Article Title: ARCHIVE | Criteria | Corporates | Industrials: Key Credit Factors For The Transportation Infrastructure Industry Data: (EDITOR'S NOTE: —This article is no longer current. We have included relevant content in "Guidance: Corporate Methodology," published on July 1, 2019.) 1. This article presents S&P; Global Ratings' methodology and assumptions for rating transportation infrastructure companies. This article aims to help market participants better understand these key credit factors. This article relates to our corporate criteria, "Corporate Methodology," and to "Principles Of Credit Ratings." 2. This paragraph has been deleted. 3. These criteria amend and partially supersede the cash flow and leverage sections of our corporate criteria. All other sections of our corporate criteria apply to the analysis of transportation infrastructure companies. SCOPE OF THE CRITERIA 4. These criteria apply to all transportation infrastructure companies that we rate globally. Transportation infrastructure companies, as we define them, derive most of their earnings from the commercial operation of airports, marine ports, toll road networks, railways, and other transportation infrastructure assets and services, such as navigable waterways and air and marine traffic controllers. 5. These criteria do not apply to public entities that we assess under our public finance criteria. In addition, these criteria do not apply to transportation infrastructure companies that we assess using our project finance criteria, owing to their legal, contractual, and financial structures. Finally, these criteria do not apply to commercial freight railroads, unless they are state owned. We assess freight railroads that are not state owned under our "Key Credit Factors For The Railroad And Package Express Industry." SUMMARY OF THE CRITERIA 6. S&P; Global Ratings is updating its criteria for analyzing transportation infrastructure companies. 7. We view transportation infrastructure as a "low risk" industry under our criteria, given its "low" cyclicality risk and "low" degree of competitive risk and growth. 8. In assessing the competitive position of transportation infrastructure companies, we emphasize their competitive advantage and profitability. In terms of competitive advantage, we focus on their market position; the areas and markets they serve; and the regulatory, legal, political, or contractual frameworks or concession agreements under which they operate. 9. The stability of the industry means that transportation infrastructure companies can generally tolerate significantly higher financial leverage than would otherwise be the case. Conservative management of the companies' debt maturity structure and interest rate risk are key considerations in our assessment of financial risk, alongside our cash flow and leverage analysis. 10. If we consider that a transportation infrastructure company is a government-related entity (GRE), the GRE criteria also continue to apply. In this case, we derive the company's stand-alone credit profile (SACP) using our corporate criteria and the transportation infrastructure key credit factors. Then, we derive the corporate credit rating from the SACP and application of our GRE criteria. 11. This paragraph has been deleted. 12. This paragraph has been deleted. METHODOLOGY Part I. Business Risk Analysis A. Industry Risk 13. Within the framework of S&P; Global Ratings' corporate criteria for assessing industry risk, we view transportation infrastructure as a "low risk" industry (category 2). This reflects the industry's: "Low risk" (category 2) cyclicality assessment; and "Low risk" (category 2) competitive risk and growth assessment. 14. The incidence of default in the industry has been lower than in most other industries and sectors. We have found two corporate defaults since 2002 among the transportation infrastructure companies we rate, both in emerging markets, based on our analysis of our global CreditPro data and default studies. 1. Cyclicality 15. We assess cyclicality for the transportation infrastructure industry as "low risk" (category 2). The industry has low cyclicality relative to other industries in terms of revenues and profitability. Revenues and profitability are two key measures that we use to derive an industry's cyclicality assessment; see "Methodology: Industry Risk." The transportation infrastructure industry experienced an average peak-to-trough decline in revenues of 0.4% and in profitability of 6.1% over 2007-2009, based on our analysis of our global Compustat data. 16. Demand for transportation fluctuates with economic and population growth, employment levels, and trade flows. Transportation infrastructure companies provide an essential service and typically hold a monopolistic or dominant position in their markets. As a result, declines in demand tend to be limited (both in length and magnitude) compared with those for other transportation companies such as airlines, trucking, or shipping companies. In addition, demand for companies that mainly transport passengers is generally more resilient than for those that mainly transport goods. 17. Many transportation infrastructure companies are subject to formal oversight to limit their monopoly powers, through regulation, long-term concession agreements, law, or political oversight. While this oversight, typically through tariff

mechanisms, limits pricing power, it also provides transparency and stability of earnings and profitability. Such mechanisms are generally based on some form of cost recovery, including an economic return on investment. These features help insulate transportation infrastructure companies from economic downturns and support long-term, predictable, and stable cash flows. 2. Competitive risk and growth 18. We view the competitive risk and growth assessment of the transportation infrastructure industry as "low risk" (category 2). To assess competitive risk and growth, we assess four subfactors as low, medium, or high risk. The four subfactors are: Effectiveness of industry barriers to entry; Level and trend of industry profit margins; Risk of secular change and substitution by products, services, and technologies; and Risk in growth trends. a) Effectiveness of the transportation infrastructure industry's barriers to entry — low risk 19. We consider this subfactor to be "low risk" for the transportation infrastructure industry. 20. Transportation infrastructure assets are typically essential to their national and regional economies. Due to a high initial asset cost and subsequent economies of scale reflecting the low marginal cost of servicing additional demand once operational, it is not usually economically viable to construct competing assets. As a result, transportation infrastructure companies typically operate under specific long-term regulatory, legal, political, or contractual framework or concession agreements. This regulates pricing power, but at the same time supports transparent and predictable earnings, usually based on some form of cost recovery, including an economic return. 21. In addition, the industry's capital intensity, high environmental impact, complex planning process, and long lead times for completion of facilities tend to limit competing transportation infrastructure. This results in relatively stable competitive positions. However, there is generally some competition with other modes of transport and with existing transportation infrastructure. 22. Government ownership of transportation infrastructure companies is more common than for industrial corporate entities, although privatization has been gaining ground. In addition, tariffs are often regulated or contractually set, owing to the monopolistic or dominant market positions of transportation infrastructure companies. 23. A market's size and characteristics, supply and demand dynamics, and a company's scale and diversity can be important rating differentiators for transportation infrastructure companies, especially during difficult economic conditions. In analyzing a market, we make distinctions for toll roads and railways between passenger and freight traffic, and commuters and long-distance users; for airports, between inbound and outbound traffic, and origin-and-destination and transit passengers. b) Level and trend of the transportation infrastructure industry's profit margins — low risk 24. We consider this subfactor to be "low risk" for the transportation infrastructure industry. 25. Transportation infrastructure companies with operational assets tend to exhibit stable profit margins that are typical of regulated companies. Although demand can fluctuate with economic cycles, profitability tends to be relatively stable, owing to the limited competitive forces the industry faces. Profitability also reflects the regulatory, legal, political, or contractual frameworks or concession agreements under which transportation infrastructure companies operate. These frameworks and agreements typically involve some element of cost recovery, including an economic return on investment. Weather conditions, and exceptional events, such as health scares, natural disasters, political unrest, and security concerns, may also affect demand and profitability significantly, although historically this has been for short periods of time. c) Risk of secular change and substitution by products, services, and technologies — low risk 26. We consider this subfactor to be "medium risk" for toll road networks and railroads, and "low risk" for the rest of the transportation infrastructure industry. 27. There is some competition among different forms of transport, such as travel by air, road, rail, and ship or ferry. However, we typically expect a shift of traffic from one form of transportation to another to be limited. For instance, a new long-distance high-speed rail link may compete with flights and road links that cover the same route. Where airports have diverse destinations and serve attractive markets, the impact of a new high-speed rail link may be offset by route and schedule adjustments. Toll road network operators are typically less able to adjust their route network. However, they may benefit from protection against competing routes or from compensation for changes that have a significant negative impact on the economic balance under their concession agreements. 28. Government policies sometimes encourage competition among different modes of transport, which can increase the risk of substitution. d) Risk in the transportation infrastructure industry's growth trends — medium risk 29. We consider this subfactor to be "low risk" for toll road networks and railroads, and "medium risk" for the rest of the transportation infrastructure

industry. 30. We expect transportation infrastructure revenue growth to generally be equal to or greater than GDP growth when it is positive. Demographic and social trends have supported and, in our view, will likely continue to support long-term demand for transportation infrastructure. Tariffs tend to increase with inflation, as well as to finance new investments. B. Country Risk 31. Country risk plays a critical role in determining our ratings on all companies. Country-related risk factors can have a substantial effect on a company's creditworthiness, both directly and indirectly. We look beyond the sovereign rating to evaluate the specific economic, demographic, and other country risks that may affect a company's creditworthiness. 32. In assessing country risk for transportation infrastructure companies, we use the same methodology as for other corporate issuers (see "Corporate Methodology"). 33. We believe that transportation infrastructure companies are highly sensitive to country risk. This reflects the infrastructure's essential nature, the companies' typically significant exposure to their country of domicile, and the regulatory, legal, political, or contractual frameworks or concession agreements under which they typically operate. These factors also generally limit the extent to which we may rate transportation infrastructure companies above the sovereign rating on their main country of operation. 34. When determining the country risk of a transportation infrastructure company with operations in more than one jurisdiction, we typically measure their exposure to each country based on forecast EBITDA or, if EBITDA per country is not available, forecast revenues. C. Competitive Position (Including Profitability) 35. Under our corporate criteria, we assess a company's competitive position as (1) excellent; (2) strong; (3) satisfactory; (4) fair; (5) weak; or (6) vulnerable. In line with all other corporate entities, when we assess a transportation infrastructure company's competitive position, we review its: Competitive advantage; Scale, scope, and diversity; Operating efficiency; and Profitability. 36. We assess the first three components independently as (1) strong; (2) strong/adequate; (3) adequate; (4) adequate/weak; or (5) weak. We assess profitability through the combination of two subcomponents--the level of profitability and the volatility of profitability. 37. After separately assessing competitive advantage, scale, scope, diversity, and operating efficiency, we determine the preliminary competitive position assessment by ascribing weights to each component. The weights depend on the company's competitive position group profile (CPGP). 38. The CPGP we assign to most transportation infrastructure companies that we rate is "national industries and utilities." This reflects the effects of government policy and regulation in limiting competitive pressures and supporting stable profitability. For these companies, we weight the first three components of competitive position as follows: Competitive advantage (60%); Scale, scope, and diversity (20%); and Operating efficiency (20%). 39. We may assign the "capital or asset focus" CPGP to transportation infrastructure companies that face higher levels of competition, or that operate in emerging and transitional economies with higher currency risk and cyclicality. The component weights for companies with a "capital or asset intensive" CPGP is as follows: Competitive advantage (30%); Scale, scope, and diversity (30%); and Operating efficiency (40%). 1. Competitive advantage 40. When assessing the competitive advantage of a transportation infrastructure company, we focus on its asset profile, as well as on the regulatory, legal, political, or contractual frameworks or concession agreement under which it operates. Our assessment includes: The size and attractiveness of the areas and markets the company serves, including the location and wealth of the area, and its connectivity with the regional economy. Exposure to demand risk. We consider the company's operating history and track record in terms of traffic. Some transportation infrastructure companies have exposure to groups whose usage is more volatile. For instance, toll road usage by heavy goods vehicles tends to be more volatile than usage by cars; and the number of passengers transiting at an airport tends to fluctuate more than the number of origin-and-destination passengers. Some companies may also have part or all of their revenues contracted or guaranteed, which may moderate demand risk. Market share in key regions and the nature of competition from other transportation links and operators in terms of availability, time, and cost. Asset constraints, such as curfews or noise restrictions for airports; or channel depth for marine ports. 41. An unfavorable framework or agreement is consistent, in our view, with one or more of the following characteristics: The company operates in an opaque regulatory, legal, political, or contractual framework or under a concession agreement that lacks transparency, predictability, and consistency. For regulated assets or concessions, the regulatory framework or concession agreement does not contain a clear pricing or tariff-setting mechanism. The regulatory, legal, political, or contractual

frameworks or concession agreement restrict the company from recovering fully or on a timely basis its fixed and variable operating costs, investments, and capital costs (depreciation and a reasonable return on investment). The company has a track record of earning minimal or negative rates of return in cash through various economic and political cycles and a projected inability to improve that record sustainably. The company is obligated by a third party (government, regulator, or concession grantor) to make significant capital expenditure (capex) commitments, with no legal or contractual basis for the full recovery of capital costs. The company operates in an environment where there has been a recent history of adverse government or regulatory intervention in the transportation infrastructure industry or other regulated industries. 42. The following features are typically consistent with a "strong" or "strong/adequate" competitive advantage assessment for transportation infrastructure companies: The company provides an essential service to the national or regional economy; The area the company serves is large and wealthy, and generally includes a capital city or strategic routes; The company is dominant within its market or markets, and competition from other transportation links and operators is limited and stable; and The company's regulatory, legal, political, or contractual frameworks or concession agreement is transparent, predictable, and consistent, and enables adequate and timely cost recovery, as well as an adequate return on investment. In addition, there is no history of adverse government or regulatory intervention. 43. One or more of the following features is typically consistent with a "weak" or "adequate/weak" competitive advantage assessment for transportation infrastructure companies: A relatively small or weak economy in the area the transportation infrastructure company serves, constraining demand for the services it offers; Exposure to intense competition from other transportation links and operators, creating low or volatile demand or tariffs; and An unfavorable regulatory, legal, or political framework or concession agreement. 44. The following features are typically consistent with an "adequate" competitive advantage assessment: The transportation infrastructure company has significant competition, but demand for its services remains stable and sufficient to cover its costs; The areas the transportation infrastructure company serves are of sufficient quality to support demand in the long term; and We consider the company's regulatory, legal, political, or contractual frameworks or concession agreement as favorable. 2. Scale, scope, and diversity 45. When assessing the scale, scope, and diversity of a transportation infrastructure company, we typically focus on its operations. This reflects the industry's requirements of a high initial investment and, once operational, the relatively low marginal costs of servicing additional demand until capacity is fully utilized. Our assessment of scale, scope, and diversity includes: An analysis of the company's revenue streams and their key drivers, including any long-term contractual income (for example from property or leased assets) and the proportion of commercial and regulated revenues; and The company's geographic footprint, including the size, diversity, and maturity of the markets it serves, and the number and diversity of its customers or users. 46. We see as positive a company's participation in a variety of markets with favorable supply and demand fundamentals that are not closely correlated. However, it is not a necessary condition for a "strong" or "strong/adequate" assessment of scale, scope, and diversity. This is because the stability of transportation infrastructure assets makes diversification less important. 47. We can assess the scale, scope, and diversity of a transportation infrastructure company as "strong," despite customer concentration, if we assess its competitive advantage as "strong" or "strong/adequate." This is the case, for instance, for national hub airports that typically have a main carrier generating more than 50% of sales, and where we believe that in the event of default, the carrier would be replaced within a short time frame. However, for companies that do not have a "strong" or "strong/adequate" competitive advantage assessment, a "strong" or "strong/adequate" scale, scope, and diversity assessment is typically consistent with a customer base that mainly comprises origin-and-destination rather than transit passengers. 48. A transportation infrastructure company with a "strong" or "strong/adequate" scale, scope, and diversity assessment typically has mature transportation assets that serve sizable and wealthy markets. 49. A "weak" or "adequate/weak" scale, scope, and diversity assessment is typically consistent with one or both of the following: Small markets with limited wealth or poor growth prospects or intense competition. That is, unless the transportation infrastructure assets have a track record of stable demand that is sufficient to cover the company's costs; Significant customer concentration, where the company has a "weak," "adequate/weak," or "adequate" competitive advantage assessment. 3. Operating efficiency 50. Our assessment of

operating efficiency includes: Scope to manage variable operating costs, for example through flexible outsourcing arrangements; Mechanisms in the regulatory, legal, political, or contractual framework or concession agreement that enable the company to increase tariffs or be compensated for cost increases; The scale of maintenance costs and investments, taking into account asset age and quality, capacity utilization, government policies in the industry, any contracts the company has entered into, and its business plan; Flexibility of spending, notably during periods of lower demand; and Working capital management and effectiveness of revenue collection. 51. A "strong" or "strong/adequate" operating efficiency assessment is typically consistent with a combination of the following features: Scope to manage the cost base to maintain profitability throughout most of the industry cycle. This could reflect the company's ability to manage its operating cost base. It could also reflect the company's ability under the regulatory, legal, political, or contractual framework or concession agreement to adjust tariffs in a timely fashion when costs increase. Limited capex requirements, if there is sufficient growth capacity and assets are operational and in good condition. Or, if capex requirements are significant, a "strong" or "strong/adequate" operating efficiency assessment typically requires either the flexibility to time and sequence the spending in line with market conditions, or substantial coverage of capex by subsidies. 52. A "weak" or "adequate/weak" operating efficiency assessment is typically consistent with one or more of the following features: An inability to manage the cost base and/or adjust tariffs in the medium term (more than two years). When we expect a company to restore its profitability in the medium term--for instance, thanks to tariff adjustments in compensation for cost increases--this is typically consistent with an "adequate" operating efficiency assessment. The need or plans for significant investment where there is no pre-agreed mechanism to recover the investment, or when the operator is not adequately remunerated--for instance, when remuneration is significantly back-ended. When there is a pre-agreed mechanism to recover those costs, and when the operator is adequately remunerated by increases in tariffs and/or subsidies, this is typically consistent with an "adequate" operating efficiency assessment. Poor working capital management, or exposure to late payments and customer defaults. 4. Profitability 53. The profitability assessment can either confirm or modify the preliminary competitive position assessment that results from the combination of our assessment of components 1 to 3. (For more details on this, see "Corporate Methodology.") The profitability assessment comprises two components: (1) level of profitability; and (2) volatility of profitability. Level of profitability 54. We typically assess the profitability of transportation infrastructure companies using EBITDA margin. We consider: An EBITDA margin higher than 55% as "above average"; An EBITDA margin between 30% and 55% as "average"; and An EBITDA margin lower than 30% as "below average". Volatility of profitability 55. We typically assess volatility of profitability based on EBITDA. In general, we base our assessment on the standard error of the regression of the company's EBITDA over seven years, divided by the average EBITDA over the period. 56. We exclude from our calculation large profitability distortions arising, for instance, from significant changes in the company's regulatory or contractual framework. We typically use a proxy to carry out the volatility assessment, as we do for other corporate entities (see "Corporate Methodology"). Examples of such changes are: The resetting of regulated tariffs to reflect any changes in the company's cost base; Revised operating subsidies, in line with the company's cost base; A reclassification of operating subsidies in the company's accounts, although without effect to cash flows; and A change in scope of consolidation or a restructuring. Part II: Financial Risk Analysis D. Accounting And Analytical Adjustments 57. In assessing the accounting characteristics of transportation infrastructure companies, we use the same methodology as for other corporate issuers (see "Corporate Methodology: Ratios And Adjustments"). Our analysis of a company's financial statements begins with a review of its accounting to determine whether the statements accurately measure the company's performance and position relative to its peers and the larger universe of corporate entities. To allow for globally consistent and comparable financial analyses, our rating analysis may include quantitative adjustments to a company's reported results. These adjustments also better align a company's reported figures with our view of underlying economic conditions. Moreover, they allow for a more accurate portrayal of a company's ongoing business. Adjustments that pertain broadly to all corporate sectors, including transportation infrastructure, are discussed in "Corporate Methodology: Ratios And Adjustments." 58. This paragraph has been deleted. E. Cash Flow/Leverage Analysis 59. In assessing cash flow and leverage for a transportation

infrastructure company, our analysis uses the same methodology as for other corporate issuers (see "Corporate Methodology"). We assess cash flow/leverage on a six-point scale--ranging from (1) minimal to (6) highly leveraged--by aggregating the assessments of a range of predominantly cash flow-based credit ratios, which complement each other by focusing attention on the different levels of a company's cash flow in relation to its obligations. 60. We use the volatility tables in "Corporate Methodology" to assess a transportation infrastructure company's cash flow and leverage. We apply the low volatility table to transportation infrastructure companies with a business risk profile assessment that is "satisfactory" or better, except when the company exhibits, or we think it is likely to exhibit, standard levels of volatility; or when the company has any of the following characteristics: It operates in a country with a country risk assessment of '5' or '6'. It derives approximately one-third or more of its cash flows from activities outside transportation infrastructure. It operates under an unfavorable or unpredictable regulatory, legal, or political framework or concession agreement (see the "Competitive advantage" section above for further detail). Core ratios 61. In accordance with "Corporate Methodology: Ratios And Adjustments," we determine two core credit ratios--FFO to debt and debt to EBITDA. If the core ratios result in different cash flow leverage assessments, we select the one we believe is the best indicator of a company's future leverage. For transportation infrastructure companies, this is typically the FFO-to-debt ratio because it incorporates debt service costs that are typically significant for transportation infrastructure companies. Supplemental ratios 62. In addition to our analysis of a company's core ratios, we consider supplemental ratios to develop a fuller understanding of a company's credit risk profile and to fine-tune our cash flow analysis. In our view, a transportation infrastructure company's inability to meet cash interest payments or a debt maturity is the most likely cause of a cash default. Therefore, the preferred supplemental ratio we use in assessing a transportation infrastructure company's financial risk is FFO cash interest coverage, which we define as FFO plus interest to cash interest. Part III: Rating Modifiers F. Diversification/Portfolio Effect 63. In assessing a transportation infrastructure company's diversification/portfolio effect we use the same methodology as for other corporate issuers (see "Corporate Methodology"). G. Capital Structure 64. In assessing a transportation infrastructure company's capital structure, we use the same methodology as for other corporate issuers (see "Corporate Methodology"). 65. Thanks to their profitability and stability, transportation infrastructure companies can generally tolerate significantly higher financial leverage than would otherwise be the case. However, this is only true if the companies manage their debt maturity structure and debt interest rate risks conservatively. As a result, we consider debt maturity profile and debt interest rate risk to be the most meaningful subfactors for rating transportation infrastructure companies. We see well-staggered maturities of primarily fixed-rate or largely hedged debt as consistent with conservative financial management. H. Liquidity 66. In assessing a transportation infrastructure company's liquidity, we use the same methodology as for other corporate issuers (see "Corporate Methodology"). I. Financial Policy 67. In assessing a transportation infrastructure company's financial policy, we use the same methodology as for other corporate issuers (see "Corporate Methodology"). 68. A transportation infrastructure company that operates under a concession is obliged to repay its debt by the time the assets return to the concession holder. As a result, our assessment of financial policy includes the company's deleveraging strategy. If a company lacks a credible plan to deleverage well ahead of the end of the concession, we would likely assess leverage tolerance as "negative." J. Management And Governance 69. In assessing a transportation infrastructure company's management and governance, we use the same methodology as for other corporate issuers (see "Corporate Methodology"). K. Comparable Ratings Analysis 70. In assessing a transportation infrastructure company's comparable ratings analysis, we use the same methodology as for other corporate issuers (see "Corporate Methodology"). REVISIONS AND UPDATES This article was originally published on Nov. 19, 2013. Changes introduced after original publication: Following our periodic review completed on June 17, 2016, we updated criteria references and deleted paragraphs 2, 11, and 12, which were related to the initial publication and no longer relevant. Following our periodic review completed on June 14, 2017, we updated the contact information and criteria references. Following our periodic review completed on June 8, 2018, we updated the contact information and "Related Criteria And Research" section. On April 1, 2019, we republished this article to make nonmaterial changes. We removed paragraph 58 because it was superseded by "Corporate

Methodology: Ratios And Adjustments," published on April 1, 2019 (Ratios and Adjustments). The sector-specific accounting and analytical adjustments previously included in those paragraphs are now included in the Guidance supporting the Ratios and Adjustments criteria. We also updated the criteria references. On Aug. 5, 2019, we republished this criteria article to make nonmaterial changes. We updated the contact information and criteria references. RELATED CRITERIA AND RESEARCH Related Criteria Corporate Methodology: Ratios And Adjustments, April 1, 2019 Rating Government-Related Entities: Methodology And Assumptions, March 25, 2015 Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014 Corporate Methodology, Nov. 19, 2013 Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013 Key Credit Factors For The Railroad And Package Express Industry, Nov. 19, 2013 Methodology: Industry Risk, Nov. 19, 2013 Management And Governance Credit Factors For Corporate Entities And Insurers, Nov. 13, 2012 Principles Of Credit Ratings, Feb. 16, 2011 Related Research Guidance: Corporate Methodology: Ratios And Adjustments, April 1, 2019 These criteria represent the specific application of fundamental principles that define credit risk and ratings opinions. Their use is determined by the issuer-specific or issue-specific facts, as well as Standard & Poor's assessment of the credit and, if applicable, structural risks for a given issuer or issue rating. Methodology and assumptions change from time to time as a result of market and economic conditions, issue-specific or issuer-specific factors, or new empirical evidence that would affect our credit judgment.