ORIEL

VALUES IN PERSPECTIVE

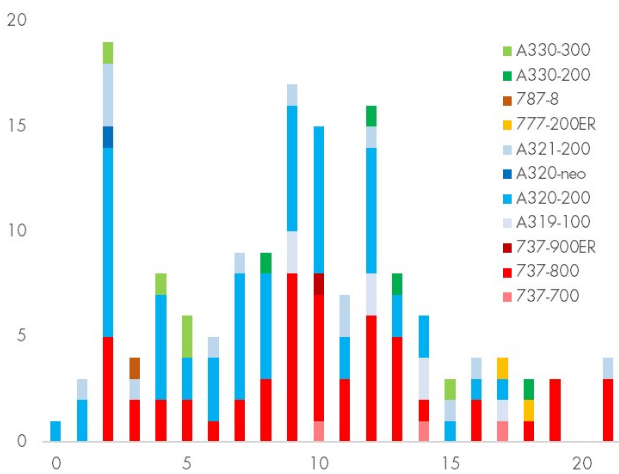
ORIEL VIP REPORT 24

Nov 2019

Welcome to the 24th OrielVIP report in which we are discussing the recent flurry of aircraft ABS announcements. In addition to Oriel's opinion on the aircraft fleets and values, David Berkowitz of Radar Asset Management provides some commentary in this update on portfolio diversification and airline lessee credit risk issues.

Recent ABSs – Oriel's commentary

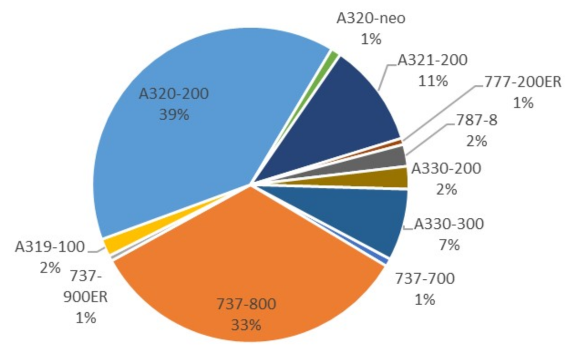
Seven aircraft ABS announced within one month attract attention and make us wonder as to the causes of such a rush to the post. Featuring between 18 and 23 aircraft each the ABSs cover a total of 154 aircraft. While the overall average age is just above 9 years, there are two notably "youthful" issuances WAVE and Raptor with 5.0 and 4.4 average age, respectively. Over a quarter of the total fleet on offer is 0-5 years old.



Source: CAPA Fleets database

Looking at the type composition of the total fleet, the A320 and 737 families comprise 92% by number and 87% by value, according to the Oriel's Market Value analysis. The majority of the single-aisles are the more desirable A320-200s and 737-800s, including a 2017 vintage A320neo, as well as 17 A320-200s, 5 A321-200s and 9 737-800s, all under 5 years old.

Only a handful of twin-aisles are thrown in making up only 13% of the Oriel's aggregate Current Market valuation. Nearly one fifth of that portion is attributed to the 2016 vintage 787-8, the only new technology aircraft. It is complemented by 4 mature A330-200s (8-18 years old) and 5 younger (2-15 years old) A330-300s. Despite having their values barely in double figures, two venerable 17-18-year-old 777-200ERs bring the attraction of Air France credit. This small sprinkling of twin-aisles is spread over four issuances, with Falcon having the highest proportion of 30% of its total Oriel valuation.

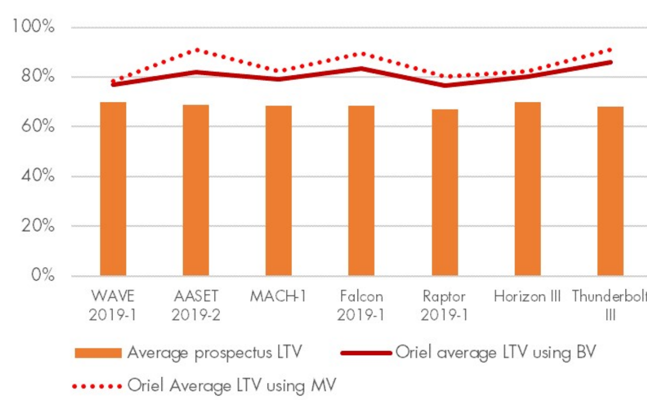


Source: CAPA Fleets database

On the surface, the seven recent aircraft ABSs offer a largely youthful portfolio of desirable single-aisle aircraft with three of the ABSs comprised exclusively of narrow-bodies. Under the surface, such prevalence of the younger A320ceo and 737NG aircraft indicates uneasiness about their mid to long-term future and the associated residual value risk.

The issuing lessors are rushing to capitalise on the short period of sharpened demand linked to the short-term market forces, namely the MAX grounding and delays in the A320neo deliveries. However, once these issues are resolved and the current ceo and NG leases and extensions run out the situation is likely to change. Values and lease rates will come under increased downward pressure, exacerbated for the younger vintages by their last-off-the-line position in the production cycle. While mature vintages will be supported by the natural value floor stemming from freighter conversions and engine values, these will be still too low for the younger aircraft.

Our estimate of the recent ABSs' LTVs against Oriel's Base Value is between 77% and 86%, rising to 78%-91% against Oriel's Market valuation. Given the short-term nature of today's market influences, it can be expected that re-leasing of the securitised aircraft will be complicat-

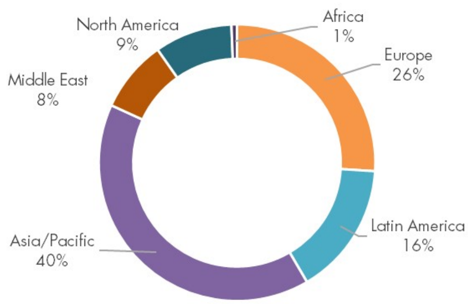


Source: KBRA reports

ed and unlikely to command lease rates similar to recent high levels. Together with the faster depreciation of younger aircraft's values, the already high LTVs are likely to come under increasing pressure in relatively near future.

Recent ABSs – Radar's Commentary

The recent large volume of new aircraft lease ABS issuance brings renewed attention to the underlying airline lessees and how they affect current and projected deal cash flows. Notwithstanding these are asset-base transactions, the ultimate obligors here are airlines of various business models and sizes, globally. In this context, we make some observations and comments below, highlighting some key risks and trends.



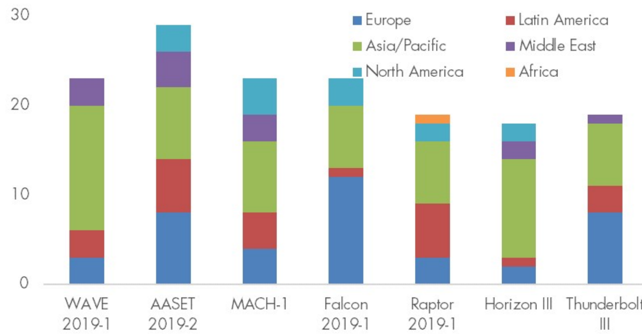
Source: CAPA Fleets database

These recent deals contain lease portfolios with varying regional exposures, as do their issuer/sponsors many of whom are lessors themselves. Most ABS portfolios do not necessarily match up exactly to the geographic breakdowns of their respective issuer/servicer. And that is a matter of some debate which some investors and market observers argue for and some, against. The alignment of servicers and investor objectives and portfolio governance as tradable E-Tranches emerge is an important topic in the aircraft ABS market and requires a separate discussion.

As has been typical in the current the lessor market, most of these recent issues have a heavy weighting towards the Asia/ Pacific region, with 40% of aircraft in aggregate deployed there. Europe accounts for 26% of that total, which is not surprising given the historically high usage of operating leases among European carriers. Likewise in Latin America, with a 16% exposure.

This distribution is by no means uniform across all recent deals, as shown below, with Falcon and Thunderbolt relatively high in Europe exposure, and Horizon III and Wave noticeably low in that region. (Horizon and Wave have correspondingly high exposures to the Asia/ Pacific region). For a number of reasons, it is also typical that most of these deals have minimal exposure within North America, with Wave and Thunderbolt having none.

In terms of maximum regional diversification within the group, no individual recent deal has exposure to all 6 major regions, and only Raptor has exposure in Africa. And finally, it is worth noting two deals have exposure to only four regions: Thunderbolt and Falcon.



Source: CAPA Fleets database

Lease Portfolio Diversification

Recent deals are not well diversified by the conventional definition, neither by region nor by airline lessee. Investors generally prefer at least 20-25 distinct obligors in roughly even amounts for 'reasonable' diversification. But because aircraft leases are not liquid in the way public securities are, a different standard than price volatility (or some other mark-to-market mechanism) needs to be applied. Partly for this reason, an approach that emphasizes the potential impact on lease cash flows generated during the life of a lease, based on the probability of default (PD) by the lessee is used. Generally we capture this risk in a credit rating, whether published by an established rating agency or by proprietary analysis (or both). With respect to secured transactions such as leases or secured debt, a further measure based on the PD that assesses recoverability of principal or 'Loss Given Default' (LGD) gives added dimension.

Lessee diversification

- Most here have 20 or fewer lessees, which should be regarded as the 'bare' minimum for adequate diversification (as discussed above), nor are they in even amounts/ exposures. I.e. the number of names is obviously not sufficient a metric either.
- Likewise, many airlines in the same region are highly correlated with each other and not necessarily inversely correlated, even if they have different business models.
- This is further exacerbated by no discernible hierarchy for risk weightings by lessee. (See credit quality discussion below).

Regional diversification

- Aircraft ABS investors should remember in this sector there exists some auto-correlation *between* regions and certainly *within* regions
- We do acknowledge however, diversification in this sector is inherently difficult, given the small number of definable regions and the spread of globalization generally.
- Current deal limits appear to be quite wide, making

most deals unreasonably vulnerable to regional event risk, among other risks.

- We have observed more U.S. domiciled carriers are appearing in recent ABS deals, as noted earlier. We believe this is driven partly by a growing scarcity of better-quality carriers within certain regions, partly some incremental increase in US carriers taking on operating lease financing and partly due to greater investor recognition, among other reasons.

Other considerations

- Concentration limits: given the strong demand for ABS product, structural protections such as concentration limits have been trending weaker, notably in the Thunderbolt III transaction. In practice however, the geographic and issuer limits overall have been ample to the point that these portfolios may even become significantly *less diversified* over time.
- Note too that limits are also ample for jurisdictions where the local governments are active, cumbersome and protectionist in any court process involving aircraft repossession, fleet liquidation and rent / liquidity recapture. i.e. Brazil, Ukraine, Russia, India.
- This points to the critical need for investors, particularly in C and E tranches, to thoroughly analyse the local repossession and creditor rights regime and process, whether Section 1110, Cape Town or other.
- Another current and growing risk is that the *number* of available lessees able to take in aircraft for re-lease from failed carriers is *declining*, given the recent failures and some M&A activity. Thus, by definition, there is an inherent risk to diversification due to consolidation in the airline sector in some regions and distressed liquidations for various reasons. A possible mitigant to this trend would be a servicer's ability to convince a carrier with an historically cash-financed fleet to consider leasing. Likewise, an investor would need to hope for more start-up carriers in the near future in certain regions. In either case, it is likely that the renewal lease rate would decline vs. the prior rate.

Diversification by deal doesn't always work. I.e. should one or more of these carriers become distressed, there could well be a broader effect on the aircraft ABS market.

Operator	WAVE 201!	AASET 201!	MACH-1	Falcon 201!	Raptor 201	Horizon III	Thunderbo
Interjet	2	0	2	0	2	0	0
GOL	0	5	0	0	1	0	0
American	0	0	2	2	2	0	0
Vietjet	2	3	0	0	0	0	0
S7	1	0	1	2	0	0	1
AirAsia	3	0	0	1	1	0	0
Asiana	1	1	0	2	0	0	1
Air France	0	2	0	1	0	0	2
Indigo	2	1	0	0	0	0	1
Vueling	0	0	1	0	2	0	1

As more aircraft deals come to market, we are seeing multiple deals with the same lessees as above table shows. Investors should therefore be vigilant for outsize airline exposures, even when several different ABS deals are held. Examples here would include American Airlines, VietJet, S7, Interjet, or GOL for example. *We would note though that to date, the bankruptcies of other airlines such as Thomas Cook, Monarch and Jet Airways appear to have had little impact on either the new issue or secondary ABS markets. Further, we are not suggesting that this is a particular near-term concern regarding any of the formerly mentioned carriers. However, our analysis does show there is actually a fair number of deals with little lessee overlap. Thus there are real diversification benefits to holding a combination of certain deals.*

Some deals are more concentrated than others, as measured by appraised value: for example, ACG's Mach 1 deal has an 15.9% exposure to JetStar Pacific, or Carlyle's AASET 2019-1 has 20.4% to GOL. These are high credit exposures, even if they were considered stellar investment-grade issuers and were to have maintenance or security deposits or other forms of credit protection. Other notably high exposures include:

- *PT Batik Air Indonesia (16.1% Exposure in BBAM's Horizon III)*
- *Philippine Air (13.7% Exposure in DAE's Falcon 2019-1)*
- *Alitalia (11.9% Exposure in Thunderbolt III)*

As such, we monitor these credits closely and recommend investors in high and low tranches do the same.

Lessee credit quality

In some cases lessees are rated, but more often not. But with adequate disclosure, a reasonable credit and PD assessment can be made. This In the absence of an agency rating, many investors look to the sovereign rating to derive a proxy for the lessee rating. But more often, this is not adequate and not representative of the risk to cash flows and residual value, nor does it reflect much on the credit profile of the carrier itself (or the odds of [and degree of] government or other support in a bankruptcy.

In aggregate, these portfolios appear to be no better than 'B' on average on a casual review, on an appraised value weighted basis. This is an under-appreciated risk, and taken on its own would be unusual for a portfolio on about 20 'B'-rated credits in a single sector for many debt investors.

On an individual lessee basis,

- The Lion's share seems to be trending towards more single-B or lower rated carriers, or those that are unrated.
- This highlights the need for independent analysis and assessment of a lessee's effective/implied credit rating.

Certain recent ABS portfolios have near term cash flow generation ability risks:

- Aircraft under contract to be purchased by the issuer
- Aircraft not currently earning cash income
- Lessees in or near bankruptcy or may be in arrears on rent
- Aircraft that will likely generate lower income on re-lease if the associated lease is terminated now or soon

The increase in exposure to U.S. airlines as discussed earlier may help the current decrease in credit overall to some of these portfolios.

More servicers entering the fray

- Some are full service lessors with large in-house portfolios and infrastructure
- Some are newer asset-light entities or other alternative business models
- Gauging the servicer: how best to assess performance, conflicts, portfolio yield?
- These are important issues but we will address them separately

Pricing and pipeline

- The ABS market remains very attractive for issuers in the current environment. This is largely a function of low U.S. interest rates and narrowing spreads for competing ABS product
- Record low interest rates achieved in several recent deals
- However yields and spreads on recent aircraft ABS remain higher than those for other larger and more liquid equipment asset-backed public securitizations. Whether this pricing relationship continues will be driven by both supply factors as well as pricing for alternatives to investors.

The aircraft ABS Shadow pipeline for 2020 appears to be as strong as in 2019, barring one of the following:

- A general Capital Markets disruption
- An unanticipated failure of an existing aircraft ABS deal,
- A major airline failure larger than ones we have witnessed year to date,
- A serious product-related issue to a mid life aircraft model type commonly seen in ABS deals.

Trends

Although there have been anecdotal signs of weaker results from carriers globally, particularly those with material Hong Kong-route exposures, the impact on recent ABS portfolios is murky, as a key measure for ABS investors' purposes would be the transaction's Debt Service Coverage Ratio (or DSCR). Likewise, there may be a time lag before an upcoming or actual violation of the DSCR would be reported by a rating agency, leading to a downgrade to one or more tranches of a deal.

Notwithstanding the rash of recent airline failures, most of those *don't seem to be driven by cyclical factors*. Rather, for various reasons, they can be ascribed to flawed or dated business models that finally ran out of capital-raising and cost cutting options or lost out to more innovative business models.

David Berkowitz

- Founder and sole proprietor of Radar Asset Management LLC, which consults and advises on a variety of aviation-related investment, leasing, and fleet financing issues, as well as credit risk management / optimization for aircraft lease portfolios.
- Recognized by both investors and leaders in the aviation finance community for expertise and thought leadership on the evolution of and innovations in airline and aircraft capital markets transactions such as EETC's, aircraft ABS, private placement debt, public debt and lease equity.
- Clients and partners include institutional investors, aviation appraisers/ technical advisors, lessors, law firms, equipment financing advisors and other parties supporting transaction underwriting and exits, portfolio governance and performance management, and lessor industry strategic transactions.
- Over 20 years of aviation investment management, transportation credit research and consulting experience.
- Member, ISTAT Appraisers Program (IAP) Board of Governors and speaker on ISTAT Continuing Education and other worldwide aircraft finance panels and events.
- David consults on airline credit ratings, probability of default assessment, potential influence of default on the performance of the ABS on a lease-by-lease basis and other credit-related issues.

Tel: +1 908-277-1667 Mobile: +1 908-303-8288 Email: dberko@Radar-AeroInv.com

Meet us in Hong Kong at Airline Economics and in Dublin at Everest Useful Life conference. Find us at: www.oriel.aero.

Les Weal
Tel: +44 3330112129
Mobile +44 7913845440
les.weal@oriel.aero

Olga Razzhivina
Tel: +44 3330117676
Mobile: +44 7715868776
olga@oriel.aero