THE CORONA VIRUS PANDEMIC
IMPACT ON THE AVIATION MARKET

UPDATE AS OF 6TH APRIL 2020

EXECUTIVE SUMMARY

- COVID-19 will have a far more disruptive impact on the travel and tourism industry than past epidemics – and the virus will cause a global recession in the short run
- Airlines are turning to new debt, renegotiating leases and requesting rental holidays, while aircraft values and lease rates are deteriorating, especially of older aircraft types
- Airline consolidation of financially weak airlines is inevitable, while governnment aid will be essential for airlines and the entire aircraft supply chain
- However – aviation is vital infrastructure for the global economy, as it fosters economic growth and creates jobs. We believe that aviation will be essential in the post-virus world
- Aircraft give investors capital protection, as real assets that will help power the post-virus recovery – while proactive management of portfolios by teams with engineering expertise can help to maintain these capital assets and add investment outperformance
- Investors in aircraft can expect lower lease income during 2020, but promising longer-term income prospects over typical aircraft lifespans of 20+ years

Aviation is considered to be an important part of infrastructure

1. INTRODUCTION

Passenger air traffic is moving towards a near total shutdown, a course that has felt almost inevitable since COVID-19 was categorised as a global pandemic on 12th March.

The airline industry has been affected in the most severe way as airlines have been forced to make substantial changes to their network including flight cancellations, route suspensions and capacity adjustments. Governments will now be challenged to support airlines in adequate ways to help them through the crisis.

But what does this mean for the fundamental assets of aviation – aircraft themselves – and what should investors expect?

This paper aims to answer this question. The sections below give an overview of the impact on the airline industry (section 2) and summarises the reactions so far by airlines (section 3). Compared to the previous edition of this whitepaper, this paper describes in greater detail how governments are reacting to the current crisis (section 4). Section 5 gives an outlook on aircraft lease rates and residual values. In the final chapter of this paper, we give a brief outlook on the aviation sector over the longer-term, beyond the current exceptional period (section 6).

2. IMPACT ON AIRLINE INDUSTRY

Looking at the development of commercial aviation since the 1950s, we see a dual pattern – an underlying steady increase in air traffic, measured in Revenue Passenger Kilometres (RPKs), and overlaid on top of this many external short-term negative actors, such as oil crises, recessions, wars, terrorist attacks and disease outbreaks.

The impact of COVID-19 will be far more disruptive than past epidemics

This time however, air travel is expected to take longer to rebound after the current crisis. There are some key differences compared with past episodes such as the unprecedented travel restrictions around the globe and the expected worldwide recession.

A global recession will likely lead to increased unemployment, lower business confidence and a reduction in consumer spending, which is taken into account in the latest estimation of the International Air Transport Association (IATA).[1]

TABLE 1: UPDATED FORECAST ON CHANGE OF PASSENGER NUMBERS AND REVENUE **AS OF 24-MAR-2020**[1]

Region of Airline Registration	% Change in RPKs (2020 vs. 2019)	Impact on passenger revenue 2020 vs. 2019 (bn USD)
Africa	-32%	-4
Asia Pacific	-37%	-88
Europe	-46%	-76
Latin America	-41%	-15
Middle East	-39%	-19
North America	-27%	-50
Industry	**-38%**	**-252**

[1] Source: IATA, 24/3/2020: COVID-19, Updated impact assessment of the novel Coronavirus

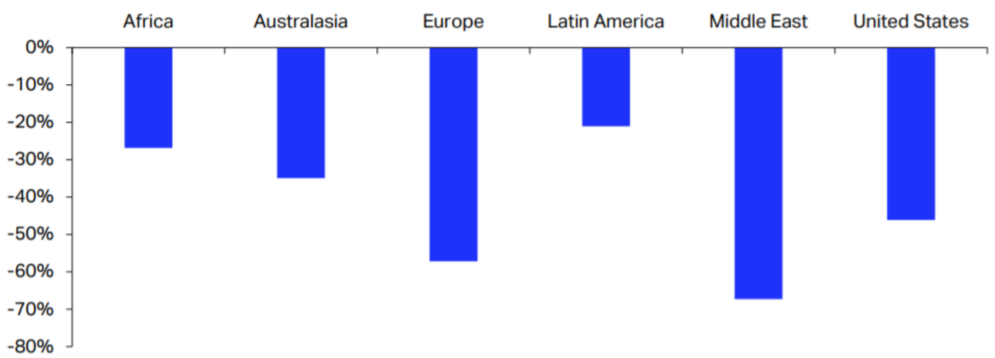
The association predicts that full year revenue passenger kilometers decline 38% in 2020 compared to 2019. This would result in a passenger revenue loss of USD 252 billion for the industry which would equal approximately 29% of the previous forecasted annual total.[1]

As described in the next sections, airlines attempt to mitigate the immediate strain on liquidity and the simultaneous loss of revenue by means of targeted operating costs' measures (fleet grounding, shorter working hours, immediate cost-cutting programs). In addition, extensive government support programs are vital to the industry.

3. REACTIONS BY AIRLINES

As shown in the chart below, demand for air traffic fell tremendously worldwide due to travel warnings, travel restrictions and closed borders, the airline sector is the industry that has been hit the fastest and probably hardest by COVID-19.

CHART 1: NUMBER OF PASSENGERS FOR TRAVEL MONTH MARCH (YEAR-ON-YEAR CHANGE)[2]



Demand has dropped globally, from 20% to more than 60%. For the first three months of 2020, weekly RPKs have reduced by between 21% (North America) and 75% (Europe).

It is expected that around half of the world fleet is expected to be grounded by the end of April. According to a study by the IATA, the industry is estimated to burn approximately USD 61 billion in just the second quarter of 2020.[3]

Therefore, airlines have moved into crisis mode. Liquidity management for airlines remains key in order to navigate through the global crisis. In order to manage liquidity and to cover remaining operating costs, airlines have cut down costs, by introducing measures such as reduced work hours and vastly reduced flight capacities. An airline's typical cash position would otherwise last for approximately two months without operating income, according to IATA, but this can be prolonged with the dramatic measures that have been taken.

Around 90 airlines have halted their entire flight schedules while another 40 carriers are reducing services by between 80% and 99%. Now, at the end of the first quarter, the number of temporarily parked aircraft has reached over 11,000, which equals to more than 40% of the world fleet.

The remaining aircraft are flying under significantly reduced utilisation. Currently, many airlines are still operating repatriation flights. Once these operations are ceased, global capacity is expected to decline even further.[3]

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[2] Source: IATA, 24/3/2020: COVID-19, Updated impact assessment of the novel Coronavirus. Number of passengers are based on booking data for the month of March

[3] Source: IATA, 31/03/2020, COVID-19, Cash burn analysis

Lessors have also been approached in order to defer lease rentals and grant rental holidays. This, along with the addition of new debt, in the form of refinancing unencumbered assets as well as governmental support, will tremendously help all airlines to outlive this period of dramatically – but temporarily – reduced demand.

As described above, the industry is capable of reacting very quickly to sudden events such as the current outbreak. Airlines have many different instruments in order to navigate the crisis, which they are using in a very professional manner.

Alongside these steps taken with current fleets, many airlines with existing aircraft orders have approached manufacturers to reach agreements on deferring delivery slots. This will further avoid overcapacity. Airlines are also working to restructure payments to aircraft manufacturers to free additional financial liquidity.

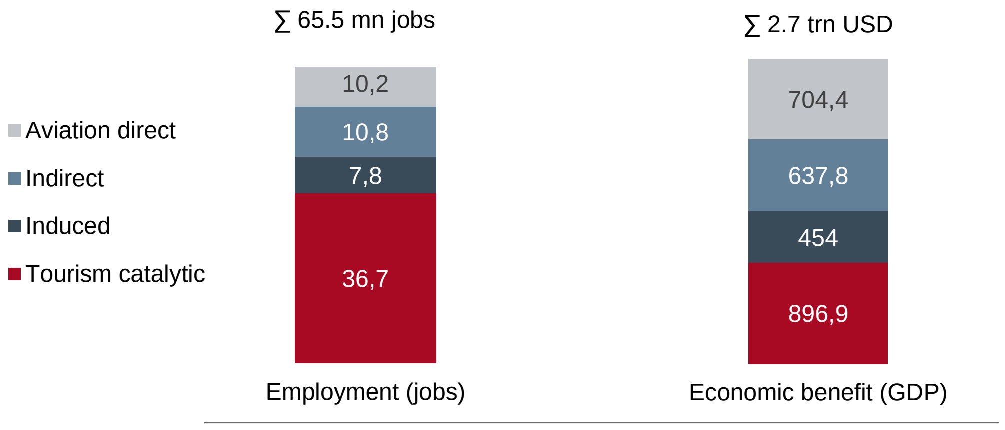
Carriers have also reached out to their respective governments to negotiate credit lines, tax aid and other means of support, as detailed in the following section.

4. REACTIONS BY GOVERNMENTS

Such a tremendous financial impact on the global airline industry cannot simply be bridged through short-term deferrals of airline repayment obligations and the drawing down of existing institutional lines of liquidity or credit.

The vast majority of airlines around the world are requesting lease payment deferrals from their aircraft lessors and loan repayment deferrals from their aircraft's senior secured lenders to preserve their short-term liquidity positions. But to look beyond these short-term solutions, all eyes remain focused on the governments around the world.

CHART 2: DIRECT AND INDIRECT IMPACT OF THE AVIATION SECTOR [4]



Governments around the globe have supported the aviation sector during or after previous crises. This is likely to be the case again. The aviation sector plays a major role for the global economy, among other things by supporting directly and indirectly around 65.5 million jobs globally and by generating a contribution towards GDP of around USD 2.7 trillion.[4]

[4] Source: ICAO Website (https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx)

In observing the impressive government actions that have already taken place over the last few weeks, it was reported that already “close to USD 72.8 billion” in government financial support, specifically for airlines, has been committed.[5] As these commitments take form, the industry anticipates even more governments to confirm financial support to their own national airlines.

A very large portion of this committed amount is the circa USD 58 billion slotted for US airlines included in the US Government’s USD 2 trillion financial relief package signed into law last week. When compared to the USD 15 billion financial response to the 9/11 Aviation Crisis of 2001, the 2020 commitment of the US government to its aviation industry is nothing short of remarkable. Even in considering that the worldwide airline revenues grew at a circa 2.75x multiple since 2001, the 2020 US Government commitment can be viewed as substantially more than its commitment back in 2001. Interesting to note here is that the total 9/11 financial impact to US airlines was calculated to be USD 10.7 million in lost revenues.[6]

Turning to the broader international picture again, unconfirmed reports are already circulating suggesting a further USD 5 billion of support could be committed by other governments shortly.

However, not all governments have or will choose to deploy government aid in the form of large blanket bailouts. More selective, creative and complex government measures are being implemented to support the domestic airlines, their workforces and their flight operations.

Examples of these more creative government support packages include:

- **Salary subsidies:** Among other forms of selective government aid, Lufthansa is looking for German, Swiss, Austrian and Belgium government financial support to help subsidies employee’ salaries as approximately 87,000 of its 135,000 global workforce is asked to go on part-time employment contracts in the hopes of minimising employee lay-offs.
- **Revenue subsidies:** Among other forms of creative subsidies, China for example is also choosing to support its airlines by directly subsidizing each available seat kilometer flown. The government’s focus here is to see its domestic air traffic network ramp-up while its international flights continue to be reduced to prevent further imported cases of COVID-19.
- **Emergency credit:** Among the anticipated complex government measures, the UK government is being challenged on one side by cries from Virgin Atlantic demanding government emergency credit facilities totaling up to USD 5.8 - 8 billion while on the other side British Airways, and its owner AIG, are warning the UK Government not to repeat its (FlyBe) mistakes of the past.

Ultimately, government support for its own airlines will depend on the respective countries’ economic reliance on air transport, the economic state of both the respective government and its aviation industry, internal and international political concerns and the government’s current involvement in its airlines.

Notably, any public support for aviation will also depend on how it relates to government environmental policies around aviation, and in particular the way in which any support is either seen to be providing subsidy for carbon emissions, or conversely the way in which support can encourage efficiencies. This might include the priority use of newer aircraft on remaining routes and changes to regulations such as the recent changes to ‘slot retention’ rules. With greater imperatives for public scrutiny and government oversight, such environmental considerations will also likely impact fleet management in this highly disrupted period.

[5] Source: Ishka Insights, Eduardo Mariz, 2nd April, 2020, Covid-19: Airline demands vrs government support

[6] Source: Ito and Lee, 2005, Assessing the impact of the September 11 terrorist attacks on US airline demand, Journal of Economics and Business 57 (2005) 75-95

5. IMPACT ON LEASE RATES AND RESIDUAL VALUES

In past crises, market values for narrow body aircraft have declined by about 15% while lease rates fell by around 25%.[7] Then, in those past scenarios, it has usually taken about two years until the market values and lease rates started to rise again. Meanwhile, the trend for wide body aircraft has mostly followed the same pattern, but with longer recovery periods.

In order to assess the present situation, Ishka, a specialised consultancy for aviation, has analysed current market values of aircraft and respective lease rates between January and March 2020, drawing on market events and aircraft activity. The general opinion is, that the developments of market values will be heavily dependent on airline survival as well as global economic recovery and consequently the demand for aircraft capacity.[8]

As it can be assumed that domestic markets are likely to recover first, narrow body aircraft should be in higher demand than wide bodies, their larger counterparts.

Recovery for long-haul, international flights will eventually be subject to governmental approval of cross border transportation. For modern wide body aircraft types such as the Airbus A350 or Boeing B787, these effects will only be in the medium term. Older aircraft types that are already nearing the end of their respective in-service time, such as the Airbus A340 or the Boing B757 and B767, could potentially be retired earlier than expected. Some larger carriers have already announced accelerated retirements for such aircraft within their fleets.[9]

Depending on the asset type, Ishka believes that in this crisis initial adjustment will be between 10% and 30% for market values and lease rates. The following table shows the evolution of current market values (CMV) in the first quarter of 2020 for different aircraft types based on observed transactions as well as appraiser opinions.[9]

TABLE 2: EVOLUTION OF CURRENT MARKET VALUES IN Q1/2020 FOR SELECTED AIRCRAFT TYPES[9]

Type / 2019 vintage	CMV 1Q2020	CMV 2Q2020	CMV % change
A320ceo	$37.50m	$34.45m	-5%
A321neo	$55.75m	$50.25m	-10%
B737-800	$39.50m	$36.65m	-8%
B787-8	$113.50m	$108.50m	-5%
A330-300	$83.25m	$82.00m	-2%
A350-900	$143.80m	$134.00m	-7%

The freighter market is evolving slightly differently during this crisis. For now at least, the cargo market is experiencing a small rebound as the supply chains from the East come back on stream. The cargo market is even expanding its use of the main deck capacity of some passenger aircraft as well as their belly capacity – especially in order to transport medical supplies, medical personnel and pharma.

Consequently, dedicated long haul freighters and passenger aircraft with good belly cargo capability are demonstrating their utility today. Thus, market values for cargo aircraft such as the Boeing B777 freighter remain constant. These aircraft will presumably overcome the crisis better

[7] Source: Ascend by Cirium: https://www.youtube.com/watch?v=QsTcbdFAVaA
[8] Source: Ishka, 30/03/2020: Transaction situation report

[9] Source: Ishka, 30/03/2020: Transaction situation report

than passenger aircraft in terms of market values. However, the initial increased utilisation is more likely to be temporary.[9]

6. OUTLOOK BY KGAL / GOAL

Opportunities in aircraft leasing in the current situation are two-fold, and this matches how we have structured our specialist teams for many decades.

First the long-term value of relatively young aircraft remains considerable, given their lifetime well in excess of even the worst-casde scenarios around COVID-19. Within our Core fund strategy, in which the investor focus is stable fixed income, we are obviously very cautious in the current environment and are only investing very selectively. Investments in liquid assets with a long-term lease to one of the major reputable airlines are advisable.

Second, aircraft fleet management is the key issue for aviation in 2020, and this spans all aircraft types and ages. There is considerable added value to be found in utilising these technically complex assets in the most efficient way possible, maximising the value gained from older models and considering intelligent ways to add value to portfolios of aircraft. KGAL's Core Plus fund strategy is based on KGAL/GOAL's profound market knowledge, deep asset management competence as well as our long and successful track-record. We have the capacity and capability to selectively take advantage of the current unique market conditions by sourcing and co-investing alongside our investors in interesting market opportunities.

To summarise our overall apporach, realism is essential but longer-term optimism is also the most realistic view. Matching engineering excellence with investment know-how will let us successfully navigate this highly dynamic environment – and maximise long term value for investors.

As successfully demonstrated in the past, the aviation market has the capability to return to the original historical long-term growth path after the epidemic subsides. We believe, that, after the crisis has been successfully managed, aviation will still be an essential part of our modern world. Aviation is an important part of infrastructure as it provides essential services to the public, fosters economic growth and creates jobs. KGAL believes that aviation is a long-term growth industry.

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KGAL Group

To date, the aircraft fund investment volume realised by KGAL Group totals more than €7.9 billion. Since the initial aircraft fund in 1979, KGAL has concluded transactions for more than 860 aircraft, 81 private placements and other investment models, as well as 58 retail and three institutional funds. KGAL Group is a leading, independent investment and asset manager with an investment volume of €20.2 billion. The investments focus on long-term capital investments for institutional investors in the real estate, infrastructure and aircraft asset classes.