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FINANCIAL INTELLIGENCE FOR COMMERCIAL AVIATION

AIR INVESTOR 2015

Finding the right path for investors

FOREWORD

Manufacturers manage change

The A320neo's arrival will be the key event of recent years if it bucks the trend for delays to entry-into-service dates.

There were plenty of landmarks for manufacturers in 2014, but 2015 is the year when some of them will have to start delivering on the promises made about their new-technology single-aisle aircraft.

The potential problems for new aircraft models were still being seen at the beginning of 2014, with battery problems continuing for the Boeing 787. Things were beginning to look up by the middle of the year as the US Federal Aviation Administration and Boeing completed a joint review by declaring that the manufacturer's flagship aircraft met a "high level of safety". This was welcome, considering that Boeing was already rolling out 787s at a rate of 10 aircraft a month, with aims to step up production to 12 a month by the end of the decade.

Announcements of increased production rates seemed almost commonplace, with news that Airbus was to boost A320-family production from a rate of 42 a month to 46 a month from 2016.

Boeing, which has been producing 737NGs at a rate of 42 aircraft a month since March, says it plans to increase to a monthly figure of 47 in 2017. The manufacturers cite unprecedented backlogs and increased forecasts of long-term demand as justification for the rate hikes, but some industry insiders are more cautious.

The strength of some potential customers was called into question when, in July, Airbus informed the market that it had terminated Skymark Airlines' contract to purchase six A380s and the manufacturer was rumoured to be seeking $700 million in damages. Such cancellations have been relatively rare, but the rescheduling of deliveries muted by carriers such as Garuda and Philippine Airlines, although less dramatic, may be more problematic for the manufacturers to manage.

Their task is further complicated by the transition to newer technology models. For example, Airbus announced in October it would cut its A330-family production rate from 10 aircraft a month to nine from the fourth quarter of 2015. In a statement, the manufacturer stated the decreased production rate marks the firm's transition towards the A330neo.

There were other problems for manufacturers in 2014, not least the interruption to Bombardier's CSeries flight-testing, which resumed in September. The company, however, says this interruption will not cause further delays to the programme and that the CSeries's entry into service remains on track for the second half of 2015.

Airbus's launch of a re-engined A330 at the Farnborough Airshow in July was one of the major landmarks in 2014 and followed strong pressure from the market. Deliveries of the A330neo are scheduled to start in the fourth quarter of 2017. Airbus and early customers for the A330neo – such as the lessor ALC – have been keen to point out that the new A330 variants will complement the A350 models, which are now entering into service (Qatar Airways received the first A350 XWB on December 22).

However, the relatively good start for orders of the A330neo (particularly the larger -900 model) is clouded by questions of how the A350 will be impacted, particularly given Emirates' high-profile cancellation of 70 of the type in June.

Other major landmarks for manufacturers in 2014 included: Boeing's launch of the 737 Max 200 with an order of 100 aircraft from Ryanair; certification and delivery of the 787-9; Mitsubishi's unveiling of the first MRJ regional jet; and Embraer cutting metal on the first parts for its second-generation E-Jet family.

The engine manufacturers also played their part in 2014, with both Pratt & Whitney and CFM International saying that testing of their respective engines for the next generation of single-aisle aircraft progressed well.

But perhaps none of these landmarks are as significant to the financing community as the planned entry into service of the first of the next-generation single-aisle aircraft in 2015. With the arrival of the A320neo, we may see some indicators as to whether the fears of some about the impact on values of current-generation aircraft are going to be realized.

Also, it should become clearer whether the new aircraft can deliver the promised economies in a world where fuel prices are well below the levels at the time when decisions were made to launch the new-technology and re-engined aircraft.

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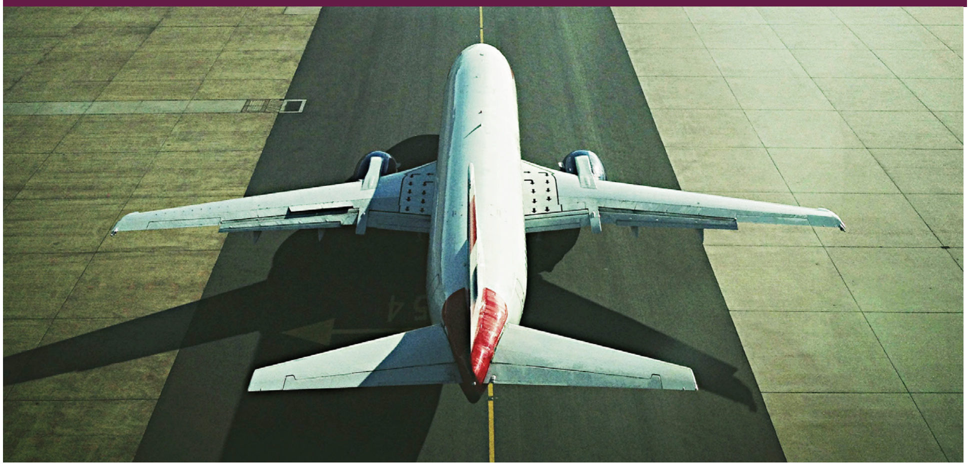

NARROWBODIES REPORT

Narrowbodies attract large orders

Highly liquid single-aisle jets remain popular with operators.

Ryanair placed an order with Boeing for 100 737 Max 200s.

Representing 65% of new aircraft orders placed in 2014, the narrowbody market remains the largest segment of aircraft by quantity.

Investors like single-aisle aircraft because they are highly liquid assets. The A320 family and 737 have a proven record of operational success and are easy to re-locate because of high demand and a wide operator base.

Boeing and Airbus continue to attract large orders from airlines and lessors for

MARKET SHARE BY MANUFACTURER

	Airbus		Boeing		Comac		Irkut		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Africa	33	0.7%	57	1.4%	0	0.0%	0	0.0%	90	0.9%
Asia	1472	30.9%	617	15.1%	480	96.0%	71	20.8%	2640	27.3%
Asia Pacific	131	2.8%	46	1.1%	0	0.0%	0	0.0%	177	1.8%
Europe	1021	21.5%	624	15.3%	0	0.0%	0	0.0%	1645	17.0%
Lat Am	305	6.4%	190	4.7%	0	0.0%	0	0.0%	495	5.1%
Mid East	275	5.8%	156	3.8%	0	0.0%	0	0.0%	431	4.5%
North America	1169	24.6%	1339	32.9%	20	4.0%	0	0.0%	2528	26.1%
Russia CIS	50	1.1%	104	2.6%	0	0.0%	266	77.8%	420	4.3%
Not Disclosed	303	6.4%	940	23.1%	0	0.0%	5	1.5%	1248	12.9%
Total	4759	49.2%	4073	42.1%	500	5.2%	342	3.5%	9674	
ORDERS BY CUSTOMER PROFILE										
Airlines	3451	72.5%	2442	60.0%	240	48.0%	31	9.1%	6164	63.7%
Lessors	1005	21.1%	633	15.5%	260	52.0%	306	89.5%	2204	22.8%
Other	303	6.4%	998	24.5%	0	0.0%	5	1.5%	1306	13.5%

> "The A321 is really coming into its own."
>
> **Gueric Dechavanne, Collateral Verifications**

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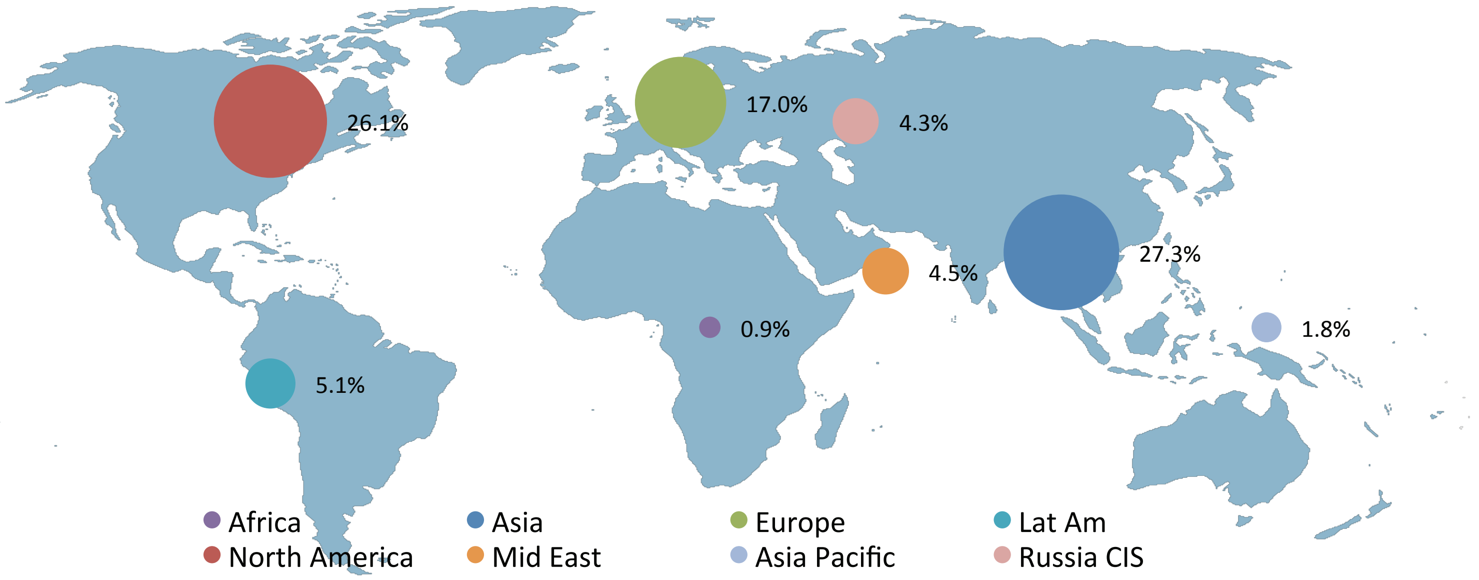


these aircraft. Large orders were placed in 2014 by Ryanair and SMBC, which both opted for considerable numbers of next-generation jets.

The Irish low-cost carrier placed an order with Boeing for 100 737 Max 200s, with options for a further 100, while Dublin-based lessor SMBC ordered 110 A320neos.

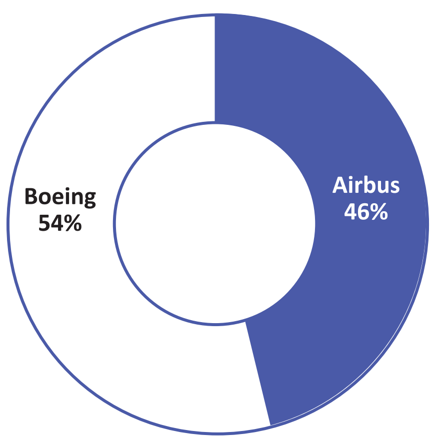
Significantly, SMBC has the option of converting the majority of its A320neos into A321 variants. The past year has seen a boost in popularity for the A321. Airlines and lessors are choosing the aircraft as global passenger demand increases and busy routes require additional capacity.

Gueric Dechavanne, vice-president at Collateral Verifications, notes that the A321 has achieved greater popularity among airline and leasing customers.

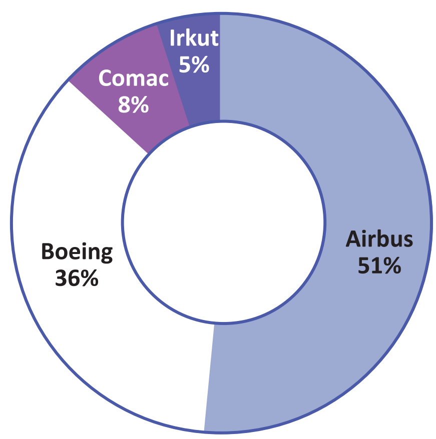
"The A321 is really coming into its own," he says. "Operators are starting to see the benefit of that airplane. Airbus has done a couple of things to improve the economics and increase the seating capacity of the aircraft. In addition, the A321neo is making the aircraft very attractive to operators who are looking for that size and mission-capable airplane that hasn't really been there since the 757."

He adds: "As more airlines develop obviously there are going to be routes that require bigger airplanes – and that's where the A321 comes into play. We're seeing the same pattern with some of the regional aircraft, as airlines and lessors look at some of the larger size airplanes."

AIRCRAFT IN PRODUCTION



AIRCRAFT NOT IN PRODUCTION



WIDEBODY REPORT

777X launch brings Boeing success

Both manufacturers are gearing up to battle over new technology widebody aircraft.

Boeing took 269 orders for the 777X in 2014

The total number of widebody orders in the first three quarters of 2014 was 2,717, according to the Airfinance Deals Database Manufacturers Report Quarter 3 2014. This increase of more than 250 orders from last year's figure of the same period shows the resilience of the widebody market.

Widebody orders for the first three quarters of 2014 were predominantly from the Middle East and Asian markets. The report revealed they made up 53.9% of the widebody market share.

Analysts see 2014 as a particularly successful year for Boeing, which appears to have beaten Airbus in the number of overall commercial aircraft orders and deliveries for the year. One of the main reasons for this was Boeing's launch of the 777X at the end of 2013.

Boeing took 269 orders for the 777X

MARKET SHARE BY REGION AND MANUFACTURER

	Airbus		Boeing		TOTAL	
	No.	%	No.	%	No.	%
Africa	39	3.3%	23	1.5%	62	2.3%
Asia	394	33.6%	342	22.1%	736	27.1%
Asia Pacific	8	0.7%	16	1.0%	24	0.9%
Europe	199	17.0%	179	11.6%	378	13.9%
Lat Am	51	4.4%	42	2.7%	93	3.4%
Mid East	295	25.2%	433	28.0%	728	26.8%
North America	143	12.2%	381	24.7%	524	19.3%
Russia CIS	26	2.2%	43	2.8%	69	2.5%
Not Disclosed	17	1.5%	86	5.6%	103	3.8%
Total	1172	43.1%	1545	56.9%	2717	
ORDERS BY CUSTOMER PROFILE						
Airlines	1037	88.5%	1253	81.1%	2290	84.3%
Lessors	114	9.7%	192	12.4%	306	11.3%
Other	21	1.8%	100	6.5%	121	4.5%

"Airbus's announcement in December that it is to go ahead with the A380neo has divided opinions in aviation."

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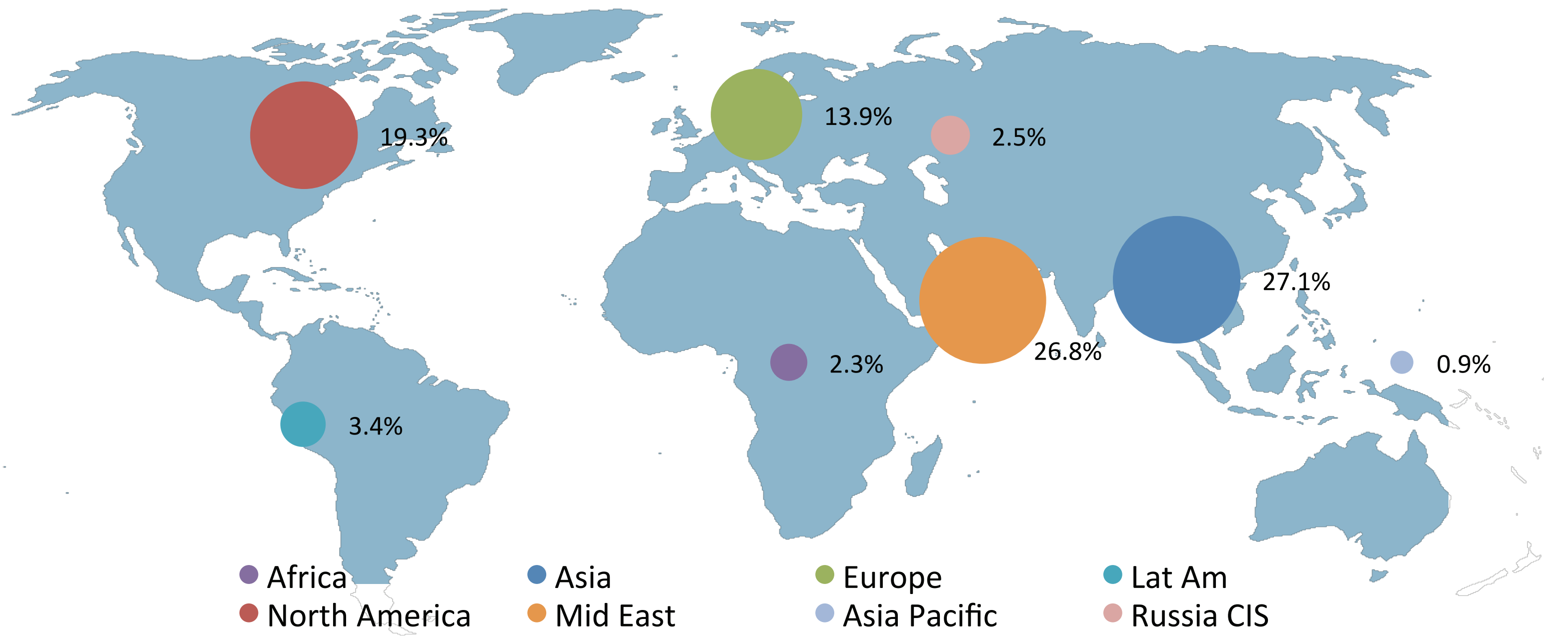


in 2014, making the 777 the most popular widebody on the market: 150 of those orders were from Emirates – the largest aircraft order by value. The deal, worth $56 billion at list prices, was finalized in July, a month after Emirates cancelled an order of 70 A350 XWB aircraft.

Although Boeing outdid Airbus on existing aircraft orders, the Airfinance Deals Database report revealed that Airbus has the majority of the market share for aircraft not yet in production, making up 64% of the market. The A350-900 XWB made a significant contribution with 49 orders. In terms of aircraft in production, the most popular model for Airbus in 2014 was the A330-900, with 40 orders.

In terms of residual values, appraisers do not expect to see a significant change in the widebody market for some time. Owen Geach, communications director at the International Bureau of Aviation, says: "We don't expect to see a decline in values on either A330s or 777s until probably 2020. The trigger for that will be when Emirates start retiring large numbers of their A330s. Then we will see real trades in the market."

Airbus's announcement in December that it is to go ahead with the A380neo divided opinions in aviation. Irish lessor Amedeo did not think the Neo was a threat to the current-generation A380s, but to the 777X family instead. Many appraisers are cautious about how many orders they expect for the A380neo.

ORDERS BY REGION AND MANUFACTURER

	IN PRODUCTION				NOT IN PRODUCTION			
	Airbus		Boeing		Airbus		Boeing	
	No.	%	No.	%	No.	%	No.	%
Africa	35	3.8%	23	2.0%	4	1.7%	0	0.0%
Asia	337	36.2%	271	24.0%	57	23.7%	71	17.0%
Asia Pacific	8	0.9%	16	1.4%	0	0.0%	0	0.0%
Europe	179	19.2%	147	13.0%	20	8.3%	32	7.7%
Lat Am	48	5.2%	42	3.7%	3	1.2%	0	0.0%
Mid East	226	24.3%	178	15.8%	69	28.6%	255	61.0%
North America	73	7.8%	321	28.5%	70	29.0%	60	14.4%
Russia CIS	8	0.9%	43	3.8%	18	7.5%	0	0.0%
Not Disclosed	17	1.8%	86	7.6%	0	0.0%	0	0.0%
Total	931	45.2%	1127	54.8%	241	3.8%	418	2.2%
ORDERS BY CUSTOMER PROFILE								
Airline	809	86.9%	875	77.6%	228	94.6%	378	90.4%
Lessor	101	10.8%	152	13.5%	13	5.4%	40	9.6%
Other	21	2.3%	100	8.9%	0	0.0%	0	0.0%

ANALYSIS

Regional jets face increased competition

New aircraft offers from China and Japan will add to an already competitive market.

New regional jets coming to the market include the Mitsubishi Regional Jet (MRJ)

Unlike the medium- to long-range jet market, the regional jet market does not suffer from the duopoly of Airbus and Boeing. Rather, there are a larger number of players and this year that number is increasing.

The most popular regional jets include Bombardier's CRJ series and Embraer's E-Jets. Non-western competition comes from Sukhoi's Superjet 100 and, to a lesser extent, the Antonov An-148. These jets all generally offer fewer than 100 seats, with some exceptions.

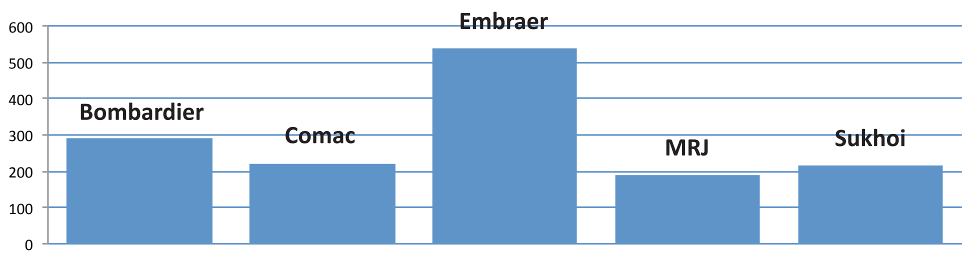
In addition to Bombardier's all-new CSeries, new regional jets coming to the market include the Mitsubishi Regional Jet (MRJ) and the Chinese Comac ARJ21 Xiangfeng.

Just under half of all regional aircraft orders for the first nine months of 2014 came from North America, according to the Airfinance Deals Database Manufacturers Report Quarter 3 2014.

About 44.5% of Bombardier, Comac, Embraer, MRJ and Sukoi's regional aircraft orders came from the US, Canada and Mexico. Embraer aircraft take up the most of those orders with 370 orders placed, nearly half the total 649 orders from the region.

While Europe remains an important region with 13.1% of the market, Asia takes second place with 26.9% of the orders. The growth of the domestic Chinese aviation market has resulted in a growth in demand for this aircraft class. In parts of South-East Asia travel by road is often slow and difficult, so short trips in regional jets can be more attractive for travellers. In Indonesia, for example, domestic carrier Kal Star Aviation is growing its fleet, and recently agreed an operating lease deal for two E-195s with Aldus Aviation.

The 2014 Farnborough Airshow saw orders for 119 regional jets with 32 options. The aircraft included SSJ-100s, E-jets, MRJ90s, CS100s and CS300s. Customers came from emerging economies such as Kazakhstan, Brazil, Myanmar, China and Jordan.



"You have a bigger lessor market now than you ever had for that specific area."

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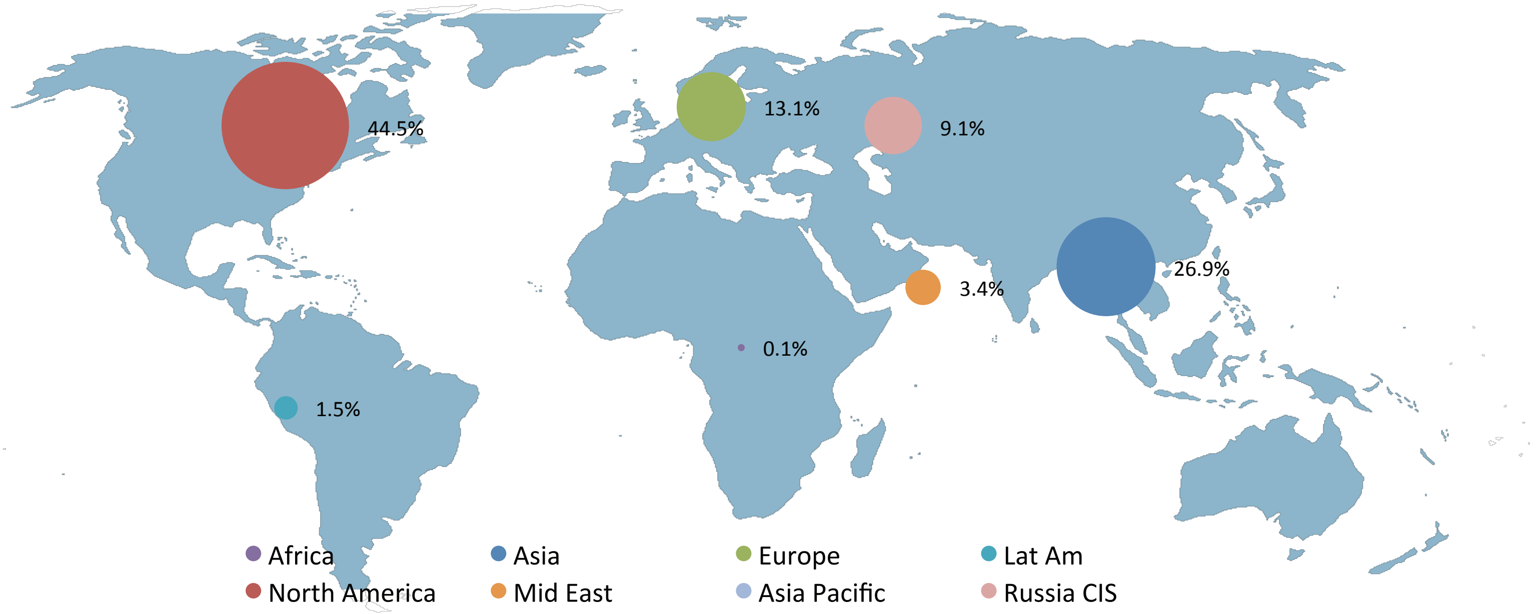


Increased availability of financing

David Tokoph, Morten Beyer & Agnew's vice-president of evaluations, suggests that regional aircraft have become more attractive as an asset, both to banks and lessors. As an example he cites Aldus's recently agreed $512.4 million asset-backed securitization, which was backed by 30 Embraer regional jets: 15 E190s, six dedicated regional jet lessors. You have a bigger lessor market [now] than you ever had for that specific area.

"Historically, a lot of regional jets have been financed through the manufacturer, usually either export credit or Bombardier or Embraer financing," Tokoph tells *Airfinance Journal*.

He adds: "I think both Embraer and Bombardier have learnt lessons from that and are starting to diversify. You're seeing a lot of

"You still have export credit available through BNDES [Brazil's export credit agency] and the Canadian export bank, and I think you're starting to see some capital markets transactions on these types as well."

AIRCRAFT ORDERS BY REGION AND MANUFACTURER

	Bombardier		Comac		Embraer		MRJ		Sukhoi		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Africa	2	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Asia	15	5.2%	215	97.7%	80	14.8%	21	11.0%	61	28.1%	392	26.9%
Asia Pacific	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Europe	118	40.7%	0	0.0%	63	11.7%	0	0.0%	10	4.6%	191	13.1%
Lat Am	0	0.0%	0	0.0%	10	1.9%	0	0.0%	12	5.5%	22	1.5%
Mid East	43	14.8%	0	0.0%	7	1.3%	0	0.0%	0	0.0%	50	3.4%
North America	68	23.4%	5	2.3%	370	68.5%	170	89.0%	36	16.6%	649	44.5%
Russia CIS	32	11.0%	0	0.0%	2	0.4%	0	0.0%	98	45.2%	132	9.1%
Not Disclosed	12	4.1%	0	0.0%	8	1.5%	0	0.0%	0	0.0%	20	1.4%
Total	290		220		540		191		217		1458	
ORDERS BY CUSTOMER PROFILE												
Airlines	193	66.6%	155	70.5%	452	83.7%	191	100.0%	139	64.1%	1130	77.5%
Lessors	121	41.7%	55	25.0%	80	14.8%	0	0.0%	78	35.9%	334	22.9%
Other	16	5.5%	10	4.5%	8	1.5%	0	0.0%	0	0.0%	34	2.3%

SPONSORED EDITORIAL

Considerations and challenges before investing into aircraft engines

Lionel Maisonneuve, TES's manager, strategic knowledge, explains how different engine designs impact on engine values and expected returns for investors exploring green-time leasing and engine tear downs.

Lionel Maisonneuve
Manager, Strategic Knowledge
TES

Before investing into aircraft engines numerous considerations and challenges will have to be addressed.

This article, based on a real case study, is not an exhaustive list of all the considerations and challenges faced by investors but focuses on some of the key elements that need to be looked at.

TES Aviation Group was recently asked by a customer to provide recommendations regarding investing in several CFM56-5B engines for green time leasing, to be followed by engine tear down.

TES has a vast amount of experience in engine-related projects, and offers innovative solutions covering all aspects such as engine acquisitions, fleet management activities, consultancy projects, material supply solutions, etc.

The first step of such a complex project is to get a good understanding of the market dynamics and engine technical considerations.

It is key to have an in-depth understanding of fleet age and ownership profiles, annual number of engine shop visits, engine maintenance, repair and overhaul (MRO) facilities – both those affiliated to the original equipment manufacturer (MRO) and independent ones – spare engine levels and the ability to supply spare engines (if the majority of operators are tied in long-term service agreements with the OEM or MROs, such agreements usually include spare engine provisioning, thus reducing the ability for a third party to provide spare engines).

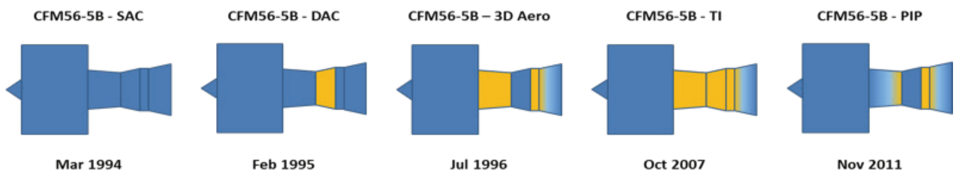
Aircraft retirements also have a significant impact because there is an ever-increasing number of spare engines becoming available, coupled with a reduction of shop visit numbers (lower demand). In addition, those retirements might be accelerated if a replacement product is planned to enter service in the near future (Leap-1A, for instance). This will also have an impact on the residual value of the current engines.

From a technical point of view, it is essential to have a good knowledge of the different variants, because this will impact on engine value, ability to intermix engines on-wing and possibility to supply used serviceable material (USM) during engine shop visits.

The CFM56-5B is composed of several engine variants, which will result in different investment strategies:

- Baseline: this entered serviced in early 1994 on the A320 family;
- 3D Aero: this is the first major upgrade of the CFM56-5B, introduced in 1996. It features redesigned HPC and HPT airfoils (3D Aero) along with redesigned LPT stage 1 nozzles. 3D Aero engines can be identified with the /P added after the engine rating, such as CFM56-5BX/P;
- DAC: in the mid-1990s CFMi introduced the double annular combustor (DAC) to try to reduce NOx (oxides of nitrogen) emissions. This features a different combustor module; however, few DAC engines have been produced (less than 220 engines), because of increased fuel burn, combustor durability and LPT stage 1 nozzle damage. Very few remain in service (some are being converted to the standard single annular combustor configuration). DAC engines can be identified with the /2 added after the engine rating, such as CFM56-5B/2 and CFM56-5BX/2P;
- Tech Insertion: this is the second major upgrade of the CFM56-5B, introduced in late 2007. It features redesigned HPC, new combustor (lower NOx emissions), redesigned HPT blades and LPT stage 1 nozzles along

CFM56-5B Variants



Orange indicates hardware changes from previous variant

"Green time leasing usually requires a more aggressive depreciation profile because the engine life is shorter. If asset owners do not depreciate their assets enough they can have engines with a book value well above the real value that cannot be offset by selling the asset or from the expected tear down revenue."

with new core life limited parts (20,000 cycles). Partial or full upgrade of existing CFM56-5B engines is possible through application of various kits. Tech Insertion engines can be identified with the /3 added after the engine rating, such as CFM56-5BX/3;

- PIP: this is the third major upgrade of the CFM56-5B, introduced in late 2011. It features optimized HPC outlet guide vane diffuser, redesigned forward outer seal, blade retainer and retaining ring, HPT disk and HPT blades (76 blades instead of 80 in previous configuration) and redesigned stage 4 to 8 HPC vane assemblies and stage 2 and 3 shroud assemblies and new LPT stage 1 nozzle guide vanes. PIP engines can only be identified from the engine data plate (ORIG-PIP) or the manufacture date.

In this particular case (investing with a view to tear engines down in the near future), the best option is to invest in 3D Aero SAC engines because this is the most common variant and represents the majority of the shop visits.

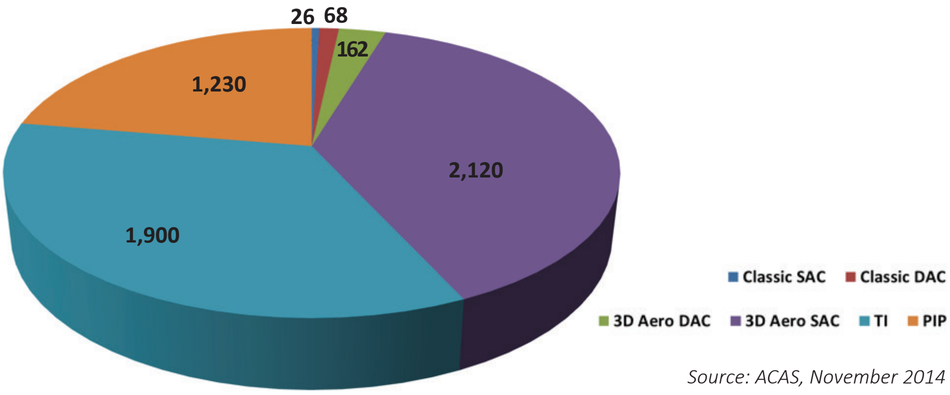
The more recent variants such as Tech Insertion and PIP are still several years away from their first planned shop visit – therefore there is very low demand for USM. Furthermore, limited interchangeability of parts from one variant to another will limit the ability to supply USM to the whole CFM56-5B fleet – eg, certain airfoils and life limited parts (LLPs) are not compatible between 3D Aero and TI/PIP.

Once the relevant engine variant(s) have been identified, the next step is to determine how much value can be extracted from the engine once it has been torn down. Typically, parts such as airfoils and LLPs will have a strong demand, while items such as cases and frame are slow moving parts.

The exact hardware standard of each individual engine is also an important factor because some part numbers are more desirable than others. For instance, most CFM56-5B HPT blades part numbers have limitations because of hardware distress and therefore have to be scrapped once these limitations have been reached. If an engine contains a non-desirable part number of HPT blades, this will have a significant impact on the revenue generated by the parts sale.

When looking at supplying USM on the market, a critical point to consider is the quality of the engine records. A very good engine, from a technical point of view, can be worthless without the proper records.

CFM56-5B - Active Fleet



Source: ACAS, November 2014

There are two levels of requirements when it comes to engine records. The first one, which is relatively easy to define and comply with, is defined by the civil aviation authorities and dictates the minimum requirements to maintain airworthiness of the engines. The second one is constantly evolving because it is based on people's views and interpretations and is often used as negotiation criteria when buying/selling USM. A typical example is the Back To Birth trace requirements for LLPs. Over the past 10 years the amount of paperwork required has increased dramatically. A trace pack, which was deemed as complete five years ago, would now be considered as incomplete. The same applies to non-LLPs, for which some people are now asking for unreasonable amounts of paperwork.

With regard to the green time leasing revenue, it is important to define correct rentals rates. All too often people are tempted to lease their spare engines below market rates (to increase the chance of placing their engine). However, this can prove a risky decision, because it will gradually drive market prices down (therefore impacting future revenue in case of multiple investments over several years) and will impact the revenue generated during the lease.

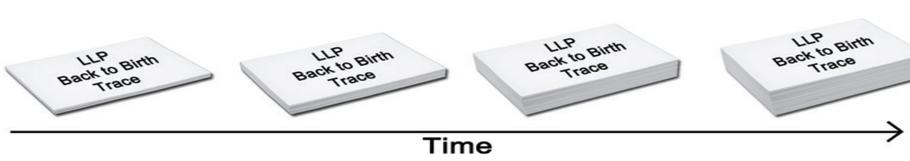
Although green time leasing does not require further investment to repair the engines, it usually requires a more aggressive depreciation profile because the engine life is shorter. Certain asset owners do not depreciate their assets enough in order to preserve their profit level. This then leads to situations where engines have a high book value that is well above the real value and which cannot be offset by selling the asset or from the expected tear down revenue.

Finally, once all of the above elements have been considered and understood, the acquisition price of an asset can be determined. On certain products such as the CFM56-5B there is often a disconnect between the perceived value of an asset and the real value. This is partly because many people are relying too much on theoretical rules and values provided by appraisers, and those rules lack resilience when exposed to the commercial and technical realities.

As mentioned above, some owners do not depreciate their assets correctly, which then leads to unrealistic expectations when trying to dispose of those assets. Therefore, it can prove challenging to secure those assets at a price that makes commercial sense.

As highlighted in this article, numerous factors have to be addressed before investing in aircraft engines. Therefore, the best recommendation is to do your homework first or get TES Aviation Group to do it for you.

LLP Back to Birth trace



AIRCRAFT APPRAISALS

Views on values

Air Investor has reviewed the values and lease rates of a representative selection of aircraft including models from each of the main manufacturers and covering a range of commercial aircraft sizes and types. Values and lease rates are taken from aircraft profiles published in *Airfinance Journal*. The Aircraft considered are:

The Appraisers
For the selection of aircraft, *Airfinance Journal's* regular panel of specialists provided independent views on values and lease rates. The panel comprises Istat appraisers and senior appraisers:

Gueric Dechavanne, *Collateral Verifications*
Angus Mackay, *ICF*
Jonathan McDonald, *IBA*
Lindsay Mohr, *MBA*
Martin O'Hanrahan, *Avitas*
Olga Razzhivina, *Oriel*
Stuart Rubin, *ICF*
Sarah Smith, *MBA*
Mike Yeomans, *IBA*

The Assumptions

Market value is based on the Istat definition – ie, the most likely trading price that may be generated for an aircraft under the market circumstances that are perceived to exist at the time in question. Market value assumes that the aircraft is valued for its highest, best use, that the parties to the hypothetical sale transaction are willing, able, prudent and knowledgeable, and under no unusual pressure for a prompt sale, and that the transaction would be negotiated in an open and unrestricted market on an arm's-length basis, for cash or equivalent consideration, and given an adequate amount of time for effective exposure to prospective buyers.

Lease rates are for indicative purposes. Monthly rental values will vary according to factors such as term and lessee credit rating.

787-8

Boeing launched the 787 in 2004 and from the outset marketed the aircraft under the Dreamliner brand. In what the company says was a response to airline demand, Boeing opted to go for an all-new design. This approach provided a step change in fuel efficiency from the previous generation of aircraft.

Composite materials make up 50% of the primary structure, fuselage and wing of the 787, but advances in engine technology are the biggest contributor to overall fuel-efficiency improvements.

The 787 offers a choice between General Electric and Rolls-Royce powerplants. The initial model, the 787-8, typically carries 242 passengers up to 7,850 nautical miles. The stretched 787-9, which entered service in 2013, has an increased capacity and longer range. The 787-10, launched in June 2013, further increases capacity but has a reduced range compared with the other two models.

Not least because of the all-new design and use of composite materials, the aircraft suffered a succession of delays to its planned entry into service and subsequently had a number of operational problems, including a series of well-documented battery fires.

Current market value ($m)

Build year	2011	2012	2013	2014
CV view	87.3	96.9	101.4	120.6
IBA view*	92.6	99.3	107.1	114.9
Oriel view	88.0	92.0	103.6	116.2

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2011	2012	2013	2014
CV view	750	850	950	1,125
IBA view	874	923	978	1,030
Oriel view	870	930	1,000	1,100

Values and lease rates taken from Airfinance Journal *November 2014*

Developments
The engine suppliers have had difficulty meeting the fuel burn specification, and both Rolls-Royce and General Electric have responded with upgrade packages that are largely retrofitable.

AIRCRAFT APPRAISALS

A340-600

The A340 is a four-engine aircraft designed for long-haul operations. There are four variants of the A340. The A340-200 and A340-300 were launched in 1987 and entered service in 1993. The A340-500 and A340-600 were launched in 1997 with introduction into service in 2002.

The A340-600 is the longest-fuselage jetliner built by Airbus, and the largest-capacity member of the A340 family. With an overall length of 75.36 metres, it has a seating capacity for 359 passengers in a two-class layout, or 475 in high-density seating. The -600 was developed alongside the shorter A340-500, which would become the longest-ranged commercial airliner until the arrival of Boeing's 777-200LR.

CFM56 engines powered the two initial A340 models, but Rolls-Royce is the sole engine supplier for the -500 and -600 models, which are equipped with Trent 560s. The A340 models utilize the same basic fuselage and wing as Airbus's twin-

engine A330. The A340 models also share similar airframe structures, components and systems with the A330 family, and the manufacturer stresses the advantages of commonality with other Airbus models for pilot training and qualification.

Current market value ($m)

Build year	2002	2004	2006	2008	2010
CV view	26.0	29.8	35.2	41.3	52.1
IBA view	22.6	26.4	30.7	34.9	40.6
ICF view	34.9	41.0	48.3	57.2	68.0

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2002	2004	2006	2008	2010
CV view	400	450	500	550	600
IBA view	317	356	390	422	445
ICF view	300-400	325-425	400-500	475-575	525-625

Values and lease rates taken from Airfinance Journal *March 2014*

Developments

Airbus is linking up with Rolls-Royce to boost the market appeal of its A340-600 model, with a view to increasing demand for the aircraft in the secondary market.

Boeing 767-300ER

The 767-300ER is an extended-range version of the 767-300, which entered service with American Airlines in 1988. The type's increased range was made possible by greater fuel capacity and a higher maximum take-off weight (MTOW), which has been further increased as the model has been developed. The -300ER is available with Pratt & Whitney PW4000, General Electric CF6, or Rolls-Royce RB211 engines.

The increased capacity/range offered by the 767-300ER was well received by airlines, and the model is by far the most successful version of the 767 family. Airlines have placed more orders for the type than all other variants combined. Although many customers are reducing the size of their fleets, the aircraft still has a large customer base.

Developments

Aviation Partners Boeing (APB) offers blended winglets for the 767-300ER passenger aircraft. The company says the winglets improve aerodynamic performance such that airlines can obtain fuel savings of between 4% and 5%, while benefiting from an increased range of about 320 nautical miles.

The 767-300F, the production freighter

version of the 767-300ER, entered service with UPS in 1995. The 767-300 passenger model has proved a successful platform for passenger-to-freighter conversions; Boeing offers the aircraft under the designation 767-300BCF (Boeing Converted Freighter). There are a number of other suppliers of conversions of the aircraft.

The 767-400ER, a further stretch of the aircraft, was the last member of the Boeing 767 family to be launched. The aircraft has, however, not met with the same success as the smaller 767-300ER.

Current market value ($m)

Build year	2000	2002	2004	2006	2008	2010	2012
CV view	17.6	19.9	22,1	23.9	30.3	34.0	40.2
ICF SH&E view	17.5	21.2	25.6	30.7	36.8	43.9	52.5
MBA view	23.4	26.9	31.5	36.9	42.2	48.3	57.6

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2000	2002	2004	2006	2008	2010	2012
CV view	270	290	310	330	350	370	390
ICF SH&E view	240-250	260-270	280-290	300-310	320-340	360-380	400-420
MBA view	250-275	270-290	300-330	330-360	360-400	400-450	470-510

Values and lease rates taken from Airfinance Journal *April 2014*

AIRCRAFT APPRAISALS

737-900ER

The Boeing 737-900ER (extended range) model is the latest and largest member of the 737 next-generation (NG) family.

The original member of the NG family was the 737-700, which entered service in 1998. This was closely followed by the stretched -800. Boeing later introduced the 737-900, which was a further stretch. The -900 retained the emergency exit configuration of the -800, which restricted its maximum seating capacity. The 737-900 also had the same maximum take-off weight and fuel capacity as the -800, which limited its range. These shortcomings prevented the 737-900 from effectively competing with the Airbus A321.

The ER variant is the second attempt by Boeing to design the largest member of the 737NG family.

After the original 737-900 failed to make an impact on the market, with only 52 aircraft delivered, the ER variant was launched with a view to improving the model's operational capability and competitiveness. Design changes included increased maximum take-off weight, auxiliary fuel tanks and winglets. The higher-capacity, longer-range derivative was launched on July 18 2005 with an order for 30 aircraft from Indonesia's Lion Air.

Current market value ($m)

Build year	2009	2010	2011	2012	2013
Avitas view	35.3	38.0	41.3	44.8	48.8
IBA view	32.8	35.5	38.5	41.8	45.3
Oriel view	34.5	36.5	38.5	40.5	45.8

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2009	2010	2011	2012	2013
Avitas view	290-310	310-330	330-350	350-370	370-390
IBA view	285-325	300-340	320-360	340-375	360-395
Oriel view	300	315	330	345	365

Values and lease rates taken from Airfinance Journal *July/August 2014*

Developments

The NG family is to be superceded by Boeing's 737 Maxs, of which the Max 9 is the replacement for the 737-900. The first member of the Max family will be the Max 7 variant, for which first deliveries are scheduled in 2017. The Max 9 will be the last of the family to enter service.

A321-200

The Airbus A321 is the largest member of the A320 single-aisle aircraft family manufactured by Airbus. The A320 was the first member of the family, entering service in 1988. The larger A321 followed in 1994, the smaller A319 in 1996 and the smallest member of the family, the A318, in 2003.

The original A321-100 had a reduction in range compared with the A320, and Airbus launched the heavier and longer range A321-200 in 1995, with entry into service a year later.

There is a very high degree of commonality in spare parts and maintenance requirements between the aircraft, allowing airlines to operate a combination of different models while benefiting from the advantages of a single-type fleet.

All members of the A320 family share a common pilot rating, which provides operational flexibility because crews can switch between models as required. Additionally, pilots can move, with relatively little additional training, from single-aisle A320s to Airbus's larger long-range aircraft.

Developments

Airbus announced in 2010 that it would re-engine all members of the A320 family, except the A318, with new-generation powerplants. The new models are identified with the suffix "neo" (new engine option), and the term "ceo" (current engine option) has subsequently been adopted for in-service and current production aircraft.

The new models provide a fuel burn improvement of about 17% over their previous generation counterparts, but some of this is derived from sharklets (extended wingtips) that are available as an option on current-generation aircraft.

The first member of the family, the A320neo, is scheduled to enter service in 2015. The A321neo will be the last of the next-generation aircraft to enter service.

Current market value ($m)

Build year	2001	2004	2007	2010	2013
CV view	20.7	24.7	29.4	34.3	42.7
ICF SH&E view	19.6	24.1	29.8	37.2	46.8
MBA view	20.4	26.2	32.8	40.0	48.8

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2001	2004	2007	2010	2013
CV view	235	265	300	345	390
ICF SH&E view	190-230	220-260	255-295	300-340	365-390
MBA view	210-230	250-270	275-300	310-330	350-370

Values and lease rates taken from Airfinance Journal *June 2014*

AIRCRAFT APPRAISALS

E175

The Embraer E175 is part of the Brazilian E-Jet family, which straddles the regional and single-aisle markets. The other members of the family are the similarly sized E170, as well as the larger E190 and E195 models. In total more than 1,000 aircraft have been delivered.

All current models are powered by General Electric engines, and have significant commonality in aircraft systems and avionics. The fuselage cross-section is identical for all members of the family and accommodates four-abreast seating.

The E170 was the first version to be built and entered service in 2004. In response to market feedback, Embraer launched the E175, which has typically eight more seats. The first E175 was delivered in 2005 and has outsold its smaller stable-mate, accounting for virtually the entire current order backlog. The E175 is available in three major versions differentiated primarily by their maximum take-off weights and associated ranges. The models are designated as standard (STD), long-range (LR) and augmented range (AR) versions. The E170 and E175 compete with Bombardier's CRJ700 and CRJ900 models.

Developments

Embraer has announced the launch of the second generation of the E-Jet family, which it identifies by the designation E2. The family comprises three models: E175-E2, E190-E2 and E195-E2. The E175 has been stretched by a single seat row and is the smallest aircraft in the second-generation family. Embraer is targeting 2018 for entry into service of the E190-E2, but the E175-E2 is not scheduled to follow until 2020. The company is introducing a number of modifications and enhancements to improve the fuel efficiency on the current-generation E-Jet that will narrow the gap to the E2, with particular focus on the E175.

Current market value ($m)

Build year	2004	2006	2008	2010	2012
Avitas view	13.5	15.8	18.3	21.2	24.7
IBA view	14.5*	15.0	17.1	20.0	24.2
Oriel view	13.5	15.0	17.0	19.0	21.0

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2008	2009	2010	2011	2012
Avitas view	125-150	140-165	155-180	175-205	195-230
IBA view	145-165*	150-170	165-185	180-205	195-220
Oriel view	150	160	170	180	205

**2005 delivery.*

Values and lease rates taken from Airfinance Journal *May 2014*

CRJ1000

Bombardier's 100-seat CRJ1000 is the latest and largest member of the Bombardier (Canadair) regional jet (CRJ) family and retains many of the characteristics of the earlier models. The first member of the family was the 50-seat CRJ100/200, which was a stretch of the Challenger business jet. It proved very successful, not least in replacing turboprops. Further stretches resulted in the CRJ700 and, subsequently, the CRJ900, which are both in production.

The CRJ1000 features uprated engines and landing gear, increased wing area and fuselage length, and a fly-by-wire rudder. The 100-seater is manufactured in standard extended-range (ER) versions. Direct competition exists in the form of the Embraer E190, the Embraer E195 and the Sukhoi SSJ100.

As part of the CRJ1000 design process, Bombardier introduced an improved NextGen passenger cabin. The new interior features were then incorporated into the CRJ700 and CRJ900, and all three models were designated in marketing literature with the NextGen tag.

Developments

Bombardier is concentrating its efforts on the development of its new CSeries single-aisle family. Major upgrades to the CRJ family are unlikely.

Current market value ($m)

Build year	2011	2012	2013	2014
CV view	18.97	19.93	22.25	26.26
ICF view	20.26	21.68	23.86	26.96
MBA view	21.56	23.44	25.47	27.66

Assuming standard Istat criteria.

Indicative lease rates ($'000s/month)

Build year	2011	2012	2013	2014
CV view	220	227	235	242
ICF view	180-210	190-220	200-230	210-240
MBA view	170-190	180-210	190-220	200-230

**2005 delivery.*

Values and lease rates taken from Airfinance Journal *May 2014*

AIRCRAFT DATA

The numbers

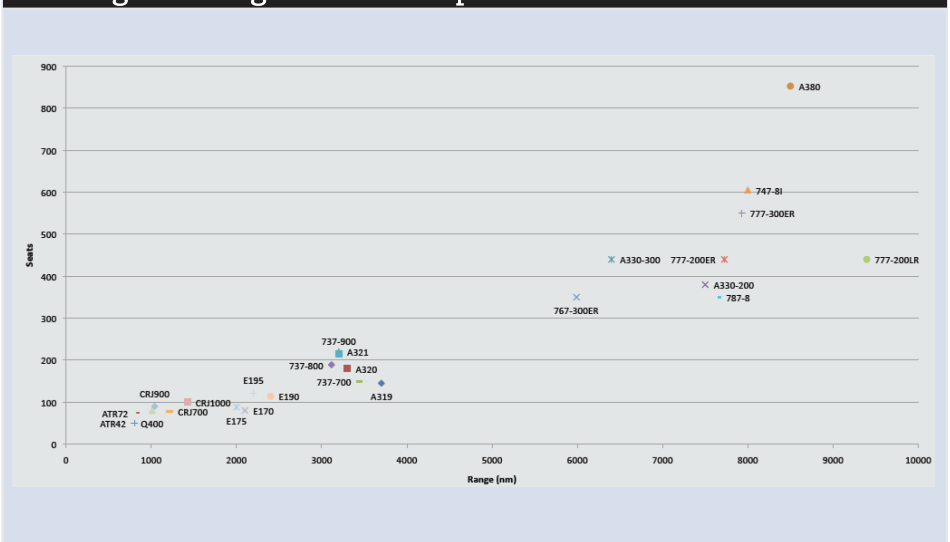
Aircraft data index

The following pages include key data for current production commercial aircraft. Aircraft that have not yet entered service are not included, because the information available has not been confirmed by in-service experience. Hence, for example, Airbus's A350 and Bombardier's CSeries are excluded. The information provided is based on a number of key assumptions as detailed in the following.

Technical characteristics

The maximum take-off weight (MTOW) shows the minimum and maximum options available for the type in question. There may be intermediate weights available. The operating empty weight (OEW) is based on the manufacturers' figures. Airline weights are likely to be higher than those quoted.

Seating and range for current production aircraft



Fuels and times

The figures shown for fuels and times are *Airfinance Journal's* estimates based on a variety of sources. They are intended to reflect 60% passenger load factors, international standard atmosphere (ISA) conditions en-route, zero winds and optimum flight levels.

Indicative maintenance costs

The maintenance figures are intended as a guide to the order of magnitude of reserves associated with the various aircraft types. The figures are intended to reflect mature costs with no account taken of warranty effects and other reductions associated with new aircraft.

The C-check and heavy-check reserves are based on typical check costs and intervals. No allowance is made for cabin refurbishment. The cost quoted for component overhaul excludes inventory support.

Engine maintenance cost estimates are based on figures quoted in the *Airfinance Journal* guide to financing and investing in engines 2013, page 29. Unless stated, the engine costs refer to the most common engine type for the aircraft model in question.

The information used to estimate the indicative maintenance reserves has been collected from a wide variety of sources. While *Airfinance Journal* has made every effort to normalize the data, direct comparisons between aircraft types may be misleading.

It should also be noted that maintenance costs of a particular type are highly dependent on the route structure, operating environment and maintenance philosophy of the airline with which the aircraft is in service. As such our estimates are difficult to reconcile with the numbers provided by manufacturers.

Seating/range

The numbers quoted for seating capacity are based on the manufacturers' selling standards. Large variations are possible, particularly for widebody aircraft. The ranges shown are for still-air conditions, optimum flight levels and are based on the typical seating figure and the operating empty weight quoted by the manufacturer. Ranges in airline operation are likely to be significantly less than the figures quoted.

A319

Seating/range		
Max seating	145	
Typical seating	124	(8+116)
Max range (Non ER version)	3,700	nm
Technical characteristics		
MTOW	64	tonnes / 76 tonnes
OEW	40	tonnes
MZFW	58	tonnes
Fuel capacity	23,860	litres / 29,840 litres
Engines	CFM56-7B/V2500	
Thrust	22,000	lbs (98kn)
Fuels and times		
Block fuel 200Nm	1,710	kg
Block fuel 500nm	3,140	kg
Block fuel 1000 Nm	5,620	kg
Block time 200Nm	54	minutes
Block time 500Nm	94	minutes
Block time 1000Nm	160	minutes
Fleet (including ACJs)		
Entry into service	1996	April
In service	1,380	
Operators (current and planned)	159	
In storage	30	
On order	106	(plus 30 A319neo)
Built peak year (2005)	142	
Built 2014	30	
Average age	9.7	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$60-65	per flight hour
Higher checks reserve	$55-60	per flight hour
Engine overhaul	$95-100	per engine flight hour
Engine LLP	$120-125	per engine cycle
Landing gear refurbishment	$35-40	per cycle
Wheels brakes and tyres	$120-130	per cycle
APU	$75-80	per APU hour
Component overhaul	$210-220	per flight hour

A320-200

Seating/range		
Max seating	180	
Typical seating	150	(12+32)
Max range (Non ER version)	3,300	nm (6,1000 km) (with sharklets)
Technical characteristics		
MTOW	73.5	tonnes / 78 tonnes
OEW	42	tonnes
MZFW	61	tonnes / 62.5 tonnes
Fuel capacity	24,210	litres / 27,200 litres
Engines	CFM56-5B/V2500	
Thrust	25,000	lbs (120kn)
Fuels and times		
Block fuel 200Nm	1,850	kg
Block fuel 500nm	3,390	kg
Block fuel 1000 Nm	6,080	kg
Block time 200Nm	54	minutes
Block time 500Nm	94	minutes
Block time 1000Nm	160	minutes
Fleet		
Entry into service	1988	March
In service:	3,765	
Operators (current and planned)	280	
In storage	123	
On order	901	(plus 2,864 A320neo)
Built peak year (2013)	348	
Built 2014	318	
Average age	7.9	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$60-65	per flight hour
Higher checks reserve	$55-60	per flight hour
Engine overhaul	$100-105	per engine flight hour
Engine LLP	$120-125	per engine cycle
Landing gear refurbishment	$35-40	per cycle
Wheels brakes and tyres	$120-130	per cycle
APU	$75-80	per APU hour
Component overhaul	$210-220	per flight hour

A321-200

Seating/range		
Max seating	236	
Typical seating	185	(16+169)
Maximum range (Non ER version)	3,200	nm (5,950 km) (with sharklets)
Technical characteristics		
MTOW	89	tonnes / 93.5 tonnes
OEW	48	tonnes
MZFW	71.5	tonnes/73.8 tonnes
Fuel capacity	23,860	litres / 29,840 litres
Engines	CFM56-5B/V2500	
Thrust	27,000	lbs - 33,000lbs (120-148kn)
Fuels and times		
Block fuel 200Nm	2,310	kg
Block fuel 500nm	4,230	kg
Block fuel 1000 Nm	7,590	kg
Block time 200Nm	54	minutes
Block time 500Nm	94	minutes
Block time 1000Nm	160	minutes
Fleet (including -100s)		
Entry into service	1996	April
In service:	992	
Operators (current and planned)	99	
In storage	12	
On order	675	(plus 704 A21neo)
Built peak year (2014)	145	
Built 2014	145	
Average age	7.1	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$65-70	per flight hour
Higher checks reserve	$60-65	per flight hour
Engine overhaul	$115-120	per engine flight hour
Engine LLP	$120-125	per engine cycle
Landing gear refurbishment	$35-40	per cycle
Wheels brakes and tyres	$120-130	per cycle
APU	$75-80	per APU hour
Component overhaul	$210-220	per flight hour

A330-200

Seating/range		
Max seating	380	
Typical seating	246	(two class)
Maximum range (Non ER version)	7,500	nm (13,900 km)
Technical characteristics		
MTOW	230	tonnes / 240 tonnes
OEW	121	tonnes
MZFW	168	tonnes/170 tonnes
Fuel capacity	139,090	litres
Engines	PW4000	/CF6-80E1/Trent 700
Thrust	68,000	lbs - 72,000lbs (303-316kn)
Fuels and times		
Block fuel 1,000 Nm	12,720	kg
Block fuel 2,000 Nm	23,710	kg
Block fuel 4,000 Nm	45,680	kg
Block time 1,000 Nm	184	minutes
Block time 2,000 Nm	299	minutes
Block time 4,000 Nm	529	minutes
Fleet (including freighter versions)		
Entry into service	1998	April
In service:	530	
Operators (current and planned)	92	
In storage	16	
On order	64	
Built peak year (2013)	60	
Built 2014	24	
Average age	7.6	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$105-110	per flight hour
Higher checks reserve	$95-100	per flight hour
Engine overhaul (Trent)	$260-275	per engine flight hour
Engine LLP (Trent)	$240-245	per engine cycle
Landing gear refurbishment	$150-155	per cycle
Wheels brakes and tyres	$375-380	per cycle
APU	$105-110	per APU hour
Component overhaul	$420-425	per flight hour

A330-300

Seating/range		
Max seating	440	
Typical seating	300	(two class)
Maximum range (Non ER version)	6,100	nm (11,300 km)
Technical characteristics		
MTOW	230	tonnes / 240 tonnes
OEW	121	tonnes
MZFW	173	tonnes/175 tonnes
Fuel capacity	97,530	litres
Engines	PW4000	/CF6-80E1/Trent 700
Thrust	68,000	lbs - 72,000lbs (303-316kn)
Fuels and times		
Block fuel 1,000 Nm	13,120	kg
Block fuel 2,000 Nm	24,460	kg
Block fuel 4,000 Nm	47,120	kg
Block time 1,000 Nm	184	minutes
Block time 2,000 Nm	299	minutes
Block time 4,000 Nm	529	minutes
Fleet		
Entry into service	1993	December
In service:	567	
Operators (current and planned)	56	
In storage	9	
On order	162	
Built peak year (2013)	68	
Built 2014	66	
Average age	6.5	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$105-110	per flight hour
Higher checks reserve	$95-100	per flight hour
Engine overhaul (Trent)	$260-275	per engine flight hour
Engine LLP (Trent)	$240-245	per engine cycle
Landing gear refurbishment	$150-155	per cycle
Wheels brakes and tyres	$375-380	per cycle
APU	$105-110	per APU hour
Component overhaul	$420-425	per flight hour

A380

Seating/range		
Max seating	853	
Typical seating	525	three class
Maximum range	8,500	nm (15,700 km)
Technical characteristics		
MTOW	560	tonnes
OEW	277	tonnes
MZFW	361	tonnes
Fuel capacity	320,000	litres
Engines	GP7200	/Trent 900
Thrust	70,000	lbs (311kN)
Fuels and times		
Block fuel 1,000 Nm	26,590	kg
Block fuel 2,000 Nm	50,580	kg
Block fuel 4,000 Nm	104,290	kg
Block time 1,000 Nm	146	minutes
Block time 2,000 Nm	265	minutes
Block time 4,000 Nm	501	minutes
Fleet		
Entry into service	2007	October
In service:	149	
Operators (current and planned)	18	
In storage	3	
On order	175	
Built peak year (2012)	30	
Built 2014	26	
Average age	2.9	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$160-165	per flight hour
Higher checks reserve	$145-150	per flight hour
Engine overhaul	$190-195	per engine flight hour
Engine LLP	$195-200	per engine cycle
Landing gear refurbishment	$200-205	per cycle
Wheels brakes and tyres	$565-570	per cycle
APU	$155-160	per APU hour
Component overhaul	$575-580	per flight hour

ATR42-600

Seating/range		
Max seating	50	@30in
Typical seating	48	@30in
Maximum range	801	nm (1,480 km)
Technical characteristics		
MTOW	18.6	tonnes
OEW	11.5	tonnes
MZFW	16.7	tonnes
Fuel capacity	5,700	litres
Engines	PW127M	
Thrust	2,160	shp
Fuels and times		
Block fuel 100Nm	340	kg
Block fuel 200 Nm	560	kg
Block fuel 500 Nm	1,210	kg
Block time 100Nm	33	minutes
Block time 200Nm	55	minutes
Block time 500Nm	122	minutes
Fleet		
Entry into service	2012	1996 for -500
In service	15	
Operators	13	
In storage	3	
On order	3	
Built peak year	11	
Built 2014	11	
Average age	1.5	year
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$35-40	per flight hour
Higher checks reserve	$25-30	per flight hour
Engine overhaul	$95-100	per engine flight hour
Engine LLP	$25-30	per engine cycle
Landing gear refurbishment	$20-25	per cycle
Wheels brakes and tyres	$35-40	per cycle
Propeller	$15-20	per propeller hour
Component overhaul	$115-120	per flight hour

ATR72-600

Seating/range		
Max seating	74	@30in
Typical seating	70	@30 inch pitch
Maximum range	825	nm
Technical characteristics		
MTOW	22.8	tonnes/23 tonnes
OEW	14	tonnes
MZFW	20.8	tonnes/21 tonnes
Fuel capacity	6,370	litres
Engines	PW127M	
Thrust	2,475	shp
Fuels and times		
Block fuel 100Nm	370	kg
Block fuel 200 Nm	610	kg
Block fuel 500 Nm	1,310	kg
Block time 100Nm	36	minutes
Block time 200Nm	58	minutes
Block time 500Nm	125	minutes
Fleet		
Entry into service	2011	1998 for -500
In service	188	
Operators (ATR72-500)	45	
In storage (ATR72-500)	2	
On order	279	
Built peak year 2014	108	
Built 2014	108	
Average age (ATR72-500)	1	year
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$35-40	per flight hour
Higher checks reserve	$25-30	per flight hour
Engine overhaul	$100-105	per engine flight hour
Engine LLP	$30-35	per engine cycle
Landing gear refurbishment	$20-25	per cycle
Wheels brakes and tyres	$35-40	per cycle
Propeller	$15-20	per propeller hour
Component overhaul	$125-130	per flight hour

Boeing 737-700

Seating/range		
Max seating	149	@30in
Typical seating	126	@34/32
Maximum range	3,440	nm (6,370 km) (with winglets)
Technical characteristics		
MTOW	70.1	tonnes (77.6 for ER version)
OEW	38	tonnes
MZFW	54.7	tonnes
Fuel capacity	26,020	litres / 40,580 litres
Engines	CFM56-7B	
Thrust	26,300	lbs (116 kn)
Fuels and times		
Block fuel 200Nm	1,810	kg
Block fuel 500nm	3,190	kg
Block fuel 1000 Nm	5,590	kg
Block time 200Nm	54	minutes
Block time 500Nm	94	minutes
Block time 1000Nm	160	minutes
Fleet		
Entry into service	1998	January
In service:	1,051	(includes 737-700C)
Operators (current and planned)	81	
In storage	22	
On order	110	
Built peak year (2004)	111	
Built 2014	15	
Average age	10.3	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$65-70	per flight hour
Higher checks reserve	$50-55	per flight hour
Engine overhaul	$115-120	per engine flight hour
Engine LLP	$120-125	per engine cycle
Landing gear refurbishment	$45-50	per cycle
Wheels brakes and tyres	$70-75	per cycle
APU	$80-85	per APU hour
Component overhaul	$210-220	per flight hour

Boeing 737-800

Seating/range		
Max seating	189	@30in
Typical seating	162	@34/32
Maximum range	3,115	nm (5,767 km) (with winglets)
Technical characteristics		
MTOW	79	tonnes
OEW	41.1	tonnes
MZFW	61.7	tonnes / 62.7 tonnes
Fuel capacity	26,020	litres / 40,580 litres
Engines	CFM56-7B	
Thrust	27,300	lbs (121kn)
Fuels and times		
Block fuel 200Nm	2,000	kg
Block fuel 500nm	3,530	kg
Block fuel 1000 Nm	6,190	kg
Block time 200Nm	54	minutes
Block time 500Nm	94	minutes
Block time 1000Nm	160	minutes
Fleet		
Entry into service	1998	April
In service:	3404	
Operators (current and planned)	168	
In storage	39	
On order	1054	
Built peak year (2014)	460	
Built 2014	460	
Average age	6.3	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$65-70	per flight hour
Higher checks reserve	$50-55	per flight hour
Engine overhaul	$115-120	per engine flight hour
Engine LLP	$120-125	per engine cycle
Landing gear refurbishment	$45-50	per cycle
Wheels brakes and tyres	$70-75	per cycle
APU	$80-85	per APU hour
Component overhaul	$210-220	per flight hour

Boeing 737-900ER

Seating/range		
Max seating	215	
Typical seating	180	
Maximum range	3,200	nm (5,920 km)
Technical characteristics		
MTOW	85.1	tonnes
OEW	42.5	tonnes
MZFW	67.8	tonnes
Fuel capacity	29,660	litres
Engines	CFM56-7B	
Thrust	27,300	lbs (121kn)
Fuels and times		
Block fuel 200Nm	2,080	kg
Block fuel 500nm	3,660	kg
Block fuel 1000 Nm	6,420	kg
Block time 200Nm	54	minutes
Block time 500Nm	95	minutes
Block time 1000Nm	160	minutes
Fleet		
Entry into service	2001	May (ER version)
In service:	281	
Operators (current and planned)	19	
In storage	4	
On order	234	
Built peak year (2014)	76	
Built 2014	76	
Average age	2.8	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$70-75	per flight hour
Higher checks reserve	$50-55	per flight hour
Engine overhaul	$115-120	per engine flight hour
Engine LLP	$120-125	per engine cycle
Landing gear refurbishment	$45-50	per cycle
Wheels brakes and tyres	$70-75	per cycle
APU	$80-85	per APU hour
Component overhaul	$210-220	per flight hour

Boeing 747-8I

Seating/range		
Max seating	605	
Typical seating	467	three class
Maximum range	8,000	nm (14,815 km)
Technical characteristics		
MTOW	447.7	tonnes (987,000lbs)
OEW	218	tonnes
MZFW	295	tonnes
Fuel capacity	238,610	litres
Engines	GEnx-2B67	
Thrust	66,500	lbs
Fuels and times		
Block fuel 1000Nm	20,370	kg
Block fuel 2000Nm	38,760	kg
Block fuel 4000Nm	79,910	kg
Block time 1000Nm	146	minutes
Block time 2000Nm	265	minutes
Block time 4000Nm	501	minutes
Fleet		
Entry into service	2011	(2010 for freighter)
In service:	19	plus 55 freighters and 6 BBJ s
Operators (current and planned)	20	including freighters and BBJs
In storage	0	
On order	28	plus 14 freighters and 2 BBJ s
Built peak year (2012)	31	
Built 2014	28	
Average age	1.7	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves (747-400 figures)		
C-check reserve	$155-160	per flight hour
Higher checks reserve	$115-120	per flight hour
Engine overhaul	$165-170	per engine flight hour
Engine LLP	$255-260	per engine cycle
Landing gear refurbishment	$160-165	per cycle
Wheels brakes and tyres	$750-755	per cycle
APU	$105-110	per APU hour
Component overhaul	$505-510	per flight hour

Boeing 767-300ER

Seating/range		
Max seating	350	
Typical seating	269	two class (218 three class)
Maximum range	5,990	nm (11,070 km)
Technical characteristics		
MTOW	186.9	tonnes (412,000lbs)
OEW	91	tonnes
MZFW	133	tonnes
Fuel capacity	90,770	litres
Engines	PW4000	/CF6-80C2
Thrust	63,300	lbs/62,100lbs
Fuels and times		
Block fuel 1,000 Nm	10,560	kg
Block fuel 2,000 Nm	19,760	kg
Block fuel 4,000 Nm	37,910	kg
Block time 1,000 Nm	184	minutes
Block time 2,000 Nm	301	minutes
Block time 4,000 Nm	536	minutes
Fleet		
Entry into service	1987	(1986 for original -300)
In service:	487	
Operators (current and planned)	83	
In storage	43	
On order	1	
Built peak year (1992)	53	
Built 2014	3	
Average age	16.8	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$100-105	per flight hour
Higher checks reserve	$75-80	per flight hour
Engine overhaul	$165-170	per engine flight hour
Engine LLP	$255-260	per engine cycle
Landing gear refurbishment	$65-70	per cycle
Wheels brakes and tyres	$70-75	per cycle
APU	$109-110	per APU hour
Component overhaul	$250-260	per flight hour

Boeing 777-200ER

Seating/range		
Max seating	440	
Typical seating	400	two class (301 three class)
Maximum range	7,725	nm (14,305 km)
Technical characteristics		
MTOW	297.5	tonnes (656,000lbs)
OEW	137	tonnes
MZFW	191	tonnes
Fuel capacity	171,170	litres
Engines	PW4090	/Trent 895/GE90-94B
Thrust	90,000	lbs - 93,700lbs
Fuels and times		
Block fuel 1,000 Nm	14,140	kg
Block fuel 2,000 Nm	26,350	kg
Block fuel 4,000 Nm	50,780	kg
Block time 1,000 Nm	152	minutes
Block time 2,000 Nm	277	minutes
Block time 4,000 Nm	525	minutes
Fleet		
Entry into service	1996	for ER (1994 for original -200)
In service:	409	plus 86 non ER/LR models
Operators (current and planned)	40	
In storage	4	
On order	none	
Built peak year (1999)	63	
Built 2014	none	
Average age	13.2	years (ER version only)
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$125-130	per flight hour
Higher checks reserve	$90-95	per flight hour
Engine overhaul (PW4090)	$305-310	per engine flight hour
Engine LLP	$520-525	per engine cycle
Landing gear refurbishment	$160-165	per cycle
Wheels brakes and tyres	$480-485	per cycle
APU	$105-110	per APU hour
Component overhaul	$410-415	per flight hour

Boeing 777-200LR

Seating/range		
Max seating	440	
Typical seating	301	three class
Maximum range	9,395	nm (17,395 km)
Technical characteristics		
MTOW	347.5	tonnes (766,000lbs)
OEW	137	tonnes
MZFW	191	tonnes
Fuel capacity	181,280	litres/202,570 litres
Engines	GE90-110B1	/GE90-115BL
Thrust	110,000	lbs - 115,300lbs (489 -512 kN)
Fuels and times		
Block fuel 1,000 Nm	14,140	kg
Block fuel 2,000 Nm	26,350	kg
Block fuel 4,000 Nm	50,780	kg
Block time 1,000 Nm	152	minutes
Block time 2,000 Nm	277	minutes
Block time 4,000 Nm	525	minutes
Fleet		
Entry into service	2005	
In service:	56	
Operators (current and planned)	13	
In storage	2	
On order	1	
Built peak year (2009)	16	
Built 2014	3	
Average age	5.4	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$125-130	per flight hour
Higher checks reserve	$90-95	per flight hour
Engine overhaul	$290-295	per engine flight hour
Engine LLP	$450-455	per engine cycle
Landing gear refurbishment	$160-165	per cycle
Wheels brakes and tyres	$480-485	per cycle
APU	$105-110	per APU hour
Component overhaul	$410-415	per flight hour

Boeing 777-300ER

Seating/range		
Max seating	550	
Typical seating	365	three class
Maximum range	7,930	nm (14,685 km)
Technical characteristics		
MTOW	351.5	tonnes (775,000lbs)
OEW	168	tonnes
MZFW	238	tonnes
Fuel capacity	181,280	litres
Engines	GE90-115BL	
Thrust	115,300	lbs
Fuels and times		
Block fuel 1,000 Nm	15,610	kg
Block fuel 2,000 Nm	29,840	kg
Block fuel 4,000 Nm	60,900	kg
Block time 1,000 Nm	152	minutes
Block time 2,000 Nm	277	minutes
Block time 4,000 Nm	525	minutes
Fleet		
Entry into service	2003	for ER (1997 for original -300)
In service:	530	plus 60 non ER models
Operators (current and planned)	39	
In storage	1	
On order	269	
Built peak year (2013)	98	
Built 2014	98	
Average age	4.2	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$125-130	per flight hour
Higher checks reserve	$90-95	per flight hour
Engine overhaul	$290-295	per engine flight hour
Engine LLP	$450-455	per engine cycle
Landing gear refurbishment	$160-165	per cycle
Wheels brakes and tyres	$480-485	per cycle
APU	$105-110	per APU hour
Component overhaul	$410-415	per flight hour

Boeing 787-8

Seating/range		
Max seating	350	
Typical seating	264	two class (242 three class)
Maximum range	7,650	nm to 8,200 nm (14,200 km to 15,200km)
Technical characteristics		
MTOW	227.9	tonnes (502,500lbs)
OEW	110	tonnes
MZFW	172	tonnes
Fuel capacity	126,920	litres
Engines	Genx	/Trent 1000
Thrust	64,000	lbs (280 kN)
Fuels and times		
Block fuel 1000Nm	10,176	kg
Block fuel 2000Nm	18,968	kg
Block fuel 4000Nm	36,544	kg
Block time 1000Nm	146	minutes
Block time 2000Nm	265	minutes
Block time 4000Nm	501	minutes
Fleet		
Entry into service	2011	October
In service:	202	
Operators (current and planned)	51	
In storage	5	
On order	267	
Built peak year (2013)	119	
Built 2014	119	
Average age	1.2	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$110-115	per flight hour
Higher checks reserve	$80-85	per flight hour
Engine overhaul	$290-300	per engine cycle
Engine LLP	$300-305	per engine cycle
Landing gear refurbishment	$75-80	per cycle
Wheels, brakes and tyres	$100-105	per cycle
APU	$105-110	per APU hour
Component overhaul	$315-320	per flight hour

Boeing 787-9

Seating/range		
Max seating	408	
Typical seating	280	two class
Maximum range	8,300	nm (14,370 km)
Technical characteristics		
MTOW	252.7	tonnes (557,000lbs)
OEW	120	tonnes
MZFW	181	tonnes
Fuel capacity	138,700	litres
Engines	Genx	/Trent 1000
Thrust	71,000	lbs (320 kN)
Fuels and times		
Block fuel 1000Nm	10,480	kg
Block fuel 2000Nm	1,950	kg
Block fuel 4000Nm	37,630	kg
Block time 1000Nm	146	minutes
Block time 2000Nm	265	minutes
Block time 4000Nm	501	minutes
Fleet		
Entry into service	2014	June
In service:	9	
Operators (current and planned)	24	
In storage	0	
On order	407	
Built peak year (2013)	9	
Built 2014	9	
Average age	0.3	
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$110-115	per flight hour
Higher checks reserve	$85-90	per flight hour
Engine overhaul	$305-310	per engine cycle
Engine LLP	$315-320	per engine cycle
Landing gear refurbishment	$75-80	per cycle
Wheels brakes and tyres	$100-105	per cycle
APU	$125-130	per APU hour
Component overhaul	$320-325	per flight hour

BOMBADIER CRJ700

Seating/range		
Max seating	78	
Typical seating	70	at 31inch pirch
Maximum range	1,218	nm (2,256 km)
Technical characteristics		
MTOW	33	tonnes (72,750 lbs)
OEW	20.1	tonnes (44,245 lbs)
MZFW	28.3	tonnes (62,300 lbs)
Fuel capacity	10,990	litres
Engines	CF34-8C5B1	
Thrust	12,670	lbs (56 kn)
Fuels and times		
Block fuel 200 Nm	1,150	kg
Block fuel 500 Nm	1,950	kg
Block time 200 Nm	45	minutes
Block time 500 Nm	88	minutes
Fleet		
Entry into service	2001	
In service:	332	including 30 ER versions
Operators (current and planned)	22	
In storage	none	
On order	3	
Built peak year (2005)	68	
Built 2014	9	
Average age	9.4	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$45-50	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Engine LLP	$100-105	per engine cycle
Landing gear refurbishment	$30-35	per cycle
Wheels brakes and tyres	$45-50	per cycle
APU	$55-60	per APU hour
Component overhaul	$150-160	per flight hour

BOMBADIER CRJ900

Seating/range		
Max seating	90	
Typical seating	88	at 31inch pirch
Maximum range	1,040	nm (1,940 km)
Technical characteristics		
MTOW	36.5	tonnes (80,500 lbs)
OEW	21.8	tonnes (48,160 lbs)
MZFW	31.8	tonnes (70,000 lbs)
Fuel capacity	10,990	litres
Engines	CF34-8C5	
Thrust	13,360	lbs (59kn)
Fuels and times		
Block fuel 200 Nm	1,240	kg
Block fuel 500 Nm	2,100	kg
Block time 200 Nm	45	minutes
Block time 500 Nm	88	minutes
Fleet		
Entry into service	2001	
In service:	313	including 54 ER & 71 LR versions
Operators (current and planned)	23	
In storage	13	
On order	40	
Built peak year (2008)	59	
Built 2014	49	
Average age	5.8	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$50-55	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Engine LLP	$100-105	per engine cycle
Landing gear refurbishment	$30-35	per cycle
Wheels brakes and tyres	$50-55	per cycle
APU	$60-65	per APU hour
Component overhaul	$160-165	per flight hour

CRJ1000

Seating/range		
Max seating	104	
Typical seating	100	at 31inch pirch
Maximum range	1,425	nm (2,640 km)
Technical characteristics		
MTOW	40.8	tonnes (90,000 lbs)
OEW	23.2	tonnes (51,120 lbs)
MZFW	35.2	tonnes (77,500 lbs)
Fuel capacity	10,990	litres
Engines	CF34-8C5A1	
Thrust	13,360	lbs (59kn)
Fuels and times		
Block fuel 200 Nm	1,320	kg
Block fuel 500 Nm	2,200	kg
Block time 200 Nm	45	minutes
Block time 500 Nm	88	minutes
Fleet		
Entry into service	2011	
In service:	41	
Operators (current and planned)	5	
In storage	none	
On order	31	
Built peak year (2011)	18	
Built 2014	18	
Average age	2.7	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$50-55	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Engine LLP	$100-105	per engine cycle
Landing gear refurbishment	$30-35	per cycle
Wheels brakes and tyres	$50-55	per cycle
APU	$60-65	per APU hour
Component overhaul	$160-165	per flight hour

Q400

Seating/range		
Max seating	80	
Typical seating	74	at 31inch pirch
Maximum range	1,010	nm (1,870 km)
Technical characteristics		
MTOW	29.5	tonnes (65,200 lbs)
OEW	17.8	tonnes (30,290 lbs)
MZFW	26.3	tonnes (58,000 lbs)
Fuel capacity	67,000	litres
Engines	PW150A	
Thrust	5,070	shp
Fuels and times		
Block fuel 100Nm	525	kg
Block fuel 200 Nm	855	kg
Block fuel 500 Nm	1,860	kg
Block time 100 Nm	35	minutes
Block time 200 Nm	55	minutes
Block time 500 Nm	108	minutes
Fleet		
Entry into service	1999	
In service:	451	
Operators (current and planned)	60	
In storage	18	
On order	60	
Built peak year (2007)	42	
Built 2014	38	
Average age	6.0	years
Source AeroTransport Database December 2014		
Indicative Maintenance Reserves		
C-check reserve	$45-50	per flight hour
Higher checks reserve	$34-35	per flight hour
Engine overhaul	$145-150	per engine flight hour
Engine LLP	$40-45	per engine cycle
Landing gear refurbishment	$30-35	per cycle
Wheels brakes and tyres	$45-50	per cycle
APU	$55-60	per APU hour
Propeller	$15-20	per propeller hour
Component overhaul	$145-150	per flight hour

E170

Seating/range		
Max seating	80	at 30/29 inch pitch
Typical seating	70	at 32inch pirch
Maximum range (AR version)	2,100	nm (3,890 km)
Technical characteristics		
MTOW	35.99	tonnes (79,340 lbs)
OEW	21	tonnes (46,385 lbs)
MZFW	30.14	tonnes (66,447 lbs)
Fuel capacity	11,670	litres
Engines	CF34-8E	
Thrust	13,800	lbs
Fuels and times		
Block fuel 200 Nm	1,120	kg
Block fuel 500 Nm	2,260	kg
Block time 200 Nm	44	minutes
Block time 500 Nm	79	minutes
Fleet data		
Entry into service	2004	
In service	185	
Operators (current and planned)	27	
In storage	7	
On order	5	
Built peak year (2008)	65	
Built 2014	17	
Average age	8.1	years
Source AeroTransport Database December 2014		
Indicative maintenance reserves		
C-check reserve	$45-50	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Engine LLP	$100-105	per engine cycle
Landing gear refurbishment	$30-35	per cycle
Wheels brakes and tyres	$50-55	per cycle
APU	$55-60	per APU hour
Component overhaul	$150-160	per flight hour

E175

Seating/range		
Max seating	88	at 30inch pitch
Typical seating	78	at 32inch pirch
Maximum range (AR version)	2,000	nm (3,706 km)
Technical characteristics		
MTOW	37.5	tonnes (79,340 lbs)
OEW	21.62	tonnes (47,664 lbs)
MZFW	31.7	tonnes (69,887 lbs)
Fuel capacity	11,670	litres
Engines	CF34-8E	
Thrust	13,800	lbs
Fuels and times		
Block fuel 200 Nm	1,180	kg
Block fuel 500 Nm	2,390	kg
Block time 200 Nm	45	minutes
Block time 500 Nm	81	minutes
Fleet		
Entry into service	2005	
In service	247	
Operators (current and planned)	19	
In storage	none	
On order	170	Excluding E2 version
Built peak year (2008)	59	
Built 2014	59	
Average age	4.3	years
Source AeroTransport Database December 2014		
Indicative maintenance reserves		
C-check reserve	$45-50	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Engine LLP	$100-105	per engine cycle
Landing gear refurbishment	$30-35	per cycle
Wheels brakes and tyres	$50-55	per cycle
APU	$55-60	per APU hour
Component overhaul	$150-160	per flight hour

E190

Seating/range		
Max seating	114	at 30inch pitch
Typical seating	98	at 32 inch pirch
Maximum range (AR version)	2,400	nm (4,448 km)
Technical characteristics		
MTOW	47.8	tonnes (105,359 lbs)
OEW	27.72	tonnes (47,664 lbs)
MZFW	40.8	tonnes (89,949 lbs)
Fuel capacity	16,210	litres
Engines	CF34-10E	
Thrust	18,500	lbs
Fuels and times		
Block fuel 200 Nm	1,340	kg
Block fuel 500 Nm	2,710	kg
Block time 200 Nm	46	minutes
Block time 500 Nm	83	minutes
Fleet		
Entry into service	2005	
In service	539	
Operators (current and planned)	71	
In storage	11	
On order	100	Excludes E2 models
Built peak year (2011)	93	
Built 2014	61	
Average age	4.8	years
Source AeroTransport Database December 2014		
Indicative maintenance reserves		
C-check reserve	$45-50	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Landing gear refurbishment	$35-40	per cycle
Wheels brakes and tyres	$55-60	per cycle
APU	$70-75	per APU hour
Component overhaul	$180-185	per flight hour

E195

Seating/range		
Max seating	122	at 30inch pitch
Typical seating	108	at 32inch pirch
Maximum range (AR version)	2,200	nm (4,077 km)
Technical characteristics		
MTOW	48.79	tonnes (105,359 lbs)
OEW	28.85	tonnes (63,603 lbs)
MZFW	42.5	tonnes (93,696 lbs)
Fuel capacity	16,210	litres
Engines	CF34-10E	
Thrust	18,500	lbs
Fuels and times		
Block fuel 200 Nm	1,420	kg
Block fuel 500 Nm	2,870	kg
Block time 200 Nm	47	minutes
Block time 500 Nm	85	minutes
Fleet		
Entry into service	2006	
In service	127	
Operators (current and planned)	14	
In storage	5	
On order	1	Excludes E2 models
Built peak year (2011)	24	
Built 2014	9	
Average age	4.0	years
Source AeroTransport Database December 2014		
Indicative maintenance reserves		
C-check reserve	$45-50	per flight hour
Higher checks reserve	$35-40	per flight hour
Engine overhaul	$70-75	per engine flight hour
Engine LLP	$90-95	per engine cycle
Landing gear refurbishment	$35-40	per cycle
Wheels brakes and tyres	$55-60	per cycle
APU	$70-75	per APU hour
Component overhaul	$180-185	per flight hour

NEW AIRCRAFT COSTS

NEW AIRCRAFT MARKET VALUES ($ MILLIONS)

Model	Avitas view	CV view	IBA view	ICF view	MBA view	Oriel view	Average
Airbus							
A319	40.2	39.15	37.2	35.1	36.3	37.0	**37.6**
A320	44.2	44.49	44.0	41.8	44.5	45.8	**43.8**
A321	54.6	51.15	49.9	51.4	53.6	53.2	**52.1**
A330-200	94.4	92.32	93.0	94.5	95.1	90.3	**93.9**
A330-300	104.6	107.60	104.5	104.7	106.8	107.8	**105.6**
A380	211.2	241.20	220.0	215.3	223.4	214.5	**222.2**
ATR							
ATR42-600	15.4	16.47	15.9	14.2	15.3	16.8	**15.5**
ATR72-600	19.8	18.98	20.8	19.9	21.4	19.3	**20.2**
Boeing							
737-700	41.2	37.16	37.1	37.0	37.5	36.5	**38.0**
737-800	49.0	47.17	47.3	45.9	48.7	48.1	**47.6**
737-900ER	54.1	48.98	49.9	48.7	51.1	49.6	**50.6**
747-8 (passenger)	173.6	161.60	163.7	169.3	168.0	150.5	**167.2**
767-300ER	79.0	53.76	65.7	62.1	55.4		**63.2**
777-200ER	134.5	100.81	101.4 (2013)	117.7	108.6		**115.4**
777-200LR	157.1	149.70	143.4	144.5	140.5	137.2	**147.0**
777-300ER	168.4	169.94	167.4	165.8	167.1	166.8	**167.7**
787-8	115.7	120.60	118.3	116.0	118.4	117.7	**117.8**
787-9	135.4	140.00	133.8		135.0	135.3	**136.1**
Bombardier							
CRJ700	25.0	23.98	18.7 (2013)	22.2	24.5	22.0	**23.9**
CRJ900	27.3	24.51	25.3	25.4	27.5	25.0	**26.0**
CRJ1000	29.8	25.50	28.3	26.9	28.1	28.0	**27.7**
Q400	22.8	20.42	21.1	20.8	21.0	20.7	**21.2**
Embraer							
E170	28.3	26.29	26.3	27.1	27.0	25.2	**27.0**
E175	29.3	28.93	28.9	29.5	29.5	27.2	**29.2**
E190	33.3	33.06	34.3	31.9	32.4	32.7	**33.0**
E195	35.5	35.02	35.2	33.1	35.6	33.7	**34.9**

NEW AIRCRAFT COSTS

LEASE RATES ($000S)

Model	Avitas view	CV view	IBA view	ICF view	MBA view	Oriel view	Overall range
Airbus							
A319	310-370	310	250-305	230-280	260-290	260	**230-370**
A320	350-410	355	300-370	280-340	340-355	340	**280-410**
A321	430-490	400	380-430	360-410	380-410	405	**360-490**
A330-200	850-950	800	730-860	690-750	770-810	800	**690-950**
A330-300	970-1,100	925	790-920	730-850	870-910	975	**730-1,100**
A380	1,950-2,110	1,950	1,175-1,900	1,650-1,750	1700-1,810	1,800	**1,650-2,110**
ATR							
ATR42-600	150-180	160	140-155	140-170	120-130	155	**120-180**
ATR72-600	180-210	190	170-185	185-210	160-180	185	**160-210**
Boeing							
737-700	320-380	260	250-310	230-290	260-290	270	**230-380**
737-800	390-450	375	330-410	330-390	340-370	380	**330-450**
737-900ER	420-470	390	375-415	370-410	370-400	380	**370-470**
747-8 (passenger)	1,600-1,770	1,200	1,250-1,400	1,250-1,350	1,210-1,310	1,250	**1,200-1,770**
767-300ER	480-590	425	410-500	400-480	380-450		**400-590**
777-200ER	1,140-1,250	850	760-900*	800-900	800-890		**800-1,250**
777-200LR	1,290-1,420	1,200	1,100-1,200	950-1,000	1,070-1,120	1,100	**950-1,420**
777-300ER	1,400-1,550	1,350	1,250-1,470	1,050-1,250	1,230-1,300	1,500	**1,050-1,550**
787-8	980-1,110	1,125	950-1,100	850-950	880-920	1,150	**850-1,110**
787-9	1,190-1,340	1,300	1,050-1,200		1,080-1,150		**1,190-1340**
Bombardier							
CRJ700	190-210	188	165-200*	160-180	180-200	200	**160-210**
CRJ900	200-220	225	210-240	190-230	210-230	225	**190-225**
CRJ1000	230-250	243	230-280	210-260	215-235	255	**210- 280**
Q400	180-210	190	175-190	190-225	150-175		**150-225**
Embraer							
E170(AR)	210-230	225	195-225	180-210	200-230	230	**180-230**
E175(AR)	220-250	235	215-255	200-240	220-250	240	**200-250**
E190 (AR)	260-300	260	255-295	215-235	240-270	285	**260-300**
E195 (AR)	280-320	275	265-310	230-260	250-280	290	**230-320**