



AFRA Aircraft Valuation Panel

Moderator: Ken Kocialski, CAVU Aerospace, Inc.

Panelists: Mike Lapson, Flight Ascend Consultancy

Brian Postel, Unical Aviation Inc



Moderator: Ken Kocialski, Partner, CAVU Aerospace, Inc.





Panelist: Mike Lapson, Senior Analyst and ISTAT Certified Appraiser, Flight Ascend Consultancy




Mid-life Aircraft Value Trends



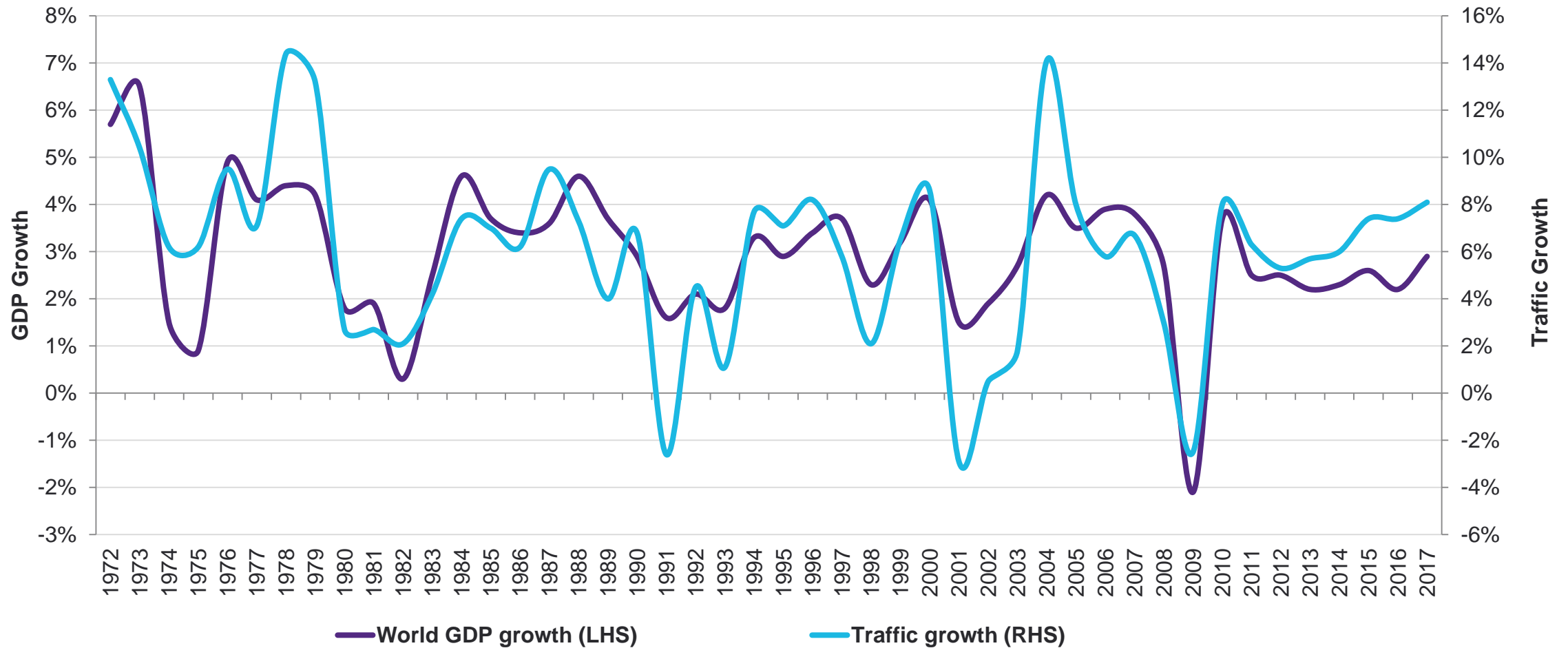
June 2018

Michael Lapson
Senior Valuations Analyst
ISTAT Certified Appraiser



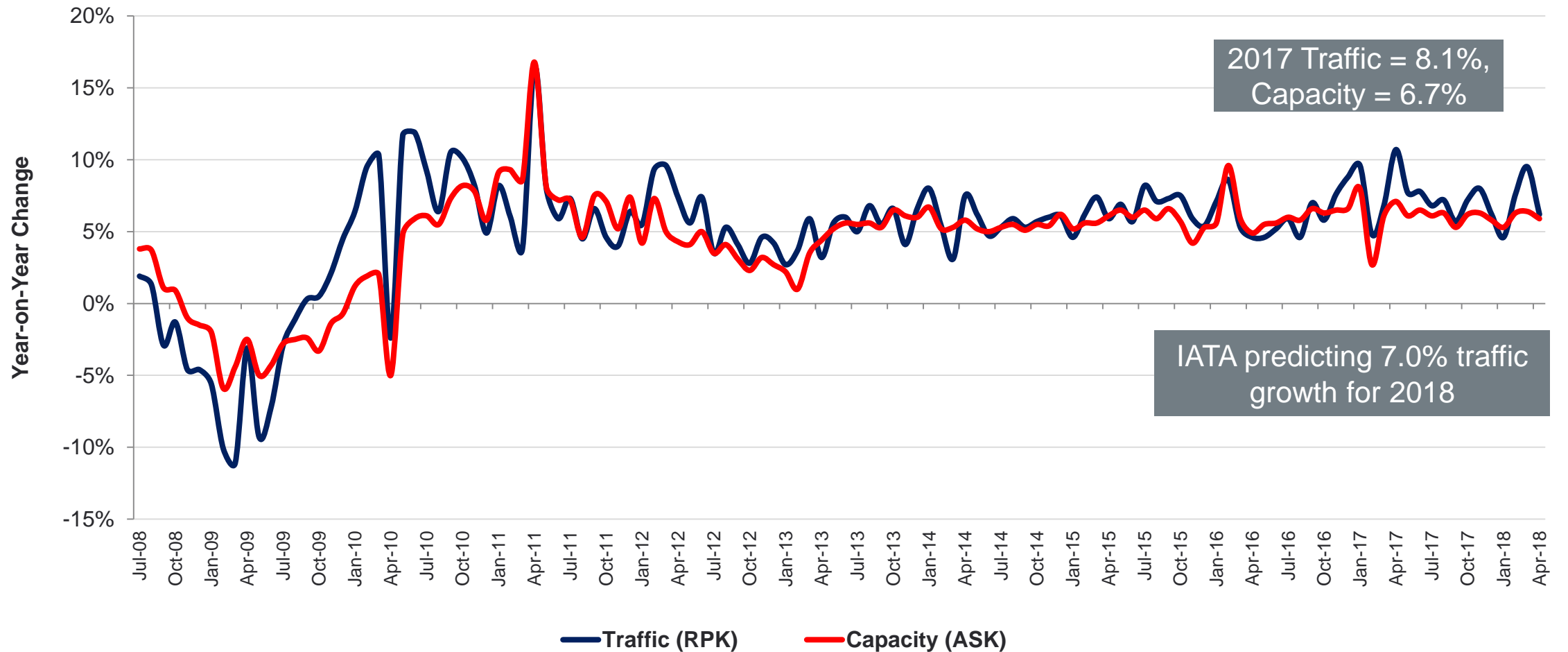
- 
- ▣ Economic trends influencing values
 - ▣ Mid-life “flyer” aircraft values
 - ▣ Engines market
 - ▣ Part-out values

8-year run of strong GDP and traffic growth



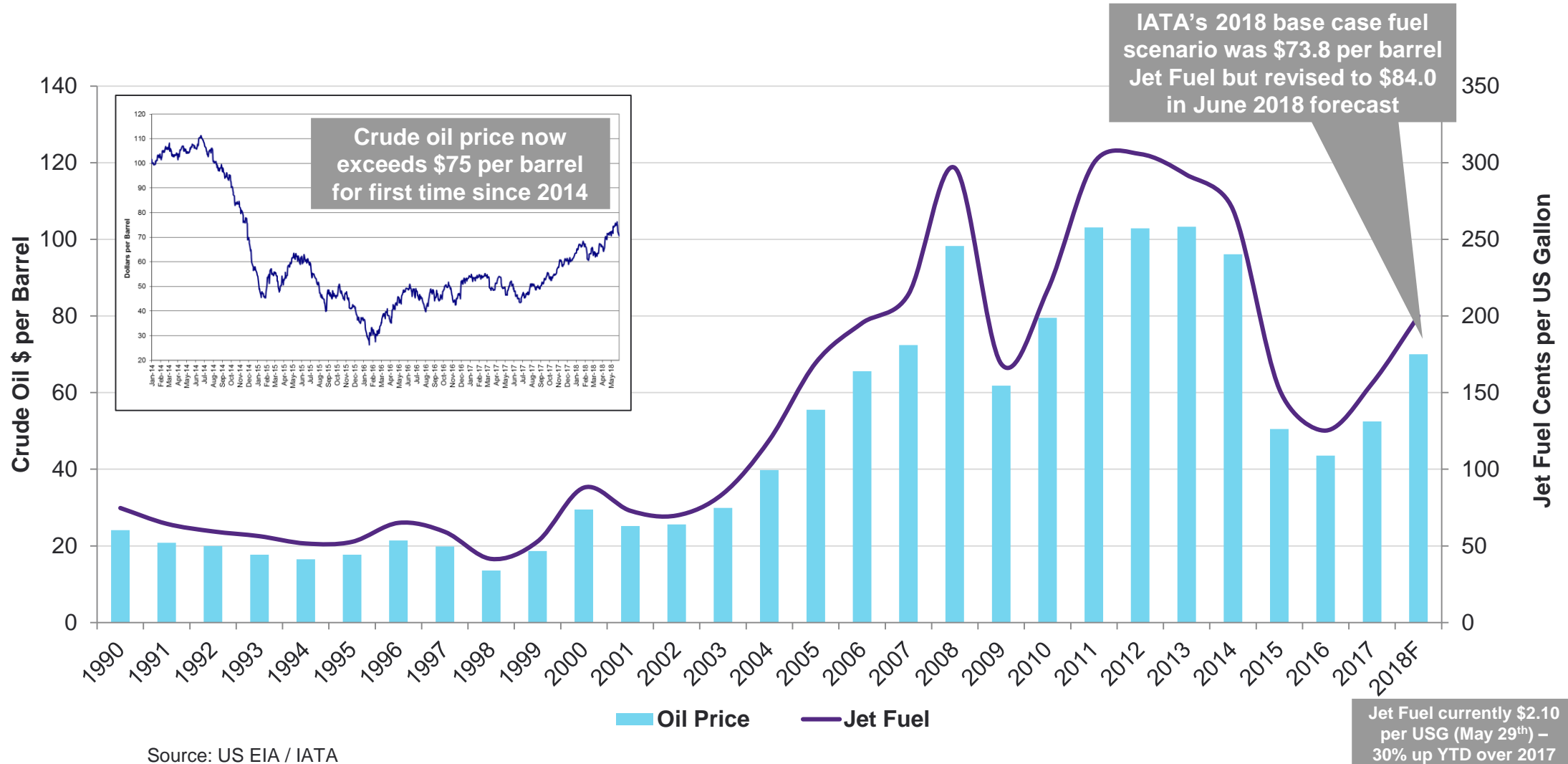
Source: ICAO, IATA, World Bank

Global passenger traffic growth stronger than capacity growth



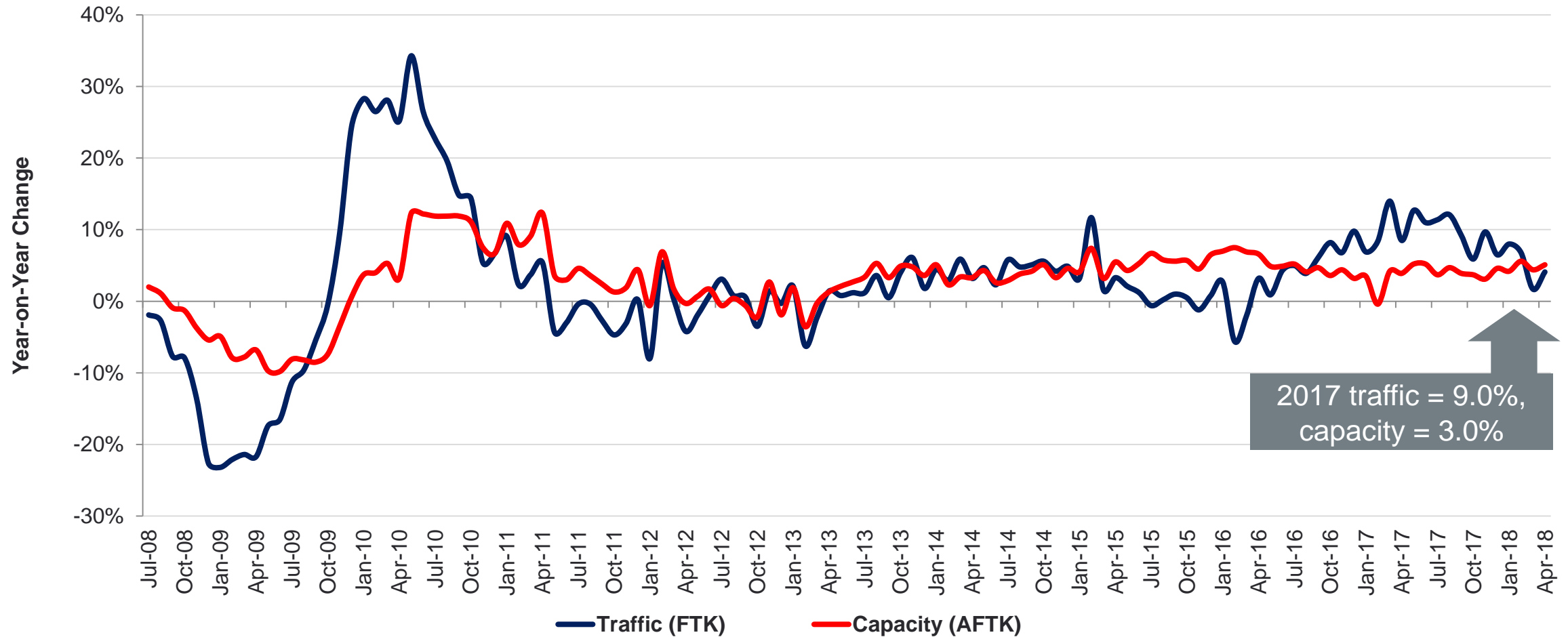
Source: IATA

Oil price trend potentially concerning



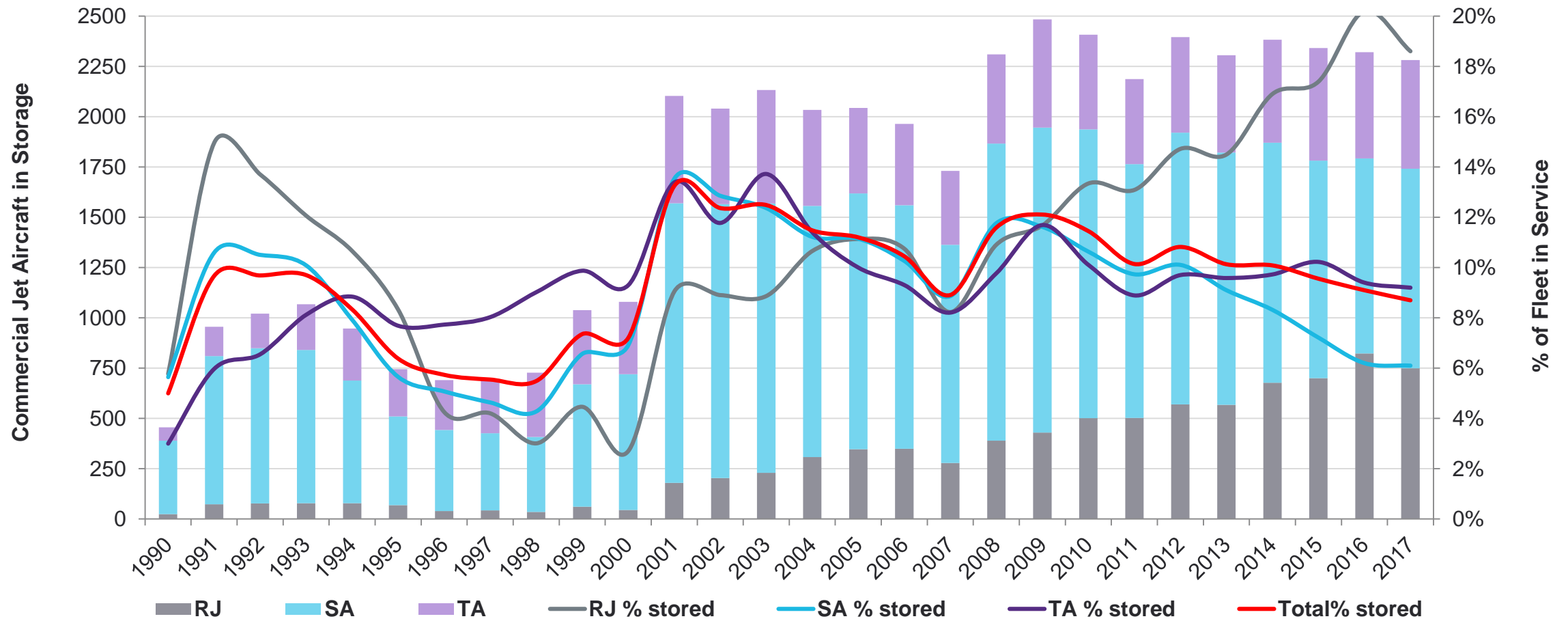
Source: US EIA / IATA

Freight market recovered strongly in 2017



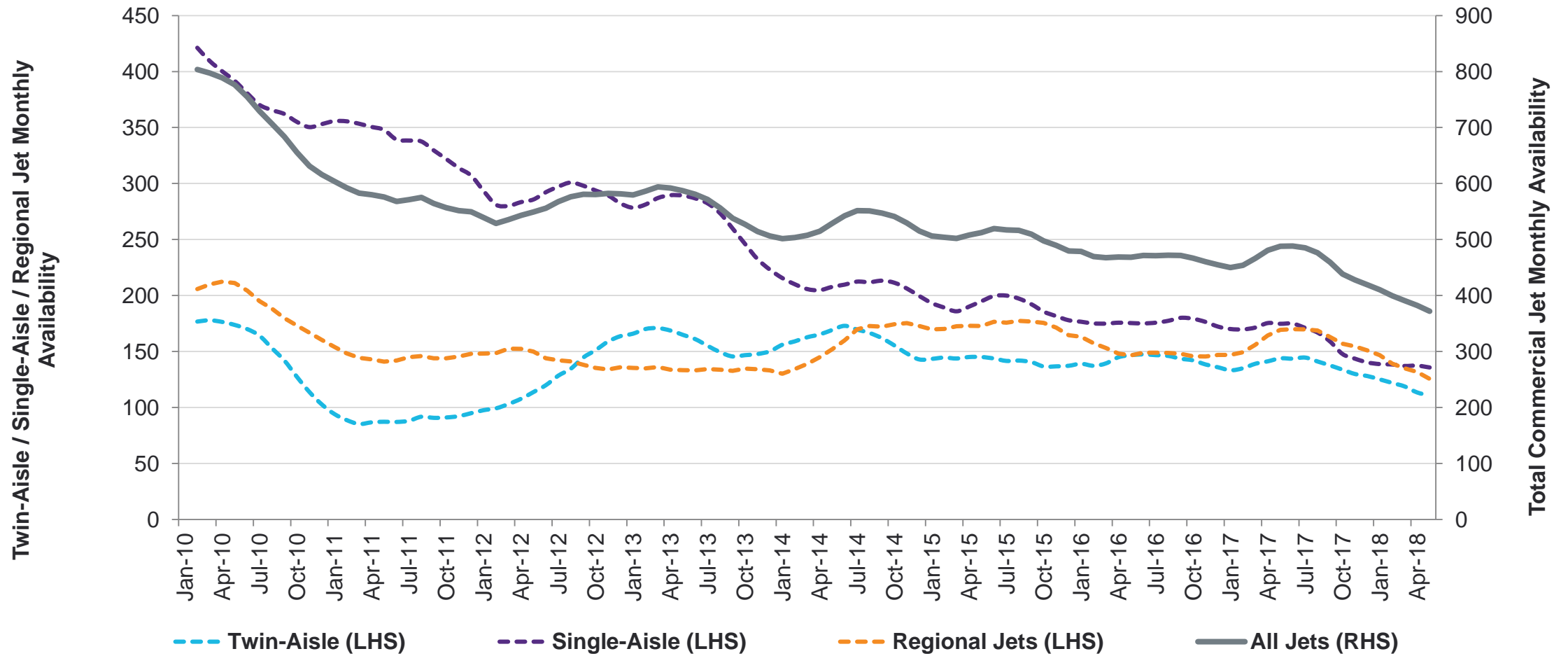
Source: IATA

Stored aircraft numbers falling for 3rd year running – as a percentage at 16 year low



Source: Flight Fleets Analyzer – Western jets only

Used jet availability stable and at lowest level since 2010



Source: Airfax, 6-month rolling average of aircraft available for lease or sale (excludes wet-lease / ACMI)

Retirement volumes peaked 2012-2015



Source: Flight Fleets Analyzer

The Market Value represents the value of a transaction would have in today's market



Market Value Definition

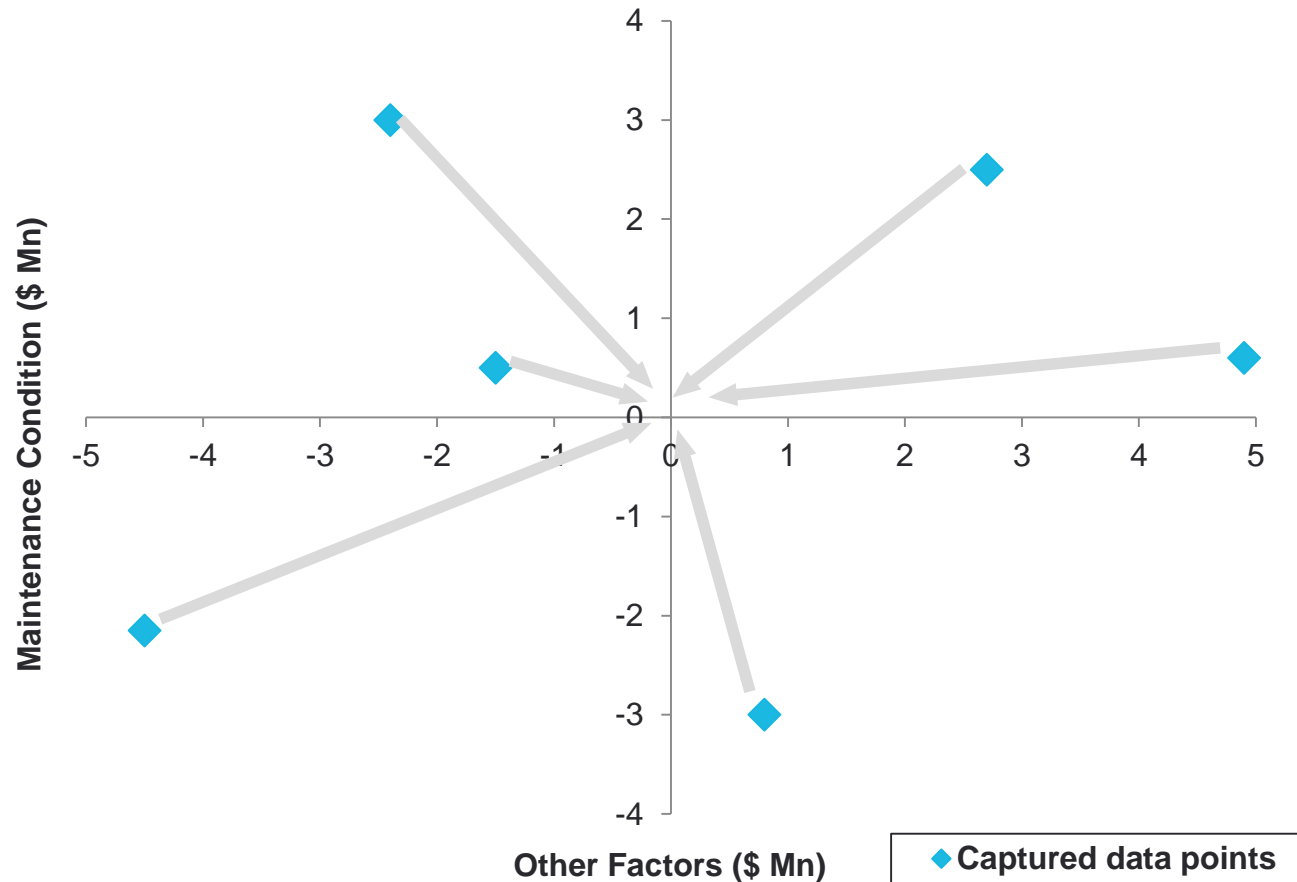
- ▣ Spot trading price
- ▣ In today's market conditions
 - ▣ Current market's state of supply and demand
- ▣ No lease attached
- ▣ Single aircraft sale
- ▣ Open sale
- ▣ Reasonable marketing time of up to 12 months
- ▣ Willing buyer and willing seller

Source: ...

Ascend's Current Market Value is based on a normalization and triangulation of data points



Establishing the Market Value - Normalization



Normalized data points are compared to arrive at our Market Value

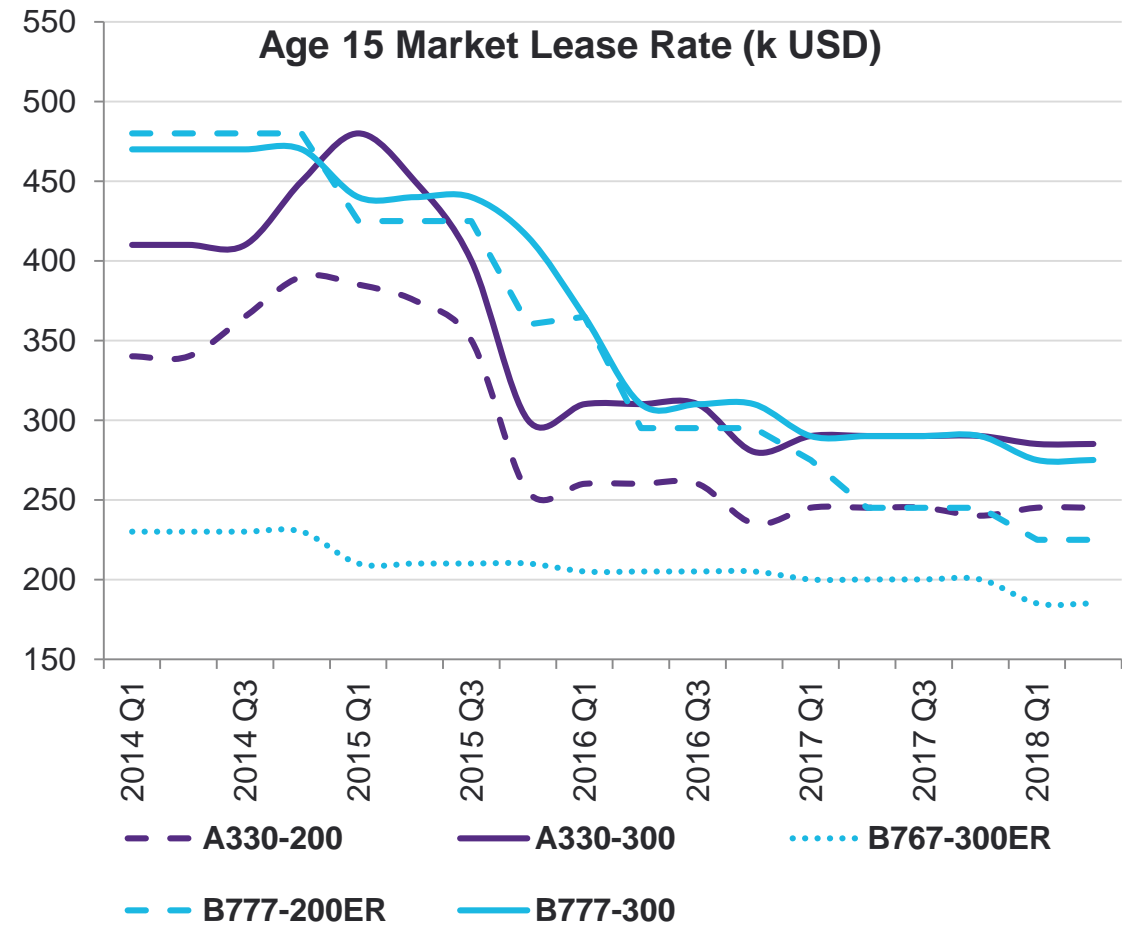
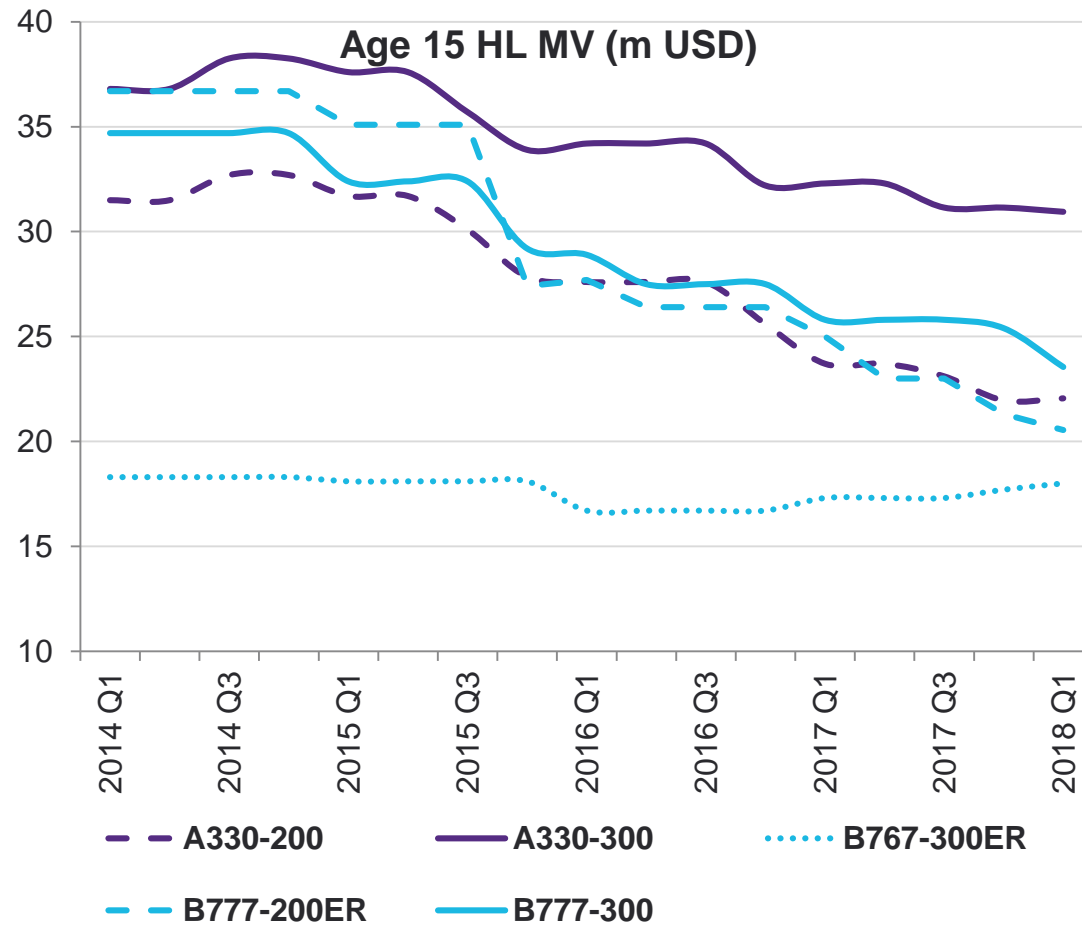
Source: Flight Ascend Consultancy

Twin aisle “flyer” market is oversupplied



- └ Demand:
 - └ Increasing fuel prices favor new replacements (787, A350)
 - └ E-commerce driving 767-300ERSF conversions
- └ Supply
 - └ Overproduction – 787, A350 ramp-up
 - └ Last-off-the-line pricing on 777-300ER and A330ceo
 - └ Glut of 777-200ERs, many getting placed, at what price?
- └ Opportunities
 - └ Short term: 777-200ERs can replace grounded 787s (Trent 1000)
 - └ A330 → freighter conversion at lease end

Mid-Life twin aisle values depressed by obsolescence and “last off the line” pricing



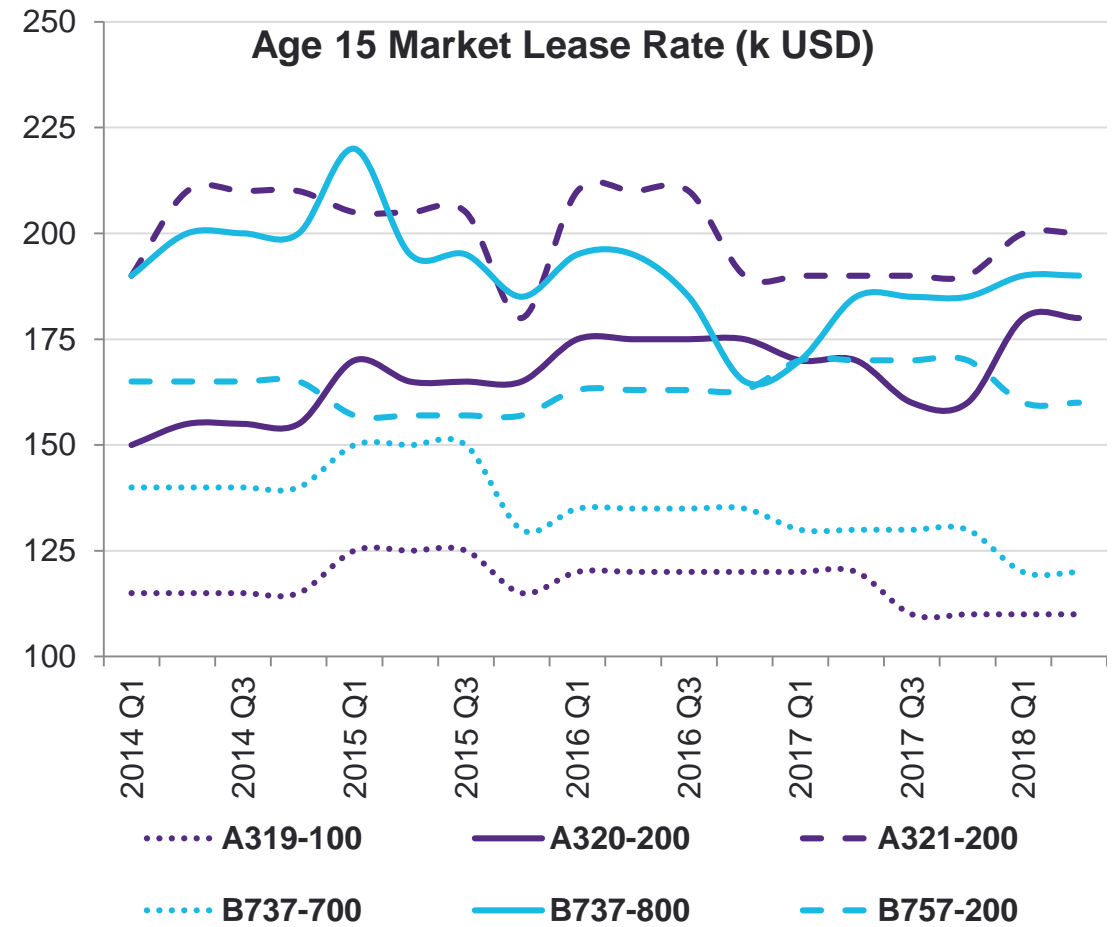
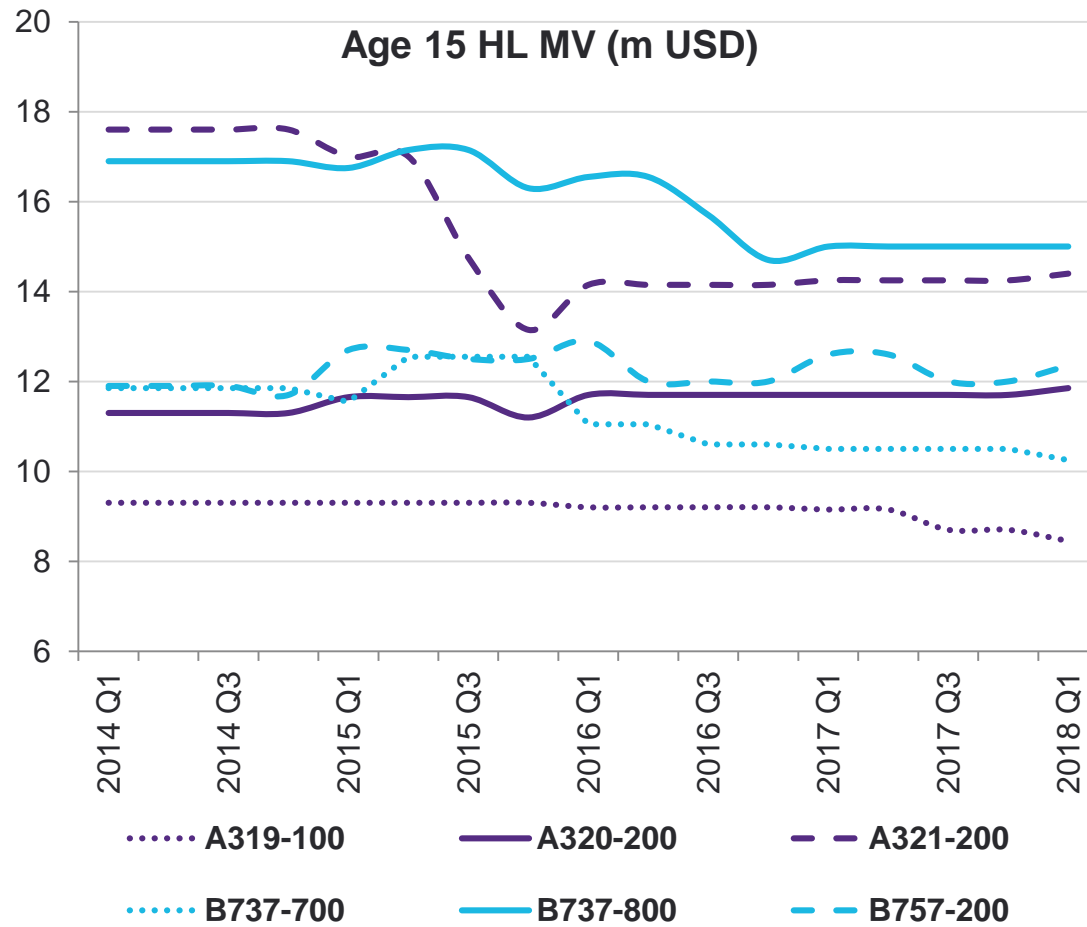
Source: Flight Ascend Values

Single aisle “flyer” market is strong, pricing remains stable



- └ Demand:
 - └ Market growth: airlines favoring larger variants
 - └ E-commerce driving 737-400SF, 757-200SF conversions
 - └ “Bow wave” of engine overhaul demand for next few years
- └ Supply
 - └ A320-neo / 737-Max mostly going to growth, not replacement yet
 - └ Engine shops are backlogged, spare engines are scarce
 - └ Dwindling supply of 737-400 conversion candidates
- └ Opportunities
 - └ Short term: lease ceos/NGs to cover GTF/LEAP production delays
 - └ 737-700 / A319 → part-out for engines
 - └ 737-800 / A320 / A321 → freighter conversion at lease end

Mid-Life single-aisle values are stable

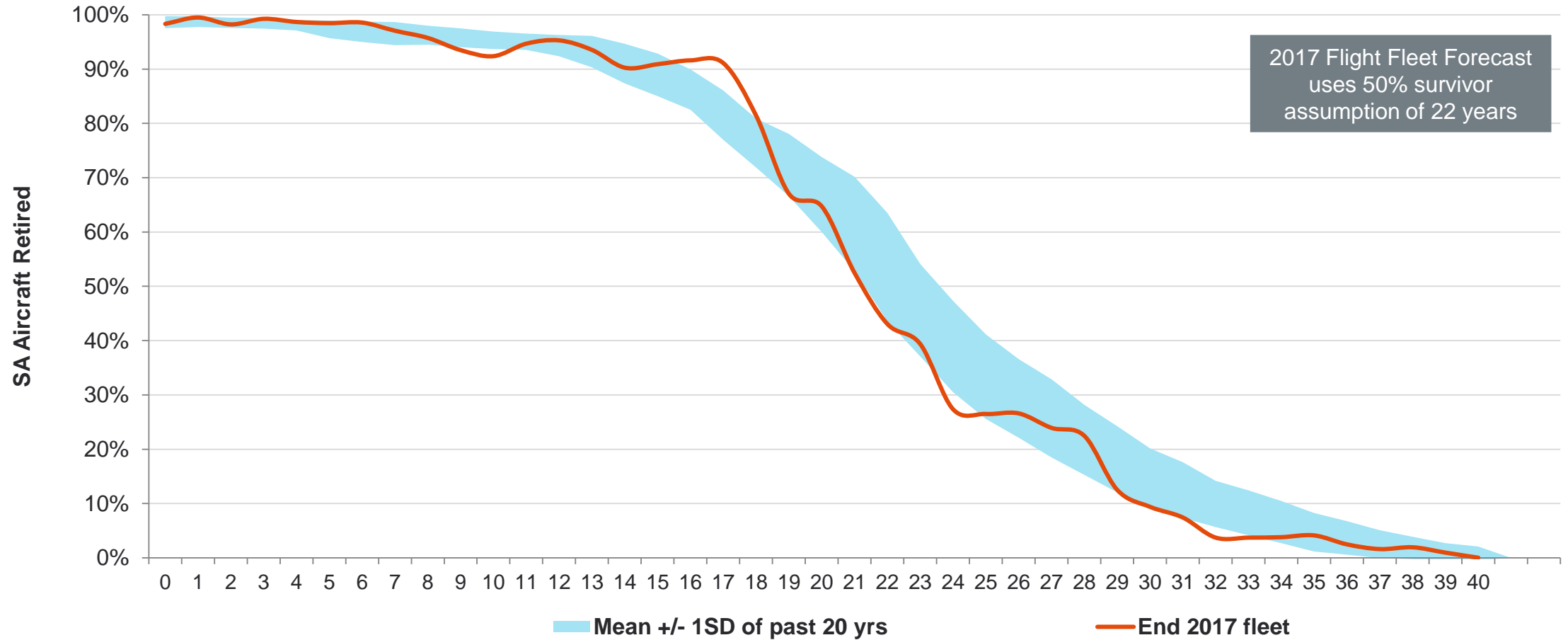


Source: Flight Ascend Values

Single aisle service life shortening



Single-aisle passenger jet survivor curve



Source: Flight Fleets Analyzer

What Makes a Part-Out Value?



Engine

(Sold as spares)



- Core Engine Value
- Engine Refurb
- Usable Cycles in LLPs

Airframe & Components

(Delivered to part-out shop without engines)



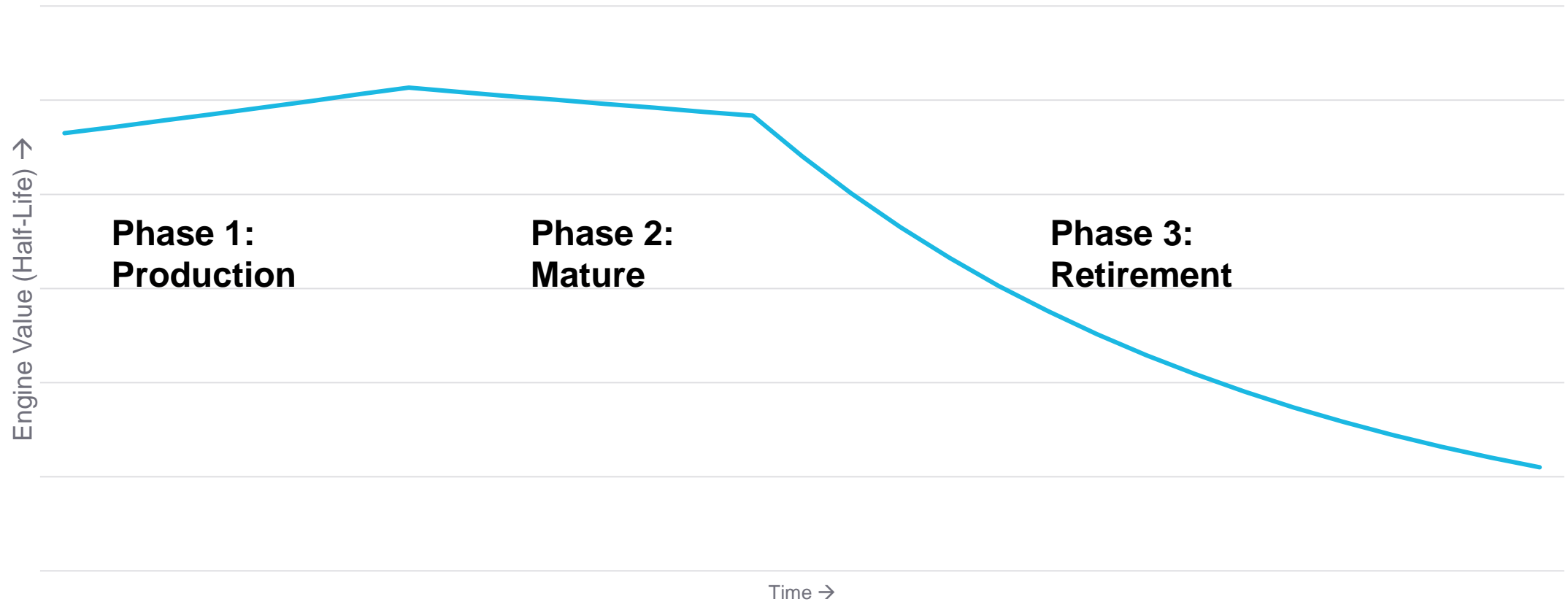
- Landing Gear
- Avionics
- APU
- Thrust Reversers
- Other re-usable parts

Source: Flight Ascend Consultancy

Engine Value Cycle



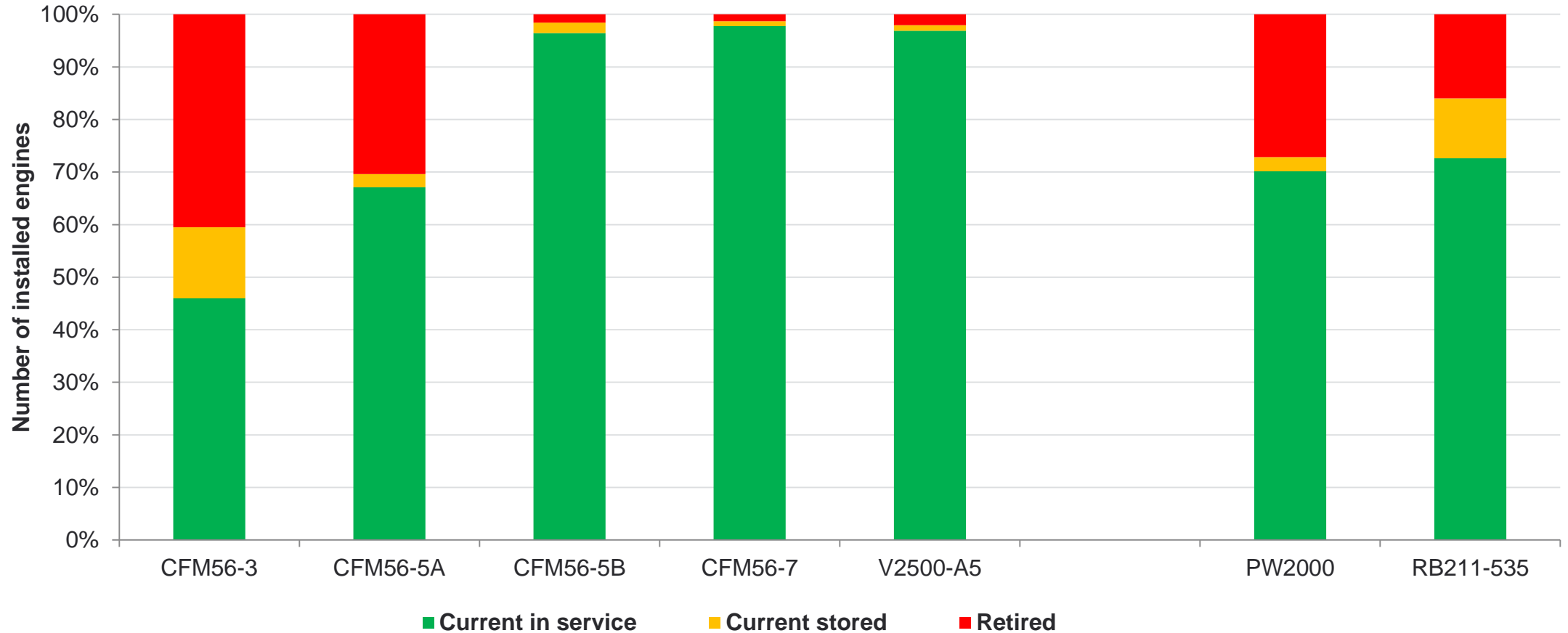
Engine value forecasts are based on phases of production cycle



Single aisle engine fleets

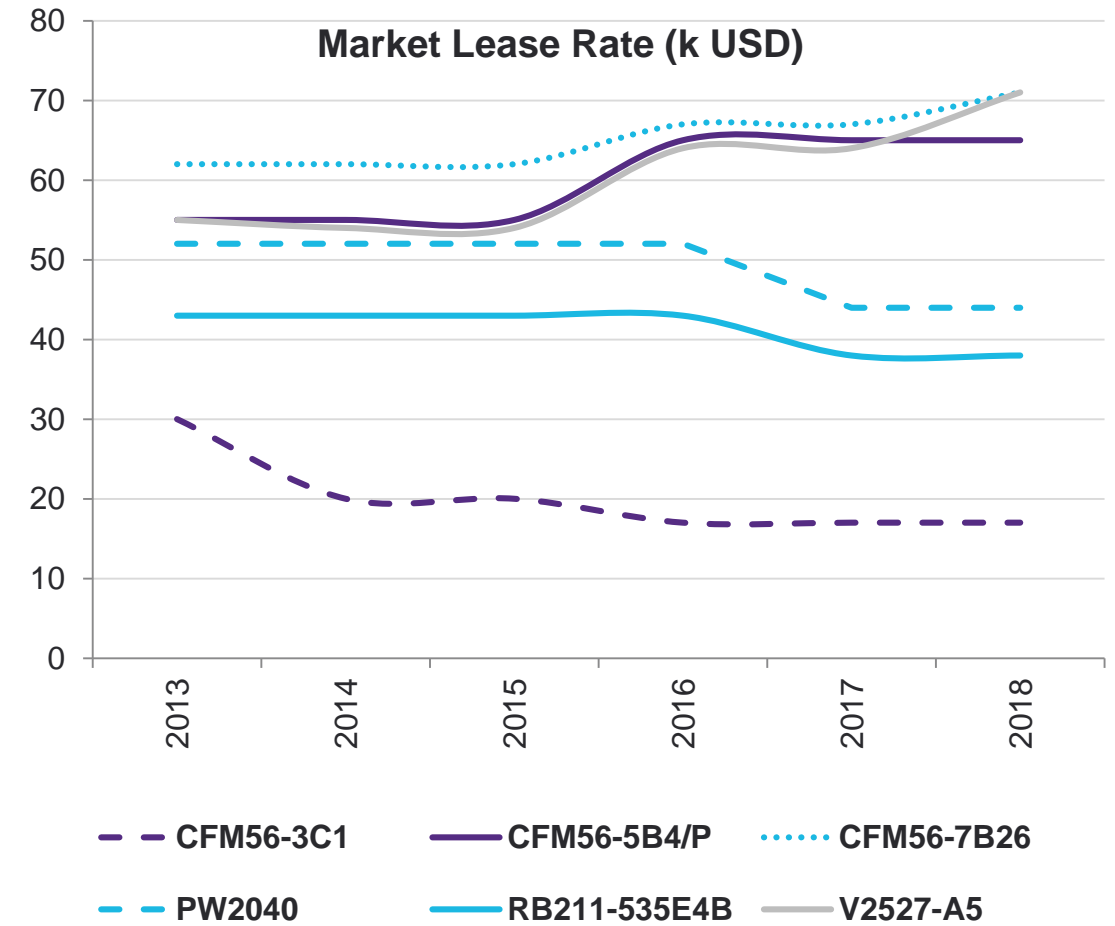
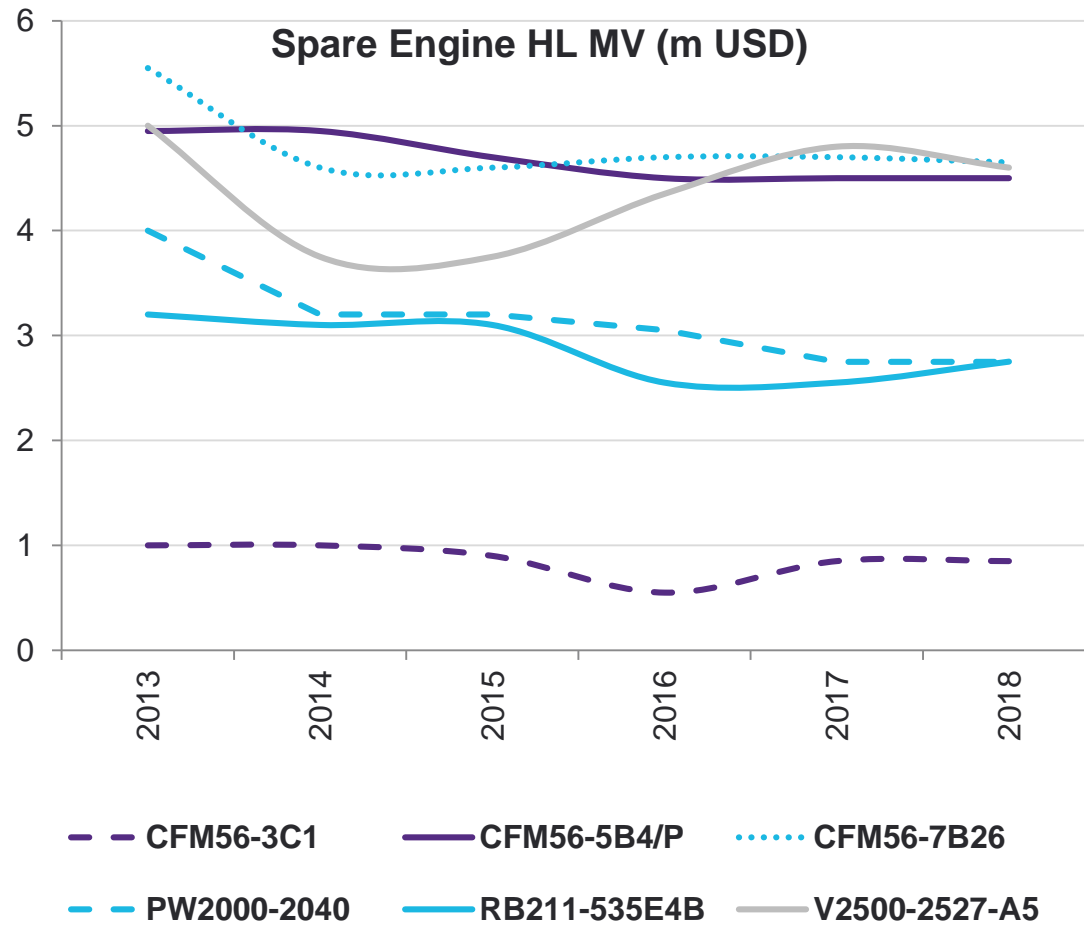


<5% of CFM56-5B, -7, V2500-A5 retired to-date



Source: Flight Fleets Analyzer

Single aisle engine values

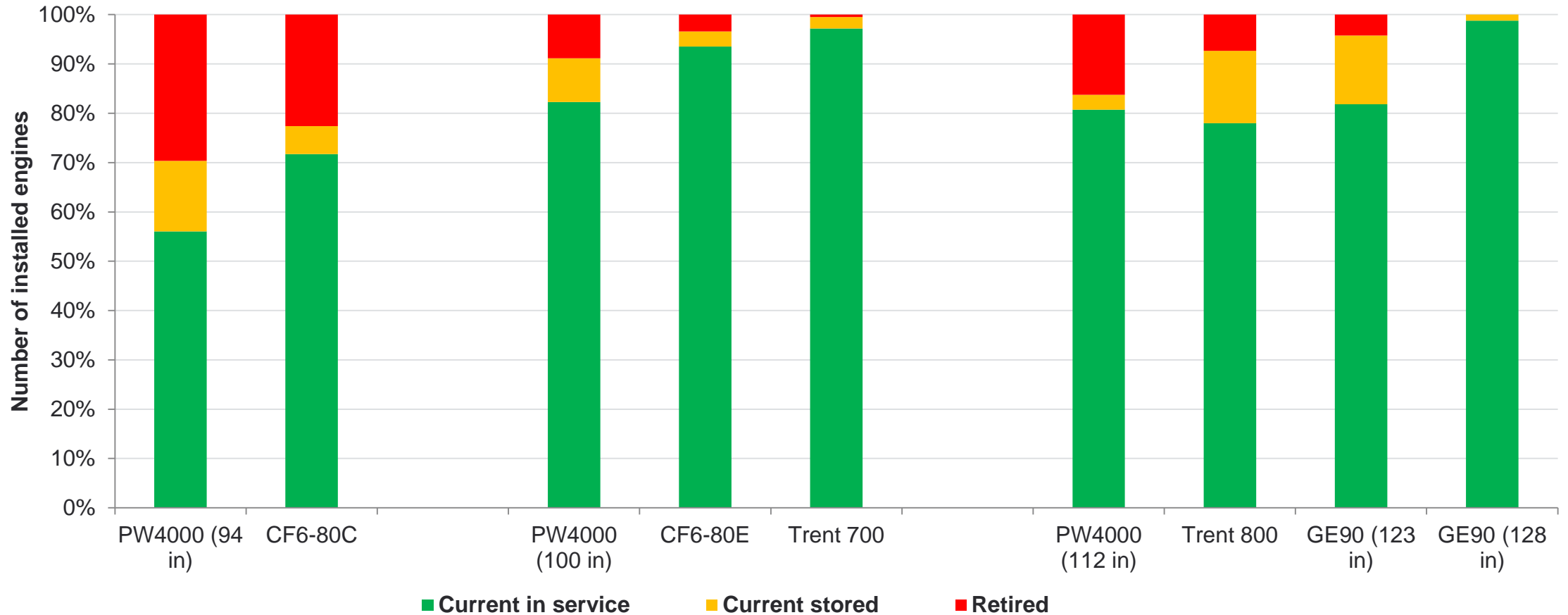


Source: Flight Ascend Values

Twin aisle engine fleets

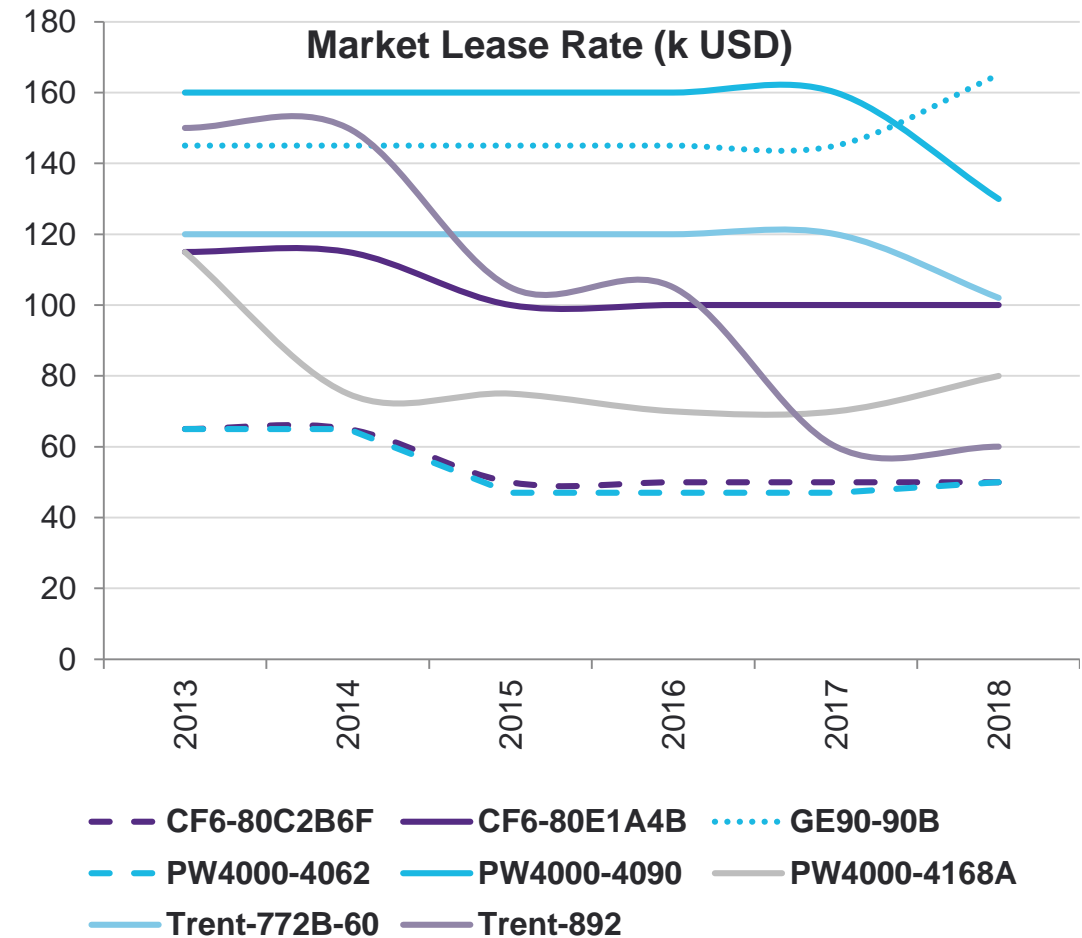
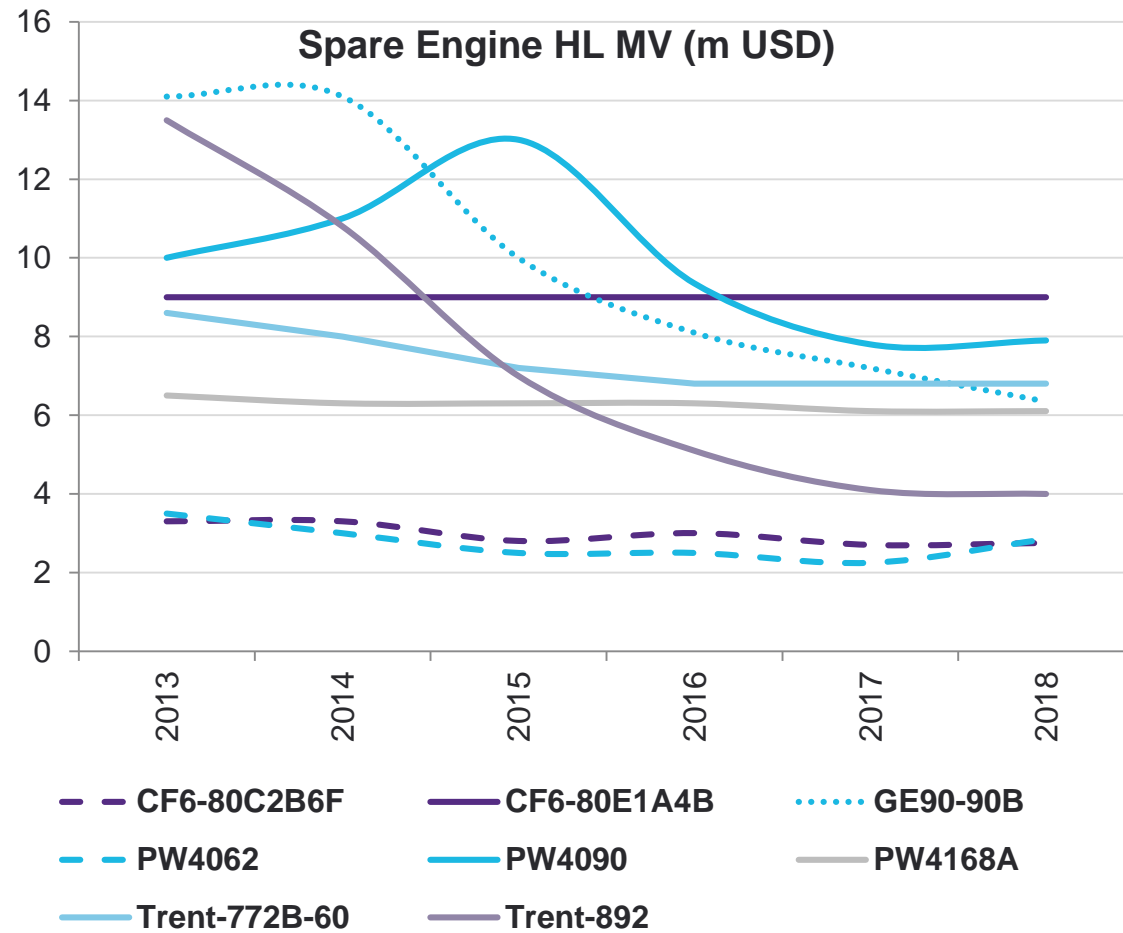


Still a lot of opportunity even for those in 'sunset' phase



Source: Flight Fleets Analyzer

Twin aisle engine values

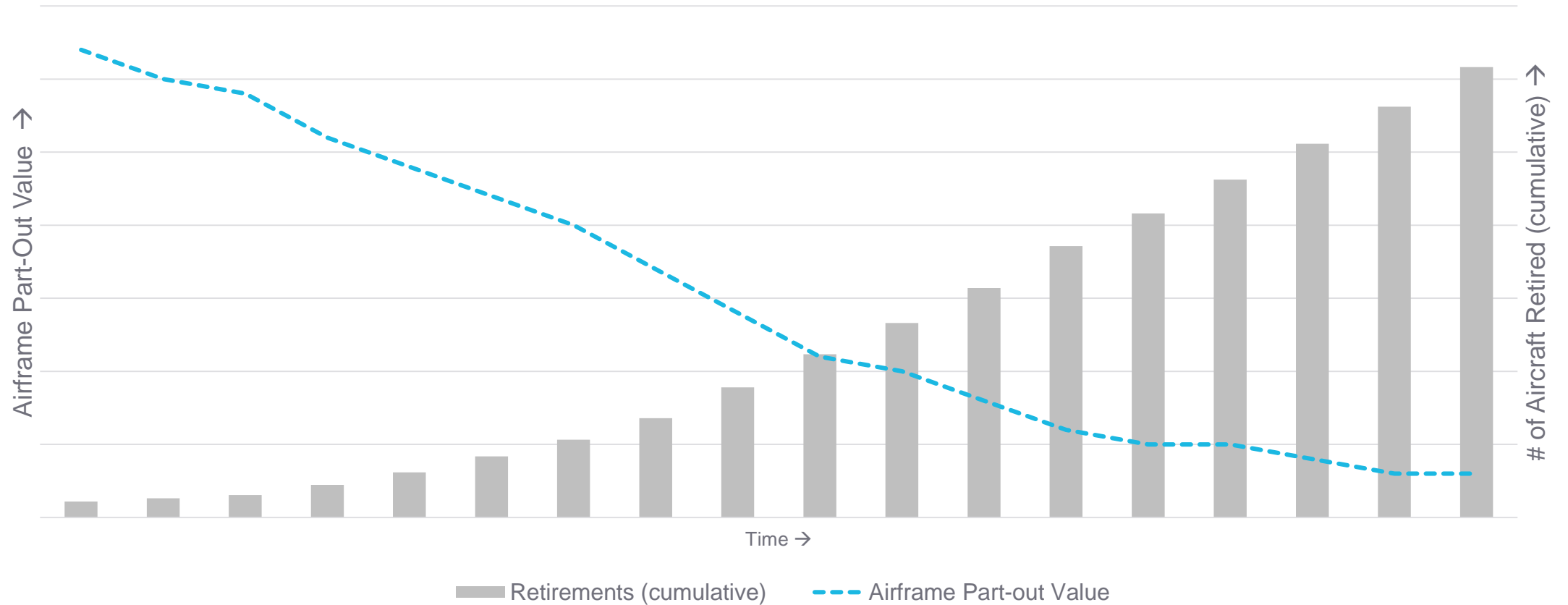


Source: Flight Ascend Values

Airframe Part-out Forecast



Diminishing returns on each additional airframe retired



Source: Flight Ascend Part Out Tool "Airframe Part-Out Value" includes LG + APU

Flight Ascend Part-Out Value Tool



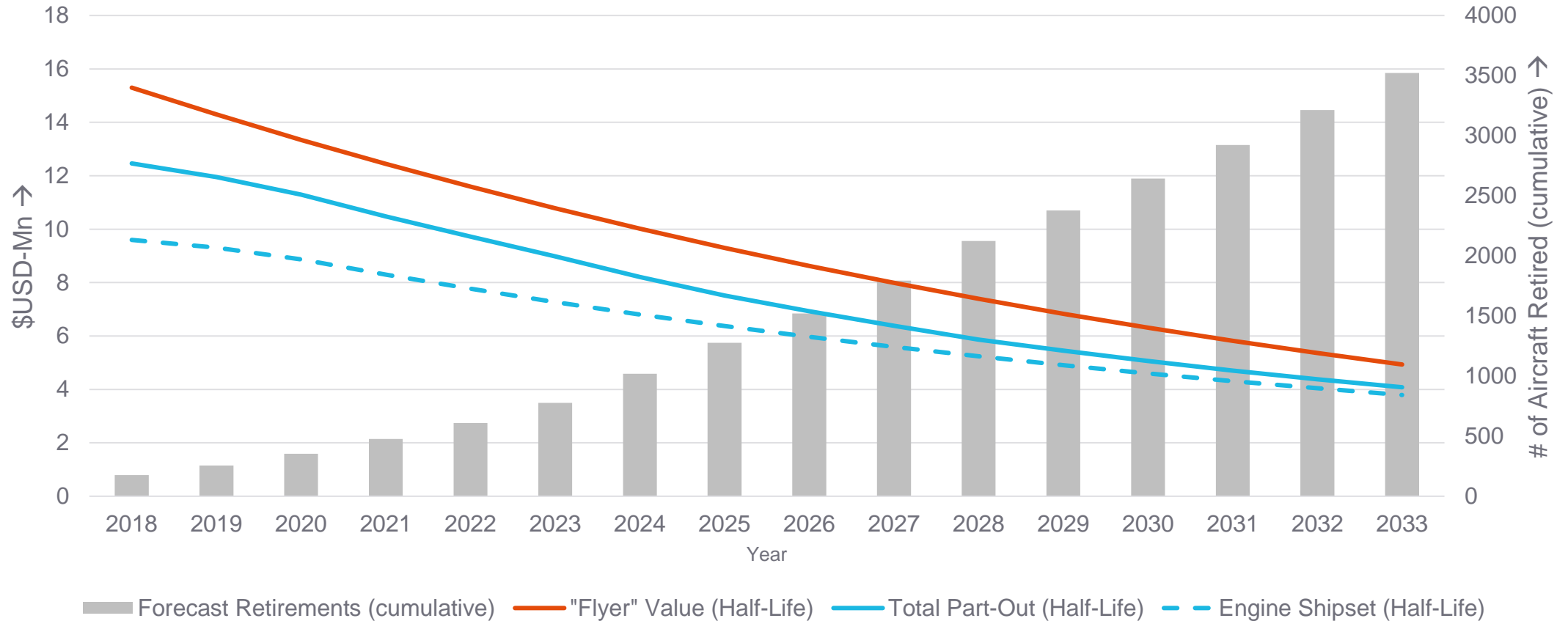
- ✧ 15 aircraft families
- ✧ 34 unique aircraft types and variants
- ✧ Hundreds of engine variant combinations to go with the above
- ✧ Updated twice per year
- ✧ Delivered in excel format
- ✧ Breakdown of airframe value, engine value and engine volatility
- ✧ User-adjustable engine condition: Run-Out, $\frac{1}{4}$ Life, Half Life, $\frac{3}{4}$ Life and Full Life

Source: Flight Ascend Consultancy

Flight Ascend Part-Out Value Forecast Tool



2003-YOB Boeing 737-800 (CFM56-7B26, 155,500lb MTOW), 2%-infl

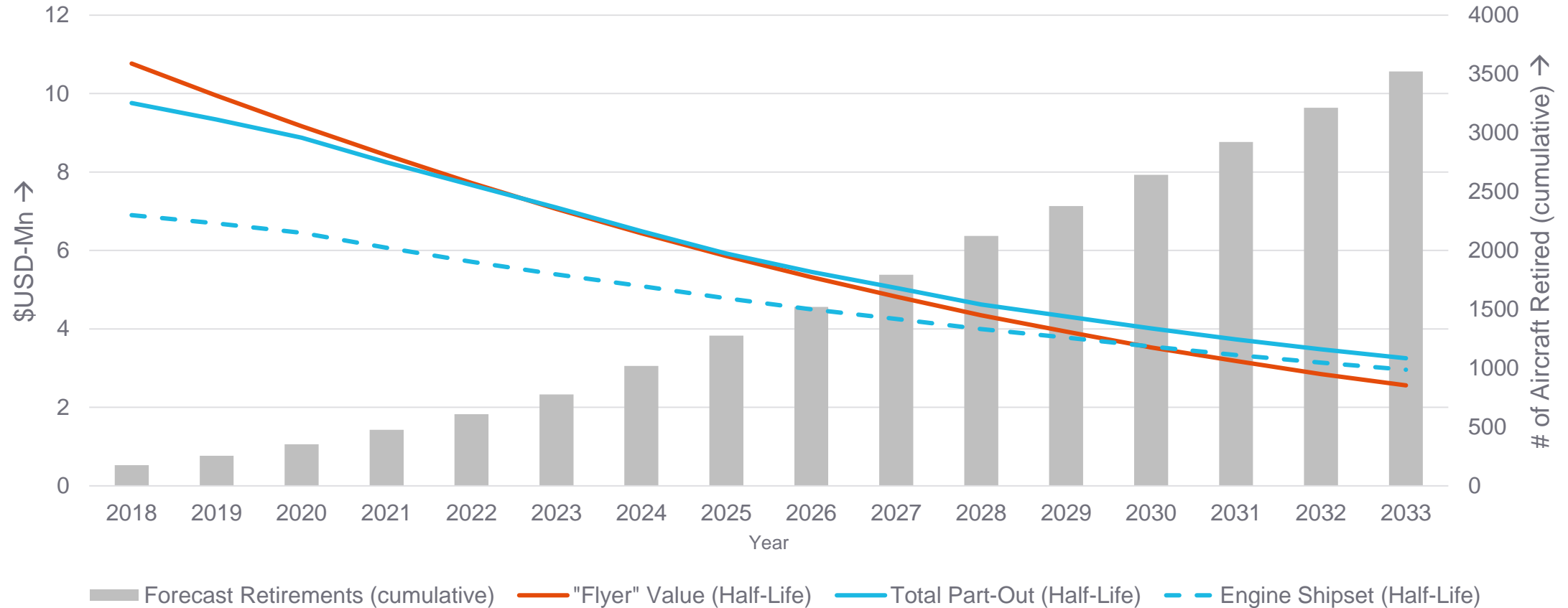


Source: Flight Ascend Part Out Tool, Flight Ascend Values, FlightGlobal Fleets Forecast (2016)
 "Total Part-Out Value Forecast" includes airframe (incl LG + APU) and engine shipset

Flight Ascend Part-Out Value Forecast Tool



2003-YOB Boeing 737-700 (CFM56-7B22, 133,000 lb MTOW), 2%-infl



Source: Flight Ascend Part Out Tool, Flight Ascend Values, FlightGlobal Fleets Forecast (2016)
 "Total Part-Out Value Forecast" includes airframe (incl LG + APU) and engine shipset

FlightGlobal: Pioneering aviation insight and analytics business



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Flight Ascend's unique value proposition as an appraiser



└ Independent Global team – fully objective

- └ We do not invest in aircraft and we are not brokers – we have NO conflicts of interest
- └ We are based in London, New York and Hong Kong and travel the world bringing regional and global opinion into our research

└ Instant access to vast data for research

- └ The only appraiser with a globally recognized Fleets database used by our clients
- └ The only appraiser with schedule information

└ Unparalleled historical values data

- └ Historical Market values from 1965

└ Access to industry tier 1 participants

- └ Clients are airlines, all the top lessors, the major banks involved in aviation finance, MROs, OEMs, regulatory bodies
- └ Presence at all major aviation events (Paris Airshow, ISTAT Asia / US / Europe...)

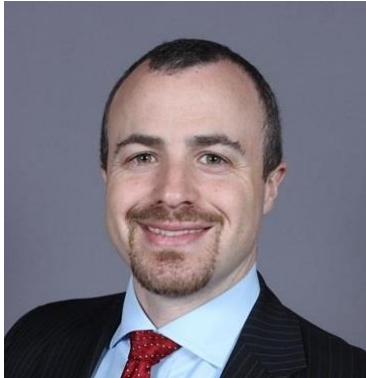
Source: Flight Ascend Consultancy

Why Flight Ascend Consultancy?



- Ascend and its predecessors have been delivering aviation data and appraisals for close to 50-years
- Thought leadership, market intelligence, analytical products, regular values updates, bespoke advisory projects
- **Ascend appraisals used globally to value in excess of 200,000 aviation assets annually**
- Unrivalled aircraft histories and values databases underpin values analysis
- Market values based upon best data capture of any appraiser globally
- **Appraiser of the Year six of the past seven years**





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Panelist: Brian Postel - Vice President of Aircraft Acquisitions, Unical Aviation Inc.



77 AIRCRAFT ACQUIRED



IN LAST 24 MONTHS

QTY	AC/TYPE	ENGINE TYPE
1	A319-100	CFM56-5B6/P
2	A320-200	CFM56-5A1
2	A320-233	V2500-A5
8	A330-300	PW4168
1	A340-300	CFM56-5C4
2	A340-600	TRENT 556-61
4	B737-500	CFM56-3C1
1	B737-700	CFM56-7B24
2	B737-700W	CFM56-7B24
1	B737-800	CFM56-7B22
2	B747-400 PAX	PW4056
3	B747-400 PAX	CF6-80C2
1	B747-400 Combi	CF6-80C2
3	B757-200	RB211-535E4B
11	B757-200	PW2000
7	B767-300	CF6-80C2
1	B767-300	CF6-80A2
2	B767-323 (ER)	CF6-80C2
6	B777-200	PW4077
2	B777-300	PW4090
3	MD-11F	PW4000
1	MD-11 PAX	CF6-80C2
11	Q400	PW150A



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Q&A: *Additional Questions?*





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- Aircraft Dismantling & Recycling
- Industry Best Management Practices
- Audit and Accreditation Services
- Industry Contacts/Networking

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