Article Title: Criteria | Insurance | General: Methodology For Assessing Capital Charges For Commercial Mortgage Loans Held By U.S. Insurance Companies Data: (EDITOR'S NOTE: —On Feb. 25, 2021, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details.) 1. S&P; Global Ratings is updating its methodology for assessing capital charges for commercial mortgage loans (CMLs) held by U.S. insurance companies. SCOPE OF THE PROPOSAL 2. The criteria apply to our ratings on all U.S. insurance companies. SUMMARY 3. This updated methodology derives capital charges for CMLs based on: Current loan status: in good standing, delinquent, or in the process of foreclosure; and Loan characteristics: loan-to-value (LTV) and debt service coverage ratio (DSCR). 4. To establish the capital charges we used historic industry experience, current loan status, and loan characteristics of CMLs held by life insurers. Specifically, our analysis incorporated delinquency rates, foreclosure rates, principal losses, LTV leves, and DSCRs of loans issued by insurance companies. 5. This methodology is based on performance and underwriting of life insurers' commercial mortgage loans, which is different from our previous methodology that overlays the commercial mortgage-backed securities (CMBS) criteria on the pool of CMLs held by insurers. 6. This paragraph has been deleted. METHODOLOGY 7. This updated methodology is based on our analysis of historical performance and current underwriting quality of commercial mortgage loans held by life insurers. This is different from our existing criteria, which rely on the methodology used for evaluating CMBS. 8. We have analyzed life insurers' CML holdings during the current real estate downturn. Loan performance has been better than expected, supported by conservative underwriting (see Same Asset Class But Diverging Results: Comparing Commercial Mortgages In CMBS And Life Insurers' Portfolios, published May 31, 2012, on RatingsDirect). To compute capital charges for CMLs, we have also observed historical performance and loan characteristics of CMLs held by life insurers going as far back as 1965 (see table 1). The data used for this analysis were from the published American Council of Life Insurers (ACLI) Commercial Mortgage Commitments Historical Database and S&P; Global Ratings' database of CMLs held by rated insurance companies. Table 1 Standard Capital Charges For Commercial Mortgage Loans Held By U.S. Insurers* --IN GOOD STANDING-- LOAN-TO-VALUE --DEBT SERVICE COVERAGE RATIOS-- DELINQUENT LOANS (%) IN PROCESS OF FORECLOSURE (%) 'BBB' level > 1.7x 1.4 to 1.7 1.1 to 1.4 < 1.1x <60% 1.1% 1.2% 1.6% 2.4% 14 27 60% - 70% 1.8% 2.0% 2.6% 3.9% 22 44 70% - 80% 2.1% 2.3% 3.0% 4.6% 26 51 > 80% 2.4% 2.7% 3.5% 5.3% 30 60 'A level' > 1.7x 1.4 to 1.7 1.1 to 1.4 < 1.1x <60% 2.0% 2.2% 2.9% 4.4% 20 39 60% - 70% 2.7% 3.0% 3.9% 6.0% 27 53 70% - 80% 3.0% 3.4% 4.4% 6.7% 30 59 > 80% 3.4% 3.7% 4.9% 7.5% 33 66 'AA level' > 1.7x 1.4 to 1.7 1.1 to 1.4 < 1.1x <60% 2.4% 2.7% 3.5% 5.4% 22 44 60% - 70% 3.1% 3.5% 4.5% 6.9% 28 57 70% - 80% 3.4% 3.8% 5.0% 7.7% 31 63 > 80% 3.8% 4.2% 5.5% 8.4% 34 69 'AAA level' > 1.7x 1.4 to 1.7 1.1 to 1.4 < 1.1x <60% 3.1% 3.4% 4.5% 6.9% 25 51 60% - 70% 3.8% 4.2% 5.5% 8.4% 31 62 70% - 80% 4.1% 4.6% 5.9% 9.1% 34 67 > 80% 4.4% 4.9% 6.4% 9.9% 36 73 *Capital charges are higher for properties designated as hotels and others. Computing the base capital charges 9. Loss factor.First, we conducted statistical analysis to establish the stressed loss on principal, or the loss factor. Based on principal loss data going back to the early 1990s, we calculated the weighted average and standard deviation of the observations. Assuming normal distribution, we stressed the loss factor to different ratings levels (AAA, AA, A, BBB) that are commensurate with our risk-based insurance capital model. (See table 2 for the principal loss factors.) Table 2 Stressed Principal Loss Factor (%) AAA 62 AA 57 A 53 BBB 44 10. Probability.The second step was to establish the probability of foreclosure, causing the insurer potentially to incur such principal losses. We used the insurance industry's CML portfolio quarterly foreclosure rates data from 1965 to 2011 to determine stressed probability of foreclosure for 'BBB', 'A', 'AA', and 'AAA' rating levels. We derived this by calculating the weighted average foreclosure rate and the annualized standard deviation, and applying the normal distribution to determine the stressed probability of foreclosure. 11. Base capital charges.CMLs are differentiated into three categories based on the current performance of the loan: in good standing, delinquent (overdue 60 days, but not in foreclosure), and in the process of foreclosure. For the loans that are currently in good standing, the base capital charge is the product of the stressed loss factor and the stressed probability of foreclosure. This methodology assumes 100% correlation between the probabilities of foreclosure and the deterioration in property values, which cause large principal losses on the loan. We believe this is in line with our assumptions for 'BBB' to

'AAA' economic scenarios as defined by our ratings definitions (see Understanding S&P; Global Ratings' Rating Definitions, published June 3, 2009, on RatingsDirect). 12. Based on observed delinquency data, we assumed that 50% of currently delinquent loans will result in foreclosure. Therefore, the base charges for delinquent loans are the product of stressed principal losses and 50% (or 0.5). 13. The loans categorized as being in the process of foreclosure will be assumed to have 100% probability of foreclosure. Hence, the base charges for loans in this category will be the same as the stressed principal loss factor (see tables 3, 4, and 5). Table 3 Base Capital Charges For Loans In Good Standing (%) LOSS FACTOR (A) PROBABILITY OF FORECLOSURE (B) BASE CAPITAL CHARGE (A*B) AAA 62 6.8 4.2 AA 57 6.1 3.5 A 53 5.7 3.0 BBB 44 4.5 2.0 Table 4 Base Capital Charges For Delinquent (Overdue, But Not In Foreclosure) Loans (%) LOSS FACTOR (A) PROBABILITY OF FORECLOSURE (B) BASE CAPITAL CHARGE (A*B) AAA 62 50 31 AA 57 50 28 A 53 50 27 BBB 44 50 22 Table 5 Base Capital Charges For Loans In The Process Of Foreclosure (%) LOSS FACTOR (A) PROBABILITY OF FORECLOSURE (B) BASE CAPITAL CHARGE (A*B) AAA 62 100 62 AA 57 100 57 A 53 100 53 BBB 44 100 44 Differentiating based on loan characteristics 14. LTV and DSCR buckets.This methodology differentiates loans based on their current characteristics, specifically the LTV ratio and DSCR of the individual loans. The methodology uses four categories for LTV and four categories for DSCR as follows. 15. LTV categories: Low risk: Less than 60%. Base case: Between 60% and 70%. Above average risk: Between 70% and 80%. High risk: Greater than 80%. 16. DSCR categories: Low risk: Greater than 1.7x. Base case: Between 1.4x and 1.7x. Moderate risk: Between 1.1x and 1.4x. High risk: Less than 1.1x. 17. The base capital charges for loans that are in the good standing category are aligned with the base case LTV and DSCR categories. The base charge will then be modified based on the characteristics of the loan. 18. Modifying charges using LTV.Assuming a 65% LTV (which is the approximate average LTV of the current pool of loans for insurers) for the base-case bucket, we derived implied property value declines in stress scenarios. Percent property value decline equals the percent equity on the property plus the product of LTV and the percent loss on the loan (i.e., [1-LTV] + LTV * principal loss factor). For example, if the principal loss factor is 62% and the LTV is 65%, the implied property value decline will be (1-0.65) +0.65 * 0.62 = 75%. Subsequently, we calculated adjusted principal loss factors for the low-risk, above-average, and high-risk categories assuming 50%, 75%, and 90% LTVs, respectively (see tables 6 and 7) We then used the adjusted principal loss factors to modify the base capital charges. 19. We believe that the property value declines we are assuming for the 'BBB' through 'AAA' scenarios are consistent with the stress scenarios we described in "Understanding S&P; Global Ratings' Rating Definitions," published June 3, 2009. This criteria article lists examples of recessions and financial crises that correspond to our rating-level stresses. One of the relevant crises mentioned is the early 1990s recession in the U.S. during which a regional real estate bubble burst. For this time period, we observed a national decline in average property value of approximately 30% during a three-to-five-year horizon. This crisis was defined as a modest recession that corresponded to a 'BB' level stress. We believe that the levels of property value decline for 'BBB' through 'AAA' levels could be multiples of the experienced 'BB' levels. 20. Modifying charges using DSCR.Based on regression analysis of delinquency and foreclosure rates and their correlation with DSCR, we determined that there is a strong negative exponential relationship between DSCR and delinquency rates assuming a time lag on the impact of DSCR on delinquency rates. These regression analyses resulted in R-squares (R2s) as high as 75% when we used the power curve to determine the predictability power of DSCR for delinquency rates. We observed that when DSCR decreases below the current average, the delinquency rates increase exponentially. Conversely, when the DSCR increases significantly, the delinquency rates decrease very little, converging at the 0% level. Therefore, using the relationship between DSCR and delinquency rates as proxy for the relationship between DSCR and foreclosure rates, we applied the following adjustment factors to the base capital charges to differentiate the charges for DSCR buckets: Low risk: 0.9x (i.e. reduction of 10%); Base case: 1x; Moderate risk: 1.3x; High risk: 2x. 21. Final Standard CML capital charges.The standard capital charges for loans in good standing differ by both LTV and DSCR. For loans that are delinquent or in the process of foreclosure, the charges differ by LTV only (see table 1). 22. Hotels and others.The standard CML charges are applicable to CMLs backed by property types designated as industrial, apartment or multifamily, mixed-use, office, and retail, and they are not applicable to CMLs

secured by hotels (lodging) or other property types. Our analysis has shown that hotels are riskier than other major property types. Both the average and the standard deviation of foreclosure rates for hotels are twice that of total commercial loans held by insurers. We also analyzed the principal loss experience for these types of loans and did not find a significant difference in observed losses for hotels and properties designated as other when compared to the total pool of loans. Thus, for loans secured by properties designated as hotels or others we will apply capital charges that are twice the standard charges in table 1. Because this is solely based on increased probability of foreclosure and not the level of potential losses, the multiplier only applies to loans that are in good standing. The LTV and DSCR differentiation will still apply for loans backed by properties designated as hotels and others (see table 8 for examples). Table 8 LTV And DSCR Differentiation Examples EXAMPLE 1: DAZ CML IS CURRENTLY IN GOOD STANDING. OUTSTANDING PRINCIPAL IS $10 MILLION, DSCR IS 1.5X, AND LTV IS 65%. PROPERTY TYPE IS RETAIL. ‘AAA’ capital charge for DAZ $10 million * 4.2% = $0.42 million ‘AA’ capital charge for DAZ $10 million * 3.5% = $0.35 million ‘A’ capital charge for DAZ $10 million * 3.0% = $0.30 million ‘BBB’ capital charge for DAZ $10 million * 2.0% = $0.20 million EXAMPLE 2: DBC CML IS CURRENTLY IN THE PROCESS OF FORECLOSURE. OUTSTANDING PRINCIPAL IS $10 MILLION AND LTV IS 65%. PROPERTY TYPE IS RETAIL. ‘AAA’ capital charge for DBC $10 million * 62% = $6.2 million ‘AA’ capital charge for DBC $10 million * 57% = $5.7 million ‘A’ capital charge for DBC $10 million * 53% = $5.3 million ‘BBB’ capital charge for DBC $10 million * 44% = $4.4 million EXAMPLE 3: MFA CML IS CURRENTLY IN GOOD STANDING. OUTSTANDING PRINCIPAL IS $10 MILLION, DSCR IS 1.5X, LTV IS 65%. PROPERTY TYPE IS HOTEL. ‘AAA’ capital charge for MFA $10 million * (4.2% * 2) = $0.84 million ‘AA’ capital charge for MFA $10 million * (3.5% * 2) = $0.70 million ‘A’ capital charge for MFA $10 million * (3.0% * 2) = $0.60 million ‘BBB’ capital charge for MFA $10 million * (2.0% * 2) = $0.40 million 23. Concentration charge.Our statistical analysis is based on the historical experience of a diversified pool of CMLs. We believe that there is increased risk if an issuer's loan portfolio is not well diversified, especially in terms of individual loan size and geography. Therefore, we will assess concentration charges that will be levied as follows: Geographic concentration: We found that if we were to apply our standard methodology to calculate capital charges for each region, the maximum charge for a single region would be 100% larger than the standard charges. This is due to higher correlation of foreclosure rates and principal losses within a region. Based on this and our analysis of regional distribution of insurer loans, if more than 40% of loans (in terms of outstanding principal balance) are concentrated in a single region, the capital charge for the loans in that particular region will be twice the standard loan charges in table 1 (see appendix for the definitions of regions). Large loan concentration: We will assess a 100% probability of foreclosure for the largest three loans in the CML portfolio and apply a loss factor based on the LTV of the properties associated with those three loans. The final capital charge for the portfolio will be higher of the standard charges (after geographic concentration adjustment, if any) or the large loan concentration charge. 24. The methodology is not applicable for credit tenant loans and construction loans. Credit tenant loans: For credit tenant loans, we focus on the credit worthiness of the tenant. We use our credit rating on the tenant to ascertain the capital charge. Construction loans: These loans usually do not have an operating income, because they are still in the construction stage. They are also considered to be of higher risk than other direct mortgage loans. We use a standard capital charge of AAA: 32.6%; AA: 28.9%; A: 26.4%; BBB: 20.0%. 25. In rare cases, we may apply appropriate analytical adjustments to this methodology if we deem a loan or a portfolio of loans to be unusual in nature. Appendix Regional Definitions New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont Middle Atlantic: New Jersey, New York, Pennsylvania East North Central: Illinios, Indiana, Michigan, Ohio, Wisconsin West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota South Atlantic: Delaware, Distric of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virgina, West Virginia East South Central: Alabama, Kentucky, Mississippi, Tennessee West South Central: Arkansas, Louisiana, Oklahoma, Texas Mountain: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming Pacific: Alaska, Caifornia, Hawaii, Oregon, Washington Other: Puerto Rico, U.S. territories and possessions, Canada, other foreign REVISIONS AND UPDATES This article was originally published on May 31, 2012. Changes introduced after original publication Following our periodic review completed on March 21, 2016, we updated the author

contact information. Following our periodic review completed on March 21, 2017, we updated the author contact information and related criteria references. We also removed the "Impact On Outstanding Ratings" section, in paragraph 6, because it was no longer relevant. On March 23, 2017, we republished the article to correct a criteria error relating to our calculation of principal loss assumptions. The error affected values included in tables 1-8 and paragraph 18. The majority of the corrected values are 10-40 basis points lower, and at most five percentage points lower, than the values previously published; none of the revised values are higher. Following our periodic review completed on March 20, 2018, we deleted text relating to the initial publication of the criteria, which had previously been moved to the "Revisions And Updates" section and was no longer relevant; deleted outdated criteria references; and added the "Related Research" section. On Feb. 25, 2021, we republished these criteria to make nonmaterial changes. Specifically, we updated the contact information and the Related Criteria section. RELATED CRITERIA AND RESEARCH Related Criteria S&P; Global Ratings Definitions, Jan. 5, 2021 Refined Methodology And Assumptions For Analyzing Insurer Capital Adequacy Using The Risk-Based Insurance Capital Model, June 7, 2010 Related Research Same Asset Class But Diverging Results: Comparing Commercial Mortgages In CMBS And Life Insurers’ Portfolios, May 31, 2012