Macquarie Research Equities

INDIA

Indian refiners

6 July 2007

RIL IN		Outperform
Stock price as of 05 Jul 07	Rs	1,715.70
12-month target	Rs	1,855.00
Upside/downside	%	+8.1
Valuation	Rs	2,061.00
- Sum of parts		
GICS sector		energy
Market cap	US$m	61,693
30-day avg turnover	US$m	122

HPCL IN		Outperform
Stock price as of 05 Jul 07	Rs	268.25
12-month target	Rs	368.000.00
Upside/downside	%	+37.2
Valuation	Rs	409.00
- RNAV		
GICS sector		energy
Market cap	US$m	2,252
30-day avg turnover	US$m	6.2

BPCL IN		Outperform
Stock price as of 05 Jul 07	Rs	340.00
12-month target	Rs	495.00
Upside/downside	%	+45.6
Valuation	Rs	550.00
- RNAV		
GICS sector		energy
Market cap	US$m	3,040
30-day avg turnover	US$m	4.5

IOCL IN		Not Rated
Stock price as of 05 Jul 07	Rs	441.40
GICS sector		energy
Market cap	US$m	13,100
30-day avg turnover	US$m	2.8

RPET IN		Not Rated
Stock price as of 05 Jul 07	Rs	113.55
GICS sector		energy
Market cap	US$m	12,800
30-day avg turnover	US$m	32.0

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Paradigm shift in margins?

Event

- **We have compared the capital cost of the new refinery projects** in light of new announcements globally, the latest being HPCL's US$4.4bn fund raising programme for its proposed 9mt pa refinery at Bhatinda.
- We estimate that the **new refineries will be viable only if the GRMs are greater than US$11/bbl** compared with the past five-year average Singapore GRM of US$4.9/bbl and Reliance's complex GRM of US$8.6/bbl.

Impact

- **HPCL's and BPCL's new refineries are back on track.** HPCL's 9mt pa Bhatinda refinery was sanctioned in 2000; however, it got delayed for various reasons. HPCL has now firmed up both its JV partner and the financing plan for the new refinery (Fig 8). The refinery is now scheduled to be completed by September 2010 at a cost of Rs167bn. This refinery will primarily target the deficit markets in northern India. BPCL is building its 6mt pa refinery at Bina at a cost of Rs104bn and is targeting the deficit markets in central India.
- **New refineries to cost 1.7–2.1x that of RPET.** We estimate that the cost of constructing refineries has nearly doubled in the past four years from US$229/t pa to more than US$400/t pa (Fig 2). HPCL has announced plans for total investments of US$4.4bn for its 9mt pa refinery, which translates to US$492/t pa. Even the other recently announced refineries have planned investments in excess of US$400/t pa. On an inflation adjusted basis, the cost of construction for these new refineries is 1.7–2.1x RPET's proposed investments, which are the lowest among all upcoming new refineries (Fig 1).
- **New refineries viable only if GRMs remain above US$11/bbl.** The rapidly rising cost of constructing new refineries has threatened the viability of the new projects. We estimate that the new refineries (cost per tonne of US$400–489) will be viable only if the GRMs remain at US$11–13/bbl (Figs 3 and 4). That assumes a weighted average cost of capital of 10% in US$ terms and a tax rate of 33%. Adjusting for the variations in complexity of the new refineries, the required GRMs could be even higher (Fig 7).
- **Existing refineries are likely to benefit significantly** not only from high margins, but also from potential delays in new capacities, given equipment suppliers' demanding longer lead times. We believe that HPCL's and BPCL's earnings from existing refineries are even-more sensitive to changes in GRMs, because nearly half of their earnings come from refining. We estimate that BPCL's earnings will increase by 63% and that HPCL's will increase by 54% if GRMs increase to US$9/bbl from US$6/bbl (adjusted for lower complexity). We estimate that RIL's earnings will increase by 18% if GRMs increase from the currently assumed level of US$9–12/bbl. Moreover, RIL, which is six months ahead of its scheduled start-up, should benefit from potential delays by other refiners. (Figs 5 and 6).

Outlook

- **RIL is our top oil & gas sector pick.** Reliance should be the key beneficiary of capacity delays and high GRMs. Capex of US$20bn in high-growth businesses will likely triple RIL's earnings in the next five years. We believe that HPCL and BPCL, trading at 0.8x FY08E book value, are value plays.

Fig 1 RPL's new refinery's capital cost/tonne is the lowest, HPCL's the highest

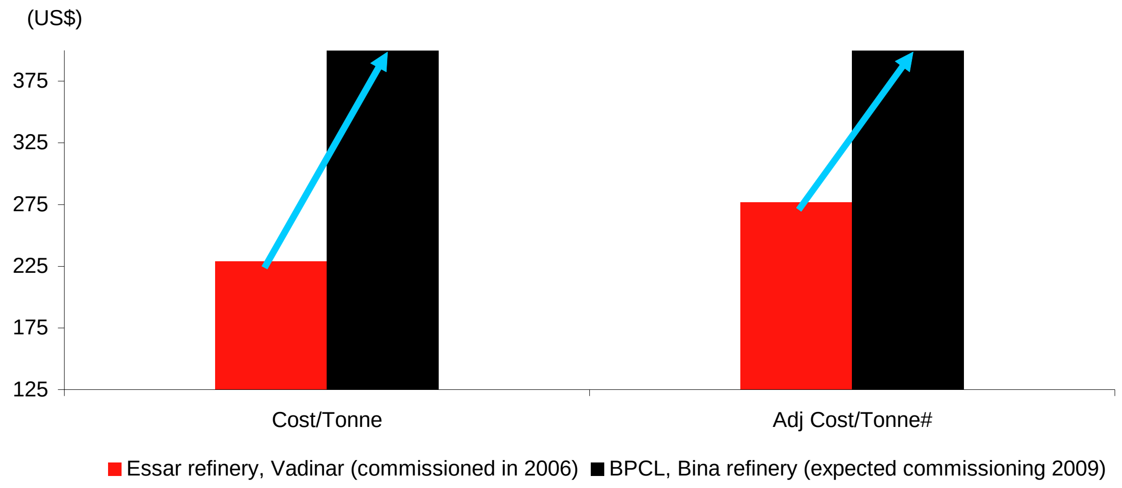
	HPCL	BPCL	Kuwait Petroleum	Farmosa	Reliance Petroleum
Location	Bhatinda, India	Bina, India	Kuwait	Guatemala	Jamnagar, India
Size (MTPA)	9	6	27	18	27
Complexity (Nelson Complexity)	9.6	NA	High	NA	14
Capital cost (US$ bn)	4.4	2.4	12	7.2	5.6
Adjusted capital cost*	4.4	2.4	12	7.2	6.3
Adj Capital cost/tonne*	489	400	444	400	233
Commissioning date	CY2010	CY2009	CY2011	CY2011	CY2008
Break-even GRM assuming 10% WACC in US$ terms*#	**13.0**	**11.2**	**12.0**	**11.1**	**6.2**

* In current money terms, ie, adjusted for inflation.

WACC of four majors in USA.

Source: Macquarie Research, July 2007

Fig 2 The cost of construction for refinery has increased ~2x in past four years



In current money terms, ie, adjusted for inflation

Source: Macquarie Research, July 2007

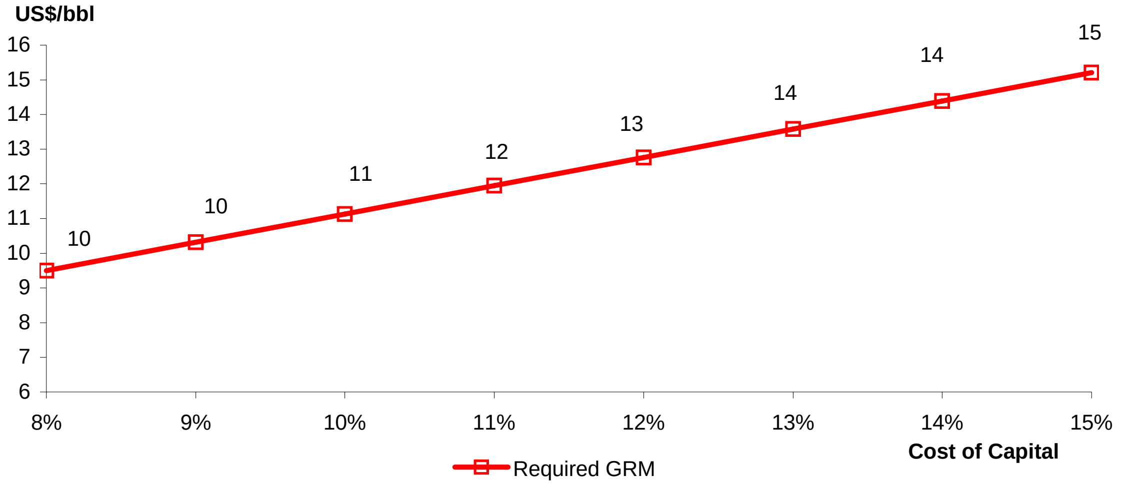
Fig 3 Breakeven GRM of a US$ 11/bbl for a new refinery at a capital cost of US$400/t pa

Capital cost per tonne *(ref Figure 1)* (US$)	400
Assumed cost of capital (WACC)#	*10%*
Minimum required return (=WACC)	10%
Minimum return required (NOPLAT) (US$)	40
Assumed Tax rate	*33%*
EBIT (US$)	60
Other Expenses (SG&A, Depreciation, Others) (US$3.0/bbl)	22
Gross profit required (US$)	82
Refining capacity (bpd)	20,000
Refining capacity (MTPA)	1.0
Implied GRMs (US$/bbl)	**11.1**

WACC of four majors in USA.

Source: Macquarie Research, July 2007

Fig 4 Sensitivity of the required breakeven GRM to cost of capital



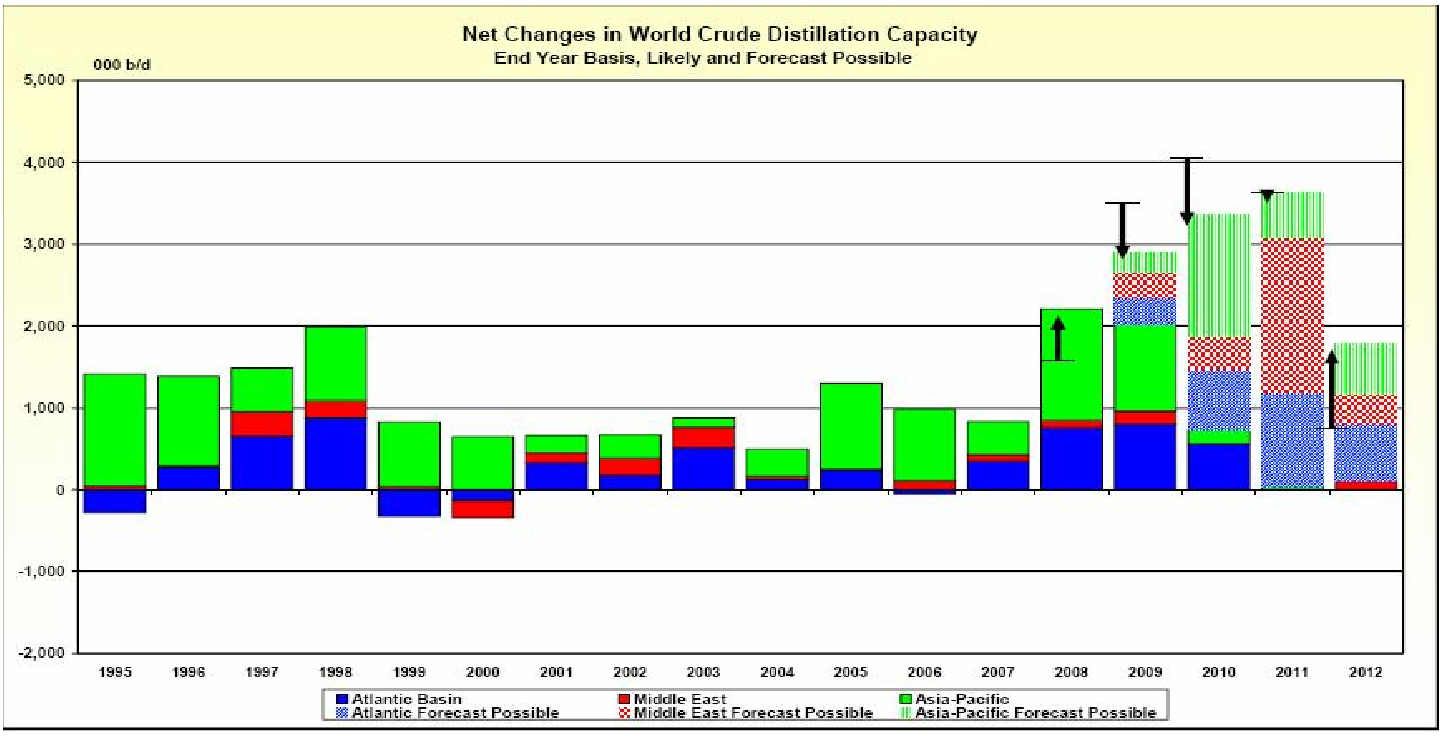
Source: Macquarie Research, July 2007

Fig 5 BPCL's earnings are most sensitive to GRMs

	Current assumed GRM	High case GRM	Change in earnings
Reliance Industries	9	12	+17%
HPCL	6	9	+54%
BPCL	6	9	+63%

Source: Macquarie Research, July 2007

Fig 6 Reliance Industries forecasts delay in project implementations



Source: Company data, Macquarie Research, March 2007

Fig 7 Reliance's refinery has the greatest complexity, HPCL's the least

Company	NCI
Existing refineries	
Reliance Industries (RIL)	11.3
Mangalore Refinery (MRPL)	6.0
Chennai Petroleum (MRL)	5.0
Indian Oil Corporation (IOCL)	4.1
Bharat Petroleum (BPCL)	4.0
Hindustan Petroleum (HPCL)	3.6
New refineries	
Reliance Petroleum (RPET) New Refinery at Jamnagar	14.0
HPCL – New Refinery at Bhatinda	9.6

Source: Macquarie Research, July 2007

Fig 8 HPCL's Bhatinda refinery is close to achieving full financial closure

Equity	
L N Mittal's investments (49%)	US$724mn
HPCL's investments (49%)	US$724mn
Other's investments	US$30mn
Debt	
Overseas	US$1,000mn
Domestic (Rs80bn)	US$1,950mn
Total investments (33% Equity, 67% Debt)	**US$4,428mn**

Source: Macquarie Research, July 2007

Fig 9 HPCL Bhatinda's complexity enables high degree of high and middle distillates

	MMTPA	% of total
Polypropylene	0.36	4.00%
LPG	0.682	7.58%
Hexane	0.005	0.06%
Naphtha	0.404	4.49%
MS-Premium	0.25	2.78%
MS-Regular	0.75	8.33%
Kerosene	0.09	1.00%
ATF	0.5	5.56%
MTO	0.025	0.28%
HSD	3.817	42.41%
Bitumen	0	0.00%
Coke	0.932	10.36%
Sulphur	0.202	2.24%
Fuel & Loss	0.983	10.92%

Source: Macquarie Research, July 2007

Fig 10 BPCL's Bina also has a high-end product slate

Products	TMTPA	% of Total
LPG	195	3.25%
Naphta	200	3.33%
Euro III MS	385	6.42%
Euro IV MS	400	6.67%
SKO	450	7.50%
ATF	358	5.97%
Euro III HSD	1856	30.93%
Euro IV HSD	1000	16.67%
Sulphur	120	2.00%
Bitumen	400	6.67%
Fuel & Loss*	636	10.60%

Source: Macquarie Research, July 2007

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

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Neutral – expected return from -5% to +5%
Underperform – expected return <-5%

Recommendations – 12 months

Note: Quant recommendations may differ from Fundamental Analyst recommendations

Recommendation proportions

	AU/NZ	Asia	RSA
Outperform	46.81%	61.36%	45.30%
Neutral	39.01%	18.67%	35.80%
Underperform	14.18%	19.97%	18.90%

For quarter ending 30 June 2007

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).

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Brendan Rake (India)	(9122) 6653 3204

Sales Trading cont'd

Edward Robinson (London)	(44) 20 7065 5883
Robert Risman (New York)	(1 212) 231 2555
Isaac Huang (Taiwan)	(8862) 2734 7582
Kenichi Ohtaka (Tokyo)	(813) 3512 7830

Index Sales

Margaret Hartmann	(612) 8232 9834

Alternative Strategies

Convertibles - Roland Sharman	(852) 2823 4628
Depository Receipts - Robert Ansell	(852) 2823 4688
Derivatives - Vipul Shah	(852) 2823 3523
Futures - Tim Smith	(852) 2823 4637
Hedge Fund Sales - Darin Lester	(852) 2823 4736
Structured Products - Andrew Terlich	(852) 2249 3225