MOODY'S
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RATING METHODOLOGY

Publicly Managed Ports Methodology

This rating methodology replaces the *Publicly Managed Ports Methodology* published in June 2019. We have updated footnote 10, in the "Relationship of the Publicly Managed Port and the Related Government" section, to incorporate the issuer rating of US states as a relevant government rating. We have corrected the number of notches shown for the Tax Support for Operations and Liquidity notching factors on page 22 under Appendix B to make them consistent with the number of notches shown in the "Notching Factors" section. We have also updated analyst contacts. These updates do not change our methodological approach.

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Introduction

In this rating methodology, we explain our general approach to assessing credit risk of publicly managed ports globally, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector.

We discuss the scorecard used for this sector. The scorecard[1] is a relatively simple reference tool that can be used in most cases to approximate credit profiles in this sector and to explain, in summary form, many of the factors that are generally most important in assigning ratings to issuers in this sector. The scorecard factors may be evaluated using historical or forward-looking data or both.

We also discuss other considerations, which are factors that are assessed outside 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. In addition, some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.[2] Furthermore, since ratings are forward-looking, we often incorporate directional views of risks and mitigants in a qualitative way.

As a result, the scorecard-indicated outcome is not expected to match the actual rating for each issuer.

Our presentation of this rating methodology proceeds with (i) the scope of this methodology; (ii) the scorecard framework; (iii) a discussion of the scorecard factors; (iv) other considerations not reflected in the scorecard; (v) the assignment of issuer-level and instrument-level ratings; (vi) methodology assumptions; and (vii) limitations.

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.

In Appendix A, we describe how we use the scorecard to arrive at a scorecard-indicated outcome. Appendix B shows the full view of the scorecard factors, sub-factors and thresholds.

Scope of This Methodology

This methodology applies to publicly managed ports globally. Publicly managed ports are primarily[3] engaged in the operation and maintenance of a seaport or seaport terminal used for maritime cargo shipments or for cruise travel. These ports are owned by a government or governmental entity. Publicly managed ports rated under this methodology do not operate under a profit-maximization model; the primary purpose of these entities is to operate and maintain port infrastructure at a reasonable cost to users.

The ports rated under this methodology may be landlord ports, operator ports or both.[4] They derive revenue from a variety of activities, including property leases, cargo or passenger throughput charges, and harbor or dockage fees.

This methodology is used to rate the revenue-backed debt of US publicly managed ports. Issuers that have both revenue-backed debt and tax-backed debt are assigned a revenue bond rating under this methodology. Typically, in addition to issuing bonds backed solely by net operating revenue, these issuers have or can issue debt backed by a tax levied on the property in a defined area. The tax-backed debt of these ports is rated under a separate methodology.[5]

For issuers outside the US that may not have revenue-backed debt, per se, the debt rated under this methodology is the debt that is serviced by the public port enterprise.

Ports or port assets that are privately owned or operated are rated under our methodology that discusses privately managed ports. Any percentage of private ownership would cause an issuer to be rated as a privately managed port. The government-owned and operated model differs fundamentally from that of privately managed ports because the latter have at least some profit motive.

3 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 revenue, earnings and cash flows.

4 A landlord port owns and develops marine terminal facilities and leases them to tenants for a combination of fixed and variable payments. These types of ports provide administrative services and facilities maintenance services for port users, but they do not directly handle cargo or passengers. An operator port owns, operates and maintains marine terminal facilities and is directly involved in handling cargo or passengers.

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

Scorecard Framework

The scorecard in this rating methodology is composed of four weighted factors. Some of the four factors comprise a number of sub-factors. The scorecard also includes two notching factors, which may result in adjustments in half-notch increments to the preliminary outcome.

EXHIBIT 1

Publicly Managed Ports Sector Scorecard Overview

Factor	Factor Weighting	Sub-factor	Sub-factor Weighting
Market Position	40%	Port Size (Operating Revenue)	25%
		Service Area and Competition	7.5%
		Operational Restrictions	7.5%
Volatility and Diversity	15%	Operating Revenue Volatility (five-year compound annual growth rate)	10%
		Customer Diversity	5%
Capital Program	5%	Capital Needs Requiring Leverage	5%
Key Credit Metrics	40%	Net Revenue Debt Service Coverage Ratio (three-year average)	20%
		Debt + ANPL* / Operating Revenue (three-year average)	20%
Total	**100%**		**100%**
		Preliminary Outcome	
Notching Factor			**Notching Range**
Tax Support for Operations			(0 to +1)
Liquidity			(-1 to +1)
		Scorecard-Indicated Outcome	

** ANPL stands for adjusted net pension liability.*

Source: Moody's Investors Service

Please see Appendix A for general information relating to how we use the scorecard and for a discussion of scorecard mechanics. The scorecard does not include every rating consideration.[6]

Discussion of the Scorecard Factors

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

6 Please see the "Other Considerations" and "Limitations" sections.

Factor: Market Position (40% Weight)

Why It Matters

Market position is an important indicator of a port's competitive strength based on the size of a port's operations, the size and economic strength of its service area, and its operational capabilities and restrictions.

Port Size (Operating Revenue)

A port's size is an important indicator of demand for its facilities and its capacity to generate revenue. A large revenue base can lead to more efficient development of port infrastructure and is an indicator of high activity levels that provide broader and more convenient services to customers. Large ports may also benefit from greater access to the capital markets, which can reduce borrowing costs.

Service Area and Competition

The size and economic strength of a port's service area greatly influence the level of demand for the port's facilities. A port's proximity to large economic centers, manufacturing facilities, industrial warehousing, and major railroad and highway networks are core aspects of its ability to attract demand. The ability of customers to cost-effectively and efficiently use other ports to access the same service area provides important indications of a port's relative competitive strength.

Operational Restrictions

Operational restrictions, such as water depth, berth capacity and rail connectivity, provide important indications of a port's ability to serve a variety of ships and cargo types, which is another indicator of competitive strength. For example, a port may be at a competitive disadvantage if it is unable to serve a large container ship because it does not have sufficient water depth, handling equipment or terminal capacity.

How We Assess It for the Scorecard

PORT SIZE (OPERATING REVENUE):

We use operating revenue as a proxy for port size. Operating revenue is measured (or estimated in the case of forward-looking expectations) using annual reported operating revenue in US dollars.

SERVICE AREA AND COMPETITION:

Our qualitative assessment of a port's service area and competition considers whether the area can generate demand for cargo and for cruise travel, typically based on the economic strength and population size of the service area, the port's connections to railroad and highway networks, and the port's competitive strength relative to other ports in the region.

OPERATIONAL RESTRICTIONS:

In assessing a port's operational restrictions, we consider whether there are physical limitations on a port's ability to move different types of cargo or restrictions on the number and types of vessels able to call on the port. We may also consider how easily a port is able to expand its facilities, for example whether nearby land is available for development.

FACTOR

Market Position (40%)

Sub-factor	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Port Size (Operating Revenue)	25%	$300 million or greater.	$200 million or greater but less than $300 million.	$75 million or greater but less than $200 million.	$50 million or greater but less than $75 million.	$30 million or greater but less than $50 million.	$15 million or greater but less than $30 million.	Less than $15 million.
Service Area and Competition	7.5%	Port has an effective monopoly on port services for a large population base (>10 million) or is a key national port asset with little competition.	Port forms an essential part of the economy for a large, multi-state or province region (population >5 million). Competitive position in the region is dominant.	Port serves as a major regional port and is the largest in its state or province. Faces some competition but has a competitive advantage.	Port primarily serves a mid-sized to small city or region (population 1-3 million) with limited economic growth. Strengths equal to peers in its competitive environment and is expected to maintain its current activity levels or competitive position.	Port primarily serves a small city with limited expected economic growth. Limited connections, or lacking good proximity to major centers. Operates at a competitive disadvantage which is expected to cause throughput to stagnate or decline.	Port located away from any significant population centers. Operates at a significant competitive disadvantage to other ports, or expected to have a highly volatile demand pattern.	Competitive position is not established, is speculative, or expected to show a steep decline.
Operational Restrictions	7.5%	No physical limitations to operations.	Port able to handle all cargo types, but some physical limitations may limit long-term growth.	Ability to handle container throughput is small; some physical limitations are expected to limit long-term growth; port may primarily be for cruise passengers but able to handle several large vessels.	Port unable to routinely handle containers; long-term growth of bulk cargo is not limited by physical restrictions; port may primarily be for cruise passengers but able to handle a single large vessel.	Port can only handle bulk cargo, but handles a wide variety of cargo types; mid-term growth may be limited by channel depth, physical land area, or other; primarily cruise port that handles several small vessels.	Port can only handle certain types of bulk cargo; mid-term growth severely limited by channel depth, physical land area, or other; primarily cruise port that handles vessels of very limited number and size.	Port has limited ability to handle new cargo types or additional volume; Port capabilities are in decline.

Source: Moody's Investors Service

Factor: Volatility and Diversity (15% Weight)

Why It Matters

Revenue volatility and customer diversity provide important indications of a port's ability to withstand downturns in cargo or passenger demand, or a loss of a major customer.

This factor comprises two sub-factors:

Operating Revenue Volatility

Operating revenue volatility is an indicator of how stable revenue is over a multi-year period considering changes in cargo or passenger volumes, which are economically sensitive and subject to competition from other ports.

Landlord ports, whose revenue is not directly tied to cargo or passenger volume, typically have more revenue stability than operator ports. Landlord ports receive revenue from long-term leases that typically include minimum payment guarantees from customers. Ports that are able to stabilize revenue through these methods tend to have more reliable and predictable revenue to support debt service payments and make long-term investments in their facilities, which is essential to supporting a competitive position.

Operator ports are generally more exposed to economic cycles because their revenue is primarily based on volume. They can experience stronger revenue growth during periods of economic expansion because of rising volume, but they may experience larger revenue declines than landlord ports when the economy is weak. Operator ports have, to varying degrees, a greater ability to manage revenue by adjusting rates in response to changes in volumes.

Customer Diversity

Customer diversity is an important indicator of revenue stability. A highly diverse customer base helps insulate a port from poor performance by a particular customer or within a particular business line. Ports with lower customer diversity are more exposed in the event of persistent weakness in a single industry, or from the business failure or loss of a customer.

How We Assess It for the Scorecard

OPERATING REVENUE VOLATILITY:

Scoring is based on the five-year compound annual growth rate (CAGR) of operating revenue.

CUSTOMER DIVERSITY:

Scoring is based on the percentage of operating revenue derived from the port's largest customers. We may also consider the diversity of customers by industry.

Ports that derive operating revenue from a diverse array of customers, where the top 10 customers account for no more than 50% of operating revenue, typically receive higher scores for this sub-factor. Ports with a high concentration in customers or industries, where the top 10 customers account for more than 50% of operating revenue, typically receive lower scores for this sub-factor.

FACTOR
Volatility and Diversity (15%)

Sub-factor	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Operating Revenue Volatility (five-year CAGR)	10%	5% or greater.	3% or greater but less than 5%.	1% or greater but less than 3%.	0% or greater but less than 1%.	-1% or greater but less than 0%.	-3% or greater but less than -1%.	Less than -3%.
Customer Diversity	5%	Operating revenue from diverse array of customers; top 10 account for no more than 25% and no one customer accounts for more than 5%.	Operating revenue from diverse array of customers; top 10 account for no more than 30% and no one customer accounts for more than 10%.	Operating revenue from diverse array of customers; top 10 do not account for more than 50%; no single customer accounts for more than 20%.	Operating revenue has some concentration in customers or industries; top 10 account for more than 50% but not more than 70%.	More pronounced concentration in customers or industries; top five customers may account for more than 50% of revenue.	Very high concentration in customers or industries; top 3 customers may account for more than 50% of revenue.	Extreme sector concentration or dependence on a few customers; top 3 customers may account for more than 75% of operating revenue; or one commercial customer may account for 50% or more of operating revenue.

Source: Moody's Investors Service

Factor: Capital Program (5% Weight)

Why It Matters

The size of a port's capital program provides important indications of the port's ability to fund future capital projects relative to its revenue and balance sheet position. In addition, the capital program indicates the extent to which the port may require additional funding, including debt, to maintain assets in good working order and fund projects that enhance capacity and revenue generation to stay competitive.

How We Assess It for the Scorecard

CAPITAL NEEDS REQUIRING LEVERAGE:

We consider whether the port's medium-term capital needs require additional debt. We typically consider the size and scope of a port's annual and multiyear capital improvement program relative to the condition of its assets, its financing plans and the potential impact of the capital program on the port's financial metrics. We also typically assess a port's strategic and economic rationale for capital expenditures. We may also consider a capital program's potential impact on revenue generation.

Ports with low medium-term capital needs whose assets are competitive and well-maintained typically receive higher scores for this factor. Ports with medium-term capital needs that require new borrowing in excess of 20% of current debt outstanding typically receive lower scores for this factor.

Increased leverage may not necessarily have a negative effect on credit quality. Debt-financed projects that expand a port's capacity, or enhance access to the facility, can result in an improved market position and new revenue opportunities. In addition, large relative increases in debt can have a more modest credit impact if a port has low starting debt levels and is likely to comfortably manage debt service costs.

FACTOR
Capital Program (5%)

Factor	Factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Capital Needs Requiring Leverage	5%	Little to no capital needs are required in the medium term; while no additional debt planned, growth is unconstrained.	Medium-term capital needs are easily handled through annual cash flow; some limited additional debt is or may be required.	Medium-term capital needs will require additional debt of less than 20% of current debt.	Medium-term capital needs will require additional debt of 20% to 33% of current debt.	Medium-term capital needs will require additional debt of 34% to 50% of current debt.	Medium-term capital needs will require additional debt of 51% to 100% of current debt.	Medium-term capital needs will require additional debt more than current debt outstanding.

Source: Moody's Investors Service

Factor: Key Credit Metrics (40% Weight)

Why It Matters

Financial metrics provide important indications of a port's ability to generate sufficient cash flow to pay debt service, invest in facilities and sustain a competitive position.

Net Revenue Debt Service Coverage Ratio

The ratio of net revenue to debt service (net revenue DSCR) is an important indicator of a port's ability to meet its debt service obligation from internally generated cash. A higher ratio indicates a stronger ability to withstand declines in revenue or increases in operating expenses.

Debt and ANPL to Operating Revenue

The ratio of debt and adjusted net pension liabilities[7] (ANPL) to operating revenue provides important indications of leverage and financial flexibility.

How We Assess It for the Scorecard

NET REVENUE DEBT SERVICE COVERAGE RATIO (THREE YEAR AVERAGE):

The numerator is gross enterprise revenue and income (excluding tax revenue) minus operating and maintenance expenses[8] before depreciation and amortization, and the denominator is annual debt service requirements on revenue-backed debt (excluding debt backed by tax revenue). We use the average of the annual ratios for the past three years.

Most publicly managed ports have amortizing debt that includes the annual payment of interest and principal. We typically do not apply standard adjustments to accreting debt or debt for which repayment is deferred or back-loaded. However, we may adjust reported debt service to estimate the amount of annual payments that would be required under a standard amortization profile. We also may calculate or estimate

7 Our calculation or estimate of ANPL is typically based on the issuer's pension disclosures. In cases where pension information is disclosed only at the level of the corresponding government, we typically attribute a proportionate amount of the government's ANPL to the port based on its share of compensation expenses or the number of its employees as a percentage of the total. Where there is not sufficient information to estimate the ANPL, typically where it is immaterial, we do not include it in the ratio and assess any pension-related credit risk outside of the scorecard.

8 Operating expenses are adjusted to exclude non-cash pensions and other post-employment benefit (OPEB) contributions. For an explanation of ANPL and our standard adjustments, please see our methodology that discusses adjusting reported pension data for US public entities such as states and local governments.

the margin between the net revenue DSCR and a port's minimum, or covenanted, debt service coverage requirements.

DEBT AND ANPL TO OPERATING REVENUE (THREE YEAR AVERAGE):

The numerator is total revenue-backed debt (excluding debt backed by tax revenue) and ANPL, and the denominator is total annual operating revenue. We use the average of the annual ratios for the past three years.

FACTOR

Key Credit Metrics (40%)

Sub-factor	Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Net Revenue Debt Service Coverage Ratio (three-year average)	20%	5.0x or greater	2.0x or greater but less than 5.0x	1.3x or greater but less than 2.0x	1.1x or greater but less than 1.3x	1.0x or greater but less than 1.1x	0.85x or greater but less than 1.0x	Below 0.85x
Debt + ANPL* / Operating Revenue (three-year average)	20%	Below 1.0x	1.0x or greater but less than 2.0x	2.0x or greater but less than 3.5x	3.5x or greater but less than 5.0x	5.0x or greater but less than 7.0x	7.0x or greater but less than 10x	10x or greater

* ANPL stands for adjusted net pension liability.

Source: Moody's Investors Service

Notching Factors

The scorecard includes notching factors. Our assessment of these factors may result in upward or downward adjustments to the preliminary outcome that results from the Market Position, Volatility and Diversity, Capital Program and Key Credit Metrics factors. Adjustments may be made in half-notch increments, based on the notching factors listed in the table below. In aggregate, the notching factors can result in a total of up to two upward notches or up to one downward notch from the preliminary outcome to arrive at the scorecard-indicated outcome. In cases where we consider that the credit weakness or credit strength represented by a notching factor, or by these factors in aggregate, is greater than the scorecard range, we incorporate this view into the issuer's rating, which may be different from the scorecard-indicated outcome.

Notching Factor	Notching Range
Tax Support for Operations	0 to +1
Liquidity	-1 to +1

Source: Moody's Investors Service

Tax Support for Operations

Why It Matters

Tax support for operations is important because it provides revenue diversity. The use of tax revenue to support operations increases a port's financial flexibility while helping to manage increases in charges for the port's customers. While tax support for operations can take different forms, in most cases the support is provided by the port's ability to levy a property tax on a local or regional tax base. In other cases the support may be provided by a state or local government.

How We Assess It for the Scorecard

In assessing tax support for operations, we typically consider the legal ability of the port to collect tax revenue and the willingness of the port to exercise its taxing ability. For ports that levy a tax, this notching factor may result in an upward adjustment of one notch to the preliminary outcome. For ports that have the ability to levy taxes but do not exercise it, this notching factor may result in an upward adjustment of one-half notch to the preliminary outcome.

Notching Factor: Tax Support for Operations

	+1.0	+0.5	0
Tax Support for Operations	Current tax revenue supports O&M* or debt service.	Ability to levy O&M tax, but not implemented.	No impact.

* O&M stands for operations and maintenance.

Source: Moody's Investors Service

Liquidity

Why It Matters

Liquidity is an important consideration because it provides a port with the flexibility to manage unexpected financial or operational challenges. Liquidity is also an important consideration in assessing a port's balance sheet and its ability to manage its capital plan with financial resources other than debt. Low liquidity limits a port's ability to adequately respond to unanticipated financial pressures and to invest in its facilities.

How We Assess It for the Scorecard

In assessing liquidity, we use the ratio of unrestricted cash and investments plus discretionary reserves to total debt. This notching factor may result in an upward adjustment of one notch where the ratio exceeds 100%, and one-half notch where the ratio is less than 100% but at least 70%. We may notch down by a half-notch where the ratio is less than 30% but at least 10% and by one notch if the ratio is less than 10%. We may also consider a port's days cash on hand to assess how its liquidity compares to its operating expenses over time.

Notching Factor: Liquidity

	+1.0	+0.5	0	-0.5	-1.0
Liquidity	Cash to debt is 100% or greater.	Cash to debt is at least 70% but less than 100%.	Cash to debt is at least 30% but less than 70%.	Cash to debt is at least 10% but less than 30%.	Cash to debt is less than 10%.

Source: Moody's Investors Service

Other Considerations

Ratings may reflect consideration of additional factors that are not in the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. Such factors include financial controls and the quality of financial reporting; legal structure; the quality and experience of management; assessments of governance as well as environmental and social considerations; 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.

Debt Structure

Many publicly managed ports issue fixed-rate debt that amortizes over a multiyear period. We typically assess the structure of the various liens, the availability and level of debt service reserve funds, whether the flow of funds is open and allows a port to transfer funds to the owner government, and financial or debt covenants that could strengthen or weaken credit quality.

Ports that have variable-rate debt may be more exposed to liquidity demands or may require market access for refinancing, which can place downward pressure on credit quality. Liquidity and market access risks can also arise with variable-rate demand obligations and bonds that contain provisions that allow debtholders to put bonds back to the issuer. The potential adverse credit effects of variable-rate demand obligations are assessed in the context of the overall credit profile and circumstances of each issuer.

In addition, a back-loaded or continually increasing debt service profile may cause a port's rating to be lower than the scorecard-indicated outcome, because the port may be more dependent on revenue growth to service the debt compared with a port that has a more conservative debt structure.

Revenue Diversification

A diverse set of revenue streams that are not closely tied to the activity at the port helps a port manage revenue pressure, particularly when shippers' finances are under stress. For publicly managed ports, revenue diversification typically comes from a combined airport-port enterprise or ad valorem tax support.

In particular, operating tax revenue may allow a port to be price-competitive. A port that pays for some operating expenses or capital improvements with a general obligation or a similar tax can mitigate the related cost increases to its customers. We typically consider the additional level of protection that revenue diversification provides and reflect that support in our assessment.

In rare cases, a port that collects a tax to support general obligation debt could present downside risk for the revenue-backed bond rating of the port. This risk could arise if the general obligation tax revenue were insufficient to pay the related debt service and the port had to make up the difference with net operating revenue.

Asset Ownership

Publicly managed ports tend to own their assets in perpetuity. For publicly managed ports that do not own assets in perpetuity, we would typically consider the length and terms and conditions of the ports leases and assess whether the lack of ownership introduces any meaningful risks that are not considered in the scorecard.

Other Pension Related Considerations

In addition to including pension liabilities in calculating or estimating certain scorecard metrics, we may incorporate pension-related considerations into our analysis in other ways.

For example, we may estimate the pension contribution necessary to prevent unfunded pension liabilities from growing, year over year, in nominal dollars, if all actuarial assumptions are met. This estimate, which we refer to as the tread water indicator, can provide an important indication of the strength or weakness of a port's pension contributions relative to reported plan funding needs.[9] For scorecard metrics that include cash pension contributions, we may consider how an alternate version of the metric using the tread water indicator would affect the scorecard-indicated outcome.

In addition, we may consider the impact of the long-term liabilities of other post-employment benefits (OPEB) by imputing a debt equivalent, to assess how that would affect scorecard metrics.

We may also consider the tread water indicator or OPEB liabilities as part of our qualitative analysis, including for peer comparisons.

Relationship of the Publicly Managed Port and the Related Government

The publicly managed ports scorecard primarily focuses on factors relating to the stand-alone credit profile of the enterprise, because debt rated under this methodology is non-recourse to any other government entity. Where a port is owned by or linked to a government (the related government), the credit profile of the government can have a material impact on the overall credit profile of the port, especially if the related government's rating[10] is meaningfully lower than the publicly managed port's stand-alone credit profile.

In cases where the related government's rating diverges meaningfully from the port's stand-alone credit profile, we typically consider the credit linkages between the port and the government, including the organizational structure, management and governance, separation or commingling of cash, the government's dependence on transfers from the port, bond structure, and overlap in access to credit and capital markets. In these cases, we may also consider how a scenario of government distress or insolvency could affect the port.

» Organizational Structure: A publicly managed port can be organized in a variety of ways that create different levels of financial and legal ties to the related government, e.g., as a department or component unit of the government (which usually implies very close ties), or as a separate authority or a separately constituted subsidiary (where there may be greater separation, depending on our assessment of the considerations below). In some cases, the port is not directly exposed to the credit quality of a related government, and there may complete de-linkage.

» Management and Governance: Management of the government and the port may fully overlap or have close ties. For example, the government may appoint the port's managers or board members, in which case the port may be exposed to the risk of decision-making that benefits the related government at the expense of the port's credit profile. The governance structure can also affect the ability of the government to interfere in the port's operations.

» Cash and Liabilities: The extent to which the port and the government commingle cash is a very important consideration. We typically assess the extent of the government's access to the port's cash, for example whether the government is restricted from accessing the port's cash and the durability of those restrictions. We also consider exposure to the same liabilities, e.g., whether the port is exposed to the government's pension-related liabilities beyond the allocated ANPL.

» Dependence on Transfers: Even where the government does not have access to the port's cash, it may have meaningful influence over the amount of transfers of excess revenue from the port. We typically assess the extent of this influence (e.g., closed loop versus open loop, and the nature of any restrictions

9 Please see our methodology that discusses our adjustments to reported pension data for US state and local governments, which provides more information about the tread water indicator. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

10 The relevant government rating is typically the issuer rating or general obligation rating for US municipalities and states, or the issuer rating or senior unsecured rating for sub-sovereign governments outside the US.

on transfers) as well as the extent to which the government requires, or may in the future require, transfers to meet its general government obligations.

» Bond Structure: We typically assess important bond provisions, including cross-defaults and covenants that may limit how the government can intervene in the port's affairs. Where the port's bond indentures contain events of default and acceleration that are tied to the insolvency or bankruptcy of the general government, the credit linkage is typically strong.

» Overlap in Access to Capital Markets: We typically consider how the government's credit profile may affect the port's access to credit and capital markets over time.

» Government Insolvency Scenario: Bankruptcy courts and other courts overseeing insolvency proceedings typically have wide latitude to make decisions affecting bondholders' recovery, including the breadth of the entities drawn into the proceedings and whether or not specific debt classes will be subject to a stay in the payment of debt service. Unless there is clear credit de-linkage, the potential for contagion typically limits the extent to which the rating of a publicly managed port can be higher than the rating of the related government. Visibility into a bankruptcy scenario is usually very limited until the port or the government is in, or nearing, distress. Where there is meaningful clarity on likely default scenarios for a port or the related government, there is greater potential for a wider differential between the ratings of the port and the government; however, there are also scenarios where the ratings would converge.

Because governments typically expect publicly managed ports to be self-supporting, we do not generally incorporate expectations of parental support into our assessment. However, if we consider that the related government clearly has the financial capacity and willingness to provide support to the issuer, for instance in a time of stress or financial need (e.g., a major capital investment), or has already done so in the past, ratings would reflect that support expectation. We consider that any willingness to support would be based on the strategic interest of the government, for example to protect the general government's own tax base.

Transparency and Predictability of Government Policy

The scorecard is calibrated based on a sovereign environment where the government is very highly rated, and where the broad legal and judicial environment is extremely stable and predictable. Where the environment is less stable and predictable, ratings may be lower than the scorecard-indicated outcome.

Financial Controls

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

Management Strategy

The quality of management is an important factor supporting a port'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's performance relative to performance of competitors and our projections. A record of consistency provides insight into management's likely future performance in stressed situations and can be an indicator of management's tendency to depart significantly from its stated plans and guidelines.

Regulatory Considerations

Issuers in the publicly managed ports sector are subject to varying degrees of regulatory oversight, including regulations related to safety, the use of port funds and local ordinances that may affect operations and construction activity. Effects of these regulations may entail limitations on operations, higher costs, and higher potential for technology disruptions and demand substitution. Regional differences in regulation, implementation or enforcement may advantage or disadvantage particular issuers.

Our view of future regulations plays an important role in our expectations of future financial metrics as well as our confidence level in the ability of an issuer to generate sufficient cash flows relative to its debt burden over the medium and longer term. Regulatory considerations also play a role in our assessment of an issuer's operational flexibility, possibly affecting operating revenue, capital expenditures and financial metrics. In some circumstances, regulatory considerations may also be a rating factor outside the scorecard, for instance when regulatory change is swift.

Environmental, Social and Governance Issues

Environmental, social and governance (ESG) considerations may affect the ratings of issuers in the publicly managed ports sector. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.[11]

Long-term climate trends such as rising sea levels as well as more severe weather may require ports to redesign existing facilities. In addition, environmental requirements and efforts to reduce carbon emissions may lead to higher costs. For example, some ports have required customers to upgrade truck engines and use electric-powered equipment to reduce emissions. The dredging of ports to maintain an authorized depth and width or to accommodate larger vessels can entail efforts to protect wildlife and river flows, or mitigate environmental effects on water quality.

Social considerations, such as union actions to strike against the automation of port operations, may affect ports. Governance issues may also affect ports, including interference into port operations from governments.

Liquidity

Liquidity is an important rating consideration for publicly managed ports, although it may not have a substantial impact in discriminating between two issuers with a similar credit profile. Liquidity can be particularly important for ports 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 a discussion of general concepts related to liquidity analysis, please see our liquidity cross-sector methodology.[12]

While liquidity is specifically considered in the scorecard, when it is very weak, the impact it has on ratings may be much greater than the standard scorecard notching would imply.

Additional Metrics

The metrics included in the scorecard are those that are generally most important in assigning ratings to issuers in this sector; however, we may use additional metrics to inform our analysis of specific ports that issue revenue-backed bonds. These additional metrics may be important to our forward view of metrics that

[11] A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

[12] A link to a list of our cross-sector methodologies can be found in the "Moody's Related Publications" section of this report.

are in the scorecard or other rating factors. For example, in addition to the scorecard metrics, our forward view of liquidity may be informed by other indicators, such as the number of days for which a port can cover operating expenses with the cash it has on hand.

For publicly managed ports that issue revenue-backed and tax-backed debt, scorecard metrics are based on revenue-backed debt and operating revenue, because non-operating tax revenue is generally pledged to other debt, and the revenue-backed debt may have no claim on non-operating revenue. However, we often find it analytically useful to also calculate scorecard ratios using all debt and all revenue, to form a view on the serviceability of the totality of the publicly managed port's debt obligations.

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 natural disasters to sudden regulatory changes or liabilities from an accident — can overwhelm even a stable, well-funded issuer. Some other types of event risks include tariff increases, or significant cyber-crime events and terrorism that cause a prolonged decrease in port operations and revenue.

Assigning Issuer-Level and Instrument-Level Ratings

After considering the scorecard-indicated outcome, other considerations and relevant cross-sector methodologies, we typically assign a reference rating. Where the capital structure contains multiple liens and thus multiple debt classes, the reference rating pertains to the debt class representing the significant majority of the debt serviced by the public port enterprise (for publicly managed ports in the US this is the revenue-backed debt). Individual debt instrument ratings may be notched up or down from the reference rating to reflect our assessment of differences in expected loss related to an instrument's seniority level. We may also assign an issuer rating.

For issuers that are classified as government-related issuers, we may assign a Baseline Credit Assessment.[13] Any ratings uplift related to the potential for extraordinary support from a government parent would normally be quite limited, because all issuers rated under this methodology are publicly owned, and many of the benefits of public ownership are considered in the scorecard.

Key Rating Assumptions

For information about key rating assumptions that apply to methodologies generally, please see *Rating Symbols and Definitions*.[14]

13 For an explanation of the Baseline Credit Assessment and entities eligible to be considered government-related issuers, please refer to *Rating Symbols and Definitions* and to our cross-sector methodology for government-related issuers. As explained in that methodology, entities owned by US states and municipalities are not government-related issuers. A link to a list of our sector and cross-sector methodologies and a link to *Rating Symbols and Definitions* can be found in the "Moody's Related Publications" section.

14 A link to *Rating Symbols and Definitions* can be found in the "Moody's Related Publications" section.

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 tool focused on indicators for relative credit strength. 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 sub-factor and 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 issuer'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 issuer to issuer. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.[15] 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. Issuers 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, sector competition, disruptive technology, or regulatory and legal actions. In any case, predicting the future is subject to substantial uncertainty.

15 A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Appendix A: 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 sub-factor or factor,[16] 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 bond financing documentation; financial statements or regulatory filings; and other publicly available information provided by the issuer; and information 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, 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.

Financial metrics may incorporate analytical adjustments that are specific to a particular publicly managed port. These may include adjustments for restructurings, impairments and off-balance-sheet accounts.

2. Mapping Scorecard Factors to a Numeric Score

After estimating or calculating each sub-factor, the outcomes for each of the sub-factors are 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.

The numeric value of each alpha score is based on the scale below.

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, when the factor has no sub-factors) is multiplied by the weight for that sub-factor (or factor), with the results then summed to produce an aggregate numeric score before notching factors (the preliminary outcome). We then consider whether the preliminary outcome that results from the four weighted factors should be notched upward or downward[17] in order to arrive at an aggregate numeric score after notching factors, based on Tax Support for Operations and Liquidity. In aggregate, the notching factors can result in a total of up to two upward notches or up to one downward notch from the preliminary outcome to arrive at the scorecard-indicated outcome.

The aggregate numeric score before and after notching factors is mapped to an alphanumeric. For example, an issuer with an aggregate numeric score before notching factors of 11.7 would have a Ba2 preliminary

[16] 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.

[17] Numerically, a downward notch adds 1 to the score, and an upward notch subtracts 1 from the score.

outcome, based on the ranges in the table below. If the combined notching factors totaled two upward notches, the aggregate numeric score after notching factors would be 9.7, which would map to a Baa3 scorecard-indicated outcome. In general, the scorecard-indicated outcome is oriented to the reference rating.

EXHIBIT 2

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

Appendix B: Publicly Managed Ports Sector Scorecard

	Factor or Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Market Position (40%)								
Port size (Operating Revenue)	25%	$300 million or greater.	$200 million or greater but less than $300 million.	$75 million or greater but less than $200 million.	$50 million or greater but less than $75 million.	$30 million or greater but less than $50 million.	$15 million or greater but less than $30 million.	Less than $15 million.
Service Area and Competition	7.5%	Port has an effective monopoly on port services for a large population base (>10 million) or is a key national port asset with little competition.	Port forms an essential part of the economy for a large, multi-state or province region (population >5 million). Competitive position in the region is dominant.	Port serves as a major regional port and is the largest in its state or province. Faces some competition but has a competitive advantage.	Port primarily serves a mid-sized to small city or region (population 1-3 million) with limited economic growth. Strengths equal to peers in its competitive environment and is expected to maintain its current activity levels or competitive position.	Port primarily serves a small city with limited expected economic growth. Limited connections, or lacking good proximity to major centers. Operates at a competitive disadvantage which is expected to cause throughput to stagnate or decline.	Port located away from any significant population centers. Operates at a significant competitive disadvantage to other ports, or expected to have a highly volatile demand pattern.	Competitive position is not established, is speculative, or expected to show a steep decline.
Operational Restrictions	7.5%	No physical limitations to operations.	Port able to handle all cargo types, but some physical limitations may limit long-term growth.	Ability to handle container throughput is small; some physical limitations are expected to limit long-term growth; port may primarily be for cruise passengers but able to handle several large vessels.	Port unable to routinely handle containers; long-term growth of bulk cargo is not limited by physical restrictions; port may primarily be for cruise passengers but able to handle a single large vessel.	Port can only handle bulk cargo, but handles a wide variety of cargo types; mid-term growth may be limited by channel depth, physical land area, or other; primarily cruise port that handles several small vessels.	Port can only handle certain types of bulk cargo; mid-term growth severely limited by channel depth, physical land area, or other; primarily cruise port that handles vessels of very limited number and size.	Port has limited ability to handle new cargo types or additional volume; Port capabilities are in decline.

	Factor or Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Volatility and Diversity (15%)								
Operating Revenue Volatility (five year CAGR)	10%	5% or greater.	3% or greater but less than 5%.	1% or greater but less than 3%.	0% or greater but less than 1%.	-1% or greater but less than 0%.	-3% or greater but less than -1%.	Less than -3%.
Customer Diversity	5%	Operating revenue from diverse array of customers; top 10 account for no more than 25% and no one customer accounts for more than 5%.	Operating revenue from diverse array of customers; top 10 account for no more than 30% and no one customer accounts for more than 10%.	Operating revenue from diverse array of customers; top 10 do not account for more than 50%; no single customer accounts for more than 20%.	Operating revenue has some concentration in customers or industries; top 10 account for more than 50% but not more than 70%.	More pronounced concentration in customers or industries; top five customers may account for more than 50% of revenue.	Very high concentration in customers or industries; top 3 customers may account for more than 50% of revenue.	Extreme sector concentration or dependence on a few customers; top 3 customers may account for more than 75% of operating revenue; or one commercial customer may account for 50% or more of operating revenue.

	Factor or Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Capital Program (5%)								
Capital Needs Requiring Leverage	5%	Little to no capital needs are required in the medium term; while no additional debt planned, growth is unconstrained.	Medium-term capital needs are easily handled through annual cash flow; some limited additional debt is or may be required.	Medium-term capital needs will require additional debt of less than 20% of current debt.	Medium-term capital needs will require additional debt of 20% to 33% of current debt.	Medium-term capital needs will require additional debt of 34% to 50% of current debt.	Medium-term capital needs will require additional debt of 51% to 100% of current debt.	Medium-term capital needs will require additional debt more than current debt outstanding.

	Factor or Sub-factor Weight	Aaa	Aa	A	Baa	Ba	B	Caa
Factor: Key Credit Metrics (40%)								
Net Revenue Debt Service Coverage Ratio (three-year average)	20%	5.0x or greater	2.0x or greater but less than 5.0x	1.3x or greater but less than 2.0x	1.1x or greater but less than 1.3x	1.0x or greater but less than 1.1x	0.85x or greater but less than 1.0x.	Below 0.85x.
Debt + ANPL* / Operating Revenue (three-year average)	20%	Below 1.0x	1.0x or greater but less than 2.0x	2.0x or greater but less than 3.5x	3.5x or greater but less than 5.0x	5.0x or greater but less than 7.0x	7.0x or greater but less than 10x	10x or greater.

* ANPL stands for adjusted net pension liability.

Preliminary Outcome

Notching Factor

Tax Support for Operations

	+1	+0.5	0
Tax Support for Operations	Current tax revenue supports O&M* or debt service.	Ability to levy O&M tax, but not implemented.	No impact.

* O&M stands for operations and maintenance.

Liquidity

	+1	+0.5	0	-0.5	-1
Liquidity	Cash to debt is 100% or greater.	Cash to debt is at least 70% but less than 100%.	Cash to debt is at least 30% but less than 70%.	Cash to debt is at least 10% but less than 30%.	Cash to debt is less than 10%.

Source: Moody's Investors Service

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.

Report Number: 1317553

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