

Analysing the Airbus–Boeing Duopoly:

Financial Ratios, DCF Valuation, and
Strategic Implications for the Aerospace
Industry

Manuel Stella

B.Sc. Student in Business Administration & Economics
Alma Mater Studiorum — University of Bologna
Email: manuel.stella@studio.unibo.it ORCID: 0009-0005-5399-8972

Abstract

This report provides a comprehensive analysis of Airbus SE within the context of the global commercial aircraft manufacturing industry, characterised by its enduring duopoly with Boeing. The study begins with an industry overview, employing Porter's Five Forces to assess the competitive environment, before focusing on Airbus's business strategy, diversified portfolio, and sustainability-driven vision. A comparative examination of Airbus and Boeing follows, using horizontal and vertical analyses of financial statements (2022–2024) to highlight Airbus's operational resilience against Boeing's instability, shaped by reputational and structural challenges.

Ratio analysis further underscores Airbus's strengths in efficiency, liquidity, and solvency, in contrast to Boeing's prolonged difficulties in cash conversion, leverage, and profitability. Decomposition of return on equity reveals that Airbus leverages financial structure effectively to deliver above-average shareholder returns, whereas Boeing's negative equity position distorts conventional measures. The intrinsic valuation, based on a Discounted Cash Flow framework incorporating a conservative WACC (7.06%) and long-term growth assumptions, estimates Airbus's intrinsic share price at €119.84. Compared with a prevailing market price of €154.90, the findings suggest modest overvaluation, possibly explained by market optimism, strategic intangibles, and sentiment-driven pricing.

Overall, the report illustrates Airbus's position as a financially robust, innovation-oriented leader well placed to capitalise on the rising global demand for sustainable aviation, while also noting the limitations and behavioural factors that influence divergence between intrinsic and market valuations.

Keywords: Airbus SE; Boeing Company; Commercial Aircraft Manufacturing; Aviation Duopoly; Financial Ratio Analysis; Return on Equity (ROE) Decomposition; Discounted Cash Flow (DCF) Valuation; Weighted Average Cost of Capital (WACC); Sustainable Aviation Strategy; Comparative Financial Performance

Table of Contents

1	Front Page	1
2	Abstract	2
3	Introduction and Industry Analysis	4-7
	Introduction	4
	Business Activities	4
	Business Strategy	5
	The Boeing Company	5
	Industry analysis	6
4	Horizontal and Vertical Analysis	8-12
	Airbus — Revenue, Profitability, Financial Income, Expenses and Net income	8
	Boeing — Revenue, Profitability, Financial Income, Expenses and Net income	9
	Summary and Comparison	10
	Vertical Analysis	11
5	Ratios Analysis	13-16
	Airbus and Boeing — Efficiency Comparison	13
	Airbus and Boeing — Solvency Comparison	14
	Airbus and Boeing — Liquidity Comparison	15
	Airbus and Boeing — Profitability Comparison	16
6	Decomposition of ROE	17-19
	DuPont methodology	17
	Airbus's ROE	17
	Boeing's ROE Dilemma	18
7	Intrinsic Valuation and Market Comparison	20-27
	Free Cash Flow to the Firm (FCFF)	21
	Weighted Average Cost of Capital (WACC)	22
	Capital Asset Pricing Model (CAPM)	23
	Discounted Cash Flow model (DCF)	25
	Market Comparison	27
8	Bibliography and References	28-29

Introduction

In the past century, the aviation industry has undergone a profound transformation, evolving into a cornerstone of modern life. Today, air transport serves not only leisure and business travellers but also plays an indispensable role in global trade and logistics. By March 2025, the industry was operating approximately 127,200 commercial flights per day worldwide—a figure that illustrates both the vastness and the critical importance of this sector. Given the sheer size of global aviation, this report narrows its scope to the commercial aircraft manufacturing segment, allowing for a more precise and focused analysis. Within this field, Airbus and Boeing dominate the market, forming a long-standing duopoly. A third contender, COMAC of China, is increasingly attempting to challenge their supremacy, although it remains at a relatively early stage of expansion. Airbus itself was established in 1970 as a European consortium designed to counterbalance the dominance of American manufacturers, particularly Boeing. The company initially represented the cooperative efforts of France, Germany, and Spain, before being reorganised in 2000 as Airbus S.A.S. under the European Aeronautic Defence and Space Company (EADS). In 2014, EADS was rebranded as Airbus Group, consolidating its identity under a single brand more closely aligned with aerospace activities. In the current decade, Airbus has shifted its strategic emphasis towards sustainability and technological innovation, positioning itself not only as a leader in aircraft design but also as a pioneer in decarbonisation and zero-emission aviation.

Business Activities

Airbus engages in a broad spectrum of business activities, reflecting the company's ambition to position itself as a comprehensive aerospace and defence leader. Its portfolio spans several interconnected domains:

- **Commercial Aircraft Manufacturing** – This remains Airbus's core and largest business line. The company designs, manufactures, and delivers a wide range of aircraft tailored to diverse customer requirements, serving airlines across the globe.
- **Helicopters** – Airbus is recognised as the world's leading producer of both civil and military helicopters. These aircraft serve critical functions for first responders, public service operators, firefighting agencies, and military missions, underscoring their versatility and operational importance.
- **Defence** – In the field of defence, Airbus plays a central role in enhancing security capabilities. A prominent example is its position as the prime contractor for Europe's Future Combat Air System, a project that seeks to redefine next-generation air defence.
- **Space** – Airbus has also extended its strategic outlook beyond Earth, contributing to the space sector through the development of spacecraft systems, telecommunications and navigation satellites, Earth-observation satellites, and pioneering technologies that enable independent access to space.
- **Security** – Complementing its aerospace and defence activities, Airbus provides global security solutions, ensuring connectivity, reliability, and advanced intelligence services to its clients.

Taken together, these activities highlight Airbus's highly diversified portfolio. The company's engagement across multiple sectors not only reinforces its resilience in the face of industry volatility but also underscores its long-term commitment to innovation, security, and sustainable growth.

Business Strategy

As a market leader, Airbus has articulated a strategy that centres on **technological innovation, global sustainability, and long-term value creation**. This vision is underpinned by its diversified portfolio and a consistently customer-oriented approach. According to the company's official statements, the strategy is structured around four principal pillars:

- **Strengthening leadership in aerospace and defence** – Airbus seeks to consolidate its industry position through continuous innovation, investing in the design and development of advanced products and services.
- **Consolidating European foundations while expanding global reach** – Building on its strong European heritage, Airbus is committed to extending its influence in international markets through sustained global investment.
- **Expanding capacity for future investment** – The company aims to maintain its leading role by balancing growth, profitability, and resilience, thereby ensuring sufficient resources to fund future opportunities.
- **Driving the transformation of aerospace** – Sustainability lies at the core of Airbus's long-term strategy. The company aspires to lead the industry's decarbonisation efforts, setting a benchmark in the transition towards zero-emission aviation.

Through these strategic priorities, Airbus demonstrates both a forward-looking vision and a strong alignment with broader global challenges, particularly the imperative of sustainable development.

The Boeing Company

Boeing represents Airbus's principal rival within the highly concentrated, duopolistic structure of the commercial aircraft manufacturing industry. Headquartered in the United States, Boeing is a multinational corporation engaged in the design, manufacture, and sale of commercial aeroplanes, military aircraft, satellites, spacecraft, and defence systems. This breadth of activities illustrates that the competition between Airbus and Boeing extends well beyond the commercial segment into multiple areas of aerospace and defence. In recent years, however, Boeing's corporate trajectory has been overshadowed by a series of controversies and operational setbacks that have had a material impact on its reputation and financial performance. Among the most notable incidents are:

- A **\$51 million fine** for violations of the U.S. Arms Export Control Act.
- The case of **John Mitchell Barnett**, a former quality manager who raised safety concerns before being found dead under contested circumstances.
- The **737 MAX crashes**, which tragically caused the loss of 346 lives and triggered a global grounding of the model.
- Ongoing criticism regarding lobbying practices and preferential tax arrangements.

These events have significantly damaged Boeing's public image and stakeholder confidence, particularly when compared with Airbus's emphasis on sustainability, innovation, and corporate responsibility. For the purposes of this analysis, Airbus has therefore been selected as the focal company—not only due to its robust market presence and diversified portfolio, but also because it currently stands in contrast to Boeing's reputational challenges.

Industry Analysis

We begin by defining the scope of the industry under analysis. The **global commercial aircraft manufacturing industry** encompasses the production of complete civilian aircraft, including aerospace engines, auxiliary equipment, and component parts. It also covers prototypes, aircraft conversions, full-system overhauls, and rebuilding activities. By contrast, the manufacture of military aircraft and related services falls outside this definition.

The sector has a long and complex trajectory, shaped by technological advancements, geopolitical dynamics, and the sustained global demand for air travel. Historically, Boeing dominated the market, effectively operating as a near-monopoly for much of the 20th century. However, towards the end of the century, the competitive landscape evolved into a **duopoly**, with Airbus rising to challenge Boeing as a co-leader of the industry.

To analyse the structural conditions in which Airbus operates, this study applies **Porter's Five Forces framework**. This tool provides a structured lens through which to examine the competitive pressures and external dynamics affecting firms in the sector. The five forces considered are:

1. Rivalry among existing competitors
2. Bargaining power of suppliers
3. Bargaining power of buyers
4. Threat of substitutes
5. Threat of new entrants

This framework enables a clearer understanding of the opportunities and challenges that characterise the commercial aircraft manufacturing industry, and in particular the strategic environment in which Airbus competes.

1. Rivalry among existing competitors

The commercial aircraft manufacturing industry is characterised by a **duopolistic structure**, with Airbus and Boeing standing as its dominant players. The rivalry between these two firms has deep historical roots and continues to define the competitive landscape today. Their competition extends across multiple dimensions, including aircraft pricing, technological innovation, operational efficiency, and above all, fuel economy—an increasingly critical factor given rising environmental concerns and regulatory pressures. Both companies allocate substantial resources to **research and development (R&D)**, seeking to differentiate themselves through advancements in design, safety, and sustainability. The scale and persistence of these investments underscore the intensity of the rivalry, which can be assessed as **structurally high** and unlikely to diminish in the foreseeable future.

2. Bargaining power of suppliers

Within the commercial aircraft manufacturing industry, the bargaining power of suppliers can be assessed as medium to high. This dynamic stems primarily from the limited number of specialised providers of engines, avionics, and other critical components. Because these inputs are highly technical and subject to stringent certification standards, manufacturers face significant challenges in diversifying their supplier base. Switching to alternative sources is not only **costly and time-consuming**, but also involves operational and regulatory risks, given the complexity of integrating new systems into established aircraft platforms. As a result, suppliers retain a considerable degree of leverage over manufacturers, influencing both cost structures and production timelines.

3. Bargaining Power of Buyers

In the commercial aircraft manufacturing industry, the bargaining power of buyers can be assessed as moderate to strong. Airlines typically place high-value, large-scale orders, which provides them with a certain degree of leverage in negotiations over pricing and delivery conditions. Nevertheless, their influence is structurally limited by the scarcity of alternatives: with only two dominant manufacturers, switching costs are high and substitution options are minimal. In practice, while airlines can negotiate within certain margins, the industry's duopolistic configuration constrains their overall power.

4. Threat of Substitutes

The threat of substitutes remains relatively low. For long-distance and time-sensitive travel, commercial aviation has no true equivalent. High-speed rail represents the closest alternative in some regions, yet it lacks the global reach and speed required to compete effectively with aircraft on intercontinental routes. Other forms of transport, such as maritime shipping or long-haul buses, remain far too slow to represent a viable substitute. Consequently, air travel maintains a dominant position in meeting global mobility demands.

5. Threat of New Entrants

The threat of new entrants is also low. The design, certification, and mass production of commercial aircraft demand extraordinary levels of capital investment, technological expertise, and long development cycles. Regulatory frameworks further heighten the barriers to entry, as compliance with stringent international safety standards is both resource-intensive and complex. While new players such as **COMAC** in China and **Embraer** in Brazil have entered the market in recent years, their scale and technological capacity remain far behind those of Airbus and Boeing.

Conclusion

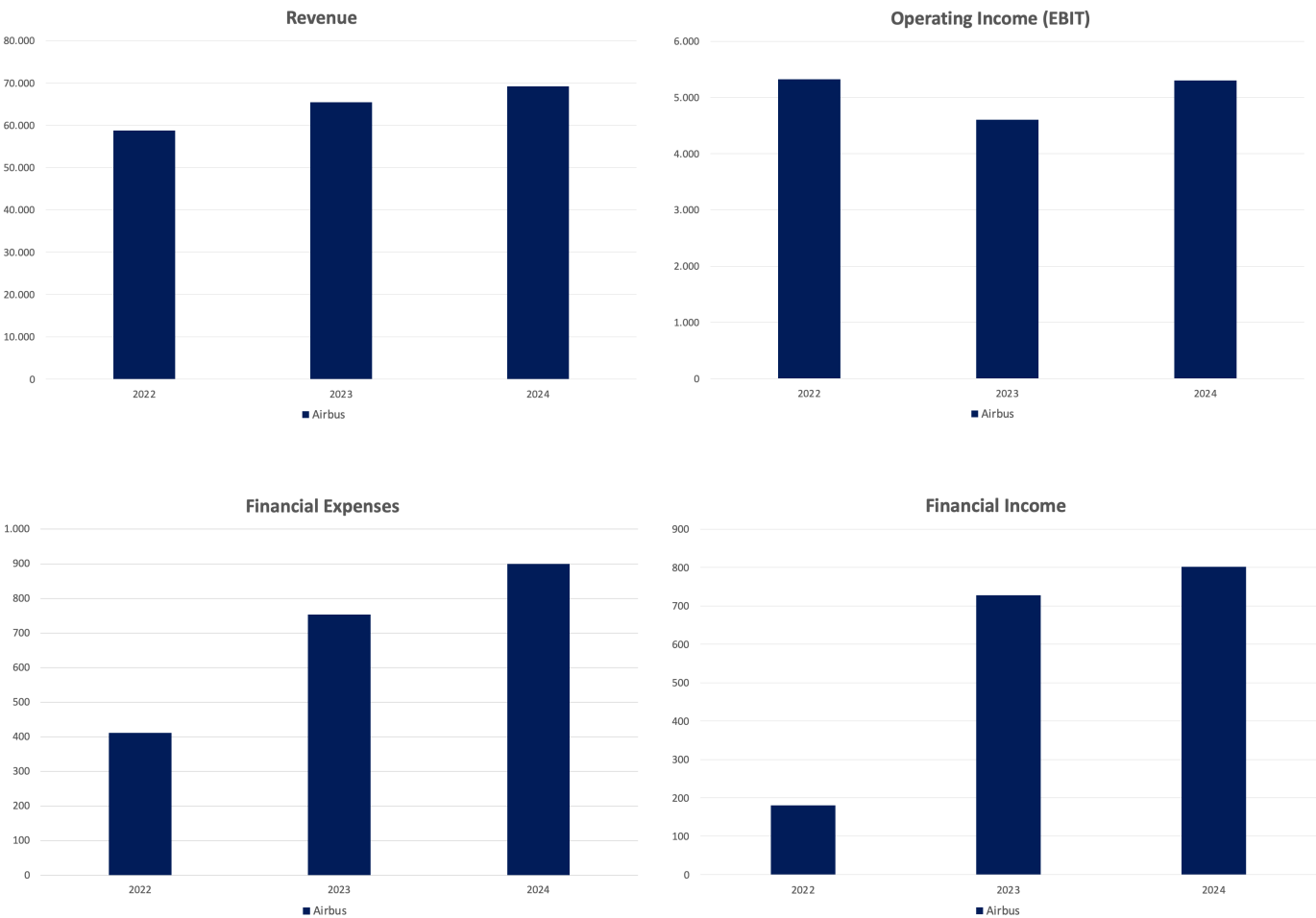
Taken together, these dynamics confirm that the global commercial aircraft manufacturing sector is a highly protected and structurally concentrated industry. Despite the high entry barriers, the market continues to expand globally, driven by the steady increase in demand for air travel and the ongoing need for modern, fuel-efficient aircraft.

Horizontal Analysis

This section examines the horizontal analysis of Airbus and Boeing's financial performance between 2022 and 2024, focusing on year-over-year percentage changes in key income statement components. For the sake of comparability, Boeing's figures were converted from U.S. dollars into euros, and both companies' statements were standardised to ensure structural alignment.

Airbus demonstrated **steady revenue growth** across the period, rising from €58.76 billion in 2022 to €69.23 billion in 2024, corresponding to a compound annual growth rate (CAGR) of 8.54%. Gross profit largely followed this trend, though it experienced a temporary decline of -4.99% in 2023 before recovering in 2024. Operating income (EBIT) also reflected this pattern of fluctuation, falling by 13.56% in 2023 but rebounding by 15.23% in 2024—an indication of the company's operational resilience in a challenging environment.

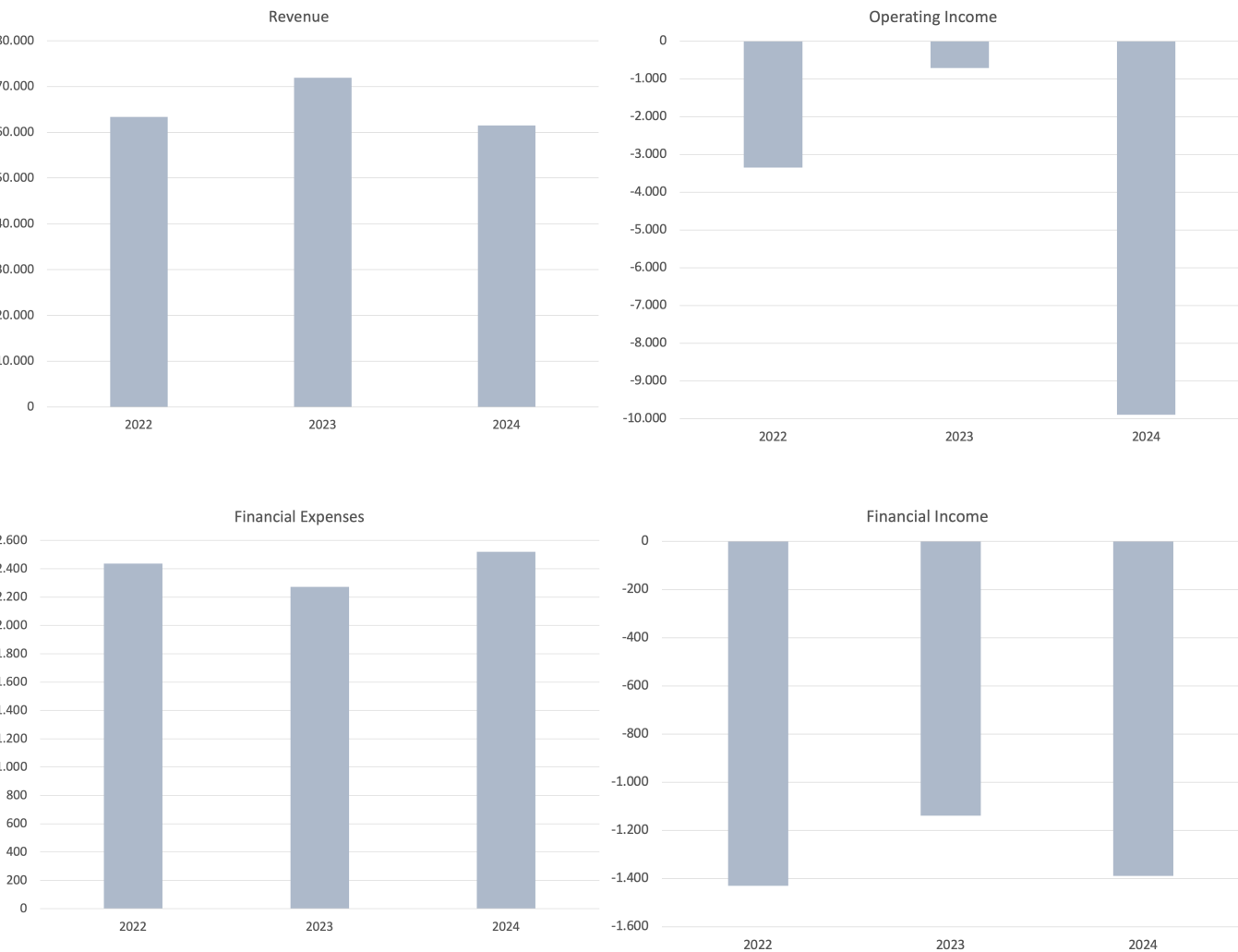
Financial performance outside of core operations presented a more mixed picture. Financial income surged by 304.44% in 2023, while financial expenses increased sharply as well—by 82.77% in 2023 and a further 19.52% in 2024. These increases may be attributable to higher financing costs or greater reliance on leverage. Net income declined by 12.65% in 2023 but recovered by 12.87% the following year, underlining Airbus's ability to absorb external shocks and preserve profitability.



By contrast, **Boeing's** financial performance over the same period was marked by significant **volatility and deterioration**. Revenue increased by 16.79% in 2023, only to contract sharply by 14.50% in 2024. Gross profit exhibited even greater instability: after a surge of 118.81% in 2023, it collapsed by 125.78% in 2024, leading to a negative gross profit margin and signalling severe inefficiencies in production.

Operating losses deepened substantially, widening from €773 million in 2023 to €10.7 billion in 2024, which highlights a pronounced decline in the company's core operating performance. Financial income remained negative throughout the period and deteriorated further in 2024, while financial expenses continued to rise, compounding the pressure on earnings. Net income mirrored this downward trajectory, culminating in a loss of €11.83 billion in 2024.

Taken together, these results underscore Boeing's ongoing financial and operational challenges, reflecting both the long-term repercussions of the 737 MAX crisis and broader structural difficulties within its business model.



Boeing's fluctuating results can be traced in part to the long-term repercussions of the **737 MAX crisis**, which followed two fatal crashes in 2018–2019 and led to a worldwide grounding of the model. The reputational and financial consequences of this event were severe, not only in terms of lost sales but also in the form of heightened regulatory scrutiny and increased production costs. When combined with the unprecedented disruptions caused by the **COVID-19 pandemic**, as well as ongoing operational challenges, these factors substantially eroded Boeing's financial resilience and market standing.

Airbus, by contrast, capitalised on this period of turbulence to consolidate its market position. The development and successful rollout of the **A320neo family**, widely perceived as a more efficient and reliable alternative to Boeing's narrow-body aircraft, enabled Airbus to capture a significant share of new orders. This outcome reflects the dynamics often described in **Post-Incident Trajectory (PIT) analysis**, which highlights how exogenous shocks or corporate crises can permanently shift competitive advantage within a concentrated industry. The case of Boeing's 737 MAX underscores how a safety-related incident can alter customer preferences, financing conditions, and long-term brand equity—while simultaneously creating strategic opportunities for rivals (see *Deloitte, 2024; EY, 2023; Financial Times, 2024*).

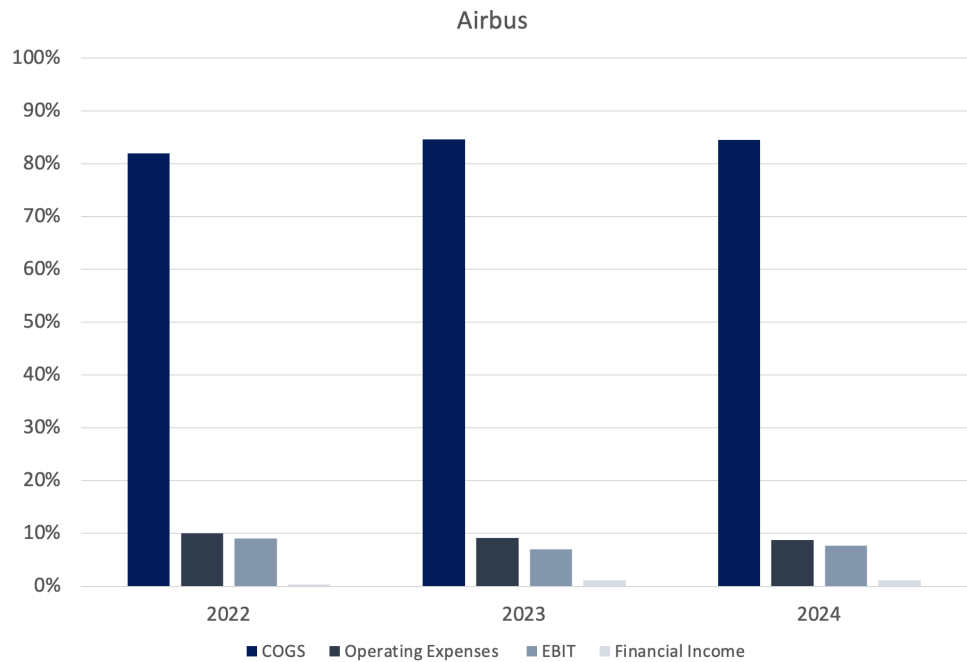
It is also important to note that some of the extreme percentage swings reported in Boeing's financials stem from **very small or negative base values** in preceding years. In such cases, relative percentage changes may exaggerate the perceived magnitude of developments. For this reason, **absolute figures** often provide a more accurate representation of performance. In the present analysis, metrics deemed statistically uninformative or potentially misleading have been marked as "NA" to preserve analytical integrity.

Taken together, the evidence suggests that while Airbus navigated the period with relative resilience, Boeing continues to face the compounded effects of reputational damage, structural inefficiencies, and financial strain. The contrasting trajectories of the two firms highlight not only their operational divergence but also the sensitivity of the industry to crises that can permanently redefine competitive dynamics.

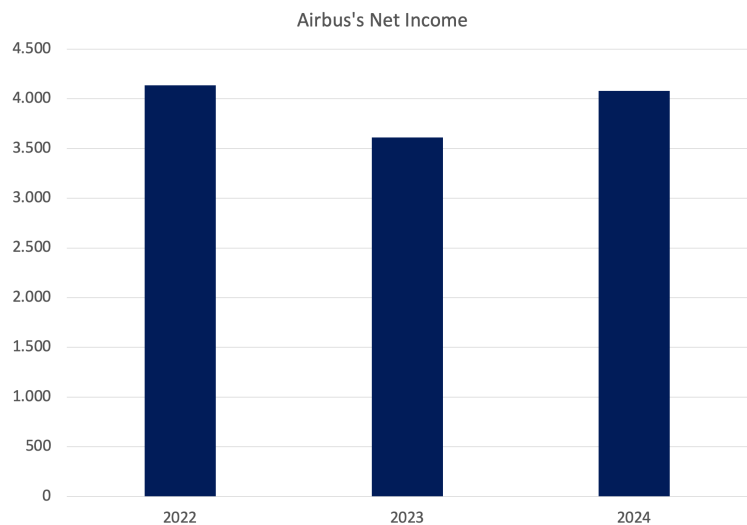
Overall, the horizontal analysis confirms a clear divergence in performance: **Airbus showed steady growth and operational resilience**, whereas **Boeing faced persistent volatility and deepening structural challenges**. These contrasting dynamics underline Airbus's ability to consolidate its market position during the period, while Boeing continued to struggle with the long-term consequences of past crises and production inefficiencies.

Vertical Analysis

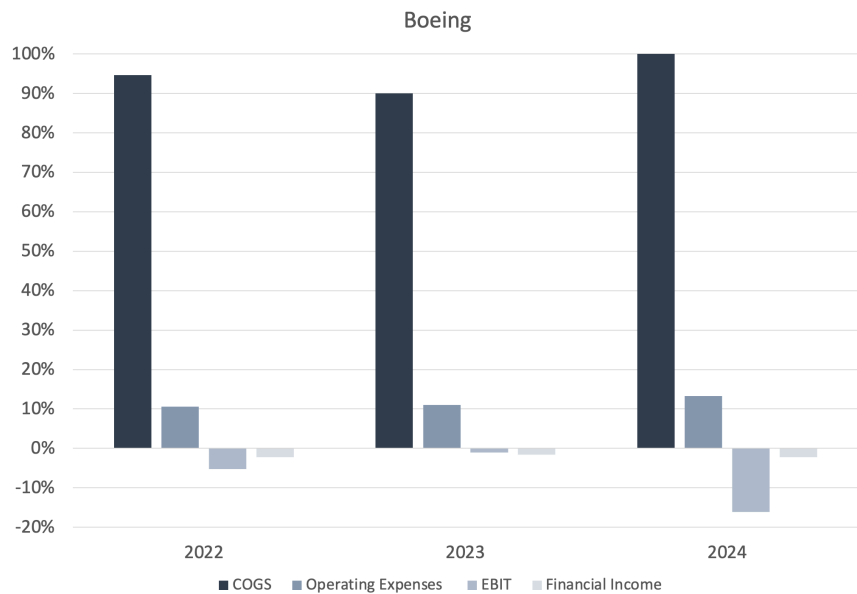
The vertical analysis of Airbus's reformulated income statements from 2022 to 2024 presents a picture of **cost discipline and operational resilience**. Each income statement component was expressed as a percentage of total revenue, enabling a direct comparison of cost structure, efficiency, and profitability across the period. Airbus consistently reported a **healthy gross profit margin** in the range of 15.3% to 18%, supported by a relatively stable cost of sales of approximately 82% to 84.6% of revenue. This stability reflects effective cost control and efficient production processes. Operating expenses were also tightly managed, remaining below 9% of revenue each year. As a result, Airbus achieved **EBIT margins between 7% and 9%**, signalling strong operating performance.



Although financial income and expenses showed some fluctuations, **net income margins remained within a steady and sustainable range**. Taken together, these figures highlight Airbus's ability to maintain a **robust cost structure** and to convert revenue into consistent, positive earnings—a key strength in an industry characterised by volatility and high capital intensity.



In contrast, Boeing's vertical analysis highlights **persistent operational and financial fragility**. Gross profit margins remained weak and unstable throughout the period, rising from 5% in 2022 to 9.9% in 2023 before collapsing to -2.9% in 2024. The negative margin in the final year indicates that cost of sales actually exceeded total revenue, effectively implying production at a loss. Operating expenses also grew as a proportion of revenue, increasing from roughly 11% in 2022 to nearly 14% in 2024. This escalation likely reflects higher internal costs associated with quality control efforts, restructuring initiatives, and ongoing attempts to address reputational challenges. EBIT remained negative across all three years, with particularly poor results in 2024 following further disruptions, including another incident involving the 737 MAX programme, which led to production halts and additional financial losses.



Although financial income and expenses were relatively minor when expressed as a percentage of revenue, they did little to offset the company's negative operating results. Consequently, Boeing's **net income margins remained consistently negative**, deteriorating to -17.78% in 2024.



These results underscore Boeing's difficulties in restoring profitability, with rising costs, recurring operational disruptions, and reputational challenges continuing to weigh heavily on its financial structure.

Ratio Analysis

Ratio analysis represents a cornerstone of financial evaluation, offering a systematic approach to assessing a company's **performance, resilience, and long-term sustainability**. By interpreting financial ratios, analysts are able to gauge how effectively a firm generates returns, manages its obligations, and deploys its resources in support of both short-term operations and long-term strategy. In this section, Airbus and Boeing are compared side by side to uncover not only their **operational strengths and weaknesses**, but also the broader **strategic differences** that define their competitive positions within the global aerospace industry. This comparative perspective provides a more nuanced understanding of how each company responds to external shocks, capital requirements, and the long investment cycles inherent in the aerospace sector. The analysis will be structured around four key dimensions:

- **Efficiency**, which evaluates how effectively assets and resources are utilised to generate revenue.
- **Solvency**, which measures the long-term financial stability and the capacity to meet debt obligations.
- **Liquidity**, which reflects the ability to manage short-term liabilities and maintain operational flexibility.
- **Profitability**, which indicates the firm's capacity to generate consistent earnings and create shareholder value.

By integrating these perspectives, the ratio analysis offers a comprehensive view of Airbus and Boeing's financial health, highlighting both immediate performance metrics and long-term strategic implications.

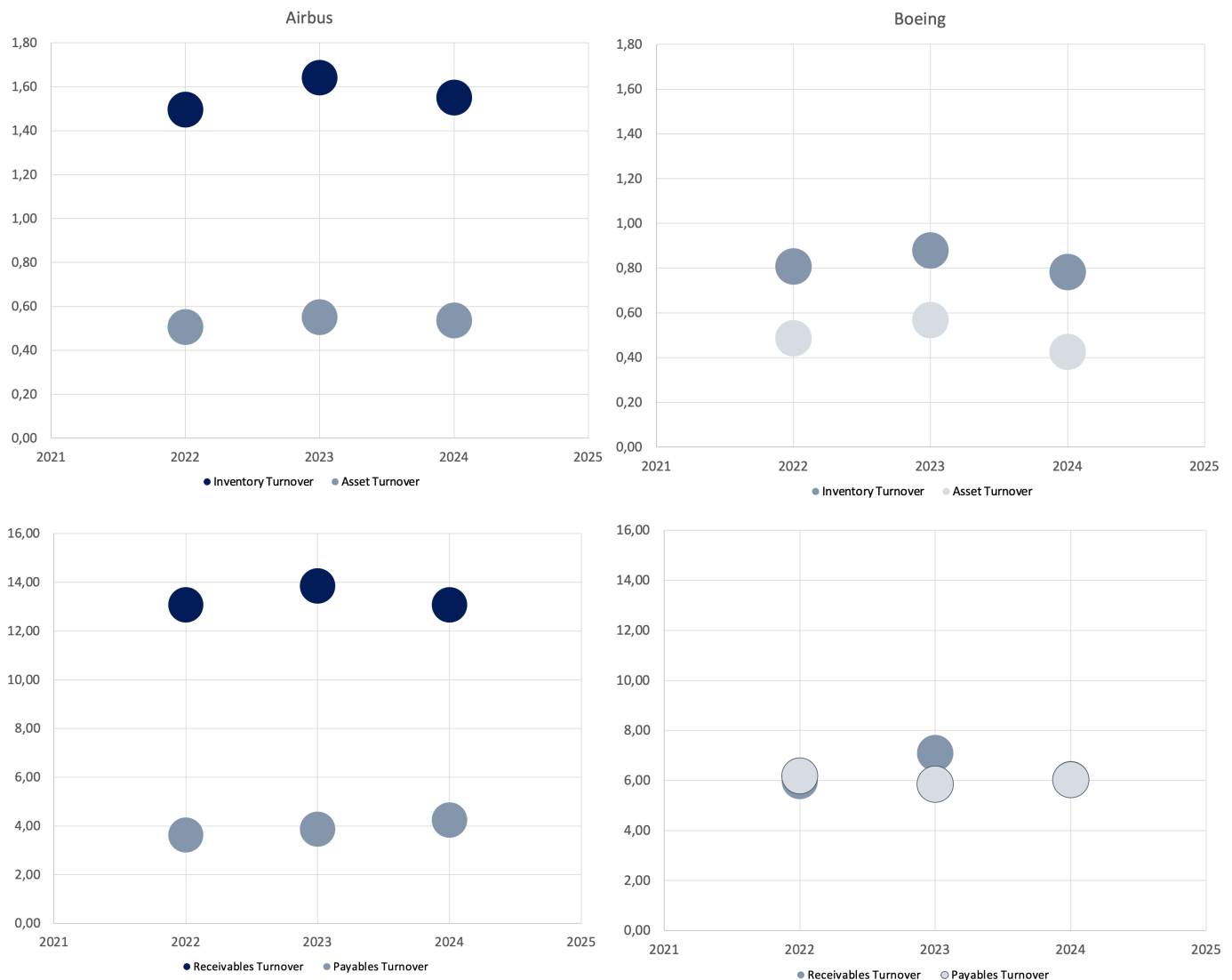
Efficiency

In terms of efficiency, Airbus consistently outperformed Boeing across the period. **Asset turnover** for Airbus improved slightly, from 0.53 to 0.56, indicating a gradual increase in the company's ability to generate revenue from its asset base. Boeing's asset turnover, by contrast, was more erratic—showing a temporary improvement in 2023 before declining again in 2024. This volatility suggests that parts of Boeing's asset portfolio were underutilised, particularly during periods of revenue contraction.

Inventory turnover revealed an even starker contrast. Airbus maintained a turnover rate of roughly two times per year, a figure that is reasonable for the aircraft manufacturing sector. Boeing, however, reported a turnover rate of less than once annually, implying that it held inventory for extended periods. In 2024, this translated into approximately **446 inventory days for Boeing**, compared with **180 days for Airbus**. Such a gap highlights Boeing's difficulty in converting production into deliveries, leaving significant capital tied up in undelivered aircraft and spare parts.

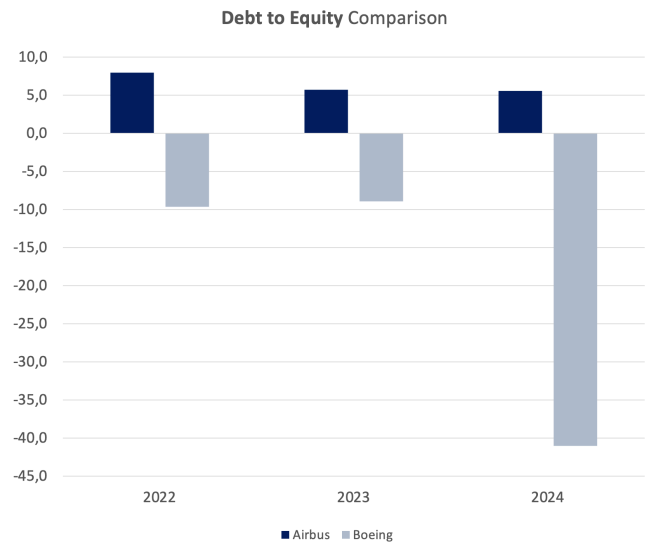
Receivables turnover reinforced the same pattern. Airbus collected payments in about 27 to 30 days on average, while Boeing required almost double that time—around 55 to 60 days. This slower cycle not only delayed cash inflows but also created additional strain when coupled with high inventory levels.

The combined impact of these differences was evident in the **cash conversion cycle (CCC)**. Airbus reported a CCC of approximately 117 days, whereas Boeing's extended to nearly 400 days by 2024. In practical terms, this means Boeing needed more than a year to recover cash outflows tied to production, compared with just under four months for Airbus. Such a prolonged cycle severely restricts operational flexibility and places pressure on liquidity management, illustrating the scale of Boeing's efficiency challenges relative to its European counterpart.



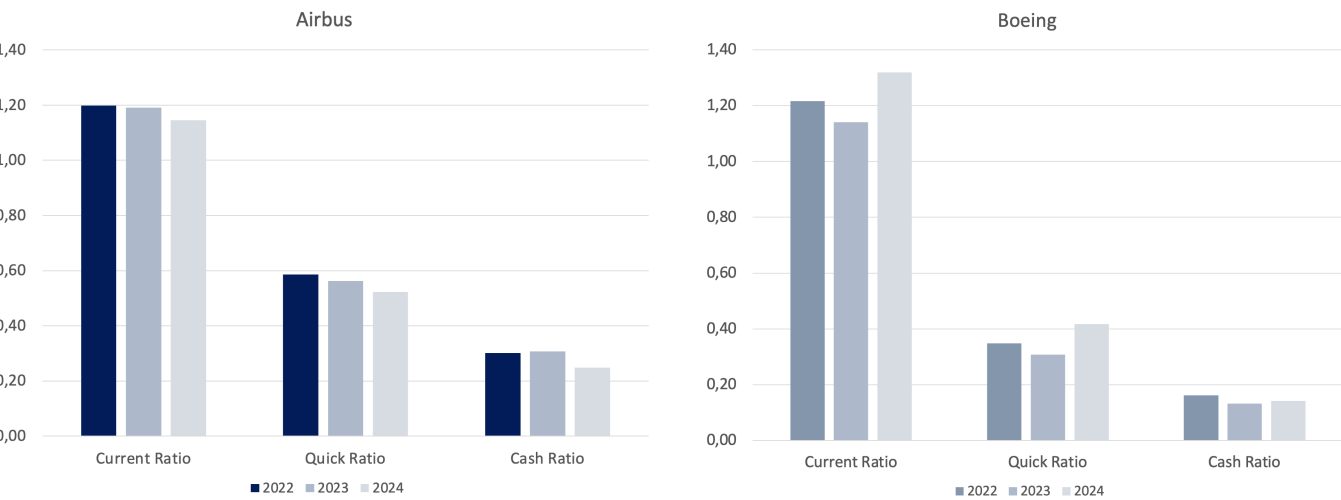
Solvency

The contrast between Airbus and Boeing is particularly evident in the area of **solvency**. Airbus maintained a comparatively solid capital structure, with its **debt-to-equity ratio** declining from nearly 100% in 2022 to around 73% in 2024. This reduction illustrates a gradual shift away from debt financing and an improvement in the balance between debt and equity. Its **interest coverage ratio**—a key measure of how comfortably a company can meet its interest obligations—was also robust, starting at around 12 and remaining at 5 by 2024. Although the ratio declined, these figures still signal strong solvency and an adequate cushion against financial risk. Airbus also preserved a stable **equity ratio**, demonstrating that a significant portion of its assets was financed through equity rather than debt, further reinforcing its financial resilience. Boeing, by contrast, presented a **much more fragile solvency position**. The company reported **negative equity** across all three years, which implies that its total liabilities exceeded its total assets. In such cases, conventional solvency benchmarks such as debt-to-equity or equity ratio lose their interpretive value, as they cannot meaningfully be applied to negative equity scenarios. Even more concerning, Boeing's **interest coverage ratio** remained negative throughout the period, reflecting the fact that it failed to generate sufficient operating earnings to meet interest expenses. This situation underscores the company's heightened financial vulnerability and raises the risk of further pressure if structural improvements are not achieved in the near term.



Liquidity

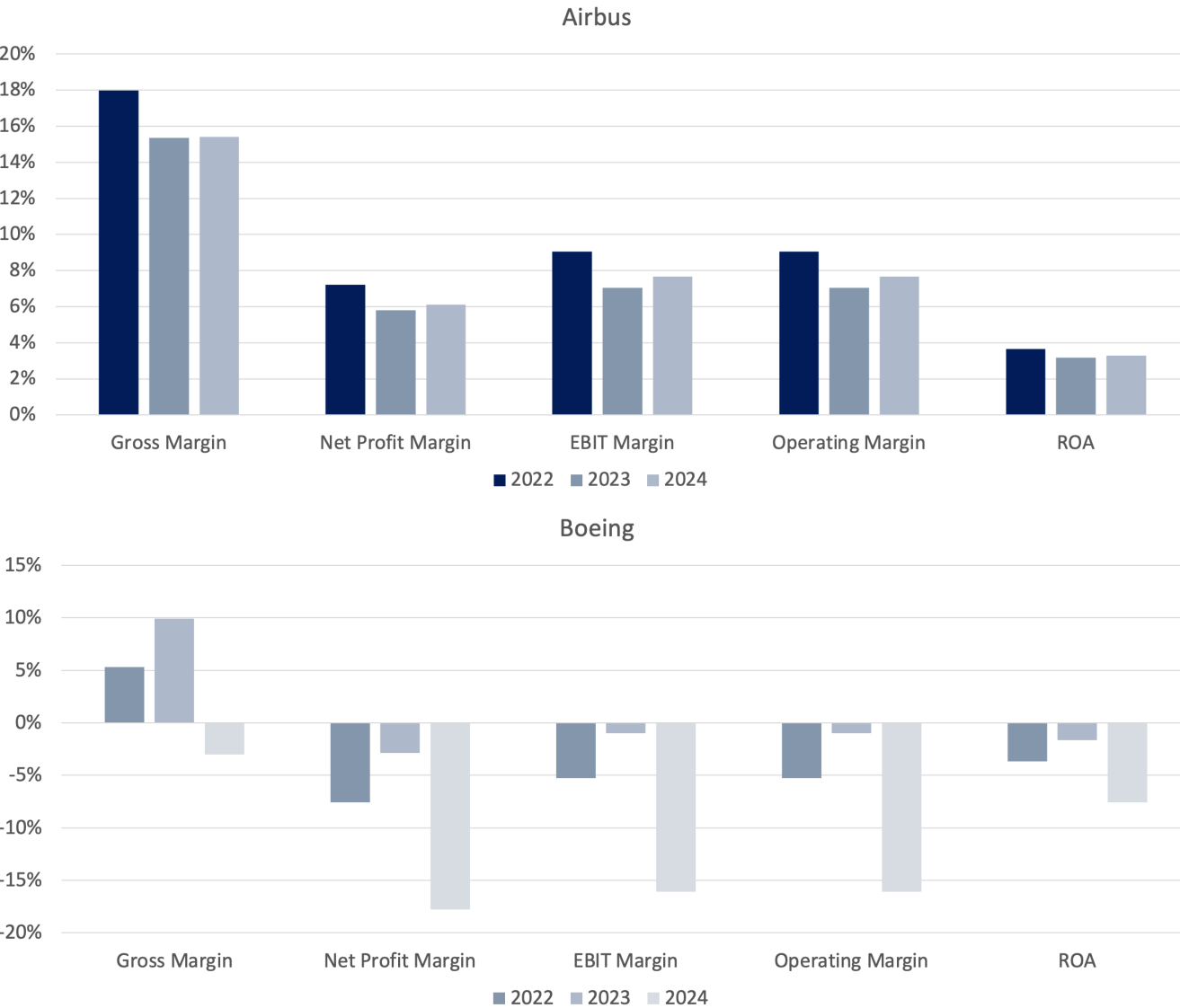
Airbus demonstrated a **stable and healthy liquidity position** throughout the period. Its **current ratio** remained close to 1.2, indicating that the company consistently held slightly more than one euro in current assets for every euro of short-term liabilities. This reflects a prudent balance: sufficient liquidity to meet obligations without tying up excessive resources in idle cash. The **quick ratio**, which excludes inventory, was somewhat lower at around 0.50 to 0.56 but still within an acceptable range, given the capital-intensive nature of the industry. The **cash ratio** improved modestly from 0.20 to 0.25, signalling a gradual strengthening of Airbus’s immediate liquidity. Collectively, these measures suggest that Airbus faced no significant short-term financial pressures and managed its working capital with discipline. Boeing, by contrast, began the period in a weaker liquidity position, though some progress was observed by 2024. Its **current ratio** improved from 1.1 to approximately 1.3, which on the surface suggests a more comfortable short-term outlook. However, both the **quick ratio** (remaining below 0.5) and the **cash ratio** (persistently under 0.15) highlighted the company’s reliance on inventory and less liquid assets to meet near-term obligations. While the headline current ratio appeared reassuring, the underlying quality of liquidity was notably weaker than Airbus’s, underscoring Boeing’s vulnerability in the event of operational or financial stress.



Profitability

When examining **profitability**, Airbus demonstrated a pattern of **resilient and consistent performance**, whereas Boeing experienced persistent instability and deterioration. Airbus maintained a solid **gross margin**, beginning at approximately 18% in 2022 and moderating slightly to around 15% by 2024. While this decline indicates some upward pressure on costs, the overall margin remained robust for the sector. The company's **net profit margin** also contracted modestly, from around 7–8% to just above 6%, with net income decreasing from €4.25 billion in 2022 to €3.79 billion in 2023. Nonetheless, Airbus consistently generated profits, reflecting effective cost management and operational control. Importantly, the **EBIT margin** improved over the period, reaching 7.66% in 2024—an encouraging signal of efficiency in core operations.

Boeing, by contrast, displayed a far weaker and more volatile profitability profile. Although its **gross margin** briefly improved in 2023, it turned negative in 2024 at approximately –3%, meaning that the cost of production exceeded total revenue. The **net profit margin** followed a similar trajectory: a short-lived improvement in 2023 was followed by a sharp decline in 2024, when losses amounted to nearly 18% of revenue. Likewise, the **EBIT margin** deteriorated significantly, falling to about –16% in 2024. These figures confirm Boeing's inability to restore sustainable profitability during the period, with performance worsening rather than stabilising by the end of the three years.



Decomposition of ROE

Return on Equity (ROE) is one of the most widely used indicators in corporate finance to assess the profitability of a company relative to its shareholders' equity. In essence, it measures how effectively a firm transforms the capital entrusted by its investors into actual net earnings. A higher ROE suggests that the company is able to generate more monetary value for each unit of equity, reflecting not only profitability but also efficiency in resource allocation and financial management.

However, the raw ROE ratio by itself often provides limited insight into *where* this performance originates. To address this, the **DuPont method** was developed as a decomposition framework that breaks down ROE into its fundamental components: **operational efficiency (net profit margin)**, **asset utilisation (asset turnover)**, and **financial leverage (equity multiplier)**. This multi-dimensional view is particularly relevant in capital-intensive industries such as aerospace, where margins are often slim, asset bases are large, and financing structures play a critical role in shaping results.

By adopting the DuPont decomposition, analysts and stakeholders can identify whether ROE is being driven primarily by strong operational margins, efficient use of assets, or a high reliance on debt financing. This distinction is crucial for a nuanced understanding of the firm's financial health and sustainability over time. Formally, the decomposition is expressed as:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Equity}} = \underbrace{\frac{\text{Net Income}}{\text{Sales}}}_{\text{Net Profit Margin}} \times \underbrace{\frac{\text{Sales}}{\text{Assets}}}_{\text{Asset Turnover}} \times \underbrace{\frac{\text{Assets}}{\text{Equity}}}_{\text{Equity Multiplier}}$$

The DuPont breakdown of Airbus's ROE over 2022–2024 shows how the company's performance has evolved and, more importantly, *why* the numbers have shifted. In 2022, Airbus reached an outstanding **31.9% ROE**, a level that stands out even for a capital-intensive industry like aerospace. Over the following two years, however, the figure gradually normalised, moving to **20.4% in 2023** and then **20.7% in 2024**. At first glance, that looks like a sharp decline, but the decomposition highlights that the story is less about deterioration and more about balance sheet adjustments and market conditions.

Starting with **net profit margin**, we see a modest decline from **7% in 2022** to **5.9% in 2024**. This indicates that Airbus is still able to translate a healthy portion of its revenue into net income, though rising costs — from supply chain disruptions to inflationary pressures in materials and labour — have slightly eroded profitability. Importantly, margins remained positive and relatively stable, showing that the company has maintained cost discipline even in a challenging operating environment.

Asset turnover, by contrast, has been steady, fluctuating only between **0.51 and 0.55**. This tells us that Airbus generates about half a euro of sales for every euro invested in assets. In an industry dominated by massive fixed investments in plants, R&D, and long production cycles, such stability is actually a strength. It shows Airbus has been consistently able to monetise its asset base, without sharp swings in operational efficiency.

The most telling change comes from the **equity multiplier**, which dropped from **8.93 in 2022** to **6.56 in 2024**. This signals a reduction in financial leverage — in other words, Airbus is relying less on debt and more on equity to fund its operations. While leverage often boosts ROE by magnifying returns, it also increases risk. Airbus's choice to deleverage, especially in the wake of industry turbulence, suggests a strategic preference for financial resilience over short-term performance.

Put together, these factors explain the downward shift in ROE. Airbus has traded some of the “artificial” lift from high leverage for a sturdier, lower-risk financial profile. The company is still profitable, still efficient with its assets, and is now arguably better prepared to weather external shocks. The slight decline in profitability, combined with a stronger equity base, paints a picture of a firm focused on sustainability rather than chasing inflated short-term returns. For investors, this means that while headline ROE is lower, the quality and reliability of those returns may actually have improved.

Airbus ROE Decomposition (3-step DuPont model)			
(in € millions)	FY2024	FY2023	FY2022
Revenue	69.230	65.446	58.763
Net income	4.078	3.613	4.136
Total Asset	129.213	118.871	115.944
Total Equity	19.696	17.730	12.982
Net Profit Margin	5,9%	5,5%	7%
Asset Turnover	0,54	0,55	0,51
Equity Multiplier	6,56	6,70	8,93
ROE	20,7%	20,4%	31,9%

Boeing's ROE Dilemma

The DuPont analysis of Boeing's ROE highlights just how fragile the company's financial situation has become in recent years. On paper, the numbers look extreme: **31.9% in 2022**, **13.0% in 2023**, and then an astonishing **302.2% in 2024**. But these values don't represent genuine profitability. Instead, they are distorted by deep structural weaknesses in the business, most notably the combination of persistent net losses and **negative equity**.

The first red flag is the **net profit margin**, which has been negative across all three years. In 2024, Boeing recorded a **-17.8% margin**, meaning the company lost nearly 18 cents for every euro of revenue. Even in 2023, when results slightly improved, the margin was still **-2.9%**, showing that core operations remain unprofitable. These recurring losses stem from production setbacks, reputational damage from safety issues, and higher costs linked to supply chain disruptions and debt servicing.

Next, **asset turnover** is modest, ranging from **0.43 to 0.57**, which is roughly in line with Airbus but doesn't offset the negative margins. In fact, even when Boeing generates sales, its inability to keep costs under control prevents those sales from being translated into profits.

The most problematic element is the **equity multiplier**. Because Boeing has had **negative equity** for several years, the ratio explodes into unrealistic territory: **-8.65 in 2022**, **-7.95 in 2023**, and a staggering **-39.95 in 2024**. In practice, this means that Boeing owes more than it owns, and its capital structure is stretched to a dangerous degree. The “boost” this gives to the calculated ROE is purely mathematical and misleading — it reflects balance sheet fragility, not real value creation.

For this reason, it is important to stress that **Boeing's ROE is not economically interpretable** in these circumstances. Negative equity breaks the logic of the DuPont framework, turning the indicator into a distorted figure rather than a meaningful measure of shareholder returns.

In summary, Boeing’s DuPont decomposition reveals a company still struggling to restore financial stability. The inflated **302% ROE** in 2024 is not a sign of exceptional performance, but the by-product of **negative equity combined with heavy losses**. Instead of indicating efficiency or profitability, it underscores the urgency for Boeing to rebuild its equity base, restore sustainable margins, and reduce its reliance on debt. Until those issues are addressed, any interpretation of ROE in isolation risks painting a completely misleading picture of the company’s health.

The Boeing Company ROE Decomposition (3-step DuPont model)			
(Converted in € millions)	FY2024	FY2023	FY2022
Revenue	66.517	77.794	66.608
Net income	-11.829	-2.242	-5.053
Total Asset	156.363	137.012	137.100
Total Equity	-3.914	-17.228	-15.848
Net Profit Margin	-17,8%	-2,9%	-7,6%
Asset Turnover	0,43	0,57	0,49
Equity Multiplier	-39,95	-7,95	-8,65
ROE	302,2%	13,0%	31,9%

For a deep analysis suggestion, it is important to recognise that when equity is negative, the standard ROE ratio becomes mathematically inflated and loses its economic relevance. In Boeing’s case, this means that the extreme ROE figures observed do not represent genuine profitability but rather highlight structural fragility in the balance sheet.

To address this, analysts can turn to complementary indicators. **Return on Assets (ROA)** avoids the denominator problem by focusing on how efficiently assets generate earnings. **Return on Invested Capital (ROIC)** goes further, capturing returns relative to both debt and equity, which is especially relevant in a highly leveraged firm. In addition, **cash flow-based ratios** (operating or free cash flow over capital employed) can reveal the company’s ability to generate value beyond accounting losses and extraordinary charges.

These alternative measures do not replace ROE, but they provide a more grounded interpretation of Boeing’s financial performance and make it clear that the extreme ROE values stem from leverage pressure rather than true profitability.

Intrinsic Valuation

To estimate the intrinsic value of Airbus SE, this analysis employs the **Discounted Cash Flow (DCF) methodology**, a framework widely recognised in corporate finance for valuing companies on the basis of their capacity to generate future free cash flows. Unlike dividend-based models such as the **Dividend Discount Model (DDM)**—which presuppose a stable and predictable pattern of shareholder distributions—the DCF approach concentrates on the firm's underlying operational cash generation. This makes it particularly suitable for companies, such as Airbus, that do not adhere to a consistent or representative dividend policy.

The choice of the DCF model is supported by several **strategic and structural considerations**:

- **Non-dividend-focused capital policy** – Airbus does not maintain a fixed or high dividend payout ratio, reducing the reliability of dividend-based models. The DCF framework, by contrast, captures the full economic value of future cash flows, irrespective of payout policies.
- **Visibility into future cash flows** – Airbus holds a significant order backlog of more than 7,200 commercial aircraft, representing approximately €390 billion in expected revenue. This backlog provides a high degree of visibility and supports credible forecasting of **Free Cash Flow to the Firm (FCFF)**, a key requirement for applying DCF analysis.
- **Sector characteristics and long-term cycles** – The aerospace and defence industry is characterised by extended product development timelines, typically ranging from 5 to 10 years, alongside substantial up-front capital commitments. The DCF model is well-suited to capture these long-term investment dynamics, in contrast to valuation methods centred on short-term earnings or distributions.
- **Capital structure and value drivers** – The model also incorporates Airbus's **Weighted Average Cost of Capital (WACC)**, reflecting the blended cost of equity and debt. This allows for a granular valuation that accounts for the company's capital structure and current market conditions, thereby enhancing the robustness of the results.

By integrating these considerations, the DCF framework provides a comprehensive and forward-looking estimate of Airbus's intrinsic value, aligning the valuation process with the firm's structural realities and sector-specific dynamics.

Free Cash Flow to the Firm (FCFF)

The first step in the Discounted Cash Flow (DCF) valuation process is to compute the **Free Cash Flow to the Firm (FCFF)**, which represents the cash available to all capital providers—both equity and debt holders—after accounting for operating costs and necessary investments to sustain growth. We calculated the FCFF starting from the Cash Flow from Operations (CFO). The main reason behind our choice is the Data Availability and Transparency. As a matter of facts, Airbus provides detailed and audited financial statements with clearly disclosed CFO, CapEx, and interest expense figures, making this approach both feasible and robust. Moreover, Compared to Net Income-based approaches, starting from CFO minimises the distortions caused by accounting policies, one-time items, and non-cash adjustments. Furthermore, Given the aerospace sector's high reinvestment requirements and long production cycles, accurately accounting for CapEx is essential to capture true free cash flow. The CFO-based method directly incorporates these cash reinvestments, ensuring consistency with the economic reality of the business.

For Airbus, the **CFO-based approach** was adopted to estimate FCFF, applying the following formula:

$$\text{FCFF} = \text{CFO} - \text{CapEx} + \text{Interest Expense} \times (1 - \text{Tax Rate})$$

The **CFO figure** was taken directly from Airbus's audited *Statement of Cash Flows*, providing a reliable and standardised starting point. CFO is preferred over net income as it already incorporates adjustments for non-cash items and changes in working capital, thereby offering a more accurate reflection of the company's underlying cash generation.

To this, **Capital Expenditures (CapEx)** were deducted, using the cash outflows associated with investments in property, plant, and equipment as reported under *Investing Activities*. Absolute values were applied to ensure CapEx was correctly treated as a positive cost in the calculation.

Adding After-tax Interest Expense

To eliminate the effect of capital structure and obtain an **unlevered measure of cash flow**, the **after-tax interest expense** was added back. This adjustment reflects the level of cash that would have been available to the firm had it been entirely equity-financed.

$$\text{Interest Expense} \times (1 - \text{Tax Rate})$$

The **tax rate** applied was based on Airbus's effective tax payments in 2023. To adjust the interest expense correctly and capture the effect of the tax shield, the **effective tax rate** was calculated using the following formula:

$$\text{Tax Rate} = \frac{\text{Income Taxes}}{\text{Earnings Before Tax (EBT)}}$$

Airbus FCFF from CFO			
(in € millions)	FY2024	FY2023	FY2022
Cash Flow From Operations (CFO)	7.402	6.255	6.288
Interest Expenses	900	753	412
Net Income	4.232	3.789	4.247
Income Taxes	-1.347	-1.156	-939
EBT	5.579	4.945	5.186
Tax Rate	24,14%	23,38%	18,11%
After-Tax Interest Expense	683	577	337
Capital Expenditure (CAPEX)	-3.669	-3.051	-2.464
FCFF	4.416	3.781	4.161

Weighted Average Cost of Capital (WACC)

The **Weighted Average Cost of Capital (WACC)** represents the average rate of return a firm is expected to pay to all providers of capital—both equity holders and debt holders—weighted according to their relative contribution to the overall capital structure. It is a cornerstone metric in corporate finance and valuation, particularly within the Discounted Cash Flow (DCF) framework, where it serves as the discount rate applied to future free cash flows in order to determine their present value.

$$\text{WACC} = \left(\frac{E}{E + D} \cdot K_e \right) + \left[\frac{D}{E + D} \cdot K_d \cdot (1 - T) \right]$$

Market Value of Equity (E) and Total Debt (D)

To estimate the **Total Debt (D)**, we referred to the line item *Total Liabilities* as reported in Airbus's Consolidated Balance Sheet FY2024 (€109,517 million). Although this figure encompasses both financing and operational liabilities, we adopted it as a conservative proxy that reflects the full extent of the company's obligations, in line with common practice when market values of debt are not readily observable.

In contrast, the estimation of the **Market Value of Equity (E)** relied on external market data. Specifically, we used the share price at the valuation date (€154.90) together with the number of shares outstanding (792,283,683), applying the following relation:

$$E = P_0 \times N$$

$$\text{€122.725M} = \text{€154,90} \times 792.283.683$$

Estimation of the two main components of the capital structure:

$$\frac{E}{E + D} = 52,84 \% \qquad \frac{D}{D + E} = 47,16 \%$$

Cost of Debt (K_d)

To estimate the **Cost of Debt (K_d)** for Airbus, we relied on actual figures from the FY2024 Consolidated Financial Statements. From the Consolidated Income Statement, we extracted the reported **Interest Expense** of €900 million (presented as a negative item, consistent with standard accounting practice). At the same time, we considered the sum of **Long-term Financing Liabilities** (€3,924 million) and **Short-term Financing Liabilities** (€10,355 million) as a proxy for the total book value of interest-bearing debt. This approach was adopted because Airbus does not disclose the market value of its debt instruments. Moreover, the company's financing structure is largely composed of conventional liabilities rather than complex tradable securities, making book values a conservative and acceptable proxy in line with corporate finance practice. The pre-tax cost of debt was therefore computed as:

$$K_d = \frac{|\text{Interest Expense}|}{\text{Short-term Financing Liabilities} + \text{Long-term Financing Liabilities}} = \frac{|900|}{10,355 + 3,924} = 6,30 \%$$

Capital Asset Pricing Model (CAPM)

Determining Cost of Equity (K_e)

To estimate the Cost of Equity (K_e) for Airbus, we applied the Capital Asset Pricing Model (CAPM), one of the most widely adopted frameworks in corporate finance for determining the expected return required by equity investors. CAPM incorporates both firm-specific and market-wide risk factors, making it particularly suitable for publicly traded companies. The model is expressed as:

$$K_e = R_f + \beta \cdot (R_m - R_f)$$

Risk-Free Rate (R_f)

The risk-free rate forms the baseline for the cost of equity, representing the time value of money in the absence of default risk. In practice, it is proxied by sovereign bond yields with the highest credit quality and liquidity. For this analysis, we adopted the yield on the **10-year German Bund** (2.44%), sourced from Deutsche Bundesbank data covering the period October 2024–March 2025. Despite Airbus being headquartered in France, the Bund is widely regarded as the Eurozone benchmark due to its superior market depth and lower yield volatility relative to French OATs.

Equity Risk Premium (ERP)

The equity risk premium reflects the additional return investors demand for assuming exposure to the equity market relative to a risk-free asset. It is a critical input to CAPM, as it captures long-term compensation for systematic risk. For Airbus, we applied a forward-looking **ERP of 5.5%**, consistent with historical averages for developed Eurozone markets and in line with Damodaran's most recent estimates, which remain a global reference point for valuation practice.

$$ERP = R_m - R_f$$

Levered Equity Beta (β_L)

The levered equity beta measures Airbus's sensitivity to overall market movements, integrating both operating risk and financial leverage. We estimated β_L through a regression of Airbus's monthly stock returns over a 5-year horizon against the **EURO STOXX 600** index, using data obtained from Yahoo Finance. This approach ensures a market-representative beta estimate aligned with professional standards.

$$\beta_L = \beta_U \cdot \left[1 + \frac{D}{E} \cdot (1 - T) \right]$$

The slope coefficient from the regression represents the **raw beta** observed in the market. To ensure alignment with Airbus's actual capital structure, we employed the **levered beta** as reported by financial data providers (e.g., Yahoo Finance). This measure already incorporates the effects of Airbus's leverage and thus provides a market-consistent estimate of systematic risk. The company's equity shows above-average sensitivity to market fluctuations, as reflected in the value:

$$\beta_L = 1.21 > 1$$

Having outlined in detail the underlying components of the Cost of Equity (K_e) formula, the computation can now be carried out as follows:

$$K_e = R_f + \beta \cdot (R_m - R_f) = 2,44\% + 1,21 \times 5,50\% = 9,10\%$$

Having determined each of the underlying components, we are now in a position to compute the final Weighted Average Cost of Capital (WACC). In this step, the effective tax rate of 24.14%—previously derived for FY2024—is incorporated, and the relevant values are substituted into the formula to obtain the consolidated measure.

$$\text{WACC} = (52,84\% \cdot 9,10\%) + [47,16\% \cdot 6,30\% \cdot (1 - 24,14\%)] = 7,06\%$$

The computed WACC of 7.06% represents a balanced and competitive cost of capital for a capital-intensive enterprise such as Airbus. This outcome aligns with the firm's investment-grade standing and robust market position, and is broadly consistent with benchmarks observed within the European aerospace and defence industry. From a valuation standpoint, a WACC at this level indicates that Airbus is able to fund future expansion at a moderate cost of capital, without capital markets assigning an undue risk premium. This, in turn, reinforces the plausibility of the long-term investment assumptions underpinning the DCF model.

Discounted Cash Flow Model (DCF)

Growth rate Assumptions and FCFF forecasting

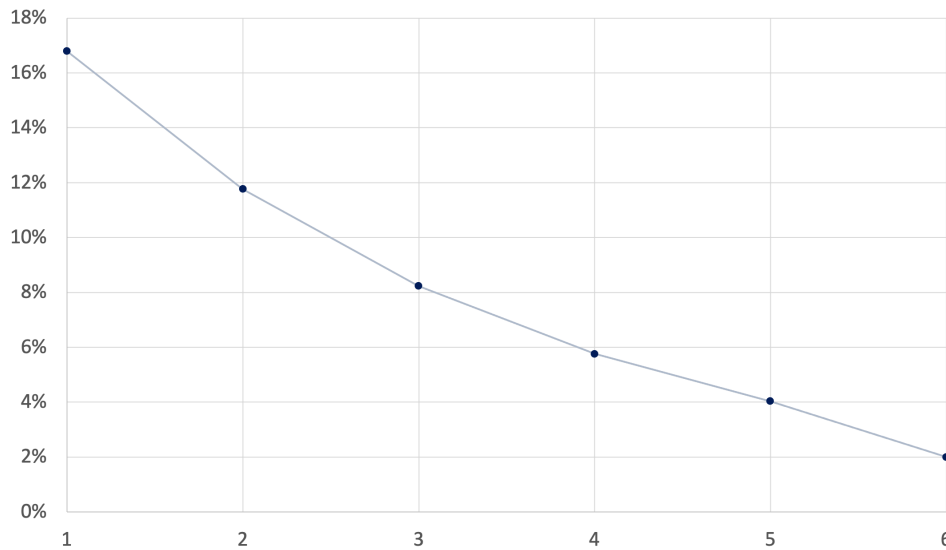
The initial stage of a Discounted Cash Flow (DCF) analysis involves forecasting the company's Free Cash Flow to the Firm (FCFF) across a defined projection horizon. In this case, Airbus's FCFF was projected for the five fiscal years 2025–2029, followed by the computation of a Terminal Value (TV) derived under a perpetual growth framework. A long-term growth rate of 2% was applied, consistent with expected inflation and GDP growth in developed European economies. This conservative assumption adheres to industry best practices, recognising Airbus as a mature enterprise expected to expand at a stable and sustainable pace over the long term.

To generate FCFF forecasts for the explicit period, a Geometric Decay Model was implemented, informed by Airbus's historical free cash flow dynamics (e.g., $\Delta\text{FY2023}/\text{FY2024} = 16.79\%$). This methodology captures a gradually moderating growth trajectory—particularly relevant for capital-intensive industries such as aerospace, where early phases of recovery-driven expansion typically revert to more sustainable patterns over time. Unlike linear or constant growth approaches, the geometric decay framework better reflects the cyclical character and long production horizons inherent in Airbus's operations.

For this analysis, a Decay Factor of 0.70 was selected to govern the trajectory of FCFF growth. This choice balances the visibility provided by Airbus's sizeable order backlog of €390 billion with the structural risks and cyclical pressures characteristic of the aerospace sector. As such, it represents a disciplined midpoint: sufficiently conservative to account for volatility and extended production cycles, yet adequately optimistic to acknowledge the company's robust post-recovery fundamentals.

$$FCFF_t = FCFF_{t-1} \times (1 + g \cdot \delta^{t-1})$$

Geometric Decay Model of Growth Rate



- **Year 1** (2025) = **16,79%**
- **Year 2** (2026) = **11,76%**
- **Year 3** (2027) = **8,23%**
- **Year 4** (2028) = **5,76%**
- **Year 5** (2029) = **4,03%**
- **Year 6** (TV) = **2,00%**

Intrinsic Enterprise Value

The central stage of the DCF methodology involves discounting all projected FCFFs to their present value by applying the Weighted Average Cost of Capital (WACC) as the discount rate. This process generates a sequence of discounted cash flows which, when aggregated and combined with the present value of the terminal value, provides an estimate of the firm's intrinsic enterprise value.

$$\text{Enterprise Value} = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC)^t} + \frac{TV}{(1 + WACC)^n} \approx 93.348 \text{ M}$$

Intrinsic Value of Equity

Finally, in order to move from Enterprise Value to Equity Value, the intrinsic enterprise value is adjusted by adding total financial assets and deducting total financial liabilities. This adjustment accounts for the company's net financial position, thereby ensuring that the final valuation accurately reflects the portion of value attributable to equity holders.

$$\text{Intrinsic Equity Value} = (\text{Intrinsic Enterprise Value} + \text{Cash and Financial Assets} - \text{Financial Liabilities}) \approx 94.950 \text{ M}$$

Consistent with the previous steps, the intrinsic share price is obtained by dividing the Equity Value by the total number of shares outstanding at year-end 2024. This final step translates the firm's intrinsic valuation into a per-share measure, enabling a direct comparison with the prevailing market price.

$$\text{Intrinsic Share Price} = \frac{\text{Equity Value}}{\text{Shares Outstanding}} = \frac{94.950 \text{ M}}{792.283.683} \approx \text{€}120$$

Market Comparison

At the time of this analysis, Airbus's shares were trading at €154.90 per share, compared to an intrinsic value estimate of €119.84 derived from a discounted cash flow model. The valuation relied on conservative yet sector-consistent assumptions, including a WACC of 7.06%, a perpetual growth rate of 2%, and a geometric decay applied to FCFF growth. The discrepancy between market price and intrinsic value can be attributed to several interrelated factors.

First, **market expectations of sustained growth** may lead investors to price in stronger delivery momentum or favourable macroeconomic conditions, supported by Airbus's sizeable order backlog of over €390 billion (Airbus, 2024). Second, **intangible sources of value not captured by FCFF**—such as technological leadership in sustainable aviation, first-mover positioning in hydrogen aircraft development, and potential geopolitical advantages from transatlantic defence contracts—may also be embedded in the share price. Third, **behavioural and sentiment-driven forces** often influence market valuations, with factors such as analyst upgrades, sector rotations, and thematic trends (e.g., green industrial policy) driving momentum beyond fundamentals. Finally, the **conservative modelling assumptions** employed—namely the 0.70 decay factor and 2% terminal growth rate—prioritise prudence but may underestimate more optimistic scenarios that equity markets are inclined to consider.

Taken together, these elements suggest that the prevailing market valuation incorporates a degree of optimism extending beyond the firm's fundamental cash flow capacity. Within the framework of standard valuation principles, this points to Airbus being modestly overvalued at the time of the assessment.



Bibliography and References

1. **Airbus.** (2024a). *Products & Services* | Airbus. *Www.airbus.com*. <https://www.airbus.com/en/products-services>
2. **Airbus.** (2024b, April 15). *Our Strategy* | Airbus. *Airbus*. <https://www.airbus.com/en/about-us/our-strategy>
3. **Airbus.** (2024c, September 18). *Airbus values* | Airbus. *Airbus*. <https://www.airbus.com/en/careers/our-values>
4. **Airbus.** (2025, January 16). *Airbus Annual Report*. *Airbus*. <https://www.airbus.com/en/investors/annual-reports>
5. **Airbus SE.** (2025). *Consolidated financial statements for the year ended December 31, 2024*. Retrieved from <https://www.airbus.com/en/investors/financial-results-and-annual-reports>
6. **Airbus SE.** (2024). *Orders & Deliveries Report – Q4 2024*. Retrieved from <https://www.airbus.com/en/products-services/commercial-aircraft/market/orders-and-deliveries>
7. **Airbus SE.** (2025). *Share price and market data – End of Year 2024*. Retrieved from <https://www.airbus.com/en/investors/share-price>
8. **Boeing.** (2015). *Boeing Company - Investors - Overview*. *Boeing.com*. <https://investors.boeing.com>
9. **Boeing.** (2023). *Boeing Company - Investors - Reports*. *Investors.boeing.com*. <https://investors.boeing.com/investors/reports/>
10. **Boeing.** (2025). *Boeing: the Boeing Company*. *Boeing.com*. <https://www.boeing.com/>
11. **Brealey, R. A., Myers, S. C., & Allen, F.** (2022). *Principles of corporate finance* (14th ed.). McGraw-Hill Education.
12. **Berk, J., & DeMarzo, P.** (2020). *Corporate finance* (5th ed.). Pearson Education.
13. **Bundesbank.** (2025). *German 10-year government bond yields (Oct 2024 – Mar 2025)*. Retrieved from <https://www.bundesbank.de>
14. **Bushey, C., Megaw, N., Ralph, O., & Platt, E.** (2024, October 29). *Boeing's record \$21bn fundraising boosts hopes of avoiding downgrade*. @FinancialTimes; *Financial Times*. <https://www.ft.com/content/f96ba803-5d80-45b1-8057-dd6924805a6b>
15. **CFI Team.** (2023). *Financial ratios*. *Corporate Finance Institute*. <https://corporatefinanceinstitute.com/resources/accounting/financial-ratios/>
16. **Connor Surmonte.** (2024, March 12). *Boeing Whistleblower Found Dead Days After Testifying Against Airplane Giant*. *RadarOnline*. <https://radaronline.com/p/boeing-whistleblower-found-dead-hotel-parking-lot-testify-warning/>
17. **Damodaran, A.** (2024). *Cost of capital by sector – Europe*. *NYU Stern School of Business*. Retrieved from <https://pages.stern.nyu.edu/adamodar/>
18. **Damodaran, A.** (2024). *Equity risk premiums (ERP): Determinants, estimation and implications – 2024 Edition*. *NYU Stern*. Retrieved from <https://pages.stern.nyu.edu/~adamodar/>
19. **Deloitte.** (2024). *2024 Aerospace and Defense Industry Outlook*. Retrieved from <https://www2.deloitte.com/global/en/pages/about-deloitte/articles/aerospace-defense-industry-outlook.html>
20. **EY.** (2023). *How to build a DCF model that investors trust*. Retrieved from https://www.ey.com/en_gl/valuation/how-to-build-a-dcf-model
21. **Isidore, C.** (2024, March). *Boeing fined \$51 million for violating Arms Export Control Act*. *CNN*; *CNN*. <https://edition.cnn.com/2024/03/01/business/boeing-fine-violating-arms-export-act/index.html>

22. **Federal Deposit Insurance Corporation.** (n.d.). *Equity/Assets and ROE of S&P 500 Companies*. <https://www.fdic.gov/about/learn/board/hoenig/sp500.pdf>
23. **MacroMicro.** (2025). *World - Number of Daily Flights - Commercial Flights*. MacroMicro. <https://en.macromicro.me/series/7251/flight-tracking-commercial>
24. **Pingle, T.** (2024, May 8). *COMAC's impact on the future of the Airbus-Boeing duopoly*. Michigan Journal of Economics. <https://sites.lsa.umich.edu/mje/2024/05/08/comacs-impact-on-the-future-of-the-airbus-boeing-duopoly/>
25. **Reuters Staff.** (2017, January 10). Boeing joins group lobbying to keep \$8.7 billion in tax breaks. *Reuters*. <https://www.reuters.com/article/world/americas/boeing-joins-group-lobbying-to-keep-87-billion-in-tax-breaks-idUSL1N1F010S/>
26. **The Economic Times.** (2024, July 8). Boeing 737 Max: The troubled history of fatal crashes and 346 deaths in 7 years. *The Economic Times*. <https://economictimes.indiatimes.com/news/international/business/boeing-737-max-the-troubled-history-of-fatal-crashes-and-346-deaths-in-7-years/articleshow/111566888.cms?from=mdr>
27. **Yahoo Finance.** (2025). *Airbus SE (AIR.PA) historical share price and beta data*. Retrieved from <https://finance.yahoo.com/quote/AIR.PA/>
28. **Koller, T., Goedhart, M., & Wessels, D.** (2020). *Valuation: Measuring and managing the value of companies* (7th ed.). McKinsey & Company Inc., Wiley Finance.