

Business Jet Update

1Q23 utilization normalizing, delivs. down on supply chain and finance uncertainty

Industry Overview

Utilization levels down from 2021, normalizing above 2019 levels

Business aviation experienced significant tailwinds from industry shifts after the COVID-19 outbreak. Following the worst of the pandemic and returning travel, bizjet activity saw growth driven by a higher interest on safety and flexibility as well as limited service at many of the world's airlines. The US business jet aviation industry recovered swiftly in 2021 and throughout the first part of 2022, but growth stalled in the second half of 2022 and into the 1Q23 likely due to the continued ramp of commercial airline travel and general economic uncertainty. According to JetNet iQ, in October 2021 total business jet utilization peaked at 48% above 2019 levels and saw a 51% increase in utilization Y/Y. As of March 2023, total business jet utilization was 27% above 2019 levels but was down 14% Y/Y. We believe a significant portion of the late-2021 peak above 2019 levels may be attributed to limited-time users brought into the market by uncertainty about commercial travel and illness. We do not believe the 2021 peak represented a fundamental or secular change in demand, and thus we see the trend returning to 2019 utilization levels as in line with expectations. We expect to see continued stabilization in utilization rates throughout 2023 to slightly above 2019 levels but well below the 2021 peak.

Available for sale fleet on the rise

We see the available for sale fleet as one of the main drivers behind and indicators of the health of the bizjet market. Inventory for sale as a percentage of total fleet was 5.4% in March 2023, up from 5.0% in December 2022. We note that inventory for sale as a percent of total fleet was up versus December 2022 levels across all segments. Large Jets had the lowest available inventory for sale as of March 2023 (5.2% of total fleet vs. 4.8% in December 2022), followed by Light Jets (5.4% of total fleet vs. 5.1% in December 2022) and Medium Jets (5.6% of total fleet vs. 5.0% in September 2022). From a historical perspective 5-6% of the fleet for sale is still considerably lower than "normal."

Deliveries decreased, down 15% on LTM basis

Current market sentiment has been declining and we believe this softening optimism is a result of uncertainty within the macro and financial environment. According to JetNet iQ, deliveries were down 15% on a last-twelve-month basis vs. the same period last year. According to JetNet iQ, their forecasts expect deliveries to decline slightly from 2024-2027 as business jet utilization normalizes to lightly above 2019 levels. In the out years, beyond 2027, JetNet iQ expects business jet deliveries to stabilize, albeit experiencing general market sways (see exhibits 35-38). This is largely in line with our thesis of a softening of deliveries and utilization from pandemic highs followed by modest growth in the outyears consistent with pre-pandemic trends.

20 April 2023

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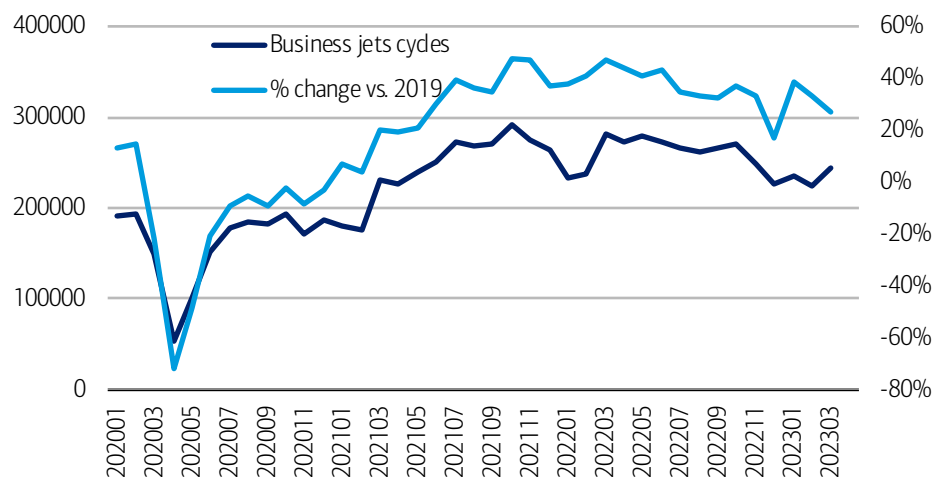
Timestamp: 20 April 2023 03:00AM EDT

Business jet demand

Aircraft utilization / Business jet cycles

Exhibit 1: Monthly bizjet cycles

Total bizjet cycles were up 27% vs. 2019 as of March 2023

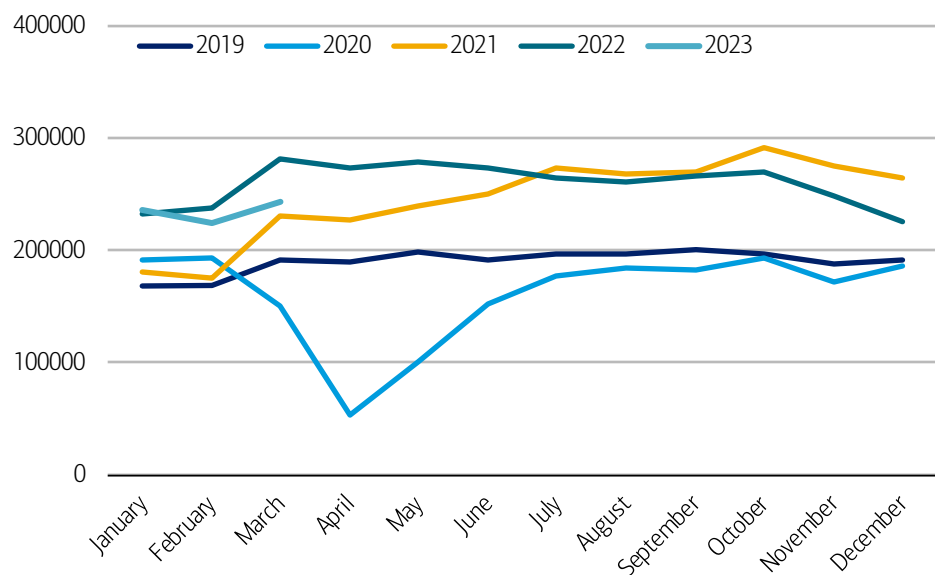


Source: JETNET IQ

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Exhibit 2: Monthly bizjet cycles by year

March 2023 saw a pickup in monthly bizjet cycles

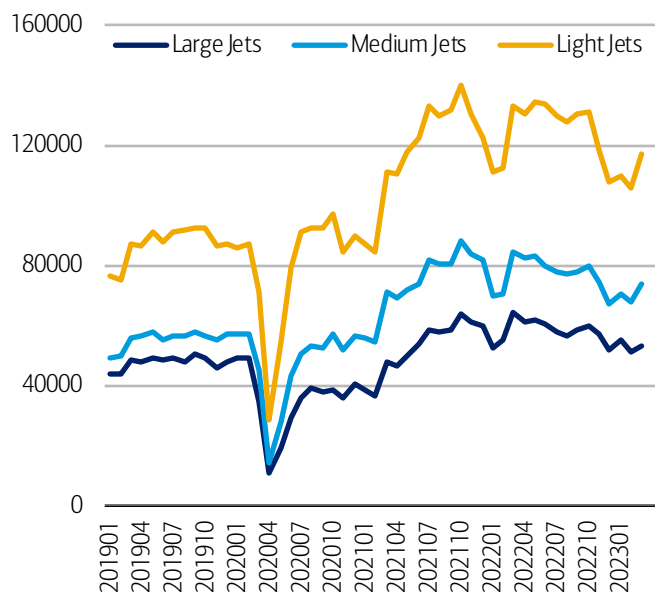


Source: JETNET IQ

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Exhibit 3: Monthly bizjet cycles by consolidated segment

Light jets are the main driver behind the recovery in activity

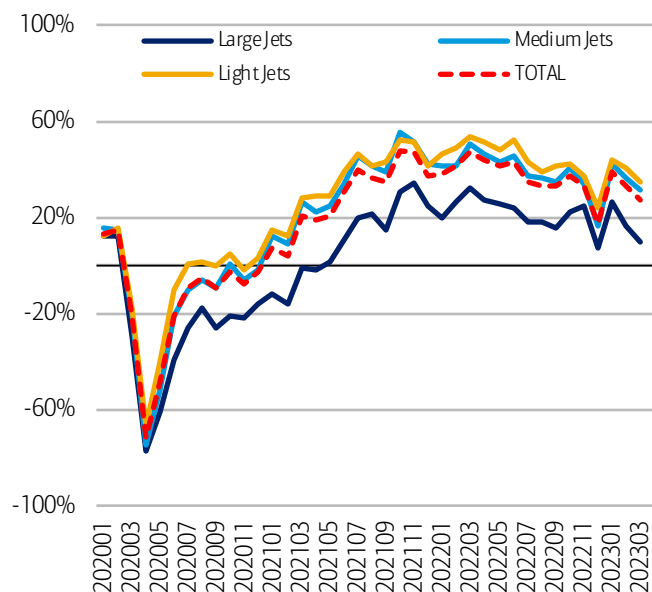


Source: JETNET IQ

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Exhibit 4: Monthly bizjet cycles by consolidated segment (vs. 2019)

Total jet cycles are 27% above 2019 levels as of March 2023

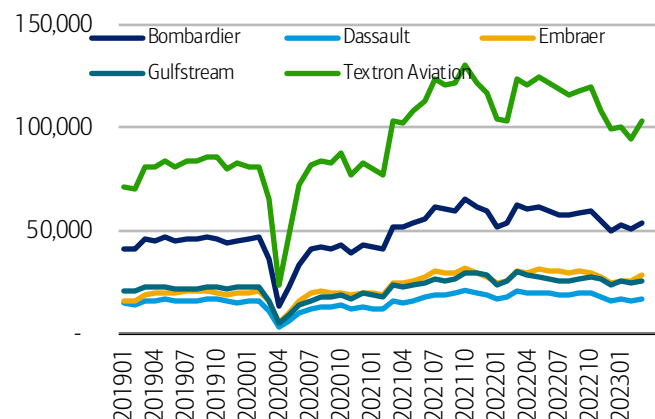


Source: JETNET IQ

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Exhibit 5: Monthly bizjet cycles by selected OEMs

Textron and Bombardier cycles have significantly recovered

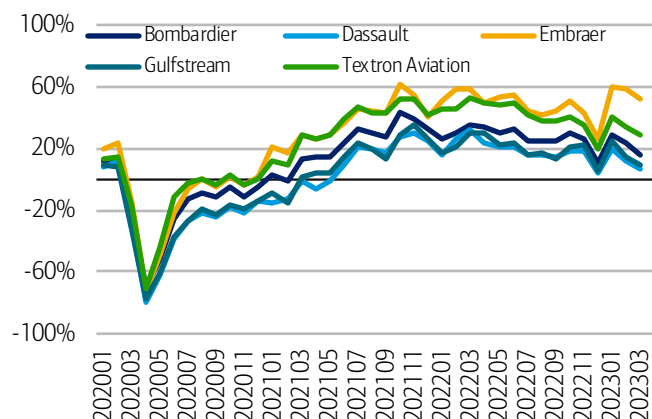


Source: JETNET IQ

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Exhibit 6: Monthly bizjet cycles by selected OEMs (vs. 2019)

Embraer jets cycles are up 52% vs. 2019 as of March 2023

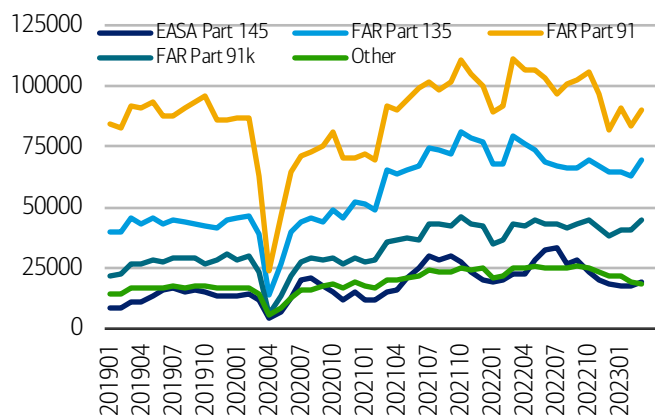


Source: JETNET IQ

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Exhibit 7: Monthly bizjet cycles by type of operation

Part 91 operations have recovered to near pre-pandemic levels

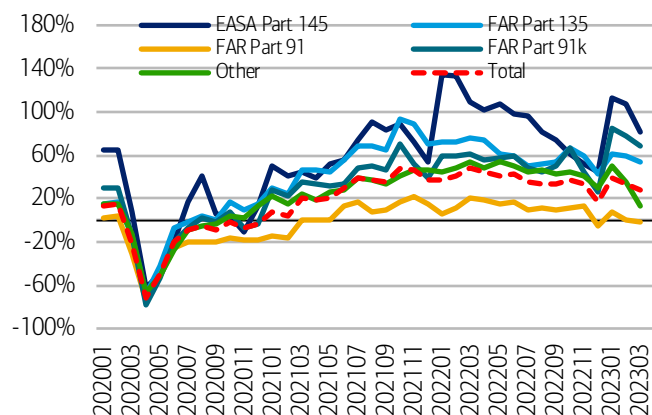


Source: JETNET IQ

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Exhibit 8: Monthly bizjet cycles by type of operation (vs. 2019)

EASA Part 145 cycles are up 81% vs. 2019 as of March 2023



Source: JETNET IQ

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Exhibit 9: Select types of business jet operations

Many business jets operate under one of four main operation types

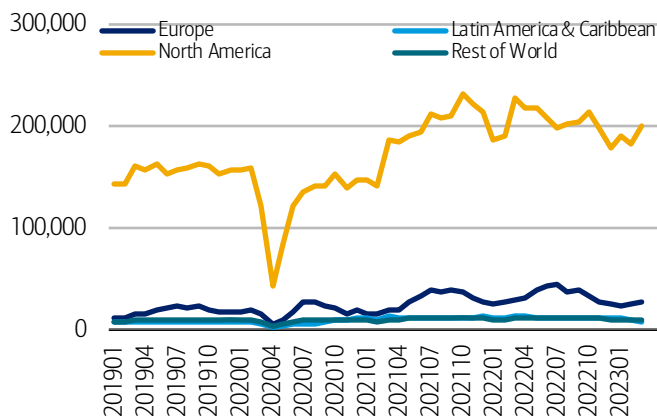
Type of Operation	Details
EASA Part 145	The European standard for the approval of organizations that perform maintenance on aircraft and aircraft components
FAR Part 135	Charter flights conducted by companies who provide air charter service for a profit
FAR Part 91	Charter flights conducted for personal travel
FAR Part 91k	Charter flights conducted through fractional ownership programs

Source: BofA Global Research

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Exhibit 10: Monthly bizjet cycles by region

Most of bizjet activity is concentrated in North America

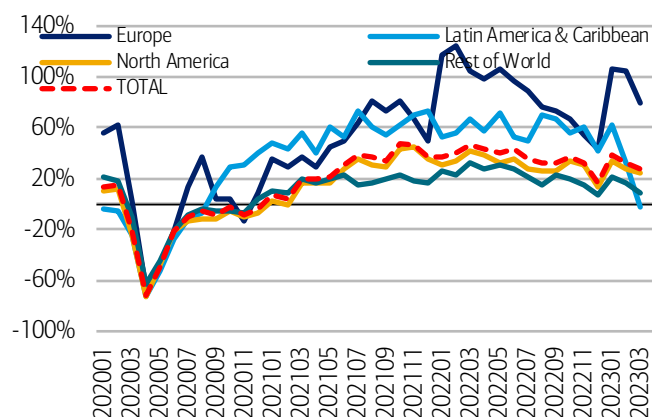


Source: JETNET IQ

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Exhibit 11: Monthly bizjet cycles by region (vs. 2019)

North American cycles are up 27% vs. 2019 as of March 2023, while European cycles are up 80%



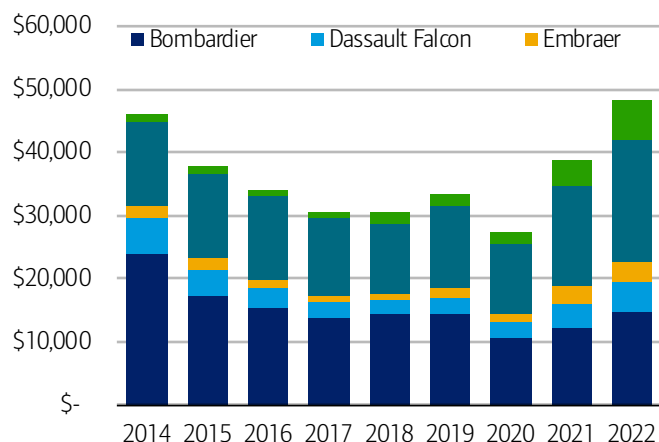
Source: JETNET IQ

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Bizjet backlog

Exhibit 12: Bizjet backlog by selected OEMs (\$mn)

Backlog has returned to growth for the major OEMs, after declining in 2020

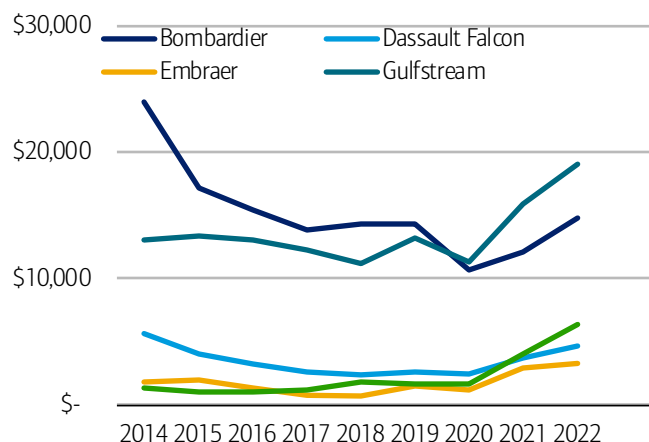


Source: JETNET iQ, company reports

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Exhibit 13: Bizjet backlog by selected OEMs (\$mn)

Bombardier backlog declined between 2014-2020, but was up in 2021



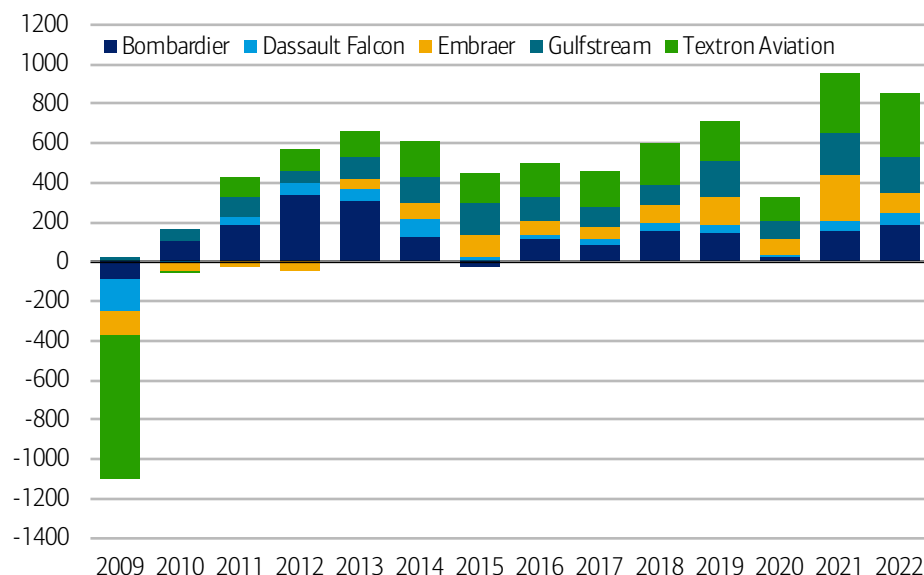
Source: JETNET iQ, company reports

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Net new bizjet orders

Exhibit 14: Net new orders by selected OEMs (units)

New orders for the main OEMs have accelerated in 2021



Source: JETNET iQ, reports

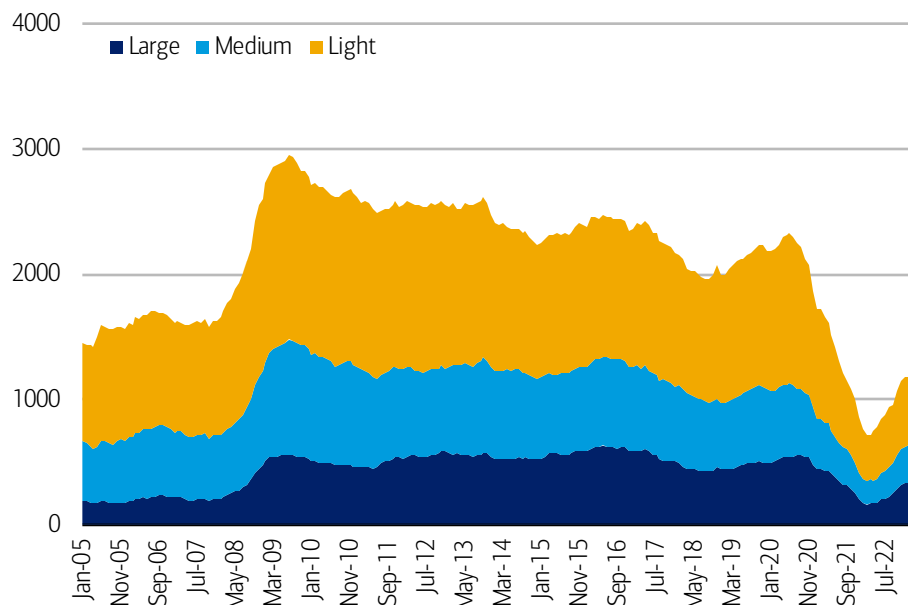
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Business jet supply

Business jet inventory for sale

Exhibit 15: Business jet inventory for sale by consolidated segment

Inventories for sale continued to rise after hitting a low in February 2022

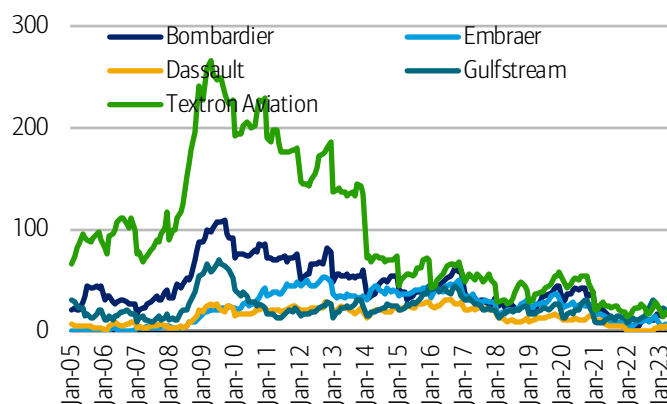


Source: JETNET IQ

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Exhibit 16: Inventory for sale by selected OEMs (0-5yrs)

Inventory for sale is normalizing across all OEMs

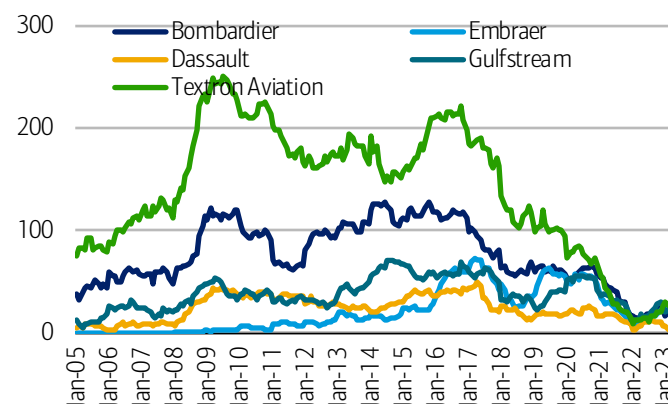


Source: JetNet IQ

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Exhibit 17: Inventory for sale by selected OEMs (6-10yrs)

Older Inventory for sale is slightly above newer inventory for sale



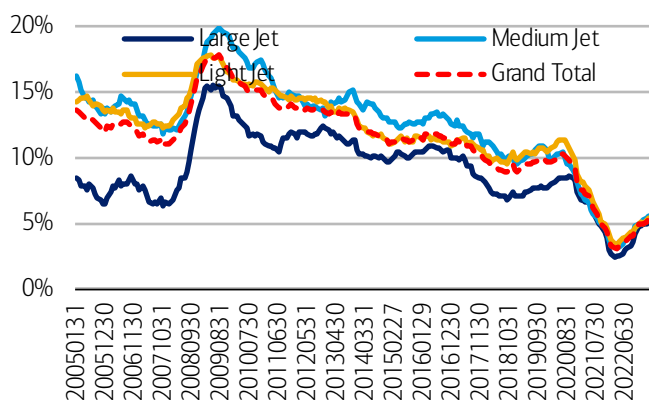
Source: JetNet IQ

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Business jets % for sale

Exhibit 18: Bizjets % for sale by consolidated segments

Bizjet for sale fleet are rising since record lows across all aircraft segments

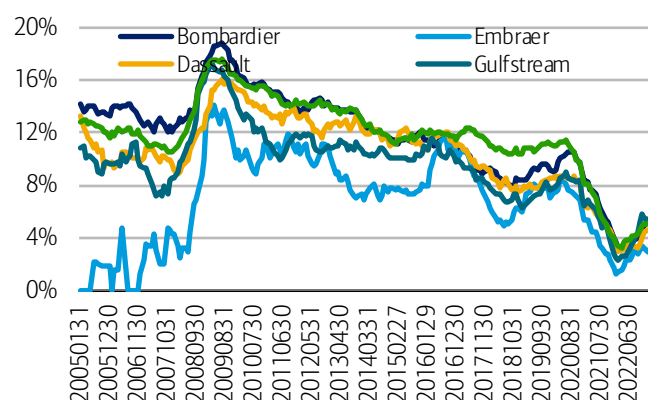


Source: JETNET IQ

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Exhibit 19: Bizjets % for sale by selected OEMs

Embraer still has the lowest bizjet % for sale among the main OEMs

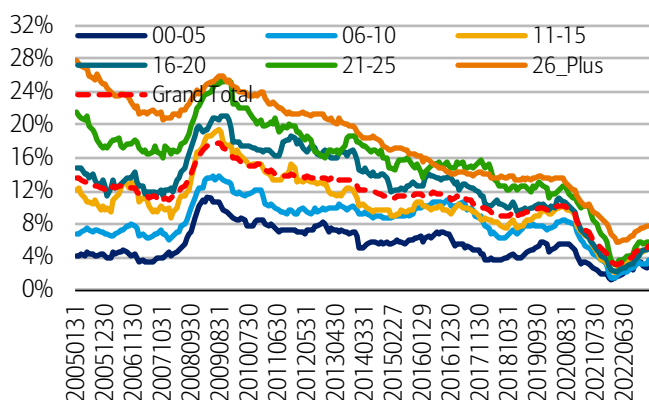


Source: JETNET IQ

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Exhibit 20: Bizjets % for sale by age

Younger aircraft tend to have the lowest % for sale, while older aircraft tend to have the highest levels

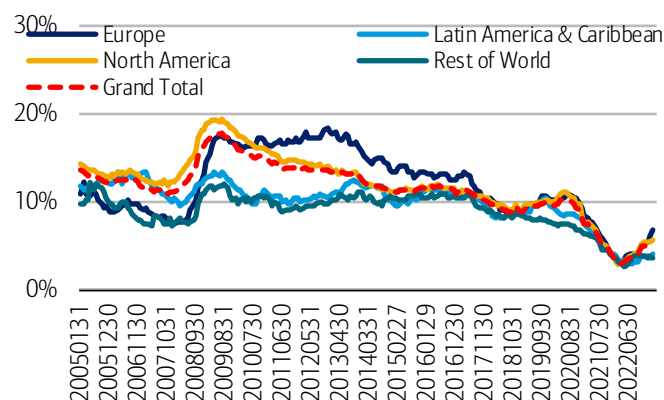


Source: JETNET IQ

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Exhibit 21: Bizjets % for sale by region

After a period of significant decline in sales, there is starting to be the beginning of a rebound



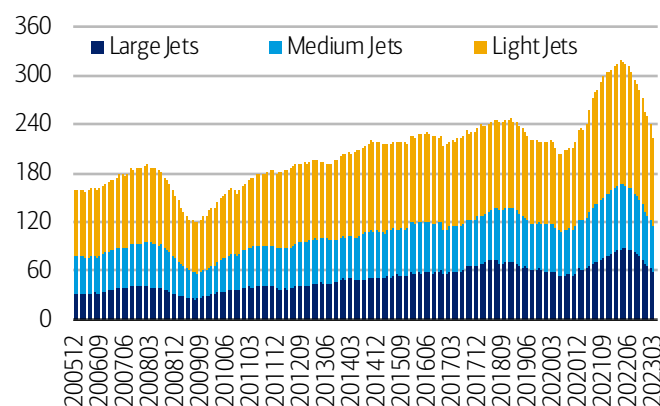
Source: JETNET IQ

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Pre-owned bizjet transactions (TTM average)

Exhibit 22: Pre-owned transactions (TTM) by consolidated segment

Pre-owned transactions have continued to decline in 1Q23

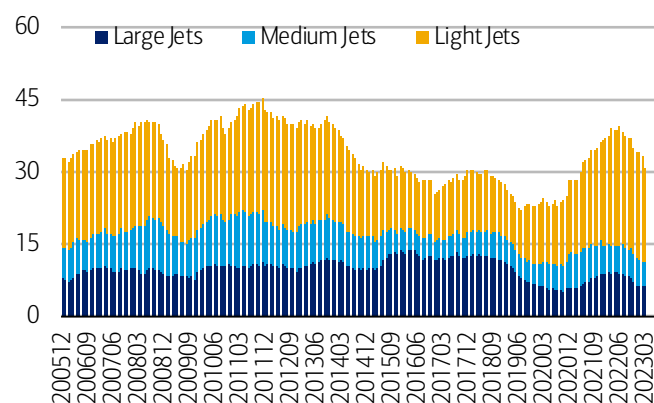


Source: JetNet iQ

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Exhibit 24: 0-5yrs pre-owned transactions (TTM) by consolidated segment

0-5yrs pre-owned activity is in line with 2009 levels

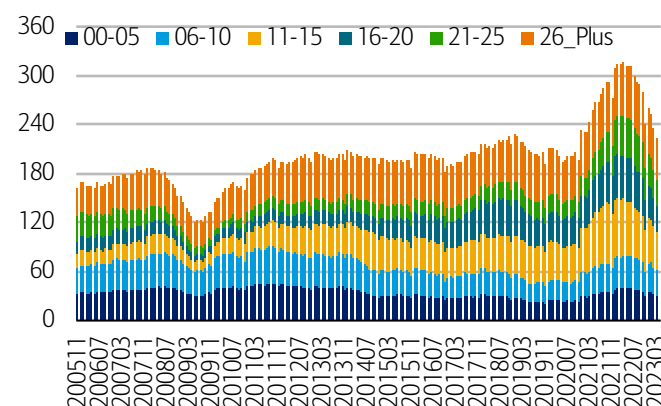


Source: JetNet iQ

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Exhibit 23: Pre-owned transactions (TTM) by age

Pre-owned activity has dropped off for all age groups

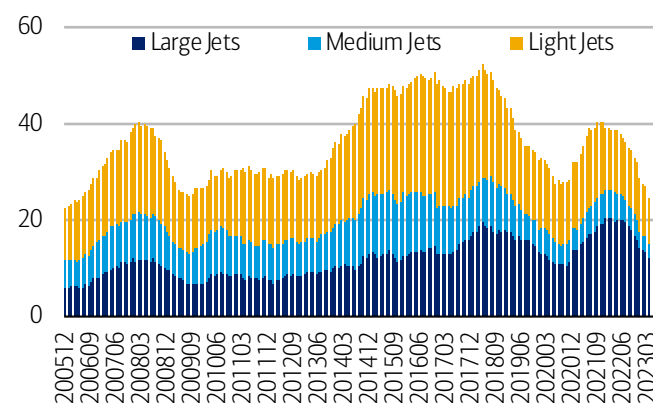


Source: JetNet iQ

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Exhibit 25: 6-10yrs pre-owned transactions (TTM) by consolidated segment

6-10yrs pre-owned activity has continued to fall across all segments



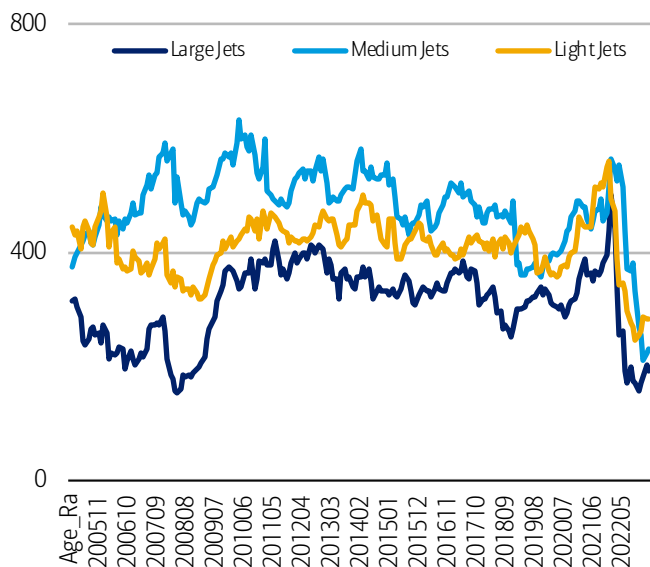
Source: JetNet iQ

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Business jets average days on market

Exhibit 26: Avg. days on market by consolidated segment

Light jets average days on market fell sharply in 2022 and started to rise in 1Q23

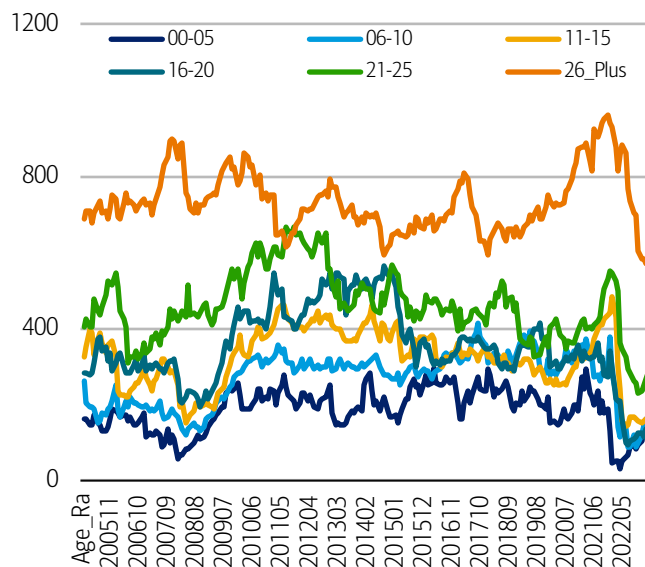


Source: JETNET IQ

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Exhibit 27: Avg. days on market by age

Average days on market for age 26+ aircraft has fallen significantly since 2021

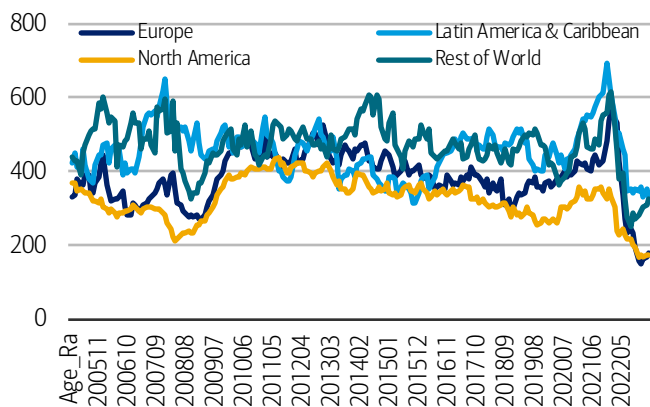


Source: JETNET IQ

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Exhibit 28: Avg. days on market by region

Avg. days on market is lowest for North America and Europe



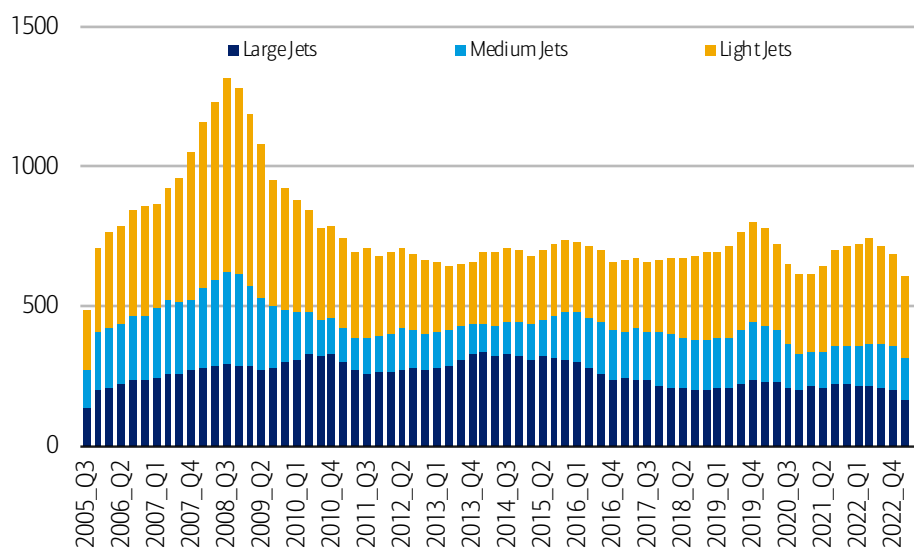
Source: JETNET IQ

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Bizjet deliveries

Exhibit 29: Deliveries LTM by consolidated segment

Deliveries never recovered after the 2008 crisis

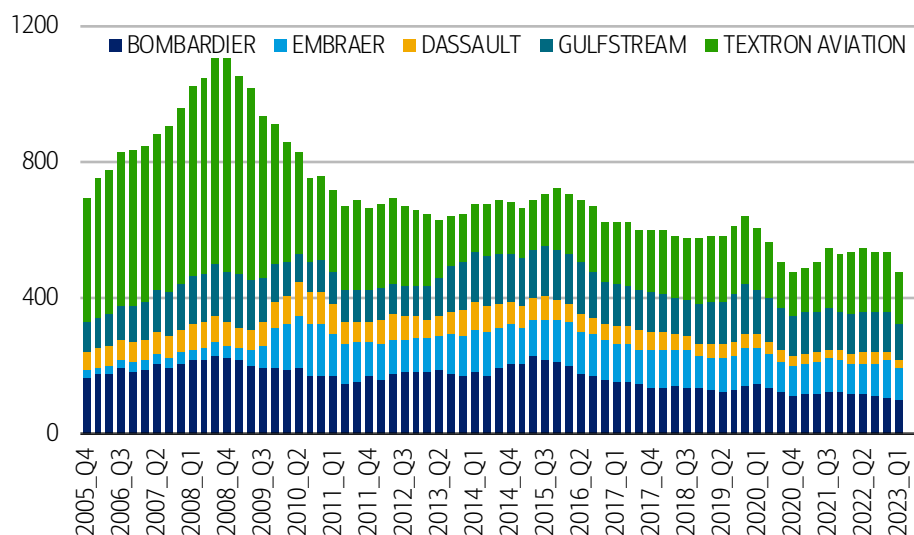


Source: JETNET IQ

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Exhibit 30: Deliveries by selected OEMs

Textron deliveries declines to 155 in 1Q23 from 177 in 4Q22

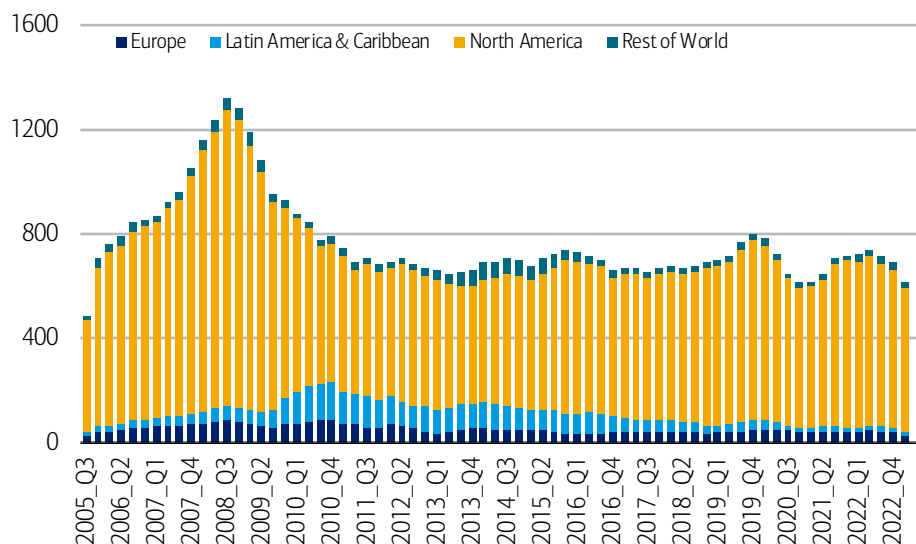


Source: JETNET IQ

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Exhibit 31: Deliveries LTM by region

Most of bizjet deliveries are for the North America region

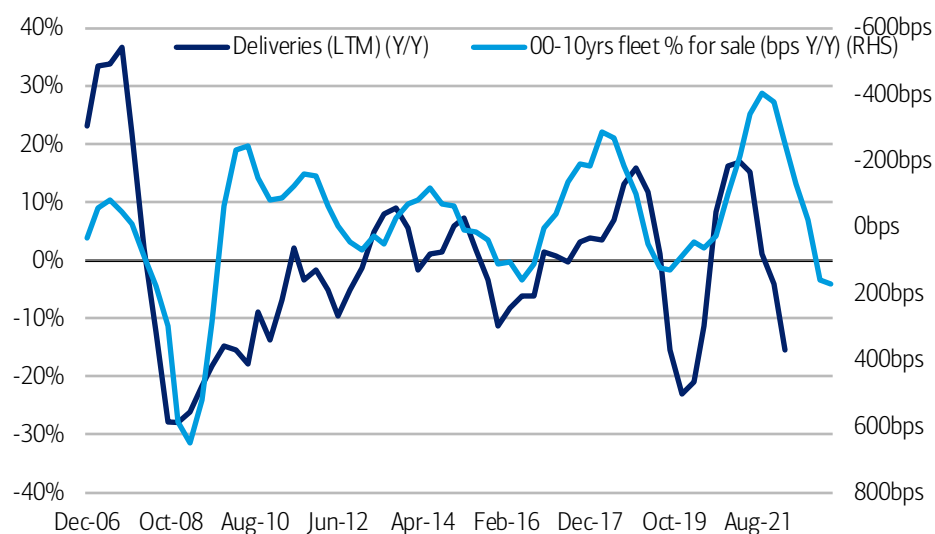


Source: JETNET IQ

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Exhibit 32: Deliveries LTM (% Y/Y) vs. 1 year earlier avg. 0-10yrs fleet % for sale (bps Y/Y) (RHS)

Deliveries tend to react with certain lag to changes in available for sale bizjet inventory



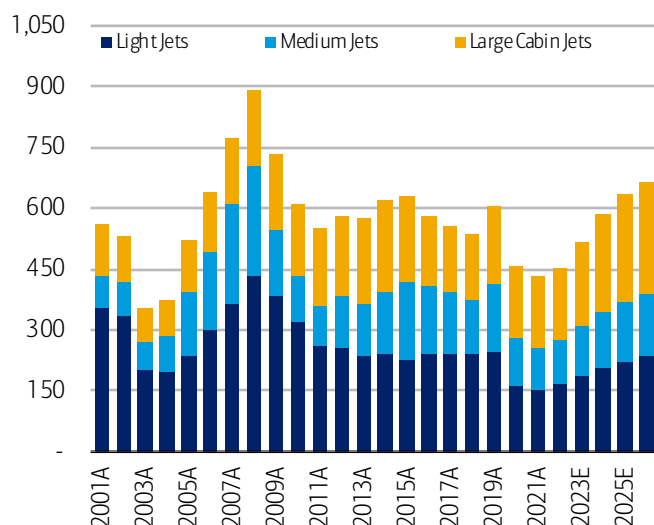
Source: JETNET IQ

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BofA delivery forecast for selected OEMs

Exhibit 33: BofA delivery forecast by consolidated segment (units)

We expect 9.3% CAGR in 2021-2025 for bizjet deliveries



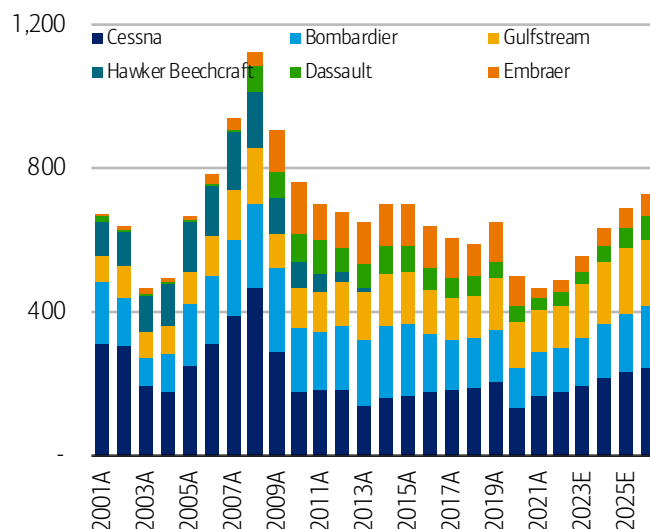
Source: BofA Global Research, Company filings

Note: Only includes Cessna, Gulfstream, Embraer, and Bombardier

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Exhibit 34: BofA delivery forecast for selected OEMs (units)

We expect 9.8% CAGR in 2021-2025



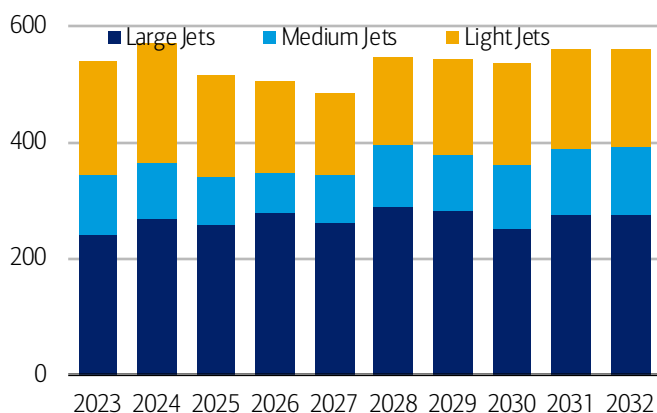
Source: BofA Global Research, company filings

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JETNET iQ delivery forecast

Exhibit 35: JetNet iQ delivery forecast by consolidated segment (units)

JetNet iQ expects deliveries to remain fairly stable throughout the decade

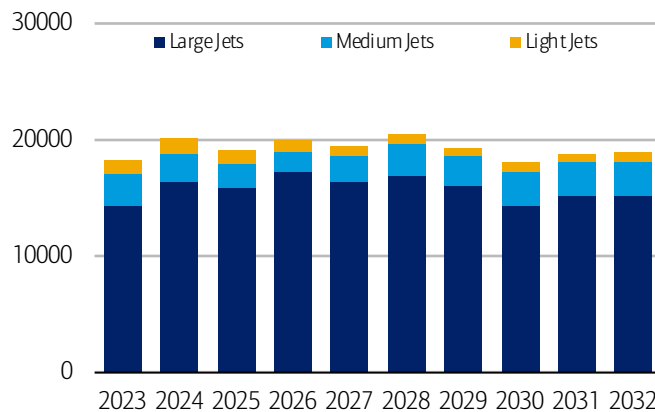


Source: JetNet iQ

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Exhibit 36: JETNET iQ delivery revenue forecast by consolidated segment (2022 \$mn)

JETNET iQ expects ~2.5% delivery revenue CAGR in 2022-2031

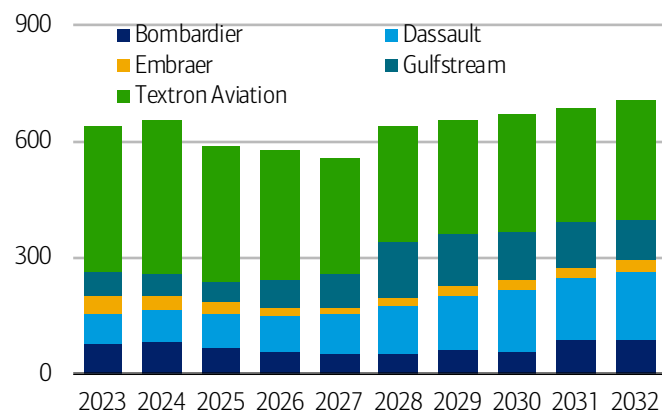


Source: JETNET iQ

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Exhibit 37: JetNet iQ delivery forecast by selected OEMs (units)

JetNet iQ expects ~1% delivery CAGR in 2022-2032

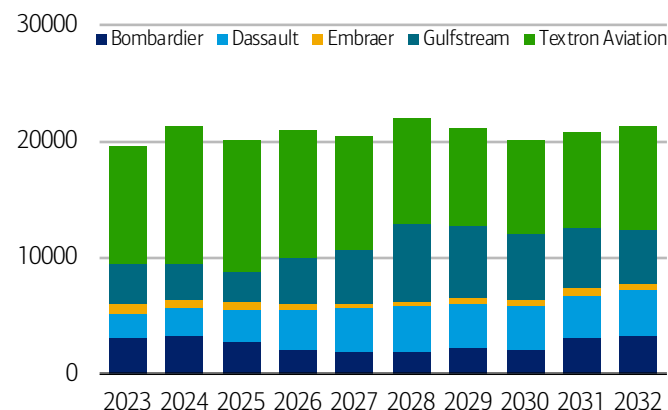


Source: JetNet iQ

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Exhibit 38: JETNET iQ delivery forecast by selected OEMs (2022 \$mn)

JETNET iQ sees ~\$19.5bn delivery revenues for the main OEMs in 2023



Source: JETNET iQ

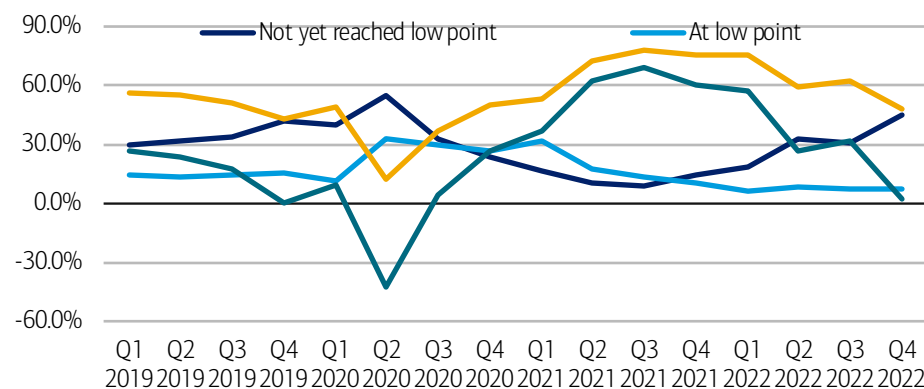
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Industry Sentiment

Current market conditions

Exhibit 39: Current market conditions sentiment for Business Aviation

Net optimism fell throughout 4Q22

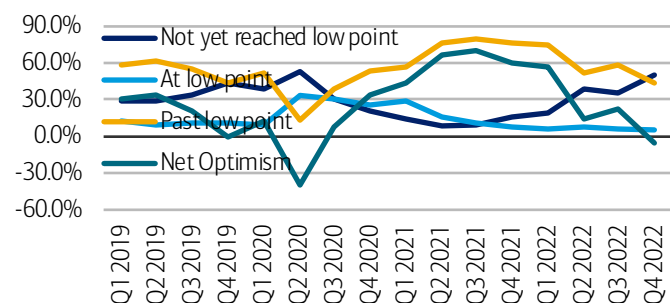


Source: JetNet iQ

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Exhibit 40: Current market conditions sentiment for Business Aviation – North America

Net optimism turned negative in 4Q22

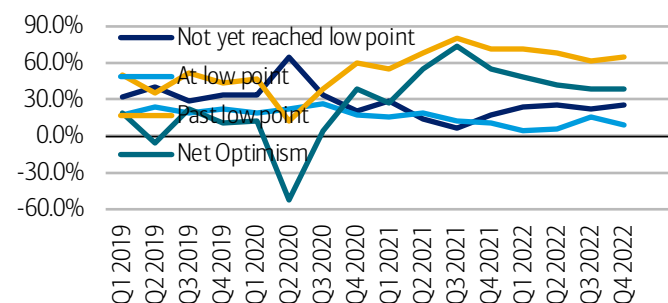


Source: JetNet iQ

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Exhibit 41: Current market conditions sentiment for Business Aviation – Latin America & Caribbean

Net optimism remains high at 38.1%

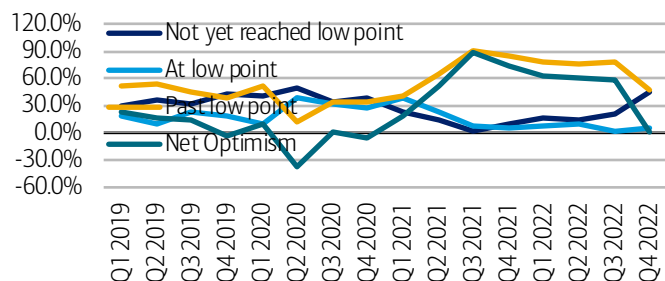


Source: JetNet iQ

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Exhibit 42: Current market conditions sentiment for Business Aviation – Europe

In Europe, net optimism fell dramatically to 2% in 4Q22

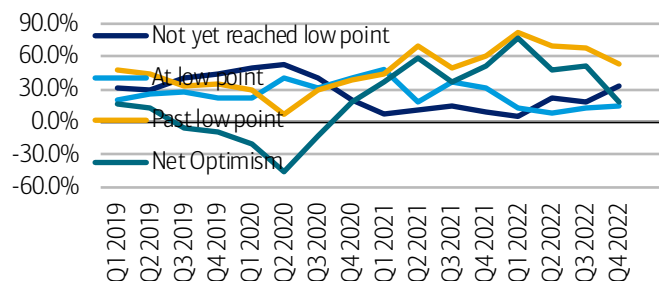


Source: JetNet iQ

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Exhibit 43: Current market conditions sentiment for Business Aviation – Rest of World

In RoW, net optimism fell to 19% in 4Q22

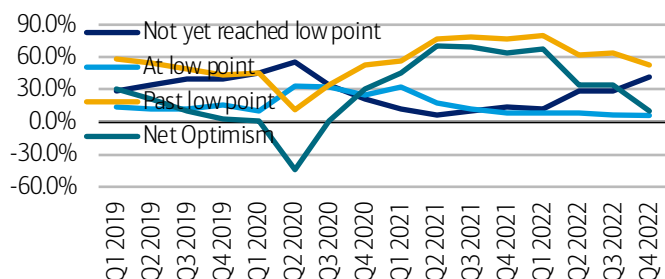


Source: JetNet iQ

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Exhibit 44: Current market conditions sentiment for Business Aviation – Heavy Jet Operators

Heavy jet operators net optimism improved to 68% after bottoming in Q2 2022 and is now about 9.8%

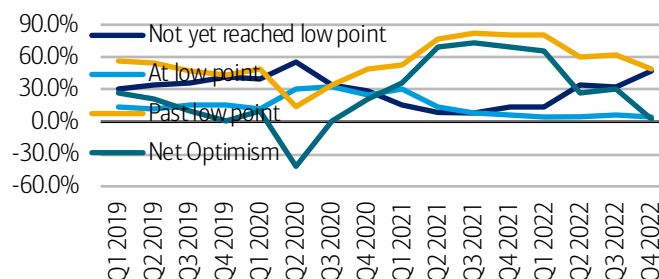


Source: JetNet iQ

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Exhibit 45: Current market conditions sentiment for Business Aviation – Medium Jet Operators

Medium jet operators net optimism improved to 66%, after bottoming in 2Q20 and is now about 2.3%

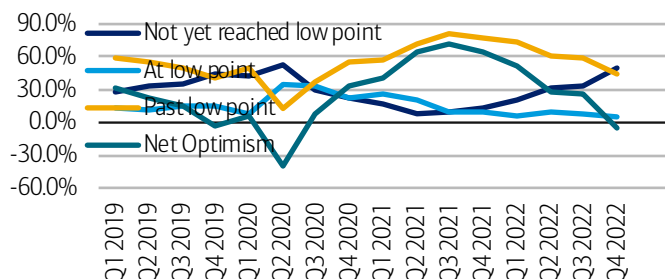


Source: JetNet iQ

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Exhibit 46: Current market conditions sentiment for Business Aviation – Light Jet Operators

Light jet operators net has fallen to -5% after peaking at around 70% in Q3 2021



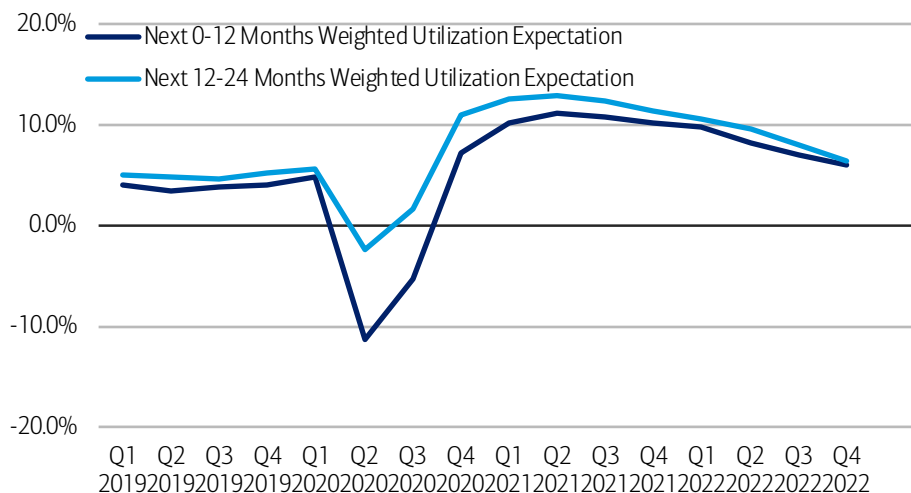
Source: JetNet iQ

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Utilization expectations

Exhibit 47: Compared with last 12 months, what change do you expect in your total Annual Flight Hours?

Outlook has seen a slight decline in recent quarters, after expected utilization peaked in 1Q21

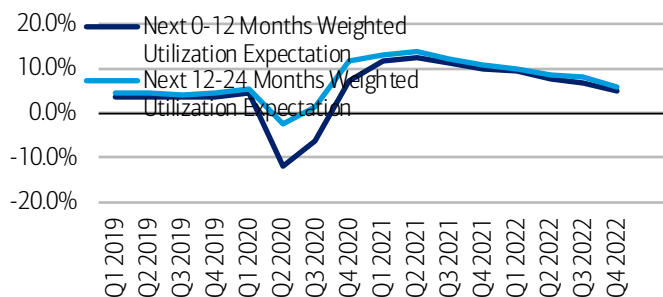


Source: JetNet iQ

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Exhibit 48: Compared with last 12 months, what change do you expect in your total Annual Flight Hours? – North America

Outlook has dipped after improving throughout 2020-2021

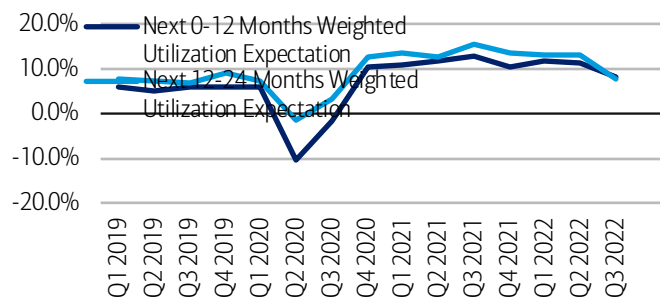


Source: JetNet iQ

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Exhibit 49: Compared with last 12 months, what change do you expect in your total Annual Flight Hours? – Latin America & Caribbean

Outlook for two years from now has fallen below outlook for next year

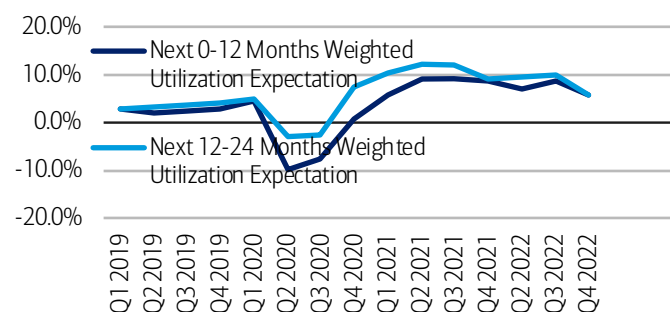


Source: JetNet iQ

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Exhibit 50: Compared with last 12 months, what change do you expect in your total Annual Flight Hours? – Europe

Outlook for the next 2 years in Europe fell slightly in 4Q22

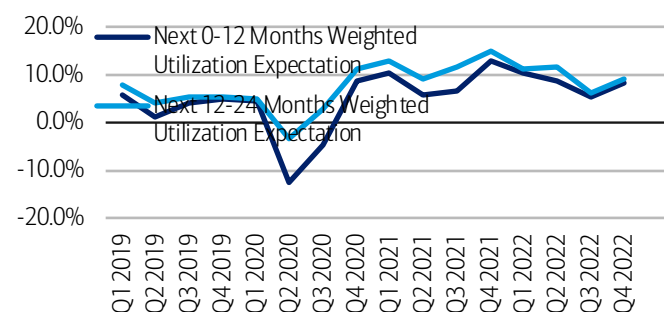


Source: JetNet iQ

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Exhibit 51: Compared with last 12 months, what change do you expect in your total Annual Flight Hours? – Rest of World

Outlook over the next 2 years continues to decline in ROW



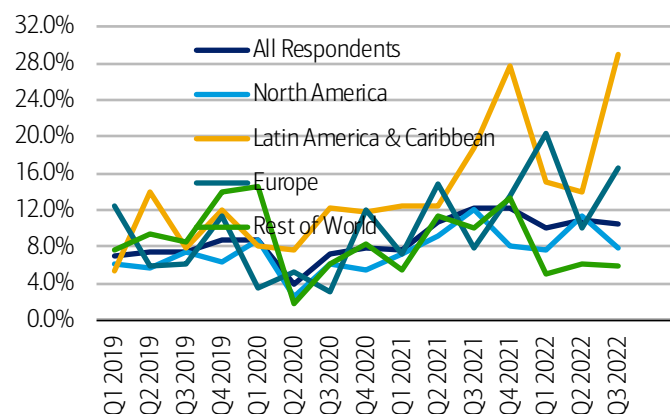
Source: JetNet iQ

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Likelihood of purchase

Exhibit 52: 61-100% likely to purchase? (by region)

Latin America & Caribbean intent to purchase rose sharply in 3Q22

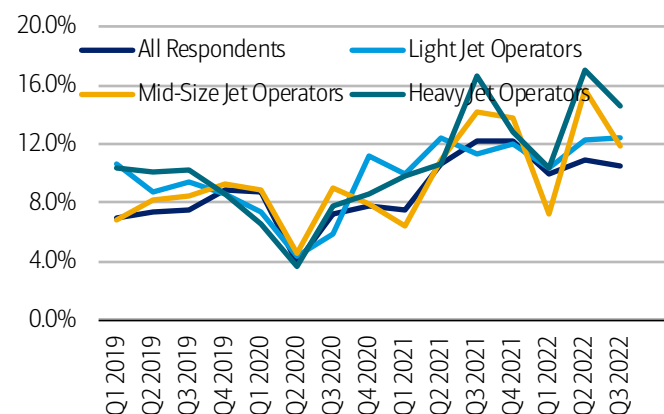


Source: JetNet iQ

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Exhibit 53: 61-100% likely to purchase? (by segment)

Likelihood to purchase of all respondents fell slightly in 3Q22



Source: JetNet iQ

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R1}
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Underperform	N/A	≥ 20%

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