Moody's Approach to Assessing Credit Risk for Oil & Gas Companies

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Agenda

1. Overview of Moody's Ratings

2. Rating Methodologies for Oil & Gas Companies

- Credit perspectives on reserves in context of Moody's:
  - » Exploration & Production (E&P) Methodology
  - » Integrated Oil & Gas Methodology

3. Credit Impact of Carbon-Reduction Policies

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Overview of Moody's Ratings

What are credit ratings?

- An independent opinion of creditworthiness
  - Based on fundamental analysis vs. market pricing or quantitative models
- Measure of expected loss
  - Expected loss = probability of default x loss given default
  - Probability of default = risk of missed or delayed payment of interest or principal
  - Loss given default = severity of loss in even of default (how much investors can expect to recoup)

The Rating Scale – Relative Ranking of Credit Risk

Quality of credit	long term	short term	
Gilt edged	Aaa	Prime-1	Investment Grade
Very high	Aa1 Aa2 Aa3		
Upper-medium	A1 A2 A3	Prime-2	
Medium grade	Baa1 Baa2 Baa3	Prime-3	
Questionable	Ba1 Ba2 Ba3	Not Prime	Speculative Grade
Poor quality	B1 B2 B3	SGL-1 SGL-2 SGL-3 SGL-4	
Very poor	Caa1 Caa2 Caa3 Ca C		

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Moody's Rating Methodologies for Oil & Gas Companies

Moody's Rating Methodology for Oil & Gas Companies

- Moody's global rating methodologies span the energy space: Integrated Oil & Gas, Independent E&P, Midstream, Refining & Marketing, Oilfield Services
- Moody's ratings assessments include both quantitative and qualitative factors; ratings are forward looking
- Few companies have credit profiles that are universally strong or weak across all dimensions
- Short term results are weighed in the context of a longer time horizon that includes both peaks and valleys as commodity prices and margins oscillate

Credit perspectives on oil & gas reserves

- Focus on proved reserves, as disclosed in regulatory filings
  - Reserves are an upstream company’s most valuable asst
  - Reserves can be measured and compared across companies
  - Proved reserves are estimated by petroleum engineers
- Proved reserves and production profiles are a measure of scale
  - Companies with larger reserve bases tend to be higher rated and have more debt capacity
  - Analysis of size of reserves, geographic locations, and geological basins
  - Consideration for proved developed vs. proved undeveloped reserves
  - Analysis of multi-year historical reserve and production trends, with a forward view
- Reserves and production characteristics are key factors in our rating methodologies
  - 40% of E&P methodology factors related to reserves and production
  - ≥20% of Integrated methodology factors related on reserve and production

Moody's E&P Rating Methodology

Moody's Focuses on Four Key Factors

1. Reserves and Production Characteristics (40%)
   - Average Daily Production – 15%
   - Proved Developed Reserves – 15%
   - Total Proved Reserves – 10%

2. Operating and Capital Efficiency (20%)
   - Leveraged Full-Cycle Ratio – 20%

3. Leverage and Cash Flow Coverage (40%)
   - E&P Debt / Average Daily Production – 10%
   - E&P Debt / Proved Developed Reserves – 10%
   - Retained Cash Flow / Total Debt -10%
   - EBITDA / Interest Expense – 10%

4. Production Mix Overlay
   - E&P Unleveraged Cash Margin / BOE

Moody's rating analysis encompasses business risk and financial risk

Moody's Integrated Oil & Gas Rating Methodology

Moody's Focuses on Five Key Factors

1. Scale (25%)	Average Daily Production - 10% Proved Reserves – 10% Crude Distillation Capacity – 5%
2. Business Position (20%)	Business Position – 20%
3. Profitability and Returns (10%)	EBIT / Average Book Capitalization – 5% Downstream EBIT /Total Throughput Barrels – 5%
4. Leverage and Coverage (15%)	EBIT / Interest – 7.5% Retained Cash Flow / Total Debt – 10% Debt / Book Capitalization – 7.5%
5. Financial Policy (20%)	Financial Policy – 20%

Moody's rating analysis encompasses business risk and financial risk

3 Credit impact of carbon-reduction policies

Three primary credit effects from carbon-reduction policies

1. Direct Costs	2. Disruptive Technology Shock	3. Policy Uncertainty/ Regulatory Risk	Key Mitigants
Rising costs, if not passed on to consumers timely and effectively, would lead to higher costs, lower profitability and cash flow.	Longer-term modest shift in demand growth, reducing scope of investment opportunities, as alternative products gain traction (e.g., biofuels)	Regulatory exposure tied to risk of a globally coordinated policy response, potentially impacting long-term investment decisions and investor flows.	Larger players are operationally and geographically diversified and financially strong. National oil companies benefit from full or partial government ownership.

Credit impact of carbon-reduction policies

- » Impact of carbon reduction policies is rising globally, but impact on oil & gas companies is more muted over the the near term (next 3-5 years)
- » Oil & gas companies are exposed to higher direct operating costs, reduced demand growth rates, and regulatory uncertainty when making long-term investment decisions
- » Increased costs expected to be manageable for most companies, many of which have strong operating and financial profiles to help mitigate policy shocks and long histories adapting to rising regulatory costs
- » Risks to global demand growth rates will be modest
- » Over the longer term (next 10 years), credit risks are more difficult to assess in terms of materiality