MOODY'S
INVESTORS SERVICE

RATING METHODOLOGY
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Rating Methodology

Medical Products and Devices

This rating methodology replaces the *Medical Product and Device Industry* methodology published in June 2017. We have reordered and have made editorial updates to various sections of the methodology, and we have changed the presentation of the scorecard. These updates do not change our methodological approach.

Scope

This methodology applies to companies globally that are primarily* engaged in the sale of medical products and devices.

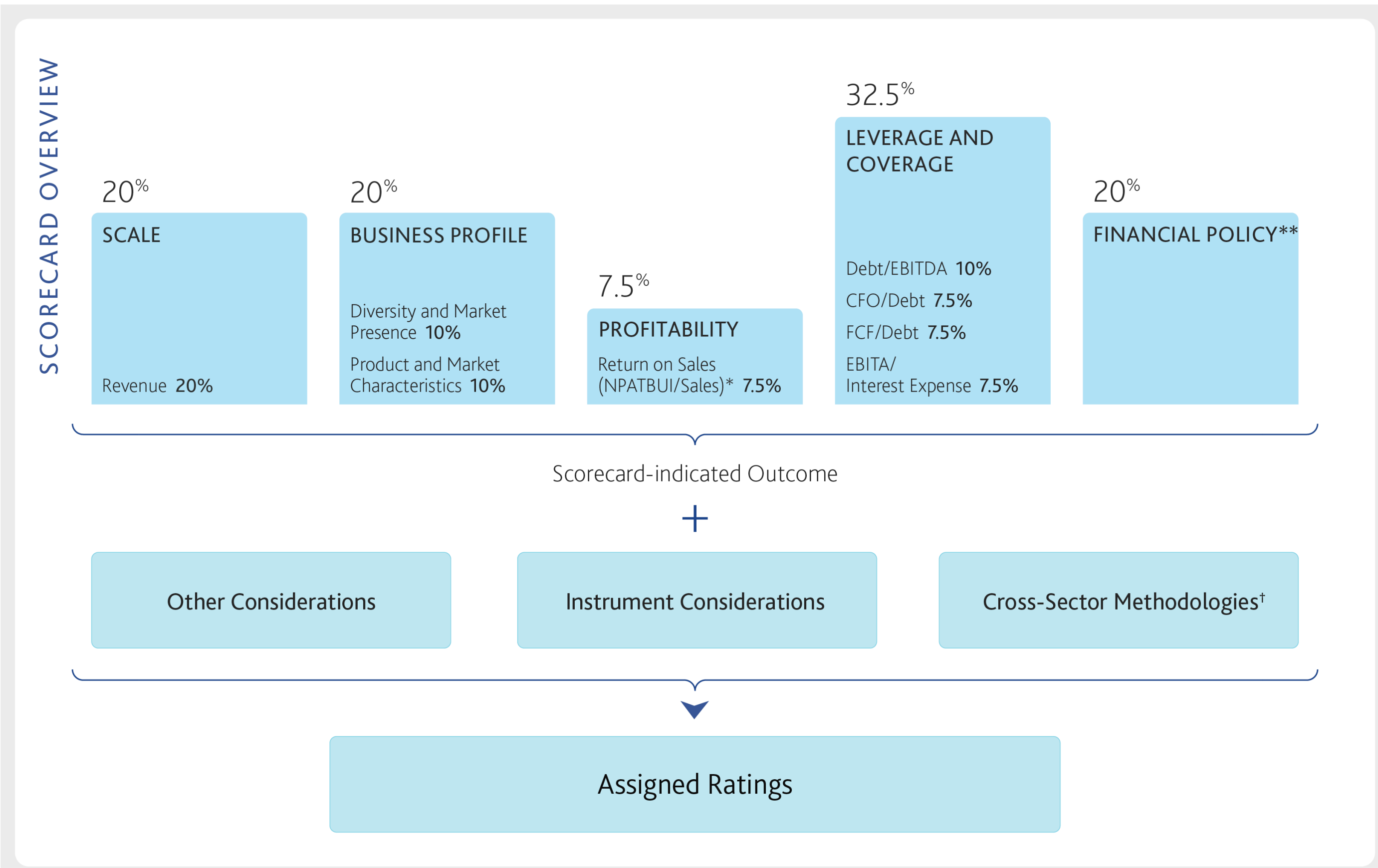
*The determination of a company's primary business is generally based on the preponderance of the company's business risks, which are usually proportionate to the company's revenues, earnings and cash flows.

Rating approach

In this rating methodology, we explain our general approach to assessing credit risk of issuers in the medical product and device 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 medical product and device 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 medical products and devices methodology framework



* NPATBUI/Sales stands for net profit after tax before unusual items divided by net revenues.
** 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

Medical products and devices 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
Medical products and devices scorecard

	SCALE (20%)	BUSINESS PROFILE (20%)		PROFITABILITY (7.5%)	LEVERAGE and COVERAGE (32.5%)				FINANCIAL POLICY (20%)
	Revenue (USD Billion)[1] (20%)	Diversity and Market Presence (10%)	Product and Market Characteristics (10%)	Return on Sales[2] (NPATBUI/Sales) (7.5%)	Debt/ EBITDA[3] (10%)	CFO/ Debt[4] (7.5%)	FCF/ Debt[5] (7.5%)	EBITA/ Interest Expense[6] (7.5%)	
Aaa	≥ $60	Extremely diverse group of broad product segments with distinct end-user markets. Estimated to have very limited reliance on any product segment and No. 1 market positions or > 50% market share in majority of segments.	Exceptional prospects for organic sales growth and market share stability due to: (1) extremely high level of innovation and demand; (2) minimal pricing constraints across all geographic regions; (3) extremely low regulatory, technology or competitive risk.	≥ 25%	≤ 0.5x	≥ 75%	≥ 45%	≥ 25x	Expected to have extremely conservative financial policies (including risk and liquidity management); very stable metrics; essentially no event risk; and public commitment to a very strong credit profile over the long term.
Aa	$30 - $60	Highly diverse group of broad product segments with distinct end-user markets. Estimated to have limited reliance on any product segment and No. 1 or No. 2 market positions in majority of segments.	Superior prospects for organic sales growth and market share stability due to: (1) very strong level of innovation or demand; (2) low pricing constraints across all geographic regions; (3) very low regulatory, technology or competitive risk.	17.5% - 25%	0.5x - 1x	50% - 75%	30% - 45%	15x - 25x	Expected to have very conservative financial policies (including risk and liquidity manage-ment); stable metrics; minimal event risk that would cause a rating transition; and public commitment to strong credit profile over the long term.
A	$10 - $30	Well-diversified group of broad product segments with distinct end-user markets. Estimated to have some reliance on one product segment and No. 1 or No. 2 market positions in majority of segments.	Very good prospects for organic sales growth and market share stability due to: (1) strong level of innovation or demand; (2) moderately low pricing constraints across all geographic regions; (3) low regulatory, technology or competitive risk.	12.5% - 17.5%	1x - 2x	35% - 50%	22.5% - 30%	10x - 15x	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 commit-ment to a solid credit profile.
Baa	$4 - $10	Diverse group of broad product segments with distinct end-user markets. Estimated to have moderate reliance on one product segment. Among top three players in all significant segments.	Good prospects for organic sales growth and market share stability due to: (1) above-average level of innovation or demand; (2) moderate pricing constraints across all geographic regions; (3) average regulatory, technology or competitive risk.	7.5% - 12.5%	2x - 3x	25% - 35%	15% - 22.5%	5x - 10x	Expected to have financial policies (including risk and liquidity managem-ent) that balance the interests of creditors and share-holders; some risk that debt-funded acquisitions or shareholder distributions could lead to a weaker credit profile.

	SCALE (20%)	BUSINESS PROFILE (20%)		PROFITABILITY (7.5%)	LEVERAGE and COVERAGE (32.5%)				FINANCIAL POLICY (20%)
	Revenue (USD Billion)[1] (20%)	Diversity and Market Presence (10%)	Product and Market Characteristics (10%)	Return on Sales[2] (NPATBUI/Sales) (7.5%)	Debt/ EBITDA[3] (10%)	CFO/ Debt[4] (7.5%)	FCF/ Debt[5] (7.5%)	EBITA/ Interest Expense[6] (7.5%)	
Ba	$1.5 - $4	Moderately diverse group of broad product segments with distinct end-user markets. Estimated to have moderately high reliance on one product segment. Among leading players in most segments.	Moderate prospects for organic sales growth or market share stability due to: (1) average level of innovation or demand; (2) moderately strong pricing constraints across all geographic regions; (3) above-average regulatory, technology or competitive risk.	5% - 7.5%	3x - 4.5x	15% - 25%	7.5% - 15%	2.5x - 5x	Expected to have financial policies (including risk and liquidity management) that tend to favour share-holders over creditors; above-average financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.
B	$0.5 - $1.5	One broad product segment or one primary end-user market. Estimated to have high reliance on one product segment. Among leading players in this segment.	Modest prospects for organic sales growth or market share stability due to: (1) below-average level of innovation or demand; (2) strong pricing constraints across all geographic regions; (3) high regulatory, technology or competitive risk.	2.5% - 5%	4.5x - 6.5x	5% - 15%	0% - 7.5%	1x - 2.5x	Expected to have financial policies (including risk and liquidity management) that favour share-holders over creditors; high financial risk resulting from shareholder distributions, acquisitions or other significant capital structure changes.
Caa	$0.25 - $0.5	At least one niche product segment with leading market presence. Estimated to have very high reliance on this niche segment.	Expect flat to declining sales growth and weak market share stability due to: (1) very weak level of innovation or demand; (2) very strong pricing constraints across all geographic regions; (3) very high regulatory, technology or competitive risk.	0% - 2.5%	6.5x - 9x	0% - 5%	(5)% - 0%	0.5x - 1x	Expected to have financial policies (including risk and liquidity management) that create elevated risk of debt restructuring in varied economic environments.
Ca	< $0.25	Not expected to have a significant market presence in any product segment.	Expect declining sales growth and loss of market share due to: (1) lack of innovation or demand; (2) severe pricing constraints across all geographic regions; (3) severe regulatory, technology or competitive risk.	< 0%	> 9x	< 0%	< (5)%	< 0.5x	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 $100 billion. A value of $100 billion or better equates to a numeric score of 0.5. The Ca endpoint value is $0.05 billion. A value of $0.05 billion or worse equates to a numeric score of 20.5.
[2] NPATBUI/Sales stands for net profit after tax before unusual items divided by net revenues. For the linear scoring scale, the Aaa endpoint value is 50%. A value of 50% 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.
[3] For the linear scoring scale, the Aaa endpoint value is 0x. A value of 0x equates to a numeric score of 0.5. The Ca endpoint value is 15x. A value of 15x or worse equates to a numeric score of 20.5, as does a negative Debt/EBITDA value.
[4] For the linear scoring scale, the Aaa endpoint value is 125%. A value of 125% or better equates to a numeric score of 0.5. The Ca endpoint value is (2.5)%. A value of (2.5)% or worse equates to a numeric score of 20.5.
[5] For the linear scoring scale, the Aaa endpoint value is 100%. A value of 100% or better equates to a numeric score of 0.5. The Ca endpoint value is (10)%. A value of (10)% or worse equates to a numeric score of 20.5.
[6] For the linear scoring scale, the Aaa endpoint value is 50x. A value of 50x or better equates to a numeric score of 0.5. The Ca endpoint value is 0x. A value of 0x or worse equates to a numeric score of 20.5.
Source: Moody's Investors Service

Sector overview

Manufacturers of medical products and devices are a diverse group, united primarily by the customers — health-care providers or research entities — they serve. Hospitals, a key customer base for companies in this sector, purchase both technology-intensive devices, such as stents or implantable cardioverter-defibrillators, as well as more commodity-like products, such as syringes or catheters. Laboratories and academic centers, another key customer base, purchase equipment, instruments and consumables needed to conduct diagnostic testing or research.

Discussion of the scorecard factors

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

Factor: Scale (20% weight)

Why it matters

Scale is important because it 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 can make a company more resilient to changes in demand and better able to absorb changes in costs. Scale can also give a company greater geographic diversity, greater bargaining strength with customers, labor, and vendors, and stronger research and development (R&D) capabilities.

How we assess it for the scorecard

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

Factor: Business Profile (20% weight)

Why it matters

The business profile is important because a company's product diversity and market presence, as well as the characteristics of its products and the markets it serves, provide a meaningful indicator of the likely stability and sustainability of its future cash flows. Product line and end-user diversification help offset the constantly evolving dynamics of the health care delivery system, which influence demand and pricing. Market share can be an indicator of competitiveness, depth of customer relationships and likely prospects for future performance.

Many companies in the medical product and device industry manufacture a vast array of products, each with distinct characteristics and customer bases worldwide. The business profile factor includes the types of products a company manufactures as well as the company-specific and sector-wide variables that can influence prospects for sales growth and market share shifts.

How we assess it for the scorecard

Scoring for this factor is based on two sub-factors: Diversity and Market Presence, and Product and Market Characteristics.

DIVERSITY AND MARKET PRESENCE:

In the diversity and market presence sub-factor, we assess several dimensions of a company's business profile: (i) diversity of product lines, including those outside of medical devices; (ii) distinct customer or end-user categories, which are critical to purchasing decisions; (iii) the level of concentration or reliance on one or two segments; and (iv) market positioning within product lines, which typically includes a company's breadth of reach.

Product lines are often reported as "sales segments" and comprise products that treat a specific medical or clinical market or serve a specific healthcare customer's need. Examples of product lines include orthopedic products, dental products, eye care products, cardiovascular products, urology products, endosurgery products, hospital beds or clinical laboratory products. In assessing this sub-factor, we consider the degree of reliance on one product line or product, especially in light of competition and potential regulatory issues.

Companies with similar broad product lines may offer different products. Breadth of product offerings within a product line or business segment can influence the scoring within this sub-factor. For example, one orthopedic company may offer only spinal products while another may offer reconstructive, trauma and spinal products. In rare instances, a company may manufacture only one distinct product within one customer segment, and it would typically have a low score for this sub-factor.

We typically view high customer and end-user diversification positively when it mitigates the risk that a change in an individual end-user market (such as cuts in hospital reimbursement or funding for academic research by the US National Institutes of Health or a similar organization) will significantly impair profitability and cash flow. Healthcare organizations such as hospitals, clinical laboratories, pharmaceutical companies or academic research centers, or physicians within a specialty area, are examples of customer bases or end-user markets.

There may be multiple targeted customer bases for certain product lines. For example, clinical laboratory products may be sold to both hospital laboratories as well as to reference laboratories. Manufacturers of dental products may serve both dentists and dental laboratories. Likewise, there can be a single customer base for multiple product lines. For example, infusion pumps and hospital beds are both purchased primarily by hospitals.

We typically view lack of concentration in any product line or lack of reliance on one end-user category favorably. Even with a relatively high level of diversification in product offerings, concentration in one or two product lines or reliance on one end-user category can negatively influence scoring for this sub-factor.

For market presence, we assess a company's market share in its major product lines. Our forward view of market share is often influenced by the breadth and depth of product positions. For certain products, particularly those where sales representatives are critical in helping physicians use the devices, relationships tend to be more "sticky," meaning customers do not change vendors easily. Fewer device products are considered "sticky" than in the past, as hospitals have become more influential in making decisions about purchases. We view favorably companies that are highly diverse from a product line or end-user standpoint and that hold leading (No. 1 or No. 2) market positions in the majority of these product lines.

PRODUCT AND MARKET CHARACTERISTICS:

For the product and market characteristics sub-factor, we assess prospects for a company's organic sales growth and its market share stability based on the company's level of innovation, the level of demand for its products, pricing constraints, and regulatory, technology or competitive risks. Our assessment of product and market characteristics may be informed by considerations of the following dimensions: (1) product life cycle and the risk of technological obsolescence; (2) strength of demand for products across geographies; (3) pricing constraints across geographies; (4) number of and quality of competitors; (5) risk that regulatory matters, including safety or efficacy concerns, will impede sales growth; (6) level of innovation, including strength of pipeline; and (7) ability to demonstrate value to key decision makers, including hospitals and payors.

Product life cycle and the risk of technological obsolescence is an important component of this sub-factor. Companies that make products that are more highly technology-oriented tend to face challenges related to shorter life cycles, including higher obsolescence risk as well as more stringent pre-market and post-market regulatory oversight. For example, manufacturers of certain cardiac devices face the risk of rapid adoption of a competing new technology by customers, thereby engendering shifts in market share and cash flow. The rapid pace of change forces many medical device companies to invest more of their revenues into R&D. Manufacturers of products with longer life cycles (such as hospital beds or syringes) require less R&D investment and generally have more stable market positions due to lower risk that a new technology will render their products outdated, and they typically have less exposure to regulatory matters.

All medical device companies need to innovate in order to offset pricing pressure with new value-added products. We consider the quality of a company's pipeline and its success not only with product approvals but also in demonstrating value to its key customers.

Another component that can be both company- or sector-specific is demand. Company-specific regulatory matters such as recall actions or Food and Drug Administration (FDA) warning letters[2] or industry-wide questions related to safety or the appropriate utilization of a device can negatively affect demand and sales. Pricing trends are also important, especially if customers are under reimbursement pressure or if a highly competitive market forces prices down. Because most companies sell products globally, demand and pricing trends can vary across geographies depending on the maturity of the products in each region, including the level of product penetration as well as clinical practice patterns, differences in reimbursement and coverage, and payor constraints.

Factor: Profitability (7.5% weight)

Why it matters

Profits matter because they are needed to maintain a competitive position, including sufficient reinvestment in R&D, marketing, manufacturing facilities, and human capital. Sustained high profitability is generally a strong indicator of substantial competitive advantages, particularly if combined with evidence of stable or rising market share. Product type, company-specific operations and market-wide conditions can affect operating efficiency and profitability.

Highly technical devices may provide significant medical value and contribute greatly to improving a patient's health. Healthcare payors will often allow for additional reimbursement of these devices, and hospitals may exert less pricing pressure on the medical device maker if the product can be shown to significantly improve patient outcomes, including reducing complications or hospital re-admissions. As a result, some of these devices can be richly priced and can have very high operating margins. Manufacturers of low-technology-oriented, more-commodity-like products may have less favorable pricing and, consequently, lower margins and profitability. Given the lower value-added nature of these products, efficient operations may even be more critical to ensure price competitiveness.

How we assess it for the scorecard

RETURN ON SALES:

In assessing profitability, we use a return on sales measure that captures net profit after tax before unusual items divided by net revenues.

Factor: Leverage and Coverage (32.5% 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 adapt to changes in the economic and business environments of the segments in which it operates.

The factor has four 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.

CFO / Debt

The ratio of cash flow from operations to debt (CFO/Debt) is an indicator of a company's ability to repay its debt. It is a measure or estimate of cash flow after working capital movements in relation to total debt.

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.

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.

How we assess it for the scorecard

Scoring for this factor is based on four sub-factors: Debt/EBITDA; CFO/Debt; FCF/Debt; and EBITA/Interest Expense.

DEBT / EBITDA:

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

CFO / DEBT:

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

FCF / DEBT:

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

EBITA / INTEREST EXPENSE:

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

Factor: Financial Policy (20% 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 the company will use that flexibility to fund a strategic acquisition, cash distribution to shareholders, spin-off or other leveraging transaction. Conversely, a company's credit rating may be better able to withstand a moderate leveraging event if management places a high priority on returning credit metrics to pre-transaction levels and has consistently demonstrated the commitment to do so through prior actions. Liquidity management[3] is an important aspect of overall risk management and can provide insight into risk tolerance.

Many medical product and device companies have used acquisitions to spur revenue growth, expand business lines, consolidate market positions, advance cost synergies or seek access to new technology. The impact of an acquisition on a rating will depend on the company's existing capital structure and the extent 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, its history of prior actions, including its track record of risk and liquidity management, and its adherence to its commitments. We pay attention 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 mergers and acquisitions (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's and its owners' past record of balancing shareholder returns and debtholders' interests. A track record of favoring shareholder returns at the expense of debtholders is likely to be viewed negatively in scoring this factor.

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 healthcare reimbursement, consumer and provider spending patterns, competitor strategies and macroeconomic trends also affect ratings.

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

Regulatory and Legal Exposure

Issuers in the medical product and device industry are subject to a high level of regulatory oversight. In the US, the FDA oversees product approval, inspection of manufacturing facilities and ongoing product-specific safety matters. Medical device companies are also regulated by many entities outside the US. Effects of these regulations may entail limitations on operations, higher costs and a higher potential for shifts in market share or demand. The level of regulatory risk may vary depending on a company's specific product lines or its warning letters outstanding from the FDA or other regulators. Regional differences in regulation, implementation or enforcement may advantage or disadvantage particular issuers. Our view of regulatory trends 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 relative to its debt burden over the medium and longer term.

Medical device companies are also exposed to legal challenges, including product liability or patent lawsuits. Safety concerns highlighted by FDA recalls, for example, often result in product liability claims. The presence of these legal matters presents risk, because they could result in cash outlays, lower levels of cash and higher leverage. We typically view the outlays associated with legal matters as one-time in nature.

Regulatory considerations are incorporated into our assessment of a company's product and market characteristics. A material, negative change in a company's regulatory status or large damages resulting from litigation may, however, cause ratings to be lower than a scorecard-indicated outcome based on historical financials. This is especially the case if the regulatory change is swift or the uninsured portion of the liability is very large.

Management Strategy

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

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 — can overwhelm even a stable, well-capitalized firm. Some other types of event risk include M&A, asset sales, spin-offs, litigation, pandemics, significant cyber-crime events and shareholder distributions. Event risk related to debt-financed M&A in the device sector has had a material negative impact on ratings in some cases.

Environmental, Social and Governance Considerations

Environmental, social and governance (ESG) considerations may affect the ratings of issuers in the medical product and device sector. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[4]

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 medical product and device 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.[5]

Additional considerations for medical device companies include litigation payouts or unusual expenses associated with building large manufacturing facilities.

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. Excess cash can be in 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 issues have very predictable cash needs and others have much broader intra-period swings, for instance related to mark-to-market collateral requirements under hedging instruments. Some companies may hold large levels of cash at times because they operate without committed, long-term bank borrowing facilities. Some companies may hold cash on the balance sheet to meet long-term contractual liabilities, whereas other companies with the same types of liabilities have deposited cash into trust accounts that are off balance sheet. The level of cash that issuers are willing to hold can also vary over time based on the cost of borrowing and macroeconomic conditions. The same issuer may place a high value on cash holdings in a major recession or financial crisis but seek to pare cash when inflation is high. As a result, cash on the balance sheet is most often considered qualitatively, by assessing the issuer's track record and the financial and liquidity policies rather than 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 and coverage ratios with total (or gross) debt rather than net 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 low end of the ratings spectrum.

Geographic Concentration

The majority of rated companies in this sector operate globally. As a result, geographic diversity does not generally play an important role in the scorecard. Nonetheless, we consider geographic diversity beneficial because it helps mitigate against economic downturns, unfavorable regulations or negative trends in healthcare delivery. Instances of significant geographic concentration would likely be captured in the Business Profile factor and more generally incorporated into our ratings.

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.

Parental Support

Ownership can provide ratings lift for a particular company 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.[6] 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,[7] 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,[8] 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[9] 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	$x \leq 1.5$
Aa1	$1.5 < x \leq 2.5$
Aa2	$2.5 < x \leq 3.5$
Aa3	$3.5 < x \leq 4.5$
A1	$4.5 < x \leq 5.5$
A2	$5.5 < x \leq 6.5$
A3	$6.5 < x \leq 7.5$
Baa1	$7.5 < x \leq 8.5$
Baa2	$8.5 < x \leq 9.5$
Baa3	$9.5 < x \leq 10.5$
Ba1	$10.5 < x \leq 11.5$
Ba2	$11.5 < x \leq 12.5$
Ba3	$12.5 < x \leq 13.5$
B1	$13.5 < x \leq 14.5$
B2	$14.5 < x \leq 15.5$
B3	$15.5 < x \leq 16.5$
Caa1	$16.5 < x \leq 17.5$
Caa2	$17.5 < x \leq 18.5$
Caa3	$18.5 < x \leq 19.5$
Ca	$19.5 < x \leq 20.5$
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 fating (CFR) for speculative-grade issuers and 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 Baseline Credit Assessment, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers.[10]

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.[11]

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.[12]

Key rating assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.[13]

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.[14] 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 An FDA warning letter is a notification that a manufacturer has significantly violated FDA regulations.

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

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

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

6 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.

7 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.

8 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.

9 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.

10 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.

11 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.

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

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

14 A link to a list of our sector and cross-sector 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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