FitchRatings

Structured Finance
Commercial Mortgage
Americas and Asia Pacific

CMBS Large Loan Rating Criteria

Sector-Specific

Scope

The CMBS Large Loan Rating Criteria are used to analyze loans in two types of CMBS transactions — Single Borrower and Large Loan Pool. The criteria are also used for analyzing credit opinion loans within Multiborrower Fusion transactions. The criteria report is used for both new and existing ratings.

The scope of the report is limited to asset types and jurisdictions within North America, Latin America and the Asia-Pacific region, as identified in the criteria appendices. Ratings may be constrained by sovereign or location-specific considerations. Collateral for CMBS loans or securities is conventionally secured by mortgages or deeds of trust; in certain transactions, such as billboards, the income-producing asset is considered personal property and is secured through Uniform Commercial Code (UCC) financing statements.

Fitch Ratings describes in this report how property, loan and transaction attributes inform its assumptions for calculating rating case-specific debt proceeds. Proceeds represent amounts expected to be recovered or refinanced under various rating cases. For Large Loan Pool transactions, rated proceeds represent the sum of each loan's rating case-specific debt proceeds, adjusted for pooling.

Key Rating Drivers

The key rating drivers are equally important to the initial analysis. For surveillance, the related rating action commentary (RAC) will discuss the most relevant key rating drivers.

Property Cash Flow: Fitch analyzes property revenue, operating expenses and capex to derive a Fitch net cash flow (NCF) that reflects a property's sustainable performance.

Collateral Characteristics: Fitch's assessment of collateral characteristics informs its leverage assumptions. Collateral characteristics include the property, tenancy, sponsorship, property management, location, market and similar attributes. Leverage assumptions include the Fitch constants, cap rates and debt service coverage ratio (DSCR) and loan to value (LTV) hurdles. Fitch NCF assumptions also reflect the relative strength of collateral characteristics.

Leverage: Rated proceeds are determined using the Fitch rating case-specific leverage hurdles (DSCR or LTV) and the Fitch NCF or Fitch property value.

Loan and Transaction Structure: Certain loan and transaction structural features are typical of CMBS large loans or structured finance transactions. The presence and relative strength or weakness of these features collectively inform leverage assumptions; however, when absent, Fitch could cap ratings.

Pooling: For large loans assessed in the context of a multiborrower pool (Large Loan Pool), pooled proceeds reflect adjustments for diversification and potential negative pooling.

Table of Contents

This reportreplaces the previously published report titled "CMBS Large Loan Rating Criteria," dated March 1, 2023.

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Application of Large Loan Criteria

The primary distinction between large loan and multiborrower conduit analyses lies in the ratings approach, rather than loan size. Because there is a lack of diversity and/or exposure to one loan (or one borrower), the large loan analysis employs a loan-specific estimate of recovery or refinanceability; this approach is often referred to as "direct sizing." In contrast, multiborrower transaction analysis employs a portfolio analysis where losses are estimated based on loan-level default probability and loss given default. Large loans also typically have lower leverage and stronger collateral and structural characteristics compared to conduit loans.

The large loan criteria are used to analyze loans in two types of CMBS transactions — Single Borrower and Large Loan Pool. The criteria are also used for analyzing credit opinion loans within Multiborrower Fusion transactions.

Single Borrower

Single borrower transactions provide financing to one sponsor secured by either a single property or a pool of cross-collateralized and cross-defaulted properties. Fitch-rated single borrower transactions should exhibit cash flow durability, experienced and well-capitalized sponsorship and a sound loan structure. For single asset transactions, Fitch expects collateral to be of the highest quality construction, finish and location. In addition, the collateral is expected to demonstrate durability of value and cash flow through cycles, have high marketability to prospective buyers and have minimal deferred maintenance. For multi-asset transactions, Fitch considers the aggregate portfolio, rather than the individual properties and expects diversity and cross-collateralization to mitigate individual property performance risks.

Fitch may either apply rating caps or decline to rate transactions that do not exhibit these characteristics. Weaknesses in some characteristics could be compensated by strengths in others. By way of illustration, Fitch would consider a rating cap for transactions backed by the following:

- Without strong mitigants, a class A office building in a secondary market or a class B office building in a primary market;
- A single mall or a diversified portfolio of malls located in secondary or tertiary markets;
- A diversified portfolio of specific-use properties with limited alternative uses;
- A portfolio of lower quality hotels without experienced and well-capitalized sponsorship, even if well diversified by number and geography;
- A portfolio of industrial buildings lacking tenant diversity unless leased to investment grade-rated tenants; and
- A class A property in a primary market with significant exposure to near-term lease roll or current dark space.

Of note, these are only examples and do not constitute the full spectrum of rationales for applying rating caps.

Large Loan Pool

Large Loan Pool transactions typically consist of up to 20 loans at issuance, each secured by one or more properties, with generally discrete sponsors. Average loan size is typically above $25 million, with individual loans often exceeding $100 million. Pools with a high loan count but where a small number of loans represent a large overall percentage of the transaction may also be considered large loan pools.

Credit Opinion Loans in Multiborrower Fusion

Multiborrower conduit transactions often include large loans with characteristics substantially similar to single borrower loans. These loans are individually analyzed using this criteria report and receive a credit opinion reflecting the loan characteristics on an individual (standalone) basis. In the fusion approach, rating case-specific, large loan proceeds with pooling benefit are added to rating case-specific conduit proceeds. Credit opinion loans in fusion transactions are often pari passu participation interests in a larger loan. The standalone sizing of a credit opinion loan in a Multiborrower Fusion transaction follows these criteria; however, the pooling benefit

Applicable Criteria

Global Structured Finance Rating Criteria (March 2023)

Structured Finance and Covered Bonds Counterparty Rating Criteria (March 2023)

U.S. and Canadian Multiborrower CMBS Rating Criteria (May 2023)

Criteria for Rating North American Commercial Mortgage Servicers (December 2022) for these loans and the rating methodology for Multiborrower Fusion transactions are described in Fitch's "U.S. and Canadian Multiborrower CMBS Rating Criteria."

In surveillance, if the performance of a credit opinion loan has declined such that it is no longer considered investment grade, Fitch would no longer model it as a credit opinion loan and would analyze it as a conduit loan under the "U.S. and Canadian Multiborrower CMBS Rating Criteria."

Overview of the Rating Process

Fitch's qualitative analysis informs its selection of leverage assumptions (constants, cap rates and DSCR/LTV hurdles), as well as potential rating caps. Qualitative factors, which are assessed in the aggregate, include collateral characteristics, as well as loan and transaction structure, inclusive of total leverage (including subordinate debt, if any), pooling, property quality and collateral diversity.

Quantitative analysis determines the Fitch NCF and rating case-specific proceeds, also referred to as the Model Implied Rating (MIR). To calculate Fitch NCF, Fitch analyzes issuer-provided, historical and underwritten revenue and expenses to reflect sustainable income (Fitch NCF). The Fitch NCF is considered the cash flow for all rating cases.

Fitch calculates rating-case-specific proceeds by dividing the Fitch NCF by the product of the refinance constant, rating-case-specific DSCR hurdles and the amortization factor (the DSCR approach), or by dividing the Fitch NCF by the cap rate, multiplied by rating-case-specific LTV hurdles, divided by the amortization factor (the LTV approach). Fitch computes these calculations through the large loan module of the CMBS CoRE Model, a proprietary Excel-based model.

Model-generated proceeds may be rounded outside the model. The model-generated or rounded proceeds at each rating and/or the implied expected losses are then compared to the actual cumulative class balance and/or actual credit enhancement of each rated class to determine the model implied rating (MIR).

References in this report to "proceeds" refer to the amount of cumulative debt at a particular rating, including senior and pari passu debt. Proceeds reflect the amount expected to be recovered or refinanced under various rating cases. References to "pooled proceeds" refer to the sum of aggregate loan proceeds at a given rating after any pooling adjustments.

Fitch's LTV hurdles and DSCR hurdles are based on historical market value declines. Fitch compares the market value declines implied by the difference between rating case-specific proceeds and the Fitch property value and in the context of observed market value declines across various historical business cycles. Fitch considers rating case-specific debt yields relative to Fitch cap rates and market cap rates, as well as long-term average cap rates and mortgage constants as a way to compare transactions.

See the appendices for specific leverage assumptions and other rating considerations, which may differ across jurisdictions.

Rating Determination

While the MIR is a key consideration for a committee's determination of ratings, assigned ratings may differ from the MIR. The following outlines where this may occur.

- For transactions that are subject to a rating cap, individual class ratings and their MIRs will incorporate such rating cap.
- For new ratings, a credit committee may assign a particular rating to a class up to one notch higher or lower than the MIR for immaterial rounding differences.
- For existing ratings, the ratings will be within three notches of the MIR (for avoidance of doubt, the difference between 'AAAsf' and 'AA+sf' is considered one notch, and the difference between 'AAAsf' and 'AAsf' is considered three notches); if not, it will be disclosed and described in rating commentary as a criteria variation.
- For existing ratings, where an updated analysis results in a MIR of three or fewer notches from the current class rating (e.g. the MIR is 'BBBsf' or 'AAsf' and the current rating is 'Asf'), the current rating may be affirmed, downgraded or upgraded at any level between the current rating and the MIR if there is uncertainty as to whether performance trends are sustainable or if credit enhancement (CE) is expected to increase from amortization

or property releases, which would result in a future MIR that meets the current rating or any rating level between the current rating and the MIR (see the *Surveillance* section for details on rating changes).

- For a MIR below 'CCCsf', Fitch will assign a rating of 'CCCsf, 'CCsf' or 'Csf', in accordance with its structured finance rating definitions (see Distressed Ratings in the *Surveillance* section).

Source of Transaction Data and Assumptions

Requested Issuer Information

- An overview of the transaction and the proposed structure.
- A comprehensive data tape and/or a detailed summary of key loan and property-level attributes.
- Descriptive materials about the collateral and tenancy, property descriptions, maps, photographs and relevant market data.
- Three or more years of property operating history, cash flow projections and rent rolls.
- Appraisals, environmental and engineering reviews, as well as seismic reviews, if applicable, typically completed within the prior 12 months. Descriptive materials on potential risks associated with climate change and potential local regulations pertaining to climate change.
- Summary of the terms and conditions of the underlying loan and loan documents as requested. Requested documents may include the loan agreement, mortgage, cash management agreement, legal opinions and intercreditor agreements, if applicable.
- Background information on the loan sponsor and property manager's experience and financial resources relative to business plans.
- Transaction documents, including the trust servicing agreement (or pooling and servicing agreement, if applicable); offering document, including the waterfall description; mortgage loan purchasing agreement, including representations and warranties; and legal opinions.

The above information is commonly requested and is considered in Fitch's cash flow analysis and model input variables. In some cases, Fitch may request supplemental information based on transaction, loan, borrower, collateral, tenancy and ownership-specific attributes. To the extent information is limited or lacking, and not offset by substitute information or mitigating factors, Fitch may apply more conservative assumptions, cap the ratings or decline to rate the transaction.

In its analysis of existing transactions, Fitch considers performance, remittance and collateral information reported by the servicer and the trustee.

Data Sources for Key Assumptions

Fitch utilizes data provided by multiple sources to derive leverage assumptions and cash flow adjustments, the primary inputs to Fitch's large loan analysis. Data sources for each jurisdiction are provided in the appendices.

Determining Fitch Net Cash Flow

For income-producing real estate, cash flow is fundamental to assessing a property's ability to pay debt service, refinance its balance at maturity and estimate recovery or loss should a mortgage loan default. When assessing default and loss characteristics of CMBS loans, Fitch considers both the amount and durability of property cash flow, including individual revenue and expense components.

In determining the Fitch NCF, Fitch reviews issuer cash flow and issuer-provided supporting information that typically includes historical, appraisal, budgeted and projected cash flows; rent rolls; third-party reports; and market data. Fitch's cash flow analysis is also informed by third-party market data.

Starting with historical or issuer-underwritten cash flow, Fitch adjusts for nonrecurring items, above-market performance, volatile market conditions and revenue and expense items that deviate from sustainable long-term market or property levels and normalizes capex. Such adjustments are commonly referred to as a "haircut" when discussing the overall effect on property-level cash flow relative to historical results or issuer cash flow.

The objective of Fitch's large loan cash flow analysis is to determine sustainable income, and the most common adjustments are outlined below. The adjusted NCF (Fitch NCF) is used to determine the Fitch DSCR, Fitch value and Fitch LTV and, ultimately, rating case-specific proceeds.

In surveillance, the Fitch NCF would be updated if Fitch deems that actual or expected changes in cash flow, vacancy or expenses will be sustainable; in determining an updated Fitch NCF, the starting point would be the current in-place cash flow with similar adjustments to those described within this section.

Rent Recognition

For properties with long-term leases, such as office, industrial and retail properties, Fitch generally recognizes rent from leases in place from tenants in occupancy and paying rent. Above-market rents are adjusted down to sustainable long-term market levels. This rental rate may be below current market levels if Fitch expects market performance to deteriorate beyond current levels.

Fitch may consider credit or partial credit for leased, but not occupied, space when certainty of occupancy is high, such as tenant expansion, and appropriate structure/reserves are in place.

For most tenants, consideration of rent steps is limited to near-term (generally, up to six months) contractual increases and by market rents. Fitch may average rents over the lesser of the loan term and the lease term for investment grade tenants or other tenants with highly durable income characteristics, provided the average is not above market.

For properties with short-term leases, such as multifamily properties, or no leases, such as hotels, the lesser of the trailing 12 months (TTM) or sustainable rents generally informs revenue assumptions. Additionally, Fitch's cash flow adjustments may be greater for loans originated during the peak of the real estate cycle relative to those originated during the trough. While Fitch may consider in-place income when recent performance has been materially impaired (e.g. large tenant vacancy), performance improvement plans, borrower projections, pro forma income and annualized statements are generally not included in the Fitch NCF. For properties whose current income does not reflect the value, recoverable amounts may reflect a dark value approach, as described in the Dark Value Consideration section.

Percentage Rent

Retail tenants often pay percentage rent in addition to base rent upon reaching sales thresholds, and they might pay percentage rent in lieu of all or a portion of base rent. Given its variability, only percentage rent with a demonstrated long-term history and deemed sustainable under expected future market conditions is included in the Fitch NCF.

Vacancy

Fitch adjusts income to reflect stabilized vacancy consistent with historical levels, projections of future vacancy levels or an assumed minimum of 5%–10%, depending on the property type. Fitch focuses on economic vacancy that, in addition to physically vacant space, includes concessions, market rent adjustments, occupancy cost adjustments for retail properties and management units. Exceptions to minimum vacancy amounts include demonstrated long-term property or submarket performance, as well as for investment grade tenants with long-term leases.

Other Income

Fitch includes other income deemed sustainable and recurring such as parking at commercial properties and laundry income. One-time items, such as a large lease termination fee, will not be recognized. Income deemed non-sustainable, such as management fees or joint venture income, is typically excluded.

Management Fee

Fitch adjusts management fees to the higher of the contractual fees and market levels. Typical management fees for North American CMBS are 3%–6% of effective gross income, capped at USD1.25 million (or the CAD equivalent) for single property loans, if the management fee is subordinate to the mortgage. Loans secured by multiple properties are not subject to the cap.

Operating Expenses

Fitch reviews issuer-underwritten operating expenses, as well as expense trends and margins, for reasonability. The Fitch NCF typically reflects the most recent year-end amounts or TTM levels, plus 3%, and Fitch normalizes variable expenses to sustainable levels. For declining expenses, Fitch may request supporting information, such as paid bills or insurance premiums. Fitch pays particular attention to potential expense increases, such as ground lease payments, payments in lieu of taxes, tax abatements and reassessments arising from property sales.

Capital Items

Leasing Costs

Fitch generally assumes market amounts for tenant improvements (TIs) and leasing commissions (LCs), which are normalized over the average lease term. Fitch generally assumes office TIs of 50%–100% of one year's rent for a new tenant and 50% of that amount for a renewal. For LCs, Fitch assumes 4%–5% of one year's rent for a new tenant and typically half of that amount for a renewal. Exceptions to these standards often reflect the presence of upfront leasing reserves, investment grade tenants with long-term leases or below-market lease structures.

Replacement Costs

A property's age, quality and engineering evaluation are key determinants in estimating replacement costs; Fitch normalizes these capital amounts over their useful lives at assumed market costs. In North America, the typical minimum amount is USD300 per unit for multifamily or USD0.15psf–USD0.30psf for commercial properties along with 5% of revenue for hotels.

Calculating Rating Case-Specific Proceeds

Proceeds represent amounts expected to be refinanced or recovered in the rating cases; proceeds are also cumulative through the referenced rating.

Fitch determines rating case-specific proceeds under an LTV or DSCR approach. Under the LTV approach, the Fitch NCF is divided by the Fitch cap rate, multiplied by the LTV hurdle and divided by the amortization factor (for amortizing loans). Under the DSCR approach, the Fitch NCF is divided by the product of the Fitch constant, the DSCR hurdle and the amortization factor (for amortizing loans).

Calculating Rating Case-Specific Proceeds — Example

Loan Amount ($)	80,000,000	Fitch Constant (%)	9.25
Fitch NCF ($)	10,000,000	Fitch Cap Rate (%)	8.75
Amortization Factor	0.92		

DSCR Hurdle (x)		LTV Hurdle (%)		Rating	DSCR Proceeds ($)	Debt Yield (%)	LTV Proceeds ($)	Debt Yield (%)
AAA	2.05	AAA	45.00	AAAsf	57,321,372	17.4	55,900,621	17.9
AA	1.80	AA	52.00	AAsf	65,282,674	15.3	64,596,273	15.5
A	1.60	A	59.00	Asf	73,443,008	13.6	73,291,925	13.6
BBB	1.45	BBB	67.00	BBBsf	80,000,000	12.5	80,000,000	12.5

Note: DSCR proceeds: Fitch NCF/Fitch Constant/DSCR Hurdle/Amortization Factor. LTV proceeds: Fitch NCF/Fitch Cap Rate * LTV Hurdle/Amortization Factor. Debt Yield: Fitch NCF/Proceeds.
Source: Fitch Ratings

Leverage Assumptions

Leverage assumptions are assigned during the analytical and committee process. Fitch considers the collateral characteristics and a review against similar cohorts and peers, primarily by property type.

Fitch Constants and Cap Rates

Given the non-fully amortizing nature of most CMBS loans, the borrower typically repays the maturity balance by refinancing or selling the property. Fitch constants, which reflect long-term average mortgage constants, are intended to address the potential for interest rates to mean-revert to historical levels.

Similarly, Fitch cap rates generally reflect long-term average capitalization rates; the Fitch value is typically a function of the Fitch NCF and the cap rate.

Sector appendices detail the property- and jurisdiction-specific Fitch cap rates and constants.

LTV and DSCR Hurdles

Hurdles are the only rating case-specific variable in the large loan analysis. Hurdle assumptions, which reflect Fitch's qualitative and collective assessment of collateral characteristics, and loan and transaction attributes are discussed below. The property- and jurisdiction-specific starting hurdles are detailed in the appendices.

Analytical Approach

Fitch's large loan analysis commonly considers LTV sizing in the U.S., Canada and Australia and both DSCR and LTV sizing in Latin America. Stabilized properties are modeled using DSCR or LTV, while assets with future growth potential generally are sized using LTV parameters. Future growth potential commonly stems from below-market occupancy resulting from a recent or near-term lease expiration or in-place rents well below sustainable market levels.

Fitch also considers a total rated debt LTV (the Fitch Market LTV), which is calculated based on the Fitch NCF and a blend of the Fitch cap rate and the then-current market cap rate; the market cap rate is generally based on the appraisal. Fitch expects the Fitch Market LTV for non-investment grade-rated tranches to not exceed 100%.

Amortization Factor

The Amortization Factor adjusts proceeds to reflect scheduled amortization and is a function of the scheduled principal repayment before maturity and property type. For property types conventionally leased, the amortization factor is calculated as follows:

Amortization Factor = [(Average of the Initial Loan Balance and the Balloon Balance)/Initial Loan Balance]

As hotels and other operating businesses have higher operating leverage and potentially greater cash flow volatility, amortization credit is limited by weighting 75% on the initial loan balance and 25% on the balloon balance.

For loans that amortize by 50% or more, the amortization credit is typically limited by applying a floor of 75% to the Amortization Factor; exceptions may be made for single-tenant properties with long-term leases to highly rated tenants.

Collateral Characteristics

Fitch's leverage assumptions vary by property type and jurisdiction; Fitch's standard assumptions are listed in the appendices to this report. Fitch's application of these assumptions reflects a collective assessment of collateral characteristics, along with loan and transactional structure.

Commercial real estate value conventionally reflects the present value of future cash flow where the amount, timing and durability of income are primary considerations. Fitch assesses collateral characteristics in the same context — attributes that affect the amount or durability of property income directly affect a loan's recovery and refinanceability and, therefore, relative leverage.

Fitch's leverage assumptions, particularly Fitch caps and constants, reflect its assessment of:

- Collateral quality;
- Tenancy attributes;
- Sponsorship attributes;
- Property management;

- Location and market attributes; and
- Geographic and property diversity.

Collateral Quality

Property quality assessments include a review of third-party property appraisals, market studies, engineering reports and environmental studies. When possible, Fitch performs site visits at issuance for each property or a representative sample of loans or properties, as applicable. Post-closing, Fitch relies on the original assessments, in addition to updated financial and market performance, as well as any updated information provided by the servicer.

In assigning collateral quality, Fitch considers the design, function, construction quality, location and environmental and sustainability impacts. A successful design will be appealing and functional and possess a timeless quality. Specialized improvements may become outdated and dated properties often require renovation. Properties of high quality construction typically capture relatively higher rents, and properties with little or no deferred maintenance are generally less expensive to operate.

A building that is a certified Leadership in Energy and Environmental Design (LEED) could achieve lower operating costs through reduced energy and water usage, as well as greater value durability given improved indoor air quality, increased tenant desirability and a better public image. Buildings with a superior carbon footprint and/or LEED certification may materially reduce the negative consequences of regulations or policy pertaining to anticipated climate change. Fitch may assign lower cap rates and/or constants for buildings displaying positive environmental features.

Engineering and environmental studies provide third-party assessments of the condition of the subject property and estimates of the immediate and long-term costs to address respective issues. Fitch expects material issues to be remedied and reserves adequate to complete the work. Based on the severity of the issues, Fitch may choose to cap the ratings or to not rate a transaction.

Tenancy

Tenancy considerations primarily include tenant diversity, credit quality, remaining lease term, distribution of lease expirations, tenants' space utilization and in-place rents and occupancy relative to market. Fitch's analysis is based on a review of rent rolls and third-party information on rents, occupancy and leasing trends.

Sponsor/Property Manager

Fitch considers the relevant experience of the sponsor and the property manager and assesses their ability to operate and manage the property. Fitch expects issuer- and sponsor-provided information to detail experience with the subject property type and the local market, current or pending litigation, financial resources relevant to obligations, the depth and breadth of the organization and similar operational issues. For sponsors lacking professional management experience, Fitch expects sponsors to hire capable third-party managers; the Fitch NCF includes management fees sufficient to engage third-party providers.

For transitional properties, Fitch expects issuers and sponsors to demonstrate the efficacy of the business plan to stabilize the assets, adequacy of the reserves or financial capacity to re-invest in the property as needed and evidence of the sponsor/manager's experience implementing similar plans for like properties in the market.

Location and Market

Leverage assumptions also reflect Fitch's view on the strength and stability of the submarket, the primary market and the property's location and positioning within the market. Fitch primarily assesses market attributes through third-party data, including market studies, rents and occupancy, demographic information, construction and leasing absorption information and competitive property analysis. Fitch may request and consider other information to address credit risks specific to the subject property.

Other location attributes considered include ingress and egress, visibility of the property and signage, access to major thoroughfares, public transportation, supporting retail and other demand drivers. Fitch assesses these characteristics primarily through site inspections and desktop reviews.

Loan and Transaction Structure

The presence and relative strength of most structural features also influence Fitch's selection of leverage assumptions; these structural features are assessed in the aggregate, and those most common to securitizations of large loans are listed below. To the extent structure is limited, lacking or not offset by mitigating factors, Fitch would apply more conservative assumptions, cap the maximum achievable rating or decline to rate the transaction.

Some single borrower, large loan transactions are "direct issuance"; rather than depositing a loan to a trust, the issuer simply issues the debt secured by the real estate collateral. The presence of direct issuance transactions limits the distinction between loan and transaction structural features.

Certain structural elements such as servicing and liquidity pertain only to the transaction. While Fitch also considers the presence and relative strength of these features, in the absence of adequate transaction structural features, Fitch would cap the ratings.

Loan Structure

Security Interest

Collateral for CMBS loans or securities is conventionally secured by mortgages or deeds of trust; in certain transactions such as billboards, the income-producing asset is considered personal property and is secured through UCC financing statements.

Occasionally, CMBS debt is further secured by the sponsor's equity in the borrower, which is more common with large portfolios of properties. Enforcing under an equity pledge may be more efficient, allowing the creditor to control the borrower rather than enforcing on each property. However, absent a perfected security interest in the property, subsequent debt with priority liens will diminish the borrower's equity, creating uncertainty in Fitch's recovery analysis.

Cash Management

Hard lockboxes and central collection accounts ensure property cash flows are directed in accordance with the indenture and cash management agreement. With a hard lockbox, tenants remit rents directly to an account held and maintained by the servicer for the benefit of security holders rather than to the borrower or its sponsors. With cash management, trust and servicing fees, tax and insurance escrows, principal and interest payments and required reserve deposits are paid before the issuer receives residual cash flow; cash management may be performed over the life of the loan or is initiated upon a performance trigger. Cash management typically is limited to loans that have hard lockboxes.

Property Release

In connection with a release of one or more properties in a multi-property loan, issuers prepay an amount typically equal to the greater of 115% of the allocated note amount or an amount that will result in the DSCR following the release being equal to or greater than the greater of the DSCR prior to the release and at origination. The release premium mitigates the potential impact of adverse selection by deleveraging the loan.

Management Replacement

Following a material change in property performance, the servicer has the right, although not the obligation, to terminate and replace the property manager. If management has, in fact, become inefficient, the installation of a new property manager may help avert a default on the mortgage.

Capital Reserves

Upfront and ongoing reserves are common for expected and potential events. Leasing reserves are structured to pay ongoing or periodic leasing costs, or to address the potential downtime period between leases. Conclusions from engineering and environmental reviews quantify expected capital costs, both upfront and ongoing.

Debt Service Reserve

A debt service reserve, or a DSCR-based cash trap, mitigates unexpected shortfalls in cash flow relative to debt service. Upon trigger events, such as a significant drop in debt service coverage, all excess cash is trapped and the issuer receives no residual cash flow until the DSCR has returned to a predetermined level, typically for two consecutive quarters. If the DSCR continues to decline, early amortization triggers apply previously trapped amounts and future excess cash to amortize the transaction. Thus, the cash trap serves as an early warning system and mitigates the risk of funds being diverted by the issuer.

Insurance Coverage

Borrowers maintain the following types of insurance coverage, among others, subject to standards described in the Commercial Real Estate Finance Council's (CREFC) model representations and warranties:

- Special cause of loss form ("all risk");
- Commercial general liability;
- Umbrella excess liability;
- Business interruption insurance;
- Terrorism insurance; and
- Flood, windstorm and earthquake insurance, if the site is located in designated zones.

Any lapse in coverage is mitigated by servicers' force-placed insurance, contingently available under blanket policies. Title insurance is also typically in place, which protects against loss resulting from defects of title. Among other requirements in the transaction documents, Fitch expects carriers to have an insurer financial strength (IFS) rating of 'BBB' or 'F2' when the category of the highest rated class is 'Asf' or higher. Fitch expects IFS ratings to be from Fitch, S&P or Moody's. When the syndicate of insurers is concentrated, Fitch may expect higher IFS ratings on case-by-case basis. Insurance coverage not meeting these guidelines will be evaluated relative to the rated proceeds on a case-by-case basis. The indenture trustee is typically named an additional insured for each policy.

Leaseholds

For loans secured by the borrower's leasehold interest, creditor protections include a lockbox for ground lease payments, default notice and cure rights and lease terms materially longer than the loan. Typically, Fitch will look to the average ground lease expense over the loan term plus five years when determining ground rent expenses.

Transferability/Assumption Provisions/Intercreditor Agreements

Large loans are typically either "due on sale" or have limitations and standards to address the credit impact of potential ownership transfers or loan assumptions. Transfer, assumption and intercreditor provisions articulate the rights, responsibilities and remedies of the lender and the original as well as subsequent borrowers. Fitch considers the potential for credit degradation under adverse scenarios and structural protections from these provisions.

Recourse Provisions

Large loans are typically non-recourse to the borrower and sponsor with specific carveouts where recourse would apply. These carveouts are sometimes referred to as 'bad boy' carveouts and allow the lender to pursue recourse beyond the property. Fitch expects, at a minimum, documents will contain carveout provisions consistent with language included in the CREFC standard representation related to recourse. This includes carveouts for bankruptcy actions, fraud, misappropriation, and waste.

Transaction Structure

Liquidity

Servicer advancing or other liquidity features provide for timely payment of interest in the event of payment default. Servicers or backup entities, such as the trustee, providing liquidity are expected to comply with Fitch's counterparty criteria.

Transactions in Latin America do not rely on servicer advances and, therefore, liquidity protections are an important feature built into the structure. Liquidity features include interest rate reserves and flexible amortization schedules where principal can be deferred. The Brazilian market is unique as both principal and interest can be deferred in the majority of transactions.

The Brazilian rating cap is below the rating cap stated within the "Global Structured Finance Rating Criteria" regarding deferrals.

Servicing

CMBS transactions depend on qualified servicing for the duration of a transaction. In North America, servicer qualifications are assessed through a standardized review process, and discontinuity risk is mitigated by the depth of the servicing market and standard provisions for replacement servicing in transaction documents.

Master and special servicers are expected to have experience with the specific property type and demonstrate proficiency in overall servicing ability. If a master or special servicer has not been previously reviewed by Fitch, the servicer may be deemed acceptable following an analysis by operational risk representatives from Fitch's CMBS team. In Latin America, the servicer reviews are completed with operational risk representatives or the local structured finance analysts. Such analysis will examine the servicer in relation to the principles highlighted in Fitch's commercial mortgage servicer rating criteria. For more information, see Fitch's "Criteria for Rating North American Commercial Mortgage Servicers," available on its website at www.fitchratings.com.

In North America, the depth of the servicing market is considered robust, including the approximately 40 servicers annually assessed by Fitch. The risk of servicing discontinuity is also mitigated by standard transaction language that includes clear provisions for servicer compensation, termination and replacement, as well as the obligation of the trustee to fulfill the responsibilities of the servicer following a servicer default until a replacement servicer is engaged. These obligations include, but are not limited to, advancing of principal, interest and property protection expenses.

While the roles are defined within the transaction documents, the servicer markets are not as developed in Latin America. CMBS transaction ratings within Latin America are subject to rating caps, which attempt to address a variety of risks that include country risk and the depth of the securitization market.

Rated Final Maturity and Tail Risk

Allowing five years between loan maturity and the final rated maturity of the bonds, the "tail" provides the servicer reasonable time to work out or extend loan(s), as well as sufficient time to foreclose and liquidate, assuming servicers may not extend the loan(s) into the last two years of the tail period. For classes, such as certain interest-only bonds where there is no cash flow due and payable after a predefined date, no tail is necessary.

Adjustments to Leverage Assumptions

Given the idiosyncratic nature of commercial real estate, certain attributes may positively and negatively affect recovery and refinance assumptions, and Fitch addresses these attributes by adjusting its caps, constants and hurdles. Fitch also considers the adjustments in a review of similar cohorts and peers, primarily by property type.

The Fitch cap rate and constants are guided by Fitch standards for the property type, as shown in the jurisdiction-specific appendices A, B and C (for North America, please see the Fitch Standard Cap Rate and Constants table in Appendix A). The Fitch cap rate and constant for a particular loan will generally be within 200 basis points (bps) of the standard. Fitch may apply cap rates and/or constants that are above or below the standard for assets with characteristics, positive or negative, relative to the norm; characteristics that would warrant cap rates or constants different from the standard include properties with superior or inferior construction quality, tenant quality, infill, established locations versus less established, secondary or tertiary locations and historical stable cash flows versus unproven cash flows, among other credit qualities.

For example, office properties with green certification, such as LEED, may receive Fitch cap rates and constants below the standard because these properties may attract stronger tenants at higher rental rates, achieve lower operating costs and be less susceptible to the impact of regulations or policies pertaining to climate change.

For exceptionally strong or weak credit characteristics, Fitch may adjust its cap rates and constants by more than 200 bps. For instance, a high-quality trophy property in a dominant real estate market has expectations for certainty of recovery and could warrant cap rates and constants of more than 200bps below the standard. In contrast, properties with characteristics that materially differ from the usual property type, property types in tertiary markets, properties with higher reliance on operating income and special-use properties all lack certainty in recovery, particularly under stress scenarios, and could warrant cap rates and constants more than 200 bps above the standard.

Fitch may also adjust the Fitch loan specific cap rate to maintain a cushion of up to 200 bps above the loan's actual cap rate.

Hurdle Adjustments

The presence of other credit characteristics, such as leverage, interest rate risk and property diversity, is reflected in adjustments to the hurdles.

Total Leverage

Adjustments for lower leverage are applied at each rating level when total debt levels do not exceed the 'BBBsf' category, including debt that is beyond the rated proceeds. The typical adjustment at each rating category for lower leveraged loans is shown in the Lower Leveraged Loans table, as follows:

Lower Leveraged Loans

Debt Floor[a]	DSCR Adjustment (bps)	LTV Adjustment (%)
AAsf	(5)	2.50
Asf	(5)	2.50
BBB–sf	0	0.00

Source: Fitch Ratings Note: No additional adjustment to loans already sizing to AAAsf.

Higher Leveraged Loans

	DSCR Adjustment (bps)		LTV Adjustment (%)	
Debt Floor[a]	Mortgage Debt[b]	Mezzanine Debt	Mortgage Debt[b]	Mezzanine Debt
BBsf	5–10	2.5–5.0	(2.5)–(5.0)	(1.25)–(2.50)
Bsf or Below	10 or Greater	5 or Greater	(5.0) or Greater	(2.5) or Greater

[a]Debt floor represents the corresponding rating for the last dollar of modeled proceeds prior to any leverage adjustment. [b]Mortgage Debt includes the total debt secured by the property (i.e. includes any B notes or junior participations held inside or outside the trust).
Source: Fitch Ratings

Except as noted below, adjustments for higher leverage are applied at each rating level when the total debt (debt floor), including subordinate debt, exceeds the Fitch 'BBB–sf' debt proceeds. The amount of the adjustment differs depending on whether the total debt is secured by the property (mortgage debt in the table above) or by equity interests in the borrower (mezzanine debt); when both types of subordinate debt exist below 'BBB–sf', Fitch applies the Mortgage Debt adjustments. The typical adjustments at each rating category for higher leveraged loans are shown in the Higher Leveraged Loans table above.

In certain cases, even when the total debt level significantly exceeds 'B–sf', other factors may be considered in determining whether to apply the adjustment to 'BBsf 'and 'Bsf' hurdles. Examples of other factors may include the level of the debt psf relative to the market and upside potential from in-place below-market leases.

For DSCR hurdle adjustments, references to "bps" mean 1/100; for example, a negative 5 bps adjustment to a 1.30x hurdle means 1.25x.

Interest Rate Risk

Interest rate caps are conventionally used to mitigate floating-rate and adjustable-rate risk in CMBS large loans. To the extent a large loan is exposed to floating or adjustable rates, which are not capped or mitigated, or a loan's effective constant could exceed the Fitch constant, the rating case DSCR hurdles are adjusted upward by 5bps and the LTV hurdles downward by 2.5%. If the all-in capped rate is below the Fitch constant but the interest rate cap is considered nonconforming, the

DCSR and LTV hurdle adjustments are 2.5 bps upward and 1.25% downward, respectively. The cap is considered nonconforming if the cap provider is not rated 'BBB' or 'F2' or higher when the category of the highest rated class is 'Asf' or higher; the term of the cap does not match the term of the loan; or the borrower is not contractually obligated to renew the cap at extension terms.

Fixed-rate loans set at low interest rates expose the transaction to less interest rate risk in the case of servicing advancing during liquidation. Fixed-rate loans with coupons of 3% or lower would receive an upward LTV hurdle adjustment of up to 5%. Fixed rate loans with coupons above 7% will not receive an adjustment. Analytical perspective on collateral quality and cash flow durability will be considered in the application of these hurdle adjustments including potential interpolated treatment in cases of coupons between 3% and 7%.

Property Diversity and Quality

To recognize the benefit of multiple income sources, Fitch lowers the DSCR hurdle and raises the LTV hurdle for loans secured by multiple properties. Fitch may adjust the DSCR and LTV hurdles up to 10bps and 5%, respectively, for loans collateralized by up to 25 properties. For loans with greater diversity, Fitch may adjust the DSCR and LTV hurdles up to 25bps and 12.5%, respectively.

Before adjusting for collateral diversity, Fitch considers concentrations such as geographic or tenancy. Exposure to only one or two markets, or a small number of tenants or concentrations in markets with natural disaster risks such as earthquakes and floods, may offset the benefits of property count.

To recognize the benefit of a high quality collateral profile (as described above in the *Collateral Quality* section), Fitch may adjust the DSCR and LTV hurdles for property quality up to 25 bps and 12.5%, respectively.

Both property diversity and quality hurdle adjustments are made at each rating level.

High quality, trophy properties in dominant real estate markets may receive an additional property quality adjustment at the 'AAAsf' rating to reflect the asset's superior position.

The aggregate of the adjustments to the hurdle starting point for Total Leverage, Interest Rate Risk, Property Diversity and Property Quality will not exceed 40bps (DSCR) and 20% (LTV), exclusive of any additional property quality adjustment at the 'AAAsf' rating.

Dark Value Considerations

Fitch's large loan analysis is heavily cash flow oriented — rated proceeds typically reflect either a DSCR approach or a value predicated on an income capitalization approach (LTV approach). However, in limited circumstances in-place income alone may overstate or materially understate recovery value; in these cases, a dark value analysis is conducted as a sensitivity.

Fitch dark value represents the Fitch stabilized value less the cost to carry, lease and stabilize the property and less an assumed developer's profit. The recoverable amount for this sensitivity analysis refers to Fitch's dark value adjusted upward for reserves available, if any, to offset carry, leasing and stabilization costs.

Single Tenant

For loans representing approximately 2% or more of a pool, secured by properties with material single-tenant exposure (an individual tenant represents 75% or more of the space or revenue), investment-grade proceeds may be constrained by a dark value analysis. In this case, Fitch assumes the tenant defaults and the space is re-leased at market levels.

In the dark value analysis, Fitch typically assumes a recoverable amount in an investment grade stress. Cumulative proceeds are typically constrained through investment grade (the rating constraint) by the recoverable amount. When the recoverable amount is less than the loan proceeds, the proceeds are typically constrained at and above the 'BBB–sf' level. The rating constraint may be higher than 'BBB–' in certain circumstances, such as the tenant having a rating higher than 'BBB–'. No constraint is applied if the recoverable amount is greater than the cumulative loan proceeds at the rating constraint. In the example below, the recoverable amount in the 'BBB–sf' stress is $90 million, which is less than the loan amount *(see table below)*.

Dark Value Constraint for Single Tenancy — Office-Urban Example

Loan Amount ($)	95,995,000	Dark Value ($)	85,000,000
Fitch NCF ($)	10,000,000	Reserves ($)	5,000,000
Amortization Factor (%)	91.54	Recoverable Amount ($)	90,000,000
Fitch Cap Rate (%)	8.25	Rating Constraint	BBB–sf
		Adj. Fitch NCF ($)	9,375,488

LTV Hurdles (x)		LTV Cumulative Proceeds ($)	Debt Yield (%)	Dark Value Constrained Cumulative Proceeds ($)[a]		Dark Value Debt Yield (%)
AAA	45.5%	60,246,369	16.6	AAA	56,483,913	17.7
AA	52.5%	69,515,041	14.4	AA	65,173,746	15.3
A	59.5%	78,783,714	12.7	A	73,863,579	13.5
BBB	67.5%	89,376,482	11.2	BBB	83,794,816	11.9
BBB–	72.5%	95,995,000	10.4	BBB–	90,000,000	11.1
BB	N.A.	N.A.	N.A.	BB	95,995,000	10.4

[a]The recoverable/dark value amount is used to determine the adjusted Fitch NCF. The adjusted Fitch NCF is then used to calculate the Dark Value Constrained Cumulative Proceeds at every rating level. N.A. – Not applicable. Note: Adj. Fitch NCF ($) = Recoverable Amount/'BBB–sf' LTV Hurdle * Fitch Cap Rate (%) * Amortization Factor. Debt Yield (%) = Fitch NCF/Cumulative Proceeds.
Source: Fitch Ratings

Proceeds for classes at and above the rating constraint are limited by adjusting the Fitch NCF to an amount that limits proceeds at the constraining rating level to the recoverable amount.

In the example, using the recoverable amount of $90,000,000, divided by the 'BBB–sf' LTV hurdle of 72.5%, multiplied by the Fitch cap rate of 8.25% and multiplied by the amortization factor of 91.54%, the adjusted Fitch NCF is approximately $9.375 million, which reduces the proceeds for all classes, and the lowest rated class becomes 'BB'.

Transitional Assets

For an asset whose current income does not reflect its value, Fitch's recovery estimate may reflect an alternative to the income capitalization approach using the Fitch NCF and Fitch cap rates — if the latter materially understates recovery value. Such properties are generally in a transitional state whereby planned improvement or repositioning of the property can reasonably be expected to result in a significantly higher level of sustainable cash flow within a relatively short timeframe or from a recent tenant departure, causing occupancy and rental income to fall below market levels. To assess such recovery for these properties, Fitch may place increased reliance on a dark value analysis using Fitch's projections, often in conjunction with other means of valuation such as comparable sales, appraised value and recent purchase price.

Analysis of Pooling in Large Loan Pool Transactions

Adjustments for Loan Diversification/Pooling Benefit

For loans contributed to Large Loan Pool transactions, Fitch first performs a "standalone analysis." A pooling benefit is then applied to reflect the greater diversity provided by other loans in the pool. The pooling benefit is made through an increase to the standalone LTV hurdle. The first step in determining the pooling benefit is to determine the 'AAAsf' pooled hurdle add-on based on the loan's percentage of the pool. The second step is to linearly interpolate the 'AAAsf' pooled LTV hurdle through the rating cases so that there is no pooling benefit applied at the 'BBB–sf' LTV hurdle. The third step, done outside the model, is to limit the pooling benefit for each loan so that the rating corresponding to the most subordinate pooled proceeds is not higher than the rating corresponding to the most subordinate proceeds on the stand-alone basis. This adjustment mitigates the potential risk of rating migration that could result from adverse selection when fewer loans remain.

For loans that represent 5% or less of the pool, the 'AAAsf' pooled hurdle add-on is 15% (the pooled 'AAAsf' LTV hurdle is equal to the standalone 'AAAsf' LTV hurdle plus 15%); the 'AAAsf' pooled hurdle add-on for loans that represent 25% or more of the pool is 0% (no pooling benefit). The LTV hurdle add-on at 'AAAsf' is linearly interpolated between 15% and 0% as the loan's percentage of the pool moves from 5% to 25%. There is a minimum of 5% between the 'AAAsf' pooled LTV hurdle and the 'BBB−sf' pooled LTV hurdle. Since there is no pooling benefit applied at 'BBB−sf', the 'BBB−sf' standalone LTV hurdle is the same as the 'BBB−sf' pooled LTV hurdle.

The methodology for pooling benefit for loans contributed to Multiborrower Fusion transactions is described in the "U.S. and Canadian Multiborrower CMBS Rating Criteria."

Example of Pooling Benefit for Loans Contributed to Large Loan Pool Transaction

(%)	Example 1	Example 2	Example 3	Example 4
Percentage of Pool	5.0	16.7	25.0	53.3
Standalone LTV Hurdle AAAsf	45.5	45.5	45.5	45.5
Standalone LTV Hurdle BBB−sf	72.5	72.5	72.5	72.5
AAAsf LTV Hurdle Add-on	15.0	6.3	0.0	0.0
BBB−sf LTV Hurdle Add-on	0.0	0.0	0.0	0.0
Pooled LTV Hurdle AAAsf	60.5	51.8	45.5	45.5
Pooled LTV Hurdle BBB−sf	72.5	72.5	72.5	72.5

Note: The 'AAAsf' LTV hurdle add-on is linearly interpolated between 15% and 0% as the loan's percentage of the pool moves from 5% to 25%. The pooled LTV hurdles for rating cases between 'AAAsf' and 'BBB−sf' are linearly interpolated.
Source: Fitch Ratings

Adjustments for Event Risk/Negative Pooling

The benefits of diversification are counterbalanced by the increased probability of idiosyncratic risk in a low rating case. Therefore, a measure of negative pooling is incorporated into Fitch's analysis to capture the higher probability of default of a bond in a lower stressed environment secured by multiple underlying loans, compared with an equally rated single bond secured by one loan. This increased default probability stems from unexpected event risk within a pool of loans and is only identified in multiple loan pools. This risk is mitigated in a transaction secured by one multi-property loan through cross-collateralization.

Fitch performs a deterministic portfolio test to reflect the risk of negative pooling. As more loans are pooled together, noteholders become increasingly exposed to the risk that the performance of any one loan could deviate from projections. While any such so-called deviation might reasonably be expected to be observable in either direction, for first-loss debt investors, any losses recorded on one loan cannot be offset by excess recoveries on others.

Consequently, the most junior noteholder would suffer a loss if even one loan underperforms. This will constrain the rating of the affected bond if it is not mitigated by additional CE. Notably, within junior tranches, this risk could also affect more senior investors; therefore, Fitch tests both the first- and second-loss position.

Number of Loans Assumed to Default

	Pool Loan Count																		
Rating Case	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AAA	—	—	—	—	—	—	1	1	1	1	1	1	1	2	2	2	2	2	2
AA	—	—	—	—	—	1	1	1	1	1	1	2	2	2	2	2	2	2	2
A	—	—	—	—	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
BBB	—	—	—	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	3
BB	—	—	—	1	1	1	1	2	2	2	3	3	3	3	3	3	3	3	4
B	—	—	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	6

Source: Fitch Ratings

The test takes as its starting point the implied loan ratings indicated by the asset analysis and compares them to the proposed capital structure. Starting with the lowest target rating in the proposed capital structure, Fitch identifies loans that contribute to this tranche and assumes a number of such loans default in the lowest rating category. This number is a function of the loan count and the target rating, as shown in the Number of Loans Assumed to Default table above. For example, to assign a 'AAAsf' rating to a pool of 10 loans sizing to the 'AAA' rating case, one loan is assumed to default. For a pool of 10 loans sizing to the 'B' rating case, Fitch would assume three loans default to assign a 'Bsf' rating. The test is repeated at the next highest rating category.

The choice of which loans are assumed to default is determined by the median loan by size, since the purpose of this test is not to stress loan concentration but, rather, event risk. So if there is one loan to default, it will be the median. If there are two, it will be the median plus the next largest; if there are three, it will be the median plus the next largest and next smallest, and so on.

The resulting loss is based on an assumed 10% loss given default; this effectively represents a market value decline that is 10% greater than that assumed in the asset analysis for the loan in question. To achieve the target rating, this loss would have to be covered by CE, which could take the form of lower rated bonds. For relatively low loan counts, the bond could be rated one rating lower than the target. If the loan count is particularly high, additional CE may be needed at an even lower rating, reflecting increased exposure to idiosyncratic risk. In the absence of CE, the affected CMBS ratings would, therefore, be capped at the results of this deterministic test. Returning to the first example, a single-tranche CMBS secured by 10 'loans sizing to the 'AAA' rating case could not be rated above 'AAsf'.

The following Hypothetical Example Loan Tranching table shows the loan tranching for a hypothetical six-loan pool.

Hypothetical Example Loan Tranching

($ Mil.)

Rating Case Proceeds	Loan 1	Loan 2	Loan 3	Loan 4	Loan 5	Loan 6
AAA	120	100	50	35	25	20
AA	20	20	10	10	10	10
A	20	10	10	5	5	5
BBB–	10	10	10	5	5	5
Total	**170**	**140**	**80**	**55**	**45**	**40**

Source: Fitch Ratings

As all loans in the hypothetical example contribute to the two lowest rating cases ('A' and 'BBB–'), Fitch applies a negative pooling adjustment. The portfolio default rate of six loans sizing to the 'BBB' rating case or below is one. Fitch selects the median loan (loan 3) and applies a 10% loss severity, resulting in subordination at 'BBsf' of $8 million.

The following Hypothetical Example Final Ratings table shows the hypothetical capital structure with and without the negative pooling adjustment.

Hypothetical Example Final Ratings

($ Mil.)

Ratings	Pre-Negative Pooling	Post-Negative Pooling
AAAsf	350	350
AAsf	80	80
Asf	55	55
BBB–sf	45	37
BBsf	—	8

Source: Fitch Ratings

Rating Assumption Sensitivity

Defined Stresses

Defined stresses describe the sensitivity of ratings when one assumption is modified while holding the others equal. The sensitivity reflects the impact of changes to property NCF in down environments. Declining cash flow decreases property value and capacity to meet its debt service obligations.

In the following illustration, Fitch NCF is reduced by three different amounts: NCF is reduced an additional 10%, 20% and 30% from Fitch NCF at the time of issuance. The implied ratings are only indicative of some of the potential outcomes and do not consider other risk factors to which the transaction is exposed.

Defined Stresses[a]

Scenarios	–10%	–20%	–30%
Office Property			
AAAsf	AAsf	A+sf	BBB+sf
AAsf	Asf	BBBsf	BB+sf
Asf	BBBsf	BB+sf	BB–sf
BBBsf	BB+sf	BB–sf	Bsf
BBB–sf	BBsf	B+sf	B–sf

[a]Additional NCF declines
Source: Fitch Ratings

Defined Sensitivities

Defined sensitivities describe stresses to the assumptions required to reduce a rating by one full category, to non-investment grade and to ‘CCCsf’ by further stressing the Fitch NCF. The implied rating sensitivities are only indicative of some of the potential outcomes and do not consider other risk factors to which the transaction is exposed.

Defined Sensitivities

(Cash Flow Decline %)

Scenarios	AAAsf	AAsf	Asf	BBBsf	BBB–sf
Office Property					
Downgrade by One Full Category	8	9	9	13	13
Downgrade to Non-Investment Grade	39	29	19	7	<1
Downgrade to CCC	58	52	45	37	33

Source: Fitch Ratings

Surveillance

Fitch monitors all CMBS transactions after closing, with the exception of limited instances where it expressly assigns a point-in-time rating. For North American CMBS, Fitch expects to receive loan-level information from the servicers and the trustee consistent with CREFC standards. For Australian CMBS, Fitch expects to receive updated loan-level information at least semiannually. If loan-specific information is not available, other data from the originator or significant marketwide data may provide proxy information. For Latin American CMBS, Fitch expects to receive loan-level and property-related information from primary servicers and/or property managers on a quarterly basis.

Fitch’s surveillance of existing single borrower and large loan transactions follows a similar analytical framework as that set out above for new transactions. Fitch reviews transactions at a minimum of once per year. Fitch follows market and industry trends such as tenant bankruptcies and submarket performance to identify loans of concern by region and property type. Fitch will also initiate a transaction review when there is a significant and unexpected change in the loan status or operating performance of a property or loan representing a considerable portion of the transaction.

Fitch reviews current operating statements and rent rolls (when available) of underlying properties, market conditions and the strength and experience of the borrower. Analysts review servicer-reported financials to determine and understand any differences to the Fitch NCF used at issuance or the most recently used Fitch NCF, if different from that at issuance. Post-new issuance, forward-looking information such as free rent periods, forward bookings, etc. are not typically received from the servicer.

Actual operating performance may fluctuate from year to year. If Fitch determines that the most recent cash flow is more relevant than previously used cash flows, Fitch will run the model with an updated Fitch NCF. Changes to current cash flow that Fitch might account for include, among others, a significant and expected prolonged increase or decrease in vacancy at the property due to long-term changes in the market or new leases signed at the then-current rate that are significantly below or above that at issuance. Changes that would not necessarily alter the Fitch NCF include, for example, declines in reported cash flow that stem from downtime between leases in a market that has stable vacancy or one-off expense increases that are expected to be reimbursed by tenants sometime in the future.

Additionally, if Fitch believes the reported cash flow does not reflect recoverable value, Fitch will derive an updated Fitch NCF, often using a dark value analysis, or some other means of valuation, such as comparable sales, value per square foot/unit or recent purchase price.

Even if an updated Fitch NCF alters MIRs, there may not be any rating changes if MIRs are within three notches of the current ratings (as stipulated above) because Fitch will also factor in the implications of forward-looking changes (for example, changes in class balances as the result of amortization, loan repayment, defeasance and realized losses). If the difference is more than three notches, a criteria variation will be disclosed and described. If uncertainty exists as to whether trends are sustainable, Rating Outlooks (positive or negative) will be used prior to rating movement.

When updated property-level operating performance is not received, Fitch typically applies conservative assumptions, including, but not limited to, assumed cash flow declines and cap rate increases, limiting its value and recovery assumptions. In the case of a specially serviced loan, operating performance is not always readily available or reliable. In these instances, Fitch will determine value or approximate a property's NCF by incorporating valuations received from the special servicer and/or reviewing recent comparable market sales.

Because not all key rating drivers in these criteria apply to all rating actions, the RAC will discuss those factors most relevant to the rating action(s). In most cases, collateral quality and cash flow analysis are likely to be key considerations in the surveillance review.

Distressed Ratings

For distressed ratings of 'CCCsf', 'CCsf' or 'Csf', default risk is defined as possible, probable and inevitable, respectively. While ratings are ultimately made by a rating committee and reflect Fitch rating definitions, 'Csf' ratings often correspond to estimated losses from foreclosed properties and imminent liquidations, 'CCsf' ratings reflect estimated losses from defaulted loans where resolution amounts or timing are less certain, and 'CCCsf' ratings may reflect expected losses from loans not yet defaulted and/or those recently transferred to special servicing, where value and recovery estimates are preliminary.

Criteria Disclosures

Fitch will disclose in its initial rating report or initial RAC: 1) the Fitch cap rate or Fitch constant and haircut to issuer cash flow for loans in single borrower transactions and each loan that represents a material portion of a large loan transaction; 2) the LTV or DSCR sizing hurdles for each rated tranche; 3) the application of a rating cap and 4) the rating sensitivity to NCF stress up and down 10%. In addition, for the most junior non-investment grade-rated tranche, Fitch will disclose the Fitch Market LTV, which will be based on a blend of the market cap rate, in turn based on the appraisal and the Fitch cap rate. For surveillance, the related RAC will discuss the most relevant key rating drivers, which usually include commentary on cash flow, current property performance and overall leverage. For Australian CMBS, Fitch will additionally disclose in its initial rating report or initial RAC the leverage assumptions and the presence and rationale for any rating cap.

Variations from Criteria

Fitch's criteria are designed to be used in conjunction with experienced analytical judgment exercised through a committee process. The combination of transparent criteria, analytical judgment applied on a transaction-by-transaction or issuer-by-issuer basis and full disclosure via rating commentary strengthens Fitch's rating process while assisting market participants in understanding the analysis behind Fitch's ratings.

A rating committee may adjust the application of these criteria to reflect the risks of a specific transaction or entity. Such adjustments are called variations. All variations will be disclosed in the respective RACs, including their impact on the rating where appropriate.

A variation can be approved by a ratings committee where the risk, feature or other factor relevant to the assignment of a rating and the methodology applied to it are both included within the scope of the criteria, but where the analysis described in the criteria requires modification to address factors specific to the particular transaction or entity.

Limitations

Ratings, including Rating Watches and Outlooks, assigned by Fitch are subject to the limitations specified in Fitch's Ratings Definitions page at www.fitchratings.com.

Appendix A: North America Leverage Assumptions

Fitch Standard Cap Rates and Constants

Fitch Property Type	Fitch Standard Cap Rate (%)	Fitch Standard Constant (%)	Hurdle Property Type
Co-op Housing	8.00	9.00	Multifamily
Office-Urban	8.50	9.50	Commercial
Office-Medical	8.50	9.50	Commercial
Office-Suburban	8.50	9.50	Commercial
Multifamily	8.25	9.25	Multifamily
Multifamily-Student	8.75	9.75	Multifamily
Multifamily-Senior	8.50	9.50	Multifamily
Retail-Unanchored	10.00	11.00	Commercial
Retail-Anchored	8.50	9.50	Commercial
Retail-Shadow Anchored	8.75	9.75	Commercial
Retail-Mall Tier 1	7.50	8.50	Commercial
Retail-Mall Tier 2	9.50	10.50	Commercial
Retail-Mall Tier 3	11.50	12.50	Commercial
Industrial	8.50	9.50	Commercial
Manufactured Housing	8.25	9.25	Multifamily
Self-Storage	9.00	10.00	Commercial
Lodging-Full Service	10.75	10.50	Hotels
Lodging-Limited Service	11.00	10.75	Hotels
Lodging-Extended Stay	11.00	10.75	Hotels
Healthcare-Assisted Living	10.00	11.00	Hotels
Healthcare-Skilled Nursing	11.00	12.00	Hotels
Other	10.50	11.50	Hotels
Leased Fee	6.50	7.50	Commercial

Source: Fitch Ratings

- Fitch refinance constants and cap rates are based on long-term historical averages for commercial real estate loans. The implied recovery debt yields at high investment-grade stresses exceed historical peak cap rates.
- Periodic internal reviews address current performance observations and future expectations for primary property types and primary and geographical markets; conclusions from these reviews inform Fitch NCF, cap rate and constant assumptions. If the conclusions result in changes to standards, leverage assumption ranges or Fitch's NCF determination approach, the changes will be reflected in updated criteria.
- Some property types, such as Retail-Unanchored or Retail-Mall Tier 3, are not anticipated to be considered for new issue single borrower or credit opinion loan ratings. For more examples, refer to the Application of Large Loan Criteria section on page 2.

Hurdles by Hurdle Property Type[a]

Rating	Multifamily		Commercial		Hotels	
Case	DSCR (x)	LTV (%)	DSCR (x)	LTV (%)	DSCR (x)	LTV (%)
AAAsf	2.00–2.10	42.50–47.50	2.05–2.20	40.50–45.50	2.95–3.05	35.50–40.50
AAsf	1.75–1.85	49.50–54.50	1.75–1.90	47.50–52.50	2.45–2.55	42.50–47.50
Asf	1.55–1.65	56.50–61.50	1.55–1.70	54.50–59.50	2.15–2.25	49.50–54.50
BBBsf	1.40–1.50	64.50–69.50	1.40–1.55	62.50–67.50	1.90–2.00	57.50–62.50
BBB–sf	1.30–1.40	69.50–74.50	1.30–1.45	67.50–72.50	1.75–1.85	62.50–67.50
BBsf	1.15–1.25	79.50–84.50	1.15–1.30	77.50–82.50	1.45–1.55	72.50–77.50
Bsf	1.00–1.10	97.00–102.00	1.00–1.10	95.00–100.00	1.20–1.30	90.00–95.00
CCCsf	0.85–0.95	114.50–119.50	0.85–0.90	112.50-117.50	0.95–1.05	107.50–112.50

[a]Hurdle property types for each Fitch property type are noted in the Fitch Standard Cap Rates and Constants table above. DSCR – Debt service coverage ratio. LTV – Loan-to-value ratio. Note: Rating case hurdles for notched ratings not shown in the table are interpolated linearly between the rating categories shown above, with one notch between AAAsf and AAsf, and BBB–sf and BBsf, along with two notches between AAsf and Asf, Asf and BBBsf, and BBsf and Bsf. The B–sf and CCC+sf hurdles are based on the interpolation between BBsf and Bsf.
Source: Fitch Ratings

- Rating case-specific proceeds for North American CMBS large loans are typically determined under the LTV approach.
- Rating case DSCR and LTV hurdles are supported by observed value and cash flow declines in various economic stresses for all CMBS loans since 1994. Fitch's cash flow adjustments are based on actual historical performance data and current and forecast market-specific performance. These assumptions are informed by data provided by third-party sources, such as Trepp LLC, CoStar, Reis, International Council of Shopping Centers (ICSC) and Smith Travel Research (STR).
- Rating case DSCR and LTV hurdles for notches not shown are interpolated.

Appendix B: APAC CMBS Leverage Assumptions

The following criteria will apply unless rental and yield data covering at least 10 years, sufficiently comparable to those in EMEA based on, for example, property market pricing, leasing conventions, among other factors, in which case the EMEA CMBS and CRE Loan Rating Criteria will apply.

Fitch Standard Cap Rate and Constant for Australia

Property Type (%)	Constant	Cap Rate
Office	9.5	8.375

Source: Fitch Ratings

Australian Hurdles for Office Property Large Loan Transactions

Rating	Office	
Category	DSCR (x)	LTV (%)
AAAsf	2.05–2.20	40.50–45.50
AAsf	1.75–1.90	47.50–52.50
Asf	1.55–1.70	54.50–59.50
BBBsf	1.40–1.55	62.50–67.50
BBB–sf	1.30–1.45	67.50–72.50
BBsf	1.15–1.30	77.50–82.50
Bsf	1.00–1.10	95.00–100.00

DSCR – Debt service coverage ratio. LTV – Loan-to-value ratio.
Source: Fitch Ratings

- Rating case-specific proceeds for Australian CMBS large loans are typically determined under the LTV approach.
- Refinance constants are arrived at with reference to historical Australian interest rates.
- Fitch cap rates are derived with reference to cap rates of Fitch-reviewed office property acquisitions across the market; independent real estate research; and global markets with similar parameters. A single cap rate is selected for each collateral property guided by the Fitch standard to determine Fitch's base property value.
- DSCRs and LTVs are arrived at with reference to the historical volatility of capital and rental values of Australian office properties. Properties with exceptionally positive characteristics will have stronger recoveries in down markets due to the flight-to-quality associated with high quality assets. Therefore, Fitch may make an additional downward adjustment of approximately 5 bps to the 'AAAsf' DSCR hurdle and upward adjustment of 2.5% to the 'AAAsf' LTV hurdle.

Other APAC Property Types

Fitch may provide ratings on transactions secured by property types other than office properties in Australia. In doing so, a Fitch rating committee will determine the assumptions (such as constant, cap rate and DSCR and LTV hurdles) to be used, which will be based on historical data on the specific property type and the market in which the properties are located. Fitch expects to disclose all of these assumptions in its initial transaction reports and/or RACs.

Rating Cap

Fitch may determine that a rating cap is needed if the historical volatility of the property type cash flows and/or property type values warrant it or, in consideration of the availability, quality and quantity of data. The presence and rationale of a rating cap will be communicated as part of Fitch's transaction-specific disclosure.

Appendix C: Latin America CMBS Leverage Assumptions and Other Considerations

Several countries, such as Brazil, Chile, Colombia, Panama and Mexico, have developing commercial real estate markets in the form of single borrower structures. For CMBS transactions in these countries, Fitch will analyze property NCFs within the rating rationale detailed in this report as a basis of calculating rating case-specific debt proceeds. Debt proceeds will depend on specific country-based assumptions relating to cap rates, DSCR, LTV hurdles, loan amortization schedule and other specific macroeconomic factors, including the credit quality of the sovereign.

Debt Proceeds and Leverage Considerations

Fitch will publish specific appendices related to cap rates, DSCR and LTV hurdles for countries with one or more international ratings or five or more National Scale Ratings in one sector within the country.

Fitch cap rates are derived with reference to cap rates of Fitch-reviewed property acquisitions across the market, independent real estate research and global markets with similar parameters (adjusted for country risk). When analyzing historical cap rates, Fitch may also shorten the relevant cap rate data length for a particular market segment where a noteworthy structural change occurred that renders older data less meaningful. For example, a substantial shift in an emerging market country's interest rates and sovereign rating fundamentals in the long run may result in earlier data being less relevant when predicting future cap rate trends. A single cap rate is selected for each collateral property guided by the Fitch standard cap rate to determine Fitch's base property value.

DSCRs and LTVs are arrived at with reference to the historical volatility of capital and rental values of the particular country. Properties with exceptionally positive or negative characteristics will have stronger or weaker recoveries in down markets due to the flight-to-quality associated with high quality assets.

Loan Structures

The majority of Latin American markets have fully amortizing loans due to the increased volatility within the markets. This differs from other developed commercial real estate markets, such as the U.S. market, which has interest-only loans, balloon structures and amortizations over 25 years–30 years. The pace of deleveraging across markets may differ depending on if amortization is back-loaded or indexed to inflation. Fitch will run various sensitivities to determine the impact of different amortization paces and any impact of inflation, considering the stress assumptions set out in the "Structured Finance and Covered Bonds Interest Rate Stresses Rating Criteria," together with the historical correlation between market reference interest rates, the CDI and the Brazilian inflation index, IPCA.

As loan maturities in Latin America are typically fully amortizing over a period of eight years–15 years, the loan will mature within a much shorter period and the transaction will de-lever significantly faster than a 25-year–30-year loan. As a result, the mortgage constant will be significantly higher than U.S. levels, and average DSCR levels will be lower than an equally sized loan that has a maturity of 25 years–30 years.

In calculating DSCR, Fitch uses the greater of the actual mortgage constant rate, which Fitch may stress for inflation, and the stressed refinance constant, if any has been determined for the country. Due to the historical volatility of capital and rental values in emerging markets — notwithstanding deleveraging — the refinance or recovery analysis is less important than the ability of property cash flows to cover debt service. Therefore, the analysis relies on the current DSCR, stressed for inflation, as appropriate and, in effect, without credit for past or future amortization.

Fitch will calculate DSCR and LTV levels for Latin America National Scale Ratings and, given the simplicity of the calculation, may not use the model, as both hurdles are calculated for fully amortizing transactions (i.e. with no need to add amortization factor or mortgage constants relative to Fitch constant adjustments).

Brazil Assumptions for Retail, Office and Industrial Properties

Fitch cap rates in Brazil are derived with reference to cap rates of Fitch-reviewed property acquisitions across the market, independent real estate research and global markets with similar parameters. Combining this information and considering country risk factors, Fitch uses a cap rate in real terms of 11.00%–12.50% for Brazilian retail, office and industrial properties.

Brazilian loan structures are designed to fully amortize between eight years and 15 years. As such, the Fitch constant for Brazilian transactions will be equal to the actual mortgage constant. This shorter amortization profile will dictate lower overall leverage as measured by LTV for the equivalent international rating; however, DSCR levels will be similar to levels used in developed markets, such as the U.S. and Australia, as the mortgage constant will be much higher. Brazilian loan structures are also exposed to an additional risk as liabilities are tied to inflation. Fitch will run sensitivities on the underlying liabilities by stressing the IPCA and lagging the impact of inflation on the underlying cash flows and valuation. The shorter amortization profile and lower LTV structures are designed to mitigate this risk.

Brazil Parameters for Retail, Office and Industrial Large Loan Transactions

Rating	Retail, Office and Industrial Properties	
Brazil National Scale	DSCR (x)	LTV (%)
AAAsf(bra)/AA+sf(bra)	1.26–1.41	58.50–63.50
AA+sf(bra)/AAsf(bra)/AA–sf(bra)	1.23–1.26	63.50–67.50
AA–sf(bra)/A+ sf(bra)/A sf(bra)/A–sf(bra)	1.15–1.23	67.50–76.00
A–sf(bra)/BBB+ sf(bra)/BBBsf(bra)/BBB–sf(bra)	1.08–1.15	76.00–81.00

DSCR – Debt service coverage ratio. LTV – Loan-to-value ratio. Note: The hurdles within the table are calibrated assuming Brazil is rated within the 'BB' category. The assumptions will be reviewed if the sovereign rating is no longer within the 'BB' category.
Source: Fitch Ratings

Additional Brazilian Considerations

Fitch applies additional rating caps at the transaction-specific level when the underlying properties are determined to be highly concentrated within a less liquid market. This is the case in Brazil as several transaction ratings have been capped at 'A'(bra) or 'AA'(bra), although LTV and DSCR hurdle rates would dictate a higher rating.

Fitch will apply these criteria for assigning National Scale Ratings considering international scale DSCR and LTV attachment points. The National Scale attachment points were calibrated considering Brazil is rated in the 'BB' category. Fitch may recalibrate these attachment points if the sovereign rating moves outside the 'BB' category (i.e. to BBB or B).

Mexican Assumptions for Industrial, Retail and Office Properties

Fitch's long-term cap rates applied to Mexican industrial, retail and office properties mostly range between 10.0%–12.0%, 9.9%–13.5% and 9.9%–12.5%, respectively. The Fitch standard cap rate values are 11.00%, 11.70% and 11.20%, respectively. The ranges are commensurate with long-term market levels, independent real estate research and appraisal reports, as well as developed markets' cap rates when adjusted for country risk.

Mexican CMBS are commonly designed to fully amortize in 15 years–20 years, although transactions with terms shorter than 10 years may be exposed to refinance risk as they are structured with a balloon payment. These transactions usually benefit from dividend retention mechanisms and property disposition triggers, which help to mitigate this exposure. For investment-grade transactions exposed to refinance risk, overall net LTVs, calculated considering the initial Fitch property value, are usually lower than 40% at maturity.

For all cases Fitch will use the greater of the actual mortgage constant rate and the U.S. defined constant. In addition, interest rates on the notes are generally fixed and, unlike Brazil, there is no principal-inflation adjustment on the notes. Nonetheless, lease agreements have automatic annual rent-inflation adjustments during the term of the contract. Fitch NCF considers normalized property revenue, operating expenses, capex and other variable expenses at sustainable levels. Operating expenses typically reflect the most recent year-end amounts or

TTM levels, plus an adjustment equal to 1.5x Mexico's Central Bank, or the Fed's target inflation levels, in line with the applicable currency. Initial Fitch NCF and the applicable cap rate are considered to determine rating case-specific proceeds on Mexican CMBS using an LTV approach.

The shorter amortization profile of transactions in this market dictates lower overall leverage, as measured by a traditional DSCR approach. However, automatic annual rent-inflation adjustments offset the latter when considering average DSCR during the life of the transaction. Unlike the LTV calculation, Fitch NCF used to calculate average transaction DSCRs may reflect an annual adjustment to account for inflation-linked rent commensurate with Mexico's Central Bank or the Fed's target inflation level in line with rent currency denomination, as applicable. Therefore, both LTV and DSCR hurdles are similar to levels used in developed markets, such as the U.S. and Australia.

For transactions exposed to refinance risk, overall leverage will be mainly dictated by both initial LTV levels and those at maturity. DSCR levels for these transactions will most likely be higher than DSCR levels of fully amortizing transactions.

Additionally, Mexican loan structures are usually single loan/borrower transactions backed by a multi-property and multi-tenant securitized portfolio of institutional-level real estate. For this reason, property diversity and quality benefits may be applied through lower DSCR and higher LTV hurdles. These may be up to 10 bps and 5%, respectively, and up to 25 bps and 12.5%, respectively, for highly diversified sources of income.

When assigning ratings on the international scale for Mexican CMBS backed by office buildings, regional malls and retail and industrial properties (commercial properties) Fitch will use its North American DSCR and LTV hurdle attachment points (described in *Appendix A*). However, transactions with ratings above Mexico's Local Currency Issuer Default Rating will consider higher stressed asset assumptions than those used in North American transactions. The hurdles in these cases will be determined in line with principles described in Fitch's "Structured Finance and Covered Bonds Country Risk Rating Criteria" and will be disclosed in RACs and presale reports. Finally, when assigning National Scale Ratings in this jurisdiction, Fitch will use these international scale hurdle attachment points together with the relevant National Rating Equivalency Table described in Fitch's "National Scale Rating Criteria." These will also be disclosed in RACs and presale reports.

Additional Mexican Considerations

Certain real estate sectors and regions in Mexico have historically carried USD-denominated lease agreements. This is common in industrial properties in regions with a relevant exporting component, as well as with A-type office buildings in key metro areas, such as Mexico City.

Mexican CMBS may include USD-denominated debt to match their dollarized rent revenue. Fitch will assess property and market characteristics on a case-by-case basis to determine whether potential currency mismatches may arise when USD debt is issued backed by assets located in Mexico.

The agency will look for proven dollarized rental stability and historically USD-denominated leases. Fitch expects a predominant portion of leases in places linked to USD-generating tenants (or parent companies) and/or high credit quality Mexican companies. In addition, structural features such as cash trap and full turbo mechanisms that mitigate potential changes in market practice, which could result in currency mismatches, are expected. Depending on asset quality and location, Fitch may apply lower leverage attachment points than what would be commonly considered for similar properties, including any benefit for diversification and property quality.

Asset-specific characteristics, remaining terms from leases in place, capex budget and renewal plans, the size of the balloon payment as a portion of the Fitch property value and structural features are relevant factors considered when evaluating refinance risk.

Furthermore, market fundamentals, debt amortization profiles and Fitch LTV are also used to compare transaction deleveraging across transactions with different overall maturities.

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