

WARBIRD CAPITAL

An Alternative View on Commercial Aircraft Valuations (How COVID-19 Changes All Assumptions)

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Summary:

At the beginning of 2020, there was a world fleet of around 26,000 airliners valued at approximately 1.6 Trillion US Dollars. Today 2/3 of those are parked, and airlines and lessors are facing historic financial challenges. How does one determine the value of an idle airliner given that demand for it does not exist at the present time? It is generating significant expenses every month for storage, insurance and maintenance. Does that mean the asset has a negative value, like a May 2020 oil delivery contract is trading for today? If you wanted to bid on such an asset, what should you pay?



As most people around the world are hunkered down in some form of isolation to slow the spread of this COVID virus, travel restrictions and stay home orders are common around the world. Air travel as we knew it a few short months ago has mostly come to a halt. Unbelievably, ~2/3 of the jetliner fleet is parked today. Schedules have been slashed, many airlines have suspended operations entirely, and load factors on the flights that are operating are frequently under 20%. As of today, we do not know how long this will last, how much economic damage will occur, and what path the resumption of traffic will take as the recovery to “normalcy” occurs, and if the post COVID propensity to travel will be different than it was before.

With that previously unthinkable scenario now our current reality, the aviation finance community of lessors, lenders, appraisers, advisors and investors are all trying to understand the impact this has on aircraft values.

Some of the first estimates to be published logically looked back to the period after 9/11/2001 plus the Afghanistan Invasion, the 2002 SARS outbreak, 2003 Iraq War 2 and the combined traffic disruptions (the worst impact prior to COVID) to see what happened to values then. In that cycle, many airline bankruptcies occurred years after the initial traffic disruption so the idle fleet while considered large at the time was not as overwhelming. Like now, there was an absence of trading activity initially, so the values published were estimates only, not based on actual trades. I advise caution when looking at the estimates from that period to guide views for today. Not only is the current situation more global and more severe, post 9/11 it took a few years for enough trades to occur that a real “market value” supported by transaction data existed.



Initial comments and revisions to published values from the ISTAT certified appraiser community have begun. These were necessary to acknowledge the obvious fact that there has been a fundamental change due to a tremendously disruptive event, but those changes were quite modest. Many observers would be surprised at such minor changes, but in the past, severe criticism has been directed at appraisers for “leading the market”. I appreciate the delicate position they are in. With no sales to observe, and no leases, and even a lack of offers, let alone bids, there is no new data for appraisers to use for the comparable sales method of valuation, or even lease implied values. That is part of the reason I have laid out an alternative approach, reflecting the thought process of an investor looking to purchase assets at this time. When we see the first trading activity, it will certainly not meet the ISTAT Market Value definition of equally motivated buyer and seller. That does raise an interesting side question. If the only market activity is distressed sales, is “Market Value” and “Distressed Value” the same thing?

I have been a member of ISTAT (International Society of Transport Aircraft Traders) for ~20 years, including my years at GECAS and CIT as well as Warbird Capital. I (via my employers) have also been a customer of many appraisal firms over that 20 year period, and I have become friends with many of the ISTAT appraisers. At both GECAS and CIT we had our own internal value numbers and forecasts that were largely my own models and included the large amounts of internal data that was present in those institutions. We would also do comparisons to up to 5 appraiser values (especially for accounting use where third party numbers were important). I consider the ISTAT appraiser certification program to be a model for other industries to follow, and I have the highest respect for the ISTAT organization and the appraiser community. Despite being deeply involved in predicting cycles and aircraft values for the main part of my career, I have never sought an ISTAT appraiser certification, as the firms I was at were never providers of appraisal services. The work I did on cycles and values was to guide our own forecasting, strategy and leasing and lending underwriting. The analysis included here is not intended to compete with or replace an



appraisal of any aircraft, and Warbird Capital does not offer appraisal services. What I am presenting here is simply the thought process of an experienced aircraft investor. As the title implies, this is an alternative view, and unconstrained by any concerns about “leading the market”, or any existing investments in aircraft or lessors that could cause a conflict of interest.

The valuation method included here reflects the fact that an airliner as a stand alone asset is actually a liability to an investor. Only a regulated, certified airline can turn that large ticket asset into cash flows via operating it, so absent the ability to sell it or lease it to an airline, an investor is holding a large capital asset that is a negative cash flow due to storage and maintenance. So, does that mean that a parked aircraft with no lease is worthless? No, of course not. In addition to the ability to tear down the aircraft and properly label the parts for sale as used serviceable material, there is an embedded call option value on a market recovery in the asset. A long lived asset with negative cash flows at the moment can be sold or leased at a later date, thus generating positive cash flows. The longer the remaining utility of the asset, the more that option is worth.

A non-aviation example of this is a large ship like a capesize bulk carrier. In shipping any owner can be an operator by creating a shipping company, or by putting a vessel into a managed pool or simply outsourcing the commercial as well as technical management. There have been many low market time periods where the earnings of such a vessel are less than the daily operating expense, thus the asset is cash flow negative. While the NPV of those current cash flows is negative, vessels in those periods are still sold for tens of millions of dollars based on the embedded call option inherent in owning a young asset with a long lifespan in a market with high volatility. Shipping has much higher volatility than aviation, plus periods of windfall profits, but the valuation method is similar. The value can be derived by discounting different recovery scenarios where the asset produces positive cash flows.



To properly calibrate this future estimated cash flow methodology, we will start by looking at a narrowbody aircraft that was brand new just prior to COVID. We will keep this generic and ignore the MAX issues that are outside of COVID, so it could be either an Airbus NEO or Boeing MAX product. These numbers should look directionally familiar to market participants.

Assumptions:

New narrowbody delivered January 2020 and leased to a creditworthy airline for a 12 year lease at \$380,000 per month. With a value / capital cost of \$51,750,000 that lease rate factor is .7343 (monthly lease over capital cost).

Minimal off lease time / transition expenses between leases (1 month off lease and \$1MM cost for each transition)

Lease 2 is a 5 year lease at \$270,000 per month

Lease 3 is a 3 year lease at \$200,000 per month

Sale at age 20 for \$12,000,000.

Result:

The IRR of those 20 years of cash flows is 6%. Given the intense competition in recent years, low interest rates and ever lower expectations for both debt and equity returns, deals like this were common. Whether investors ran the cash flows out 20 years or just put in a higher number at end of lease as a residual value, the math is the same. With low cost debt, a 6% unlevered return was creating equity returns that were attracting capital.

Our view was that those type of transactions were priced for perfection, and that the probability of achieving those results was low, mostly due to the risks of



longer downtime, higher transition expenses, and lower residual values, not necessarily a near term credit event or demand shock.

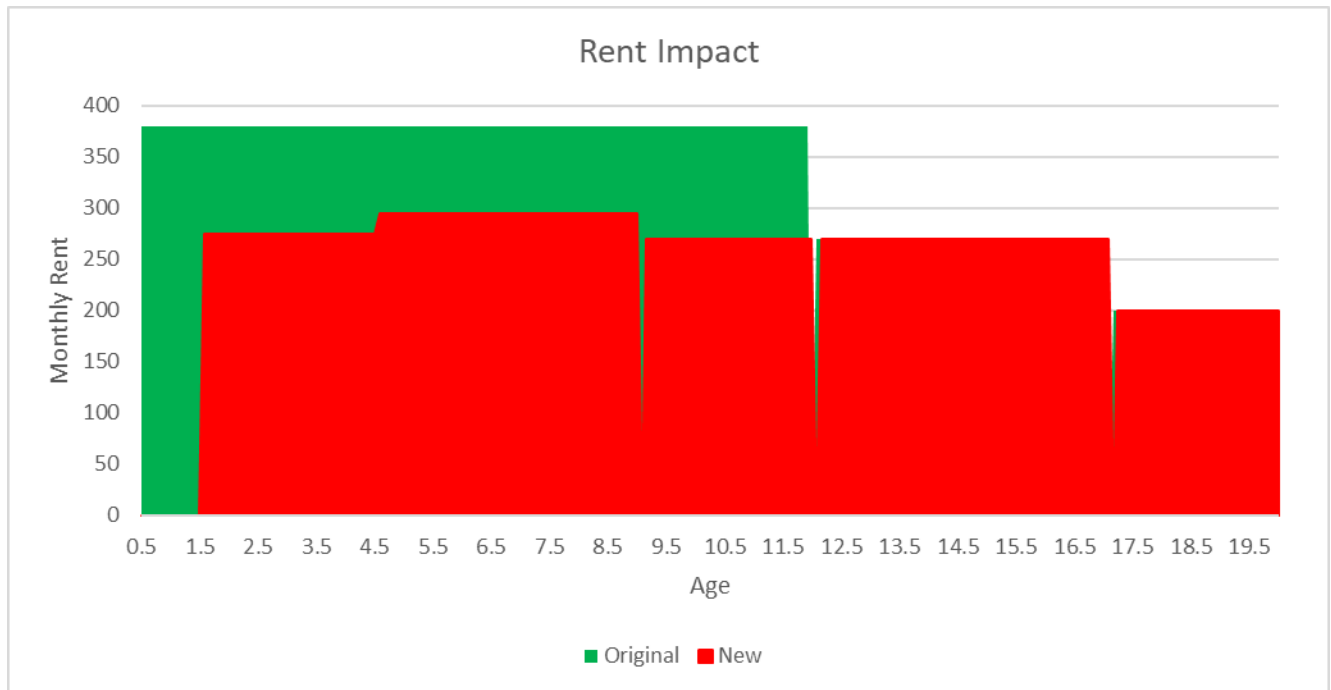
Now if we look at that same aircraft off lease as of June 30, 2020 we get a very different picture. That original 11 1/2 year lease remaining is gone, replaced by estimates of 12 months off lease to begin (with storage and maintenance costs), then a 3 year lease at \$275,000, followed by a 4 1/2 year lease extension at \$295,000, and another 3 year lease (with a transition) at \$270,000. The original estimates for years 13 to 20 are unchanged. While these lease numbers likely sound low, keep in mind that a small oversupply had some brand new MAX aircraft being leased from speculative orders at under \$300,000 per month before the grounding and before COVID. I could easily argue for a much lower lease rate or longer off lease time.

For another non-aviation example, look at lease rates for coal carrying railcars. Given the secular decline in coal, there is more supply than demand, so lessors are sometimes forced to offer leases of those cars at \$1 per month, or a per diem structure, where the customer only pays if the car is utilized. This is better for the lessor than having the cars returned, where the lessor has to pay for storage, and the cost to do a shop visit and move the car to a location to commence the next lease. Could we see \$1 a month aircraft leases or rent per flight hour structures in aviation?

The revised downtime and leases above translate into the following bid options for different discount rates by an investor for that same January 2020 built off lease airplane as of June 30, 2020. The original investor assumed a 6% unlevered return on its 51,750,000 investment. Below is a table showing the NPV's of the revised lifetime cash flow assumptions at discount rates from 6% to 15%.

Discount Rate	NPV
6%	\$ 34,523,634
7%	\$ 31,503,361
8%	\$ 28,849,225
9%	\$ 26,508,019
10%	\$ 24,435,175
11%	\$ 22,593,247
12%	\$ 20,950,679
13%	\$ 19,480,798
14%	\$ 18,160,990
15%	\$ 16,972,029

Even though this example is for a very capable, young aircraft, the off lease period with technical expenses, combined with a lease into a weak market dramatically impacts the NPV of the cash flows. The green area visible in the graph following represents lost value of downtime and a lower initial lease compared to the original lease. That lost value cannot be recovered. Different scenarios varying time off lease, duration of future leases and rent levels all change the NPV's, but the overall magnitude of the new NPV compared to the original \$50MM+ value does not materially move. The loss of that initial lease makes the post COVID rents for the nearly new aircraft look like the rent for middle aged assets. The value from the NPV approach at the higher discount rate also looks like a value we used to equate with a middle aged aircraft.



Lessors will be highly motivated to preserve that original lease, even with long rent deferrals, as that will be a better outcome than getting the aircraft back and experiencing the revenue loss shown in this example. Since they will not have alternative deployment opportunities in the near term if they repossess, keeping the aircraft at the airline and hoping they survive and can make payments in the future is the best of the terrible options.

Lessors will be faced with near term liquidity challenges from the deferral requests / demands from nearly all airline customers, many of which will turn into restructurings and some to liquidations. While young assets suffering a lease default do not trigger mark to market accounting that pushes an impairment to the balance sheet, the cash flow shortfalls compared to debt service is the short term threat the lessors face. Long term the cumulative reduction in portfolio cash flows that do not support the debt balances will remain an issue requiring recapitalization. Accordingly, aircraft backed lenders to airlines, to lessors, or to individual aircraft SPV's can all expect to be asked for forbearance and likely restructuring.



We have also modeled scenarios for middle aged aircraft to see the percentage reduction compared to pre-COVID market values, and the results are generally a bit worse, as there is a shorter useful life to work with. The grounding period and weak rent period is a larger percentage of the remaining cash flows of the older asset. Warbird's view is that with oil prices at historic lows, the middle aged aircraft, with very low capital costs and fuel burn only ~10% higher than the newest models are very compelling alternatives for restructured and new airlines formed to replace those that failed.

The values that ~15-20 year old aircraft were trading for based cash flows of a short lease period plus the value of the parts when retired is also subject to change. With far fewer airplanes flying, and the ability to run green time off of stored aircraft and engines prior to doing any overhaul work, parts demand is expected to be very low. Thus the value of aircraft being parted out is significantly lower as less parts get sold to be put on other aircraft, and over a longer period of time.

The very oldest types that were already experiencing retirements but still have some units in the pre COVID fleet face a situation where very few or no airlines will continue to fly the type, so the value of those aircraft, engines and parts effectively drops to zero.

With some conservative estimates of the numbers of airlines that will be totally shut down, undergo full restructurings allowing leases to be broken and the negotiated lease amendments, Warbird estimates \$600B of losses in aircraft values / revised NPV of cash flows across the global fleet that existed as of the beginning of 2020. Note that this is just the existing fleet, not including any impairments of value of aircraft in the order book that are contracted at pre-COVID prices.



We do not expect to see the replacement cost method of valuation to change, in sharp contrast to the NPV approach, and they will eventually converge again. The OEM's and their suppliers are simply not able to produce aircraft materially cheaper, and lower production rates are likely to drive unit costs up, not down. Therefore, we expect much lower production rates to be sustained for several years until supply and demand comes into balance and the economics of a new delivery makes sense to the airline, and the financing party. Once the supply of used and parked aircraft gets low enough that market lease rates and airline credit quality again can support 50MM+ narrowbody aircraft costs / collateral value we can see increased production again. Those values will have to be based on a discount rate that reflects the market debt and equity costs, which will include interest rate and risk considerations.

About the Author:

Nicholas Pastushan is a business leader, investment manager, lessor and lender with a track record of success and extensive experience in large ticket transportation assets. His transaction history includes all parts of the aviation ecosystem, including many complex restructurings. He is the founder and CEO of Warbird Capital LLC, a private investment and advisory firm based in New Canaan, CT. Warbird's existing portfolio includes equity investments in several small and lower middle market firms, asset based and cash flow loans, working capital finance, and a lease program for hydrokinetic renewable energy solutions for off the grid communities.

Prior to founding Warbird, from 2005 to 2016 he was Chief Investment Officer of CIT's Transportation Finance Segment. The \$20B of assets in the Transportation Segment included a \$10B aircraft leasing unit with direct orders from Boeing and Airbus, plus lending secured by commercial and business jets, railcar leasing, ship finance, and aerospace and defense merger and acquisition finance. As Chief Investment Officer, he chaired the Segment Credit and Investment Committees,



plus was a permanent member of CIT's top level credit committee that oversaw the \$50B+ business across all the operating units.

From 1999 to 2005 he was VP Portfolio and Director of Industry Research at GE Capital Aviation Services, which had ~\$50B of aircraft exposure. During that period, GECAS and ILFC were by far the 2 largest lessors in the world. He was responsible for the GECAS market forecasts, values and portfolio strategy.

Across 20+ years of aviation experience, he has been a speaker at several dozen major conferences and events. The topic of these presentations was usually a buyer's view of supply and demand, cycle forecasts and the status of aviation finance markets. He is a Past President and long time Board Member of Air Transportation Research International Forum.

About Warbird Capital:

Warbird Capital invests its own capital for most transactions, and partners with funds, family offices and other institutional capital on a deal by deal basis for larger transactions.

Warbird is rapidly expanding its advisory business and capabilities in the wake of the COVID crisis, the massive disruption it caused, and the huge need for advisory, restructuring and recapitalization of whole industries, especially aerospace.

Warbird can offer forecasts, analysis, strategic and restructuring advice to aero related companies that need to radically adjust to the new reality. Warbird can assist institutional investors that have existing investments in Aerospace, as well as those that are looking for good investment opportunities in the sector in distressed situations, asset based securities, and in the recapitalization of great companies that will thrive again once this difficult period has passed. Warbird



can provide lenders and investors in aircraft based loans, with a full spectrum of services up to and including formal restructurings, leading creditor's committees, and bringing in the legal resources with direct and relevant experience and expertise.

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