MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY
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Rating Methodology

Communications Infrastructure

This rating methodology replaces the *Communications Infrastructure Methodology* published in August 2021. We have reordered and have made editorial updates to various sections of the methodology, and we have changed the presentation of the scorecard. We have removed outdated information. These updates do not change our methodological approach.

Scope

This methodology applies to companies globally that are primarily* engaged in providing communications infrastructure. Communications infrastructure companies provide specific physical or network infrastructure, including data transport services or processing capacity, to telecommunications carriers, pay television companies, corporations and government entities, as well as other types of companies and institutions.

Although communications infrastructure companies provide telecommunications services, they are generally more specialized than the companies covered under our methodology for telecommunications service providers,[1] and they provide communications infrastructure on a wholesale basis rather than to retail consumers directly.

Tower companies and data centers that are or convert to real estate investment trusts (REITs)[2] are rated using our methodology for REITs and other commercial real estate firms.[3] Other companies involved in the communications infrastructure business that are not REITs but whose primary business includes significant ownership, development or management of real estate properties, projects or companies, and whose income stream is principally derived from leases of real estate assets or other real estate-based activities, rather than that of activities tied to technological equipment and associated risks, are also rated using the methodology for REITs and other commercial real estate firms.

*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.

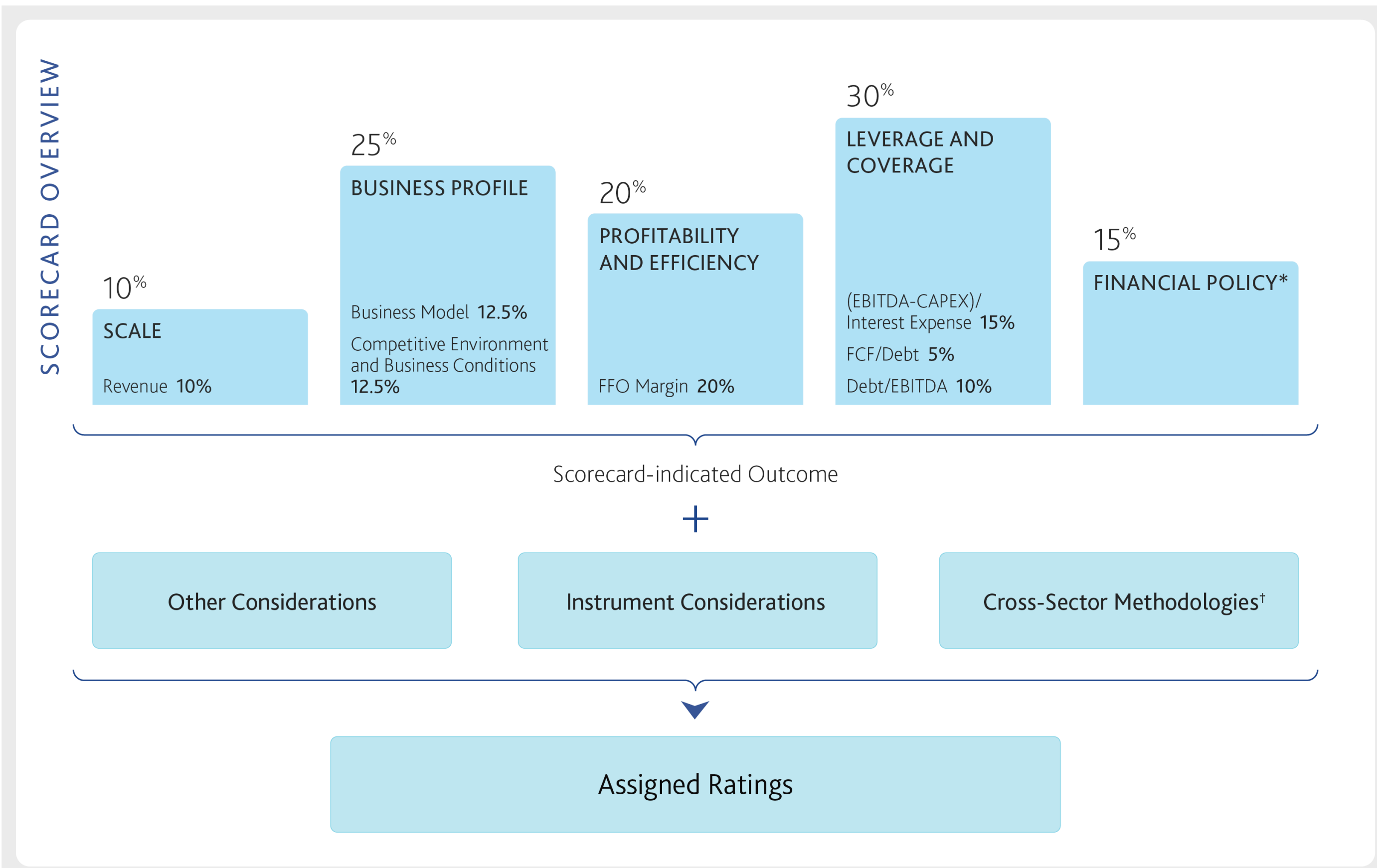
Rating approach

In this rating methodology, we explain our general approach to assessing credit risk of issuers in the communications infrastructure 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 communications infrastructure companies, which includes the use of a scorecard.[4] 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 communications infrastructure methodology framework



* 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

Communications infrastructure 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

Communications infrastructure scorecard

	SCALE (10%)	BUSINESS PROFILE (25%)		PROFITABILITY and EFFICIENCY (20%)	LEVERAGE and COVERAGE (30%)			FINANCIAL POLICY (15%)
	Revenue (USD Billion)[1] (10%)	Business Model (12.5%)	Competitive Environment and Business Conditions (12.5%)	FFO Margin[2] (20%)	(EBITDA - CAPEX) / Interest Expense[3] (15%)	FCF / Debt[4] (5%)	Debt / EBITDA[5] (10%)	
Aaa	≥ $60	**Satellite:** Global FSS provider that owns a very large constellation of satellites, in-orbit redundancy, exceptional customer diversity, and extremely broad industry exposure; exclusive orbital slots to provide coverage around the world, including significant spectrum capacity to handle high-bandwidth data transmissions; other license awards are prohibited by regulators; and in-market fiber capacity is non-existent. **Towers:** Dominant global provider of independent tower sites to wireless carriers in regions where the operator controls substantially all tower sites, and government regulations prohibit new tower construction; operator owns the towers and land; and customers are spread across the wireless carriers' markets. **Fiber Networks and Data Centers:** Dominant global provider of data center services, fiber connectivity (with broad product diversity) or network interconnection with exclusive internet access points in its service area; exceptional client diversity; company owns all of the data center properties or fiber routes it serves; has primary leasehold rights or easements in buildings and floors/risers it serves; and regulations prevent entry of new competitors.	Exclusive provider of services to its clients within the coverage area; very long-term contracts; unique service offering unmatched by peers; virtually no customer churn; and government regulations restrict virtually any entry of new competitors.	≥ 95%	≥ 12x	≥ 45%	≤ 0.5x	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 very strong credit profile over the long term.
Aa	$30 - $60	**Satellite:** Global or regional FSS provider that owns a large constellation of satellites, in-orbit redundancy, excellent client diversity, and very broad industry exposure; exclusive orbital slots to provide coverage around the world, including significant spectrum capacity to handle high-bandwidth data transmissions; and in-market fiber capacity is non-existent. **Towers:** Multi-national provider of independent tower sites to wireless carriers in regions with developed independent tower sector in which independent owners control greater than a majority of industry cell sites; location exclusivity and zoning regulations prohibit new tower construction; and customers are spread across the wireless carriers' markets. **Fiber Networks and Data Centers:** Dominant global or national provider of data center services, fiber connectivity (with broad product diversity) or network interconnection with exclusive internet access points in its service area; excellent customer diversity; company owns all of the data center properties or fiber routes it serves; has primary leasehold rights or easements in buildings and floors/risers it serves; and regulations limit entry of new competitors.	Dominant provider of services to its clients within the coverage area; very long-term contracts; highly specialized service offering; very low customer churn; and government regulations severely limit entry of new competitors.	75% - 95%	7x - 12x	30% - 45%	0.5x - 1x	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 strong credit profile over the long term.

	SCALE (10%)	BUSINESS PROFILE (25%)		PROFITABILITY and EFFICIENCY (20%)	LEVERAGE and COVERAGE (30%)			FINANCIAL POLICY (15%)
	Revenue (USD Billion)[1] (10%)	Business Model (12.5%)	Competitive Environment and Business Conditions (12.5%)	FFO Margin[2] (20%)	(EBITDA - CAPEX) / Interest Expense[3] (15%)	FCF / Debt[4] (5%)	Debt / EBITDA[5] (10%)	
A	$10 - $30	**Satellite:** Global or regional FSS provider, with a large constellation of satellites, in-orbit redundancy, very good client diversity, and broad industry exposure; desirable orbital slots to provide coverage around the world, including significant spectrum capacity to handle high-bandwidth data transmissions. **Towers:** Multi-national provider of independent tower sites to wireless carriers in regions with developed independent tower sector in which independent owners control at least a majority of the cell sites; location exclusivity and zoning regulations significantly constrain new tower construction; customers are spread across the wireless carriers' market. **Fiber Networks and Data Centers:** Global or national provider of data center services, fiber connectivity (with broad product diversity) or network interconnection at critical internet access points, resulting in location exclusivity; very good customer diversity; company owns the vast majority of the data center properties or fiber routes it serves; has primary leasehold or easements in buildings and floors/risers it serves.	Strongly competitive provider of services within the coverage area; long-term contracts; specialized service offering; low customer churn; high barriers to entry for competitors and high barriers to exit for the customer.	60% - 75%	4x - 7x	20% - 30%	1x - 1.5x	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.
Baa	$3 - $10	**Satellite:** Regional FSS provider with a medium-size constellation of satellites, good client diversity and broad industry exposure; desirable orbital slots to provide coverage in the regions it serves. **Towers:** National or regional provider of independent tower sites to wireless carriers in regions with developed independent tower sector in which independent owners control a meaningful amount of the cell sites; location exclusivity and zoning regulations constrain new tower construction; some customer concentration exists, albeit with a dominant carrier. **Fiber Networks and Data Centers:** National or regional provider of data center services, fiber connectivity (with broad product diversity) or network interconnection at critical internet access points; good customer diversity; company owns a majority of the fiber routes it serves; has primary leasehold or easements in buildings and floors/risers it serves.	Competitive provider of services within the coverage area against a modest number of viable alternative providers; long-term contracts; some service differentiation; modest customer churn; high barriers to exit for the customer.	50% - 60%	3x - 4x	10% - 20%	1.5x - 3x	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	$1 - $3	**Satellite:** Single-country FSS provider in area with increasing fiber capacity, or global VSAT[6] provider with good client diversity but lacks broad product diversity (primarily data services to maritime and remote regions); limited owned transponder capacity, but has relationships with major FSS providers to provide coverage around the world. **Towers:** Regional provider of independent tower sites to wireless carriers in regions with less developed independent tower sector in which wireless carriers control more than a majority of the cell sites; limited zoning restrictions on new tower construction. Some customer concentration exists, albeit with a dominant carrier. **Fiber Networks and Data Centers:** Regional provider of data center services, fiber connectivity or network interconnection; good customer diversity, but lacks broad product diversity; company leases most of the fiber routes and properties it serves; relies on secondary arrangements to gain access into buildings and floors/risers it serves.	Reasonably competitive provider within the coverage area against some viable alternative providers; primarily medium-term contracts; limited differentiation of service offering; moderate customer churn; few barriers to entry other than availability of capital; high barriers to exit for the customer.	40% - 50%	2x - 3x	5% - 10%	3x - 5x	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.

	SCALE (10%)	BUSINESS PROFILE (25%)		PROFITABILITY and EFFICIENCY (20%)	LEVERAGE and COVERAGE (30%)			FINANCIAL POLICY (15%)
	Revenue (USD Billion)[1] (10%)	Business Model (12.5%)	Competitive Environment and Business Conditions (12.5%)	FFO Margin[2] (20%)	(EBITDA - CAPEX) / Interest Expense[3] (15%)	FCF / Debt[4] (5%)	Debt / EBITDA[5] (10%)	
B	$0.25 - $1	**Satellite:** Single-country FSS provider in area with significant, built-out fiber capacity, or regional VSAT provider with significant customer concentration, limited client diversity and lack of broad product diversity (primarily data services to maritime and remote regions); limited owned transponder capacity. **Towers:** Regional provider of independent tower sites to wireless carriers in regions with less developed independent tower sector in which wireless carriers control more than the majority of cell sites; few zoning restrictions govern new tower construction; customer concentration exists. **Fiber Networks and Data Centers:** Limited-reach regional provider of data center services, fiber connectivity or network interconnection; limited customer diversity and lacks broad product diversity; company leases most of the fiber routes and properties it serves; lacks significant access to buildings and floors/risers in markets it serves.	Modestly competitive provider, or industry has many viable alternatives to the service the company provides; primarily short-term contracts; minimal differentiation of service offering; meaningful customer churn; barriers to entry limited to availability of capital; high barriers to exit for the customer; faces competition from IT integrators and telcos.	30% - 40%	1x - 2x	0% - 5%	5x - 7x	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	$0.1 - $0.25	**Satellite:** Primarily a reseller of spare satellite capacity; aging fleet of satellites requiring significant replacements; or limited bandwidth capacity. **Towers:** Local provider of independent tower sites to wireless carriers in regions where the independent tower sector is in the very early stages of development; few zoning restrictions govern new tower construction; or significant customer concentration exists. **Fiber Networks and Data Centers:** Local provider of data center services, fiber connectivity or network interconnection; lacks both broad product and customer diversity; company leases substantial portions of its fiber routes and the properties it serves; or lacks significant access to buildings and floors/risers in markets it serves.	Weakly positioned provider or industry has a large number viable, competitive alternatives to the service the company provides; short-term contracts; commodity-like service offering; high customer churn; barriers to entry limited to availability of capital; low barriers to exit for the customer; or faces competition from IT integrators and telcos.	20% - 30%	0.5x - 1x	-5% - 0%	7x - 9x	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring in varied economic environments.
Ca	< $0.1	**Satellite:** Primarily a reseller of spare satellite capacity; dependent on a single satellite needing replacement in the near term, for which no committed funding source exists; or limited bandwidth capacity. **Towers:** Start-up provider of independent tower sites to wireless carriers in regions where the independent tower sector is not developed; no zoning restrictions to constrain new tower construction; or significant customer concentration with weak wireless services providers exists. **Fiber Networks and Data Centers:** Very small provider of data center services, fiber connectivity or network interconnection; lacks broad product diversity and has high customer concentration; company leases substantially all of the fiber routes and the properties it serves; or lacks significant access to buildings and floors/risers.	Very weakly positioned provider, or industry has a great many viable, highly competitive alternatives to the service the company provides; or short-term contracts with weak customers; commodity-like service offering; very high customer churn; minimal entry barriers for competitors and low barriers to exit for customers; or faces high competition from IT integrators and telcos.	< 20%	< 0.5x	< -5%	> 9x	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring even in healthy economic environments.

[1] For the linear scoring scale, the Aaa endpoint value is $80 billion. A value of $80 billion 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] For the linear scoring scale, the Aaa endpoint value is 150%. A value of 150% 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 score of 20.5.
[3] For the linear scoring scale, the Aaa endpoint value is 18x. A value of 18x 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.
[4] For the linear scoring scale, the Aaa endpoint value is 70%. A value of 70% or better equates to a numeric score of 0.5. The Ca endpoint value is -10%. A value of -10% or worse equates to a numeric score of 20.5.
[5] For the linear scoring scale, the Aaa endpoint value is zero. A value of zero or better equates to a numeric score of 0.5. The Ca endpoint value is 13x. A value of 13x or worse equates to a numeric score of 20.5, as does a negative Debt/EBITDA value.
[6] Very Small Aperture Terminals (VSAT) are small earth stations that share satellite resources among a large number of similar terminals. Individual VSAT terminals typically transmit at relatively low power levels, and use relatively small equipment that allows flexible installation of a satellite network earth station directly at a wide variety of user locations and platforms.
Source: Moody's Investors Service

Sector overview

Communications infrastructure companies typically offer their customers a lease-like, off-balance-sheet alternative to owning and financing the assets themselves. The physical assets communications infrastructure companies own play an essential role in delivering mobile phone service, internet capacity and broadcast television to consumers. The industry is capital-intensive, and companies require financial resources in order to support the large upfront investments needed to grow.

Nearly all companies in the sector benefit from some degree of recurring revenue and long-term contracts, as well as location exclusivity that creates barriers to entry.

In terms of business models, we categorize the companies covered under this methodology as satellite operators, independent tower operators,[5] or fiber networks and data centers.

» Fixed satellite service (FSS) operators transmit communications between stations on the ground and geostationary satellites, which move with the earth and appear to maintain a fixed point in the sky. These satellites can offer a cost-effective way of broadcasting the same information to multiple recipients across a wide geography. For example, the broadcast of a linear television channel (whereby a broadcaster sets the programming schedule, as opposed to on-demand television) usually relies on satellite service. Although satellites are generally not as cost-effective as terrestrial networks for two-way communication, they remain indispensable for sparsely populated, remote or maritime markets.

» Wireless tower operators provide infrastructure and services that enable wireless carriers to provide last-mile communications[6] to end-users.

Fiber networks provide the backbone for internet connectivity. Data centers provide customers with dedicated sites that house data processing and network equipment and maintain redundant network access in a controlled environment with high security at a lower cost than customers could get investing in the infrastructure themselves. Data center products may also include managed services, bandwidth services and security services.

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 (10% weight)

Why it matters

Scale can be an important indicator of a company's ability to influence business trends and pricing within its segments and to support a stable or growing market position. Larger scale can make a company more resilient to changes in demand or exogenous events, such as natural disasters, macroeconomic shocks, regional disruptions or technological change. Communications infrastructure companies provide a lease-like alternative to owning assets, so larger companies are also less vulnerable to potential displacement by their customers, which generally have the option to build their own infrastructure.

How we assess it for the scorecard

Scale is measured (or estimated in the case of forward-looking expectations) using total reported revenue in billions of US dollars.

Factor: Business Profile (25% weight)

Why it matters

The business profile of a communications infrastructure company provides critical indications of the strength or weakness of its business model based on whether it owns or leases assets, its product and service offering, and the exclusivity of the location of its infrastructure.

A communications infrastructure company's competitive environment and business conditions, including the stability and tenor of its contracts, also affects its ability to generate cash flow and raise external capital. All else equal, barriers to entry and long-term contracts with strong counterparties can foster stable cash flows that may support higher leverage than companies that face more robust competition.

Business Model

Most communications infrastructure providers are asset heavy. Asset ownership is a credit strength because owning the assets gives an operator more control over its costs than reselling the spare capacity of other providers. Also, companies need some excess asset capacity to ensure as close to zero downtime as possible for customers, given the critical nature of services provided. For example, satellite companies need redundancy to manage possible in-orbit malfunctions.

A communications infrastructure provider with expansive geographic reach and a broad product line is able to serve a diverse customer base, which helps insulate it from region-, industry- or customer-specific weaknesses. Tower companies, which focus on serving wireless operators, tend to have a less diversified customer base than other types of communications infrastructure providers; however, high barriers to entry, the essential nature of the service they provide and the typically strong credit profiles of their customers help offset this risk.

In addition to ownership and breadth of assets, location exclusivity can create barriers to entry. For example, the high cost of building out a fiber network makes overbuilding less likely where there are already alternative providers, and a company with an expansive network of fiber routes can protect its position. Similarly, data center operators with facilities in key network locations have a greater opportunity to interconnect with other carriers or customers, a market advantage that may be difficult for other operators to replicate.

Competitive Environment and Business Conditions

The degree of competition a company faces directly affects its pricing power and marketing expenses. Communications infrastructure companies often offer services that their key customers could self-provide (if they were willing to make the required investments), so reliability, product differentiation, execution and competitive cost structures are critical. A product set that includes exclusive, specialized offerings leads to pricing power, whereas more commodity-like products and services could make a company susceptible to supply-demand imbalances and volatile service pricing. A differentiated offering also usually leads to higher switching costs for customers, which can lend stability to the customer base. The ability to innovate and keep pace with technological change is necessary for a company to maintain market share and achieve growth.

Given the industry's high capital intensity, a stable customer base, long-term contracts and low customer churn are often essential to ensuring an adequate return on investment, especially since companies typically invest capital before they start to generate cash flow from their contracts.

Customer churn can have varying degrees of negative impact for the different sub-sectors. In some cases, such as satellite or tower operators, some churn is positive in that it allows for price escalation in markets where demand is strong. However, fiber carriers that focus on local connectivity are unlikely to be able to reuse equipment, and high churn can have disproportionately negative effects on cash flow.

How we assess it for the scorecard

Scoring for this factor is based on two sub-factors: Business Model; and Competitive Environment and Business Conditions.

BUSINESS MODEL:

For all sub-sectors, we compare the proportion of assets that the company owns to the proportion it leases. For example, a satellite operator with a large constellation of owned satellites will typically score better for this sub-factor than one that resells the spare capacity of other operators.

For a data center or fiber network operator, we typically consider the ownership status of the network it uses to serve multiple customers and how it accesses the buildings of specific customers. A data center or fiber network operator that owns significant interconnection facilities in locations critical to customers will generally receive a higher score for this sub-factor than one that leases more of its assets and relies on secondary arrangements for access to the buildings of the customers it serves.

We assess diversification across customers and geographic reach. We typically consider the number of total customers and revenue concentration in customers or industries, based on available data. For tower companies, which focus on serving wireless operators and tend to have a less diversified customer base, we may assess whether the revenue is spread across the major wireless operators as well as the financial profile of those customers, because strong wireless operators themselves typically have highly diversified and more stable customer bases.

For satellite operators and fiber networks and data centers, we consider both the breadth of the industries they serve and the number of customers. We view international diversification positively if it affords the provider with key strategic landing points or internet gateways in regions with high traffic. We view it negatively if the diversification is in emerging markets and likely to add risk. The location of a company's assets generally provides some indication of its customer base, although we may consider any segment disclosure in financial reporting.

Our assessment of location exclusivity can vary by sub-sector, but we typically consider the size and location of the asset base. Satellite operators can achieve an exclusive market presence with orbital slots and spectrum capacity, and we typically look at the location, number and redundancy of satellites.

For tower operators, we typically consider the number and location of its towers. Barriers to entry can result from zoning regulations, and tower operators that own assets in markets with heavy zoning restrictions generally score higher for this sub-factor.

For fiber networks, we typically consider the length and location of a company's network; for example, we may assess the route miles or kilometers of a fiber network. For a data center operator, we consider the number and locations of data centers and the total floor space or power capacity of its facilities.

COMPETITIVE ENVIRONMENT AND BUSINESS CONDITIONS:

Our assessment of the competitive environment and business conditions is typically based on the number and strength of competitors in the company's market that provide a comparable offering. The fewer viable alternatives for customers, the better a company will typically score for this sub-factor. Government regulation can also play a role in the number of competitors.

We also typically assess how the product and service offerings stack up relative to peers in terms of unique offerings versus commodity-like offerings. This assessment considers execution and customer service as well as how technologically advanced the product and service offerings are. We also often consider trends in price per unit — the price paid for internet capacity, for example —

which gives some indication of any price erosion and therefore a sense of the value added and how easily the customer can replace the product or service. A company with a truly differentiated offering will usually score higher than one with a commodity-like offering. If a company does not keep up with evolving technology, we will take it into account, and it may lead to a lower score for this sub-factor.

Companies generally provide some information about the tenure of their contracts and customer churn. For example, satellite operators derive revenue from satellite-distributed video markets and from data services. Since video contracts are usually for at least 10 years, compared to about three years for data contracts, we typically consider the mix of revenue from different end-markets as well as information about individual contracts that is available. Tower operators in markets with developed tower-sharing can score higher for this sub-factor, because the number of competitors is limited. We may consider the company's revenue backlog and its churn metrics as well, if they are disclosed, to better understand the degree of recurring revenue.

Factor: Profitability and Efficiency (20% weight)

Why it matters

Profits are necessary in order for a company to reinvest in its business and maintain a competitive position, and sustained high profitability generally indicates a substantial competitive advantage. The funds from operations (FFO) margin takes into account a company's capital allocation choices by capturing its interest expense and taxes, making it an important metric for this capital-intensive industry.

How we assess it for the scorecard

FFO MARGIN:

We use FFO margin, which is the ratio of FFO to revenue.

Factor: Leverage and Coverage (30% weight)

Why it matters

Leverage and coverage measures are important indicators of a company's financial flexibility and long-term viability, including its ability to generate sufficient returns to maintain access to the capital markets. Given the capital intensity of the industry, companies that are able to finance projects with internally generated cash flow and external sources have an inherent advantage.

The factor comprises three sub-factors:

(EBITDA - Capex) / Interest Expense

The ratio of earnings before interest, taxes, depreciation and amortization minus capital expenditures to interest expense ((EBITDA - Capex)/Interest Expense) indicates a company's ability to meet its interest obligations and invest in fixed assets with EBITDA.

FCF / Debt

The ratio of free cash flow to debt (FCF/Debt) provides a different view of a company's ability to repay its debt compared with Debt/EBITDA, because it compares cash flow generation after working capital movements, capital expenditures and dividends to total debt.

Debt / EBITDA

The ratio of debt to earnings before interest, taxes, depreciation and amortization (Debt/EBITDA) is an indicator of debt serviceability and financial leverage. The ratio is commonly used in this industry as a proxy for comparative financial strength.

How we assess it for the scorecard

Scoring for this factor is based on three sub-factors: (EBITDA – Capex)/Interest Expense; FCF/Debt; and Debt/EBITDA.

(EBITDA – CAPEX) / INTEREST EXPENSE:

The numerator is EBITDA minus capital expenditures, and the denominator is interest expense.

FCF / DEBT:

The numerator is free cash flow, and the denominator is total debt.

DEBT / EBITDA:

The numerator is total debt, and the denominator is EBITDA.

When evaluating leverage and coverage metrics for communications infrastructure companies, we typically take into account the potential that advance payments that are recognized as deferred revenue could create a mismatch in the timing of when cash is received and when revenue and costs are recognized.

For example, a fiber network company might get a significant upfront cash payment for the sale of dark fiber (unlit fiber), and then amortize the revenue over the 10 years the customer will use that dark fiber. The company will continue to record revenue and EBITDA (typically at a very high margin) over the life of the contract, but it will not receive additional cash payments. This non-cash EBITDA strengthens the debt-to-EBITDA ratio and interest-coverage metrics but does not actually fund debt repayment or interest expense. The free-cash-flow metric, on the other hand, reflects when the company received the cash. Although we do not typically make adjustments for such contracts, we consider them qualitatively, including in our liquidity assessment.

Another potentially important mismatch arises when data center operators have contracts that contain rent escalators. A data center company often pays lower rent on a cash basis in the early years of a lease, which helps it achieve profitability on a cash basis as it secures more clients to fill its space. For accounting purposes, the rent expense will likely be spread more evenly over the tenor of the lease, so as revenue increases with an increase in customers, the company will appear to be benefitting from operating leverage, and its EBITDA margin will improve on a reported basis. The simultaneous increase in cash rent payments, however, means that this benefit is overstated from a cash perspective. Similar to the previous example, we may consider this dynamic and its impact on leverage and coverage metrics on a qualitative basis as well as in the assessment of liquidity.

Factor: Financial Policy (15% weight)

Why it matters

Management and board tolerance for financial risk is an important rating determinant, because it directly affects debt levels, credit quality, and the risk of adverse changes in financing and capital structure.

Our assessment of financial policies includes the perceived tolerance of a company's governing board and management for financial risk and the future direction for the company's capital structure. 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.

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 that 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[7] is an important aspect of overall risk management and can provide insight into risk tolerance.

Many communications infrastructure companies have historically used acquisitions to spur revenue growth, expand business lines, consolidate market positions and advance cost synergies.

How we assess it for the scorecard

We assess the company'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.

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 debt holders' interests. A track record of favoring shareholder returns at the expense of debt holders is likely to be viewed negatively in scoring this factor.

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; exposure to uncertain licensing regimes; and possible government interference in some countries. 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.

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 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.

Environmental, Social and Governance Considerations

Environmental, social and governance (ESG) considerations may affect the ratings of issuers in the communications infrastructure sector. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[8]

Among the areas of focus in corporate governance, for example, are audit committee financial expertise, the incentives created by executive compensation packages, related party transactions, interactions with outside auditors and ownership structure.

Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this industry. 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.

Liquidity

Liquidity is an important rating consideration for all communications infrastructure 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.[9]

Excess Cash Balances

Some companies in this sector 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 companies 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 companies 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 on 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 analyses 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 leverage ratios with total (or gross) debt rather than net debt (debt/EBITDA and FCF/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.

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.

Additional Metrics

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, the EBITDA margin is not always an important differentiator of credit profiles. Highly leveraged companies may have apparently strong EBITDA margins but weak credit profiles. Also, a strong EBITDA margin may be more indicative of the industry or sub-sector within which a company operates than of the strength of the company. For example, tower companies typically have had EBITDA margins higher than 50%, whereas fiber networks and data center operators generally have had lower margins, although still often 30% or higher. However, in some cases, the EBITDA margin can help differentiate a company within a sector. A fiber network or data center that offers more value-added products and services will likely have a stronger EBITDA margin than one that provides more commodity-like products and services. For all companies, a resale service likely has a lower margin than a wholly owned service. The trend in the EBITDA margin for a given company is also often important to our view of forward metrics.

We usually consider EBITDA margin in conjunction with capital intensity, which can be very high for this industry. For example, a fiber network operator may generate 50% EBITDA margins but spend 30% of revenue on capital expenditures, compared with an integrated carrier, which may generate 35% EBITDA margins and spend 15% of revenue on capital expenditures. These two businesses, if similarly capitalized, would generate approximately the same amount of cash flow.

Non-Wholly Owned Subsidiaries

Some companies in the communications infrastructure industry choose to dilute their equity stake in certain material subsidiaries, for example through an initial public offering, which may in some cases negatively affect future financial flexibility. While improving cash holdings on a one-off basis, selling minority interests in subsidiaries may have a negative impact on cash flows available to the parent company that may not be fully reflected in consolidated financial statements.[10] The parent's share of dividend flows from a non-wholly owned subsidiary is reduced, and minority stakes can increase structural subordination, since dividend flows to minority interest holders are made before the cash flows are available to service debt at the parent company. While less frequent, sale of a minority stake may be accompanied by policies protective of the subsidiary that further limit the parent's financial flexibility, for instance, restrictions on cash pooling with other members of the corporate family, limitations on dividends and distributions, or arms-length business requirements. Minority stakeholders may have seats on the board of the subsidiary. In many cases, we consider the impact of non-wholly owned subsidiaries qualitatively. However, in some cases we may find that an additional view of financial results, such as analyzing cash flows on a proportional consolidation basis, may be very useful to augment our analysis based on consolidated financial statements. When equity dilution or structural subordination arising from non-wholly owned subsidiaries is material and negative, the credit impact is captured in ratings but may not be fully reflected in scorecard-indicated outcomes.

For companies that hold material minority interest stakes, consolidated funds from operations typically includes the dividends received from the minority subsidiary, while none of its debt is consolidated. When such dividends are material to the company's cash flows, these cash flows may be subject to interruption if they are required for the minority subsidiary's debt service, capital expenditures or other cash needs. When minority interest dividends are material, we may also find that proportional consolidation or another additional view of financial results is useful to augment our analysis of consolidated financials. We would generally also consider structural subordination in these cases.[11] When these credit considerations are material, their impact is captured in ratings but may not be fully reflected in scorecard-indicated outcomes.

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 — can overwhelm even a stable, well-capitalized firm. Some other types of event risks include M&A, asset sales, spin-offs, litigation, pandemics, significant cyber-crime events and shareholder distributions.

Regulatory Considerations

Companies in the communications infrastructure industry 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 or their customers.

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 also play a role in our assessment of a company's business model and competitive environment. For example, regulators may subject operators to price caps, or may restrict or encourage new entrants in a market.

Given the importance of connectivity, governments may provide support for investments in communications infrastructure, either directly or indirectly. The availability of independent infrastructure providers has, generally, resulted in greater market competition among communications service providers by lowering the barriers to entry for new carriers, which is generally supported by industry regulators, whose mandate includes promoting competition. In this sense, the regulatory environment could benefit smaller communications infrastructure companies and threaten incumbent ones.

In some circumstances, regulatory considerations may also be a rating factor outside the scorecard — for instance, when regulatory change is swift.

Parental Support

Ownership can provide ratings lift for a particular company in the communications infrastructure 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 supply 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.[12] For example, price controls, onerous taxation and high distributions can have a negative effect on an issuer's underlying credit profile.

Other Institutional Support

In some countries, large corporate issuers have received government or banking support in the event of financial difficulties because of their overall importance to the functioning of the economy. In Japan, our corporate ratings consider the support that has operated there for large and systemically important organizations. Over the years, this has resulted in lower levels of default than might otherwise have occurred. Our approach considers whether the presence of group and banking relationships may provide support when systemically important companies encounter significant financial stress.

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,[13] 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,[14] 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[15] 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 3

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 4

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 sub-factor (or each 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. The aggregate numeric score is then mapped back to a scorecard-indicated outcome based on the ranges in the table below.

Exhibit 5

Scorecard-indicated outcome

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

Source: Moody's Investors Service

For example, an issuer with an aggregate numeric score of 11.7 would have a Ba2 scorecard-indicated outcome.

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.[16]

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.[17]

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.[18]

Key rating assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.[19]

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.[20] 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 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 We use the term REITs to refer to real estate trusts globally.

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

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

5 Independent means independent of wireless telecommunications service providers, which sometimes operate their own towers.

6 Last-mile communications refers to technology that is used to connect physical and network infrastructure to a home or business.

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

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

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

10 For example, in the case of an equity stake reduction in a subsidiary down to 75%, in the parent's financial statements, all revenue and EBITDA of the subsidiary would typically still be consolidated at the group level.

11 Proportional consolidation brings a portion of the minority subsidiary's debt onto the balance sheet, but this debt is structurally senior to debt at the parent company, because it is closer to the assets and cash flows of the minority subsidiary.

12 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.

13 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.

14 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.

15 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.

16 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.

17 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.

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

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

20 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 ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

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