Aircraft Operating Lease ABS Rating Criteria

Sector-Specific

This report replaces "Aircraft Operating Lease ABS Rating Criteria," dated Aug. 9, 2021.

Related Criteria

Global Structured Finance Rating Criteria (March 2023)

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

Structured Finance and Covered Bonds Interest Rate Stresses Rating Criteria (December 2022)

CLOs and Corporate CDOs Rating Criteria (March 2023)

Aircraft Enhanced Equipment Trust Certificates Rating Criteria (August 2021)

Scope

This report details Fitch Ratings' global framework for rating new and existing passenger and freighter aircraft, and aircraft engine, operating lease asset-backed security (ABS) transactions. These sector-specific criteria will be used in conjunction with other criteria (see Related Criteria).

Key Rating Drivers

The following factors have the greatest influence on the ratings and are listed in the typical order of importance.

Asset Values: Aircraft and engine values directly affect ABS cash flow through both lease rates and sales proceeds. We derive our initial Fitch Value (FV) for each asset from various appraisal sources and stress the future FV with depreciation and market value decline (MVD) assumptions at each rating category to reflect the risk of future aviation market downturns.

Tiered Collateral Quality: A number of factors influence market demand for aircraft assets and, as a result, their values and lease rates over their life cycle. Fitch considers these factors and groups aircraft into three tiers, so to stress cash flow assumptions differently for stronger and weaker collateral. Our tier classifications evolve with the asset's marketability and over time aircraft migrate to lower tiers.

Pool Concentration: Portfolios with fewer aircraft produce more volatile cash flow than more diverse pools. To account for this risk, we apply a haircut to our projected cash flow depending on the number of planes (or engines) and concentration levels in each future period. The magnitude of the haircut varies by rating stress and increases as concentration increases when assets are sold and exit the pool.

Lessee Credit Risk: Lessee defaults can reduce cash flow through aircraft downtime and costs associated with repossession and remarketing aircraft. Our lessee default rate assumptions are based on historical corporate default rates and vary by both rating stress and airline corporate rating. Airlines that do not have a public rating, or a credit opinion from Fitch, are assumed to be rated in the 'C' to 'B' range. Lessee ratings are stressed further as an aircraft ages and migrates to the lowest tier, as older aircraft are typically placed with weaker credits.

Operational and Servicing Risk: Operating lease transactions are reliant on the servicer to repossess and remarket aircraft and engines, monitor and manage maintenance condition, and legally protect trust assets in multiple foreign jurisdictions. Fitch reviews the operational capabilities and practices of the servicer.

Transaction Structure: The transaction's structure determines how cash flow is applied to pay expenses and interest and principal on the notes. Fitch replicates the transaction waterfall in its internal Aircraft Lease Liability Model to determine if the notes repay under rating-specific stresses.

Industry Rating Cap of 'Asf': Fitch limits ratings to 'Asf' due to servicer reliance and the uncertainty associated with forecasting cash flows over the long life of aircraft and engines in the cyclical commercial aviation industry.

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Data Sources and Adequacy

Fitch's operating lease ABS rating methodology relies on historical data from a variety of servicers as well as data from industry market sources to determine its benchmark leasing assumptions. In instances where a servicer can't provide certain data items, Fitch will assess the materiality and relevance of such data. Depending on the outcome of such assessment, Fitch will either adjust its approach, cap ratings at a level lower than 'Asf', or decline to rate a transaction.

Fitch's MVD assumptions are based on historical aircraft market values/appraisals, with particular focus on the 2001–2003, 2008–2010 and 2020–2022 aviation market downturns.

Fitch's depreciation rate assumptions were developed by analyzing historical base values/appraisals for the same aircraft type and vintage to arrive at the average expected depreciation rates. These results were scaled by aircraft tier to reflect Fitch's view that less marketable aircraft are likely to depreciate more rapidly. The residual value (RV) assumptions were based on data covering aircraft sales during the period between 2007 and 2018 for aircraft 15 years old and older (consistent with our criteria and model expectation that aircraft dispositions only occur at the end of the leasable life).

Modeling

Models Used

We use two proprietary models in our aircraft ABS rating analysis. The first is the Aircraft Lease Asset Model (the asset model). This model uses our assumptions for aircraft, lessor and lessees to produce projected monthly revenue and expense streams at the asset- and pool-level. The asset model produces cash flow stress scenarios that correspond to each rating level and reflect our stressed assumptions for each scenario. The Asset Analysis section below details our assumptions used within the asset model.

The asset model predicts future cash flow from lease payments and asset sales, as well as future expenses incurred from remarketing and repossessing aircraft. The asset model does not produce predictions for future cash flow from lessee maintenance or end-of-lease payments or future expenses from maintenance events. As discussed later in this report, Fitch engages with each transactions' maintenance forecast provider to produce maintenance-related cash inflow and outflow assumptions.

The second model we use to rate aircraft ABS is the Aircraft Lease Liability Model (the liability model). The projected pool-level cash flow produced by the asset model and outsourced maintenance cash flow mentioned above are the inputs to the liability model. The liability model replicates each transactions' capital structure, accounts, priority of payments and performance-based triggers. The output of the liability model is projected interest and principal payments to the rated ABS notes, under the various rating scenarios. If there are no shortfalls in accordance with the transaction documents (i.e. typically principal is repaid on the legal maturity and senior interest is paid timely), the structure can sustain the tested rating stress.

Model-Implied Ratings

As mentioned above, our asset and liability models produce various pool- and bond-level cash flow scenarios. Each scenario is associated with a Fitch rating level and, the higher the rating level, the more stressful the cash flow. For each ABS note class under analysis, we define the model-implied rating (MIR) as the rating level associated with the most stressful scenario under which the class is paid in full, in accordance with the terms of the transaction documents. For example, if a class is projected to receive full interest and principal under all scenarios 'BB+sf' and lower, but fails to receive full interest or principal under all more stressful scenarios 'BBB-sf' and higher, the MIR would be 'BB+sf'.

Rating Determination

The MIR is a key input to the rating committee determination, but ratings are ultimately determined by a rating committee and may differ from the MIR in the following situations:

- Note ratings are subject to a rating cap, as defined in these or related criteria, and this rating cap is not factored into the MIR. In this case, the note rating will be the lower of the rating cap and the MIR.

- When rating newly issued transactions, our assigned rating will be within one rating notch of the MIR; when reviewing existing ratings, the assigned rating will be within three notches of the MIR. Examples of why committees will determine ratings different to the MIR include, but are not limited to, the below:
  - the committee concludes there is a significant likelihood that a rating action may be reversed in the near term due to potentially volatile performance;
  - the committee decides not to upgrade to the MIR if they believe the transaction is exposed to increasing concentration risk that the concentration adjustment does not sufficiently capture given the transaction specifics;
  - the committee expects near-term asset sales/deleveraging at amounts that justify a rating above the MIR; or
  - the committee concludes that there are asset pool characteristics that are not fully captured by the asset model.
- In assigning ratings different than the MIR, or making changes to the current Rating Outlook or Rating Watch, the committee often times uses sensitivity analyses, which incorporate different assumptions on certain assets. This may occur, for example, if the committee believes certain assets may be subject to near-term performance expectations that are not adequately addressed under the standard asset assumptions.
- The lowest MIR Fitch's aircraft liability model can produce is 'CCCsf', in line with the assumptions described under this criteria report and hardcoded into the asset model. For notes that cannot achieve this MIR, the rating committee may determine a rating in the range of 'Csf' to 'CCC-sf' based on Fitch's Rating Definitions. For example, a 'CCsf' rating would be assigned if the committee believes there to be a high level of credit risk' and 'a default of some kind seems probable'.

Asset Analysis

Rating Cap of 'Asf'

Due to servicer reliance and the uncertainty associated with forecasting cash flow over the long life of aviation assets, Fitch will not assign or maintain ratings above 'Asf' to aircraft operating lease securitizations that do not have the benefit of an external guarantee. In addition, this cap stems from the historically volatile performance of the asset class and its pronounced exposure to exogenous risks on demand for air travel, as evidenced by the effects of the events of Sept. 11, 2001, the 2008–2010 credit crisis and pandemic disease scares, including the 2020–2022 COVID-19 pandemic, i.e. the biggest downturn in aviation history with the greatest impact on ABS performance to date.

Additionally, the servicer is responsible for maintaining and remarketing the aircraft, as well as for the analysis of certain foreign jurisdictions and putting in place necessary protections to facilitate timely repossession of aircraft from defaulted lessees, resulting in heavy servicer reliance. Fitch considers jurisdictional concentrations per the "Structured Finance and Covered Bonds Country Risk Rating Criteria," which could result in rating caps lower than the 'Asf' industry cap.

The risks of aviation market cyclicality are compounded as lessee default probability is highest when aircraft values and lease rates are typically depressed.

For transactions with a low starting effective count of assets (a metric that captures both the number of assets in the pool and the distribution of asset values) or pools with extreme forms of other concentration such as lessees, geographic region, aircraft models and aircraft ages, we may cap ratings below 'Asf' or decline to rate the transaction, if we believe the risks cannot adequately be addressed with adjustments such as additional cash flow haircuts.

Data Requested

Fitch expects to receive the asset data indicated in Appendix C to set cash flow assumptions as the first step in the quantitative review process. These data, with the exception of the appraisals and maintenance forecasts, are provided by the prospective seller/servicer of the

securitization. Appraisal reports and maintenance forecasts are provided by independent third-party companies.

Modeling Asset Cash Flow

Fitch's quantitative review of an aircraft securitization centers on the amount of cash expected to be generated by a pool of assets under base and stress case scenarios. Our asset model generates future monthly cash flow from each individual asset (aircraft or engine), including lease payments and sales proceeds after the end of its assumed leasable life. The asset model also projects asset-level expenses to cover remarketing and repossession, including downtime between leases.

For each asset, the model produces multiple future cash flow and expense streams, representing different levels of stressed assumptions. Each combination of stressed assumptions represents a stressed future state scenario, and each is associated with a Fitch rating level. Under each stress scenario, the asset model aggregates the monthly asset-level predictions to produce a monthly pool-level prediction of cash flows and expenses. The asset model produces the following three core outputs at both the asset- and pool- level and for each rating scenario:

1. **Monthly asset-level rent cash flow:** as the product of the lease rate and utilization rate (UR). The lease rate represents the contractual amount of monthly rent *owed* by the lessee. Our lease rate assumptions are detailed in the Lease Rates section below. In the context of our asset model, UR represents the percentage of the lease rate that is *collected* each month. The asset model calculates UR as a function of our assumptions for lessee default rate, lease extension, future lease terms and aircraft downtime, all of which are detailed in their respective sections below.
2. **Net sale proceeds:** when each asset reaches the end of its assumed leasable life, the asset model ceases projected lease cash flow and calculates a single cash inflow. Net sales proceeds are calculated by applying a residual value (RV) haircut to the projected FV of the asset at the end of its leasable life. See Appraisals, Aircraft Values: Base Value and Fitch Value and Residual Value sections.
3. **Projected monthly repossession and remarketing expenses:** as a function of the four Fitch assumptions listed below and described in their respective sections further below.
    a. Repossession and remarketing expenses (per occurrence)
    b. Repossession and remarketing downtime (per occurrence)
    c. Lessee default rate
    d. Remaining leasable life of the asset

The asset model adjusts the projected rent and residual cash flow based on the concentration profile of the pool. This adjustment is made to account for the increased risk of cash flow volatility among smaller pools. We quantify pool concentration with an effective asset count metric, which captures both the number of assets in the pool and the distribution of asset values. The magnitude of the concentration adjustment is a function of the effective asset count of the pool and the rating scenario. See the Pool Concentration Adjustment section below for more details.

Aircraft Tiering

There are a number of factors that influence market demand for aircraft models and, as a result, their values and lease rates over an asset's life cycle. These factors include, but are not limited to: an aircraft's operator base, fuel efficiency, overall operating cost, fleet size, versatility, position within its life cycle and the sustainability of future demand for the aircraft. At a more granular level, within specific aircraft models, there can be value differentiators, including engine type, onboard systems, the existence of freighter conversion programs, technical specifications and compliance with regulatory initiatives. We evaluate each individual aircraft and group it into one of three tiers.

Grouping aircraft into tiers allows us to use different stress assumptions based on stronger or weaker collateral characteristics. As discussed later in this report, Fitch's tier classification affects our assumptions for asset depreciation, MVD and remarketing downtime. Our tier

classifications evolve with market demand, and therefore, aircraft typically migrate to lower tiers over time; this occurrence is particularly true in the presence of technological advancements.

Many aircraft types have subvariants that Fitch may view as more or less marketable. For example, certain models may be adapted for extended- or long-range flying (often denoted by an ER or LR, respectively) or may have newer, more fuel-efficient variants that make them more marketable. Other aircraft subvariants may have limited production volume and, thus, are supported by a limited operator base. In these and certain other situations, Fitch may classify aircraft from a given family into multiple tiers.Fitch regularly reviews and updates its aircraft tier classifications and will publish them on its website at www.fitchratings.com.

Most aircraft types will be replaced by newer technology aircraft sometime during their useful life. Therefore, Fitch assumes aircraft will migrate to lower tiers as they age, exposing the aircraft to more severe stress assumptions in the asset model. The table in the right margin displays our tier migration assumptions for modeling asset cash flows. These assumptions represent historical observations regarding the decline in marketability as aircraft age, the increasing likelihood of technological replacement as aircraft programs age and the time needed for new aircraft production to replace an existing fleet. Fitch may lower the aircraft tier prior to the indicated timeframes in the table to the right if we believe the introduction and rapid deployment of replacement technology aircraft will negatively impact an aircraft's value and marketability. This would principally be applied to last-of-the-line aircraft that have been replaced by new technology aircraft that Fitch anticipates will rapidly become a meaningful portion of the global fleet relative to the prior generation technology aircraft.

Fitch Tier Migration

Age (Years)	Tier 1	Tier 2	Tier 3
Passenger Aircraft			
0–<15	1	2	3
≥15–<20	2	3	3
≥20	3	3	3

Source: Fitch Ratings

Tier 1 — Most Marketable Aircraft

Tier 1 assets are those considered by Fitch to be the most marketable over the term of the transaction. Tier 1 aircraft are widely used and often considered the workhorse aircraft for many operators; they are typically in production. Recently out-of-production, best-in-class aircraft with large fleets and operator bases may remain Tier 1 aircraft until sufficient numbers of replacement technology aircraft enter the global fleet. Tier 1 aircraft are generally more technologically advanced, fuel-efficient aircraft, as fuel efficiency is paramount to most operators. In production Tier 1 aircraft have little risk of major near-term value and lease rate weakness tied to a replacement program from its respective manufacturer.

Tier 2 — Moderately Marketable Aircraft

Tier 2 incorporates a large number of aircraft models on the current market. Assets grouped into this category typically have a significant existing fleet and a well-developed market. These aircraft may or may not currently be in production. However, if out of production, the end of the production run will typically be recent, and replacement parts will still be manufactured and readily available. While these models may be at or toward the end of their production run, the existing asset and operator base is such that current demand could be maintained in the absence of new deliveries.

Tier 3 — Least Marketable Aircraft

Tier 3 aircraft are generally out-of-production aircraft with already poor or weakening demand profiles. While some Tier 3 aircraft still have significant operator bases, the existing fleets are older and likely to face retirement in the near term. While opportunities exist in less-developed markets for these aircraft, Fitch takes a negative view on the value retention of Tier 3 assets in the long term.

Leasable Life

Commercial passenger aircraft are typically assumed to have a maximum useful life of 20 years–25 years with freighter aircraft having longer useful lives. Aircraft in ABS transactions are leasing assets and the cashflows are modeled as such. While airlines may operate aircraft they own beyond 20 years of age, it is often times uneconomical for lessors to incur the costs to redeploy older aircraft. As such, Fitch uses a leasable life of the later of 20 years or the end of the current lease for passenger aircraft as a base scenario, unless the asset make, model, variant and other factors call for a different assumption.

Appraisals

We expect to receive a minimum of three independent appraisals on each asset in the proposed pool from appraisers certified by the International Society of Transport Aircraft Trading (ISTAT). We expect appraisers to provide each aircraft's current base and market values. Base value appraisals estimate an aircraft's value in an open, unrestrained market with a reasonable balance of supply and demand. Market value appraisals estimate what the aircraft would be worth in the current market. We expect updated appraisals be provided at least annually to assist in the ongoing monitoring of a transaction.

Appraisers generally provide half-life and maintenance-adjusted appraisals. Half-life appraisals value the aircraft assuming it is halfway between required maintenance events. Maintenance-adjusted appraisals reflect the amount of usage and maintenance that has occurred on each aircraft. Two aircraft may have the same manufacture date and specifications, but their values may diverge due to differences in their usage or maintenance status. We expect to be provided maintenance-adjusted appraisals that reflect the current condition and value of the assets.

Aircraft Values: Base Value and Fitch Value

Asset values directly affect the ABS cash flow through both lease rates and sales proceeds. An aircraft's value is affected by depreciation and supply/demand market value fluctuations. In our asset modeling, we forecast two types of future values: the cycle-neutral base value (BV) and the Fitch Value (FV).

Base Value

The projected BV does not directly affect the asset model cash flow. Rather, it is used as an input to our liability model, and influences bond principal allocation. Our assumption for the BV in period zero of our cash flow modeling is typically the average of the three maintenance-adjusted base value (MABV) appraisals. In future modeling periods, we reduce the initial BV assumption each month to reflect depreciation, based on the assumptions in the table aside.

Fitch Value

In formulating our starting FV assumption, we consider both cycle-neutral base values (BV) and current market values (CMV). We may use either a BV or CMV, or a value in between, depending on the time period over which we're forecasting cashflows. If the cashflows are in the near term and there's a large difference between CMV and BV due to a then current market dislocation, we may use the CMV. If the cashflows are several years in the future, we typically use a BV.

The FV is informed by BV and CMV estimates from several ISTAT certified appraisers, typically three or more. Fitch doesn't exclusively rely upon appraisals provided in a given transaction. Rather, we generally triangulate among value estimates from several sources. Appraisals deemed to be outliers may be removed or replaced. We may also supplement appraiser values with information from other sources, including industry consultants or research firms.

For the starting FV, we commonly use the lower of the mean or median (LMM) of value estimates from three or more appraisers. Other approaches include using the lowest value or the average of two values. The choice reflects our view of the current and future value of the aircraft type and vintage being modeled.

Within our asset model, the FV is a strong driver of future cash flow as it drives income from future leases and sales proceeds. The asset model receives the starting FV assumption discussed above, then reduces it in each future projected period by depreciation and various MVD scenarios.

Our depreciation rate assumptions are derived from historical BVs from multiple appraiser sources, and vary by asset age and tier as shown in the table at the right.

In addition to depreciation, aircraft values are exposed to market value declines from which they may not fully recover. These declines are primarily driven by commercial aviation market down-cycles, but other factors like technological advances and regulatory changes may also make certain aircraft less marketable. Therefore, our cash flow analysis includes assumptions at each rating level for unforeseen market value decline, as shown in the table to the right.

Annualized Base Depreciation Rate Assumptions — Aircraft

(%)			
	Passenger Aircraft		
Age (Years)	**Tier 1**	**Tier 2**	**Tier 3**
0–<10	6	7	8
≥10–<15	7	8	9
≥15–<20	—	9	10
≥20	—	—	11

Depreciation rate assumptions for older Tier 1 and 2 aircraft are not applicable because as aircraft age they move to lower tiers.
Source: Fitch Ratings

Market Value Decline Target Assumptions — Aircraft

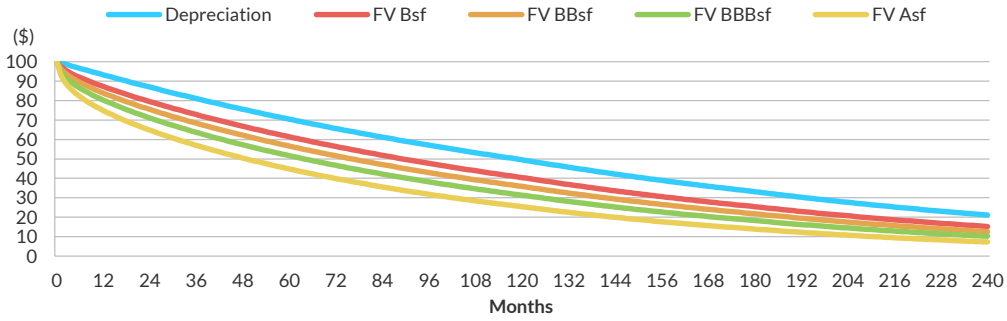
(%)	Tier 1	Tier 2	Tier 3
Asf	30.0	40.0	50.0
BBBsf	20.0	30.0	40.0
BBsf	12.5	22.5	32.5
Bsf	5.0	15.0	25.0

Notch-specific stresses are interpolated between the assumptions applicable to adjacent rating categories. At 'CCCsf' there is no stress.
Source: Fitch Ratings

As shown below, we assume MVDs are steepest in the first few projected years, reflecting the risk of a near-term market downturn. We assume FVs do not recover from previously declined value. Our market value decline assumptions were calibrated such that the cumulative time-weighted decline below the depreciated value over a 20-year projection is roughly equivalent to the Target Value Declines shown to the right. Aircraft with less than 20 years of life remaining will not experience the full declines displayed to the right. If there are asset-specific risks or industry cyclical risks that we determine are not fully captured because the full Market Value Decline Targets have not been achieved due to the short time horizon over which the MVDs are applied, Fitch may apply a discount to the starting FV.

Fitch Value Assumptions

Tier 2 Asset with a $100 Starting FV



Source: Fitch Ratings

Residual Value

At the end of an aircraft's leasable life, our asset model assumes lease cash flow ceases and the asset is sold for a RV calculated by applying an RV haircut to the FV at the time of the sale. For example, if the assumed FV was $1 million at the end of the aircraft's leasable life and the RV haircut was 15% ('Asf' rating level), the assumed sales proceeds would be $850,000. Our RV haircut assumptions vary by rating level and were derived through an analysis of historical sales proceeds data for 15+ year old aircraft sold between 2007–2018, which includes the 2009 downturn, and BV appraisals at the time of sale.

Fitch's RV haircut assumptions are 15% at the Asf level and 5% at the Bsf level. For rating stress levels between Asf and Bsf the RV haircuts are linearly interprolated between Asf and Bsf levels. There are no RV haircuts for rating stress levels B-sf and lower.

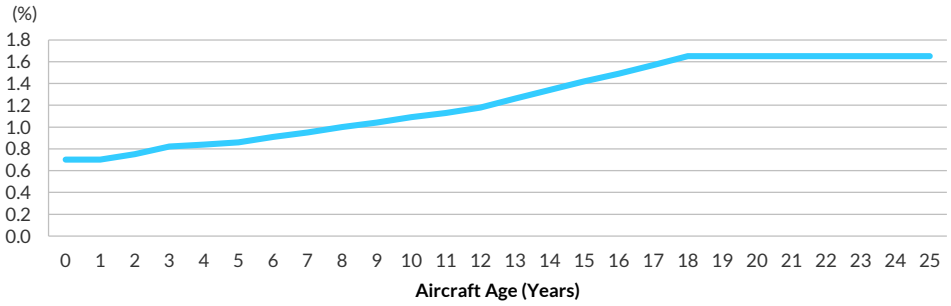
Operating lease ABS transactions also allow for asset dispositions prior to the end of their leasable lives. Lessors may sell aircraft with or without leases attached opportunistically in strong markets. Sales proceeds in these cases are typically stronger than end of life aircraft discussed above. Thus, Fitch may also consider scenarios under which aircraft are assumed to be sold earlier in their life, albeit at lower or higher haircuts to assumed market value than end of life scenarios.

Lease Rates

The term 'lease rate' refers to the amount of rent due each month from the lessee. In our asset model, we make assumptions for current and future leases. For future leases, the lease rate assumption is calculated as the product of the FV and a lease rate factor (LRF). Our LRF assumptions vary by asset age, as shown in the table to the right and the graph below. As aircraft age, LRFs tend to increase as monthly rent collections do not decline as rapidly as aircraft value. This fact is particularly true for late stage aircraft leased to weaker lessees who are charged higher lease rates to account for credit risk. While our LRF assumptions do not vary by rating category, our FV does, and therefore so does our assumed future lease payments.

Additionally, we may adjust our lease rate assumptions (up or down) for AOG aircraft and aircraft coming off lease in the near term when we observe material differences between market and base values. To account for temporary differences in expected lease rates, Fitch may adjust its rent estimates during the market imbalance, rather than assuming the current market rents apply for the remaining life of the asset. Lessor assumptions may also be modified to reflect these leasing considerations.

Fitch Assumed Lease Rate Factors



Source: Fitch Ratings

Indicative Aircraft LRF Assumptions by Age

Years	LRF	Years	LRF
0	0.70	13	1.26
1	0.70	14	1.34
2	0.75	15	1.42
3	0.82	16	1.49
4	0.84	17	1.57
5	0.86	18	1.65
6	0.91	19	1.65
7	0.95	20	1.65
8	1.00	21	1.65
9	1.04	22	1.65
10	1.09	23	1.65
11	1.13	24	1.65
12	1.18	25	1.65

LRF – Lease rate factor
Source: Fitch Ratings

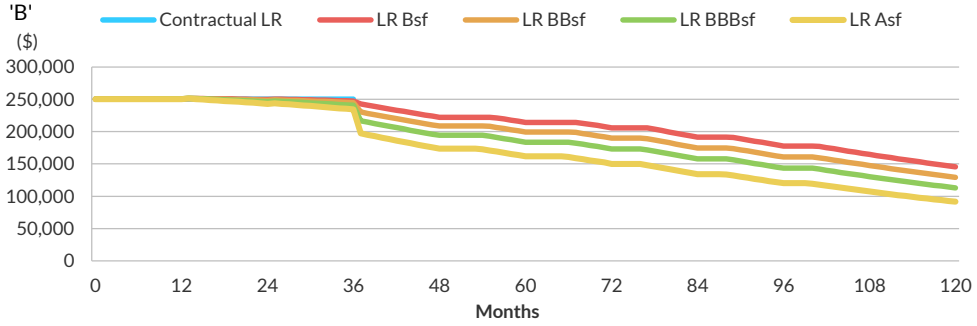
Contractual lease rates are generally fixed for the term of the lease. However, since our asset model does not simulate specific start and end dates for future leases, we do not assume fixed lease rates for future leases. Instead, our lease rate assumption for future leases is updated each projected month, as the product of the LRF from the prior month and the FV from 12 months prior. For example, to calculate the lease payments for future month 120, the asset model will multiply the LRF from month 119 by the FV from month 108. We use these lagged FVs and LRFs to more accurately predict future lease rates, since not using a lag would underestimate lease rates that are fixed in reality.

If an aircraft is on lease at the time of the analysis, our lease rate assumption for the remaining term of the lease reflects a blend of the contractual lease rate — whether fixed or on a schedule — and the calculated future lease rate discussed in the paragraph above. This blended lease rate is typically heavily weighted on the contractual lease rate in place, but reflects the possibility of the current lessee defaulting before the end of the existing lease, and the aircraft being re-leased at a lower lease rate.

The blended lease cash flow is weighted by the default rate assumption of the current lessee. Higher-rated lessees will have lower default assumptions and the blended lease cash flow will be closer to the contractual payment. Lower-rated lessees will have higher default assumptions and more weight will be applied to the lower future lease cash flow. The chart below illustrates the lease payment during the existing and future leases for a hypothetical aircraft.

Fitch Lease Rate Assumptions

Hypothetical Aircraft: 3 Years Remaining on Current Lease, $250 Contractual Lease Rate; Lessee Rated 'B'



Source: Fitch Ratings

If the actual lease monthly payment is less than the contractual lease rate; for example, in the case of lease deferrals or restructuring, we will adjust our lease rate assumption for the current

lease to reflect the new lease terms provided by a servicer. This adjustment includes accounting for power-by-the-hour lease terms, where airlines pay for actual hourly aircraft use. If lease deferral terms are not provided by the servicer, we will assume deferral terms consistent with other lessees, if available.

Lessee Defaults

Our assumption for lessee default rate varies by rating level and by our assumption for the lessee's corporate rating, as shown in the table below. These default rate assumptions are derived from an analysis of long-term historical corporate default rate data through various levels of economic stress. The default rates below are displayed on an annualized basis for presentation purposes, but are converted to monthly rates for use in our asset model.

Annualized Default Rates by Lessee Rating

Rating Stress	AAA	AA+	AA	AA–	A+	A	A–	BBB+	BBB	BBB–	BB+	BB	BB–	B+	B	B–	CCC+	CCC	CCC–	CC	C
Asf	0.10	0.20	0.31	0.39	0.57	0.75	1.01	1.24	1.45	2.63	3.70	4.56	6.12	7.57	9.18	12.94	16.55	20.15	27.37	42.57	77.66
BBBsf	0.06	0.13	0.20	0.26	0.39	0.52	0.71	0.88	1.04	1.96	2.83	3.54	4.84	6.08	7.47	10.80	14.07	17.38	24.16	38.91	75.01
BBsf	0.03	0.07	0.12	0.16	0.24	0.33	0.45	0.57	0.69	1.36	2.01	2.56	3.60	4.61	5.76	8.59	11.44	14.40	20.61	34.69	71.66
Bsf	0.02	0.05	0.08	0.10	0.16	0.22	0.32	0.40	0.49	1.00	1.52	1.96	2.81	3.65	4.63	7.09	9.63	12.30	18.03	31.48	68.90
CCCsf	0.01	0.02	0.04	0.05	0.09	0.12	0.18	0.23	0.28	0.62	0.97	1.28	1.90	2.53	3.28	5.22	7.31	9.57	14.57	26.95	64.61

Notch-specific stresses are derived, in the same manner as for the flat ratings shown above, from cumulative five-year default probabilities.
Source: Fitch Ratings

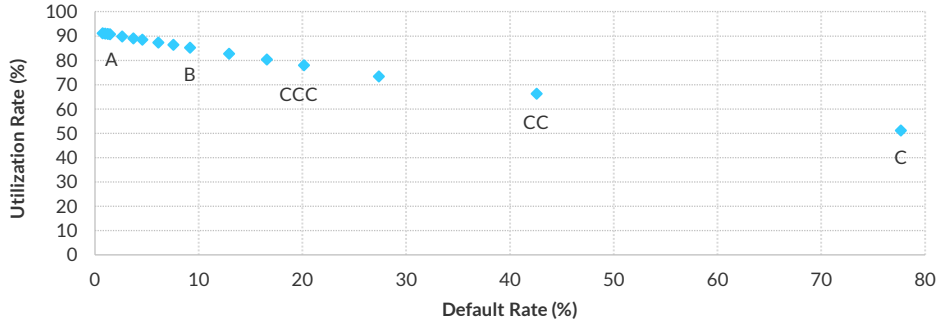
The lessee default rate assumption is not used to simulate specific binary default events. Instead, it is used to derive a UR that determines our projected monthly rent collections. The UR is expressed as a percentage of our lease rate assumption. For example, if a lessee owes a $100 monthly lease payment, and our UR is 85%, we will assume $85 of the $100 are collected.

Conceptually, our asset model's UR is intended to represent a long-term average that takes into consideration both aircraft on lease as well as aircraft off-lease due to lessee defaults or remarketing downtime between leases. Accordingly, while the default rate is a meaningful factor in deriving the UR, the UR is also impacted by our assumptions for lease extension probability, lease extension term, and downtime between leases.

The chart below displays the inverse relationship between default rate and UR. Each dot's location on the x-axis represents the 'Asf' rating stress from the default rate assumption table above. Note that even when default rates are assumed to be near zero, the UR only reaches roughly 92%, because even if there are no lessee defaults there will still be aircraft downtime while remarketing between leases. Conversely, even when the default rate assumption is very high, the UR does not approach zero since defaulted aircraft will be re-leased to a new lessee, and resume producing cash flow.

Relationship Between Default Rate and UR

Uses Fitch's Default Rates and Benchmark Lessor Assumptions for the 'Asf' Stress



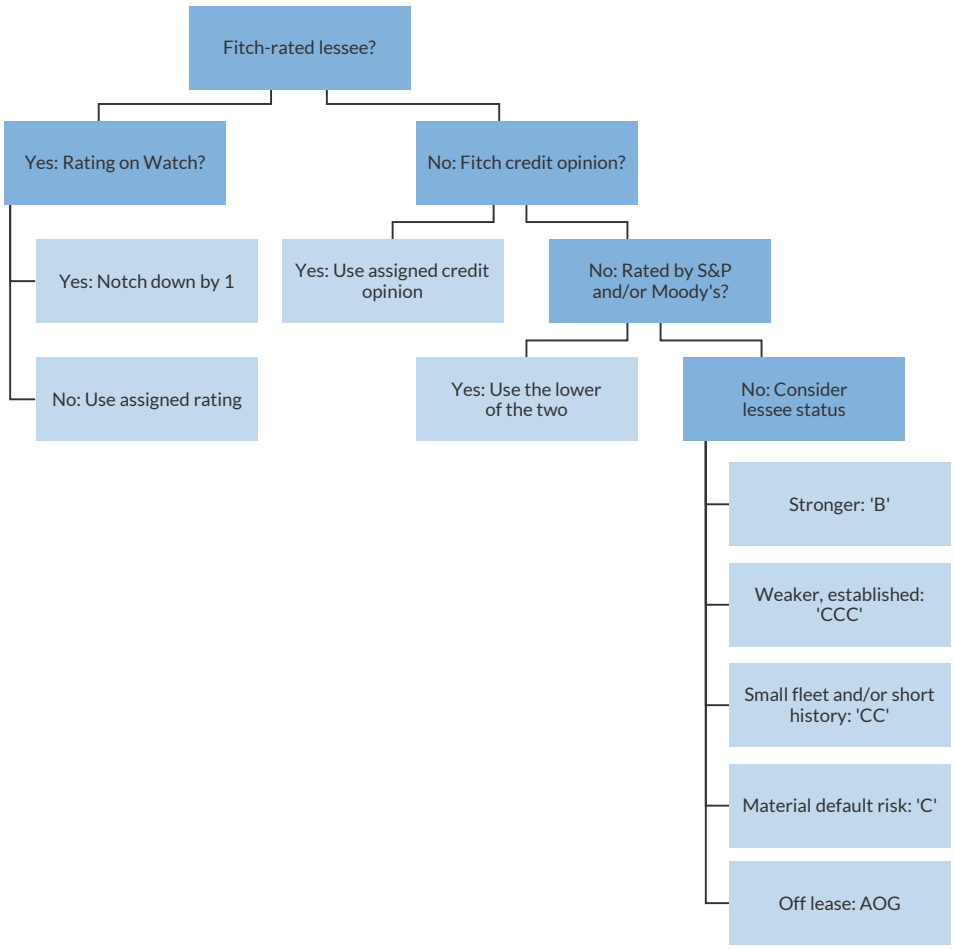
Source: Fitch Ratings

Current Lessees

Since our default rate for every projected period is based on our lessee rating assumption, we need a corporate rating assumption for both the current lessee and future lessees. If an aircraft is on lease at the time of the analysis, our assumption for the current lessee's rating follows this decision tree:

- If an initial lessee is rated by Fitch, the Fitch rating will be used.
- If not rated by Fitch publicly or privately, a Fitch credit opinion will be used (or may be requested).
- If no Fitch rating or credit opinion is available, the lower of Standard & Poor's or Moody's public ratings will be used.
- If an airline's rating is on Rating Watch Negative, we will assume a rating one notch lower than its current rating.
- For airlines without public or Fitch private ratings (or Fitch credit opinion) or ratings from S&P or Moody's, we assume:
    - 'B' rating for stronger airlines, such as flag carriers with strong government support and which are important to their national economies;
    - 'CCC' rating for weaker credits, with no strong government or private backing, or in emerging markets which may be more vulnerable to market downturns, even if they are major regional carriers or flag carriers;
    - 'CC' rating for lessees with smaller fleet sizes or short histories, or for lessees that have lease payment delinquencies as of the analysis date;
    - 'C' rating for lessees with lease payment defaults and a high probability of lease termination in the near term; and
    - 'AOG' (aircraft on ground) for off-lease aircraft, which results in no modeled cash flow from the current lessee.

Rating Decision Tree



Source: Fitch Ratings

For most portfolios, our average rating assumption for the current lessee is 'B' or below. This assumption is consistent with Fitch's corporate rating group's view of the long-term, steady state credit quality of the average airline globally.

Future Lessees

The future lessees for each aircraft are unknown at the time of analysis, so we must make a generic assumption. We typically assume future lessees are in the 'B' category, but assumptions could be higher or lower based on our knowledge of the lessor, the aircraft, and the lessee market. When an aircraft is assumed to migrate to Tier 3, we assume the credit quality of the future lessee deteriorates, usually to 'CCC'. This assumption reflects our observation that less marketable aircraft are often placed with smaller, weaker, less financially stable start-up airlines, frequently in emerging markets.

Leasing Assumptions

Benchmark Leasing Assumptions

Certain drivers of net aircraft lease cash flow are influenced by the lessor's business model and proficiency. These drivers include: lease extensions, future lease terms, downtime and expenses related to repossession and remarketing. For each of these metrics, our assumption in the asset model varies by rating level, and is based on a set of benchmark assumptions, which may be adjusted through data specific to each lessor.

The table below displays our benchmark leasing assumptions at each rating category, which are based on historical lessor performance data.

Benchmark Leasing Assumptions — Aircraft

Rating Stress	Downtime (Months)		Future Lease Term (Months)	Lease Extension Probability	Lease Extension Term (Months)
	Repo	Remarket[a]			
Asf	5.0	5.0	42	30	24
BBBsf	4.0	4.0	48	35	30
BBsf	3.0	3.0	54	40	36
Bsf	2.0	2.0	60	45	42
CCCsf	1.0	1.0	66	50	48

[a]The remarketing assumptions shown are for Tier 2 aircraft. They are shortened by 1.0 month for Tier 1 aircraft and lengthened by 1.0 month for Tier 3 aircraft. Note: Notch-specific stresses are interpolated between the assumptions applicable to adjacent rating categories.
Source: Fitch Ratings

Repossession and Remarketing Expenses

Fitch bifurcates its transition expenses into repossession expenses and remarketing expenses. For modeling purposes, the expense of each aircraft transition between one lessee and the next is the sum of the repossession and remarketing expenses. For each asset, we estimate the number of future repossession and remarketing occurrences, as a function of remaining leasable life, lease terms, downtime length and lessee default expectations. Since we don't project specific transition dates, we smooth the total costs associated with our transition occurrence estimate over the remaining leasable life of the asset. We assume no repossession or remarketing expenses within the last three years of an asset's leasable life, as lessors are more likely to extend the existing lease or sell the aircraft during this period rather than lease to a new lessee.

Repossession Expense

Fitch's repossession expense estimates consider the following types of expenses: ferry flights, storage, records and insurance. Fitch's estimated repossession expense by aircraft body type are as follows:

Aircraft Body Type	Narrowbody	Widebody	Regional Jet	Turboprop
Respossession Expense ($)	400,000	650,000	350,000	200,000

Source: Fitch Ratings

Remarketing Expense

Fitch's remarketing expense estimates consider the following types of expenses: cabin reconfiguration/refurbishment, inflight entertainment, avionics, painting, and weight and thrust upgrades. They do not include maintenance costs. Fitch recognizes that remarketing expenses can vary widely by aircraft characteristics and lease terms. For cash flow modelling purposes, we consider the range of remarketing expenses plus consider the total lifetime remarketing expenses. We believe remarketing expenses typically decrease as an aircraft ages given less extensive cabin reconfiguration/refurbishment is typically performed on older aircraft. Fitch models aircraft remarketing expenses as a percentage of Fitch Value using between 4% and 7% per occurrence, depending on aircraft body type. We believe remarketing expenses typically fall within the following ranges:

Aircraft Body Type	Expense ($ Mil.)
Widebody Passenger	2.0 to 12.0
Narrowbody Passenger	0.5–1.75
Regional Jet	0.5–1.5
Turbo Prop	0.5–1.5

Source: Fitch Ratings

Lessor-Specific Assumptions

When we have robust lessor-specific data that we expect to remain stable over time, we will use lessor-specific assumptions. These assumptions do not vary by rating category, and instead represent a base-case assumption that we associate with the 'Bsf' category and we make harsher in higher rating scenarios.

If the lessor's historical data aligns with Fitch's 'Bsf' assumptions, we use the Fitch assumptions. If the lessor's historical data does not align with Fitch's assumptions, the assumptions used in our asset model are a synthesis of both the Fitch assumptions and the lessor-specific assumptions. The following example is for the future lease term variable:

- The benchmark assumptions range from 60 months (at 'Bsf') to 42 (at 'Asf') as shown above.
- If the lessor-specific assumption for Lessor ABC were 60 months, the modeled assumptions would be identical to the benchmark assumption at each rating category because the lessor-specific assumption is equal to the 'Bsf' benchmark.
- If the lessor-specific assumption for Lessor ABC is 55 months, the five months of difference would be applied to the benchmark assumption at each rating category: 55, 49, 43, 37 for 'Bsf', 'BBsf', 'BBBsf' and 'Asf', respectively.
- If the lessor-specific assumption for Lessor ABC is 65 months, the 5 months of difference is applied at the 'Bsf' category, but then haircut at each higher rating category, based on the table to the right.
    - at 'Bsf', it would be 60 + 5*(1-0) = 65 months;
    - at 'BBsf', it would be 54 + 5*(1-0.25) = 57.75 months;
    - at 'BBBsf', it would be 48 + 5*(1-0.5) = 50.5 months; and
    - at 'Asf', it would be 42 + 5*(1-0.75) = 43.25 months.

We haircut the benefit for above average lessor performance because under stressful economic conditions lessors may underperform their historical average or fail to remain a going concern.

Haircut to Benefit for Above-Average Lessors

Rating Level	Haircut (%)
Asf	75
BBBsf	50
BBsf	25
Bsf and below	0

Source: Fitch Ratings

Lease Extensions

We make assumptions for the probability of a lease being extended, and the length of such extension. The product of these two assumptions gives us our expected lease extension term. We expect lessors to provide historical data regarding the propensity of lessees to extend leases. Our lessor-specific assumptions may be below the average of the data provided based on the level of historical volatility observed.

Terms of Future Leases

Our stresses for future lease terms increase the number of times the aircraft must be remarketed. The shorter an aircraft's average lease term, the more often it must be remarketed; therefore, it is assumed to incur more remarketing expense and spend more time on the ground without generating cash flow.

We review the average length of new aircraft leases as per the lessor's historical data. These data are also compared to market data to gauge whether or not offered terms are consistent with market practices. Historical lease term data that displays volatility would likely result in shorter lessor-specific lease term assumptions.

Repossession and Remarketing Downtime and Expenses

There can be significant downtime and cost associated both with the repossession and remarketing of commercial aircraft. We assume all leases have remarketing downtime, adjusted by tier, and related costs, regardless of whether the lessee defaults or the lease runs to expiration. For defaulted leases, we also assume lessors incur repossession downtime and costs.

Our lessor-specific assumptions for both downtime and cost are determined by evaluating historical data provided by the lessor. While we look at average downtime experience, this review will also consider the relative distribution of downtime in re-leasing events.

Data provided by issuers are also compared to other issuers' remarketing and repossession data to determine whether or not they are consistent with market experience. If there are not robust lessor-specific data available that we expect to remain stable over time, we will use the benchmark assumptions.

Pool Concentration Adjustment

All of the asset modeling assumptions and methods discussed above are based on expected-case calculations. When a pool of assets is sufficiently large and diverse, it is appropriate to rely on expected cases since idiosyncratic risks can be mitigated through diversity. However, as pools become more concentrated, cash flows tend to become more volatile and may materially diverge from the expected case. To mitigate this risk, we adjust our model-projected asset cash flow depending on the concentration profile of the pool.

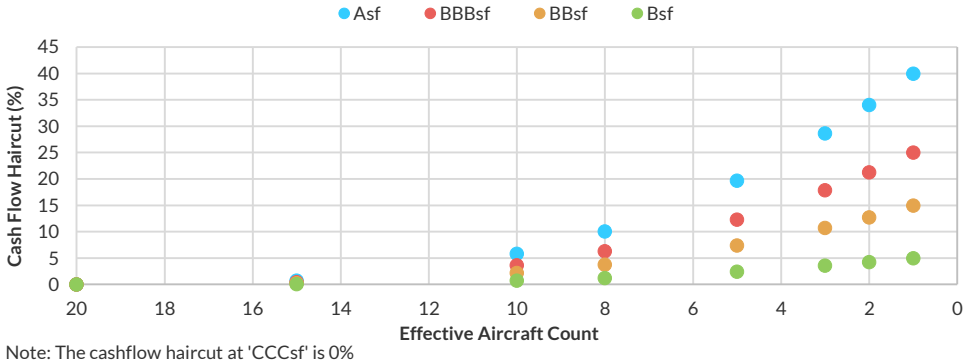
Our main concentration adjustment attempts to account for outsized exposures to a small number of aircraft. This exposure could be the result of a small absolute number of aircraft, or one disproportionately large aircraft among many other smaller ones. We quantify this concentration risk with an 'Effective Count' of aircraft, which captures both the count/number of assets, and the distribution of aircraft values. The effective count is calculated as the reciprocal of the Herfindahl–Hirschman index for the pool of planes, using FV as the weight.

In all projected periods when the effective count is calculated to be less than 20, both rent and residual cash flow are reduced. The magnitude of the haircut varies by the effective count and the rating level, as shown in the chart below. Adjustments are modest as the effective count falls below 20, then increase in magnitude nonlinearly as the effective count approaches one. In a hypothetical pool with only one aircraft remaining, the asset model will haircut all cash flows by 40% at the 'Asf' rating level.

These adjustments are applied based on each projected period's assumed effective count, not just based on the starting pool's effective count. As such, a pool that starts with an effective count of 25 will still incur some concentration adjustments toward the end of the model projections, as older aircraft reach the end of their leasable life, are assumed to drop out of the pool, and lower the effective count.

All else being equal, pools with lower starting aircraft counts will result in lower model-projected lifetime per-plane cash flow, and ultimately will require higher bond credit enhancement to achieve a given rating. For newly issued pools with very low starting effective counts, we may make further adjustments, such as additional cash flow haircuts, capping ratings below 'Asf', or declining to rate the transaction.

Cash Flow Haircuts by Effective Aircraft Count



Note: The cashflow haircut at 'CCCsf' is 0%
Source: Fitch Ratings

In addition to effective count, Fitch also monitors pools for other forms of concentration, such as concentrations of lessees, geographic region, aircraft models, and aircraft ages. If material concentrations are identified, adjustments may be made to mitigate the associated risks.

Maintenance Collections and Expenditures

An important component of transaction cash flow modeling is the evaluation of maintenance reserve collections and expenditures. Aircraft maintenance can be classified into scheduled and

unscheduled maintenance. Scheduled maintenance consists of the maintenance checks, which need to be performed in line with the manufacturer's recommendations. Unscheduled maintenance includes all maintenance items that need to be performed outside of scheduled maintenance. Of note, maintenance reserves usually cover only certain scheduled maintenance expenditures.

Due to servicing policies and other variables, such as lessee defaults, the transaction may be exposed to maintenance expenditures not covered by maintenance reserves. Additionally, the replenishment of maintenance reserves is spread over the duration of the lease, while aircraft maintenance is often performed only at specific periods during the life of the aircraft. This timing can lead to a mismatch between collected maintenance reserves and maintenance expenditures.

As a result, for all new transactions Fitch expects to receive an evaluation performed by an independent third party of the adequacy of collections and any maintenance reserves to match maintenance expenses incurred utilizing Fitch's stress assumptions (such as default rates, lease terms and downtime). Leases typically either include monthly maintenance reserves or a one-time end-of-lease payment (EOL). EOL payments compensate the owner, or airline using the aircraft, for the change in maintenance condition between the beginning of the lease and the end of the lease. As such, it could result in a payment owed from the lessee to the trust or, less frequently, a trust expense owed to the lessee (e.g. the lessee performs maintenance during the lease and returns the aircraft in a better condition than at lease start).

Fitch assumes that 50% of future lessees will pay monthly reserves and 50% will make EOL payments. For mid- to end-life aircraft in particular, this assumption is conservative in that older aircraft are usually leased by weaker airlines, which in turn are required by lessors to post regular reserves to mitigate counterparty risk. Fitch may adjust this percentage if the original portfolio make-up, or lessor data, indicate a materially different share of reserve paying lessees. By and large, the aircraft that at the time of securitization are paying reserves will continue to do so, while a portion of those on EOL will convert to reserve-paying.

Fitch will request the maintenance cashflow forecast providers apply various stresses to the cashflow forecasts by rating category and current and future lessee creditworthiness.

Fitch reviews this third-party analysis and incorporates the resulting cash flow in its liability model. The maintenance reserve mechanics are considered along with the parties involved in projecting, collecting, and reserving future maintenance and associated collections in order to determine an appropriate stress. When possible, Fitch will also consider the distribution, in addition to the expected values, of the maintenance cash flow and may run alternative scenarios for sensitivity purposes. For leases structured with EOL payments, Fitch considers not only the forecasted EOL payment amount but also its collectability.

For surveillance reviews of outstanding transactions, Fitch will use updated maintenance cashflow forecasts based on the then current maintenance status of the aircraft in the pool if such forecasts are available. In the absence of updated maintenance cashflow forecasts Fitch may estimate the remaining lifetime net maintenance cashflows of the aircraft in the pool using the then current maintenance-adjusted values from third-party appraisers, if available, or may stress the net maintenance collections provided at the time the transaction closed. These stresses are determined by reviewing the lessor's historical record of mismatches between maintenance reserves collected and the cost of maintenance incurred. In certain circumstances, these stresses may also be amplified or time shifted for particular aircraft if those aircraft are more likely to incur significant maintenance costs or if utilization rates are significantly higher or lower than expectations.

Excess Proceeds

Some transaction structures include features that require additional amortization on the notes when excess proceeds, which include EOL payments, are received. As this amortization can greatly increase how quickly notes are repaid, Fitch limits credit given to excess proceeds receipts. First, excess proceeds credit is only given to initial leases in the pool as the terms and timing of future leases are unknown. Furthermore, expected EOL payments are haircut after considering multiple factors, which include lease length, default probability, collectability and likelihood of extension.

Freighter Aircraft Assumptions

In the event Fitch rates a new freighter aircraft transaction we will source additional data from appraisers, servicers, and other market participants at that time and determine the modelling assumptions. For transactions rated by Fitch that include one or a few freighter aircraft and make up small portion of the overall pool we will apply bespoke assumptions.

Liability Analysis

The Asset Analysis section above described how we generate several pool-level projected cash flow scenarios, one for each rating level. To evaluate a proposed or existing structure, these various cash flow streams are applied as available collections to the liability structure. We use a proprietary liability model that can be customized to replicate each transaction's structure and priority of payments. If a class is able to pay in full utilizing the stressed cash flow stream, it is considered to have passed that particular scenario.

We review the liability structure to identify risks under different rating scenarios and form a view on the ability of the proposed structure to mitigate such risks. We do not recommend or approve any particular structural features.

Liability cash flow results and MIR are an important consideration in Fitch's rating process, but are not the sole driver of Fitch's ratings. We incorporate qualitative considerations, including the quality of the portfolio, capability of the servicer, outlook for the commercial air travel market and protections of the liability structure in our analysis.

Credit Enhancement and Liquidity

Credit enhancement (CE) is typically provided in the form of subordination, overcollateralization, credit facilities and reserve funds. Fitch will review the relevant CE structure of each transaction and model it within the agency's cash flow analysis.

Overcollateralization and Subordination

Overcollateralization (OC) is often the primary component of CE within an operating lease aircraft securitization. OC and subordination are measured with a leverage or loan-to-value (LTV) ratio. A note class' LTV is typically calculated as the total amount of debt ranking equal or senior to that class divided by the average or LMM of the appraised portfolio values provided plus any cash reserves that can be used to support principal payments on said class.

While LTV provides a high-level comparison point between transactions, when viewed in isolation of other factors it can be misleading. Notably, transactions often utilize different methods to calculate the portfolio's total value. As a result, portfolios and transactions with different characteristics, such as slower note amortization profiles or varying aircraft quality, will be able to achieve different rating levels at seemingly equivalent LTVs.

Credit Facilities and Reserve Funds

Liquidity for operating lease transactions is often provided in one of two forms — a credit facility or a cash reserve. Credit facilities are generally in the form of letters of credit (LOC), which are provided by investment-grade financial institutions. This liquidity provides support for interest payments and in some cases, transaction expenses which are senior to the supported class of debt. Most facilities cover nine months of note interest payments, which Fitch generally deems adequate. Fitch will analyze the credit quality of the counterparty and the terms and conditions of the facility using the framework described in Fitch's "Structured Finance and Covered Bonds Counterparty Rating Criteria."

Cash reserves can also take various forms. In some circumstances, reserve funds may only be drawn to provide timely payments of interest to a given class but no other transaction liabilities. In other cases, reserve funds may be drawn to the extent that cash in the collection account is insufficient to pay any obligation senior to it in the waterfall.

Interest Rate Risk

Offered notes or certain fees (e.g. fees on liquidity facilities) may bear either fixed- or floating-rate coupons, creating the potential for interest rate mismatches. Fitch will apply interest rate stresses to any floating-rate liabilities consistent with the applicable rating category as

described in Fitch's "Structured Finance and Covered Bonds Interest Rate Stresses Rating Criteria."

Most operating lease ABS documents require the servicer to maintain hedges to shield notes from interest rate risk, which creates additional operational reliance on the servicer.

Operating lease aircraft transactions may include some mix of fixed- and floating-rate leases. However, the mix of leases will change over time as initial leases expire and new leases enter the pool. Additionally, lease rates (fixed or floating) have historically shown correlation to prevailing interest rates, as would be expected. The ability for lease rates to reset many times over the life of the transaction creates possible compression in a declining interest rate environment. For the initial pool of leases, Fitch will consider any floating-rate component of each lease consistent with the stresses described above regarding the liability structure. To the extent a detrimental unhedged exposure exists, Fitch will model increasing or decreasing interest rates.

Future leases will be assumed to be fixed rate. However, if deemed applicable Fitch will modify LRF assumptions to mimic the assumed interest rate environment represented in the analysis of the liability structure.

Priority of Payments

Note Amortization

Unlike many traditional term ABS sectors, aviation operating lease transactions do not allocate principal based on an implied principal portion of collections. Rather, the allocation of principal is calculated based on predetermined schedules. These schedules are most frequently expressed as a progression of pool factors, which, when multiplied by the initial bond balance or portfolio value allocable to a certain class, produce the target bond balance for that class in any given period.

Fitch replicates note amortization schedules in its liability model. Nonpayment of principal according to these schedules is typically not considered an event of default under the terms of the notes, unless the principal remains unpaid by a respective class' legal final maturity date.

Equity Distributions

Operating lease transactions may also incorporate some form of equity tranche. The characteristics and priority of this equity component may differ by transaction. Under certain structures, the equity interest in the trust will be structured to receive a payment or multiple payments at different points in the transaction's waterfall. Equity interests may also be structured to receive a share of asset liquidation proceeds and retain any residual claim to the transaction in addition to their contemplated monthly cash flows or dividends.

These equity payments are often subject to lockout triggers tied to debt service, asset valuation, or other performance metrics. Nonetheless, equity distributions will usually detract from cash flow available to service the notes. Excessive payments made to equity interests that result in less cash available to service the rated debt under stress scenarios could negatively affect the assigned ratings.

Performance Triggers

Operating lease transactions typically also include transaction performance triggers that, if breached, could cause various changes to payment priorities or principal allocations. Frequently these triggers are structured to cause the outstanding notes to amortize more quickly. This amortization may be in the form of an accelerated payment schedule or full principal turbo (all collections allocated to pay note principal following certain senior payments in the waterfall). Such performance triggers may be tied to annual appraisals, portfolio utilization, lease cash flow generated (collections test), certain performance ratios like debt service coverage (DSCR) or the passing of a transaction's anticipated repayment date (ARD), which often occurs seven years following close. A utilization trigger is expected to be structured effectively by replicating actual physical aircraft use, in other words, if an aircraft is on lease but not flying, then this scenario is expected to contribute to lower asset utilization and fall under non-utilized aircraft, contributing to a lower utilization rate calculation.

Step-Up Interest

Operating lease aircraft securitizations frequently incorporate step-up interest features, whereby following a specific date, an additional coupon will accrue on a specified class of notes. This step-up interest is typically subordinated to other obligations of the trust, including full principal repayment of subordinate classes and other amounts. Importantly, the nonpayment of this amount (to the extent there are not available funds) is typically not defined as an event of default.

In the case of the operating lease aircraft sector, the subordination of this amount and its exclusion from the events of default is a consistent and well understood and disclosed market convention. For this reason, in cases where the nonpayment of this amount will not result in an event of default, Fitch's ratings do not address the payment of step-up interest.

Aircraft Novation Risk

Following closing of a transaction, aircraft which are not yet owned by a securitization trust must be novated and their ownership transferred to the trust during a specified delivery period, which typically does not exceed 365 days after closing. Novation risk arises when aircraft fail to novate/transfer prior to the lapse of the delivery period, which may result in a significant concentration risk across airline lessees, aircraft asset types and models/variants or geographic regions.

If a material number of aircraft fail to transfer into a transaction by the end of the delivery period, we expect the associated concentration risk to be mitigated through structural features, including a minimum aircraft count threshold and/or a sequential principal paydown of the notes. Such a sequential principal note allocation is a common structural feature used in many other asset classes, with senior-subordinate capital structures accelerating payments to the senior classes. This type of structure helps protect the senior note classes by paying down and building enhancement quickly, when a significant number of assets do not novate and transfer into a trust.

If mitigating features are not present, this absence will constrain ratings, including across the senior note tranches, and/or potentially limit ratings to below investment grade. The presence of mitigating features, however, does not preclude ratings constraints *(see Pool Concentration Adjustments section)*.

Aircraft Substitution Risk

Aircraft lease ABS also may incorporate the ability to use aircraft disposition proceeds to acquire substitute aircraft, in lieu of allocating receipts to principal payments. This structural attribute provides flexibility to the trust, allowing for the disposition of older assets while maintaining asset diversity and lowering prepayment risk to investors. The performance of the trust and, thus, outstanding ratings can also benefit, by reducing the possible adverse selection associated with an aging aircraft portfolio. However, this feature can create additional extension risk and ambiguity regarding the portfolio's future asset mix, irrespective of a transaction's criteria for substitutions. This consideration is particularly relevant in the face of replacement technology.

Parameters dictating the characteristics of subsequently acquired assets may vary. These criteria generally address the characteristics of the acquired aircraft and attached lease. Fitch believes these parameters provide the trust with more certainty as to the future asset composition and the characteristics of cash flow. Substitution parameters are evaluated to determine the possible migration of the asset composition in the portfolio. Parameters that allow the portfolio to materially migrate in a negative direction could be detrimental to assigned ratings.

Concentration Limits

The nongranular nature of a pool of aircraft leases creates concern surrounding concentrations. For this reason, aircraft securitizations typically employ concentration limits defined by the transaction documents. These concentrations may be related to a specific lessee, aircraft type, lease type, country or geographic region. These limits serve to reduce the potential amount of concentration risk present in the pool as the transaction seasons.

Legal Considerations

Fitch's analysis of special-purpose vehicles (SPVs) in structured finance is described in detail in the "Global Structured Finance Rating Criteria" report. Structural risks can affect the rating in the event that legal uncertainties pose a threat to the availability of cash flows or the collateral itself. Fitch's analysis includes a review of the legal structure, including transaction documents, furnished to confirm cash flow derived from the assets will not be impaired or diminished.

Operational and Counterparty Risks

The following section highlights counterparty risks that are common in aircraft ABS transactions. However, they should be considered in conjunction with the relevant counterparty risk and global structured finance criterion. For more information on counterparty risk, see Fitch's "Structured Finance and Covered Bonds Counterparty Rating Criteria" and "Global Structured Finance Rating Criteria."

Lessor (Originator/Seller/Servicer) Operational Review

The lessor will affect the performance of the underlying assets and, ultimately, an aircraft ABS transaction. Fitch analysts review the operational processes for each lessor/seller/servicer participating in a securitization rated by Fitch.

The result of Fitch's review may lead to adjustments to a transaction's assumptions and/or stresses, application of a rating cap, or cause Fitch to decline to rate a transaction. These adjustments may include poor financial or operational strength; inadequate ability or lack of experience in servicing; and lack of or inadequate financial, operational or performance data/information provided by the applicable party. The ability to replace the servicer and assess the operational capabilities of that replacement servicer would be a factor in our assessment.

Fitch conducts periodic reviews of the sponsor/seller/servicer's operations, including their origination, underwriting, and servicing capabilities as well as their risk mitigation practices and financial performance. The financial review is often combined with a review by Fitch's Financial Institutions and/or Corporate groups. Reviews are performed at issuance for new issuers, and updated as needed to reflect material changes in personnel or management, business model, portfolio asset performance or market factors. A summary of items typically discussed can be found in Appendix C.

Fitch's operational analysis focuses on three main factors:

1. Corporate performance, including operational and financial stability;
2. The capabilities and quality of the originations and underwriting processes; and
3. The capabilities and quality of fleet management including all servicing operations.

In addition, Fitch may review a sample of credit files as described below.

Corporate Review

Corporate background and performance are a function of management quality and financial strength, as are operational risk management capabilities. Origination and underwriting strength are evaluated by reviewing the originator's origination and sourcing procedures, underwriting integrity, quality control and risk management within the origination function.

Factors considered in the review include: financial condition; legal structure and ownership; management stability, tenure and depth; operating history and experience; compliance and corporate governance; legal; competitive position; portfolio characteristics; and competitive growth strategy.

A final component of the analysis is corporate governance. Integrity of the audit process and regulatory compliance (where required) are elements of governance that are pertinent for lease origination, underwriting, and servicing. Fitch expects an issuer to comply with all audit processes and regulatory requirements.

Technical Management

As previously mentioned, one of the key functions of the servicer is to maintain the integrity and airworthiness of all aircraft in its fleet. For this reason, many owners of large leasing fleets

employ an in-house technical management team. Those servicers without the critical mass to employ such a staff often rely on the management services of other larger lessors or maintenance and repair organizations (MROs).

Originations and Underwriting

Due to the mismatch between operating lease terms and the securitization term, as well as the potential for frequent lessee defaults, a servicer's ability to market and remarket aircraft efficiently is imperative to the ultimate performance of a transaction. Fitch reviews remarketing staff procedures, experience, and demonstrated performance to evaluate a servicer's ability to maximize lease cash flow for the portfolio of aircraft supporting the securitization.

Credit Evaluation

Fitch requests to discuss the credit-scoring methodology and the relative importance of credit scores to the lease-approval process. If credit-scoring models do not exist, the lessor should be able to detail how lessee credit is evaluated and affects origination decisions. Airline credit evaluations typically incorporate a thorough financial and operational review of a company, which often includes on-site meetings.

Jurisdictional Matters

A knowledgeable and experienced legal team is paramount to any lessor's success, given the international nature of the aircraft operating lease business. Due to the multiple jurisdictions in which lessees are based, aircraft lessors bear risk to various legal environments. Differences in bankruptcy laws in lessees' countries could impair the lessor's and, in a securitization, the issuer's ability to repossess an asset. The ratification of the Cape Town Convention may lessen this risk in some jurisdictions. See "Aircraft Enhanced Equipment Trust Certificates Rating Criteria" for further details.

Credit Monitoring

Periodic evaluations of lessee creditworthiness discussed above can help alert a lessor to possible credit concerns. Fitch views frequent evaluations and timely identification of poorly performing airlines positively. A lessor's risk-mitigating actions could reduce the frequency and/or severity of default in a securitization.

Insurance

Fitch expects that aircraft in a securitization portfolio are appropriately insured to cover any event of loss or potential liability. Lessors generally have minimum insurance thresholds for aircraft by insurance type and aircraft body type. Lessors typically either maintain or require lessees to maintain airline hull and liability insurance. The required amounts of coverage for these policies vary and can be larger for wide-body aircraft than for narrow-body due to the cost and size differential. For all assets to be included in a securitization, the named loss payee should be the issuer.

Maintenance Reserves

Mismatches between a servicer's estimated costs of maintenance and, consequently, reserves collected and the actual cost of maintenance procedures can reduce available cash flow to repay securities.

As mentioned previously, certain leases may also allow for EOL adjustments whereby the lessee pays, or is paid, the value of the difference between the maintenance condition of the asset when initially delivered and the condition at lease termination. This practice may increase the degree of credit risk allocated to a specific lessee. Fitch requests projections by third-party service providers of maintenance reserve collections and maintenance expenditures over the term of the securitization. Based on data made available to Fitch and the models of aircraft in the pool, Fitch will stress cash flow to simulate shortfalls in expected maintenance reserves available to pay contracted maintenance.

Credit File Review

In conjunction with its review of the origination and underwriting processes and practices of an originator, lessors provide an overview of their internal process; Fitch may also request the lessor's underwriting analyses of several lessees. This discussion is expected to include, but is not limited to, the lessor's view of the airline's financials, passenger traffic, load factors and

market position. If applicable, the lessor is also asked to provide its internal ratings/watch alerts for each lessee discussed in the review.

Fitch may enquire about leases with certain airlines in the lessor's managed portfolio and attributes thereof, including exceptions/inconsistencies to the stated guidelines and policies against the actual origination processes employed in the files reviewed.

Rating Assumption Sensitivity

Given the number of variables when evaluating operating lease securitizations, Fitch conducts a number of model runs with varying assumptions. Fitch determines on a transaction-by-transaction basis which scenarios are most insightful. The following section details possible sensitivity scenarios related to asset values, lessee creditworthiness and a combination of the two. Actual sensitivity scenarios run when assigning or reviewing transaction ratings may also depend on, among other things, collateral types, collateral ages and the economic environment.

In the table below, for a representative transaction, we decreased the starting Fitch Value by either 10% or 20%. Under this scenario a 10% decline in value indicates likely one notch downgrades for the class B and C notes and no change in the rating for the class A note. A 20% decline in value indicates probable two to three notch downgrades in ratings for the A, B and C notes.

Sensitivity to Aircraft and Engine Value Assumptions

	Current Rating	10% Decline	20% Decline
Class A	Asf	Asf	BBB+sf
Class B	A-sf	BBB+sf	BBB-sf
Class C	BBBsf	BBB-sf	BB+sf

Source: Fitch Ratings

Fitch may also stress the assumed lessee credit rating. While a lessee may carry a certain rating during the initial or subsequent review of a transaction, the potential for deterioration is high during future industry downturns. A lower IDR increases the likelihood of lease default, which further stresses the UR and, in turn, the cash flow available to the trust.

In the example below, we lowered the lessee IDR by one or two categories from an assumed 'B' rating for all current and future lessees in the transaction to an assumed rating of 'CCC' in scenario one or 'CC' in scenario two. The effect is a probable one or two notch downgrade in the case of a one-category lessee IDR downgrade and more severe downgrades in the two-category downgrade scenario given the high default rate of 'CC' rated lessees, resulting in more defaults and related aircraft time off lease and higher repossession and remarketing costs.

Sensitivity to Airline IDR Assumption

	Current Rating	One Category Downgrade	Two Category Downgrade
Class A	Asf	A-sf	BB+sf
Class B	A-sf	BBBsf	BBsf
Class C	BBBsf	BBB-sf	BB-sf

Source: Fitch Ratings.

Finally, we ran these sensitivities simultaneously. In the table below, we decreased both the aircraft and engine values and the airline IDR. Under these scenarios, category-level downgrades would be probable.

Sensitivity To Airline IDR and Aircraft and Engine Value Assumptions

	Current Rating	10% Value Decline Plus One Category IDR Downgrade	20% Value Decline Plus Two Category IDR Downgrade
Class A	Asf	BBBsf	BBsf
Class B	A-sf	BBB-sf	Bsf
Class C	BBBsf	BB+sf	CCC+sf

Source: Fitch Ratings

Surveillance Analysis

Monitoring the performance of rated transactions forms an essential part of our rating process and allows us to assess whether transactions are performing in line with initial expectations. We rely on information provided by monthly servicer reports to conduct this analysis.

Rating review committees are convened at least once every 12 months, or following the identification of performance developments, which may include events such as:

- The downgrade or default of a transaction counterparty or materially large lessee;
- The breach of a documented performance-based trigger; and
- Lease collections activity that is significantly outside Fitch's forecast expectations (above or below).

A rating committee review shall result in a rating action (i.e. an upgrade, downgrade or affirmation) and a Rating Outlook or Rating Watch being assigned or reviewed.

Rating reviews are conducted consistent with the criteria described in this report. Fitch expects to receive updated collateral pool information, including recent maintenance adjusted market and base appraisal values and lease terms. However, updated lifetime third-party maintenance expense and collection projections are not typically received following transaction close.

Fitch uses the current characteristics of the lease portfolio, including lessee payment performance and outlook *(see Current Lessees section on page 10)*, to generate the portfolio cash flow in the asset model. The resulting cash flow serves as revenue in the liability modeling of the transaction. Updated sensitivity scenarios, if any, will be based on transaction performance, collateral characteristics and economic factors.

Fitch may not update its asset and liability models for surveillance reviews when all the below conditions are met:

- Aircraft composition and overall asset performance (as indicated by lease collections) have been broadly consistent with expectations since the last full asset and liability analysis;
- It is not a performance-based trigger review as identified above;
- There have been no material changes to asset or cash flow assumptions since the last asset and liability analysis; and
- The leverage (expressed in terms of LTV) or CE of the individual tranches of notes, if under a pro rata amortization period, has not changed materially since the last model run or, if during sequential amortization, has changed only for the senior notes and the latter already are at the 'Asf' cap.

For the sake of clarity, ratings upgrades or downgrades will always be backed by modelling.

In addition to the quantitative review discussed above, Fitch also evaluates the characteristics of the portfolio as a whole to identify trends in transaction performance. Such an evaluation will look to trends in lease collections, leverage, and market conditions for the aircraft that support the specific transaction. Given the long tenure of the typical operating lease ABS transaction, we will consider these and other factors in concert with modeling results in determining the appropriate rating action.

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 our 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 rating action commentaries, 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.

Criteria Disclosures

In the initial rating report or rating agency commentary (RAC), Fitch expects to disclose material rating assumptions and pertinent rating considerations including the following items, if applicable:

1. Application of a rating cap if other than 'Asf' and rationale;
2. The aggregate FV of the portfolio;
3. The weighted average assumed lessee credit rating;
4. Deviations from Fitch's published aircraft tier classifications;
5. Assumed engine phase and phase migration dates by engine type;
6. Freighter aircraft assumptions;
7. Alternative consideration for leasable life;
8. Material maintenance stress assumptions;
9. Rating sensitivities that influence the final ratings ; and
10. Variations to criteria.

In many cases, Fitch uses the assumptions derived from its initial rating analysis in its surveillance reviews. To focus Fitch's RACs on the most important changes to the rating, Fitch will not disclose these assumptions in subsequent RACs unless there is a material change to the assumption.

Limitations

Ratings, including Rating Watches and Outlooks, assigned by Fitch are subject to the limitations specified in Fitch's "Ratings Definitions."

Appendix A: Engine Lease Securitizations

Transactions backed by leased engines are also covered under this criteria report. While engines share many similarities to the aircraft they support, there are different considerations for projecting periodic and terminal cash flow and certain adjustments must be made to take these differences into account. This section discusses some primary differences between engines and aircraft and how Fitch adjusts the operating lease aircraft methodology to compensate for those differences.

Fitch uses the assumptions disclosed in this section to surveille engine transactions. In the event Fitch is approached to rate a new issuance we expect to receive additional market data and data from the servicer at that time and re-evaluate the depreciation and market value decline assumptions noted below, which may lead to changes in those assumptions.

Value Retention

Commercial aircraft engines have historically proven their ability to retain and even gain value over long periods. Driving this ability are maintenance procedures and the components of the engines. Replaceable parts, particularly life-limited parts (LLPs), make up much of the value in an engine. As these parts wear down from use, the engine's value declines. When LLPs are replaced through maintenance procedures, the engine value increases. Thus, the maintenance status of the engine becomes more important than the age of the engine in determining the engine's value. In the majority of operating leases, maintenance expense is the obligation of the lessee. In addition to the maintenance status, the value of an engine is driven primarily by demand for the aircraft that engine propels, which in turn depends on the former's position in its production run; we call this concept "phases." For cash flow modeling purposes, engine phases are the equivalent of tiers for aircraft.

Annualized Base Depreciation Rate Assumptions — Engine

(%)	Phase 1	Phase 2	Phase 3
	0.0	5.0	10.0

Source: Fitch Ratings

Longer Leasable Life

As a result of an engine's ability to regenerate through maintenance procedures, leasable life can be considerably longer than its aircraft counterpart. In fact, the most significant limit to an engine's leasable life is obsolescence. This limit comes in the form of newer technology which occurs in the course of development of more advanced replacement engines and, usually concurrently, aircraft models. Asset leasable life is thus predicated on the remaining time in the supported aircraft's production run. Due to the engine's extended life, it often accounts for the majority of aircraft value at the end of an airframe's life.

To determine asset cash flow for engines, Fitch employs the same asset model utilized for evaluating pools of aircraft. Similar to the methodology for aircraft, Fitch will incorporate different depreciation and MVD assumptions for each engine type in the portfolio. The initial assumed engine values are depreciated monthly, depending on where the engine is in the production cycle and, consequently, how many years remain in the engine's leasable life.

Fitch currently monitors several engine transactions and will apply the depreciation rates and MVD assumptions as detailed in the nearby tables. In the event Fitch rates a new engine issuance, we will source additional market data from the servicer and other sources at that time and refresh our assumptions.

Engine Phases

Fitch divides value assumptions into three phases of an engine's production cycle, as per the tables aside. Engines are assumed to be in Phase 1 until the aircraft on which the engine is being utilized reaches the end of its production cycle. During Phase 1, Fitch generally assumes no base depreciation on the engine, but the engines are still exposed to market value declines.

Market Value Decline Target Assumptions — Engine

(%)	Phase 1	Phase 2	Phase 3
Asf	10.0	15.0	25.0
BBBsf	7.5	12.5	22.5
BBsf	5.0	10.0	20.0
Bsf	2.5	7.5	17.5

Notch-specific stresses are interpolated between the assumptions applicable to adjacent rating categories. At 'CCCsf' there is no stress
Source: Fitch Ratings

Phase 2 is characterized by the fragmentation of the operator base for the supported aircraft. During this phase, spare engines may or may not continue to be produced to support demand from the increase in operators. The length of Phase 2 can vary from a few years to 10 years depending on characteristics of the market for the supported aircraft. In such cases, Fitch's assumptions regarding the depreciation and length of this phase will vary.

Phase 3 marks the rapid deterioration in engine value as the aircraft supported by the engines begin to be retired in large numbers, and market demand for the engine deteriorates. During Phase 3, Fitch assumes significant value deterioration, consistent with assumptions for aircraft

in the final years of their assumed useful life. Again, the length of this phase can vary and for some engines may last up to 15 years. Fitch will disclose the phase migration for the securitized portfolio in its transaction reporting.

Interchangeability and Mobility

Another difference between aircraft and engines is the relatively better mobility of engines and their multiple-airframe applicability. Because engines can often be used on multiple aircraft frames, certain engines' susceptibility to problems with specific aircraft can be limited. If the primary airframe supported by an engine is no longer manufactured, it may still be used on an in-production aircraft model, which could extend the engine's leasable life.

The utilization rate of a portfolio of engines is difficult to predict. As a result, unlike the approach taken for aircraft, the lessor assumptions (downtime, lease extension probability, future lease terms, and repossession and remarketing expenses) are portfolio-specific instead of criteria-wide and are assigned during the initial rating analysis and may be adjusted in subsequent reviews.

Long-Term and Short-Term Rentals

Engine lessors have classically offered two products — short-term rental and long-term operating leases. As assets are continually coming on and off lease during the term of a securitization, transactions will have exposure to both types of leases irrespective of initial lease characteristics of the portfolio. Short-term rentals have traditionally been defined as any lease with a term to maturity up to one year, while anything longer would be considered a long-term operating lease. Yields on short-term leases are generally higher than those of long-term operating leases. However, assets on short-term leases are more likely to experience downtime given the constant need to remarket the engine. Conversely, while long-term operating lease arrangements offer somewhat lower yields, there is less risk of frequent off-lease downtime. As a result, asset cash flow can be meaningfully affected by the ongoing composition of the pool between short-term and operating leases.

The propensity to execute one type of lease rather than the other is servicer specific, based on internal criteria and strategy. To properly evaluate portfolio exposure to each type of lease, Fitch first reviews available lease origination data, from which it determines the probability of executing each type of lease. These probabilities are used to calibrate Fitch's asset lease model to create the appropriate mix of short- and long-term future leases.

Power-by-the-hour agreements, which are more common in times of fleet management challenges and market disruption, are generally assumed to fall within the short-term lease category, but the lessor's track record will be assessed on a case-by-case basis.

Lease Rate Factors

Consistent with aircraft operating leases, engine lease terms follow similar trends throughout the engine's life in that monthly rental amounts do not decline as rapidly as engine values, leading to increasing LRFs over time. However, due to the ability to restore an engine to like-new condition through the replacement of engine parts, LRFs are viewed in conjunction with the current phase of the engine rather than its age, and in certain cases may not change between Phase 1 and Phase 2. While Fitch reviews industry data in order to derive appropriate LRF assumptions by engine phase, more emphasis is given to lessor-specific data.

As mentioned previously, short-term rentals demand higher lease rates than long-term leases in order to offset the increased risk of off-lease downtime. As a result, Fitch's LRF assumptions for short-term leases are higher than those of long-term leases. Fitch expects to receive historical lessor data including both long- and short-term lease rates by aircraft type and encompass a full economic cycle.

Accession Risk

In certain foreign jurisdictions, an engine affixed to an aircraft may be viewed legally as part of that aircraft, such that rights of the aircraft's owner supersede those of the engine's owner. In these jurisdictions, the lessor may encounter difficulty recovering an engine currently attached to an aircraft from a lessee. Fitch reviews lessees' jurisdictions to determine the amount of accession risk present in an initial pool of aircraft engines and attached leases. Additionally, Fitch reviews protections in place, such as securitization concentration limits on jurisdictions with accession risk, insurance or recognition of rights agreements with the applicable lessees.

Appendix B: Onsite Visit Agenda and Discussion Topics

The table below details the key topics and data that Fitch may discuss and/or receive during on-site meetings with an issuer or servicer.

On-Site Review Agenda

Topic	Sub-Item
Business Overview	**Management and Strategy** • Management team overview experience and board composition • Company legal structure • Historical financial performance, current funding sources, and future strategy • Parent company relationship • Roles and responsibilities of different functional groups and business segments • Internal and external accounting audits and regulatory compliance
	Competition and Markets • Primary competitors • New entrants, current and expected competition from domestic and foreign lenders and their impact on the business • Active markets and targeted growth areas, as well as their risks and mitigants
	Industry Outlook • Company's industry and aircraft values outlook for the next five years • Forecast for demand growth for leased aircraft by asset type • Projected growth and decline for various areas and asset types
	Environmental, Social and Governance • Strategy including across lessor fleet management and aircraft purchases/sales
Portfolio Strategy	**Acquisition Objectives** • Current and expected future status of the portfolio by size, aircraft type, model, region, age, etc. • Current and future acquisition strategy, including source of purchases, specific asset types and hold periods • Order book for future deliveries
	Investment Criteria and Procedures • Details of asset acquisition process, including: – specific asset criteria and standards – valuation – economic evaluation of opportunities – technical, maintenance and legal evaluation – initial marketing considerations – approval process • Parts inventory criteria and procedures • Lead time from asset acquisition to utilization within the fleet
Originations and Underwriting	**Policies and Procedures** • Detail of origination process, underwriting criteria and eligibility requirements, and any notable changes in recent years
	Marketing • Detail on when marketing efforts begin • Level of emphasis on extensions
	Collateral Valuation • Models used to evaluate asset risk and how they impact underwriting decisions • Detail on how valuations versus market rents impact lease rate decisions
	Lessee Evaluation • Lessee credit scoring system, including key inputs and how scores impact leasing and pricing decisions • On-site diligence of lessees and frequency thereof • Determination of security deposits and/or LOCs
	Legal Review • Lease due diligence, registrations and repossessions • Required documentation and detail of exceptions • Evaluation of jurisdictions; forbidden jurisdictions; and protections put in place for troublesome jurisdictions • Legal team expertise and use of local counsel • Analysis of local tax law, bankruptcy code, repossession rights, and lessor liability for tort claims • Views on the ultimate enforceability for the Cape Town Convention
	Lease Approval • Detail of lease approval process, including credit and investment authorities • Exceptions to the criteria/approval process, if any • Experience of underwriters
	Aircraft Transitions • Extension rates and lease terms • Average time on ground and remarketing costs

On-Site Review Agenda

Topic	Sub-Item
	– Costs borne by lessee versus the company, and tradeoff with lease rates • Stance on aircraft reconfiguration in remarketing
	Sales/Residual Value • Decision process on selling, re-leasing, and/or performing maintenance on an aircraft • Historical set residuals and appraisals versus actual sales proceeds • Detail on process to sell aircraft, including: – Upcoming maintenance – Targeted sale age • Use of third parties
	Portfolio Risk Management • Detail on internal concentration limits for lessees, regions, airline types, etc. • Minimizing potential exposure to regional downturns • Models used to evaluate individual transaction as well as portfolio risk
Lease/Loan Management and Servicing	**Credit Monitoring** • Monitoring of lessees • Frequency of financial reviews and on-site visits • Actions taken to mitigate problems or potential default
	Delinquency and Repossession • Summary of arrears and problematic lessees • Progression of collections process from initial delinquency to eventual repossession, including involvement of various company functions • Repossession case studies • Costs incurred and time taken to repossess aircraft
	Insurance • Insurance maintained by the company and lessees • Minimum policy dollar value requirements • Use of political risk insurance for various jurisdictions • Tracking insurance compliance
	Technical, Maintenance and Reserves Policy • Use and determination of end of lease adjustments and maintenance reserve payments; contractual maintenance cost escalations • Maintenance arrangement concentrations in the portfolio • Frequency and scope of inspections • Tracking and reporting of utilization • Maintenance record-keeping and compliance with airworthiness directives • Technical team involvement in redeliveries and repossessions • Acceptable MROs and replacement parts
Systems and Procedures	**Staffing** • Staff numbers and experience by department
	Collections and Reporting • Billing and processing procedures through benign and recessionary environments • Authority to restructure contracts • Delinquency trends through a market cycle
	File Maintenance • Storage of original hard files and maintenance records • Details on file back-up
	Management Information Systems and IT • Systems used for various functions and level of integration • Lease management and servicing system back-up / replication • Cybersecurity
	Internal/External Audit and Compliance Functions
	Disaster Recovery and Contingency Plans
Credit File Reviews	Fitch requests to complete a sample contracts file review to observe the origination and underwriting processes and practices of a lessor. This review is expected to take place during an on-site visit, if possible. Fitch requests to review credit decisions that represent the following, as applicable: • Simple approval • Rejection • Approval with additional protection • Exception to policy

Source: Fitch Ratings.

Appendix C: Expected Leasing Performance and Collateral Data

The following table summarizes the data that Fitch expects when rating a new deal and for surveillance purposes.

Data Expectations

Item	Sub-Item
Transaction Data Tape	
MSN	
Aircraft type	
Date of manufacture	
Engine type	
Lessee	
Lessee country	
Primary flight route(s)	
Lease start date	
Lease end date	
Lease rates and lease rate type (floating/fixed/variable), any lease deferral plans and related terms	
Lease payment frequency	
Security deposits (LOC or cash)	
Maintenance reserves (LOC or cash)	
Half-life and maintenance-adjusted base and market value appraisals from three independent ISTAT-certified appraisal firms	
Servicing History (for each event)	
Remarketing (incl. Extensions)	Aircraft type and MSN
	Aircraft manufacture date
	Old lessee
	Date of prior lease end
	Remarketing downtime
	Remarketing cost
	New lessee (if applicable)
	Date of new lease/extension start
	Date of new lease/extension end
	Lease rate
	Appraised value at execution
Repossession	Aircraft type and MSN
	Aircraft manufacture date
	Defaulting lessee
	Date of old lease termination
	Date of repossession
	Repossession downtime
	Repossession cost
Historical Sales	Aircraft type and MSN
	Aircraft manufacture date
	Date of sale
	Most recent appraised value at sale
	Gross sales proceeds
Historical managed utilization rate and method of calculation	

Source: Fitch Ratings

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