S&P Global
Ratings

Research

Criteria | Structured Finance | ABS:

Global Equipment ABS Methodology And Assumptions

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*(**Editor's Note:** On Aug. 6, 2024, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details.)*

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OVERVIEW AND SCOPE

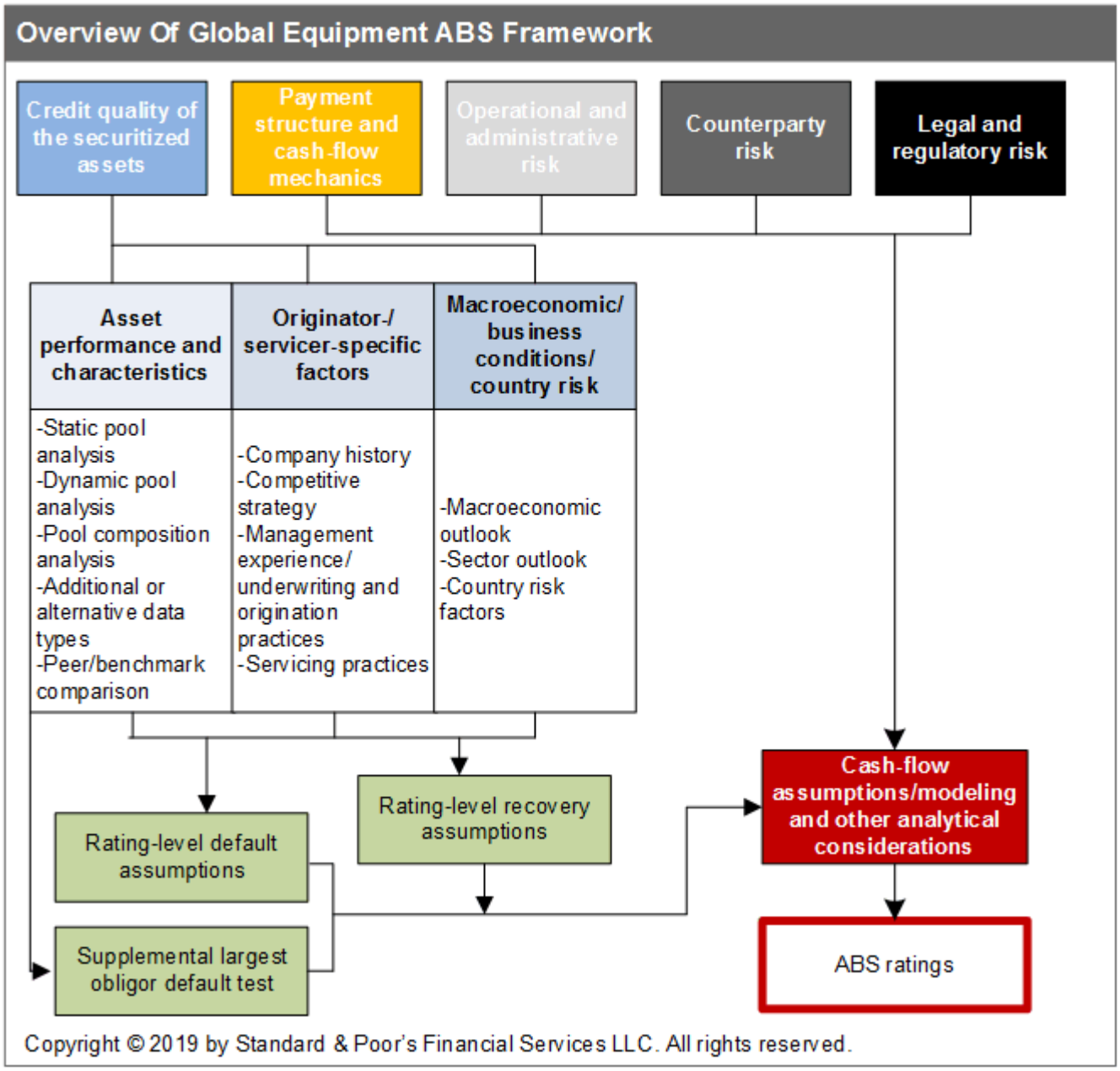
1. S&P Global Ratings' global criteria for rating equipment asset-backed securities (ABS) aim to help market participants better understand our approach to reviewing equipment ABS and to provide increased transparency regarding the framework we use to rate these types of transactions.
2. These criteria apply globally to ratings on equipment ABS that are backed predominantly by financing arrangements (usually in form of loans or leases) used to finance the acquisition of equipment, including, but not limited to, construction, agricultural, office and vehicle fleets. In addition, in some situations, these criteria apply to mixed pools of assets that may include:
   - Vehicles, if a given pool is exposed to obligor concentration risk.
   - A low percentage (no more than about 15% at closing) of amortizing unsecured loans to commercial obligors.
   - Commercial real estate leases in Italy, where the underlying leased assets are traditionally not transferred to the issuer such that the benefit of recovery against underlying assets is not given.
3. These criteria do not apply when our analytical considerations differ from the approach used herein; in such cases, other asset-specific criteria apply. For example, the criteria do not apply in situations where:
   - Loans or leases have substantial operating risks (re-leasing, repositioning, and sale, for example), typically found in segments such as railcar, marine shipping containers, rental fleet, and aircraft.
   - At closing, a significant percentage of the securitized collateral was not associated with equipment, such as small business loans (except as stated in the previous paragraph).

METHODOLOGY

Criteria Framework

4. As outlined in our credit ratings principles criteria article (see the Related Criteria section), when we assign ratings to structured finance transactions, we consider the risks associated with the five key areas: credit quality of the securitized assets; payment structure and cash flow mechanics; operational and administrative risk; counterparty risk; and legal and regulatory risk. Chart 1 provides an overview of the criteria framework for rating global equipment ABS. These criteria outline our analytical framework for assessing the credit quality of the securitized assets related to equipment ABS. For the analysis of the payment structure and cash flow mechanics, operational and administrative risk, counterparty risk, and legal and regulatory risk, see the Related Criteria section for relevant criteria articles.

Chart 1



5. In addition, when analyzing pools in individual countries, these criteria also consider the specificities of the local markets. Depending on the situation, additional considerations may be made in the more detailed application of the criteria or to reflect risk factors that are unique to a specific market.

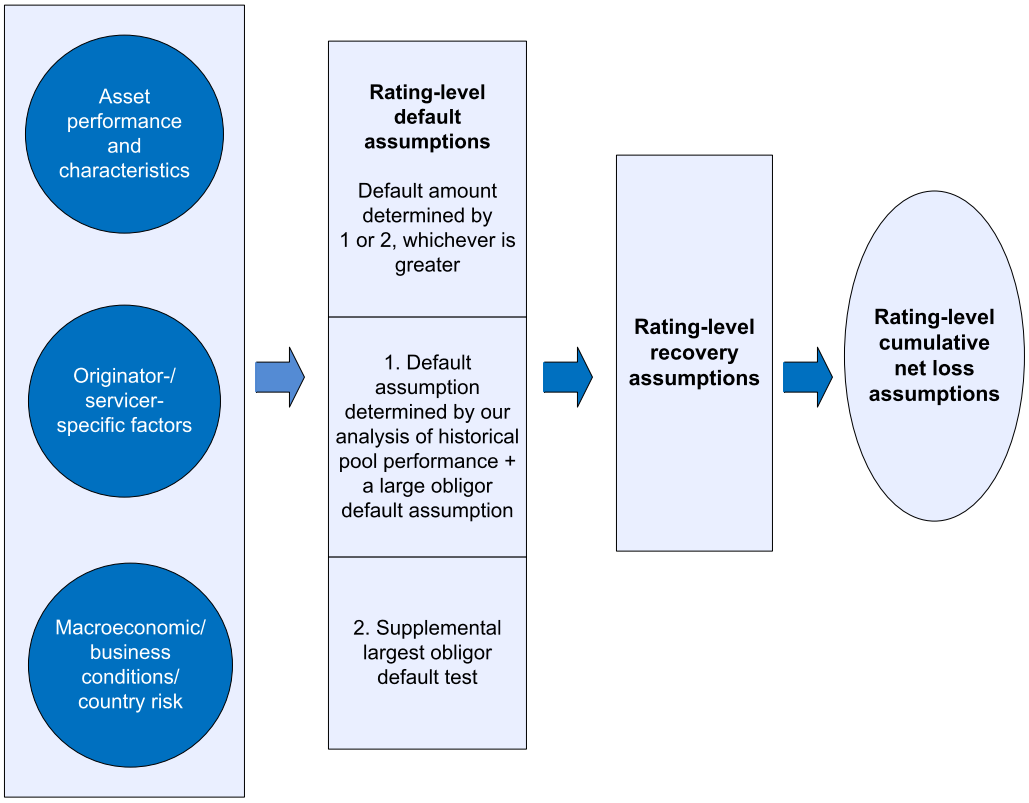
Credit Quality Of The Securitized Assets

Calculation of ratings-level default assumptions

6. When determining the rating-level default assumptions for a given pool, we first compute the base-case defaults as described under section "Establishing base-case default assumptions--factors." We then calculate the rating-category defaults by multiplying base-case default with the rating-category multiples. The rating-level (which includes the +/- modifiers) defaults are determined by interpolating the rating-category defaults. It is common for pools of equipment loans and leases to be diversified by obligor, but they can still contain some elevated obligor concentrations. Our methodology contemplates the default of larger obligors based on stress associated with rating categories. The blended rating-level defaults for the pool are derived by adding the rating-category large-obligor default percentage to the rating-level default assumptions (applied to the portion of the pool excluding the large obligors assumed to default for a given rating category). This blended rating-level default is compared with the default assumption resulting from the supplemental largest-obligor test, and the higher of the two determines our rating-level default assumption for a given pool. The following sections describe each of these steps in detail.

Chart 2

Overview Of Equipment ABS Credit Analysis



Establishing base-case default assumptions--factors

7. We establish base-case default assumptions primarily based on our analysis of the factors below, where applicable, and if the relevant data is available. However, we may exclude one or more of them if we consider their impact to be immaterial to our analysis.

8. Because our approach for estimating base-case losses for commercial equipment loan and lease securitizations is generally data-driven, our confidence in estimating base-case lifetime losses on a pool of commercial equipment loans or leases generally increases with the amount of relevant data and time horizon. For example, when the performance track record is short, erratic, or does not encompass periods of differing economic stress--or if the available data is limited--we may qualitatively adjust our default assumptions to account for this.

Static pool performance

9. If available, we typically analyze monthly, quarterly, and/or annual static pool performance based

on both origination data and the performance of assets backing past securitizations. For vintages that have not fully paid off, we may project losses by analyzing historical loss-timing curves.

10. The performance of past static pools can help indicate the performance of a new pool, provided the pool characteristics and economic environment are similar. However, this might not be the case if an originator has experienced rapid asset growth and where older, smaller pools could be less predictive for future credit performance. Accordingly, we will incorporate our assessment of these factors into our base-case assumptions.

11. Static pool data can provide insight into changing portfolio characteristics, underwriting, or collection policies. This type of data generally shows how sensitive an originator's underwriting policies are to changes in the macroeconomic or sector performance over time.

Dynamic pool performance

12. Dynamic pool data, usually expressed annually, records defaults incurred during a specific time period, regardless of when the defaulted receivable was originated. Dynamic pool performance data may be used as a stand-alone method of establishing base-case expectations, depending upon our view of data length and consistency, or as a supplemental method when static pool data is available. If dynamic pool data is used, the periodic defaults are typically adjusted upwards to arrive at a default rate over the full life of the securitized pool. In addition, for portfolios that we believe have a high growth rate, we may make additional upward adjustments to the base-case default assumption to account for the growth in originations.

Pool composition/characteristics

13. To better understand static or dynamic pool historical performance and derive our base-case default assumptions, we analyze the pool composition. Key pool composition factors that may influence our default assumption include obligor credit quality (as measured by internal and external scoring), certain characteristics of loans with high obligor concentrations (credit quality, relative size, tenor, etc.), industry mix, geographic diversification, equipment type, contract type, origination channel (including third-party and broker originations versus direct originations), loan-to-value, presence of personal guarantees, contract yield, subpool (default analysis based on pool characteristics) mix, and concentrations of unsecured and balloon loans.

14. If we view a shift in loan or lease characteristics that is indicative of a material change in the risk profile of the pool, we will generally adjust our base-case default assumptions accordingly.

15. **Subpool analysis.** In addition to total portfolio performance data, we may also analyze static and dynamic performance specific to subpools with specific characteristics to derive base-case default assumptions for each subpool in a given total pool.

16. **Seasoning.** Seasoning generally refers to the amount of time that has passed since the contract was originated. While a higher level of seasoning is typically a positive factor in our credit analysis, it does not always result in a reduction to the expected defaults that a pool may experience over its remaining life.

17. Seasoning credit (a reduction in our default assumption to adjust for pool seasoning) generally applies to assets with default-timing patterns that are consistently front-loaded, meaning that defaults occur at a faster rate than assets amortize. For a seasoned pool and a portfolio that exhibits front-loaded defaults, our expected default may be adjusted downward because a disproportionate share of defaults is assumed to have already occurred. However, for some equipment pools with back-ended default tendencies, we may apply little or no seasoning credit.

We typically examine the timing and overall stability of default curves from fully liquidated static pools before adjusting default estimates for higher levels of seasoning. While a pool may have a significant level of seasoning, any reduction to our base-case default assumption could be limited by the quality or amount of static pool performance data available to determine an appropriate loss timing curve.

18. **Balloon loans.** Balloon loans are different than straight amortizing loans in that they typically require relatively small installment payments during the loan's life and then one final, relatively large installment at the end. We generally view balloon loans as riskier than a straight amortizing loan because it could be more difficult for obligors to make a relatively large balloon payment in periods of economic stress, especially if the obligor relies on the sale or re-financing of the related equipment to make the final balloon payment.

19. Under the criteria, when balloon loans are securitized and the aggregate balloon payments constitute a significant portion of the total pool balance, we will typically adjust our default rates higher to address the additional risk that might not be reflected in the historical loss data.

20. Pool characteristics that could affect our balloon default stress include the types of equipment in the pool and their secondary markets, brand and manufacturer diversification, the originator's balloon-setting policy and collateral value forecast policy, and the presence of any third-party repurchase obligations.

Additional and alternative data types

21. **Default proxies.** In some instances, we may derive default proxies when performing static and dynamic pool analysis. Examples include:

- The performance of most North American fleet lease portfolios exhibit consistently near-zero loss rates. In addition to the historical loss experience and underwriting of these types of pools, our analysis considers event risks associated with obligor and industry concentrations. We typically assume that performance could differ from a near-zero loss scenario if, under a stress scenario, an obligor bankruptcy occurred, leading to either nonpayment or delayed payments from obligors.
- Originators may enter new markets as they grow their portfolios. While the inclusion of such a portfolio in a securitization pool is typically lagged so that performance data is available, the length and consistency of such data on a newer type of origination might be less than that of the existing total pool and subpools. In these cases, we may use a default proxy for the newer subpool based on comparisons to existing subpools or to existing performance data from other originators in similar markets with longer historical performance data.
- When a pool includes third-party originations--in the form of portfolio acquisitions, broker originations, or vendor (which are in many cases the equipment manufacturers) originations--we will typically consider available performance data. However, we may utilize a default proxy for third-party originations that qualitatively adjusts for these risks. We will also consider the absolute level of third-party originations and their materiality to the overall analysis.
- To understand potential credit risks associated with third-party originations, our analysis considers the lender's established underwriting of third parties and brokers as well as the extent to which third-party originations are re-underwritten utilizing the lender's standards.
- In addition, if there is any third-party recourse provided to cover credit losses, then our analysis of defaults would generally be assessed before any recourse or payments to remove the impact

of the recourse, as we may assume that it will not be available in our stress scenarios.

22. **Net loss data.** When historical default performance data are not available by static or dynamic pool, we typically estimate the base-case default rate based on an analysis of net loss performance data. In these situations, we estimate a net loss using the same general approach as estimating base-case default rates. We then derive base-case default assumptions by grossing-up the net loss data. We do so based on a recovery rate that we determine based on recovery or disposition rate data available from the issuer or, in some cases, default and recovery data for similar assets of the issuer's peers. In such instances, we generally use the upper end of the typical recovery rates observed. In geographical markets where such peer data is not available, we may compare to similar assets in other regions and assume conservative (high) recovery rates to gross-up net losses.

23. **Originator- and servicer-specific factors.** In setting our base-case default assumption, we may consider potential adjustments for qualitative factors related to the originator's and servicer's operations and financial management. Some examples of these qualitative factors include:

- Originator history and business model;
- Competitive strategies and market position;
- Management experience and track record, market segments, and origination and underwriting practices;
- Financial strength and flexibility; and
- Servicing practices and charge-off policy.

24. Appendix II provides further details on how we may adjust our base-case default assumption to account for these qualitative considerations.

Performance risks

25. Performance risks may be present in equipment ABS transactions when significant services are included in the loans or leases. In such cases, we determine the potential impact on the collateral's performance if the service provider does not fulfill its contractual obligation under the services. We may adjust our default and loss assumptions higher based on qualitative and quantitative analysis to account for performance risks that are not reflected in historical data. If the transaction exhibits performance risks that are substantial and not mitigated, we may cap the rating (for more information, see Appendix III and the operational risk criteria in the Related Publications section).

Macroeconomic conditions and sector outlook

26. Economic conditions are a key determinant of equipment loan or lease pool performance. We would expect higher obligor default rates in more stressful economic scenarios. The key economic variables may vary based on obligor and the related industry. For example, GDP growth generally affects most industries, while housing starts may have more of an impact on the construction industry, and commodity prices may have more of an impact on agriculture-related obligors.

27. Base-case default rates are generally expected to increase under more stressful economic conditions. If the economy deteriorates, some level of volatility around the base-case defaults can occur without affecting the ratings assigned to securities rated at higher rating levels. The level of

pool performance deviation away from the base-case before a rating action is necessary may be higher as ratings move up the scale from 'B' to 'AAA'. In a normal economic cycle, as the rating scenario moves up the rating scale, the level of sensitivity to a change in the economic environment is generally expected to decline. For example, a hypothetical pool could have a base-case default rate that ranges from 2% to 3%, depending on economic conditions during a normal economic cycle (a cyclical trough no worse than a moderate stress, which we associate with a 'BBB' rating level). The rating-level default rate for a 'B' rating will generally change as the base-case changes. However, the 'AAA' stress-scenario default rates for the hypothetical pool is likely to remain constant at 12% throughout a normal economic cycle. If the economic and market conditions deteriorate significantly beyond the normal ranges for cyclical fluctuations, we would expect even the 'AAA' default rates to increase, and rating-category multiples may be outside the ranges outlined in Table 1.

Peer comparisons

28. To help maintain ratings comparability across the equipment ABS sector, we generally compare, when applicable, pools with similar characteristics such as obligor type and concentrations, industry concentrations, and equipment type. Our comparison typically covers collateral and obligor characteristics, dynamic pool data, average yield, and our original and updated projected default ranges for pools securitized by the peers. These comparisons across originators and issuers can be useful in identifying trends and market developments that may be less apparent when looking exclusively at a single portfolio or originator. We may qualitatively adjust our base-case default assumption based on peer comparisons.

Multi-factor adjustments

29. A single pool often exhibits more than one of the default adjustment factors outlined above. In adjusting our default assumptions for multiple factors, we will consider the interplay between the individual characteristics. For example, if a pool has both industry concentration as well as originator-specific characteristics that may lead to less-stringent underwriting standards, we may consider a higher overall adjustment factor than the sum of individual factor adjustments if, in our view, the interplay of the factors exacerbates the volatility of losses.

Calculating rating-level default assumptions: base-case multiples

30. Table 1 shows the typical range of rating-category default assumptions as a multiple of base-case default. For example, in a 'AAA' scenario where we assume an extreme deterioration in economic and business conditions, we believe defaults could reach levels that are approximately 4x-6x the base-case losses. We may apply lower multiples outside the ranges in Table 1 when considering portfolios with very high base-case default rates if the stressed default rate is approaching 100%.

Table 1

Typical Rating-Category Default Assumptions As A Multiple Of The Base-Case Default

Rating category	Typical multiple ranges of the base-case default (x)
AAA	4-6
AA	3-4.5
A	2-3.5
BBB	1.5–2.5

Table 1

Typical Rating-Category Default Assumptions As A Multiple Of The Base-Case Default (cont.)

Rating category	Typical multiple ranges of the base-case default (x)
BB	1.25-1.75
B	1.0-1.5

31. The determination of where the multiple for a pool will fall within the range may consider the following factors, among others:

- Length, consistency, and span over business cycles of performance data--Higher multiples may be applied to pools if the length of historical data is limited and our default assumption is based on proxy data or if data is lengthy but highly volatile. We also may consider a higher multiple even if historical data is lengthy if the data does not cover a period of economic stress. Conversely, we may consider lower multiples within the ranges when historical data is lengthy, exhibits low volatility, and covers multiple economic cycles.
- Shifts in loan and lease characteristics for a securitized pool that are indicative of a significant change in the risk of loan or lease losses or shifts in a servicer's originations--We may apply a higher multiple if the shift reflects an increase in riskier originations, rendering this historical data less indicative of the securitized pool's performance.
- Servicer experience--We may apply a higher multiple if the servicer has less experience with securitization, or we may apply a lower multiple for servicers with significant experience and evidence of relatively consistent performance during multiple economic cycles.
- Presence of certain loan characteristics, such as balloon payments--We may apply higher multiples if pools include riskier loan types, including balloon loans that increase tail risk.

Obligor Concentration Risk--Large Obligor Default Assumption

32. Equipment ABS pools often have significantly fewer obligors than pools of consumer assets. Pools with significant single-obligor concentrations, typically where a single-obligor concentration exceeds approximately 1.5% of the relevant pool, may limit our reliance on historical pool performance, and the creditworthiness of such single obligors in relation to the rating level becomes important in our analysis. We may define a relevant pool based on the maturity terms and other factors to determine the single-obligor concentration. We may also assume a larger number of obligors to default (generally not to exceed what's outlined in Table 2) at the time of the transaction closing to account for a potential risk that as the transaction seasons, the concentration associated with some obligors may exceed approximately 1.5%.

33. Table 2 shows the number of top obligors (with concentration exceeding approximately 1.5%) that we would typically assume to default at each rating category above 'B'. These are applied to obligors with creditworthiness (including a guarantee that qualifies for ratings substitution, if applicable) that is below the given liability rating level. For example, if a tranche is rated 'AA+', we would include the four largest obligors with creditworthiness of 'AA' and below, if applicable, in this default simulation. If a tranche is rated 'AA-', we would include the four largest obligors with creditworthiness of 'A+' and below, if applicable. We may assume a larger number of obligor defaults if the obligors in the pool exhibit high correlation by industry, geography, or both but will not exceed the applicable number in our supplemental largest obligor default test (see Table 3).

We may determine the creditworthiness on unrated obligors using credit estimates.

Table 2

Concentration Coverage Under Pool Analysis Approach

Liability rating	Typical number of largest obligors* assumed to default
AAA	5
AA	4
A	3
BBB	2
BB	1

*Obligors with a creditworthiness lower than the liability rating level and concentration exceeding approximately 1.5%.

34. The blended default rate is calculated by adding the large obligor defaults for a rating category as determined above to the corresponding rating-level default applied to the remaining balance of the pool.

Obligor Concentration Risk--Supplemental Largest-Obligor Default Test

35. The criteria implement a supplemental largest-obligor default test. At any given rating category, a tranche must be able to cover the defaults arising from the supplemental largest-obligor default test. The supplemental test addresses event risks associated with large-obligor defaults that might be present in rated transactions.

36. Our analysis assumes that equipment ABS tranches should be able to withstand the default of a certain number of the largest obligors. The number of defaulted obligors assumed for this test is a function of the liability rating and obligor creditworthiness (see Table 3). For each unrated obligor, we typically assume that the obligor's creditworthiness falls within the 'B+' to 'CCC-' bucket, unless we have an assessment of its creditworthiness (based on, for example, a credit estimate or a guarantee that qualifies for ratings substitution, if applicable).

Table 3

Supplemental Largest Obligor Default Test

	--Liability rating*--					
Obligor creditworthiness	**AAA**	**AA**	**A**	**BBB**	**BB**	**B**
'AAA' to 'CCC-'	2	1	--	--	--	--
'AA+' to 'CCC-'	3	2	1	--	--	--
'A+' to 'CCC-'	4	3	2	1	--	--
'BBB+' to 'CCC-'	6	4	3	2	1	--
'BB+' to 'CCC-'	8	6	4	3	2	1
'B+' to 'CCC-'	10	8	6	4	3	2
'CCC+' to 'CCC-'	12	10	8	6	4	3

*Any tranche or liability rating from categories below 'AAA' includes rating subcategories. For example, the 'AA' column also applies to tranches rated 'AA+' or 'AA-'.

37. For example, under our criteria, a 'AAA' rated tranche should have sufficient credit enhancement to survive the highest level of losses associated with the defaults of each of the following combinations of underlying obligors:

- The two largest obligors with creditworthiness between 'AAA' and 'CCC-';
- The three largest obligors with creditworthiness between 'AA+' and 'CCC-';
- The four largest obligors with creditworthiness between 'A+' and 'CCC-';
- The six largest obligors with creditworthiness between 'BBB+' and 'CCC-';
- The eight largest obligors with creditworthiness between 'BB+' and 'CCC-';
- The 10 largest obligors with creditworthiness between 'B+' and 'CCC-'; and
- The 12 largest obligors with creditworthiness between 'CCC+' and 'CCC-'.

Rating-Level Default Assumptions

38. The rating-level default assumption is the greater of the blended default rate and default rate determined under the supplemental largest obligor default test.

Recovery Analysis

39. Recoveries may be a source of significant cash flow to an equipment ABS transaction because of the secured nature of many equipment leases and loans. However, recovery rates vary significantly depending on legal rights, equipment type, method of disposition, or financing terms.

40. Our analysis of recovery assumptions generally begins with an analysis of the legal rights that the relevant issuer or securities holders, as applicable, have in the underlying equipment. If we assume recoveries are available to the relevant issuer or securities holders, as applicable, which may be secured or unsecured recoveries, then our analysis will generally incorporate a review of historical static or portfolio data to determine appropriate base-case and stressed recovery rates. We typically adjust for fees, such as repossession and auction fees, from the recovery rate data.

41. Our review of historical data generally considers the type of equipment (large ticket, small ticket, etc.), the method of recovery used (pursuing legal remedies, repossession, or re-leasing equipment), and the servicing intensity involved. For examples on how to apply these, see Appendix IV.

42. In determining our stressed recovery rates at each rating category, we may consider the stability of historical recovery rates and factors that could affect the timing, amount, and availability of expected recovery proceeds for the securitized pool. We may increase recovery haircuts if, in our view, the recovery rates are volatile or the availability of expected recovery proceeds are subject to significant credit, operational or legal risks.

43. Table 4 outlines the minimum haircuts applied to our base-case recoveries on defaulted equipment loans and leases at each rating category. Higher haircuts are usually applied based on our pool-specific analysis as described above.

Table 4

Minimum Haircuts Applied To Our Base-Case Recovery Assumptions At Each Rating Category

Rating scenario	Minimum haircut (%)
AAA	25
AA	20
A	15
BBB	10
BB	5
B	0

44. We may apply additional stress recovery haircuts for balloon loans when the aggregate balloon payments constitute a significant portion of the total pool balance. This is to address the additional risk given the limited or no equity built for such loans, resulting in higher loss severities. In addition, the historical recovery data for a given issuer may not fully reflect balloon loan recoveries.

Country Risk Factors

45. Our country risk framework is outlined in the country risk criteria (see the Related Criteria section). There are four pillars to country risk: economic risk, institutional risk, financial system risk, and payment culture rule-of-law risk. We will consider country risk factors that could affect asset performance over time in the rating level default rate and stressed recovery rate assumptions. Such risks generally include:

- Economic risk--This risk, including heightened macroeconomic volatility, can increase the volatility of the performance of the underlying assets, which could affect repayment of the debt obligations. Relatively low business income in a given jurisdiction may also constrain commercial debt repayment.
- Institutional and governance effectiveness risk (including political risk)--Weak institutional and governance effectiveness risk, including political risk, can severely affect the business environment and loan or lease delinquencies.
- Financial system risk--This risk is important because we tend to observe weak points in business and commercial credit cycles correlated with banking crises.
- Payment culture and rule-of-law risk: Our assessment of this risk covers key country-specific aspects that can affect pool performance, including respect for rule of law, property rights, contract rights and enforceability, corruption, and related event risk.

46. Finally, in addition to these country risks, ratings on an individual security can be constrained by our criteria for incorporating sovereign risk (see the Related Publications section).

Residual-Value Analysis

47. In certain equipment ABS transactions, the available cash flows can include proceeds from residuals, which are distinct from scheduled lease payments because they are generally not contractual amounts due. In some cases, open-end leases provided by the U.S. fleet lessors

typically contain contractual provisions that shift the risk of the market value of the vehicles being financed to credit risk of the obligor (the lessee makes whole provision to the lessor if the vehicle sells for less than the outstanding lease balance). In these cases, we would generally analyze the risk to the securitization as we would other types of contractual payments. Residual cash flows available from equipment lease contracts vary significantly from one securitization to another.

48. A key consideration when analyzing residual cash flows and determining an appropriate stress at each rating category is the legal rights to take possession of the collateral and receive residual cash flows. Legal rights are generally a jurisdiction-specific consideration, and in some countries, there might be no value assigned to residual cash flows because of the lack of legal rights to realizations.

49. Our analysis of assumed residual realization will generally consider how the lessor sets residual values and its historical experience of realizing those values upon lease expiration. Our base-case assumption for realization of booked residual values considers, among other factors, the length and consistency of realization data as well as servicer-specific residual setting policies and changes to those policies over time.

50. Residual payments are typically a lump sum. However, in some cases residual payments are received as a continuation of the periodic payment that was made to rent the equipment (in-place residual payments). In these situations, we may consider historical in-place residual payment performance to determine our base-case assumption of booked value realization.

51. After determining a base-case realization rate, we apply stresses for factors that potentially reduce residual realizations, including:

- Servicer risk, because we believe residual realization rates will be lower if a backup servicer--rather than an experienced servicer with advantages such as expertise in equipment liquidation or access to a large dealer network--is performing the residual realization process.
- Concentration within manufacturers, for which we may also increase our stresses based on the manufacturers' financial strength.
- Equipment type, as the depreciated value of the equipment may reduce or increase the incentive for the lessee to buy out the equipment at the end of the lease term or for the servicer to take possession. For example, smaller-ticket equipment may generally have little to no resale value if returned and sold, but we also consider the in-place value of small-ticket equipment to the lessee.
- Market risk, as there is generally no recourse to the lessee for any deficiencies. The secondary market for certain types of equipment at lease termination may be relatively small or less liquid than auction markets like those for vehicles. In some cases, equipment may be near the end of its useful life and the cost may exceed the potential benefits of repossession and liquidation when the lease contract has terminated.
- Other equipment characteristics, such as obsolescence (for example, due to quick technology advancement and evolving regulation on safety standards or pollution control) or the specialty nature of equipment, that could affect resale values.
- Obligor default. If residuals are included in the pool balance we will apply our residual stress to the portion of the pool representing residuals of non-defaulted obligors, to avoid application of both credit stress and residual stress on the same asset. Our considerations include region-specific practices and the transaction's structural provisions for the allocation of proceeds from obligor defaults between recoveries and residual value.

52. Appendix V provides region-specific detailed application of residual analysis.

Assumptions For Revolving Transactions/Prefunding Structures

53. Equipment ABS transactions that have revolving structures or a prefunding structure allow for the reinvestment of principal collections or asset purchases for a specified period of time, followed by an amortization period in which the principal collections are passed through to pay down the securities. Such transactions typically include additional eligibility parameters for the purchase of new assets during the revolving or prefunding period. For example, the eligibility criteria could include concentration limits, the minimum and/or weighted-average pool interest rate, and the maximum tenor of the assets. The purchase of new receivables might also be subject to portfolio parameter conditions related to portfolio performance (such as delinquency or annualized net loss rates).

54. When establishing base-case defaults and stressed recovery rates, we may consider any transaction-specific additional eligibility parameters, payment allocation provisions, and amortization events as well as historical asset performance, pool composition, and the term of the revolving or prefunding period.

55. When two similar pools are securitized--one in a static transaction and the other one using a revolving or prefunding structure--the latter typically has a higher base-case default assumption and a lower stressed recovery assumption. We typically assume such higher losses on revolving or prefunding pools based on our view that the revolving pool's credit profile may deteriorate due to an adverse change in pool composition (receivable or obligor characteristics) because of the eligibility parameters associated with revolving or prefunding transactions generally have some tolerance for weaker obligor and receivable characteristics before an amortization event would be triggered.

Payment Structure And Cash Flow Mechanics

56. For the purpose of cash flow analysis, we apply our global cash flow criteria (see the "Related Criteria" section) alongside these criteria. We typically perform a cash flow analysis by using a cash flow model to determine if a transaction has sufficient credit and liquidity enhancement to pay timely interest and principal by final maturity under rating level stress scenarios consistent with our ratings definitions. In certain circumstances, a cash flow model may not provide additional insight to the sufficiency of credit enhancement; therefore, we may not use a cash flow model.

Minimum Credit Enhancement Levels

57. Our minimum credit enhancement levels at each rating category (expressed as a percentage of the current balance) range from 6% for 'AAA' ratings to 1% for 'B' ratings (see table 5), which would be interpolated to determine the rating-level (i.e. +/- modifiers) minimum credit enhancement. These are based on our view that there are limits on the predictability of equipment loan or lease performance. We believe that a credit enhancement level below 6% creates vulnerabilities that are inconsistent with the degree of creditworthiness associated with a 'AAA' rating for the equipment ABS sector. Moreover, the minimum 'AAA' credit enhancement levels can't be funded solely through soft credit enhancement (excess spread), and the minimum amount of hard credit enhancement supporting a 'AAA' rated equipment ABS transaction is 3.0%. Hard credit enhancement generally includes sources such as subordination, overcollateralization, and reserve funds.

Table 5

Equipment ABS Minimum Credit Enhancement Levels

Rating category	Minimum credit enhancement level as a percent of current balance*	Minimum hard credit enhancement level as a percent of current balance*
AAA	6	3.0
AA	4.5	2.25
A	3.5	1.75
BBB	2.5	0
BB	1.75	0
B	1	0

Would be interpolated to determine the rating-level (i.e. +/- modifiers) minimum credit enhancement

Credit enhancement floors

58. A credit enhancement floor is useful for protecting the notes from tail risk at the end of the transaction's life. In the absence of other structural mitigants--such as sequential-pay structures that lock out principal distributions to subordinate securities, once operative--credit enhancement floors prevent credit enhancement from being released over the transaction's remaining life to address back-ended idiosyncratic risk that may result from higher concentrations when the pool amortizes over time.

59. Our credit enhancement floors generally take the form of hard credit enhancement in an amount equal to a level of approximately 25% of the initial hard credit enhancement based on our analysis. However, in some instances we may look for higher credit enhancement floors depending on factors including:

- Level of single-obligor concentrations;
- A concentration in medium- or large-ticket types of equipment;
- Potential changes in pool composition with differing loss profiles and remaining terms;
- Timing of losses;
- Specific back-ended risks, such as balloon payments;
- Credit quality of the pool; and
- Degree of collateral modifications, extensions, and forbearance.

Surveillance

60. Our analytical approach to monitoring equipment ABS transactions that fall within the scope of these criteria reflects our view of the change in the credit risk inherent in a collateral pool over time. In surveillance, our focus generally follows a subset of variables that we consider to be the most likely to materially change and which reflect the credit quality, credit enhancement, and other relevant factors that drive the determination of ratings when analyzed in conjunction with observed and expected performance.

61. Our surveillance analysis incorporates observed pool performance relative to our expectations and

reflects our forward-looking view of performance relative to the credit enhancement available at a given rating level. In applying the methodology and assumptions described in these criteria, our surveillance analysis considers the collateral's performance trends and dynamic characteristics as well as significant shifts in the pool's collateral composition to determine if updates to our most recent assumptions are warranted.

62. At the time of issuance, a pool of loans will typically have very little, if any, observed performance data available. As such, our new issuance analysis primarily infers future collateral performance from the loan and borrower characteristics at the time of origination. As a pool of loans seasons and default and loss patterns begin to emerge, those patterns will be considered in determining the assumptions we will apply in our surveillance analysis. Furthermore, the performance history informs the qualitative factors assessed at the time of our initial rating and the relevance of such factors given our current outlook for the collateral pool at the time of surveillance.

63. This paragraph has been deleted.

64. This paragraph has been deleted.

APPENDIXES

Appendix I: Special Considerations For Italian Commercial Real Estate Leases

65. For commercial real estate-related leases in Italy, we will derive the default assumptions as outlined in the criteria. However, in our analysis we would generally assume that recoveries are limited to unsecured claims under the lease agreement. If there is a significant concentration of receivables from obligors in the same city or commercial real estate location, we may further stress the largest obligor default concentration coverage and the supplemental largest obligor default test.

Appendix II: Originator- And Servicer-Specific Factors

66. Our review of the originator begins with an overview of the company's history, the markets it serves, and how its business focus has evolved over time. Consistency in the company's business practices determines what degree of weight may be placed on historical pool performance to extrapolate future pool performance. We may adjust our base-case default assumption higher than the historical performance of the originator's managed pool if the originator has a changing business model or a short history operating in a given market, or doesn't have performance history through business cycle.

67. Given the individualized business practices of commercial finance lessors and lenders, we evaluate the internal operations and competitive position of each originator in their respective market. Markets typically dictate financing terms, equipment type, and obligor profile and often are affected by specific economic variables. We may adjust our base-case default assumption higher if we view an originator's market share or competitive position as weaker than that of peers because this could affect the willingness or ability of the originator to balance underwriting decisions with growth and market-share considerations.

68. We consider in our base-case loss assumption management's experience, the company's goals, and target market. This target market could range from high-credit-quality large enterprises to SMEs. By understanding management's goals, target markets, and products, we gain a better

perspective of the historical loss performance and how that performance may change in the future. In addition, we look at the company's ownership and how it can influence management behaviors and strategies.

69. Management teams with strong, proven track records in equipment and commercial financing, preferably in the markets the originator/servicer operates in, tend to increase the weight that can be ascribed to past performance as an indicator of future results. Depending on management experience, we may make qualitative adjustments to key variables in assessing credit risk, such as default frequency, loss severity, and the timing of losses. Understanding the origination, underwriting, and risk management tools and policies an originator employs, and how these factors have changed over time, are also important elements in our analysis.

70. We also consider the originator's underwriting policies in determining our base-case loss assumption. Originators with more conservative underwriting policies could result in lower losses, even in industries that generally tend to be more volatile. Depending on underwriting standards and an originator's adherence to those standards, our base-case loss assumptions may differ by originator, based on qualitative adjustments, even though the originators operate in similar industries or markets. Changes to an originator's underwriting and collection policies and procedures may limit our ability to use historical performance to gauge future performance and may lead to more conservative estimates of base-case losses for the pool to be securitized.

71. An originator's financial strength and management is an important factor in our analysis. Limited financial resources and access to capital could create an incentive toward more liberal origination and underwriting standards, misapplication of securitized cash flows, or an adverse impact on portfolio servicing. Any of these events could negatively affect pool performance. Furthermore, we believe it is important to determine the role of securitization in a company's overall funding strategy.

72. The servicer's charge-off policy is generally reviewed to ascertain the consistency of using historical information as a proxy for future pool performance because future performance will be governed by the charge-off policy in the transaction documents. However, unlike consumer loans, there is no standard charge-off policy in commercial finance, including equipment finance.

73. Our analysis generally includes reviewing the company's collection policies, procedures, and staffing levels, as changes in these areas could affect loss performance and the timing thereof. We typically also examine repossession policies, remarketing strategies, and exceptions to credit underwriting and collection policies.

74. The servicer may extend a loan's or lease's term or refinance it as a loss-mitigation tool, but this approach could also delay the recognition of losses until later in the transaction. If the servicer refinances or restructures contracts for borrowers that experience financial difficulty, the servicer's historical performance data may understate losses. Our analysis generally contemplates that the originator and servicer may become insolvent and will not be around to refinance or restructure contracts in the securitized pool. Therefore, in such situations, our opinion of defaults for the securitized pool may be higher than what would otherwise be derived through our analysis, all other things being equal.

75. In most cases, leases are non-cancellable. In instances, where the lessor and lessee mutually agree, for various business reasons, to terminate the lease contract through payment of an amount less than the original contractual amount, the originator/servicer is typically obligated for the shortfall amount associated with these terminated leases. This situation poses a risk that the originator/servicer may accept lease terminations during a collection period and subsequently fails to repurchase or replace these terminated leases from the trust. Where we view early termination to be a material risk, we may apply higher base-case and stressed assumptions based on historical pool performance of the early termination rate. In addition, we consider other

factors such as creditworthiness of the originator/servicer, originator business operations, static pool data, the seasoning of lease receivables, and the type of equipment.

Appendix III: Performance Risks

76. An example of performance risk in some equipment ABS transactions are bundled services, which are prevalent in many markets of equipment finance (especially the technology finance sector). In this arrangement, the lease payment may be combined (bundled) with the services payments. These bundling arrangements may combine different payment types in the same lease contract, in the same invoice, or a combination of the two. There is heightened risk associated with these types of arrangements because they may require an ongoing relationship between the servicer/originator and the service provider. In addition, if the service is disrupted or not performed, then there is a higher likelihood that the borrower could, as a result, choose to offset related loan or lease payments. A disruption in payments, be it permanent or temporary, may occur even if the lease contracts were styled as unconditional payment obligations with no rights to defense or offset. We analyze bundled lease/loan and service payments by assessing how a service disruption would affect payments of obligors, and thus the transaction. Below are some of the key considerations:

- The degree of diversification in the portfolio by service provider, such that the sudden failure of one or more of them does not exhibit an outsized impact on the overall credit risk of the transaction;
- The level of specialization involved in servicing the equipment;
- Any back-up servicing agreement, its level, and the amount of service providers in the market that could be readily available to provide such services; and
- The service provider's credit quality.

Appendix IV: Recovery Analysis--Examples

77. With small-ticket equipment, often the cost of repossession and disposition exceeds the value of the equipment. Historically, a large portion of securitized small ticket equipment has been technology-related (such as copiers, computers, or phone systems) and has been subject to rapid technological obsolescence, which has put downward pressure on recovery rates. As such, it is not uncommon for small-ticket equipment originators to achieve recoveries mainly by pursuing legal remedies against the defaulted obligors rather than by repossessing and selling the equipment.

78. In contrast, large-ticket equipment originators often pursue repossession of movable agricultural, construction, or industrial equipment, which retains its value longer than office equipment because they tend to depreciate at a slower, more predictable rate and are more closely tied to hours used than their age. Furthermore, the useful lives of these assets typically exceed the terms financing them, which supports strong recovery rates. In addition, repossessing agricultural equipment, which may be more valuable and not subject to rapid technological obsolescence like information technology equipment, could be worthwhile for the servicer to pursue. However, installed equipment presents additional challenges and often requires different methods from a recovery perspective.

79. The stress applied to recoveries also depends on our assessment of the servicer's collection and recovery strategies. For example, when recoveries are volatile or driven by temporary factors--such as a one-time sale of defaulted receivables--we may assume lower or no recoveries. Similarly, we may give only minimal or no credit to recoveries that represent additional amounts

received beyond the proceeds of asset sale (legal judgments for example). The level of legal risk and degree of discount to historical recovery rates is generally region- or country-specific.

Appendix V: Region-Specific Residual-Value Stresses

80. In Latin America, we generally only assume a residual value above zero for auto lease collateral. For a typical securitized pool in Latin America, the assumed residual value on a non-defaulted auto lease is the lower of the residual or 50% of our expected value of the vehicle at lease termination. However, if the average residual amount of the pool exceeds approximately 15%, then we'll generally apply an additional residual market value haircut to the portion that exceeds the approximately 15% residual value limit to account for the additional market risks the transaction would be exposed to. The additional haircut will generally be based on originator-specific factors that could, in our view, increase the transaction's exposure to residual values. Example of such factors include the originator's residual setting policy and historical refinancing rates.

81. An obligor default results in all or a portion of residual realizations being accounted for as recovery proceeds. For example, in U.S. equipment ABS transactions, the method by which we account for obligor default and its reduction of residual proceeds depends upon the way in which the ABS transaction is structured. In some cases, residuals are included as part of the overall pool balance, and therefore obligor defaults are applied to residual values as well as scheduled payments in our cash flows. In other structures, residual values are not included in the calculation of the pool balance but represent potential excess cash flows available to cover losses. In these types of structures, our stress to the base-case residual realizations includes reductions for obligor default as well as for potential mismatches between the expected timing of residual realizations and the losses. If the structural provisions of a transaction allow for residual proceeds to be released when realized in the event that losses do not occur at the same time, we apply stress to our assumed residual realizations to reflect this leakage of residuals from the structure.

REVISIONS AND UPDATES

This article was originally published on May 31, 2019.

Changes introduced after original publication:

- On Dec. 5, 2019, we republished this criteria article to make nonmaterial changes. We updated the contact information and certain criteria references.
- On Sept. 25, 2020, we republished this criteria article to make nonmaterial changes. We removed noncriteria text from the first paragraph and removed the "Impact On Outstanding Ratings" section, which were related to the initial publication. We also updated a criteria reference in paragraph 46. We moved a reference to the criteria guidance to a newly added "Related Guidance" section.
- On Dec. 14, 2020, we republished this criteria article to make nonmaterial changes to clarify the use of models in our cash flow analysis in paragraph 56.
- On July 15, 2021, we republished this criteria article to make nonmaterial changes to criteria references.
- On May 31, 2022, we republished this criteria article to make nonmaterial changes. As announced in "Evolution Of The Methodologies Framework: Introducing Sector And Industry Variables Reports," published Oct. 1, 2021, we are phasing out guidance documents over time.

As part of that process, we have archived "Guidance: Global Equipment ABS Methodology And Assumptions," published May 31, 2019. The relevant guidance content, now included in the criteria, was moved without any substantive changes. Specifically, we moved guidance content to paragraph 31 and to appendixes I-V. We didn't move paragraphs 2-5 from the guidance, since these concepts are covered in "Global Framework For Payment Structure And Cash Flow Analysis Of Structured Finance Securities," published Dec. 22, 2020. We also updated contact information and article references in the "Related Publications" section.

- On May 22, 2023, we republished this criteria article to make nonmaterial changes to the contact information and criteria references.
- On May 8, 2024, we republished this criteria article to make nonmaterial changes to the related publications references.
- On Aug. 6, 2024, we republished this criteria article to make nonmaterial changes to the related criteria references.

RELATED PUBLICATIONS

Superseded Criteria

- Methodology And Assumptions For Rating Mexican Equipment ABS, Dec. 11, 2014
- Methodology And Assumptions For Rating Japanese Lease Receivables Securitizations, May 11, 2010
- Rating Leasing Securitizations In Italy, May 3, 2006
- Equipment Leasing Criteria: Credit Risks Evaluated In Lease-Backed Securitizations, Sept. 1, 2004
- Equipment Leasing Criteria: Structural Considerations In Rating Lease-Backed Transactions, Sept. 1, 2004

Related Criteria

- Methodology For Determining Ratings-Based Inputs, July 26, 2024
- National And Regional Scale Credit Ratings Methodology, June 8, 2023
- Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- Global Framework For Payment Structure And Cash Flow Analysis Of Structured Finance Securities, Dec. 22, 2020
- Methodology To Derive Stressed Interest Rates In Structured Finance, Oct. 18, 2019
- Global Methodology And Assumptions For CLOs And Corporate CDOs, June 21, 2019
- U.S. Structured Finance Asset Isolation And Special-Purpose Entity Criteria, May 15, 2019
- Counterparty Risk Framework Methodology And Assumptions, March 8, 2019
- Incorporating Sovereign Risk In Rating Structured Finance Securities: Methodology And Assumptions, Jan. 30, 2019

- Structured Finance: Asset Isolation And Special-Purpose Entity Methodology, March 29, 2017
- Methodology And Assumptions For Stressed Reinvestment Rates For Fixed-Rate U.S. Debt Obligations, Dec. 22, 2016
- Guarantee Criteria, Oct. 21, 2016
- Global Framework For Assessing Operational Risk In Structured Finance Transactions, Oct. 9, 2014
- Methodology And Assumptions For U.S. Small Business Loan-Backed Securitizations, March 28, 2014
- Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings, Oct. 1, 2012
- Global Investment Criteria For Temporary Investments In Transaction Accounts, May 31, 2012
- Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- European SME CLO Methodology And Assumptions, Jan. 10, 2013
- Principles Of Credit Ratings, Feb. 16, 2011
- Methodology For Servicer Risk Assessment, May 28, 2009

Related Research

- S&P Global Ratings Definitions, updated from time to time
- Evolution Of The Methodologies Framework: Introducing Sector And Industry Variables Reports, Oct. 1, 2021

Related Guidance

- ARCHIVE: Guidance: Global Equipment ABS Methodology And Assumptions, May 31, 2019

This report does not constitute a rating action.

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