General Criteria:

Methodology: Industry Risk

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(***Editor's Note:*** *On July 7, 2025, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details.)*

1. These criteria present S&P Global Ratings' methodology for measuring and calibrating global industry risk.

2. This paragraph has been deleted.

SCOPE OF THE CRITERIA

3. The criteria apply to global corporate ratings and to certain public sector entities. The corporate criteria framework incorporates an entity-level industry risk assessment as one of the three anchor assessments--together with the country risk assessment and a competitive position assessment--that we would use to derive the business risk profile assessment for the rated corporate entity. These industry risk criteria may complement other methodologies that incorporate sector-specific approaches for assessing industry risk.

4. This paragraph has been deleted.

SUMMARY OF THE CRITERIA

5. Our industry risk criteria enhance the comparability and transparency of ratings across sectors by comparing and scoring interindustry risk. The methodology addresses the major industry risk factors that entities face.

6. The criteria use two factors for calculating a global industry risk assessment:

- Cyclicality, and
- Competitive risk and growth.

7. Each of the two factors receives an assessment from 1 (very low risk) to 6 (very high risk). The combination of these assessments determines the global industry risk assessment, which uses the same 1 to 6 scale (see table 1).

8. We calibrate an industry's cyclicality assessment (see section A) using the hypothetical stress scenarios in "S&P Global Ratings Definitions," which we use to enhance ratings comparability.

9. The analysis of a sector's overall competitive risk and growth environment (see section B) addresses on an industry-aggregate level the:

- Effectiveness of industry barriers to entry;
- Level and trend of industry profit margins;
- Risk of secular change and substitution of products, services, and technologies; and
- Risk in growth trends.

10. The risks within different subsectors of an industry are captured within the analysis of a firm's competitive position.

11. This paragraph has been deleted.

12. This paragraph has been deleted.

METHODOLOGY

13. The industry risk criteria consider two factors in the calculation of a global industry risk assessment:

- Cyclicality, and
- Competitive risk and growth.

14. We assess each factor according to the following scale: very low risk (1), low risk (2), intermediate risk (3), moderately high risk (4), high risk (5), and very high risk (6). These assessments are based on a series of quantitative and qualitative considerations. Combined, they determine the global industry risk assessment (see table 1).

15. The criteria weight competitive risk and growth more heavily than cyclicality because competitive risk and growth is a prospective analysis, and the cyclicality assessment is based on historical data.

Table 1

Determining A Global Industry Risk Assessment

	--Competitive risk and growth assessment--					
	Very low risk (1)	**Low risk (2)**	**Intermediate risk (3)**	**Moderately high risk (4)**	**High risk (5)**	**Very high risk (6)**
Cyclicality assessment						
Very low risk (1)	1	2	3	4	5	6
Low risk (2)	1	2	3	4	5	6
Intermediate risk (3)	2	2	3	4	5	6
Moderately high risk (4)	3	3	3	4	5	6
High risk (5)	3	4	4	5	5	6
Very high risk (6)	4	4	5	5	6	6

A. Cyclicality

16. Cyclicality is the first factor in the global industry risk assessment under the criteria and has two subfactors: cyclicality of industry revenue and cyclicality of industry profitability.

17. We generally consider the more cyclical an industry's level of profits, the more this factor will contribute to credit risk for the entities operating in that industry. However, the overall effect of cyclicality on an industry's risk profile may be mitigated or exacerbated by an industry's competitive risk and growth environment.

18. The criteria assign a heavier weighting to an industry's profitability cyclicality assessment than to its revenue cyclicality assessment to calculate the industry cyclicality risk assessment. The reason for this is the importance of an entity maintaining adequate profitability to service its cash flow needs, including its working capital and debt service requirements. Although a company's level and volatility of cash flows are often a better measure of its credit strength than its profitability, we have used the cyclicality of an industry's level of profits in the criteria as a proxy for cash flows due to the lack of globally consistent and comparable data. Profitability measures also exclude distortions to industry cyclicality measurements that working capital movements (that are not reflective of credit risk) would have on cash flow measurements.

19. We calibrate the cyclicality assessments with stress scenarios to enhance ratings comparability across sectors and time. As part of our calibration, we calculated the peak-to-trough changes in U.S. sector revenues during the first leg of the Great Depression (from August 1929 to March 1933). In the second phase of the cyclicality calibration, we focused on analyzing industry revenue and EBITDA margin performance in recessions from 1950 to 2010 in the U.S. and from 1987 to 2010 in other major economies. The cyclicality assessments are calibrated against 'BBB' and 'BB' stresses/recessions during this time period (see "S&P Global Ratings Definitions"). To calibrate the cyclicality component of these criteria, we performed a peak-to-trough analysis of industry revenues and profitability in these recessionary periods.

20. We consider cyclicality calibration as a key component of these criteria because of the importance of cyclicality in determining an industry's and entity's level of credit risk. Historical research demonstrates that industries vary significantly in their degree of revenue and profitability cyclicality. See Appendix IV for a compendium of our rank ordering of industry revenue and profitability cyclicality. Table 2 shows the methodology we use to determine the rank ordering of the degree of cyclicality between industries.

21. The criteria divide the cyclical peak-to-trough declines in revenue and profitability into ranges and assign each an assessment, from 1 to 6. The categories are: very low risk (1), low risk (2), intermediate risk (3), moderately high risk (4), high risk (5), and very high risk (6).

22. The statistical technique we used to establish the buckets in table 2 is based on a k-means clustering methodology (see Appendix II for an explanation).

Table 2

Determining An Industry's Cyclicality Risk Assessment

	Profitability ratio either increases or declines by up to 3% during a cyclical downturn	Profitability ratio declines between 3% and up to 7% during a cyclical downturn	Profitability ratio declines between 7% and up to 12% during a cyclical downturn	Profitability ratio declines between 12% and up to 24% during a cyclical downturn	Profitability ratio declines between 24% and up to 72% during a cyclical downturn	Profitability ratio declines more than 72% during a cyclical downturn
Industry revenues either increase or decline by up to 4% during a cyclical downturn	1	2	3	4	5	6
Industry revenues decline between 4% and up to 8% during a cyclical downturn	1	2	3	4	5	6
Industry revenues decline between 8% and up to 13% during a cyclical downturn	1	2	3	4	5	6
Industry revenues decline between 13% and up to 20% during a cyclical downturn	2	3	3	4	5	6
Industry revenues decline between 20% and up to 32% during a cyclical downturn	2	3	4	4	5	6
Industry revenues decline by more than 32% during a cyclical downturn	3	3	4	5	5	6

23. Sectors with higher cyclicality of profitability include mineral-based, metals, and building products industries (see Appendix IV). This is because demand for their products comes, to a great extent, from industries that produce discretionary consumer and capital goods, which also tend to demonstrate greater cyclicality than many other sectors.

24. Overbuilding of production capacity in an industry will create more competitive and earnings pressure, especially in the event of a cyclical downturn in demand.

25. Companies operating in cyclical industries need to be able to reduce their cost bases in a downturn as revenues decline. Therefore, industry risk is greater for cyclical industries with high fixed costs, such as the auto industry.

B. Competitive Risk And Growth

26. The second factor under the criteria is competitive risk and growth. The criteria assess four subfactors as low, medium, or high risk (see table 3). These subfactors are:

- Effectiveness of barriers to entry;
- Level and trend of industry profit margins;
- Risk of secular change and substitution of products, services, and technologies; and
- Risk in growth trends.

27. The criteria then combine these subfactor assessments to produce a competitive risk and growth assessment, from 1 to 6 (see table 4).

Table 3

Assessing The Competitive Risk And Growth Subfactors

Subfactor	Low risk	Medium risk	High risk
a) Effectiveness of barriers to entry (see paragraph 28)	Barriers to entry are high and are effective in limiting competitive entrants.	Barriers to entry are limited but partially effective in excluding competitive entrants.	Barriers to entry are either very low or nonexistent.
b) Level and trend of industry profit margins (see paragraphs 29 and 30)	Industry participants demonstrate stable or increasing operating profit margins.	Operating margins are under moderate competitive pressure.	Material prospective or actual pressure on operating margins. Alternatively, margins may be increasing unsustainably and creating the risk of a collapse in industry profitability.
c) Risk of secular change and substitution of products, services, and technologies (see paragraph 31)	No discernible substitution risk from outside the industry.	Limited likelihood of substitution risk from outside the industry.	High risk of prospective or actual substitution from outside the industry.
d) Risk in growth trends (see paragraph 32)	Established industry where sales are rising over the medium term at a rate equal to or faster than nominal GDP growth.	Established industry where sales are rising between 1% and the rate of nominal GDP growth over the medium term, given that nominal GDP growth is greater than 1%.	Established industry where sales are either rising by less than 1%, or are declining, over the medium term. This category also includes start-up industries, which may be high growth, with unproven growth records.

Table 4

Determining The Industry Competitive Risk And Growth Assessment

Competitive risk and growth assessments	Combination of assessments from table 3
1. Very low risk	All of the subfactors are low risk.
2. Low risk	Three of the subfactors are low risk, and one subfactor is medium risk.
3. Intermediate risk	(i) Three subfactors are medium risk and one is medium or low risk; (ii) Two subfactors are medium risk and two are low risk; or (iii) One subfactor is high risk, and the other three are any combination of low and/or medium risk.*
4. Moderately high risk	Two of the subfactors are assessed as high risk, and the other two are medium or low risk.
5. High risk	Three of the subfactors are high risk, and one is medium or low risk.
6. Very high risk	All four of the subfactors are high risk.

*If either barriers to entry or substitution risk is assessed as high risk, competitive risk and growth is assigned an assessment of '4' (moderately high risk).

1. Competitive risk and growth subfactors

a) Effectiveness of barriers to entry

28. Industries that benefit from meaningful barriers to entry generally have materially lower competitive risk than those that have low or no barriers. Barriers to entry include:

- Government-related factors such as regulation, licensing, approvals, tariffs, taxation, and government industry ownership and controls. These elements may lower competition and stabilize EBITDA and cash flows. In some instances, governments may grant monopolies or oligopolies in industries such as regulated utilities, telecommunications, and airlines.
- Barriers to entry can also include sufficiently visible and material environmental or social credit factors. For example, rising costs to implement increasingly stringent regulatory requirements to address potential environmental or health and safety risks can create higher barriers to entry in certain industries.
- Patents, research capabilities, and scientific and technological know-how. These can create substantial competitive advantage for a period of time for established entities, as well as barriers against would-be entrants, in industries such as pharmaceuticals, biotechnology, high technology, specialty chemicals, and aerospace.
- Capital intensity. Industries that require large capital outlays, especially those with a long-term return horizon, present a major obstacle for entities attempting to break in because their access to debt and equity financing is often weaker than that of industry incumbents. Industries where these characteristics are present include regulated utilities, steel, autos, and aerospace.
- Industry structure that creates cost advantages for incumbents. For example, transportation and distribution infrastructure and vertical integration of production can make it difficult for challengers to establish themselves profitably. Industries where these characteristics are present include forest products, integrated oil, and mining.
- Industry consolidation and concentration. This can lead to limited competition and greater size

and efficiency for incumbents, including oligopolistic and monopolistic market positions in such sectors as steel, chemicals, branded consumer products, and patented/branded pharmaceuticals.

- Brand power, such as established profitable brands that make it difficult and costly for entrants to build competitive brands and gain customer recognition. Industries where strong brands can provide a real advantage include luxury and big box retail, autos, consumer technology, and consumer staples.

b) Level and trend of industry profit margins

29. This subfactor evaluates the effect that an industry's competitive conditions, operating dynamics, and cost structure and volatility have on margins--as opposed to the economic cyclicality of profit margins. The criteria evaluate both the level and trends of an industry's margins. The methodology does not specifically measure and assess competitive and operating risk and cost elements affecting industry operating margins because these are already captured in the cost side of an industry's profit margin.

30. Some major industry competitive and operating cost considerations that we view as affecting industry operating margins include:

- Level of competition in an industry, including the basis for/nature of its competition;
- Production input costs and related volatility (such as energy, raw material, and component prices);
- Asset and commodity price bubble-and-bust risk
- Labor costs and practices risk;
- Customer and supplier concentrations and pricing power
- Asset quality costs, including property, plant, and equipment upkeep in capital-intensive industries;
- Natural and manmade catastrophic event risk. Manmade catastrophes include nuclear, chemical plant, and oil drilling accidents, and associated costs;
- Emerging climate transition risk that can lead to an increase in greenhouse gas emissions costs (e.g., carbon tax, compliance costs), and which may result in weaker industrywide profitability trends;
- Technological change in an industry and related costs and risk dynamics;
- Legal risks and costs; and
- Government regulation, taxation, and ownership policies.

c) Risk of secular changes and substitution of products, services, and technologies

31. This section of the criteria covers secular changes in an industry that can affect its internal competitive and risk profile. In addition, competition from other industries or from an innovative company within the industry providing alternative technologies or products can have a negative impact on industry revenues, margins, cash flows, and credit quality. This form of substitution or competition can, in extreme cases, shutter an entire industry. For example, an anticipated shift to

hybrid/electric vehicles stemming from intensifying environmental and/or social regulations or concerns can significantly impact an industry's competitive and risk landscape.

d) Risk in growth trends

32. A healthy growth outlook for a well-established industry can be a key positive factor in the industry's risk profile. Conversely, a long-term trend of, or prospects for, declining revenues is a major industry risk. Very rapid industry growth can also be a major generator of risk when an industry is young, growing from a low revenue base, or uses new technology or a business model with unproven long-term commercial viability. Emerging environmental or social factors can also impact the growth trends of an entire industry, either positively or negatively. For example, aging population trends can lead to sustainable growth in certain industry sectors such as old-age homes, health care providers, and pharmaceutical companies. The same social trend, however, can have a negative impact on the revenue potential of certain industries if a young and technologically advanced workforce or client base is crucial for sustainable growth.

APPENDIX I

33. See the tables in Appendix IV for a compendium of our rank ordering of industry revenue and profitability cyclicality. To do that rank ordering, we based our global peak-to-trough (PTT) change analysis for industry EBITDA margins and revenues on data for major recessions ('BBB' and 'BB' stress) mapped to specific industry sectors.

Computing industry revenues and profitability margins in a recession

34. In calculating an industry's sales, we determine the group of companies that report sales data for every year of a particular recession in each industry. We use this group of companies to compute the average sales (after applying a deflationary multiplier to account for inflation) for each year of that recession.

35. For the profitability margin, we use the ratio of EBITDA to sales margins for each year in the data set. To compute these profitability margins, we first selected the universe of companies in a given year and industry in which sales and EBITDA are reported. The profitability margin for that year equals the sum of all companies' EBITDA divided by the sum of all companies' sales.

Calculating industry peak-to-trough declines

36. For purposes of calculating the industry PTT change in sales and profitability, we begin by taking the relevant data for the year before recession. For most industries, we calculate the PTT decline from the year before the recession to the year the recession ends. However, some industries will lag the economic cycle. For these industries, we include any decreases in sales and profitability in the year after the end of the economic downturn in the PTT calculation.

37. We measure an industry's PTT sales and profitability declines by determining the average percentage decline for each 'BBB' and 'BB' stress recession since 1950 on which data was available. For a given recession, we determine the maximum percentage decline in sales and profitability margin throughout the period but set this PTT decline to 0% if the profitability margin strictly increases throughout the period.

APPENDIX II

Technique used to establish the cyclical scoring ranges in table 2

38. To establish the cyclical scoring ranges in table 2, we used a statistical technique known as k-means clustering. This is a method of cluster analysis that partitions data observations into k clusters (referred to as groups or buckets), maximizing the distance between cluster means, and by which each observation belongs to the cluster with the nearest mean. In this case, k, the number of scoring groups, is six.

39. The criteria use the k-means clustering technique for both the historical sector revenue and EBITDA margin PTT data. However, because the EBITDA margin PTT assessments were positively skewed, a log transform methodology was first applied to control the influence of more extreme PTT assessments on the resulting ranges. A log transform was not applied to the revenue PTT data, which were much less skewed.

APPENDIX III

40. Industry risk assessments for public finance enterprise sectors are based on the principles described above. Given the typical not-for-profit mission of public finance entities, we may tailor the application of the criteria to reflect public-sector specificities.

41. For cyclicality, we determine the assessment based on one of three approaches (see the table 9 footnote for the approach for each sector):

- We apply table 2 using comparable public finance data when available;
- In the absence of public finance data, we borrow the assessment derived from a comparable sector; and
- When profitability does not sufficiently capture the cyclicality to which public finance enterprises are exposed and an alternative metric is available, we apply table 2 using the same thresholds but with the alternative metric described in public finance sector-specific criteria.

42. For competitive risk and growth, we apply tables 3 and 4 without any adjustments.

43. The final industry risk assessment is determined based on the application of table 1, using the cyclicality and competitive and growth risk assessments.

Appendix IV

Sector and industry variables

44. The sector and industry variables and associated details in this appendix are expected to be periodically updated and republished as market conditions warrant.

Table 5

EBITDA margin PTT declines (%)

PTT decline by recession

Industry	Average PTT decline	1952-1955	1956-1958	1959-1962	1968-1971	1972-1975	1979-1982	1989-1992	2000-2002	2007-2009	2019-2021
Transportation cyclical	(59.1)							(42.3)	(93.4)	(41.7)	OL
Auto and commercial vehicle manufacturing	(34.6)	(18.1)	(22.8)	(4.6)	(34.1)	(49.5)	(79.5)	(39.9)	(27.9)	(65.4)	(4.0)
Mining	(30.0)	(9.9)	(29.9)	(7.0)	(16.1)	(8.6)	(64.3)	(40.3)	(37.7)	(55.8)	OL
Metals production and processing	(29.6)	0.0	(7.0)	(13.2)	(25.2)	(24.0)	(56.3)	(52.4)	(27.3)	(71.4)	(19.4)
Homebuilders and real estate developers	(23.2)			0.0	(2.4)	(52.9)	(34.8)	(36.6)	0.0	(55.4)	(3.5)
Refining and marketing	(22.1)	(5.9)	(15.9)	(2.8)	(30.3)	(25.7)	(36.8)	(20.3)	(11.3)	(50.0)	OL
Forest and paper products	(18.0)	(3.8)	(9.5)	(20.0)	(23.8)	(13.4)	(41.5)	(33.8)	(18.1)	(12.4)	(3.5)
Oil and gas exploration and production	(15.5)	(6.2)	(17.4)	(2.9)	(4.4)	(19.0)	(27.5)	(22.2)	(12.2)	(27.4)	OL
Agribusiness, commodity foods, and agricultural cooperatives	(15.3)	(4.5)	(7.6)	(4.2)	(12.5)	(1.0)	(25.4)	(31.4)	0.0	(50.9)	OL
Leisure and sports	(14.9)	(16.2)	(9.8)	(28.7)	(30.4)	(15.7)	(14.1)	(8.4)	0.0	(10.6)	OL
Building materials	(14.6)	0.0	(15.7)	(18.4)	(18.6)	(7.0)	(32.1)	(30.6)	(7.3)	(15.5)	(0.4)
Aerospace and defense	(13.9)	(7.2)	(16.4)	(25.6)	(11.7)	(12.1)	(13.1)	(6.3)	(9.6)	(13.9)	(23.5)
Commodity chemicals	(13.9)	(7.2)	(9.9)	(10.2)	(15.8)	(7.5)	(16.4)	(27.5)	(27.4)	(11.0)	(6.4)
Real estate	(10.2)				(15.4)	(33.3)	(2.9)	(9.1)	(3.9)	0.0	(7.1)
Auto suppliers	(13.2)	(6.5)	(6.2)	(12.5)	(17.9)	(20.2)	(11.9)	(10.0)	(18.8)	(17.5)	(10.5)
Engineering and construction	(11.7)	(12.0)	(7.5)	(10.6)	(29.8)	(12.5)	(6.5)	0.0	(16.6)	(2.5)	(18.5)

Table 5

EBITDA margin PTT declines (%) (cont.)

PTT decline by recession

Industry	Average PTT decline	1952-1955	1956-1958	1959-1962	1968-1971	1972-1975	1979-1982	1989-1992	2000-2002	2007-2009	2019-2021
Technology hardware and semiconductors	(11.6)	(8.0)	(2.4)	(3.3)	(12.0)	(4.9)	(7.7)	(18.7)	(42.3)	(16.3)	(0.1)
Capital goods	(10.9)	(13.1)	0.0	(17.7)	(8.4)	(3.1)	(20.3)	(5.5)	(10.3)	(21.8)	(8.6)
Railroads, package express, and logistics	(10.6)							(8.6)	(8.3)	(14.8)	OL
Specialty chemicals	(10.5)	0.0	(9.3)	(12.6)	(11.1)	(21.2)	(19.0)	0.0	(14.0)	(15.9)	(2.3)
Business and consumer services	(10.2)	(50.0)	(9.2)	0.0	(6.6)	(9.6)	(10.7)	(1.9)	0.0	(4.0)	OL
Midstream energy	(10.0)		0.0	(4.8)	(12.0)	(12.2)	(13.2)	(19.2)	(9.5)	(8.8)	OL
Consumer durables	(9.9)	(1.0)	(7.9)	(10.7)	(12.1)	(18.4)	(7.3)	(2.3)	(11.6)	(18.1)	OL
Containers and packaging	(8.6)	0.0	(0.8)	(8.9)	(15.9)	(6.3)	(24.2)	(10.6)	(6.3)	(6.5)	(6.8)
Technology software and services	(8.6)	(13.3)	0.0	(4.4)	(28.8)	(24.6)	(3.1)	0.0	0.0	(10.5)	(1.1)
Media and entertainment	(8.1)	0.0	0.0	(17.4)	(19.4)	(7.2)	(8.0)	(6.3)	(7.5)	(6.9)	OL
Oilfield services and equipment	(7.7)	0.0	(5.8)	(8.5)	(21.6)	(0.4)	(4.6)	(5.6)	(13.5)	(9.0)	OL
Retail and restaurants	(7.1)	(1.9)	(6.2)	(9.5)	(9.0)	(13.1)	(7.1)	(9.9)	(1.1)	(5.6)	OL
Regulated utilities	(6.9)	0.0	0.0	(5.3)	(11.2)	(16.6)	(8.4)	(1.9)	0.0	(4.3)	(21.7)
Transportation infrastructure	(6.1)									(6.1)	OL
Health care services	(5.8)				(5.7)	(16.6)	(1.6)	(6.8)	(2.5)	(3.8)	(3.3)
Environmental services	(5.7)			(4.9)	(10.9)	(6.7)	0.0	(8.4)	(1.3)	(9.9)	(3.7)
Pharmaceuticals	(3.7)	0.0	(5.4)	(3.1)	(9.0)	(7.4)	(3.7)	(1.7)	(3.5)	(1.8)	(1.5)
Transportation leasing	(3.7)	(8.2)	0.0	0.0	(7.6)	(3.9)	(4.7)	(3.8)	0.0	(5.2)	OL
Consumer staples and branded nondurables	(3.2)	0.0	0.0	(2.6)	(4.6)	(9.8)	(0.3)	(3.6)	(2.2)	(5.4)	OL
Health care equipment	(3.1)	(8.5)	0.0	0.0	(11.1)	(3.4)	(4.5)	0.0	0.0	(1.8)	(1.4)
Telecommunications	(2.8)						(5.3)	(2.6)	(0.4)	(5.1)	(0.8)
Unregulated power and gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 5

EBITDA margin PTT declines (%) (cont.)

PTT decline by recession

Industry	Average PTT decline	1952-1955	1956-1958	1959-1962	1968-1971	1972-1975	1979-1982	1989-1992	2000-2002	2007-2009	2019-2021
Digital infrastructure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Empty cells in the table refer to recessionary periods before sector data were available. OL--Outlier, data ineligible because it falls beyond 'BBB' and 'BB' stress calibration parameters for cyclicality (see Cyclicality section for more details). N/A--Not applicable.

Table 6

Revenue PTT declines (%)

PTT decline by recession

Industry	Average PTT decline	1952-1955	1956-1958	1959-1962	1968-1971	1972-1975	1979-1982	1989-1992	2000-2002	2007-2009	2019-2021
Homebuilders and real estate developers	(18.2)				0.0	(31.1)	(26.4)	(18.8)	0.0	(44.5)	(6.4)
Mining	(17.4)	(16.1)	(21.1)	(8.1)	(6.1)	(16.0)	(24.2)	(24.2)	(6.5)	(34.3)	OL
Auto and commercial vehicle manufacturing	(16.2)	(10.3)	(24.0)	(5.8)	(16.9)	(15.7)	(30.0)	(8.2)	(6.9)	(30.7)	(13.4)
Midstream energy	(15.3)			(0.4)	(3.4)	0.0	(2.6)	(12.1)	(59.3)	(29.2)	OL
Metals production and processing	(12.9)	(1.4)	(27.4)	(1.3)	(8.2)	(7.3)	(25.9)	(15.5)	(5.7)	(20.6)	(15.4)
Refining and marketing	(11.7)	(15.2)	(18.0)	(2.4)	0.0	(2.1)	(11.5)	(15.4)	(9.5)	(31.4)	OL
Transportation cyclical	(10.7)							(0.2)	(14.7)	(17.3)	OL
Auto suppliers	(10.0)	(10.4)	(8.1)	(6.7)	(5.4)	(6.1)	(20.3)	(5.2)	(4.9)	(18.9)	(14.3)
Capital goods	(8.1)	(7.0)	(9.1)	(0.2)	0.0	(1.4)	(14.7)	(10.0)	(5.3)	(21.8)	(11.0)
Building materials	(7.9)	(1.8)	(6.3)	(2.2)	0.0	(8.4)	(23.6)	(11.5)	(1.5)	(16.9)	(7.1)
Oil and gas exploration and production	(7.9)	(0.2)	(7.3)	0.0	0.0	(0.7)	(12.0)	(14.2)	(3.9)	(33.2)	OL
Oilfield services and equipment	(7.7)	(1.0)	(17.7)	0.0	0.0	0.0	(9.7)	(10.2)	(9.4)	(21.5)	OL
Transportation leasing	(7.7)	(17.5)	(23.5)	(0.9)	0.0	0.0	(5.0)	(3.0)	(6.3)	(12.6)	OL
Commodity chemicals	(7.4)	(1.6)	(6.8)	0.0	(4.8)	(2.1)	(2.4)	(13.1)	(12.1)	(22.9)	(8.4)
Consumer durables	(7.4)	(8.1)	(5.6)	0.0	(3.7)	(7.8)	(15.3)	(2.0)	(5.9)	(18.5)	OL
Real estate	(7.0)				0.0	(11.7)	(8.8)	(11.5)	0.0	(12.1)	(5.2)

Table 6

Revenue PTT declines (%) (cont.)

PTT decline by recession

Industry	Average PTT decline	1952-1955	1956-1958	1959-1962	1968-1971	1972-1975	1979-1982	1989-1992	2000-2002	2007-2009	2019-2021
Railroads, package express, and logistics	(6.6)							(2.5)	(3.7)	(13.5)	OL
Forest and paper products	(6.3)	0.0	0.0	0.0	(2.6)	(8.8)	(16.1)	(9.3)	(2.5)	(11.4)	(12.4)
Regulated utilities	(5.9)	0.0	0.0	0.0	0.0	0.0	0.0	(6.1)	(42.6)	(6.2)	(4.2)
Aerospace and defense	(5.8)	(4.1)	(4.5)	0.0	(15.3)	(0.4)	(2.9)	(8.2)	0.0	(4.0)	(18.9)
Technology software and services	(5.4)	(17.8)	0.0	(2.3)	(11.9)	(9.0)	0.0	0.0	0.0	(11.8)	(1.0)
Engineering and construction	(5.3)	(12.6)	(4.7)	(4.5)	0.0	0.0	0.0	(8.1)	(0.6)	(12.3)	(10.6)
Business and consumer services	(4.4)	0.0	(23.0)	0.0	0.0	(2.6)	(3.0)	0.0	(2.1)	(9.3)	OL
Specialty chemicals	(4.0)	0.0	0.0	0.0	0.0	(4.2)	(9.7)	(2.0)	(0.3)	(18.3)	(5.8)
Technology hardware and semiconductors	(4.0)	0.0	0.0	0.0	(1.0)	0.0	0.0	(1.5)	(19.4)	(17.6)	(0.9)
Agribusiness, commodity foods, and agricultural cooperatives	(3.7)	(10.8)	(5.1)	(6.9)	0.0	0.0	(3.3)	0.0	0.0	(6.7)	OL
Containers and packaging	(3.4)	(0.4)	(1.2)	(1.9)	0.0	(1.7)	(20.2)	0.0	(1.1)	(5.0)	(2.1)
Environmental services	(2.9)				0.0	(1.5)	(0.9)	0.0	(6.9)	(4.5)	(6.3)
Telecommunications	(2.5)						(0.9)	(0.6)	(5.6)	(5.0)	(0.5)
Leisure and sports	(1.6)	0.0	0.0	0.0	0.0	(3.1)	0.0	(2.8)	(0.8)	(7.3)	OL
Consumer staples and branded nondurables	(1.1)	0.0	0.0	0.0	0.0	0.0	(1.4)	0.0	(4.4)	(3.8)	OL
Health care equipment	(0.8)	(5.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.5)	(1.2)
Media and entertainment	(0.6)	0.0	(0.4)	0.0	(1.8)	0.0	0.0	0.0	0.0	(3.3)	OL
Retail and restaurants	(0.6)	(0.5)	0.0	0.0	0.0	(1.4)	0.0	0.0	0.0	(3.4)	OL
Transportation infrastructure	(0.4)									(0.4)	OL
Pharmaceuticals	(0.2)	0.0	0.0	0.0	0.0	0.0	(1.2)	0.0	0.0	(0.4)	(0.7)
Health care services	0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 6

Revenue PTT declines (%) (cont.)

PTT decline by recession

Industry	Average PTT decline	1952-1955	1956-1958	1959-1962	1968-1971	1972-1975	1979-1982	1989-1992	2000-2002	2007-2009	2019-2021
Unregulated power and gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Digital infrastructure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Empty cells in the table refer to recessionary periods before sector data were available. OL--Outlier, data ineligible because it falls beyond 'BBB' and 'BB' stress calibration parameters for cyclicality (see Cyclicality section for more details). N/A--Not applicable.

Table 7

Industry risk assessments

Industry	--Cyclicality assessment--		--Competitive risk and growth assessment--		--Global industry risk assessment--	
Transportation cyclical	High risk	5	Moderately high risk	4	High risk	5
Metals production and processing	High risk	5	Intermediate risk	3	Moderately high risk	4
Mining	High risk	5	Intermediate risk	3	Moderately high risk	4
Auto and commercial vehicle manufacturing	High risk	5	Intermediate risk	3	Moderately high risk	4
Homebuilders and real estate developers	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Auto suppliers	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Commodity chemicals	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Refining and marketing	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Oil and gas exploration and production	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Unregulated power and gas	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Forest and paper products	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4
Technology hardware and semiconductors	Intermediate risk	3	Moderately high risk	4	Moderately high risk	4
Engineering and construction	Intermediate risk	3	Moderately high risk	4	Moderately high risk	4
Oilfield services and equipment	Intermediate risk	3	Moderately high risk	4	Moderately high risk	4
Agribusiness, commodity foods, and agricultural cooperatives	Moderately high risk	4	Intermediate risk	3	Intermediate risk	3

Table 7

Industry risk assessments (cont.)

Industry	--Cyclicality assessment--		--Competitive risk and growth assessment--		--Global industry risk assessment--	
Leisure and sports	Moderately high risk	4	Intermediate risk	3	Intermediate risk	3
Building materials	Moderately high risk	4	Intermediate risk	3	Intermediate risk	3
Aerospace and defense	Moderately high risk	4	Intermediate risk	3	Intermediate risk	3
Midstream energy	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Capital goods	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Consumer durables	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Business and consumer services	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Technology software and services	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Containers and packaging	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Media and entertainment	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Retail and restaurants	Intermediate risk	3	Intermediate risk	3	Intermediate risk	3
Transportation leasing	Low risk	2	Intermediate risk	3	Intermediate risk	3
Telecommunications	Low risk	2	Intermediate risk	3	Intermediate risk	3
Health care services	Low risk	2	Intermediate risk	3	Intermediate risk	3
Real estate	Intermediate risk	3	Low risk	2	Low risk	2
Railroads, package express, and logistics	Intermediate risk	3	Low risk	2	Low risk	2
Specialty chemicals	Intermediate risk	3	Low risk	2	Low risk	2
Health care equipment	Low risk	2	Low risk	2	Low risk	2
Transportation infrastructure	Low risk	2	Low risk	2	Low risk	2
Environmental services	Low risk	2	Low risk	2	Low risk	2
Consumer staples and branded nondurables	Low risk	2	Low risk	2	Low risk	2
Pharmaceuticals	Low risk	2	Low risk	2	Low risk	2
Digital infrastructure	Low risk	2	Low risk	2	Low risk	2
Regulated utilities	Low risk	2	Very low risk	1	Very low risk	1

Table 8

Industry risk assessments for financial services sectors

Industry	--Cyclicality assessment--		--Competitive risk and growth assessment--		--Global industry risk assessment--	
Asset managers	Low risk	2	Intermediate risk	3	Intermediate risk	3
Financial market infrastructure companies	Low risk	2	Low risk	2	Low risk	2
Financial services finance companies	Moderately high risk	4	Moderately high risk	4	Moderately high risk	4

Table 9

Industry risk assessments for public finance sectors

Industry	--Cyclicality assessment--		--Competitive risk and growth assessment--		--Global industry risk assessment--	
Municipal retail electric and gas utilities	Low risk	2*	Very low risk	1	Very low risk	1
Municipal water and waste						
--Water, sewer, and combined	Low risk	2*	Very low risk	1	Very low risk	1
--Solid waste	Low risk	2§	Low risk	2	Low risk	2
--Irrigation	Low risk	2*	Very low risk	1	Very low risk	1
Not-for-profit education providers	Very low risk	1†	Low risk	2	Low risk	2
Long-term municipal pools	Low risk	2±	Low risk	2	Low risk	2
Not-for-profit transportation infrastructure enterprises						
--Airports and ports	Low risk	2**	Low risk	2	Low risk	2
--Toll roads, parking systems, and mass transit	Low risk	2**	Low risk	2	Low risk	2
Public and nonprofit social housing providers	Low risk	2§§	Low risk	2	Low risk	2
Not-for-profit acute care health care organizations	Low risk	2††	Intermediate risk	3	Intermediate risk	3
Charter schools	Very low risk	1±±	Moderately high risk	4	Moderately high risk	4

*Based on data from regulated utilities. §Based on data from environmental services. †See sector-specific criteria for description of alternative metric. ±Based on data from public finance sectors typically included in pool financings. **Based on data from transportation infrastructure. §§Based on sector-specific data. ††Based on data from health care services. ±±Based on data from U.S. public finance: not-for-profit education providers.

Table 10

Competitive risk and growth subfactors

Industry name	Effectiveness of barriers to entry	Level and trend of industry profit margins	Risk of secular change and substitution of products, services, and technologies	Risk in growth trends
Transportation cyclical	High risk	High risk	Medium risk	Medium risk

Table 10

Competitive risk and growth subfactors (cont.)

Industry name	Effectiveness of barriers to entry	Level and trend of industry profit margins	Risk of secular change and substitution of products, services, and technologies	Risk in growth trends
Homebuilders and real estate developers	Medium risk	High risk	Medium risk	High risk
Metals production and processing	Medium risk	High risk	Medium risk	Medium risk
Mining	Medium risk	Medium risk	Low risk	Medium risk
Auto and commercial vehicle manufacturing	Low risk	High risk	Medium risk	Medium risk
Auto suppliers	Medium risk	High risk	Medium risk	High risk
Commodity chemicals	High risk	High risk	Medium risk	Medium risk
Technology hardware and semiconductors	Medium risk	High risk	High risk	Low risk
Refining and marketing	Low risk	High risk	Medium risk	High risk
Oil and gas exploration and production	Medium risk	High risk	Medium risk	High risk
Unregulated power and gas	Medium risk	High risk	Medium risk	High risk
Forest and paper products	Medium risk	High risk	Medium risk	High risk
Engineering and construction	High risk	High risk	Low risk	Medium risk
Oilfield services and equipment	Medium risk	High risk	Medium risk	High risk
Agribusiness, commodity foods, and agricultural cooperatives	Medium risk	High risk	Medium risk	Medium risk
Leisure and sports	Medium risk	Medium risk	Medium risk	Medium risk
Building materials	Low risk	Medium risk	Medium risk	Medium risk
Aerospace and defense	Medium risk	Medium risk	Low risk	Medium risk
Midstream energy	Low risk	Medium risk	Medium risk	Medium risk
Capital goods	Medium risk	Medium risk	Low risk	Medium risk
Consumer durables	Medium risk	Medium risk	Low risk	Medium risk
Business and consumer services	Medium risk	Medium risk	Low risk	Medium risk
Technology software and services	Medium risk	Medium risk	Low risk	Low risk
Containers and packaging	Medium risk	Medium risk	Medium risk	Medium risk
Media and entertainment	Medium risk	Medium risk	Medium risk	Medium risk

Table 10

Competitive risk and growth subfactors (cont.)

Industry name	Effectiveness of barriers to entry	Level and trend of industry profit margins	Risk of secular change and substitution of products, services, and technologies	Risk in growth trends
Retail and restaurants	Medium risk	High risk	Medium risk	Medium risk
Transportation leasing	Medium risk	Low risk	Medium risk	Low risk
Telecommunications	Low risk	Low risk	Medium risk	Medium risk
Health care services	Medium risk	Medium risk	Low risk	Low risk
Real estate	Medium risk	Low risk	Low risk	Low risk
Railroads, package express, and logistics	Low risk	Low risk	Medium risk	Low risk
Specialty chemicals	Low risk	Medium risk	Low risk	Low risk
Health care equipment	Low risk	Medium risk	Low risk	Low risk
Transportation infrastructure	Low risk	Low risk	Low risk	Medium risk
Environmental services	Low risk	Low risk	Low risk	Medium risk
Consumer staples and branded nondurables	Medium risk	Low risk	Low risk	Low risk
Pharmaceuticals	Low risk	Low risk	Low risk	Medium risk
Digital infrastructure	Medium risk	Low risk	Low risk	Low risk
Regulated utilities	Low risk	Low risk	Low risk	Low risk

Table 11

Competitive risk and growth subfactors for financial services sectors

Industry name	Effectiveness of barriers to entry	Level and trend of industry profit margins	Risk of secular change and substitution of products, services, and technologies	Risk in growth trends
Asset managers	Medium risk	Low risk	Medium risk	Low risk
Financial market infrastructure companies	Low risk	Low risk	Medium risk	Low risk
Financial services finance companies	High risk	Medium risk	Medium risk	High risk

Table 12

Competitive risk and growth subfactors for public finance sectors

Industry name	Effectiveness of barriers to entry	Level and trend of industry profit margins	Risk of secular change and substitution of products, services, and technologies	Risk in growth trends
Municipal retail electric and gas utilities	Low risk	Low risk	Low risk	Low risk

Table 12

Competitive risk and growth subfactors for public finance sectors (cont.)

Industry name	Effectiveness of barriers to entry	Level and trend of industry profit margins	Risk of secular change and substitution of products, services, and technologies	Risk in growth trends
Municipal water and waste				
--Water, sewer, and combined	Low risk	Low risk	Low risk	Low risk
--Solid waste	Low risk	Low risk	Medium risk	Low risk
--Irrigation	Low risk	Low risk	Low risk	Low risk
Not-for-profit education providers	Low risk	Low risk	Medium risk	Low risk
Long-term municipal pools	Low risk	Low risk	Medium risk	Low risk
Not-for-profit transportation infrastructure enterprises				
--Airports and ports	Low risk	Low risk	Low risk	Medium risk
--Toll roads, parking systems, and mass transit	Low risk	Low risk	Medium risk	Low risk
Public and nonprofit social housing providers	Medium risk	Low risk	Low risk	Low risk
Not-for-profit acute care health care organizations	Low risk	Medium risk	Medium risk	Low risk
Charter schools	Medium risk	Medium risk	High risk	High risk

REVISIONS AND UPDATES

This article was originally published on Nov. 19, 2013. These criteria became immediately effective upon publication.

Changes introduced after original publication:

- On July 7, 2025, we republished this criteria article to make nonmaterial changes. We updated Appendix IV to add the sector and industry variables used when we assess digital infrastructure companies.
- On April 9, 2025, we republished this criteria article to make nonmaterial changes to improve transparency in Appendix III about the application of industry risk to public finance sectors. We also added in Appendix IV new sector and industry variables tables 9 and 12 that provide the assessments we use for public finance sectors. The addition of those tables resulted in renumbering of tables 10 and 11. Tables 9 and 12 result from consolidation of existing information from public finance-specific criteria and align public finance industry descriptions to corresponding public-sector criteria. We also updated corporate industry descriptions in tables 5, 6, 7, and 10 to match current sector-specific corporate methodology industry names. We made additional editorial changes to paragraph 18, the title of table 2, and the column headers in tables 7 and 8.
- On Dec. 26, 2024, we republished this criteria article to make nonmaterial changes. We deleted

noncriteria text in Appendix I and updated the sector and industry variable tables in Appendix IV to incorporate, where relevant, information related to the COVID-19 recessionary period. We also added the equivalent numerical score in parentheses after each of the industry risk scale assessments in Table 1.

- On May 22, 2024, we republished this criteria article to make nonmaterial changes. We moved the relevant content of "Sector And Industry Variables: Industry Risk Methodology," published Feb. 6, 2023, without any substantive changes, to the new Appendix IV of these criteria.
- On Feb. 6, 2023, we republished this criteria article to make nonmaterial changes. We deleted noncriteria text in paragraph 4 and removed tables 5 and 6, which contained industry variables that were included in the sector and industry variables report.
- On Oct. 11, 2021, we republished this criteria article to make nonmaterial changes. We updated paragraphs 28, 30, 31, and 32 to include examples describing how we incorporate environmental, social, and governance credit factors in our criteria framework.
- Following our periodic review completed on Oct. 16, 2017, we clarified the criteria scope.
- On Oct. 14, 2016, we clarified that certain public-sector entities are in scope of the criteria, and we clarified the listing of such public sectors in Appendix III, including railways as a corollary to transportation infrastructure industry, in place of "transit systems," and added a cross-reference to the Mass Transit Enterprise Ratings criteria.
- On March 28, 2014, we updated data in tables 5 and 6 concerning the unregulated power and gas sector.

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- Principles Of Credit Ratings

Other publications

- S&P Global Ratings Definitions
- Industry Risk Sector And Industry Variables Updated, Dec. 26, 2024

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