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Boeing vs Airbus: A Pairs Trading Analysis

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Abstract

This paper investigates the potential use of a pairs trade strategy between Boeing and Airbus, two companies in the aerospace sector. I conducted a comprehensive analysis of the industry and each company separately, aiming to gain a deeper understanding of their individual stories and market positioning. Subsequently, I performed a Discounted Cash Flow (DCF) assessment to determine the intrinsic value of the share price for both Boeing and Airbus. The results of the DCF analysis indicated that Boeing was overvalued, while Airbus was undervalued. Following this, I performed a fundamental analysis on the pair, exploring whether the strategy would remain viable under different assumptions.

Key words: Pairs Trade; Valuation; Trading; Aerospace.

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1. Introduction

The simultaneous purchase of one stock and the simultaneous short sale of another highly correlated asset constitutes pairs trading, a market-neutral trading strategy. Profiting from brief divergences in the prices of two related assets that are anticipated to eventually return to their historical mean relationship is the essence of pairs trading. The objective of this approach is to capitalize on the relative mispricing of the two assets in order to profit from their convergence, independent of the market's overall trend.

Pairs trading gained popularity in the late 1980s and was thoroughly studied and refined within Morgan Stanley by a group of quantitative analysts. Traders usually begin by choosing two assets that have a high historical correlation before putting their pairs trading technique into practice. These assets share comparable underlying qualities and are frequently from the same sector or industry. Here, I have selected the aircraft industry and its two principal players, Boeing and Airbus. Not only do they adhere to all the requirements necessary for the strategy's execution, but they also work in the exciting and quickly developing aerospace sector.

Recently, Boeing has been plagued by numerous issues, stemming from its cost-cutting strategy and recent scandals related to the quality and safety guarantees in its aircraft, while Airbus appears to be thriving, with a continuous growth spanning decades and its significant contribution to sustainability. It might seem logical to short Boeing and go long Airbus, but it is unclear how much of Boeing's negative news and Airbus's positive news have already been factored into their stock prices. To address this uncertainty, I conducted an in-depth DCF valuation to determine each company's intrinsic value, after conducting comprehensive research on the Aerospace and Defence sector and gaining insight into the business models of the two participating organizations. The fourth step involved conducting a fundamental analysis to

determine if the strategy could still be applied with variations in the growth rate and the Weighted Average Cost of Capital.

2. Industry Analysis

The Aerospace and Defence (A&D) industry significantly contributes to GDP in the US and EU and wields considerable influence. However, during the COVID-19 pandemic, it faced substantial challenges, being among the most affected sectors. The industry is on its way to reach the pre-pandemic levels and trying to improve constantly starting from there. Growth is anticipated in both the commercial and space and defence sectors in the coming years.

Talent acquisition emerges as a significant challenge within this sector, attributed to perceived inadequate salaries and associated job risks. Another critical concern is the complexity of the supply chain, which must comply with stringent safety, maintenance checks, and regulations. This complexity often leads to production delays, extended aircraft delivery times, and increased costs for raw materials and individual components. However, it is noteworthy that delivery times have improved, decreasing from an average of 100 days in July 2022 to 87 days in August 2023 (Deloitte 2024 A&D outlook), although they have not yet returned to pre-pandemic levels.

The demand for sustainability continues to grow, especially considering past scandals in the sector and the fact that aviation is one of the main contributor to greenhouse gas emissions, the sector is responsible for around 2-3% of global CO2 emissions, and this contribution is expected to increase as air travel continues to grow. Environmentally friendly airplanes are increasingly sought after by consumers and airlines. Over the next few years, the challenge lies in producing efficient and safe aircraft that can also meet the requirement of reducing emissions. It is also crucial to consider the goal of achieving net-zero CO2 emissions by 2050 and gradually reducing emissions to reach this target.

On the defence spending front, increases are expected, particularly due to geopolitical issues such as the Russian and Israeli matters, the US in particular spent $916bn dollars on national defence in 2023, more that the next 9 countries (The Foundation Blog, April 2024).

From a commercial perspective, an increase is also anticipated as we continue to recover from the pandemic. The objective is to invest in safer and more efficient technologies, in fact, in terms of security, there have been several scandals, recently at the beginning of 2024 with the Alaska Air scandal, but also in 2019 related to Boeing 737MAX model. Being a high-risk and continuously evolving industry, new technologies proposed often fail to be 100% secure and this is partly because the tests required do not always fully meet the safety standards.

The two main protagonists in this industry are the two companies that will be analysed within this paper: Boeing, which primarily serves the American market, and Airbus, which operates in the European market, but is also more global-centered. In terms of the commercial side, Boeing focuses more on the wide-body jets market, while Airbus focuses on the narrow-body jets market. In recent years, demand for wide-body jets has significantly declined due to reduced travel amid the pandemic, leading to narrow-body jets being perceived as more efficient and in higher demand.

Boeing's business model is characterized by its older and more financially centered approach, which emphasizes cost-cutting measures, significant dividend payments, and an aggressive share buyback policy. In contrast, Airbus prioritizes sustainability and fuel efficiency, garnering a better reputation and attracting less media attention compared to Boeing.

In a general sense, the industry's future outlook appears optimistic, driven by fundamental factors such as economic expansion, a growing inclination to travel because of enhanced trade, globalization, and improved airline offerings.

3. Company Presentation

3.1 Boeing

Boeing, founded in 1916 by William Boeing as "Pacific Aero Products Co." has been a trailblazer in commercial aviation, revolutionizing the industry with its innovative aircraft designs. Boeing, which is well-known for its unrelenting dedication to quality, adopted the motto "If it ain't Boeing, I'm not going" in 1994 to represent the strong faith that customers have in the company's offerings.

In a strategic move in 1997, Boeing acquired McDonnell Douglas, a company known for its combat aircraft. This acquisition positioned Boeing as the world's leading producer of commercial aircraft, surpassing Airbus, and expanded its presence in the Defence sector. However, the merger also brought together two companies with distinct cultures regarding controls and safety: Boeing's culture was more organized and established, with a centenary story, while McDonnell Douglas had a younger and dynamic approach.

This merger caused several issues for what was once one of the most stable American companies with a solid global reputation. Post-merger, a cost-cutting strategy emerged, starting the declining of the company and prioritizing stock price growth in order to satisfy Wall Street at the expense of product quality. Managers were given monthly targets that had to be met at any cost. Previously, employees' quality concerns were addressed, but after the merger, there was a reduction in quality managers, and a shift occurred where employee feedback was disregarded when quality issues arose.

Anyway, over the years, Boeing has maintained its leadership in producing wide-body aircraft capable of long-haul operations. With a primary focus on the American market, Boeing serves major airlines and defense organizations through its diverse product portfolio, which includes commercial aircraft, military planes, and aerospace technologies. Operating across several key

divisions such as Commercial Airplanes, Defense, Space and Security, as well as Global Services, Boeing offers a comprehensive range of solutions to meet diverse aviation needs. Boeing's product range includes a mix of commercial aircraft, such as the Boeing 737, 747, 777, and 787 Dreamliner series, as well as military aircraft like the F/A-18 Super Hornet and KC-46 tanker. The Boeing 777 stands out as one of its best-selling models, known for its operational efficiency and versatility. Additionally, the 787 Dreamliner was designed to offer advanced fuel efficiency and passenger comfort, further solidifying Boeing's reputation for innovation.

Despite its longstanding success, Boeing has faced challenges that have drawn media attention and public scrutiny. In recent years, technical issues with its aircraft have led to significant incidents that have impacted its reputation. The Boeing 737 MAX has been at the center of controversy following two fatal crashes in 2018 and 2019. These tragedies prompted a global grounding of the aircraft and led to a comprehensive review of its MCAS (Maneuvering Characteristics Augmentation System) and changes in certification and pilot training processes. The main reason behind this scandal is attributed to Airbus' introduction of the A320 NEO model, a large aircraft with unprecedented fuel efficiency, meeting all sustainability goals. On the other hand, Boeing did not have a ready aircraft and did not want to invest time and money in creating a new model, so they installed larger and more sustainable engines on the 730-model produced in the 1960s. However, these engines caused several quality issues that led to two fatal incidents.

In early 2024, another incident involving Alaska Airlines, where a door detached shortly after takeoff, once again thrust Boeing into the media spotlight. These incidents have led to increased scrutiny from regulatory bodies, particularly the FAA, and have put pressure on Boeing to prioritize safety and regain consumer trust. Looking ahead, Boeing is poised to navigate these challenges under new leadership, as the company's CEO has announced his resignation at the

end of the year. The incoming management is expected to focus on strengthening safety controls and restoring Boeing's reputation as a trusted leader in the aviation industry. With over a century of experience in aircraft engineering and manufacturing, Boeing has established itself as a recognized brand in the sky. Despite the recent setbacks, Boeing's ambition to excel and maintain its leadership position remains unwavering, reflecting its enduring commitment to innovation, quality, and safety.

3.2 Airbus

Airbus was established in the early 1970s in France with the objective of challenging industry giants such as Boeing and McDonnell Douglas. Despite the formidable dominance of Boeing in the market until then, Airbus quickly emerged as a significant competitor, solidifying its position as the largest aeronautics and space company in Europe and a global leader. The company's core business revolves around the design and manufacturing of Commercial Aircraft, complemented by divisions dedicated to Space and Defence, as well as Helicopters.

Throughout the 1980s and 1990s, Airbus showcased its prowess in innovation and design by introducing groundbreaking aircraft models such as the A320, A330, and A340. These aircraft offered customers modern and efficient alternatives to Boeing's offerings, enabling Airbus to capture a considerable market share. In subsequent years, Airbus continued its trajectory of innovation with the introduction of iconic aircraft models like the A380, a double-decker aircraft, and the A350, a long-range aircraft featuring a composite fuselage. These developments further solidified Airbus's position as a leader in the commercial aircraft market.

A key element of Airbus' brand strategy lies in its strong customer-centric approach. The company always prioritizes customer, listening to their needs and preferences, by actively engaging clients and taking them into account while developing aircraft. Airbus fosters a sense of partnership and cultivates enduring relationships. Additionally, Airbus's brand strategy

highlights its dedication to remaining at the top of aviation innovation, which includes introducing aircraft that are fuel-efficient and investigating cutting-edge technologies like electric and hydrogen propulsion. This dedication to innovation reinforces Airbus's position as an industry leader and contributes to its competitive advantage, Airbus's A320 NEO, for example, has been a significant success, offering customers a highly efficient and competitive option in the single-aisle market.

Having said that, even if the companies' competitiveness in the big jet airliner industry is described as a duopoly, Airbus's capacity to "steal" customers from Boeing is not an easy task, with both companies operating in a highly competitive environment. It is in fact unlikely that Airbus will be able to "steal" customers from Boeing in a structural way, as the industry is characterized by a high degree of loyalty among airlines. Airlines often have long-term contracts with manufacturers and have invested heavily in specific aircraft types. Changing manufacturers requires significant crew training, which can be a costly and time-consuming process. This means that even if Airbus gains market share during a safety crisis or regulatory challenges, it is unlikely that customers will switch to Airbus permanently, instead, they will likely return to Boeing once the safety issues are resolved.

In summary, Airbus has evolved from a European consortium into one of the world's premier aircraft manufacturers. With a diversified product portfolio and a steadfast commitment to innovation and sustainability, Airbus continues to play a pivotal role in shaping the global aviation market.

4. Comparison Boeing and Airbus

4.1 General Differences

The differences between Boeing and Airbus are numerous, encompassing business models, offered products, and geographical exposure, as previously mentioned. Even though Boeing

was the market leader for commercial airplanes at first, the gaps in commercial aircraft deliveries and market share between Airbus and Boeing decreased over time. This may also be attributed to technological differences since Airbus aircraft, with their fly-by-wire technology, feature cleaner instrument layouts and rely more heavily on automated systems, such as autopilot. In contrast, Boeing aircraft often feature more complex instrument panels that require greater manual inputs. These distinctions are reflected in the branding and marketing strategies of both companies: Boeing emphasizes engineering excellence and leadership, focusing on technicality, human input, and mechanical detail while Airbus, on the other hand, highlights the enjoyable and automated flying experience for both pilots and passengers, emphasizing speed, lightness, and comfort.

The development of competitive strategies based on divergent industry expectations has been a key element of the competitive dynamic between Boeing and Airbus, in addition to technological competition. The two organizations' overall operational strategies differ greatly as a result of their employment of various operating models: hub-and-spoke and direct point-to-point. In particular, the Boeing direct point-to-point operational model involves airlines flying directly between destinations without stopping at a central hub. This model is often associated with low-cost carriers and is favoured for short-haul flights where efficiency and time savings are fundamental. In contrast, Hub and spoke is a system used by Airbus where an airline uses a central airport as a hub and routes passengers to their final destinations through connecting flights. This model enables airlines to optimize their aircraft utilization, reduce operating costs and consolidate passenger traffic, for this reason the model is common among full-service carriers and are well-suited for long-haul flights with multiple destinations.

On a manufacturing model side, we also have crucial differences, Boeing traditionally follows a more decentralized manufacturing approach, with production facilities spread across various locations in the United States, allowing to leverage local expertise and resources. Airbus instead

follows a more centralized approach, with primary production facilities located in several key European countries, including France, Germany, Spain, and the United Kingdom. This strategy allows Airbus to achieve economies of scale, streamline logistics, and maintain stringent quality control standards across its manufacturing operations.

4.2 Revenues

Before comparing financial data, it is important to note that Boeing's financial statements are reported in USD, while Airbus's are in EUR.

Analysing the income statements of both Boeing and Airbus over the past five years, from 2019 to 2023, we observe significant revenue decreases for both companies in 2020, dropping by 24% and 29%, respectively (Figure 1 and Figure 2). These declines were attributed to the COVID-19 pandemic and the subsequent halt in flights during that year. Also, it is worth noting that during this period, many aircraft were grounded due to reduced demand and stop of the supply chain. From 2020 to 2023, both companies have shown signs of recovery with increasing growth rates: while Boeing has managed to return to pre-pandemic revenue levels and even slightly exceed them, Airbus has not yet reached those levels. This difference in recovery could also be due to the fact that Boeing experienced an incident with a 737MAX aircraft in 2019, which led to the grounding of all Boeing-produced models, so the 2019 Revenues data are not representative of a full capacity level of pre-pandemic values. Also, even if Airbus delivered more aircraft than Boeing in 2023, specifically 735 against 528, the challenge remains the tense supply chain situation given the shortage of spare parts, but Airbus CEO Guillaume Faury said: “The company is aware of the supply-chain challenges, but ramping up narrow-body aircraft production is at the heart of our priorities”.

4.3 Margins

Discussing margins, starting with the Gross Margin, we observe a trend similar to the revenue pattern, with a decline in 2020 followed by growth in subsequent years.

For Airbus, the company returned to pre-pandemic levels in 2022 but saw a decrease in 2023 due to higher cost of sales, attributed to ongoing supply chain challenges. In contrast, Boeing has significantly lower gross margins compared to its competitor, peaking in a negative value in 2020, indicating that it costs the company more to produce or acquire the goods it sells than the revenue it generates from selling those goods, and this situation is not sustainable in the long run. However, the company showed signs of recovery in 2023 (Figure 1). The main drivers contributing to this negative margin are high level of Research and Development expenses and General and Administrative expenses, which have been on an upward trend for five years and led to reporters accusing Boeing of overpaying their top executives ($817 million in 2023).

Regarding the Operating margin of Airbus, identified here as Profit before financial result and income taxes, has been positive in the past years, except for 2020. We can observe in Figure 2 that the recovery has been swift, with results significantly higher in the past three years, mainly due to much lower administrative expenses. This is mainly due to the fact that, in 2019, Airbus paid two fines totalling around 4 billion dollars in a corruption case, for violating anti-bribery laws and export controls. Airbus concluded an agreement with the French, British, and American judicial authorities to avoid criminal proceedings related to corruption in contracts, and this fine also resulted in a negative outcome in that year.

Airbus's Operating result and Gross Margin are significantly higher than Boeing's, as can be observed. This reflects Airbus's better operational structure with specific cost structures and corporate governance. Additionally, Airbus has a significant presence in various regions worldwide, providing geographical diversification that can help mitigate the negative impacts

of economic events or crises specific to a region while, Boeing may be more exposed to specific market risks in the American market. Anyway worth mentioning that Boeing is more concentrated on a product diversification, while Airbus on a geographical one.

Finally, Boeing has faced various challenges in recent years, particularly related to the Boeing 737 MAX incident as explained above, which had a significant impact on its finances and the company's reputation.

4.4 Share Prices

The Boeing company is quoted on the New York Stock Exchange with the ticker NYSE:BA and Airbus Group is quoted on the Euronext stock market with the ticker ENXTPA:AIR.

In Figure 3, the variation in share prices of Boeing and Airbus from 01/01/2019 until the end of March 2024 in USD is showed. As observed, Boeing's share price has consistently been higher than Airbus' throughout the observation period, culminating in a recent rapprochement.

Before the onset of the pandemic, Boeing's share price was significantly higher than that of its main competitor, partly due to its stock policy. Boeing has paid out about $22 billion in dividends to its shareholders and over $40 billion on stock buybacks over the past ten years. Boeing's dividend payouts to shareholders reached a peak in 2019 of $4.6 billion, and the company's repurchase allocation reached a record high of $9.3 billion in 2017. In particular, writers for Yahoo Finance dubbed Boeing a "true dividend rockstar" in the years after the company merged with McDonnell Douglas. Boeing's stock buybacks artificially inflated the business's short-term worth for shareholders by repurchasing company shares with cash on hand. It is evident that Airbus's share price has increasingly closer to Boeing's, this is primarily attributed to recent news questioning the safety of Boeing airplanes due to recent incidents, additionally, Airbus's better-structured and efficient business model has contributed to this shift.

5. Boeing vs Airbus Valuation

5.1 Methodology

To evaluate Airbus and Boeing, I have decided to use the Discounted Cash Flow (DCF) method in order to find the intrinsic value of the share price of the two companies according to my valuation. Subsequently, I will compare this value with the current market price to be able to recognize which company is overvalued and which is undervalued in the market.

As a first step, I reviewed the financial statements for the past five years, from 2019 to 2023, to understand the recent performance of both companies. Then, I reformulated the financial statements into core, non-core, and financials to obtain a predefined view of the activities. (Figure 5, 6, 7 and 8).

I also investigated the breakdown of taxes, while analysing the Income Statements, with corporate tax rates being 21% in the USA and 25.8% in the Netherlands, I divided the other components of taxes by Core and Non-core in order to allocate them under the right part of the financial statement as Adjustments of taxes (Figure 9 and Figure 10).

Next, I analysed the breakdown of Sales, Costs, and Invested Capital (Figure 11 and 12). For sales, I segmented them based on business areas, general breakdown, and geographical area. In Boeing's case, the general breakdown consists of Sales of Products and Sales of Services, with the former averaging 83.6% over the past 5 years. In Airbus, in addition to the simple division of products and services, there is a third category of Products sold over time, averaging 7% of total sales, while Products sold at a point in time account for 77%.

Regarding business areas, Boeing's segments are Commercial, Space & Defence, and Global Services, while Airbus includes 'Airbus' covering Commercial, Space and Defence, and Helicopters. For Boeing, the year 2020 significantly boosted the Space and Defence sector, compensating for the Commercial sector's slowdown, this resulted in the segment becoming the

business area with the highest average revenue percentage at 37.7%, compared to 37% on the commercial side. On the Airbus side, the dominance of the commercial sector is much clearer, accounting for 71% of total revenues. Analyzing the geographical breakdown, it is evident that Boeing's revenues primarily come from the US, while Airbus is more diversified with significant shares, other than in Europe, in Asia and the Middle East, accounting for 33% and 20%, respectively, compared to Boeing's 60% of revenues solely from the US. This segmentation confirms the different diversification focus of the two companies, more geographical for Airbus and more under a business area perspective for Boeing.

Regarding costs, Boeing divides them into service costs and product costs, while Airbus combines them under the unified category of sales costs without providing a detailed breakdown in the financial report. Boeing's product costs, as expected, represent 86% of total costs and expenses and 83% of revenues.

As for the Invested Capital (IC) breakdown, I linked each income of Core and Non-core categories to a single variable, such as Revenues, PP&E, and Cost of Products. In the case of PP&E, the financial report of both companies provided a breakdown into Land, Buildings and Land Improvement, Machinery and Equipment, and Construction in Progress, with Depreciation calculated based on the Gross PP&E (Figure 13).

All Non-core items were linked to Revenues, and most Core items were as well, being it the main driver, except for Accounts Payable and Accrued Liabilities, which were linked to the Cost of Products. The only hard-coded value is the Operating Cash, estimated as a percentage of revenues. Specifically, 1% of Revenues was classified as Operating Cash, while the remaining cash was allocated to the Excess Cash category for both companies.

These steps were fundamental in initiating the construction of the forecasted financial statements. To apply the DCF method effectively, it is now necessary to formulate assumptions

regarding the future performance of the companies. These assumptions will be derived from a thorough analysis of the companies' historical financial data, industry trends, and competitive positioning.

5.2 Assumptions

Before discussing the construction of the forecasted statement, it's crucial to highlight that a 7-years forecasting period has been chosen due to the high volatility of financial statement values and five years were deemed insufficient under my consideration. Additionally, 2030 is considered a steady state year in many other analyses, leading me to proceed with this approach for the DCF valuation.

5.2.1 Income Statement

The first step is to start with the forecast of the Income Statement, enabling the linking of movements of individual items to the Balance Sheet, as done for the observed five years. For this evaluation, I decided to divide the Revenues by Business Department and estimate them first, then summing them to obtain the total Revenues for each year due to the higher accuracy of this approach and the different trends for each department.

It is crucial to emphasize that after the heavy impact of Covid, the growth rates in recent years were exceptionally high, so it's generally expected to ease down towards a steady growth rate in the upcoming years.

Regarding Boeing (Figure 14), a decrease in revenue growth rates is expected, both due to the return to normality after the pandemic-induced downturn as said and concerns regarding aircraft safety and decreased consumer confidence due to recent incidents and scandals that have put Boeing in the media spotlight. Specifically, Commercial Revenues are expected to grow by only 3% in 2024, compared to 30% in 2023, recovering in subsequent years and stabilizing around a 2.5% long-term growth rate. It is also important to note that, according to my

estimates, Revenues will not decrease compared to 2019 since, as previously mentioned, 2019 is not a fully representative year of pre-Covid full capacity, given the two serious incidents related to the 737MAX model that led to order cancellations by airlines and consequently lower Revenues. On the other hand, the Global Services and Space & Security sectors should not be affected by the commercial airplane safety dynamics, having a different consumer base, starting with a growth rate of 5% and stabilizing at 2% in both cases. Regarding Unallocated items, forecasts are based on the moving average of the last five years, as this item has been more stable over the years compared to the previous ones.

On the Airbus side (Figure 15), within the Annual Financial Report 2023, long-term estimates were already provided, which I found useful to use since in the Aerospace field forecasting are quite accurate given the gap of years between the order placement and its delivery, averaging around 10 years.

The long-term estimates are respectively 2% for the Commercial department and 1% for both Space and Defence and Helicopters. In this case, the Commercial side remains the main driver of Revenues, as in previous years, and according to estimates, its growth will peak to 5% in 2024, lower than the 27% in 2023, but still not enough to reach pre-Covid levels. Subsequently, the percentages will begin to gradually decrease, but by 2026 a return to full capacity is expected, and from there, growth will continue due to increased transportation and globalization or a probable market share increase, reaching a steady state of 2%.

A different trend is observed for the other two departments, which had already reached pre-pandemic levels in 2023. Consequently, the growth will be more moderate, at 3% for Helicopters and 5% for Space and Defence, gradually decreasing to reach a steady state of 1% by 2030 in both cases.

As it’s easy to notice, the growth rate of General Revenues for Both Airbus and Boeing is equal to 2% in the steady state, since the two company operates in the same sector and are highly correlated, I assumed that in the long term they both will reach the same level of growth.

When it comes to costs, estimating future values was more challenging due to the numerous variables to consider, and there were no existing estimates, however, costs have been more stable over the years analysed compared to revenues. For Boeing, the breakdown of cost of products and cost of services remained more or less consistent as a percentage of total costs, averaging at 85% and 15%, respectively. In contrast, relative to revenues, which I decided to link costs to, the Cost of Sales naturally increases in absolute terms as revenues grow, even if the cost percentages in relation to revenues decrease over the years due to increasing supply chain efficiency in the next years. This leads to the Cost of Sales stabilizing at -67% and the Cost of Services at -8% for Boeing and around -76% for Airbus.

For both companies, regarding General and Administrative expenses and R&D costs, calculations were based on annual growth rates since they are not directly linked to revenue trends. General expenditures have slightly increased but remained fairly stable since 2023, as salaries remained unchanged, and the increase was solely due to future inflation. The same goes for R&D expenditures, which have increased slightly but remain tied to pre-pandemic values.

Then, calculations on corporate taxes were made on the core values using fixed rates (21% for the US and 25.8% for the Netherlands) and adjusted the value using an average of previous years.

Regarding the non-core and financing side, given its lesser significance, a five-year moving average was applied for Boeing's gain on dispositions, maintaining stability over the years. Adjustments were made to the average for other income to reflect its stability and significance. For Airbus, a similar adjustment to the five-year average was made, except for “Other

Expenses", where a notable value was set due to a particularly low value in 2020. The tax calculations followed the same procedure used for the core part.

These procedures facilitated the estimation of income/loss for Boeing and Airbus up to 2030, considered as the steady state. Based on the forecasting, it's evident that the future outlook is positive for both Boeing and Airbus, with notable improvements in the core areas of the companies. Boeing is expected to return to positive results in 2025, partly due to a change in management anticipated by the end of 2024, following the departure of the current CEO, Dave Calhoun.

5.2.2 Balance Sheet

I then moved on to consider the Balance Sheet, linking estimates to Income Statement variables as mentioned. In particular for the part related to Core invested capital, I used the previously done breakdown of invested capital, linking individual items to Revenues, Cost of Products, or PP&E. To calculate future forecasts, I again used a five-year moving average as the percentages were all reasonably stable. The same method was used for the Financing part for the same reasons.

Analysing the results, it's evident that (Figure 16 and 17) the core invested capital gradually increases over the years. However, the non-core invested capital is expected to remain in negative territory for Airbus, even if showing improvement, while it becomes slightly positive for Boeing. On the financing side, values are expected to stay at an average level and, specifically for Boeing, there are expectations that a change in management and a recent positive income result will lead to positive equity values starting from 2026.

5.2.3 Free Cash Flow Statement

As a final statement, I compiled the Free Cash Flow Statement (Figure 18 and 19), within which I calculated the Core Free Cash Flow, that is the Free Cash Flow generated from core business

operations excluding one-time items or non-recurring expenses, as the difference between the Core result and the Change in core invested capital. I then used the same procedure for the Non-Core part, representing Free Cash Flow generated from non-core business activities or one-time events, subsequently summing both the Core and Non-core FCF values to obtain the Total FCF.

Total cash flows exhibit significant volatility for Boeing, only turning positive in 2026, whereas for Airbus, they remain positive throughout the entire period under consideration.

For the financial part, the formula used is Financial Result - Change in Financial Asset = Net Debt Cash Flow. This value represents the cash flow associated with changes in net debt, encompassing debt repayments, issuances, and interest payments. It's notably volatile for both companies, with Boeing experiencing more negative values.

Moving forward, the Change in Equity subtracted from the comprehensive income yields the Equity cash flow, representing the cash flow linked to changes in equity, including dividends paid to shareholders and alterations in retained earnings. When added to the Net Debt Cash Flow, it provides the Financing Cash Flow, which is expected to be negative for both companies in the long run, as Comprehensive Income is growing more rapidly than the change in Equity for both. As a final check, the Financing Cash Flow should mirror the total FCF but with the opposite sign and throughout all the years, this check appears positive.

5.2.4 Discount Rate

For the calculation of the Weighted Average Cost of Capital (WACC) (Figure 20), which will be used later as the discount rate of cash flows, I used the following formula:

$$WACC = \left(\frac{E}{V} \times Re\right) + \left(\frac{D}{V} \times Rd \times (1 - Tc)\right)$$

In the initial step, the market capitalization of Airbus and Boeing as of March 31, 2024 is used as Equity Value and it was equal €137,74 billion and $118.33 billion, respectively.

Subsequently, the debt values were calculated by summing the short-term and long-term borrowings for 2023, with Boeing's debt value being significantly higher than Airbus', specifically equal to $52.3 million and €13,59 million.

The equity and debt percentages of the total value were calculated using the formulas E/(E+D) and D/(E+D). Boeing had more balanced equity and debt percentages of 69% and 31%, respectively, while Airbus had a significantly higher equity value compared to its debt, with percentages of 91% and 9%, respectively.

The cost of equity was then calculated using the Capital Asset Pricing Model (CAPM):

Cost of equity = Risk-free rate + Beta × Equity risk premium

Boeing's beta was estimated to be between 1.09 and 1.48, with a selected value of 1.29. On the other hand, Airbus's beta was estimated to be between 0.8 and 1.2, with a selected value of 1.0. The risk-free rate was assumed to be 4.62%, which is the 30-year treasury rate used for both companies.

The Market Risk Premium (MRP), that measures the additional return investors require for investing in the stock market compared to a risk-free investment, was estimated equal to the Country Risk Premium of 4.6%, which is the same for both the Netherlands (Airbus) and the United States (Boeing). The cost of equity was calculated as 4.62% + 1.29 × 4.57% = 11.00% for Boeing, and 4.62% + 1.0 × 4.57% = 9.19% for Airbus.

The cost of debt is the interest rate each company pays on its debt, adjusted for the tax benefit of debt financing, and it is calculated as the interest rates paid on total debt for each company, with Airbus's cost of debt being 5.54% and Boeing's being 4.7%. The country tax percentages were 21% for the US (Boeing) and 25% for the Netherlands (Airbus).

The WACC was finally calculated as:

For Boeing, WACC = 0.69 × 11.00% + 0.31 × 4.7% × (1 - 0.21) = 8.77%.

For Airbus, WACC = 0.91 × 9.19% + 0.09 × 5.54% × (1 - 0.25) = 8.73%.

5.3 Valuation

Now that all the necessary elements are available to complete the valuation of Boeing and Airbus, a Discounted Cash Flow Analysis is conducted. The objective is to discount future cash flows at the Weighted Average Cost of Capital (WACC) to obtain a final intrinsic share price and determine if the company is overvalued or undervalued compared to the market price.

The Core Free Cash Flows obtained from the FCF statement are discounted with the previously calculated WACC, resulting in a Sum of Discounted Cash Flows of $9,537 million for Boeing and €36.417 million for Airbus. Additionally, the terminal value needs to be added, calculated with the formula Core FCF of 2030 * (1+2%) / (WACC – 2%), where 2% represents the assumed long-term growth rate of revenues in a steady-state scenario for both companies.

The terminal value accounts for the value of the business beyond the explicit forecast period, factoring in ongoing operations and cash generation capacity in the long run. It is then discounted for 7 years to bring it to present value. After discounting it for the WACC, it is added to the Sum of Discounted Cash Flows to obtain the Core Business Value, which is $116,102 million for Boeing and €142.450 million for Airbus. Moving on to the non-core part, the same procedure is followed, discounting the Non-Core Free Cash Flows for the WACC. Non-core activities may include non-operating assets or business segments not part of the core operations of the companies.

The Core and Non-Core Business values are then summed to derive the Enterprise Value, representing the total value of the business, including both core and non-core operations. By

subtracting the Net Debt from the Enterprise Value, the Equity Value is obtained. Net Debt represents the total debt of the company net of cash and cash equivalents, while Equity Value represents the value of the company's equity or ownership interest.

Finally, dividing the Equity Value by the number of shares outstanding provides the share price. This valuation method offers investors insight into the fair value of the company's shares, aiding in making informed investment decisions. Following these calculations, the final valuation predicts a value per share of €183,91 for Airbus and $138,23 for Boeing (Figure 21 and Figure 22). As of the 28^{h} of March 2024, the last available share price in March, Airbus's price target is above the market price which is €170,72, indicating the company is undervalued, while Boeing's price target is below the market price of $192, indicating the company is overvalued.

6. Pairs Trade Strategy

In addition to the valuation conducted using the DCF model, which helped understand the overvaluation and undervaluation of the companies in the market, a sensitivity analysis was performed to conduct a deeper fundamental analysis. This analysis illustrated how changes in the Weighted Average Cost of Capital (WACC) and revenue growth rates impact the companies' share prices. The results are depicted in Figure 23 and Figure 24.

As observed in the figure, an increase in the growth rate would lead to a corresponding increase in the share prices of both companies. Notably, for a growth rate of 3%, all else being equal, Airbus's price target would remain higher than the market price, while Boeing's price target would be lower. However, a growth rate lower than 2% would result in Airbus's target price decreasing to €162,73, making it overvalued compared to the market. This scenario is highly unlikely as the 2% growth rate estimates are already conservative, and even lower revenue growth estimates are improbable.

Regarding variations in the Cost of Capital, with a higher estimated WACC which can be due to an higher Market Risk Premium or an higher Beta, for example, at 9% for both companies, Airbus's price target would be €178,43, indicating undervaluation, while Boeing's price target would be $137.62, suggesting overvaluation. The same applies for a cost of capital of 8%. Therefore, variations in the cost of capital within a range of 0.5% up or down would not alter the validity of the strategy.

7. Conclusion

The aerospace sector is highly volatile and was one of the industries most affected by the COVID-19 pandemic in 2020. In addition, Boeing, one of the two companies in the aerospace duopoly scenario, has often been, and especially recently, at the center of media attention due to safety-related scandals. This recent scandal of the main competitor, together with robust and sustainable growth, has allowed Airbus to make inroads into the aerospace scenario.

In fact, Airbus not only has a stronger market positioning but also benefits from greater strength in terms of revenues, profitability, and liquidity. Moreover, Airbus appears to be undervalued by the market, while Boeing is likely overvalued. The market seems to be underestimating Airbus's ability to profit from its market positioning and strong presence in the sustainability battle. Of course, Boeing remains a globally recognized company, but its stock buyback policies and high dividends paid over the past decade have allowed it to gain favour on Wall Street despite complaints about the quality of its products.

Since it appears likely that Airbus will continue to outperform Boeing in the long run, there is currently a chance that Boeing and Airbus may engage in a Pairs Trade investment plan. To obtain a hedged position, this approach entails purchasing Airbus, the outperforming company, and short selling Boeing, the underperforming company. I anticipate that Airbus's share price will rise in the near future as the analysis indicates. Thus, purchasing an undervalues stock

(Airbus) that would appreciate in value over time and selling an overvalued stock (Boeing) would benefit an investor in the long term. Also, the investor shouldn't be worried about a slight upgrade in the growth rate of the industry or changes in the WACC assumptions, as the Pairs Trading strategy will still be effective as shown in the fundamental analysis.

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Appendix

Figure 1 - The Boeing Company and Subsidiaries Consolidated Statements of Operations.

(Dollars in millions)	2019	2020	2021	2022	2023
Sales of products	66.094	47.142	51.386	55.893	65.581
Sales of services	10.465	11.016	10.900	10.715	12.213
Total revenues	**76.559**	**58.158**	**62.286**	**66.608**	**77.794**
Cost of products	- 62.877	- 54.568	- 49.954	- 53.969	- 59.864
Cost of services	- 9.154	- 9.232	- 9.283	- 9.109	- 10.206
Total costs and expenses	**- 72.031**	**- 63.800**	**- 59.237**	**- 63.106**	**- 70.070**
Net sales	**4.528**	**- 5.642**	**3.049**	**3.502**	**7.724**
(Loss)/income from operating investments, net	- 4	9	210	- 16	46
General and administrative expense	- 3.909	- 4.817	- 4.157	- 4.187	- 5.168
Research and development expense, net	- 3.219	- 2.476	- 2.249	- 2.852	- 3.377
Gain on dispositions, net	691	202	277	6	2
Loss from operations	**- 1.913**	**- 12.724**	**- 2.870**	**- 3.547**	**- 773**
Other income, net	438	447	551	1.058	1.227
Interest and debt expense	- 784	- 2.199	- 2.714	- 2.561	- 2.459
Loss before income taxes	**- 2.259**	**- 14.476**	**- 5.033**	**- 5.022**	**- 2.005**
Income tax (expense)/benefit	1.623	2.535	743	- 31	- 237
Net loss	**- 636**	**- 11.941**	**- 4.290**	**- 5.053**	**- 2.242**

Figure 2 - Airbus SE – IFRS Consolidated Income Statement.

(In € million)	2019	2020	2021	2022	2023
Revenue	70.478	49.912	52.149	58.763	65.446
Cost of sales	- 59.973	- 44.250	- 42.518	- 48.192	- 55.402
Gross margin	**10.505**	**5.662**	**9.631**	**10.571**	**10.044**
Selling expenses	- 908	- 717	- 713	- 788	- 867
Administrative expenses	- 5.217	- 1.423	- 1.339	- 1.452	- 1.654
Research and development expenses	- 3.358	- 2.858	- 2.746	- 3.079	- 3.257
Other income	370	132	594	471	243
Other expenses	- 356	- 1.458	- 201	- 590	- 209
Share of profit from investments accounted for under the equity method	299	39	40	134	267
Other income from investments	4	113	76	58	36
Profit before financial result and income taxes	**1.339**	**- 510**	**5.342**	**5.325**	**4.603**
Interest income	228	140	88	180	728
Interest expense	- 339	- 411	- 334	- 412	- 753
Other financial result	- 164	- 349	- 69	- 18	191
Total financial result	**- 275**	**- 620**	**- 315**	**250**	**166**
Income taxes	- 2.389	- 39	- 853	- 939	- 1.156
Profit for the period	**- 1.325**	**- 1.169**	**4.174**	**4.136**	**3.613**

Figure 3 - Airbus SE and The Boeing Company share prices in absolute terms (USD) in the last 5 years. (31/03/2024)

Figure 4 - Airbus SE and The Boeing Company share prices change % in the last 5 years. (31/03/2024)

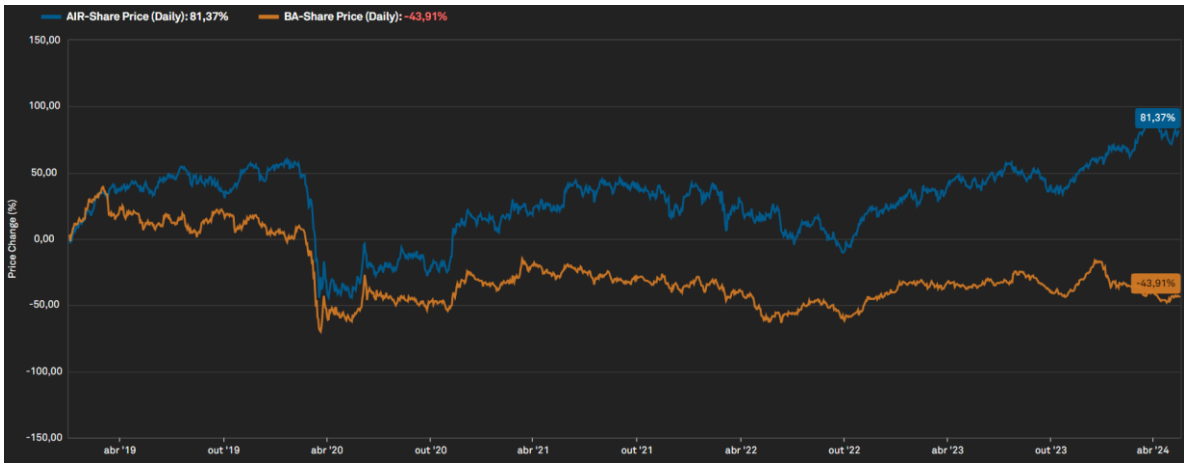

Figure 5 – The Boeing Company Reformulated Balance sheet.

The Boeing Company and Subsidiaries Reformulated Consolidated Statements of Financial Position

(Dollars in millions)

CORE	2019	2020	2021	2022	2023
Intangible Assets	11.398	10.924	10.630	10.368	10.187
Property, plant and equipment	12.502	11.820	10.918	10.550	10.661
Customer financing, net	2.298	2.037	1.812	1.604	959
Advances and progress billings	- 51.551	- 50.488	- 52.980	- 53.081	- 56.328
Inventories	76.622	81.715	78.823	78.151	79.741
Accounts receivable, net	3.266	1.955	2.641	2.517	2.649
Accounts payable	- 15.553	- 12.928	- 9.261	- 10.200	- 11.964
Unbilled receivables, net	9.043	7.995	8.620	8.634	8.317
Accrued liabilities	- 22.868	- 22.171	- 18.455	- 21.581	- 22.331
Operating Cash	383	291	311	333	389
INVESTED CAPITAL CORE BUSINESS	**25.540**	**31.150**	**33.059**	**27.295**	**22.280**

NON-CORE	2019	2020	2021	2022	2023
Deferred tax liabilities	- 413	- 1.010	- 218	- 230	- 229
Other assets	6.691	8.998	7.812	7.010	7.439
Investments	1.637	18.854	9.167	3.589	4.309
Post-retirement obligations	- 20.816	- 18.545	- 12.632	- 8.644	- 8.749
Deferred tax assets	683	86	77	63	59
Other liabilities	- 3.422	- 1.486	- 1.750	- 2.211	- 2.332
INVESTED CAPITAL NON-CORE BUSINESS	**- 15.640**	**6.897**	**2.456**	**- 423**	**497**
TOTAL INVESTED CAPITAL	**9.900**	**38.047**	**35.515**	**26.872**	**22.777**

NET DEBT AND OTHER CLAIMS	2019	2020	2021	2022	2023
Short-Term Borrowings	- 7.340	- 1.693	- 1.296	- 5.190	- 5.204
Long-Term Borrowings	- 19.962	- 61.890	- 56.806	- 51.811	- 47.103
Excess Cash	9.102	7.461	7.741	14.281	12.302
Non-controlling interests	- 317	- 241	- 153	- 35	- 5
NET FINANCIAL ASSETS	**- 18.517**	**- 56.363**	**- 50.514**	**- 42.755**	**- 40.010**
TOTAL SHAREHOLDER'S EQUITY	**- 8.617**	**- 18.316**	**- 14.999**	**- 15.883**	**- 17.233**

Figure 6 - Airbus SE Reformulated Balance sheet.

Airbus SE - Reformulated Consolidated Statement of Financial Position

(In € million)

CORE	2019	2020	2021	2022	2023
Intangible Assets	16.591	16.199	16.367	16.768	16.929
Property, plant and equipment	17.294	16.674	16.536	16.505	17.201
Contract assets	1.258	1.122	1.404	1.527	1.849
Contract liabilities	- 43.406	- 43.887	- 42.526	- 45.913	- 48.498
Inventories	31.550	30.401	28.538	32.202	33.741
Accounts receivable, net	5.674	5.132	4.957	4.953	4.725
Accounts payable	- 14.808	- 8.722	- 9.693	- 13.261	- 14.323
Operating Cash	705	499	521	588	654
INVESTED CAPITAL CORE BUSINESS	**14.858**	**17.418**	**16.104**	**13.369**	**12.278**

NON-CORE	2019	2020	2021	2022	2023
Current and Deferred tax liabilities	- 3.178	- 1.762	- 1.173	- 981	- 1.101
Other assets	6.487	9.082	5.973	8.710	8.172
Investments	19.449	12.403	13.825	14.069	15.791
Provisions	- 18.914	- 20.543	- 15.281	- 11.023	- 9.828
Current and Deferred tax assets	6.792	4.643	4.875	5.387	3.994
Deferred Income	- 619	- 608	- 639	- 520	- 485
Other liabilities	- 17.346	- 11.022	- 13.209	- 18.491	- 13.315
INVESTED CAPITAL NON-CORE BUSINESS	**- 7.329**	**- 7.807**	**- 5.629**	**- 2.849**	**3.228**
TOTAL INVESTED CAPITAL	**7.529**	**9.611**	**10.475**	**10.520**	**15.506**

NET DEBT AND OTHER CLAIMS	2019	2020	2021	2022	2023
Short-Term Borrowings	- 1.959	- 3.013	- 1.946	- 2.142	- 3.389
Long-Term Borrowings	- 8.189	- 14.082	- 13.094	- 10.631	- 10.202
Excess Cash	8.609	13.940	14.051	15.235	15.815
Non-controlling interests	- 15	- 11	- 20	- 32	- 35
NET FINANCIAL ASSETS	**- 1.554**	**- 3.166**	**- 1.009**	**2.430**	**2.189**
TOTAL SHAREHOLDER'S EQUITY	**5.975**	**6.445**	**9.466**	**12.950**	**17.695**

Figure 7 – The Boeing Company Reformulated Income Statement.

The Boeing Company and Subsidiaries Reformulated Income Statement

(Dollars in millions)

CORE	2019	2020	2021	2022	2023
Revenues	76.559	58.158	62.286	66.608	77.794
Cost of products	- 62.877	- 54.568	- 49.954	- 53.969	- 59.864
Cost of services	- 9.154	- 9.232	- 9.283	- 9.109	- 10.206
General and administrative expense	- 3.909	- 4.817	- 4.157	- 4.187	- 5.168
Research and development expense, net	- 3.219	- 2.476	- 2.249	- 2.852	- 3.377
(Loss)/income from operating investments, net	- 4	9	210	- 16	46
CORE RESULT BEFORE TAXES	**- 2.604**	**- 12.926**	**- 3.147**	**- 3.525**	**- 775**
Statutory taxes	- 547	- 2.714	- 661	- 740	- 163
Tax adjustments	- 25	- 161	- 47	- 26	- 40
CORE RESULT AFTER TAXES	**- 2.032**	**- 10.051**	**- 2.439**	**- 2.759**	**- 572**

NON CORE	2019	2020	2021	2022	2023
Gain on dispositions, net	691	202	277	6	2
Other income, net	438	447	551	1.058	1.227
NON CORE RESULT BEFORE TAXES	**1.129**	**649**	**828**	**1.064**	**1.229**
Statutory taxes	237	136	174	223	258
Tax adjustments	- 1.124	665	361	1.111	698
NON CORE RESULT AFTER TAXES	**2.016**	**- 152**	**293**	**- 270**	**273**

FINANCING	2019	2020	2021	2022	2023
Interest and debt expense	- 784	- 2.199	- 2.714	- 2.561	- 2.459
FINANCING RESULT BEFORE TAXES	**- 784**	**- 2.199**	**- 2.714**	**- 2.561**	**- 2.459**
Statutory taxes	- 165	- 462	- 570	- 538	- 516
FINANCING RESULT AFTER TAXES	**- 619**	**- 1.737**	**- 2.144**	**- 2.023**	**- 1.943**

Figure 8 - Airbus SE Reformulated Income Statement.

Airbus SE - Reformulated Income Statement

(In € million)

CORE	**2019**	**2020**	**2021**	**2022**	**2023**
Revenues	70.478	49.912	52.149	58.763	65.446
Cost of sales	- 59.973	- 44.250	- 42.518	- 48.192	- 55.402
General and administrative expense	- 6.125	- 2.140	- 2.052	- 2.240	- 2.521
Research and development expense, net	- 3.358	- 2.858	- 2.746	- 3.079	- 3.257
CORE RESULT BEFORE TAXES	1.022	664	4.833	5.252	4.266
Corporate Income taxes	- 256	- 166	- 1.208	- 1.355	- 1.101
Tax adjustments	- 783	- 323	89	162	- 7
CORE RESULT AFTER TAXES	**- 17**	**175**	**3.714**	**4.059**	**3.158**

NON CORE	**2019**	**2020**	**2021**	**2022**	**2023**
Share of profit from investments accounted for under the equity method	299	39	40	134	267
Other expenses	- 356	- 1.458	- 201	- 590	- 209
Other income from investments	4	113	76	58	36
Other income, net	370	132	594	471	243
NON CORE RESULT BEFORE TAXES	317	- 1.174	509	73	337
Corporate Income taxes	- 79	294	- 127	- 19	- 87
Tax adjustments	- 1.340	1	315	208	81
NON CORE RESULT AFTER TAXES	**- 1.102**	**- 880**	**697**	**262**	**331**

FINANCING	**2019**	**2020**	**2021**	**2022**	**2023**
Interest income	228	140	88	180	728
Interest expense	- 339	- 411	- 334	- 412	- 753
Other financial result	- 164	- 349	- 69	18	191
FINANCING RESULT BEFORE TAXES	- 275	- 620	- 315	250	166
Corporate Income taxes	69	155	79	65	- 43
FINANCING RESULT AFTER TAXES	**- 206**	**- 465**	**- 236**	**186**	**123**

Figure 9 – The Boeing Company Tax breakdown.

Boeing Tax Breakdown

Years ended December 31,	2019		2020		2021		2022		2023	
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
U.S. federal statutory tax	-474	21%	-3039	21,00%	-1057	21,00%	-1054	21,00%	-421	21,00%
Valuation allowance	25	-1,1	2.603	-18	512	-10,2	1.199	-23,9	1.150	-57,3
Research and development credits	-382	16,9	-284	2	-189	3,8	-204	4,1	-472	23,6
State income tax provision, net of effects on U.S. federal tax	-45	2	-168	1,2	-94	1,9	-90	1,8	-75	3,7
Tax on non-U.S. activities	20	-0,9	7	-0,1	47	-0,9	64	-1,3	35	-1,8
Impact of subsidiary shares purchased from noncontrolling interests	-	-	-	-	-	-	-	-	-29	1,5
Impact of CARES Act	-	-	-1.175	8,1	3	-0,1	-5	0,1	-	-
Other provision adjustments	66	-3	234	-1,7	41	-0,9	121	-2,3	49	-2,5
Excess tax benefit	-180	8	-82	0,6	-6	0,1	-	-	-	-
Audit settlements	-371	16,4	-587	4,1	-	-	-	-	-	-
Foreign derived intangible income	-229	10,1	-31	0,2	-	-	-	-	-	-
Tax deductible dividends	-53	2,4	-13	0,1	-	-	-	-	-	-
Income tax expense/(benefit)	($1,623)	71,80%	($2,535)	17,50%	($743)	14,70%	$31	-0,60%	$237	-11,80%

Figure 10 - Airbus SE Tax Breakdown.

Airbus Tax breakdown

(In € million)	2019	2020	2021	2022	2023
Profit before income taxes	1064	-1130	5,027	5,075	4,769
Corporate income tax rate	25%	25%	25%	25,8%	25,8%
Expected (expense) for income taxes	-266	283	-1257	-1309	-1230
Effects from tax rate differentials / Change of tax rate	-439	-4	-103	39	-45
Capital gains and losses on disposals / mergers	21	-3	5	0	20
Income from investment and associates	74	24	23	29	57
Tax credit	49	13	53	41	48
Change in valuation allowances (1)	-467	-356	116	53	-67
Non-deductible final agreements reached with PNF, SFO and DoS	-899	-	-	-	-
Tax contingencies	-331	147	186	156	76
Other non-deductible expenses and tax-free income	-131	-143	124	52	-15
Reported tax (expense)	-2,389	-39	-853	-939	-1,156

Figure 11 – The Boeing Company Revenues and Cost Breakdown.

Revenue breakdown						
In $ million		2019	2020	2021	2022	2023
Sales of products		66.094	47.142	51.386	55.893	65.581
	% of Tot Revenues	*86,3%*	*81,1%*	*82,5%*	*83,9%*	*84,3%*
Sales of services		10.465	11.016	10.900	10.715	12.213
	% of Tot Revenues	*13,7%*	*18,9%*	*17,5%*	*16,1%*	*15,7%*
Total Revenues		**76.559**	**58.158**	**62.286**	**66.608**	**77.794**

Revenue breakdown by business						
In $ million		2019	2020	2021	2022	2023
Commercial Airplanes		32.499	16.423	19.714	26.026	33.901
	% of Tot Revenues	*42,4%*	*28,2%*	*31,7%*	*39,1%*	*43,6%*
Defense, Space & Security		26.095	26.257	26.540	23.162	24.933
	% of Tot Revenues	*34,1%*	*45,1%*	*42,6%*	*34,8%*	*32,1%*
Global Services		18.468	15.543	16.328	17.611	19.127
	% of Tot Revenues	*24,1%*	*26,7%*	*26,2%*	*26,4%*	*24,6%*
Unallocated Items		- 503	- 65	- 296	- 191	- 167
	% of Tot Revenues	*-0,7%*	*-0,1%*	*-0,5%*	*-0,3%*	*-0,2%*
Total Revenues		**76.559**	**58.158**	**62.286**	**66.608**	**77.794**

Revenue breakdown by geography						
In $ million		2019	2020	2021	2022	2023
Europe		10.366	7.961	8.967	7.916	10.520
	% of Tot Revenues	*13,5%*	*13,7%*	*14,4%*	*11,9%*	*13,5%*
Asia, other than China		16.346	5.931	5.845	8.393	10.013
	% of Tot Revenues	*21,4%*	*10,2%*	*9,4%*	*12,6%*	*12,9%*
Middle East		9.272	5.308	4.653	5.047	6.594
	% of Tot Revenues	*12,1%*	*9,1%*	*7,5%*	*7,6%*	*8,5%*
Canada		2.019	1.302	1.147	1.576	1.655
	% of Tot Revenues	*2,6%*	*2,2%*	*1,8%*	*2,4%*	*2,1%*
Oceania		2.006	832	969	1.612	1.256
	% of Tot Revenues	*2,6%*	*1,4%*	*1,6%*	*2,4%*	*1,6%*
Africa		1.113	114	239	418	825
	% of Tot Revenues	*1,5%*	*0,2%*	*0,4%*	*0,6%*	*1,1%*
Latin America, Caribbean and other		1.015	229	1.376	2.412	1.524
	% of Tot Revenues	*1,3%*	*0,4%*	*2,2%*	*3,6%*	*2,0%*
Total non US Revenues		**42.137**	**21.677**	**23.196**	**27.274**	**32.387**
United States		42.681	36.979	39.076	38.218	45.380
	% of Tot Revenues	*55,7%*	*63,6%*	*62,7%*	*57,4%*	*58,3%*
Estimated potential concessions to 737 MAX customers, NET		- 8.259	- 498	14	16	27
	% of Tot Revenues	*-10,8%*	*-0,9%*	*0,0%*	*0,0%*	*0,0%*
Total Revenues		**76.559**	**58.158**	**62.286**	**66.608**	**77.794**

Costs breakdown						
In $ million		2019	2020	2021	2022	2023
Cost of products		- 62.877	- 54.568	- 49.954	- 53.969	- 59.864
	% total costs and expenses	*87,3%*	*85,5%*	*84,3%*	*85,6%*	*85,4%*
	% revenues	*82,1%*	*93,8%*	*80,2%*	*81,0%*	*77,0%*
Cost of services		- 9.154	- 9.232	- 9.283	- 9.109	- 10.206
	% total costs and expenses	*12,7%*	*14,5%*	*15,7%*	*14,4%*	*14,6%*
	% revenues	*12,0%*	*15,9%*	*14,9%*	*13,7%*	*13,1%*
Total Costs and Expenses		**- 72.031**	**- 63.800**	**- 59.237**	**- 63.078**	**- 70.070**

Figure 12 - Airbus SE Revenues Breakdown.

Revenue breakdown						
In euro million		2019	2020	2021	2022	2023
Sales of goods at a point in time		56958	37396	39829	44479	49512
	%	81%	75%	76%	76%	76%
Sales of goods over time		4241	4394	3769	4443	4584
	%	6%	9%	7%	8%	7%
Services, including sales of spare parts		9279	8122	8551	9841	11350
	%	13%	16%	16%	17%	17%
Total Revenues		**70478**	**49912**	**52149**	**58763**	**65446**

Revenue breakdown by business						
In euro million		2019	2020	2021	2022	2023
Airbus		54775	34250	36164	41428	47763
Inter-segment revenue		-696	-689	-425	-622	-787
	%	77%	67%	69%	69%	72%
Airbus Helicopters		6007	6251	6509	7048	7337
Inter-segment revenue		-429	-271	-230	-291	-300
	%	8%	12%	12%	11%	11%
Airbus Defence and Space		10907	10446	10186	11259	11495
Inter-segment revenue		-86	-75	-55	-59	-62
	%	15%	21%	19%	19%	17%
Total Revenues		**70478**	**49912**	**52149**	**58763**	**65446**

Revenue breakdown by geography						
In euro million		2019	2020	2021	2022	2023
Europe		22625	13087	15970	24261	25733
	%	*32%*	*26%*	*31%*	*41%*	*39%*
Asia-Pacific		22591	20325	19490	15380	18733
	%	*32%*	*41%*	*37%*	*26%*	*29%*
North America		12036	8688	10546	13549	13784
	%	*17%*	*17%*	*20%*	*23%*	*21%*
Middle East		7053	3123	2256	2598	3933
	%	*10%*	*6%*	*4%*	*4%*	*6%*
Latin America		1851	983	980	2086	1737
	%	*3%*	*2%*	*2%*	*4%*	*3%*
Other countires		4322	3706	2907	889	1526
	%	*6%*	*7%*	*6%*	*2%*	*2%*
Total Revenues		**70478**	**49912**	**52149**	**58763**	**65446**

Figure 13 – The Boeing Company and Airbus SE Invested Capital Breakdown.

AIRBUS

CORE IC					
In euro million except where specified	2019	2020	2021	2022	2023
Operating cash	705	499	521	588	654
% of Revenues	1%	1%	1%	1%	1%
Account Receivables, net	5.674	5.132	4.957	4.953	4.725
% of Revenues	8%	10%	10%	8%	7%
Inventories	31.550	30.401	28.538	32.202	33.741
% of Revenues	45%	61%	55%	55%	52%
Intangible assets	16.591	16.199	16.367	16.768	16.929
% of Revenues	24%	32%	31%	29%	26%
Contract Assets	1258	1122	1404	1527	1849
% of Revenues	2%	2%	3%	3%	3%
Property and equipment, net	17.294	16.674	16.536	16.505	17.201
% of Revenues	25%	33%	32%	28%	26%
Land, leasehold improvements and buildings	9.879	9.767	10.344	10.536	10.948
% of property and equipment	24%	23%	24%	26%	26%
Technical equipment and machinery	23144	23650	23697	21982	22415
% of property and equipment	56%	57%	56%	53%	53%
Other equipment, factory and office equipment	3782	3699	3853	3932	3955
% of property and equipment	9%	9%	9%	10%	9%
Construction in progress	2714	2310	1890	2241	2720
% of property and equipment	7%	6%	4%	5%	6%
Right-of-use assets	1793	2426	2486	2578	2616
% of property and equipment	4%	6%	6%	6%	6%
Contract liabilities	-43.406	-43.887	-42.526	-45.913	-48.498
% Cost of sales	72,4%	99,2%	100,0%	95,3%	87,5%
Accounts payable	-14.808	-8.722	-9.693	-13.261	-14.323
% Cost of sales	24,7%	19,7%	22,8%	27,5%	25,9%

NON CORE IC					
In euro million except where specified	2019	2020	2021	2022	2023
Investments	19.449	12.403	13.825	14.069	15.791
% of Revenues	27,6%	24,8%	26,5%	23,9%	24,1%
Other assets	6.487	9.082	5.973	8.710	8.172
% of Revenues	9,2%	18,2%	11,5%	14,8%	12,5%
Current Deferred tax assets	6.792	4.643	4.875	5.387	3.994
% of Revenues	9,6%	9,3%	9,3%	9,2%	6,1%
Other liabilities	-17.346	-11.022	-13.209	-18.491	-13.315
% of Revenues	-24,6%	-22,1%	-25,3%	-31,5%	-20,3%
Provisions	-18.914	-20.543	-15.281	-11.023	-9.828
% of Revenues	-26,8%	-41,2%	-29,3%	-18,8%	-15,0%
Deferred Income	-619	-608	-639	-520	-485
% of Revenues	-0,9%	-1,2%	-1,2%	-0,9%	-0,7%
Current Deferred tax liabilities	-3.178	-1.762	-1.173	-981	-1.101
% of Revenues	-4,5%	-3,5%	-2,2%	-1,7%	-1,7%

BOEING

CORE IC					
In $ million except where specified	2019	2020	2021	2022	2023
Operating cash	383	291	311	333	389
% of Revenues	1%	1%	1%	1%	1%
Receivables, net	3.266	1.955	2.641	2.517	2.649
% of Revenues	4,3%	3,4%	4,2%	3,8%	3,4%
Inventories	76.622	81.715	78.823	78.151	79.741
% of Revenues	100,1%	140,5%	126,6%	117,3%	102,5%
Intangible assets	11.398	10.924	10.630	10.368	10.187
% of Revenues	14,9%	18,8%	17,1%	15,6%	13,1%
Property and equipment, net	12.502	11.820	10.918	10.550	10.661
% of Revenues	16,3%	20,3%	17,5%	15,8%	13,7%
Land	527	512	377	376	377
% of property and equipment	2%	2%	1%	1%	1%
Buildings and improvements	14288	14415	14152	14404	14795
% of property and equipment	45%	45%	45%	45%	45%
Machinery and Equipment	15723	16060	15692	15844	16055
% of property and equipment	49%	50%	50%	50%	49%
Construction in progress	1306	1340	1235	1368	1679
% of property and equipment	4%	4%	4%	4%	5%
Customer financing, net	2.298	2.037	1.812	1.604	959
% of Revenues	3,0%	3,5%	2,9%	2,4%	1,2%
Unbilled receivables, net	9.043	7.995	8.620	8.634	8.317
% of Revenues	11,8%	13,7%	13,8%	13,0%	10,7%
Accounts payable	-15.553	-12.928	-9.261	-10.200	-11.964
% of Cost of products	24,7%	23,7%	18,5%	18,9%	20,0%
Accrued liabilities	-22.868	-22.171	-18.455	-21.581	-22.331
% of Cost of products	36,4%	40,6%	36,9%	40,0%	37,3%
Advances and progress billings	-51.551	-50.488	-52.980	-53.081	-56.328
% of Revenues	-67,3%	-86,8%	-85,1%	-79,7%	-72,4%

NON CORE IC					
In $ million except where specified	2019	2020	2021	2022	2023
Investments	1.637	18.854	9.167	3.589	4.309
% of Revenues	2,1%	32,4%	14,7%	5,4%	5,5%
Other assets	6.691	8.998	7.812	7.010	7.439
% of Revenues	8,7%	15,5%	12,5%	10,5%	9,6%
Deferred tax assets	683	86	77	63	59
% of Revenues	0,9%	0,1%	0,1%	0,1%	0,1%
Other liabilities	-3.422	-1.486	-1.750	-2.211	-2.332
% of Revenues	-4,5%	-2,6%	-2,8%	-3,3%	-3,0%
Post-retirement obligations	-20.816	-18.545	-12.632	-8.644	-8.749
% of Revenues	-27,2%	-31,9%	-20,3%	-13,0%	-11,2%
Deferred tax liabilities	-413	-1.010	-218	-230	-229
% of Revenues	-0,5%	-1,7%	-0,3%	-0,3%	-0,3%

Figure 14 – The Boeing Company Forecasted Income Statement.

In $ millions	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Actual	*Actual*	*Actual*	*Actual*	*Actual*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*
CORE OPERATIONS												
Revenues	76559	58158	62286	66608	77794	80899	85113	88856	92244	95472	98590	100784
% growth		-24%	7%	7%	17%	4%	5%	4%	4%	3%	3%	2%
Commercial Airplanes	32499	16423	19714	26026	33901	34918	37013	38864	40224	41632	42881	43953
% growth		-49%	20%	32%	30%	3%	6%	5%	4%	4%	3,0%	2,5%
Defense, Space & Security	26095	26257	26540	23162	24933	26180	27358	28452	29590	30626	31698	32332
% growth		1%	1%	-13%	8%	5%	5%	4,0%	4,0%	3,5%	3,5%	2%
Global Services	18468	15543	16328	17611	19127	20083	20987	21827	22700	23494	24316	24803
% growth		-16%	5%	8%	9%	5%	5%	4,0%	4,0%	3,5%	3,5%	2%
Unallocated Items	-503	-65	-296	-191	-167	-282	-245	-287	-269	-280	-305	-303
% Revenues	-0,7%	-0,1%	-0,5%	-0,3%	-0,2%	-0,35%	-0,29%	-0,32%	-0,29%	-0,29%	-0,31%	-0,30%
Cost of products	-62877	-54568	-49954	-53969	-59864	-61483	-62984	-63976	-66416	-67785	-68027	-67525
% total costs and expenses	*87%*	*86%*	*84%*	*86%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*	*85%*
% revenues	*82%*	*94%*	*80%*	*81%*	*77%*	*-76%*	*-74%*	*-72%*	*-72%*	*-71%*	*-69%*	*-67%*
Cost of services	-9154	-9232	-9283	-9109	-10206	-9708	-10214	-10663	-10147	-10502	-9859	-8063
% total costs and expenses	*13%*	*14%*	*16%*	*14%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*	*15%*
% revenues	*12%*	*16%*	*15%*	*14%*	*13%*	*-12%*	*-12%*	*-12%*	*-11%*	*-11%*	*-10%*	*-8%*
General and administrative expense	-3909	-4817	-4157	-4187	-5168	-5297	-5403	-5511	-5594	-5678	-5735	-5792
% growth		23%	-14%	1%	23%	3%	2%	2%	2%	1,5%	1,0%	1,0%
Research and development expense, net	-3219	-2476	-2249	-2852	-3377	-3461	-3531	-3601	-3655	-3710	-3747	-3785
% growth		-23%	-9%	27%	18%	3%	2%	2%	1,5%	1,5%	1%	1%
(Loss)/income from operating investments, net	-4	9	210	-16	46	49	49	49	49	49	49	49
CORE RESULT BEFORE TAXES	-2604	-12926	-3147	-3525	-775	998	3031	5153	6481	7846	11271	15668
Statutory taxes	-547	-2714	-661	-740	-163	210	637	1082	1361	1648	2367	3290
Statutory tax rate	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Tax adjustments	-25	-161	-47	-26	-40	-59,8	-59,8	-59,8	-59,8	-59,8	-59,8	-59,8
CORE RESULT AFTER TAXES	**-2032**	**-10051**	**-2439**	**-2759**	**-572**	**848**	**2454**	**4131**	**5180**	**6258**	**8964**	**12438**
Gain on dispositions, net	691	202	277	6	2	236	236	236	236	236	236	236
Other income, net	438	447	551	1058	1227	744	805	877	942	919	858	880
NON CORE RESULT BEFORE TAXES	1129	649	828	1064	1229	980	1041	1113	1178	1155	1093	1116
Statutory taxes	237	136	174	223	258	206	219	234	247	243	230	234
Tax adjustments	-1124	665	361	1111	698	342	635	630	683	598	578	625
NON CORE RESULT AFTER TAXES	**2016**	**-152**	**293**	**-270**	**273**	**432**	**187**	**250**	**247**	**315**	**286**	**257**
Interest and debt expense	-784	-2199	-2714	-2561	-2459	-2143	-2415	-2459	-2407	-2377	-2360	-2404
FINANCING RESULT BEFORE TAXES	-784	-2199	-2714	-2561	-2459	-2143	-2415	-2459	-2407	-2377	-2360	-2404
Statutory taxes	-165	-462	-570	-538	-516	-450	-507	-516	-506	-499	-496	-505
FINANCING RESULT AFTER TAXES	**-619**	**-1737**	**-2144**	**-2023**	**-1943**	**-1693**	**-1908**	**-1942**	**-1902**	**-1878**	**-1865**	**-1899**
TOTAL INCOME (LOSS)	**-636**	**-11940**	**-4290**	**-5052**	**-2242**	**-413**	**733**	**2438**	**3526**	**4695**	**7385**	**10796**

Figure 15 – Airbus SE Forecasted Income Statement.

In euro millions	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Actual	*Actual*	*Actual*	*Actual*	*Actual*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*	*Forecasted*
CORE OPERATIONS												
Revenues	70478	49912	52149	58763	65446	69778	72418	75161	77297	79362	80840	82559
% growth		-29%	4%	13%	11%	6,6%	3,8%	3,8%	2,8%	2,7%	1,9%	2,1%
Airbus	54775	34250	36164	41428	47763	50151	52157	54243	55871	57547	58698	60107
Inter-segment revenue	-696	-689	-425	-622	-787	-644	-633	-622	-662	-670	-646	-647
% growth		-1%	-38%	46%	27%	5%	4%	4%	3%	3%	2%	2%
Airbus Helicopters	6007	6251	6509	7048	7337	7557	7708	7862	7980	8100	8222	8337
Inter-segment revenue	-429	-271	-230	-291	-300	-304	-279	-281	-291	-291	-289	-286
% growth		-37%	-15%	27%	3%	3%	2%	2,0%	1,5%	1,5%	1,5%	1%
Airbus Defence and Space	10907	10446	10186	11259	11495	12070	12553	13055	13446	13715	13921	14116
Inter-segment revenue	-86	-75	-55	-59	-62	-67	-64	-61	-63	-63	-64	-63
% growth		-13%	-27%	7%	5%	5%	4%	4,0%	3,0%	2,0%	1,5%	1%
Cost of sales	-59973	-44250	-42518	-48192	-55402	-57218	-59383	-60880	-62611	-61902	-63055	-62745
% Revenues	-85%	-89%	-82%	-82%	-85%	-82%	-82%	-81%	-81%	-78%	-78%	-76%
General and administrative expense	-6125	-2140	-2052	-2240	-2521	-2771	-2173	-1879	-1546	-1587	-808	-826
% Revenues	-9%	-4%	-4%	-4%	-4%	-4%	-3%	-3%	-2%	-2%	-1%	-1%
Research and development expense, net	-3358	-2858	-2746	-3079	-3257	-2791	-2173	-2255	-1546	-1587	-808	-826
% Revenues	-5%	-6%	-5%	-5%	-5%	-4%	-3%	-3%	-2%	-2%	-1%	-1%
CORE RESULT BEFORE TAXES	1022	664	4833	5252	4266	6998	8690	10147	11595	14285	16168	18163
Corporate Income taxes	-256	-166	-1208	-1355	-1101	-1805	-2242	-2618	-3061	-3771	-4268	-4795
Corporate Income tax Rate	25%	25%	25%	25,8%	25,8%	25,8%	25,8%	25,8%	26,4%	26,4%	26,4%	26,4%
Tax adjustments	-783	-323	89	162	-7	-172	-50	4	-13	-48	-56	-32
CORE RESULT AFTER TAXES	**-17**	**175**	**3714**	**4059**	**3158**	**5020**	**6398**	**7533**	**8521**	**10466**	**11844**	**13336**
Share of profit from investments accounted for under the equity method	299	39	40	134	267	156	127	145	166	172	153	153
Other expenses	-356	-1458	-201	-590	-209	-200	-200	-200	-200	-200	-200	-200
Other income from investments	4	113	76	58	36	57	68	59	56	55	59	59
Other income, net	370	132	594	471	243	362	360	406	368	348	369	370
NON CORE RESULT BEFORE TAXES	317	-1174	509	73	337	375	356	410	390	375	381	382
Corporate Income taxes	-79	294	-127	-19	-87	-97	-92	-106	-103	-99	-101	-101
Tax adjustments	-1340	1	315	208	81	-147	92	110	69	41	33	69
NON CORE RESULT AFTER TAXES	**-1102**	**-880**	**697**	**262**	**331**	**131**	**355**	**414**	**356**	**317**	**313**	**350**
Interest income	228	140	88	180	728	273	282	310	355	389	322	332
Interest expense	-339	-411	-334	-412	-753	-450	-472	-484	-514	-535	-491	-499
Other financial result	-164	-349	-69	-18	191	-82	-65	-9	3	8	-29	-18
FINANCING RESULT BEFORE TAXES	-275	-620	-315	-250	166	-259	-256	-183	-156	-137	-198	-186
Corporate Income taxes	69	155	79	65	-43	66,8	65,9	47,1	41,2	36,3	52,3	49,1
FINANCING RESULT AFTER TAXES	**-206**	**-465**	**-236**	**-186**	**123**	**-192**	**-190**	**-136**	**-115**	**-101**	**-146**	**-137**
TOTAL INCOME (LOSS)	**-1325**	**-1170**	**4174**	**4136**	**3613**	**4959**	**6564**	**7811**	**8762**	**10682**	**12011**	**13549**

Figure 16 – The Boeing Company Forecasted Balance Sheet.

In $ millions	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CORE OPERATIONS											
Operating cash	291	311	333	389	809	851	889	922	955	986	1008
% of Revenues	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Receivables, net	1955	2641	2517	2649	3082	3166	3368	3414	3518	3689	3757
% of Revenues	*3%*	*4%*	*4%*	*3%*	*4%*	*4%*	*4%*	*4%*	*4%*	*4%*	*4%*
Inventories	81715	78823	78151	79741	94970	102865	103896	106083	109350	115295	117769
% of Revenues	*141%*	*127%*	*117%*	*103%*	*117%*	*121%*	*117%*	*115%*	*115%*	*117%*	*117%*
Intangible assets	10924	10630	10368	10187	12846	13684	13805	14050	14477	15358	15639
% of Revenues	*19%*	*17%*	*16%*	*13%*	*15%*	*16%*	*15%*	*15%*	*15%*	*16%*	*16%*
Gross PP&E	11820	31844	32327	31456	29825	40558	39991	39827	43228	43860	44661
% of Revenues	*20%*	*42%*	*56%*	*51%*	*37%*	*48%*	*45%*	*43%*	*45%*	*44%*	*44%*
Land	512	377	376	377	403	524	493	494	541	558	562
% of property and equipment	*2%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Buildings and improvements	14415	14152	14404	14795	13388	18207	17976	17899	19421	19701	20064
% of property and equipment	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*	*45%*
Machinery and Equipment	16060	15692	15844	16055	14912	20107	19818	19710	21390	21763	22127
% of property and equipment	*50%*	*50%*	*50%*	*49%*	*50%*	*50%*	*50%*	*49%*	*49%*	*50%*	*50%*
Construction in progress	1340	1235	1368	1679	1286	1765	1757	1787	1958	1936	1981
% of property and equipment	*4%*	*4%*	*4%*	*5%*	*4%*	*4%*	*4%*	*4%*	*5%*	*4%*	*4%*
Accumulated Depreciation	-20507	-20538	-21442	-22245	-19088	-26553	-26345	-26283	-28439	-28696	-29347
% of property and equipment	*-63%*	*-65%*	*-67%*	*-68%*	*-64%*	*-65%*	*-66%*	*-66%*	*-66%*	*-65%*	*-66%*
Customer financing, net	2037	1812	1604	959	2112	2156	2078	2052	2089	2345	2351
% of Revenues	*4%*	*3%*	*2%*	*1%*	*3%*	*3%*	*2%*	*2%*	*2%*	*2%*	*2%*
Unbilled receivables, net	7995	8620	8634	8317	10202	10869	11173	11366	11641	12318	12569
% of Revenues	*14%*	*14%*	*13%*	*11%*	*13%*	*13%*	*13%*	*12%*	*12%*	*12%*	*12%*
Accounts payable	-12928	-9261	-10200	-11964	-13016	-12885	-12674	-13326	-13759	-13850	-13639
% of Cost of products	*24%*	*19%*	*19%*	*20%*	*21%*	*20%*	*20%*	*20%*	*20%*	*20%*	*20%*
Accrued liabilities	-22171	-18455	-21581	-22331	-23515	-24326	-24452	-25554	-25876	-26087	-26335
% of Cost of products	*41%*	*37%*	*40%*	*37%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*	*38%*
Advances and progress billings	-50488	-52980	-53081	-56328	-63312	-68470	-70350	-71946	-74140	-77597	-80627
% of Revenues	*-87%*	*-85%*	*-90%*	*-72%*	*-76%*	*-90%*	*-79%*	*-78%*	*-78%*	*-78%*	*-80%*
CORE INVESTED CAPITAL	**31.150**	**33.059**	**27.295**	**22.280**	**35.079**	**41.959**	**41.433**	**40.666**	**43.127**	**47.720**	**47.878**
% growth											
NON CORE OPERATIONS											
Investments	18854	9167	3589	4309	6915	5525	6095	6734	6572	6916	7121
% of Revenues	*32%*	*15%*	*5%*	*6%*	*9%*	*6%*	*7%*	*7%*	*7%*	*7%*	*7%*
Other assets	8998	7812	7010	7439	8.799	8.785	9.111	9.670	9.884	10.217	10.481
% of Revenues	*15%*	*13%*	*11%*	*10%*	*11%*	*10%*	*10%*	*10%*	*10%*	*10%*	*10%*
Deferred tax assets	86	77	63	59	79	76	78	85	86	88	91
% of Revenues	*0%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*	*0,1%*
Other liabilities	-1486	-1750	-2211	-2332	-2461	-2655	-2713	-2834	-2942	-3026	-3098
% of Revenues	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*
Post-retirement obligations	-18545	-12632	-8644	-8749	-12001	-11081	-11581	-12572	-12629	-13109	-14110
% of Revenues	*-32%*	*-20%*	*-13%*	*-11%*	*-15%*	*-13%*	*-13%*	*-14%*	*-13%*	*-13%*	*-14%*
Deferred tax liabilities	-1010	-218	-230	-229	-267	-275	-281	-298	-306	-315	-324
% of Revenues	*-2%*	*0%*	*-0,3%*	*-0,3%*	*-0,3%*	*-0,3%*	*-0,3%*	*-0,3%*	*-0,3%*	*-0,3%*	*-0,3%*
NON CORE INVESTED CAPITAL	**6.897**	**2.456** -	**423**	**497**	**1.064**	**374**	**709**	**785**	**665**	**771**	**162**
TOTAL INVESTED CAPITAL	**38.047**	**35.515**	**26.872**	**22.777**	**36.143**	**42.333**	**42.142**	**41.451**	**43.791**	**48.491**	**48.040**
FINANCING											
Short-Term Borrowings	-1693	-1296	-5190	-5204	-4145	-3506	-3868	-4382	-4221	-4024	-4000
Long-Term Borrowings	-61890	-56806	-51811	-47103	-47514	-53025	-51252	-50141	-49807	-50348	-50915
Excess Cash	7461	7741	14281	12302	10177	10392	10979	11626	11095	10854	10989
Non-controlling interests	-241	-153	-35	-5	-64	-64	-64	-64	-64	-64	-64
NET FINANCIAL ASSETS	**-56363**	**-50514**	**-42755**	**-40010**	-41546	-46202	-44206	-42961	-42997	-43582	-43990
Equity	-18316	-14999	-15883	-17233	-5403	-3869	-2064	-1510	795	4909	4050

Figure 17 – Airbus SE Forecasted Balance Sheet.

In euro millions	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CORE OPERATIONS												
Operating cash	705	499	521	588	654	698	724	752	773	794	808	826
% of Revenues	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Account Receivables, net	5674	5132	4957	4953	4725	6069	6392	6415	6448	6606	6908	7030
% of Revenues	8%	10%	10%	8%	7%	9%	9%	9%	8%	8%	9%	9%
Inventories	31550	30401	28538	32202	33741	37227	39879	40511	41536	42476	43585	44605
% of Revenues	45%	61%	55%	55%	52%	53%	55%	54%	54%	54%	54%	54%
Intangible assets	16591	16199	16367	16768	16929	19787	21233	21566	21762	22283	23056	23573
% of Revenues	24%	32%	31%	29%	26%	28%	29%	29%	28%	28%	29%	29%
Contract Assets	1258	1122	1404	1527	1849	1695	1853	1970	2015	2070	2073	2140
% of Revenues	2%	2%	3%	3%	3%	2%	3%	3%	3%	3%	3%	3%
Gross PP&E	41312	41852	42270	41269	42654	50091	53893	54516	54749	56306	58288	59580
% of Revenues	59%	84%	81%	70%	65%	72%	74%	73%	71%	71%	72%	72%
Land, leasehold improvements and buildings	9879	9767	10344	10536	10948	12314	12934	13548	13647	13513	14264	14567
% of property and equipment	24%	23%	24%	26%	26%	25%	24%	25%	25%	24%	24%	24%
Technical equipment and machinery	23144	23650	23697	21982	22415	27491	29454	29593	29524	30438	31686	32326
% of property and equipment	56%	57%	56%	53%	53%	55%	55%	54%	54%	54%	54%	54%
Other equipment, factory and office equipment	3782	3699	3853	3932	3955	4599	4311	4917	4927	4504	5036	4766
% of property and equipment	9%	9%	9%	10%	9%	9%	8%	9%	9%	8%	9%	8%
Construction in progress	2714	2310	1890	2241	2720	2842	2961	2993	3117	3235	3275	3341
% of property and equipment	7%	6%	4%	5%	6%	6%	5%	5%	6%	6%	6%	6%
Right-of-use assets	1793	2426	2486	2578	2616	2845	3205	3259	3283	3348	3445	3548
% of property and equipment	4%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Accumulated Depreciation	-24018	-25178	-25734	-24764	-25453	-29940	-32389	-32757	-32809	-33734	-34949	-35746
% of property and equipment	-58%	-60%	-61%	-60%	-60%	-60%	-60%	-60%	-60%	-60%	-60%	-60%
Contract liabilities	-43406	-43887	-42526	-45913	-48498	-51496	-56058	-56890	-57684	-56643	-58198	-58980
% Cost of sales	72%	99%	100%	95%	88%	90%	94%	93%	92%	92%	92%	94%
Accounts payable	-14808	-8722	-9693	-13261	-14323	-13797	-14251	-15132	-15820	-15363	-15518	-15504
% Cost of sales	25%	20%	23%	28%	26%	24%	24%	25%	25%	25%	25%	25%
CORE INVESTED CAPITAL	**14.858**	**17.418**	**16.104**	**13.369**	**12.278**	**20.333**	**20.250**	**20.744**	**20.718**	**23.530**	**25.472**	**26.492**
% growth		17%	-8%	-17%	-8%	66%	0%	2%	0%	14%	8%	4%
NON CORE OPERATIONS												
Investments	19449	12403	13825	14069	15791	17727	17380	18638	18903	18253	19670	19910
% of Revenues	28%	25%	27%	24%	24%	25%	24%	25%	24%	23%	24%	24%
Other assets	6487	9082	5973	8710	8172	9233	10166	9926	10479	10559	10887	11158
% of Revenues	9%	18%	11%	15%	12%	13%	14%	13%	14%	13%	13%	14%
Current Deferred tax assets	6792	4643	4875	5387	3994	6079	6175	6292	6320	6331	6752	6836
% of Revenues	10%	9%	9%	9%	6%	9%	9%	8%	8%	8%	8%	8%
Other liabilities	-17346	-11022	-13209	-18491	-13315	-17282	-17958	-19047	-19590	-19141	-20108	-20553
% of Revenues	-25%	-22%	-25%	-31%	-20%	-25%	-25%	-25%	-25%	-24%	-25%	-25%
Provisions	-18914	-20543	-15281	-11023	-9828	-18292	-18894	-17344	-16875	-17814	-19346	-19381
% of Revenues	-27%	-41%	-29%	-19%	-15%	-26%	-26%	-23%	-22%	-22%	-24%	-23%
Deferred Income	-619	-608	-639	-520	-485	-690	-733	-729	-711	-735	-779	-791
% of Revenues	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Current Deferred tax liabilities	-3178	-1762	-1173	-981	-1101	-1904	-1718	-1609	-1637	-1752	-1870	-1841
% of Revenues	-5%	-4%	-2%	-2%	-2%	-3%	-2%	-2%	-2%	-2%	-2%	-2%
NON CORE INVESTED CAPITAL	**- 7.329**	**- 7.807**	**- 5.629**	**- 2.849**	**3.228**	**- 5.129**	**- 5.582**	**- 3.873**	**- 3.112**	**- 4.300**	**- 4.795**	**- 4.662**
TOTAL INVESTED CAPITAL	**7.529**	**9.611**	**10.475**	**10.520**	**15.506**	**15.204**	**14.668**	**16.870**	**17.607**	**19.230**	**20.677**	**21.830**
FINANCING												
Short-Term Borrowings	-1959	-3013	-1946	-2142	-3389	-2490	-2596	-2513	-2626	-2723	-2589	-2609
Long-Term Borrowings	-8189	-14082	-13094	-10631	-10202	-11240	-11850	-11403	-11065	-11152	-11342	-11362
Excess Cash	8609	13940	14051	15235	15815	13530	14514	14629	14745	14646	14413	14589
Non-controlling interests	-15	-11	-20	-32	-35	-23	-23	-23	-23	-23	-23	-23
NET FINANCIAL ASSETS	**-1554**	**-3166**	**-1009**	**2430**	**2189**	-222	46	690	1031	749	459	595
Equity	5975	6445	9466	12950	17695	14982	14714	17561	18638	19979	21136	22425

Figure 18 – The Boeing Company Free Cash Flow Statement.

In $ millions	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Core Result	-2032	-10051	-2439	-2759	-572	848	2454	4131	5180	6258	8964	12438
Core Invested Capital	25540	31150	33059	27295	22280	35079	41959	41433	40666	43127	47720	47878
Change in Core Invested Capital		5610	1910	-5764	-5015	12799	6880	-526	-767	2460	4593	158
Core FCF		-15661	-4349	3006	4443	-11951	-4425	4657	5947	3798	4371	12280
Growth Rate of FCF			72%	169%	-48%	-369%	63%	205%	28%	-36%	15%	181%
Non-core Result	2016	-152	293	-270	273	432	187	250	247	315	286	257
Non core invested capital	-15640	6897	2456	-423	497	1064	374	709	785	665	771	162
Change in non-core invested capital		22537	-4441	-2879	920	567	-690	335	76	-120	106	-609
Non-core FCF		-22689	4734	2609	-647	-135	877	-85	171	435	180	866
Total FCF		-38350	385	5614	3796	-12086	-3548	4572	6118	4233	4551	13146
Growth Rate of total FCF			101%	1357%	32%	-418%	71%	229%	34%	-31%	8%	189%
Financial Result	-619	-1737	-2144	-2023	-1943	-1693	-1908	-1942	-1902	-1878	-1865	-1899
Financial assets	-18517	-56363	-50514	-42755	-40010	-41546	-46202	-44206	-42961	-42997	-43582	-43990
Change in Financial Assets		-37846	5848	7759	2745	-1536	-4656	1997	1244	-35	-586	-407
Net debt Cash Flow		36109	-7992	-9783	-4688	-157	2748	-3939	-3146	-1842	-1279	-1492
Equity	-8617	-18316	-14999	-15883	-17233	-5403	-3869	-2064	-1510	795	4909	4050
Change in Equity		-9699	3317	-884	-1350	11830	1533	1806	554	2305	4114	-858
Comprehensive income	-636	-11940	-4290	-5052	-2242	-413	733	2438	3526	4695	7385	10796
Equity Cash Flow		2241	7607	4168	892	12244	800	-633	-2972	-2391	-3272	-11654
Financing Cash Flow		38350	-385	-5614	-3796	12086	3548	-4572	-6118	-4233	-4551	-13146

Figure 19 - Airbus SE Free Cash Flow Statement.

In euro millions	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Result	-17	175	3714	4059	3158	5020	6398	7533	8521	10466	11844	13336
g Core Result		-1161%	2022%	9%	-22%	59%	27%	18%	13%	23%	13%	13%
Core Invested Capital	14858	17418	16104	13369	12278	20333	20250	20744	20718	23530	25472	26492
Change in Core Invested Capital		2560	-1314	-2736	-1090	8055	-83	494	-25	2812	1942	1020
Core FCF		-2385	5027	6795	4249	-3035	6481	7039	8546	7655	9902	12315
Growth Rate of FCF			-311%	35%	-37%	-171%	-314%	9%	21%	-10%	29%	24%
Non-core Result	-1102	-880	697	262	331	131	355	414	356	317	313	350
Non core invested capital	-7329	-7807	-5629	-2849	3228	-5129	-5582	-3873	-3112	-4300	-4795	-4662
Change in non-core invested capital		-478	2178	2780	6077	-8357	-453	1708	762	-1188	-495	132
Non-core FCF		-402	-1481	-2518	-5746	8488	808	-1294	-406	1505	808	218
Total FCF		-2787	3546	4277	-1497	5453	7289	5745	8140	9160	10710	12533
Growth Rate of total FCF			-227%	21%	-135%	-464%	34%	-21%	42%	13%	17%	17%
Financial Result	-206	-465	-236	-186	123	-192	-190	-136	-115	-101	-146	-137
Financial assets	-1554	-3166	-1009	2430	2189	-222	46	690	1031	749	459	595
Change in Financial Assets		-1612	2157	3440	-242	-2411	268	645	341	-282	-290	136
Net debt Cash Flow		1147	-2393	-3625	365	2219	-457	-780	-455	181	145	-273
Equity	5975	6445	9466	12950	17695	14982	14714	17561	18638	19979	21136	22425
Change in Equity		470	3021	3484	4745	-2713	-268	2847	1077	1342	1157	1289
Comprehensive income		-1170	4174	4136	3613	4959	6564	7811	8762	10682	12011	13549
Equity Cash Flow		1640	-1153	-652	1132	-7672	-6832	-4965	-7685	-9341	-10855	-12260
Financing Cash Flow		2787	-3546	-4277	1497	-5453	-7289	-5745	-8140	-9160	-10710	-12533

Figure 20 – The Boeing Company and Airbus SE WACC calculation.

AIRBUS	
Valuation Date	31/03/2024
Market Cap	134.740 €
Debt	13.591 €
E/V	91%
D/V	9%
Risk-free Rate	4,62%
Beta	1
MRP	4,57%
Cost of Equity	9,19%
Cost of Debt	5,54%
Tax Rate	25,00%
WACC	8,73%

BOEING		
Valuation Date		31/03/2024
Market Cap	$	118.330
Debt	$	52.307
E/V		69%
D/V		31%
Risk-free Rate		4,62%
Beta		1,29
MRP		4,57%
Cost of Equity		11,0%
Cost of Debt		4,70%
Tax Rate		21,00%
WACC		8,77%

Figure 21 – The Boeing Company Valuation.

Valuation Analysis	
In million $	
Core Business Value	116.102
Non Core Business Value	8.248
Enterprise Value	124.350
Net Debt	40.010
Equity	84.340
Number of shares outstanding in m	610,13
Share price	138,23
Equity as % of Enterprise Value	68%
Growth Rate steady state (g)	2%
Cost of Capital	8,77%

Figure 22 - Airbus SE Valuation.

Valuation Analysis	
In million euro	
Core Business Value	142.454
Non Core Business Value	4.884
Enterprise Value	147.338
Net Debt	2.189
Equity	145.150
Number of shares outstanding in m	789,25
Share price	183,91
Equity as % of Enterprise Value	99%
Growth Rate steady state (g)	2%
Cost of Capital	8,73%

Figure 23 - Sensitivity analysis The Boeing Company.

		Cost of Capital				
	138,23	7%	8%	8,77%	9%	10%
Growth Rate	0%	91,84	89,45	88,01	87,62	86,18
	1%	111,80	108,79	107,02	106,55	104,84
	2%	144,89	140,61	**138,23**	137,62	135,43
	3%	173,45	167,80	164,83	164,08	161,44
	4%	225,04	216,17	211,92	210,89	207,40

Figure 24 - Sensitivity Analysis Airbus SE.

		Cost of Capital				
	183,91	7%	8%	8,73%	9%	10%
Growth Rate	0%	174,06	157,94	148,50	145,38	135,31
	1%	196,60	174,98	162,73	158,74	146,08
	2%	233,05	201,11	**183,91**	178,43	161,49
	3%	275,48	229,50	206,08	198,81	176,86
	4%	354,36	277,21	241,51	230,88	199,95