

# Retirement and storage trends

In a recent white paper, aircraft lessor Avolon again analysed the economic life of commercial jet aircraft. Tailwind Capital presents its own assessment of current trends.

**B**uilding on a study launched in September 2012 and a subsequent report in March 2015, aircraft lessor Avolon has published a new White Paper entitled, Aircraft Retirement and Storage Trends: Economic Life Analysis Revisited and Expanded. The paper contains updated and expanded analysis of key factors that influence the economic life of commercial jet aircraft, which explores current aircraft retirement and aircraft storage trends, and considers outlook for the current stored fleet of commercial aircraft.

Avolon concludes that patterns of retirement behaviour have not materially changed since 2012, with average retirement age stable at or around 25 years and more than 50% of fleets remaining in service beyond 25 years.

Although there have been a few instances of younger aircraft being retired prematurely, Avolon dismisses there as “isolated occurrences typically triggered by specific economic considerations relating to the maintenance condition of the aircraft in question and the prevailing market environment”. The average retirement age of most fleets has continued to increase over the past two years, says the lessor: “The retirement rate for current production aircraft continues to be very low and, where it is occurring, average retirement ages are continuing to move upwards, following the age distribution trends anticipated in the 2012 analysis,” says the paper.

Nearly 85% of stored in-production aircraft return to active flying, compared to only 30% of out of production types and less than 25% of stored aircraft over

15 years old. Avolon states that overall, almost 40% of the current stored fleet (800 aircraft) are expected to return to active service. “Historical storage patterns confirm that whilst young, in-production aircraft types will generally return to active service, even after several years in storage, older aircraft and out of production models are less likely to see active service again, with the probability of re-activation reducing with age and time in storage,” says Avolon’s White Paper. Avolon adds that two-three years of storage represents a threshold beyond which the “prospect of a return to active service diminishes significantly, largely determined by the costs associated with the necessary technical work required to put such aircraft back into airworthy condition. After five years in storage, the level of re-activation is very low, even



for younger aircraft, averaging less than 10% and falling to just 5% for aircraft older than 20 years.”

Much has been said on the influence of lower fuel prices on the useful life of older aircraft and Avolon’s analysis suggested that fewer than 200 incremental stored aircraft (less than 1% of the global active fleet) could also be re-activated in response to sustained lower fuel prices. It expects the potential for deferred retirements linked to cheaper oil is estimated between 150 and 200 aircraft per annum. This would result, in Avolon’s view, “in impact on new deliveries equivalent to no more than 5% to 10% of production, which OEMs are well-placed to manage”.

Dick Forsberg, Avolon’s Head of Strategy and author of the study, comments: “This new paper combines

an update of what became a hotly debated subject in 2012 with a detailed investigation into the movement of aircraft into and out of storage facilities. It validates our view that the average retirement age of an aircraft remains stable at around 25 years. The paper also determines that, in response to a sustained period of lower fuel prices, fewer than 200 incremental aircraft could potentially return to operation and a similar number may see retirement deferred - extremely small numbers in the context of the global fleet.”

Tailwind Capital was asked by Airline Economics to opine on the recently updated white paper published by Avolon as a follow-up to its analysis performed at the end of September 2012. In offering this opinion, Tailwind did not recreate its own information

dataset and instead relied solely on what was provided in the document published by Avolon in March 2015.

While we tend to agree with the approach taken by Avolon, we believe it is important to drill down further in respect of current issues that might continue to exacerbate the trend towards a shorter economic life for commercial aircraft. It is important to note that these trends are a result of market developments to date yet could be caused to change due to any number of unforeseen factors.

1. As we reach a maturation point for product offerings in most major aircraft type segments (widebody, narrowbody, regional), this will only continue to subdivide the market further as aircraft types become increasingly positioned,

and manufactured, for specific mission types (range, density, weight restrictions). As these markets are further refined, the overall ubiquity of an aircraft type will decrease and be less appealing to the broader market, making the secondary and tertiary leasing market less viable for some aircraft types, eventually causing a shortening of economic life, as substantial investments in airframe or engine maintenance will not be recovered. In contrast, we knew this was not always the case with older types such as the 747, DC10, or L1011, as these aircraft were part of a limited offering at the time and operators were forced to accept these types offered by the OEM, with limited deviation. These earlier types remained in service for substantially longer for a variety of factors that are less applicable today, including, but not limited to: increased regulatory control, lack of alternative offerings, available financing and the acceptance of older types in less developed jurisdictions, and as further detailed below, cargo conversion opportunities.

2. While the freighter market still makes a material contribution to the aviation transport sector, the foregone assumption must be reconsidered that most widebody aircraft will be ultimately converted to freighter, thereby extending the operating life of the aircraft. In the past decade, there has been a material increase in the amount of freight being carried as belly freight in conjunction with scheduled passenger operations, with a huge uptick of capacity now offered through Middle East hubs. As Middle East carriers tend to operate very large widebody fleets they are easily positioned to facilitate this movement of cargo.
3. As rightly pointed out in the Avolon analysis, the regional jet sector (in this case 50-seaters) continues to see the most notably shorter economic life with an average age at retirement of approximately 12 years. While these aircraft are remnants of an artificial market, initially created in

the United States with scope clauses, these types of restrictions will only continue to support aircraft types that might not benefit from broader operator interest. For example, the smaller EJets are being operated primarily by US operators, whereas the rest of the international operator base continues to be interested in the larger variants of the family. Depending on future demand for the smaller types, the likelihood of being able to place the smaller jets on subsequent leases remains challenging and will ultimately impact the type's economic life.

4. Due to significant improvements by engine manufacturers, engines stay on-wing much longer and, by design, are operated "on-condition" without a specific overhaul interval, the end result being an engine that gets overhauled infrequently. This factor combined with the increasing cost of overhaul, will eventually lead to a shortening of airframe life due to lack of supply of engines. This appears to be already evident with the 737NG aircraft segment, and will eventually start to affect the EJET market as well.
5. OEM engine maintenance programs that control both the new and used market for engines and engine maintenance have effectively eliminated a natural secondary trading market for used engines, and will eventually completely remove a segment of the market that would buy a used aircraft and deploy the remaining life of the airframe or engine, and subsequently part-out the large components, including engines. However, if there is no residual value in the engine due to OEM control, both the engine and airframe will see a premature retirement. This has already occurred in the ERJ-145 market and to a lesser extent with Trent-powered B777s and A330s.
6. Currently, there are many banks that will not entertain financing used aircraft due to the unfamiliarity of product or uncertainty of

residual exposure. As long as this trend continues, those buyers that specialise in this segment will continue to find it challenging to find financing, which will ultimately lead to a lack of interest and liquidity for this sector.

7. Conversely, the leasing community is now willing to work with second- and lower-tier operators, customarily operators of older used aircraft, and are offering delivery of new aircraft to such operators, eventually giving rise to a lack of demand for older, used aircraft.
8. In previous cycles, long-term leveraged leases (with terms sometimes up to 23 years) were broadly popular, resulting in a large portion of aircraft being held captive to these slowly amortising structures; which in many cases only delayed the inevitable retirement as aircraft 'book' values remained well above then market values for either sale or part-out. Many aircraft were taken out of operation and sent to storage to await their ultimate fate, with only a small percentage ever returning to service. As operators have been increasingly able to command greater flexibility for non-core assets under shorter financing schemes, usually coinciding with heavy maintenance events or engine overhauls, the decision to permanently retire an aircraft now comes with less financial and operational impact.

The analysis performed by Avolon makes excellent use of available data to draw some very important conclusions that the industry cannot ignore. While the trends don't seem as dramatic as what some are already experiencing, only time will tell if these current issues will abate or accelerate, with acceleration being the apparent current direction. Shorter economic lives of aircraft only seems to be inevitable as the industry moves towards higher levels of commoditization and a greater focus on airlines doing what they do best, which is efficiently transporting people at the lowest possible cost.