



Maintenance Matters in Aircraft ABS Deals – Part II

Re-Published: February 20, 2020

Brief:

In this edition of mba Aviation's Insight Series, the Forecasting & Modeling team analyzes the effect of monthly utilization on maintenance cash flow.

Key Concepts:

- Aircraft utilization has a non-linear effect on maintenance cash flow value to a lessor.
- Outflows are significantly larger and less frequent than inflows, so the shifting of outflow timing due to utilization has a sizable effect on total lessor value of maintenance.
- Outflow timing is influenced by minimum return conditions.

mba helps leaders in all facets of the aviation industry solve some of their toughest problems and capture their greatest opportunities. Our people are committed to our clients' success and focused on achieving essential advantage on their behalf.

mba provides solutions:

Valuation: mba provides a wide range of valuation services to improve your business decisions. These services include Tangible Assets, Intangible Assets and Enterprise Valuations.

Analytical: Recognized as a premier aviation consulting firm, mba's team brings over 150 years of combined industry experience to public and private clients.

Asset Management: mba's asset management team is comprised of seasoned aviation professionals encompassing years of experience within flight operations, engineering and maintenance.

Safety & Compliance: mba is a trusted and independent auditing firm, fully prepared to guide you through the audit and corrective action process.

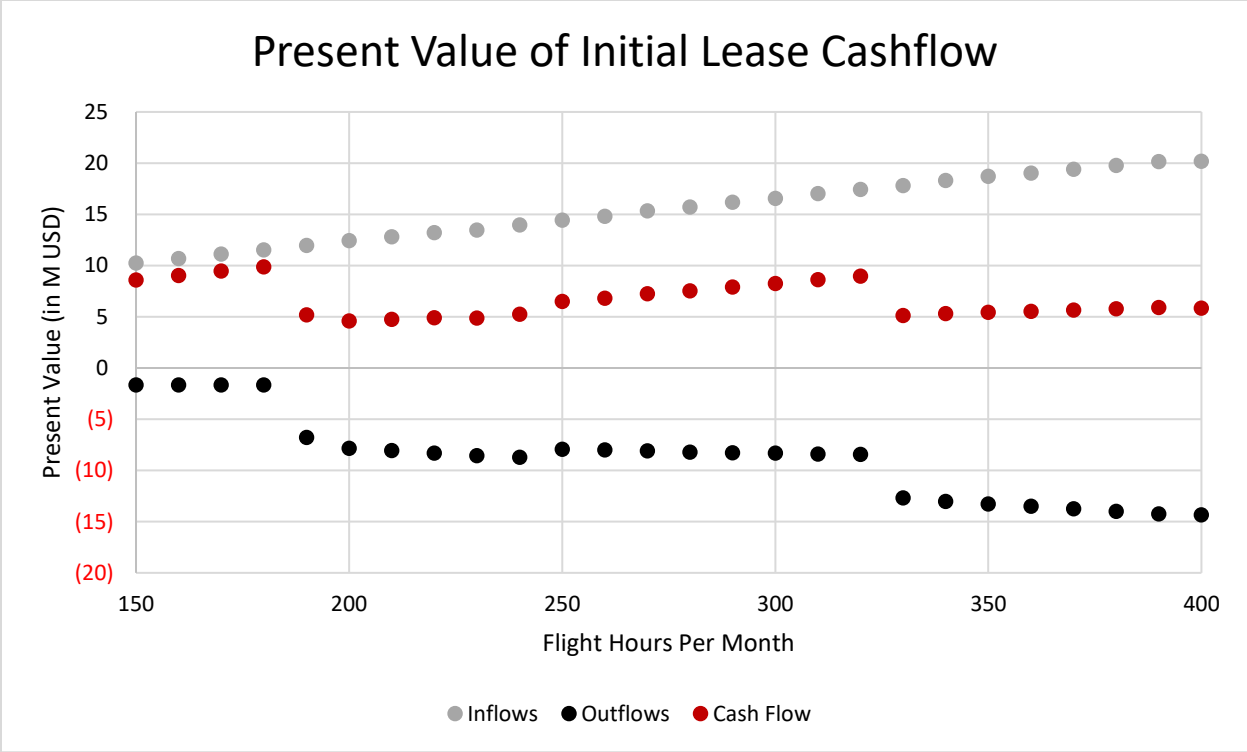
Maintenance Matters – Part II

Utilization is a major driver of aircraft maintenance. The majority of an aircraft's value is in its engines, and the engines will deteriorate based on the number of flight hours and flight cycles they fly. Correspondingly, the majority of the maintenance compensation for an aircraft is driven by flight hours and flight cycles. However, if the utilization of an aircraft increases, the value of the cash flow associated with that aircraft may not increase in a linear fashion, or at all.

In order to demonstrate the effects of varying utilization on the maintenance cash flow of an aircraft, we will posit a generic scenario common to an aviation asset backed securitization (ABS).

Scenario Assumptions	
<i>Aircraft Type</i>	A320-200
<i>Engine Type</i>	CFM56-5B4/3
<i>Environment</i>	Benign
<i>Maintenance Compensation Type</i>	Reserves
<i>Maintenance Compensation Rate at Lease Start</i>	At Cost, with 5% stub life for LLPs
<i>Maintenance Compensation Escalation</i>	At Cost for LLPs, 3% for all else
<i>Initial Lease Start Date</i>	Jan 1, 2020
<i>Initial Lease Term</i>	12 Years
<i>Minimum Return Conditions</i>	C-Check Interval (None for APUs)
<i>Subject Period Term</i>	Initial Lease
<i>Discount Rate</i>	7%

The monthly cash flow was varied between 400 flight hours and 150 flight hours in increments of 10 and assigned a number of flight cycles that would correspond to that number of flight cycles using a linear formula based on industry information. A narrowbody operating 400 flight hours per month would be expected to be flying 2.54 hour flight lengths, which a narrowbody operating 150 hours per month would be expected to fly 1.73 hour flight lengths.

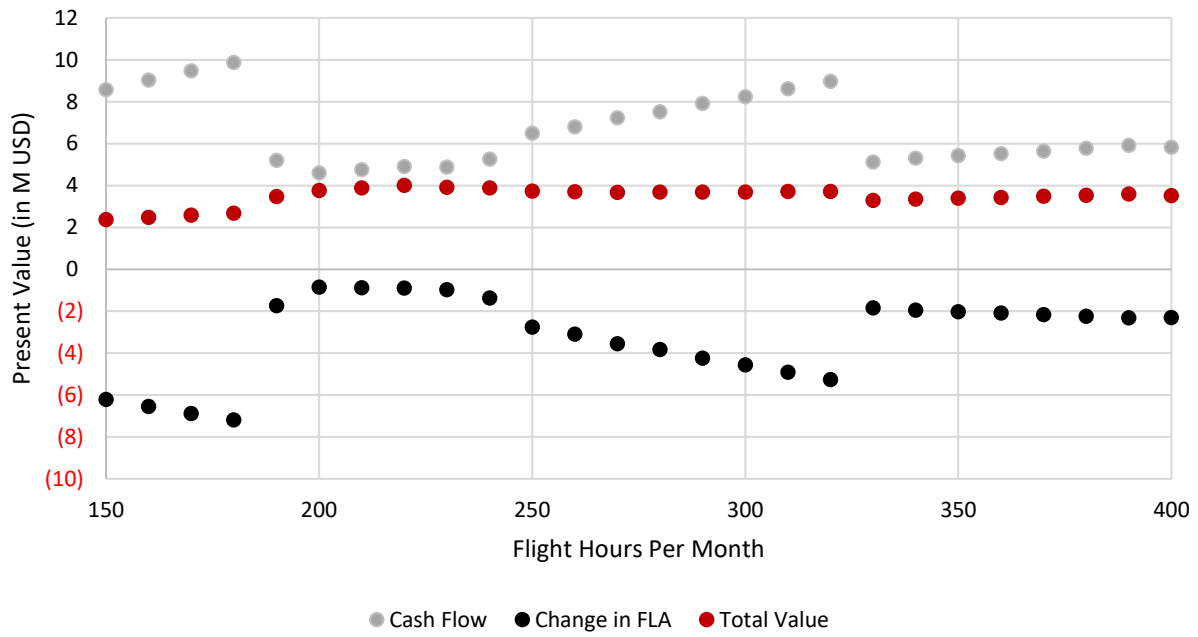


Maintenance inflow alone does not vary linearly with utilization. While in general, the present value of inflows over the period increases as utilization increases, the lack of reserve collection during maintenance downtime influences the totals.

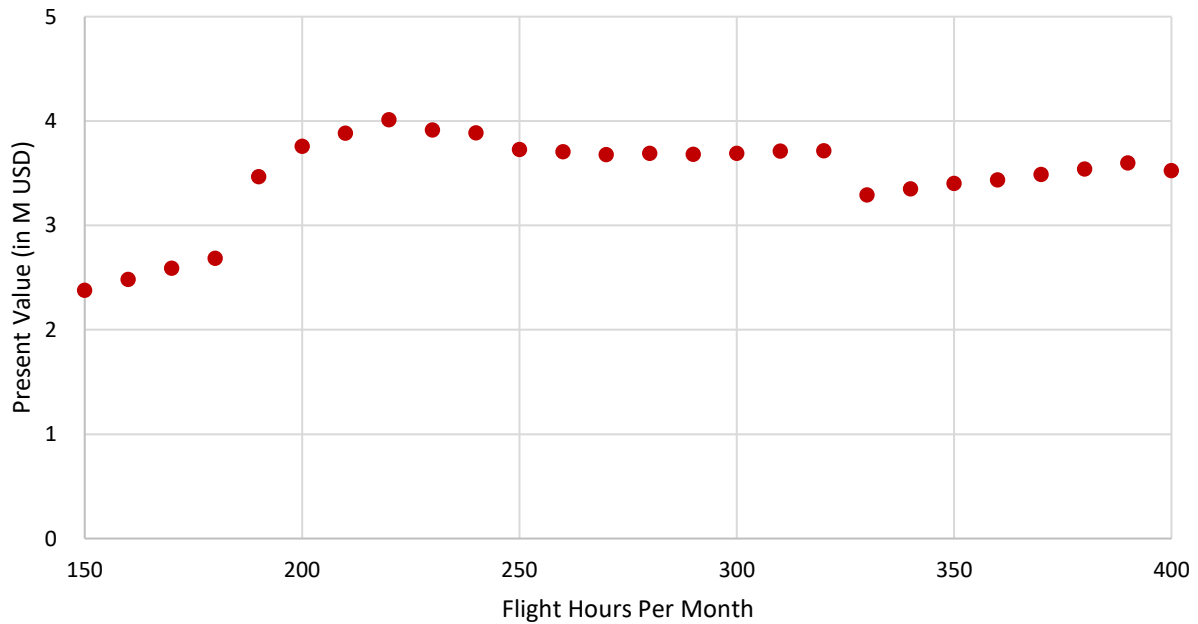
The increase in maintenance outflows as utilization increases is significantly less constant. Some outflow-causing maintenance events, such as landing gear overhauls and airframe heavy checks, are primarily calendar-driven and do not shift as utilization is varied within this range. However, engine overhauls and engine LLP replacements, which are the cause of the vast majority of outflows over the life of the aircraft, are utilization driven. These events can occur due to engine condition (driven by hours and cycles), LLP life limits (driven by cycles), or minimum return conditions for engine condition or LLP cycles remaining until life limit (driven by lease negotiations).

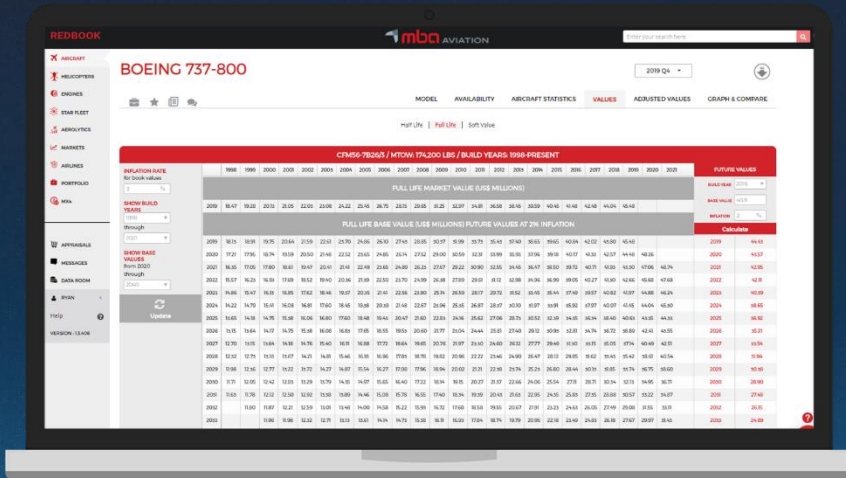
The value of the aircraft’s maintenance condition at the end of the period is also relevant to the value of the aircraft over this period. Therefore, for as complete a picture as possible, and to be able to answer the question of if increased utilization increases value for the lessor, we will take these into consideration. The value of this aircraft’s maintenance over the Subject Period is the sum of the present value of the cash flow during the subject period and the present value of the maintenance adjustment at the end of the subject period.

Present Value of Initial Lease Maintenance



Total Value of Initial Lease Maintenance





Make data-driven investment decisions with REDBOOK.

MX4 – Maintenance Forecasting

- ➔ Model an aircraft's full maintenance program
- ➔ Forecast maintenance adjusted values
- ➔ Visualize lease payment cash flows

Asset Valuations

- ➔ Reliable values from ISTAT Certified appraisers
- ➔ Full coverage of aircraft, helicopters & engines
- ➔ Streamlined data for ABS & EETC transactions

STAR Fleet

- ➔ Filter records for 45,000+ aircraft
- ➔ Build batches of aircraft for detailed analysis
- ➔ Unlimited downloads to Excel