# IAS 36: The Impact of Covid-19 Pandemic on the Aircrafts Recoverable Amount in the European Aviation Sector

**Filippe Pimenta[1],\*, Sandra Alves[2]**

[1] ISCA-UA, University of Aveiro, Portugal; filippepimenta@ua.pt
[2] GOVCOPP; ISCA-UA, University of Aveiro, Portugal; sandra.alves@ua.pt
**\* Corresponding author**

**Abstract:** The year of 2020 will be marked in history by the pandemic caused by the Covid-19 outbreak. Worldwide economies and markets have been affected by the consequences of the highly transmissible disease, particularly the aviation segment. Considering that the main activity of airlines is only possible through their aircrafts, the objective of this study consists in estimating, based on International Accounting Standard no. 36 – Impairment of Assets, the recoverable amount of these assets in the European Union commercial aviation sector. The results suggest that Lufthansa and Ryanair Groups do not indicate any impairment loss to be recognized in the Financial Statements as of December 31st 2021. For IAG Group, we concluded that may be a reversal of the impairment loss recognized in the prior year - 2020. Finally, for AirFrance-KLM Group, according to our estimation, the Group may reinforce the impairment loss in the amount of approximately €674M.

**Keywords:** Impairment of assets; IAS 36; Covid-19; Aircrafts; Aviation; Discount rate; Air France-KLM; IAG; Lufthansa; Ryanair.

## 1    Introduction

The pandemic triggered by the coronavirus has had implications for operations over all industries worldwide. The airline industry was one of the first affected, due to the fact that the disease is highly transmissible between humans (Maneenop & Kotcharin, 2020). Consequently, air transport suffered implications due to external factors, with a more severe

and timely impact, namely: flight cancellations, grounded aircrafts, travel bans and border closures, which are quickly reflected in airline income (Hobe, 2021; Voltes-Dorta & Pagliari, 2012).

The most valuable assets of airlines are in general their aircrafts, since it is through these assets that their main cash flow generating activity takes place. All publicly disclosed information and data have a direct or indirect impact on the value of the aircrafts. That said, this study will be based on information disclosed by airlines in their financial statements (FS), as well as on data released by regulatory bodies in the aviation sector.

If, on the one hand, the airlines assessed the impairment of their assets on the reporting date of December 31st 2020, on the other hand, the expectations of improvement in the sector for 2021 did not materialize. In this sense, the following main question arose: did the cash flow estimations calculated by European airlines at the reporting date of December 31st 2020 take into account a slower recovery scenario than initially expected? In other words, weren't the assumptions used by them overly optimistic? This question eventually resulted in others, such as: was the amount of impairment losses recognized in 2020 FS sufficient? And for the next financial year (2021) will it be needed to recognize, reinforce or reverse potential impairment losses?

The main objective of this study is to evaluate the reasonableness of the assumptions used by European airlines on the reporting date of December 31st 2020 regarding their predictive capacity to generate future financial flows, thus allowing to measure, based on current market data, the potential impairment losses to be reflected in the FS as of December 31st 2021, a study not yet carried out by other authors.

The secondary objectives consist of: (i) knowing the structure of income and expenses of companies in the aviation sector, at European level; (ii) analyze, in general terms, the historical evolution of cash flows generated by aircraft; and (iii) knowing the real financial effects following the current health crisis.

In addition to the introduction developed in the first chapter, this work comprises four more chapters. Thus, in the second one, the literature review is carried out. In the third one, the methodology used is described. The fourth one presents the results of our investigation and their interpretation. Finally, the fifth chapter is dedicated to the presentation of the main conclusions, the research limitations, as well as guidelines for future investigations.

## 2   Literature Review

Our study will encompass listed companies from the commercial airline sector at European level. Thus, in accordance to the Regulation 1606/2002 of the European Parliament and Council, from July 19th 2002 and subsequent amendments, concerning the application of the International Accounting Standards (IAS), such companies must apply IAS 36 – Impairment of assets, when determining the recoverable amount of its aircrafts.

IAS 36 aims to describe the procedures to be adopted by most entities, whenever there is any indicator of impairment, ensuring that assets are recognized at a carrying amount, not exceeding their recoverable amount. If the carrying amount is greater than the amount to be recovered through the use or sale of this asset, then the standard requires an

impairment loss to be recognized. Additionally, this same standard also describes in which situations entities can reverse an impairment loss, as well as the correct disclosures for such effect (§ 1 of IAS 36).

IAS 36 states that whenever there is any indication that an asset may be impaired, entities must formally estimate its recoverable amount at the end of the reporting period (§ 8 of IAS 36). However, in the case of intangible assets with an indefinite useful life or not yet available for use, as well as in the case of goodwill acquired as a result of a business combination, the estimate of the recoverable amount must be made annually, regardless of any indicator, at any time during the annual period, since it is done at the same time each year (§§ 9-10 of IAS 36).

The standard also establishes that the measurement of the recoverable amount is carried out, whenever possible, for an individual asset. If it is not possible to identify the cash inflows generated by an individual asset (§ 22 of IAS 36), the Cash Generating Unit (CGU) must be used. A CGU is the smallest identifiable group of assets that generates cash inflows and is independent of other assets or groups of assets (§ 6 of IAS 36).

IAS 36 defines recoverable amount as the higher between the value in use and fair value less disposal costs. The calculated recoverable amount will subsequently be compared to the carrying amount, which will be its net value, after accumulated depreciation, amortization and impairment losses (§ 6 of IAS 36).

Whenever it is not possible to determine the sale price reliably, the recoverable amount will be determined by the value in use (Biancone, 2012; Ewert & Wagenhofer, 2005; § 20 of IAS 36).

§ 30 of IAS 36 defines the elements that must be reflected when calculating the value in use of an asset:

- "an estimate of the future cash flows the entity expects to derive from the asset; expectations about possible variations in the amount or timing of those future cash flows;

- the time value of money, represented by the current market risk-free rate of interest;

- the price for bearing the uncertainty inherent in the asset; and

- other factors, such as illiquidity, that market participants would reflect in pricing the future cash flows the entity expects to derive from the asset"

When measuring value in use, the discount rate used should be the pre-tax rate that reflects current market valuations, the time value of money and the specific risks of the asset (§ 55 of IAS 36).

"When an asset-specific rate is not directly available from the market, an entity uses surrogates to estimate the discount rate" (§ 57 of IAS 36). For this purpose, the following fees must be taken into account (§ A17 of IAS 36):

The entity's weighted average cost of capital determined using techniques such as:
- the Capital Asset Pricing Model;
- the entity's incremental borrowing rate; and
- other market borrowing rates.

According to Rehman & Raoof (2010), the generally accepted formula for calculating WACC is:

$$WACC = \frac{E}{E + D} * R_E + \frac{D}{E + D} * R_D * (1 - T)$$

Where:
**E** is the value of equity;
**D** is the value of debt;
**R$_E$** is the cost of equity, obtained through the CAPM formula;
**R$_D$** is the cost of debt;
**T** is the tax rate.

The recoverable amount is normally determined for an individual asset. However, whenever the asset does not directly generate cash flows individually, it must be calculated for the CGU (§ 22 of IAS 36). It should be noted that in our study, the recoverable amount will be determined for each individual asset (aircraft), as aircraft generate cash flows independent of other assets held by airlines.

Regarding the useful life of an aircraft's assets, according to a study published by the International Air Transport Association (IATA, 2016) together with KPMG, these are generally depreciated over 15 to 25 years, with residual values between 0 and 20%, being the linear depreciation the most used by companies in the sector.

The recognition of an impairment loss depends on the subsequent measurement model used for the assets.

If the entity uses the cost model to measure its assets, an impairment loss must be immediately recognized in profit or loss, against a reduction in the asset carrying amount.

If the entity uses the revaluation model to measure its assets, an impairment loss shall be treated as a revaluation decrease, against a decrease in the asset carrying amount. However, if the impairment loss exceeds the amount of the asset's revaluation surplus, the remaining must be recognized in profit or loss.

Subsequent to the recognition of an impairment loss, depreciation (amortization) must be adjusted according to the new carrying amount less its residual value (if any) over the remaining useful life of the asset. This recognition will also have a tax impact, namely with regard to deferred taxes, when comparing the new carrying amount with its tax base (§§ 59-64 of IAS 36).

At the period end date, an entity must assess whether there are changes in the conditions that determined the recognition of an impairment loss recognized in previous periods for an asset. If such changes exist, the entity shall estimate the recoverable amount of the asset(s), which may lead to a decrease in the carrying amount of the asset, or, conversely, an increase. In the event of a decrease, we will be facing an increase in impairment, with a consequent decrease in the carrying amount of the asset. If there is a positive change in the asset's carrying amount, we will be facing a total or partial reversal of a previously recognized impairment loss.

Like the recognition of an impairment loss, its reversal also depends on the subsequent measurement model used for the assets.

If the entity uses the cost model to measure its assets, the reversal of an impairment loss must also be recognized in profit or loss, against an increase in the carrying amount. The reversal must not give rise to a carrying amount greater than the one that would exist if no impairment loss had been recognized for the asset in previous years.

If the entity uses the revaluation model to measure its assets, the reversal of an impairment loss must be recognized in profit or loss up to the limit of the impairment previously recognized in profit or loss. The remaining amount of the reversal, if any, must be recognized as a revaluation increase.

After recognition of a reversal, the asset's depreciation (amortization) should be adjusted in future periods to allocate the asset's revised carrying amount, less its residual value (if any), over its remaining useful life. This recognition also implies an impact on the related deferred tax assets or liabilities, arising from the comparison of the revised carrying amount with its tax base.

## 3    Methodology

### 3.1    Sample selection

In order to study the impact of the Covid-19 pandemic on the recoverable amount of aircraft in the European commercial aviation sector, our sample is made up of the largest airlines in the European Union (EU).

According to the International Civil Aviation Organization (ICAO, 2020), as of December 31st 2019, the 15 largest airlines in the world, measured in billions of Revenue Passenger-Kilometers (RPK), are: United Airlines, American Airlines, Delta Airlines, Emirates, China Southern, Air France-KLM , International Airlines Group (IAG), Lufthansa, Air China, China Eastern, Southwest, Qatar Airways, Ryanair, Singapore Airlines and Turkish Airlines. Thus, our sample includes the following airlines: Air France-KLM, IAG, Lufthansa and Ryanair with locations, respectively, in France, Spain, Germany, Ireland.

We considered the largest airlines in the world on December 31st 2019, that is, the pre-pandemic year, given that the effect of Covid-19 biases the perception of reality of most companies in the world and any consideration after that would have a high degree of uncertainty.

### 3.2    Assumptions used

To calculate the carrying amount, through the analysis of the FS as of December 31st 2020 of the companies under study, we identified the balance sheet captions that relate to aircrafts (the fact that the information is disclosed by aircraft, allows this study to be carried out at individual asset level and not at the CGU), and projected these amounts to December 31st 2021, based on the relative variation from December 31st 2020 to June 30th 2021. This is, we considered that the relative change in assets between June 30th 2021 and December 31st 2021 will correspond to the relative change in assets between December 31st 2020 and June 30th 2021.

To calculate the fair value it is needed information that allow us to reliably measure the sale value of the aircraft, such as the state of conservation and age. However, this information is not disclosed by the airlines in their FS. Therefore, as it is not possible to reliably estimate the fair value less disposal costs, the measurement of the recoverable amount will be carried out by determining the value in use.

The approach to be used in the measurement of value in use will be the expected cash flow, as detailed on §§ A4-A6 of IAS 36. Although the standard suggests that the projection of cash flows does not exceed 5 years, we have taken into account that the useful life of the aircraft is greater than this time limit. IATA predicts that the useful life of aircraft varies between 15 and 25 years. Thus, we considered the projection of expected cash flows for a time horizon of 15 years to be reasonable.

To identify the components of aircraft that generate cash inflows and outflows, we used information from the FS of the last five years. This period allowed us to estimate the cash flows generated, as well as their evolution trend. This trend allowed us to project cash flows for two different scenarios: in the first (normal and most likely), where we consider that the sector's recovery will take place in 2024 (hereinafter referred to as Scenario A); and in the second (pessimistic and less likely), that the recovery will only occur in 2027 (hereinafter referred to as Scenario B). It should be noted that the forecast for the year of recovery in each of the scenarios is based on the expectations of the sector's regulatory bodies.

Our projection, until the year of 2025 (first 5 years), took into account the specificities of each of the entities selected for our sample. Starting in 2025, and in compliance with the terms of § 33 of IAS 36, we have defined a stable growth rate that consists of the average growth over the last decade for each airline.

Pursuant to § 31 of IAS 36, after estimating the future cash inflows and outflows arising from the continued use of the asset, these must be discounted at a certain rate consistent with the nature of these flows. In this sense, we chose to use the WACC, as it is the most commonly used, allowing us to take into account some specificities of the sector that we deemed relevant, as described below.

For the calculation of the E / E + D and D / E + D ratios, from the WACC formula presented earlier, we identified through Damodaran database (access via https://pages.stern.nyu.edu/~adamodar/), in the topic Data > Current Data > Discount Rate Estimation, sub-topic Costs of Capital by Industry Sector – Europe, the values of equity and debt for the European air transport sector. The result for the E / E + D ratio corresponds to 49.4% and for the D / E + D ratio, corresponds to 50.6%.

To determine the RD, we collected the information available in the FS as of December 31st 2020 and calculated the cost of debt through the ratio between the total interest recognized in the year and the total loans (financial leases included). The detail of the calculation by each selected company can be analysed in Table 1.

**Table 1.** Cost of debt calculation. Source: FS of the selected companies as of December 31st 2020

|  | AirFrance-KLM | IAG | Lufthansa | RyanAir |
|---|---|---|---|---|
| Loans | 15.010 | 5.655 | 12.731 | 3.965 |
| Financial leases | 2.788 | 10.024 | 2.637 | 246 |
|  | **17.798** | **15.679** | **15.368** | **4.211** |
| Loans interests | 186 | 189 | 307 | 4 |
| Financial leases interests | 252 | 442 | 110 | 69 |
|  | **438** | **631** | **417** | **73** |
| Cost of debt | 2.5% | 4.0% | 2.7% | 1.7% |

The tax rate T, for each country, was identified through the Damodaran database, in the topic Data > Current Data > Discount Rate Estimation, subtopic Risk Premiums for Other Markets, whose last update took place in July 2021, as seen in the Table 2.

**Table 2.** Tax rate by country. Source: Adapted from Damodaran (2021)

| Country | Tax Rate |
|---|---|
| Germany | 30.00% |
| Spain | 25.00% |
| France | 28.00% |
| Ireland | 12.50% |

To calculate the RE, we used the following formula:

$RE = rf + \beta a * (rm - rf)$

To determine the rf, we used the Statista data platform (access via https://www.statista.com/statistics/885915/average-risk-free-rate-select-countries-europe/), a German company specialized in market and consumers, which published in July 2021 the average risk-free rate for EU countries, as shown in Table 3.

**Table 3.** Risk-free rates (average). Source: Adapted from Statista (2021)

| Country | Rf (average) |
|---|---|
| Germany | 0.60% |
| Spain | 1.00% |
| France | 0.80% |
| Ireland | 0.70% |

To determine the βa of the air transport sector, we used the Damodaran database, in the topic Data > Current Data > Discount Rate Estimation, sub-topic Levered and Unlevered Betas by Industry – Europe. We then obtained the unleveraged beta, represented by 0.85, and later leveraged it, based on the sector's debt-to-equity ratio and the country's tax rate. We thus obtained the βa equivalent to 1.48.

To determine the rm, we used the Damodaran database, in the topic Data > Current Data > Discount Rate Estimation, sub-topic Risk Premiums for Other Markets, and determined the risk premium per country, as shown in Table 4. Note that the estimate of this rate takes into account Moody's country rating.

**Table 4.** Market profitability rates. Source: Adapted from Damodaran (2021)

| Country | Market Profitability |
|---------|----------------------|
| Germany | 4.38% |
| Spain | 5.72% |
| France | 4.80% |
| Ireland | 5.09% |

Given the effects of Covid-19 on the airline sector and the high risks associated with airlines, we concluded that it was necessary to include an additional risk rate, which we called the "alpha factor". This factor aims to reflect the inherent market risk associated with the European aviation sector and is obtained through a completely subjective estimate, based on the judgment of professionals with experience in the assessment of risks underlying the business activity. In order to obtain a reasonable rate, we met with specialists in Corporate Finance from a multinational company with activity in the field of auditing, with whom we concluded that the acceptable range of risk will vary between 4 and 6%.

In order to make it more adherent to the reality of the different scenarios, the discount rate was calculated individually for each company, and the "alpha" risk factor was set at 6% in scenario A (less conservative and therefore more susceptible to risk), and by 4% in scenario B (more conservative and less susceptible to risk).

## 4   Results

In assessing the existence of potential impairment losses and given that we do not have information on the carrying amounts of the aircraft as of December 31st 2021, their value will be estimated based on the carrying amounts as of December 31st 2020 and the relative variation from December 31st 2020 and June 30th 2021. In the case of the Ryanair Group, as it closes its accounts for the year 2021 on March 31st 2022, its value will be estimated based on the amounts recorded on December 31st 2020 and the relative variation from March 31st 2021 and June 30th 2021 (latest financial information available).

The recoverable amounts as of December 31st 2021 of the aircraft of the entities in our sample were obtained by discounting the projected cash flows for the period from 2021 to 2035, and compared with the carrying amounts estimation.

As mentioned before, in Scenario A, the sector's recovery will take place in 2024 while in Scenario B, in 2027. Nonetheless, Ryanair Group's year end is on March 31st 2022. Thus, in order to meet this specificity, in scenario A the recovery of the company will occur in 2025, and in scenario B in 2028.

The results regarding the existence of potential impairment losses are presented in Table 5.

**Table 5.** Summary of results. Own source

| Scenario A | AirFrance-KLM | IAG | Lufthansa | RyanAir |
|---|---|---|---|---|
| Recoverable amount | 16.786 | 36.977 | 26.044 | 23.160 |
| Carrying amount | 14.822 | 16.956 | 16.929 | 8.473 |
| | **1.964** | **20.021** | **9.115** | **14.687** |
| | **RA > CA** | **RA > CA** | **RA > CA** | **RA > CA** |
| **Scenario B** | **AirFrance-KLM** | **IAG** | **Lufthansa** | **RyanAir** |
| Recoverable amount | 13.474 | 23.892 | 21.070 | 18.029 |
| Carrying amount | 14.822 | 16.956 | 16.929 | 8.473 |
| | **-1.348** | **6.936** | **4.141** | **9.556** |
| | **RA < CA** | **RA > CA** | **RA > CA** | **RA > CA** |

The present study allowed us to conclude that the Air France-KLM, IAG, Lufthansa and Ryanair Groups, considering scenario A, have a recoverable amount of their aircrafts greater than the carrying amount, with no impairment losses for these assets, under the terms of IAS 36. However, considering scenario B, with the exception of the Air France-KLM Group, the other target groups of our study also do not show signs of potential impairment losses. In this scenario, the Air France-KLM Group has a recoverable amount that is approximately €1.3 billion lower than the carrying amount. It should also be noted that this scenario is very unlikely to happen, however, it suggests that the estimates to be updated in the near future, in order to bring them closer to reality.

Regarding the Air France-KLM Group, we draw attention to the fact that at the reporting date of December 31st 2020, it recognized impairment losses in its results, in about €672 million. This suggests that if the estimates calculated by the Group for the year 2021 are in line with those calculated by us, the carrying amount of its aircraft may be affected by the recognition of an additional impairment loss at the reporting date of December 31st 2021. Bearing in mind the low probability of scenario B happening, we considered the additional recognition (reinforcement) of impairment of only 50% of the calculated value, i.e., €674M, as the most appropriate assumption.

Regarding the IAG Group, we found that its turnover showed an average growth of 6.03% over the last decade, which is the second highest rate among the companies in our sample. Even so, the Group recognized in its results at the reporting date of December 31st 2020, an impairment loss of its aircrafts of €837 million. It should be noted that the IAG Group's business is similar in nature to the Air France-KLM and Lufthansa Groups, however its higher average growth rate can be explained by the fact that the Group was created in early 2011, which led to higher yields than the others for the period considered. Additionally, it completed the purchase of the airline Air Europa at the beginning of 2021 and forecasts optimistic growth for the coming years. Based on these perspectives, we also conclude on the reasonableness of the average growth rate of 6.03% per year from 2026 onwards, and consequently, on the recoverable amounts calculated for the two scenarios.

With regard to the Lufthansa Group, its turnover grew by an average of 4.33% over the last decade, a rate considered normal when compared to the German market's 4.38% return rate, obtained within the scope of the calculation of the WACC are. Additionally, the Group did not recognize in its results any impairment loss related to its aircraft as of the reporting date of December 31st 2020.

Finally, with regard to the Ryanair Group, we draw attention to the fact that its turnover has shown an average growth of 11.41% over the last decade, the most significant among the other companies in our sample and, as a consequence, the calculated recoverable amount was materially higher than the carrying amount. It should be noted that at the reporting date of December 31st 2020, the Group did not recognize any impairment loss related to its aircrafts. It should be noted that the Ryanair Group's business has a different nature from others, as it is a low-cost airline, in which part of its profit comes from the sale of additional products and services to its passengers. Therefore, the operating margin practiced tends to be higher when compared to other companies. Besides, the Ryanair Group has a decentralized operation, as it has hubs throughout Europe and North Africa. In total, there are 82 bases spread across the continents. It should also be noted that the airports used by it are mostly secondary, which is reflected in reduced expenses and, in most cases, free from direct competition.

Given the aforementioned characteristics, we believe that the existence of 82 operation centers results in a series of possibilities for creating new routes and increasing the frequency of their flights. Additionally, in accordance with the plan approved by the Board of Directors of the Group on September 16, 2021, an increase in the number of passengers transported of around 50% is expected for the next 5 years, as a result of the acquisition of 210 new aircraft. Based on these perspectives, we also conclude on the reasonableness of the average growth rate of 11.41% per year from 2027 onwards, and consequently, on the recoverable amounts calculated for the two scenarios.

## 5   Conclusions

The year 2020 was characterized as the worst year in history for the world aviation industry, namely, due to the negative effects caused by the Covid-19 pandemic. The current financial crisis experienced by the sector is a consequence of the mandatory sanitary measures to prevent the disease adopted by governments around the world as a form of containment.

This study allowed us to understand the high volatility of the sector, given the direct dependence on external factors that guarantee its operational capacity. As an example, we can mention the close relationship between tourism and aviation. If, on the one hand, tourism depends on its users, on the other hand, aviation depends on tourism, and in this sense, any behavioral change in society could have severe impacts on the operationalization of the airline industry.

In general, the IAG, Lufthansa and Ryanair Groups have shown a significant evolution in the last decade, and their growth in the same proportion is expected for the coming years. These optimistic outlooks positively affected our forecasts. On the other hand, the Air France-KLM Group presented an average growth rate of only 1.19% in the last

decade, thus suggesting that the company has already reached a limit in terms of growth that will hardly be exceeded.

The main objective of this study was to evaluate the reasonableness of the assumptions used by European airlines as of December 31st 2020 regarding their predictive capacity of future cash flows. To this end, we projected the carrying amount of the aircraft at the reporting date of December 31st 2021 and defined two scenarios whose difference consisted in the recovery time of the sector. However, to conclude on the main objective, we were based on a weighting between scenario A and scenario B.

Although it was not possible for us to make exactly the same assumptions used by the constituent Groups of our sample when determining the value in use of their aircraft, the estimate of the recoverable amount calculated by the Lufthansa and Ryanair Groups at the reporting date of December 31st 2020 and the recoverable amount calculated by us, do not indicate any additional impairment loss to be recognized in the FS as of December 31st 2021. The IAG Group, although it recorded an impairment loss in 2020 of about €837 million, we estimated a recoverable amount significantly higher than the carrying amount for the reporting date of December 31st 2021. In our opinion, our results were mainly affected by the growth rate considered, which was considered reasonable by the factors described above. The Group's consolidated financial statements as of December 31st 2020 do not detail the assumptions used in the projection of cash flows, the time horizon and the discount rate considered. For these reasons, we conclude that, for the reporting period ending on December 31st 2021, the IAG Group should reassess its assumptions within the scope of estimating the recoverable amount of its aircrafts. According to our estimate, as of December 31st 2021, a reversal of the impairment loss recognized by the IAG Group in 2020 may occur.

On the other hand, we warn for the possibility of an additional recognition of impairment losses in the Air France-KLM Group at the reporting date of December 31st 2021, given that in scenario B, the recoverable amount calculated in this study is €1.3 lower billion to the projected carrying amount. Thus, assuming the assumptions of scenario B, we would verify the need to reinforce the impairment loss that would amount to approximately 50% of the calculated value, that is, €674M.

Finally, as already mentioned, the Air France-KLM Group recognized in its results on December 31st 2020, impairment losses of approximately €672M. However, as a result of the methodology used by us, this Group must also recognize at the reporting date of December 31st 2021, an additional impairment loss. In this sense, we can conclude that, given the proximity of the values achieved in the two methodologies, the assumptions used by the entity were reasonable. As for the other Groups in the sample, we had no doubts as to the ability of their aircraft to generate future economic benefits. Thus, the present investigation allowed us to respond to the main objective proposed and to conclude on the reasonableness of the assumptions used by companies in the European commercial airline sector, regarding their ability to generate future cash flows as a result of the use of their aircraft.

The results of this study are particularly important for shareholders, investors, companies in the aviation sector and auditors. In fact, the estimated recoverable amounts of aircraft for the companies in our sample allowed us to conclude about the values of these assets and, consequently, about their ability to generate future cash flows. They also allow

verifying that companies have a solid financial structure to overcome the bad results resulting from the pandemic and recover in the near future.

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