Equity Valuation: Airbus SE

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Abstract

The Aerospace and Defense (A&D) industry was one of the most negatively impacted by the covid crises, having recently started to ramp-up production and deliveries, it is now facing supply-chain bottlenecks as an indirect consequence of the current Russia and Ukraine conflict.

Airbus is one of the global leaders in the industry, having surpassed Boeing for the crown position since 2019, benefitting from the grounding of one of its most important aircrafts, the B737 Max.

Airbus has been facing some challenging market conditions, but the recovery to pre-pandemic levels seems in reach, leveraging on the resurgence and great demand for air travelling.

The present equity valuation aims to value the company using the DCF and Multiples methodology, and compare the resulting price to that of 31st March 2023 (€123.28).

The valuation resulted in a price per share of €112.81, a downside of 8.5%, but considering the sensitivities performed the price ranges from €102.01 to €127.75.

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Resumo

A indústria Aeroespacial e de Defesa foi uma das mais impactadas pela crise do covid, tendo recentemente começado a aumentar produções e entregas, encontram-se agora a enfrentar um estrangulamento da cadeia de abastecimento como uma consequência indireta do atual conflito entre Rússia e Ucrânia.

A Airbus é uma das líderes mundiais na indústria, tendo ultrapassado a Boeing pela primeira posição desde 2019, beneficiando do impedimento de voar a uma das suas mais importantes aeronaves, o B737 Max.

A Airbus tem enfrentado condições de mercado desafiantes, mas a recuperação para níveis pré-pandemia aparenta estar ao alcance, alavancando no ressurgimento e grande demanda para viagens aéreas.

A presente avaliação dos capitais próprios tem como objetivo avaliar a empresa utilizando o método dos fluxos de caixa descontados e múltiplos, e comparar o preço resultante com o de 31 de março de 2023 (€123.28).

A avaliação resultou num preço por ação de €112.81, uma desvalorização de 8.5%, mas considerando a análise de sensibilidade executada o preço estaria num intervalo de valor entre €102.01 a €127.75.

Título da Tese: Equity Valuation: Airbus SE

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Palavras-Chave: Airbus, Finanças Corporativas, Capitais Próprios, Avaliação de Capitais Próprios, Análise de Capitais Próprios, Aeroespacial e Defesa, Aeronaves, Fluxos de Caixa Descontados, WACC, EV/EBITDA, EV/Sales

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Finally, to my lovely girlfriend, Sara, who is always pushing and motivating me, and most importantly has always been an inspiration to give my best.

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1. Introduction

This dissertation is based on one of the most popular corporate finance topics, corporate valuation, and it aims at providing an indicative valuation for one of the most iconic and historic European publicly traded companies, Airbus.

Airbus is a worldwide leader in aircraft manufacturing and is Europe's aeronautics and space largest company. Additionally, it still counts with government support from its two founding Governments (France and Germany) and later included Spain, who together own around 25.8% of the company's shares.

This equity valuation will start with a literature review where several valuation techniques are introduced and discussed in order to understand which methods are better suited and why.

This paper will include a company presentation and overview of its core businesses, strategy, shareholding and management structure, followed by a market analysis of the Aerospace and Defense industry. Afterwards, a financial analysis and financial forecast for the explicit period (2023-2027) is conducted based on assumptions documented.

Finally, it is computed the value of Airbus based on the DCF (WACC) and Multiples (EV/Sales and EV/EBITDA) methodology.

2. Literature Review

2.1 Discounted Cash Flow Valuation

Within the many techniques to value a company, the discounted cash flow method continues to be one of the most used among experts and academics, since it depends only on the asset's cash flows, and is regarded as the "most accurate and flexible method for valuing projects, divisions, and companies" (Koller et al., 2020).

The DCF methodology's main goal is to derive a company's worth based on its expected future cash flows discounted to the present value at an opportunity cost of funds, meaning, the potential return that could have been obtained from an alternative investment with the same level of risk (Luehrman, 1997). In other words, it is used an asset's fundamentals to estimate its intrinsic value (Damodaran, 2012).

This approach is very important as it lays the foundations on which the remaining valuation methodologies are built, since we need to understand the fundamentals of a DCF to properly value a company through multiples and, in the case of the APV, the starting point is usually a DCF (Damodaran, 2012).

Steiger (2008) indicates a series of stages required to value a company by the DCF method. The first one is to estimate the future free cash flows for an explicit period, usually from 5 to 10 years. Next, it should be determined the appropriate discount factor to be applied to the forecasted cash flows to determine their net present value. Afterwards, it should be determined the terminal value, which is the value of all future cash flows beyond the explicit forecasted period and applied the discount factor. Finally, the company value is obtained by summing the discounted cash flows and discounted terminal value.

Equation 1: Discounted Cash Flow method

$$Company\ Value = \sum_{t=0}^{n} \frac{FCF_t}{(1+r)^t} + \frac{Terminal\ Value_n}{(1+r)^n}$$

2.1.1 FCFF and FCFE Valuation Approaches

According to Brealey, Myers and Allen (2017), free cash flow is considered the "amount of cash not required for operations or reinvestment" by the company. The free cash flow can then be analyzed in two different perspectives: (i) to value the entire business (includes all claim holders in the firm) using free cash flow to the firm (FCFF); or (ii) an approach that values solely the equity stake in the company, in this case using free cash flow to equity (FCFE) (Damodaran, 2012).

When valuing a company, free cash flow to the firm can be defined as the cash flow available to all of the company's suppliers of capital (e.g. shareholders, debt holders) after paying all operating expenses, including taxes, and making the required investments in working capital and capex (Pinto et al., 2015).

Equation 2: Free Cash Flow to the Firm computation

$$FCFF = EBIT\ (1 - tax\ rate) + Depreciations - Capex - \Delta NWC$$

The free cash flow to equity is defined as the cash flow available to be returned to its stockholders minus all operating expenses, interests, and principal payments, minus the required investments in working capital and capex (Pinto et al., 2015). Additionally, investors should also consider the impact of changes in debt in the cash flow since debt repayments could be financed through the issuance of new debt, which represents a cash inflow (Damodaran, 2012).

Equation 3: Free Cash Flow to the Equity computation

$$FCFE = Net\ Income + Depreciations - Capex - \Delta NWC + Net\ Borrowings$$

Although these two cash flows are computed differently and despite being discounted at two different rates (FCFF uses the weighted average cost of capital, while FCFE uses the cost of equity), if the valuation reflects the same assumptions, in theory, it should result in the same indicative value (Pinto et al., 2015).

Equation 4: Relation between FCFF and FCFE

$$FCFF = FCFE + Interest\ expenses * (1 - tax\ rate) - Net\ Borrowings$$

Despite both FCFF and FCFE having many similarities, Steiger (2008) considers the FCFF to be more appropriate "since an acquirer usually takes over all liabilities, debt and equity". Pinto et al. (2015) consider the FCFF to be more appropriate for: (i) levered companies with negative FCFE; and (ii) for levered companies with a changing capital structure since the WACC might be less sensitive to changes in capital structure compared to the cost of equity.

2.1.2 Discount Rate

The most commonly used discount rate to discount FCFF is the weighted average cost of capital (WACC), as it considers both funding sources (equity and debt) used by a company, proportionately (Larrabee and Voss, 2013). The required rate of return by equity and debt holders is reflected by the cost of equity (k_e) and cost of debt (k_d), respectively.

Equation 5: Calculation of the WACC

$$WACC = \frac{E}{E+D} * k_e + \frac{D}{E+D} * k_d(1-t)$$

In equation 5, it is observable that the WACC is dependable on several factors: (i) company's target capital structure, therefore able to capture the tax advantages associated with debt financing (Luehrman, 1997); (ii) the cost of equity; and (iii) cost of debt.

The market value of equity (E), or market capitalization, equals the number of shares outstanding multiplied by the current stock price. This corresponds to the amount investors are willing to pay for the company's equity (Berk and DeMarzo, 2016).

From an accounting perspective, the book value of equity can be derived from a company's balance sheet by subtracting the firm's liabilities to its assets, but this would not be an accurate representation of the true value of a firm's equity. Firstly, many assets on the balance sheet are valued at historical cost instead of their true current value. Secondly, the balance sheet is not able to capture many of the firm's valuable assets, such as reputation, expertise, or quality of management (Berk and DeMarzo, 2016).

According to Koller et al. (2020), "the market value of debt (D) captures the present value of all future interest payments, assuming perpetual rollover of debt financing". As opposed to the market value of equity, the market value of debt for healthy firms might not be much different from its book value, therefore it is often used to compute the WACC (Brealey et al., 2017). Notwithstanding, Damodaran (2012) introduces the following equation as a way of converting debt book value into market value:

Equation 6: Converting book value of debt into market value

$$D = Interest\ expense * \left[\frac{1 - \frac{1}{(1+K_d)^t}}{K_d}\right] + \frac{Total\ debt\ value\ at\ maturity}{(1+K_d)^t}$$

Despite having been investigated for so long, there is not yet a model developed to concretely reach an optimal capital structure. In order to define an effective capital structure, Koller et al. (2020) suggests using reference points: (i) peer group comparison, as it would provide some knowledge on what could be a reasonable capital structure; (ii) credit rating analysis, since ratings represent a summary of the company's capital structure health and can have a great impact in the company's ability to access debt markets; and (iii) cash flow analysis, by assessing financial flexibility and robustness.

2.1.2.1 Cost of Equity (K_e)

Cost of equity is the required rate of return on an equity investment that is demanded by investors to bear the risk of holding a share of the company (Steiger, 2008).

According to a study from Graham and Harvey (2001), the capital asset pricing model (CAPM), is the most used model to estimate the costs of equity, with a 73,5% usage rate by the firms questioned. Koller et al. (2020) also believe this single-factor model to be the best to calculate the cost of equity if a WACC is being used as the discount factor in a corporate valuation.

The CAPM methodology was first introduced by Sharp (1964), Lintner (1965) and Mossin (1966) as a way of estimating the required rate of return based on the return of the risk-free rate, the company's specific systematic risk (ß) and the market risk premium. This method builds on the model developed by Markwowitz (1959), also known as the "mean-variance model", in which investors choose portfolios that maximized the trade-off between risk (variance of returns) and expected returns.

Equation 7: Capital Asset Pricing Model (CAPM)

$$E(R_i) = r_f + \beta_L[E(R_m) - r_f]$$

Where:

$E(R_i)$ – cost of equity or expected return of security i

Rf – Risk-free rate

$ß_L$ – Levered beta or stock's specific systematic risk

R_m – expected market return

(R_m – r_f) – Market risk premium

2.1.2.1.1 Risk-Free Rate (r_f)

Damodaran (2012) defines the risk-free rate as an asset which we know with certainty its expected returns. This condition only holds if: (i) there is no default risk, which singles out all securities except for government issued, since usually they have control over the supply of currency; and (ii) there is no reinvestment risk, implicitly this is mostly applicable to short-term securities since future coupon rates, once the treasury bond matures, are not known and might misestimate the opportunity cost of longer-term investments (Koller et al., 2020). When assessing the risk-free rate, it should also be factored at a present rate, as the cost of equity is calculated, and not at an historical average (Fernández, 2004).

In an ideal scenario, the risk-free rate should match the maturity of the cash flows being discounted, however this is usually hard to estimate, and frequently the 10-year corporate bond is used as a proxy to a zero-risk investment (Koller et al., 2020). When considering a risk-free rate, the currency should also match that of the cash flows as to model inflation consistently between cash flows and discount rate, since “differences in interest rates reflect difference in expected inflation” (Damodaran, 2012).

To be noted, not every government is perceived from investors as default free. For less developed economies, that have lower debt quality (lower sovereign credit rating), a Country Risk Premium (CRP) is usually added to the CAPM, to reflect the higher risk associated with investing in that country.

2.1.2.1.2 Levered Beta ($ß_L$)

The beta is defined as a measure of market risk, it assesses the sensitivity of an asset’s returns to that of the market (Fama and French, 2004). In summary, if the beta is greater than 1, the asset is more volatile (riskier) than the market, the opposite is verified if beta is less than 1. When the beat is equal to 1, the asset presents similar volatility to the overall market, while if it is 0 there is no correlation at all.

Since beta is not an observable variable, it must be estimated by a regression of returns. According to Damodaran (2012), the most common method is to regress the asset’s returns against the returns of the market.

Equation 8: Market Model

$$R_i = \alpha + bR_m$$

Where:

R_i – expected return of security i

α – intercept from the regression

b – slope of the regression

R_m – expected market return

The slope of the regression (b) measures the systematic risk inherent to that stock and is equal to the “covariance of its returns with the market return divided by the variance of the market return” (Fama and French, 2004). In regard to the expected market returns, Pinto et al. (2015)

consider it represented by a “broad value-weighted equity market index”, such as the Morgan Stanley Capital International (MSCI) World Index returns.

When performing the regression, Koller et al. (2020) indicates that the measurement period should be based on monthly returns and include at least a sample of 60 entries, in other words a sample of 5 years monthly results. Damodaran (2012) also considers more appropriate using monthly or weekly returns since it reduces the nontrading bias that the estimation could be exposed to if used more frequent return intervals.

Another method considered to estimate betas by Damodaran (2012) is to consider the fundamentals of the business, and is determined by the type of business, level of operating leverage and of financial leverage.

Given the definition of beta, the type of business is quite straight forward to understand. For example, if the company operates in a cyclical industry or provides discretionary goods *ceteris paribus*, it should have a higher beta than a non-cyclical or that provides necessary goods, respectively.

Operating leverage is assessed as the relationship between fixed and total costs, the higher the fixed costs the higher the degree of operating leverage. If a company is operating with high operating leverage its operating income will be more volatile than a similar company operating at a lower level of operating leverage. The higher variance in operating income implies a higher beta (Damodaran, 2012).

Lastly, the degree of financial leverage is also fundamental in estimating a firm’s beta. According to Damodaran (2012), higher financial leverage leads to higher betas as it increases the variance in net income, making the equity investment riskier. So, the levered beta is determined by both the risk of the business it operates and the amount of financial leverage.

2.1.2.1.3 Market Risk Premium (MRP)

Simply put, the Market Risk Premium is the difference between the expected market return and risk-free government bond. This is one of the most discussed topics in finance and one where there is not yet a universally accepted model to estimate it.

One approach to estimate the risk premium is by analyzing historical data and compute the returns on stocks minus the risk-free rate on an annual basis over a long period of time. However, Damodaran (2012) warns to the fact that this approach can lead to different market premium computations since not every analyst will use the same time period nor choose the same risk-free security and even the type of average used (arithmetic vs geometric).

An alternative method suggested by Damodaran (2012) is the implied equity risk premium, that uses a forward-looking approach:

Equation 9: Valuation model for stocks

$$Value = \frac{Expected\ dividends_{\ n+1}}{Required\ return\ on\ equity - Expected\ growth\ rate}$$

This equation assumes that the market is correctly valued. Out of the 4 variables, only the required return on equity is not obtained externally, therefore by solving the equation for that variable, it is possible to estimate an implied expected return on the stock. Nevertheless, there are limitations to this method, as dividends are not the only way a company can pay its shareholders, for example it could use its FCF to repurchase shares or just not pay any dividends for a considerable amount of time (Koller et al., 2020).

2.1.2.2 Cost of Debt (K_d)

The cost of debt represents the current compensation, in the form of interest, demanded by debtholders for providing capital to the company. According to Steiger (2008), the most relevant factor to the cost of debt is the company's credit rating, as an investment grad company (Moody's Baa3 and S&P BBB-, or better) are able to borrow at lower interest rates than a non-investment grade company.

Koller et al. (2020) approach for estimating the cost of debt for investment grade companies is to use the yield to maturity as a proxy, since the probability of default is very limited, considering a "promised" returns rather than an expected return (how FCF should be discounted) is considered as a non-material inconsistency.

For rated companies that are non-investment grade or that have bonds outstanding that are not very liquid, Damodaran (2012) estimates their cost of debt by using their credit ratings and adding the associated credit spread to the risk-free rate.

If the company being analyzed is not rated and does not have market debt outstanding, Damodaran (2012) suggests two approaches: (i) base the cost of debt on their recent borrowing history, from banks or other financial institutions, and understand the spreads that are being applied to these companies; or (ii) estimate a synthetic rating, where the analyst assigns a rating to the company based on its financial ratios (e.g. net debt to EBITDA, coverage ratios) and compares them to other rated companies.

When valuing a company through DCF using the WACC, the cost of debt is considered after-tax, as interest costs are tax deductible. This is called "Interest Tax Shields" as they "reduce the cost of debt by the marginal tax rate" (Koller et al., 2020).

2.1.3 Terminal Value

Terminal value is a very important component of a DCF as a great portion of the value results from there. This is the case since a company has no expiration date, so it is not possible to value its cash flows indefinitely, being the terminal value used to bring closure to the valuation.

Damodaran (2012) considers the following three methods to determine the terminal value:

i) Liquidation value, where it is assumed the company, at some point in time, will cease its operation and sell all its assets. The amount generated is then the liquidation value. In order to estimate this value, we can use one of two approaches: (i) consider the book value and adjust for inflation, although this approach will not reflect the earnings power of the assets; or (ii) to value the assets considering their earnings power, which is similar to a DCF, by discounting the expected cash flows of the assets at the appropriate discount rate. Noteworthy, any outstanding debt has to be deducted from the liquidation value to achieve the proceeds owed to equity holders.

ii) Multiple approach, in which the terminal value is based on a multiple that is applied to the company's revenue or earnings. Damodaran (2012) indicates that this approach leads to a mix of both relative and intrinsic valuation, which is not consistent.

iii) Stable growth model, in which a going concern for the company is assumed. As opposed to the liquidation method, the stable growth model expects the company to continuously reinvest some of its cash flows in new assets, therefore it will continue operating beyond the terminal year. The model is then based on the assumption that the firm will be able to grow at a constant rate in perpetuity, although this rate cannot be higher than that of the overall economy it operates in.

Equation 10: Stable growth model

$$Terminal\ Value_t = \frac{Cash\ Flow_{t-1}}{r - g}$$

2.2 Relative Valuation

Relative valuation, also known as multiples valuation, is one of the most used techniques of valuation due to its intuitive nature and relatability, which, consequently, makes it easier to understand by investors while also being easy to defend (Damodaran, 2012).

As the name suggests, the rationale behind this methodology is to value a stock based on similar companies that are currently available in the stock market through common variables such as earnings, sales, or book value (Damodaran, 2012).

When valuing an asset, as suggested by Fernandéz (2002), multiples could be useful in a second stage of a valuation, meaning as a complement to another valuation technique. This is also in line with Koller et al. (2020) perspective, who deem multiples analysis as a fitting crosscheck to triangulate DCF results, as it could help *"test the plausibility of cash flow forecasts"* and understand how the company is positioned to take advantage of its value creation opportunities. This was also verified by Bancel and Mittoo (2014), whose work finds that most European valuation experts with a CFA or equivalent designation, part of their study, used both DCF and Relative Valuation models.

Although relative valuation has its appealing reasons (quicker and easier to perform compared to a DCF, for example), it could lead to inconsistent results since some important factors such as risk, growth or cash flow potential might be ignored (Damodaran, 2012). For that reason, it is essential to have a deep understanding of the multiple's drivers.

According to Koller et al. (2020), the following three steps should be taken into consideration to perform a useful analysis of comparable multiples:

i) Use the right multiple: companies can be similar but will still have their differences, therefore a common variable should be defined. Based on Penman's research (2007), a market multiple can be defined as the ratio between a market price variable (e.g. EV or market capitalization) and firm value driver (e.g. sales, earnings, EBITDA). In terms of multiples used, Bancel and Mittoo (2014) find that the most used multiples by experts are Firm Value to EBITDA (83%), Price to Earnings (68%), Price-to-book and Firm value to sales (both 45%). Considering the most popular multiples, it should be noted that the PE ratio is impacted by a company's capital structure and could also be distorted by nonoperating and none-recurring items (Koller et al., 2020). Furthermore, one should choose a ratio that is based on a forecast rather than historical data, which is congruous with

Valuation theory, that is, a company's value is the sum of its future cash flows discounted to the present (Schreiner, 2007).

ii) The multiple must be defined consistently: when valuing a company through multiples it is extremely important to define the ratio inputs consistently. As Damodaran (2012) emphasizes, the numerator and denominator of a multiple should both be based on the same underlying measure, being either an equity measure (such as the P/E ratio that uses two equity values) or a firm measure (such as EV/EBITDA, since both numerator and denominator are both firm value measures). By using an inconsistent multiple, for example P/EBITDA (an equity value over a firm value) some aspects such as the amount of debt of each company would be overlooked and lead to a distorted valuation.

iii) Define the appropriate peer group: Damodaran (2012), defines a comparable company has having similar cash flows, growth potential and risk to that being valued. Additionally, the peers should also share similar characteristics such as being in the same industry or sector and of comparable sizes and market capitalizations (Foushee et al., 2012). This step is extremely relevant, since the selection of the appropriate peers is essential in achieving accurate estimations (Bhojraj and Lee, 2002).

2.3 Dividend Discount Model (DDM)

The two sources of cash flow investors receive from owning a stock are dividends, while they own the stock, and the price at the end of the holding period, although this last one could actually be a negative source of income (if the share is sold at a price lower than it was bought). Since selling prices reflect the future dividends expected by the next investor, "the value of a share reflects projected dividends to current and all future shareholders" (Larrabee and Voss, 2013).

The dividend discount model assumes that the value of a company is the present value of expected dividends per share in perpetuity (Damodaran, 2012). However, this relies on the assumption that dividends are made to infinity. This is a projection that cannot be made and, for that reason, other dividend discount models with different assumptions have been developed.

Damodaran (2012) considers two models, one for stable growth firms and an adaptation of the latter to value high growth companies.

The first one is relatively simple and is known as the Gordon Growth Model. This model is used to value stable companies with dividends growing at a sustainable rate in perpetuity.

Equation 11: Gordon Growth Model

$$Value\ of\ stock = \frac{E(DPS_{n+1})}{k_e - g}$$

Although very simple to compute, it has a severe limitation: it can only be applicable to firms that are growing at a stable rate. Another issue lies on its sensitivity to the estimated growth rate, for instance: (i) if the growth rate surpasses the cost of equity this will result is a negative stock price; or (ii) as growth rate converges to the cost of equity the price will tend to infinity. Damodaran (2012) highlights two ways to fix this issue: (i) to limit the stable growth to the risk-free rate: and (ii) to acknowledge that growth has a price, as the growth rate increases the payout ratio should decrease, creating a trade-off on growth.

The second model is the two-stage dividend discount model, which considers two growth stages: an initial phase where the company does not grow at a stable rate and then the phase where the company reaches a stable growth state that is expected to remain in the long term. The value of the stock is the sum of the present value of expected dividends during the high growth phase and the present value of the terminal price (stable growth).

Equation 12: Two-stage dividend discount model

$$P_0 = \sum_{t=1}^{t=n} \frac{DPS_t}{(1 + k_{e,hg})^t} + \frac{\frac{DPS_{n+1}}{k_{e,st} - g_n}}{(1 + k_{e,hg})^n}$$

The limitations of the two-stage stage dividend discount model are identified by Damodaran (2012) and lie on the difficulty to identify the duration at which the company will grow at non-stable rate and the fact that the transaction from one phase to the next occurs instantly, while it would be more realistic to verify a gradual decrease in growth.

Last note, as the DDM is solely focused on dividend payments it excludes other indirect income that shareholders might receive, such as share buyback porgrams that results in value appreciation of the stock. An additional issue with DDM highlighted by Damodaran (2012) regards companies that decide not to pay dividends or have relatively low payout ratios, if valued through a DDM will lead to underestimation of the company’s value.

3. Company Overview

Airbus SE is a French group operating in the Aerospace and Defense industry for over 50 years. Its headquarters are located in Leiden (Netherlands), although its head office is based in Toulouse (France). The company is the largest aeronautics and space company in Europe, employing around 134,267 people throughout its 180 international locations and counting on approximately 18,000 direct suppliers across more than 90 countries.

The group's main activities are centered around designing, manufacturing, and marketing aerospace products and services to customers (mainly civilian and military) all around the globe. Its main offering consists of commercial aircrafts, civil and military helicopters, missiles, military aircrafts, satellites, and defense systems.

During 2022 the group registered revenues of EUR 58.8bn (up 12.7% YoY) and an adjusted operating profit of EUR 5.3bn (margin of 9.1%). Overall, sales are well diversified geographically across all major regions, and generated from its three operating segments:

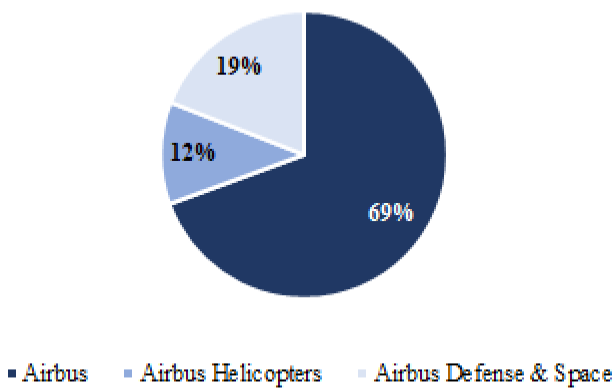

Figure 1: Airbus revenues by segment FY22
Source: Airbus FY22 Annual Report

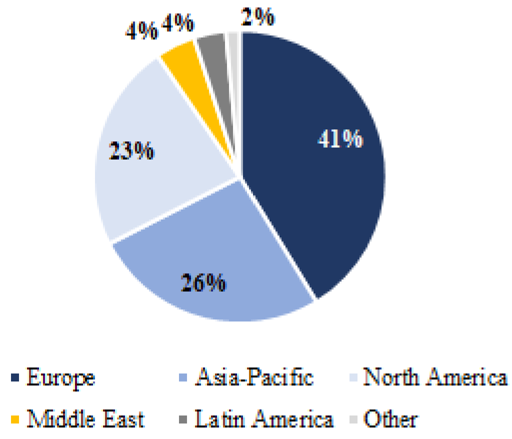

Figure 2: Airbus revenues by geography FY22
Source: Airbus FY22 Annual Report

1) Airbus (Commercial Aircrafts) (69% of total revenues):

Main revenue driver of Airbus, it is responsible for the manufacturing and delivery of aircrafts. Airbus has a large range of products covering the 100 seats and more aircraft category, that currently includes four programs (after the stoppage of production of the A380 family in 2020): two Narrowbody (A220 and A320) focused on short-to-medium range flights, and two Widebody (A330 and A350) intended for long-haul flights.

During 2022, Airbus delivered a total of 661 aircrafts (611 during FY21), of which 86% were Narrowbody aircrafts. More specifically, through the A320 family (516 units vs. 483 in FY21), which remains the leading value driver of the group, ever more so, since the launch of the A320neo (2016). This new re-engineered A320 is able to reduce the cost per seat/kilometer and per passenger, and appears, in certain cases, as a cheaper alternative to smaller Widebody aircrafts for Atlantic routes.

Moreover, the A320neo family maintains the largest market share (approximately 60%) in the Narrowbody segment, benefitting from the stagnation in Boeing's 737 Max orders since its grounding order (between Mar'2019 and Dec'2020 due to two crashes).

At YE22, Airbus had 444 customers and a net order backlog of 7,239 units (compared to 7,082 at YE21), also dominated by the Narrowbody aircrafts (approximately 90%).

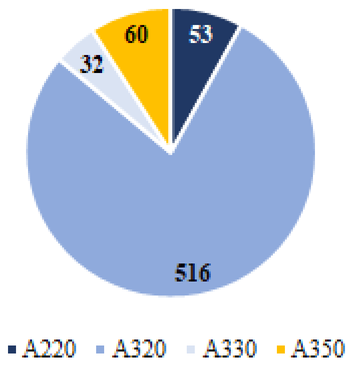

Figure 3: Airbus CA deliveries by program FY22
Source: Airbus FY22 Annual Report

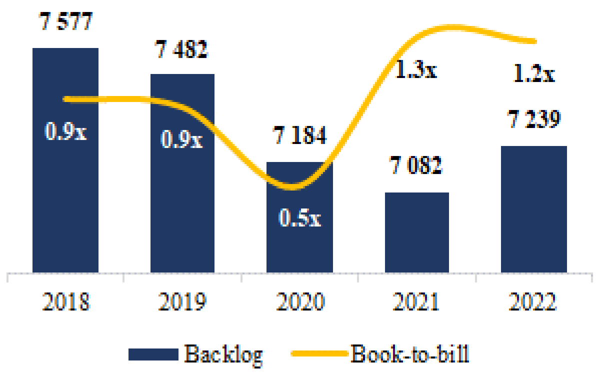

Figure 4: Airbus CA backlog (units) and Book-to-bill
Source: Airbus FY22 Annual Report

2) Airbus Helicopters (12%):

Airbus is the global leader in helicopter manufacturing with a 52% market share, based on units delivered in 2022. The segment offers a complete range of helicopters and related services to both civil and military customers. Airbus' portfolio currently includes intermediate single-engine, light twin-engine, medium, and medium-heavy rotorcraft.

In 2022, the H160 program (medium rotorcraft) has gone into operation with deliveries to Brazil, France, and Japan. In total, 362 new orders were place during 2022, including 12 for the new H160 range, and total backlog increased to 757 units (compared to 739 in FY21).

A large portion of revenues in this segment is also derived from its customer services support, which generated 45% of total revenues in FY22. This constitutes another important revenue stream, more stable and predictable, as Airbus counts with more than 3,100 operators across 150 countries and more than 12,000 helicopters to support.

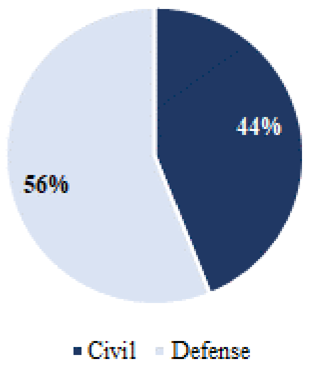

Figure 5: Helicopters revenue split FY22
Source: Airbus FY22 Annual Report

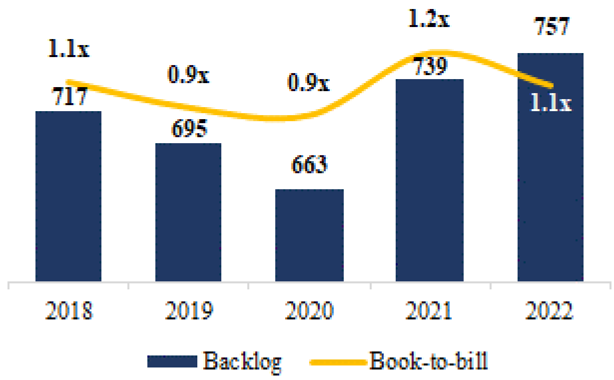

Figure 6: Helicopters backlog (units) and Book-to-bill
Source: Airbus FY22 Annual Report

3) Airbus Defense & Space (19%):

Airbus is Europe's market leader in defense and space, and within the global top ten. The group provides products to commercial and governmental customers by three programs:

<u>Military Aircraft</u> – its main costumers are the public sector (armed forces). The program includes combat aircrafts, aircrafts for military transportation and unmanned aerial systems. The relationships with customers in this segment are usually long-term due to its strategic nature.

<u>Space Systems</u> – supplies the commercial sector mainly with telecommunications satellites and launch services, and the governmental sector with satellites, space infrastructures and launchers. Additionally, Airbus and Safran in 2015 initiated a joint venture "ArianeGroup", consolidating and strengthening Europe's position in the global space industry.

<u>Connected Intelligence</u> – dedicated to services related to cyber security, space and terrestrial connectivity (e.g., satellites communication), data management and intelligence.

Additionally, a third of Airbus' D&S revenues are generated from support services provided during the lifetime of its products. In terms of order book, Airbus maintained its upward trajectory since 2019 and net orders remained relatively stable (figure 8), while the book-to-bill ratio was approximately 1.2x.

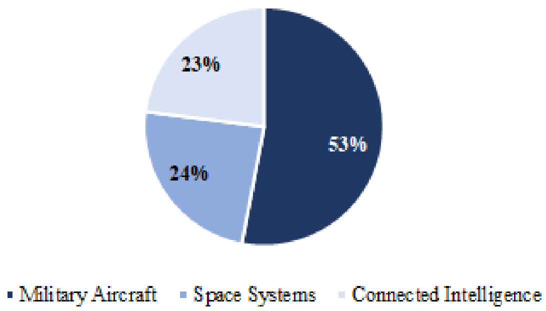

Figure 7: D&S revenue split FY22
Source: Airbus FY22 Annual Report

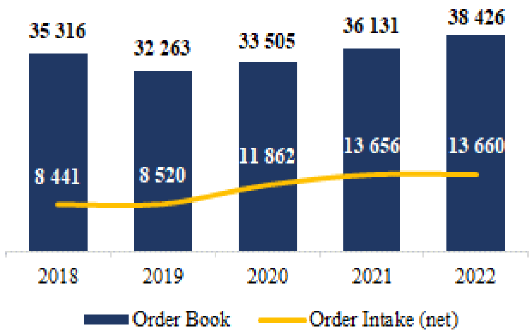

Figure 8: D&S order book and order intake (€ mil)
Source: Airbus FY22 Annual Report

Airbus Strategy:

Following the unprecedented years for the aviation industry across the globe, related to the covid-19 crises, in 2021 Airbus defined its new strategy to enable the company to create value and remain profitable into the future. This new strategy has its foundations under the following four axis:

1) **Grow Airbus as an aerospace and defense leader** – the goal is to continue innovating its current portfolio, working on new products to safeguard its current market leading position, and expand into new territories;

2) **Leverage European roots to pursue global research** – the company success and its leadership position results from the ambition of European companies to work together. The company's multicultural environment gives it a solid strength to continue succeeding in global markets**.**

3) **Increase capacity to invest for the future** – the market recovery led to an increase in demand for air traveling, while commercial aviation is headed towards decarbonization, Airbus continues to make investments in its decarbonatization roadmap, where it is a leader.

4) **Lead the transformation of the aerospace industry** – the industry transformation goes hand in hand with sustainability, with the aerospace and defense industry also motivated to improve the environmental impact of its products and operations. Airbus aims at leading the way towards a clean aerospace industry and develop its business on the foundation of safety and quality.

Management and Shareholding structures:

Twelve people compose Airbus' board of directors, whose chairperson is René Obermann. Obermann is also the managing director of Warburg Pincus Deutschland (private equity firm), deputy chairman of the supervisory board of IONOS Group and board member of ISAT Connect Bidco Limited. Previously, he has also held board positions in Allianz, Spotify, and Telenor.

Guillaume Faury was appointed Airbus CEO in April 2019 and leads the company's executive committee. Previously, he was the president of Airbus Commercial Aircrafts division, a role he had held since February 2018. Additionally, Faury is also a board member of AXA SA.

Airbus is listed in the Paris, Frankfurt and Spanish stock exchanges, with a market capitalization of 97 billion euros as of March 31, 2023 (source: Thompson Reuters Eikon).

The three largest shareholders are the French, German, and Spanish governments with 10.9%, 10.8% and 4.1% stake, respectively (figure 9). The French and German governments were the founders of Airbus, with the Spanish joining at a later stage. In 2013, the three countries entered into a shareholders' agreement, of which resulted some changes to the Articles of Association, one of them being the ownership restriction to 15% of share capital or voting rights to any shareholder.

The ownership involvement of the three countries also brings some advantages to Airbus, who is able to finance projects by means of special loans ('European governments' refundable advances') that need only to be repaid if the projects are successful, mitigating the financial risk on new projects.

Shareholder Structure	
French Gov	10.9%
German Gov	10.8%
Spanish Gov	4.1%
Shareholder agreement	**25.8%**
Free float	**74.0%**
Treasury Shares	**0.2%**

Table 1: Airbus shareholder structure Mar'23
Source: Airbus 1Q2023

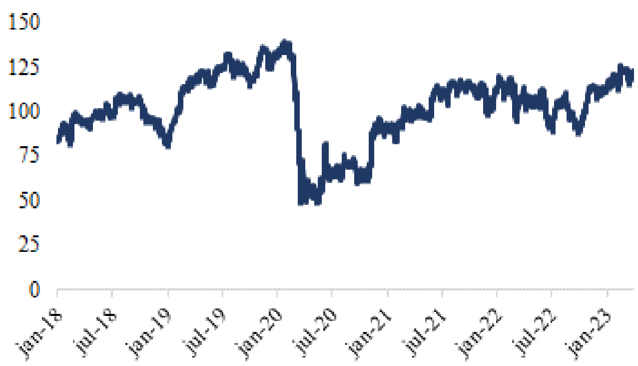

Figure 9: Airbus share price evolution Jan'18-Mar'23
Source: Thompson Reuters Eikon

Airbus share performance was highly impacted by the corona virus outbreak, going from its peak value of EUR 139.00 per share on the 24th of January 2020, to its lowest of EUR 49.07 per share less than two months after (18th of March 2020). As shown in figure 9, as governments started to alleviate covid related measures and the economy started to recover, so did Airbus, registering a progressive increase in its share price, reaching EUR 123.28 per share by March 31, 2023.

4. Industry Overview

The aerospace & defense industry was severely impacted by the pandemic crisis in 2020. Since then, the industry has been recovering and in 2022 reported revenues of USD 741 billion, a 3% increase compared to 2021 and just 4% shy of 2019's record year of USD 780 billion[1].

4.1 Aerospace

The commercial aviation is dominated by Airbus and Boeing. During 2022 both companies registered an increase in deliveries and net orders: Airbus delivered 661 aircrafts and reported 820 net orders (up 9% and 6% YoY, respectively), compared to 480 deliveries and 774 net orders by Boeing (up 41% and 52% YoY, respectively). This marks the fourth consecutive year where Airbus surpasses Boeing in deliveries, and it is expected to continue that way given Airbus' deeper backlog (7,239 units compared to 4,578 at YE2022).

According to the International Air Transport Association (IATA), in 2022 demand for air traveling continued to recover and revenue passenger kilometers (RPKs) registered a 64.4% increase compared to 2021, although it still translates into only 68.5% of 2019's RPKs. Despite the increase in demand, the leading factor into A&D continuing recovery during 2022 was mainly commercial aftermarket, since supply chain disruptions and talent shortages have caused unexpected production constraints.

As per IATA's most recent global outlook[2], in 2023 RPKs are expected to reach 87.8% of 2019's level, as a result of great demand in spite of the economic headwinds. Additionally, it is expected the industry to turn profitable for the first time, since the covid outbreak, in 2023 and revenues to be around 93% of that registered in 2019.

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[1] PwC "Global aerospace and defense annual industry performance and outlook (2023 edition)"
[2] IATA "Global Outlook for Air Transport", June 2023

At the start of 2023, the global commercial fleet had in service about 27,400 aircrafts, close to its peak of 28,000 right before the covid crises, in January 2020[3]. The Narrowbody aircrafts make up the largest part of the fleet at 60%, and it is expected to increase to 64% by 2033[3], being the only class expected to grow in share. The narrowbody market, historically, had been evenly split between Airbus and Boeing until the grounding of Boeing's 737 MAX. Airbus is expected to maintain the upper hand on this segment, with a market share of 60%.

The global production of narrowbody aircrafts is expected to be on average 93 units per month during 2023 and increase to 132 by 2027, supported by strong demand and a supportive market for aircraft finance. Airbus' highest production rate was achieved in the A320 in 2019 with 53 units per month, which fell to 43 during 2022. Airbus goal is to achieve a production rate of 75 A320 units on average per month by 2026, which will require an ease on the current supply-chain and labor shortages constraints. To boost the production output, Airbus has recently announced plans to open a new assembly line in China and is looking to add 13,000 new workers.

Additionally, according to Moody's, the commercial aircraft financing market remains robust and has continued to support the sector, despite the rise in financing costs and its current volatility.

The maintenance, repair and overhaul (MRO), much correlated to the aircraft manufacturing, has also followed the positive trend and grew to USD 77 billion in 2022 (up 18% YoY), as fleets have increased and travelling demand rose, there was more wear and tear to the aircrafts in service. It is expected MRO spend to increase to USD 95 billion in 2023 and continuing growing at a CAGR of 2.9% until 2033, where it reaches USD 125 billion[3].

4.2 Defense

The defense industry was valued at USD 577 billion in 2023 (up 7.9% YoY), and the coming years are expected to see an increase to the global defense industry, growing to USD 718 billion by 2027, at a CAGR of 5.6%[4].

According to the Stockholm International Peace Research Institute (SIPRI), the world military spending reached its record high of USD 2,240 billion in 2022 (up 3.7% YoY), which accounted

[3] Oliver Wyman "Global Fleet and MRO Market Forecast 2023-2033"
[4] The Business Research Company "Defense Global Market Report" (January 2023)

for 2.2% of global GDP, and out of the five geographical regions military expenditure increase in four of them, with Europe topping the list with a 13% increase.

The Ukraine-Russia war underlined the recent underinvestment of European countries on defense, with a sudden recognition that Europe would not necessarily be capable of defending itself in case of an open conventional conflict with another developed country. Several European countries reacted rapidly in increasing their defense budget, and the need for Europe to collectively act for its defense became a priority.

This war is then the main factor driving spending in Europe but also in the United States, with NATO members committing to expanding their defense budgets up to or more than 2% of GDP target for alliance members[5].

4.3 Global Economic Outlook

The aerospace & defense sector is mainly dependent on demand for air travelling and countries defense budget, which ultimately is primarily influenced by economic factors.

For example, demand for air travelling is highly correlated to GDP growth. In other words, a positive economic outlook would lead to an increase in demand for air travelling. On the other hand, oil prices impact fuel costs, which are one of the main costs to airlines that in order to retain their profitability margin will either have to pass on price fluctuations to passengers or invest in new, more efficient aircrafts ahead of schedule.

Other factors also take a toll into companies' profitability, such as the rising inflation or disruptions to supply chain caused by unpredictable events such as the war between Ukraine and Russia.

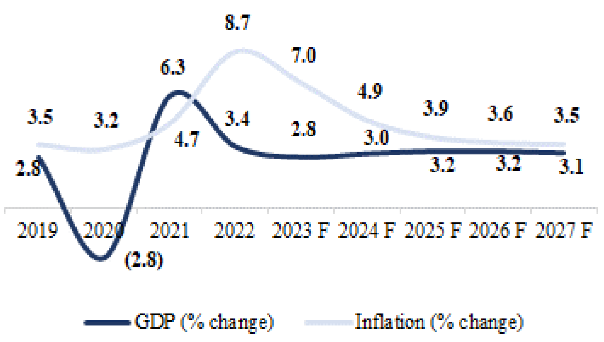

Figure 10: Global GDP and Inflation % change 2019-2027
Source: IMF, April 2023

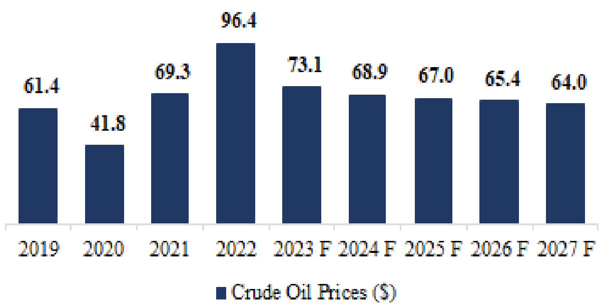

Figure 11: Crude Oil prices per barrel 2019-2027F
Source: IMF, April 2023

[5] KPMG "Aerospace & Defense M&A 2023"

According to the latest economic outlook released from the International Monetary Fund (IMF, April 2023), inflation started to rise in 2021 and reached its pick in 2022, resulting from supply chain disruptions and spike in energy prices, an aftermath of the war between Ukraine and Russia. Inflation is expected to smoothly decline in 2023 and stabilize by 2027 around 3.5%.

Global GDP was highly impacted by the covid crises in 2020, declining 2.8%, but had a pronounced recovery in 2021 (+6.3%) as economies reopened and governments alleviated covid related measures. The IMF projection is for the global GDP to remain relatively stable around 3%.

The energy prices crisis is also observable in the barrel prices of crude oil, that have reached its highest value in 2022.

4.4 Industry main players

In this section a list of industry peers of Airbus is introduced, which will later be used also for the relative valuation cross-check. The peers were defined considering their main industry (aerospace and defense) and specific characteristics, such as revenues, market capitalization and capital structure. The below table (figure 13) identifies these companies:

(€ Millions)	Revenues	Market Cap	E/(E+D)	Country
Airbus	**58 763**	**87 507**	**84.0%**	**France**
Boeing	62 443	106 430	66.6%	U.S.
Raytheon	62 880	139 082	82.3%	U.S.
Lockheed Martin	61 858	119 524	89.2%	U.S.
General Dynamics	36 943	63 859	86.4%	U.S.
Northrop Grumman	34 313	78 725	86.7%	U.S.
BAE Systems	23 969	29 702	79.3%	U.K.
Safran	19 035	49 953	87.8%	France
Thales	17 569	25 460	82.3%	France

Table 2: Airbus peer group, results date to YE22
Source: Thompson Reuters Eikon

The industry is dominated by American companies and, as one would expect, so is the peer group.

At YE2022, Raytheon was the largest company both in terms of revenue (7% higher than Airbus) and market capitalization (+59%), and at the opposite end was the French group Thales, whose revenues and market cap correspond to approximately 30% to those of Airbus.

The capital structure of the peer group is relatively similar, with Boeing displaying the lowest equity weight at 66.6% and Lockheed Martin the highest at 89.2%. The median points to 84.0%, which is precisely in line with Airbus' capital structure.

5. Valuation

Considering the introductory literature review, the preferred methodology is the Discounted Cash Flow valuation, as it relies mostly on understanding the fundamentals of a company. In addition, a relative valuation by the multiples EV/Sales and EV/EBITDA, will also be performed considering Airbus' peers, as a cross check analysis.

The DCF valuation was conducted for a forecast period of five years (FY2023 to FY2027), afterwards a terminal value was considered on the basis that the company will continue to operate on an ongoing basis and in the same industry.

5.1 Financial analysis and forecast assumptions

5.1.1 Revenue and profitability

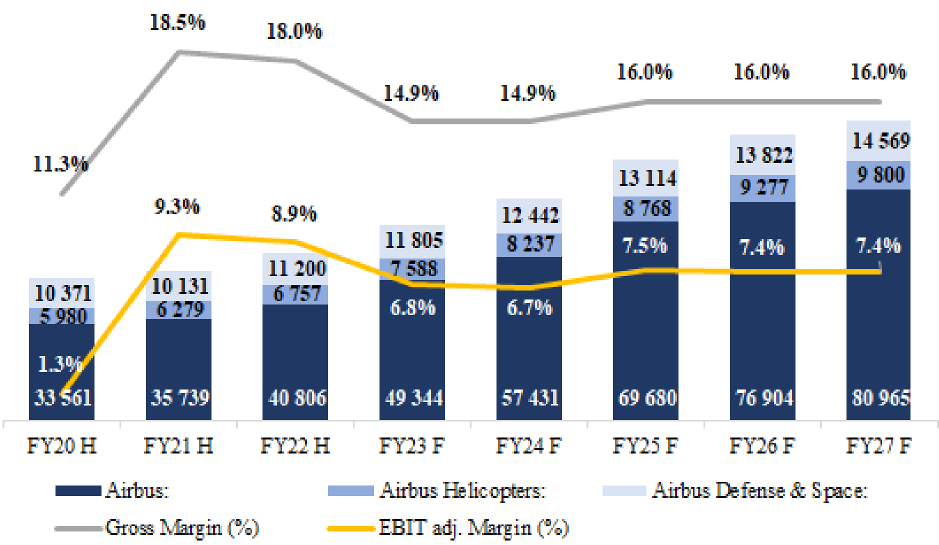

Figure 12: Airbus Revenues (€ millions) and profitability margins
Source: Airbus Annual Reports and own calculations

In FY20, the group reported revenues of EUR 49.9bn (down 29.2% YoY, compared to EUR 70.5bn in FY19), but has gradually been recovering and in FY22 achieved revenues of EUR 58.8bn (83% of FY19).

As mentioned previously in the group overview, the Airbus Commercial Aircrafts segment is the main value driver of the group. Noting the severe impact the corona crises had on commercial airlines, it is no surprise that this segment of Airbus was also highly impacted. The main driver was the lower amount of aircrafts delivered at 566 compared to the record high 863 units from FY19.

Aircraft Family	FY19 H	FY20 H	FY21 H	FY22 H	FY23 F	FY24 F	FY25 F	FY26 F	FY27 F
A220	48	38	50	53	58	73	102	142	170
A320	642	446	483	516	562	660	780	840	900
A330	53	19	18	32	35	36	48	48	48
A350	112	59	55	60	65	72	90	108	108
A380	8	4	5	-	-	-	-	-	-
Units delivered:	**863**	**566**	**611**	**661**	**720**	**841**	**1 020**	**1 138**	**1 226**

Table 3: Airbus historical and forecasted deliveries
Source: Airbus information and own calculations

During FY21 and FY22, the ease on covid restrictions and beginning of the recovery in passenger traffic were the catalysts to Airbus recovery, having delivered 611 and 661 units during those two years, respectively.

By YE22, Airbus Commercial Aircrafts represented approximately 69% of total revenue (figure 1), although it is highly concentrated, the group benefits from its market leading position, large scale and it is balanced by its record high order book of 7,239 aircrafts (figure 4), which is equivalent to around eight years of production considering its 2019 deliveries, or ten years considering 2022 production. The order backlog is dominated by narrowbody aircrafts (around 90%), mostly by the A320neo.

Airbus CA revenue is projected to achieve EUR 81.0bn by FY27, growing at a CAGR of approximately 14.7% between FY22-27, resulting from the ramp-up in aircrafts produced and delivered in the coming years, as well as an increase in price-mix since the newer generations are priced higher. This is supported by Airbus investments in increasing its capacity output, such as the recently announced new assembly line in its Chinese factory, that should double its current capacity[6].

For FY23, it was considered Airbus guidance of 720 estimated units and used the same family mix as in FY22. Management guidance was revised down from 751, as a consequence of supply chain constraints across many segments, that should persist during 2023 and part of 2024[7].

For the period between FY24-27, the following assumptions were made for production:

[6] The New York Times: "Airbus to double production in China as it moves ahead with new orders", April 2023
[7] Financial Times: "Airbus warns that supply chain crisis could last until 2024", May 2023

i) Narrowbody aircrafts: Airbus revised its 65 per month target from FY23 to FY24, and 75/month from FY25 to FY26. Considering the current supply chain bottle necks, the estimation here presented was more conservative and considered 55/month in FY24, the 65/month target being achieved in FY25 and increasing by 5/month in the next couple of years, reaching the 75/month target for FY26 a year later in FY27. For the A220 family, it was projected as a percentage of the A320 production based on FY22 (approximately 10% per year);

ii) Widebody aircrafts: unlike the narrowbody, the measures taken by Airbus during covid to preserve the production lines were not as pronounced, including reallocation of workforce and cuts in production fixed costs. For that reason, investments will have to be made in order to improve production rates. Airbus target is to increase the production of the A330 from 3 to 4 per month by 2024 and the A350 from 6 to 9 by 2025. Given the aforementioned supply chain issues, this was revised to maintain for the A330 the production rate of 3/month during 2023 and 2024, and 4/month from 2025 onwards. For the A350, a production rate of 6/month in 2024, 7.5/month in 2025, and 9/month starting in 2026.

The other component leading to an improvement in revenue is the price of the aircrafts, which for the newer generations are higher than its predecessor, therefore leading to a better price mix. In addition, for the projected period the average price of each aircraft family was considered to grow 2 percentage points below the weighted average inflation for each region (the weight for each region was considered the average from FY20 to FY22).

As for the revenues generated from services, it was considered in line with the same percentage of aircraft sales in FY22 (approximately 8%).

The Helicopters segment was very resilient during the covid crises and was even able to maintain an upward trend in revenues during the period. In FY20, despite a decrease in total units delivered to 300 (compared to 332 in FY19), the segment reported an increase in revenues to EUR 6.0bn (up 7.2% YoY) reflecting a favorable product mix and increase in services (41% of total revenues). The next couple of years registered a continuous development in deliveries and services, and by FY22 the company had delivered 344 units and services accounted now for 45% of the total EUR 6.8bn revenues.

For the projected period the light and medium aircrafts delivered were considered to increase at the same pace of FY22, while heavy aircrafts to increase to the level of FY21 of 58 units.

Overall, total deliveries in FY28 amount to 405, corresponding to a CAGR of 3.3% between FY22-27.

Services were considered as a percentage of sales and, considering the historical increase as a percentage of total revenues, an additional 4 percentage points were added to the FY22 ratio (0.85% of revenues), implying it would represent 46% of helicopter revenues (up 1% YoY).

The Defense & Space has remained rather stable until FY22, when revenues reached EUR 11.2bn (up 10.6% YoY), resulting from an increase in Military Aircrafts and Eurodrone program. The revenues projections considered the expected CAGR of 5.4% for the industry until 2027 as its forecasting driver.

In line with the positive trend seen across revenues, profitability has also been increasing since FY20 when it registered a gross margin of 11.3% and adjusted EBIT margin of 1.3%, to 18.0% and 8.9% in FY22, respectively. The cost structure of Airbus has remained relatively stable since the covid outbreak.

For the projected period the following assumptions were considered:

i) Cost of goods sold: considering the above mentioned supply chain constraints and high inflation, for FY23-24 it was considered the average percentage of sales between FY20-22 (84.1%), and from then on the same as in FY22 (82.0%);

ii) SG&A: considered the same percentage of sales from FY22;

iii) R&D: Airbus CA, considered the same percentage of revenues as in FY22 (6.2%), which is higher than before covid (5.1% in FY19), in order to develop the next generation of aircrafts. Helicopters and D&S considered the average percentage of sales of FY19 and FY22 (4.6% and 2.6%, respectively).

5.1.2 Working Capital

	FY19 H	FY20 H	FY21 H	FY22 H	FY23 F	FY24 F	FY25 F	FY26 F	FY27 F
Inventories	**31 550**	**30 401**	**28 538**	**32 202**	**29 891**	**27 883**	**32 013**	**35 138**	**37 125**
COGS	(59 973)	(44 250)	(42 518)	(48 192)	(57 965)	(66 077)	(75 862)	(83 269)	(87 979)
DIO	*193*	*256*	*253*	*230*	*188*	*154*	*154*	*154*	*154*
Accounts receivable	**5 674**	**5 132**	**4 957**	**4 953**	**6 649**	**7 580**	**8 920**	**9 791**	**10 345**
Sales	70 478	49 912	52 149	58 763	68 951	78 601	92 503	101 534	107 277
DSO	*30*	*40*	*35*	*31*	*35*	*35*	*35*	*35*	*35*
Accounts payable	**14 808**	**8 722**	**9 693**	**13 261**	**13 371**	**15 393**	**20 527**	**23 583**	**24 557**
Purchases	59 632	43 101	40 655	51 856	55 654	64 069	79 991	86 395	89 966
DPO	*91*	*100*	*83*	*81*	*88*	*88*	*94*	*100*	*100*

Table 4: Airbus historical and forecasted WC items
Source: Airbus information and own calculations

Working capital management is fundamental for the company's cash flow, since if they are well managed could lead to cash freed up. Airbus displays a comfortable position in terms of credit from suppliers (DPO) compared to its receivables (DSO), but inventories have been building up as a covid safety measure to promote a faster recovery, specifically in the A320 family.

Inventories were modeled considering a higher release of the safety inventory to satisfy the increasing demand from airline companies, receivables and payables were modeled as the average of DSO and DPO against sales and purchases, respectively.

Another component of Airbus' working capital are contract assets and liabilities. Contract assets was modeled based on the percentage of revenues considering the ratio of FY22, while contract liabilities were modeled to progressively increase to reach in FY26 the same level of FY19, as percentage of revenues, which translates into higher cash inflows as it mostly reflects advance payments on new orders placed.

5.1.3 CAPEX

Given Airbus established market position Capex was modeled on the basis that in order for the company to sustain the aircraft production target it would have to invest above maintenance (depreciations), as for example the addition of the second production line in China. As so, capex was modeled against sales, maintaining for FY23 the same ratio as FY22 (4.2%) and progressively decreasing until FY25 where it reaches FY19 ratio (3.5%), resulting in capex being 1.32x the depreciation expense in FY27.

5.1.4 Dividends

Airbus dividend policy is in place since 2013 and it targets a payout ratio in the range of 30-40%. In FY20 due to crisis environment the company did not pay any dividends, and in FY21 and FY22 distributed at a ratio of 28% (EUR 1.5 per share) and 33% (EUR 1.8 per share), respectively. For the projected period, it was considered a payout ratio of 35%, within the range of hte company's target.

5.1.5 Liquidity and Debt

Airbus displays a strong liquidity position, amounting to EUR 23.6bn, of which EUR 15.8bn is cash and EUR 7.8bn correspond to highly liquid securities non-speculative financial instruments. Total debt amounted to EUR 12.8bn at YE22, mostly euro centered and bond oriented (approximately 70%).

For the forecasted period it is considered that total debt will remain stable, meaning that any bond/loan that reaches maturity will be refinanced. The assumption is supported by Airbus' strong credit ratings (A by S&P, A2 by Moody's and upgraded to A- by Fitch in June 2023, all with a stable outlook), easy access to debt capital markets, and available liquidity buffer composed of: EUR 8bn RCF, EUR 12bn EMTN program of which EUR 4bn remain to be issued, EUR 4bn commercial paper program and USD 3bn US commercial paper program.

5.2 Cost of Capital

A discount cash flow valuations requires a discount rate, which for the FCFF method is commonly used the WACC via equation 5. Therefore, the following points are dedicated to the calculation of the inputs needed to compute the WACC, namely the capital structure, after tax cost of debt and cost of equity.

5.2.1 Capital Structure

Airbus does not have a target capital structure defined. As such, the median of the capital structure of Airbus and its peers (figure 13) at YE22 was used as proxy, which in fact resulted in the exact capital structure that Airbus displayed at YE22, of 84% equity and 16% debt.

5.2.2 Cost of Debt

As evidenced earlier, Airbus has access to multiple sources of funding. The cost of debt was then computed as the weighted average coupon yield of the group's outstanding bonds (2.20%). Considering that the cost of debt should represent the cost at which the company can borrow "now" and the fact that market dynamics have changed significantly since the corona crises, the weighted average was then trimmed to include only the bonds issued since 2020, resulting in a cost of debt of 2.63% (table 5).

The after-tax cost of debt, considering the corporate tax of 25.8%, is then 1.95%.

Bond (€)	Principal	Yield	Maturity	Issue date
EMTN 15y	500	2.21%	out-29	out-29
EMTN 10y	823	2.42%	abr-24	abr-24
EMTN 10y	461	0.98%	mai-26	mai-26
EMTN 15y	900	1.50%	mai-31	mai-31
EMTN 5y	561	1.80%	abr-25	abr-25
EMTN 8y	611	2.10%	abr-28	abr-28
EMTN 12y	1000	2.49%	abr-32	abr-32
EMTN 20y	1000	2.44%	jun-40	jun-40
EMTN 6y	894	1.47%	jun-26	jun-26
EMTN 10y	1250	1.74%	jun-30	jun-30
US Bond 10y ($)	750	3.20%	abr-27	abr-27
US Bond 30y ($)	750	4.02%	abr-47	abr-47
WA all		2.20%		
WA issue after 2020		2.63%		

Table 5: Airbus bonds outstanding
Source: Airbus information and own calculations

5.2.3 Cost of Equity

The cost of equity is computed using the CAPM model (equation 7). The variables were considered as follows:

i) Risk-free rate was the German 10Y government bond (2.31% yield in March 2023);

ii) The market risk premium, given the broad geographical reach of Airbus operations, was considered as the weighted average of equity risk premiums provided by Damodaran (January 2023) for each region by its share in FY22 revenues, which resulted in 8.83%;

iii) Levered beta was computed by a regressing the weekly returns of the last 5 years (Mar'2018-Mar'2023) of Airbus and a global reference market index, that was considered the MSCI World Index. The regression output was a Beta of 1.29.

The cost of equity, considering the above inputs, was then 13.72%.

5.2.4 WACC

Considering all the above inputs, the WACC can be calculated using equation 5, as follows:

$$WACC = 84.03\% * 13.72\% + 15.97\% * 1.95\%(1 - 25.80\%) = 11.84\%$$

5.3 Discounted Cash Flow Method

€ Millions	Projected:				
Year	FY23	FY24	FY25	FY26	FY27
EBIT adjusted	4 810	5 416	8 246	8 980	9 461
D&A (add-back)	2 613	2 649	2 691	2 762	2 861
Tax payments	(1 176)	(1 333)	(2 063)	(2 252)	(2 376)
Net interest payments	(250)	(250)	(250)	(250)	(250)
Minorities	-	-	-	-	-
Operating cash flow	**5 996**	**6 482**	**8 624**	**9 239**	**9 696**
Changes in WC:	4 569	8 444	7 176	7 153	1 040
Inventories	2 404	2 089	(3 978)	(2 921)	(1 845)
Trade account receivables	(1 676)	(904)	(1 297)	(814)	(514)
Trade account payables	44	1 969	5 016	2 894	899
Net contract assets	(255)	(239)	(344)	(216)	(136)
Net contract liabilities	4 051	5 529	7 779	8 210	2 635
Capex	(2 882)	(2 972)	(3 227)	(3 524)	(3 712)
Total investments	**1 687**	**5 472**	**3 949**	**3 629**	**(2 673)**
Free cash flow	**7 683**	**11 954**	**12 574**	**12 868**	**7 023**

Table 6: Airbus projected free cash flow FY23-FY27
Source: Own calculations

5.3.1 Free Cash Flow to the Firm (FCFF) and Terminal Value

Free cash flow was calculated based on the assumptions described earlier, which once discounted by the WACC will be used to compute the enterprise value of Airbus and afterwards its Equity value and price per share.

Considering the WACC of 11.84%, the sum of all discounted cashflows amounts to approximately EUR 38.1bn.

Additionally, in order to arrive at the enterprise value, we must compute the terminal value of the company (equation 10) and discount it at the WACC. The perpetual growth rate was computed as the weighted average GDP forecast for 2027 considering the geographical share of each region in Airbus revenues between FY20 and FY22, which resulted in 2.32%. The discounted terminal value calculation determined its value to be EUR 44.0bn.

Lastly, the enterprise value is reached by adding the sum of all projected discounted cash flows and the discounted terminal value, which resulted in an Enterprise Value of EUR 80.8bn, implying an EV/Sales multiple of 1.4x and EV/EBITDA of 10.1x.

5.3.2 Airbus Target Price

In order to assess the target price per share of Airbus, the Equity Value will be derived from the enterprise value by adjusting for the net cash/debt and non-operating asset, as follows:

i) Net cash position of EUR 9.7bn, considering excess cash of EUR 14.5bn and securities of EUR 7.9bn and financial debt of EUR 12.8bn on March 31st, 2023;

ii) Ownership of 9.9% of Dassault Aviation's share capital, valued at EUR 1.3bn;

iii) Net deferred tax assets amounting to EUR 4.5bn, pension provision totaling EUR 3.5bn and European Government's refundable advances of EUR 3.7bn.

Investment in Joint Ventures and Associates are not adjusted for since these items are already accounted for using the equity method.

By adjusting the EUR 80.8bn enterprise value by the above adjustments, the equity value reached is EUR 89.0bn.

Considering the total amount of shares outstanding (789,063,167) leads to a target price of EUR 112.81 per share for Airbus on 31st March 2023, a downside of 8.5% compared to the close price of EUR 123.28.

5.3.4 Sensitivity Analysis

A sensitivity analysis was conducted to determine the impact on Airbus' valuation of some of its key operating variables and valuation drivers, namely:

i) Number of units produced (+/- 5%. Figure 17): the sale of aircrafts is the main revenue generator of Airbus as so, it is of major importance to the whole valuation case, even more so considering the current uncertainty on the group's ability to deliver its projected aircrafts. Based on this sensitivity the enterprise value would range from EUR 77.9bn to 84.0bn, and price per share from EUR 109.11 to 116.88;

	EV	Price/share
Negative (-5%)	77 856	109.11
Base	80 773	112.81
Positive (+5%)	83 983	116.88

Table 7: Sensitivity analysis to aircrafts produced
Source: Own calculations

ii) Gross Margin (+/- 1%, figure 18): is an important variable since the group does not provide detailed information on COGS and considering the group's exposure to macroeconomic environment, such as high inflation and supply chain constraints. Gross margin could be negatively impacted either by an increase in costs and Airbus' inability to pass them on to customers or positively by an earlier than expected improvement in market conditions. Based on this sensitivity the enterprise value would range from EUR 73.1bn to 88.4bn, and price per share from EUR 103.14 to 122.48;

	EV	Price/share
Negative (-1%)	73 139	103.14
Base	80 773	112.81
Positive (+1%)	88 406	122.48

Table 8: Sensitivity analysis to gross margin
Source: Own calculations

iii) Research and Development costs (+/- 5%, figure 19): these are one of the main costs of Airbus (5.2% of revenues in FY22) and one of the main expenses incurred to keep airbus competitive and develop new and improved goods, which could lead to years with higher-than-expected expenses and vice-versa. Based on this sensitivity the enterprise value would range from EUR 78.7bn to 82.8bn, and price per share from EUR 110.19 to 115.43;

	EV	Price/share
Negative (+5%)	78 708	110.19
Base	80 773	112.81
Positive (-5%)	82 837	115.43

Table 9: Sensitivity analysis to R&D costs
Source: Own calculations

iv) Discount rate (WACC) and terminal value growth rate (+/- 20bps increments): are two of main variables in a DCF, especially considering that the terminal value account for 53% of the total valuation. Based on this combined sensitivity, the enterprise value would range from EUR 72.3bn to 92.6bn, and the price per share from EUR 102.01 to 127.75. Figures 20 and 21 display how incremental changes of 20bps would impact the enterprise value and price per share of Airbus, respectively:

EV (€ Millions)		TV growth rate (20bps variation)								
	80 773	1.52%	1.72%	1.92%	2.12%	2.32%	2.52%	2.72%	2.92%	3.12%
WACC (20bps variation)	11.04%	82 769	83 809	84 895	86 030	87 217	88 460	89 762	91 128	92 564
	11.24%	81 273	82 263	83 296	84 375	85 501	86 680	87 913	89 206	90 563
	11.44%	79 835	80 779	81 762	82 788	83 858	84 977	86 147	87 372	88 656
	11.64%	78 452	79 352	80 289	81 265	82 284	83 347	84 457	85 619	86 835
	11.84%	77 120	77 979	78 873	79 803	**80 773**	81 784	82 839	83 942	85 095
	12.04%	75 837	76 657	77 510	78 398	79 321	80 284	81 288	82 336	83 431
	12.24%	74 600	75 384	76 199	77 045	77 926	78 844	79 799	80 796	81 837
	12.44%	73 406	74 156	74 935	75 744	76 584	77 459	78 370	79 319	80 309
	12.64%	72 253	72 971	73 716	74 489	75 292	76 127	76 996	77 900	78 842

Table 10: Sensitivity analysis in EV to WACC and 'g'
Source: Own calculations

Share price (€)		TV growth rate (20bps variation)								
	112.81	1.52%	1.72%	1.92%	2.12%	2.32%	2.52%	2.72%	2.92%	3.12%
WACC (20bps variation)	11.04%	115.34	116.66	118.04	119.47	120.98	122.55	124.20	125.93	127.75
	11.24%	113.44	114.70	116.01	117.38	118.80	120.30	121.86	123.50	125.22
	11.44%	111.62	112.82	114.06	115.36	116.72	118.14	119.62	121.17	122.80
	11.64%	109.87	111.01	112.20	113.43	114.73	116.07	117.48	118.95	120.49
	11.84%	108.18	109.27	110.40	111.58	**112.81**	114.09	115.43	116.83	118.29
	12.04%	106.56	107.60	108.68	109.80	110.97	112.19	113.46	114.79	116.18
	12.24%	104.99	105.98	107.01	108.09	109.20	110.37	111.58	112.84	114.16
	12.44%	103.47	104.43	105.41	106.44	107.50	108.61	109.77	110.97	112.22
	12.64%	102.01	102.92	103.87	104.85	105.87	106.92	108.02	109.17	110.36

Table 11: Sensitivity analysis in price per share to WACC and 'g'
Source: Own calculations

5.4 Relative Valuation

Companies	**EV/Sales**			**EV/EBITDA**		
	2020	**2021**	**2022**	**2020**	**2021**	**2022**
Boeing	2.8x	2.6x	2.3x	ns	175.2x	499.5x
Raytheon	2.4x	2.4x	2.6x	21.3x	16.0x	14.9x
Lockheed Martin	1.7x	1.6x	2.1x	10.9x	10.2x	14.4x
General Dynamics	1.4x	1.8x	2.0x	10.6x	13.5x	15.2x
Northrop Grumman	1.7x	2.0x	2.6x	11.4x	14.3x	19.1x
BAE Systems	1.0x	1.1x	1.4x	8.1x	9.3x	10.4x
Safran	3.0x	3.2x	2.6x	17.4x	19.0x	12.4x
Thales	1.2x	1.1x	1.5x	9.3x	7.4x	10.3x
Average	**1.9x**	**2.0x**	**2.1x**	**12.7x**	**12.8x**	**13.8x**
Median	**1.7x**	**1.9x**	**2.2x**	**10.9x**	**13.5x**	**14.4x**

Table 12: EV/Sales and EV/Multiples of Airbus' peer group
Source: Own calculations

In this section a relative valuation based on Enterprise Value multiples, namely the EV/Sales and EV/EBITDA, are introduced as a cross-check for the value derived from the discounted cash flow valuation.

The comparable companies selected are the ones introduce in section 4.4. To be noted that for the EV/EBITDA multiple the Boeing multiples were not considered for the average and median computation since it is an outlier compared to all the others.

Recalling the implicit EV/Sales and EV/EBITDA multiples for the DCF valuation conducted of 1.4x and 10.1x, it is easily observable that according to the market Airbus is undervalued or, the peers are overvalued. Even considering the best-case scenario analyzed in the sensitivities section Airbus would still be considered undervalued.

Noting the positive trend projected for Airbus, another alternative to compute the two multiples is to base them on the revenue and EBITDA projected for FY27 discounted at the WACC, that would result in an EV/Sales of 1.3x and EV/EBITDA of 11.8x, but still leading to same interpretation that Airbus is undervalued.

A reason that could shed some light onto these differences is the fact that, although all companies are part of the aerospace and defense industry, Boeing is the only company that could be said to be similar in almost every aspect to Airbus, while the other companies are either focused more on the defense segment or into the aerospace/aircraft components/parts.

Considering the multiples valuation based on FY22, Airbus enterprise value would point to EUR 144.2bn and a share price of EUR 182.7 (upside of 48.2%) based on the EV/Sales multiple, and enterprise value of EUR 114.9bn and price per share of EUR 163.33 (upside of 32.5%) based on the EV/EBITDA multiple.

6. Conclusion

This dissertation aimed at studying and understanding one of Europe's largest and most well-known companies, and the environment in which it operates, in order to assess its fair value and conclude whether or not it is appropriately priced.

In the process, it was possible to gain a valuable experience in building DCF and Multiples valuation models from the ground up and to understand how every assumption and financial detail could impact the overall value of the company.

In the dissertation the DCF methodology, using WACC as the discount rate, pointed to a valuation of EUR 112.81 per share, a downside of 8.5% to its price of EUR 123.28 on 31st March 2023.

The main takeaways from this thesis are the strong market position of Airbus, the strong recover from one of the largest crises that impacted the aerospace industry, how it has been coping with the current supply chain crises and, finally, how it managed to take the upper hand over its biggest and historical competitor Boeing.

To be highlighted, corporate valuation is not an exact science, being subjective and dependent on each induvial assumptions and judgement. Noting that, it is possible that other valuations could point out to different values, but I consider the conclusions of this thesis reasonable and defendable considering all the public information available at the time this analysis has been conducted.

References

Accenture. (2023, April). *Commercial Aerospace Insight Report.*

Airbus. (2019). *Annual Report 2018 and Results Presentation 2018.*

Airbus. (2020). *Annual Report 2019 and Results Presentation 2019.*

Airbus. (2021). *Annual Report 2020 and Results Presentation 2020.*

Airbus. (2022). *Annual Report 2021 and Results Presentation 2021.*

Airbus. (2022, December, 6). *2022 commercial aircraft delivery target & financial guidance.*

Airbus. (2023). *Annual Report 2022 and Results Presentation 2022.*

Airbus. (2023, May, 3). *Quarter 1 2023 Financial Statements and Presentation.*

Airbus. (2023, June, 13). *Global Market Forecast 2023.*

Bancel, F., & Mittoo, U. R. (2014). The Gap between the Theory and Practice of Corporate Valuation: Survey of European Experts. *Journal of Applied Corporate Finance, 26*(4), 106–117.

Berk, J. & DeMarzo, P. (2016). *Corporate Finance* (4th ed.). Pearson Higher Education.

Bhojraj, S., & Lee, C. (2002). Who Is My Peer? A Valuation-Based Approach to the Selection of Comparable Firms. *Journal of Accounting Research, 40*(2), 407–439.

Brealey, R. A., Myers, S. C. & Allen, F. (2017). *Principles of Corporate Finance* (12th ed.). New York: McGraw-Hill Education.

Damodaran, A., (2011). *The Little Book of Valuation: How to Value a Company, Pick a Stock and Profit* (1st ed.). John Wiley & Sons.

Damodaran, A., (2012). *Investment Valuation: Tools and Techniques for Determining the Value of any Asset* (3rd ed.). John Wiley & Sons.

Deloitte. (2022). *2023 aerospace and defense industry outlook.*

Fama, E. F., & French, K. R. (2004). The Capital Asset Pricing Model: Theory and Evidence. *Journal of Economic Perspectives, 18*(3), 25–46.

Fernández, P. (2004), 80 common errors in company valuation. IESE Business School.

Fernández, P. (2002), Valuation Using Multiples. How Do Analysts Reach Their Conclusions?. IESE Business School.

Financial Times. (2023, May). *Airbus warns that supply chain crisis could last until 2024.*

Foushee, S., Koller, T. and Mehta, A. (2012), 'Why bad multiples happen to good companies?', Corporate finance practice.

Graham, J. R. & Harvey, C. R. (2001), The Theory and Practice of Corporate Finance: Evidence from the Field, *Journal of Financial Economics*, 60(2-3), 187-243.

IATA. (2022, September). *Developing sustainable aviation fuel.*

IATA. (2023, April). *Air Passenger Market Analysis.*

IATA. (2023, June). *Global Outlook for Air Transport Highly Resilient, Less Robust*.

IMF (2023, April). *World economic Outlook Database.*

https://www.imf.org/en/Publications/WEO/weo-database/2023/April

Koller, T., Goedhart, M. & Wessels, D. (2020). *Valuation: Measuring and managing the value of companies* (7th ed.). John Wiley & Sons.

KPMG. (2023). *Aerospace & Defense M&A 2023.*

Larrabee, D. T. & Voss J. A. (2013). *Valuation techniques: Discounted cash flow, earnings quality measures of value added, and real options*. New Jersey: John Wiley & Sons.

Luehrman, T. A. (1997), Using APV: A Better Tool for Valuing Operations, *Harvard Business Review*, 145-154.

Luehrman, T.A. (1997), What's it Worth? A General Manager's Guide to Valuation, *Harvard Business Review*, 132-142.

Markowitz, H., (1959). Portfolio Selection: Efficient Diversification of Investments.

Moody's. (2022, September, 14). *Aerospace and Defense - Global.*

Moody's. (2023, April, 28). *Airbus SE Update to credit analysis.*

OliverWyman. *Global Fleet and MRO Market Forecast 2023-2033*

Penman, S. H., Richardson, S. A., & Tuna, A. I. (2007). The Book-to-Price Effect in Stock Returns: Accounting for Leverage. *Journal of Accounting Research, 45*(2), 427–467.

Pinto, J. E., Henry, E., Robinson, T. R. & Stowe, J. D. (2015). *Equity Asset Valuation* (3rd ed.). John Wiley & Sons.

PwC. (2023). *Global aerospace and defense annual industry performance and outlook (2023 edition).*

Schreiner, A., (2007). *Equity Valuation Using Multiples: An Empirical Investigation* (1st ed.). Deutscher Universitätsverlag Wiesbaden.

Sharpe.W. (1964). Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk. *The Journal of Finance, 19*(3) 425-442.

SIPRI[8]. (2023, April). *Trends in World Military Expenditure, 2022.*

Statista. (2021. August, 20). *Airbus aircraft – new aircraft values 2021*.

Steiger; F. (2008). The Validity of Company Valuation Using Discounted Cash Flow Methods. European Business School.

The Business Research Company. (2023, January). *Defense Global Market Report.*

The New York Times. (2023, April). *Airbus to double production in China as it moves ahead with new orders.*

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Appendix

A. Income Statement

€ Millions	Historical:			Projected:				
Year	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**
Revenue	**49 912**	**52 149**	**58 763**	**68 737**	**78 110**	**91 562**	**100 003**	**105 333**
Cost of sales	(44 250)	(42 518)	(48 192)	(57 784)	(65 664)	(75 091)	(82 014)	(86 385)
Gross Margin	**5 662**	**9 631**	**10 571**	**10 952**	**12 446**	**16 471**	**17 990**	**18 949**
Gross Margin (%)	*11.3%*	*18.5%*	*18.0%*	*15.9%*	*15.9%*	*18.0%*	*18.0%*	*18.0%*
Selling expenses	(717)	(713)	(788)	(922)	(1 047)	(1 228)	(1 341)	(1 412)
Administrative expenses	(1 423)	(1 339)	(1 452)	(1 698)	(1 930)	(2 262)	(2 471)	(2 603)
Research and development expenses	(2 858)	(2 746)	(3 079)	(3 726)	(4 276)	(5 080)	(5 571)	(5 867)
EBIT adjusted	**664**	**4 833**	**5 252**	**4 606**	**5 193**	**7 901**	**8 607**	**9 066**
EBIT adj. Margin (%)	*1.3%*	*9.3%*	*8.9%*	*6.7%*	*6.6%*	*8.6%*	*8.6%*	*8.6%*
Non-recurring items	(1 326)	(795)	(119)	-	-	-	-	-
Share of profit from inv. accounted for under the equity method	39	40	134	142	160	244	265	280
Other income from investments	113	76	58	62	63	101	108	115
EBIT	**(510)**	**4 154**	**5 325**	**4 810**	**5 416**	**8 246**	**8 980**	**9 461**
EBIT Margin (%)	*-1.0%*	*8.0%*	*9.1%*	*7.0%*	*6.9%*	*9.0%*	*9.0%*	*9.0%*
Interest income	140	88	180	180	180	180	180	180
Interest expense	(411)	(334)	(412)	(412)	(412)	(412)	(412)	(412)
Other financial result	(349)	(69)	(18)	(18)	(18)	(18)	(18)	(18)
EBT	**(1 130)**	**3 839**	**5 075**	**4 560**	**5 166**	**7 996**	**8 730**	**9 211**
Income taxes	(39)	(853)	(939)	(1 176)	(1 333)	(2 063)	(2 252)	(2 376)
Effective tax rate (%)	*-3.5%*	*22.2%*	*18.5%*	25.8%	25.8%	25.8%	25.8%	25.8%
Minority interest	36	39	111	-	-	-	-	-
Net Income	**(1 133)**	**3 025**	**4 247**	**3 383**	**3 833**	**5 933**	**6 478**	**6 834**
Net margin (%)	*-2.3%*	*5.8%*	*7.2%*	*4.9%*	*4.9%*	*6.5%*	*6.5%*	*6.5%*

B. Balance Sheet

Year	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Assets								
Cash and cash equivalents	21 407	22 683	23 598	30 097	40 709	51 206	61 807	66 438
Inventories	30 401	28 538	32 202	29 798	27 709	31 687	34 608	36 453
Accounts receivable	5 132	4 957	4 953	6 629	7 533	8 830	9 644	10 158
Contract assets	1 074	1 377	1 501	1 756	1 995	2 339	2 554	2 691
Other current assets	5 736	4 933	6 761	6 761	6 761	6 761	6 761	6 761
Property, plant and equipment	16 674	16 536	16 505	16 799	17 131	17 638	18 332	19 096
Intangible assets	16 199	16 367	16 768	16 743	16 734	16 763	16 831	16 919
Invetsment in associates	1 578	1 672	2 067	2 067	2 067	2 067	2 067	2 067
Financial assets	3 855	4 001	4 190	4 190	4 190	4 190	4 190	4 190
Other long term assets	8 039	5 983	7 399	7 399	7 399	7 399	7 399	7 399
Total Assets	**110 095**	**107 047**	**115 944**	**122 239**	**132 228**	**148 880**	**164 194**	**172 171**
Equity and liabilities								
Shareholders' equity	**6 445**	**9 466**	**12 950**	**15 149**	**17 641**	**21 497**	**25 708**	**30 150**
Non-controlling interests	11	20	32	32	32	32	32	32
Total equity	**6 456**	**9 486**	**12 982**	**15 181**	**17 673**	**21 529**	**25 740**	**30 182**
Accounts payable	8 722	9 693	13 261	13 305	15 274	20 290	23 184	24 083
Contract liabilities	24 675	23 906	23 869	27 920	33 449	41 229	49 439	52 074
Other short term liabilities	6 816	7 752	9 196	9 196	9 196	9 196	9 196	9 196
Short term debt	3 013	1 946	2 142	2 142	2 142	2 142	2 142	2 142
Long term debt	14 082	13 094	10 631	10 631	10 631	10 631	10 631	10 631
Pension liabilities	9 210	7 072	3 509	3 509	3 509	3 509	3 509	3 509
Provisions	11 333	8 209	7 514	7 514	7 514	7 514	7 514	7 514
Other long term liabilities	25 788	25 889	32 840	32 840	32 840	32 840	32 840	32 840
Total liabilities	**103 639**	**97 561**	**102 962**	**107 058**	**114 556**	**127 350**	**138 455**	**141 989**
Total equity and liabilities	**110 095**	**107 047**	**115 944**	**122 239**	**132 228**	**148 880**	**164 194**	**172 171**

C. Cash Flow Statement (Forecast)

€ Millions	Projected:				
Year	**FY23**	**FY24**	**FY25**	**FY26**	**FY27**
EBIT adjusted	4 810	5 416	8 246	8 980	9 461
D&A (add-back)	2 613	2 649	2 691	2 762	2 861
Tax payments	(1 176)	(1 333)	(2 063)	(2 252)	(2 376)
Net interest payments	(250)	(250)	(250)	(250)	(250)
Minorities	-	-	-	-	-
Operating cash flow	**5 996**	**6 482**	**8 624**	**9 239**	**9 696**
Changes in working capital:	4 569	8 444	7 176	7 153	1 040
Inventories	2 404	2 089	(3 978)	(2 921)	(1 845)
Trade account receivables	(1 676)	(904)	(1 297)	(814)	(514)
Trade account payables	44	1 969	5 016	2 894	899
Net contract assets	(255)	(239)	(344)	(216)	(136)
Net contract liabilities	4 051	5 529	7 779	8 210	2 635
Capex	(2 882)	(2 972)	(3 227)	(3 524)	(3 712)
Total investments	**1 687**	**5 472**	**3 949**	**3 629**	**(2 673)**
Free cash flow	**7 683**	**11 954**	**12 574**	**12 868**	**7 023**
Changes in debt	-	-	-	-	-
Dividend payments	(1 184)	(1 342)	(2 077)	(2 267)	(2 392)
Cash flow from financing activities	**(1 184)**	**(1 342)**	**(2 077)**	**(2 267)**	**(2 392)**
Net change in cash	**6 499**	**10 612**	**10 497**	**10 601**	**4 631**
Cash at the beg. of the period	15 823	22 322	32 934	43 431	54 032
Cash at the end of the period	22 322	32 934	43 431	54 032	58 663
Securities	7 775	7 775	7 775	7 775	7 775