MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY
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TABLE OF CONTENTS

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Rating Methodology

Integrated Oil and Gas

This rating methodology replaces the *Integrated Oil and Gas Methodology* published in September 2019. We have reordered and have made editorial updates to various sections of the methodology, and we have changed the presentation of the scorecard. These updates do not change our methodological approach.

Scope

This methodology applies to companies globally that are primarily* engaged in integrated oil and gas operations, typically including both the upstream segment (exploration and production) and the downstream segment (refining, marketing and chemicals). Some companies also have midstream operations.

Companies primarily engaged in the upstream business are rated using our methodology for independent exploration and production companies.[1] Companies primarily engaged in the downstream business are rated using our methodology for refining and marketing. Companies primarily engaged in the midstream energy business are rated using our methodology for midstream energy, and midstream energy project financings are rated under applicable project methodologies, including our methodology for generic project finance. Companies primarily engaged in the chemicals business are rated using our methodology for the chemical industry.

The upstream business involves the acquisition, exploration, development, production and sale of different types of hydrocarbon resources, e.g., crude oil, natural gas liquids and natural gas. The downstream business involves the separation of oil into different components, e.g., diesel fuel, gasoline, and jet fuel, and the sale of these components at retail operations. Within the downstream business, many companies also have chemicals operations, which involve converting non-fuel compounds produced during the refining process into chemical products, such as plastic.

The midstream business includes the construction, ownership and operation of infrastructure for aggregating, processing, transporting and storing raw hydrocarbons and petroleum or chemical products produced in the upstream business and sold in the downstream markets. Operators of midstream assets employ fixed infrastructure to connect energy production

*The determination of a company's primary business is generally based on the preponderance of the company's business risks, which are usually proportionate to the company's revenues, earnings and cash flows.

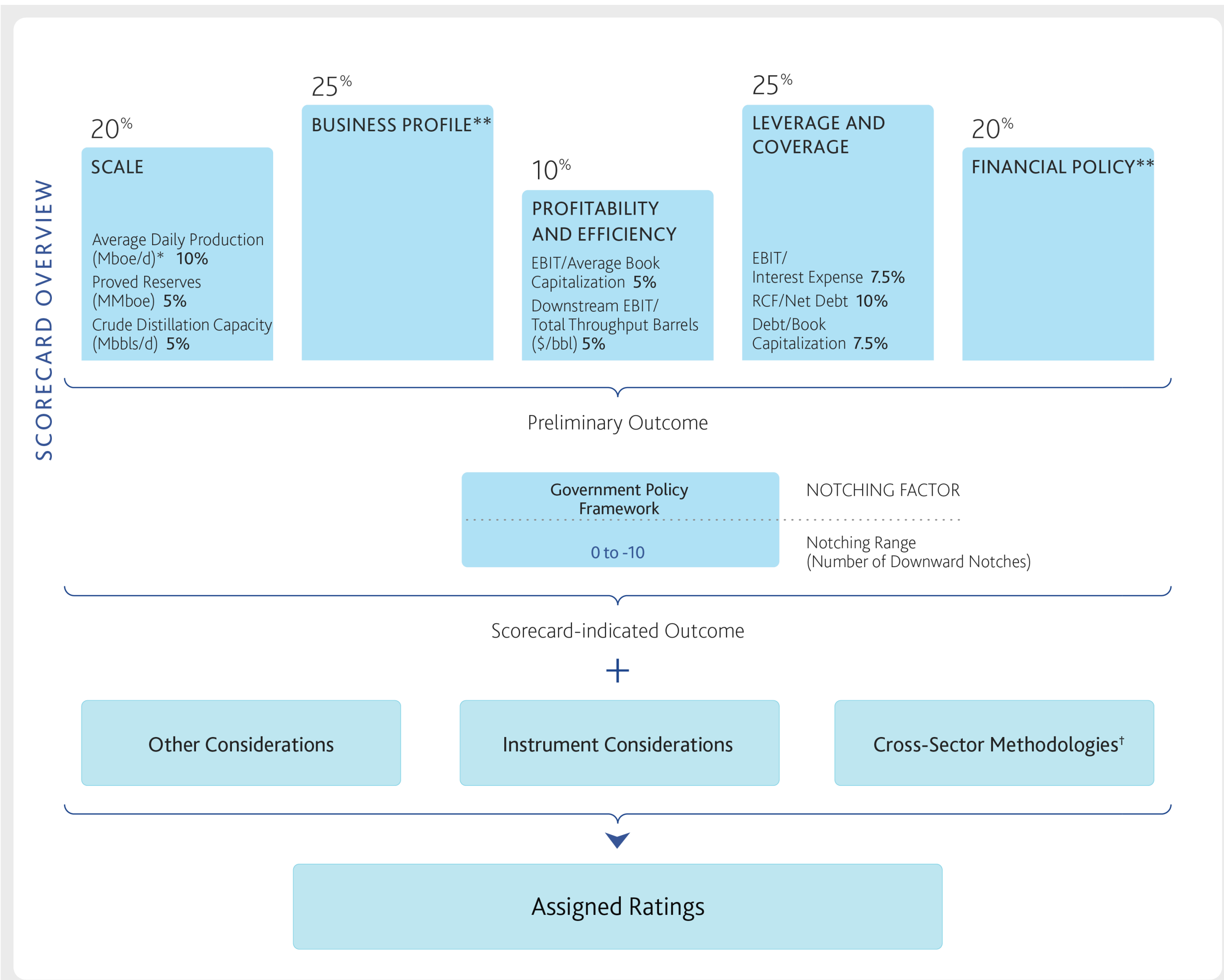
(upstream activities) to downstream markets, including petroleum refiners. An example of a midstream asset is a natural gas or crude oil pipeline, or a liquefied natural gas (LNG) terminal.

Rating approach

In this rating methodology, we explain our general approach to assessing credit risk of issuers in the integrated oil and gas industry globally, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits. The following schematic illustrates our general framework for the analysis of integrated oil and gas companies, which includes the use of a scorecard.[2] The scorecard-indicated outcome is not expected to match the actual rating for each company. For more information, see the "Other considerations" and "Limitations" sections.

Exhibit 1

Illustration of the integrated oil and gas methodology framework



* Boe stands for barrel-of-oil equivalent. Natural gas is converted to an oil-equivalent basis at six thousand cubic feet per one barrel. Mboe/d is thousands of boe per day. MMboe is millions of boe. Mbbls/d is thousands of barrels of oil per day (bbls is barrels of oil).

** This factor has no sub-factors.

† Some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

Source: Moody's Investors Service

Integrated oil and gas scorecard

For general information about how we use the scorecard and for a discussion of scorecard mechanics, please see the "Using the scorecard to arrive at a scorecard-indicated outcome" section. The scorecard does not include or address every factor that a rating committee may consider in assigning ratings in this sector. Please see the "Other considerations" and "Limitations" sections.

Exhibit 2
Integrated oil and gas scorecard

	SCALE (20%)			BUSINESS PROFILE (25%)	PROFITABILITY and EFFICIENCY (10%)		LEVERAGE and COVERAGE (25%)			FINANCIAL POLICY (20%)
	Average Daily Production (Mboe / d)[1] (10%)	Proved Reserves (MMboe)[2] (5%)	Crude Distillation Capacity (Mbbls / d)[3] (5%)	Business Profile (25%)	EBIT / Average Book Capitalization[4] (5%)	Downstream EBIT / Total Throughput Barrels ($ / bbl)[5] (5%)	EBIT / Interest Expense[6] (7.5%)	RCF / Net Debt[7] (10%)	Debt / Book Capitalization[8] (7.5%)	Financial Policy (20%)
Aaa	≥ 2,750	≥ 10,000	≥ 3,000	Production, reserves and resources are extremely large and diversified by geography and by basin and support extremely strong reserve replacement capability; industry leader with extremely strong execution of complex upstream and LNG projects; leading technological capabilities across all main technologies and geological plays, including conventional, unconventional and offshore; extremely large global LNG franchise and strong market position in all principal LNG markets; extensive integration along the oil and gas value chain; highly efficient, extremely large refineries, backed by very strong marketing franchise; and chemicals franchise with extremely strong market positions supported by structural cost advantages and technological leadership that result in new market opportunities and very limited competitive threats.	≥ 25%	≥ $15	≥ 25x	≥ 60%	≤ 20%	Expected to have extremely conservative financial policies (including risk and liquidity management); very stable metrics; essentially no event risk that would cause a rating transition; and public commitment to a very strong credit profile over the long term.
Aa	1,100 - 2,750	5,000 - 10,000	2,000 - 3,000	Production, reserves and resources are very large and diversified by geography and by basin and support very strong reserve replacement capability; very strong execution of complex upstream and LNG projects; very strong technological capabilities across the majority of main technologies and geological plays; very large global LNG franchise within several key markets; very strong integration along the oil and gas value chain; highly efficient, very large refineries, backed by strong marketing franchise; and chemicals franchise with very strong market positions supported by structural cost advantages and technological leadership that result in new market opportunities and few competitive threats.	20% - 25%	$10 - $15	15x - 25x	40% - 60%	20% - 30%	Expected to have very conservative financial policies (including risk and liquidity management); stable metrics; minimal event risk that would cause a rating transition; and public commitment to a strong credit profile over the long term.
A	550 - 1,100	2,000 - 5,000	1,000 - 2,000	Production, reserves and resources are large and well-diversified by geography and by basin and support strong reserve replacement capability; strong execution of complex upstream and LNG projects; strong leadership in selected technologies; large LNG portfolio; strong integration along the oil and gas value chain; efficient, large refineries, backed by strong marketing franchise; chemicals franchise with strong market positions supported by predominantly low-cost operations and technological leadership that result in meaningful barriers to entry.	15% - 20%	$7 - $10	7x - 15x	30% - 40%	30% - 40%	Expected to have predictable financial policies (including risk and liquidity management) that preserve creditor interests; although modest event risk exists, the effect on leverage is likely to be small and temporary; strong commitment to a solid credit profile.

	Scale (20%)			Business Profile (25%)	Profitability and Efficiency (10%)		Leverage and Coverage (25%)			Financial Policy (20%)
	Average Daily Production (Mboe / d)[1] (10%)	**Proved Reserves (MMboe)[2] (5%)**	**Crude Distillation Capacity (Mbbls / d)[3] (5%)**	**Business Profile (25%)**	**EBIT / Average Book Capitalization[4] (5%)**	**Downstream EBIT / Total Throughput Barrels ($ / bbl)[5] (5%)**	**EBIT / Interest Expense[6] (7.5%)**	**RCF / Net Debt[7] (10%)**	**Debt / Book Capitalization[8] (7.5%)**	**Financial Policy (20%)**
Baa	140 - 550	500 - 2,000	500 - 1,000	Production and reserves are moderately diversified by geography and by basin, or the resource base is fairly large with some basin concentration, and there is limited consistency in reserve replacement; fairly strong project execution capabilities, with mixed record on complex upstream or LNG projects and some reliance on partners for key projects; fairly strong technological capabilities in selected technologies; some LNG activities; material integration along the oil and gas value chain; meaningful refining and marketing position; chemicals franchise with cost-competitive operations in more than one region and technological capabilities present moderate competitive threats.	10% - 15%	$4 - $7	4x - 7x	20% - 30%	40% - 50%	Expected to have financial policies (including risk and liquidity management) that balance the interests of creditors and shareholders; some risk that debt-funded acquisitions or shareholder distributions could lead to a weaker credit profile.
Ba	55 - 140	100 - 500	250 - 500	Production and reserves are fairly concentrated by geography and by basin, or the resource base is moderately sized, and there is an inconsistent track record of reserve replacement; moderate project execution capabilities, with mixed or limited record on complex upstream projects and reliance on partners for key projects; significant reliance on technological capabilities of project partners; no LNG activities; some integration along the oil and gas value chain; a small number of mid-sized refineries backed by a meaningful marketing position in a single national market; regional chemicals franchise in more cyclical end-markets, with no meaningful cost advantage and limited technological differentiation, or equity investments in chemical businesses.	5% - 10%	$2 - $4	2x - 4x	10% - 20%	50% - 60%	Expected to have financial policies (including risk and liquidity management) that tend to favor shareholders over creditors; above-average financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.
B	20 - 55	30 - 100	50 - 250	Production and reserves are concentrated by geography and by basin, or the resource base is small, and there is a weak track record of reserve replacement; limited project execution capabilities, and heavy reliance on partners for key projects and technological capabilities; no LNG activities; limited integration along the oil and gas value chain; refining franchise is immaterial; interests are mainly in subscale refineries with weak marketing positions; chemicals franchise is immaterial.	3% - 5%	$1 - $2	1x - 2x	5% - 10%	60% - 70%	Expected to have financial policies (including risk and liquidity management) that favor shareholders over creditors; high financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.
Caa	10 - 20	10 - 30	25 - 50	Production and reserves are very concentrated by geography and by basin, or the resource base is very small, and there is a poor track record of reserve replacement; weak project execution capabilities, and essentially all key projects are operated by partners; no LNG activities; very limited integration along the oil and gas value chain; refining franchise is immaterial; interests are mainly in subscale refineries and very weak marketing position; chemicals franchise is immaterial.	0% - 3%	$0 - $1	0.5x - 1x	2% - 5%	70% - 80%	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring in varied economic environments.
Ca	< 10	< 10	< 25	Production and reserves are extremely concentrated, or the resource base is extremely small, and there is a poor track record of reserve replacement; very weak project execution capabilities, and all key projects are operated by partners; no LNG activities; essentially no integration along the oil and gas value chain; no refining franchise; no chemicals franchise.	< 0%	< $0	< 0.5x	< 2%	> 80%	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring even in healthy economic environments.

Notching Factor: Government Policy Framework (Number of Downward Notches)

		0	1-2	3-4	5-6	7-8	9-10
NOTCHING FACTOR	Government Policy Framework (Number of Downward Notches)	Low to no regulatory and fiscal risk: production and reserves are globally diversified or any concentrations are in countries with low to no regulatory risk; current restrictions on profitability, competitive position and operations are minimal, and regulation, legal framework, tax regime and energy policy in country of domicile or largest country of operations are highly predictable; and government has no power to influence the company's corporate governance, strategy or financial policies, or, if government has an ownership stake, its influence is neutral or benign.	Moderate regulatory and fiscal risk: more than half of production and reserves are in countries with moderate regulatory risk; current restrictions on profitability, competitive position and operations are minimal, and regulation, legal framework and tax regime in country of domicile or largest country of operations are somewhat subject to change; government objectives in country of domicile or in main countries of operations include promoting the development of the country's oil and gas resources, and objectives are largely compatible with the company's business and financial objectives; government has limited power to influence the company's corporate governance, strategy or financial policies or is unlikely to have a negative impact.	Somewhat elevated regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in country of domicile or largest country of operations may be subject to periodic adjustments but impose modest restrictions on the company's profitability, competitive position or operating capability; government objectives in country of domicile or in main country(ies) of operations include maximization of oil and gas revenue to help fund social policies and boost national employment, with potential for negative impact on the company's financial standing; government has some power to influence the company's corporate governance, strategy or financial policies with potential for some negative impact.	High regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in country of domicile or largest country of operations are unpredictable and somewhat constrain company's profitability, competitive position or operating capability; primary objective of government of domicile or in main country(ies) of operations is maximization of oil and gas revenue to fund social policies and boost national employment, with little consideration for the company's financial standing; government is likely to exercise influence on the company's corporate governance, strategy or financial policies with moderate negative impact.	Very high regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in country of domicile or largest country of operations are unpredictable and constrain the company's profitability, competitive position or operating capability; primary objective of government of domicile or in main country(ies) of operations is maximization of oil and gas revenue to fund social policies and boost national employment, with essentially no consideration for the company's financial standing; or government is likely to exercise influence on company's corporate governance, strategy or financial policies with significant negative impact.	Extremely high regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in the country of domicile or the largest country of operations are highly unpredictable and severely constrain the company's profitability, competitive position or operating capability; primary objective of government of domicile or in main country(ies) of operations is maximization of oil and gas revenue to fund social policies and boost national employment, with no consideration for the company's financial standing; or government is likely to exercise influence on the company's corporate governance, strategy or financial policies at will and with significant negative impact.

[1] Boe stands for barrel-of-oil equivalent. Natural gas is converted to an oil-equivalent basis at six thousand cubic feet per one barrel. Mboe/d is thousands of boe per day. For the linear scoring scale, the Aaa endpoint value is 5,000 Mboe/d. A value of 5,000 Mboe/d or better equates to a numeric score of 0.5. The Ca endpoint value is zero. A value of zero equates to a numeric score of 20.5.
[2] MMboe is millions of boe. For the linear scoring scale, the Aaa endpoint value is 15,000 MMboe. A value of 15,000 MMboe or better equates to a numeric score of 0.5. The Ca endpoint value is zero. A value of zero equates to a numeric score of 20.5.
[3] Mbbls/d is thousands of barrels of oil per day (bbls is barrels of oil). For the linear scoring scale, the Aaa endpoint value is 4,000 Mbbls/d. A value of 4,000 Mbbls/d or better equates to a numeric score of 0.5. The Ca endpoint value is 10 Mbbls/d. A value of 10 Mbbls/d or worse equates to a numeric score of 20.5.
[4] For the linear scoring scale, the Aaa endpoint value is 30%. A value of 30% or better equates to a numeric score of 0.5. The Ca endpoint value is (5)%. A value of (5)% or worse equates to a numeric score of 20.5.
[5] Bbl stands for barrel of oil. For the linear scoring scale, the Aaa endpoint value is $20/bbl. A value of $20/bbl or better equates to a numeric score of 0.5. The Ca endpoint value is $(5)/bbl. A value of $(5)/bbl or worse equates to a numeric score of 20.5.
[6] For the linear scoring scale, the Aaa endpoint value is 35x. A value of 35x or better equates to a numeric score of 0.5. The Ca endpoint value is zero. A value of zero or worse equates to a numeric score of 20.5, as does negative EBIT.
[7] For the linear scoring scale, when net debt is positive, the Aaa endpoint value is 100%. A value of 100% or better equates to a numeric score of 0.5. The Ca endpoint value is 0%. A value of 0% or worse equates to a numeric score of 20.5. When net debt is negative and RCF is positive, the numeric score is 0.5. When net debt is negative and RCF is negative or zero, the numeric score is 20.5.
[8] For the linear scoring scale, the Aaa endpoint value is 0%. A value of 0% equates to a numeric score of 0.5. The Ca endpoint value is 100%. A value of 100% or worse equates to a numeric score of 20.5, as does a negative Debt/Book Capitalization value.
Source: Moody's Investors Service

Discussion of the scorecard factors

In this section, we explain our general approach for scoring each scorecard factor or sub-factor, and we describe why they are meaningful as credit indicators.

Factor: Scale (20% weight)

Why it matters

Scale is an important indicator of diversification, the ability to extract value, and resilience. Larger integrated oil and gas companies typically benefit from greater asset diversification (by geography and by reserve basin) and economies of scale. Compared with smaller companies, larger companies are better able to withstand shocks, such as sudden changes in oil and gas prices or different demand and cost scenarios, which is important in this cyclical industry. Larger companies are also typically in stronger positions to negotiate with service providers, such as oilfield services companies, for lower costs. Scale also tends to closely track other positive characteristics, such as operating efficiency, longevity and access to capital markets.

This factor comprises three quantitative sub-factors:

Average Daily Production (Mboe / d)

Average daily production indicates the amount of cash flow a company is currently realizing from its reserves, and therefore its capacity to reinvest in its business and pay debt service.

Proved Reserves (MMboe)

The amount of proved reserves, which are oil and gas reserves below the surface that have not yet been produced and that are economically viable to extract, is an important indicator of both the current and future value of an integrated oil and gas company. This metric represents the scale of a company's primary upstream assets.

Crude Distillation Capacity (Mbbls / d)

Crude distillation capacity is a proxy for the scale of a company's downstream operations, which is an important consideration because the downstream business can help a company better withstand fluctuations in commodity prices. For example, price declines in the downstream business typically lag behind price declines in the upstream business.

How we assess it for the scorecard

Scale is measured (or estimated in the case of forward-looking expectations) based on average daily production, proved reserves and total crude distillation capacity. Companies may report these metrics on an annual basis only, rather than on a quarterly basis. In these cases, we typically use the most recent annual number for subsequent quarters until the updated annual number is available.

For integrated oil and gas companies, we consider these metrics to be more stable measures of scale than more traditional metrics, such as assets and revenue, where accounting differences and commodity price fluctuations can reduce comparability and create volatility.

AVERAGE DAILY PRODUCTION (MBOE / D):

We typically obtain historical production data from supplemental information reported in companies' financial statements. Companies can typically project production three to five years out with some degree of visibility based on current development projects and identified discoveries. We may use this information to develop a forward view of average daily production.

PROVED RESERVES (MMBOE):

We typically obtain data for total proved reserves from supplemental data reported annually in companies' financial statements. Proved reserves are estimated by petroleum engineers, who are either company employees or external reserve engineers, and proved reserves can be quantified and compared across integrated oil and gas companies. Proved reserves come from known reservoirs and can be produced with reasonable certainty under current pricing and technological operating assumptions.

Total proved reserves include proved developed (PD) reserves and proved undeveloped reserves (PUD). PD reserves are the source of a company's oil and natural gas production and cash flow, and they typically require modest or no capital investment. PUD reserves require significant capital spending to be converted to PD reserves. Where information is available, we may consider the mix of PD reserves and PUD reserves. We typically consider large PD reserves more favorably, because PUD reserves have lower certainty and require investment before they generate cash, although reliable long-term access to substantial low-cost PUD reserves can also be a credit strength due to the potential for future development of these reserves.

CRUDE DISTILLATION CAPACITY (MBBLS / D):

Crude distillation capacity is based on information in companies' financial statements or annual reports.

Factor: Business Profile (25% weight)

Why it matters

The business profile of an integrated oil and gas company is an important indicator of its capacity to generate significant, recurrent and diversified streams of operating cash flow to support the execution of complex, capital-intensive projects and to sustain its business model over the long term.

Core aspects of an integrated oil and gas company's business profile include the size and diversification of its hydrocarbon resource base, by geography and by basin; its project execution and technological capabilities, including for its liquefied natural gas (LNG) operations; the extent of the integration of its upstream, midstream and downstream operations; and the scale, efficiency and market position of its downstream operations, including its chemicals franchise and its marketing operations. We consider higher levels of integration and diversification to be principal strengths of an integrated oil and gas business model and important differentiating factors in the comparative analysis of business profiles.

The size and diversity of a company's hydrocarbon reserve and resource bases are critical indicators of its ability to access resources and replenish proved reserves, which underpin its production profile in the longer term. In addition, while unproved reserves and contingent resources typically consume cash at first, as opposed to generating it, they are important because they may constitute a store of value and a source of additional financial flexibility, which can be realized through the sale of assets (all or in part through partnerships and joint ventures) at different stages of the life of a project.

Geographic diversification is also important because it may help mitigate risks related to civil disruptions, weather events, regulatory risks and rising input costs, as well as transportation takeaway risks (e.g., in the event of a pipeline disruption, a company that relies on a single pipeline to transport its gas faces greater takeaway risk than a company that has multiple pipelines). Concentration in a single country leaves a company vulnerable to unfavorable changes in that country's political or regulatory environment, or to earnings volatility if prices in its region diverge from global trends for country-specific reasons.

A diverse geological make-up of resources may reduce geological risks, such as exposure to natural disasters that halt production in a particular basin, and may also provide a buffer against price volatility. Supply and demand trends for crude oil compared to those for natural gas may vary, which may drive differences in prices. In addition, the combustion of natural gas produces much lower carbon dioxide emissions than combustion of other hydrocarbons, so a diversified resource base that includes natural gas may mitigate increasing regulatory costs and product substitution. A company that has multiple basins, even within a single country, is more likely to benefit from diversification by resource and is also potentially less exposed to concentration risk.

A company's project execution and technological capabilities are important because they provide indications of the ability to offset the continued depletion of existing reserves with new production that will generate future cash flow. These capabilities are essential for companies to upgrade facilities and to adapt to evolving industry regulation and fuel specifications, as well as for unconventional resource development. To offset the depletion of conventional oil basins, companies may undertake more complex projects and venture into new oil frontiers and more hostile operating environments, which may present significant technical challenges and pose greater execution, environmental and social risks. In this context, on-time, on-budget and safe execution of these highly complex projects requires considerable technological expertise and extensive project management skills. In more mature hydrocarbon basins, the ability of companies to apply the latest enhanced oil-recovery techniques can significantly improve recovery rates and help extend the field lives and production profiles of existing oilfields. A company that relies on partners to execute projects typically has less control over costs and overall execution, and less flexibility on timing.

Downstream operations, including refining franchises, chemical franchises and marketing operations, greatly influence credit quality. Although refining activities carry higher risk on a stand-alone basis given a lack of control over either input costs or end prices, downstream activities (refining, marketing and chemicals) typically have different supply and demand drivers from upstream operations and may provide a hedge against crude oil price movements. Declines in retail gas prices may lag behind declines in prices in the upstream market, and demand for many chemicals products is typically more stable than demand for oil. In addition, the profitability of chemical operations may also be greatly enhanced through structural cost advantages and technological differentiation that result in meaningful barriers to entry. The cost structure of the downstream operations is an important indicator of a company's ability to manage the price swings inherent in the industry.

A high degree of integration across the upstream, midstream and downstream segments is important because it helps companies to capture additional value for stakeholders, to gain cost efficiencies and to diversify earnings, mitigating the inherent exposure of upstream activities to oil and gas price volatility. Midstream operations support a company's ability to maximize the value of resources. For example, companies that own operations across the entire industry chain, including the production, liquefaction and shipping of natural gas, can arbitrage price differentials among principal markets in different regions by taking the lowest-cost supply to the highest-price end-market. Vertically integrated companies may also have greater visibility into demand for the upstream business and a greater ability to rationalize costs.

How we assess it for the scorecard

In assessing the diversity of a company's hydrocarbon resource base, we consider its size (because size is typically required for a high degree of diversity), the geographic location and geological make-up of the basins where the company operates, and the extent to which production, reserves and resources support reserve replacement capacity.

We typically also consider the diversification of current production and the diversification of reserves, to the extent this information is available. We generally view diversification across multiple countries more favorably than diversification within a single country, and diversification across a very large country is typically considered more favorably than diversification across a smaller country. We also typically assess the number and location of a company's key basins.

We typically consider the relative portion of daily production that a company derives from oil and from natural gas, as well as the composition of its reserves. To the extent a company diversifies into significant new energy resources, we would typically also consider these resources.

In assessing a company's ability to replace reserves, we may consider proved reserve life in years, i.e., how many years reserves will last at the current production rate with no additions to reserves. All else being equal, the longer the reserve life, the longer a company can continue to produce without material incremental investment. A shorter reserve life may indicate an inability to sustain production at current levels. We may also consider a company's proved developed reserves relative to its total reserves, which include undeveloped reserves. We may take into account the company's track record of profitable reserve replacement and our expectations for future profitability, including the company's average costs of finding and developing reserves (whether through acquisition or organic development) and returns achieved in a variety of pricing environments.

We assess project execution and technological capabilities, typically based on a company's track record and its reliance on partners relative to its own capabilities. In assessing LNG activities, we typically consider a company's geographic diversity and the strength of its franchise in terms of its reputation among customers and market position. We may also assess its liquefaction capacity, which is typically measured in millions of tons per annum (Mtpa).

In assessing the extent of integration among a company's upstream, midstream and downstream operations, we typically consider the relative portion of cash flow a company derives from each segment. We also may consider the degree to which a company benefits from operating synergies among the upstream, midstream, and downstream segments or whether it operates each as a stand-alone business.

In assessing the scale and strength of a company's downstream operations, we may consider the number and location of its refineries, chemical plants and retail outlets, as well as brand recognition and market position. For companies with a chemicals franchise, we may consider the diversity of chemicals produced and the company's overall production capacity, measured in millions of tons per year. We also assess the cost structure and technological capabilities of a company's chemicals activities relative to peers.

Generally, we do not expect a given company's business profile to exactly match each of the attributes listed for a given scoring category. We typically assign the factor score based on the alpha category for which the issuer has the greatest number of characteristics. However, there may be cases in which one characteristic is sufficiently important to a particular company's credit profile that it has a large influence on the factor score. For example, geographic concentration within a single country may limit the score to the Aa category or lower, even if the company's diversification by resources and its reserve replacement capability, degree of integration, market position and technological capabilities are very strong, because this exposure may create greater business risk.

Factor: Profitability and Efficiency (10% weight)

Why it matters

Profits matter because they are needed to generate sustainable cash flow and competitive returns. Companies with higher returns are typically better able to attract relatively low-cost debt and equity capital that is often essential for the investments required to stay competitive in this capital-intensive industry. A lean cost structure also helps companies better withstand commodity price volatility.

This factor comprises two quantitative sub-factors:

EBIT / Average Book Capitalization

The ratio of earnings before interest and taxes (EBIT) to average book capitalization is an indicator of a company's ability to generate a meaningful return on all sources of capital.

Downstream EBIT / Total Throughput Barrels ($ / bbl)

The ratio of downstream EBIT to total throughput barrels shows the level of profit derived from each barrel of oil.

How we assess it for the scorecard

Scoring for this factor is based on two sub-factors: EBIT/Average Book Capitalization; and Downstream EBIT/Total Throughput Barrels.

EBIT / AVERAGE BOOK CAPITALIZATION:

The numerator is EBIT, and the denominator is book capitalization averaged over the past two years.

DOWNSTREAM EBIT / TOTAL THROUGHPUT BARRELS ($ / BBL):

The numerator is EBIT for the company's downstream operations, and the denominator is total throughput based on number of barrels of oil. We use EBIT of all downstream operations, including chemicals, supply and trading, and retail and marketing activities, because the refining-only EBIT may not be consistently reported.

Factor: Leverage and Coverage (25% weight)

Why it matters

Leverage and coverage measures provide important indications of an integrated oil and gas company's financial flexibility and long-term viability. Financial flexibility is essential for companies to be able to undertake large investments in complex upstream and downstream projects, which require continued funding of substantial commitments and may require years to achieve profitability. Financial flexibility is also important for a company to be able to service its debt and make investments throughout commodity cycles, when swings in profitability may be significant.

This factor comprises three quantitative sub-factors:

EBIT / Interest Expense

The ratio of earnings before interest and taxes to interest expense (EBIT/Interest Expense) is an indicator of a company's ability to meet its interest obligations.

RCF / Net Debt

The ratio of retained cash flow to net debt (RCF/Net Debt) is an indicator of a company's cash generation (before working capital movements and capital expenditures, and after dividend payments) relative to its net debt (total debt minus cash and cash equivalents).

Debt / Book Capitalization

The ratio of total debt to book capitalization (Debt/Book Capitalization) is a measure of balance sheet leverage that indicates how much of a company's capital structure is composed of debt and debt-like obligations. Companies frequently use this ratio to set the range of leverage in which they choose to operate, so this ratio also provides an indication of management's risk tolerance and a reference point for comparing the capital structures of companies within the industry.

How we assess it for the scorecard
Scoring for this factor is based on three sub-factors: EBIT/Interest Expense; RCF/Net Debt; and Debt/Book Capitalization.

EBIT / INTEREST EXPENSE:

The numerator is EBIT, and the denominator is interest expense.

RCF / NET DEBT:

The numerator is RCF, and the denominator is net debt (total debt minus cash and cash equivalents).

DEBT / BOOK CAPITALIZATION:

The numerator is total debt, and the denominator is book capitalization.

Factor: Financial Policy (20% weight)

Why it matters
Financial policy encompasses management and board tolerance for financial risk and commitment to a strong credit profile. It is an important rating determinant, because it directly affects debt levels, credit quality, the future direction for the company, and the risk of adverse changes in financing and capital structure.

Financial risk tolerance serves as a guidepost to investment and capital allocation. An expectation that management will be committed to sustaining an improved credit profile is often necessary to support an upgrade. For example, we may not upgrade the ratings of a company that has built flexibility within its rating category if we believe the company will use that flexibility to fund a strategic acquisition, cash distribution to shareholders, spin-off or other leveraging transaction. Conversely, a company's credit rating may be better able to withstand a moderate leveraging event if management places a high priority on returning credit metrics to pre-transaction levels and has consistently demonstrated the commitment to do so through prior actions. Liquidity management[3] is an important aspect of overall risk management and can provide insight into risk tolerance.

Many integrated oil and gas companies have historically used acquisitions of companies or assets to spur revenue growth, expand business lines, consolidate market positions, advance cost synergies or seek access to new technology.

How we assess it for the scorecard
We assess the issuer's desired capital structure or targeted credit profile, its history of prior actions, including its track record of risk and liquidity management, and its adherence to its commitments. Attention is paid to management's operating performance and use of cash flow through different phases of economic and industry cycles. Also of interest is the way in which management responds to key events, such as changes in the credit markets and liquidity environment, legal actions, competitive challenges or regulatory pressures. Considerations include a company's public commitments in this area, its track record for adhering to commitments and our views on the ability of the company to achieve its targets.

When considering event risks in the context of scoring financial policy, we assess the likelihood and potential negative impact of M&A or other types of balance-sheet-transforming events. Management's appetite for M&A activity is assessed, with a focus on the type of transactions (i.e., core competency or new business) and funding decisions. Frequency and materiality of acquisitions and previous financing choices are evaluated. A history of debt-financed or credit-transforming acquisitions will generally result in a lower score for this factor. We may also consider negative repercussions caused by shareholders' willingness to sell the company.

We also consider a company's and its owners' past record of balancing shareholder returns and debtholders' interests. A track record of favoring shareholder returns at the expense of debtholders is likely to be viewed negatively in scoring this factor.

We consider financial policy in the context of the inherent volatility of commodity prices and downstream margins, which can affect operating cash flow generation, as well as the relatively high capital intensity of oil and gas activities. Integrated oil and gas companies typically undertake large investments in complex upstream and downstream projects, which are characterized by significant execution risk and long lead times, resulting in a large proportion of capital being tied up in assets under construction that are not producing profits or cash flow.

Notching Factor: Government Policy Framework

The scorecard incorporates a notching factor for government policy framework that may result in a downward adjustment to the preliminary outcome that results from the five weighted factors.

In some countries, governments influence the performance of integrated oil and gas companies through policy as well as through an ownership stake. For example, some integrated oil and gas companies may benefit from enormous oil and gas reserves and limited competition for resources within their country, which may reduce development and production costs. These favorable business characteristics may result in a preliminary outcome based on the five weighted scorecard factors that does not fully reflect our opinion of the credit risk. As another example, uncertainty related to fuel price regulations may be difficult to incorporate quantitatively into scorecard metrics.

Our assessment of this factor may result in a downward adjustment to the preliminary outcome that results from the Scale, Business Profile, Profitability and Efficiency, Leverage and Coverage, and Financial Policy factors. This notching factor can result in an adjustment of zero downward notches to a total of up to 10 downward notches in whole notch increments from the preliminary outcome to arrive at the scorecard-indicated outcome. In cases where we consider that the credit weakness represented by the notching factor is greater than the scorecard range, the company's rating reflects our view of the full impact of this risk, some of which may be incorporated outside the scorecard.

Why it matters

A government's policy framework, including its regulatory framework, legal framework, tax regime and energy policy, is important because actions and policies of the country of primary operations may prevent a company from realizing the economic value of its reserves absent these policy restraints.

Integrated oil and natural gas companies may be sources of significant, dependable cash flow for governments, particularly in some emerging market countries where the oil and gas company may be the primary source of fiscal revenue and control the bulk of the nation's hydrocarbon resources. Governments may regard some of these companies as major sources of employment and call upon them to play key roles in building infrastructure, providing social services or advancing government social policies. For example, some governments may require oil and gas companies to provide consumer subsidies for key products, such as gasoline or heating oil, or cross-industry subsidies, such as subsidies for power generation.

Governments may also compel companies to pay out large portions of their cash flow through royalties, dividends, special taxes or direct contributions to government development funds, in some cases to the detriment of the integrated oil and gas companies' financial flexibility and ability to reinvest. Actions and policies of the country of primary operations may also limit or prohibit foreign investment in the sector, or restrict imports, exports or access to technology, all of which may negatively affect a company's profitability or its ability to compete. In other cases, the government may influence the oil and gas company to consolidate with other state-owned enterprises, or it may reallocate resources away from the company.

Also, a lack of predictability in a government's policy framework typically increases risk for a company with its primary operations in that country. For example, a company may begin a project to develop reserves with expectations for a given return level based on the current tax regime, but changes in tax policy over the life of the project materially reduce the project's profitability. Such changes pose particular risk for oil and gas projects that may require years of development to generate positive cash flow. Uncertainty may also negatively affect a company's access to capital markets.

As a result, some integrated oil and gas companies may be subject to government influence and actions that create credit risk for that country's oil and gas sector generally, or for a particular company in the sector. This credit risk may extend beyond the general risk faced by any issuer operating in a particular country, which we consider through our cross-sector methodology that describes how we assess the impact of sovereign credit quality on other ratings.[4] For clarity, notching assigned for this scorecard factor relates to the more specific relationship between a sovereign and an integrated oil and gas company, whereas the impact of applying the cross-sector methodology is a rating consideration outside the scorecard (please see the "Other considerations" section).

How we assess it for the scorecard

Our qualitative assessment of this factor typically considers the regulatory and fiscal environments of a country in which the company generates most of its cash flow, with particular focus on the company's country of domicile, where a government can typically exert the most influence. For companies with some diversification, we may consider the influence of a government or governments whose actions could have a material impact on long-term profitability and cash flow, for example, a country representing 25% or more of cash flow. Geographical diversification of assets and cash flows may allow companies to mitigate regulatory and policy risks arising in a specific jurisdiction. We generally assess the historical, current and expected impact of the legal framework, tax regime and regulation on a company's profitability, cash flow generation and the value of its assets, as well as the predictability, transparency and consistency of overall government policy. Where government policies are unpredictable or subject to periodic adjustments, we may apply a notching adjustment even if the prevailing policies do not constrain the company's profitability or competitive position.

In assessing the government policy framework, we typically assess the level of the government's intrusion into an integrated oil company's markets and operations and the impact of this intrusion on operations, profitability, cash flow and leverage. Our assessment is forward-looking and considers the track record of the government's policies and actions as well as the company's responses.

We may consider the following in our assessment:

» Whether the government controls domestic prices for the company's products and whether these controls impede the company's profitability and cash flow generation.

» Whether the government requires the company to pay subsidies to customers or to companies in other industries.

» Whether the government restricts exports, imports or access to technology, such that it negatively affects the company's profitability, cash flow generation or competitive position.

» Whether the government's actions or policies limit the company's ability to reinvest in its operations.

» Whether the government's actions or policies prevent or limit foreign investment in the sector to the detriment of a company's profitability or ability to compete.

» Whether the company allocates resources to less profitable or loss-making operations based on government influence or to meet certain social policy goals.

» Whether the government imposes punitive windfall taxes or ad hoc taxes to support its fiscal position or to fund government projects.

» Whether the company directs its resources to non-core projects based on government influence.

» Whether the company's decisions regarding personnel and operations are influenced by the government in a manner that negatively affects its competitiveness.

Exhibit 3

Notching factor

Government policy framework (number of downward notches)

0	1-2	3-4	5-6	7-8	9-10
Low to no regulatory and fiscal risk: production and reserves are globally diversified or any concentrations are in countries with low to no regulatory risk; current restrictions on profitability, competitive position and operations are minimal, and regulation, legal framework, tax regime and energy policy in country of domicile or largest country of operations are highly predictable; and government has no power to influence the company's corporate governance, strategy or financial policies, or, if government has an ownership stake, its influence is neutral or benign.	Moderate regulatory and fiscal risk: more than half of production and reserves are in countries with moderate regulatory risk; current restrictions on profitability, competitive position and operations are minimal, and regulation, legal framework and tax regime in country of domicile or largest country of operations are somewhat subject to change; government objectives in country of domicile or in main countries of operations include promoting the development of the country's oil and gas resources, and objectives are largely compatible with the company's business and financial objectives; government has limited power to influence the company's corporate governance, strategy or financial policies or is unlikely to have a negative impact.	Somewhat elevated regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in country of domicile or largest country of operations may be subject to periodic adjustments but impose modest restrictions on the company's profitability, competitive position or operating capability; government objectives in country of domicile or in main country(ies) of operations include maximization of oil and gas revenue to help fund social policies and boost national employment, with potential for negative impact on the company's financial standing; government has some power to influence the company's corporate governance, strategy or financial policies with potential for some negative impact.	High regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in country of domicile or largest country of operations are unpredictable and somewhat constrain company's profitability, competitive position or operating capability; primary objective of government of domicile or in main country(ies) of operations is maximization of oil and gas revenue to fund social policies and boost national employment, with little consideration for the company's financial standing; government is likely to exercise influence on the company's corporate governance, strategy or financial policies with moderate negative impact.	Very high regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in country of domicile or largest country of operations are unpredictable and constrain the company's profitability, competitive position or operating capability; primary objective of government of domicile or in main country(ies) of operations is maximization of oil and gas revenue to fund social policies and boost national employment, with essentially no consideration for the company's financial standing; or government is likely to exercise influence on company's corporate governance, strategy or financial policies with significant negative impact.	Extremely high regulatory and fiscal risk: geographic diversification does not meaningfully reduce regulatory and fiscal risk; regulation, legal framework and tax regime in the country of domicile or the largest country of operations are highly unpredictable and severely constrain the company's profitability, competitive position or operating capability; primary objective of government of domicile or in main country(ies) of operations is maximization of oil and gas revenue to fund social policies and boost national employment, with no consideration for the company's financial standing; or government is likely to exercise influence on the company's corporate governance, strategy or financial policies at will and with significant negative impact.

Source: Moody's Investors Service

Other considerations

Ratings may reflect consideration of additional factors that are not in the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. Such factors include financial controls and the quality of financial reporting; corporate legal structure; the quality and experience of management; assessments of corporate governance as well as environmental and social considerations; and exposure to uncertain licensing regimes. Regulatory, litigation, liquidity, technology and reputational risk as well as changes to consumer and business spending patterns, competitor strategies and macroeconomic trends also affect ratings.

Following are some examples of additional considerations that may be reflected in our ratings and that may cause ratings to be different from scorecard-indicated outcomes.

Regulatory Considerations

Companies in the integrated oil and gas sector are subject to varying degrees of regulatory oversight. Effects of these regulations may entail limitations on operations, higher costs, and higher potential for technology disruptions and demand substitution. Regional differences in regulation, implementation or enforcement may advantage or disadvantage particular issuers.

Our view of future regulations plays an important role in our expectations of future financial metrics as well as our confidence level in the ability of an issuer to generate sufficient cash flows relative to its debt burden over the medium and longer term. Regulatory considerations may also play a role in our assessment of a company's business profile, because regulatory changes may impact a company's cost structure, technological requirements and market position, as well as its ability to replace reserves or build new facilities. We also typically assess the regulatory environment in our assessment of the Government Policy Framework notching factor. In some circumstances, regulatory considerations may also be a rating factor outside the scorecard, for instance when regulatory change is swift.

Environmental, Social and Governance Considerations
Environmental, social and governance (ESG) considerations may affect the ratings of issuers in the integrated oil and gas sector. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[5]

Integrated oil and gas companies face increasing environmental regulation of upstream operations and restrictions on access to new resources, which could increase costs and the ability to replace reserves. Decommissioning liabilities related to mature fields may also increase costs. Downstream operations also face stricter regulation of fuel specifications (such as sulfur content), refining facilities and air, water and carbon emissions.

The entire oil and gas sector faces carbon transition risks, the pace of which will largely depend on national implementation of global accords and technological change. Although natural gas produces much lower carbon dioxide emissions than other hydrocarbons, oil and natural gas are both energy-intensive, high-carbon emitters, creating the risk of product substitution, due to consumer preferences or policy initiatives such as carbon taxes. Regional variations in implementation may create different operating environments that create relative advantages and disadvantages for certain integrated oil and gas companies. Over time, these companies may invest in or acquire different types of businesses to diversify away from high-carbon products, and different strategies may entail different levels of risk and greater or lesser success. In the absence of substantial counterbalancing initiatives, the transition to a lower carbon future will likely result in increasing pressure on the credit profiles of integrated oil and gas companies. Carbon transition and other environmental risks may also lead to increased shareholder activism, incremental required disclosure, and a higher cost of capital. These considerations may play a role of our assessment of financial policy and our expectations for future financial metrics. Companies with stronger business profiles, lower production costs and greater levels of cash flow will have more flexibility to manage this transition.

In addition, upstream operations are exposed to the risk of industrial accidents, spills and disasters, especially offshore, and downstream operations may be vulnerable to plant accidents, disruptions and pipeline ruptures. Disparities in regulations and associated operational and legal costs are likely to favor some companies and create competitive challenges for others, and our expectation for environmental considerations may be an important aspect of our assessment of a company's business profile.

Social and governance considerations may play a role in our assessment of the Government Policy Framework notching factor, because countries may influence an integrated oil and gas company to fund social services or boost employment, to the detriment of the company's credit profile.

Financial Controls
We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including the proper tone at the top, centralized operations, and consistency in accounting policies and procedures. Auditors' reports on the effectiveness of internal controls, auditors' comments in financial reports and unusual restatements of financial statements or delays in regulatory filings may indicate weaknesses in internal controls.

Management Strategy
The quality of management is an important factor supporting a company's credit strength. Assessing the execution of business plans over time can be helpful in assessing management's business strategies, policies and philosophies and in evaluating management performance relative to the performance of competitors and our projections. Management's track record of adhering to stated plans, commitments and guidelines provides insight into management's likely future performance, including in stressed situations.

Excess Cash Balances
Some companies in this sector may maintain cash balances (meaning liquid short-term investments as well as cash) that are far in excess of their operating needs. This excess cash can be an important credit consideration; however, the underlying policy and motivations of the issuer in holding high cash balances are often as or more important in our analysis than the level of cash held. We have observed significant variation in company behavior based on differences in financial philosophy, investment opportunities, availability of committed revolving credit facilities and shareholder pressures.

Most issuers need to retain some level of cash in their business for operational purposes. The level of cash required to run a business can vary based on the region(s) of operation and the specific sub-sectors in which the issuer operates. Some issuers have very predictable cash needs and others have much broader intra-period swings, for instance related to mark-to-market collateral requirements under hedging instruments. Some companies may hold large levels of cash at times because they operate without committed, long-term bank borrowing facilities. Some companies may hold cash on the balance sheet to meet long-term contractual liabilities, whereas other companies with the same types of liabilities have deposited cash into trust accounts that are off balance sheet. The level of cash that issuers are willing to hold can also vary over time based on the cost of borrowing and macroeconomic conditions. The same issuer may place a high value on cash holdings in a major recession or financial crisis but seek to pare cash when inflation is high. As a result, cash on the balance sheet is most often considered qualitatively, by assessing the issuer's track record and financial and liquidity policies rather than by measuring how a point-in-time cash balance would affect a specific metric.

Across all corporate sectors, an important shareholder-focused motivation for cash holdings, sometimes over very long periods, is cash for acquisitions. In these cases, we do not typically consider that netting cash against the issuer's current level of debt is analytically meaningful; however, the cash may be a material mitigant in our scenario analysis of potential acquisitions, share buybacks or special dividends. Tax minimization strategies have at times been another primary motivation for holding large cash balances. Given shareholder pressures to return excess cash holdings, when these motivations for holding excess cash are eliminated, we generally expect that a large portion of excess cash will be used for dividends and share repurchases.

By contrast, some companies maintain large cash holdings for long periods of time in excess of their operating and liquidity needs solely due to conservative financial policies, which provides a stronger indication of an enduring approach that will benefit creditors. For instance, some companies have a policy to routinely pre-fund upcoming required debt payments well in advance of the stated maturity. Such companies may also have clearly stated financial targets based on net debt metrics and a track record of maintaining their financial profile within those targets.

While the scorecard in this methodology uses certain leverage and coverage ratios with total (or gross) debt, we do consider excess cash holdings in our rating analysis, including in our assessment of the financial and liquidity policy. For issuers where we have clarity into the extent to which cash will remain on the balance sheet and/or be used for creditor-friendly purposes, excess cash may be considered in a more quantitative manner. While we consider excess cash in our credit assessment for ratings, we do not typically adjust the balance sheet debt for any specific amount because this implies greater precision than we think is appropriate for the uncertain future uses of cash. However, when cash holdings are unusually large relative to debt, we may refer to debt net of cash, or net of a portion of cash, in our credit analysis and press releases in order to provide additional insight into our qualitative assessment of the credit benefit. Alternatively, creditor-friendly use of cash may be factored into our forward view of metrics, for instance when the cash is expected to be used for debt-repayment. We may also cite rating threshold levels for certain issuers based on net debt ratios, particularly when these issuers have publicly stated financial targets based on net debt metrics. In cases where we believe that cash on the balance sheet does not confer meaningful credit support, we are more likely to cite gross debt ratios in our credit analysis, press releases and rating threshold levels.

Even when the eventual use for excess cash is likely to be for purposes that do not benefit debtholders, large holdings provide some beneficial cushion against credit deterioration, and cash balances are often considered in our analysis of near-term liquidity sources and uses. Such downside protection is usually more important for low rated companies than for highly rated companies due to differences in credit stability and the typically shorter distance from potential default for issuers at the lower end of the ratings spectrum.

Liquidity

Liquidity is an important rating consideration for all integrated oil and gas companies, although it may not have a substantial impact in discriminating between two issuers with a similar credit profile. Liquidity can be particularly important for companies in highly seasonal operating environments where working capital needs must be considered, and ratings can be heavily affected by extremely weak liquidity. We form an opinion on likely near-term liquidity requirements from the perspective of both sources and uses of cash. For more details on our approach, please see our liquidity cross-sector methodology.[6]

Additional Metrics and Special Situations

The metrics included in the scorecard are those that are generally most important in assigning ratings to companies in this industry; however, we may use additional metrics to inform our analysis of specific companies. These additional metrics may be important to our forward view of metrics that are in the scorecard or other rating factors.

For example, free cash flow is not always an important differentiator of credit profiles. Strong companies with excellent investment opportunities may demonstrate multiyear periods of negative free cash flow while retaining solid access to capital and credit, because these investments will yield stable cash flows in future years. Weaker companies with limited access to credit may have positive free cash flow for a period of time because they have curtailed the investments necessary to maintain their assets and future cash-generating prospects. However, in some cases, free cash flow can be an important driver of the future liquidity profile of an issuer, which, as noted above, can have a meaningful impact on ratings.

While scale and replacement costs are considered in the scorecard, there can be cases where extremely large scale (in terms of reserves and production capacity) or extremely low finding and replacement costs confer benefits to the company that are considered outside of the scorecard. For example, where a single company's scale is so large that its production decisions have very meaningful and sustained impact on global oil markets, the scale of that company confers benefits that go beyond the more typical benefits reflected in the scorecard, such as diversification, operating efficiency and resilience.

Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in an issuer's fundamental creditworthiness, which may cause actual ratings to be lower than the scorecard-indicated outcome. Event risks — which are varied and can range from leveraged recapitalizations to sudden regulatory changes or liabilities from an accident such as a major oil spill — can overwhelm even a stable, well-capitalized firm. Some other types of event risks include sudden adverse political or geopolitical events, nationalization, large natural disasters, M&A, asset sales, spin-offs, litigation, pandemics, significant cyber-crime events and shareholder distributions.

Parental Support

Ownership can provide ratings lift for a particular company in the integrated oil and gas sector if it is owned by a highly rated owner(s) and is viewed to be of strategic importance to those owners. In our analysis of parental support, we consider whether the parent has the financial capacity and strategic incentives to provide support to the issuer in times of stress or financial need (e.g., a major capital investment or advantaged operating agreement), or has already done so in the past. Conversely, if the parent puts a high dividend burden on the issuer, which in turn reduces its flexibility, the ratings would reflect this risk.

Government-related issuers may receive ratings uplift due to expected government support. However, for certain issuers, government ownership can have a negative impact on the underlying Baseline Credit Assessment.[7] For example, price controls, onerous taxation and high distributions can have a negative effect on an issuer's underlying credit profile.

Cyclical Sectors

Scorecard-indicated outcomes in cyclical sectors such as integrated oil and gas may be higher than the rating at the top of the economic cycle and lower than the rating at the bottom of the cycle. While using annual financials in the scorecard typically provides very useful insights into recent or near-term results, ratings may also reflect our expectations for the progression of yearly results over a longer period that may include a full economic cycle. However, cyclicality itself poses many different types of risks to companies, and cycles do not reverse themselves with predictable regularity. A cyclical sector may also be affected by a secular decline or expansion. These considerations may be incorporated qualitatively into ratings.

Using the scorecard to arrive at a scorecard-indicated outcome

1. Measurement or estimation of factors in the scorecard

In the "Discussion of the scorecard factors" section, we explain our analytical approach for scoring each scorecard factor or sub-factor,[8] and we describe why they are meaningful as credit indicators.

The information used in assessing the sub-factors is generally found in or calculated from information in the company's financial statements or regulatory filings, derived from other observations or estimated by Moody's analysts. We may also incorporate non-public information.

Our ratings are forward-looking and reflect our expectations for future financial and operating performance. However, historical results are helpful in understanding patterns and trends of a company's performance as well as for peer comparisons. Financial ratios,[9] unless otherwise indicated, are typically calculated based on an annual or 12-month period. However, the factors in the scorecard can be assessed using various time periods. For example, rating committees may find it analytically useful to examine both historical and expected future performance for periods of several years or more.

All of the quantitative credit metrics incorporate our standard adjustments[10] to income statement, cash flow statement and balance sheet amounts for items such as underfunded pension obligations and operating leases. We may also make other analytical adjustments that are specific to a particular company.

2. Mapping scorecard factors to a numeric score

After estimating or calculating each factor or sub-factor, each outcome is mapped to a broad Moody's rating category (Aaa, Aa, A, Baa, Ba, B, Caa or Ca, also called alpha categories) and to a numeric score.

Qualitative factors are scored based on the description by broad rating category in the scorecard. The numeric value of each alpha score is based on the scale below.

Exhibit 4

Aaa	Aa	A	Baa	Ba	B	Caa	Ca
1	3	6	9	12	15	18	20

Source: Moody's Investors Service

Quantitative factors are scored on a linear continuum. For each metric, the scorecard shows the range by alpha category. We use the scale below and linear interpolation to convert the metric, based on its placement within the scorecard range, to a numeric score, which may be a fraction. As a purely theoretical example, if there were a ratio of revenue to interest for which the Baa range was 50x to 100x, then the numeric score for an issuer with revenue/interest of 99x, relatively strong within this range, would score closer to 7.5, and an issuer with revenue/interest of 51x, relatively weak within this range, would score closer to 10.5. In the text or table footnotes, we define the endpoints of the line (i.e., the value of the metric that constitutes the lowest possible numeric score, and the value that constitutes the highest possible numeric score).

Exhibit 5

Aaa	Aa	A	Baa	Ba	B	Caa	Ca
0.5-1.5	1.5-4.5	4.5-7.5	7.5-10.5	10.5-13.5	13.5-16.5	16.5-19.5	19.5-20.5

Source: Moody's Investors Service

3. Determining the overall scorecard-indicated outcome

The numeric score for each weighted sub-factor (or each weighted factor, when the factor has no sub-factors) is multiplied by the weight for that sub-factor (or factor), with the results then summed to produce an aggregate numeric score before notching factors (the preliminary outcome). We then consider whether the preliminary outcome that results from the five weighted factors should be notched downward[11] in order to arrive at an aggregate numeric score after the Government Policy Framework notching factor. The notching factor can result in zero downward notches to a total of up to 10 downward notches from the preliminary outcome to arrive at the scorecard-indicated outcome.

The aggregate numeric score before and after notching factors is mapped to an alphanumeric score. For example, an issuer with an aggregate numeric score before notching factors of 11.7 would have a Ba2 preliminary outcome, based on the ranges in the table below. If the notching factor resulted in two downward notches, the aggregate numeric score after the notching factor would be 13.7, which would map to a B1 scorecard-indicated outcome.

Exhibit 6

Scorecard-indicated outcome

Scorecard-indicated outcome	Aggregate numeric score
Aaa	x ≤ 1.5
Aa1	1.5 < x ≤ 2.5
Aa2	2.5 < x ≤ 3.5
Aa3	3.5 < x ≤ 4.5
A1	4.5 < x ≤ 5.5
A2	5.5 < x ≤ 6.5
A3	6.5 < x ≤ 7.5
Baa1	7.5 < x ≤ 8.5
Baa2	8.5 < x ≤ 9.5
Baa3	9.5 < x ≤ 10.5
Ba1	10.5 < x ≤ 11.5
Ba2	11.5 < x ≤ 12.5
Ba3	12.5 < x ≤ 13.5
B1	13.5 < x ≤ 14.5
B2	14.5 < x ≤ 15.5
B3	15.5 < x ≤ 16.5
Caa1	16.5 < x ≤ 17.5
Caa2	17.5 < x ≤ 18.5
Caa3	18.5 < x ≤ 19.5
Ca	19.5 < x ≤ 20.5
C	x > 20.5

Source: Moody's Investors Service

In general, the scorecard-indicated outcome is oriented to the corporate family rating (CFR) for speculative-grade issuers and to the senior unsecured rating for investment-grade issuers. For issuers that benefit from rating uplift from parental support, government ownership or other institutional support, we consider the underlying credit strength or Baseline Credit Assessment for comparison to the scorecard-indicated outcome. For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers.[12]

Assigning issuer-level and instrument-level ratings

After considering the scorecard-indicated outcome, other considerations and relevant cross-sector methodologies, we typically assign a CFR to speculative-grade issuers or a senior unsecured rating for investment-grade issuers. For issuers that benefit from rating uplift from government ownership, we may assign a Baseline Credit Assessment.[13]

Individual debt instrument ratings may be notched up or down from the CFR or the senior unsecured rating to reflect our assessment of differences in expected loss related to an instrument's seniority level and collateral. The documents that provide broad guidance for such notching decisions are the rating methodology on loss given default for speculative-grade non-financial companies, the methodology for notching corporate instrument ratings based on differences in security and priority of claim, and the methodology for assigning short-term ratings.[14]

Key rating assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.[15]

Limitations

In the preceding sections, we have discussed the scorecard factors and many of the other considerations that may be important in assigning ratings. In this section, we discuss limitations that pertain to the scorecard and to the overall rating methodology.

Limitations of the scorecard

There are various reasons why scorecard-indicated outcomes may not map closely to actual ratings.

The scorecard in this rating methodology is a relatively simple reference tool that can be used in most cases to approximate credit profiles of companies in this sector and to explain, in summary form, many of the factors that are generally most important in assigning ratings to these companies. Credit loss and recovery considerations, which are typically more important as an issuer gets closer to default, may not be fully captured in the scorecard. The scorecard is also limited by its upper and lower bounds, causing scorecard-indicated outcomes to be less likely to align with ratings for issuers at the upper and lower ends of the rating scale.

The weights for each factor and sub-factor in the scorecard represent an approximation of their importance for rating decisions across the sector, but the actual importance of a particular factor may vary substantially based on an individual company's circumstances.

Factors that are outside the scorecard, including those discussed above in the "Other considerations" section, may be important for ratings, and their relative importance may also vary from company to company. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.[16] Examples of such considerations include the following: how sovereign credit quality affects non-sovereign issuers, the assessment of credit support from other entities, the relative ranking of different classes of debt and hybrid securities, and the assignment of short-term ratings.

We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our ratings we often incorporate directional views of risks and mitigants in a qualitative way.

General limitations of the methodology

This methodology document does not include an exhaustive description of all factors that we may consider in assigning ratings in this sector. Companies in the sector may face new risks or new combinations of risks, and they may develop new strategies to mitigate risk. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

Ratings reflect our expectations for an issuer's future performance; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other considerations, typically diminishes. Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, industry competition, disruptive technology, or regulatory and legal actions. In any case, predicting the future is subject to substantial uncertainty.

Moody's related publications

Credit ratings are primarily determined through the application of sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. A list of sector and cross-sector credit rating methodologies can be found here.

For data summarizing the historical robustness and predictive power of credit ratings, please click here.

For further information, please refer to *Rating Symbols and Definitions*, which is available here.

Moody's Basic Definitions for Credit Statistics (User's Guide) can be found here.

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Endnotes

1 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

2 In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.

3 Liquidity management is distinct from the level of liquidity, which is discussed in the "Other considerations" section.

4 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

5 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

6 A link to a list of our cross-sector methodologies can be found in the "Moody's related publications" section.

7 For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers. A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

8 When a factor comprises sub-factors, we score at the sub-factor level. Some factors do not have sub-factors, in which case we score at the factor level.

9 For definitions of our most common ratio terms, please see *Moody's Basic Definitions for Credit Statistics (User's Guide)*. A link can be found in the "Moody's related publications" section.

10 For an explanation of our standard adjustments, please see the cross-sector methodology that describes our financial statement adjustments in the analysis of non-financial corporations.

11 Numerically, one downward notch adds 1 to the score.

12 A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

13 For an explanation of the Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for assessing government-related issuers. A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

14 A link to a list of our sector and cross-sector rating methodologies can be found in the "Moody's related publications" section.

15 A link to *Rating Symbols and Definitions* can be found in the "Moody's related publications" section.

16 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's related publications" section.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on https://ratings.moodys.com for the most updated credit rating action information and rating history.

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