MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY
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Rating Methodology

Distribution and Supply Chain Services

This rating methodology replaces the *Distribution & Supply Chain Services Industry* methodology published in June 2018. We have reordered and have made editorial updates to various sections of the methodology. We have removed outdated information.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 distribution and supply chain services to their customers. The companies rated using this methodology represent a diverse group of issuers differentiated by scale, strategic profile, geographic reach and industry focus. Some issuers provide distribution services to the healthcare industry (i.e., to pharmaceuticals, medical products, laboratory supplies or pharmacy benefit management companies) while others provide distribution, value-added resale or manufacturing services for component manufacturers, original equipment manufacturers and software publishers in the technology, electronics or communications arenas. Many issuers focus on wholesale distribution services across consumer goods, electrical, energy or metals industries.

*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.

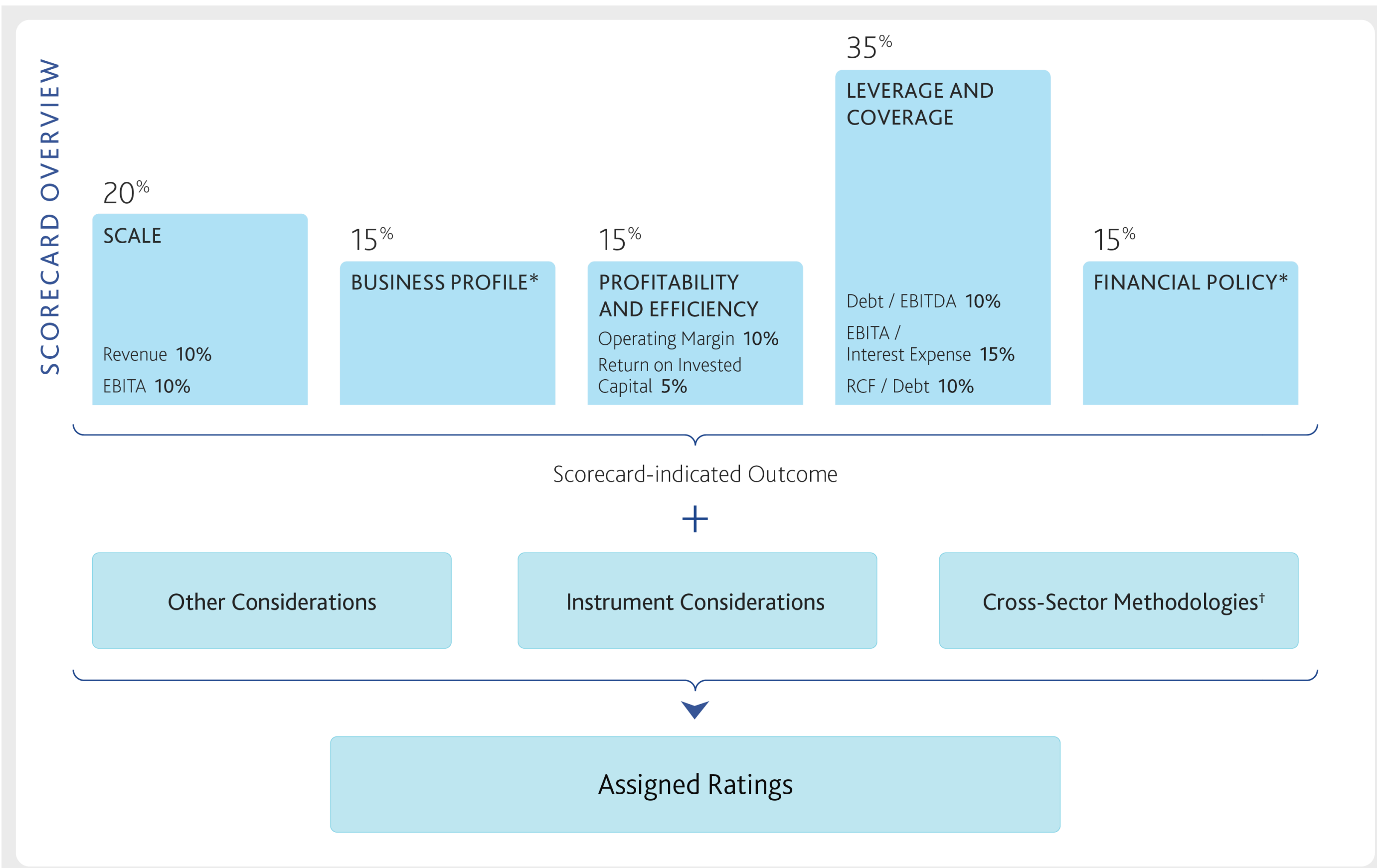
Rating approach

In this rating methodology, we explain our general approach to assessing credit risk of issuers in the distribution and supply chain services 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 distribution and supply chain services companies, which includes the use of a scorecard.[1] 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 distribution and supply chain services 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

Distribution and supply chain services 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
Distribution and supply chain services scorecard

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Factor: Scale (20%)									
Revenue (USD Billion)	10%	≥ $160	$85 - $160	$35 - $85	$15 - $35	$5 - $15	$2 - $5	$0.5 - $2	< $0.5
EBITA (USD Billion)	10%	≥ $8	$4 - $8	$2 - $4	$0.75 - $2	$0.4 - $0.75	$0.05 - $0.4	$0 - $0.05	< $0
Factor: Business Profile (15%)									
Business Profile	15%	Highly reliable and steady demand; impervious to product/industry cycles. Unique service lines with very well-established track record. Essential service offerings. Very strong supplier/ customer bargaining power. Multiple business segments and a wide range of services. End-market is well-diversified with no vendor/customer concentration. Strong barriers to entry eliminate possibility of new competitors. Dominant share of market.	Reliable and steady demand, although moderately exposed to product/industry cycles. Very high competitive differentiation and well-established track record for service lines. Nearly essential service offerings. Strong supplier/ customer bargaining power. Multiple business segments and a wide range of services in most segments. End-market is diversified with very limited vendor/customer concentration. New entrants are rare due to strong barriers to entry. Market share reflects oligopolistic industry profile.	Mostly steady demand, with moderate exposure to product/industry cycles. High differentiation of service lines and established track record. Very important service offerings. Business segments with broad service offerings. End-market is fairly well-diversified with minimal vendor/customer concentration. Barriers to entry provide sustainable protection of market share. Leading market share in an industry characterized by limited competition.	Steady demand expected over the medium term; moderate exposure to product/industry cycles. Significant service line differentiation and some track record. Important service offerings. Several business segments with broad service offerings in at least one key segment. Well-diversified in its major market; some vendor/ customer concentration. Barriers to entry or high switching costs limit new entrants. Among market share leaders.	Steady demand expected over the near term only; significant exposure to product/industry cycles. Some service line differentiation and recent track record. Service offerings perceived to be somewhat important. Operates in a few business segments, with a broad portfolio in at least one segment. Somewhat diversified in its major market; moderate vendor/customer concentration. Limited barriers to entry or low switching costs. Among top providers in key markets or a strong niche player.	Recent evidence of strong demand, but long term stability cycle is less certain. Limited service line differentiation. Service offerings perceived to be of limited importance. Operates in a few business segments, although heavily reliant on one segment. High degree of vendor/customer concentration. Ineffective barriers to entry or absence of switching costs permit large number of new entrants. Local or niche player in key market or segment.	Very recent service offering with unknown demand trajectory with vendors and customers. Little service line differentiation. Service of little importance to customer. Operates in only one business segment with high vendor/customer concentration. No barriers to entry; service has commodity attributes. Small player compared to key competitors or somewhat fragmented market.	New service offering with unknown demand trajectory. No differentiation of service. Service not important to customer. Operates in only one business segment with very high vendor/customer concentration. No barriers to entry; service is a commodity. Very small player compared to key competitors or highly fragmented market.

	Weight	Aaa	Aa	A	Baa	Ba	B	Caa	Ca
Factor: Profitability and Efficiency (15%)									
Operating Margin	10%	≥ 40%	30% - 40%	20% - 30%	10% - 20%	5% - 10%	2% - 5%	0.5% - 2%	< 0.5%
Return on Invested Capital	5%	≥ 50%	35% - 50%	25% - 35%	15% - 25%	7.5% - 15%	2.5% - 7.5%	1% - 2.5%	< 1%
Factor: Leverage and Coverage (35%)									
Debt / EBITDA[1]	10%	< 0.5x	0.5x - 1x	1x - 2x	2x - 3x	3x - 4.5x	4.5x - 6.5x	6.5x - 9x	≥ 9x
EBITA / Interest Expense	15%	≥ 25x	15x - 25x	10x - 15x	5x - 10x	2.5x - 5x	1.5x - 2.5x	0.75x - 1.5x	< 0.75x
RCF / Debt	10%	≥ 70%	50% - 70%	35% - 50%	22.5% - 35%	12.5% - 22.5%	5% - 12.5%	0% - 5%	< 0%
Factor: Financial Policy (15%)									
Financial Policy	15%	Expected to have extremely conservative financial policies; very stable metrics; public commitment to very strong credit profile over the long term.	Expected to have very stable and conservative financial policies; stable metrics; minimal event risk that would cause a rating transition; public commitment to strong credit profile over the long term.	Expected to have predictable financial policies 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.	Expected to have financial policies that balance the interest of creditors and shareholders; some risk that debt funded acquisitions or shareholder distributions could lead to a weaker credit profile.	Expected to have financial policies that tend to favor shareholders over creditors; above average financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.	Expected to have financial policies that favor shareholders over creditors; high financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.	Expected to have financial policies that create elevated risk of debt restructuring in varied economic environments.	Expected to have financial policies that create elevated risk of debt restructuring even in healthy economic environments.

[1] When debt is zero, the score is Aaa. When debt is positive and EBITDA is negative, the score is Ca.

Source: Moody's Investors Service

Sector overview

Distribution and supply chain services firms are a particularly diverse group serving a variety of industries with a broad range of core competencies. However, the features that are common across all business models include: (i) the ability to reduce unit production costs by aggregating similar products or operations from various suppliers or customers to create scale economies and operational efficiencies; (ii) being a core component of the global product supply chain by facilitating timely delivery of products through the use of distribution centers or facilities located in close proximity to suppliers and/or customers; (iii) effectively deploying working capital and managing inventories to produce a sufficient return on assets given thin operating margins (often less than 10%); and (iv) reliability and service quality.

Healthcare Distribution

The rated universe of healthcare distributors is relatively broad, covering companies that offer services to pharmaceutical, medical products and laboratory supply chain companies as well as services to prescription drug benefit management companies. Most of the rated healthcare distributors are based in the US with revenue concentration in North America. Maintaining a sizable market position and significant scale are key success factors given relatively low margins for most distributors. Large customer and vendor concentration (e.g., large retail chains or health plan customers) can lead to ongoing pricing pressure. Large customers maintain significant negotiating leverage in contract renewals.

For most companies in this space, revenues tend to be highly concentrated within one business line. To help offset margin compression in their core business, many of the large drug distributors have diversified into higher margin non-distribution businesses such as oncology and biopharmaceutical services, medical device manufacturing or retail pharmacies as well as higher margin distribution channels, including distribution of animal health drugs or home health care products. In addition, to help boost margins, each of the major drug distributors has aligned with retail pharmacies to leverage their ability to purchase generic drugs more cheaply. Medical-supply distribution has been affected by volume trends for hospitals and physician offices. Laboratory supply distribution has faced uncertainty around levels of government funding for science research.

Unlike other types of distributors, healthcare distributors -- to varying extents -- have been subject to government regulation. Long-term care pharmacies, companies that provide diabetes testing and home care supplies, and certain distributors that operate outside the US have been directly affected by reimbursement or regulatory matters. Also, because all of these healthcare distributors interact with a wide range of healthcare providers (e.g., hospitals, nursing homes, physician offices) or manufacturers (e.g., drug and medical device) that can be affected, they have been indirectly subject to changes to the healthcare reimbursement and regulatory environment. This is particularly the case for distribution and supply chain companies in Europe, where government intervention has resulted in greater uncertainty in drug pricing and retail pharmacy fees.

Information Technology Distribution

The information technology or IT distribution industry involves electronic component, computer, mobile and consumer electronics products distribution. IT distributors provide a valuable function in the technology supply chain, and their value is reflected by inventory price protection and stock rotation privileges they receive under authorized distributor agreements. These protections help to offset the limited demand visibility and frequent volatility in IT supply and pricing cycles. Although highly diversified by customer and geographic reach, IT distributors are subject to supplier concentration and intense competition, which have historically exerted pressure on operating margins. To offset this, IT distributors have maintained a flexible operating cost structure.

The evolution of technology distribution follows the ever-changing dynamics of the technology industry, as distributors have adapted to customer demands and product life cycles. We have witnessed a transition of products away from traditional IT gear to new areas such as mobile devices, software, services, networking and security that cater to enterprise customers' evolving data center needs and increasing demand for bundled information technology solutions.

The IT distributors supply semiconductors and other integrated circuits, as well as high-end computing (e.g., servers and storage devices), software and networking equipment, mobile devices, desktop, laptop and notebook PCs, media tablets, flat panel displays, peripherals, and data networking device. Clients include original equipment manufacturers (OEMs), original design manufacturers (ODMs), electronics manufacturing services (EMS) firms, and small- and medium-sized industrial businesses (SMBs). The IT distributors focus on a much broader set of customers than the manufacturers can address directly. Given their significant scale, IT distributors can handle high-volume transactions and efficiently source hundreds of thousands of parts from component suppliers and repackage them to meet individualized customer needs at relatively low production costs. Many smaller customers are highly dependent on these distributors for timely delivery of a diverse set of components at competitive pricing that could not be achieved through direct purchases from the manufacturers.

Electronics Manufacturing Services

Electronics manufacturing services or EMS companies serve a key role in the global electronics supply chain by providing comprehensive outsourced design and manufacturing of electronic equipment built to customer specifications that is eventually branded by the original equipment manufacturer (OEM). EMS providers are able to reduce unit production cost by aggregating similar manufacturing operations from various OEM customers into smaller production facilities, which create economies of scale and operational efficiencies. EMS companies tend to have well-diversified geographic footprints.

The value that a contract manufacturing firm provides to its customers is in capital asset savings, production agility, geographically dispersed platforms, and growing engineering acumen that is deeply ingrained with the OEMs during product development stages. These features have offered the OEMs more flexible manufacturing platforms, especially during the introductory phases of a product's life. These trends may minimize the enduring cyclical volatility in the EMS sector resulting from limited demand visibility, relatively high customer concentration and high fixed costs associated with maintaining manufacturing operations to serve customers across the globe.

However, given the volatile nature of IT products and the risk associated with rapid technology changes, the industry has a narrow window of demand visibility which can make forecasting difficult. Furthermore, EMS margins are low due to competitive pricing from low-cost Asia-based providers, a highly concentrated customer base that exerts pricing pressure, the large labor component in the EMS cost structure and significant working capital and inventory costs associated with sourcing tens of thousands of parts and components, as well as purchasing manufacturing equipment for customer programs. To offset risks related to low margins, EMS companies have maintained a flexible operating cost structure with facilities in low-cost geographies. This approach to cost structure and low-cost geographies has been driven by the secular OEM outsourcing trend from both large technology firms and non-traditional customers (e.g., automotive, instrumentation, industrial, healthcare, defense/aerospace and clean technology) that historically manufactured products in-house. As electronic products become more complex and require more engineering, OEMs have increasingly eliminated their production facilities and outsourced the manufacturing function to EMS firms so that they can focus on their core competencies, reduce fixed costs and improve their return on investment.

Wholesale Distribution

The rated issuers in the wholesale distribution industry are diverse, providing distribution and value-added processing services across consumer goods, electrical, energy or metals industries. With numerous distribution centers located in various regions, wholesale distributors typically have broad geographic coverage thus reducing their reliance on a particular region. Companies operating in these industries are subject to extreme price volatility due to the changing supply and demand characteristics of underlying commodities, varying demand patterns of end market customers and competitor pricing actions. As such, key success factors for wholesale distributors include scale, regional proximity to suppliers and customers, effective branch office operations, reliable and high quality service, efficient inventory and working capital management, cost controls and sufficient liquidity.

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

Larger scale can be an indicator of a company’s ability to influence business trends and pricing within its service segments and to support a stable or growing market position. Scale also can be an indicator of greater resilience to changes in demand, including the negative impact from supply chain disruptions, geographic diversity, cost absorption, R&D capabilities and greater bargaining strength with customers, labor, and vendors.

How we assess it for the scorecard

Scale is measured (or estimated in the case of forward-looking expectations) using total reported revenue and adjusted earnings before interest, taxes and amortization (EBITA). Many companies rated using this methodology play a key role in complementing and augmenting the vendors' sales channel and manufacturing output, and thus generate very high revenues, albeit at small operating margins. Utilizing EBITA as a measurement of scale balances out the high revenue scores for the large, multinational supply chain companies.

Factor: Business Profile (15% weight)

Why it matters

The business profile of a distribution and supply chain services company is important because it greatly influences its ability to generate sustainable earnings and operating cash flow.

The distribution and supply chain services industry comprises a vast array of business models encompassing distribution, logistics, manufacturing, sales and other value-added services to vendors and end customers worldwide. The underlying demand characteristics of a company's service offerings and its relative breadth, strength and endurance of demand are important. The evolution of distribution and supply chain companies follows the ever-changing dynamics of the served industries, as these companies need to constantly adapt to customer demands, vendors' product life cycles and supply chain disruptions. Companies that have established a long history of strong demand for a diverse range of service offerings that are critical to customer needs and provide more customized services typically receive higher scores for this factor compared to those that offer a single line of service or deal in commodity goods that may be easier to replicate by a competitor.

Customer and vendor concentration, which is generally high across the sector, is also important. Although customer relationships tend to be sticky, companies within the supply chain do not have significant negotiating leverage in pricing their service.

Operations in multiple business segments, as well as diversity within the customer and geographic base, can indicate an ability to maintain a relatively strong competitive position over time. Geographic diversity is an important element of distribution and supply chain services because it helps indicate: (i) a company's regional proximity to suppliers and customers to facilitate timely delivery of products, which ultimately enhances the reliability and quality of its services; (ii) a company's vulnerability to the economic cyclicality of individual countries; (iii) the effect of country-specific regulatory, competitive, supplier/customer leverage and demographic issues; and (iv) the scope of operations and global footprint, which may help to moderate cash flow fluctuations across regions and end markets.

How well a company is able to effectively execute a business strategy that contends with the competitive environment, market structure and supplier/customer demands is also critical.

How we assess it for the scorecard

The scoring of this sub-factor is based on our qualitative assessment of the durability of demand and the company's ability to fulfill a need.

We assess the importance of a supply chain provider to its vendors and customers and evaluate the extent to which demand for the service is likely to be maintained over time, considering the risk of technology or business changes that may affect demand. Lower risk is associated with services that are indispensable to the customer due to sales channel augmentation, the vendors' inability to insource production or move it to competitive providers, enduring business necessity or basic human needs. Impediments that discourage customers from taking on the task themselves are also considered.

Our assessment of a company's competitive environment is qualitative and takes into account the market dynamics, the degree of pricing pressure, competitive positioning, barriers to entry, regulatory and litigation risks, technology risk, product lifecycles and geographic diversification.

A high score for this factor typically would reflect a market that has a very low threat of competitors with substitute products/services, a highly defensible market share with high barriers to entry, and an ability to manage relationships with key suppliers and customers resulting in relatively stable pricing. Companies with high scores on this factor may also operate in markets with very low regulatory risk or very low revenue concentration across business lines or geographic regions. Conversely, a low score on this factor would typically be characterized by low product differentiation resulting in a very high threat of competitors with substitute products/services, very low barriers to entry, and very strong bargaining power among suppliers or customers resulting in intense and/or aggressive pricing pressures. Issuers with low scores may also operate in markets with very high regulatory risk or very high revenue concentration across business lines or geographic regions.

We also consider a number of aspects within an issuer's competitive landscape with particular emphasis on diversity, the nature of competition, and market share. We assess the most prominent characteristics for each issuer, often by evaluating a company relative to its most direct competitors. Barriers to entry may include high customer switching costs and unique assets or proprietary technologies that reduce the threat of new entrants.

Large market share suggests a sustainable business position with greater ability to weather volatile market conditions. Market share that is protected by patent and unique licensing restrictions, technological advantages, or strong brands can underpin a strong competitive profile.

Factor: Profitability and Efficiency (15% weight)

Why it matters

Profits matter because they are needed to maintain a business's competitive position, including sufficient reinvestment in operations, marketing, research, facilities and staff. Sustained high profitability is generally a strong indicator of substantial competitive advantages, particularly if combined with evidence of a stable or rising market share.

For issuers in the supply chain sector, working capital management is extremely important, especially when considering the typically low operating margins that necessitate maintaining strong liquidity and low cash conversion cycles. For these reasons, we track return on invested capital to measure the operating efficiency of companies in the distribution and supply chain services industry. This ratio provides an indication of an issuer's ability to profitably earn a return on capital.

How we assess it for the scorecard

Scoring for this factor is based on two sub-factors: Operating Margin; and Return on Invested Capital.

OPERATING MARGIN:

We use the ratio of operating profit to revenue. We may adjust operating profit based on our standard adjustments as well as for elements that we view to be non-recurring or unusual.

RETURN ON INVESTED CAPITAL:

Return on invested capital (ROIC) is measured or estimated using the ratio of after-tax operating profits to the sum of short term debt, long-term debt, and equity, minus cash balances.

Factor: Leverage and Coverage (35% weight)

Why it matters

Leverage and coverage measures are indicators of a company's financial flexibility and long-term viability, including their ability to adapt to changes in economic and business environment in the segments in which they operate.

The factor comprises three sub-factors:

Debt / EBITDA

The ratio of total 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 sector as a proxy for comparative financial strength.

EBITA / Interest Expense

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

Retained Cash Flow / Debt

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

How we assess it for the scorecard
Scoring for this factor is based on three sub-factors: Debt/EBITDA, EBITA/Interest Expense and RCF/Debt.

DEBT / EBITDA:

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

EBITA / INTEREST EXPENSE:

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

RCF / DEBT:

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

Factor: Financial Policy (15% weight)

Why it matters
Management and board tolerance for financial risk is a 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 for 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 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.

Many distribution and supply chain services companies have historically used acquisitions to spur revenue growth, expand business lines, consolidate market positions, advance cost synergies or seek to access new technology. The impact of an acquisition on a rating would depend on the company's existing capital structure and the degree to which it is changed by the acquisition.

How we assess it for the scorecard
We assess the issuer's desired capital structure or targeted credit profile, history of prior actions and 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, and regulatory pressures.

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 also consider a company and its owners' past record of balancing shareholder returns and debtholders' 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 distribution and supply chain services industry. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[2]

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 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.

Liquidity

Liquidity is an important rating consideration for all distribution and supply chain services 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.[3]

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, shareholder distributions, litigation, pandemics, significant cyber-crime events and geopolitical conflicts.

Seasonality

Seasonality is an important driver of customer demand and can cause swings in cash balances and working capital positions for some distribution and supply chain services companies. Higher volatility creates less room for errors in meeting customer demand or operational execution.

Parental Support

Ownership can provide ratings lift for a particular company in the distribution and supply chain services 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.[4] For example, price controls, onerous taxation and high distributions can have a negative effect on an issuer's underlying credit profile.

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,[5] 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 metrics,[6] 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[7] 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, 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

3. Determining the overall scorecard-indicated outcome

The numeric score for each sub-factor (or each factor, where 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 4
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	x ≥ 19.5

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.[8]

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.[9]

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.[10]

Key rating assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.[11]

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.[12] 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 In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.

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

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

4 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.

5 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.

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

7 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.

8 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.

9 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.

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

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

12 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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