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Chasing investment-grade

China Aircraft Leasing Group is ready to close on post-pandemic opportunities

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JOLCO SURVEY | MORE ABS APPETITE IN 2022? AIR INVESTOR 2022 REGIONALS

(Cautious) optimism returns

Covid-19 restrictions are coming to an end in many countries, bringing much joy to the aviation industry, although there will be other problems ahead for carriers. But as the recent weeks show with the Russian's invasion of Ukraine, another obstacle has presented potentially hampering a clear road to recovery.

The Omicron variant of Covid-19 halted the recovery of the aviation industry in the final quarter of last year and dented new hopes of further recovery in the first quarter of 2022. As *Airfinance Journal* went to press, Russia invaded Ukraine raising concern about how the leasing industry would recover its assets by the 28 March deadline. However, days later IATA released its forecast, insisting that the spread of the Omicron variant did not change the "trajectory for the recovery in passenger numbers". The forecast did not include the downside risks of the Ukraine conflict because it is "too early to determine" near-term consequences. But the trade group anticipates rising energy prices and the avoidance of Russian airspace as potentially having implications for the industry.

Many people talk of the downgrading of the Covid-19 pandemic to an endemic status. New variants will still present a threat but the aviation industry is more equipped to deal with them.

The industry continues to adapt and various indicators suggest its recovery will pick up the pace again this year. Forward bookings, demand, traffic revenues, airline revenues, aircraft utilisation, new orders and production rates are all pointing to a more positive outlook.

Analysts say planned summer peak capacity remains close to pre-pandemic levels.

Increased new aircraft deliveries could lead to more trading activity between lessors and investors, something that has slowed down over the past two years.

Take the top public lessors. Like in 2014 when Aercap acquired ILFC, the market expects some asset sale activity from the GECAS portfolio. Post the ILFC transaction, Aercap sold $2 billion-worth of assets versus $1 billion initially anticipated.

"You will definitely see sales as this is part of our business of recycling capital," Aengus Kelly, Aercap's chief executive officer, tells *Airfinance Journal*.

"We will employ the same asset disposal strategy we had post the ILFC acquisition and shape the portfolio accordingly."

In January, Air Lease said it only sold five aircraft in 2021, but if production rates continue to increase, it will sell $750 million-worth of assets this year. This is not surprising because ALC will take 266 new aircraft from the original equipment manufacturers over the next three years: 85 in 2022, 84 in 2023 and 97 in 2025. This represents almost two-thirds of its orderbook, in terms of aircraft numbers.

BOC Aviation was more of a seller last year. The Singapore-based lessor sold 26 aircraft as it took delivery of 52 new aircraft.

Some argue there is an attractive window in 2022 for investors to gain exposure to the sector.

The final quarter of 2021 saw multiple lessors restarting their asset sales programmes, following a relative quiet year.

There were more portfolios hitting the market in the first quarter of this year, especially combined new- and current-technology Airbus assets.

Leasing companies trade assets, it is in their DNA, but the delays of new deliveries over the past two years have had an effect in their trading activity. Therefore there is a lot of catching up to do.

As one source suggests: "I think we will see a lot of portfolios on offer for a few reasons. Revenues at lessors are still a bit flat but should go up towards the end of this year as airlines come off power-by-the-hour and aircraft on the ground get placed."

The source adds that, in the meantime, sales attract high prices at the moment and this will fill in a lot of the gaps in the bottom-line profits.

The recent merger and acquisition announcements also suggest some future trading activity, whether to avoid credit-risk concentration, geographic concentrations or simply taking advantage of the marketplace (and investor appetite) for tradeable assets, new or mid-life.

Then there are the trading conditions.

As recently as October, investors expected just a solitary interest-rate increase from the Federal Reserve in 2022. But they have revised expectations as consumer-price inflation surged in the final quarter. The Fed could announce as many as five rate rises over the course of this year. Treasury yields and interest-rate expectations in the USA have marched higher since the end of 2021, when the Federal Reserve announced it would accelerate plans to taper its asset purchases. The yield on 10-year Treasuries climbed to 1.9% in mid-January. It reached 1.97% in mid-February, its highest level in two years.

Could this influence aircraft trading, especially in a relatively high asset price environment?

Another factor is oil prices, which have dramatically increased over the past three months.

US Gulf Coast Kerosene jet fuel-type had creeped up from 60 cents per US gallon to almost $2.30 per gallon last October. The oil price trajectory reverted for a brief period, but has been on the rise since.

As *Airfinance Journal* passed to press, it had reached 2.68 per gallon. The IEA member countries, led by the United States, agreed to release 60 million barrels of emergency stockpiles, but it appeared to have had a limited effect on pricing.

A higher oil price environment favours new-technology assets.

But one leasing source says that airlines have enquired about further capacity in the first two months of this year as Covid restrictions get lifted.

Another leasing source says placing Boeing 737-800s is not a problem at the moment. Lease rates are similar to this time last year, he adds. Airbus A320 inventory is also "relatively OK" to place, although IAE-powered assets are proving more challenging because of oversupply.

The potential repossession of more than 500 aircraft from Russian operators could change this market dynamism and the Russian invasion of Ukraine has triggered concerns about the leasing industry's exposure to the region amid fears that western sanctions could disrupt payments and impair efforts to recover assets.

Bar the Russian/Ukraine conflict the summer season could see a return to normality in capacity, at least on the short- and medium-haul operations.

Airline consolidation

The merger of Frontier Airlines and Spirit Airlines, which is set to complete in the second half of this year, will create a competitive ultra-low fare airline, according to Bill Franke, Frontier's chairman and managing partner of Indigo Partners.

Canadian carrier WestJet has also agreed to Sunwing Vacations and Sunwing Airlines to bring a complementary business and strengthen its leisure offering. Could the airline industry see more consolidation?

There are headwinds for airlines that could influence their trajectory. Business travel return is slow, fuel prices are on the rise and so are airport charges.

OLIVIER BONNASSIES
Managing editor
Airfinance Journal

Cover story

CALC pumps up its muscles

Strong ESG credentials, access to cheap capital and the region's largest lessor orderbook will pave the way for China Aircraft Leasing Group to gain an investment-grade rating, its founder and chief executive officer, Mike Poon, tells **Dominic Lalk**.

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Former leasing executives form new company

Lynn Guiney and Gerard (Garry) Burke have registered a new company, Soleir Aviation Capital, with Companies House Ireland.

The move marks the first female-founded aircraft operating lessor and should attract environmental, social and governance-focused investors looking to support diversity in the sector.

The company was registered on 11 November in Dublin, Ireland.

Guiney, who previously served as the head of Europe, Middle East and Africa (EMEA) at Avolon, is listed as the company director.

She stepped down from her Avolon role in September 2021. Guiney previously worked at Standard Chartered Bank as a managing director in its aviation finance division with global remarketing and EMEA origination responsibilities.

She has held various aircraft leasing and finance positions, including several senior origination and management roles at AWAS and SMBC Aviation Capital (formerly RBS Aviation Capital).

Guiney declined to comment on the company registration.

Burke is the secretary, according to the registration. He previously worked as the global head of structured finance at Standard Chartered Bank, responsible for aviation and shipping portfolios. Burke was the chief executive officer of Pembroke Capital when Standard Chartered Bank acquired it in 2007. He had previously held various positions at aircraft leasing companies GPA Group and GE Capital Aviation Services.


Lynn Guiney

MUFG names new head of aviation asset management

Geraint Sampson has joined MUFG Bank as director and head of aviation asset management within the bank's global aviation finance office.

Sampson has more than 30 years' experience in the aviation sector, having previously held positions at General Electric, Virgin Atlantic Airways, Royal Aero, CIT, Avolon and, most recently, Boeing Capital, where he was senior manager, powerplant, handling aircraft transitions and returns.

His long-standing expertise spans aircraft and engine management, including maintenance, airline, leasing and manufacturer.

Sampson is responsible for creating an asset management capability to further strengthen MUFG's technical and lease management offering and support the lending platform with necessary detailed operating lease and aircraft condition analysis, in line with strategic ambitions to provide cross-border solutions for aviation clients globally.

Based in London, he reports to Vicente Alava-Pons, MUFG co-head of global aviation.

"Geraint's wealth of experience will be key to differentiating MUFG in the market as we continue to build out a best-in-class team," says Alava-Pons.

"We take pride in our ability to tailor solutions for clients, and Geraint's appointment will further enhance our technical expertise, providing added value to our offering to airlines, operating lessors, investors, airframe and engine manufacturers, traders and MROs [maintenance, repair and overhaul companies]," he adds.

Heinemann joins NAC

Nordic Aviation Capital (NAC) has hired Klaus Heinemann as a strategy consultant pursuant to naming him non-executive chairman of the board on emergence from Chapter 11.

Heinemann brings more than four decades of aviation financing and board expertise to NAC, having held senior leadership roles throughout his career.

He was chief executive officer (CEO) of Aercap for 10 years to 2012, where he was instrumental in building the firm into a top global aircraft lessor.

A banker, Heinemann began his career in 1976 at Bank of America, where he worked for 11 years. He then served as joint general manager at Long Term Credit Bank from 1988 to 1998, where he built its aviation financing franchise. In 1998, he joined DVB Bank and was on the executive board until 2002, driving its transformation into a global transportation-focused bank.

Since retiring from Aercap, Heinemann has been an independent director at multiple firms over the past decade. He is an independent board member of Hamburg Commercial Bank. He is also a former chairman of Ingrid Hotels and Finnair and a former board member of Algeco Scotsman.

Blueberry expands with ex-Airbus VP structured finance

Former Airbus finance executive Yann Ballet has joined asset management and remarketing company Blueberry Aviation as a senior adviser.

Ballet has more than 30 years' financing experience in aircraft and structured finance with experience covering aircraft financing structures, including mortgage debt, leasing, capital markets, Islamic financing, investment funds and corporate financing.

He previously served as vice-president of structured finance at Airbus, which he joined in 1987. He held various senior positions in France, the USA, Ireland and the UAE, building strong relationships within the financing communities.

He was more recently responsible for designing and implementing Balthazar, a private non-payment insurance programme for Airbus aircraft, which has supported the financing of 23 aircraft over the past three years.


Yann Ballet

Ballet also advised commercial teams for several airlines on restructuring schemes implemented during the Covid-19 crisis.

Francois Gautier, founder and chief executive officer of Blueberry Aviation, says: "I am delighted that Yann is joining Blueberry Aviation's team to support our customers as well as assist us in the development of new exciting projects."

No liquidity challenges for **Avianca**

The Colombian airline has no plans to raise additional debt in the near term and is open to financing alternatives outside of primary operating lease strategy. **Hugh Davies** reports.

Colombian flag carrier Avianca is optimistic for 2022 as it looks to develop its post-Chapter 11 business plan based on profitable, sustainable growth over the long term, the airline's chief financial officer, Rohit Philip, tells *Airfinance Journal*.

"We are happy with the market recovery so far and cautiously optimistic for 2022. By the start of the summer season in April, we will be flying 610,000 seats per week, which is 96% of the capacity we had available in the same month in 2019," says Philip.

He notes that there continues to be a recovery of demand in all markets in which the carrier operates.

"By the end of the summer season, in October, we will be flying more than 676,000 seats per week, which is more than 10% higher capacity than we operated in the same month in 2019."

Coming out of Chapter 11 in December, Avianca wants to combine its 100 years' industry experience with the "practicality and flexibility of the modern low-cost world".

He says: "We are always analysing opportunities to connect point-to-point routes to Colombia and Latin America with new destinations, and also to increase our presence on those routes that our customers prefer.

"The fundamental pillar of our business plan is that we will have a very efficient cost structure, which enables us to profitably fly several new point-to-point markets. We will, as always, make sure our capacity growth is in line with overall market demand."

As for long-haul, Colombia-Europe is Avianca's key market, according to Philip.

"In March, we will reactivate flights from Medellín and Cali to Madrid, and we will also resume our flight to London. We also continue to fly between Bogota and Madrid, as well as Bogota and Barcelona," he says.

It will also look to grow its network in North America, having launched its first direct Bogota-Toronto route in December and strengthening its presence in the USA with the launch of direct routes to New York, Orlando, Los Angeles, Ontario and Washington, DC.

Philip tells *Airfinance Journal* that Avianca has no current plans to raise additional debt.

"We have successfully restructured the entire capital structure of the company and have a solid liquidity position that allows us to execute our business plan," he adds.

The company raised about $1.7 billion of new investment during its restructuring process, reducing its debt pile while rejecting around 50 aircraft, including ATRs, Airbus A330s and A321s.

Avianca retained $1 billion of liquidity as of the end of November.

"We have all learned from the pandemic that we are susceptible to factors beyond our control. There will always be uncertainty. An example of this was the impact on the airline industry, of the Omicron variant. Avianca was no exception, though the consequences for us were less due to some proactive measures that we took," says Philip.

Avianca unveiled plans to streamline its widebody operations around the Boeing 787-8 model late last year, however a number of A330s will remain in the fleet until the end of the year, he adds.

"The Boeing 787-8 is the widebody aircraft of choice for Avianca, as it offers a very comfortable flight experience for our passengers, significant belly cargo capacity, fuel efficiency and efficient operating costs, making it the ideal aircraft for Avianca's network," says Philip.

Avianca operates a fleet of 14 787s, including one 787-9 leased from SMBC Aviation Capital (SMBC AC), while seven 787-8s are owned.

The carrier will look primarily at operating leases for additional aircraft but will remain open to reviewing other financing alternatives available, says Philip.

Roughly half of Avianca's fleet is made up of operating leases with names including SMBC AC, Jackson Square Aviation, Seraph Aviation Group, ICBC Leasing, Avolon, Castlelake and Aercap, according to *Airfinance Journal* Fleet Tracker.

Avianca agreed new aircraft leases for five new A320neos from CDB Aviation as well as four aircraft of the type with Aviation Capital Group.

More recently, New York City-based Fortress Transportation and Infrastructure Investors (FTAI) closed nine A320 sale and leaseback transactions with Avianca.

The firm says an additional 10 sale and leasebacks with Avianca were expected to close by the end of February.

Asia's apathy fails to slow ABS market

Investors in Asia-Pacific continue to show little interest in aircraft asset-backed securities transactions. **Elsie Guan** asks why.

Aircraft asset-backed securities (ABS) are common in the US and European markets. They have been for years. In the Asia-Pacific region, however, and China in particular, there is decidedly less appetite for ABS that generate cash flows from aircraft leases or receivables.

"Setting up and servicing an ABS transaction is very troublesome for us," a director at a Chinese bank-backed lessor tells *Airfinance Journal*.

"The process is long, and the legal fees are not cheap. Good and bad aircraft assets are put in a portfolio for financing, which is definitely a consideration [because the lessor would prefer not to touch the 'bad assets']. We have strong credit and strong liquidity; we are popular with banks doing long-term financings, so it seems unnecessary for us to launch an ABS transaction," says the director.

"I am personally very interested in the ABS market, but operating an US dollar-denominated ABS faces relatively large restrictions under the Chinese regulatory environment," says another Chinese lessor.

Johnny Lau, chief aviation consultant of PwC Aviation Services believes Asian investors prefer higher-yield and more liquid products than aircraft ABS.

"The Asian market is different because investor appetite and behaviours are different. I think most Asian investors would like to target higher returns than US investors. And they are less patient. They don't like to put money in very long-term investments," says Lau.

Even if the global aviation market is under continuing assault from the Covid-19 pandemic, the global aircraft ABS market has seen a good recovery over the past year and is expected to launch many new 'transactions this year, prospectuses show.

In February, Dubai-headquartered DAE Capital confirmed plans to return to the ABS market in 2022 with a "nice-sized" transaction that will include equity notes.

"For issuers such as DAE, whose ABS transactions have outperformed in the past, I believe we have a very compelling story to tell E-note investors. It is my expectation that we will see a nice-sized transaction in 2022 with E-notes sold and that will be part of our asset sales target for this year," says DAE's chief executive officer, Firoz Tarapore, during an earnings call in February.

"The Asian market is different because investor appetite and behaviours are different. I think most Asian investors would like to target higher returns than US investors."

Johnny Lau, chief aviation consultant of PwC Aviation Services

Separately, in December 2021, Kuwaiti aircraft leasing company ALAFCO said it was "currently active in tapping the ABS market". In its outlook for 2022, ALAFCO noted that "lessor financing and the ABS market continue to be very robust, reflective of increasing appetite from investors".

Back in the Asia-Pacific, Hong Kong SAR-based China Aircraft Leasing Group (CALC) returned to the ABS market in 2020 with its first renminbi-denominated issuance, for Rmb5 billion ($710 million). *Airfinance Journal* understands that most of the aircraft in the ABS pool are operated by Chinese carriers.

This was China's first ABS denominated and settled in renminbi currency. It was structured in eight tranches, with the longest maturity at 7.65 years.

In 2018, CALC launched China's first $170 million ABS which was denominated and settled in US dollars. The ABS was listed on the Shanghai Stock Exchange, and Tianjin-registered China Asset Leasing was the issuer, while Huatai Securities (Shanghai) Asset Management was the manager. The ABS was rated AAA by China Cheng Xin International.

"I think it is a matter of how you appreciate liquidity and credit. In the western world, all these ABS papers have good credit-rating agencies which put reasonable ratings on these ABS. But here in Asia, there is not enough expertise to do that," says Lau.

Lau notes that ABS experts are largely based in the US and in Europe, not in the Asia-Pacific.

"Even the issuers are Asian companies – they will choose to issue their ABS products in the US or Europe. Some Asian rating agencies I know have limited knowledge about aircraft ABS. They have to refer cases to their headquarters in New York or London in order to get ratings and valuations," he says.

Another element, adds Lau, may be differences in business management philosophy. In Asia, lessors like to hold on to their assets, building large portfolios to conquer market share.

"In China, leasing companies like assets. They want to have as many aircraft as possible. So, if they are going to sell assets through aircraft ABS, their portfolios will decrease. That means it will have an impact on their appraisals or their evaluation of performance," says Lau.

He adds: "I think a lot of the larger global leasing companies which opt for ABS transactions are already strong enough and have diversified their risks well enough to weather almost any crises thrown at them. Chinese and Asian investors may learn from them that income stream and risk diversification can be more important than the size of the fleet.

"Regional players in the Asia-Pacific and China should reset their focus and double down on risk management and the overall return of the portfolio."

Will there be more appetite for ABS this year?

Despite a good pipeline of transactions, which could include an inaugural issuance in the aviation ABS market, this year's deals may not reach the volumes of 2021. **Olivier Bonnassies** reports.

The aviation asset-backed securities (ABS) market could see its first issuance in the first quarter.

Airfinance Journal understands there are seven transactions in the pipeline that include five more traditional issuances and a pair of loan format deals.

One source says one transaction could see an inaugural issuance in the aviation ABS market.

"Around four proposed deals are frequent issuers, while the remaining two are occasional issuers," says the source.

Marketing is in place for the seven potential deals but the source does not expect any issuance being announced before the beginning of next month.

"The first transaction will not hit the market before next month and then the market will see how it feels," adds the source.

All seven deals could be announced before the end of the first quarter, though.

Volume

"One issuer may tap the market in the first quarter and then in the second quarter," says another source.

However, he is not sure 2022 will match last year's aircraft ABS volumes.

"I am putting volumes slightly under. There will be repeat deals in 2022 but I am interested at what rate they get closed and the ability to finance the transactions at the levels they [issuers] need.

"Some issuers have been originating portfolios at the same pace. Some that executed in early 2021 originated their portfolio at great prices," he adds.

For him, refinancing deals may be difficult. "When rates are 2.5% there will be appetite for refinancings but when they creep back up, it is not going to be acceptable to refi those deals," he says.

Post-financial crisis (2007-10) ABS transactions have typically featured a refinance date at the end of year seven. The source recalls that two transactions are coming up for refinancing in the first half of this year.

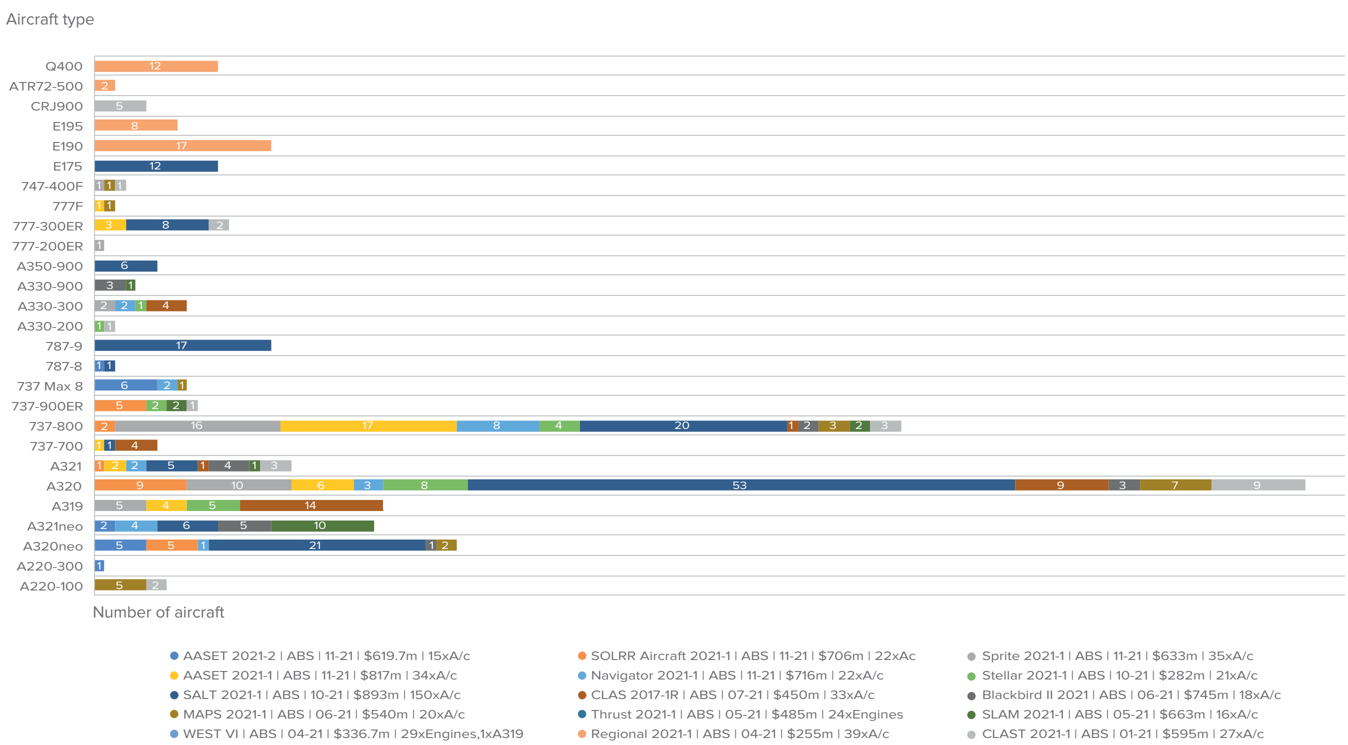
DCAL 2015-1 was up for refinancing in February, while ECAF I transaction refinanced debt is up in June.

"Those deals are likely not going to refinance by the dates they should, and this may cause investors to ask for more in new issue deals," says the source.

Airfinance Journal Deal Tracker shows that 15 transactions (of which two were engine deals) were issued last year with more than $8.65 billion of debt raised in the ABS market.

More than $7 billion-worth of debt was issued on the senior tranches last year. Appetite for the B tranches totalled more than $1.2 billion-worth of financings while another $416 million was invested in ABS C tranches.

2021 ABS issuances per aircraft securitised (*Airfinance Journal* Deal Tracker)



This compared with 2020 when the market paused after five deals in the first quarter, worth $2.04 billion of debt, including two transactions including engines only.

In 2019, *Airfinance Journal* recorded 17 transactions worth $8.8 billion, up from $7.3 billion the previous year.

The year 2021 had many firsts.

The SALT 2021-1 transaction was the inaugural ABS transaction serviced by Bellinger Loan Management, an affiliate of Bellinger Asset Management, in partnership with Stonepeak. It was also the first ABS comprised entirely of aviation loans.

SLAM 2021-1, the transaction by sponsor Sky Leasing and its affiliates, priced at a 2.43% coupon on the senior tranche. The transaction represented the lowest-ever coupon across all aircraft ABS at the time.

MAPS 2021-1, the transaction by funds managed by affiliates of Apollo Global Management and Merx Aviation, priced at the tightest-ever all-in yield for a three-tranche syndicated aircraft portfolio ABS.

The Regional 2021-1 transaction, sponsored by Falko, was the first ABS comprised entirely of regional aircraft.

In the light of the Covid-19 pandemic, the focus has been on new-technology equipment along with good credits.

But some argue that future ABS transactions could feature more used equipment, as lessor trading continues.

> *"ABS have focused on asset types, underlying credits and, to a certain extent, asset manager over the past few years, but in the final quarter of last year we saw a move back to more mid-life or older asset types with shorter and sometimes close to end-of-life leases."*

Narrowbody-centric

In 2021, a total of 453 aircraft assets were refinanced via the ABS market, the data shows. Regional aircraft accounted for 64 units last year with the ATR72-500, De Havilland of Canada Dash 8-400, Bombardier CRJ900 and some E-Jets featuring as collateral for the first time.

Last year also saw the Airbus A220 family in some ABS transactions. Regional aircraft accounted for more than widebodies.

Issuers included the new-technology A330neo, A350-900 and Boeing 787 products in some ABS transactions. In total, 29 new-technology widebody aircraft featured, versus 30 older technology widebodies such as the A330 and 777 families and 747-400F model.

Narrowbodies accounted for the largest share with 330 units, or 73% of aircraft assets, although no transaction uniquely featured narrowbody aircraft, the data shows.

Liquid narrowbody aircraft, which make up 70% of the overall pools securitised, are considered strong leasing assets because of their large diversified installed or expected operator bases.

Given the nature of some ABS transactions, the A320 and the 737-800 were the lead aircraft last year, accounting for 43% of the assets.

The data shows that 117 A320s featured on last year's ABS transactions along with 78 737-800s.

The A320neo family accounted for 62 aircraft: 35 A320neos and 27 A321neos.

In 2020, 61 aircraft assets featured in three of the five ABS transactions. All were narrowbody aircraft, except four A330-200s and a pair of A330-300s, therefore accounting for 91% of total aircraft assets.

Among the narrowbody securitised assets, only two units were new-technology aircraft.

One source says a differentiator in this year's ABS issuances could be the credit quality, compared with the deals in the first half of 2021.

Structures

Aircraft ABS structures underwent some changes in 2021, with additional protection for noteholders depending on the collateral.

Loan-to-values (LTVs) were slightly more conservative with single-A bonds in the mid-60 percentage range, about 75% LTV for BBB bonds and 80% for BB versus 85% pre-Covid.

Pricing was inside of where the market was before the pandemic, although some protections were added for noteholders.

For example, the debt service coverage ratio (DSCR) was halved to a three-month trailing average and minimum numbers of aircraft were specified for certain structures.

Towards the end of the year, issuer focus reverted to mid-life or older assets, rather than the young assets featuring in some transactions in the second quarter.

"ABS have focused on asset types, underlying credits and, to a certain extent, asset manager over the past few years, but in the final quarter of last year we saw a move back to more midlife or older asset types with shorter and sometimes close to end-of-life leases. The market was open to those structured deals," observes another source.

One banking source says, historically, pricing has been yield-based but since the middle of last year when rates were low, issuers argued for spread-based transactions.

"Now the benchmarks have been shooting right back up, banks and issuers may reverse course and opt for yield-based," he says.

"Some deals were like 175-200bps [basis points] on spread basis and rates were 50-60bps a year ago," he adds. "But if you apply 200bps over five-year treasury, the cost of financing is tremendously higher."

2021 ABS low coupon transactions

Senior tranche	Size (m)	WAL	GDNC (bps)	SPRD (bps)	CPN (%)	YLD (%)
SLAM 2021-1	592.43	5.49	160-170	150	2.43	2.447
BBIRD II	630.00	5.20	160-170	150	2.44	2.456
MAPS 2021-1	417.65	4.99	170-180	170	2.52	2.535
Junior tranche	**Size (m)**	**WAL**	**GDNC (bps)**	**SPRD (bps)**	**CPN (%)**	**YLD (%)**
SLAM 2021-1	70.73	5.49	285-300	250	3.42	3.447
BBIRD II	115.00	5.30	270-280	250	3.45	3.471
MAPS 2021-1	72.23	4.99	-	-	3.43	3.45
MAPS 2021-1 (C tranche)	50.24	3.46	5.75 area	-	5.44	5.5

Source: *Airfinance Journal* Deal Tracker 2021

Irish lessor in **growth mode**

Aergo Capital's chief risk officer, Antony Snelleman, delves into the company's ambitious expansion plans as the Covid-19 pandemic unwinds, **Hugh Davies** reports.

Irish lessor and asset manager Aergo Capital has been poised for rapid growth since the start of the pandemic, after having shrunk its portfolio significantly between 2017 and 2019.

In an interview with *Airfinance Journal*, Aergo's chief risk officer, Antony Snelleman, explains that the company has increased its owned portfolio from 40 to more than 100 aircraft in the past 15 to 18 months with exposure of about $1.8 billion across 31 lessees in 26 countries.

It also manages another 80 aircraft worth more than $2 billion.

"Leading up to the crisis, from around 2018 to 2019 it was very hard to write new business and find new deals and so we found it was better to be selling because we were seeing better execution in selling deals than we were able to buy," explains Snelleman.

"Like everybody, the first few months of the crisis were hard work dealing with deferrals and so on, but after about six months we saw opportunities arise and we started to invest.

"We've had a really substantial increase in the size of the portfolio and improvement in the average credit quality of the portfolio during the pandemic," he adds, noting that Aergo has added with new names such as British Airways, Singapore Airlines, SAS and Iberia and, more recently, Canadian start-up Lynx Air and established regional carrier Porter Airlines in Canada.

Snelleman says this rapid growth is set to continue with the company potentially reaching 300 to 400 aircraft over the coming years. Portfolio acquisitions are an important candidate for growth.

"We would certainly consider an M&A play and if there was an opportunity to acquire a whole portfolio, we would look at that. We're confident with the platform we have now that we can lever it up.

"There's a lot of M&A activity in that space, so we expect some aircraft will drop out of that," says Snelleman.

He notes environmental, social and corporate governance (ESG) factors will also create opportunities for mid-life and end-of-life equipment.

"A number of lessors are rebalancing their portfolios in line with ESG criteria so we think that will create some good opportunities," he says.

> *We've had a really substantial increase in the size of the portfolio and improvement in the average credit quality of the portfolio during the pandemic.*

Antony Snelleman, chief risk officer, Aergo Capital

New technology

Aergo delivered the first of three Boeing 737 Max 8 aircraft to Lynx Air under a purchase and leaseback transaction in mid-February.

Each of the three aircraft will be financed with equity provided by Carval investment funds and debt arranged by AV Airfinance. The remaining two 737 Max units to be sold to and leased back from Aergo will arrive in early 2022.

Snelleman says the company expects to be a growing player in the new-technology area, both with the Max but also crossover regional aircraft such as the Airbus A220, which has attracted a significant amount of interest in the past 12 months.

"We've been studying the A220 and it's only a matter of time before we enter that space," says Snelleman.

"Similarly, for the turboprop market, as that space evolves that will remain an important part of our portfolio. Then as we move onto entirely new technologies again we will look at those as well and find new opportunities to invest," he adds.

Snelleman explains that Aergo's portfolio variety, which spans widebody 787s through to the De Havilland of Canada Dash 8-400, helps deploy capital as efficiently as possible to generate returns.

"We look for value across the spectrum. At times there's pockets of value in different places. While some lessors specialise in certain areas, we will go where there's efficiency and where we can generate quality returns for our shareholders rather than saying that we have to be in a certain area of the market," adds Snelleman.

Financing

Snelleman says debt retrenchment during the peak of the pandemic "played to our advantage" as the lessor began to increase its exposure and expand its relationship with lenders.

"There's no doubt that in the early days banks were hunkering down and trying to work out their exposure. There was a gap about 15 to 18 months ago where there wasn't a lot of competition in the space and a lot of the lenders just weren't lending.

"They're now powering back and so there's a lot of money in the market that is creating a lot of competition," says Snelleman.

"We're constantly exploring new ways to finance and broaden the debt portfolio so it's exciting to bring on new partners and new relationships.

"Only about half our portfolio has debt on it so we're able to acquire aircraft with cash and hold it with cash or back lever it later which reduces the execution risk significantly," he adds.

Investment-grade status for Aergo is on the cards to finance growth more efficiently, says Snelleman.

"We have a project that looks at exactly that to review what is the most effective way to raise equity and raise debt."

He adds: "We're seeing some of our competitors have amazing execution through reaching investment-grade status, so we're looking at that and that's definitely an opportunity we'll work towards in this calendar year."

Electric potential for regionals

As the leasing community continues to show interest in innovative propulsion technology, Heart Aerospace's Anders Forslund details the tech start-up's vision for regional air travel of the future. **Hugh Davies** reports.

Lessors and the investor community will play an "integral role" in the success of future aircraft propulsion programmes as the global air transport industry commits to net zero by 2050, according to Swedish aerospace company Heart Aerospace.

"We've had discussions with several leasing companies already," Anders Forslund, chief executive officer of Heart Aerospace, tells *Airfinance Journal*.

"We are at the stage in the product where we can engage with the market further and so we are in the process of understanding how to create those collaborations," says Forslund.

The company is developing its 19-seat ES-19 electric aircraft with certification expected in the third quarter of 2026 and commercial availability later that year.

"We look at the programme from a de-risk perspective – the biggest risks for the programme are technological, so our efforts so far have been building an engineering team to demonstrate elements such as electrical propulsion and other subsystems we are looking at," says Forslund.

He points out that different types of financing structures such as green project financing are becoming more common, but notes it is also important for airlines and leasing companies to realise that they have an important role to play as well.

"The pace at which these aircraft come will depend on early development of future technology programmes, which means some companies will have to go out of their comfort zone to make these types of engagements," adds Forslund.

Quizzed on the pace of future technology programmes such as electric vertical take-off and landing (eVTOL) gaining interest from the lessor and investor community, Forslund says it is important for industry players looking at building their climate investments to think of it as an investment portfolio.

"Some of it carries higher risk but potentially higher reward, whereas other programmes may not be making the best risk-reward proposal. It's all about adding variation and diversity to make sure you're covering all your bases," he says.

> *"The pace at which these aircraft come will depend on early development of future technology programmes, which means some companies will have to go out of their comfort zone."*

Anders Forslund, chief executive officer of Heart Aerospace

Several major lessors and airlines have started in a different direction around electric propulsion.

Embraer's urban air mobility division, Eve, has secured 400 commitments from lessors for its eVTOL aircraft, including Azorra Aviation and Falko Regional Aircraft.

Last year, Irish lessor Avolon teamed up with Vertical Aerospace, a UK aerospace manufacturer, with a $2 billion order for up to 500 of Vertical's VX4 eVTOL.

Of these, placements have been secured with Gol for 250 aircraft, Japan Airlines for up to 100 aircraft and a minimum of 100 units with Air Asia.

California-based Aviation Capital Group recently agreed with urban air mobility (UAM) provider Volocopter to develop financing solutions of up to $1 billion that will assist with the sale of Volocopter's family of eVTOLs.

Brazilian carrier Azul aims to enter the eVTOL market under a strategic partnership signed with German aerospace company Lilium last summer. The deal includes a fleet of 220 Lilium eVTOL aircraft expected to start operating in 2025.

Regional profitability

Forslund explains that Heart's ES-19, which has secured backing from major airlines such as Finnair, Mesa Airlines and United Airlines, is not just focused on sustainability, but also on reinvigorating the regional aviation market by improving profitability for regional carriers and enhancing accessibility in underserved areas of the world.

The first-generation ES-19, which has the potential to operate up to 250 miles, aims to compete with 70-seat regional aircraft. Its electric motor is expected to reduce significantly engine cost of ownership and maintenance expenses compared with traditional turboprop and turbofan engines.

While initially starting with 19-seat aircraft to facilitate certification processes and take advantage of technological overlap with current electric charging and motor designs, the company is planning for larger aircraft in the future.

The company says it is seeing strong interest from regions such as Canada, New Zealand, the UK and Indonesia.

"Regional aircraft have been getting larger and larger and more routes are getting shut down, which is diminishing the value proposition of regional travel. We're starting to see that it's the 70-seat ATRs or Dash 8s that are around the limit of where airlines operate profitably," adds Forslund.

"It's a similar situation we're seeing with our relationship with Mesa Airlines, who used to be the largest operator of 19-seater aircraft in the world… they don't operate those aircraft anymore.

"We believe," he adds, "that by replacing the jet engine, which is just as expensive for a 19-seater as for a 70-seater, with an electric motor, we can change the equation of regional travel."

Home comforts

Chinese lessors will strongly support the Chinese-manufactured C919 aircraft, believing it will not squeeze Airbus's and Boeing's narrowbody market share in China, reports **Elsie Guan**.

The C919 manufactured by Commercial Aircraft Corporation of China (COMAC) will be delivered to its maiden airline operators this year, the company's deputy general manager, Yongliang Wu, confirmed in early 2022.

The project, designed to take on Airbus's A320neo-family of aircraft and Boeing's 737 Max programme, is years behind schedule and has so far only garnered firm order commitments from airlines and leasing firms in China.

"The C919 project is still in the airworthiness certification stage and is expected to be delivered in 2022," says Wu, who adds that the first delivery is pending certification of the programme.

Founded in 2008, COMAC offers two current types of aircraft, the C919 and the ARJ21, as well as the widebody CR929 model in development in a joint venture with Russian state manufacturers.

The ARJ21 entered into passenger service in 2016, with 66 units of the model delivered so far. They are in service with Chengdu Airlines, Genghis Khan Airlines, Jiangxi Airlines, China Express, Air China, China Southern Airlines and OTT Airlines. The largest current operator is Chengdu Airlines.

COMAC has two ARJ21 production lines. While the Chinese manufacturer does not officially disclose production rates, it targets a production of 30 ARJ21s a year on the second line.

"To obtain an airworthiness certification is no easy feat, especially for a brand-new aircraft like the C919. It is not necessarily due to the aircraft itself, but because of some external factors," says an anonymous director from a Shanghai-based lessor (lessor A).

"Some certification work for the C919 needs to be proceeded under extreme environments overseas. It is not easy to do the work overseas under the continuing situation of the Covid-19 pandemic. Therefore, we are not sure when the aircraft will really be delivered," he adds.

The C919 will have a capacity of 156 to 168 passengers – the A320neo can accommodate 140 to 170 passengers. The 737 Max has a wider range, seating 138 to 204 people.

The list prices for the ARJ21-700, C919, A320neo and 737 Max is $38 million, $50 million, $110.6 million and $99.7 million, respectively.

"The C919 project is still in the airworthiness certification stage and is expected to be delivered in 2022."

Yongliang Wu, deputy general manager, COMAC

In China, several lessors have placed C919 commitments with firm orders and purchase options, including ICBC Leasing (100), Bocomm Leasing (30), CCB Leasing (50), CMB Leasing (30), Everbright Leasing (30), ABC Leasing (75), AVIC Leasing (30) and Huaxia Financial Leasing (20).

ICBC Leasing confirmed it has 30 firm orders while others did not specify.

China Eastern Airlines will be the launch operator of the C919. Industry sources tell *Airfinance Journal* that COMAC will prioritise airline deliveries before attending to lessor orders.

"When COMAC begins to deliver the C919, airline orders will come first. Our lessor orders will follow," says lessor A.

Lessors and financial institutions are keen to provide C919 financings, he adds, especially for top-tier credits such as China Eastern.

Another Shanghai-based lessor agrees, saying C919 financing requests would see fierce competition.

As a wholly owned leasing arm of China Eastern, China Eastern Financial Leasing has been mandated to finance China Eastern's first C919 delivery. A source at the lessor says it has sufficient funding to finance the delivery.

As *Airfinance Journal* went to press, COMAC claimed 876 order commitments for C919 aircraft.

Lessors quizzed by *Airfinance Journal* do not believe the C919 will give real competition to A320neo-family and 737 Max sales, at least not in the coming years.

"As far as I know, the cost of the C919 is relatively high. However, airlines which will operate this aircraft type will get lots of government subsidies. But, if these supporting factors were completely removed, I doubt that operating the C919 would be profitable for airlines," says a director who wishes to remain anonymous from a Shanghai-based lessor (lessor B).

"We definitely support the C919 strongly, although this doesn't necessarily mean that we have to reduce the proportion of Airbus and Boeing aircraft in our fleet. In other words, supporting the C919 is one thing, there are no conflicts with other models, and other models will not be affected by the C919," says another Shanghai-based lessor.

Lessor A feels that the C919 will become more competitive in the long run, when and if it gains acceptance from regulators and operators regionally and worldwide.

The duopoly of Airbus and Boeing "is very unfriendly to aircraft leasing companies, especially to Chinese lessors", he notes. "If the C919 enters into service, there will be a lot of policy support. For example, Chinese companies do not need to apply for import approvals for the C919, which will cut out many complicated procedures," according to lessor A.

"However, in terms of asset liquidity, the C919 is not an ideal aircraft type for the time being. It definitely will take time for the C919 to be accepted by the mainstream markets in Europe and the US. Before that, the liquidity of the asset will be somewhat limited, with most of the aircraft only operated in the Chinese market, which is also a consideration," says lessor A.

"As a lessor, we will always select aircraft types according to customer demand. If customers want an aircraft, we will find ways to provide it to them," he adds.

"What will be most crucial is passenger acceptance," says lessor B. "The people who fly will need to like the plane."

‘**Kings of cargo**’: assessing A350 and 777X freighters

Airfinance Journal’s **Olivier Bonnassies** talks to experts on the new factory-built generation of freighters.

Boeing formally launched the freighter version of the Boeing 777X in late January, responding to a threat from Airbus, with its Airbus A350F but also making sure that, by 2027, it will have a factory-built widebody freighter meeting ICAO emissions in the marketplace.

The US manufacturer announced Qatar Airways as the launch customer with an order for 34 777-8Fs and deliveries starting in 2027. As part of the deal, Qatar Airways converted 20 777-8 passenger orders into freighters.

Boeing formally launched the freighter version of the Boeing 777X in late January

Boeing has been dominant in the widebody factory-built freighter market.

In a statement, Boeing Commercial Airplanes chief executive officer, Stan Deal, noted that the US manufacturer provides more than 90% of the world’s dedicated freighter capacity.

It still produces the 767-300ERF, the 777-200F and the 747-8F models and during the pandemic it further increased its market share with new orders.

But as per the 2017 adoption of the new aircraft CO_2 emissions standards, which will reduce the impact of aviation greenhouse gas emissions on the global climate, all three in-production aircraft will not meet the standard by the end of 2027.

Airbus’s A350F fully meets ICAO’s enhanced CO_2 emissions standards.

The 777-8F will carry about 10 tonnes more payload and with more range than the A350F, which has a predicted 118 tonnes payload.

Its cargo volume is 27,000 cubic feet versus 24,500 cubic feet for the A350F.

The Airbus freighter has a 300-nautical mile (nm) advantage at 5,400nm (8,700km), however.

It features a maximum take-off weight of 319 tonnes, a 250-tonne maximum landing weight while its fuselage width is 19ft 5in.

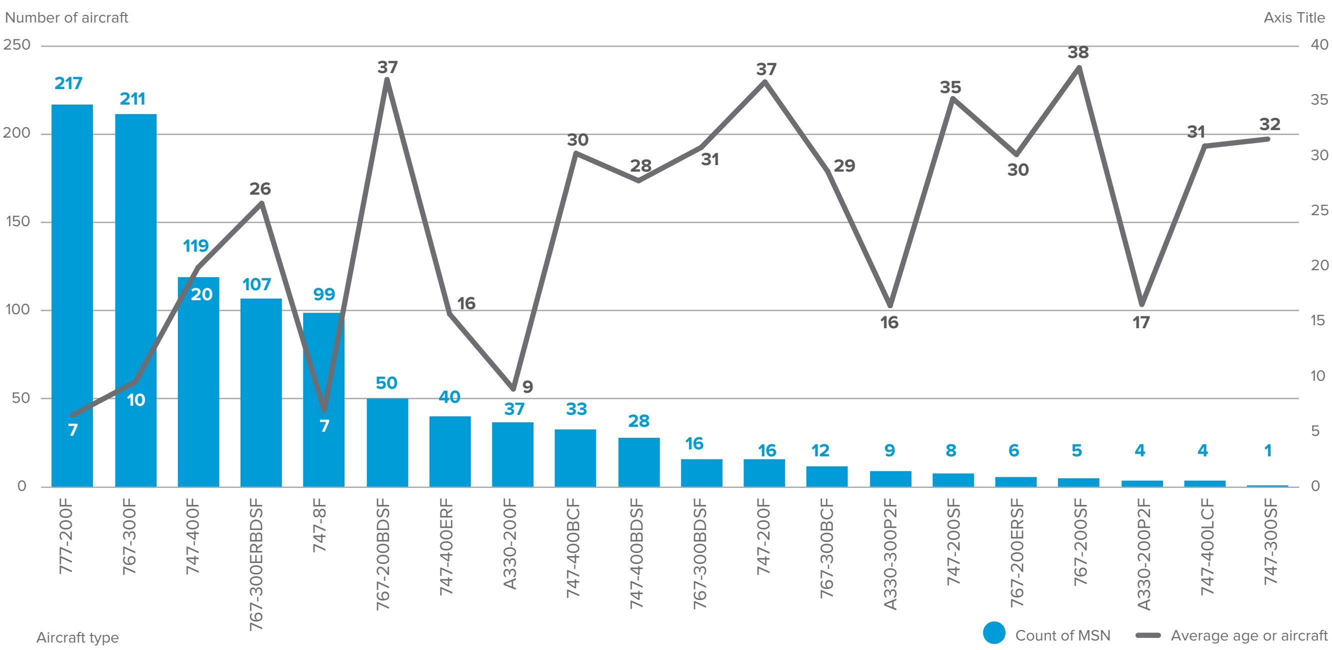
The A350F has a 232ft 4in (70.8 metres) overall length, and a 212ft 5in wingspan.

The A350F can carry 30 pallets 96” x 125” or 30x AM-base containers on the main deck as well as 12 pallets 96” x 125” or 40x LD3 containers on the lower deck.

The fuselage width of the 777-8F is greater than the A350F. The aircraft has similar dimensions as the A350F: 232ft 6in overall length, a 212ft 8in wingspan.

Boeing says maximum payload is 112.3 tonnes over 4,410nm.

Potential replacement fleets (*Airfinance Journal* Fleet Tracker, Feb 2022)



The 777-8F can accommodate two extra pallets in the cargo hold than the A350F: one on the main deck and one on the lower deck. Compared with the 777F, the 777-8F will take seven more pallets and can carry 17% more volume.

The 777-8F is also expected to have a higher maximum take-off weight (MTOW) than the A350F, which is 319 tonnes (Boeing has yet to release the data).

In addition to varied performance, the two freighters will use different engines: Boeing will use the specially engineered General Electric GE9X, Airbus will use Rolls-Royce Trent XWB-97.

Both manufacturers claim their products can serve all cargo markets and/or open new markets.

At mid-February, the A350F had won firm orders and commitments for 29 aircraft from five customers, versus Boeing's sole customer Qatar Airways.

At the Dubai air show, Qatar Airways' chief executive officer, Akbar Al Baker, said the "yet-to-be launched 777X freighter design will outperform the carrier's current 777F freighter fleet", stressing that discussions around the order were focused on performance as well as pricing.

Qatar Airways operates a fleet of 26 777-200Fs, according to *Airfinance Journal*'s Fleet Tracker.

EIS timing

The Boeing freighter will be the largest in the marketplace when it starts operating in 2027, two years after the A350F, which entry into service is scheduled for 2025.

"2027 is important for two reasons," says Scott Hamilton of Leeham News. "The first is that the competing Airbus A350F has a targeted EIS of 2025 (with the same certification caveat). A two-year gap is not ideal, but workable for Boeing – if that's all it is. The second is that ICAO emissions standards taking place in 2027 prohibits the current 777F from being produced from 2028. Boeing needs a replacement in place before this happens."

Hamilton adds that this should be doable under ordinary circumstances, but it all depends on the timely certification of the 777-9, which is targeted for the second half of 2023. "As we know from the Max crisis, smooth certification is no longer a given," he says.

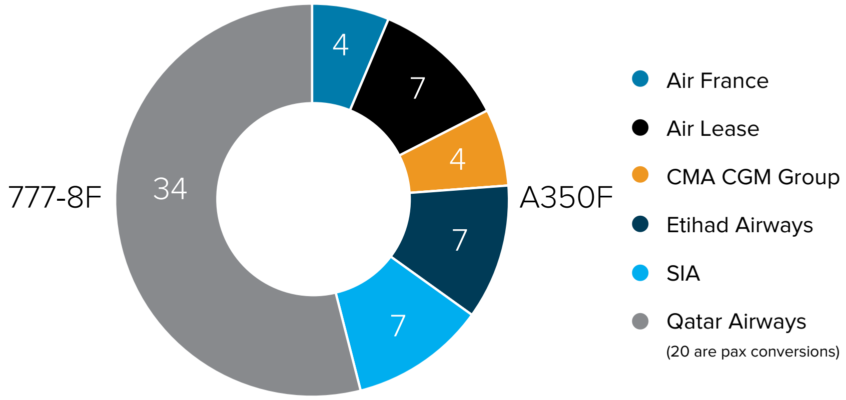
"At first glance, the economic cost per tonne kilometre is similar, but both new freighters beat the 777F operating economics," says Bjorn Fehrm of Leeham News.

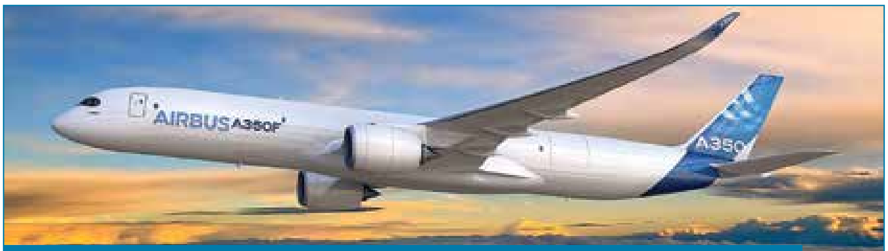
Fehrm refers both aircraft as classic freighters for forwarders, which are different than the e-commerce/package freighters.

"The classic freighters work at 10 pounds per cubic feet capacity while the package freighters are more like 7.5 pound per cubic feet," he says.

A350F/777-8F orders and commitments

(*Airfinance Journal* Fleet Tracker - February 2022)





The A350F may appeal to airlines who already have other Airbus widebodied aircraft

Hamilton believes the 777-8F variant sales targets are combination carriers such as Qatar Airways. "All cargo airlines like Southern Air, Atlas Air, etc, are also targets," he says, adding that the new freighter variant will mainly replace 747 freighters, but also MD11Fs and ageing 777-200LRFs.

At the Singapore air show, Singapore Airlines (SIA) firmed up an order for seven A350Fs and said the new freighters will replace the carrier's existing 747-400F fleet from the fourth quarter of 2025. SIA says the A350F fuel consumption is up to 40% lower on similar missions to the 747-400F.

"These new-generation aircraft will substantially increase our operating efficiencies and reduce our fuel burn, making an important contribution towards the success of our long-term decarbonisation goals," says Singapore Airlines' chief executive officer, Goh Choon Phong.

Etihad Airways also committed at the air show for seven A350Fs.

Beyond Air Lease, Hamilton sees a limited appetite from lessors.

Andy Mansell, a partner at Split Rock Aviation, agrees. He says Airbus has worked to keep lessors away from the front-end of their orderbook. "I wonder if that will change with Boeing getting after it," he says.

"I would be hesitant to order either of them as a lessor, as your traditional users are buyers of aircraft. These freighters are 747 replacements and are in a completely different category to the A330Fs, which are 767F replacements," he says.

Simon Finn, MUFG's director, aviation research, says the new large cargo aircraft are a bit of a departure from the 747s they will replace and, while airlines have experienced the 777F, the new offerings are going to move the efficiency needle quite a bit further up the scale.

"From MUFG's perspective, large freighters aren't likely to reach the market acceptance levels of their passenger counterparts so the quality of the operator base is going to be very important, and both the A350F and 777-8F programmes have got off to a good start," he says.

"The OEM [original equipment manufacturer] dynamic is interesting as this is Airbus's first go at taking a slice of the large cargo aircraft market (100-plus tonnes payload). The A350F may appeal to airlines who already have other Airbus widebodied aircraft and can benefit from commonality cost savings, as well as from the step-change in operating economics. That being said, Boeing has occupied the high ground in the air cargo sector for some time now and it will work to protect its hard-won advantage with the higher volume and greater payload of the 777-8F."

Finn recalls that during the pandemic, many airlines have learned the importance of diversified revenue sources and now see air cargo as an important part of their future.

"Different airlines will require different marketing," says Finn, "but, in the final analysis, selection may well come down to the relative operating economics – the unit cost improvement that results from the lower fuel burn and enhanced performance of these two new kings of cargo."

Russia sanctions blow to lessors

Just as the industry starts recovering from Covid, Russia's invasion of Ukraine has put a significant obstacle in the way of that recovery, particularly for lessors with assets in the region. **Laura Mueller** reports.

Russia's invasion of Ukraine has triggered concerns about the leasing industry's exposure to the region amid fears that western sanctions could disrupt payments and impair efforts to recover assets.

Aviation lessors and lenders have until 28 March to terminate their exposure to the Russian aviation sector under EU sanctions imposed following the invasion of Ukraine.

"It shall be prohibited to sell, supply, transfer or export, directly or indirectly, goods and technology suited for use in aviation or the space industry," according to Article 3c of the regulation.

This second sanctions package bars aircraft sales, leases, spares and maintenance, as well as insurance, reinsurance and loan activities.

The regulation took effect as of 26 February and prohibits any new transactions.

There is a "window" for lessors and lenders to wind down existing deals by 28 March and avoid contravention of the sanctions, says law firm Clifford Chance in a briefing note.

However, if insurance is withdrawn then events will overtake that deadline.

A C-suite lessor, speaking on the condition of anonymity, says: "I believe the EU sanctions are poorly thought out, counterproductive, making it effectively impossible to return assets with the strong possibility of Russian airlines continuing to operate the aircraft domestically without payment of rent and insurance."

No doubt reinsurance will become more difficult to obtain. Airlines will have Russian insurance but that "won't do much good to lessors", says a leasing source. "Also, contingent policies will get restricted."

Clifford Chance urges parties to "engage as soon as practicable" with their brokers and insurers to understand the effect of the insurance prohibition. "We note that any resultant loss of insurance cover may trigger separate lease events of default."

The law firm also notes affected lenders to the sector should consider funding arrangements other than traditional loans which may fall within the term "financial assistance".

The move raises interesting questions, says Andy Mansell, a partner at Split Rock Aviation, such as will Russian authorities cooperate? Will the airlines? What happens if the lessors cannot physically retrieve the aircraft?

Nothing good for aviation can come from Russia's invasion of Ukraine, Adam Pilarski, the senior vice-president of aviation consulting firm Avitas tells *Airfinance Journal*.

"Traffic will be affected negatively, at least for some time. Of course, we do not know how this whole adventure will evolve. Will it be contained to Ukraine or also affect Poland, Germany, Europe... World War III?" he asks.

According to Pilarski, the market should watch for developments in China. "Putin waited for the [Winter] Olympics to be over before invading, and China did not show their hand yet. More political uncertainty in the world cannot be a positive development for aviation," he says.

Lessor exposure

According to *Airfinance Journal*'s Fleet Tracker, 650 western-built aircraft are leased to Russian lessees, of which 487 are non-Russian owned, and 187 are Russian-owned (though in some cases held through an offshore company).

Of the top five lessors with exposure to the region, Aercap has a strong lead with 149 aircraft leased in, with a market value of $2.4 billion, as determined by Avitas. However, this exposure accounts for only 5% of the $49 billion market value of Aercap's total fleet.

From a lessee credit point of view, 96 of Aercap's aircraft are leased to Aeroflot and 17 to Pobeda, a low-cost subsidiary of the Russian carrier.

The other airlines are all rated CC by *Airfinance Journal*'s The Airline Analyst Financial Ratings.

EU sanctions

The Regulation (Article 3c)

1. It shall be prohibited to sell, supply, transfer or export, directly or indirectly, goods and technology suited for use in aviation or the space industry, as listed in Annex XI, whether or not originating in the [European] Union, to any natural or legal person, entity or body in Russia or for use in Russia.

2. It shall be prohibited to provide insurance and reinsurance, directly or indirectly, in relation to goods and technology listed in Annex XI to any person, entity or body in Russia or for use in Russia.

3. It shall be prohibited to provide any one or any combination of the following activities: overhaul, repair, inspection, replacement, modification or defect rectification of an aircraft or component, with the exception of pre-flight inspection, in relation to the goods and technology listed in Annex XI, directly or indirectly, to any natural or legal person, entity or body in Russia or for use in Russia.

4. It shall be prohibited to: (a) provide technical assistance, brokering services or other services related to the goods and technology referred to in paragraph 1 and to the provision, manufacture, maintenance and use of those goods and technology, directly or indirectly to any natural or legal person, entity or body in Russia or for use in Russia (b) provide financing or financial assistance related to the goods and technology referred to in paragraph 1 for any sale, supply, transfer or export of those goods and technology, or for the provision of related technical assistance, brokering services or other services, directly or indirectly to any natural or legal person, entity or body in Russia or for use in Russia.

5. With regard to the goods listed in Annex XI, the prohibitions in paragraphs 1 and 4 shall not apply to the execution until 28 March 2022 of contracts concluded before 26 February 2022, or ancillary contracts necessary for the execution of such contracts.

In distant second is lessor SMBC Aviation Capital with 34 units and a market value of $1.3 billion. Air Lease has exposure to 25 aircraft, while BOC Aviation and Carlyle Aviation Partners account for 23 aircraft each.

Fleet Tracker indicates there are 70 Russian-operated aircraft in asset-backed securitisation transactions.

A total of 153 Airbus and Boeing aircraft are on order by 11 Russian operators and lessors.

Oil prices have increased steadily during the past year, but they rose quickly during the weeks leading up to the invasion as the world nervously waited to see whether provocations would lead to conflict.

European natural gas prices jumped nearly 70%, and crude oil exceeded $110 a barrel (as *Airfinance Journal* passed to press) for the first time since 2014 following the invasion.

Russia is the third-largest oil producer and ranks as the second-largest natural gas producer in the world.

The conflict has prompted concerns over prolonged higher inflation and what is the appropriate pace for central banks to tighten monetary policy if Russia's energy and resources are shut out of global supply chains.

"Clearly, oil prices will go up," says Pilarski. "In the long run, that may be positive, but right now, oil prices will respond. We will go back to more fracking."

Higher fuel prices are an unwelcome move for the aviation industry, which is expected to lose $11.6 billion this year, according to the International Air Transport Association.

While many airlines have fuel hedges in place, it is worth noting that Wizz Air has not yet hedged fuel in 2022.

The carrier along with Ryanair and Ukraine's Skyup are the most impacted airlines by the closure of Ukrainian airspace.

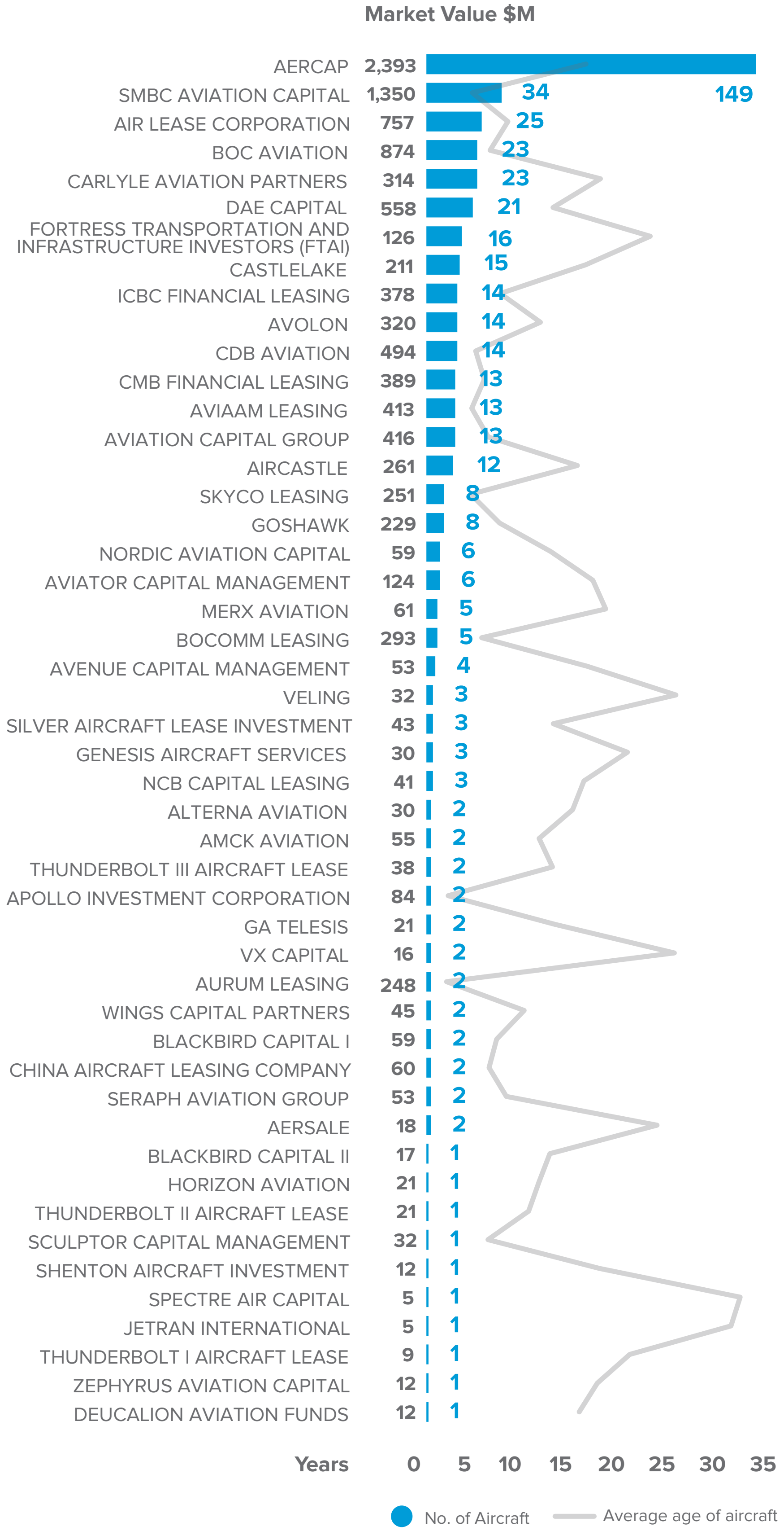
Wizz Air operates about 115 routes from six airports in Ukraine and recently announced a capacity expansion after signing the EU's open skies agreement last October.

The Ukrainian government set up a grant of about $600 million to help cover the insurance of aircraft still flying into Ukraine, but insurers are not sure if that still exists or how the funds will be used now.

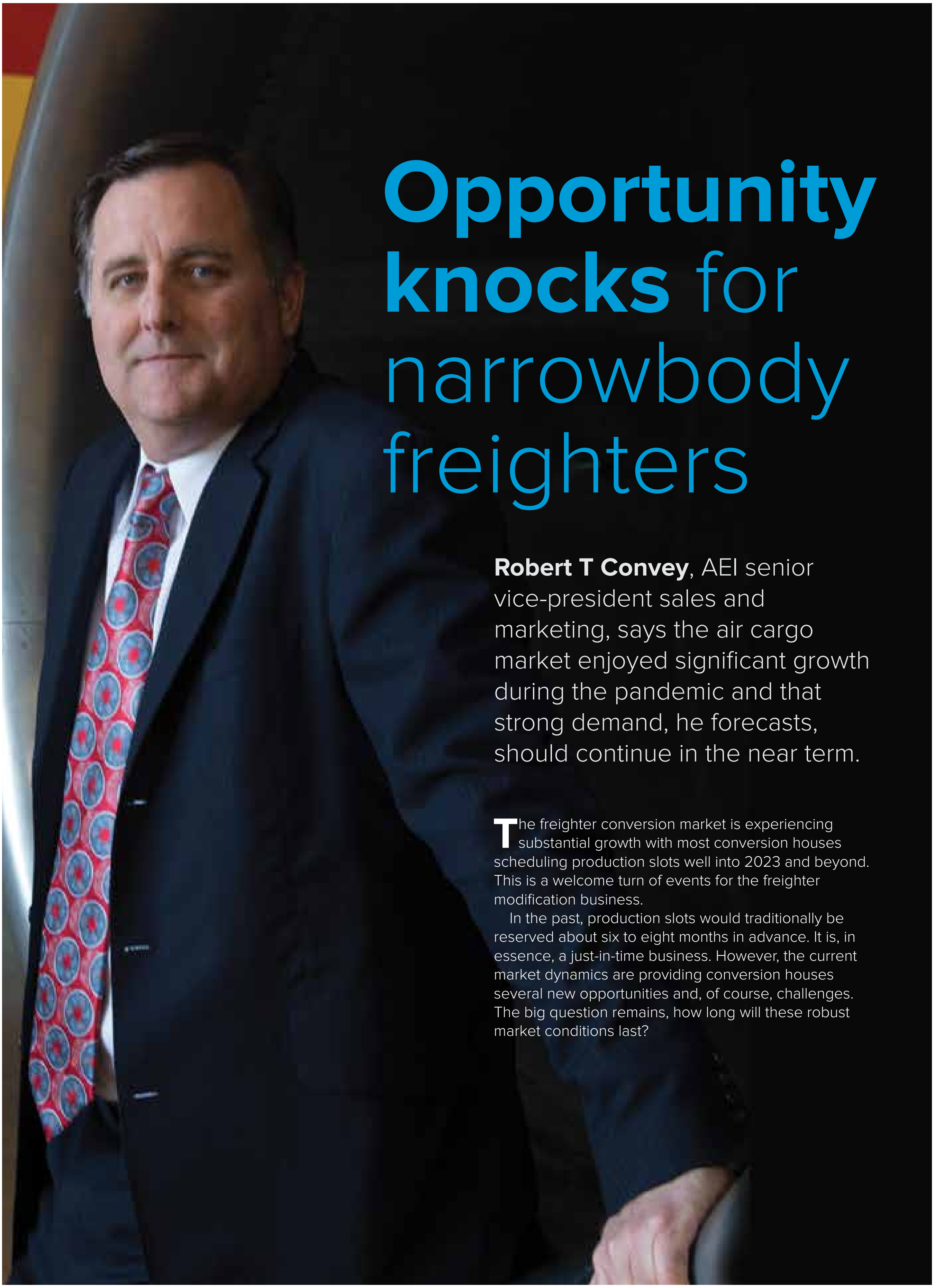
But even if aircraft are removed, another problem arises: where do these assets go? Russia has always been a market where lessors could cascade their aircraft down to second- or third-tier credits with exemptions, of course.

While the aviation market has adapted to the crippling impact of the pandemic, greater geopolitical tensions, higher inflation for longer and further supply-chain squeezes will likely dominate the medium-term outlook. However, to what extent depends on how destabilising the Ukraine invasion becomes.

Aircraft leased to Russian airlines by foreign owned lessors



Source: AFJ's Fleet Tracker and AVITAS as of 24 February, 2022



Opportunity knocks for narrowbody freighters

Robert T Convey, AEI senior vice-president sales and marketing, says the air cargo market enjoyed significant growth during the pandemic and that strong demand, he forecasts, should continue in the near term.

The freighter conversion market is experiencing substantial growth with most conversion houses scheduling production slots well into 2023 and beyond. This is a welcome turn of events for the freighter modification business.

In the past, production slots would traditionally be reserved about six to eight months in advance. It is, in essence, a just-in-time business. However, the current market dynamics are providing conversion houses several new opportunities and, of course, challenges. The big question remains, how long will these robust market conditions last?

As with all industries during the past couple of years, the mood has centered on uncertainty. Every segment of business wakes up daily to new challenges and must quickly adapt to survive. I do not believe anyone, myself included, would have expected a vigorous air cargo market would be born from a pandemic, but that is the case. The freighter conversion houses are the beneficiaries of this current market, at least for now.

During the past couple of years AEI's redelivery rate for its entire product portfolio averaged about 23 freighters a year. This was driven in large part by the popularity of the Boeing 737-400SF as a replacement for earlier models. As candidate feedstock of 737-400s became exhausted, operators and aircraft owners jumped directly to the 737-800SF. As a sidenote, the average age of narrowbody feedstock has traditionally been between 15 to 20 years, but with the 737-800, we have seen freighter conversions accomplished at a mere 10 years of age.

When AEI first introduced the 737-800SF and subsequently received FAA approval, we projected it would take three to four years for the market conditions and aircraft values to align. That would place the programme gaining steady traction in 2023. We are already well ahead of our projections and are on schedule to deliver our 24th 737-800SF. In 2020, AEI had 10 737-800SF reserved production slots, all through leasing companies. A year later, the number of committed production slots for the 737-800SF rose to 60 with a mix of leasing companies and operators.

The main driver for the quick success of the 737-800 as a freighter had to do with declining aircraft values coupled with available feedstock. Added to that equation was the lack of conversion candidate 737-400s to fill the expanding air cargo market needs.

AEI's initial projections were based on aircraft valuation trends in 2019. As pressures from the economic conditions caused by the pandemic materialised, combined with the Max groundings, the values of 737-800 aircraft dropped to a point of sensible conversion economics. They are still a bit high when considering the historical records of other platforms, but given the newer technology and efficiencies, the aircraft became well within reach for many operators.

AEI has a long history of providing the industry with robust freighters at a fair price

As a conversion house, AEI is experiencing a perfect business scenario: strong end-user demand resulting in committed production slots well into 2024. This unusual moment of business predictability and stability provides us, and other conversion houses, with the opportunity to develop longer-range planning and implement manufacturing efficiencies.

AEI has a long history of providing the industry with robust freighters at a fair price, and this "breathing room" offers us another opportunity to continue that mission. But uncertainty is the mood of the day. The last thing any conversion house wants to do is overbuild their capacity.

We have seen conversion houses take a measured approach to growth over the past several of years. Boeing and Precision added production lines in the past year. Our latest authorised AEI conversion centre was HAECO Xiamen, which incorporated two additional modification lines. Currently, and including all our authorised AEI conversion centres across the globe, we provide a total of 14 simultaneous lines, nine of which are dedicated to the 737-800SF platform. We believe that for the current market conditions, this offering provides the appropriate production capacity necessary to meet our customers' demands, while mitigating the risk of overbuilt capacity.

This brings me to the point of forecasting future demand. Anyone with that crystal ball, would most certainly be enjoying a cocktail on the beaches of Bora Bora right about now, but prognostication is an ability I do not have. I can, however, share the current trends and influencing factors.

While we are still in pandemic mode, we are seeing improving economic conditions. Yet, war in the Ukraine would cause fuel prices to spike across the globe, once again negatively impacting air cargo and potentially suppressing demand. Western nations are still seeing strong consumer demand, along with e-commerce, which is driving inflation. I will not dive into inflation, but untethered it can ruin any economy and all resultant activity.

E-commerce is a very strong force in the narrowbody freighter sector: it is responsible for consuming about 85% of AEI's total output, so we keep a close eye on the e-commerce trends.

The strongest interest came from lessors early on in our 737-800SF programme. While we are continuing to see this segment grow, we are seeing an overall slowing or rather a levelling out. As the 737-800 values continue to decline, operators are becoming a solid part of the mix for converted freighters.

I am forecasting the continuation of strong demand for narrowbody freighters throughout 2023, with a potential slowing in the second half of 2024. After that point, we should move to a more balanced approach of supply and demand.

Do not hold me to these words because, if anything, the past couple of years have taught us that conditions can change on a dime. However, if by chance I should unexpectedly disappear from the scene, you will know on which beach I can be found.

As a conversion house, AEI is experiencing a perfect business scenario: strong end-user demand resulting in committed production slots well into 2024

CALC pumps up its muscles

Strong ESG credentials, access to cheap capital and the region's largest lessor orderbook will pave the way for China Aircraft Leasing Group to gain an investment-grade rating, its founder and chief executive officer, Mike Poon, tells **Dominic Lalk**.

Last year was another turbulent one for aviation, as governments raced to combat new Covid-19 variants with travel bans and border closures. In Hong Kong SAR, where the headquarters of China Aircraft Leasing Group (CALC) is based, the industry especially remained on its knees, and travel is off the table for most in 2022 because of onerous quarantine requirements.

None of these challenges, however, significantly slowed CALC's expansion. The lessor's portfolio stayed largely active throughout the pandemic, with the latest data showing only 7% of its fleet as grounded, far undercutting the above 20% industry average.

"If you look at the statistics, CALC throughout the pandemic has ranked high if not highest among all lessors in terms of aircraft in service, not subject to grounding orders or grounding of the aircraft due to no demand. In the latest data I have available, I can see that only 7% of the CALC fleet was grounded in 2021, whereas most of our competitors had 20% of their portfolios or even more grounded," the lessor's chief executive officer, Mike Poon, tells *Airfinance Journal*.

"The reason is that we have the right aircraft assets – young, latest generation, environmentally friendly and mostly narrowbody – and the right client mix. Our customers in our Chinese home market are very healthy and, globally speaking, we have been very selective when adding new airline credits to our portfolio," says Poon.

CALC's largest airline customers, in terms of number of aircraft placed, are China's big three state-controlled carriers and their affiliates. China Eastern Airlines leases more than 30 CALC aircraft, followed by China Southern Airlines and flag carrier Air China and their Shandong Airlines, Chengdu Airlines and Sichuan Airlines associates.

Outside China, the group's largest current asset value exposure is with low-cost carriers in South America, Bamboo Airways in Vietnam and flag carrier Air India.

Chasing investment grade

With strong backing from parent China Everbright Group (CE Group), CALC has easy access to cheap capital. CE Group recently signed off on plans to provide higher annual loan facilities to the company to "fund the projected increase in fleet size and the expected aircraft delivery schedule" over the next three years.

"Last year, we got our first global credit rating, just one notch below investment grade, BB+. We are very confident of our business and our facilities in place. We look forward to continuing our hard work to be upgraded to investment grade when the market has fully recovered," says Poon.

"On the financing side, a lot of liquidity has been available to us throughout the market downturn. Especially in China, people realised that CALC is different. We were able to deal with the new situation quickly and efficiently and were rewarded in return with a very high rent collection record," adds Poon.

"Financing costs are hugely important, of course. Having access to cheap capital is one of the key elements to becoming a successful lessor, but there is more to it than that, and during a crisis and downturn we can prove that we are different. You need to be supportive to your customers, have great teams in place, the whole infrastructure supply chain, the full value chain," says Poon.

He adds: "For investors, they would understand now more than ever that to be successful in aircraft financing you need to offer the full value chain and offer value return and cash flow at every stage of the aircraft's lifecycle."

In a profit alert, CALC notified the market in the second half of February that it expects to post 55% higher net earnings for the year ended 31 December 2021, compared with 2020 when profit

"If you look at the statistics, CALC throughout the pandemic has ranked high if not highest among all lessors in terms of aircraft in service."

Mike Poon, founder and chief executive officer, China Aircraft Leasing Group

attributable to shareholders was HK$334 million ($42.9 million). CALC had total assets exceeding HK$45.4 billion at year-end 2021. It has in place a $3 billion medium-term note programme.

Largest orderbook

CALC claims the largest orderbook among its lessor peers in the Asia-Pacific, counting 244 unfilled firm orders, as *Airfinance Journal* went to press. These new-technology aircraft will greatly advance the firm's already well recognised environmental, social and corporate governance (ESG) credentials, says Poon.

From Airbus, CALC is due a further 148 Airbus A320neo-family aircraft; from Boeing it has commitments for 66 Boeing 737 Max series aircraft; and from China's COMAC it is due 30 ARJ21s. It is also a launch customer of the C919, with a commitment for 10 aircraft.

CALC will be adding new aircraft to its portfolio at a rate of up to 50 units a year from 2023, says Poon. The current fleet hit a milestone when it reached 150 aircraft in the final weeks of 2021.

"We have the biggest orderbook among our [Chinese] peers, with another 244 aircraft on order as of today. Naturally, we also remain active in aircraft trading and will continue to offer lease-attached portfolios in the market as we strive for an investment-grade rating," says Poon.

"Last year, we had a total of 34 aircraft deliveries, including remarketed aircraft, sale and leaseback [SLB] and from our own orderbook. Every year we will put some of our lease-attached aircraft into some sidecars, joint ventures or dispose into the market as we add up to 50 new units to the portfolio," he discloses to *Airfinance Journal*.

Until now, the lessor has resisted an order for the A220 series, mainly because the aircraft may just be too small for its Chinese clientele.

"The A220 is a very good aircraft, we keep exploring it. We must, however, be fully confident we see the full value chain potential first, including residual values. We also need to understand if this aircraft really fits our customer base profile. Currently, our customers want to upgauge, from A319s or A320s to A321neos. These are higher capacity models, but I like the A220 very much regardless and I think eventually I will find solutions for placing it," says Poon.

He notes no difficulties placing its 737 Max orderbook, saying customers are keen to find solutions to upgrade their 737NG fleets to the Max series.

"We also are in final discussions for placing our Max 10 orders," says Poon, noting an agreement in place with Boeing whereby CALC "can easily convert" Max aircraft into widebodies "in line with the market demand". It did so at the beginning of the pandemic when it delivered two 787-9s to Bamboo Airways.

Poon says CALC's widebody strategy has not changed. The firm continues to target 20% widebodies as per its fleet net book value.

"Widebodies are here to stay, especially in Asia," he says, "even as the A321LRs are getting more capable. They will make a return from 2023. I'm pretty confident this year the pandemic will be ending, and China will reopen starting next year."

Mainland joint ventures

As *Airfinance Journal* went to press, CALC was in the market offering a portfolio of 14 aircraft with leases attached to the highest bidders. The portfolio is a mix of A320-family aircraft. Intra-lessor trading had been curtailed by the pandemic when sellers and buyers initially struggled to agree on pricing but has bounced back over the past six months.

In addition to regular trading activity, CALC has become an expert carving out niche opportunities in the Chinese domestic market, often working with players largely unknown to western leasing executives.

"You would have noticed that last year we formed a number of joint ventures with smaller competitor lessors in China. Actually, they are more like partners than competitors, they are traditional financing lessors. Nowadays, traditional finance lessors in China realise that it is better to form a joint venture with us so we become the asset managers of their portfolios and then they can enjoy quite reasonable financial returns," says Poon.

"With these Chinese financing lessors, we usually sell lease-attached aircraft to them and then we continue as the asset manager – for example, we did a transaction like that last year with Moutai Leasing. We have a very attractive orderbook that is attractive also to them you see," adds Poon.

Industry analysts have long predicted that consolidation in aircraft leasing and finance is overdue, especially in China where a significant number of small-time lessors have emerged hoping to ride the wave of success of their foreign peers as China continued its opening up policy through the end of the past decade.

"KBRA expects the trend of consolidation among smaller leasing companies, especially those in China, to continue as the global leasing market grows in importance, and as the importance of established platforms with strong airline relationships and access to capital rises," the ratings agency said earlier this year.

China's largest lessors are ICBC Leasing, AVIC Leasing, CDB Aviation and Bocomm Leasing, with a combined fleet exceeding 1,500 aircraft. There are, however, many smaller leasing firms in China, shows *Airfinance Journal* data, some with portfolios of fewer than 20 aircraft.

SPDB Financial Leasing, Kunlun Financial Leasing, CIB Leasing, Dragon Leasing, SDH Wings International Leasing and Taiping & Sinopec Financial Leasing (TSFL) are among the smaller platforms.

After the pandemic, I think we will see some of the pure financing lessors merge and consolidate, some will exit the market.

Mike Poon, founder and chief executive officer, China Aircraft Leasing Group

"After the pandemic, I think we will see some of the pure financing lessors merge and consolidate, some will exit the market. This is because they realise now that they need to offer the full value chain if they want to be successful in the aircraft business and not all are willing and able to do that," says Poon.

CALC recently offloaded lease-attached aircraft to joint-venture partners TSFL, as well as ABC Leasing and CEB Leasing. In 2020, CALC and China Construction Bank (CCB) Shanghai joined hands to support the establishment and growth of Moutai Leasing, a new leasing platform from China's Moutai Group, the world's largest distiller.

Under that joint venture, CALC will provide aircraft asset management services and CCB will provide lending, debt underwriting, asset securitisation and other financial services. Moutai Leasing aims to seal leasing transactions for at least 20 aircraft through 2024.

ESG pioneer

Poon is surprised by industry players who claim ESG poses more questions than answers. At CALC, he says, ESG played a vital role almost from the very beginning.

"For us, being able to offer the full value chain to our customers has always been at the very core of our business. Especially from 2014, we doubled down on our full value chain and ESG commitments, including when our ARI subsidiary opened the first aircraft recycling plant in China," says Poon.

"The last two years for us were a lot about brand building, especially here in our region. We have continued to build muscle. We are quite muscular today. We can handle whatever aircraft come to us and find the best solutions – young and old," he adds.

This, he says, puts CALC in a perfect position to "capture post-pandemic opportunities" in the market and support its customers with "tailormade fleet upgrade solutions".

"At CALC, ESG is definitely not a PR exercise. CALC was the first operating lessor in China. We have closely witnessed and sometimes were actively involved in policy changes. From 2014-15, we have invested a lot in end-of-life solutions as part of our fleet solutions strategy. We have been ESG and fleet solutions conscious for a very long time now.

"Last year, we did a SLB with China Eastern for 12 Airbus A321 aircraft as part of a fleet upgrade arrangement; we helped resolve their old aircraft and ESG concerns and supply them with new aircraft," recalls Poon.

"Our home market China is particularly conscious about maintaining a fleet of young aircraft, so as these aircraft get replaced after their initial lease cycle, we need to find afterlives or other fleet solutions for them elsewhere. That is a key reason why we are growing our teams overseas as you would have seen with the appointment of Luis Ayala [as chief development officer] in Miami in February. He will focus on driving our ESG initiatives in that region and find fleet solutions for the aircraft we are taking back from China, including cargo conversions," says CALC's Poon.

Ayala has more than 27 years' experience in commercial aviation, including seven years as vice-president Americas for AWAS and a period as a managing director at GA Telesis.

Poon says he is advocating in the industry and among regulators to develop a quantifiable ESG framework designed to reward those players who pioneer green fleet upgrade solutions.

"We try to lobby and promote this to the government. The industry should reward ESG credentials and initiatives. This could take the form of a points system where for every older aircraft taken out you get credit. This in turn could translate into more import quota for aircraft into China, for example, or this will mean you get x credit," he explains.

Poon adds: "The regulators are asking the industry to provide input on how to quantify what ESG returns may look like. It is too early to say what the policymakers can do based on your scorecard. We need to see the implementation of a full framework."

Jol/Jolco light at end of runway

Japanese investors remain wary of the aviation market. Yet, the major players are cautiously optimistic that Jol and Jolco aircraft financings will pick up again this year, writes **Dominic Lalk**.

The market for Japanese operating lease (Jol) and Japanese operating lease with call option (Jolco) financing structures remains depressed. Airlines are still keen on closing new deals, but bank funding and trepidation from equity arrangers are often the limiting factors. Moreover, Japanese tax investors may find alternatives in maritime assets, which are considered less risky than sinking funds into the volatile aviation sector.

The leasing fund business of Japan's Financial Products Group (FPG) arranged aircraft assets worth ¥16.1 billion ($139.9 million) in its fiscal first quarter ended 31 December. In financial year 2021, FPG arranged total aircraft assets valued at ¥57.3 billion, down from ¥94 billion in FY2020 and ¥284.9 billion in FY2019. In its final quarter, FPG did not arrange any aircraft asset deals.

The figures from other notable Japanese aircraft financiers paint a similar picture, confirming record low aircraft asset arrangements in 2021.

"In terms of Jolco, bank funding to the airline sector seems to be the limiting factor and we may not be seeing the historical pick up in volume in the second half of the traditional Japanese fiscal year."

Marito Takamasa, aviation financier, Tokyo Century

Rock bottom

"In terms of Jolco, bank funding to the airline sector seems to be the limiting factor and we may not be seeing the historical pick up in volume in the second half of the traditional Japanese fiscal year. Our gut feeling is that volumes are well below 30% of 2019-20 levels. However, this may be too quick a call as the fiscal year in Japan runs through 31 March," says Tokyo Century aviation financier Marito Takamasa.

"It's a very different story for Jols as funding is readily available for lessors and underwriters. The market size of Jols is much more difficult to assess as we would probably need to start from defining what Jols are, but with the likes of Bleriot successfully concluding deals we do feel there is momentum," adds Takamasa.

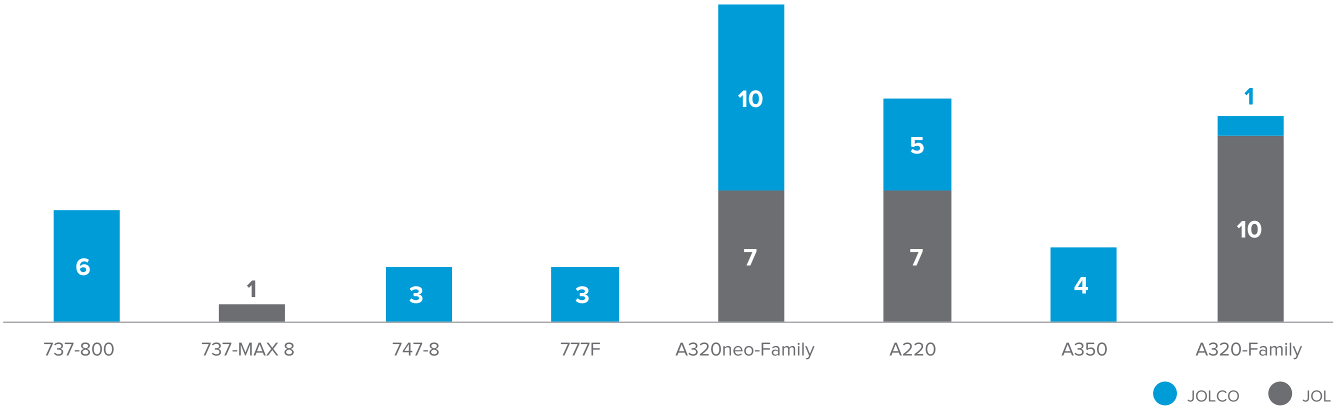
Tokyo Century has executed definitive agreements to finance three Airbus A321neos under a Jolco mandate for Wizz Air, as well as two A321neo aircraft for Germany's Lufthansa (DLH).

Legal experts at White & Case told *Airfinance Journal* they are "not seeing a significant increase in the number of aircraft Jolco transactions".

Simon Collins, White & Case partner and aviation expert, says: "The deal flow remains light and concentrated on the best credits and/or the freighter market. Japanese investors remain wary of the aviation market and have had a bruising experience in the various airline restructurings. We have only seen a limited number of aircraft Jolco deals in the current fiscal year. Notably, we closed a vintage [Boeing] 747-8F Jolco aircraft for Atlas Air."

A top executive at an investment bank that closed several Jol and Jolco transactions over the past 12 months says: "While some equity arrangers still shy away from new underwriting, or at least require very specific conditions, certain

JOL/JOLCO by aircraft type FY2021-22 (*Airfinance Journal* Deal Tracker)



Japanese equity arrangers are reluctant to restructure as this directly impacts the tax position of their investors and, in turn, impacts the market for future investment by Jolco investors.

Simon Collins, partner, White & Case

players became more aggressive when new opportunities arose in 2021. This is a typical recovery scenario, like during past crises, although the magnitude of Covid-19 is much worse."

Top lessee credits only

"What is a clear trend is the flight to top-tier airlines on the Jolco side. Only a handful of names are open across all the equity arrangers, with slightly more names for Jols," says Shumpei Tsuda, co-head of the global aviation team at Development Bank of Japan (DBJ).

"There seems to be much more scrutiny of the airline credit, with a focus on state support, so mostly going back to the past, with European flag carriers being the most popular traditional Jolco names," adds Tsuda, who says that DBJ remains only a lender and does not underwrite aircraft equity.

"Credit does seem key at the moment. Only the strongest credits seem to be open to Jolco transactions at this time," notes White & Case.

"There definitely is more scrutiny on airline credit when screening new deals. We do, however, see a few outliers – whether they are wrong messages being sent and/or they evidence depth and diversity of the Japanese market we would need to see," says Tokyo Century's Takamasa.

Thierry Pierson, chief executive officer and co-founder of Asset Brok'Air, agrees that the market will "pick up only to long-standing, well-established names with proven long-term satisfactory performance".

Pierson and his co-founder, Jean-Gaël Duboc, point out that, as *Airfinance Journal* went to press, they were in the process of closing the firm's first "sustainable Jolco".

Bob Melson, K&L Gates partner, says: "At the outset of Covid, financiers generally pulled away from the Jolco market but Japanese equity investor appetite was still extremely high so we started to see 100% equity financed Jolcos [equity investors typically make up 35%], which was an interesting development with no finance documentation/security package in place. It seems that lenders have a much better idea of which airline credits will weather the Covid storm and we are seeing financings flooding back to the Jolco market."

His colleague, K&L Gates partner Sebastian Smith adds: "Jolcos involving freighters are indeed popular and we believe that the AFIC and Balthazar insurance products will start to crop-up in transactions."

In 2021, FPG Amentum and Societe Generale closed the first financing of a Jol supported by Aircraft Finance Insurance Consortium (AFIC), a non-payment insurance product designed by Marsh, secured against a 737 Max 8 aircraft leased to Flydubai. The transaction involved a wholly Japanese financing structure, with the debt provided by the Tokyo branch of Société Générale and the AFIC insurance policy underwritten by Aioi Nissay Dowa Insurance with reinsurance support from Fidelis Insurance and Axis Insurance.

ABL Aviation tells *Airfinance Journal* that it experienced brisk business in Japan last year. Its chief executive officer, Ali Ben Lmadani, says ABL closed 22 aircraft transactions in 2021: the Jolco financing of two A350-900s for DLH and an A320neo for Pegasus Airlines; the sale of an A320 on lease to Wizz Air and an A321 on lease to Eva Airways from Jol investors to US investors, as well as the sale of eight A320s on lease to Latam; and the acquisition of eight A220s on lease to Delta Air Lines and an A321neo on lease to Alaska Airlines.

ABL Aviation has just been awarded a mandate to finance and lease four A220-300 aircraft for Air France, utilising Japanese investor funds.

"ABL Aviation and our Japanese partners have actually seen a year-on-year growth in transactions," says Lmadani. "Our reputation of being a responsible and innovative asset manager is growing amongst Japanese investors, which is helping to drive new deals and giving us access to some of the best airlines worldwide.

"Our level of activity in the market was supported by the excellent sales capacity of our Japanese partners, who quickly provided market and technical data and responded to queries from the Japanese investors," he adds.

Painful restructurings

Jolco financings are generally not easy to restructure, especially those with multiple Japanese equity investors. The impact of restructuring impacts each of the key parties differently. This created many headaches and sleepless nights for financiers as airlines the world over entered wide-ranging restructurings since the beginning of 2020, many of them shedding excess aircraft and seeking lease discounts.

"Airlines who are entering restructuring proceedings have generally sought to focus attention on their easier options such as restructuring operating leases or commercial debt before tackling their Jolco exposure.

"Japanese equity arrangers are reluctant to restructure as this directly impacts the tax position of their investors and, in turn, impacts the market for future investment by Jolco investors. Equity also sits fully subordinated to lenders and so is most at risk from the impact of depressed market values," explains White & Case.

What is a clear trend is the flight to top-tier airlines on the Jolco side. Only a handful of names are open across all the equity arrangers, with slightly more names for Jols.

Shumpei Tsuda, co-head of the global aviation team at Development Bank of Japan

Jolco lenders are generally well collateralised; however, they will be affected immediately by any rent payment deferrals and or defaults as 100% of rent services loan principal and interest.

"All three parties have found their positions affected by the entry into the restructured Jolco of the investors looking for Chapter 11-related opportunities, as they bring a very different perspective to the distressed situation," says the firm's Hong Kong and Tokyo-based partner Collins.

"We have seen some Jol cases where investors probably had expected the incumbent airline to extend expiring leases but instead the aircraft got returned. Airline bankruptcies and restructurings naturally pose a big problem for investors. Some of the names that had Jol/Jolco exposure and were restructured include Latam, Aeromexico, Avianca, Virgin Australia, Virgin Atlantic, Norwegian and Malaysia Airlines," says DBJ's Tsuda.

"Many transactions were suffering restructurings, with various outcomes. Typically, once an airline enters bankruptcy, an on-going discussion starts with the administrator to determine which aircraft will be kept under new leasing terms and which will be returned, including to investors. All cases are possible according to the need of the airline and the willingness and flexibility of the lessor," says Asset Brok'Air's Pierson.

"What you call 'bad behaviour' from arrangers and lenders is the consequence of the conflicting interest of being equity arranger and lender in the same transaction. Some lenders/equity arrangers have ruined their reputation by doing so," adds Pierson. "This was the first time in the Jol/Jolco evolution that Japanese leasing houses realised how such conflicting interest could jeopardise transactions."

Earlier in 2022, *Airfinance Journal* reported that four young Airbus aircraft operating for Vietjet Air were up for sale. The aircraft were financed in the Jolco market, although now the lenders are seeking to obtain the title through an auction process. Airborne Capital has been mandated by those lenders to conduct the sales process.

In 2019, *Airfinance Journal* reported that Vietjet had closed new A321 Jolcos, one led by BNP Paribas and the other by Natixis. Both banks acted as mandated lead arranger bank and lease arranger on five aircraft each at the time.

"We have seen in recent months some cases of irresponsible management of aircraft assets to the detriment of junior noteholders and Japanese equity holders. Talking from an investment and asset manager perspective, the buck stops with us when it comes to protecting our investors," says Lmadani.

"We believe that is why we are seeing growth in our Jol and Jolco transactions, because we have demonstrated to our investors that we value our relationship with them and will be as agile and innovative as possible to find solutions that protect their interests," he adds.

"To illustrate this point, our technical expertise and strong negotiation skills with transaction parties allow us to protect the investor's interest on eight rejected Jolco aircraft during Latam's Chapter 11 process, ensuring all the money was repaid to investors with a profit," says Lmadani.

Aircraft types in demand

On the Jolco front, Airbus's A320neo-family series of aircraft has been the most in-demand aircraft asset class, followed by Boeing's 777 freighters and the increasingly popular A220 series of aircraft. For Jol transactions, however, Japanese investors continued to accept other types of aircraft, including refinanced vintage units. Interest in non-cargo widebodies remains depressed.

Financing A220 aircraft presents various advantages and opportunities over other aircraft types for Japanese investors, including its relatively modest price tag, which makes it a great "entry model" for first-time investors, as well as the A220's sustainability credentials.

On top of the ABL A220 deals with Air France and Delta, Osaka-based Chishima Real Estate's aviation division last year secured a deal for Japanese investors that involves two A220-300 aircraft to be acquired and leased back to Air France under a Jol structure.

The A220 is the right model for short- and medium-range fights. It is cost-effective and fuel-efficient, meeting airline environmental, social and governance targets, notes Tokyo Century's Takamasa.

DBJ's Tsuda says he echoed these observations, adding that A220 financings may provide better yields for investors compared with other narrowbodies.

The A220, indeed, has a very competitive price tag, adds ABL's Lmadani.

"We do feel that the A220 has been accepted by the Japanese market. Leaving aside the point that it is a great product, the market has gained comfort in the increased operator base since Airbus took control of the programme," says Takamasa.

On Boeing's ungrounded 737 Max and the series' investment credentials, the Tokyo Century financier says he did not believe there were "signs of aversion to Max aircraft in the Japanese market" with more deals anticipated as deliveries increase.

Pierson says that the Max may still suffer from a "bad reputation" but it will return to the Jol and Jolco market soon.

In 2021, demand for freighter aircraft hit a new high, particularly for the 777F and converted A330s. At the beginning of this year, Airbus launched the A350F, garnering launch orders from Air Lease, Singapore Airlines and CMA CGM.

It seems that lenders have a much better idea of which airline credits will weather the Covid storm and we are seeing financings flooding back to the Jolco market.

Bob Melson, partner, K&L Gates

"The high price tag of new widebody freighters limits the investor base but cargo is another area we expect an increased deal flow, especially if we can come up with the right structure to finance P2F [passenger-to-freighter] aircraft," says Takamasa.

"We have seen transactions for 777Fs and 747-8Fs being discussed for very select names. Some have gone toward insurance covered loans/Jolcos as not many lenders are willing to take the risk of freighters yet," says DBJ's Tsuda.

"The widebody market remains depressed and the tax benefit for investors is less attractive than with narrowbodies. In addition, the equity at risk is much larger for a market which is just recovering. However, for a very good name, the market is still open," says Pierson.

Jol and Jolco players say they do not expect to see Embraer's E2 series or other regional aircraft to be welcomed by investors in the foreseeable future.

"Regional jets are always difficult to manage at lease end because of the drop in value and volatile demand," notes Pierson.

Tsuda says: "We have no news of E2 deals, which is possibly a product of there not being many deliveries to airlines with access to the Jolco market."

Regional **boom**

As the industry emerges from Covid-19, regional lessors will look to take advantage of M&A opportunities as well as the improved economics of new-technology regional assets. **Olivier Bonnassies** and **Hugh Davies** report.

Regional leasing and asset management specialists are bullish about growth prospects as the Covid-19 pandemic recedes, airlines adapt to new market and network conditions, and larger leasing platforms look to divest parts of their regional portfolios.

Dutch regional lessor Truenoord believes there are interesting prospects for asset acquisitions this year as various aircraft portfolios come up for sale.

In an interview with *Airfinance Journal*, Truenoord's chief executive officer (CEO), Anne-Bart Tieleman, says that as parts of leasing businesses' non-core assets come to market, the Amsterdam-headquartered lessor is open to the "right deal".

Aercap completed the acquisition of GECAS on 1 November last year, and the market is also expecting some asset sale activity from the GECAS portfolio, according to Tieleman.

"There's a substantial regional fleet within GECAS that are non-core assets for Aercap. They won't put everything up for sale at once, but they will likely sell in chunks and so that's a potential source for us," says Tieleman.

"NAC [Nordic Aviation Capital], the situation being what it is, is also a potential source of other aircraft for us," he adds.

"It's a process that will slowly gather pace but it's definitely an opportunity for us and there are certainly assets there that we could pick up.

"It won't be a disaster if it doesn't happen because there's still plenty of sources of growth, but we're definitely interested in the opportunities they might generate," says Tieleman.

Since NAC commenced its much-anticipated Chapter 11 bankruptcy protection process on 17 December, *Airfinance Journal* has reported on various movements around the Limerick-based lessor's regional portfolio.

Airfinance Journal revealed in January that Azorra Aviation is placing $100 million of equity into a carve-out entity, which will fund the purchase of 37 aircraft from NAC, including four ATR42-600s, three ATR72-600s, one De Havilland of Canada Dash 8-400, seven Embraer 175s, 18 E190s and four E195s.

NAC also launched a remarketing process in January for 12 Bombardier-MHI CRJ1000 aircraft leased to Garuda Indonesia as well as a batch of Dash 8-400s.

The lessor seeks to exit Chapter 11 protection in the first quarter of 2022 as it looks to transition to more new-generation narrowbody assets.

Outside of portfolio sales, Truenoord's Tieleman points out that there are still plenty of other opportunities for aircraft trading between lessors, adding: "There's always trading between lessors and we see that starting to pick up again."

As airlines place large regional jet orders, the growing sale and leaseback space is another source of origination for the company to expand, although Tieleman rules out its own orderbook for the time being.

"All those aircraft need to be financed. Of course, they won't all be financed through sale and leasebacks but a large portion will and so that's another source of growth for us," he says.

Truenoord specialises in the 50- to 150-seat segment with a fleet of almost 60 aircraft, including 19 ATR72-600s, 21 E190s, six E170s, four E195s, three Dash8s, one ATR72-200 and two Bombardier CRJ900s, according to *Airfinance Journal*'s Fleet Tracker.

The lessor recently acquired four new ATR42-600s from the Franco-Italian manufacturer, leasing two units to existing customer Silver Airways and two to Indian operator Alliance Air.

Growth opportunities

Aerocentury's new aviation subsidiary, Jetfleet, was set up to build a new regional jet and turboprop leasing platform, according to its CEO, Michael Magnusson.

Magnusson says the re-born lessor has started operations from a "clean sheet" and aims to build its portfolio fleet with turboprop and regional jets using the experienced team from Aerocentury.

When parent company Aerocentury and certain subsidiaries filed for bankruptcy in March 2021, it said the Chapter 11 process was the most effective step to resolve the company's outstanding indebtedness and to progress towards its goal of continuing in the regional aircraft business in order to preserve enterprise value for its stakeholders.

At the time, Aerocentury owned 12 aircraft. 10 of which were encumbered by a first-priority lien securing the approximately $83.2 million of secured indebtedness of the company held by Drake Asset Management Jersey. Two of the aircraft are on lease to lessees in Kenya and not subject to the first-priority lien of Drake, its sole secured lender.

There's a substantial regional fleet within GECAS that are non-core assets for Aercap.

Anne-Bart Tieleman, chief executive officer, Truenoord

"We sold all of our assets to Drake Asset Management Jersey and paid back the related debt, bar one aircraft," says Magnusson.

Aerocentury exited the Chapter 11 bankruptcy status on 30 September with only one Dash 8-300, on lease to a Kenyan operator. *Airfinance Journal* understands that the aircraft will be sold to the airline.

"Jetfleet has a clear focus on four aircraft families: the E-Jet and Bombardier CRJs on the regional jet side and the ATRs and Dash families on the turboprop side. We aim to acquire mid-life assets in those markets," he tells *Airfinance Journal*.

"We are starting to build up the portfolio," says Magnusson, who adds that the firm has engaged B Riley Financial to advise in securing new equity. It has also engaged former board member Evan Wallach as consultant.

Magnusson explains that the focus on those assets reflects the company's expertise in the 70- to 120-seat market.

Jetfleet's business plan anticipates a fleet size of up to 50 assets over the next five years, and Magnusson says the lessor has strong support from Aerocentury to develop its plan in the sector.

Magnusson sees investor appetite for regional aircraft lessors but believes the investor community needs to be comfortable in this segment of the market.

Elix Aviation Capital says it is also actively reviewing the development of investment opportunities in the market and will pursue those that align with its growth plans.

"We have built an experienced platform that has specialised in managing exposures in the regional market, specifically turboprops, and our growth objectives are across the full range of regional aircraft and adjacent opportunities," says John Moore, Elix Aviation Capital's CEO.

"Elix offers a wide range of services to investors to originate and execute transactions and to provide lease/asset management services. The Elix vision is to be trusted for our passion and expertise in aircraft investment and the creation of value – and this is what will drive our development."

Moore says Elix intends growing the business this year, working with its investor partners seeking to deploy capital in the market.

"The expansion will focus upon opportunities where the Elix edge in aviation risk management can provide an acceptable risk and return profile to the investor. We are not pursuing growth just for the sake of growth," he says.

The preference will remain for assets that have long-term value and liquidity, rather than end-of-life assets, adds Moore.

"The regional sector is characterised by operators and aircraft in many markets that often are playing an essential role in domestic and regional transportation, which makes it less vulnerable to market disruptions and cycles. Consequently, we will continue to be active on every continent," he says.

Its focus in the past has been more concentrated on the 50- to 70-seat segment, and Elix sees many opportunities in that part of the market for growth and replacement. However, the lessor also targets expansion into larger aircraft.

Elix Aviation Capital, which launched operations with a portfolio purchased from Nordic Aviation Capital, was founded in September 2013 with funding from Oaktree Capital Management, which also invested into Azorra last year.

Elix purchased 22 turboprop aircraft with three options from NAC in a transaction valued at more than $100 million. It bought a mix of ATR42-300/-500s and DHC8-100/-300s from the world's largest regional aircraft lessor.

Sameer Adam, senior vice-president marketing for Acia Aero Leasing, says the company continues to invite all sellers for both off lease and on lease aircraft as it engages with various parties for the aircraft that are coming out of portfolios.

"Acia has been executing on a growth strategy and we are focused on new transaction opportunities. We anticipate announcing some new lessee customers and potentially new aircraft types for our portfolio in the near future. Our goal is to diversify where we see value and expand further into markets where there is sustainable growth," he continues.

"We'll look at any transaction that fits our model. Acia is uniquely positioned in that we managed through the pandemic years with minimal impact and actually, we won new customers. This has contributed to our growth mindset and I see more opportunities for Acia to make some strategic decisions as part of executing on our commercial strategy.

Adam says the company is working through multiple discussions to close "quite a few" aircraft transactions by the end of the second quarter.

"We will continue this effort well into Q2 as we position ourselves for new lessees," he adds.

Amid speculation around aircraft portfolios up for sale, Canadian regional lessor Chorus Aviation says it will be selective on how it approaches M&A activity.

"While there are buy opportunities, what we don't want to do is take on some of these opportunities that later become problems," Chorus's CEO, Joe Randell, says.

Market share is a secondary objective to Chorus. "Instead, we look at each deal in terms of the financial aspects and creditworthiness of the customer and balancing that with our own liquidity.

"While market share is nice to have, we've seen some large lessors with major market share that have not been successful, so we're being very prudent and very careful," he adds.

In late January, *Airfinance Journal* reported that Brookfield Asset Management, in partnership with Chorus Aviation, was one of two platforms in the final stages of bidding for the purchase of regional aircraft asset manager and lessor Falko Regional Aircraft*.

Crossover space

New-technology regional jets such as the Airbus A220 and Embraer E2 have already garnered significant interest from the leasing community.

Airfinance Journal's Fleet Tracker shows more than 80 such aircraft have already been delivered to lessors with a further 300 units on order.

This order backlog is split roughly two to one in favour of the A220 with regional lessors such as Chorus, Azorra and NAC committing to the A220; however, Azorra and Falko both have sizable E195-E2 orders.

For other regional players such as Truenoord, these aircraft types are on their wish list but only at the right price and the right returns.

"We're seeing on the A220-300 market that some lessors are pretty aggressive but that's fine with us. That's the nature of the market and so we'll continue to be patient and wait for the right deal," says Tieleman.

"We're happy to take new assets onboard if it makes sense from a risk perspective and a customer perspective," he adds.

For its part, Aergo Capital, which has a large turboprop portfolio, expects to be a growing player in the new technology area, both with narrowbodies such as the Boeing 737 Max but also crossover regional aircraft such as the A220.

"We've been studying the A220 and it's only a matter of time before we enter that space," says Antony Snelleman, chief risk officer at Aergo.

He notes, however, that the turboprop segment will still "remain an important part of our portfolio", pointing out that Aergo's portfolio variety helps deploy capital as efficiently as possible to generate returns.

"We look for value across the spectrum. At times there's pockets of value in different places. While some lessors specialise in certain areas, we will go where there's efficiency and where we can generate quality returns for our shareholders rather than saying that we have to be in a certain area of the market," adds Snelleman.

Acia Aero Leasing branched out into the regional jet space with its first E190 late 2021 on lease to Bestfly, with more expected in the near term.

"We are also looking at E195s and we see further opportunities with the A220. We like the A220 and would certainly welcome an opportunity to bring the aircraft into our portfolio but we also see a market frenzy in that space," Acia Aero Leasing's Adam says.

Chorus Aviation sees opportunities in the crossover segment in particular as more airlines make the transition to new-technology regional jets to reshape their networks.

"I do see it becoming a larger part of the business moving forward. In this particular market we'll be more of a niche player but there are clearly carriers that are moving in that direction that would fit the type of carrier profile we would target," Randell says.

"We're looking at all opportunities including mid-life and older assets but we find the larger regional jets to be particularly attractive, especially the crossover jets like the A220s and E2, in particular."

"Our focus has primarily not been on the very large carriers but on the mid-to-smaller size and we're very comfortable in that niche," he adds.

The lessor acquired its first A220-300 in late 2019 via the sale and leaseback market with Air Baltic through a mandate covering five aircraft.

"Air Baltic is a great example of a niche player that has been very successful and supportive in its home market," explains Randell. "There are other opportunities such as those that we would pursue."

**As Airfinance Journal went to press, Chorus Aviation announced the purchase of Falko in partnership with Brookfield Asset Management. The total consideration for the transaction is approximately $855 million, comprising $445 million of cash and approximately $410 million of existing indebtedness that will remain with the relevant target entities.*

ATR72-600 makes it three in a row

The European manufacturer's turboprop celebrates a hat-trick of wins in *Airfinance Journal*'s Investor Poll regional aircraft category.

The ATR72-600 model continues to top *Airfinance Journal*'s Investor Poll regional aircraft category. This is the third year in a row the turboprop has won, but in last year's results the top five models were slightly down in their overall ratings.

The regional market recovery has been fuelled by domestic traffic and public service operations. However, airline failures and bankruptcies have not spared it.

ATR has had a decent year in terms of new orders, with 35 units.

The European manufacturer reinforced its market position by updating ATR72-500 fleets with new -600s as shown with Binter Canarias, Air Corsica and Tarom while winning new campaigns such as Greece's Sky Express and Maldivian carrier Island Aviation Services.

This followed six orders for its products in 2020 while deliveries to customers accounted for 10 units.

The French turboprop manufacturer delivered 31 new aircraft to customers in 2021.

ATR, which celebrated 40 years of operations in November 2021, also launched a new engine variant, the PW127XT engine.

The engine sets a new standard for sustainability and operating economics in regional aviation. Customers will benefit from 40% extended time on wing, bringing the engine overhaul to 20,000 hours, resulting in fewer events over the lifecycle of the aircraft. This will allow a 20% reduction in engine maintenance costs, says the manufacturer.

The PW127XT will provide 3% improvement in fuel efficiency from technology injection. It consumes more than 40% less fuel versus other regional jets, amounting to a similar proportion of CO_2 savings. The engine is compatible with sustainable aviation fuels, says ATR.

Regionals

Aircraft type	Residual value	Value for Money	Operational success	Remarketing Potential	Overall Score	Last year's score	Difference
ATR72-600	3.81	3.92	4.39	3.97	**4.02**	**3.60**	0.42
E175	3.33	3.56	4.33	3.25	**3.62**	**3.52**	0.10
ATR72-500	3.03	3.44	3.89	3.11	**3.37**	**3.28**	0.09
ATR42-600	3.22	3.28	3.53	3.31	**3.33**	**3.06**	0.27
E195-E2	3.21	3.22	3.19	3.06	**3.17**	**2.72**	0.45
CRJ900	2.79	3.26	3.74	2.88	**3.17**	**3.07**	0.10
A220-100	3.06	3.16	3.39	3.06	**3.16**	**2.88**	0.28
E190	2.69	3.19	3.67	2.75	**3.08**	**2.85**	0.23
Dash 8-400	2.63	3.05	3.39	2.89	**2.99**	**2.99**	0.00
E190-E2	2.97	2.97	3.00	2.88	**2.95**	**2.53**	0.42
CRJ700	2.68	2.88	3.47	2.76	**2.95**	**2.82**	0.13
ATR42-500	2.72	2.94	3.28	2.72	**2.92**	**2.89**	0.03
Dash 8-300	2.76	2.88	3.24	2.76	**2.91**	**2.95**	-0.04
E195	2.72	2.94	3.22	2.69	**2.90**	**2.67**	0.23
E175-E2	2.73	2.79	2.80	2.57	**2.72**	**2.18**	0.54
ERJ-145	1.82	2.71	3.35	2.35	**2.56**	**2.74**	-0.18
E170	2.31	2.67	2.89	2.17	**2.51**	**2.47**	0.04
CRJ1000	1.79	2.44	2.38	1.76	**2.10**	**2.26**	-0.16
SSJ-100	1.03	1.44	1.22	1.09	**1.20**	**1.24**	-0.04

There is no doubt that ATR continues to increase its market share in the turboprop sector and the -600 series is enjoying a relatively favourable perception in today's lean, increasingly ESG-focused market.

However, the ATR series is fundamentally a 40-year-old aircraft design concept, despite the numerous improvements especially over the past 10 to 12 years with improved engines, updated avionics and cabins.

The manufacturer has beefed up its offering over the past few years with a full cargo version, which is attractive and suitable to dedicated freighter operations, and a short take-off and landing version to address some limited runways. Those have allowed ATR not to commit to launching a radically new successor to the ATR42/72-600 series.

ATR benefits from a broader customer base than its closest competitor, but like de Havilland, some of its customers have defaulted, thereby resulting in structurally high availability of relatively young aircraft on the market.

Some new operators such as Irish regional carrier Emerald Airlines are emerging taking some capacity, while others such as Air Serbia, Windrose Aviation and Loganair are leasing ATR72-600 equipment to renew their ATR existing fleets.

On the lessor side, Truenoord Regional Aircraft Leasing has acquired new aircraft on an opportunistic basis. Azzora Aviation, Falko and Acia Aero Leasing are expanding their portfolio with the -600 models, while Avation and debtholders on some Nordic Aviation Capital aircraft have sold assets with leases attached.

The Embraer E175 model is firmly installed in second place in the regional aircraft market, because of its continuing sales.

The type has been described as the "sweet spot" for regional aircraft in the USA despite a potential threat of airlines being able to renegotiate their scope clauses amid the Covid-19 pandemic.

Embraer has, however, opened some markets for the type outside North America. The sales to Nigerian carrier Overland

Airways also supports the manufacturer's efforts in the African market on the E2 front.

The best-selling E175 continues to sustain Embraer, making up about 50% of entire commercial aircraft backlog.

But as one pollster observes, the US concentration of global fleet is only increasing and demand is only for new E175 types. Former Flybe and Alitalia E175s are taking time to place, asking the question: just how liquid is the E175 on the secondary market?

The pollster says that it could be that the market will start to distinguish more between the original E175 (only about 180 built) and the more efficient, more ubiquitous E175+ that has comprised all deliveries since 2014.

The E195-E2 model was the most improved aircraft in operations last year, up 0.45 points overall and dramatically improving in all four categories: remarketing potential, operational success, value for money and residual values.

The type is Embraer's best-selling E2 variant, and despite strong competition from the larger Airbus A220-300 type, the Brazilian manufacturer shows it can sell the E195-E2 to replace small narrowbodies such as the Boeing 737-700s, with KLM Cityhopper.

Embraer also has further opened the leasing sector beyond Aercap, ICBC Leasing and Aircastle. Lessor Falko has also played a role in that market, supporting some deliveries (through the sale and leaseback market) for new customer Porter Airlines.

The polls also show the E190 and E195 models strongly improving in 2021 over the previous year.

The E190 has benefitted from a liquid market and has probably been the most traded regional aircraft since 2019. Supply has been mostly absorbed over the past two years, with more than 50 aircraft placed at Alliance Airlines, Airlink and Breeze Airways alone, plus smaller numbers at BA Cityflyer, Bamboo Airways, Cobham, etc.

The E195 has had different fortunes regarding trading over the same period. Main customer Azul Linhas Aereas was planning to rollover its fleet in 2020 over a two-year period as it was receiving new E195-E2s.

The ATR72-600 model continues to top *Airfinance Journal*'s Investor Poll regional aircraft category

All its E195s were expected to be phased out by the end of 2022 and were to be sub-leased at least until the end of the original operating lease term.

LOT Polish Airlines had signed letters of intent covering 18 units, Breeze for up to 28 E195s, while some aircraft were being earmarked to Portugalia Airlines (PGA).

Azul has nine E195-E2s and operates its 50 E195s alongside them, but plans could be revised to make way for the E2 orderbook.

Production for the Dash 8-400 is still paused, with limited demand. The Flybe bankruptcy (54 aircraft) has not helped the type.

When combined with Air Baltic, LGW, Austrian Airlines, SA Express phase-outs, a total of 90 units have been on the market looking for new homes.

The type is effectively retiring from the European markets and one source points out as many as 110 units, or more than 25% of the estimated 420-active fleet, include imminent retirements at Olympic Air and LOT.

Demand and the secondary market demand has been very limited for the passenger side while the main trading has been aerial firefighting applications at Conair Aviation.

The Canadian operator intends converting the 2007/09-vintage fleet into Q400AT air tankers and Q400MR multi-role variants to join its firefighting fleet of 70 aircraft, which also includes Convair 580s and BAe Avro RJ85s.

The freighter conversion could also be revived, though.

Azul has nine E195-E2s and operates its 50 E195s alongside them

End of CRJ900 production

The final two deliveries of the Canadair Regional Jet (CRJ) family were performed in February 2021.

One aircraft went to Chorus Aviation, for forward lease to Jazz Air. The second was delivered to Delta Air Lines, for operations at Skywest Airlines.

The CRJ family, made up of the 50-seat CRJ100/200/550s, the niche 44-seat configured CRJ440, the 70-seat CRJ700, the 86-seat CRJ900 and 104-seat CRJ1000 models, has received more than 1,950 orders in almost 30 years in production.

One pollster says the CRJ900 unsurprisingly shares similarities with the E175: the best-selling member of its family, driven largely by demand from the USA in 76-seat configuration. The CRJ900 type recorded limited activity in the second-hand market in 2021. Only a handful of Lufthansa Cityline aircraft were sold to lessor Regional One for forward lease to Elite Airways. Another unit was leased to Copenhagen Air Taxi.

The CRJ700 customer base is now 88% concentrated in North America. As with the E170, aircraft being phased-out by European operators are finding their way to the USA, so expect concentration in the latter market to grow, observes a pollster.

There is one real CRJ1000 operator, Air Nostrum. Air France's Hop has tried to sell its fleet for about 18 months, but demand is relatively limited, and offering prices are low.

Boeing 737 Max 8's return moves up a gear

With its return to service, **Geoff Hearn** reviews the market for the lead model of the Boeing Max family.

The ending of the FAA grounding in November 2020 and the subsequent easing of restrictions by many authorities worldwide have paved the way for the Boeing 737 Max to return to service.

North American carriers were the first to restart operations with the aircraft last year. European airlines did not rush the aircraft back into service. Even though European regulators followed their US counterpart in lifting the grounding, most carriers are reinstating the aircraft where passenger demand justifies the restarting of services.

Chinese approval pending

China is yet to set a date for the 737 Max's return to service, which is serious for Boeing because the Chinese market accounts for about 20% of all single-aisle aircraft sales. However, there are some signs that a return may be in the offing.

As reported by *Airfinance Journal* on 9 January, a 737 Max 8, operated by Hainan Airlines, was ferried from Taiyuan to Haikou, ending its storage for more than two years in the northwest of China. Although the operator did not comment on whether the ferry flight implied that the aircraft might return to service soon, other developments are also encouraging.

The Civil Aviation Administration of China (CAAC) issued an airworthiness directive on 2 December last year that would remove the barriers for the model to return to service in China. However, no date has been set for a lifting of the ban.

Perhaps another sign of Chinese intentions came at the end of January, when the Hong Kong SAR civil aviation department signalled that airlines could restart the use of 737 Max aircraft in the city's airspace. No carriers based in Hong Kong SAR have 737 Max aircraft in their fleets, so the impact of the edict may be limited in the short term.

There are some signs that a return to service in China may be in the offing

Market activity

Sales of the Max 8 showed signs of recovery in 2021 with a number of significant orders, particularly from major US carriers, and there have been signs of this continuing in early 2022, with American Airlines agreeing to purchase a further 23 aircraft, according to a regulatory filing in February. This takes the airline's total order for the type to 30: 15 of which are scheduled for delivery in 2023 with the rest following in 2024.

The order is welcome news for the US manufacturer, but it is leasing activity that

737 Max-family background

The 737 Max models are the fourth generation of the Boeing 737. Although the latest variants retain similarities with earlier designs, the Max family incorporates major technological advances from the so-called Next Generation (NG) models, which were already substantially enhanced from the original 737 types.

According to the manufacturer, the aircraft's key features include: new engines, updated flight deck and new interior. The aircraft offer substantial fuel burn and range advantages over the aircraft they replace. As with the NG family, Boeing has opted to go with CFM as a single source engine supplier, selecting the LEAP-1B engine as the sole powerplant option. The Max-family aircraft are all equipped with Boeing's sky interior, which was introduced as an option on NG models in 2010.

The Max family includes four variants. The Max 8, which replaces the successful 737-800, was the first to enter service in 2017. However, the fleet (together with a few Max 9s) was grounded in March 2019 after two fatal accidents in the space of a few days killed 346 passengers and crew, and was not cleared to enter service in the USA until November 2020.

The grounding has had an impact on the development of the largest variant – the Max 10, which has seen its entry into service delayed until 2023. This delay is hampering Boeing's attempts to compete with the Airbus A321, which is becoming the dominant model in the market.

737 Max 8 orders and deliveries each year

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022 (to 1 March)
Orders	81	562	558	735	323	435	477	741	45	37	515	43
Deliveries	none	none	none	none	none	none	74	234	49	17	166	19

Source: *Airfinance Journal* Fleet Tracker, includes subsequently cancelled orders is leading the restoration of the model's fortunes in the early part of 2022. Activity so far this year includes CDB Aviation's purchase and leaseback agreement with Oman Air. This transaction will cover five new 737 Max 8s, which will be scheduled for delivery this year.

Another leasing transaction for the type was Brazilian carrier Gol Linhas Aereas's agreement with Castlelake for 12 units. Two aircraft will be incorporated under operating leases and 10 under finance leases approved by Gol's board of directors on 11 January.

Partly in response to Covid-19 pandemic-induced financial problems, many airlines have turned to lessors to fund incoming Max 8 deliveries. A recent example is Malaysia Airlines, which is reported to have selected US-based Air Lease (ALC) to supply the largest number of Max aircraft to the carrier, while Aercap and ALAFCO will reportedly also lease Max aircraft to the airline.

In 2021, *Airfinance Journal* reported that Malaysia Airlines and Boeing had agreed a deal that allowed the airline to transfer its Max 8 delivery slots to aircraft lessors.

In mid-January, DAE Capital said it had successfully completed the placement of 14 737 Max 8s with two long-standing customers. The order was placed with Boeing in March 2021. Aeromexico will receive 12 aircraft and Icelandair will receive two units. Deliveries commenced last October and all aircraft are scheduled for delivery before the end of the first half of 2022. Icelandair has also taken Max 8s from US-based lessor Aviation Capital Group.

In early February, ACMI and charter specialist Smartlynx Airlines signed an agreement with SMBC Aviation Capital to lease two units. Encouragingly for the manufacturer, the 737 Max will be the first Boeing aircraft in 10 years to be operated by Smartlynx.

At the end of February, ALC signed long-term lease placements for nine 737 Max aircraft with European leisure carrier Corendon Airlines.

Five new Max 8 models are confirmed for delivery to the Turkish carrier in spring 2022 with one more unit to be delivered in the first quarter of 2023. In addition, Corendon will lease three new 737 Max 9 aircraft that are scheduled to be delivered from the first half of 2023. All nine aircraft will come from ALC's orderbook with Boeing.

An Appraiser's view

Olga Razzhivina
senior Istat appraiser, Oriel

When the Boeing 737 Max family was launched, the 15% fuel efficiency improvement offered primarily by the new LEAP-1B engine was the main selling point and was expected to attract a swathe of customers trying to combat ever-increasing oil prices and growing environmental concerns.

These expectations were met by numerous orders from airlines and lessors with prices showing a healthy premium to the incumbent 737NG models. However, by the time of the first delivery in May 2017 oil prices appeared to have sustained a drop, raising doubts over the justification of the price premium.

Speculative orders from lessors slowed down in early 2019 as airlines shunned the Max as it suffered with early issues of engine reliability.

The grounding of the Max following two fatal accidents in 2019 has proved to be lengthier than originally expected with return into service still ongoing. The effect of the Max's grounding on its market values and lease rates was profound. The Covid pandemic exacerbated the problem, prompting appraisers to consider base values of the stored aircraft as they were ageing while not generating revenue.

Furthermore, as some customers took an opportunity to walk away from their orders, Boeing was faced with placing an inventory of rejected aircraft (grey tails) in a market where most airlines had pushed back scheduled deliveries. The potential sale of grey tails at low prices raised questions about base values with the possibility of a permanent negative effect on new aircraft values.

However, Boeing was eventually successful in getting the Max back into service as fuel prices started a steady climb. With airlines still reeling from the damage caused by Covid, any opportunity of controlling costs is welcome. Furthermore, the latest crisis appears to have triggered a growing emphasis on environment and sustainability issues, which the Max and other new-generation aircraft can help to address.

Financing new-generation aircraft did not wane during the pandemic, as investors were looking to age-proof their portfolios and capture better-credit airlines. The sale and leaseback pricing and lease rate factors are at pre-Covid levels and do not appear to reflect the increased credit risk of the air transport industry.

The renewed focus on the fuel efficiency and the relative ease of financing have not only resolved the issue of grey tails but also encouraged some stronger-credit airlines to bring their deliveries forward. Now that the generational replacement has started in growing numbers, it is very unlikely to stall, ensuring the medium- and long-term demand for the Max.

Another long-term concern about the Max was Boeing's proposed NMA (new midsize airplane) and its potential to cannibalise the former's market share. However, as Boeing faces a ramp-up of Max production and rectification issues with the 787, the NMA has taken a back seat. With any replacement moving further into the future, the concerns about the longevity of the Max have dissipated.

The recovery from the Covid crisis has started and will be strongest in the short-haul sector, where the Max is one of the two new-generation options. Being the most popular variant within the family, the Max 8 will see its values and lease rates recover ahead of older types.

The valuation of stored aircraft – delivered and undelivered – will have to be done on a case-by-case basis to reflect the lower utilisation and any possible effects of storage. However, with large numbers affected, they are less likely to be singled out as oddballs.

In any case, the Max 8 is expected to be a workhorse of the industry for at least another decade.

Oriel view of 737 Max 8 values and lease rates

Build year	2017	2018	2019	2020	2021	2022 (new)
Current market value ($m)	31.5	32.3	33.3	34.8	41.6	49.4
Lease rate ($'000s/month)	245	255	265	275	290	315

Maintenance status assumes "half-life", except for the new aircraft, which assumes full life, and one-year-old aircraft, which assumes 75% life. Aircraft specifications: MTOW 181,200lb, CFMI LEAP-1B27 engines.

Battle intensifies for **sub-150-seat sector**

Embraer sees a large market for aircraft up to 150 seats, but the Brazilian manufacturer's second-generation E-Jets face stiff competition from Airbus's A220 family. **Geoff Hearn** compares the respective aircraft.

Most industry sources suggest the sweet spot in the single-aisle commercial aircraft market has moved towards larger models such as the Airbus A321, but the market sector for aircraft below 150 seats is showing signs of life and offers new-technology aircraft from both Embraer and Airbus.

The European manufacturer's acquisition of Bombardier's CSeries boosted the programme, leading to the renamed A220 acquiring substantial sales. Embraer's E190/195-E2 family has not matched the orders of the adopted Airbus aircraft and the breakdown of a partnership with Boeing has left the Brazilian manufacturer to fight a competitor with significantly greater resources.

Embraer is reliant on the sector and is bullish on potential sales for its E2 models. The company has forecast demand for nearly 11,000 new aircraft in the up-to-150-seat category in its 20-year global commercial market outlook, which was presented during the Dubai air show last November. This global demand is broken into 8,640 regional jets and 2,260 turboprop aircraft, with a market value of $650 billion.

"The fallout from the pandemic has shown, once again, that our philosophy of matching the right aircraft size with market demand is always the most efficient way to plan your fleet," Arjan Meijer, president and chief executive officer of Embraer Commercial Aviation, commenting on the forecast at the time.

He says: "The sub-150-seat segment was instrumental in speeding industry recovery throughout 2020. Airlines that flew these aircraft discovered the power of their versatility as they struggled to maintain service."

Market characteristics

Previous reporting by *Airfinance Journal* suggests there are essentially two types of market available to the A220 and E190/E195. The first of these is short- to medium-haul thin routes, which until recently have been served by larger single-aisle aircraft. As Embraer suggests, there is evidence that the Covid-19 pandemic has increased demand for smaller aircraft to serve such routes.

Nigeria's Air Peace has ordered 13 E195-E2s

Jetblue Airways has signed for an additional 30 A220-300s

The second market is traditional regional routes. However, at least two of the world's regions present problems in these market sectors. In the USA, many regional routes are serviced by aircraft conforming to pilot scope clauses, which neither the A220 nor E2 models meet. In Europe, it is environmental issues that pose the biggest obstacle.

Although the E2 and A220 models have relatively low fuel-burn and emissions, European passengers are being encouraged by governments to travel by train for journeys of less than three hours – the segment these aircraft would typically fly.

Despite these apparent drawbacks, there are signs of confidence from the industry. For example, Canadian lessor Chorus Aviation has a positive outlook on the segment and has earmarked investments of between C$300 million ($236 million) to C$400 million in its regional aircraft leasing segment, financed through existing cash resources, capital raises and secured debt financing.

Chorus's chief executive officer, Joe Randell, says the company sees opportunities in what it calls the crossover segment, in particular, because more airlines make the transition to new-technology regional jets to reshape their networks.

In a February earnings call, Randell said: "We look at all opportunities including mid-life and older assets but we find the larger regional jets to be particularly attractive, especially the crossover jets like the A220s and E2, in particular."

Recent market activity

Although Embraer is more reliant on the segment, Airbus continues to lead the chase for sales, with a number of significant deals already announced in 2022. Recent activity includes Air Canada's decision to revive a previously cancelled order for 12 A220-300s. Another major development

Orders per year

	Pre- 2018	2018	2019	2020	2021	2022 (to 1 March)
A220-100	80*	none	31	11	14	2
A220-300	252*	171	87	53	50	82
E190-E2	46	10	none	none	none	none
E195-E2	121	29	16	none	32	20

Source: Airfinance Journal Fleet Tracker and Airbus announcements. Includes subsequently cancelled orders.
** As Bombardier Cseries*

was Jetblue Airways' signing in February for an additional 30 of the larger A220 variant. This takes the airline's firm commitment for the model to 100 aircraft. Based on Airbus's announcements the A220 order book is in excess of 750 aircraft.

Also in February, California-based Aviation Capital Group (ACG) confirmed an order for 20 A220s at the Singapore air show. This is ACG's first A220 commitment directly with Airbus, although in 2021 it acquired four from European carrier Air Baltic through purchase and leaseback agreements.

At the turn of the year, Air Lease Corporation (ALC) firmed its 111-aircraft letter of intent (LOI) which included 25 A220-300s.

Fort Lauderdale-based leasing company Azorra Aviation placed an order with Airbus for 22 A220s at the beginning of this year, but also provided a welcome boost to Embraer with an agreement to acquire 20 E2s with options for a further 30 units. The deal is flexible to enable Azorra to acquire either the E190-E2 or E195-E2 models. Deliveries will begin in 2023, adding to the 21 already in the lessor's existing and committed portfolio.

The order follows the conclusion at the end of 2021 of Azorra's purchase and leaseback agreement with Porter Airlines for five E195-E2s. The Canadian operator was the last airline to place a major order for the type, when it committed in July 2021 to 30 E2s with options for a further 50. Like the deal with Azorra, there is flexibility between the E190 and E195 variants.

The deal is particularly welcome for Embraer because sales successes for its E190/E195-E2 models have been limited since the launch of the second generation of aircraft, with much of the recent activity for the type focused on deliveries and leases. In December, US lessor Aircastle handed over a pair of E195-E2s to KLM Royal Dutch Airlines. The aircraft were the third and fourth units under a 15-aircraft mandate with KLM Cityhopper to be completed through 2024.

At the end of November, KLM also took delivery of an E195-E2 on operating lease from ICBC Aviation Leasing, after a nine-month delivery pause to the carrier.

In a sign that Embraer is diversifying its customer base, Nigeria's Air Peace has been taking deliveries of E195-E2s from its 13-aircraft order.

Key data of competing Embraer E2 and Airbus A220 models

Model	E190-E2	E195-E2	A220-100	A220-300
MTOW (tonnes)	56.4	61.5	63.1	69.9
Typical seats (single-class)	106	132	100-120	120-150
Typical range (nm)	2,850	2,600	3,500	3,400
Entry into service	2018	2019	2016	2016
Delivered (including stored)	18	33	53	145
Orders backlog	13	160	64	490
Current market value ($m)	31	34	33	37

Source: Air Investor 2022/Fleet Tracker February 2022/Airbus announcements

Head-to-head

Although the Embraer and Airbus aircraft are seen as direct competitors, and are often evaluated together by airlines and lessors, the competing models have significantly different ranges and seating capacities.

The A220-300 is by far the most successful variant (commercially). It offers greater capacity and range than the largest Embraer model.

The A220-100 sits between the two Embraer aircraft in terms of capacity, but it retains a significant advantage in range over both of them. The limited sales of the A220-100 perhaps suggest that airlines consider the E195-E2's range sufficient for its size category.

The greater operational capabilities of the A220 models come at a cost – *Airfinance Journal* believes list prices for the A220 variants are in excess of $20 million higher than the competing Embraer models. However, the most recent figures supplied to *Air Investor* for current market values indicate a smaller differential, with a new E195-E2 being valued slightly higher than an equivalent A220-100.

Operating cost

Airfinance Journal has looked at the relative cash operating costs of the A220 and the E2 models. Exact comparisons of capacity and, hence, costs per seat are difficult, but the A220-300 is significantly larger than the E195-E2. Depending on the type of cabin layout, the Airbus model can carry between 10 and 15 more passengers than the Embraer aircraft.

Assuming a fuel cost of $2 per US gallon, the *Airfinance Journal* analysis indicates the cash operating costs of the respective models are broadly in line with their respective seating capacities.

Taking the E195-E2 as the base, the smaller Embraer model is about 5% cheaper to operate on a 500-nautical mile trip. The A220-100 costs about 2% more and the larger A220 model is around 6% more expensive.

A relatively high fuel price works in favour of the Airbus models, but percentage differences in operating cost between the models in question are relatively insensitive to fuel price changes. However, higher fuel prices do increase the advantage of these new-generation aircraft compared with the types they are aimed at replacing.

In terms of cost per seat, the A220-300 appears the most competitive, which would be expected of the largest aircraft in the category, while the smaller E190-E2 has higher per seat cost than its stablemate and the Airbus competitors.

There are a number of caveats to the analysis. The Airbus models have higher maximum take-off weights, in part as a result of offering significantly more range than the competing Embraer aircraft. Should an airline not require the additional capability, it is possible to select lower maximum take-off weight options, which will reduce operating costs, particularly in a European environment. However, in some cases, the additional range may be a critical factor in an airline's selection process.

Room for all?

The momentum is with the Airbus models, but if Embraer's forecast is correct, there may be room for both manufacturers to succeed.

The Brazilian manufacturer will be hoping that its larger models succeed and it is not forced to rely on sales of the E175, for which the company recently announced a delay in development of the E2 version. Airbus is likely to be more sanguine as the success of its larger models, particularly the A321, provides a reliable revenue stream.

Indicative relative cash operating costs

	E190-E2	E195-E2	A220-100	A220-300
Relative trip cost	95%	Base	102%	106%
Relative seat cost	118%	Base	122%	97%

Assumptions: 500 nautical sector, fuel price $2 per US gallon. Fuel consumption, speed, maintenance costs and typical seating layouts as per Air Investor 2022.

Rating agency unsecured ratings

Airlines

	Fitch	Moody's	S&P
Aeroflot	BB(stable)	-	-
Air Canada	B+(stable)	Ba3(neg)	B+(neg)
Air New Zealand	-	Baa2(stable)	-
Alaska Air Group	BB+(neg)	-	BB(stable)
Allegiant Travel Company	-	Ba3(positive)	B+(stable)
American Airlines Group	B-(stable)	B2(stable)	B-(Stable)
Avianca Holdings	WD	-	D(NM)
British Airways	BB(neg)	Ba2(neg)	BB(neg)
Delta Air Lines	BB+(neg)	Baa3(stable)	BB(Stable)
Easyjet	-	Baa3(stable)	BBB-(stable)
Etihad Airways	A(stable)	-	-
Grupo Aeromexico	-	-	D(NM)
GOL	B-(stable)	B3(stable)	CCC+(positive)
Hawaiian Holdings	B-(stable)	B1(stable)	CCC+(positive)
International Consolidated Airlines Group	-	Ba2(neg)	BB(neg)
Jetblue	BB-(stable)	Ba2(Positive)	B+(Positive)
LATAM Airlines Group	WD	-	-
Lufthansa Group	-	Ba2(neg)	BB-(stable)
Pegasus Airlines (Pegasus Hava Tasımacılıgı Anonim Sirketi)	BB-(neg)	-	B (stable)
Qantas Airways	-	Baa2(neg)	-
Ryanair	BBB(Stable)	-	BBB(stable)
SAS	-	Caa1(neg)	CCC(neg)
Southwest Airlines	BBB+(neg)	Baa1(stable)	BBB(Positive)
Spirit Airlines	BB-(stable)	B1(positive)	B(positive)
TAP Portugal (Transportes Aereos Portugueses, S.A.)	-	Caa2	B-(watch neg)
Turkish Airlines	-	B3(neg)	B(stable)
United Airlines Holdings	B+(stable)	Ba2(neg)	B+(stable)
Virgin Australia	WD	-	-
Westjet	B(neg)	B3(positive)	B-(neg)
Wizz Air	BBB-(stable)	Baa3(neg)	-

Source: Ratings Agencies - 22/2/2022

Lessors

	Fitch	Moody's	S&P	Kroll Bond Ratings
Aercap	BBB-(stable)	(P)Baa3(stable)	BBB(stable)	-
Air Lease Corp	BBB(Stable)	-	BBB(stable)	A-(neg)
Aircastle	BBB(stable)	Baa3(Stable)	BBB-(stable)	-
Avation PLC	WD	-	CCC(Developing)	-
Aviation Capital Group	-	Baa2(stable)	BBB-(stable)	A-(neg)
Avolon Holdings Limited	BBB-(Stable)	Baa3(stable)	BBB-(stable)	BBB+(neg)
AWAS Aviation Capital Limited	-	Baa3(Stable)	-	-
BOC Aviation	A-(stable)	-	A-(stable)	-
CCB Leasing (International) Corporation	-	-	A (stable)	-
CDB Aviation Lease & Finance	A+(stable)	A2(stable)	A (stable)	-
Dubai Aerospace Enterprise	BBB-(Stable)	Baa3(stable)	-	BBB+(neg)
Fly Leasing	-	B1(Stable)	BB-(neg)	BBB-(neg)
Global Aircraft Leasing	-	B1(neg)	-	-
ICBC Financial Leasing	A(stable)	A1(stable)	A(stable)	-
ILFC (Part of Aercap)	BBB-(stable)	Baa3(stable)	-	-
Macquarie Group Limited	A-(Stable)	A3	BBB+(stable)	-
Marubeni Corporation	-	Baa2(stable)	BBB (positive)	-
Mitsubishi UFJ Lease	-	A3(stable)	A-(stable)	-
Park Aerospace Holdings	BBB-(Stable)	Baa3(Stable)	-	-
SMBC Aviation Capital	A-(neg)	-	A-(stable)	-
Voyager Aviation	B(Stable)	WD	-	WR

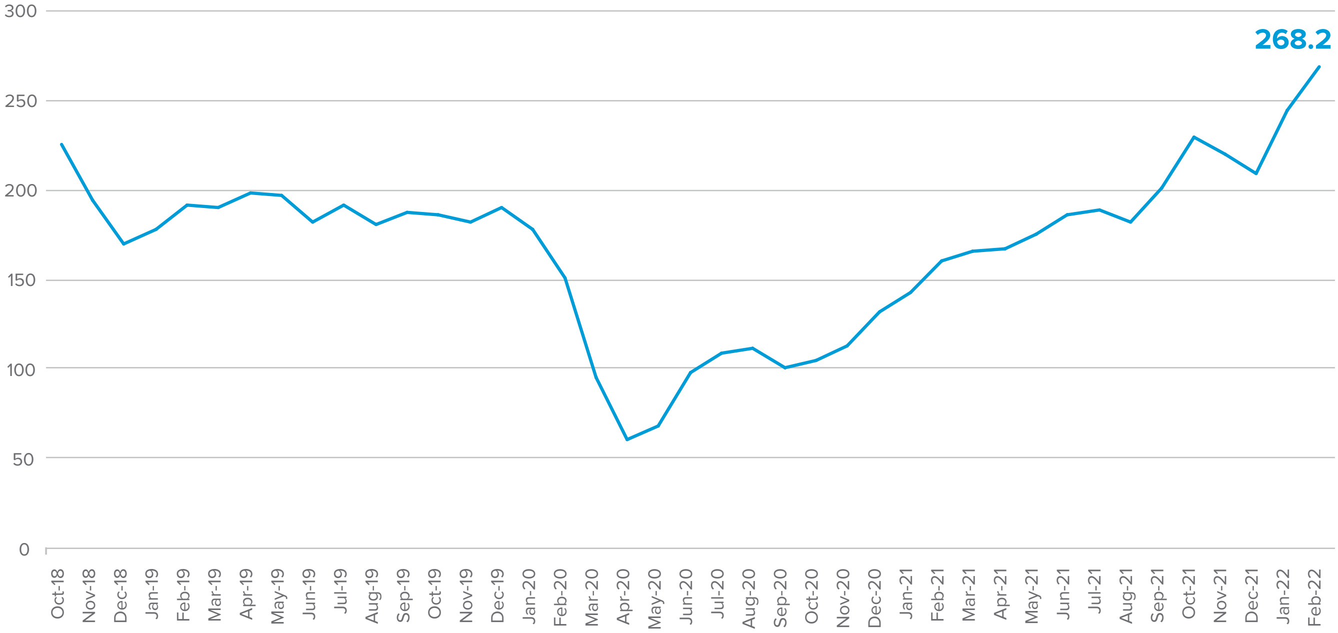
Source: Ratings Agencies - 22/2/2022

Manufacturers

	Fitch	Moody's	S&P
Airbus Group	BBB+(stable)	A2(neg)	A(neg)
Boeing	BBB-(stable)	Baa2(neg)	BBB-(neg)
Bombardier	WD	Caa1 (Stable)	CCC+(positive)
Embraer	BB+(stable)	Ba2(neg)	BB(positive)
Rolls-Royce plc	BB-(stable)	Ba3(stable)	BB-(stable)
Raytheon Technologies Corp	-	Baa1(stable)	A-(neg)

Source: Ratings Agencies - 22/2/2022

US Gulf Coast kerosene-type jet fuel (cents per US gallon)



Source: *US Energy Information Administration*

Commercial aircraft orders by manufacturer

	Gross orders 2022	Cancellations 2022	Net orders 2022	Net orders 2021
Airbus (31 January)	36	52	-16	507
Boeing (31 January)	77	2	75	535
Bombardier - Mitsubishi Heavy Industries	0	0	0	0
De Havilland of Canada	0	0	0	0
Embraer	23	0	23	81
ATR	2	0	2	35

Based on *Airfinance Journal* research and manufacturer announcements until 28/02/2022

Recent commercial aircraft orders (January-February 2022)

Customer	Country	Quantity/Type
Allegiant Air	USA	50 Max 7/8-200
Truenoord Regional Aircraft	The Netherlands	Four ATR42-600
American Airlines	USA	23 737 Max 8
American Airlines	USA	Three E175
Aviation Capital Group	USA	20 A220
Azorra Aviation	USA	20 A220-300s, two ACJ TwoTwenty
China Airlines	Republic of Taiwan	Four 777F
Jetblue Airways	USA	30 A220-300
Jazeera Airways	Kuwait	20 A320neo, eight A321neo
Kuwait Airways	Kuwait	Six A321neo, three A321neoLR, seven A330-900
Maldivian	The Maldives	Two ATR72-600, One ATR42-600
Qatar Airways	Qatar	14 777-8F
Qatar Airways	Qatar	Two 777F
Singapore Airlines	Singapore	Seven A350F
Southwest Airlines	USA	12 737 Max 8
Western Global Airlines	USA	Two 777F, three E175
Undisclosed		Six A320neo, two A321neo
Undisclosed		Six A321neo
Undisclosed		Two 777F
Undisclosed		20 737 Max Family

Based on *Airfinance Journal* research January-February 2022

New aircraft values ($ million)

Model	Values of new production aircraft*
Airbus	
A220-100	32.6
A220-300	37.4
A319neo	37.4
A320*	40.6
A320neo	50.4
A321*	47.7
A321neo	58.6
A330-800	87.5
A330 900	102.4
A350-900	146.3
A350-1000	159.0
A380	140.7
ATR	
ATR42-600	15.3
ATR72-600	19.0
Boeing	
737-800*	33.8
737 Max 8	47.8
737 Max 9	49.4
767F	80.0
777-300ER	132.4
777F	161.4
787-8	107.5
787-9	138.0
787-10	148.1
De Haviland	
DHC 8-400*	19.6
Embraer	
E175	26.4
E190-E2	31.1
E195-E2	33.9
Sukhoi	
SSJ100	20.0

Based on ISTAT appraiser inputs for Air Investor 2022. *Values for last year of build

New aircraft lease rates ($'000 per month)

Model	Low	High	Average
Airbus			
A220-100	210	245	227.5
A220-300	230	270	250
A319neo	227	290	258.5
A320*	210	310	260
A320neo	285	380	332.5
A321*	269	360	314.5
A321neo	325	430	377.5
A330-800	562	700	631
A330 900	655	750	702.5
A350-900	850	1,100	975
A350-1000	900	1,250	1,075
A380	640	1,234	937
ATR			
ATR42-600	105	135	120
ATR72-600	115	165	140
Boeing			
737-800*	125	325	225
737 Max 8	265	340	302.5
737 Max 9	265	340	302.5
767F	400	700	550
777-300ER	850	1,015	932.5
777F	950	1,260	1,105
787-8	630	875	752.5
787-9	805	1,100	952.5
787-10	835	1,150	992.5
De Haviland			
DHC 8-400*	125	180	152.5
Embraer			
E175	170	241	155.5
E190-E2	190	225	207.5
E195-E2	216	260	238
Sukhoi			
SSJ100	140	198	169

Making sense of **aircraft numbers**

Adam Pilarski, senior vice-president at Avitas, believes the anticipated shortage of aircraft will not occur, despite Airbus and Boeing forecasting fewer aircraft in the world fleet than previous estimates.

The past few years have not been kind to aviation, especially to aircraft manufacturers. Covid brought a lot of misery to our industry. Flight levels dropped dramatically, especially international ones. Most of us in aviation strongly believe this is only a temporary aberration and will dissipate, similar to the events of 9/11 in 2001. The only question that some analysts ask is: when will we return to the old trajectory of growth that was rudely interrupted by the pandemic?

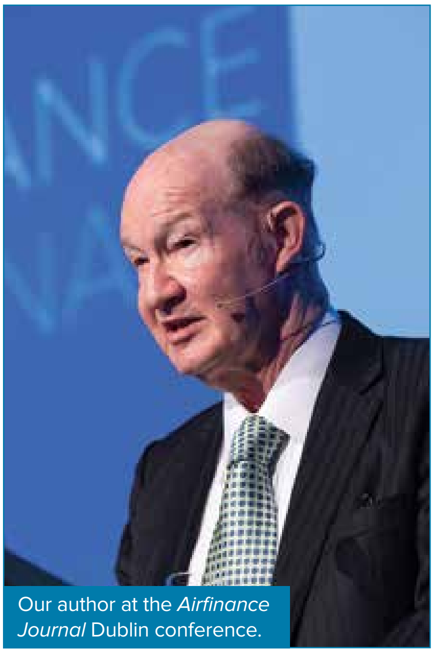
A welcome sign of progress recently was an announcement by Airbus about its increase in production levels this year by 20%. While this is obviously good news, it is worth noticing that the higher levels of traffic still leaves us at levels way below those experienced in 2019. So we are experiencing progress while still in deficit, and this explains the increased Airbus production, getting ready for better news but still nowhere near levels reached before.

The question is why would Airbus want to increase production levels? There are two possible explanations. One could be a strategic attempt to increase its market share, possibly permanently. All theoretical and actual outcomes in a purely duopolistic market lead to a very clear 50/50 split. This has been the result of market developments and all the new products introduced and sales campaigns for a few decades.

The two duopolists gave up their attempts to gain a market share significantly greater than 50% some time ago knowing full well that it would only lead to a counter action from the other player which would cost both money but not result in long-term advantages.

It looks like now we may be facing a different situation. Airbus has an advantage in the narrowbody market, which it is exploiting strenuously. At the same time, Boeing is in serious trouble because of the mismanagement of the Max problem, which prevents it from being the usual aggressive and technologically competent manufacturer.

Over the past few years the market seemed to believe that Airbus had a better slew of products in the narrowbody market segment while Boeing was superior in the widebody segment. Covid made this situation much worse for Boeing because the market in which it has an advantage is less important right now. The US manufacturer's situation is further worsened with the Boeing 787 production problems, which further deplete its financial resources to fight a good fight against its able adversary. This situation may lead Airbus to try permanently to increase its market share to, say, a two-thirds versus one-third share, not a natural outcome for a duopolistic market.



Our author at the *Airfinance Journal* Dublin conference.

> *A welcome sign of progress recently was an announcement by Airbus about its increase in production levels this year by 20%.*

There is another idea being floated by a number of analysts that may appear counter-intuitive and even far-fetched. Because we have experienced a period of lower production levels for a few years, partially because of the grounding of the Max product and partially because of the Covid drop in traffic demand, it is argued we will experience forthcoming shortages of narrowbody aircraft. The industry has lost a few years of production and if we would want to continue on the trajectory that some believed we would stay on after 2019, we definitely could not produce the number of aircraft needed to satisfy the existing demand. The obvious question is whether we will regain the old trajectory of future demand for traffic.

Many industry players believe so and are positive a huge pent-up demand is about to bless us with riches beyond belief. It could happen. But another alternative reality may materialise, one where the cost of flying will increase, demand will be smaller than previously expected and business travel will be permanently impaired. Such a situation could lead to a few years of sub-par traffic growth with an eventual return to old realities. Under such circumstances, the industry will, at best, resume the same pattern of traffic growth as envisioned before Covid but resulting in a permanent loss of traffic in the long run.

Looking at the forecasts of the duopolists, who by their nature are fairly optimistic, confirms such a vision of the future. As one example, the 20-year forecast of world fleet published by Boeing in 2019 predicted a total of 50,660 aircraft reached in 2038 while the most recent prediction for 2040 has a lower number (49,405). Equivalent numbers for Airbus are 47,680 and 46,720. While this is not a very depressing prediction, it makes me confident that the anticipated shortage of aircraft coming soon is not realistic.

That we lost a number of aircraft because of the current problems is well justified and will not lead to short-term shortages. Rather, that the industry did not produce these aircraft was rational and good for us.