Varieties of Industrial Relations in Aviation Lockdown

WP2 The economic conditions of the air transport sector before and during the crisis COVID-19 in Europe

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INTRODUCTION

The purpose of this study is to provide an economic analysis of the air transport sector and its value chain in Europe. The report describes and analyses the factors that influence the economic operating conditions, both for the sector as a whole and for its individual components.

In diagnosing the economic problems faced by the air transport sector during the crisis triggered by COVID-19, the wider context of the sector's activities will be analysed, as well as the action of political factors to limit the negative effects of the crisis, particularly in the context of state aid.

The economic analysis of the operation of airlines and airports in Europe includes the following elements:

- changes in passenger numbers compared to previous economic crises.
- changes in revenue and profitability,
- identification of key players on the European market,
- structure of operating costs, with particular emphasis on personnel costs.

For each of them the situation in the years prior to and during the COVID-19 pandemic is compared.

The aviation value chain is made up of:

- aircraft manufacturers,
- leasing suppliers,
- aviation related service providers,
- airports,
- and airlines, both passenger and cargo.

1. AIRCRAFT MANUFACTURERS, LEASING SUPPLIERS & AVIATION RELATED SERVICE PROVIDERS

1.1. AIRCRAFT MANUFACTURERS

Let us start the economic analysis with aircraft manufacturers. This is a highly oligopolised sector, consisting of two dominant players: Airbus and Boeing, and two smaller rivals in the mid-size segment: Bombardier and Embraer.

Aircraft manufacturers have enormous bargaining power vis-à-vis airlines. While technological advances make it possible to produce more efficient aircraft, which improves airlines' margins, the oligopoly in the industry allows them to dictate prices. The sector has high barriers to entry due to the capital-intensive nature of production and the long-time lag between order and delivery of the finished aircraft. The importance of quality and tradition is important, as well as the fact that there is another oligopoly in a key segment - aircraft engines - Pratt & Whitney, General Electric and Rolls-Royce.

According to 2018 figures:

- Boeing had the highest revenues, around $100 billion, delivering 806 aircraft a year;
- Airbus produced slightly fewer aircraft (800) and had revenues of $25 billion less;
- Embraer produced only 181 aircraft in the same period, 44 more than Bombardier;
- Bombardier's revenue was 16.2 billion, more than three times that of Embraer.

Although the health of aircraft manufacturers is not the subject of the economic analysis, it is worth noting that COVID-19 gave a hard time to all four competitors:

- Airbus ended 2020 with revenues of $57 billion, producing 566 aircraft;

- Boeing recorded $62 billion in revenue, but delivered just 157 aircraft;
- Embraer delivered 141 aircraft in the same year. Embraer's revenue melted down to $3.8 billion;
- Bombardier delivered 114. Bombardier's revenue melted to $6.5 billion.

1.2. LEASING SUPPLIERS

Another link in the aviation value chain is the lessors. Aircraft are expensive assets, so airlines are pursuing a strategy of buying owned and leased aircraft. For more than a decade, the ratio of owned aircraft to leased aircraft has been decreasing. In 2010, the ratio was 60 to 40, over a decade later it is only 54 to 46.

It is worth mentioning at this point - although, like aircraft manufacturers, lessors are not the subject of this economic analysis - that the aviation leasing sector is growing rapidly, with 156 operators in 2021, up from 118 in 2008. It is a very competitive industry, driven by mergers and acquisitions, with the aim of increasing shareholdings while reducing costs.

The largest players are Ireland's AerCap and GE-owned GECAS:

- AerCap has more than 2,000 aircraft with a combined value of $42 billion.
- GECAS, on the other hand, has a fleet of 1,600 aircraft, worth nearly $36 billion.

Both companies were hit hard by COVID-19 ending 2020 with losses. The sector is undoubtedly in shambles, but in theory the forecasts for aircraft purchases for airlines serving developing countries offer the prospect of improvement.

1.3. AVIATION RELATED SERVICE PROVIDERS

The next link in the aviation value chain which is worth mentioning to fully understand the specifics of the industry and which will not be analysed further are aviation-related services. These can include maintenance, aircraft repair and overhaul, fuel supply, ground handling, insurance, IT service, marketing, sales, and passenger services. This is the whole fabric of intermediate contacts between the two links of most interest to us - airports and air carriers (cargo and passengers). The revenues of the aviation related

industry are undoubtedly linked to and dependent on the contacts with the two links mentioned above.

The most important elements of the aviation services link are maintenance, repair, and overhaul (MRO), which has a high barrier to entry due to the technical expertise, reliability and trust required. 60% of carriers outsource these services, often to aircraft and component manufacturers or other specialist suppliers. This is a key sector for carriers if they are to maximise profits and reduce costs. Having a reliable, well-maintained fleet gives a competitive advantage.

The second important element of the aviation related services is ground handling, which includes passenger, baggage, and cargo handling. Half of the carriers outsource ground handling. The market is concentrated but has low barriers to entry and, in addition, is experiencing bipolar consolidation on the part of existing players and the airlines themselves.

Before going on to analyse the impact of the crisis triggered by COVID-19 on the aviation sector, we should look at the situation of the industry before the critical events. An economic assessment made without presenting the characteristics of the airlines and airports could lead to misleading conclusions or inappropriate recommendations, which could inappropriately influence political and economic decision-making when providing public support to the industry.

2. AIRPORTS

2.1. AVIATION INFRASTRUCTURE PROVIDERS

The first link of interest - from the point of view of economic analysis - in the aviation industry value chain are the providers of aviation infrastructure, which can be divided into air navigation agencies and airports.

Although the first link will not be the focus of attention, it should be mentioned that no air traffic can take place without the approval of the regulator. Air Navigation Service Providers (ANSPs) exclusively control the airspace assigned to them. This is a tightly controlled, capital-intensive sector, the technological development of which is essential both for efficient air traffic management but also to enable further growth of the aviation sector, which should be understood as more space for more flights.

The second element of the link is airports. These may have different governing bodies: public, private or some combined form. It is estimated that there are more than 40 000 airports in the world, but not all of them are facilities ready to receive large passenger or freight traffic. The actual number of airports that guarantee stable connections is much lower. In the United States alone, for example, out of more than 20 000 airports, only just over 500 have public status.

More than 500 cities in the world have just one airport, and those that have more than one is less than 80.

Airports focus on enabling airlines to operate, in return for collecting fees. As long as a city has one airport its negotiating power is high. However, it is declining as airlines pressure to build smaller facilities, even further away from base cities, to reduce operating costs and increase capacity.

Interestingly, according to the ACI (Airports Council) World's Airport Service Quality programme, the most important factors for airline travel satisfaction are:

- airport ambience,
- leisure including food and beverage,
- retail outlets,

- entertainment including Wi-Fi,
- the security process,
- and of course, the human factor.

The ACI promotes the vision that airports and their airline partners not only provide a service to transport goods and passengers but are in fact a key driver and facilitator of economic growth and prosperity in today's globalised world.

2.2. IMPACTS OF AIRPORT ACTIVITIES

According to the ACI report, four impacts of airport activity can be distinguished:

- direct,
- indirect,
- induced,
- and catalytic.

Direct impacts include activities necessary to deliver the service. Airline and airport operations (technical support and service, catering, fuel, security, and cleaning), as well as the commercial function (shopping, restaurants, motor vehicle rental, parking).

In turn, the indirect effects of activity are manifested through: wholesalers supplying food for on-board catering, oil refineries to produce aviation fuel, companies providing accounting and legal services to airlines or travel agents booking flights.

The induced effects of airports are the revenue impacts generated by direct and indirect effects, especially private consumption (i.e. spending by employees working in indirect and direct activities). For example, everything that airline employees buy - both products and services - generates employment in downstream sectors of the economy.

The catalytic effects of airport activity go even further. For example, the location of an airport influences investment decisions in trade or industry. On the demand side, airports boost exports and tourism. On the supply side, airports are gateways to new markets.

Further impacts of airport activity are translated into concrete employment figures and revenues. Before the crisis, caused by COVID-19, European airports contributed to the

employment of 12.3 million people with revenues of € 365 billion per year. Overall, 4.1% of GDP in Europe is generated each year thanks to airports. It is estimated that for every 10% increase in air links in a country, GDP per capita increases by 0.5%.

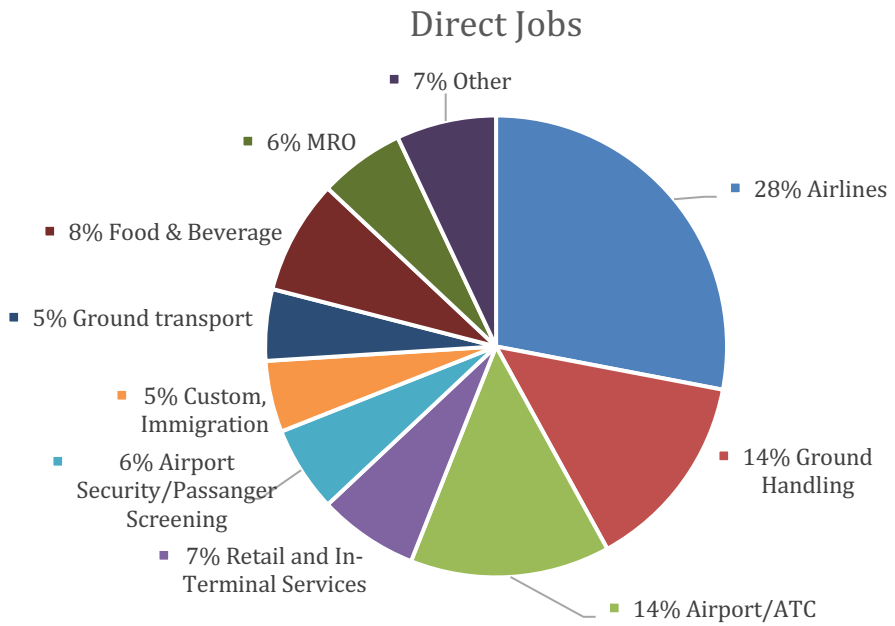
This capacity contributes to improving overall economic performance at national and European level, reflecting the role that air connectivity plays in boosting trade, investment, tourism activity and overall productivity.

2.3. JOBS AT EUROPEAN AIRPORTS

The direct effects of airports: airport management, airline services, air traffic control, ground handling, airport security, immigration and customs, aircraft maintenance and other airport-related activities create 1.7 million direct jobs in Europe. As much as 53% of these jobs are concentrated in five countries: Germany, United Kingdom, France, Spain, and Turkey.

The chart below shows the distribution of direct jobs at European airports by type of service. Somewhat surprisingly, security functions, which typically represent a disproportionate share of airport costs and are very labour intensive, account for only 11% of total jobs.

Figure 1: Direct jobs at European airports



Source: own elaboration

2.4. IMPACT OF LOW-COST AIRLINES ON AIRPORTS

The APC report notes that given the continued growth of low-cost passenger airlines (LCCs), and with it the construction of new airports to serve LCC operators, airport revenues are expected to decline. LCC passenger airlines, generate a fifth fewer jobs than full-service carriers. This may be due to lower employment levels at low-cost airlines, a reduction in ancillary services (such as in-flight catering and airport lounges) and a reduction in LCC passengers' spending on the airline's commercial offerings.

Clearly, the strong growth of low-cost carriers in recent years has underpinned the development of secondary airports. This success was mainly since LCCs offered low airfares, which enabled many consumers to access air travel. Consequently, if fares remain low, the priority of optimal airport access becomes lower, resulting in increased traffic at secondary airports.

This has its good and bad sides. On the one hand, the fastest growing airports are those serving mainly low-cost operators. However, because LCCs are very flexible in their route networks, driven by demand as well as cost, secondary airports are also at the top

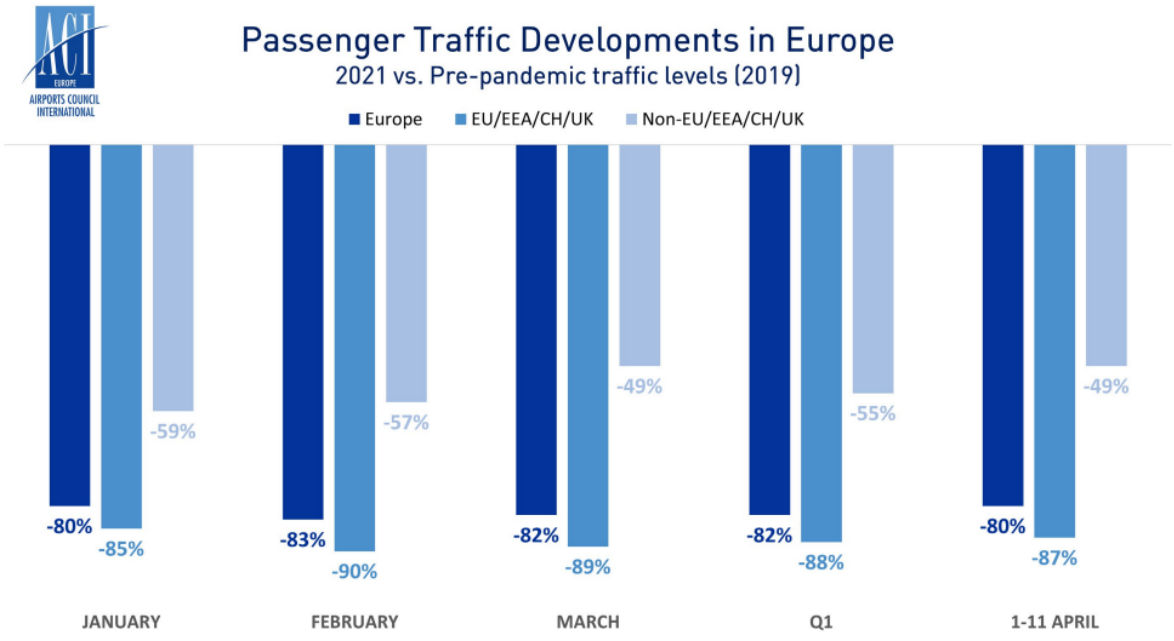
of the list of facilities experiencing a huge decline in traffic. This means that smaller airports need to remain competitive in the absence of planning permission for new infrastructure and keep a close eye on price movements at primary airports, which have so far supported full-scope operators but tempt - from time to time - lower-cost carriers.

2.5. PASSENGERS AT EUROPEAN AIRPORTS

Between 2016 and 2019, the number of passenger flights at European airports increased by 17 per cent from 1.6 billion to 1.9 billion. The EU has a mature air transport market, which grew by 17 per cent between 2016 and 2019, compared to 13-33 per cent growth elsewhere in the world. In turn, EU airports handled over 57.8 million passengers in 2019, representing 76% growth.

Unfortunately, the crisis, triggered by COVID-19, has taken a heavy toll on airport performance.

Figure 2: Passenger traffic volumes in 2021 compared to pre-pandemic period

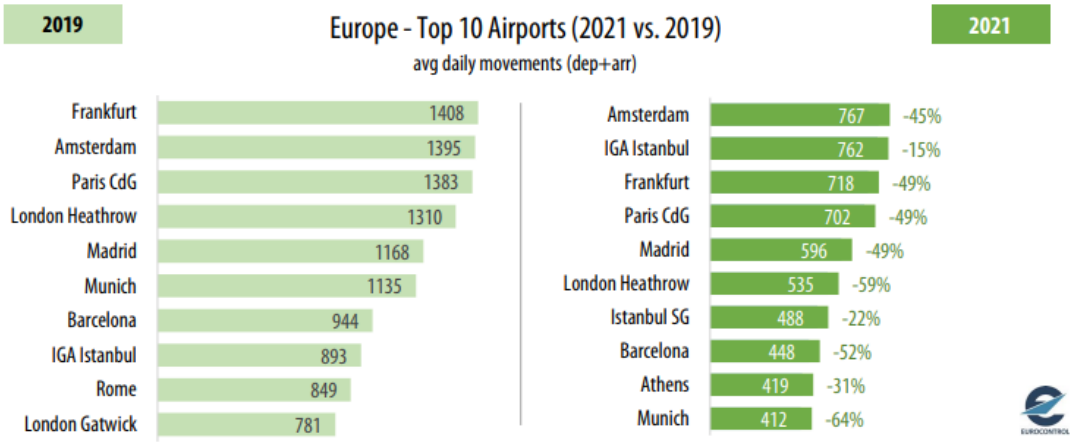


Source: ACI

The above graph shows the near disappearance of passenger air traffic during the pandemic. The decline in demand for flying, is not only a problem for airline operators, but also for all economic actors who - operating at airports - derived revenue from passenger traffic.

Airports in Europe have been painfully affected by a drop of almost 900 million passengers in 2020 (-35% year-on-year), which means a loss of airport revenue of almost 30 billion compared to 2019.

Figure 3: Differences in traffic at Europe's largest airports in 2019 and 2021.



The traffic freeze during the crisis, triggered by COVID-19, was largely due to administrative travel restrictions rather than a real fall in demand. For this reason, the pandemic became a catalyst for a risk that has always existed in the industry but was ignored - operating on low margins.

The decline in airport revenue is certainly a bad situation as it undermines the ability of companies, operating directly or indirectly, to invest in the future. With air traffic returning to levels like pre-pandemic levels, it is not only passengers who may be deprived of adequate infrastructure.

As mentioned earlier, airports are important elements in the bloodstream of the European economy, the financial difficulties of a major airport will immediately resonate on a wider than local scale.

The assistance offered should not be selective: airport ownership varies greatly, from entirely public to entirely private, and many are under mixed ownership. Loans can be an effective means of survival and continuity, but repayment will become a future liability that will weigh on the budget. Private capital injections, on the other hand, require the ability to quantify future risks, which for now - despite the prevailing optimism - are still real and unknown. A separate issue is the maintenance of airports that are 'essential' to the operation of the network and which, due to the pandemic, may have already suffered or will suffer in the future due to fluctuations in demand.

It is likely that with the recovery from the crisis caused by COVID-19, average airport costs will remain higher for the next few years. Obviously, this will raise operating costs for carriers, which for some of the financially weaker operators will translate into higher ticket prices as they will not be able to fully absorb the higher charges. Higher ticket prices could in turn weaken demand, which would negatively affect airlines and airports themselves.

Some solution, proposed by the IATA think-tank, is for airports to agree to bear losses for the near term so that future prosperity can allow for compensation. This is a major risk that should be shared by both airlines and airports, as it is in their mutual interest that the air transport sector survives and thrives.

3. AIRLINES

3.1. AIRLINES IN THE AIR TRANSPORT SECTOR

The second, analysed in the study, link in the aviation industry value chain is airlines. It has a more complex structure, which is divided into civil aviation and military aviation, and our analysis will focus only on the first area. Civil aviation is further subdivided into freight and passenger transport.

Until the crisis triggered by COVID-19, air freight was responsible for only 1% of the volume of goods transported worldwide. At the same time, cargo aircraft are particularly well suited to the transport of high-value goods, as it provides direct routes, exceptional capacity considerations, reliability and high transport control and fast delivery times. Therefore, air freight transported as much as 35% of the total value of goods.

Freight can be transported in two ways: by dedicated freighters, which is the most popular mode of transport, accounting for as much as 90% of the share of air freight, and by free cargo space in passenger aircraft.

In turn, passenger aviation can be divided into general aviation and commercial aviation. In our analysis, we will refrain from a broader description of general aviation, which is divided into private and recreational aviation. It is undoubtedly an interesting and fast-growing sector, whose revenues even before the crisis, triggered by COVID-19, accounted for more than 35% of commercial aviation. The sector involves the transport of usually small groups of passengers, for private or business purposes, using light jets or suitably adapted larger aircraft.

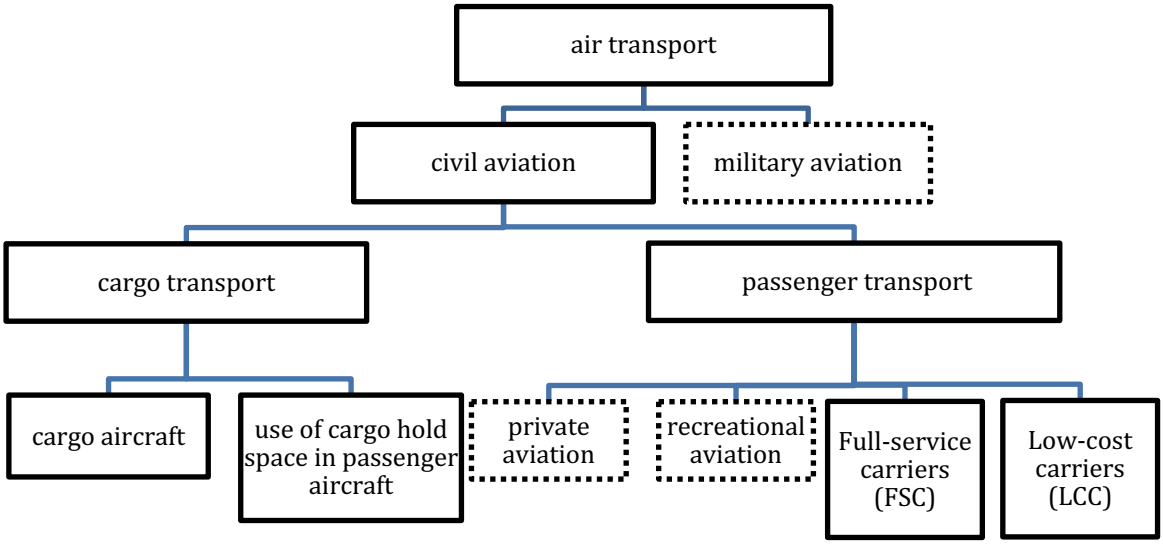
In our analysis, we will focus on the segment that is the main driver of the aviation industry - commercial aviation. As recently as 2018, it accounted for 61% of the total aviation industry, generating revenues almost 10 times higher than freight and three times higher than general aviation. Commercial aviation is the fastest means of long-distance passenger transport, and in some cases is the only viable option

Commercial aviation can be divided into two further segments: full-service carriers (FSC) and low-cost carriers (LCC). Full-service carriers tend to have the highest revenue

per unit as well as the highest cost structure, thus losing the market to low-cost carriers. Even before the outbreak of the pandemic, the share of FSC carriers was melting year on year to a ratio of 75 to 25, in their favour.

The following diagram may help to distinguish the relationship.

Figure 4: The air transport sector



Source: own elaboration

3.2. COSTS AND DEMAND FOR AIR-TRAVELS BEFORE COVID-19

Let us devote some space to the state of the air transport sector before it fell into the crisis triggered by COVID-19. A historical perspective is important to see certain regularities in the development of the industry and to understand the mechanisms that may shape its future. Some analyses of the air transport industry and forecasts of its revival - after the turbulence of COVID-19 - refer very strongly to historical data and the trends outlined at the time.

In retrospect, the air transport sector was undoubtedly one of the fastest growing branches of the world economy. Looking back over 70 years, legal liberalisation,

deregulation of regulations and technological advances have resulted in increased competition, efficiency, and innovation in the industry, as well as falling costs. Above all, the industry has seen a reduction in direct government involvement and a greater focus on consumer interests. In turn, the factors impeding development have been economic or political crises, generating a series of disruptions which, despite their dramatic impact, have had a fundamental influence on the shape of the sector.

Over the last 40+ years, the airline industry has been connecting more and more cities through direct services. The number of unique city pairs has increased more than 3.5 times, from just over 6,000 in 1980 to more than 21,000 in 2019. And over a slightly longer period, since 1970, the price of air transport services, adjusted for inflation, has fallen by more than 60%.

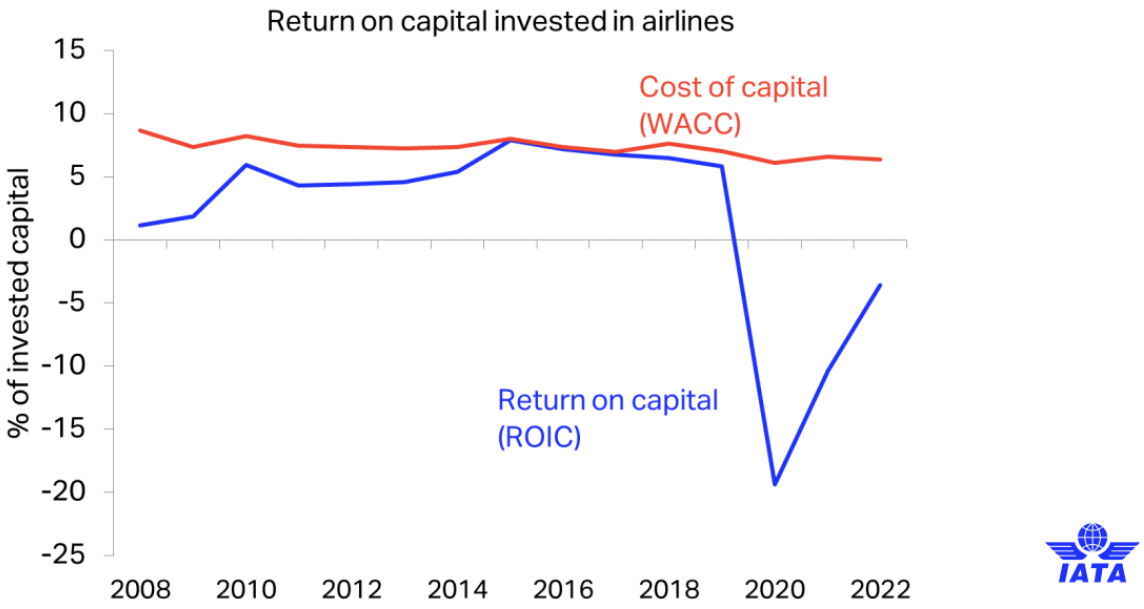
Moreover, according to a 2013 report by IATA (International Air Transport Association), demand for air transport services has grown much faster than demand for most other goods and services in the global economy. Since 1970, demand for air travel, as measured by Revenue Passenger Kilometres (RPKs) flown, has grown 10-fold while the world economy has grown 3-4 times. Demand for air freight, reflecting and facilitating the globalisation of corporate and economic supply chains, grew 14-fold over the same period.

3.3. RETURN ON CAPITAL INVESTED IN AIRLINES

These figures might suggest that the air freight sector is highly profitable. Meanwhile, intense competition and numerous deregulations have resulted in the industry generating one of the lowest rates of returns on invested capital (ROIC) of any industry since the 1970s. Thus, for decades, equity investors have watched their capital shrink. Air transport continues to create enormous value for its users, passengers, and shippers, as well as other participants in the value chain. But on the other hand, the airline industry was destroying - by 2016 - on average more than $18 billion annually for shareholders.

The reasons for this were: fierce price competition between carriers, powerful infrastructure providers, cost-sensitive customers, an unstable cost structure due to fluctuating oil prices, the still significant influence of state administrations - despite far-reaching liberalisation, outsourcing of operations, with consolidating industries.

Figure 5: Return on capital invested in airlines.



Source: IATA

Historically, airline financiers have not been adequately remunerated for their capital. In previous business cycles, the airline industry was able to generate sufficient revenues to pay supplier bills and service debt.

On the other hand, even before the crisis triggered by COVID-19, equity owners were not adequately rewarded for risking their capital in all regions. In normal times, investors should expect to receive at least the return on assets with a similar risk profile, the weighted average cost of capital (WACC).

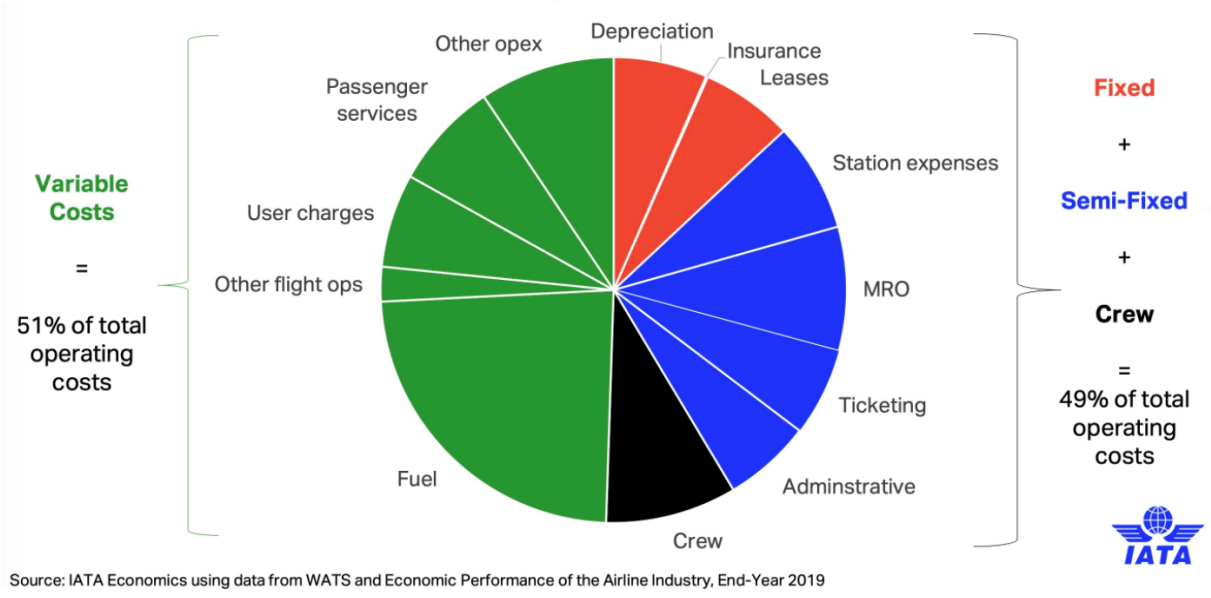
The intensity of competition and the challenges of doing business have meant that the average airline return has rarely been as high as the industry's cost of capital. Only in North America and Europe did equity investors earn returns more than the cost of capital in the four years preceding the COVID-19 crisis. However, airlines in Asia-Pacific and Latin America consistently delivered returns below the WACC.

3.4. AIRLINES PROFIT MARGIN AND COST STRUCTURE BEFORE AND DURING THE PANDEMIC

The sudden impact of the Covid-19 crisis on airlines can be explained by a structural cause specific to the sector: air transport is a high volume but low margin industry. If we consider the long period - since 2002 - and all regions combined, the industry's operating margin is around 3%. In 2019, the operating margin worldwide was 5.8%, even though we were at the peak of the cycle (IATA 2020), which corresponds to a profit per passenger of just $6.85.

The structural weakness in margins is since natural barriers to entry are quite low. In principle, except for the availability of slots at large congested airports and, for some international flights, the granting of traffic rights by states, there are no major barriers to entry: a new airline can start operations after investing a few million euros in the form of aircraft leasing. In turn, the possibility for a new player to enter the market quickly leads to constant pressure on prices and margins. To regain some market power, established companies have no choice but to cut costs or to control hubs and alliance networks to limit the growth of new entrants.

Figure 6: Cost structure of air carriers.



Source: IATA Economics using data from WATS and Economic Performance of the Airline Industry, End-Year 2019

The graph above shows a generalised, indicative cost structure for full-service carriers. Note the large share of fixed costs, which are incurred regardless of the intensity of operations.

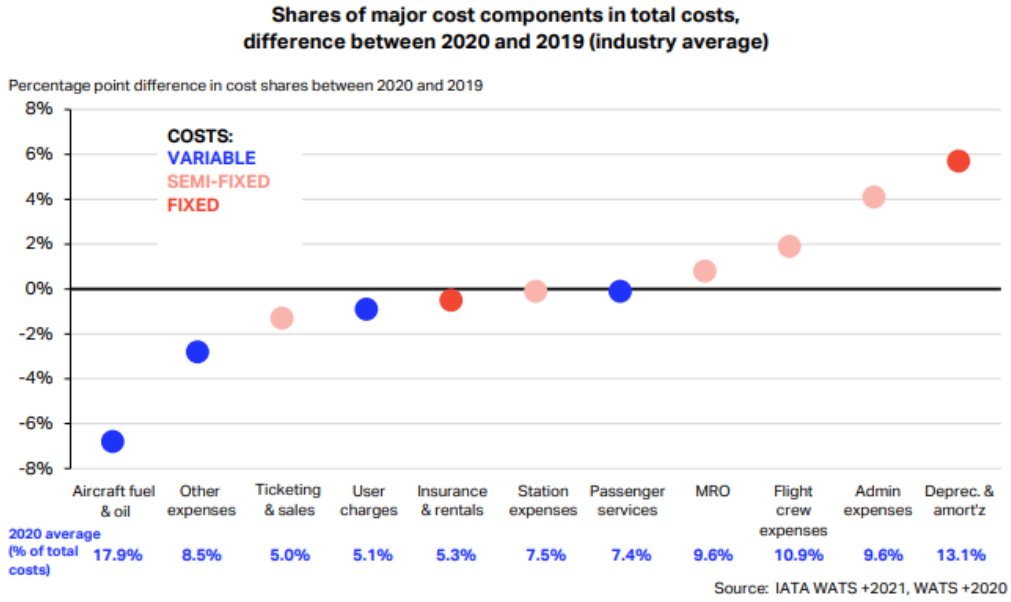
The air transport sector is an industry of high fixed and semi-fixed costs. These come from the payment of salaries (especially cockpit crew), the cost of aircraft rental (when not fully owned by the carrier), aircraft maintenance and debt service. Fixed costs account for approximately 50% of the operating costs of full-scope carriers.

Expenses of low-cost carriers - in principle - do not differ drastically from the cost structure of full-service carriers, differences may lie in details, such as the service of obligations to lessors, depending on the form of ownership of the fleet or expenses on crew salaries, which in the case of LCCs are lower, due to a smaller number of flights. In the case of low-cost carriers, the purchase of aviation fuel has a higher share of expenses.

The highest variable cost is the expense for the purchase of fuel, it is the largest cost item. Any fluctuation in the price of aviation fuel is immediately transferred directly to the carriers' results.

The market turbulence resulting from COVID-19 has strongly affected the cost levels of passenger carriers. Due to the administrative restriction of flights, the largest reduction in the share of the cost structure concerned variable items, with reference to the high fall in fuel prices, which was directly caused by the huge reduction in demand. On the other hand, fixed and semi-fixed costs came to the fore - showing at the same time the biggest weakness of the air transport sector.

Figure 7: Shares of major cost components in total costs before and during the pandemic.



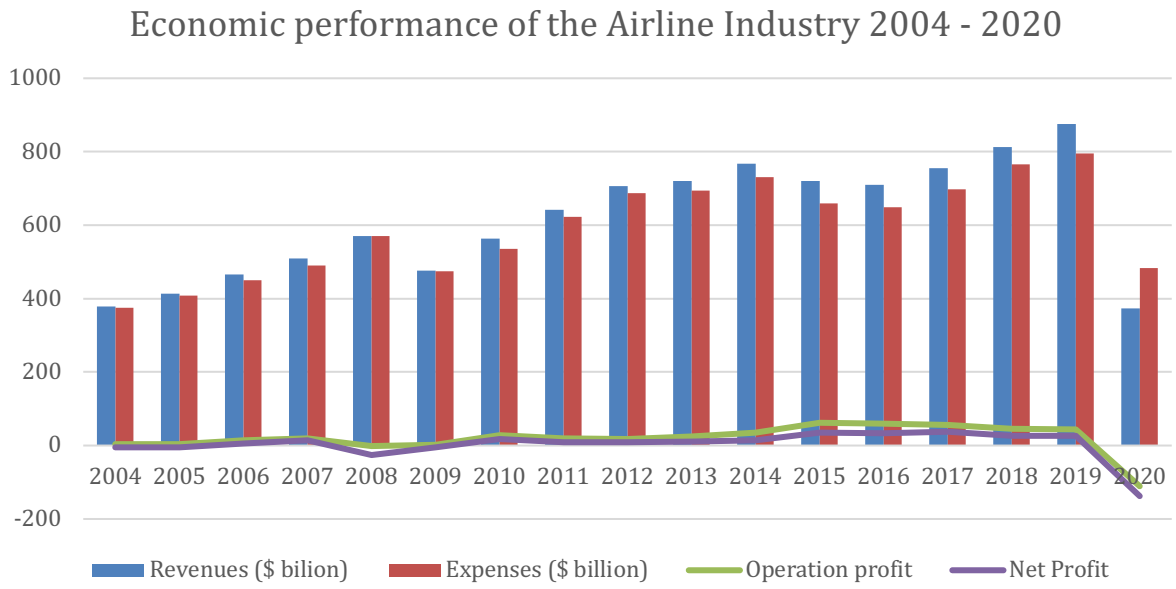
The grounding of the fleet may have resulted in savings on fuel purchases, but even a standing fleet requires maintenance or aircraft lease payments. Fewer routes and fewer travellers do not, therefore, reduce pay for the crew, who must turn up regardless of the aircraft's occupancy.

3.5. ECONOMIC PERFORMANCE BEFORE AND DURING THE CRISIS

A small decline in business - and especially a decline in the load factor - quickly leads to losses. As a result, the rate at which operators enter and disappear from the market is high: many new companies are created every year, while others, often small, leave the market. In 2019, which was a good year in terms of profitability, nonetheless as many as 23 airlines worldwide went out of business.

The tense economic situation has worsened considerably in the wake of the crisis, triggered by COVID-19, over the past two years. The unprecedented decline in air passenger traffic has had a severe impact on all regions. The industry is expected to generate a negative ROIC (-10.4%) in 2021.

Figure 8: Economic performance of the airline industry 2004-2020.



Source: IATA.

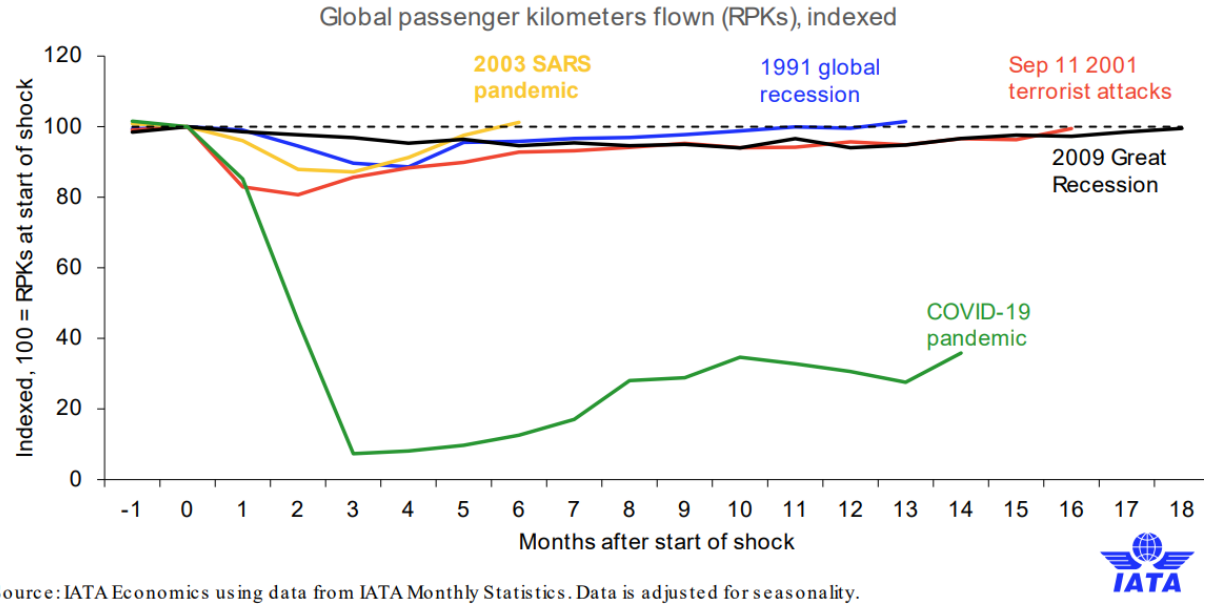
The graph above, showing the economic performance of the air transport sector, in the commercial and cargo flight segments, is a good representation of the industry characteristics explained above. For decades, high revenues have been accompanied by equally high costs, resulting in very low profits and often losses.

For the airline industry - as highlighted above, which operates on low margins - any change in the environment, be it an armed conflict pushing up fuel prices, a natural disaster reducing the network of routes, or simple changes in competitive behaviour or administrative changes, strongly affects results.

The graphic below is taken from a presentation by Brian Pearce, IATA's chief economic officer, given at an online conference on 6 May 2021.

The graphic perfectly illustrates the abrupt nature of the bump in the airline industry's performance during the crisis caused by COVID-19. The earlier pandemic of 2003 (SARS) resulted in a decline in passenger kilometres of just 10%, and it took less than six months to return to pre-pandemic performance.

Figure 9: Global passenger kilometres flown during the crisis.



Source: IATA Economics using data from IATA Monthly Statistics. Data is adjusted for seasonality.

The graph also shows other economic phenomena - the recessions of 1993 and 2009 - or political events - the terrorist attack in 2001 - which have significantly worsened the performance of the air transport sector. However, none of these turbulences has affected the industry's overall performance as strongly and permanently as the COVID-19 pandemic. It is worth noting that, almost 1.5 years after the start of the epidemic, the air transport sector has not even returned to half of its pre-2020 passenger-kilometre volume. We also know - as we write these words - that even at the beginning of 2022, the situation is far from normal.

The performance of the air transport sector under 'normal' conditions, prior to 2020, has already been presented earlier. This should give the reader some idea of the operating conditions and condition of the industry.

3.6. AIR TRAFFIC DURING THE COVID-19 PANDEMIC

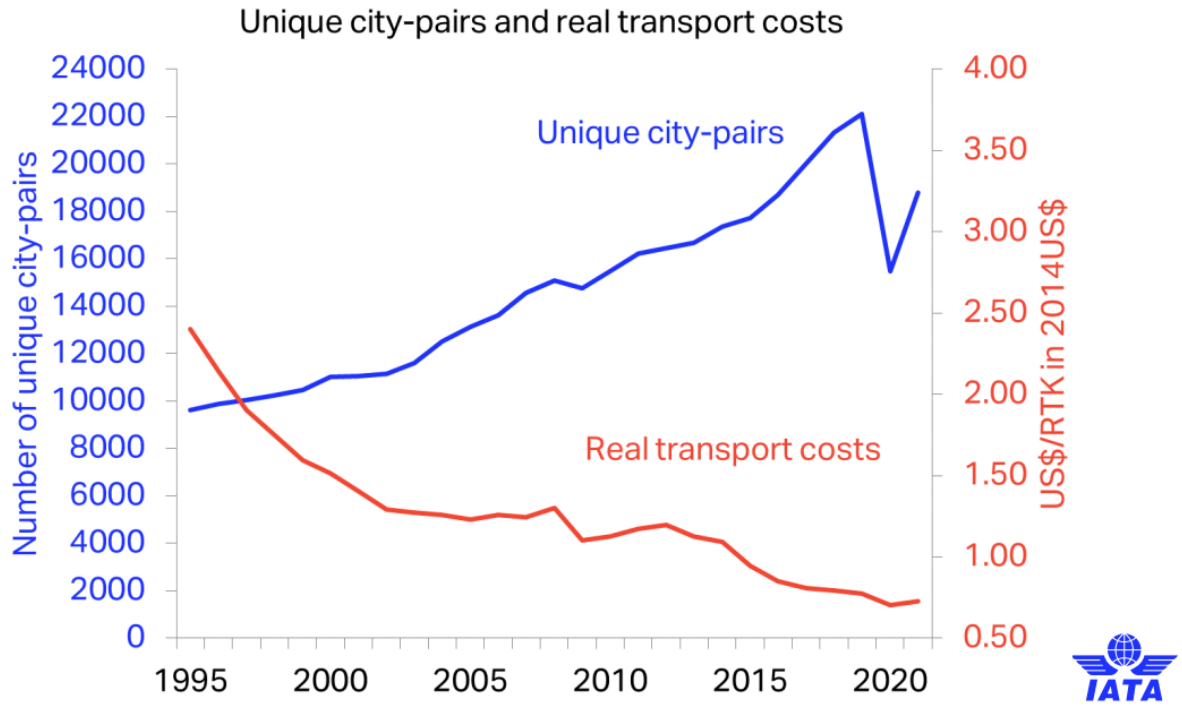
Before the analysis covers the European aviation sector in more detail, data will be presented to show - only tentatively already outlined - the financial and organisational disaster of the aviation industry we are witnessing, the cause of which is the pandemic

caused by COVID-19 and the restrictions on air traffic as a response by government administrations to the spread of the dangerous virus.

Air transport has been heavily affected by COVID-19, with reduced passenger traffic, low revenues and large financial losses. Industry-wide revenue passenger kilometres (RPKs) fell by 65.9% year-on-year in 2020. The decline in RPKs was much larger than the reduction in global GDP, by -3.6%, due to stringent control measures on air travel, particularly on international routes. A total of around 1.5 billion passenger trips took place during 2020, compared to 4.5 billion the year before.

The decline in passenger numbers due to the crisis, triggered by COVID-19, has resulted in a significant loss of airline connections. As a result of the travel restrictions, the number of unique city pairs decreased for the first time since the global financial crisis in 2009. In 2020, the number of unique city pairs decreased by 30%. In 2021, the number of unique city pairs is expected to partially improve as airlines expand their route networks due to the easing of travel restrictions in some regions. However, it is estimated to be 15% lower than in 2019.

Figure 10: Unique city-pairs and real transport costs.



Source: IATA

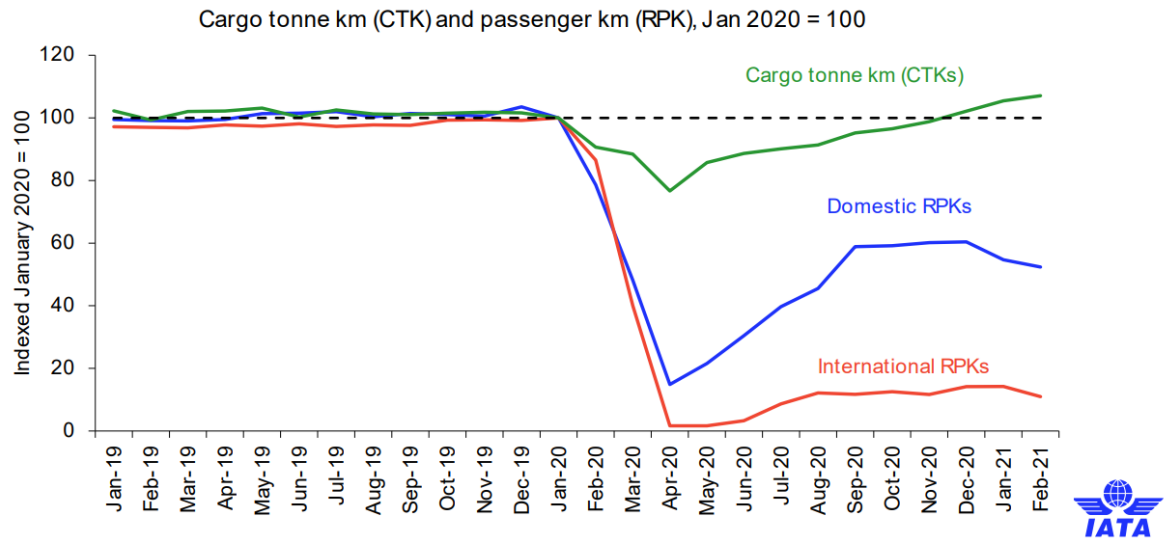
However, it is worth noting the constantly falling costs of air transport, which, together with suspended connections, falling passenger numbers and administrative restrictions, is leading to an even worse economic situation in the air transport sector.

The graph below perfectly illustrates the scale of the collapse of the air transport sector in the passenger traffic segment. In the three months following the announcement of the pandemic, international traffic practically froze, falling to around 5%. And despite the lifting of some restrictions between Waves I and II of the coronavirus, it never exceeded 20% of the baseline values, before the beginning of the epidemic.

Against the backdrop of international flights, the performance generated by local traffic, defined as domestic air links, does not take on such gloomy colours. Domestic aviation markets are more resilient than international ones because screening measures tend to be less stringent in-country. Vietnamese, Russian, American, Brazilian or Chinese passengers did reduce their travel plans, but it was not as steep a cut as for international flights.

Some local markets kept domestic travel open, even though they saw more COVID-19 cases. This was the case in Russia, Iran and Mexico, among others. Often demand was supported by lower airfares and government campaigns for 'at home' tourism. With strong perturbations in other domestic markets, China became the largest market for domestic air travel for the first time since IATA began collecting data.

Figure 11: Cargo tonne kilometres and passenger kilometres.



Source: IATA Economics using data from IATA Monthly Statistics. Data is adjusted for seasonality.

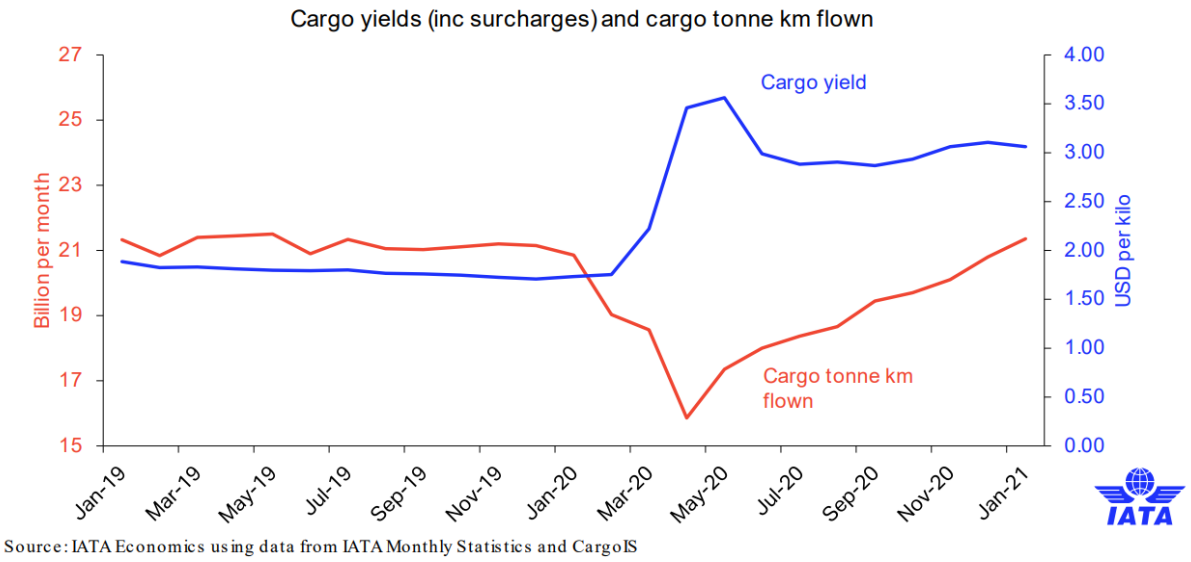
Freight traffic, on the other hand, turned out to be an industry phenomenon, the dynamics of which are worth following closely. Careful observers should not miss the divergence in trends in passenger and cargo load factors in the first year of the pandemic.

Passenger air transport capacity was significantly impacted by the grounding of the aircraft fleet at the start of the crisis, as well as by uncertainty about the resumption of demand for passenger travel. This has made it difficult for airlines to plan for an adequate number of seats. As a result, industry-wide available seat-kilometres (ASKs) fell by 56.7% year-on-year in 2020. As this decrease was smaller than the decrease in ASKs (65.9%), the industry-wide passenger seat-kilometre ratio decreased by 17.5 percentage points to 65.1%. Historically speaking, this is the lowest value in almost three decades and therefore a reduction of the strong growth trends prior to the crisis. Even before the pandemic broke out, 2019 saw a record high load factor of as much as 82.6%.

3.7. CARGO TRANSPORT DURING THE COVID-19 PANDEMIC

A shortage of available passenger aircraft meant that air cargo capacity was not sufficient to meet the surge in demand for freight. Despite airlines increasing freighter capacity and converting passenger aircraft to freighters, the industry-wide number of available cargo tonne-kilometres (ACTKs) fell by 21.2% year-on-year in 2020. This led to a capacity crunch, with the industry-wide load factor increasing by 7.1 percentage points to 53.9%.

Figure 12: Cargo yields and cargo tonne kilometres flown.



Source: IATA Economics using data from IATA Monthly Statistics and CargoIS

The chart above clearly shows how the pandemic outbreak has affected the profitability and capacity of air freight. At first, with the disruption of the supply chain, the inability to carry cargo in passenger space, the direct impact of trade blockages on demand, the shrinking network of routes, the restrictions on international travel and the simple human fear for their own health and that of their loved ones - transport costs rose dramatically, reducing the volume of freight transported.

The steep rise in transport costs was supposed to compensate for the reduction in air links. Companies, trying to keep their supply chains normal, were prepared to pay more and more to send goods.

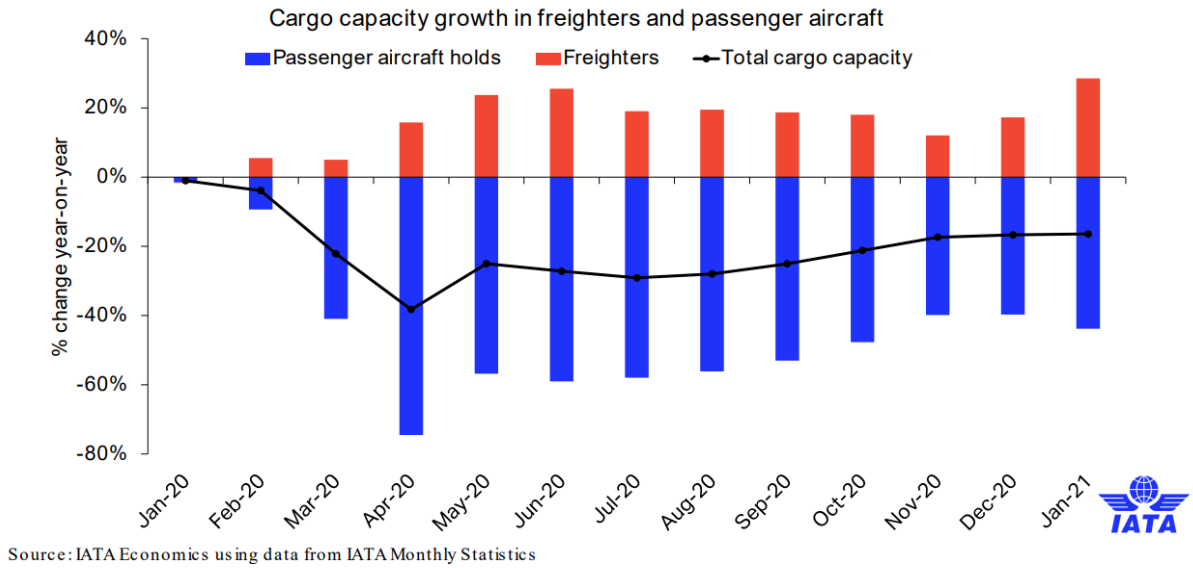
In 2020, a shortage of cargo capacity was outlined in comparison to growing needs:

- dynamic demand for goods,
- congestion at airports and other parts of supply chains,
- increase in fast e-commerce shipments,
- increased transport of personal protective equipment (PPE).

All these factors have put significant pressure on air freight rates.

These rates rose sharply during the peak period of supply chain disruption, from March to May 2020, and eased slightly mid-year before rising again during the peak freight season in Q4. As a result, air freight rates in 2020 were 55.9% higher than in 2019.

Figure 13: Cargo capacity growth in freighters and passenger aircraft.



Source: IATA Economics using data from IATA Monthly Statistics

It is worth noting that the cargo industry recovered from the initial shock in April, when - together with fiscal support from the government and an upturn in online trade - freighters were joined by passenger planes that were converted ad hoc into cargo planes (it often happened that part of the cargo was placed directly on passenger seats because there was not enough time to assemble them).

From May 2020 to January 2021, it is possible to observe a return of the air freight sector to the pre-crisis capacity state triggered by COVID-19. Figuratively, we can speak of a V-shaped recovery phenomenon. However, it is worth noting that freight costs have increased by around 50% since the start of the pandemic.

Moreover, the annual decrease in tonne-kilometres in 2020 was still the largest since the global financial crisis of 2009, with an annual fall of as much as 9.1%. Characteristically, this was worse than the decline in global merchandise trade (as this declined by 5.3% year-on-year in 2020). The reason is that air transport is much less popular (it is worth mentioning the 1% share in the total volume of goods shipped) and more costly, so the phenomenon of a decrease in tonne-kilometres should not come as a surprise, as it is natural during an economic downturn.

The decline in tonne-kilometres in 2020 is partly due to a lack of air freight capacity as well as a sharp increase in air freight fares and revenues. This has provided a welcome source of cash for airlines but has increased transport costs for businesses.

In the case of the European market, the largest freight line is Luxembourg-based Cargolux, which, after a slightly weaker year in 2019, improved its performance in 2020, surpassing its 2018 records.

Second place in the European market belongs to Turkish Airlines, which occupied the first year of the pandemic with a slight decline of almost 1 per cent in cargo tonne-kilometres, compared to 2019.

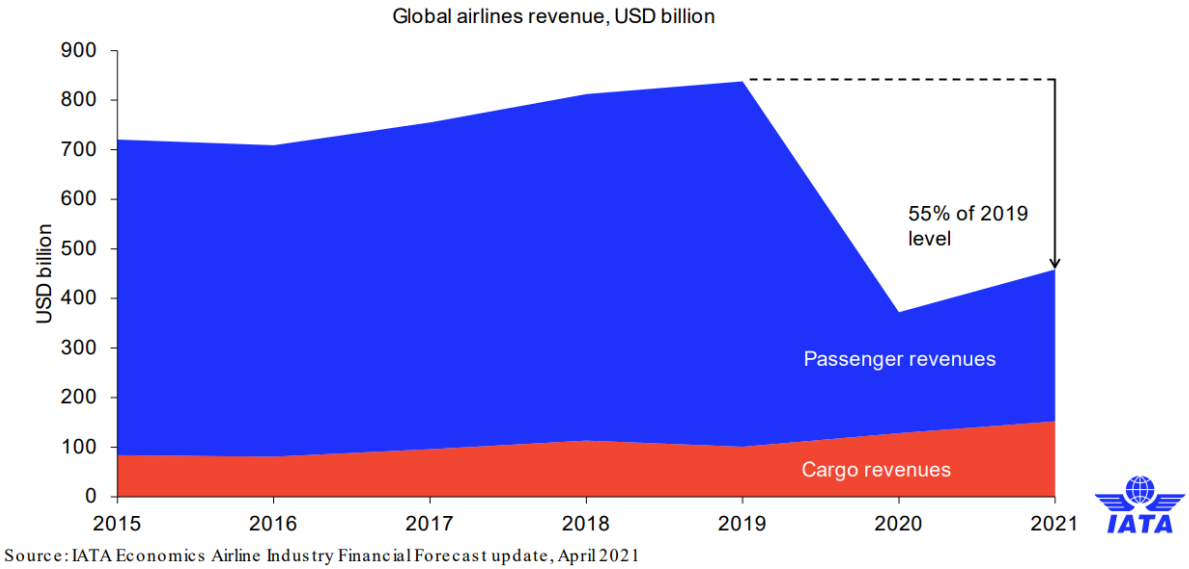
The biggest loser of the COVID-19 crisis is Lufthansa, which for years held the top spot in the European market, but the sharp decline in cargo capacity in the baggage hold and the initial reduction in demand for flights caused the carrier to record as much as a 33 per cent drop in CTK in 2020 and fall to third place.

Summarising the air cargo sector, it must be clear that despite a gentle decline in air cargo volumes (down 9.1% year-on-year in 2020), an increase of almost 56% in air freight rates resulted in air cargo revenues increasing by 27.2% in 2020 to USD 128.2 billion, a new all-time record.

3.8. AIRLINES REVENUES AND PASSENGERS BEFORE, DURING AND AFTER THE PANDEMIC

For companies providing services in both passenger and freight, this may have meant offsetting losses in the former sector with above-average revenues in the latter, or it may have offset the performance of the air transport industry taken as a whole.

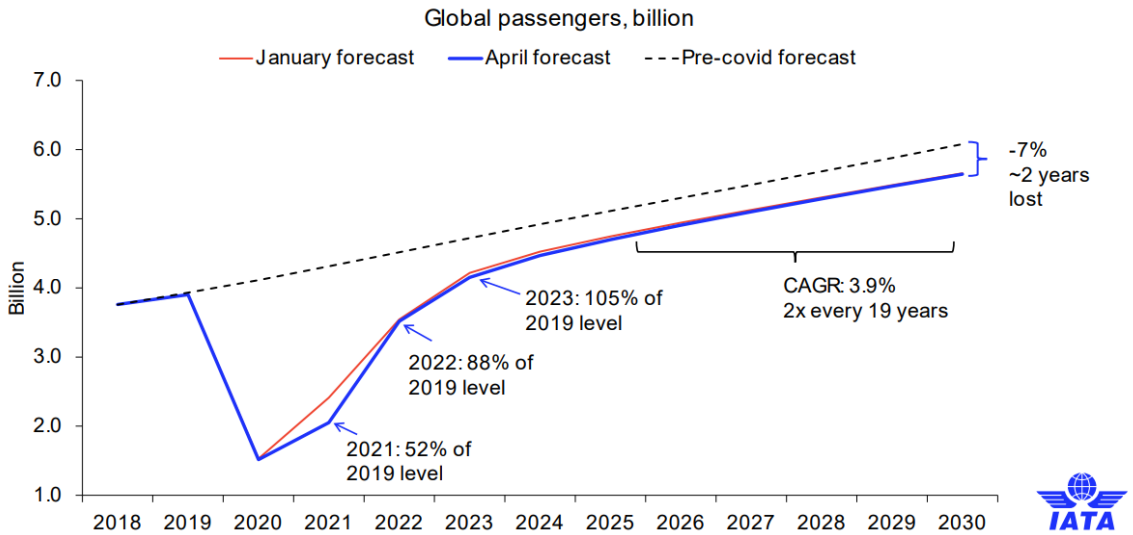
Figure 14: Global airlines revenue.



However, the gap between the profitability of the cargo sector and the lack of profitability of the passenger sector is quite a challenge to the stability of the industry and should be an important factor in the allocation of any state aid. According to an analysis of the data - conducted by IATA - it appears that as recently as 2021 the air transport sector's revenues will only reach 55% of 2019 revenues.

IATA economic analysts, led by Brian Pearce, were tempted to set trends for the air transport sector for the coming years. It is worth noting the optimism of the forecast. Of course, the growth of air passenger traffic depends on the state of the pandemic, the level of immunization of citizens in each country or region, the condition of aviation companies or the scale of assistance from government administrations. From today's point of view - after the restrictions on air traffic related to the Omicron variant or the war in Ukraine - forecasts of a loss in performance compared to the original trends of 2019 seem cautious and definitely underestimated.

Figure 15: Forecast of global passengers after the pandemic.



Source: IATA Economics using data from Tourism Economic/IATA Air Passenger Forecast, April 2021.

In this sense, referring to the scale of the sector's activities before the crisis triggered by COVID-19 seems a nostalgic approach. Disruptive events often divide the era of data collection and analysis. For many industries, the year of the collapse of Lehman Brothers (2008) and the ensuing Great Recession, which changed forever the approach to doing business in many sectors, was such a year. The crisis, caused by COVID-19, is a new benchmark for the air transport sector. It will be difficult to erase the years, make up for the losses, or restore previous forms of business. It is necessary to look at the sector and its current state, no matter how well or badly it has done in the past.

Recall that although air transport profitability is structurally low, the profitability of European airlines, which in 2019 was in line with the world average, contrasts with that of US carriers, which was more than double at 9.6%.

The difference in sector profitability can be explained by the different scale of concentration in the industry. The first decade of the 21st century - roughly from the terrorist attacks in 2001 to the Great Recession - has been marked by consolidation, which has produced four major players: American, Delta, Southwest, United. In 2019, the four largest operators in the US domestic market had, in terms of passengers, 64% of the market share. What's more, of these industry leaders, three of them are full-service carriers, only Southwest - with 20% market share - can be considered a medium-cost carrier. True low-cost competitors - such as Jetblue, Frontier and Spirit Airlines -

form the background. Thus, the US market is dominated by large tycoons who can dictate favourable ticket prices for themselves and thus control profitability.

The European market is also concentrated, as the four largest carriers (Ryanair, Lufthansa group, IAG and easyJet) had a total local market share of as much as 57% in 2019. However, as many as two of the leaders are low-cost carriers, of which Ryanair (19% share) is often described as ultra-low cost. Acrimonious intra-European competition means that the industry's profitability was at a very low level before the crisis, despite historically high revenues. In addition, more than 100 carriers with market shares of less than 1% were operating under European skies until the beginning of the crisis, triggered by COVID-19. This is partly due to the tradition that each country has at least one low-cost airline in addition to one national flag carrier - usually full-service.

Determining the pre-crisis, pandemic state of the European air transport sector is key to understanding the scale of possible restructuring moves, whether through elimination of certain players, bankruptcy, or acquisitions, as well as the need for government support.

Given the turbulence of the crisis caused by COVID-19 and the financial weakness of some major carriers in Europe, as demonstrated earlier, public support for the Air France-KLM group or Lufthansa seemed inevitable. To assess the need for and value of aid, it is worth evaluating the carriers' ability to overcome the crisis themselves. For example, the airline's ability to survive without undertaking any activities and without recourse to external resources, i.e. using only its cash reserves and previously granted credit lines.

At the beginning of the crisis, triggered by COVID-19, Ryanair had liquid assets representing 47% of its annual revenues, equivalent to 170 days of no activity before simple financial resources were exhausted. Unfortunately for the other key players in the European market, the full-scope carriers, the situation was more dramatic. Air France-KLM Group was able to endure a period of inactivity lasting 81 days, while for Lufthansa it was only 51 days.

Government administrations almost all over the world supported the airlines as the impact of the COVID-19 crisis proved to be deeper and longer than originally expected. This support prevented widespread airline bankruptcy in 2021.

3.9. ADJUSTMENTS IN RESPONSE TO THE PANDEMIC

For European passenger carriers, the onset of the pandemic may have led to drastic financial decisions. It should be noted, however, that it is difficult for large full-service carriers to cut fixed costs, which represent on average half of their total costs from one day to the next.

Certainly, passenger carriers can decide not to pay dividends, which is a slight relief to the budget. An alternative solution - which would keep cash in the company - such as not refunding customers for missed flights is, on the one hand, illegal - for a missed flight, a passenger can claim a refund or request a ticket at another time - but on the other, it would only postpone liabilities.

In response to the pandemic the passenger transport sector has made more or less explicit adjustments to reduce the fixed costs of its operations. Unfortunately, the cost structure of carriers and their long-term commitments indicate that the only cuts can be made mainly in wages and staffing levels.

Airline companies can, of course, lay off staff, cancel aircraft orders (pun intended) or sell off aircraft they already own. But the sources of reduction in fixed costs remain limited, given the large share of personnel costs: 40% for Air France, 30% for Lufthansa and IAG, compared to only 24% for Ryanair.

Thus, the main changes in cost structure include staff reductions of almost 30% (12,000 employees) at British Airways, at least 16% at Lufthansa (22,000) and 17% at Air France. In most cases, these were voluntary departure programmes.

In addition, the three airlines mentioned above have tried to reduce staff costs by cutting salaries, especially for pilots. In the case of IAG, this was 20%. Lufthansa pilots proposed to cut their salaries by 45% to avoid redundancies. At KLM and Air France it was decided to freeze salary increases.

The full-service carriers also planned to reduce the number of flights in the medium term and to reduce their fleets. Air France was to cut 40% of its local routes by the end of 2021, while Lufthansa has decided to reduce its fleet by 150 aircraft (20%) by 2025. IAG plans to retire 55 aircraft.

The alternative to cutting costs would, of course, be to declare the company bankrupt. Let us leave this option out of our considerations. Indeed, from a theoretical point of view, one could consider that bankruptcy simply leads to the replacement of an existing entity by a new one, which is considered a fairly natural mechanism for resolving crises in a market economy. However, the costs of transforming and reorganising the market are high: putting tens of thousands of employees out of work, even temporarily, is a cost for society; moreover, disorganising and destabilising the network of lines would be costly and argues in favour of keeping the incumbent on the market.

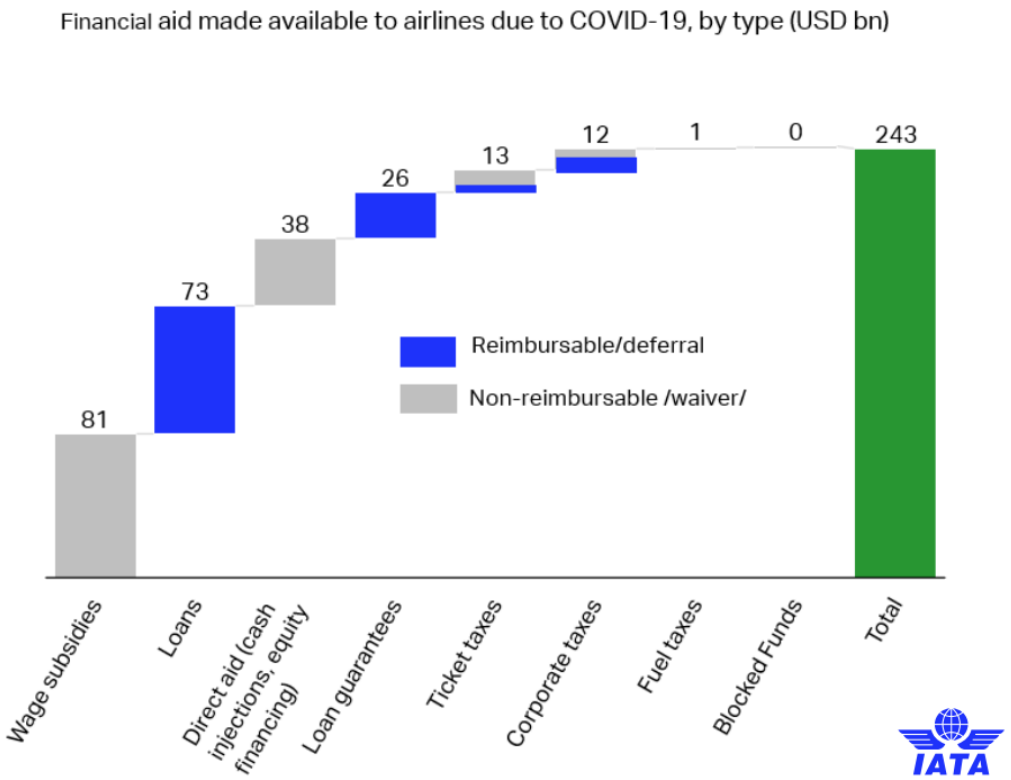
In this light, the call for public aid was justified. Moreover, historically speaking, large companies in the world will also receive support from their States when faced with unforeseen difficulties. For example, US carriers, which are in incomparably better economic shape, have asked the federal government for USD 50 billion in support. It would therefore be unjustifiable for European governments - either on their own or at Community level - not to help their airline operators.

Government support is analysed in detail in a separate report. It is only noted here that in practice it has taken various forms:

- capital injections,
- loans,
- tax deferrals,
- and reductions in tax liabilities.

It is important to distinguish that most of the aid is in the form of refunds and deferrals, only some of it - mainly related to job subsidies - is a type of exemption. This is an important distinction, as it means that some of the administrative aid actually adds to the financial obligations of the airlines.

Figure 16: Financial aid made available to airlines due to COVID-19.



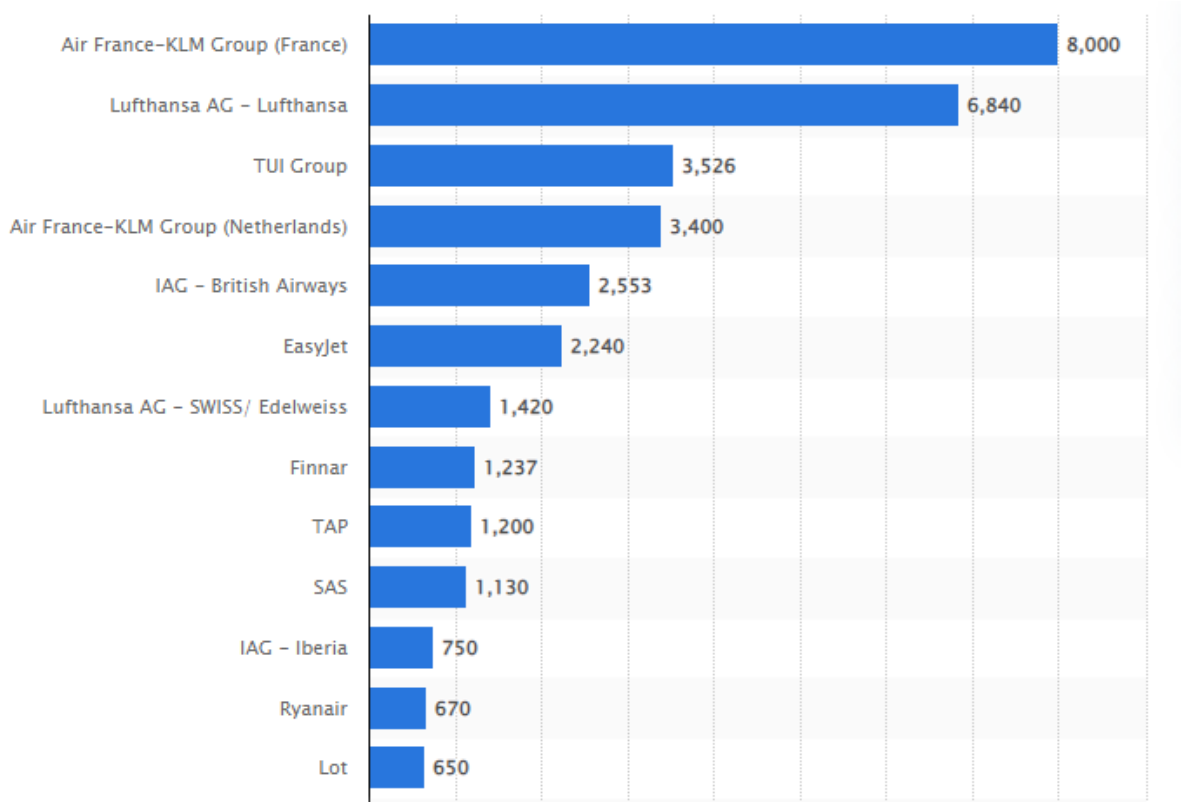
Sources: IATA, ATAG, Oxford Economics, ICAO, UNWTO, WTO, public information and data from SRS Analyser, DDS, FlightRadar 24, TTBS, ACIC, Platts, Airline Analyst, annual reports. In the gvt. aid chart.

Some governments also continued wage subsidies (USD 81 billion) to maintain jobs. Loans and loan guarantees also provided support, US$73 billion and US$26 billion respectively. At the end of September 2021, government assistance to the air transport sector totalled USD 243 billion.

However, government assistance was unevenly distributed between regions. While airlines in the United States, Europe and parts of Asia have received significant government support, while other geographical markets have received no assistance at all. It is worth noting that the main intention of the government assistance was to provide temporary relief to airlines until passenger demand returns.

The industry remains vulnerable to a recurrence of the pandemic and financial support from governments is still crucial for some airlines to survive.

Figure 17: Government aid to European passenger carriers (EUR million).



Source: Statistica.

Obviously, direct aid - granted by a state administration to companies - violates European state aid rules. Indeed, Article 107 of the Treaty on the Functioning of the European Union (TFEU) states that: "save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market". However, in view of the exceptional circumstances, the European Commission has adopted a temporary legal framework allowing Member States to ensure that all companies have sufficient liquidity to maintain economic activity during the epidemic.

Public intervention is justified by the urgency and the liquidity crisis experienced by the large national carriers, although it may also distort competition, especially for operators who do not benefit from public aid.

State aid should be made conditional on structural reforms. A partial solution is also to review the public policy on air transport taxation, particularly with a view to reducing the differences in competition between European countries.

3.10. EUROPEAN LCCs DURING THE PANDEMIC

We have devoted a lot of space to presenting the economic situation of European full-service carriers and their struggle with the crisis caused by COVID-19. For a change, let's look at the second branch of the European passenger airline market, i.e. low-cost airlines.

The biggest players are currently:

- Ryanair,
- Easyjet
- and Wizzar.

Even before the pandemic, in 2019:

- Ryanair carried 152 million passengers,
- second was Lufthansa with 145 million,
- followed by IAG with 118 million,
- Air France KLM with 104,
- fifth was EasyJet with 103,
- then Turkish Airlines with 74 million,
- Aeroflot with 60 million,
- eighth was Wizz Air with 40 million,
- and ninth was Norwegian Air with 36 million,
- tenth was Turkish Pegasus with 31 million.

Like all airlines, low-cost carriers are also feeling the strong impact of the Covid-19 crisis. Ryanair, for example, had as much as a 60% drop in traffic in 2020, when only 50 million passengers used its services compared to 152 million in 2019. Nevertheless, LCC airlines are gaining market share in Europe, thanks to their flexibility and low prices of tickets. As recently as 2019, their share of total passenger traffic stood at 37%,

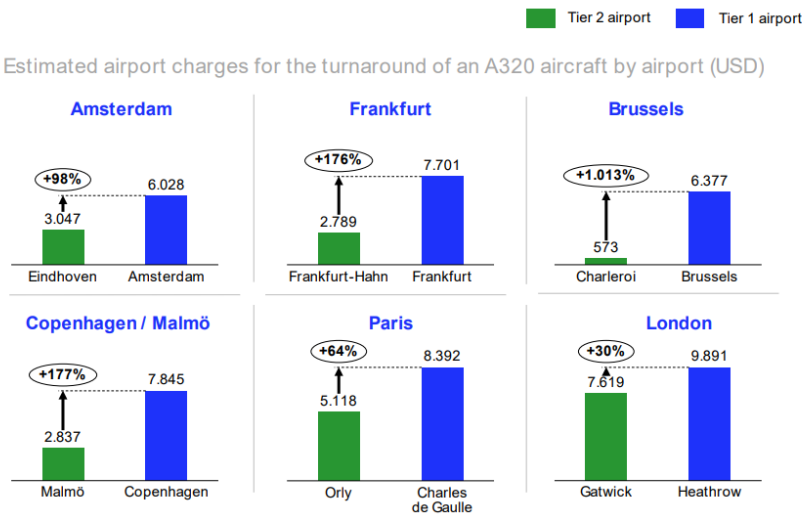
only to raise their share to 44.5% a year later, despite the significant turbulence of falling revenues.

The crisis, triggered by COVID-19, changed a lot in passenger traffic. Not only did revenues and the number of flights fall, but above all the number of passengers. In 2020:

- Ryanair still topped the list with 52 million,
- followed by Lufthansa with 36 million,
- Air France KLM with 34 million,
- IAG with 31 million,
- Aeroflot with 30 million,
- Turkish Airlines with 28 million,
- Wizz Air seventh with 16.5 million,
- EasyJet eighth with 16 million,
- Pegasus ninth with 14.5 million
- and Russian S7 tenth with 12.5 million.

As you can see, the declines in passengers carried are massive and affect all carriers, both full-range and low-cost. However, it is the latter that have several advantages that will allow them to survive the market slump more easily and even come out of it strengthened.

Figure 18: Estimated airport charges.



Source: IATA Economics. Estimated airport charges for turnaround on an A320 aircraft by airport in US$

The great strength of the low-cost model lies in the consistency between the structure of the offer, in terms of costs and routes served, and the structure of demand, in terms of customers and airline revenues.

Another important feature is the choice of operating bases. Ryanair, which in 2020 had over 70 bases across the continent, or Wizz Air, which had over 20 bases, most of which are in Eastern Europe. Setting up in regional airports allows for reduced taxes and even public subsidies for opening routes, as well as great operational flexibility.

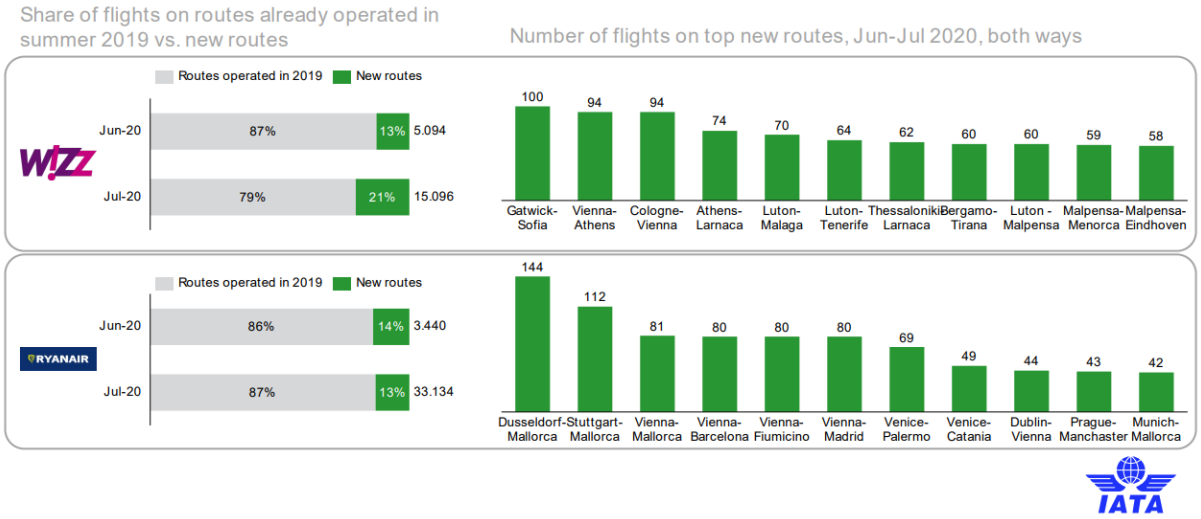
In terms of customers, low costs attract mainly leisure and foreign customers who are very price-sensitive but pay less attention to frequency, schedules and choice of destinations.

In terms of revenue, very low-cost fares are very low: for Ryanair, the average ticket price in 2019 was €37, plus €17 in paid options, for a total of €54. Organisationally, LCCs have a very agile and resilient model that quickly adjusts capacity and destinations to changes in demand.

In addition, low cost airlines fly with higher occupancy rates that reach up to 80% of seats, while traditional operators have only 65% of seats occupied on average.

Also, other expenses of low-cost carriers, such as loading, sales and distribution fees or administrative costs are between 50% and even 80% lower than those of full-service airlines. Add to this the lower wages of the slightly smaller crew and operators such as Ryanair and Wizz Air have costs per available seat 43% lower than traditional, full-service airlines.

Figure 19: Share of flights on operated and new routes and number of flights on to new routes for Wizz Air and Ryanair.



Source: IATA Economics using data from SRS Analyser

It is worth noting that during the pandemic, between waves I and II, taking advantage of several months of relative calm and the rolling back of some travel restrictions, both low-cost airlines were able to launch several percent newer unique intercity routes than in the year before the outbreak. The low-cost carriers have decisively adapted their offer volumes to the crisis context, cutting salaries and route networks to reduce fixed costs. This may not be a strategy that will restore pre-pandemic revenues, but in the new turbulent environment, it could be profitable.

What's more, low-cost airlines have been generating double-digit profit margins for several years - between 12% and 20% depending on the year - which has allowed them to accumulate significant savings. Ryanair, for example, had one of the most robust balance sheets in the sector at the start of the Covid-19 crisis, with €3.8bn in cash and low debt, estimated at 69% of equity. As mentioned earlier, the Irish carrier could sustain itself, without resorting to loans or asset sales, for 170 days, not counting the reduction in fixed costs and the fact that Ryanair was making margins all the time. The same applies to Wizz Air, which at the start of the crisis had a cash balance equal to 48% of its turnover in 2019.

In addition, Ryanair has its own fleet of more than 400 aircraft, thus saving on the financial handling costs of leasing and being able - if necessary - to sell redundant fleet.

An important feature of low-cost carriers is precisely their cost structure, and more specifically the low share of fixed costs in relation to variable costs. The largest share

of variable costs is the purchase of fuel, but for Wizz Air this represents only 29% and for Ryanair 35% of total expenditure. In the case of full-service airlines, wages for pilots and cabin crew are equally high costs. Fuel costs are often 20% of total expenditure. By contrast, for LCC airlines, staff costs, which in theory are variable costs depending on traffic, are essentially fixed at around 10% of expenditure for WizzAir and 13% for Ryanair.

CONCLUSIONS

Regardless of whether the air transport sector will ever return to 'normality' - whatever that label might conceal - it is likely that Ryanair, Wizz Air, as well as other low-cost carriers, can emerge from the Covid-19 crisis without major damage and will even have sufficient financial resources, especially through debt and purchases of failing companies, to take part in the likely restructuring of air transport in Europe.

As a result of the crisis caused by COVID-19, not all European airlines are in the same situation: former national carriers such as Air France-KLM or Lufthansa will survive the crisis mainly thanks to massive public support, while the strongest low-cost operators, among them Ryanair, Wizz Air and easyJet, should be able to survive the period of instability by drawing on their financial reserves.

It is precisely the diversity of airlines' financial situations that makes the answer to the question: who is best placed to exploit turbulent realities to their advantage, full-service or low-cost carriers?

It seems that an important part of the answer to this question will be to take over the so-called airport slots, i.e., slots, from airlines that go bankrupt or are taken over because of the crisis. As both types of passenger operator use different types of airports, this will probably mean consolidation of full-service carriers at tier one airports and low-cost carriers at tier two airports. It is worth noting at this point that vacant slots may be tempting for new entrants to take advantage of this market opportunity to establish themselves in the air transport sector.

The business profile and access to financial resources means that in this future battle for the European skies, large low-cost airlines, such as Ryanair and Wizz Air, may use the situation to go on the offensive and will seek to consolidate their advantage - in the case of Ryanair, or their position - in the case of Wizz Air. Of course, history shows us that large, full-service operators who come from former national airlines can count on considerable favour from government administrations. But by borrowing more to sustain their operations, restructuring in the short term or reducing ticket revenue, they may find it very difficult to compete with more nimble and flexible low-cost competitors.

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