FEBRUARY 2024

Aviation Leasing: A Resilient and Growing Market

Presented by
AB CarVal Investors, L.P.

Introduction

Consensus around tapering but sustained global growth is crystalizing as we enter a period of sustained recovery post-COVID in commercial aviation. As the disruptive COVID period moves further into the rear view, there is growing consensus that the commercial aviation demand recovery is well underway. We anticipate breaching 2019 baseline traffic volumes early in 2024. The operator narrative has shifted from recovery/liquidity to growth/profitability. Globally, airlines realized positive operating margin in 2022 and the International Air Transport Association (IATA) expects margin expansion in 2023 and 2024.

Meanwhile, the supply of new aircraft is structurally constrained: OEMs are struggling to replace capacity cuts undertaken in 2019, supply chains and maintenance capacity remain challenged, and latest-generation technology is underperforming expectations.

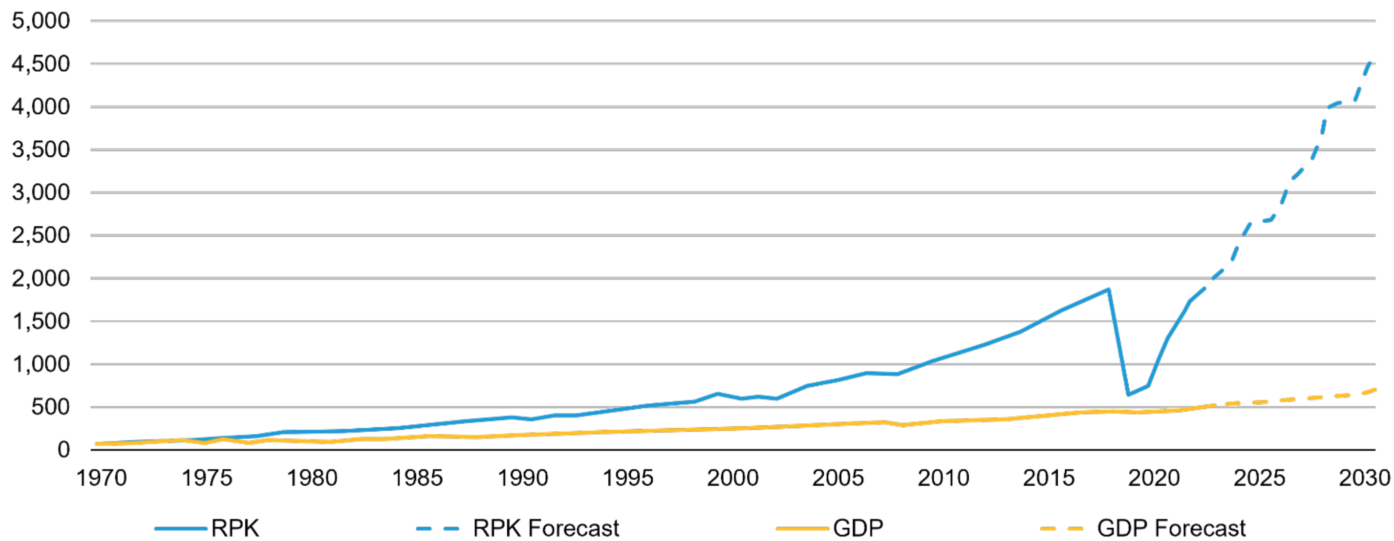
We believe these dynamics have the potential to persist through the end of this decade, supporting demand for in-service, liquid aircraft types.

Resilient Demand for Air Travel Underpinned by Evolving Population Dynamics

Over the past 50 years, commercial aviation traffic as measured by Revenue Passenger Kilometers (RPK) has grown at ~1.7x global GDP. This trend is expected to continue, as Airbus' median traffic forecast is 3.6% annual growth through 2042,[1] and IATA expects growth at 3.4% annually through 2040.[2] Commercial aviation has proven resilient to demand shocks as evidenced by recovery profiles following the 9/11 terrorist attacks, the Global Financial Crisis and the COVID pandemic.

RPK and GDP Indexed Growth Since 1970

Commercial aviation grows at a multiple to GDP and is resilient to demand shocks



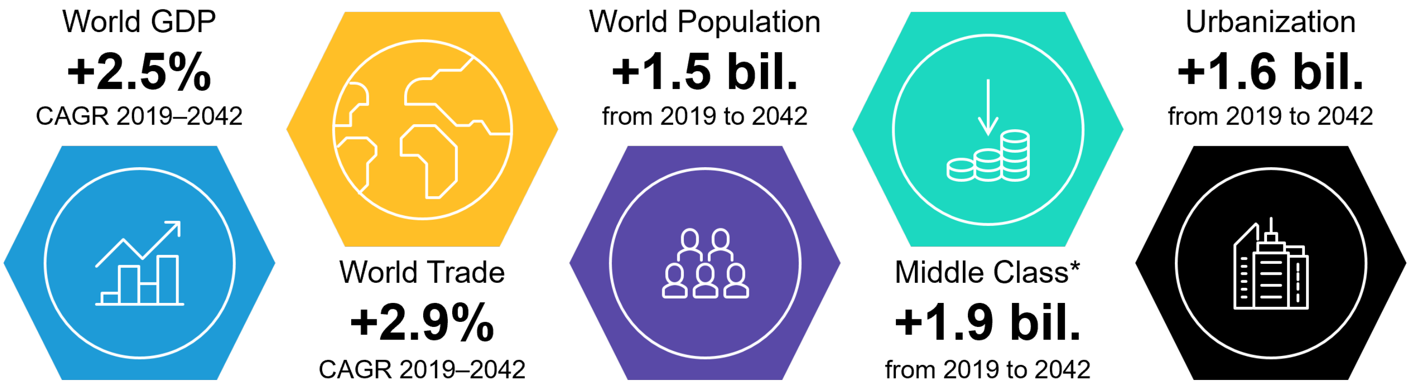
Multiplier = slope of regression log (GDP index) versus log (RPK index).
Source: ICAO, USDA and AB CarVal estimates

The growth of the global middle class is the tectonic force driving this phenomenon. Rising disposable income plus emigrant diaspora provides the means and the motivation to travel. Emerging markets are the vanguard of this dynamic, not only due to rapid income growth, but also due to a lack of legacy transportation infrastructure. Geographic constraints, cost and limited scalability of alternatives often favor investment in air transportation infrastructure.

1 Airbus Global Market Forecast 2023
2 IATA Global Outlook for Air Transport December 2023

We believe this fundamental demand dynamic will continue for ~80 years, given global population forecasts peak sometime around 2100.[3] These factors translate into demand for >40,000 new aircraft over the next 20 years,[4] all of which must be financed.

GDP, Trade and Population Growth Outlook



*Households with yearly income between $20,000 and $150,000 at PPP in constant 2015 prices
Source: Airbus GMF and IHS Market

Aircraft Financing Opportunity Set

The aircraft financing opportunity set is scalable and allows for orderly risk segmentation across aircraft type, aircraft vintage and capital stack. We believe aircraft lease equity offers a compelling risk-adjusted return profile that is uncorrelated to broad market indices, hard asset/infrastructure strategies and (crucially) commercial airlines. Contractual lease cash flow provides significant income; secondary trading markets offer decent liquidity and residual visibility; and asset portability delivers a manageable downside profile. Aircraft are relatively standardized across fleet family type, which facilitates repositioning out of underperforming lessees/markets and into performing operators.

Low Correlation to the Broad Market

Time period: 1995–2022

Correlations	ALRI (Leased Aircraft)	MSCI World
ALRI (Leased Aircraft)	—	0.02
Airlines	0.09	0.70
Infrastructure	0.01	0.83
MSCI World	0.02	—
REITs	–0.03	0.87
Shipping	0.01	0.74

EPRA/NAREIT Global TR; MSCI Daily TR World Net Airlines USD; MSCI World TR, as of December 31, 2022
*More information about the ALRI methodology is available on the Bloomberg terminal (ASCELERE [Index]).
Source: Bloomberg; DAXglobal® Shipping USD TR Index FTSE; DJ Brookfield Global Infrastructure TR; and Flight Ascend Aircraft Investment Returns Index (ALRI)

3 Long-term population projections: Scenarios of low or rebounding fertility, Spears et al, September 2023
4 Airbus Global Market Forecast 2023

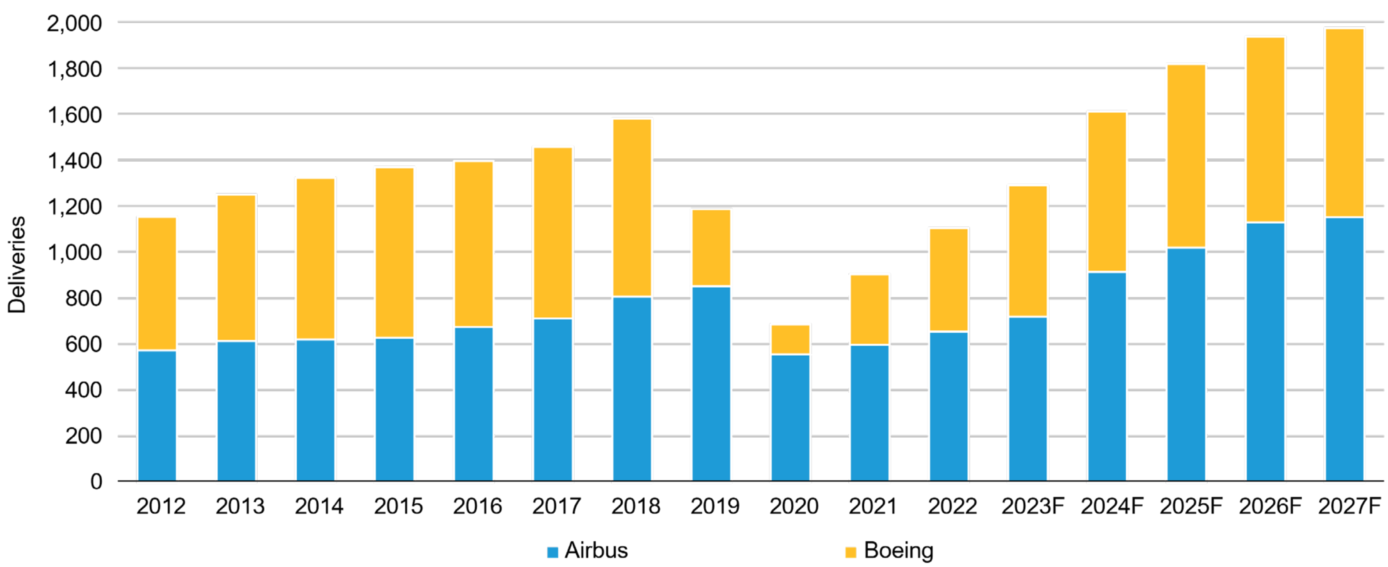
Current Market: Demand Outpacing Supply

Global air traffic grew 65% in 2022 and 37% in 2023, which implies a recovery to 99% of 2019 baseline. IATA is forecasting an additional 9.8% growth in 2024. We anticipate sustained, albeit decelerating, growth in commercial demand in the medium term. Per IATA, industry-wide commercial airline revenue growth of 7.6% will exceed operating expense growth of 6.9%, which translates into margin expansion in 2024.

While commercial demand recovery is well underway, supply is structurally constrained. Original Equipment Manufacturer (OEM) production cuts which were initiated in 2019 amid supply chain issues, and extended in 2020 after the COVID outbreak, will result in a "lost generation" of almost 3000 production units. Many of these supply chain issues remain unresolved, inhibiting OEM production re-ramp. During the pandemic, many operators deferred non-essential maintenance to preserve liquidity. Those aircraft which would otherwise be available to replace production lags are now undergoing overhauls and clogging maintenance capacity. At the same time, latest-generation engine technology such as Pratt-Whitney PW1000G Geared Turbofan (GTF) has suffered time off-wing far above expectation. The maintenance fix for contaminated metal powder used in GTF high-pressure turbine disc production will impact ~1,200 engines at an estimated 300 days each, further compounding maintenance, repair and overhaul (MRO) capacity bottlenecks.[5]

OEM Production Re-Ramp

"Lost generation" of aircraft production

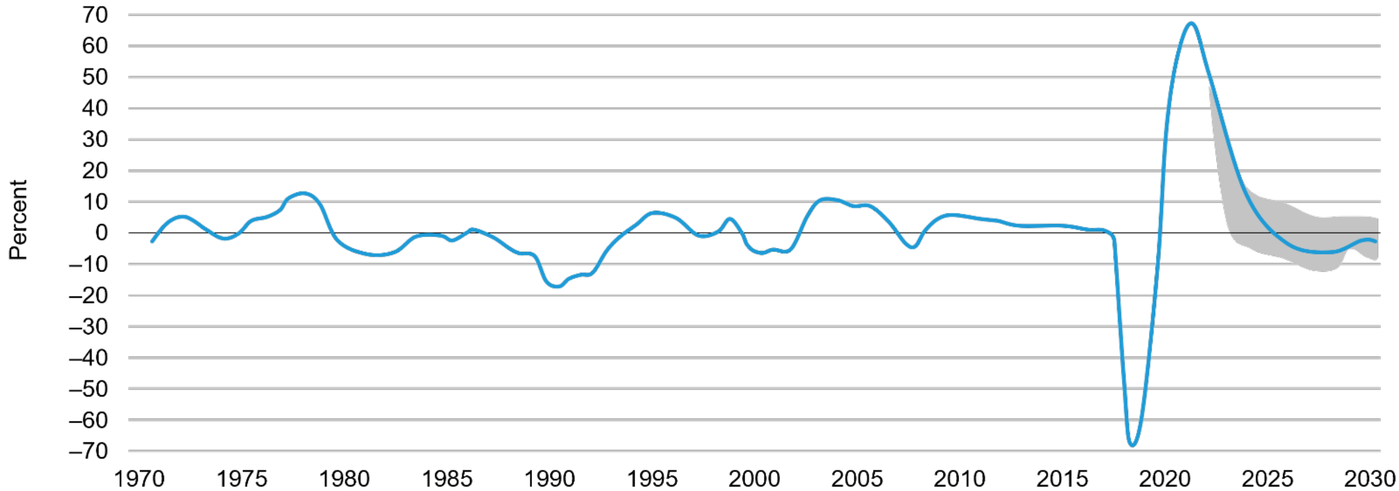


Cirium Core, OEM guidance in 2023 on production rates and the 2022 Cirium Fleet Forecast
Source: Cirium Ascend Commercial Aviation Monitor July 2023

All these factors feed our proprietary supply/demand model. Our current projection implies undersupply beyond 2027 and potentially through the end of the decade.

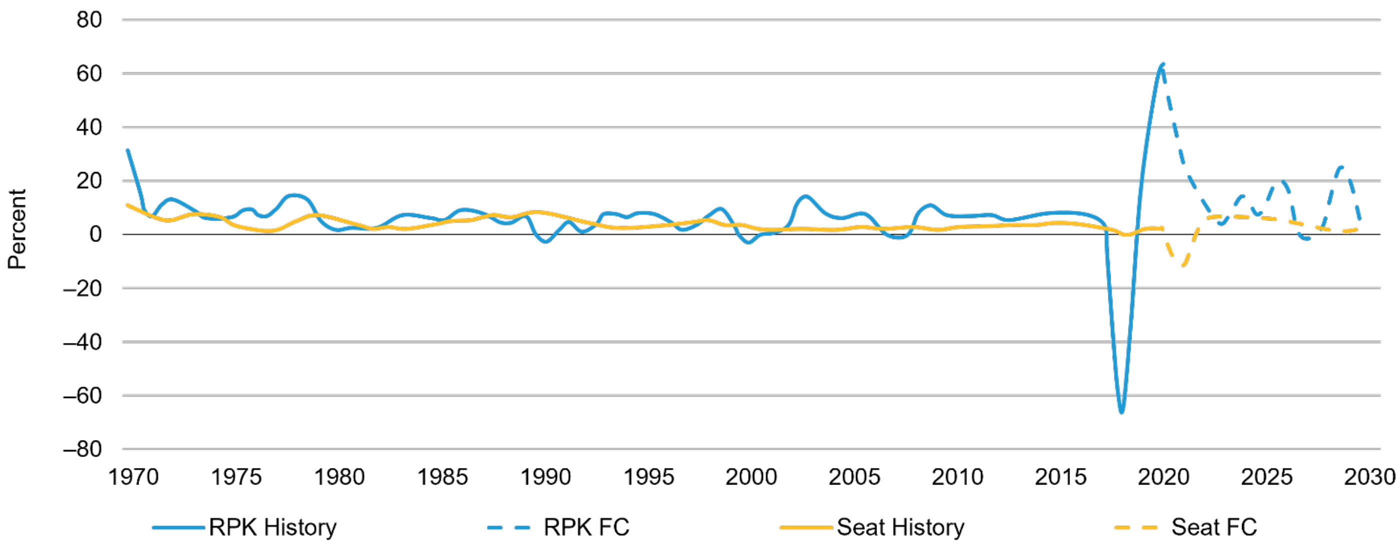
5 RTX, Pratt & Whitney GTF Fleet Update September 11, 2023

Commercial Aviation Cycle Forecast



Source: AB CarVal

Commercial Aviation Supply/Demand Forecast



Source: AB CarVal

Focus on High-Quality Young Aircraft on Lease to Stable Carriers

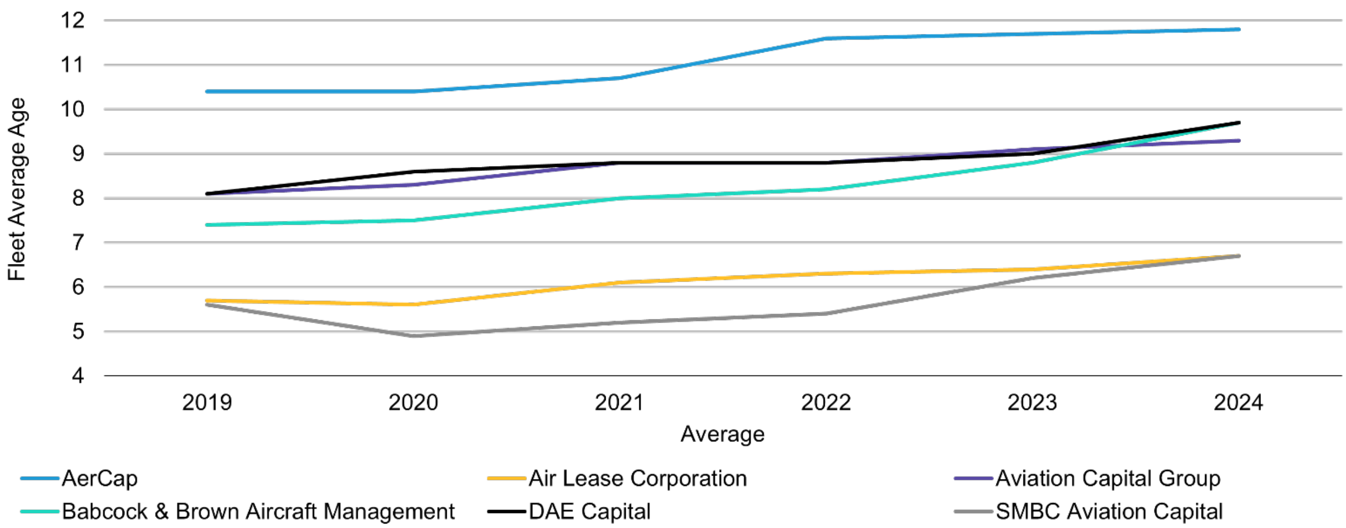
Asset-level demand stems from the combination of sustained commercial aviation traffic recovery and structural supply constraints. This manifests in the form of increased lease extensions, new leases for used/idled kit, component “green time” leases, and supportive component/used serviceable material (USM) pricing. This combination of factors offers a compelling value proposition for in-service, liquid aircraft types, with substantial remaining contractual cash flow, and optionality around residual monetization. Accordingly, AB CarVal fund investments have a bias toward fleet types with a high unit count, young average fleet age, high operator dispersion, and a high in-service ratio. Likewise, we seek stable, tiers 1 and 2 (of 3) lessee profiles and emphasize a high component of contractual lease cash flow, rather than more speculative off-lease or distressed acquisitions.

Ability to Source and Transact Across Market Cycles

During periods of demand dislocation, we like to provide liquidity solutions to operators in the form of sale lease-backs. During periods of recovery, listed lessors are liquidity takers as they seek to sell inventory to make room for new deliveries. Listed lessors closely manage portfolio average age with an eye to preserving investment grade ratings. As such, they are natural sellers of in-service, liquid aircraft over five years old. This dynamic creates opportunity for buyers capable of managing maintenance, remarketing and disposition.

Target Asset Types

Listed lessor fleet age increase 2019–2024



Source: Cirium

Potential Risks

While we are constructive on the aviation market's dynamics over the medium to long term and have identified a market segment where we can source attractive opportunities at scale, we remain cognizant of key risks to our thesis:

- **Geopolitical event risk:** large-scale events potentially deliver simultaneous demand destruction and a spike in fuel prices. Localized conflict in Ukraine and Israel could mutate into regional crises in Europe and the Middle East. We have had zero direct Russia exposure by design for almost a decade. We remain constructive on the Middle East, where there is alignment amongst most of the major sovereign actors to avoid an expansion of conflict. We are cautious regarding China. While China will be a key driver of Asia demand, we prefer adjacent rather than direct jurisdictional exposure.
- **Pandemic risk:** also a potential demand destructor, to the degree quarantine remains a viable tactic for health authorities.
- **Consumer/regulatory paradigm shift:** climate change could result in a fundamental change in consumer consciousness and/or regulatory regimes around carbon emissions. So far, we have not detected widespread impact on consumer behavior or demand. Importantly, industry initiatives are focused more on meeting current demand projections rather than limiting capacity; NetZero 2050 currently anticipates <15% of projected demand to be sustained with new technology such as hydrogen or electric powered lift; the remaining 85% will be met with carbon offset and sustainable aviation fuel, which utilizes current technology.

Conclusion

The aforementioned market dynamics offer a compelling value proposition for leased aircraft equity with a focus on in-service, liquid fleet types, with significant contractual cash flow from stable operators. We anticipate tapering but sustained commercial demand and structurally constrained supply. In our assessment, there are strong indicators that commercial aviation demand recovery is well underway. We anticipate the narrative will continue to shift from recovery/liquidity to growth/profitability.