

**Open University of Cyprus**  
**Faculty of Economics & Management**

**Postgraduate Programme of Study *Business Administration (MBA)***

**Master's Dissertation**



**Is Europe's Aviation Recovery in the Post-Pandemic World Led by Low-Cost Carriers?**

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**Supervisor**  
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**May 2022**

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## Summary

The Covid-19 pandemic brought many challenges to the airline industry, resulting in an unprecedented crisis. In just a few months after its appearance, the Covid-19 virus became a world pandemic and Europe was the most affected continent. Governments imposed travel bans and restrictions for international border crossing and applied protective measures of social distancing, personal protective equipment use and self-isolation. Together with the public fear of being exposed to the virus, these measures resulted in the largest drop in air traffic ever recorded. European air carriers saw a 74% passenger traffic decline in 2020 versus 2019. In an attempt to survive the crisis, airlines had to review and adjust their strategies. Despite experiencing similar levels of decline in traffic, load factor and RPK, the reaction of various airline models to the pandemic varied.

The purpose of this study is to understand why low-cost carriers may lead the recovery in the post-pandemic world. Full-service carriers lost their long-haul and hub-and-spoke markets since travel restrictions were different from continent to continent and connecting flights were no longer efficient due to the decline in demand. Another loss for full-service carriers was business travel which was substituted by remote work and teleconferencing. On the other hand, low-cost carriers were in a more privileged position. The leisure market is generally more resilient to crises. Short-haul, point-to-point travel market was more suitable for the situation considering that travel measures on intra-European flights were similar. Also, travellers became more price-sensitive, meaning that low fares became crucial in the attempt to revitalise the demand. The findings of this study show that the organisational structure and flexibility of low-cost carriers make them capable to recover quicker than full-service carriers in the post-pandemic era.

**Keywords: Covid-19, pandemic, airlines, Low-Cost Carriers, Full-Service Carriers, Europe**



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## List of Abbreviations

|              |  |
|--------------|--|
| <b>ACI</b>   | Airports Council International                     |
| <b>ACI-E</b> | Airports Council International Europe              |
| <b>ASK</b>   | Available Seat Kilometres                          |
| <b>BA</b>    | British Airways                                    |
| <b>CAA</b>   | Civil Aviation Authority                           |
| <b>CFI</b>   | Corporate Financial Institute                      |
| <b>CTO</b>   | Cyprus Tourism Organisation                        |
| <b>EASA</b>  | European Aviation Safety Agency                    |
| <b>EC</b>    | European Commission                                |
| <b>ECDC</b>  | European Centre for Disease Prevention and Control |
| <b>EPRS</b>  | European Parliament Research Service               |
| <b>EU</b>    | European Union                                     |
| <b>FSC</b>   | Full-service Carrier                               |
| <b>FFP</b>   | Frequent Flier Programme                           |
| <b>ICAO</b>  | International Civil Aviation Organisation          |
| <b>LCA</b>   | Larnaka International Airport                      |
| <b>LCC</b>   | Low-cost Carrier                                   |
| <b>MERS</b>  | Middle East Respiratory Syndrome                   |
| <b>ONS</b>   | Office for National Statistics                     |
| <b>PCR</b>   | Polymerase Chain Reaction                          |
| <b>PFO</b>   | Pafos International Airport                        |
| <b>PPE</b>   | Personal Protective Equipment                      |
| <b>RPK</b>   | Revenue Passenger Kilometres                       |
| <b>SARS</b>  | Severe Acute Respiratory Syndrome                  |
| <b>SAS</b>   | Scandinavian Airlines                              |
| <b>UK</b>    | United Kingdom                                     |
| <b>US</b>    | United States                                      |
| <b>WHO</b>   | World Health Organisation                          |

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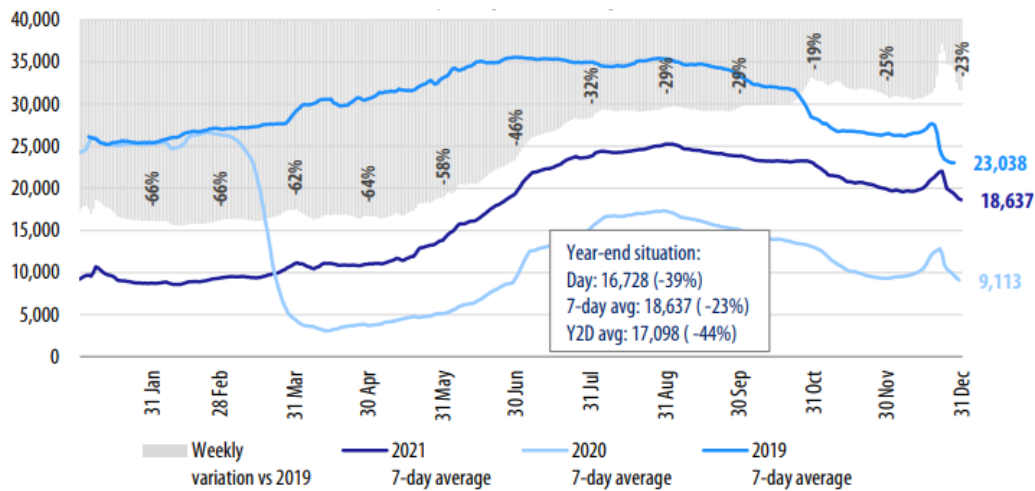
# Chapter 1

## Introduction

The objective of this project is to analyse the implications that the pandemic created for the airline industry in Europe and examine why LCCs may lead the post-pandemic recovery.

### 1.1 Background

The appearance and rapid spread of the Covid-19 pandemic have led to a harsh crisis in the airline industry and the aviation market as a whole. The commercial aviation industry has a global footprint and is thus considered highly fragile and vulnerable to external factors including the global economy and geopolitical environment (Satair, 2020; Combe and Brechemier, 2020). Various crises and unprecedented events have shaken the industry in the past including financial crises, oil price crises, natural disasters, disease outbreaks and terrorist attacks (Suaou et al., 2020). The latest of these was the outbreak of the coronavirus (COVID-19/SARS-CoV-2) pandemic in 2019 (WHO, 2022). The outbreak of the coronavirus disease began in December 2019 and was spread rapidly across the globe within a month (European Journal of Pharmacology, 2020; Lai et al., 2020). So far, there were 512 million cases around the globe and almost 6 million deaths caused by Covid-19 (Worldometer, 2022). Due to government restrictions and precautions of contracting the virus, mass transport modes have been limited (Abu-Rayash & Dincer, 2020). Since moving from country to country was restricted, the international aviation market was highly disrupted. The number of air passengers transported in 2020 experienced a decline of 60.2% compared to 2019, the largest decline in air traffic ever recorded (IATA, 2021) (See Figure 1). The International Air Transport Association (2021) described the Covid-19 outbreak as “the worst crisis in the history of aviation”.



**Figure 1.** Traffic Evolution Across Europe 2019-2021 (Source: Eurocontrol, 2022)

The measures used to contain the spread of Covid-19 rapidly resulted in low passenger traffic and low revenue which has left airlines in an unfavourable financial position. Since international border crossing was restricted, full-service carriers (FSC) that operate medium to long-haul routes were seen as the major losers (Cranfield University, 2020). The reduction of many FSCs routes has freed up slots at airport hubs and LCCs entered the hub market (Suau-Sanchez et al., 2020). While FSCs are currently struggling, low-cost carriers have been in a more favourable position owing to their business model which is based on cost-cutting, operational flexibility and rapid responsiveness (Global Data, 2021). The most common definition of LCC is “an air carrier that has a relatively low-cost structure in comparison with other comparable carriers and offers low fares or rates” (ICAO, 2004). Their point-to-point, short-haul routes were mostly served during the pandemic, as passengers looked for trips closer to home (Global Data, 2021). Even though LCCs are a relatively new concept, they have responded more effectively to the industry’s unprecedented disruptions in the past (Franke, 2004).

The emergence and rapid growth of LCCs in Europe have led to the evolution and expansion of the airline industry and the aviation market in general (Dobruszkes, 2006; Gillen & Hirsch, 2001; Lohmann et al., 2009; RDC, 2016; ICAO, 2021). The reason behind its success is the competitive advantage over full-service carriers (FSCs) in offering lower fares but a similar core product, flying from A to B (Kim and Lee, 2011). On a global level, in 2015, LCCs carried 984 million passengers representing more than a quarter of the world’s total scheduled passenger number (ICAO, 2021; Mazareanu, 2021). Global LCC seat capacity has also doubled since 2009, reaching nearly 1.7 billion in 2018 (CAPA, 2019). The two market leaders are Ryanair in Europe and Southwest in the US, the latest being the first LCC that appeared worldwide (Statista, 2021).

Europe leads the way in the low-cost market, in the last two decades the LCC segment recorded large growth, taking away FSCs capacity. In 2007, LCCs had a share of 19% of total flights, which grew to 31% in 2016 and 44.5% in 2020 (Statfor, 2017; Statista, 2021). LCC seat capacity within Europe had increased by 78% from 2009 to 2019, whereas FSC capacity had increased by 31% (CAPA, 2019). On intra-European routes, LCCs are providing over 48% of capacity as of 2016 (Boeing, 2017). Europe's countries with the most low-cost traffic are the United Kingdom, France, Germany, Italy and Spain. In these European countries, low-cost traffic exceeds 30% of the total traffic and in the case of Spain, LCCs are more popular than FSCs (Statfor, 2017).

### **1.1.2 The need for a new study**

There is extensive research on how past unprecedented events have affected European air travel including the financial crisis of 2008/2009, volcanic eruptions as of Mount Etna, terrorist attacks of 09/11 and various pandemics such as the ones of flu and cholera. However, the recent coronavirus pandemic outbreak of 2019 has been ahead of all crises in aviation history so far and has not yet been studied in detail.

While airlines are struggling with the challenges that Covid-19 has created, low-cost carriers have been in a more favourable position than full-service carriers. There is also broad literature available on the low-cost business model and how LCCs maintain a competitive advantage over full-service carriers in European air travel.

Since the Covid-19 pandemic is very recent and of high interest, there is a need for further research on how Covid-19 has affected the European aviation industry. This thesis will incorporate research from different secondary sources to give an understanding of how LCCs can lead the recovery of aviation.

### **1.1.3 Research Questions**

This thesis aims to answer the following questions:

1. How did the Covid-19 pandemic affect the aviation industry in Europe?
2. How do low-cost carriers differ from full-service carriers?
3. How can LCCs contribute to the recovery of aviation in the post-pandemic era?

## **1.2 Research Approach & Methodology**

The research approach and methodology are constructed in an attempt to answer the above-mentioned research questions through hypotheses. The first hypothesis is that the pandemic has had a negative impact on the air travel industry in Europe. The second hypothesis is that low-cost carriers' operational structure is different from full-service carriers. The final hypothesis is that LCCs have outperformed FSCs during the pandemic.

### **1.2.1 Research Approach**

This thesis studies the effects of the pandemic on aviation and how may LCCs lead to the recovery of the European aviation industry. To answer that, a holistic and in-depth study of the European airline industry is conducted in a descriptive and explanatory manner. The pandemic may be a recent happening but it is of high interest on the global scale, hence primary material already exists. Also, available reports of European airlines are used to illustrate the impact levels.

In this thesis, the aim is to provide an understanding of the LCC business model and whether it can lead the aviation recovery post-pandemic. This study empirically analyses the pre-pandemic period defined as the period between 2018 and 2019 and the pandemic period between 2020 and 2021. This research approach cannot be measured in numbers, hence, qualitative research methodology is used. Qualitative research emphasises on the collection and descriptive analysis of non-numerical data and deals mostly with the interpretation of data obtained (McMillan and Weyers, 2011; Bryman & Bell, 2018).

### **1.2.2 Data Collection Methods**

Owing to a large amount of existing data on the LCC business model as well as the broad study of the coronavirus pandemic effects as of today, secondary data will be used only. This type of data contributed to interpreting and contextualising the effects of the pandemic and was collected through an extensive study of literature. Journal articles, books and internet sources like governmental, company and organisation websites were used. Also, company reports of airlines headquartered in Europe were studied.

## Chapter 2

### The Appearance and the Current Presence of LCCs in Europe

Low-cost carriers appeared in Europe after the liberalisation of the market and have been developing and gaining market share ever since.

#### 2.1 Liberalisation of Air Transport in the EU & LCCs Emergence

According to Francis et al. (2007), LCCs were the fruit of the liberalisation process in Europe. Before liberalisation, routes within the EU were operated by flag carriers alone. The deregulation of aviation was a result of the three air transport liberalization packages implemented in 1987, 1990 and 1993 accordingly, which established an intra-European market (Burghouwt et al., 2016). The three packages were implemented by EU countries and covered the principles of air carrier licensing, market access and fares (Fu, X., Oum, T. H., & Zhang, A., 2010; The European Commission, 2017). Williams (2002) believed that Europe had the world's first fully deregulated commercial aviation industry.

The First Package was adopted in 1987 and it removed 'single designation' provisions so that any number of airlines were able to operate on the major international routes in the Community (Butcher, 2010). This package would allow small airlines to enter popular European routes since intra-community was established and gave them the freedom to provide their capacity and fares.

In 1990, the Second Package was introduced which comprised of further regulations of fares, market access which relaxed the restrictions to a greater extent and opened a network connecting almost all European Community airports (Butcher, 2010). Multiple designation was now approved (Butcher, 2010). The main change was that 'single designation' was removed meaning that many airlines could fly on major international routes.

In 1986, the Single European Act was implemented together with the third package and it created a single European market by lowering barriers to intra-European competition. The Act removed capacity restrictions, gave airlines the right to operate the 'fifth freedom', relaxing the rule that gave flag carriers fifty per cent of the market share. Moreover, lower fares could then be proposed. After the implementation of the Third Package in 1992 was when the European market started to grow (Butcher, 2010). New routes, increased frequencies and new carriers were the most significant developments (Burghouwt, De

Leon and De Witt, 2015). It was the Third Package that removed all remained governmental restrictions regarding capacity, market access and designation (O'Connell, 2007).

The EU liberalisation brought competition, drop in fares and change in travellers' behaviour, factors that drew the need for the new business models (Forsyth, 2006; Papatheodorou, 2008). For years up to the late 70s, many supported that tight regulation in aviation is inevitable and this was justified by the non-differentiated nature of the product (Doganis, 2002). Richmond (1971) stated that in the US, "unregulated competitive market forces may have adverse consequences for the public at large". It was thought that the minimisation of regulation would lead to excessive competition. This idea contradicted with the one of the reduction of existing fares by letting new entrant airlines on their attempt to possess a competitive position in the market (Doganis, 2002). Also, deregulation would set the scene for new carriers which would then eliminate government's participation in the operations and endanger flag carriers (Doganis, 2002).

According to Williams (2001), in the years between 1970 and 1990, before complete liberalisation and the appearance of LCCs, Europe had successfully adopted a non-scheduled charter business model that revolutionised the leisure market. The flourishing of the charter business model possessed an innovation for both aviation and tourism and was very favourable for package tourism development in Europe (Forsyth, 2006). A charter flight is a flight booked by a holiday company and then sold to their customers (Collins English Dictionary). It is usually a part of 'package holidays' accompanied by activities at destination, accommodation, air and ground transportation and other services at one price (Castillo-Manzano and Lopez-Valpuesta, 2015; Williams, 2001). Charters would operate short, medium and long-haul flights and would serve the mass tourist (Pearce, 1987). Charters could offer more than 50% cheaper fares than FSCs since their costs were also very low because of economies of scale and scope (Doganis, 1991; Williams, 2001). Williams (2002) claimed that charter carriers accounted for about 30% of Europe's Revenue in Passenger Kilometres (RPK) and up to the late 1990s, charters would move around 80% of European passengers on holiday packages. Charter carriers were the primary air service provider of leisure travel in Europe until the early 1990s since they offered the cheapest services until the appearance of low-cost carriers (Papatheodorou and Lei, 2006). The completion of air liberalisation in Europe in 1997 led to the gradual development of low-cost carriers (LCC) which shortly became leaders in cost reduction (Papatheodorou and Lei, 2006). In Europe, Ryanair and EasyJet are the ones that made extensive use of the freedom that liberalisation gave and proved to be the most successful, Ryanair being the pioneer of the LCC model (Gross and Luck, 2013).



## 2.2 The low-cost business model

The rapid entry and growth of LCCs in Europe in the 1990s, made full-service carriers question their short-haul flight strategy and non-scheduled charter carriers reassess their strategies (Klophaus et al., 2012). In short, LCCs provided basic quality service in a single-class cabin of dense seating arrangement, serving only regional and secondary airports on short-haul point-to-point routes (Papatheodorou and Lei, 2006).

According to Porter (1980), “businesses often compete with others on a cost basis”. The ‘no-frills’ business model’s competitive advantage lies in a cost-leadership strategy, aiming at low unit costs. Low unit costs lead to lower fares, attracting more passengers, resulting in higher revenues. According to Doganis (2001), the LCC business model can operate sustainably at 40–50% of the unit cost of the average network carrier. The LCC strategy includes numerous motives. European LCCs operate short to medium-haul flights which allows them to operate a larger volume of flights daily. This is also achieved by LCCs short turnaround times, typically between 20 to 40 minutes, optimally utilising all assets such as aircraft, personnel, etc. Point-to-point flights offer direct flights with no connections resulting in shorter travel times. The point-to-point flight model was perfectly suitable for a geographical area like Europe, where most flights do not exceed a 2,5hr time (Dobruszkes, 2006). The use of single or in a few cases double aircraft type (mostly A320s and B737) as well as the utilisation of a young, fuel-efficient fleet leads to a reduction in fuel costs and maintenance costs and staff training. Fuel is one of the airlines’ largest costs, representing between 15 and 20 percent of total expenses (US Department of Transport, 2019). Also, direct ticket sales are used to avoid travel agents and platform expenses. LCCs offer no class differentiation such as economy or business and thus have a single-class cabin that increases aircraft seat capacity. According to Boeing (2022), Ryanair’s aircraft type (737-800) has a capacity of 189 seats in a single-class cabin and 162 in a dual-class cabin. Single class seats also simplify the process of passenger handling and ticketing (Button and Ison, 2008). The no-frills strategy does not offer inflight services such as catering free of charge (Doganis, 2010). Also, baggage cannot be carried free of charge either. These additional fees for ancillary services added up to revenue generation since low ticket fares alone do not generate enough revenue for the airlines. The strategy of LCCs also drives the use of secondary airports (Doganis, 2006). Smaller, simply structured airports help reduce airline costs through lower landing, apron and passenger handling fees. Since there is no business or first class, no lounges or comfort facilities are required at the airport. Secondary airports are also less congested, resulting in lower delays and faster passenger handling and turnaround times. Not only leisure travellers would use LCCs but business travellers would have satisfaction rates over 95% (Davies, 2005).

### 2.3 Low-cost model emergence in Europe

The concept of LCC in Europe was launched in 1994 by Ryanair, who copied the business model of Southwest Airlines (Decker, 2004). Williams (1998) commented that “entrants like Southwest have shown the industry a new direction”. Francis et al. (2006) stated that Ryanair’s switch of strategy created the foundation for the low-cost industry in Europe. Ryanair was founded in 1984 but was not operating as an LCC. O’Leary, Ryanair’s CEO, is the one who decided to change the culture of the airline and reconstruct it into a pure low-cost carrier. According to Doganis (2006), during the first few years of the airline’s operations, less than three million passengers would fly with Ryanair, while in 1999, in five years, the number of passengers multiplied by almost 6 times. Ryanair now carries more European passengers than any other airline in Europe and has been profitable ever since the start of its low-cost operations (Button and Ison, 2008; Statista, 2021; IATA, 2020). In 2017, the size of the fleet was over 400 and Ryanair operated 2,000 daily flights. The low-cost airline carried more than a billion passengers and the net profit was higher than a billion euros (Ryanair website, 2017).

Even though LCCs would never share the qualities of flag carriers, in the 2000s the prosperity of flag carriers started declining because of the growth of LCCs (Burghouwt, 2015) (See Figures 2 & 3). For example, Cyprus Airways was doing well in terms of passenger numbers, carrying more than half of the tourists arriving in Cyprus. According to the Cyprus International Institute of Management (2017), in 2008, the number of tourists in Cyprus was 2,4 million and Cyprus Airways carried 1,7 million passengers. In 2011 is when LCCs arrived in Cyprus and the number of Cyprus Airways passengers started to decline (Cyprus International Institute of Management, 2017). Airlines started operating popular Cyprus Airways routes such as Larnaca – Athens and Larnaca – Moscow. The competitors of Cyprus Airways were all LCCs except for the Greek Aegean Airlines. Ryanair, Transaero, EasyJet and Blue Air being the main competitors. When Blue Air set up a permanent base in Larnaca, the downfall of Cyprus Airways began. In 2015, the Cypriot flag carrier ceased its operations (Anna.aero, 2015). Cyprus Airways was not the only case as the strategy of many airlines operating monopolistic routes failed when competitors entered the market.

Not only has the total number of LCC flights and passengers to Cyprus increased since 2008, but the secondary airport in Paphos has flourished ever since while flights landing in Larnaca experienced a decline (Farmaki & Papatheodorou, 2015). This is due to LCCs ceasing or reducing flights from the primary airport, as in the case of Ryanair which moved operations to Paphos in 2012 (Farmaki & Papatheodorou, 2015).

Apart from FSCs, LCCs have been taking away major charter carriers' share in the past 20 years (Eugenio-Martin & Perez-Granja, 2020). In 2007, UK routes to tourism destinations such as Gran Canaria, Tenerife, Lanzarote and Fuerteventura were mostly operated by charter carriers with a share ranging from 70% to 95%. At that time, LCCs had an average share of 5% on these routes. However, in 2018, charters' share fell to 35% and LCCs increased to 61% (Eugenio-Martin & Perez-Granja, 2020).

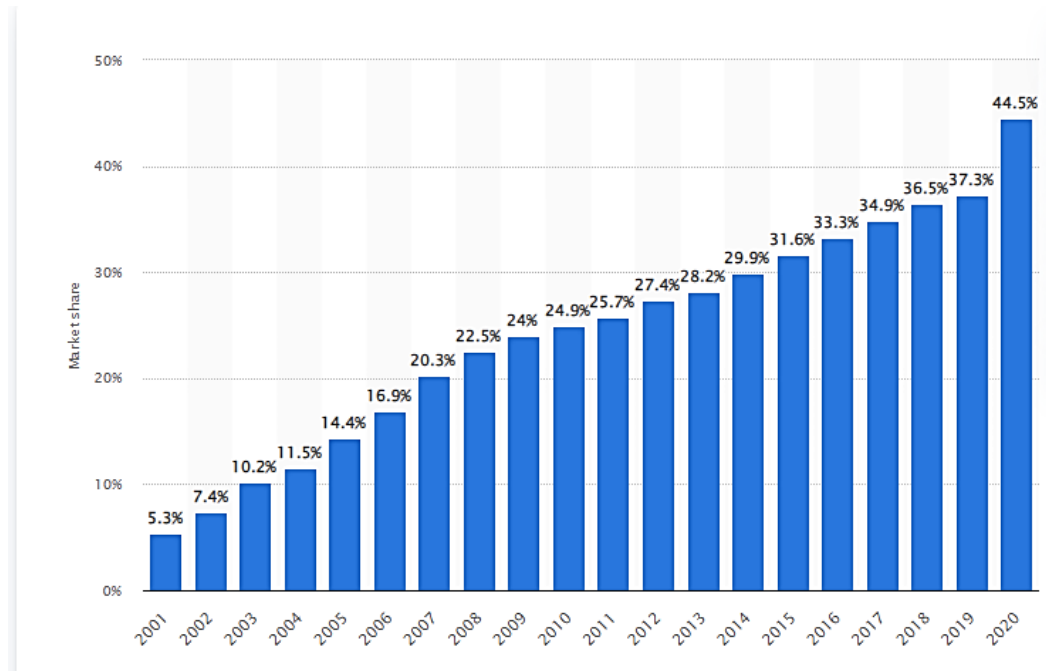


Figure 2. Market Share of Low-cost Carriers in Europe from 2001-2020 (Source: Statista, 2022)

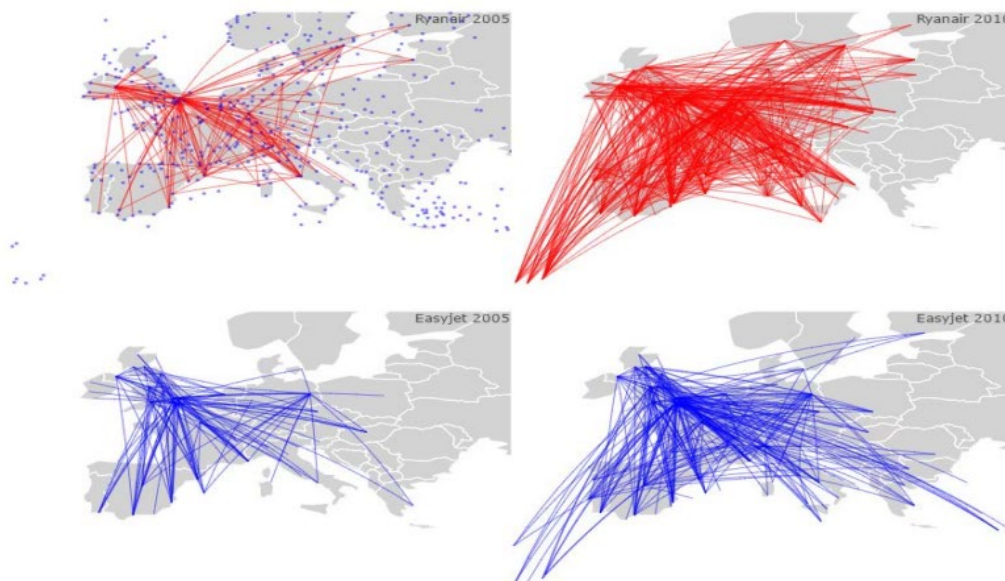


Figure 3. Route Maps for Ryanair and EasyJet from 2005 to 2010 (Source: Brookings Institution, 2017)

There is a subcategory of LCCs which appeared to confront the competitive advantage of LCCs by full-service carriers (Lin, 2012). National carriers often create low-cost subsidiaries (Jarach 2005). According to Morrel (2005), the creation of the 'airline-within-airline' concept was a response of network carriers to the LCCs. This concept is also known as 'airline-within-airline' but it generally was not successful either in Europe or the US. In Europe, for example, Lufthansa Group launched Germanwings which ceased operation in 2020 (Lufthansa, 2020). SAS in Sweden launched Snowflake which stopped operating in 2004 and Thomson in the UK launched Thomsonfly which also stopped operations (Pearson and Merkert, 2014). Most 'airlines-within-airlines' failed to succeed and this is because their costs are relatively high and strategies are poor to fight competition from LCCs (Pearson and Merkert, 2014).

The enlargement of the European Union both geographically and politically also helped the development of LCCs (Dobruszkes et al., 2006). At the time of liberalisation, the European Union was not as large as it currently is and most of the Eastern European countries were not members of the union, so they did not share the same freedom rights as the West. Consequently, the network and seats were limited to Western Europe at a level of 98%. In 2004, the enlargement of the EU took place, resulting in 10 new Member States which are; the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia and in 2007 Bulgaria and Romania followed. This led to new, liberalised services connecting western and eastern Europe. Tourism opportunities and migration from Eastern Europe to the Western are reasons that low-cost air services between west-east Europe became popular (Hall et al., 2006).

In the 28 countries that made up the European Union in 2018, there were about 1.1 billion passenger journeys (Eurostat, 2019), out of which a little more than 500 million journeys were with LCCs, which represents a year-on-year growth of 7.4%. In 2020, LCCs held 44.5 percent of the European aviation market, up from 23 percent in 2009 (Statista, 2022). The three biggest LCCs in Europe are EasyJet, Ryanair and Wizz Air. Ryanair, Wizzair and EasyJet were in the top 4 airlines for having the biggest revenues before the pandemic.

## **Chapter 3**

### **Volatility and Challenges in the Industry**

Like any other organisation, the airline and airport industries are highly impacted by changes in their external environment (Market Realist, 2014). Macro-environmental happenings directly affect airlines which then affects airport operations and the aviation industry as a whole.

#### **3.1 PESTLE Analysis of the macro-environmental factors that impact the aviation industry**

PESTEL analysis is a strategic framework and useful tool used to evaluate the external environment of an industry (CFI, 2022). It is often used for strategic and systematic investigation of an industry's volatility to external factors categorised by Political/legal, Economic, Sociocultural, Technological and Environmental.

Political factors include national and international considerations. The aviation industry had faced numerous issues such as deregulation or new regulations in the European airline market such as passengers' rights. Deregulation led to stronger competition among airlines which gave passengers the advantage of more choices and lower prices. Also, events such as terrorist attacks which are threats to a nation have led to political crises (Sørensen, 2005). Airport security had to be re-examined. Moreover, wars and political instability can hinder the airline business as proven recently by the Ukrainian and Russian situation which led to a no-fly zone for both countries and any allies of those, affecting the operations of most European airlines (Aljazeera, 2022).

Economic issues are a very important and critical factor of the airline industry since they involve economies at a local and global scope that can affect demand for air transport of both passengers and goods. The airline industry is highly affected by economic cycles. The financial crisis in Europe in 2008, for example, especially in countries like Greece and Spain hit the airline industry. The flag carrier of Greece, Olympic Airlines, had experienced financial difficulties for the last decade of its operations and the Olympic Games in Athens, Greece in 2004, generated a huge debt for the country (Politico.eu, 2015). In the same year, the government decided to privatise the airline's operation, which in 2009 straight after the peak of the crisis, was sold to a private corporation (Politico.eu, 2015). Economic crises also resulted in greater consolidation among airlines as they seek to leverage the efficiencies from the economies of scale and the synergies from the mergers with other airlines (Iatrou, 2006). Spain was highly affected by the 2008 financial crisis too. Approximately 20 million fewer passengers used secondary airports in Spain

in 2009 than in 2008. Girona airport was also highly affected since 2008 is the year when the airport's downfall started. Italy was also shocked by the recession in 2008 but, managed to recover by 2013. Global alliances have developed in response to deregulation and economic downturns. Also, events like Malaysian Airlines flight 17, for example, when a scheduled flight disappeared from the radar as it was shot, generated liabilities up to 1\$ billion (The Washington Post, 2014).

Fuel prices are highly volatile often representing up to 50% of an airline's costs (Aviation Fuel Solution Inc., 2011). Fuel prices tend to spike during and after crises such as wars or economic recessions. This explains Delta's bankruptcy in 2015, which happened because of a rise in jet fuel costs in the US, which increased the price by 20 percent (CNN Money, 2005). A reason for LCCs such as Ryanair having lower costs is because they tend to guarantee their most volatile costs by effectively engaging in fuel hedging (Ryanair, 2017).

Social and demographic factors related to the change in air travel demand and passenger behaviour like the move to LCCs from both scheduled and unscheduled air services are also critical. LCC managed to create their own traffic that would otherwise not fly or use other means of transport (Barbot, 2004). Also, business travel has been declining since the development of technology. Face-to-face meetings have now been replaced by teleconferencing through various applications, meaning that business travel is substituted by online means.

Technological issues also affect the airline industry as they have already done before. The appearance of the Internet affected the behaviour of passengers and made them instantly book their tickets in their own time and handle their check-in process themselves. In terms of aircraft, new fuel-efficient aircraft have been replacing the old ones and modern entertainment is offered on-board (individual touch-screen with plenty of movies and radio stations, WiFi, etc.)

Environmental considerations and charges are gradually increasing due to today's environmental concerns (Eurocontrol, 2018). Airport operations impact the environment in many ways including noise pollution, water use and pollution and generation of waste while airlines pollute directly the air (Green Clean Guide, 2015). Noise is the most 'visible' issue and is receiving attention. This brings problems to airports located close to residential areas such as Heathrow, where environmental charges have increased both in 2015 for noisy aircraft and in 2018 by 7% for all aircraft (Airport Mag, 2018; The Guardian, 2015). New fleet is more fuel-efficient which supports the 'green flying' procedure for protecting the environment. Ryanair, for example, has invested 22bn dollars in greener aircraft and plans to decarbonise operations by 2050 (Ryanair, 2022).

### 3.2 Unprecedented Events in Aviation

The aviation industry has experienced various mass disruptions in the past which have caused cyclical effects on the industry (Franke and John, 2011). Unprecedented events have evidence to push the aviation industry into a financial crisis and drop in passenger traffic (Blunk, Clark & McGibany, 2007) (See Figure 4). Thus, it is crucial to analyse the past to be able to forecast the future. Severe weather and natural disasters such as the tsunami in Indonesia in 2004, or Iceland's volcanic eruptions in 2010 have caused local and international transport disruptions (Britannica, 2021; Smithsonian Institution, 2021). Armed conflicts have also a strong impact on aviation in terms of risk. For example, in 2014, while the Ukraine airspace was partially closed due to an ongoing conflict, a Malaysian Airlines aircraft was shot down for entering the area (Skybrary, 2021). Major aviation-related security events such as the terrorist attacks of 09/11 have harshly affected the aviation industry. The catastrophic attacks led the volume of air travel to fall by 31.6% (Blunk, Clark & McGibany, 2007).

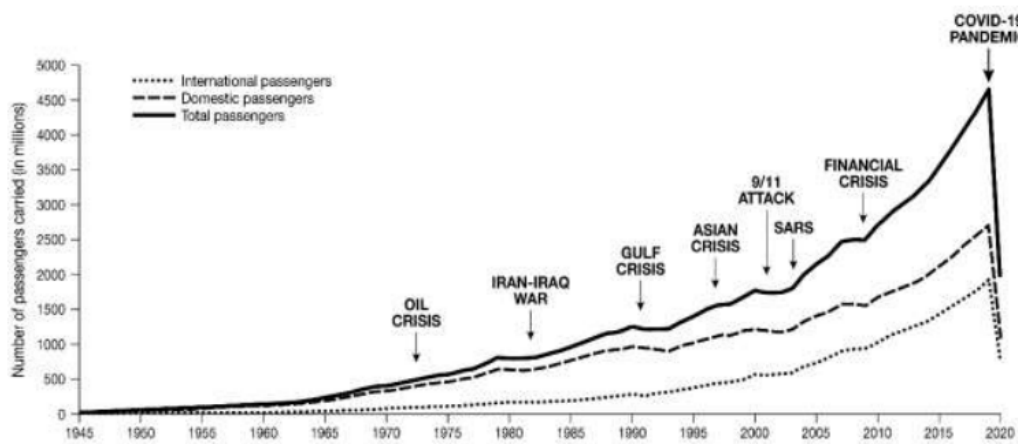
Besides natural disasters and declared or undeclared armed conflicts, various diseases had affected the aviation. Previous pandemics had seen an indiscriminate reduction of flights worldwide through both direct and indirect government interventions (Marcelino & Kaiser, 2009; Marcelino & Kaiser, 2012). The vast reduction in passenger traffic had a severe economic impact on the airlines, airports and the countries involved (Epstein et al., 2007).

Throughout history, diseases that first appeared locally had then developed into subsequent pandemics such as Severe Acute Respiratory Syndrome (SARS) in 2003, Avian influenza H5N1 threat in 2006 and Swine influenza H1N1 in 2009 (Chung, 2015). The expansion of these diseases escalated from local outbreaks into pandemics through air travel. Often, the most effective method to eliminate contamination is prophylactic Isolation. Isolation and quarantines globally caused downturns in various sectors.

A study of the macroeconomic impact of pandemic influenza from models of the United Kingdom, France, Belgium and The Netherlands has shown a similar picture of which industries were the most affected. Education, health and social services receive the largest impact. The next highly affected industries are those related to hotels and restaurants, transport and tourism (including air transport), retail, freight and public transport, post and telecommunications then followed by agriculture.

The Covid-19 crisis is the latest that has punctuated global aviation. Since WW2, there have been various other crises that hit the aviation industry but none was as disastrous as the latest one (See Figure 4). Throughout history, various crises had reduced air traffic growth. Starting with the oil crisis that appeared in 1973, which resulted in oil prices increase by 400% and oil production decreased by 240% (Teyssier,

2009). In 1980, it was the Iran-Iraq war, in 1990-91 the Gulf Crisis which led to double jet fuel prices and also the Asian financial crisis in 1998-1999 (Rimmer, 2020). Then, one of the most devastating events in aviation history took place. On 11 September 2001, members of the Islamic extremist group al-Qaeda hijacked four commercial aircraft and carried out coordinated suicide attacks against the United States (History.com, 2021). Shortly after 09/11, in 2002-2003 the SARS virus emerged in China and was rapidly spread across 4 other countries (WHO, 2022). During the 2003 outbreak, 8,098 people got infected with SARS and 774 deaths were recorded (CDC, 2017). Lasting less than one year. Wilder-Smith (2006) characterised SARS and travel as intricately interlinked as travellers belonged to those primarily affected in the early stages of the outbreak, becoming transmitters of the disease, and travel and tourism themselves became the victims. In 2008, the global economic crisis hit all business industries. In 2013 and 2015, variations of the previously-mentioned SARS and MERS appeared but did not become pandemics possibly because no second-waves were recorded which resulted in a quick recovery (Rimmer, 2020). Nevertheless, Begley (2013) noted presciently that the next pandemic would trigger a global recession. The past crises resulted in a reduction in airline capacity and a quick slowdown and slow recovery (Harvey and Turnbull, 2002, 2010).



**Figure 4.** Impact of Historical Events on World Passenger traffic (Source: IATA, 2020)



## Chapter 4

### The Appearance and Rapid Spread of the Covid-19 Pandemic

In December 2019, the first case of COVID-19 was reported. The cause was a new coronavirus later-named SARS-CoV-2 which is a highly infectious disease (WHO, 2022). On March 11, 2020, the WHO director-general declared the global Covid-19 pandemic (WHO, 2020a). The particular virus caused illness to human beings and is spread through droplets or virus particles of the nose and mouth as an infected person breathes, talks, sneezes or coughs (Johns Hopkins Medicine, 2022). The release of these particles takes place in just a few seconds hence why mask-wearing, hand hygiene and physical distancing are essential to preventing COVID-19 (Johns Hopkins Medicine, 2022). The symptoms include tiredness, fever, dry cough, nasal congestion, loss of smell and taste, headaches and muscle aches. However, in more severe cases, patients may also experience chest pain and difficulty breathing potentially resulting in pneumonia or death at any age (New Coronavirus Disease, 2020; WHO, 2022). The older population as well as those with underlying medical conditions are more likely to develop serious illnesses. The severity of the symptoms had raised scientists' attention from the very beginning (WHO, 2022).

The World Health Organization (2022) has reported 510 million confirmed cases and almost 6 million deaths from Covid-19. Europe has the largest number of confirmed Covid-19 cases reaching 214million as of April 29th, followed by the US (WHO, 2022).

Governments have applied everyday life prophylaxis policies such as social distancing of 2 metres and the use of mandatory personal protective masks which were administered by national Police. Also, more enhanced mitigating measures were applied too. Some of these were; working from home instead of physical presence, distance learning for primary and secondary education as well as colleges and universities, mandatory testing and vaccination schemes to attend school/work or visit shops and restaurants.

In the last century, various pandemics had occurred but none has resulted in such an unprecedented crisis as Covid-19 did.

## 4.1 Air Travel Restrictions to Contain the Spread of the Pandemic

International travel has been restricted to slow down the spread of coronavirus and protect the health and well-being of all European passengers (EC, 2022). Italy, Spain, France, the United Kingdom and Germany have recorded the highest numbers of Covid-19 cases according to data by John Hopkins University (Cifuentes-Faura, 2020). Various organisations have been working closely to establish effective measures to contain the spread of the virus during air travel. The European Centre for Disease Prevention & Control (ECDC) and the EU Aviation Safety Agency (EASA) have issued a COVID-19 Aviation Health Safety Protocol to assure the safety of air travellers (EASA, 2022). Some of the basic measures are the use of PPE and social distancing of at least 1 metre since the virus is transmitted by droplets and small airborne particles. All passengers and persons being at the airport and on board were obligated to wear a face mask (EASA, 2021). Thermal screening was also one of the first measures implemented at the airports of arrival, but then thermal cameras were also installed at the entrance of airports too.

EU countries implemented a common approach to air travel within the EU. EU Digital COVID Certificates were created to facilitate free movement during the COVID-19 (EASA, 2021). Passengers who had completed their COVID-19 vaccination, obtained negative Covid-19 rapid or PCR tests, or carried recovery certificates were issued a valid EU Digital COVID Certificate which gave them clearance to get on board. A Passenger Locator Form (PLF) was requested upon arrival and was used by the Member States to collect data from cross-border travellers about their permanent and temporary addresses and emergency contact persons (EC, 2022).

Countries have been categorised based on epidemiological risk assessment and high infection rates to maintain connectivity around countries in a safe manner. the quarantine of passengers arriving from high-risk countries could be considered. The EU has created a traffic light system to categorise countries by green, low-risk, orange, medium-risk and red, high-risk (DW, 2022). Some countries also required a mandatory quarantine upon arrival. To ensure compliance with the regulations imposed, many EU countries such as Greece, Italy, Germany, Spain and the UK, issued fines of up to 3,000 euros for those who violate them (Cifuentes-Faura, 2020). Passengers were only allowed to travel into the EU on condition that, they are vaccinated or recovered, they are essential travellers or non-essential travellers from countries on the EU's list (European Council, 2022). Travellers coming from grey category countries may only enter upon special permission (CyprusFlightPass, 2022).

## Chapter 5

### Impact of the Pandemic on the European Aviation Industry

The outbreak of coronavirus disease (COVID-19) spread rapidly across the globe within a month (European Journal of Pharmacology, 2020). Since the spread of the virus, Europe has been the most affected continent and governments in cooperation with European organisations urged to imply restrictions and precautions against contracting the virus.

#### 5.1 PEST Analysis of Factors that Affected the European Aviation Industry During the Pandemic

To summarize and categorize COVID-19 effects in the European airline industry, the PEST analysis is used.

In terms of political and legal factors, both national and international matters are concerned. Since 2019, governments mandated interventions to control the spread of the Covid-19 virus. The measures include closing international and provincial borders, limiting domestic and overseas travel and imposing two-week quarantine of travellers at their own expense (Rimmer, 2020). This has also highly impacted the aviation industry with air traffic dropping by 66% in 2020 (Brechemier & Combe, 2020). The restrictions were subject to change according to the number of Covid-19 cases recorded. In Europe, under the auspices of the European Commission, governments have provided financial support to help airlines survive (Patel and Wilkes, 2020). Such examples are France which strengthened Air-France with 7 billion euros, Germany which offered 9 billion euros to Lufthansa and the UK which provided British Airways with 9.37 billion euros (Dimitrelou et al., 2020; Olaganathan, 2021). EasyJet and Ryanair also received government support which was however lower than FSCs, 600 million euros each.

To fight the pandemic crisis, governments have been closely cooperating with organizations like World Health Organization (WHO), International Civil Aviation Organization (ICAO), European Aviation Safety Agency (EASA), International Air Transport Association (IATA), Airports Council International Europe (ACI Europe) and Eurocontrol, to provide a healthy and sanitized environment for passengers and employees (Olaganathan, 2021). Some flag carriers receive state aid, while others were approved loans from the government. These bailouts provided to airlines differed among the agreements. Aegean Airlines has received state aid of €120m, Air Baltic has received €250m under a recapitalisation agreement and TAROM received €19.3m under a loan guarantee (Transport & Environment, 2021). Other airlines have

accepted more aggressive deals that involve a governmental share takeover. Lufthansa Group agreed on a €9bn deal in equity and loans in return for the government to take a 20% share in the airline (Transport & Environment, 2021). Ryanair, Easyjet and Wizzair have agreed on loans. Ryanair received 670million and Wizzair 344million, while Easyjet had an initial government loan similar to Ryanair's which was followed by another government-backed loan of £1,570million in January 2021 (Reuters, 2021) (See Appendix B).

Referring to the economic factors, during the pandemic airlines have been financially struggling due to the low passenger demand leading not only to low traffic but also changes in bookings, refunds and cancellations. ACI-EUROPE (2020) reported that passenger traffic across the European airport network stood at -98% in May 2020 and at -93% in June 2020, compared to the same period last year. Also, the rule of deeper cleaning and sanitisation as well as social distancing have created new operational costs (Olaganathan, 2021). As the financial stability of commercial aviation's revenues became history, many airlines have ceased operations.

In terms of social factors, the fear of infection and perceived risk has affected passengers' travel behaviour. The demand for travel to medium and high-risk destinations has fallen significantly (Muhammad et al., 2020). Travel restrictions have enhanced the drop in demand since travelling was not feasible to some destinations. During the pandemic, people did not only skip their vacation because of social distancing and travel restrictions but also spent years apart from their families and friends (BBC, 2021). This has caused severe disappointment and loneliness as stress has intensified, often causing negative effects on mental health (Olaganathan, 2021).

Also, because of the economic downturn of aviation-related organisations, many people lost their jobs. Professor David Blustein of the Boston college commented that "This is going to be a global pandemic of unemployment" (Fowler, 2020). According to the International Airport Review (2021), 191,000 European aviation workers have lost their jobs in 2020. In 2020, Air France cut almost 19% of its workforce (7,600 employees), KLM cut 15% of its workforce (5,000 employees) and Lufthansa Group cut 16% (22,000 employees) (Europarl, 2021). LCCs followed a similar path, with Easyjet cutting 30% of its workforce (4.500 jobs) and Ryanair cutting 15% of its workforce (3000 jobs) (Dimitrelou et al., 2020) (See Appendix D).

Technological adjustment and improvements were inevitable during Covid-19 when airlines and airports had focused on new technologies and restoring passenger confidence in air travel. Much of passenger processing is now done online. This includes online check-in, self-service border immigration machines and baggage drop areas to name a few. All newly designed measures regarding travelling are also

digitalised. Countries that require a passenger locator form in order to travel, have created mobile applications where this can be done and stored. Airports have installed automated thermal cameras to measure the temperature of every person that enters the airport. Air conditioning is suggested to be using only fresh air to eliminate contamination, thus airports had to advance their air conditioning systems.

## **5.2 Impact on the European Aviation Industry**

Due to government restrictions and precautions of contracting the virus, mass transport modes have been limited (Abu-Rayash & Dincer, 2020). This highly affected the aviation industry, since moving from country to country was restricted and air travel is mostly used for international transportation. National lockdowns and quarantine measures were established and many borders were closed, often leading to temporary airport closures (Magdalina & Bouzaima, 2021). In the months of April and May, only repatriation flights would operate. During these months, the biggest drop in passenger traffic and commercial movements during the pandemic period was recorded. Cyprus airports which only operate international routes serve as an illustrative example. The downturn of commercial movements for both Cypriot airports in April and May accounted for a total of -97.34% and -96.77% accordingly, and the change in passenger traffic accounted for -98.48% and -98.26% (Hermes Airports, 2022).

Even after the removal of border closure, travelling across Europe was very difficult since mobility restrictions, quarantine and negative COVID-19 test certificates measures were applied. Passengers from third countries had to obey a 14-day quarantine upon their arrival even after loosening border restrictions. EU passengers also had a few days' quarantine obligations as well as multiple testing before after their arrival. PCR testing which was obligatory at the time was much more expensive at the start of the pandemic. Thus, travelling for leisure purposes was unfavourable not only because of the risk of the virus contamination but also because it was time-consuming and costly. Travelling for educational or work-related purposes was also held back since e-learning and teleworking were established for most organisations. Distance learning and working from home have remained current in 2022. Hence, the pandemic did not only result in mobility restrictions but also in behavioural changes to avoid social and business interactions or unnecessary trips (Christidis et al., 2021).

Europe's leisure market has been largely affected by the pandemic since the continent consists of various coastal tourism destinations including islands. Malta has been among the hardest-hit destinations having experienced a -80% drop in overnight stays. Second on the list is Spain whose tourism has dropped by

78%. Greece and Portugal have recorded similar numbers of tourism decline accounting for approximately -70% (schengenvisa.info, 2021).

In 2020, industry revenues totalled \$328 billion, around 40 percent of the previous year's, taking aviation back 20 years, as it was in 2000 (McKinsey & Company, 2021). The overall reduction of air passengers, both international and domestic, ranged from 57% to 61% in 2020 compared to 2019, leading airlines to decrease their flight capacity to 90% (ICAO, 2020; IATA, 2020). In past aviation crises that led to financial downturns, the industry has proven to take years to rebound (Franke and John, 2011). The International Air Transport Association (2020) warned that passenger demand will not recover to prior Covid-19 levels until 2024.

### 5.3 Advantages of LCCs over FSCs in the Pandemic World

Disruptions caused by the pandemic have enlarged the gap between successful and less successful business models (Franke and John, 2011). An analysis of various factors concerning low-cost and full-service carriers is presented below;

#### 5.3.1 Passenger traffic

When the first travel restrictive measures to fight the pandemic were applied in March 2020, Europe experienced a drop of -73% in passenger traffic which was the largest drop ever recorded. Countries highly dependent on tourism such as Malta and Cyprus were some of the hardest-hit, experiencing air traffic drops of -76% and -79% compared to the previous year (Eurostat, 2021). For full-service carriers, the drop reached -90% at the peak of the pandemic, while LCCs experienced a downturn of 97% in April 2020 (IATA, 2020). Even though airlines lost similar amounts of traffic, Ryanair and EasyJet have outperformed the largest network carriers in terms of yearly passenger traffic. For instance, both Ryanair and Lufthansa lost approximately 75% of their traffic but Ryanair still outperformed Lufthansa by over 15 million passengers in 2020 (schengenvisa.info, 2021). The share of intra-European traffic in 2019 was; Ryanair 19%, Lufthansa 14%, British Airways 13%, EasyJet 11%, Air France/KLM 8%, others 35% (Brechemier and Combe 2020). In 2020, Ryanair remained on the top of the list and EasyJet outperformed Lufthansa and IAG (See Figure 5).

| Airline                   | Passenger Traffic in millions (2020) |
|---------------------------|--------------------------------------|
| Ryanair (Ireland)         | 51,7                                 |
| EasyJet (UK)              | 50,8                                 |
| Lufthansa Group (Germany) | 36.4                                 |

|  |      |
|--|------|
| Air France-KLM (France)                  | 34   |
| IAG (UK)                                 | 31.3 |
| Aeroflot (Russia)                        | 30.2 |
| Turkish Airlines (Turkey)                | 27.9 |
| <b>Wizzair (Hungary)</b>                 | 16.9 |
| <b>Turkish Pegasus Airlines (Turkey)</b> | 14.7 |
| S7 Airlines (Russia)                     | 12.3 |

**Figure 5.** European Airlines with the Highest Passenger Numbers in 2020<sup>1</sup>

At the start of 2021, European traffic began recording an unfavourable figure of -64% of 2019 flight levels, with 9,241 average daily flights but closed the year with traffic at -22% with 20,028 average daily flights (Eurocontrol, 2022). Following June 2021, Wizzair and Ryanair reached 75% of passengers carried in 2019, while other LCCs like EasyJet and Norwegian hardly reached half of their 2019 traffic during season peaks. Lufthansa, Air France/KLM and the IAG Group followed the path of EasyJet and Norwegian, managing to recover up to 50% of their 2019 traffic. Still, FSCs with strong domestic markets like the one of Aeroflot recovered up to 75% of their 2019 traffic (See Appendix C).

In March 2022, total traffic reached 76% of 2019 levels (Eurocontrol, 2022). Eurocontrol (2022) has predicted three possible scenarios regarding the traffic evolution in Europe by the end of year 2022. The best-case scenario expects air traffic to get to 96% of 2019 levels, the average scenario expects reaching 90% of 2019 levels and the worst-case scenario expects 82% of 2019 levels. ULCCs such as Ryanair and Wizzair have already seen the best-case scenario happening. In March and April 2022, Ryanair and Wizzair reported higher passenger numbers than those in the equivalent month of 2019 (FlightGlobal, 2022). Meanwhile, Lufthansa reported half of 2019 passengers in the first quarter of 2022, far behind the worst-case scenario (Lufthansa, 2022).

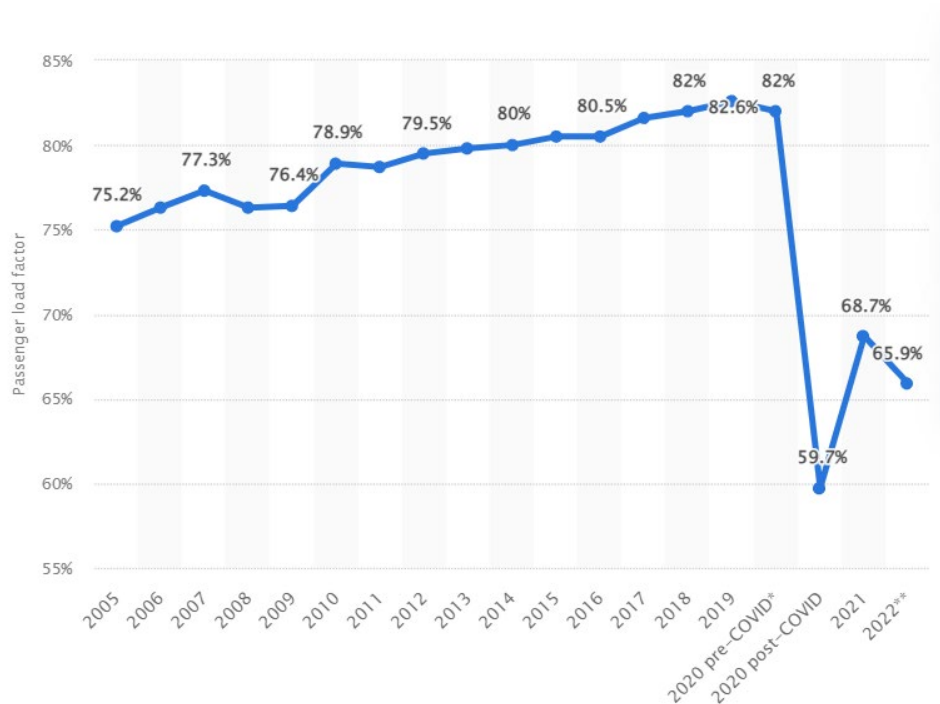
### 5.3.2 Load Factor

Passenger load factor is often used as a proxy for service competition (Good et al. 1995). The load factor is a measure of how much of an airline's passenger carrying capacity has been utilized expressed as a percentage (Mazareanu, 2021). It is calculated by dividing the revenue passenger kilometres (RPK), which is the total number of kilometres flown by passengers, by the available seat kilometres (ASK),

<sup>1</sup> Data source: schengennisainfo, 2021.

which is the total number of kilometres flown for every seat in an aircraft. A high passenger load factor means that there are fewer empty seats on each aircraft which is an important driver of the airlines' financial performance (Caves et al. 1981, 1983; IATA, 2020; Mazareanu, 2021).

During the pandemic, load factor levels sunk due to the low demand, possessing another threat to airlines' profitability (See Figure 6). In addition to that, governments imposed restrictions on social distancing on board which was highly unfavourable for airlines since this could reduce the available seat capacity by 33-50% (IATA, 2020). In practice, this means that in a typical 3-3 seat configuration aircraft that is used by both FSCs and LCCs, the middle seat on both sides of the aisle would be left empty. In doing so, the load factor would decrease to 62% on average while based on a sample of 122 airlines, a load factor of 77% is needed to break even (IATA, 2020). Breakeven Load Factor is the average percentage of seats that must be filled on an average flight at current average fares for the airline's passenger revenue to break even with the airline's operating expenses (Bureau of Transportation Statistics, 2012). According to IATA, European airlines' break-even load factor is estimated at 71.9% for 2021. Thus, very few airlines could break even at load factors below 62%.



**Figure 6.** Passenger Load Factor of Commercial Airlines Worldwide from 2005 to 2022 (Source: Statista, 2022)

For LCCs, load factor is very critical. These airlines offer cheaper fares than FSCs, thus it is imperative to maintain high load factor levels to survive (Pande, 2021). In 2019, Ryanair's load factor ranged from 91%-97%, most months accounting for 96%-97%, meaning that its aircraft were flying almost full. In 2020, Ryanair's load factor fell to 0% in times of strict border closure and accounted for approximately 70% in



the months following (Ryanair, 2021). However, in a short time, Ryanair managed to increase the load factor to 80% in 2021 and 90% in early 2022 (Ryanair, 2022). Similarly, Wizzair had a load factor of 93% on average in 2019 which dropped to 70% in 2020. In 2021, the load factor remained at 71%, while in early 2022 it reached 85% (Wizzair, 2022). In other words, these airlines have exceeded the break even point and have reported to operate profitably.

FSCs had a lower load factor than LCCs in the pre-Covid era. Lufthansa had a load factor of 82% in 2019 dropping to 56% in 2020 and 2021, while it reached 65% in the first quarter of 2022. Similarly, Air France/KLM had 87,5% on average in 2019 falling to 78% in 2020. 2021 found Air France/KLM load factor at levels as low as 40% but this figure grew to 74% in the first quarter of 2022 (Air France/KLM, 2022). The IAG Group followed a similar pattern to Air France/KLM. On the other hand, Aeroflot has almost returned to its pre-Covid numbers with load factor in 2019 being 82%, 68,8% in 2020 and 80% in 2021. Aeroflot makes an exception since it is highly dependent on its domestic market. On average, large LCCs have returned to pre-covid load factor levels while FSCs are going through a slower recovery, most having similar load factors in 2020 and 2021.

### **5.3.3 Network**

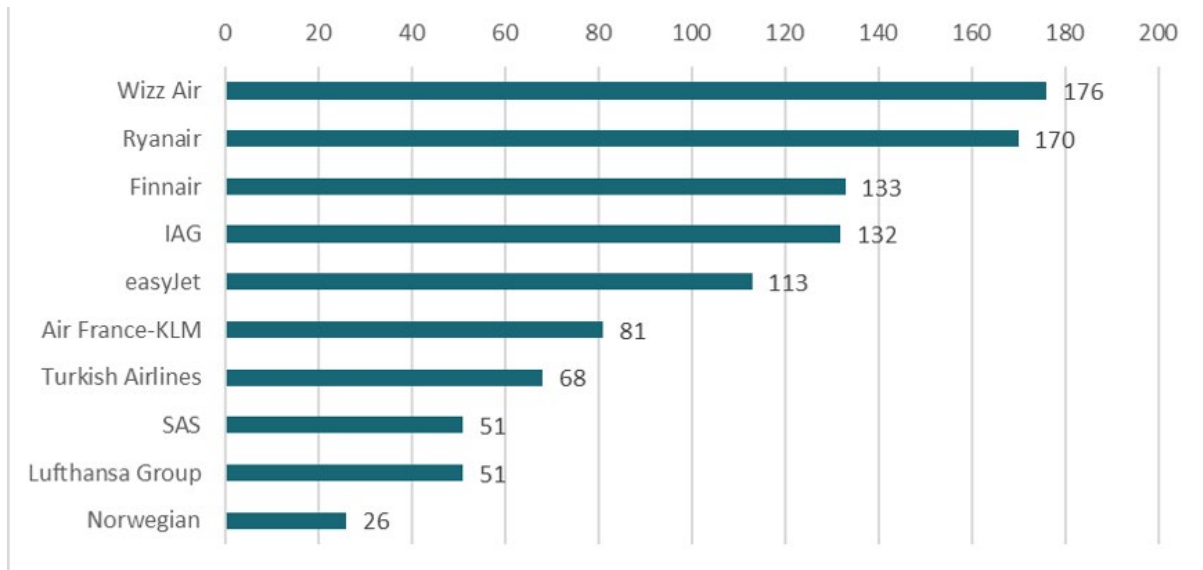
The load factor is also an indicator of route network success. Both FSCs and LCCs operate large flight networks with LCCs concentrating on all over Europe, while FSCs offer flights to other continents relying on a hub and spoke network via connecting flights. The volume of connecting passengers has been more affected than direct traffic (Europarl, 2021). In August 2019, for example, a passenger arriving in Frankfurt could connect to around 35 flights within a connecting window of one to four hours, in August 2020, the possible connections fell to just 11 (Bouwer et al., 2020). Naturally, passengers have shown a stronger preference for nonstop travel, not only to avoid the risk of Covid-19 contamination through fewer touchpoints and less time spent exposed to potential risk in airports but also because there is increased complexity in travel restrictions and quarantine rules (Bouwer et al., 2020; Lamb et al., 2020).

Nevertheless, the hub-and-spoke network in large domestic markets has not been largely affected (Europarl, 2021). An example is the advanced domestic network as the one of Russia which has not been largely disrupted as minor national travel restrictions were applied. Russia is the largest country in the world covering a territory of 17,125,191 square kilometres where air travel is popular for national movements. In 2019, Aeroflot carried 73.1 million passengers on domestic flights, which was 49.6% of the total passenger traffic (Aeroflot, 2022). Passenger traffic and load factor for domestic travel of the Aeroflot Group have not experienced extreme disruptions as they did for international travel.

While FSCs are struggling with getting passengers back on their international hub and spoke networks, LCCs have benefited from their point-to-point network and short-haul flights which are more attractive to leisure passengers given ongoing travel restrictions and uncertainty over the pandemic (CNBC, 2021). Owing to their business model, LCCs tend to be in a more favourable position during difficult times. In 2002 and 2003, Ryanair and EasyJet were able to win around 22 million new passengers, at a time of a slight overall market decline (Franke and John, 2011). LCCs might also gain share in the business travel sector since they have been held back because of the tight financial position of organisations. According to a GlobalData poll, 43% of respondents said their business has cut back significantly on its corporate travel budget (Airport Technology, 2021). This may lead organisations to find lower-fare trips for their employees. In other words, turn to low-cost carriers.

#### **5.3.4 Liquidity**

Such large disruptions in operations have a severe financial impact on airlines. Some did not manage to survive at all, during the Covid-19 period, four European airlines were restricted or shut; Alitalia, Flybe, German Airways & Germanwings (Dube et al. 2021). The advantage of the LCCs here is that they entered the COVID-19 crisis in a much better financial position than FSCs, with more favourable balance sheets and higher cash reserves (Jia, 2020). Liquidity is a measure of a company's ability to pay its short-term obligations or liabilities, the higher the liquidity, the healthier the company's finances (Netsuite, 2020). On the graph below, it is perceptible that LCCs have higher liquidity levels than most FCS. High liquidity, cash and cash equivalents give greater flexibility to these LCCs to survive during difficult times and not having to engage in the rescue financings that FSCs did. The former CEO of British Airways Alex Cruz (2021) commented that the general construct of the ultra-low-cost carriers gives them a huge advantage from a cash management perspective and certainly going through almost any shape of the recovery. According to CAPA (2020), Wizzair could hold, without recourse to borrowing or asset sales, for 176 days, Ryanair for 170 days, while Air France-KLM for 81 days and Lufthansa for only 51 days (Brechemier & Combe, 2020) (See Figure 7).



**Figure 7.** Leading European Airlines Liquidity equivalent days of 2019 revenue (Source: CAPA, 2020)

Nevertheless, not all large LCCs are performing well. Norwegian, for example, is Europe's third lowest-cost airline in terms of passenger numbers. To compare with Ryanair's liquidity, according to Roland Berger's estimates, Norwegian had a cash position at the beginning of 2020 that would enable it to go less than a month without any activity. The airline has recorded losses for several years and is heavily indebted, its debt reached 3 billion euros at the end of 2018, for a turnover of 4.3 billion euros in 2019 (Brechemier & Combe, 2020). The key difference from Ryanair, Wizzair and Easyjet is that Norwegian operates also in the long-haul market. During the Covid-19 crisis, Norwegian had to cancel 85% of its flights and all of its flights to North America (Brechemier & Combe, 2020).

|                    | 31 Dec. 2018           | 31 Dec. 2019 | 15 Apr. 2020 | Evolution between Dec. 2019 and October 2020 | Evolution between 2018 and 2019 |
|--------------------|------------------------|--------------|--------------|--|---------------------------------|
|                    | (in billions of euros) |              |              | (in %)                                       |                                 |
| AIRFRANCEKLM GROUP | 4.1                    | 4.2          | 1.4          | - 67   | + 5                             |
| BRITISH AIRWAYS    | 13.6                   | 14.6         | 6.0          | - 59   | + 7                             |
| Lufthansa          | 9.4                    | 7.8          | 5.1          | - 35   | - 17                            |
| easyJet            | 4.9                    | 6.6          | 2.7          | - 59   | + 36                            |
| RYANAIR            | 12.2                   | 15.8         | 14.7         | - 7  | + 30                            |
| WIZZ               | 2.3                    | 3.3          | 3.3          | - 2  | + 48                            |

**Figure 8.** Evolution of market capitalisation during Covid-19 (Source: R. Berger, 2020)

### 5.4.5 Cost-strategy

The success of LCCs so far is based on the cost strategy. Operating costs are a major challenge to airlines' financial performance. As airlines have reduced capacity in response to low travel demand, there are fewer seat kilometres to spread the costs over, and consecutively unit costs (CASK) have risen (Scope Ratings, 2021). Historically, Ryanair and Wizzair have the lowest CASK followed by EasyJet, Aeroflot, British Airways and Norwegian Air, while the highest CASK in Europe is the one of Lufthansa, Air France/KLM and IAG in descending order (CAPA, 2014).

Cost-cutting measures and operational responsiveness help LCCs get through the crisis easier. LCCs are rapidly able to lower operating costs which allows them to make up for the ticket revenue loss and to cushion the travel demand decline in a better way than FSCs (Jia, 2020). Ryanair has the lowest costs out of all European LCCs (See Figure 9). Naturally, FSCs have higher costs than LCCs, the highest-cost European FSCs being Lufthansa and Air France-KLM (CAPA, 2016). Additionally, LCCs' costs are comprised mostly of variable costs, which depend on the company's output, often driven by jet fuel prices. While the main operating cost driver for FSCs are fixed costs, which remain the same regardless of the output, component with high operating leverage (Jia, 2020). In terms of LCCs, cost-cutting measures will allow pushing ticket prices to new lows and still break-even, leaving other carriers flying unprofitably if they choose to compete (Gardner, 2021).

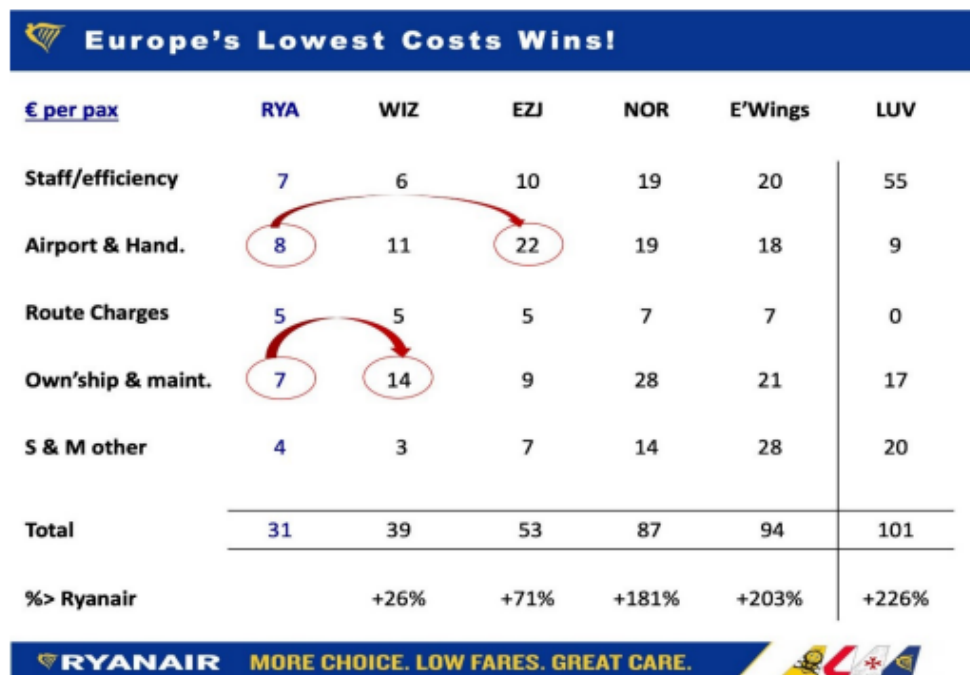
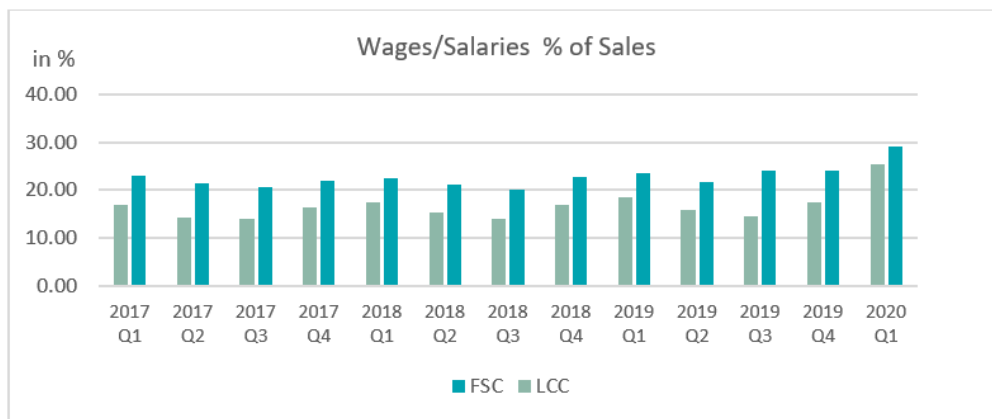
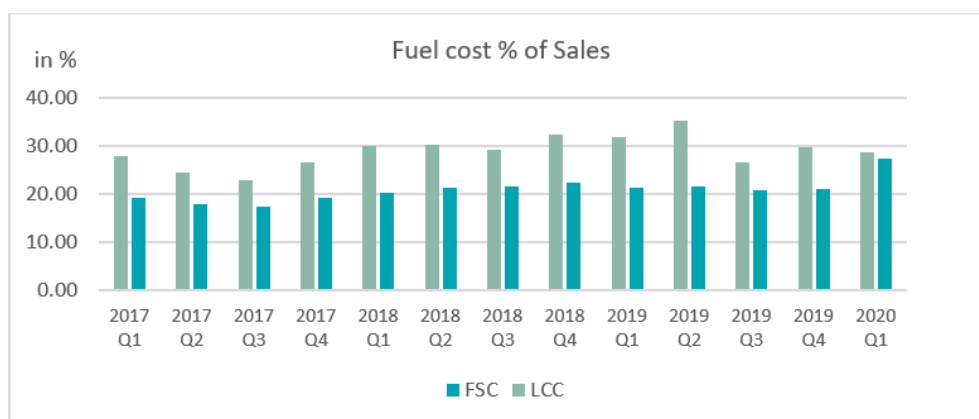


Figure 9. Ryanair's cost structure (Source: Ryanair)

In an attempt to cut costs, European airlines have cut on average 15%-20% jobs while some also lowered salaries by 20% (EPRS, 2020). Historically, labour costs have been higher for FSCs and fuel costs have been higher for LCCs as shown in the figures below;



**Figure 10.** Labour Costs of LCCs & FSCs from 2017 to 2020 (Source: Bloomberg, 2020)



**Figure 11.** Fuel Costs of LCCs & FSCs from 2017 to 2020 (Source: Bloomberg, 2020)

Lower costs provide the flexibility to LCCs to offer lower fares, giving them a competitive advantage over FSCs. European LCCs have offered lower fares during and after the pandemic in an effort to get tourists to fly and revitalise the demand. For example, a return flight from Thessaloniki to London in July 2022 costs €140 with Wizzair, while for the same dates it costs €310 with British Airways (Skyscanner, 2022). In other words, the FSC ticket costs twice as much as the LCC one. The low fares offered by LCCs better cater to the increased need for affordability in the post-pandemic period. Airlines that engaged in such pricing incentives are Ryanair and Wizzair which are the ones that have already recovered their traffic and load factor (CAPA, 2021).

### **5.3.6 Market Segmentation**

Previous events in aviation following the 9/11 attacks and the global financial crisis in 2008 have shown that leisure trips or visits to friends and family tend to rebound first while business travel takes the longest to recover (McKinsey & Company, 2021). Corporate trips that typically happened for national and international conferences and meetings have nowadays been replaced by teleconferences and online meetings. In other words, air travel has been replaced and is unlikely to recover soon since teleconferences can sometimes be more time-efficient and less costly. It is important to mention that business travel was not yet recovered from the financial crisis of 2008 when COVID-19 broke out in 2020 (McKinsey & Company, 2021). The slow recovery of business travel has a particular effect on network airlines that provide business class since these passengers are less price-sensitive than leisure passengers. For many network airlines, the business and first-class are the ones that generate profit which means that the absence of business bookings is crucial for the operations of the airline.

On the other hand, leisure travel and visiting family and friends cannot be substituted since physical presence is inevitable, hence why, this market rebounds first (Flecha, 2021). Besides the already existing markets, LCCs have created new demand through their flight network. They can be seen as a catalyst for the development of undeveloped tourism regions (Jones Lang Lasalle Hotels, 2006). Since the emergence of LCCs, secondary airports have revived, connecting regions that were inaccessible before and creating new demand. The concept of “city breaks” has also flourished through LCCs leisure, youth or “visiting friends and family” target. The travel market is now, in effect, a leisure market (Flecha, 2021). According to the European Low Fares Airline Association (ELFAA) study in 2004, 59% of low-cost air travel customers were new customers. According to OAG (2022), since 2019 European LCCs have gained 8% of the market share which outpaces all other regions. OAG (2022) suggests that ‘It is only a matter of time before low-cost airlines take their capacity share above 35% and beyond’.

### **5.3.7 Presence at Airports**

One of LCCs business model elements is the use of secondary and regional airports to save costs and offer lower fares. In the past twenty years, LCCs managed to take exclusive dominance in many secondary airports in Europe. Some examples are; Ciampino airport in Rome, Girona Costa-Brava in Barcelona and Charleroi in Brussels. In other secondary airports LCCs may have not completely taken away FSCs presence but still hold dominance. An example is Paphos airport in Cyprus where 70% of daily flights as of 21 April 2022 are operated by LCCs (Hermes Airports, 2022). In smaller airports where LCCs hold dominance, no direct competition with FSCs is observed thus LCCs are more flexible in their flight schedule.

During the pandemic, LCCs have also taken advantage of the space freed up in primary airports and hubs by expanding their network or creating new bases. The move to main airports aims to access higher yield passengers and larger volumes of demand (Jimenez & Suau-Sanchez, 2020). The increased presence at primary airports has been the case during the past years. Barcelona El-Prat had a 29% LCC presence in 2007 which grew to 69% in 2019. Similarly, Manchester airport had an LCC market share of 27.7% in 2013 which in 2019 was 44.5% (Jimenez & Suau-Sanchez, 2020). During the disastrous year of 2020, Wizzair enhanced into aggressive expansion with the launch of new airport bases with new routes taking up available slots. One of them is Larnaka International Airport (LCA), Cyprus' primary airport (anna.aero, 2020). During the pandemic, Wizzair stationed 3 aircraft at LCA and now serves a total of 37 destinations with approximately 10 daily flights (Wizzair, 2022). In the case of LCA, Ryanair also enhanced its presence in LCA by adding two new routes in 2022. In 2022, LCCs operate 30% of daily flights at LCA airport (Hermes Airports, 2022). Apart from Cyprus, Ryanair has launched various new routes and opened new bases across Europe during 2019-2020 including Eastern European destinations such as Poland and Croatia (Brechemier & Comber, 2020). In 2019, Ryanair has strongly enhanced its presence on French territory by opening bases in Bordeaux and Marseille, with a total of 50 routes (Brechemier & Comber, 2020). Domestic, Bordeaux-Marseille routes, created competition for Air France domestic traffic. The additional market shares will be detrimental to historical players such as Lufthansa (routes with Lyon or Toulouse) or British Airways (routes with Lyon or Nice) (Brechemier & Comber, 2020).

### **5.3.8 Fleet**

The year 2020 has not been favourable for either FSCs or LCCs, but the months between March and May 2020 were the hardest. Most European airlines grounded more than 90% of their fleet during these months referring to both FSCs and LCCs (Aljazeera, 2020). LCCs were not an exception. In spring 2020, LCCs grounded almost all of their fleet due to border closure, travel restrictions and zero demand. In 2020 FY, Ryanair, EasyJet and Wizzair lost 59%, 67% and 47% of their flights accordingly, while in 2021 they lost 43%, 64% and 34% (Eurocontrol, 2022). FSCs also grounded almost all fleet, except for Lufthansa, Air France/KLM and Swiss which maintained some European connectivity on key routes during March and April 2020 (Budd et al., 2020). Lufthansa Airlines lost over two-thirds of its flights, Turkish Airlines, the Aeroflot Group and SAS lost over half their flights and Air France lost two-fifths of its flights (EUROCONTROL, 2020; Rimmer, 2020). Consecutively, both FSCs and LCCs witnessed a similar reduction of flights in 2020. However, Ryanair boosted its traffic rapidly after spring 2020, resulting in keeping all fleet flying (See Figure 12).

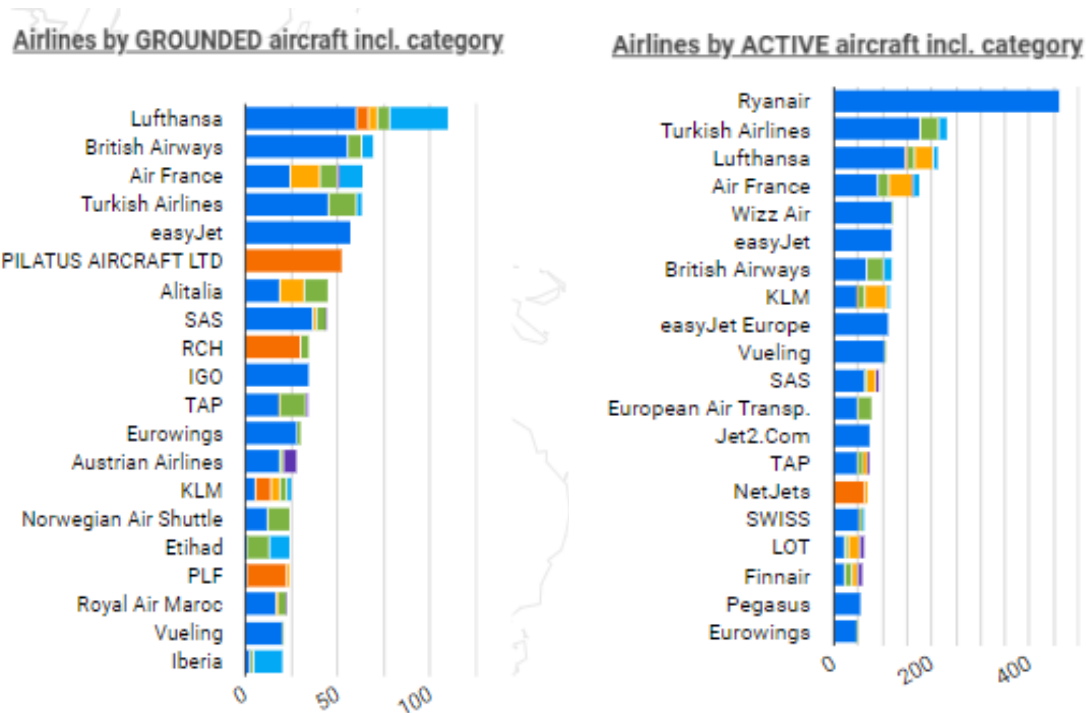


Figure 12. European Airlines Active Fleet 2020 (Source: EUROCONTROL, 2021)

As a basis of economics, airline fares are set based on a supply curve and a demand curve (Walton, 2020). Since the demand was weak, there was excess capacity and fuel prices were low for the time, airlines tended to set lower prices to persuade travellers to get on board (IATA, 2020). On the other side, unit costs increased because of social distancing and sanitisation. According to IATA, narrow-body aircraft have the largest load factor upon social distancing with an average of 67%, while wide-body aircraft can achieve a maximum of 60%. This leads to cost increases accounting for 50% for narrow-body aircraft and 67% for wide-body ones (IATA, 2020). According to IATA (2020), out of a sample of 122 airlines, only 4 could break even at load factors below 62%. Meaning that with social distancing, it is difficult for wide-body aircraft operators to break even, thus these airlines needed to increase fare prices. Wide-body aircraft are operated by FSCs on medium to long-haul flights, while short to medium-haul flights utilise narrow-body aircraft. LCCs have a single-type fleet of narrow-body aircraft which means their operations are more viable. An example of cost analysis between FSCs and LCCs based on a narrow-body aircraft is illustrated in the graph below;



| Line item                         |                               | Typical full-service carrier                     | Typical low-cost carrier                         |
|-----------------------------------|-------------------------------|--|--|
|                                   |                               | 156 seats<br>1,250-km sector;<br>65% load factor | 180 seats<br>1,250-km sector;<br>80% load factor |
| Aircraft                          | \$/month                      | \$340,000  | \$195,000  |
|                                   | BH <sup>1</sup> /day          | 8  | 12   |
| Fuel                              | Gallons/BH                    | 820  | 800  |
|                                   | \$/gallon                     | \$1.40   | \$1.40   |
| Maintenance                       | \$/BH                         | \$700  | \$600  |
| Cockpit crew                      | Annual salary                 | \$120,000  | \$100,000  |
|                                   | Benefit load                  | 35%  | 25%  |
|                                   | Annual training               | \$15,000   | \$15,000   |
|                                   | BH/month                      | 60   | 65   |
| Cabin crew                        | Annual salary                 | \$50,000   | \$40,000   |
|                                   | Benefit load                  | 25%  | 20%  |
|                                   | Cabin crew                    | 6  | 4  |
|                                   | BH/month                      | 60   | 65   |
| HOTAC <sup>2</sup>                | \$/crew member                | \$150  | -  |
| Airport/nav                       | \$/turn, aircraft             | \$2,500  | \$2,000  |
|                                   | \$/leg, Ldg/nav <sup>3</sup>  | \$750  | \$500  |
|                                   | \$/pax, <sup>4</sup> handling | \$5  | \$3.50   |
| Onboard                           | \$/pax                        | \$5  | \$1  |
| S&D <sup>5</sup>                  | \$/pax                        | \$15   | \$5  |
| G&A <sup>6</sup>                  | \$/pax                        | \$10   | \$5  |
| Cost per available seat kilometer |                               | 8.19¢  | 4.71¢  |

<sup>1</sup> Block hour.

<sup>2</sup> Hotel accommodations.

<sup>3</sup> Landing and navigation.

<sup>4</sup> Passenger.

<sup>5</sup> Sales and distribution.

<sup>6</sup> General and administrative.

**Figure 13.** An example of cost analysis between FSCs and LCCs based on a narrow-body aircraft (Source: Saxon & Weber, 2017)

The reduction in passenger demand and capacity reduction, among others, froze unessential travel which led to the grounding of jumbo jet aircraft (APEX, 2020). This relates to full-service carriers who operate jets like the A380 and B747 and highly rely on the business segment which brings the most profit. This explains why FSCs grounded most of their fleet to survive the pandemic. In fact, FSCs did not only ground some of their fleet to reduce costs but also got rid of some to avoid maintenance costs. British Airways and KLM who owned ageing Boeing 747 jumbo jets brought forward their retirement has been due to the pandemic (Rimmer, 2020). British Airways has retired its Boeing 747s four years ahead of schedule

(Slutsken, 2020). Others, like the Portuguese charter airline, Hi-Fly, Austrian Airlines and British Airways have reconfigured their jumbo A380 and B-777 aircraft into all-cargo carriers. Whereby many European airlines have removed seat capacity from their wide-body aircraft to increase cargo load capacity and offset revenue losses, these are; Swiss International Airlines, Aer Lingus, Delta, Finnair, Icelandair, Lufthansa & SAS (McWhirter, 2020). These actions of fleet reconstruction show the tendency to use smaller, more agile and easier-to-fill aircraft just like the ones that LCCs operate (Rimmer, 2020).

### 5.3.9 Stock Prices

A company's stock price is the clearest measure of market expectations about its performance and the company's value (Rappaport, 1987). Stock price refers to the current price that a share of stock is trading for on the market (CFI, 2022). Naturally, the severe disruptions caused by the pandemic have affected airlines' financial position and in turn their stock prices. Liquidity and profitability in the long-term positively influence stock prices, while operating and financial leverage negatively influence stock prices (Alici & Sevil, 2020).

Only large European airlines are listed on the stock exchange, among them are the ones analysed in this study; Ryanair, Wizzair, Norwegian Air Shuttle, EasyJet, Aeroflot, Lufthansa, IAG and Air France/KLM. As discussed in the Liquidity subchapter, LCCs entered the COVID-19 pandemic with higher cash reserves which helped them survive the crisis, while FSCs had to engage in the rescue financings to do so. Liquidity has an impact on stock prices. Stock prices of LCCs such as Ryanair and Wizzair are trading higher comparing to their pre-pandemic levels, while FSCs such as Lufthansa, IAG and Air France/KLM are struggling with lower stock prices than before (Google Finance, 2022) (See Figure 14). EasyJet which is also an LCC has not yet reached its pre-pandemic levels, while Norwegian Air Shuttle stock prices have remarkably fallen.

| All prices in €       | 06/01/2020 | 02/04/2020 | 10/02/2022 |
|-----------------------|------------|------------|------------|
| <b>Ryanair</b>        | 14.53      | 8.57       | 18.27      |
| <b>Air France/KLM</b> | 9.35       | 4.91       | 4.5        |
| <b>Norwegian</b>      | 182.26     | 41.46      | 1.32       |
| <b>Lufthansa</b>      | 10.95      | 5.69       | 7.65       |
| <b>Wizzair</b>        | 4,511      | 2,578.42   | 5,804.54   |
| <b>IAG</b>            | 482.08     | 156.87     | 212.3      |
| <b>EasyJet</b>        | 1,358.51   | 499.24     | 866.2      |

|                 |      |      |      |
|-----------------|------|------|------|
| <b>Aeroflot</b> | 1.13 | 0.75 | 0.77 |
|-----------------|------|------|------|

**Figure 14.** Changes in Stock Prices of European Airlines<sup>2</sup>

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<sup>2</sup> Data source: Ryanair Investors Relations, 2022; Google Finance, 2022.

## Chapter 6

### Conclusion

The COVID-19 pandemic has caused severe disruptions and economic damage to the European airline industry. The aviation industry as a whole has historically been highly volatile and vulnerable to unprecedented events in the macro environment, but the outbreak of the Covid-19 pandemic has been “the worst crisis in the history of aviation” far ahead of the events of 09/11 (Air Transport Association, 2021). In an attempt to eliminate the spread of the virus, European governments imposed restrictions that included border closure and social distancing which led most airlines to ground their fleet. Airlines found themselves unprepared and several have ceased operations permanently as a result of the crisis.

The crisis' impact varied across different types of air travel. Travel restrictions have not largely affected domestic travel, especially in large domestic markets like Russia where Aeroflot, the flag-carrier, has almost reached pre-pandemic load factor and RPK. Moscow's airports, VKO, SVO & DME, were the busiest in Europe in 2020 and Russia's largest low-cost carrier, Pobeda, was the top third airline in Europe in terms of seats in 2020 with figures very close to Ryanair's ones (Jimenez & Suau-Sanchez, 2020). Long-haul, international travel has faced greater disruptions than short-haul since travelling across continents was highly restricted. The sharp drop in demand for long-haul flights led airlines to ground large aircraft and in some cases retire them permanently. Business travel is likely to recover slower since face-to-face meetings have been substituted by teleconferencing. Connecting traffic has also been more affected than point-to-point traffic due to the decrease in the long-haul market and the complexity of international travel restrictions. On the other hand, the short-haul, leisure-focused market was more prosperous since visiting friends and family could not be substituted and travel restrictions were more straightforward within the EU. Hence, some business models of the airline industry proved to be more resilient and better prepared to withstand the crisis.

The adaption to the new environment has enhanced the power of low-cost carriers and the weakening of the major full-service carriers which has already been the case for the last 20 years (Brechemier & Combe, 2020). Major European low-cost carriers entered the pandemic in a more favourable financial situation than most full-service carriers. The strong profitability of Ryanair and Wizzair followed by EasyJet, enabled them to overcome the liquidity crisis easier than FSCs and get through the challenging period by drawing on their own reserves. At the start of the pandemic, Wizzair and Ryanair had more than twice as much cash reserves as Air France-KLM and more than three times the cash reserves of Lufthansa Group. Also, Ryanair owned a fleet of more than 400 aircraft, meaning that more cash could be

easily made available. On the other hand, the largest European full-service carriers, Air France-KLM, Lufthansa and IAG Group, had to rely on the massive state aid received to survive the Covid-19 crisis which led them into higher debt and equity dilution.

The pandemic resulted in a financial crisis that required cost-cutting to survive and LCCs had the advantage of their competitive cost structure. The LCC cost model is based on variable costs rather than fixed costs in contrast to FSCs, thus they managed to cut costs easier than FSCs and maintain their cash reserves. The crisis caused by the pandemic has driven the need for structural changes and LCCs responded in a more agile manner through their organisational flexibility. Shorter planning cycles enabled LCCs to make quick changes to their networks based on the demand by spreading themselves across multiple European bases while FSCs were limited by scarce slots at single hub airports (Edmond, 2020). Charles Darwin 1809 once said that “it is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change”. The agility of LCCs operations enabled them to adapt and react to the rapidly changing landscape by looking for growth opportunities. Large LCCs such as Ryanair and Wizzair have been expanding into new markets during the pandemic, while FSCs cut capacity and routes.

At the most critical times, LCCs performed significantly worse than FSCs but despite the large drop in traffic, they continued to operate the largest number of flights as they did before the pandemic. In March 2022, the busiest airlines in Europe are; Ryanair (2,117 weekly flights), EasyJet (1,132 weekly flights), Turkish Airlines (849 weekly flights), Air France (836 weekly flights) and Lufthansa (808 weekly flights) (EUROCONTROL, 2022). During the Covid-19 pandemic, LCCs have proven to seek opportunities in the market by creating and revitalising the demand through their short distance, point-to-point network on their current and new routes. Wizzair CEO Jozsef Varadi commented that “For us, the recovery is going to be around a year, for the industry, two to three years” (Aviationweek.com, 2020). Airlines’ overall performance has been also reflected in their stock prices, which have proven that LCCs like Ryanair and Wizzair have already recovered from the crisis while FSCs are still below pre-pandemic levels.

## **6.1 Hypotheses**

There were three hypotheses set in this study. The first hypothesis is that the pandemic has had a negative impact on the air travel industry in Europe. The second hypothesis is that low-cost carriers’ operational structure is different from full-service carriers. The final hypothesis is that LCCs have outperformed FSCs during the pandemic. The analysis and findings supported all three hypotheses.

## **6.2 Limitations**

The key limitations to this research are related to the dynamic nature of the aviation industry which is highly volatile and the ongoing status of the Covid-19 pandemic. The Covid-19 pandemic is a recent phenomenon and limited academic research has been conducted so far on the crisis effect on the aviation industry. Also, the pandemic is still current and Europe's seat numbers are 36.3% below 2019 levels as of 31-Jan-2022 (CAPA, 2022), thus the complete impact of the pandemic on European airline models and future evolution is yet uncertain.

## **6.3 Recommendations on Future Research**

Future research on this topic might encounter further implications of the COVID-19 crisis for the aviation industry to provide a holistic understanding of the long-term pandemic impact and examine whether LCCs had led the recovery of the airline industry. Moreover, primary data from European airports may be used to compare commercial movements and passenger traffic of LCCs and FSCs prior and post-pandemic and draw practical conclusions.

## **6.4 Synopsis**

The Covid-19 pandemic has caused severe disruptions to the airline industry which none had anticipated. The rapid loss of traffic and profit generated a crisis in the industry. Historically, low-cost airlines have been more resilient to crises and this has proven to be the case during the pandemic. Large low-cost airlines such as Ryanair and Wizzair have already reached pre-pandemic levels of passenger traffic and load factor, having outperformed full-service carriers' performance through aggressive competition. However, the Covid-19 pandemic is not over yet and many expect that a full recovery of the aviation sector is unlikely to take place before 2024-2025 (Beuc, 2020; McKinsey, 2021; Eurocontrol, 2022; IATA, 2022; ACI-E, 2022). As the pandemic recedes, measures are lifted and air travel restarts, it will be clearer to examine the precise rebound of the airlines' performance post-pandemic.

## Appendices

### Appendix A

List of European Low-Cost Carriers (adjusted from ICAO list of European LCCs)

| Current list of LCCs in Europe (by ICAO) |                |                   |                  |
|--|----------------|-------------------|------------------|
| Name                                     | Country        | Status            | End of operation |
| Albawings                                | Albania        | Active            |                  |
| Atlasjet                                 | Turkey         | Bankruptcy        | 12/02/2020       |
| Blue Air                                 | Romania        | Active            |                  |
| Blue Panorama                            | Italy          | Suspended         | 26/10/2021       |
| Corendon Airlines                        | Turkey         | Active            |                  |
| EasyJet                                  | UK             | Active            |                  |
| Eurowings                                | Austria        | Active            |                  |
| Flybe                                    | UK             | Ceased operations | 04/03/2020       |
| Germanwings                              | Germany        | Ceased operations | 07/04/2020       |
| Helvetic Airways                         | Switzerland    | Active            |                  |
| Jet2.com                                 | UK             | Active            |                  |
| Norwegian Air Shuttle                    | Norway         | Active            |                  |
| Onur Air                                 | Turkey         | Active            |                  |
| Pegasus                                  | Turkey         | Active            |                  |
| Pobeda                                   | Russia         | Active            |                  |
| Ryanair                                  | Ireland        | Active            |                  |
| Smartwings                               | Czech Republic | Active            |                  |
| SunExpress                               | Turkey         | Active            |                  |
| Transavia                                | Netherlands    | Active            |                  |
| TUI Fly Belgium                          | Belgium        | Active            |                  |
| TUI Fly                                  | Germany        | Active            |                  |
| Volotea                                  | Spain          | Active            |                  |
| Vueling                                  | Spain          | Active            |                  |
| Wizz Air                                 | Hungary        | Active            |                  |
| WOW Air                                  | Iceland        | Ceased operations | 28/03/2019       |

(Data source: ICAO, 2022)

### Appendix B

Airline Bailout Tracker

The following airline bailout tracker was last updated on 09 April 2021.

| Airline | Country | Amount (€ million) | Status | Climate and dividend ban conditions |  |
|---------|---------|--------------------|--------|-------------------------------------|--|
|         |         |                    |        |                                     |  |

|  |                             |           |                         |  |  |
|--|-----------------------------|-----------|-------------------------|--|--|
| <b>Lufthansa Group - Lufthansa</b>         | Germany                     | 6840      | Agreed                  | No dividend  | Loan / Partial takeover                                |
| <b>Air France-KLM Group - Air France</b>   | France                      | 8000      | Agreed                  | No dividends until the recapitalisation have been reimbursed. No legally binding climate condition | Recapitalisation, hybrid instrument and loan guarantee |
| <b>Air France-KLM Group - KLM</b>          | The Netherlands             | 3400/1000 | Agreed/Under discussion | No condition   | Loan and loan guarantee                                |
| <b>TUI Group (Germany)</b>                 | Germany                     | 3526      | Agreed                  | No dividends   | Loan   |
| <b>IAG - British Airways</b>               | UK                          | 2553      | Agreed                  | No condition   | Loan   |
| <b>Lufthansa Group - SWISS / Edelweiss</b> | Switzerland                 | 1420      | Agreed                  | No dividend  | Loan   |
| <b>TAP</b>                                 | Portugal                    | 1200      | Agreed                  | No condition   | Loan   |
| <b>SAS</b>                                 | Sweden<br>Denmark<br>Norway | 1130      | Agreed                  | No condition   | Credit Guarantee                                       |
| <b>Finnair</b>                             | Finland                     | 1237/63   | Agreed/Under Discussion | No condition   | Credit guarantee, recapitalisation, loan               |
| <b>IAG - Iberia</b>                        | Spain                       | 750       | Agreed                  | No condition   | Loan   |
| <b>Easy Jet</b>                            | UK                          | 2240      | Agreed                  | No dividends   | Loan   |
| <b>Ryanair</b>                             | Ireland                     | 670       | Agreed                  | No condition   | Loan   |
| <b>Lot</b>                                 | Poland                      | 650       | Agreed                  | No condition   | Loan and recapitalisation                              |
| <b>Condor</b>                              | Germany                     | 550       | Agreed                  | No condition   | Loan   |
| <b>Lufthansa Group - Austrian Airlines</b> | Austria                     | 450       | Agreed                  | No dividends and manager boni. Climate conditions  | State aid and loan                                     |
| <b>Wizzair</b>                             | Hungary                     | 344       | Agreed                  | No condition   | Loan   |
| <b>All airlines operating in Sweden</b>    | Sweden                      | 318       | Agreed                  | No condition   | Loan Guarantee   |
| <b>Alitalia</b>                            | Italy                       | 297/3000  | Agreed/Under discussion | No condition   | State aid / Takeover                                   |
| <b>Lufthansa Group - Brussels Airlines</b> | Belgium                     | 290       | Agreed                  | No condition   | Loan   |
| <b>Norwegian Air Shuttle</b>               | Norway                      | 277       | Agreed                  | No condition   | Loan guarantee   |
| <b>IAG - Vueling</b>                       | Spain                       | 260       | Agreed                  | No condition   | Loan   |
| <b>Air Baltic</b>                          | Latvia                      | 250       | Agreed                  | No condition   | Recapitalisation                                       |
| <b>Corsair International</b>               | France                      | 141       | Agreed                  | No condition   | State aid  |
| <b>SATA Air Açores</b>                     | Portugal                    | 133       | Agreed                  | No condition   | Loan   |



|  |         |                |        |              |                  |
|--|---------|----------------|--------|--------------|------------------|
| <b>Wideroe and other small regional carriers in Norway</b> | Norway  | 121            | Agreed | No condition | Loan guarantee   |
| <b>Aegean Airlines</b>                                     | Greece  | 120            | Agreed | No condition | State aid        |
| <b>Blue Air</b>  | Romania | 62             | Agreed | No condition | Loan guarantee   |
| <b>Danish airlines and small regional airports</b>         | Denmark | 34.9           | Agreed | No condition | State aid        |
| <b>Nordica</b>   | Estonia | 30             | Agreed | No condition | Recapitalisation |
| <b>TAROM</b>   | Romania | 19.3           | Agreed | No condition | Loan guarantee   |
| <b>Croatia Airlines</b>                                    | Croatia | 11.7           | Agreed | No condition | State aid        |
| <b>Air Europa</b>  | Spain   | 475            | Agreed | No condition | To be determined |
| <b>TOTAL AGREED</b>  |         | <b>37799.9</b> |        |              |                  |
| <b>TOTAL UNDER DISCUSSION</b>                              |         | <b>4063</b>    |        |              |                  |
| <b>TOTAL AGREED &amp; UNDER DISCUSSION</b>                 |         | <b>41862.9</b> |        |              |                  |

(Data source: Transport & Environment, 2022)

## Appendix C

### Passengers Carried & Load Factor

#### C.1 Ryanair

|                  | Passengers (in millions) |        |        |        | Load factor |        |        |        |
|------------------|--------------------------|--------|--------|--------|-------------|--------|--------|--------|
|                  | FY2019                   | FY2020 | FY2021 | FY2022 | FY2019      | FY2020 | FY2021 | FY2022 |
| <b>December</b>  | 10.3                     | 11.2   | 1.9    | 9.5    | 95%         | 95%    | 73%    | 81%    |
| <b>November</b>  | 10.4                     | 11     | 2      | 10.2   | 96%         | 96%    | 62%    | 86%    |
| <b>October</b>   | 13.1                     | 13.8   | 4.1    | 11.3   | 96%         | 96%    | 73%    | 84%    |
| <b>September</b> | 13.1                     | 14.1   | 5.1    | 10.6   | 97%         | 96%    | 71%    | 81%    |
| <b>August</b>    | 13.8                     | 14.9   | 7      | 11.1   | 97%         | 97%    | 73%    | 82%    |
| <b>July</b>      | 13.1                     | 14.8   | 4.4    | 9.3    | 97%         | 97%    | 72%    | 80%    |
| <b>June</b>      | 12.6                     | 14.2   | 0.4    | 5.3    | 96%         | 97%    | 0%     | 72%    |
| <b>May</b>       | 12.5                     | 14.1   | 0.07   | 1.8    | 96%         | 96%    | 0%     | 79%    |
| <b>April</b>     | 12.3                     | 13.5   | 0.04   | 1      | 96%         | 96%    | 0%     | 67%    |
| <b>March</b>     | 10.9                     | 5.7    | 0.5    | 11.2   | 96%         | 91%    | 77%    | 87%    |
| <b>February</b>  | 9.6                      | 10.5   | 0.5    | 8.7    | 96%         | 96%    | 78%    | 86%    |
| <b>January</b>   | 10.3                     | 10.8   | 1.3    | 7      | 91%         | 92%    | 69%    | 79%    |

(Source: Ryanair website)

## C.2 Wizzair

|           | Passengers |           |           | Load factor |       |       |
|-----------|------------|-----------|-----------|-------------|-------|-------|
|           | 2019       | 2020      | 2021      | 2019        | 2020  | 2021  |
| December  | 3,317,762  | 665,722   | 2,638,331 | 89.4%       | 56.1% | 75.4% |
| November  | 2,974,812  | 456,487   | 2,171,581 | 92.8%       | 68.2% | 76.1% |
| October   | 3,711,445  | 1,146,227 | 2,977,286 | 95.3%       | 65.9% | 79.5% |
| September | 3,816,913  | 1,567,836 | 2,998,797 | 94.5%       | 64.6% | 78.4% |
| August    | 4,036,914  | 2,381,214 | 3,581,788 | 96.3%       | 70.9% | 83.6% |
| July      | 3,881,750  | 1,824,452 | 2,956,043 | 95.6%       | 60.5% | 78.5% |
| June      | 3,608,960  | 502,253   | 1,557,041 | 95.0%       | 52.2% | 64.0% |
| May       | 3,470,889  | 126,549   | 832,538   | 93.9%       | 61.1% | 66.1% |
| April     | 3,288,731  | 78,389    | 564,634   | 91.9%       | 74.7% | 59.2% |
| March     | 2,721,959  | 1,754,032 | 480,203   | 94.1%       | 92.0% | 62.5% |
| February  | 2,400,692  | 3,014,341 | 382,928   | 94.2%       | 93.8% | 69.8% |
| January   | 2,569,229  | 3,151,622 | 573,692   | 88.1%       | 90.2% | 61.0% |

(Source: Wizzair website)

## C.3 EasyJet

|           | Passengers |            |            | Load factor |       |         |
|-----------|------------|------------|------------|-------------|-------|---------|
|           | 2019       | 2020       | 2021       | 2019        | 2020  | 2021    |
| December  | 7,240,000  | 827,000    | 4,100,000* | 91,3%       | 61,6% | 63,7%** |
| November  | 6,165,000  | 322,000    |            | 90,8%       | 61,5% |         |
| October   | 8,787,000  | 1,708,000  |            | 91,6%       | 68,8% |         |
| September | 8,972,901  | 2,872,785  | 4,537,760  | 91,4%       | 71,6% | 78,5%   |
| August    | 9,578,600  | 4,312,805  | 5,126,083  | 94,3%       | 76,1% | 78,8%   |
| July      | 9,469,781  | 2,183,279  | 3,690,491  | 94,3%       | 83,9% | 74%     |
| June      | 9,000,000  | 38,600,000 | 1,591,000  | 93,3%       | 90,3% | 71,8%   |
| May       | 8,900,000  |            | 870,000    | 91,1%       |       | 68,1%   |
| April     | 8,000,000  |            | 524,000    | 90,7%       |       | 52,2%   |
| March     | 7,721,347  |            | 4,100,000* | 93,1%       |       | 63,7%** |
| February  | 6,498,267  |            |            | 91,5%       |       |         |
| January   | 5,838,198  |            |            | 86,5%       |       |         |

\*In 2021, half-year results were published for months Jan-Mar & Oct-Dec altogether)

(Source: EasyJet Traffic statistics)

## C.4 Norwegian Airlines

|           | Passengers |         |           | Load factor |       |       |
|-----------|------------|---------|-----------|-------------|-------|-------|
|           | 2019       | 2020    | 2021      | 2019        | 2020  | 2021  |
| December  | 2,255,109  | 129,664 | 931,917   | 83,5%       | 52,3% | 71,3% |
| November  | 2,283,821  | 124,481 | 1,005,380 | 83%         | 44,4% | 76,6% |
| October   | 3,118,722  | 319,477 | 1,203,205 | 87,1%       | 55,3% | 82,7% |
| September | 3,310,424  | 319,370 | 977,719   | 89,9%       | 52,8% | 72,4% |

|                 |           |           |         |       |       |       |
|-----------------|-----------|-----------|---------|-------|-------|-------|
| <b>August</b>   | 3,503,913 | 313,316   | 790,220 | 90%   | 62,1% | 72,6% |
| <b>July</b>     | 3,714,432 | N/A       | 695,830 | 93,5% | N/A   | 74,4% |
| <b>June</b>     | 3,475,337 | N/A       | 225,509 | 91,5% | N/A   | 62,9% |
| <b>May</b>      | 3,362,413 | N/A       | 96,909  | 86,1% | N/A   | 54,8% |
| <b>April</b>    | 3,137,608 | N/A       | 59,431  | 86,1% | N/A   | 42,2% |
| <b>March</b>    | 2,961,840 | 1,153,283 | 71,399  | 85,4% | 71,6% | 42,7% |
| <b>February</b> | 2,517,335 | 1,955,585 | 61,374  | 81,5% | 81,7% | 38,1% |
| <b>January</b>  | 2,638,958 | 1,974,606 | 74,224  | 76,1% | 80,9% | 35,9% |

(Source: Norwegian traffic statistics)

## C.5 Lufthansa Group

|                  | Passengers (in thousands) |       |       | Load factor |       |       |
|------------------|---------------------------|-------|-------|-------------|-------|-------|
|                  | 2019                      | 2020  | 2021  | 2019        | 2020  | 2021  |
| <b>December</b>  | 9,861                     | 1,237 | 4,664 | 81%         | 49%   | 65,4% |
| <b>November</b>  | 10,351                    | 950   | 5,360 | 80.2%       | 37.3% | 63,9% |
| <b>October</b>   | 13,346                    | 2,011 | 7,261 | 82.8%       | 42.2% | 66,9% |
| <b>September</b> | 13,954                    | 2,512 | 6,615 | 84.7%       | 46,1% | 66,6% |
| <b>August</b>    | 14,143                    | 3,265 | 6,994 | 87.2%       | 54.5% | 72.4% |
| <b>July</b>      | 14,595                    | 2,905 | 6,015 | 86.9%       | 59,1% | 67.4% |
| <b>June</b>      | 13,808                    | 1,066 | 3,328 | 85.2%       | 57.7% | 58.4% |
| <b>May</b>       | 13,216                    | 412   | 2,201 | 81.1%       | 62.4% | 48.6% |
| <b>April</b>     | 12,533                    | 241   | 1,446 | 83.3%       | 47.5% | 44.4% |
| <b>March</b>     | 11,274                    | 3,914 | 1,147 | 80.5%       | 61.1% | 45.2% |
| <b>February</b>  | 9,045                     | 8,799 | 788   | 76.5%       | 75.3% | 42.1% |
| <b>January</b>   | 9,064                     | 9,043 | 1,108 | 76.2%       | 77.9% | 47%   |

(Source: Lufthansa monthly reports)

## C.6 Air France/KLM

|                  | Passengers (in thousands) |       |        | Load factor |       |       |
|------------------|---------------------------|-------|--------|-------------|-------|-------|
|                  | 2019                      | 2020  | 2021   | 2019        | 2020  | 2021  |
| <b>December</b>  | 6,878                     | 5,211 | 12,840 | 86,2%       | 41,1% | 70,5% |
| <b>November</b>  | 6,844                     |       |        | 87%         |       |       |
| <b>October</b>   | 7,624                     |       |        | 87,6%       |       |       |
| <b>September</b> | 7,573                     | 6,782 | 12,694 | 88.5%       | 42,8% | 64,8% |
| <b>August</b>    | 7,867                     |       |        | 90,2%       |       |       |
| <b>July</b>      | 8,187                     |       |        | 90,6%       |       |       |
| <b>June</b>      | 7,915                     | 1,128 | 5,853  | 90,3%       | 37,2% | 43,7% |
| <b>May</b>       | 7,527                     |       |        | 86,8%       |       |       |
| <b>April</b>     | 7,464                     |       |        | 88,6%       |       |       |
| <b>March</b>     | 7,113                     | 3,065 | 4,467  | 87%         | 65.4% | 40%   |
| <b>February</b>  | 6,133                     | 6,014 |        | 86,4%       | 83.6% |       |

|         |       |       |  |       |       |  |
|---------|-------|-------|--|-------|-------|--|
| January | 6,501 | 6,683 |  | 85,6% | 85,9% |  |
|---------|-------|-------|--|-------|-------|--|

(Source: AirFrance/KLM monthly & quarterly reports)

## C.6 IAG Group

|           | Passengers |            |            | Load factor |       |       |
|-----------|------------|------------|------------|-------------|-------|-------|
|           | 2019       | 2020       | 2021       | 2019        | 2020  | 2021  |
| December  | 8,747,000  | 4,298,000  | 15,309,000 | 83,9%       | 45%   | 71,5% |
| November  | 8,694,000  |            |            | 83,9%       |       |       |
| October   | 10,364,000 |            |            | 85%         |       |       |
| September | 10,639,000 | 6,592,000  | 15,475,000 | 85,3%       | 48,9% | 69,1% |
| August    | 11,924,000 |            |            | 88,7%       |       |       |
| July      | 11,999,000 |            |            | 88,8%       |       |       |
| June      | 11,273,000 | 508,000    | 5,468,000  | 88,3%       | 28,2% | 51,8% |
| May       | 10,378,000 |            |            | 83,2%       |       |       |
| April     | 9,852,000  |            |            | 83,4%       |       |       |
| March     | 9,161,000  | 19,877,000 | 2,612,000  | 83,7%       | 76,4% | 45,8% |
| February  | 7,528,000  |            |            | 79,6%       |       |       |
| January   | 7,693,000  |            |            | 78,6%       |       |       |

(Source: IAG Group Traffic Statistics)

## C.7 Aeroflot Group

|           | Passengers (in thousands) |         |         | Load factor |       |       |
|-----------|---------------------------|---------|---------|-------------|-------|-------|
|           | 2019                      | 2020    | 2021    | 2019        | 2020  | 2021  |
| December  | 4,372.9                   | 2,270.8 | 3,626.4 | 76.4%       | 74.4% | 76.4% |
| November  | 4,416.3                   | 2,080.6 | 3,583.2 | 77.9%       | 70.7% | 76.4% |
| October   | 5,201.2                   | 2,748.9 | 4,489.0 | 82.7%       | 78.0% | 81.0% |
| September | 5,682.9                   | 3,418.0 | 4,788.0 | 85.1%       | 83.5% | 81.5% |
| August    | 6,427.2                   | 3,791.3 | 5,546.8 | 90.2%       | 86.0% | 86.5% |
| July      | 6,423.3                   | 2,919.9 | 5,222.0 | 90.0%       | 78.7% | 83.4% |
| June      | 5,718.1                   | 1,196.6 | 4,575.2 | 84.1%       | 61.5% | 80.0% |
| May       | 4,976.7                   | 305.6   | 3,591.8 | 77.0%       | 45.4% | 75.8% |
| April     | 4,736.3                   | 229.0   | 3,019.5 | 80.6%       | 35.4% | 78.0% |
| March     | 4,594.1                   | 3,017.3 | 2,769.2 | 80.3%       | 62.6% | 82.8% |
| February  | 3,949.5                   | 3,944.2 | 2,237.8 | 77.5%       | 74.4% | 80.0% |
| January   | 4,220.7                   | 4,234.4 | 2,363.6 | 75.9%       | 74.8% | 77.2% |

(Source: Aeroflot traffic statistics)

## Appendix D

### Labour cuts

|                 |  |
|-----------------|--|
| AIR FRANCE      | The carrier plans to cut 6,560, or 16% of jobs, at the main airline by the end of 2022.  |
| BRITISH AIRWAYS | British Airways says it has proposed pay cuts to a maximum of 20%. The airline has previously said it plans to cut 12,000 staff, or more than a quarter of its workforce   |
| EASYJET         | The British low-cost airline has said that 727 of its UK-based pilots are at risk of redundancy, equivalent to about one-third of its pilots in the country. EasyJet said in May it needed to cut 4,500 jobs to stay competitive |
| LUFTHANSA       | Germany's Lufthansa, which employs about 138,000 people, will cut 20% of its leadership positions and 1,000 administrative jobs in a restructuring plan  |
| Ryanair         | Ryanair pilots have agreed to take a 20% pay cut, cutting 3,000 jobs out of 19,000 (i.e. 15% of the workforce);  |
| Norwegian       | 2172 lost jobs   |

(Adjusted from various sources)

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