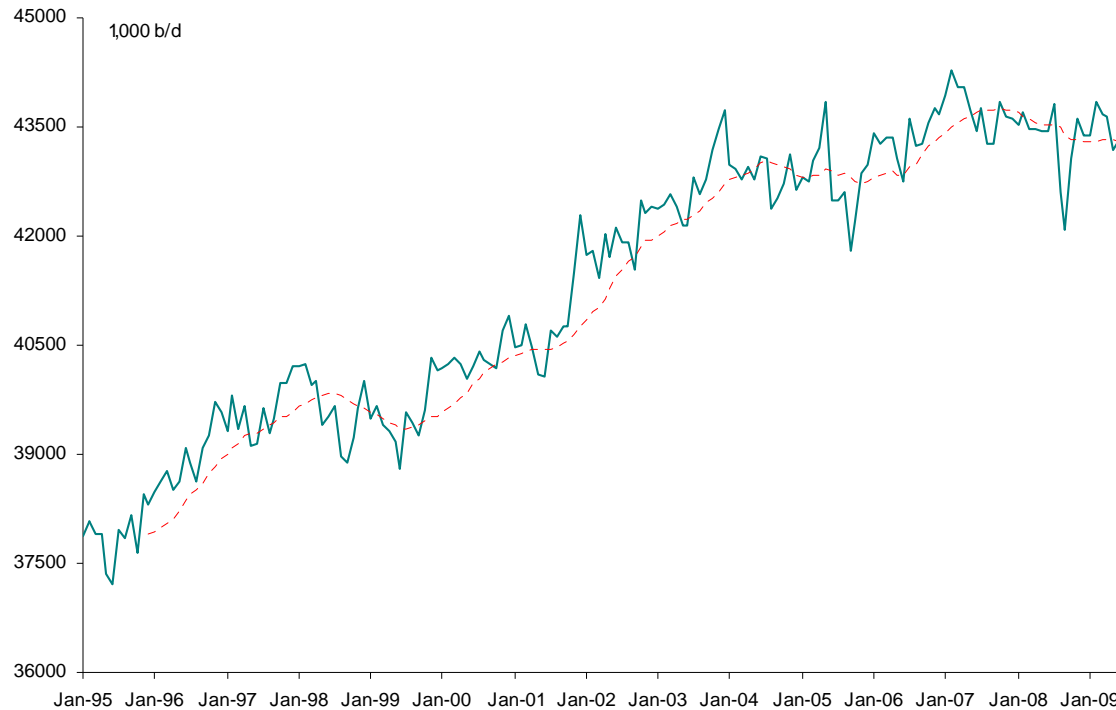


Source: EIA, IEA, Macquarie Research, September 2009



## Feverish development activity much of this decade has little to show for it

We track total non-Opec oil supply every month. Here is its history (including Angola and Ecuador).

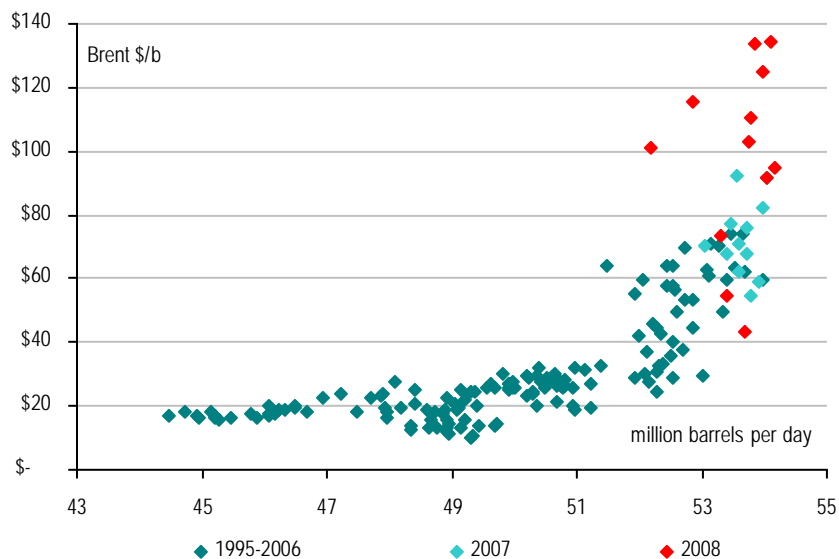


Source: IEA, Macquarie Research, September 2009

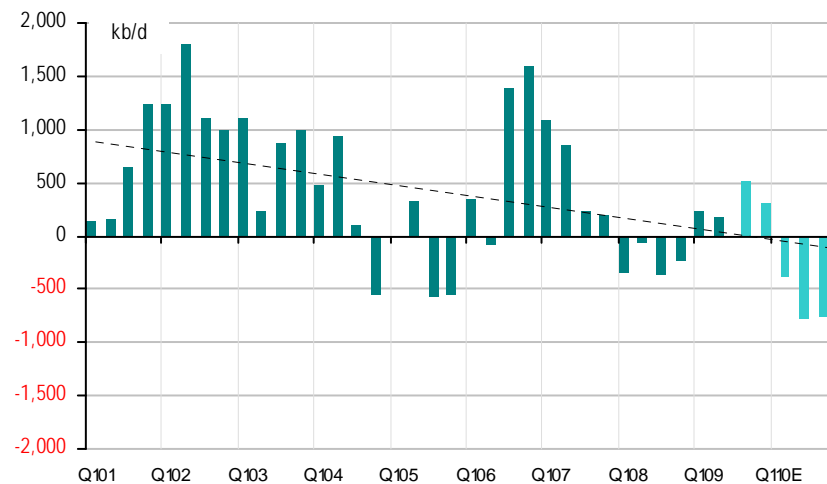


## Non-OPEC supply should fall

Crude oil production (ex Saudi Arabia, Kuwait, Iran, Mexico)



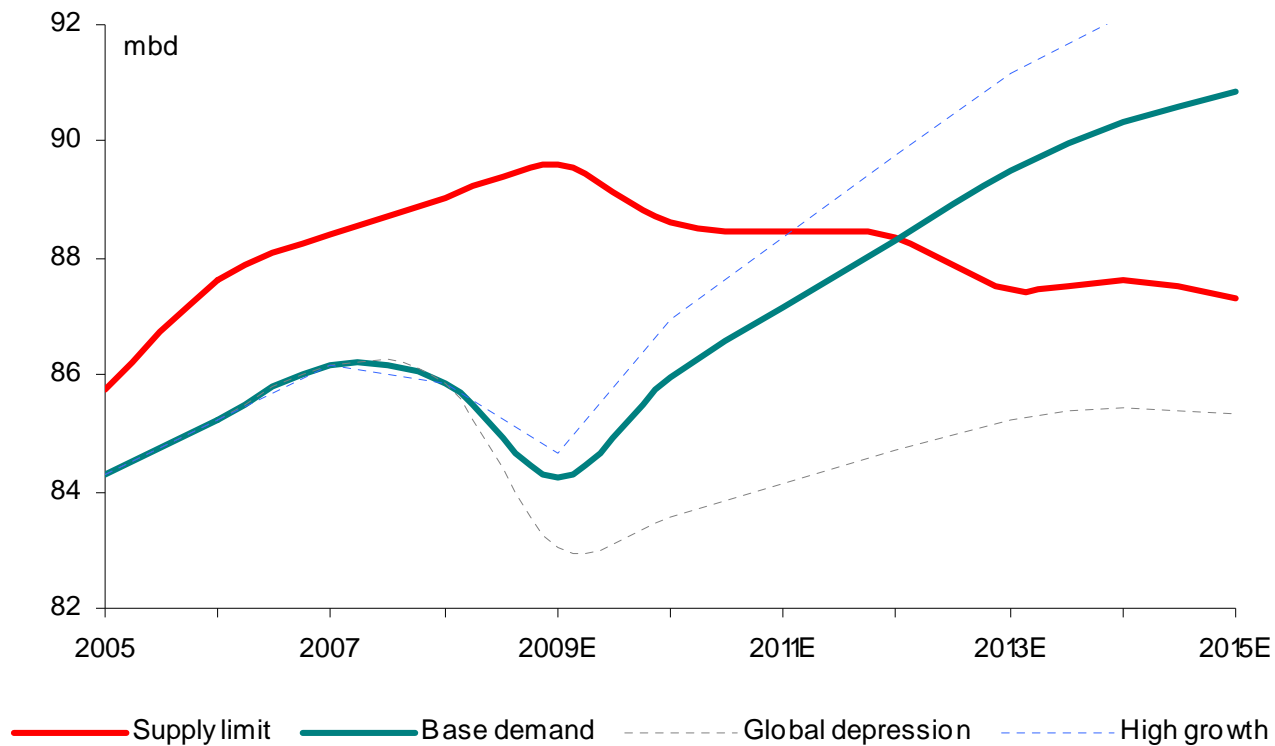
YoY change in all non-OPEC oil production



Source: IEA, Macquarie Research, September 2009



Global oil production limits are in sight, demand should again become constrained, oil sands et al will be needed



Source: Macquarie Research, September 2009



## Our medium-term global oil balance does not balance post 2013 ...

million barrels a day	2003	2004	2005	2006	2007	2008	2009E	2010E	2011E	2012E	2013E	2014E	2015E	
<b>Demand</b>														
OECD America	24.6	25.4	25.6	25.4	25.5	24.2	23.3	23.8	23.9	24.0	23.9	23.8	23.3	} Last in the OECD, NA (US) oil demand peaks in 2007
OECD Europe	15.5	15.5	15.7	15.7	15.3	15.3	14.6	14.5	14.5	14.5	14.5	14.4	14.3	
OECD Asia Pac	8.6	8.5	8.6	8.5	8.4	8.1	7.7	7.7	7.7	7.7	7.7	7.7	7.7	
<b>OECD</b>	<b>48.7</b>	<b>49.5</b>	<b>49.8</b>	<b>49.5</b>	<b>49.2</b>	<b>47.6</b>	<b>45.6</b>	<b>46.0</b>	<b>46.1</b>	<b>46.2</b>	<b>46.2</b>	<b>45.9</b>	<b>45.3</b>	
FSU	3.9	3.9	4.0	4.2	4.0	4.1	3.8	4.0	4.1	4.1	4.1	4.1	4.0	} Real demand growth limited to China, emerging market Asia, South America & Africa
China	5.7	6.6	6.7	7.1	7.5	7.7	8.1	8.6	9.0	9.4	9.8	10.3	10.9	
Other Asia	8.1	8.7	8.9	9.0	9.3	9.4	9.4	9.6	9.7	9.9	10.2	10.4	10.6	
South America	4.9	5.2	5.3	5.5	5.8	6.0	6.0	6.1	6.3	6.4	6.5	6.5	6.5	
Mideast	5.4	5.7	6.1	6.4	6.7	7.2	7.4	7.7	8.0	8.2	8.5	8.9	9.2	
Africa	2.6	2.7	2.9	2.9	3.0	3.1	3.1	3.2	3.3	3.4	3.5	3.5	3.6	
<b>Non-OECD</b>	<b>31.3</b>	<b>33.6</b>	<b>34.5</b>	<b>35.7</b>	<b>37.0</b>	<b>38.3</b>	<b>38.6</b>	<b>40.0</b>	<b>41.0</b>	<b>42.2</b>	<b>43.3</b>	<b>44.4</b>	<b>45.5</b>	
<b>Total</b>	<b>79.9</b>	<b>83.1</b>	<b>84.3</b>	<b>85.2</b>	<b>86.2</b>	<b>85.8</b>	<b>84.2</b>	<b>85.9</b>	<b>87.2</b>	<b>88.3</b>	<b>89.5</b>	<b>90.3</b>	<b>90.9</b>	
<b>Supply</b>														
Americas	18.2	17.6	17.3	18.0	18.1	17.9	18.2	17.9	18.0	17.9	17.5	17.5	17.4	} Non-Opec oil peaks are behind us already, except for some growth & potential in the FSU & Asia
Europe	6.5	6.3	5.9	5.5	5.4	5.2	4.9	4.7	4.3	4.0	3.7	3.4	3.1	
FSU	10.4	11.4	11.8	12.2	12.8	12.8	13.1	13.0	12.8	12.8	13.0	13.4	13.7	
Africa	2.1	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	
Mideast	2.0	1.9	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.4	1.3	
Asia	7.7	7.8	7.8	7.9	8.1	8.2	8.2	8.2	8.1	8.2	8.3	8.2	8.0	
<b>Non-Opec Supply</b>	<b>47.0</b>	<b>47.3</b>	<b>47.1</b>	<b>47.9</b>	<b>48.5</b>	<b>48.2</b>	<b>48.5</b>	<b>48.0</b>	<b>47.3</b>	<b>47.0</b>	<b>46.3</b>	<b>46.1</b>	<b>45.9</b>	
Opec Crude Oil	27.7	29.9	30.8	31.3	31.1	31.8	29.2	30.6	32.1	33.5	34.6	34.7	34.5	
Opec 11	26.2	27.8	29.0	29.4	29.1	29.5	26.8	28.1	29.3	30.5	31.2	30.8	30.2	
Opec non-crude	3.4	3.8	4.2	4.3	4.3	4.4	4.6	5.0	5.5	5.7	5.8	5.9	6.0	
Processing Gain	1.9	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.4	
<b>Total</b>	<b>79.9</b>	<b>83.0</b>	<b>84.1</b>	<b>85.6</b>	<b>86.1</b>	<b>86.5</b>	<b>84.4</b>	<b>85.7</b>	<b>87.0</b>	<b>88.4</b>	<b>89.0</b>	<b>89.1</b>	<b>88.8</b>	
<b>Memo:</b>														
Capacity	83.4	84.5	85.8	87.6	88.4	89.0	89.6	88.6	88.5	88.4	87.5	87.6	87.3	} Global capacity peaks in 2009
Spare	3.5	1.5	1.7	2.0	2.3	2.5	5.2	2.9	1.5	0.0				
Relative			2.0%	2.4%	2.7%	2.9%	6.2%	3.3%	1.7%	0.0%				
<b>To Balance</b>														
Implied stock change	-0.0	-0.1	-0.2	+0.3	-0.1	+0.7	+0.2	-0.2	-0.1	+0.1	-0.6	-1.2	-2.1	} No more balance

Source: Macquarie Research, September 2009



## Our medium-term global oil balance, YoY change of demand and supply

	2003	2004	2005	2006	2007	2008	2009E	2010E	2011E	2012E	2013E	2014E	2015E	
<b>Demand</b>														
OECD America	1.8%	3.4%	0.7%	-0.8%	0.4%	-5.1%	-3.8%	2.2%	0.5%	-0.1%	-0.3%	-0.8%	-1.4%	The critical shift of US demand trends
OECD Europe	0.8%	0.4%	0.8%	0.1%	-2.1%	-0.1%	-4.5%	-1.2%	0.0%	0.3%	0.3%	-0.7%	-0.7%	
OECD Asia Pac	1.7%	-1.3%	0.8%	-1.6%	-1.0%	-3.6%	-4.8%	0.4%	-0.1%	-0.1%	-0.2%	-0.2%	-0.3%	
<b>OECD</b>	<b>1.5%</b>	<b>1.7%</b>	<b>0.7%</b>	<b>-0.6%</b>	<b>-0.7%</b>	<b>-3.3%</b>	<b>-4.2%</b>	<b>0.8%</b>	<b>0.3%</b>	<b>0.0%</b>	<b>-0.1%</b>	<b>-0.7%</b>	<b>-1.0%</b>	
FSU	0.9%	0.6%	0.5%	5.3%	-4.3%	3.8%	-7.6%	7.4%	2.0%	1.0%	0.0%	-1.0%	-2.0%	Down side risk
China	9.3%	16.6%	1.9%	5.8%	5.1%	2.7%	6.2%	5.6%	4.0%	4.3%	4.9%	5.1%	5.4%	Biggest up-side risk
Other Asia	1.7%	7.1%	1.7%	1.3%	3.6%	1.0%	0.0%	2.0%	1.3%	2.3%	2.4%	2.1%	2.1%	
South America	-1.6%	5.9%	2.1%	3.6%	5.8%	3.6%	0.1%	1.7%	2.6%	1.8%	1.4%	0.7%	0.3%	
Mideast	2.0%	7.3%	5.4%	5.9%	5.0%	7.3%	2.9%	3.7%	3.4%	3.4%	3.7%	3.8%	4.1%	Down side
Africa	2.5%	3.8%	4.6%	0.0%	3.5%	4.7%	0.2%	3.0%	3.3%	2.7%	2.1%	1.4%	1.4%	
<b>Non-OECD</b>	<b>2.5%</b>	<b>7.4%</b>	<b>2.6%</b>	<b>3.7%</b>	<b>3.6%</b>	<b>3.4%</b>	<b>1.0%</b>	<b>3.7%</b>	<b>2.7%</b>	<b>2.8%</b>	<b>2.8%</b>	<b>2.5%</b>	<b>2.5%</b>	
<b>TOTAL DEMAND</b>	<b>1.9%</b>	<b>3.9%</b>	<b>1.5%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>-0.4%</b>	<b>-1.9%</b>	<b>2.1%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>1.3%</b>	<b>0.9%</b>	<b>0.7%</b>	More balanced risk
<b>Global GDP growth</b>	<b>3.7%</b>	<b>4.9%</b>	<b>4.4%</b>	<b>4.9%</b>	<b>4.8%</b>	<b>4.0%</b>	<b>-1.4%</b>	<b>2.2%</b>	<b>4.0%</b>	<b>4.0%</b>	<b>4.0%</b>	<b>3.5%</b>	<b>3.5%</b>	
<b>Supply</b>														
Americas	0.2	-0.7	-0.2	0.7	0.1	-0.2	0.3	-0.3	-0.7	0.0	-0.4	0.0	0.0	Geological, credit, execution as well as some political risk
Europe	-0.2	-0.3	-0.4	-0.4	-0.2	-0.2	-0.3	-0.2	-0.4	-0.3	-0.4	-0.3	-0.3	
FSU	1.0	1.0	0.4	0.5	0.5	0.0	0.3	-0.1	-0.3	0.0	0.2	0.4	0.3	
Africa	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	
Mideast	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	-0.1	-0.1	-0.1	
Asia	-0.1	0.0	0.1	0.0	0.2	0.1	0.0	0.0	-0.1	0.1	0.0	-0.1	-0.1	
<b>Non-Opec Supply</b>	<b>0.8</b>	<b>0.2</b>	<b>-0.2</b>	<b>0.8</b>	<b>0.6</b>	<b>-0.2</b>	<b>0.3</b>	<b>-0.6</b>	<b>-1.6</b>	<b>-0.3</b>	<b>-0.7</b>	<b>-0.1</b>	<b>-0.2</b>	
<b>Opec Crude Oil</b>	<b>1.1</b>	<b>2.2</b>	<b>0.9</b>	<b>0.6</b>	<b>-0.2</b>	<b>0.6</b>	<b>-2.6</b>	<b>1.4</b>	<b>1.9</b>	<b>1.1</b>	<b>0.9</b>	<b>0.2</b>	<b>-0.2</b>	Political & execution risks dominate
Opec 10	1.8	1.6	1.2	0.4	-0.3	0.4	-2.7	1.3	1.8	0.8	0.5	-0.3	-0.6	
Opec non-crude	0.2	0.5	0.3	0.1	0.0	0.1	0.2	0.5	0.5	0.2	0.1	0.1	0.1	
<b>Processing Gain</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.1</b>	
<b>TOTAL SUPPLY</b>	<b>2.2</b>	<b>3.1</b>	<b>1.1</b>	<b>1.5</b>	<b>0.5</b>	<b>0.5</b>	<b>-2.1</b>	<b>1.3</b>	<b>0.9</b>	<b>1.1</b>	<b>0.4</b>	<b>0.2</b>	<b>-0.3</b>	Down side risk mostly





## Conclusion: Keep your eye on the big trends

- Global demand for oil is much more resilient than one would think
- Adding sufficient productive capacity on time is nearly impossible
- Episodes with higher prices are an obvious consequence

### But nothing lasts forever

- If US\$50/b is the low end of the range, what's the ceiling, US\$150/b?
- Political and technological wild cards
- One of our favorite observations is still: "The stone-age did not end because we ran out of rocks."



## Markets are useful in clearing information. This is the one we watch.

Here are daily settlement prices of the New York oil futures contracts for delivery of WTI two years out and its average price in 2006/07 (US\$71/bbl), a range and a rolling 200-day moving average

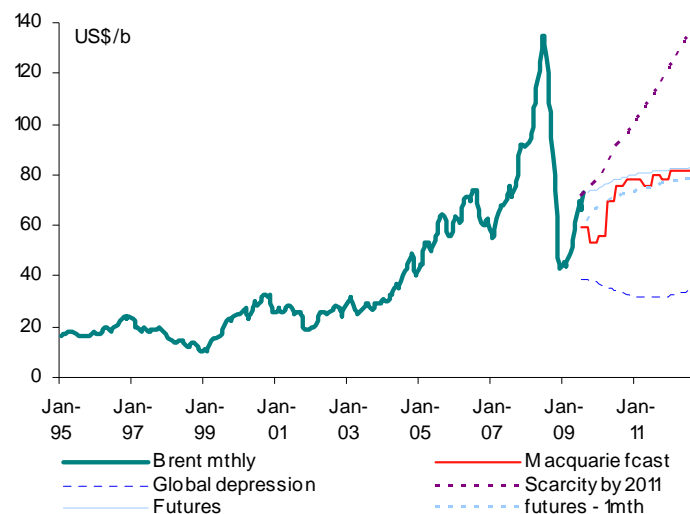
US\$/b



Source: Bloomberg, Macquarie Research, September 2009



## Macquarie's oil price forecast



Source: Bloomberg, Macquarie Research, September 2009

Brent	2008A	Q109A	Q209A	Q309E	Q409E	2009E	2010E	2011E	2012E	Long Run
US\$	98.52	45.72	59.90	59.00	53.00	54.41	70.00	78.00	82.00	73.00
Futures				73.65	74.25	63.89	78.18	81.96	83.47	92.02
WTI										
US\$	99.75	43.31	59.79	58.00	52.00	53.28	71.00	80.00	84.00	75.00
Sell-side consensus				63.06	65.26	57.03	68.86	75.52		
Tapis										
US\$	104.14	47.94	61.44	62.00	56.00	56.84	73.00	82.00	82.00	77.00
Dubai										
US\$	92.32	44.60	59.09	57.00	51.00	52.92	67.50	75.50	79.00	70.00

Note: Futures are 10-day averages on 25 August

Source: Bloomberg, Macquarie Research, September 2009



**Important disclosures:**

**Recommendation definitions**

**Macquarie - Australia/New Zealand**

Outperform – return > 5% in excess of benchmark return  
Neutral – return within 5% of benchmark return  
Underperform – return > 5% below benchmark return

**Macquarie - Asia**

Outperform – expected return >+10%  
Neutral – expected return from -10% to +10%  
Underperform – expected <-10%

**Macquarie First South - South Africa**

Outperform – return > 10% in excess of benchmark return  
Neutral – return within 10% of benchmark return  
Underperform – return > 10% below benchmark return

**Macquarie - Canada**

Outperform – return > 5% in excess of benchmark return  
Neutral – return within 5% of benchmark return  
Underperform – return > 5% below benchmark return

**Macquarie - USA**

Outperform (Buy) – return > 5% in excess of benchmark return  
Neutral (Hold) – return within 5% of benchmark return  
Underperform (Sell) – return > 5% below benchmark return

**Recommendation** – 12 months

**Note:** Quant recommendations may differ from Fundamental Analyst recommendations

**Volatility index definition\***

This is calculated from the volatility of historic price movements.

**Very high–highest risk** – Stock should be expected to move up or down 60-100% in a year – investors should be aware this stock is highly speculative.

**High** – stock should be expected to move up or down at least 40-60% in a year – investors should be aware this stock could be speculative.

**Medium** – stock should be expected to move up or down at least 30-40% in a year.

**Low–medium** – stock should be expected to move up or down at least 25-30% in a year.

**Low** – stock should be expected to move up or down at least 15-25% in a year.

\* Applicable to Australian/NZ stocks only

**Financial definitions**

All "Adjusted" data items have had the following adjustments made:

**Added back:** goodwill amortisation, provision for catastrophe reserves, IFRS derivatives & hedging, IFRS impairments & IFRS interest expense

**Excluded:** non recurring items, asset revals, property revals, appraisal value uplift, preference dividends & minority interests

**EPS** = adjusted net profit /efpowa\*

**ROA** = adjusted ebit / average total assets

**ROA Banks/Insurance** = adjusted net profit /average total assets

**ROE** = adjusted net profit / average shareholders funds

**Gross cashflow** = adjusted net profit + depreciation

\*equivalent fully paid ordinary weighted average number of shares

**All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).**

**Recommendation proportions – For quarter ending 30 June 2009**

	AU/NZ	Asia	RSA	USA	CA	EUR	
Outperform	40.38%	48.53%	40.00%	44.02%	57.42%	40.20%	(for US coverage by MCUSA, 1.54% of stocks followed are investment banking clients)
Neutral	39.25%	17.08%	45.00%	37.45%	32.90%	39.21%	(for US coverage by MCUSA, 1.16% of stocks followed are investment banking clients)
Underperform	20.38%	34.40%	15.00%	18.53%	9.68%	20.59%	(for US coverage by MCUSA, 0.77% of stocks followed are investment banking clients)



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