Oil Company Crisis

Balancing Structure, Profitability and Growth

Dr Robert Arnott
IAEE Conference Prague
7 June 2003
Why managers want to “grow value”

CEO base salary to capital

(O&G companies, 1996-98)

\[ y = 0.30x + 4.04 \]

\[ R^2 = 0.59 \]
The Challenge

- A decade of earnings growth has been achieved largely through cutting costs
- The mega-mergers of the late 1990s represent the end of this process
- Companies have not delivered growth expectations
- Vertical disintegration is widely proposed
Changing Market Pressures

National Oil Companies and Governments

Restricted Supply

Unrestricted Supply

Utilities and Retail

Integrated Oil Companies

Independents

Power and Control

Energy Supply Chain

Control

Resources

Consumer

100%

0%

100%

0%
What do we mean by integration?

- **Operational integration**
  - Integrated chain
  - Lower transaction costs

- **Financial integration**
  - Ability to fund projects cheaply
  - Manage cash flows

- **The difference**
  - Related to funding, rather than to operations
Operational Integration in 1991

Integration Index:
-100 (100% Refining)
+100 (100% Upstream)
Capital Rotation 1990-2001

Yearly Rotation

CH
RM
GP
EP

OXFORD INSTITUTE FOR ENERGY STUDIES
Current State of Integration

- Nippon Mitsubishi
- Sinopec
- Marathon
- Exxon Mobil
- Total Fina Elf
- Petrobras
- Conoco
- Repsol-YPF
- Yukos
- BP
- Chevron
- Royal Dutch/Shell
- PetroChina
- PDV
- Pertamina
- KPC
- Pemex
- Lukol
- NOC
- NPC
- Libya NOC
- Saudi Aramco
- Sonatrach
- INOC
- NCPC
- Qatar Petroleum
- Gazprom
So why disintegrate?

In a perfect world:
- Focussed businesses are allegedly better managed
- Industry maturity has reduced transaction costs to an irrelevancy
- Investors can construct balanced portfolios for themselves

But, markets are not perfect!
Exploiting the inefficiencies

- Political
  - issues of access, differing terms, embargos
- Institutional
  - OPEC, cartelisation
- Economic
  - pricing issues, investment
Exploiting the inefficiencies

- Financial
  - tax, cost of capital, risk mitigation, default risk, markets

- Operational
  - local monopolies, supply chains, project skills, reputation

- Technical
  - information transfer, cost of information
Upstream Efficiency

Spreading the risk
Access to opportunities

R² = 0.7975

FD Costs 1999-2001 ($/boe)

Market Capitalisation ($bn)

- NHY
- STL
- ENI
- REP
- TOT
- CHV
- BP
- RD/SHEL
- XOM
Minimising tax

Cross-border offsets

\[ R^2 = 0.024 \]
Financial Markets

Access to equity markets
Higher risk focussed entities

2003 Price Earnings

- Pipelines Super-major
- Large EP
- EP Mid/Small
- US Integrated
- EU Integrated
- Refiners
- Emerging Integrated
Cost of Capital

Lower cost for larger companies
Access to capital a barrier

R² = 0.804
Access to Capital

Cyclical industry financing
Invest through the cycle?

<table>
<thead>
<tr>
<th>Year</th>
<th>Financing ($Bn)</th>
<th>Oil Price ($/Bbl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>1.3</td>
<td>30</td>
</tr>
<tr>
<td>1994</td>
<td>1.1</td>
<td>25</td>
</tr>
<tr>
<td>1995</td>
<td>2.1</td>
<td>20</td>
</tr>
<tr>
<td>1996</td>
<td>2.6</td>
<td>15</td>
</tr>
<tr>
<td>1997</td>
<td>4.9</td>
<td>2</td>
</tr>
<tr>
<td>1998(1)</td>
<td>3.3</td>
<td>0.7</td>
</tr>
<tr>
<td>1998(2)</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>0.7</td>
<td></td>
</tr>
</tbody>
</table>

Equity | High Yield
Muddled Thinking in the Gas Chain

- Despite losing faith in oil chains, oil companies are keen to integrate vertically into gas and power

- They should instead concentrate on two motives:
  - focusing on their strengths
  - exploiting market inefficiencies

This may or may not require integration
Structure Conclusions

- Companies should identify and quantify market inefficiencies – operational and financial
- Companies should identify the risks that would accrue from de-integration
- Corporate capabilities are not merely energy-specific: they may comprise financial skills or customer franchise
Oil Company Crisis

Balancing Structure, Profitability and Growth

Dr Robert Arnott
7th June 2003
Profitability, Growth and Value

- Companies have concentrated internal and external attention on one metric: ROACE.
- Even if accurate, ROACE is too limited, as any growth at above WACC adds value.
- Accounting measures compound the problem: they overstate the profitability of old assets and understate the profitability of new ones.
# Case Study: Pipeline Economics

### Year 01234567

#### Cash flow model:
- **Investment** (1,000)
- **Cash flow from operations**
  - 200 210 221 232 243 255 268
- **Free Cash Flow** (1,000)
  - 200 210 221 232 243 255 268
- **Internal Rate of Return** 13.1%

#### Accounting results:
- **Opening Capital**
  - 0 1,000 857 714 571 429 286 143
- **Depreciation**
  - 0 (143) (143) (143) (143) (143) (143) (143)
- **Closing Capital**
  - 1,000 857 714 571 429 286 143 0
- **Profit**
  - 0 57 67 78 89 100 112 125
- **Return on Opening Capital**
  - 5.7% 7.8% 10.9% 15.5% 23.4% 39.3% 87.6%

#### Economic results:
- **Opening NPV**
  - 0 1,000 931 844 734 599 435 237
- **Impairment of value**
  - 0 (69) (88) (110) (135) (164) (198) (237)
- **Closing NPV**
  - 1,000 931 844 734 599 435 237 0
- **Profit**
  - 131 122 111 97 79 57 31
- **Economic ROCE (opening)**
  - 13.1% 13.1% 13.1% 13.1% 13.1% 13.1% 13.1%
Integrating DCF Analysis with Management Accounts

- Investments are originally justified with DCFs, but subsequent performance is monitored and presented using conventional accounts.
- Two alternative approaches are improvements: CFROI and adjusted EVA™.
- Both permit investment and performance measurement to be related seamlessly.
### Method: Adjusted EVA<sub>TM</sub>

#### Accounting Method

**NOPAT:**
- Operating Profit (EBIT) \(1,700\)
- Notional Tax \((500)\)
- Net Operating Profit After Tax \(1,200\)

**Opening Capital Employed:**
- Net Debt \(2,000\)
- Minority Interests \(500\)
- Shareholders' Equity \(7,500\)
- Capital Employed \(10,000\)

**Return on Capital Employed** \(12.0\%\)

#### Adjusted EVA<sub>TM</sub> Method

<table>
<thead>
<tr>
<th>Adjusted EVA&lt;sub&gt;TM&lt;/sub&gt; Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann. change in NPV of reserves</td>
<td>250</td>
</tr>
<tr>
<td>Ann. net investment in reserves</td>
<td>(200)</td>
</tr>
<tr>
<td>Unrealised gains/losses</td>
<td>50</td>
</tr>
<tr>
<td>Accounting NOPAT</td>
<td>1,200</td>
</tr>
<tr>
<td>Unrealised gains/losses</td>
<td>50</td>
</tr>
<tr>
<td>Adjusted NOPAT</td>
<td>1,250</td>
</tr>
<tr>
<td>Opening Capital Employed</td>
<td>10,000</td>
</tr>
<tr>
<td>Book value of reserves</td>
<td>(4,000)</td>
</tr>
<tr>
<td>Net Present Value of reserves</td>
<td>8,000</td>
</tr>
<tr>
<td>Adjusted Opening Capital Emp.</td>
<td>14,000</td>
</tr>
<tr>
<td>Accounting ROCE</td>
<td>12.0%</td>
</tr>
<tr>
<td>Adjusted ROCE</td>
<td>8.9%</td>
</tr>
</tbody>
</table>
Oil Company Historical Performance

- We have used a modified EVA\textsuperscript{TM} – the main adjustment being substitution of net present value for book upstream values, and the inclusion of net changes in these to profit.

- The key finding is that the profitability of the industry drops from around 12% to around 9%, slightly above its WACC.
### Case Study: Oil Company Performance

<table>
<thead>
<tr>
<th></th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Book return on capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOPAT</td>
<td>35,560</td>
<td>18,257</td>
<td>25,900</td>
<td>57,650</td>
<td>43,810</td>
<td>36,236</td>
</tr>
<tr>
<td>Opening book capital employed including goodwill</td>
<td>248,506</td>
<td>258,487</td>
<td>267,086</td>
<td>351,233</td>
<td>351,538</td>
<td>295,370</td>
</tr>
<tr>
<td><strong>Return on capital employed including goodwill</strong></td>
<td>14.30%</td>
<td>7.10%</td>
<td>9.70%</td>
<td>16.40%</td>
<td>12.50%</td>
<td>12.00%</td>
</tr>
</tbody>
</table>

| **Adjusted return on capital employed** |         |         |         |         |         |         |
| Adjusted NOPAT             | -37,867 | -42,333 | 141,346 | 145,775 | -109,907| 19,403  |
| Adjusted opening capital employed | 294,191 | 277,023 | 225,033 | 424,443 | 511,146 | 346,367 |
| **Adj return on adj opening capital employed** | -12.90% | -15.30% | 62.80%  | 34.30%  | -21.50% | 9.50%   |
| **Realised profit/adj opening capital employed** | 12.10%  | 6.60%   | 11.50%  | 13.60%  | 8.60%   | 10.50%  |
Why does this matter?

- If investors are misled as to likely future profitability, they will react adversely.
- If managers set too high a hurdle rate of return they will under-invest.
- If the profitability of the upstream is overestimated then such investment as is made will be skewed.
Case Study: Royal Dutch/Shell

- The CFROI approach yields very similar results but the detail of the adjustments make it difficult to aggregate across the sector.

- The following slide shows calculations made for Royal Dutch/Shell.
CFROI Case Study: Shell

Summary 1999-2001

<table>
<thead>
<tr>
<th>Sector</th>
<th>IRR</th>
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<tbody>
<tr>
<td>Upstream</td>
<td>13.0%</td>
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<tr>
<td>Downstream</td>
<td>5.7%</td>
</tr>
<tr>
<td>Chemicals</td>
<td>4.4%</td>
</tr>
<tr>
<td>Gas and Power</td>
<td>1.5%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>9.1%</td>
</tr>
</tbody>
</table>

Current IRR

- Upstream: 13.0%
- Downstream: 5.7%
- Chemicals: 4.4%
- Gas and Power: 1.5%
- Weighted Average: 9.1%
Profitability Conclusions

- It is essential to develop an internal management accounting system that integrates DCF analysis with performance measurement
- This should be transparent enough for presentation to investors
- The financial technology for this is already well developed