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European CMBS Methodology And Assumptions

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European CMBS Methodology And Assumptions

1. Standard & Poor's Ratings Services is updating its methodology and assumptions for rating European commercial mortgage-backed securities (CMBS). This update follows an "Advance Notice Of Proposed Criteria Change: Methodology And Assumptions For Rating European Commercial Mortgage-Backed Securities," published on Nov. 8, 2011 and the previous notice "Advance Notice Of Proposed Criteria Change: Review Of Criteria Assumptions And Methodology On European CMBS Transactions With Concentrated Loan Exposures," published on Nov. 11, 2009.
2. The criteria update refines the approach to rating European CMBS transactions, and provides a more transparent framework for analyzing the commercial real estate assets and transaction structures commonly associated with European CMBS.
3. This article discusses two of the key areas in the analytical framework for structured finance securitization ratings described in "Principles Of Credit Ratings," published on Feb. 16, 2011: credit quality of the securitized assets and payment structure and cash flow mechanics.
4. This criteria article fully supersedes "Framework For Credit Analysis In European CMBS Transactions," published on May 21, 2007, and supplements the articles listed below under "Related Criteria And Research," where applicable.

I. SCOPE OF THE CRITERIA

5. These criteria apply to all new and existing ratings on European CMBS. These criteria are also used to analyze European commercial real estate assets backing certain other types of instrument, where relevant.
6. The criteria may also constitute a starting point for assessing real estate assets that vary substantially from those in pools we have reviewed historically and analyzing structures that pose unique risks, in conjunction with the "Principles Of Credit Ratings" criteria.

II. SUMMARY OF THE CRITERIA

7. CMBS are backed by one or more loans secured by commercial properties--these may include office, retail, industrial, multifamily, or lodging properties. Therefore, examining the underlying commercial properties is the first step, and central to rating a CMBS transaction. Analysis of the properties helps determine net cash flow and capitalization rates, which are used to derive long-term sustainable values for each property. Credit enhancement levels are based on these values, in conjunction with loan-to-value (LTV) thresholds (see paragraph 26). Our European CMBS transaction analysis is essentially a recovery analysis. Because a lack of diversity in property portfolios leaves a transaction exposed to event risk, the criteria consider whether a European CMBS transaction can be paid down with the amounts recovered following a default of all the underlying loans.
8. A full discussion of the methodologies employed in the property-level analysis can be found in "European CMBS Loan

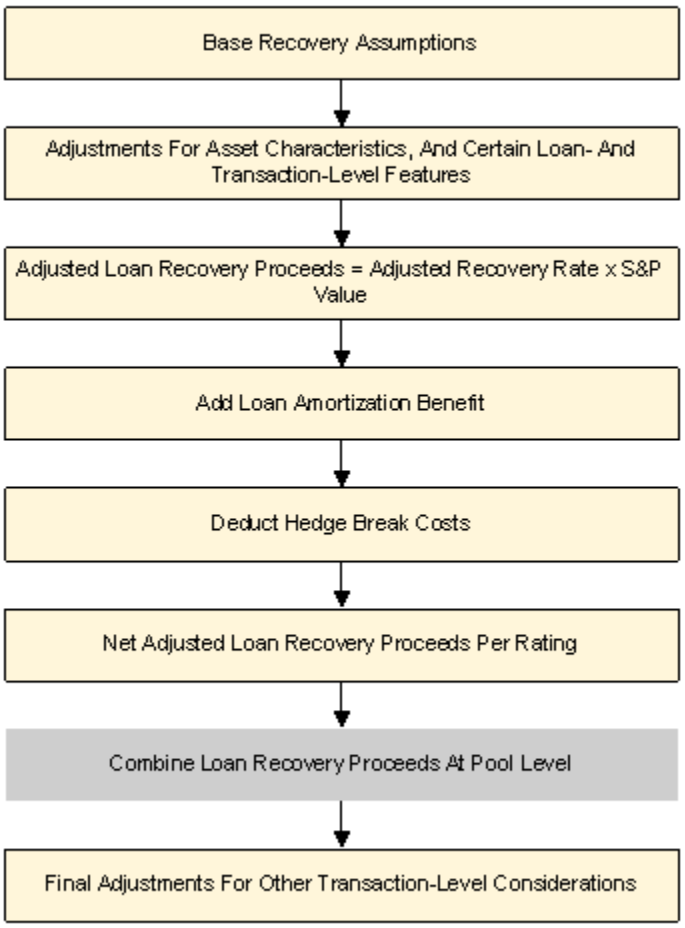
Level Guidelines," published on Sept. 1, 2004, and "CMBS Global Property Evaluation Methodology," published on Sept. 5, 2012. In addition, separate commentary articles discuss how we apply these criteria to evaluate European commercial properties. Certain general parameters, adjustments, and assumptions, defined in these commentaries, are used in the property evaluation analysis to calculate an "expected case" value at the 'B' stress level (see "Related Criteria And Research").

9. After the property analysis, the next step is to determine LTV thresholds at the loan level, which represent the amount likely to be recovered on each of the loans in a CMBS transaction, based on specific stresses we consider consistent with the assigned ratings. The criteria apply stressed recovery rates to the expected-case property value determined previously. These rates are rating-specific and reflect implied market value losses in corresponding stress scenarios that are gross of purchase or selling costs and foregone or accrued interest (see paragraphs 29-32 and table 1). The recovery rates may be adjusted further to account for certain specific property, loan, or transaction characteristics:

   - Asset-specific characteristics and loan-level features: Assets may be defined as Category 2 or Category 3 (see paragraphs 41-43) or as operating assets (paragraph 44). Loan level features include additional debt, loan leverage, size, and amortization (paragraphs 45-55). Some adjustments for these factors are rating-specific, while others apply at all rating levels. Most of these adjustments are applied by adding to or subtracting from the base recovery rate.
   - Transaction-level features: These include loan concentration (paragraphs 57-58) and remaining time to maturity (tail period; see paragraphs 59-61). To account for these features, the criteria apply multiple percentage adjustments to the recovery rate.
   - Structural features: The analysis factors in adjustments for structural features such as nonsequential waterfalls, hedge break costs, purchase/selling costs, and other features (paragraphs 62-76). Some of these adjustments are rating-specific.

10. Chart 1 outlines a summary of the analytical framework for the transaction analysis of a European CMBS.

Chart 1
Analytical Framework For Rating European Commercial Mortgage-Backed Securities



11. These criteria apply in European CMBS transactions in conjunction with the criteria listed below to address the five key areas in the analytical framework for structured finance securitization ratings:

- Credit quality of the securitized assets (paragraphs 20-36, 38, 41-61 and 76);
- Legal and regulatory risks ("European CMBS Loan Level Guidelines," published on Sept. 1, 2004, and paragraph 74);
- Payment structure and cash flow mechanics (paragraphs 62-73 and 75-76, as well as "European CMBS Loan Level Guidelines");
- Operational and administrative risks ("Criteria Methodology Applied To Fees, Expenses, And Indemnifications," published on July 12, 2012); and
- Counterparty risk ("Counterparty Risk Framework Methodology And Assumptions," published on May 31, 2012).

12. In addition, the analysis of sovereign and country risks in European CMBS transactions follows the guiding principles in "Weighing Country Risk In Our Criteria For Asset-Backed Securities," published on April 11, 2006, and is more

specifically governed by the criteria in "Nonsovereign Ratings That Exceed EMU Sovereign Ratings: Methodology And Assumptions," published on June 14, 2011, where applicable (see paragraphs 39-40).

III. SUMMARY OF THE CRITERIA UPDATE

13. These criteria establish a globally consistent and transparent framework within which to determine credit enhancement levels for European CMBS transactions. Specifically, the criteria establish which credit characteristics and structural features affect the recovery assumptions used to determine ratings on European CMBS.

14. The analysis of tail-period risks has been refined (see paragraph 59-61) and a global framework for property analysis has been adopted (see paragraphs 20-25 and "Related Criteria And Research").

IV. IMPACT ON OUTSTANDING RATINGS

15. We expect that the criteria update will have a moderate impact on outstanding ratings on European CMBS, based on a sample of transactions we tested.

16. Our impact analysis showed that the criteria update would have a negative impact on up to 40% of all rated tranches in European CMBS transactions, with average rating movements of two notches. The impact on investment-grade ratings is likely to be greater than that on speculative-grade ratings.

17. These criteria generally reflect the current approach applied when assigning ratings to European CMBS. The impact on individual ratings would primarily stem from the calculation of hedge break costs and the analysis of tail periods under the updated criteria, and from changes to certain capitalization rates used in the property analysis. The impact will also likely depend on the specific features of individual asset pools and the individual characteristics and features of each structure. In addition, any rating changes will also reflect our view of a portfolio's prevailing performance and the anticipated future performance of the underlying assets, given the continued level of stress that European CMBS collateral is experiencing.

18. We expect to resolve any rating changes within six months of the effective date of the criteria.

V. EFFECTIVE DATE AND TRANSITION

19. These criteria are effective for all in-scope ratings as of one month from publication date, at which time all the ratings likely to be affected will be placed on CreditWatch.

VI. METHODOLOGY AND ASSUMPTIONS

A. Property Analysis And S&P Value: Asset Valuation

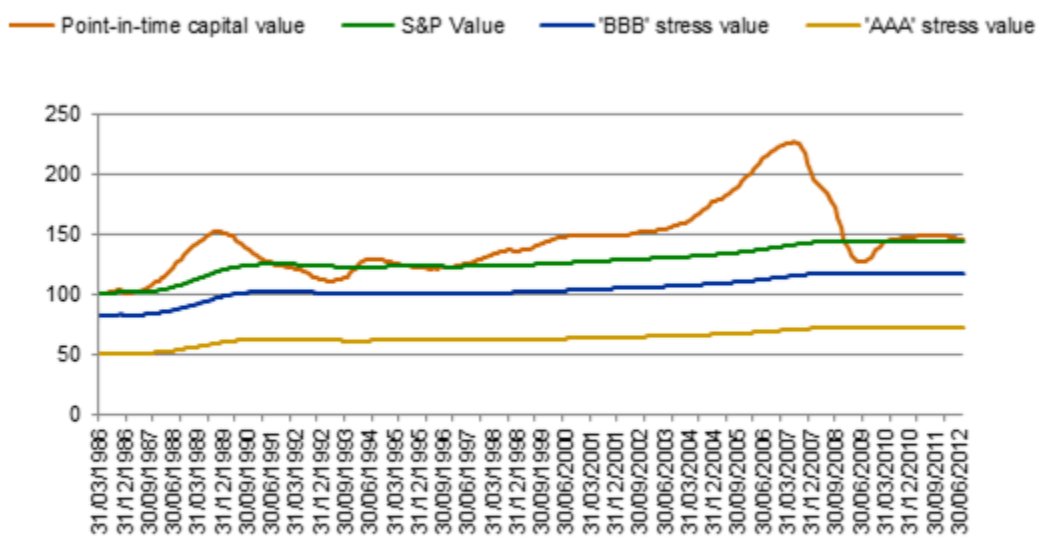
20. The first and key step in reviewing every CMBS transaction is to evaluate the underlying real estate that acts as the collateral. In Europe, large-loan transactions are common, and each loan in a portfolio is analyzed separately.

21. The criteria apply to the property analysis the approach more fully described in "European CMBS Loan Level Guidelines," published on Sept. 1, 2004 and in "CMBS Global Property Evaluation Methodology," published on Sept. 5, 2012. Separate commentary articles also discuss the application of these criteria to evaluate European commercial properties. Certain general parameters, adjustments, and assumptions are used in the property evaluation analysis to determine an "expected case" value at the 'B' stress level (see "Related Criteria And Research"). This value constitutes the "S&P Value," which is determined for each property or portfolio of properties securing a loan or multiple loans in a securitization. It primarily results from a calculation that considers the net adjusted cash flows and an applicable capitalization rate for each property.

22. Commercial property values historically exhibit significant volatility related to property cycles, and this is particularly true of the European markets. Rising commercial real estate values often increase lenders' comfort with higher levels of leverage. In turn, this supports a rise in real estate prices, reinforcing the boom in real estate values. In downward cycles, the relationship reverses--declining values and underwriting at lower leverage act to intensify recessionary effects.

23. Therefore, the property analysis seeks to determine a more-sustainable value for each property or portfolio of properties that is used to secure loans in a securitization; this value can then be used in our rating analysis for CMBS transactions. The long-term sustainable value defined under the criteria provides a calculated property value that we view as more stable than the actual value of a property through a property cycle (see chart 2).

Chart 2
Compared Example: U.K. Office Capital Values 1986-2012 Versus Long-Term Sustainable Values



Source: Investment Property Databank (IPD). The example uses U.K. commercial property values over roughly the past 25 years and shows movements in capital values relative to cumulative rolling values akin to a 'B' expected case property value under these criteria (in other words, a long-term sustainable value).

24. The property analysis adjusts the net cash flows (NCF) to estimate a property's long-term ability to generate and sustain cash flows (S&P NCF). The capitalization rates (S&P Cap Rate) reflect historical data for various property types. As a result, the property analysis provides for each property an S&P Value that we view as comparable to its long-term trend value. S&P Value is calculated by dividing the S&P NCF by the S&P Cap Rate applied to the property, creating an expected-case property value. The transaction analysis then applies rating-specific value stresses to this expected-case property value. Positive or negative adjustments may also be applied (see Part B below).

25. In circumstances where the market value of commercial properties deviates toward levels that are significantly below the long-term trend, the criteria allow for further adjustments to account for those depressed property values.

B. Transaction Analysis And Tranching Of Loans: Recovery Analysis

26. Once each property within a securitization has been assigned an S&P Value (see paragraphs 20-25), the next step is to establish the loan-to-value (LTV) thresholds for each loan being securitized, in order to determine the loan tranching. The net LTV threshold represents the percentage of an S&P Value that we estimate will be recovered, based on the relevant degree of stress at each rating level, after a loan default has been resolved by liquidating the commercial real estate, and purchase/selling costs and foregone and accrued interest have been deducted. Appendix 1 provides details of the net LTV thresholds that apply across European markets under these criteria.

27. The transaction analysis is based on an assessment of recoveries following a default of all loans in a portfolio. This is because most European CMBS transactions are not very granular; in general, they contain fewer than 10 loans. Historically, commercial real estate has suffered from volatile pricing. A lack of meaningful amortization in most loans also characterizes European portfolios. Thus, refinance risk is high, even where actual term default risk is considered lower, for example, where an underlying property benefits from long-term income from a rated borrower or high debt service coverage ratios. For those reasons, the large-loan transactions common in Europe are viewed as being subject to greater event risk and more exposed to property-specific risk factors than more-diversified portfolios.

28. For each individual loan, the analysis calculates a hypothetical loan tranching representing recovery proceeds under corresponding rating-specific stress levels. The ratings then reflect the ratable proceeds achievable by each security under each rating-specific stress level, based on the recovery proceeds for all loans in a securitization. Appendix 2 illustrates how LTV thresholds calculated for individual loans in a pool are combined to calculate ratable proceeds at a security level.

1. Loan Recovery Assumptions, Adjustments To Loan Tranching, And Country Risk Loan Capping

29. To determine ratable proceeds at each rating level for each loan (known as the "loan tranching"), the criteria provide rating-specific recovery rates that reflect implied property value losses from market value declines (MVD) in corresponding stress scenarios. These base recovery proceeds are gross rates: they do not include deductions for enforcement costs or foregone interest. These costs are incorporated at a different stage in the rating analysis and are specific to each local market in Europe (see paragraph 74).

30. The criteria set benchmarks for recovery rates and MVD at various rating levels (see table 1). These assumptions are designed to provide greater stability for higher ratings relative to lower ratings (see "Understanding Standard & Poor's Rating Definitions," published on June 3, 2009 and "The Time Dimension Of Standard & Poor's Credit Ratings," published on Sept. 22, 2010). The resulting geometric interpolation is also consistent with the approach used in other asset classes (see "Update To Global Methodologies And Assumptions For Corporate Cash Flow And Synthetic CDOs," published on Sept. 17, 2009).

Table 1

Base Market Value Declines And Recovery Rate Assumptions For Different Rating Levels*

Rating level	Market value declines (%)	Recovery rate (%)
AAA	50.0	50.0
AA	40.0	60.0
A	28.3	71.7
BBB	18.3	81.7
BB	10.0	90.0
B	0.0	100.0

*Linear interpolation is used for intermediary ratings (e.g., 'BBB+' or 'A-') in the final analysis. Market value declines represent an implied market value loss before allowance for purchase/selling costs and foregone/accrued interest. Recovery rates are defined gross of purchase/selling costs and foregone/accrued interest.

31. The estimated recovery rates at each rating level in table 1 represent stressed assumptions relative to the 'B' rating level. The "expected case" at the 'B' rating level represents the expected performance of a loan under the assumption that real estate trends revert to long-term sustainable values.

32. The approach described above and the assumptions in table 1 generally assume a sequential-pay structure. To address the specific risks posed by nonsequential pay structures, the criteria adjust LTV thresholds accordingly (see paragraphs 62-63).

a) 'AAA' recovery assumption

33. The estimated base recovery rate at the 'AAA' rating level is 50% of the calculated S&P Value, which represents the decline in market values likely in an extreme stress scenario, as described in Appendix IV in "Understanding Standard & Poor's Rating Definitions," published on June 3, 2009.

34. The 50% recovery rate at the 'AAA' level typically applies throughout normal property cycles. Here, it is applied to the S&P Value, i.e., a valuation that represents a property's long-term sustainable value and is expected to remain stable through a property cycle. As such, the calculated recovery proceeds will also remain fairly constant (see paragraphs 20-25 above and "CMBS Global Property Evaluation Methodology," published on Sept. 5, 2012).

b) 'B' recovery assumption

35. Because the S&P Value represents a 'B' stress scenario, the rating analysis assumes that at the 'B' level, the full S&P Value could be recovered. The S&P Value reflects the long-term expected-case property value for each property or portfolio of properties.

36. Particularly when monitoring existing ratings, Standard & Poor's may have received information indicating that a property's value would not be appropriately reflected by its calculated long-term sustainable value. For instance, actual performance may indicate that lower recoveries are likely to be achieved. The actions of a sponsor or servicer may also alter the susceptibility of lower-rated tranches to interest or principal losses. If we believe such a difference in value is likely to be permanent, an S&P Value not based upon the expected-case property value may be used. Typically, a lower value is used, reflecting lower expected recoveries.

c) Recovery adjustments for loan tranching

37. At each rating category, as shown in table 1, the base recovery rates may be adjusted to reflect specific property, loan, or transaction characteristics that our analysis considers augment or mitigate the risks involved (see sections 2 and 3 below). The relevant adjustments are applied in the following steps:

- Add to or subtract from the base recovery rate where assets are defined as Category 2 or Category 3 or as operating assets, where there is additional debt, for loan leverage, or loan size (see subsections 2.a)(1), 2.a)(2), 2.b)(1), 2.b)(2) and 2.b)(3)).
- Then, multiply the modified recovery rate by one or more percentage amounts to adjust for loan concentration and remaining time to maturity (see paragraph 56 for an example and subsections 2.c)(1) and 2.c)(2)).
- The final recovery rate is applied to the S&P Value for each property or portfolio of properties to determine expected recoveries at each rating category and thus the loan tranching at corresponding rating levels. Notches above and below those rating categories (for instance, at the 'BBB+' or 'A-' rating levels) are derived by interpolation of the recovery rates.

- To account for loan amortization (subsection 2.b)(4)) and hedge break costs (subsection 3)b)), the criteria apply nominal adjustments to the notched recovery proceeds.
- The rating analysis gives consideration to the other transaction features in the rest of section 3 below to determine the final loan tranching and correspondingly, the CMBS ratings.

38. If a securitized loan had characteristics that meant it only benefitted from positive adjustments, materially increasing its base recovery rate, the rating analysis would consider the LTV threshold that would result from applying all relevant adjustments. The rating analysis may limit the positive adjustments that are applied (see paragraphs 6 and 76, and the "Principles Of Credit Ratings").

d) Analysis of country risk and capping of loan tranching

39. Many country-specific risks can affect rating performance in structured finance transactions, as discussed in "Weighing Country Risk In Our Criteria For Asset-Backed Securities," published on April 11, 2006. In addition, where properties within a portfolio are located in the eurozone, ratings on European CMBS may be subject to the analytical framework in "Nonsovereign Ratings That Exceed EMU Sovereign Ratings: Methodology And Assumptions," published on June 14, 2011. In such cases, the rating analysis takes into account the rating on the relevant jurisdiction as part of the tranching of each loan (see table 1.B and paragraph 41, second bullet point in the cited article). Under these criteria, the analysis of the tranching of an individual loan may cap ratable proceeds at a certain rating level (see paragraph 37).

40. Where loans present specific risks because the properties backing them are in countries not historically represented in European CMBS portfolios, the "Principles Of Credit Ratings" would apply, along with paragraph 6 and the additional transaction-level factors described in paragraph 76.

2. Recovery Rate Adjustments

a) For asset characteristics

(1) Asset quality

41. Depending on the location, management, and quality of a property, the analysis assigns each property or portfolio of properties securing a loan a property category. Category 1 represents the highest quality assets, followed by Category 2 and Category 3 (see Appendix 3 for definitions at each level).

42. In times of recession or stress, Category 2 and Category 3 assets have historically experienced more-significant declines in value, greater widening in yields, and longer recovery periods than Category 1 assets in similar European markets. The higher the stress in the commercial real estate market, the greater the differentiation.

43. In calculating the S&P Value, the analysis accounts for the unstressed differentiation between Category 1, 2, and 3 assets by using different capitalization rates (see paragraph 24). To accurately reflect the further differentiation observed in more-stressful environments, the recovery rate for each investment-grade rating category is also lowered for Category 3 assets (see table 2) and for Category 2 assets that are considered more vulnerable to higher MVDs (see table 3). Category 2 assets that might be designated as vulnerable include those located in a nonprime market, or those where existing long-term leases will expire during or soon after the term of the loan.

Table 2

Recovery Rate Adjustments For Category 3 Assets

Rating category	Adjustment (%)
AAA	-7.50
AA	-5.00
A	-2.50
BBB	-1.25
BB	N/A
B	N/A

N/A--Not applicable.

Table 3

Recovery Rate Adjustments For Category 2 Assets Vulnerable To High Market-Value Declines

Rating category	Adjustment (%)
AAA	-3.75
AA	-2.50
A	-1.25
BBB	-0.625
BB	N/A
B	N/A

N/A--Not applicable.

(2) Income source (operating assets)

44. The recovery rate is lowered for loans where the underlying properties are predominantly operating assets because the value of such assets is typically more volatile (see table 4). Operating assets, such as nursing homes and hotels, derive their income by providing services to end users, rather than by renting space to tenants.

Table 4

Recovery Rate Adjustments For Operating Assets

Rating level	Adjustment (%)
AAA	-10.0
AA	-10.0
A	-10.0
BBB	-10.0
BB	-5.0
B	-2.5

b) For loan-level features

(1) Additional/subordinated debt

45. At all rating levels, if a whole loan has debt in addition to the securitized loan, then the recovery rate for each rating category is reduced by two percentage points (see table 5). The adjustment lowers modeled recoveries to reflect the additional risk of a more-complex recovery process. Where additional debt and creditors are involved, recovery may take longer and the amount recovered for the benefit of the transaction noteholders may be reduced.

Table 5

Recovery Rate Adjustment For Additional Debt

Additional debt	Recovery rate adjustment
	-2.0%

46. Additional debt can create a class of junior creditors whose interests are not necessarily aligned with those of the senior creditors. Depending on its form, additional debt may increase the credit risk of a securitized loan by reducing the amount of equity held, increasing the total amount of debt service required, and increasing the refinancing risk. It may also delay the enforcement of remedies on a defaulted loan.

(2) All-in leverage

47. At all rating levels, the recovery rate is adjusted where the current whole-loan LTV ratio (based on S&P Value) is below 75% or at or above 85% (see table 6). A whole loan is the full amount secured on a property, i.e., in some cases it includes a securitized 'A' note and a 'B' note that remains outside the transaction.

48. The adjustments reflect two credit factors:

- A borrower has increased incentive to act to protect property value and ultimately to repay a loan where it retains equity in a loan transaction.
- In times of stress, refinancing on properties with higher leverage levels may be more difficult to access.

Table 6

Recovery Rate Adjustments For All-In Leverage

Loan-to-value ratio for the whole loan (%)	Adjustment (%)
<=65	+2.0
>65 to <75	Interpolated adjustment
>=75 to <85	0.0
>=85 to <100	Interpolated adjustment
>=100	-3.0

49. The criteria reflect the expectation that on defaulted loans where LTV ratios (based on S&P Value) are equal to or greater than 100%, lenders may forgo larger amounts of interest during the enforcement process than they would at lower leverage levels. Conversely, we have observed that for European CMBS loan portfolios where the same LTV ratio is lower and the borrower maintains some equity, the lenders incur a reduced credit risk. For example, to preserve its equity, the borrower may more actively cooperate in the foreclosure process, resulting in higher recoveries.

(3) Loan size

50. At all rating levels, the recovery rate is adjusted where the current securitized loan balance is outside a certain range. The range is between 70 million exactly and 100 million (€ or £; see table 7). During periods of stress in the real estate market, borrowers may find it harder to access financing for loans above these ranges. By the same token, loans below the ranges carry a lesser refinancing risk.

Table 7

Recovery Rate Adjustments For Loan Sizes

Loan size (Mil. € or Mil. £)	Adjustment (%)
<= 50	+2.0
>50 to <70	Interpolated adjustment
>=70 to <100	0.0
>=100 to <150	Interpolated adjustment
150	-2.0
> 150 to <=1,000	Interpolated adjustment
>1,000	-5.0

51. In addition to the increased credit risk of larger loans in European real estate portfolios and inherently greater refinancing risks during stress periods, the adjustments made also reflect the nature of the European commercial real estate market. Unlike some other regions, Europe has a bank-driven market, which affects the availability of funding sources for larger loans, especially during times of stress. The median loan size for euro-denominated loans in European CMBS transactions rated by Standard & Poor's is approximately €50 million, while the median loan size for sterling-denominated loans is approximately £40 million. Average loan sizes are approximately €130 million and £180 million, respectively.

(4) Amortization

52. European CMBS portfolios typically include loans with a full-term, interest-only component; these loans are viewed as having greater credit risk than amortizing loans. Reducing a loan's principal balance through amortization serves to reduce loss severity, increase a borrower's equity, and lower refinance risk. An amortization benefit may therefore be factored into the analysis where loans pay down (see table 8).

53. In calculating the amortization benefit of a securitized loan, the analysis primarily considers the scheduled amortization amount. The income strength (or cash flow) of a property is characterized as "average," "strong," or "weak" (see Appendix 4). The adjustment reflects observations that are specific to the European real estate markets. The scheduled amortization amount is then adjusted based on income strength and a comparison of the weighted-average lease term (WALT) to the remaining loan term. The timing of the default point may be adjusted based on expectations of an earlier timing than implied by the calculation resulting from table 8, in which default is assumed to occur at the midpoint of a loan's remaining maturity.

54. Where applicable, the amortization benefit is added to the calculated recovery proceeds. The amortization benefit reflects the amount by which an amortizing loan may have repaid before defaulting. Because the approach is based on an analysis of the expected recoveries on the initial loan amount, adding back this amortized amount to the calculated recovery proceeds provides a way of modeling the actual amortization benefit.

55. The analysis considers only a portion of the scheduled amortization and leverage reduction, because there is more certainty associated with a property's cash flow earlier in a loan term.

Table 8

Loan Amortization Benefit By Income Strength Assessments

Income strength	WALT versus. loan term	Amortization benefit (%)
Weak	WALT > loan term	0.0
	WALT < loan term	0.0
Average	WALT > loan term	50.0
	WALT < loan term	WALT/LT x* 50.0
Strong	WALT > loan term	100.0
	WALT < loan term	WALT/LT x* 100.0

LT--Loan term. WALT--Weighted-average lease term.

c) For transaction-level features

56. A percentage adjustment, rather than an addition or subtraction, is made to the recovery rate to account for transaction-level features. The adjustments are applied to all loans in a transaction. For example, where a -10% adjustment applies to the recovery rate at the 'AAA' level and the modified 'AAA' recovery rate is 45%, the adjusted recovery rate would be calculated as follows:

45% x (1 – 10%) = 40.5%

(1) Loan concentration

57. European CMBS portfolios typically display little differentiation or granularity. While reflecting a diversification benefit, the criteria therefore apply an adjustment that results in a limited increase to recovery rates in all instances. For example, if a pool has between three and nine effective loans and the recovery rate is 50% at the 'AAA' level, the rate is multiplied by 3%, making it 51.5% (see table 9). The methodology for determining a transaction's effective loan count is described in Appendix 5.

58. Table 9 summarizes the approach that is applicable to a typical capital structure, where the senior-most security is assigned a rating of 'AAA'. The adjustment at each relevant rating category applies when calculating ratable proceeds, subject to the corresponding security having one or more subordinated classes beneath it in the capital structure, providing it with an adequate level of credit enhancement by way of subordination.

Table 9

Recovery Rate Adjustments For Loan Concentration

	Adjustment (%)					
Effective loan count	**AAA**	**AA**	**A**	**BBB**	**BB**	**B**
<=2 loans	0.0	0.0	0.0	0.0	0.0	0.0
>2 loans and <10 loans	3.0	1.5	1.0	0.0	0.0	0.0
>=10 loans	5.0	2.5	2.0	0.0	0.0	0.0

(2) Tail periods and remaining time to maturity

59. In each jurisdiction across Europe, periods of enforcement differ. Typically, they vary from 12 to 18 months in the U.K. to 18 to 24 months or more in continental European jurisdictions. In stress scenarios, however, these periods may be lengthened because of negotiations between various parties involved, judicial delays related to borrower actions, or difficulties in the market that limit a servicer's ability to maximize recoveries in the usual period of time.

60. Transactions are typically structured with a "tail period," i.e., a period between the maturity date for the last loan underlying a transaction and the transaction's legal final maturity date, to enable servicers to recover the maximum amount after any default. The criteria set out our expected minimum tail periods, especially at higher rating levels. For instance, absent any other mitigating factor, we would expect an initial tail period of five years to be the minimum for a 'AAA' rating. Where tail periods are shorter, the calculated recovery rates may be adjusted and the rating may be constrained.

61. The criteria assume that servicers will act to maximize recoveries against loans before a transaction's legal final maturity date. If the process of recovery is delayed, servicers will have less time available to achieve recovery against the underlying collateral. For that reason, for a transaction in surveillance during its tail period, the rating analysis adjusts the recovery rate as shown in table 10.

Table 10

Recovery Rate Adjustments For Transactions Under Surveillance During Their Tail Periods

	Adjustment (%)					
Months to legal final maturity	**AAA**	**AA**	**A**	**BBB**	**BB**	**B**
<48	-10.0	-5.0	-2.5	-0.0	-0.0	N/A
<36	-25.0	-10.0	-5.0	-2.5	-0.0	N/A
<24	-50.0	-25.0	-10.0	-5.0	-2.5	N/A
<12	-50.0	-50.0	-25.0	-10.0	-5.0	N/A

N/A--Not applicable.

3. Other Transaction Considerations And Final Loan Tranching

a) Nonsequential waterfalls

62. In Europe, unlike some other regions, transactions with pro rata or "modified" pro rata pay structures are common. These transactions pay down all classes simultaneously. Some include triggers that enable the issuer to pay sequentially after certain events.

63. The approach described above in this Part B generally assumes a sequential-pay structure. To address the specific risks posed by nonsequential pay structures, the analysis adjusts LTV thresholds to account for the reduction in credit enhancement that occurs when recovery proceeds that would otherwise reduce the highest-ranking classes in a sequential pay structure are diverted to lower-ranking classes. The adjusted LTV thresholds align calculated recovery assumptions with the recovery rates expected in a sequential-pay structure.

b) Hedge break costs

64. Where the default or enforcement of a loan would result in a termination of an interest rate swap, estimated hedge break costs are typically calculated. For swaps maturing within 12 months or less, no hedge break costs are modeled unless loan performance or servicer actions indicate that a default in that time frame is likely.

65. Hedge break costs--as calculated herein--are deducted from recovery proceeds amounts at each rating category after determining the loan tranching amounts (see "Recovery adjustments for loan tranching" in paragraph 37, fourth bullet point).

66. Hedge break costs in a 'AAA' stress scenario are calculated using the Cox-Ingersoll-Ross interest rate model, which was originally designed to simulate interest rate curves under multiple scenarios (see "Credit Rating Model: CIR (Cox-Ingersoll-Ross) Interest Rate Model," published on Nov. 3, 2010). To calculate hedge break costs, the analysis uses the 'AAA' down interest curve scenario, with an appropriate starting rate. While a loan default is generally expected to occur at a loan's maturity, the analysis usually assumes that the swap is broken at the midpoint of the loan's remaining term, in order to mitigate the impact of a potential hedge break during the term of a loan. Another break point may also be chosen that more-appropriately reflects when the swap is likely to be broken (for example, the point at which significant lease roll-over or assumed rental value decline would cause an interest rate coverage ratio to fall below 1.0x).

67. The calculation of break costs may be adjusted to take into account how long we expect enforcement following a default will take. Hedge break costs at 'AAA' would typically be calculated as follows:

    Break costs = (strike rate – CIR rate) x remaining term x loan balance at default

68. In long-dated swaps, the hedging maturity exceeds the loan maturity. However, the modeled point of loan default for the calculation of break costs generally remains the midpoint of the loan's remaining term and the expected duration of enforcement may also affect how hedge break costs are calculated.

69. For the 'B' rating scenario, hedge break costs are usually assumed to be zero. For long-dated swaps, however, the break costs for the 'B' rating scenario are calculated consistently with the above formula. They reflect the remaining maturity of the swap at the loan maturity.

70. The hedge break costs for ratings between 'AAA' and 'B' are calculated using an interpolation of the two figures (see paragraph 37, fourth bullet point).

71. If the underlying income comes from a rated tenant and the rental contract expires after the hedging contract, then hedge break costs are typically not subtracted from recovery value if the ratings on the notes are below the rating on the tenant. When tenants are considered strong credits, but are not rated, any benefit is typically given only up to the 'BBB' rating level.

72. The modeling approach for hedge break costs in EMEA CMBS reflects specific features of these transactions. In all instances, the possibility of an interest rate swap being terminated is asset-specific, or a second-order risk for a transaction. Because the EMEA CMBS rating analysis generally reflects an asset liquidation analysis, the realization value of each underlying property is available to pay any break costs, which may be unlike some other structures where an issuer in a securitization directly takes out a hedge. Therefore, available credit enhancement is typically fungible across all of the risks that an EMEA CMBS transaction may incur, including credit, market value, and swap break risks. In addition, because the analysis assumes the default and enforcement of each loan, liquidity issues and the risk of nontimely payment on rated securities need to be structurally mitigated by appropriately sized support facilities. Asset-specific features such as long-term leases and multitenanted loans, as well as enforcement periods that are typically long, serve to mitigate early default risks of a loan. Default risk is usually more pronounced at maturity than during the term of a loan--in other words, refinance risk, rather than debt service risk, drives the analysis. Finally, assumptions of property market value declines that reflect value changes over the long-term mitigate the risk of an

early default, since in the case of an early default, property prices are likely to have deviated less, providing additional credit enhancement to mitigate the consequences of an early default, such as those resulting from incurring larger hedge break costs.

73. For existing ratings, we monitor loan performance for indications that the transaction will have to pay hedge break costs (for example, if servicer enforcement action is likely). Where relevant, the hedge break costs modeled at each rating level will then generally be the greater of the estimated break costs provided by the servicer and the break cost calculated using the methodology detailed in paragraphs 66-70.

c) Purchase/selling costs and lost interest

74. To reflect purchase/selling costs, the analysis typically applies a haircut of at least 5% to the S&P Value of a property. The haircut may increase where selling costs are expected to be higher, for example, in specific jurisdictions, where the property has characteristics that dictate additional costs, or where additional enforcement costs are anticipated.

75. The rating analysis also assumes that interest payment disruptions may occur in scenarios of default and enforcement. These interest payments are generally covered through a liquidity facility or a servicer advancing mechanism, which is then repaid from any ultimate recoveries (see "European CMBS Loan Level Guidelines," published on Sept. 1, 2004). Foregone interest is therefore typically deducted from recovery amounts for about 12 to 24 months, depending on the jurisdiction of assets.

d) Final transaction-level considerations

76. The rating analysis may consider additional transaction-level factors if we are of the opinion that they could affect a transaction's credit quality. Typically, the adjustments for those factors will be disclosed in the related transaction publications and may move the final ratings on the notes by only one notch at each rating level. However, larger adjustments may apply to transactions with extreme or atypical features that may affect the performance of the underlying property portfolio. Considerations that may warrant adjustments to the rating levels include the following:

- Exposure to a particular market experiencing a localized economic downturn, natural disaster, or political change;
- A property relies on a particular revenue source that seems less reliable;
- The individual asset quality, loan quality and provisions, underwriting standards, sponsor quality, tenant quality, or historical performance of loans originated by the lender warrant a positive or negative overall credit quality adjustment; or
- The transaction's structure incorporates other features that create positive or negative implications for overall credit quality.

APPENDICES

Appendix 1: Net Loan-To-Value Threshold Ranges For European Jurisdictions

77. Net loan-to-value (LTV) thresholds represent the amount likely to be recovered on each of the loans in a CMBS transaction, based on specific stresses consistent with the assigned ratings. The criteria define a specific net LTV threshold by rating level for each country. The criteria therefore take into account country-specific elements that may

affect recovery rates, such as enforcement timings and foreclosure costs. These vary depending on the prevailing legal regimes in each country.

78. Table 11 shows the resulting range of net LTV thresholds that apply under these criteria. These are net of enforcement expenses. The net thresholds shown reflect the all-in recovery proceeds (including costs and foregone interest), before any of the subsequent adjustments described in this criteria article.

Table 11

Summary Of Net S&P LTV Thresholds

Rating level	European net LTV thresholds (%)
AAA	37.5-42.5
AA	47.0-52.0
A	58.0-63.0
BBB	67.5-72.5
BB	75.5-80.5
B	85.0-90.0

Appendix 2: Worked Example Of Using Loan LTV Thresholds And Ratable Proceeds To Calculate Rated Proceeds At Portfolio Level

79. Table 12 illustrates how ratable proceeds are combined at a portfolio level based on rating-specific LTV thresholds and certain given loan values (S&P Value).

Table 12

Calculated Rated Proceeds--A Worked Example

Loan A S&P Value: 21,575,000

Loan B S&P Value: 65,852,000

Rating level	Loan A adjusted LTV threshold (%)	Loan A proceeds by rating level	Loan B adjusted LTV threshold (%)	Loan B proceeds by rating level	Transaction proceeds by rating level	Implied transaction LTV threshold (%)
AAA	40.1	8,649,418	37.0	24,365,240	33,014,658	37.8
AA+	45.1	9,726,549	42.1	27,723,692	37,450,241	42.8
AA	50.1	10,803,681	47.2	31,082,144	41,885,825	47.9
AA-	54.0	11,641,870	51.3	33,775,491	45,417,361	51.9
A+	57.8	12,480,059	55.4	36,468,838	48,948,896	56.0
A	61.7	13,318,248	59.5	39,162,184	52,480,432	60.0
A-	66.1	14,251,007	64.5	42,505,271	56,756,278	64.9
BBB+	70.4	15,183,766	69.6	45,848,357	61,032,123	69.8
BBB	74.7	16,116,525	74.7	49,191,444	65,307,969	74.7
BBB-	77.5	16,713,433	77.5	51,013,349	67,726,783	77.5
BB+	80.2	17,310,342	80.2	52,835,255	70,145,596	80.2
BB	83.0	17,907,250	83.0	54,657,160	72,564,410	83.0
BB-	86.3	18,626,417	86.3	56,852,227	75,478,643	86.3
B+	89.7	19,345,583	89.7	59,047,293	78,392,877	89.7

Table 12

Calculated Rated Proceeds--A Worked Example (cont.)						
B	93.0	20,064,750	93.0	61,242,360	81,307,110	93.0
B-	100.0	21,575,000	100.0	65,852,000	87,427,000	100.0

Appendix 3: Property Categories

80. Categories are designed to reflect the market's perception of a property's quality and desirability within its sector. The criteria assign each property or portfolio of properties securing a loan to a category between 1 and 3, with 1 being the highest quality assets:

- Category 1 properties represent the highest-quality buildings in their markets. Category 1 properties are well-located, have good access, and are professionally managed. As a result, Category 1 assets attract the highest-quality tenants and command the highest rents in their markets.
- Category 2 properties are generally older than category 1 properties, but still have good-quality management and tenants. Category 2 properties have good (rather than excellent) locations, management, and construction, and tenant standards are average to good. Category 2 properties achieve rents that are on average lower than those achieved by Category 1 properties in the same market.
- Category 3 properties are generally older buildings (typically over 15 years). They may be in need of extensive renovation and be in less-desirable areas. As a result, Category 3 properties have the lowest rental rates, take the longest time to lease, and are often marketed as redevelopment opportunities.

Appendix 4: Income Strength Assessment

81. The property cash flow analysis includes determining an income strength score at the property level based on specific market observations within the European commercial real estate market. The scores are defined as follows:

- Strong: The key factor is the stability of income, so a property with a desirable location that we consider would easily attract new tenants may be considered to have strong income strength, regardless of the current tenant. If the tenant were either rated as investment grade or were otherwise strong, we would consider the income strength strong. Strong tenants include retailers with national brands or large international companies with no known financial difficulties. If the property were the country or regional headquarters for a large law or accounting firms, it could also be considered to have strong income strength.
- Average: Those tenants that fall between the strong and weak category could be considered an average tenant.
- Weak: Income strength would typically be considered weak when the property tenant is in known financial difficulties, or is a small, locally based retail tenant with unknown financial capacity. Weak scores would also be assigned where assets have potentially volatile income.

Appendix 5: Effective Loan Count

82. The effective loan count is analyzed and measured by the Herfindahl Index to assess the diversity of a CMBS transaction. The Herfindahl Index, also known as the Herfindahl-Hirschman Index, is an often-used measure of economic diversity. This index is defined as:

$$H = \sum_{i=1}^{N} S_i^2,$$

S may measure the share of a company's sales as a fraction of the total market. For the purpose of this criteria document, it measures a loan's weight in the pool as a ratio of the loan's balance to the pool's total balance.

The inverse of the HHI has a helpful interpretation and is often used to count the effective number of loans over which the pool balance is distributed. If the distribution in the diversified pool is uniform ($s_i = 1/N$, where N is the number of loans in a pool), then $1/H$ equals the initial number of loans (N).

$$(H = \sum_{i=1}^{N} S_i^2 = \sum 1/N^2 = N * 1/N^2 = 1/N, \text{ hence } 1/H = N).$$

If the distribution is non-uniform, the effective number could be less than N. For example, if s_1 is greater than $1/\sqrt{N}$, then $H = \sum_{i=1}^{N} S_i^2$ is greater than $1/N$ and $1/H < N$. The more bar-belled the loan allocation is, the lower the effective number of loans. For example, consider this somewhat extreme example. If one loan comprises 70% of a pool's balance and each of the remaining 24 loans has a 1.25% allocation, the effective number of loans would be two.

Similarly, if a pool has 100 loans with the top five loans covering 25.0% (each 5.0%) of the balance, and the next top five loans covering 10.0% (2.0% each), then the next 10 loans cover 10.0% (1.0% each), and the remaining 80 loans would be equally distributed to cover 55.0% of the balance. The HHI for this pool is 0.019. The pool has an effective loan count of approximately 52.

If S is the pool that is being analyzed, the CC for S, ($CC(S)$), is defined to be the normalized effective loan count. The CC takes values between 2.5% and 100%. When it is 2.5%, the pool consists of one loan only, and when it is 100.0%, the pool has 40 effective loans.

$$CC(S) = (1/H(S))/40.$$

RELATED CRITERIA AND RESEARCH

- Application Of Property Evaluation Methodology In European CMBS Transactions, Nov. 7, 2012
- CMBS Global Property Evaluation Methodology, Sept. 5, 2012
- Rating Methodology And Assumptions For U.S. And Canadian CMBS, Sept. 5, 2012
- U.S. And Canadian CMBS Diversity Adjustment Factor Matrices, Sept. 5, 2012
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