Macquarie Research Equities

MACQUARIE

INDIA

Cairn India

29 September 2008

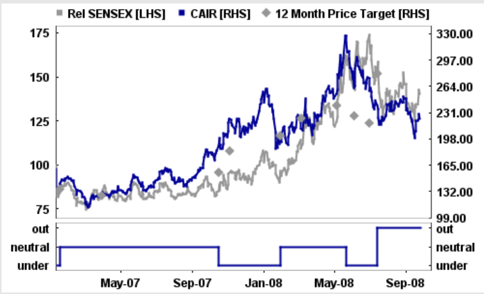
CAIR IN **Outperform**

Stock price as of 26 Sep 08	Rs	217.90
12-month target	Rs	276.00
Upside/downside	%	+26.7
Valuation	Rs	276.00
- DCF		
GICS sector		energy
Market cap	Rs m	412,796
30-day avg turnover	US$m	15.0
Market cap	US$m	9,003
Number shares on issue	m	1,894

Investment fundamentals

Year end 31 Dec		2007A	2008E	2009E	2010E
Total revenue	bn	10.1	17.5	48.5	91.0
EBITDA	bn	4.1	11.7	38.0	61.2
EBITDA growth	%	0.0	184.9	225.7	61.1
Reported profit	bn	-0.2	8.5	29.6	47.6
Adjusted profit	bn	1.8	8.5	29.6	47.6
EPS rep	Rs	-0.14	4.83	16.75	26.94
EPS adj	Rs	1.03	4.83	16.75	26.94
EPS adj growth	%	nmf	370.6	246.9	60.8
PE adj	x	212.3	45.1	13.0	8.1
Total DPS	Rs	0.00	0.00	0.00	0.00
Total div yield	%	0.0	0.0	0.0	0.0
ROE	%	0.6	2.9	9.3	13.3
EV/EBITDA	x	93.7	32.9	10.1	6.3
Net debt/equity	%	-3.5	2.9	12.2	-1.9
Price/book	x	1.3	1.3	1.2	1.0

CAIR IN rel SENSEX performance, & rec history



Source: Datastream, Macquarie Research, September 2008 (all figures in INR unless noted)

Analyst

Jal Irani
91 22 6653 3040 jal.irani@macquarie.com
Amit Mishra
91 22 6653 3051 amit.mishra@macquarie.com

Near-term impact of crude price cut

Event

- Macquarie's oil & gas sector head, David Johnson, has revised down the WTI crude-oil price forecast by 6.3% for 2008. The long-term forecasts, ie, 2009 and beyond, are left unchanged. We are cutting our target price for Cairn India by 1.4% to Rs276/sh due to the change in 2008 WTI forecast. We reaffirm our Outperform recommendation.

Impact

- **US$90 is the new US$200.** Our last oil-price forecast, published in July, was completed against a background of US$145/bbl oil, fears of demand outstripping supply, large-scale investment in commodities and political unrest. This time round we have increasing evidence of falling demand, fears of a financial meltdown and economic stagnation.
  - ⇒ Our new forecast has the 2008 figure adjusted down to reflect the recent weakness in prices and the risk that slowing demand growth keeps prices in a range of US$100–110/bbl. This figure also reflects the fact that we are approaching the Northern Hemisphere winter, usually a period of peak demand.
- However, we recognise that there are still risks to both the upside and downside. Extremely cold weather and/or political unrest would provide a further boost to prices. Signs of a slowdown in oil-demand growth in Asia-Pacific would probably result in a sharp price decline.
- **Oil-price forecast.** Our forecasts for CY08 have been cut by US$7.5/bbl and the WTI average is now US$111.5/bbl. The WTI forecasts for CY09 and beyond have been left unchanged. Our forecast still shows 2008 as the peak year for oil prices.
- **Potential for addition to reserves.** Cairn plans to use enhanced oil-recovery (EOR) techniques at the Rajasthan fields. If successful, EOR may increase the recovery factor by 10–20%, or P2 reserves, by 309m boe compared with 794m boe currently, thus extending the production plateau. Cairn plans to drill 15 exploratory wells in CY08, most of them in the second half.

Earnings revision

- We have cut CY08E PAT by 7% and increased CY09E PAT by 1.8% as we factor in new crude-oil price assumptions and INR/USD exchange rates.

Price catalyst

- 12-month price target: Rs276.00 based on a DCF methodology.
- Catalyst: New finds, revision of reserves and pricing of Rajasthan crude.

Action and recommendation

- We derive a sum-of-parts value (DCF valuations for Rajasthan and Ravva fields and relative valuation for other fields) of Rs276/sh or US$18.1/boe. We have assigned a premium of Rs50/sh (~18% of equity value) to Cairn's strong track record in striking oil.

Fig 1 Summary of crude-oil price forecasts

		2007 Year	2008F Year	2009F Year	2010F Year	2011F Year
Brent	US$/bbl					
Old forecast		72.70	117.50	101.00	90.00	92.00
New forecast			**110.00**	**101.00**	**90.00**	**92.00**
WTI	US$/bbl					
Old forecast		72.20	119.00	103.00	92.00	94.00
New forecast			**111.50**	**103.00**	**92.00**	**94.00**

Source: Macquarie Research, September 2008

Fig 2 Cairn India: Summary of earnings changes

	CY08E	CY09E	TP
Old	9,141	29,065	280
New	8,545	29,576	276
% change	*-6.7%*	*+1.8%*	*-1.4%*

Source: Macquarie Research, September 2008

Fig 3 Snapshot of Cairn India's sum-of-parts valuations

Oil reserves	Pessimistic scenario	Base scenario	Optimistic scenario	Valuation Methodology
Ravva Fields	28	34	37	DCF
Rajasthan Fields	148	184	209	DCF
Other Fields	3	4	6	EV/Reserve
Management Premium	22	53	59	
Total	202	276	311	DCF
Enterprise Value	358,507	490,691	552,291	
Probability	15%	60%	25%	
Enterprise Value per share		**273**		
Add: Net Debt/share		(3)		
Equity Value (Rs/share)		**276**		
EV/Reserves		**18.1**		
# of Shares		1778		

Source: Macquarie Research, September 2008

Oil-price forecast

(Excerpt from the report *Oil price update – US$90 is the new US$200* published on 29 September, 2008 by David Johnson and Vivian Wong.)

Our last oil price forecast, published in July, was completed against a background of US$145/bbl oil, fears of demand outstripping supply, large-scale investment in commodities and political unrest. This time round we have increasing evidence of falling demand, fears of a financial meltdown and economic stagnation and oil prices have recently been as low as US$90/bbl. We have also witnessed a US$25/bbl range in one day's trading.

Our new forecast has the 2008 figure adjusted down to reflect the recent weakness in prices and the risk that slowing demand growth keeps prices in a range of US$100–110/bbl. This figure also reflects the fact that we are approaching the Northern Hemisphere winter, usually a period of peak demand. Our forecast puts 4Q08 prices above the September level and back towards the levels apparent in the earlier part of 2008.

However, we recognise that there are still risks to both the upside and downside. Extremely cold weather and/or political unrest would provide a further boost to prices. Signs that US demand continues to fall at the rate of 5–6% YoY, or signs of a slowdown in oil-demand growth in Asia-Pacific, would probably result in a sharp price decline.

Our longer-term forecasts, ie, 2009 and beyond, are left unchanged for Brent and WTI.

- We still believe that the risk of further declines or a slowdown in the growth of oil demand in Europe and Asia-Pacific is high and that, in the next 2–3 years supply will tend to outstrip demand and boost oil-stock levels. These factors are the main factors in our forecast for oil prices to fall below US$100/bbl.
- Any signs of recovery in the US could also produce US$ strength, a factor that also tends to pull oil prices down.

The downside risk to our forecast is probably limited in that we included the impact that a slowdown in western world economic activity will have on world oil demand and it is difficult to identify any other factors that will have a further negative effect apart from some unforeseen large-scale boost to supplies or a savage downturn in growth in China/India. The other possible negative impact that could arise is if governments introduce regulations that limit the trading of oil futures.

The major upside risk is for a surge in oil demand on the back of a world economic recovery, which forces prices higher than our forecast. Action by OPEC to severely limit supply would also tend to boost prices, but we assign a low probability to such an event.

However, we have raised our forecast for Dubai crude as we recognise that increasing demand for heavier oils has closed the Brent-Dubai differential from peak levels in excess of US$5/bbl. For 4Q08, we have cut the differential to US$2.50/bbl. For 2008, the differential is now US$3.00/bbl rising to US$3.50/bbl thereafter. Previously, we had used a differential of US$4.00/bbl.

Fig 4 Oil-price forecast – yearly

		2006 Year	2007 Year	1Q(A)	2Q(A)	3Q(A)	4Q(F)	2008F Year	2009F Year	2010F Year	2011F Year
Brent	US$/bbl										
Old forecast		65.42	72.70	96.49	122.20	118.07	118.50	117.50	101.00	90.00	92.00
New forecast							**104.67**	**110.00**	**101.00**	**90.00**	**92.00**
change	*US$/bbl*						*-13.83*	*-7.50*	*+0.00*	*+0.00*	*+0.00*
WTI	US$/bbl										
Old forecast		65.83	72.20	97.87	123.80	119.63	120.00	119.00	103.00	92.00	94.00
New forecast							**106.17**	**111.50**	**103.00**	**92.00**	**94.00**
change							*-13.83*	*-7.50*	*nc*	*nc*	*nc*
WTI-Brent differential	US$/bbl	0.41	-0.50	1.38	1.60	1.55	1.50	1.50	2.00	2.00	2.00
Dubai	US$/bbl										
Old forecast		61.62	68.46	91.18	116.50	115.71	113.00	112.00	96.00	86.00	88.00
New forecast							**102.17**	**106.50**	**98.00**	**86.50**	**88.50**
change	*US$/bbl*						*-10.83*	*-5.50*	*+2.00*	*+0.50*	*+0.50*
Brent-Dubai differential		3.80	4.24	5.31	5.70	2.36	2.50	3.50	3.00	3.50	3.50
Consensus - Brent						*124.00*	*114.00*	*114.17*	*109.50*	*110.80*	*na*
Consensus - WTI						*122.00*	*114.10*	*114.44*	*112.00*	*111.00*	*na*

Source: Bloomberg, Macquarie Research estimates, September 2008

Fig 5 Oil-price forecast – quarterly

	2008F	2009F	2010F	2011F
Brent				
1Q	96.50	102.00	92.00	94.00
2Q	122.20	100.00	88.00	90.00
3Q	118.07	101.00	90.00	92.00
4Q	104.67	101.00	90.00	92.00
WTI				
1Q	97.87	104.00	94.00	96.00
2Q	123.80	102.00	90.00	92.00
3Q	119.63	103.00	92.00	94.00
4Q	106.17	103.00	92.00	94.00
Dubai				
1Q	91.18	99.00	88.50	90.50
2Q	116.50	97.00	84.50	86.50
3Q	115.71	98.00	86.50	88.50
4Q	102.17	98.00	86.50	88.50

Source: Bloomberg, Macquarie Research estimates, September 2008

Short-term outlook

In the period to end-2008 the key factors are likely to be – winter weather and demand for heating oil, the strength or weakness of the US$ and the success of the various stimulus packages in propping up economies.

The main factors in the 'winter effect' will be the level of demand and the perception on inventories of heating oil. In the US, the overall level of crude and product stocks is low mainly due to the decline in crude oil and gasoline inventory. Distillate stocks have been growing steadily since May of this year and are only marginally below the levels seen at this time last year.

In Europe, there is also evidence that distillate stocks are close to the 2007 levels. Barring temperatures that are well-below average, it would appear that the winter effect on price is likely to produce a normal upturn in the lead up to the colder weather but we do not expect any dramatic price rises.

Fig 6 US oil inventory

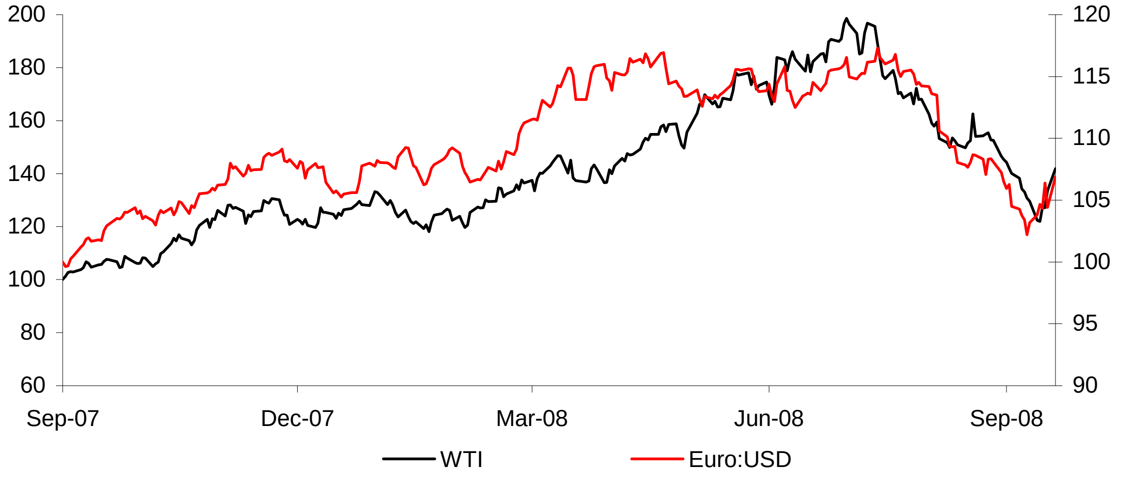
(million bbls)	Crude Oil	Gasoline	Distillate	Jet Kero	Total
1998	323.1	210.1	152.8	45.8	731.8
1999	306.1	201.7	144.5	47.3	699.6
2000	287.8	202.2	116.5	41.9	648.4
2001	307.7	203.9	121.7	42.5	675.8
2002	275.9	209.5	130.0	40.6	656.0
2003	282.0	200.2	126.6	40.4	649.2
2004	273.1	199.3	120.9	40.6	633.8
2005	300.2	198.0	128.0	36.3	662.4
2006	325.3	217.8	146.6	41.4	731.0
2007	318.0	201.2	133.3	41.8	694.3
2008 (current position)	**286.3**	**191.8**	**131.2**	**38.6**	**647.9**
5 year average (2003-2007)	299.7	203.3	131.1	40.1	674.2
10 year range (1998-2007)	273-325	192-218	117-147	36-47	634-732
Current vs five year average					
(MM bbls)	-13.4	-11.5	0.1	-1.5	-26.3
(%)	-4.5%	-5.7%	+0.1%	-3.7%	-3.9%
Current vs end Sep-07					
(MM bbls)	-31.7	-9.4	-2.1	-3.2	-46.5
(%)	-10.0%	-4.7%	-1.6%	-7.5%	-6.7%
API statistics	286.3	191.8	131.2	38.6	647.9
change on previous month	*-25.5*	*-7.4*	*+1.7*	*-3.1*	*-34.3*
DOE statistics	291.7	184.6	129.6	39.1	645.0
change on previous month	*-14.1*	*-10.8*	*-2.5*	*-3.0*	*-30.4*

Source: Bloomberg, Macquarie Research estimates, September 2008

On the currency front, US$ weakness is currently working to support oil prices after a period when US$ strength was a factor in the sharp oil-price decline. Our economists are looking for some further US$ strengthening and this may tend to limit the upside in oil prices. Any actions that pushed the US$ up sharply against major currencies could trigger a fall back to US$100/bbl or lower.

Finally, the short-term oil price will continue to be hostage to political events such as attacks on Nigerian oil installations and threats to restrict supplies by some OPEC countries. However, in the past few months these factors have had a much lesser impact on oil prices. This may be due to the fact that falling or slowing demand means that these threats are seen as less of a problem especially as the US government appears to be more willing to use the SPR to alleviate short-term crises.

Fig 7 Oil price vs euro:US$



Source: Bloomberg, Macquarie Research estimates, September 2008

Longer-term outlook

For the longer term, the key factors will be the return to stronger growth in oil demand and the balance between demand growth and supply growth.

At present we are still of the view that the slowdown in world economies is still not complete and that growth in oil demand will be limited in 2008–10. This will have the result of boosting world inventory levels as supply growth, although limited, will tend to outstrip demand growth. Any additions to OPEC production may also tend to add to the bank of spare capacity.

These demand/supply assumptions appear to be a common factor in forecasts with both the International Energy Agency (IEA) and the Energy Information Administration (EIA) looking for demand to grow by around 1% in 2008 and 2009 but supply to grow by over 2% in 2008 and by 1.5–2.0% in 2009. For 2008, the IEA figures indicate a large addition to stocks but the EIA shows a small stock reduction. In both cases, the forecasts result is an addition to stocks in 2009. Our forecast shows an addition to world stocks in both years.

In the Macquarie and EIA forecasts, the assumption is that OPEC produces 32.0–32.5m b/d of oil in both 2008 and 2009. The IEA does not forecast OPEC oil production. We have used the Macquarie forecast for OPEC oil to produce a final result. At present, OPEC is producing around 32.6m b/d. Recently, there has been talk of cutting output back to quota levels. This would cut total output to around 32.0m b/d. At this level, the surplus supply in the Macquarie and IEA forecasts would be cut back to 0.20m b/d and 0.65m b/d, respectively. The EIA figures would be unchanged. (NB Indonesia has suspended its membership of OPEC. At present we have left Indonesian output within OPEC rather than transfer it to the non-OPEC category.)

Given the track record of OPEC, we do not expect that total production will be cut back to quotas. Any reductions in total OPEC oil supply are more likely to be the result of difficulties in holding Iraqi output up at current levels rather than any concerted effort by the OPEC-11 to restrict supply.

Fig 8 Oil demand/supply forecast

	2008F			2009F		
	Macquarie	**IEA**	**EIA**	**Macquarie**	**IEA**	**EIA**
Demand						
N.America	24.68	24.48	24.93	24.84	24.51	24.82
Europe	16.53	16.01	16.02	16.53	15.98	15.96
Asia/Pacific	25.88	26.26	25.57	26.36	26.46	25.82
-Japan	*5.23*	*5.05*	*5.02*	*5.29*	*4.93*	*4.87*
-China	*8.43*	*7.96*	*8.02*	*9.07*	*8.42*	*8.42*
Rest of World	15.07	15.88	15.55	15.22	16.47	16.26
Total ex FSU	82.16	82.63	82.07	82.95	83.42	82.86
FSU	4.19	4.23	4.41	4.26	4.37	4.54
Total world demand	**86.35**	**86.86**	**86.48**	**87.21**	**87.79**	**87.40**
annual growth	*+0.4%*	*+1.0%*	*+0.8%*	*+1.0%*	*+1.1%*	*+1.1%*
Supply						
Non-OPEC	34.95	34.87	36.45	35.05	35.21	36.98
OPEC- oil	32.25	32.25	32.53	32.35	32.35	32.05
OPEC - NGLs	5.10	5.13	4.71	5.55	5.93	5.68
FSU	12.90	12.98	12.59	13.05	13.26	12.94
Refinery gain	2.00	2.24	-	2.02	2.29	-
Total world supply	**87.20**	**87.47**	**86.28**	**88.02**	**89.04**	**87.65**
annual growth	*+2.4%*	*+2.3%*	*+2.2%*	*+0.9%*	*+1.8%*	*+1.6%*
Surplus supply/(demand)	**0.86**	**0.61**	**(0.20)**	**0.81**	**1.25**	**0.25**

Source: Macquarie Research, September 2008

Fig 9 OPEC production

million b/d	**2006**	**2007**	**1Q**	**2Q**	**July**	**August**	**Average 2008 to date**	**2008 Target**
Saudi Arabia	9.22	8.68	9.20	9.29	9.60	9.50	9.32	8.94
Iran	3.85	3.89	4.00	3.84	3.98	4.08	3.95	3.82
Iraq	1.90	2.09	2.35	2.46	2.46	2.31	2.40	na
Kuwait	2.49	2.42	2.53	2.57	2.60	2.60	2.56	2.53
UAE	2.56	2.49	2.58	2.63	2.65	2.66	2.62	2.57
Qatar	0.81	0.81	0.83	0.86	0.88	0.88	0.85	0.83
Total Mid-East	**20.83**	**20.37**	**21.49**	**21.65**	**22.17**	**22.03**	**21.70**	**18.69**
Angola	1.42	1.64	1.87	1.90	1.91	1.88	1.89	1.90
Nigeria	2.20	2.15	2.05	1.86	1.93	1.90	1.95	2.16
Algeria	1.38	1.36	1.41	1.41	1.41	1.41	1.41	1.36
Libya	1.70	1.70	1.78	1.75	1.65	1.63	1.73	1.71
Indonesia	0.89	0.83	0.86	0.86	0.87	0.87	0.86	0.87
Ecuador	-	0.12	0.50	0.50	0.50	0.50	0.50	0.50
Venezuela	2.55	2.41	2.40	2.33	2.34	2.36	2.36	2.47
Total OPEC	**30.96**	**30.59**	**32.35**	**32.26**	**32.78**	**32.58**	**32.40**	**na**
Total ex Iraq and Indonesia	*28.17*	*27.67*	*29.15*	*28.94*	*29.45*	*29.40*	*29.14*	*28.79*

Source: Bloomberg, Macquarie Research estimates, September 2008

Cairn India (CAIR IN, Outperform, Target price: Rs276.00)

Balance Sheet		2007A	2008E	2009E	2010E
Cash	m	13,318	34,462	2,399	30,416
Receivables	m	1,349	4,799	13,296	18,692
Inventories	m	1,216	9,598	19,944	24,922
Investments	m	7,129	7,129	7,129	7,129
Fixed Assets	m	29,546	69,580	106,281	102,081
Intangibles	m	253,193	253,193	253,193	253,193
Other Assets	m	4,650	4,650	4,650	4,650
Total Assets	**m**	**310,401**	**383,411**	**406,892**	**441,081**
Payables	m	3,921	27,579	21,485	28,115
Short Term Debt	m	0	0	0	0
Long Term Debt	m	3,124	43,124	43,124	23,124
Provisions	m	3,680	3,680	3,680	3,680
Other Liabilities	m	5,687	5,687	5,687	5,687
Total Liabilities	**m**	**16,413**	**80,071**	**73,976**	**60,606**
Shareholders' Funds	m	293,988	303,340	332,916	380,475
Minority Interests	m	0	0	0	0
Other	m	0	0	0	0
Total S/H Equity	**m**	**293,988**	**303,340**	**332,916**	**380,475**
Total Liab & S/H Funds	**m**	**310,401**	**383,411**	**406,892**	**441,081**

Profit & Loss		2007A	2008E	2009E	2010E
Revenue	**m**	**10,123**	**17,517**	**48,531**	**90,966**
Gross Profit	**m**	**9,007**	**16,272**	**45,344**	**81,315**
Cost of Goods Sold	m	1,115	1,245	3,187	9,650
EBITDA	**m**	**4,096**	**11,671**	**38,013**	**61,250**
Depreciation	m	2,077	2,766	4,168	4,966
Amortisation of Goodwill	m	0	0	0	0
Other Amortisation	m	0	0	0	0
EBIT	**m**	**2,019**	**8,906**	**33,845**	**56,284**
Net Interest Income	m	-27	-200	-373	-1,656
Associates	m	0	0	0	0
Exceptionals	m	0	0	0	0
Forex Gains / Losses	m	0	0	0	0
Other Pre-Tax Income	m	1,324	1,324	1,324	1,324
Pre-Tax Profit	**m**	**3,316**	**10,030**	**34,795**	**55,952**
Tax Expense	m	-1,505	-1,504	-5,219	-8,393
Net Profit	**m**	**1,812**	**8,525**	**29,576**	**47,559**
Minority Interests	m	0	0	0	0
Reported Earnings	**m**	**-245**	**8,525**	**29,576**	**47,559**
Adjusted Earnings	**m**	**1,812**	**8,525**	**29,576**	**47,559**
EPS (rep)		-0.14	4.83	16.75	26.94
EPS (adj)		1.03	4.83	16.75	26.94
EPS Growth (adj)	%	nmf	370.6	246.9	60.8
PE (rep)	x	nmf	45.1	13.0	8.1
PE (adj)	x	212.3	45.1	13.0	8.1
Total DPS		0.00	0.00	0.00	0.00
Total Div Yield	%	0.0	0.0	0.0	0.0
Weighted Average Shares	m	1,765	1,765	1,765	1,765
Period End Shares	m	1,765	1,765	1,765	1,765

Profit and Loss Ratios		2007A	2008E	2009E	2010E
Revenue Growth	%	2,512.8	73.0	177.1	87.4
EBITDA Growth	%	nmf	184.9	225.7	61.1
EBIT Growth	%	nmf	341.1	280.0	66.3
Gross Profit Margin	%	89.0	92.9	93.4	89.4
EBITDA Margin	%	40.5	66.6	78.3	67.3
EBIT Margin	%	19.9	50.8	69.7	61.9
Net Profit Margin	%	17.9	48.7	60.9	52.3
Payout Ratio	%	0.0	0.0	0.0	0.0
EV/EBITDA	x	93.7	32.9	10.1	6.3
EV/EBIT	x	190.1	43.1	11.3	6.8
Balance Sheet Ratios					
ROE	%	0.6	2.9	9.3	13.3
ROA	%	0.6	2.6	8.6	13.3
ROIC	%	0.5	2.7	9.2	12.8
Net Debt/Equity	%	-3.5	2.9	12.2	-1.9
Interest Cover	x	74.6	44.5	90.7	34.0
Price/Book	x	1.3	1.3	1.2	1.0
Book Value per Share		166.5	171.8	188.6	215.5

Cashflow Analysis		2007A	2008E	2009E	2010E
EBITDA	**m**	**4,096**	**11,671**	**38,013**	**61,250**
Tax Paid	m	-1,505	-1,504	-5,219	-8,393
Chgs in Working Cap	m	0	0	0	0
Net Interest Paid	m	-27	-200	-373	-1,656
Other	m	0	0	0	0
Operating Cashflow	**m**	**2,565**	**9,967**	**32,420**	**51,201**
Acquisitions	m	0	0	0	0
Capex	m	-3,829	-42,800	-40,869	-765
Asset Sales	m	0	0	0	0
Other	m	0	0	0	0
Investing Cashflow	**m**	**-3,829**	**-42,800**	**-40,869**	**-765**
Dividend (Ordinary)	m	0	0	0	0
Equity Raised	m	733	-0	-0	-0
Debt Movements	m	-2,055	40,000	0	-20,000
Other	m	0	0	0	0
Financing Cashflow	**m**	**-1,322**	**40,000**	**-0**	**-20,000**
Net Chg in Cash/Debt	**m**	**-41,006**	**21,144**	**-32,063**	**28,017**

All figures in INR unless noted.
Source: Macquarie Research, September 2008

Important disclosures:

Recommendation definitions

Macquarie - Australia/New Zealand
Outperform – return >5% in excess of benchmark return (>2.5% in excess for listed property trusts)
Neutral – return within 5% of benchmark return (within 2.5% for listed property trusts)
Underperform – return >5% below benchmark return (>2.5% below for listed property trusts)

Macquarie – Asia/Europe
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

Macquarie First South - South Africa
Outperform – expected return >+10%
Neutral – expected return from -10% to +10%
Underperform – expected return <-10%

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

Recommendations – 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 2008

	AU/NZ	Asia	RSA	USA	CA	EUR
Outperform	41.88%	66.96%	66.13%	50.82%	71.01%	43.00%
Neutral	42.96%	16.30%	22.58%	44.26%	24.64%	48.00%
Underperform	15.16%	16.74%	11.29%	4.92%	4.35%	9.00%

Analyst Certification: The views expressed in this research accurately reflect the personal views of the analyst(s) about the subject securities or issuers and no part of the compensation of the analyst(s) was, is, or will be directly or indirectly related to the inclusion of specific recommendations or views in this research. The analyst principally responsible for the preparation of this research receives compensation based on overall revenues of Macquarie Group Ltd ABN 94 122 169 279 (AFSL No. 318062)(MGL) and its related entities (the Macquarie Group) and has taken reasonable care to achieve and maintain independence and objectivity in making any recommendations.
Disclaimers: Macquarie Securities (Australia) Ltd; Macquarie Capital (Europe) Ltd; Macquarie Capital Markets Canada Ltd; Macquarie Capital Markets North America Ltd; Macquarie Capital (USA) Inc; Macquarie Capital Securities Ltd; Macquarie Capital Securities (Singapore) Pte Ltd; Macquarie Securities (NZ) Ltd; and Macquarie First South Securities (Pty) Limited are not authorised deposit-taking institutions for the purposes of the Banking Act 1959 (Commonwealth of Australia), and their obligations do not represent deposits or other liabilities of Macquarie Bank Limited ABN 46 008 583 542 (MBL) or MGL. MBL does not guarantee or otherwise provide assurance in respect of the obligations of any of the above mentioned entities. MGL provides a guarantee to the Monetary Authority of Singapore in respect of the obligations and liabilities of Macquarie Capital Securities (Singapore) Pte Ltd for up to SGD 35 million. This research has been prepared for the general use of the wholesale clients of the Macquarie Group and must not be copied, either in whole or in part, or distributed to any other person. If you are not the intended recipient you must not use or disclose the information in this research in any way. Nothing in this research shall be construed as a solicitation to buy or sell any security or product, or to engage in or refrain from engaging in any transaction. In preparing this research, we did not take into account the investment objectives, financial situation and particular needs of the reader. Before making an investment decision on the basis of this research, the reader needs to consider, with or without the assistance of an adviser, whether the advice is appropriate in light of their particular investment needs, objectives and financial circumstances. There are risks involved in securities trading. The price of securities can and does fluctuate, and an individual security may even become valueless. International investors are reminded of the additional risks inherent in international investments, such as currency fluctuations and international stock market or economic conditions, which may adversely affect the value of the investment. This research is based on information obtained from sources believed to be reliable but we do not make any representation or warranty that it is accurate, complete or up to date. We accept no obligation to correct or update the information or opinions in it. Opinions expressed are subject to change without notice. No member of the Macquarie Group accepts any liability whatsoever for any direct, indirect, consequential or other loss arising from any use of this research and/or further communication in relation to this research.
Other Disclaimers: In Canada, securities research is prepared, approved and distributed by Macquarie Capital Markets Canada Ltd, a participating organisation of the Toronto Stock Exchange, TSX Venture Exchange & Montréal Exchange. Macquarie Capital Markets North America Ltd., which is a registered broker-dealer and member of FINRA, accepts responsibility for the contents of reports issued by Macquarie Capital Markets Canada Ltd in the United States and to US persons and any person wishing to effect transactions in the securities described in the reports issued by Macquarie Capital Markets Canada Ltd should do so with Macquarie Capital Markets North America Ltd. Securities research is issued and distributed by Macquarie Securities (Australia) Ltd (AFSL No. 238947) in Australia, a participating organisation of the Australian Securities Exchange; Macquarie Securities (NZ) Ltd in New Zealand, a licensed sharebroker and New Zealand Exchange Firm; Macquarie Capital (Europe) Ltd in the United Kingdom, which is authorised and regulated by the Financial Services Authority (No. 193905); Macquarie Capital Securities Ltd in Hong Kong, which is licensed and regulated by the Securities and Futures Commission; Macquarie Capital Securities (Japan) Limited in Japan, a member of the Tokyo Stock Exchange, Inc., Osaka Securities Exchange Co. Ltd, and Jasdaq Securities Exchange, Inc. (Financial Instruments Firm, Kanto Financial Bureau(kin-sho) No. 231, a member of Japan securities Dealers Association and Financial Futures Association of Japan); Macquarie First South Securities (Pty) Limited in South Africa, a member of the JSE Limited and in Singapore, Macquarie Capital Securities (Singapore) Pte Ltd (Company Registration Number: 198702912C), a Capital Markets Services licence holder under the Securities and Futures Act to deal in securities and provide custodial services in Singapore. Pursuant to the Financial Advisers (Amendment) Regulations 2005, Macquarie Capital Securities (Singapore) Pte Ltd is exempt from complying with sections 25, 27 and 36 of the Financial Advisers Act. Clients should contact analysts at, and execute transactions through, a Macquarie Group entity in their home jurisdiction unless governing law permits otherwise. Macquarie Capital (USA) Inc., which is a registered broker-dealer and member of FINRA, accepts responsibility for the content of each research report prepared by one of its non-US affiliates when the research report is distributed in the United States by Macquarie Capital (USA) Inc. Macquarie Capital (USA) Inc. affiliate research reports and affiliate employees are not subject to the disclosure requirements of FINRA rules. Any persons receiving this report directly from Macquarie Capital (USA) Inc. and wishing

Auckland	**Bangkok**	**Calgary**	**Hong Kong**	**Jakarta**	**Johannesburg**	**Kuala Lumpur**
Tel: (649) 377 6433	Tel: (662) 694 7999	Tel: (1 403) 218 6650	Tel: (852) 2823 3588	Tel: (62 21) 515 1818	Tel: (27 11) 343 2258	Tel: (60 3) 2059 8833
London	**Manila**	**Melbourne**	**Montreal**	**Mumbai**	**Perth**	**Seoul**
Tel: (44 20) 3037 4400	Tel: (63 2) 857 0888	Tel: (613) 9635 8139	Tel: (1 514) 925 2850	Tel: (91 22) 6653 3000	Tel: (618) 9224 0888	Tel: (82 2) 3705 8500
Shanghai	**Singapore**	**Sydney**	**Taipei**	**Tokyo**	**Toronto**	**New York**
Tel: (86 21) 6841 3355	Tel: (65) 6231 1111	Tel: (612) 8232 9555	Tel: (886 2) 2734 7500	Tel: (81 3) 3512 7900	Tel: (1 416) 848 3500	Tel: (1 212) 231 2500

Available to clients on the world wide web at www.macquarie.com/research and through Thomson Financial, FactSet, Reuters and Bloomberg.

Macquarie Research
Equities

Asia Research

Head of Equity Research

Stephen O'Sullivan	(852) 2823 3566

Automobiles/Auto Parts

Deepak Jain (India)	(9122) 6653 3157
Kenneth Yap (Indonesia)	(6221) 515 7343
Adam Collins (Japan)	(813) 3512 6047
Dan Lucas (Japan)	(813) 3512 6050
Toshisuke Hayami (Japan)	(813) 3512 7873
Eunsook Kwak (Korea)	(822) 3705 8644
Linda Huang (Taiwan)	(8862) 2734 7521

Banks and Non-Bank Financials

Ismael Pili (Asia)	(65) 6231 2840
Nick Lord (Asia, China, Hong Kong)	(852) 2823 4774
Sarah Wu (China)	(8621) 2412 9035
Seshadri Sen (India)	(9122) 6653 3053
Ferry Wong (Indonesia)	(6221) 515 7335
Chin Seng Tay (Malaysia, S'pore)	(65) 6231 2837
Nadine Javellana (Philippines)	(632) 857 0890
Matthew Smith (Taiwan)	(8862) 2734 7514
Alastair Macdonald (Thailand)	(662) 694 7741

Chemicals/Textiles

Scott Weaver (Taiwan)	(8862) 2734 7512
Jal Irani (India)	(9122) 6653 3040
Christina Lee (Korea)	(822) 3705 8670
Sunaina Dhanuka (Malaysia)	(603) 2059 8993

Conglomerates

Gary Pinge (Asia)	(852) 2823 3557
Leah Jiang (China)	(8621) 2412 9020
Kenneth Yap (Indonesia)	(6221) 515 7343
Ashwin Sanketh (Singapore)	(65) 6231 2830

Consumer

Mohan Singh (Asia)	(852) 3901 1111
Jessie Qian (China, Hong Kong)	(852) 2823 3568
Charles Yan (China)	(8621) 2412 9033
Unmesh Sharma (India)	(9122) 6653 3042
Sarina Lesmina (Indonesia)	(6221) 515 7339
Duane Sandberg (Japan)	(813) 3512 7867
Toby Williams (Japan)	(813) 3512 7392
Heather Kang (Korea)	(822) 3705 8677
HongSuk Na (Korea)	(822) 3705 8678
Edward Ong (Malaysia)	(603) 2059 8982
Alex Pomento (Philippines)	(632) 857 0899
Linda Huang (Taiwan)	(8862) 2734 7521

Emerging Leaders

Jake Lynch (Asia)	(8621) 2412 9007
Hiu-Lui Ko (China)	(852) 2823 4704
Minoru Tayama (Japan)	(813) 3512 6058
Robert Burghart (Japan)	(813) 3512 7853
Heather Kang (Korea)	(822) 3705 8677
Scott Weaver (Taiwan)	(8862) 2734 7512

Industrials

Bin Liu (China)	(8621) 2412 9006
Inderjeetsingh Bhatia (India)	(9122) 6653 3166
Christopher Cintavey (Japan)	(813) 3512 7432
Janet Lewis (Japan)	(813) 3512 7475
Michael Na (Korea)	(822) 2095 7222
Sunaina Dhanuka (Malaysia)	(603) 2059 8993
David Gambrill (Thailand)	(662) 694 7753

Insurance

Mark Kellock (Asia)	(852) 2823 3567
Seshadri Sen (Asia, India)	(9122) 6653 3053
Makarim Salman (Japan)	(813) 3512 7421

Media

Jessie Qian (China, Hong Kong)	(852) 2823 3568
Shubham Majumder (India)	(9122) 6653 3049
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Alex Pomento (Philippines)	(632) 857 0899

Oil and Gas

David Johnson (Asia, China)	(852) 2823 4691
Scott Weaver (Taiwan)	(8862) 2734 7512
Jal Irani (India)	(9122) 6653 3040
Christina Lee (Korea)	(822) 3705 8670
Edward Ong (Malaysia)	(603) 2059 8982
Sunaina Dhanuka (Malaysia)	(603) 2059 8993
Ashwin Sanketh (Singapore)	(65) 6231 2830
Trevor Buchinski (Thailand)	(662) 694 7728

Pharmaceuticals

Abhishek Singhal (India)	(9122) 6653 3052
Naomi Kumagai (Japan)	(813) 3512 7474
Christina Lee (Korea)	(822) 3705 8670

Property

Matt Nacard (Asia)	(852) 2823 4731
Eva Lee (China, Hong Kong)	(852) 2823 3573
Tata Goeyardi (Hong Kong)	(852) 2823 4077
Unmesh Sharma (India)	(9122) 6653 3042
Chang Han Joo (Japan)	(813) 3512 7885
Hiroshi Okubo (Japan)	(813) 3512 7433
Tuck Yin Soong (Singapore)	(65) 6231 2838
Elaine Cheong (Singapore)	(65) 6231 2839
Corinne Jian (Taiwan)	(8862) 2734 7522
Patti Tomaitrichitr (Thailand)	(662) 694 7727

Resources / Metals and Mining

Andrew Dale (Asia)	(852) 2823 3587
YeeMan Chin (China)	(852) 2823 3562
Rakesh Arora (India)	(9122) 6653 3054
Adam Worthington (Indonesia)	(6221) 515 7338
Polina Diyachkina (Japan)	(813) 3512 7886
Christina Lee (Korea)	(822) 3705 8670
Scott Weaver (Taiwan)	(8862) 2734 7512

Technology

Warren Lau (Asia)	(852) 2823 3592
Kishore Belai (India)	(9122) 6653 3046
Damian Thong (Japan)	(813) 3512 7877
David Gibson (Japan)	(813) 3512 7880
George Chang (Japan)	(813) 3512 7854
Yoshihiro Shimada (Japan)	(813) 3512 7862
Yukihiro Goto (Japan)	(813) 3512 5984
Do Hoon Lee (Korea)	(822) 3705 8641
Michael Bang (Korea)	(822) 3705 8659
Patrick Yau (Singapore)	(65) 6231 2835
Andy Kung (Taiwan)	(8862) 2734 7534
Chia-Lin Lu (Taiwan)	(8862) 2734 7526
Daniel Chang (Taiwan)	(8862) 2734 7516
James Chiu (Taiwan)	(8862) 2734 7517
Nicholas Teo (Taiwan)	(8862) 2734 7523

Telecoms

Tim Smart (Asia, China)	(852) 2823 3565
Shubham Majumder (India)	(9122) 6653 3049
Kenneth Yap (Indonesia)	(6221) 515 7343
Nathan Ramler (Japan)	(813) 3512 7875
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Ramakrishna Maruvada (Philippines, Singapore, Thailand)	(65) 6231 2842

Transport & Infrastructure

Anderson Chow (Asia, China)	(852) 2823 4773
Jonathan Windham (Asia, China)	(852) 2823 5417
Tim Bacchus (Asia, China)	(852) 2823 3586
Wei Sim (China, Hong Kong)	(852) 2823 3598
Eunsook Kwak (Korea)	(822) 3705 8644
Sunaina Dhanuka (Malaysia)	(603) 2059 8993

Utilities

Carol Cao (China, Hong Kong)	(852) 2823 4075
Deepak Jain (India)	(9122) 6653 3157
Adam Worthington (Indonesia)	(6221) 515 7338
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Alex Pomento (Philippines)	(632) 857 0899

Commodities

Jim Lennon	(4420) 7065 2014
Adam Rowley	(4420) 7065 2013
Jonathan Butcher	(4420) 7065 5938
Max Layton	(4420) 7065 2000
Bonnie Liu	(8621) 2412 9008
Henry Liu	(8621) 2412 9005
Rakesh Arora	(9122) 6653 3054

Data Services

Andrea Clohessy (Asia)	(852) 2823 4076

Economics

Bill Belchere (Asia)	(852) 2823 4636
Rajeev Malik (ASEAN, India)	(65) 6231 2841
Richard Gibbs (Australia)	(612) 8232 3935
Paul Cavey (China)	(852) 2823 3570
Richard Jerram (Japan)	(813) 3512 7855

Quantitative

Martin Emery (Asia)	(852) 2823 3582
Viking Kwok (Asia)	(852) 2823 4735
George Platt (Australia)	(612) 8232 6539
Raelene de Souza (Australia)	(612) 8232 8388
Tsumugi Akiba (Japan)	(813) 3512 7560

Strategy/Country

Tim Rocks (Asia)	(852) 2823 3585
Daniel McCormack (Asia)	(852) 2823 4073
Desh Peramunetilleke (Asia)	(852) 2823 3564
Mahesh Kedia (Asia)	(852) 2823 3576
Stewart Ferns (Asia)	(852) 2823 4068
Michael Kurtz (China)	(8621) 2412 9002
Seshadri Sen (India)	(9122) 6653 3053
Ferry Wong (Indonesia)	(6221) 515 7335
Chris Hunt (Japan)	(813) 3512 7878
Peter Eadon-Clarke (Japan)	(813) 3512 7850
Eugene Ha (Korea)	(822) 3705 8643
Prem Jearajasingam (Malaysia)	(603) 2059 8989
Edward Ong (Malaysia)	(603) 2059 8982
Alex Pomento (Philippines)	(632) 857 0899
Tuck Yin Soong (ASEAN, Singapore)	(65) 6231 2838
Daniel Chang (Taiwan)	(8862) 2734 7516
Alastair Macdonald (Thailand)	(662) 694 7741

Find our research at

Macquarie:	www.macquarie.com.au/research
Thomson:	www.thomson.com/financial
Reuters:	www.knowledge.reuters.com
Bloomberg:	MAC GO
Factset:	http://www.factset.com/home.aspx

Email macresearch@macquarie.com for access

Sales

Regional Heads of Sales

Peter Slater (Boston)	(1 617) 217 2103
Michelle Paisley (China, Hong Kong)	(852) 2823 3516
Ulrike Pollak-Tsutsumi (Frankfurt)	(49) 69 7593 8747
Thomas Renz (Geneva)	(41) 22 818 7712
Ajay Bhatia (India)	(9122) 6653 3200
Stuart Smythe (India)	(9122) 6653 3200
Chris Gray (Indonesia)	(6221) 515 7304
K.Y. Nam (Korea)	(822) 3705 8607
Lena Yong (Malaysia)	(603) 2059 8888
Gino C Rojas (Philippines)	(632) 857 0761
Greg Norton-Kidd (New York)	(1 212) 231 2527
Luke Sullivan (New York)	(1 212) 231 2507

Regional Heads of Sales cont'd

Scot Mackie (New York)	(1 212) 231 2848
Sheila Schroeder (San Francisco)	(1 415) 835 1235
Giles Heyring (Singapore)	(65) 6231 2888
Mark Duncan (Taiwan)	(8862) 2734 7510
Angus Kent (Thailand)	(662) 694 7601
Michael Newman (Tokyo)	(813) 3512 7920
Charles Nelson (UK/Europe)	(44) 20 7065 2032
Rob Fabbro (UK/Europe)	(44) 20 7065 2031

Sales Trading

Adam Zaki (North Asia)	(852) 2823 3528
Duncan Rutherford (ASEAN, India)	(65) 6231 2888
Mona Lee (Hong Kong)	(852) 2823 3519

Sales Trading cont'd

Stuart Goddard (Europe)	(44) 20 7065 2033
Brendan Rake (India)	(9122) 6653 3204
Edward Robinson (London)	(44) 20 7065 5883
Robert Risman (New York)	(1 212) 231 2555
Isaac Huang (Taiwan)	(8862) 2734 7582
Jon Omori (Tokyo)	(813) 3512 7838

Alternative Strategies

Convertibles - Roland Sharman	(852) 2823 4628
Depository Receipts - Robert Ansell	(852) 2823 4688
Derivatives - Tim Connolly	(852) 2249 3380
Futures - Tim Smith	(852) 2823 4637
Hedge Fund Sales - Darin Lester	(852) 2823 4736
Structured Products - Andrew Terlich	(852) 2249 3225