

## Determining the Value of a Commercial Aircraft for Insurance Purposes – Example Airbus A320

Sofema Online (SOL) [www.sofemaonline.com](http://www.sofemaonline.com) Considers Key Aspects related to the determination of an Aircraft Valuation

### Introduction

Determining the value of an aircraft is a multifaceted process influenced by numerous factors. Accurate valuation is crucial for buyers, sellers, insurers, and financiers.

To consider that each method and influencing factor plays a critical role in ensuring accurate valuations.

### Influencing Factors

By examining real-world examples, we can appreciate the dynamic nature of aircraft valuation and its critical importance in the aviation industry. To consider here the various factors:

- Purchase Price,
- Depreciation, Maintenance,
- Market conditions, and specific insurance considerations. Each aircraft's value must be determined individually, considering its unique characteristics and operational history.

### Factors Influencing Aircraft Value

- **Age and Usage:** Older aircraft typically depreciate more, though some models retain value better than others due to reputation and reliability. High flight hours can also reduce value.
- **Maintenance and Condition:** Regular maintenance and upgrades can preserve or even increase an aircraft's value. Comprehensive service records are crucial.
- **Market Demand:** High demand for certain aircraft types can inflate prices. Conversely, a surplus of similar models can drive prices down.
- **Technological Advancements:** Newer models with advanced technology may reduce the value of older models. For instance, the introduction of the Boeing 787 Dreamliner affected the value of older long-haul aircraft like the Boeing 767.
- **Economic Conditions:** Economic downturns can reduce demand for business jets, decreasing their market value, while an expanding economy can have the opposite effect.

### Key Methods of Aircraft Valuation for an A320 Aircraft

- **Example 1 - Market Comparison Approach:** This method involves comparing the subject aircraft to similar aircraft that have recently sold or are currently listed for sale. Key variables include model, age, condition, total flight hours, and installed equipment.
- **Key Variables:**
  - o Model: Ensure the comparison is between the same model variants (e.g., A320-200).
  - o Age: Consider the manufacturing year and any significant refurbishments.
  - o Condition: Assess the physical condition, maintenance history, and any recent overhauls.
  - o Total Flight Hours: Evaluate the total time the aircraft has been in the air since manufacture.
  - o Installed Equipment: Compare avionics, engines, interior configuration, and any special modifications.
- **Case Study 1 :**
  - o Suppose a pre-owned 2015 Airbus A320 is being valued.
  - o Recently sold comparable A320s from 2014-2016 might have prices ranging from \$25 million to \$27 million.
  - o Adjustments would be made based on specific factors such as if the subject aircraft has a new interior, more advanced avionics, or fewer flight hours.
- **Example 2 - Income Approach:** This method estimates the aircraft's value based on its ability to generate income. It involves forecasting future cash flows from the aircraft and discounting them to present value.
- **Key Variables:**
  - o Lease Rates: Current market lease rates for the A320.
  - o Utilization: Expected annual flight hours.
  - o Operating Costs: Maintenance, fuel, crew, and other operational costs.
  - o Residual Value: Estimated value of the aircraft at the end of the lease term.
  - o Discount Rate: Appropriate rate to discount future cash flows to present value.
- **Case Study 2:**

- o For a 2015 Airbus A320, if the average annual lease rate is \$1.5 million and it is expected to operate 3,000 hours annually with operating costs of \$1,200 per hour, the annual net income would be calculated.
  - o These cash flows would then be discounted using a rate that reflects the risk and time value of money, providing a present value estimate of the aircraft.
- **Example 3 - Cost Approach** - This method estimates the value based on the cost to replace the aircraft with a similar one, considering depreciation for age and condition.
- **Key Variables:**
  - o Replacement Cost: Current cost to acquire a new or similar aircraft.
  - o Depreciation: Account for wear and tear, technological obsolescence, and market conditions.
  - o Condition Adjustments: Specific adjustments for the condition of the aircraft.
- **Case Study3:**
  - o If the cost to acquire a new A320 is \$100 million, and the average useful life is 25 years, a 2015 model would have 9 years of depreciation.
  - o Assuming straight-line depreciation, the annual depreciation would be \$4 million.
  - o Thus, the depreciated value might be around \$64 million, further adjusted for specific condition and any additional factors.
- **Example 4 - Historical Cost Approach:** This method considers the historical acquisition cost of the aircraft, adjusted for improvements, and depreciation
- **Key Variables:**
  - o Acquisition Cost: Original purchase price of the aircraft.
  - o Improvements: Cost of major upgrades or refurbishments.
  - o Depreciation: Calculated based on the aircraft's age and condition.
- **Case Study 4:**

If the 2015 Airbus A320 was acquired for \$90 million and has undergone \$5 million in upgrades, the adjusted acquisition cost would be \$95 million. Depreciating this amount

over its useful life to account for age, the current value could be estimated, considering the specific condition and market trends.

**Example 5 - Residual Value Approach:** This method estimates the end-of-life value of the aircraft, considering its current value and expected depreciation.

- **Key Variables:**
  - o Current Value: Market value of the aircraft today.
  - o Depreciation Rate: Annual depreciation rate based on market data.
  - o Economic Life: Expected remaining useful life of the aircraft.
  
- **Case Study 5:**

For a 2015 A320 currently valued at \$40 million, with an annual depreciation rate of 4%, and an expected remaining life of 15 years, the residual value approach would project the aircraft's value over time, considering its depreciation and potential salvage value at the end of its economic life.

#### **Review Insurance Policy Requirements:**

- Policy Coverage Needs: Determine the coverage needs, including hull value, liability, and other specific requirements.
- Agreed Value Clause: Ensure the insurance policy includes an agreed value clause to avoid disputes in the event of a claim.

#### **Factor in Additional Costs:**

- Replacement Cost: Consider the cost of replacing the aircraft with a similar model.
- Operational Costs: Account for any additional operational costs that may affect the overall valuation.
- Upgrades and Enhancements: Include the value of any recent upgrades or enhancements to the aircraft.

#### **Regulatory Compliance:**

- Ensure the aircraft complies with all relevant aviation regulations and airworthiness requirements.

#### **Legal Documentation:**

- Verify all legal documents, including title, registration, and lien status.

## **Periodic Review:**

- Regularly review and update the valuation to reflect changes in market conditions, aircraft condition, and operational context.

## **Detailed Reporting:**

- Prepare a detailed valuation report documenting all factors considered, methodologies used, and conclusions reached.

## **Transparency:**

- Ensure transparency and thorough documentation for audit and review purposes.

## **Damage and Repair Costs:**

- Evaluate potential damage scenarios and associated repair costs.

## **Loss of Use:**

- Consider potential financial losses due to downtime or loss of use.

## **Next Steps**

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