

Article Title: Sector And Industry Variables | Criteria | Corporates | Recovery: Recovery Rating Criteria For Speculative-Grade Corporate Issuers Data: (Editor's note: This report updates the previous version, "Sector And Industry Variables: Recovery Rating Criteria For Speculative-Grade Corporate Issuers," published March 7, 2022. In particular, we updated our guidelines for distressed valuation of power assets, in table 9, to incorporate additional production tax credits outlined in the Inflation Reduction Act of 2022.) Overview And Scope This report provides additional information on the variables S&P; Global Ratings uses when applying the criteria "Recovery Rating Criteria For Speculative-Grade Corporate Issuers," published Dec. 6, 2016 ("recovery criteria"). It is intended to be read in conjunction with those criteria. For a further explanation of sector and industry variables reports, please see the description at the end of this article. We will periodically update these sector and industry variables as market conditions warrant. Key Publication Information This article is related to "Recovery Rating Criteria For Speculative-Grade Corporate Issuers," published Dec. 6, 2016. We will typically update this article every 24 months or more frequently if needed to reflect our views on changing macroeconomic and market conditions. Sector And Industry Variables This article provides variable inputs that we consider when applying our recovery criteria to assess recovery ratings. These variables fall into the following key categories: EBITDA industry multiples; Discrete asset valuation haircut ranges; Sector-specific variable inputs; and Prepetition interest rate guidelines. EBITDA industry multiples When assessing a company's enterprise valuation, we use the following median EBITDA industry multiples (see step 2 of the criteria). Table 1 - EBITDA Industry Multiples MULTIPLE (X) DISCOUNT TO S&P; CAPITAL IQ 15-YEAR LTM TO MARCH 2015 (%) S&P; CAPITAL IQ 15-YEAR LTM TO MARCH 2015 (X) Aerospace and defense 5.0 42 8.6 Agribusiness and commodity foods 5.0 39 8.2 Auto OEM 5.5 36 8.6 Auto suppliers 5.0 21 6.3 Branded nondurables 6.0 30 8.6 Building materials 5.0 33 7.5 Business and consumer services 5.5 37 8.7 Capital goods 5.0 41 8.5 Commodity chemicals 5.0 29 7.0 Consumer durables 5.0 39 8.2 Containers and packaging 5.0 29 7.0 Engineering and construction 5.0 26 6.8 Environmental services 6.0 36 9.4 Forest and paper products 5.0 36 7.8 Health care equipment 6.0 52 12.5 Health care services 5.5 41 9.3 Leisure and sports 6.5 33 9.7 Media and entertainment 6.5 34 9.9 Metals and mining downstream 5.5 36 8.6 Metals and mining upstream 5.0 42 8.6 Midstream energy 6.5 40 10.9 Oil and gas drilling, equipment, and services 5.5 39 9.0 Pharmaceuticals 6.5 47 12.2 Railroads and package express 5.5 36 8.6 Retail and restaurants 5.0 39 8.2 Specialty chemicals 5.5 34 8.3 Technology--hardware and semiconductors 6.0 42 10.3 Technology--software and services 6.5 44 11.7 Telecom and cable 6.0 38 9.6 Transportation cyclical 5.0 21 6.3 LTM--Last-12-month. Financial services For asset managers and for a financial services finance company (FSFC), we generally start at 5.0x and sometimes scale these multiples up or down by up to one turn of leverage (for example, to 4.0x or to 6.0x) based on our judgment of the specific FSFC subsector or on our view of the strength of the asset manager or the FSFC's business risk profile. Discrete asset valuation guidelines When assessing a company's enterprise valuation using the discrete asset valuation approach, we typically use the following discounts and valuation ranges. Aircraft Table 2 - Aircraft Annual Depreciation And Realization Ranges EQUIPMENT SHRINKAGE/DEPRECIATION (%) REALIZATION (%) Highly desirable aircraft 5-9 per year 75-85 Desirable aircraft 9-10 per year 50-65 Less desirable aircraft 10-20 per year 25-40 Auto fleets Table 3- Auto Fleet Assets Depreciation And Realization Rates SECTOR CATEGORY SHRINKAGE/DEPRECIATION (%) REALIZATION (%) Autos Auto fleets--new 0 95 Autos Auto fleets--used 0 90--95 Transportation Rental fleets 0 85 Containers and chassis Table 4 - Container Assets Depreciation And Realization Rates SECTOR CATEGORY SHRINKAGE/ DEPRECIATION (%) REALIZATION (%) Transportation Shipping containers and chassis 4 per year 60-75 Intangibles Table 5 - Intangible Assets Depreciation And Realization Rates SECTOR CATEGORY SHRINKAGE/ DEPRECIATION (%) REALIZATION (%) All General intangibles 0 0-70 Transportation Routes 0 50-60 Transportation Landing slots 0 50-75 Ships Table 6 - Ship Assets Depreciation And Realization Rates SECTOR CATEGORY SHRINKAGE/ DEPRECIATION (%) REALIZATION (%) Transportation Barges and tow boats 0 - 7 per year 0 - 75 Leisure Cruise ship 0-5 per year 0 - 85 Transportation Drill ship 0-5 per year 0 - 75 Transportation Cargo ships 0-5 per year 0 - 75 Real estate companies (homebuilders) Table 7 - Real Estate Companies (Homebuilders) Inventory Realization Ranges INVENTORY TYPE HIGH (%) MEDIUM (%) LOW (%) Completed homes / construction in progress 65-75 55-65 45-55 Land under development 55-65 45-55 35-55 Raw land 50-60 40-50 30-40 Telecom: Towers The current

valuation is typically US\$360,000 per tower when the towers involved conform to the standard format (capable of carrying multiple antennas and not built for a single purpose). Telecom: Wireless spectrum Table 8 - Telecom Asset Depreciation And Realization Rates

SECTOR CATEGORY	SHRINKAGE/DEPRECIATION (%)	REALIZATION SOURCE
Telecom Wireless spectrum	0 per year	100% of spectrum (NBV) + 25% of network assets (NBV)

Expert judgment NBV--Net book value. The value derived from this calculation serves as a floor to the estimated emergence valuation, as we typically determine the emergence value using a multiple of expected emergence EBITDA. Midstream oil refineries For a refinery that we expect to remain in operation after a default, we will generally value the property, plant, and equipment (fixed assets) at a multiple of between US\$2,000 and US\$3,000 per barrel per day of refinery crude oil throughput capacity, depending on our assessment of the relative quality of the assets. We will generally value oil storage terminals owned by oil refineries or operating independently at a price of \$25 per barrel of oil storage capacity. Higher or lower prices may be applicable, based on the location and other relevant features of the storage terminals, and assumed prices could change if future market conditions and empirical data justify that. Independent power producers (unregulated utilities) The valuation ranges in table 9 are by fuel type, adjusted for 1) dispatch characteristics (baseload versus peaking), 2) the regional transmission organization exposure of the power plant, and 3) the relative quality of the plant. Table 9 - Guidelines For Distressed Valuation Of Power Assets

FUEL SOURCE	DISPATCH CHARACTERISTICS (DC)	COAL BASELOAD	COAL PEAKING	NATURAL GAS BASELOAD	NATURAL GAS PEAKING	NUCLEAR	UNCONVENTIONAL
PJM (regional transmission organization in Northeast U.S.)	0-175	0-25	300-650	125-175	900-1,100		
200-400 Independent Service Operator of New England (ISO-NE)	0-75	0-25	350-450	150-200			
900-1,100 New York Independent Service Operator (NYISO)	0-100	0-25	500-1,000	75-325			
900-1,100 The Energy Reliability Council of Texas (ERCOT)	0-175	0-25	225-550	50-100			
900-1,100 Midcontinent Independent Service Operator (MISO)	0-75	0-25	250-550	75-125			
900-1,100 California Independent System Operator (CAISO)	N/A	N/A	300-400	100-175	N/A		
200-400 Southwest Power Pool (SPP)	0-100	0-25	250-350	75-125	900-1,100	200-400	N/A--Not applicable.

These guidelines may be subject to adjustments based on asset quality or obsolescence risk. Working capital (all sectors) Table 10 - Working-Capital Depreciation And Realization Rates

SECTOR CATEGORY	SHRINKAGE/DEPRECIATION (%)	REALIZATION (%)
All Cash (including restricted cash)	80-100	100
All Accounts receivable Consistent with expected contraction on path to default	55 - 85	
All Inventories - raw materials Consistent with expected contraction on path to default	35 - 85	
All Inventories - work in process Consistent with expected contraction on path to default	0 - 55	
All Inventories - finished goods Consistent with expected contraction on path to default	45 - 65	

Fixed assets (all sectors) Table 11 - Fixed Assets Depreciation And Realization Rates

SECTOR CATEGORY	SHRINKAGE/DEPRECIATION (%)	REALIZATION (%)
All Buildings	2-5 per year	40-60
All Land	0	70%
of NBV /85 of FMV All Furniture and fixtures	10 per year	0-10
All Machinery and equipment	4-10 per year	35-55
All Rental equipment	5-10 per year	50-85

NBV--Net book values. FMV--Fair market value. Sector-specific approach: real estate companies If a particular property type or quality classification is not listed in table 12 below, we will consider available market data to derive our own capitalization rates for the subject property type or consider the most comparable property type and its characteristics. We will also take into consideration appraisals as part of our recovery analysis. Table 12 - S&P; Global Ratings' CMBS Cap Rates Plus Distress For Recovery Analysis AS OF DEC. 14, 2020 (GUIDANCE DOCUMENT TITLED "CMBS GLOBAL PROPERTY EVALUATION METHODOLOGY" PUBLISHED MARCH 13, 2019) --S&P; CMBS CAP RATE-- --DISTRESS: 5%-- --DISTRESS: 10%-- --DISTRESS: 15%-- --MARKET TYPE-- PROPERTY TYPE PROPERTY SUBTYPE L M H L M H L M H L M H Office (*) Class A - NYC CBD 6.25 N/A N/A 6.56 N/A N/A 6.88 N/A N/A 7.19 N/A N/A Class A - DC CBD 6.75 N/A N/A 7.09 N/A N/A 7.43 N/A N/A 7.76 N/A N/A Class A - other CBD (including Toronto) 7.00 7.50 8.00 7.35 7.88 8.40 7.70 8.25 8.80 8.05 8.63 9.20 Class B - NYC CBD 7.00 N/A N/A 7.35 N/A N/A 7.70 N/A N/A 8.05 N/A N/A Class B - DC CBD 7.25 N/A N/A 7.61 N/A N/A 7.98 N/A N/A 8.34 N/A N/A Class B - other CBD (including Toronto) 7.50 8.00 8.50 7.88 8.40 8.93 8.25 8.80 9.35 8.63 9.20 9.78 Class A suburban - NYC and DC 7.00 N/A N/A 7.35 N/A N/A 7.70 N/A N/A 8.05 N/A N/A Class A suburban (including Toronto) 7.25 7.75 8.25 7.61 8.14 8.66 7.98 8.53 9.08 8.34 8.91 9.49 Class B suburban - NYC and DC 7.50 N/A N/A 7.88 N/A N/A 8.25 N/A N/A 8.63 N/A N/A Class B suburban (including

Toronto) 7.75 8.25 8.75 8.14 8.66 9.19 8.53 9.08 9.63 8.91 9.49 10.06 Medical office 8.00 8.50 9.00 8.40 8.93 9.45 8.80 9.35 9.90 9.20 9.78 10.35 Surgical medical 9.00 9.50 10.00 9.45 9.98 10.50 9.90 10.45 11.00 10.35 10.93 11.50 Retail Anchored, avg. to above avg. quality 7.00 7.25 7.75 7.35 7.61 8.14 7.70 7.98 8.53 8.05 8.34 8.91 Anchored, below-avg. quality 7.25 7.75 8.25 7.61 8.14 8.66 7.98 8.53 9.08 8.34 8.91 9.49 Unanchored, avg. to above avg. quality 7.50 8.00 8.50 7.88 8.40 8.93 8.25 8.80 9.35 8.63 9.20 9.78 Unanchored, below-avg. quality 8.00 8.25 8.75 8.40 8.66 9.19 8.80 9.08 9.63 9.20 9.49 10.06 Grocery-anchored center 6.75 7.00 7.50 7.09 7.35 7.88 7.43 7.70 8.25 7.76 8.05 8.63 Class A (+/-) 6.00 N/A 7.25 6.30 N/A 7.61 6.60 N/A 7.98 6.90 N/A 8.34 Class B (+/-) 7.50 N/A 9.75 7.88 N/A 10.24 8.25 N/A 10.73 8.63 N/A 11.21 Class C (+/-) 10.00 N/A 12.50 10.50 N/A 13.13 11.00 N/A 13.75 11.50 N/A 14.38 Class D (+/-) N/A 12.75 N/A N/A 13.39 N/A N/A 14.03 N/A N/A 14.66 N/A Free standing movie theater - sales > \$1MM/screen 8.00 8.25 8.75 8.40 8.66 9.19 8.80 9.08 9.63 9.20 9.49 10.06 Free standing movie theater - sales > \$350k and < or equal to \$1 MM/screen 8.25 8.50 9.00 8.66 8.93 9.45 9.08 9.35 9.90 9.49 9.78 10.35 Free standing movie theater - sales < \$350k/screen 8.50 9.00 9.50 8.93 9.45 9.98 9.35 9.90 10.45 9.78 10.35 10.93 Free standing fitness center 8.25 8.75 9.25 8.66 9.19 9.71 9.08 9.63 10.18 9.49 10.06 10.64 Free standing restaurant/food service 7.75 8.25 8.50 8.14 8.66 8.93 8.53 9.08 9.35 8.91 9.49 9.78 Free standing pharmacy 7.25 7.75 8.25 7.61 8.14 8.66 7.98 8.53 9.08 8.34 8.91 9.49 Multifamily Class A 5.75 6.25 6.50 6.04 6.56 6.83 6.33 6.88 7.15 6.61 7.19 7.48 Class B 6.25 6.50 7.00 6.56 6.83 7.35 6.88 7.15 7.70 7.19 7.48 8.05 Class C 6.50 7.00 7.50 6.83 7.35 7.88 7.15 7.70 8.25 7.48 8.05 8.63 Student housing** Manufactured housing 6.50 7.00 7.50 6.83 7.35 7.88 7.15 7.70 8.25 7.48 8.05 8.63 Recreational vehicle/seasonal/transient 8.75 9.00 9.25 9.19 9.45 9.71 9.63 9.90 10.18 10.06 10.35 10.64 Industrial Industrial/warehouse, above-avg. quality 6.50 6.75 7.00 6.83 7.09 7.35 7.15 7.43 7.70 7.48 7.76 8.05 Industrial/warehouse, avg. quality 6.75 7.00 7.25 7.09 7.35 7.61 7.43 7.70 7.98 7.76 8.05 8.34 Industrial/warehouse, below-avg. quality 7.50 7.75 8.00 7.88 8.14 8.40 8.25 8.53 8.80 8.63 8.91 9.20 Flex-R&D;** Lodging Recognized industry leader (Trophy Property) N/A 8.25 N/A N/A 8.66 N/A N/A 9.08 N/A N/A 9.49 N/A Luxury, high land cost areas N/A 8.50 N/A N/A 8.93 N/A N/A 9.35 N/A N/A 9.78 N/A Luxury, lower land cost areas N/A 8.75 N/A N/A 9.19 N/A N/A 9.63 N/A N/A 10.06 N/A Full service, above average, high land cost areas N/A 8.75 N/A N/A 9.19 N/A N/A 9.63 N/A N/A 10.06 N/A Full service, above average N/A 9.00 N/A N/A 9.45 N/A N/A 9.90 N/A N/A 10.35 N/A Full service, average N/A 9.25 N/A N/A 9.71 N/A N/A 10.18 N/A N/A 10.64 N/A Extended-stay, above average, high land cost areas N/A 9.25 N/A N/A 9.71 N/A N/A 10.18 N/A N/A 10.64 N/A Extended-stay, above average N/A 9.50 N/A N/A 9.98 N/A N/A 10.45 N/A N/A 10.93 N/A Extended-stay, average N/A 9.75 N/A N/A 10.24 N/A N/A 10.73 N/A N/A 11.21 N/A Limited service, above average, high land cost areas N/A 9.25 N/A N/A 9.71 N/A N/A 10.18 N/A N/A 10.64 N/A Limited service, above average N/A 9.50 N/A N/A 9.98 N/A N/A 10.45 N/A N/A 10.93 N/A Limited service, average N/A 10.00 N/A N/A 10.50 N/A N/A 11.00 N/A N/A 11.50 N/A Limited service, below average N/A 10.50 N/A N/A 11.03 N/A N/A 11.55 N/A N/A 12.08 N/A Self-storage Self-storage 7.00 7.25 7.50 7.35 7.61 7.88 7.70 7.98 8.25 8.05 8.34 8.63 Health care Independent living 8.00 8.25 8.50 8.40 8.66 8.93 8.80 9.08 9.35 9.20 9.49 9.78 Assisted living 9.00 9.25 9.50 9.45 9.71 9.98 9.90 10.18 10.45 10.35 10.64 10.93 Skilled nursing¶ 11.00 11.25 11.50 11.55 11.81 12.08 12.10 12.38 12.65 12.65 12.94 13.23 Other Parking garage 8.25 8.50 9.00 8.66 8.93 9.45 9.08 9.35 9.90 9.49 9.78 10.35 Casino 11.50 12.00 12.50 12.08 12.60 13.13 12.65 13.20 13.75 13.23 13.80 14.38 Golf course 11.25 11.75 12.25 11.81 12.34 12.86 12.38 12.93 13.48 12.94 13.51 14.09 Data center 8.50 8.75 9.00 8.93 9.19 9.45 9.35 9.63 9.90 9.78 10.06 10.35 *Class C office properties will have a capitalization rate that is 0.25%-0.50% higher than the relevant class B rate. ¶Health care properties that generate a high percentage of their revenues (typically more than 60.0%) from private-pay patients may have a capitalization rate up to 0.50% lower. **Add up to 0.50% to comparable class and market. L--Low. M--Mid. H--High. CBD--Central business district. Standard realization rates The standard realization rates assessed in our discount-to-book-value approach depend on certain characteristics of the properties and their operating performance. Table 13 - Real Estate Property Realization Rate Ranges PROPERTY TYPE HIGH (%) MEDIUM (%) LOW (%) Stabilized income-generating properties 70-80 60-70 40 - 60 Non-stabilized non-income-generating properties/land under development/construction 65-80 50-65 35-50 Land held for future development 60-75 45-60 30-45 Accounts receivable 75-100 50-75 25-50 Prepetition interest rate guidelines We generally use the following prepetition interest rates, which we

also use in our interest calculations for exposure at default and the EBITDA proxy calculations. Benchmark rates by borrowing currency Our prepetition interest rate consists of a benchmark rate plus a margin. Benchmark assumptions (including any credit spread adjustment) for various currencies are as follows: British pound: 3% Euro: 2.5% U.S. dollar: 2.5% Swiss franc: 1% Brazilian real: 5% Mexican peso: 5% Australian dollar: 3% Israeli shekel: 3% When evaluating benchmark rates or regions not listed above, we estimate a benchmark rate based on long-term medians, and we cap the benchmark rates at 5%. The benchmark rates for certain countries, usually in Group B jurisdictions (such as Brazil), have also been capped at 5%. Total interest is capped at 10% for these countries. Our margin assumptions for variable-rate debt with financial maintenance covenants are: The higher of the top of the pricing grid or 5% on first-lien debt; The higher of the top of the pricing grid or 8% on second-lien debt and junior debt; and The top of the pricing grid on asset-based loans. Related Criteria Recovery Rating Criteria For Speculative-Grade Corporate Issuers, Dec. 6, 2016 Related Research Evolution Of The Methodologies Framework: Introducing Sector And Industry Variables Reports, Oct. 1, 2021 This is a sector and industry variables report. A sector and industry variables report is a publicly available criteria-related publication that describes sector, industry, asset class, or regional variables that we expect to periodically update mainly to reflect our views on changing macroeconomic and market conditions. Sector and industry variables reports are not criteria because they do not establish a methodological framework for determining credit ratings.