

An aerial photograph of a modern cable-stayed bridge at sunset. The bridge's tall, A-shaped pylons and numerous stay cables are illuminated by the golden light of the setting sun. Below the bridge, a multi-level highway interchange with several lanes of traffic is visible. In the background, a dense urban skyline with various high-rise buildings is silhouetted against the clear blue sky. The overall scene conveys a sense of modern infrastructure and urban development.

2019 EMBRAER AIRCRAFT FINANCE OUTLOOK

FORWARD LOOKING STATEMENT

This presentation includes forward-looking statements or statements about events or circumstances which have not occurred. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends affecting our business and our future financial performance.

These forward-looking statements are subject to risks, uncertainties and assumptions, including, among other things: general economic, political and business conditions, both in Brazil and in our market. The words “believes”, “may”, “will”, “estimates”, “continues”, “anticipates”, “intends”, “expects” and similar words are intended to identify forward-looking statements.

We undertake no obligations to update publicly or revise any forward-looking statements because of new information, future events or other factors. In light of these risks and uncertainties, the forward-looking events and circumstances discussed in this presentation might not occur. Our actual results could differ substantially from those anticipated in our forward-looking statements.

INTRODUCTION

The aircraft financing market constitutes one of the most important pillars of the aviation industry. Commercial airplanes are large capital investments that may surpass double digit percentages of aviation total operating costs. The aircraft financing market is crucial for airlines, lessors and OEMs to efficiently manage such investments and maximize their profitability. As the third largest commercial aircraft manufacturer and the number one in the segment up to 150 seats, we at Embraer Commercial Aviation felt we could contribute to our industry by sharing our perspectives of the aircraft finance landscape with a special focus on this growing category of the market.

Our first public edition of the Embraer Aircraft Finance Outlook reviews the sources of financing for new commercial aircraft deliveries from 30 to 150 seats for both turboprops and jets. It predicts another year of further funding diversification, from which customers

are likely to benefit from one of the lowest funding costs levels in history. There is now a broader range of qualified options available to airlines and lessors. The robust global aircraft financing environment, is also seen in the up to 150 seat aircraft category, which forecasts financing demand of approximately US\$ 7.2 billion in 2019.

Unlike the past, the forecast for the sector's financing sources in 2019 resembles the overall financing requirements for the aviation industry. We expect more reliance on bank debt and capital markets to replace the segment's previous reliance on Export Credit Agencies (ECAs), which are currently at historically low levels. Finally, we see some ground-breaking innovations in the financing of up to 150 seat aircraft in 2019, such as the first financing of an aircraft of this segment backed by a non-payment insurance (ANPI).

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FLEET AND MARKET OVERVIEW

REGIONAL AND SMALL NARROW-BODY AIRCRAFT



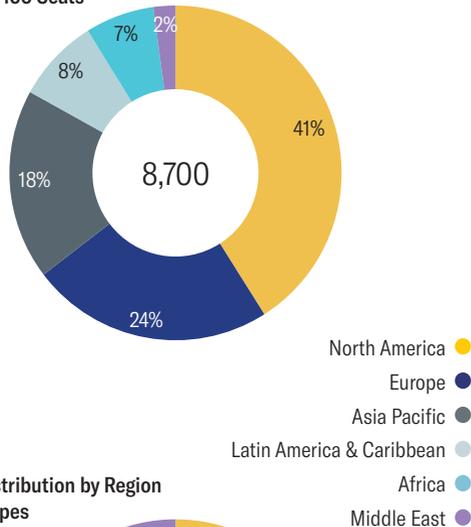


AIRCRAFT DELIVERED IN 2018 AND 2019F

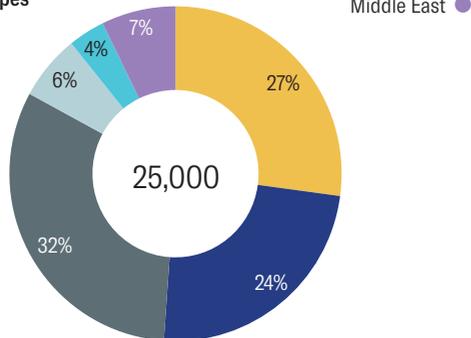
- / A220 (-100/-300)
- / A319
- / ARJ21
- / ATR (42/72)
- / B737-700
- / CRJ 700
- / CRJ 900
- / CRJ 1000
- / DHC (-6/-8)
- / E170
- / E175
- / E190
- / E195
- / E190-E2
- / E195-E2
- / SSJ-100
- / MA (-60/-600)



Number & Distribution by Region
Aircraft up to 150 Seats



Number & Distribution by Region
All Aircraft Types



Asia Pacific leads overall fleet in service, but North America’s regional aircraft market is more developed than Asia Pacific.

Source: Cirium – 4Q18

FLEET IN SERVICE BY REGION

Regional airlines are the only source of air service for more than half of all U.S. airports and carry more than 40% of all U.S. passengers. Those airlines offer a high degree of network connectivity for business travelers through high-frequency flights and serve thin-demand routes that are unsustainable with larger aircraft. The North American market is matured and sophisticated, modeled on a hub & spoke system. Pilot scope clauses add complexity to the environment. Airlines must have adaptable and optimized fleets, which means that a “one-size-fits-all” philosophy is not the best solution. It’s a reason aircraft with 50 to 76 seats continue to be vital to fleet optimization. Scope clause is the other.

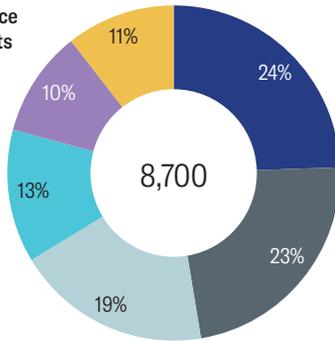
The Asian fleet landscape is the result of a huge penetration of LCCs, with a single-fleet strategy and low unit costs. Carriers in the region mostly operate large aircraft and turboprops. However, China and India, the biggest markets, have introduced policies and expanded air service to connect small- and medium sized aircraft. This will gradually allow the implementation of an efficient and more profitable hub-and-spoke system. CAAC, the aviation authority in China, for example, strictly controls new applications for air operator certificates. It aims to improve the underdeveloped regional air network by preventing the unrestricted growth of carriers.

In the Middle East, airlines prefer wide-body aircraft because of the sheer number of high-volume routes to Asia and Europe and the region’s strategic role in offering one-stop service for long-haul itineraries. In Africa, 45% of the fleet in service for regional aviation is composed of turboprops.

Despite the expansion of low-cost carriers, aircraft in the segment have maintained their share of the global market. Embraer’s 20-year market outlook estimates worldwide demand for 10,550 new aircraft with capacity up to 150 seats. This category represents 12% of manufacturers’ commercial aircraft order backlogs. Approximately 29% of these orders are from airlines in developing countries.

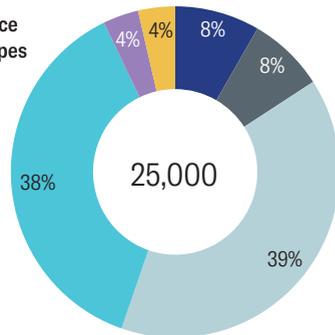


Fleet-in-Service up to 150 Seats



- Bombardier ●
- Embraer ●
- Boeing ●
- Airbus ●
- ATR ●
- Others ●

Fleet-in-Service All Aircraft Types



Recent OEM changes, entry in service of new technology aircraft and retirement of older aircraft will change the current landscape of the regional segment.

Source: Cirium – 4Q18

Note: Aircraft OEM at delivery date

FLEET IN SERVICE BY OEM

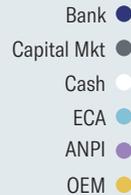
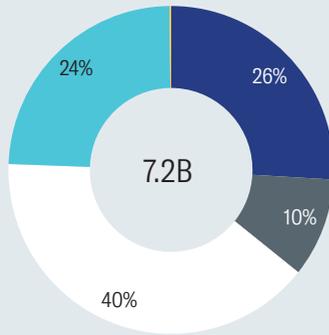
Historically, large OEMs, with approximately 78% of the market, have focused their resources on developing larger single-aisle aircraft. Consequently, other OEMs seized the opportunity to grow their market share and compete in the segment with products that vary in structure and size.

Market shares in this segment are likely to change dramatically in the near future because of recent changes in the OEM landscape. Airbus took a majority stake in Bombardier’s CSeries program, Bombardier sold the Q series aircraft program assets to De Havilland Aircraft of Canada, Boeing and Embraer are working on establishing a joint venture made up of the commercial aircraft and services operations of Embraer, and Mitsubishi Heavy Industries announced the purchase of Bombardier’s regional jet program. These events should boost sales efforts of new-technology products and accelerate the retirement of less efficient aircraft now in service.

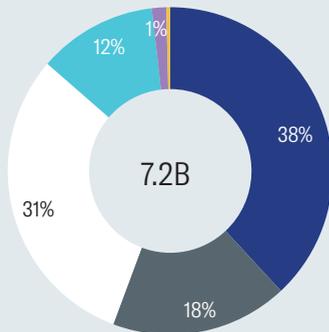
AIRCRAFT FINANCE OUTLOOK



Aircraft USD Value, Distribution of Financing
up to 150 Seats - 2018



Aircraft USD Value, Distribution of Financing
up to 150 Seats - 2019F



Profit momentum in 2018 favored cash usage for balance sheet deleveraging. Banking interest in attractive returns balanced lower ECA demand in 2019.

Source: Cirium, Embraer

FINANCE OUTLOOK FOR THE UP TO 150 SEAT SEGMENT

Despite a 5% decrease in the number of deliveries expected in 2019, total demand for financing has remained stable compared to 2018. The mix of aircraft to be delivered this year saw an increase in the average appraised Current Market Values (CMV) which fully offset the year's fewer deliveries.

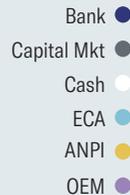
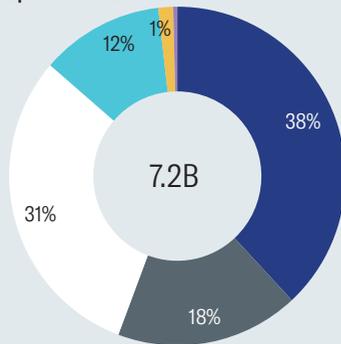
The use of cash was very relevant in 2018, as the airline industry recorded positive results in past years and airlines seized the opportunity to use their proceeds to take aircraft deliveries without further leveraging their balance sheets, especially in the U.S. That market in 2018 saw a less intense profit squeeze than the rest of the industry. However, those margins have been decreasing from the historically high levels of the previous years. The incentive to use funds from operations to finance investments is less in 2019 compared to 2018.

According to IATA, the outlook for airline profitability in Europe is more challenging, as the market and airlines are more fragmented than in the U.S. More than half the profits of the European airlines in 2018 were generated by the four big airline groups, while the remaining 98% of airlines accounted for the remaining profit share. This market also faces reduced business confidence and deteriorating economic conditions due to wider trade problems such as Brexit.

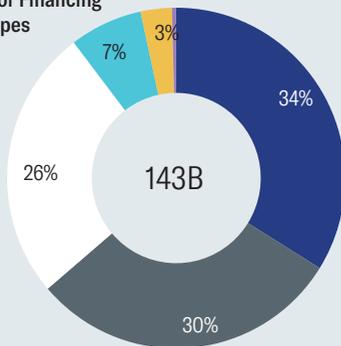
For the industry as a whole, the share of bank debt increased for deliveries of new regional aircraft. As a consequence of improved economic conditions and countries' monetary policies, interest rates in the world's major currencies have hit an all-time low level and have made commercial bank loan pricing competitive enough to offset the higher use of cash and the need to use Export Credit Agencies.



Aircraft USD Value, Distribution of Financing - up to 150 Seats



Aircraft USD Value, Distribution of Financing All Aircraft Types



Up to 150 seat market is 33% of FIS but represents 5% of finance demand.

Source: Cirium, Embraer, Boeing CAFMO

Note: This forecast does not include MAX grounding impact.

REGIONAL VS. GLOBAL – 2019F

The up to 150 seat aircraft segment represents about 33% of the global fleet-in-service yet only 5% of total financing needs.

Capital markets provide lower funding costs and are usually tapped by companies with sound financial health, a suitable portfolio of highly liquid assets and low jurisdictional risk. Most of the aircraft up to 150 seats funded through this type of instrument represent a restricted fraction of the secured portfolio.

ECA funding in the aircraft industry is at historically low levels. ECA participation is higher in regional aircraft financing than in the aircraft industry average, because of the shut-down of the U.S. EXIM* and European ECAs** over the last few years and particularities of the regional aircraft market. However, as other financing sources have excess attractive funding available, ECA were in less demand in 2018 and will remain so in 2019. ECAs remain important to fill the gaps of the commercial markets and to mitigate impacts of liquidity shortages.

* U.S. Exim was unable to approve transactions greater than US\$ 10 million in value (with few exceptions).

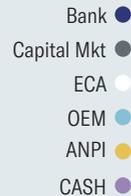
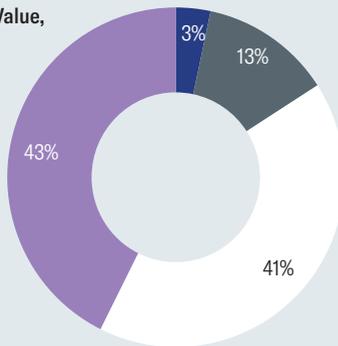
** Germany, France and the U.K. have decided to suspend support for Airbus.

EMBRAER AIRCRAFT FINANCE OUTLOOK

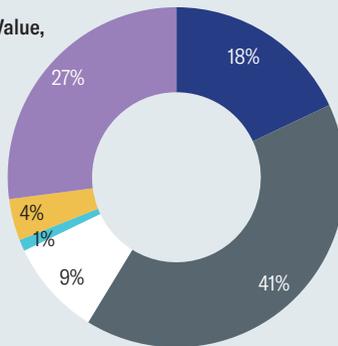
Singapore



Aircraft USD Value,
Distribution
of Financing
2018



Aircraft USD Value,
Distribution
of Financing
2019F



Deliveries concentrated on specific customers drive changes in financing profile. ECA lower-than-average share replaced by banks and capital markets.

Source: Embraer

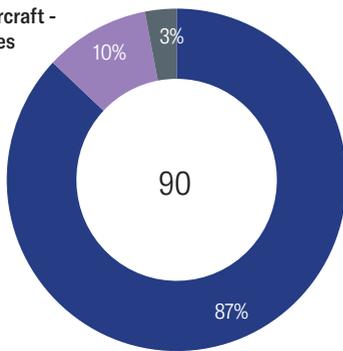
EMBRAER AIRCRAFT FINANCE OUTLOOK

Embraer's 2018 deliveries were largely financed by cash and ECA funding. In 2019 however, capital markets shall be the most relevant financing source for Embraer deliveries, breaking off from the regional aircraft segment pattern and even overcoming the participation of larger aircraft in this type of financing. There has been a change in funding strategy by customers who typically relied on official export credit to tap more flexible and efficient financing of capital markets and banks.

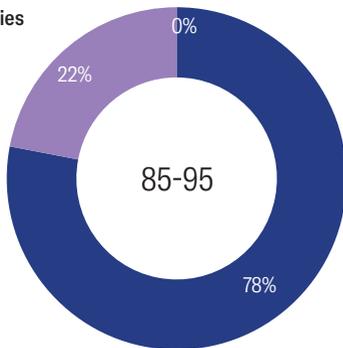
As global interest rates have been low, banks are able to provide competitive funding and there are attractive opportunity yields for aircraft up to 150 seats. Capital markets, which have the E175 in their Enhanced Equipment Trust Certificates (EETC) portfolios, are focused on U.S. airlines. All in all, diversification of funding sources is important as it reduces the risk of failure to reach aircraft delivery guidance.



Number of aircraft -
2018 deliveries



Number of aircraft -
2019F deliveries



Owned ●
Lease Placement ●
Sale-Leaseback ●

Share of leased aircraft expected to increase in the near future, along with the ramp-up of E2 deliveries.

Source: Embraer

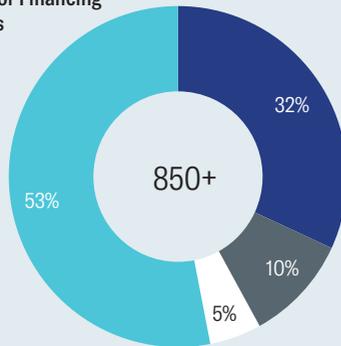
E-JETS LEASE STRUCTURES 2018 & 2019

The current availability of different capital sources for regional aviation is competitive and puts traditional leasing options for operators under margin pressure. Some lessors have taken strategic positions in OEM orderbooks to secure skyline for their future transactions.

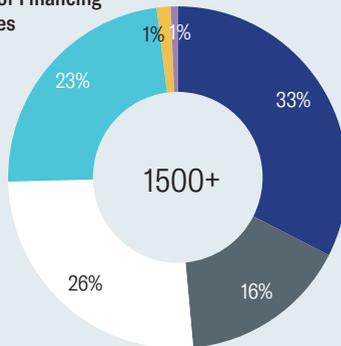
With regards to Embraer's deliveries, the recent concentration to U.S. airlines and the transition to the E2s favors the buy option. Currently, lessors are more active in the secondary market and portfolio trading. As the E2s entered in service in 2018, higher participation of lease placements and sale-leasebacks of their deliveries is expected in the future. At the time of publishing, most of the future deliveries of E2s from lessors' orderbooks with Embraer are already placed with airlines.



Distribution of Financing
ERJ Deliveries
1996-2006



Distribution of Financing
E-Jet Deliveries
2004-2019F



Well-balanced and diversified sources of financing to support E-Jet operators.

Source: Embraer
(number of aircraft delivered)

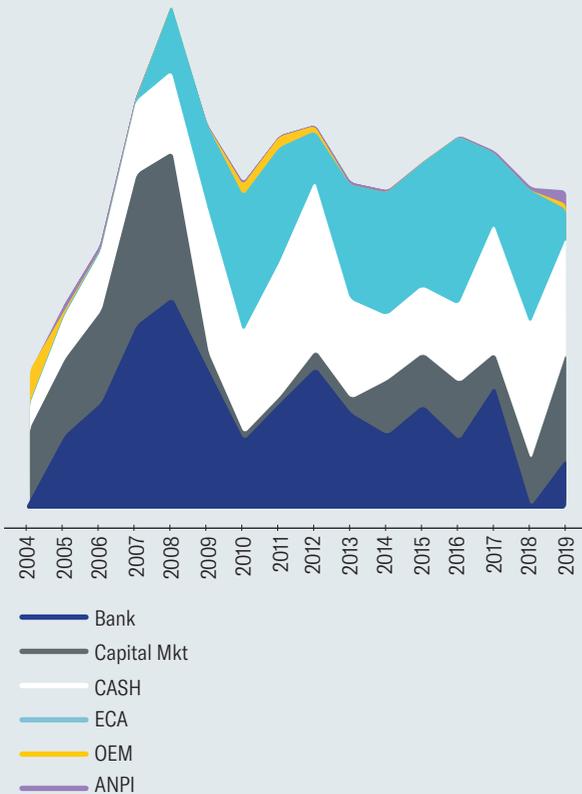
EMBRAER PROGRAM FUNDING SOURCES

Sources of finance in the regional market have evolved, as the current portfolio of Embraer jets moved away from ECA-supported financing towards private funding, leaving BNDES as a backstop.

The reliance on ECA funding for deliveries of the ERJs posed significant challenges to new aircraft deliveries in the past. In general, the 50-seat market was considered a niche asset which complied with scope clauses, limiting the funding base and the number of stakeholders willing to invest in this type of aircraft. At that time, narrow-bodies had better residual values than most traditional regional jets. Today, the broader options for funding E-Jets represent a lower risk of deliveries for the OEMs and improve the trading levels of the secondary market, ensuring very good residual value performance. This favorable environment places E-Jets among the top tier assets of the industry.



FUNDING FOR E-JETS DELIVERIES



E-Jets enjoy well-balanced funding sources: ECA represents less than 25% of total exports, acting as the last resort financier that supports liquidity shortages.

Source: Embraer (USD value of aircraft delivered)

E-JETS FUNDING SOURCES HISTORY

The development of different funding sources for Embraer E-Jets ensured that deliveries would not be impaired by external factors in the financial markets. Changes to the share of each type of financing are highly correlated with general aircraft financing landscape and to the profile of deliveries to specific customers and markets.

E-Jets are broadly comparable with narrow-bodies as shown by their funding history. A substantial portion of E-Jet operators also have narrow-bodies in their fleets and share the same credit and jurisdictional risks. E-Jet residual value performance is quite similar to narrow-bodies from a value retention and volatility perspective, and better than smaller variants of single-aisle aircraft on the market.



ECAs IN REGIONAL AVIATION

ECA-supported transactions are below historical levels for both the industry and the small aircraft category. Access to their domestic ECAs was limited for the two largest OEMs over the past few years. In 2019, export credit agency funding is expected to continue to account for a small share of aircraft financing, as markets tend to remain healthy and resilient.

Similar behavior is expected for aircraft in the regional aviation market, but the segment is not well known in the wider finance community. Consequently, ECAs have had to fill a larger proportion of the total funding demand and regional OEMs, airlines and lessors have more work to educate investors and financiers with regards to the assets' characteristics. As any aircraft type reaches greater market penetration, the proportion of funding by ECAs reduces over time.

Today, ECAs are more proactive in responding to business needs and connecting foreign buyers with domestic export industries. The market is changing from a locally based ECA-OEM relationship to a cross-country relationship. For example, some ECAs have already adjusted their internal policies to be more flexible and to capture foreign direct investments and highly valuable aerospace jobs. OEMs have started to engage ECAs around the world in order to further diversify funding sources available to their customers. It is important that ECA funding continues to be available to ensure liquidity stability, acting as a countercyclical funding source.

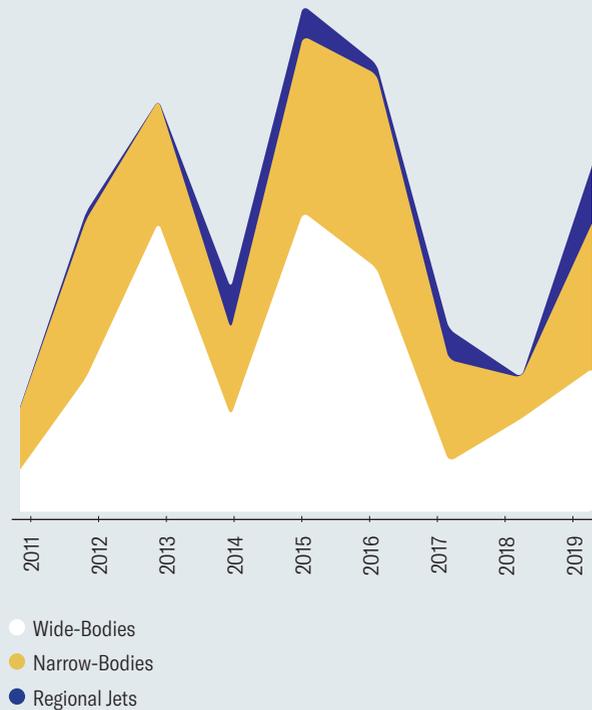


Recent ECA share in regional aircraft financing is below the historical average of 22%.

Source: Cirium, Embraer



EETCs IN THE REGIONAL SEGMENT



E175 is the only regional aircraft tapping EETCs, with 91 aircraft financed since 2011.

Source: Goldman Sachs, Embraer, Boeing CAFMO

EETCs IN THE REGIONAL SEGMENT

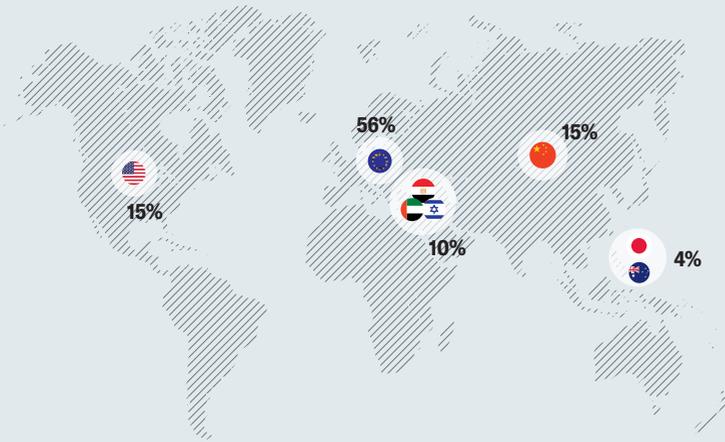
Even though capital markets financed 28% of new aircraft deliveries in 2018, most of that financing was accessed by lessors. Only a few regional aircraft lessors are capable of efficiently tapping the unsecured capital markets.

The main source of funds from debt capital markets for aircraft purchases are EETC transactions. In order to have the best possible pricing, investors take into consideration an airline's financial health, asset risks and legal framework.

As there are few publicly rated airlines, only some regularly enter the secured capital markets. In the last eight years, 13 airlines have issued public EETCs and most of them are North American airlines.

The collateral pool of EETCs is hand-picked in each transaction as its liquidity directly affects the pricing of the transaction. Diversification on types of aircraft in the collateral pool also plays an important role in reducing the overall transaction's risk premium. The E175 was included in 10 of the last 30 EETCs issued, with participation in up to 28% of the collateral pool, which is a strong endorsement by investors of the quality of this asset.

Finally, jurisdiction risk is taken into consideration, as it ensures quick access to the collateral in cases of bankruptcy. Only one of the last 44 EETCs was issued by an airline whose country has not ratified the Cape Town Convention (nor is subject to Section 1110 of the U.S. Bankruptcy Code).



Europe remains dominant, but there is a growing participation from Chinese, Japanese and Australian banks due to their cross-border expansion.

Source:
Air Finance Journal, Embraer, Boeing CAFMO, Cirium

E-JETS COMMERCIAL BANKS 2013-2019F

In response to yields that have fallen or have been eliminated in other sectors, banks are attracted to the aviation sector by its growth rates and the opportunities to obtain better risk-adjusted returns on investments. The opportunities tag along with the understanding that aircraft are stable and liquid assets, and can provide relevant safeguards to their investment, which result in solid risk-adjusted returns.

The growth of aviation in Asia is stimulating financing in the region. Japanese banks are very active in this sector, utilizing efficient equity financing structures such as JOLs and JOLCOs. Korean investors are also becoming more involved, attracted by dollar assets and structured products. Even though the banking market is global, asset allocation and deep understanding of counterparty risk are still relevant drivers for opportunities with strong returns. Players that are better structured to deal with the asset and with close relationships with airlines and lessors impose challenges to new lenders. Competition is impacting yields but the growth rate of the industry is feeding interest.

Since the regional aircraft market is a relatively less saturated market compared to the greater bank funding for larger aircraft, there are significant opportunities for banks to get solid yields on transactions. Today, the geographical concentration of banks that have supported E-Jet financing at delivery is related to their cross-border expansion, following the increase of the number of operators around the world, from 55 in 2013 to 80 in 2019.



FLEET IN SERVICE – OWNED VS. LEASED DISTRIBUTION



Leasing share in up to 150 seat market is lower than in the industry.

Source: Cirium, Embraer

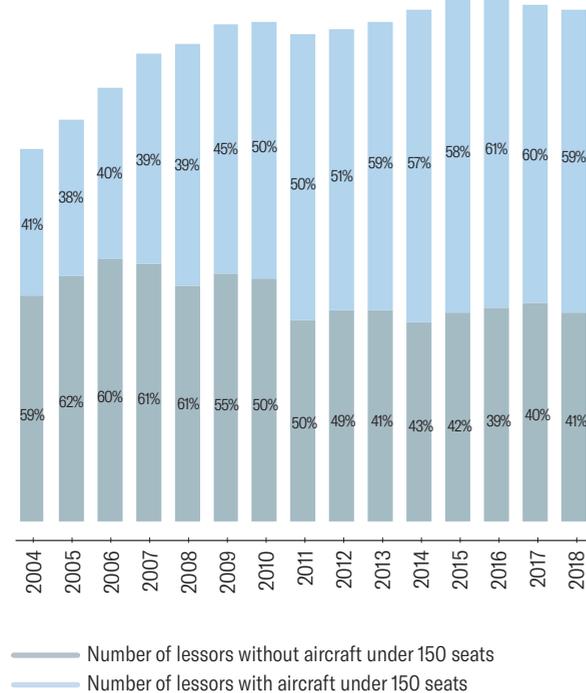
LEASED VS. OWNED

Historically, leasing regional aircraft has not been as active as leasing larger aircraft. Aircraft in service under leasing in the global industry is 41%, while regional aircraft is 30%. Despite the gap between the regional segment and the global industry, leasing company interest in the up to 150-seat segment has been growing faster than the number of aircraft lessors. The leased fleet in service in the regional segment increased 140% from 2004 to 2018 while the fleet in service of larger aircraft grew 117% in the same period. The gap in the buy vs lease proportion between aircraft up to 150 seats and the industry average is expected to narrow over time.

Sale-leaseback transactions and portfolio trades have usually been the first gate to access the market. However, increasing competition has reduced sale-leaseback margins. To avoid sale-leaseback market yield compression, lessors have grown order books with OEMs, particularly for new-generation airplanes.



LESSOR SPECIALIZATION – UPTO 150 SEATS



Since the entry in service of the E-Jets, lessors with at least one up to 150 seat aircraft in the portfolio have significantly increased.

Source: Cirium, Embraer

LESSOR SPECIALIZATION – UPTO 150 SEATS

Increased competition among lessors impacted the whole aircraft industry, but it was not as strong in the regional industry as it was in the narrow-body segment. Market share of the top two leasing companies in the global industry was less than 20% in 2018, while the top two lessors in the regional aircraft space held 31% of the market in the same period. Even though there is more competition, there is room for growth for lessors in the regional segment - 41% of lessors in the market do not have airplanes up to 150 seats in their portfolios.

Furthermore, 65% of the aircraft up to 150 seats in the lessors' portfolios are not optimized for regional aviation. They are shortened versions of larger aircraft, which are now out of production. The top leasing companies have recognized the advent of new technology products and the recent OEM consolidations and acquisitions. Accordingly, they have placed new orders with OEMs, foreseeing the need to replace older vintage aircraft with optimized aircraft up to 150 seats, and explore new opportunities with potential for higher yields.

METHODOLOGY

Frankfurt





METHODOLOGY

In terms of methodology permanent financing is classified according the 6 categories listed in the table below.

CASH

Equity paid in by the customer, including PDPs and cash sale acquisitions.

CAPITAL MARKET

For airlines, debt-capital market products secured by aircraft equipment, such as enhanced equipment trust certificates (EETCs) structures. For lessors, both secured products and unsecured notes.

BANK DEBT

Secured commercial bank debt used to directly finance a delivery.

EXPORT CREDIT

Direct export credit lending or a guarantee from an export credit agency.

ANPI

Bank loan or capital markets funding supported by a non-payment insurance policy.

OEM

Directly financed by aircraft and/or engine manufacturer.

- / Lessors are considered customers and not standalone finance sources. Their deliveries are mapped in the report.
- / Changes in financing sources up to 12 months after delivery are usually accounted for in the subsequent Finance Outlook release.
- / All US\$ amounts are based on an average of Current Market Values (CMV) from independent appraisers.
- / Deal classification considers only senior financing.



Shanghai



São Paulo

 **EMBRAER**