

Impact of COVID-19 on the UK aviation sector

Airport Operators Association
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steer

Impact of COVID-19 on the UK aviation sector

Note on timing of the report

The analysis contained within this report was undertaken in late Autumn 2020 and the report compiled in December 2020; the projections, analysis and commentary contained within this report therefore reflect the situation during this time, in particular, with respect to government policies, international travel restrictions and, the outlook on the evolution on the virus and effectiveness of the vaccines.

This report therefore does not take into account developments in late December 2020 and January 2021, including, but not limited to, the UK's government's vaccination policy, the rapid spread of the infectious strain of the virus within the UK, the national lockdown restrictions imposed at the start of January 2021 and the form of the agreement on the future relationship between the UK and the EU. In combination, these developments produce a slightly more pessimistic outlook, in the short-term, relative to the projections within this report, and analysis should be interpreted in this context.

14 January 2020

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Executive Summary (1)

UK aviation sector: 2020

COVID-19 has had an unprecedented impact on the UK aviation industry, with traffic collapsing to levels not seen since the mid 1980s and passenger traffic down **72%** in the first three quarters of 2020 (vs. 2019). The collapse in traffic has been felt across all airports, although has generally been worse at smaller airports.

Since the initial mass cancellation of flights in March 2020, airport and airline revenues have followed the collapsing passenger traffic, and have **sustained significant losses** throughout 2020. For airports in particular, this has been exacerbated by high fixed costs and the limited scope to reduce these. **At least 18,000 airport and airline staff have been made redundant.**

Airports and airlines have **significantly reduced capital investment programmes** and taken on **large quantities of debt** in order to increase cash reserves, maintain liquidity and continue operations – a number of UK airlines have also filed for bankruptcy protection in 2020.

In most cases, creditors and shareholders have provided financial support in the short-term; however, it is less clear that creditors and (where present) shareholders will continue to support some airports and airlines, whose recovery profile will be slower and which will be less profitable once traffic recovers.

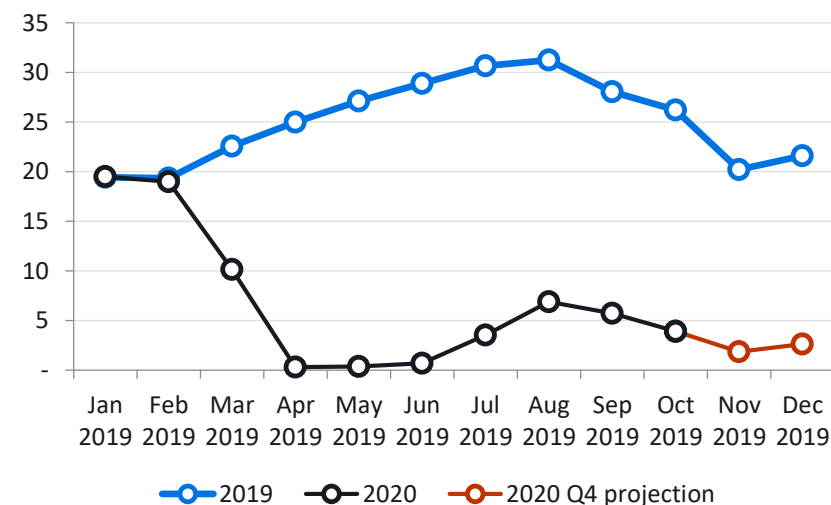
UK government support

Although airports and airlines have made use of the government's Job Retention Scheme (JRS), without which there would have likely been a far larger number of job losses, relatively little sector-specific financial support has been provided to the UK aviation sector.

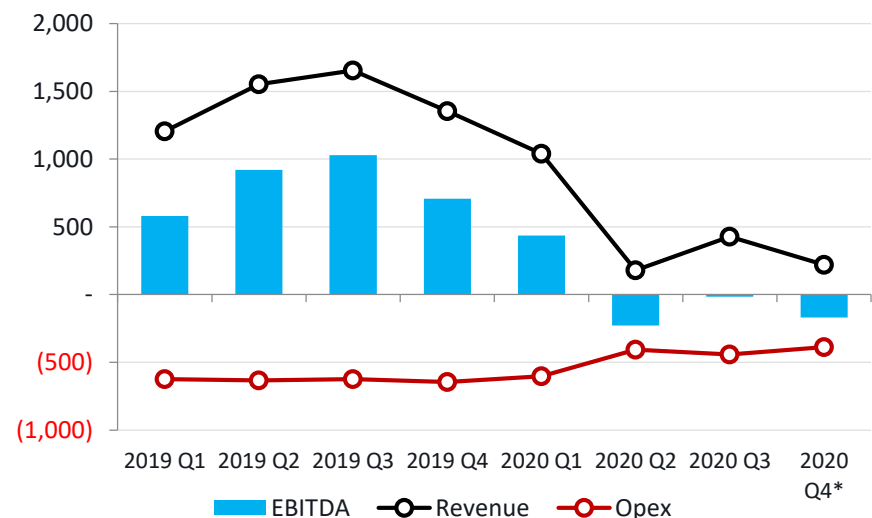
As of October, the UK government had provided a little over **£2 billion** (not including JRS) to the UK aviation sector through loans to airlines and aerospace manufacturers. The support provided has **been significantly less than many other European countries**, particularly after taking into account the relative size of the UK aviation sector. This compares with **£183 billion of COVID-19-related financial support** to the UK economy as a whole.

The **lack of a coordinated UK testing regime** through most of 2020, the **imposition of quarantine requirements**, and the **frequent changes** to the list of countries on the travel corridor list (sometimes at short notice) has resulted in a **lack of clarity** in relation to travel rules and is likely to have contributed to reductions in passenger demand during 2020.

UK passenger traffic: 2019 & 2020 (million)



UK airports EBITDA: 2019-2020 (£ million)



Executive Summary (2)

UK aviation sector: 2021-25

The projections of the impacts of COVID-19 on the UK aviation industry in the coming years are based on **three traffic scenarios**:

- **Scenario 1: Successful Vaccine**; vaccines are rolled out largely successfully worldwide through 2021.
- **Scenario 2: Divided World**; vaccines are rolled out largely successfully in developed countries through 2021, but there are issues in many parts of the world.
- **Scenario 3: Enduring Virus**; vaccines are rolled out through 2021 but their effectiveness is limited worldwide.

Under each scenario, revenues are projected to start to recover with traffic from spring 2021, although **2021 is still likely to be an extremely challenging year** for the industry (even under Scenario 1) due to the need to recover financially from 2020. In 2021, airports will not be in a position to employ additional staff and airport investment will stay at the low critical maintenance levels.

While airport revenues will recover with traffic, **per passenger yields will be lower than pre-COVID levels** for a number of years. The lower projected level of per passenger revenues mean that **total revenues are not projected to recover to 2019 levels by 2025** including under Scenario 1.

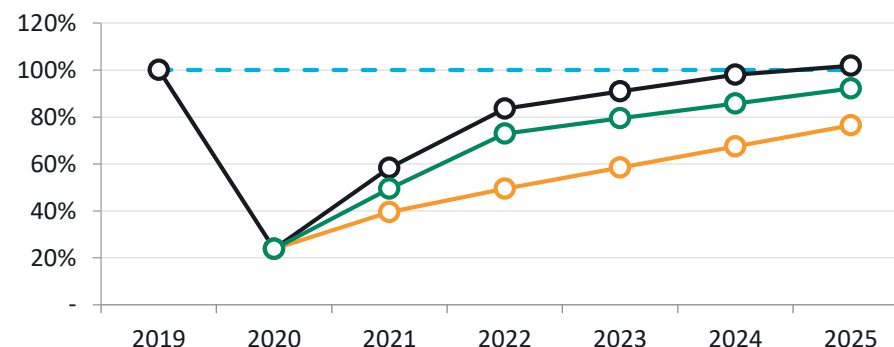
Under Scenario 1, airports and airlines are projected to be making a sufficient level of return from operations (net of capex and financing costs) to maintain their cash reserves to 2025.

Under Scenario 2 and 3, **cash reserves are depleted within the coming years, implying the need for additional financial support**. However, the projections differ across different classes of airports, with the smaller airports faring worse. At some airports, it is not clear commercial banks and shareholders will continue provide financial support and liquidity indefinitely, implying the need for additional state support.

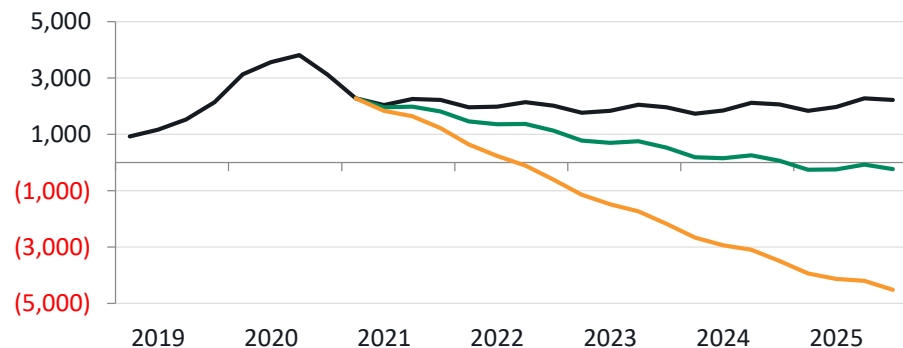
As airlines are likely to initially concentrate their capacity at major London airports, the recovery is projected to be uneven across the sector, with **smaller and regional airports recovering more slowly**, with negative impacts for regional connectivity, particularly on long-haul routes.

By 2025, **between £32 billion and £95 billion of industry Gross Value Added (GVA) is projected to have been lost** (relative to 2019 GVA). The negative impact of GVA is projected to be greatest in the regions of the UK outside London and the South East.

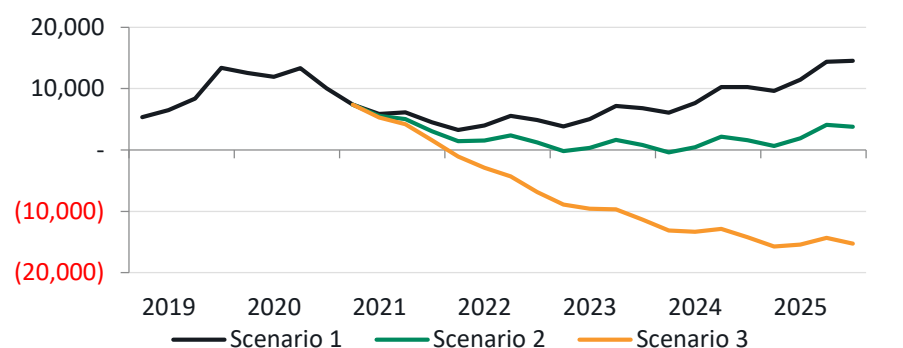
Steer Traffic Scenarios: 2021-2025 (% of 2019 passengers)



Projected UK airports aggregated cash reserves: 2019-2025 (£ million)*



Projected UK airlines aggregated cash reserves: 2019-2025 (£ million)*



*Assuming no additional financing from 2021

Executive Summary (3)

Policy Options

To date, the government has introduced a number of schemes to support the UK economy, although aviation-sector specific support has been limited. There are four broad areas, highlighted by the industry, in which the UK government could assist the aviation sector.

Health requirements

The purpose of health requirements on international travel would be to **provide effective, clear and consistent international travel rules** in cooperation with other governments.

The required measures, which include an **international recognised testing regime**, followed by **vaccine passports** and eventually **vaccine travel corridors**, are **key pre-requisites for international air travel to be able to recover** and will require effective testing regimes, and extensive dialogue and cooperation with other governments (they are also a necessary pre-requisite for many of the other policy options to have material impact).

Across the three scenarios, absence of effective targeted health measures for international travel could lead to **falls in revenue of up to between £3.8 billion and £4.6 billion** across airports and airlines in 2021.

Financial support

The purpose of financial support would be to provide airports and airlines with direct support such that they can maintain sufficient liquidity to continue operations in the short to medium-term.

Measures that would enable reductions in operating costs include the **continuation of the JRS** beyond April 2021, **business rate support** beyond the current planned support of up to £8 million in 2021 and support with sector-specific regulatory cost obligations including **CAA fees**, **air space modernisation** and **police costs**.

Across the three scenarios, an **extension of the JRS to the end of 2021** could enable operating cost savings of **between £1.4 billion and £1.7 billion**, with additional savings from **full business rate support (at least £230 million)**, **CAA fees (c.£95 million)** and **airport police costs (c.£85 million)**.

The provision of **direct loans** (on sufficiently attractive terms) to airports and airlines, would provide additional liquidity, although would need to be repaid, albeit on what are likely to be less stringent terms than commercial loans.

Tax relief

The purpose of targeted tax relief would be to incentivise passenger demand and airport spending.

Relief of Airport Passenger Duty (APD) is likely to incentivise passenger demand and give airlines an opportunity to recoup some lost revenues, and relief of VAT on airport retail offerings is likely to incentivise some additional airport spending by passengers.

Across the three scenarios, APD relief would **reduce the cost of air fares for passenger by between £1.6 billion and £2.3 billion**, and VAT relief **would reduce the cost retail offerings for passengers by between £100 million and £150 million**, in 2021.

Revisions to slot regulation

The objective of revisions to slot regulation should be to incentivise the fair and efficient use of slots and airport capacity during the traffic recovery.

Options include a continuation of the slot waiver (introduced in March 2020), a return to the previous '80-20' rule, or some kind of compromise rule, which attempts to balance interests of airports and airlines during the traffic recovery.

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Introduction

Background

This study has been produced by Steer for the Airport Operators Association (AOA) and its members, and has been undertaken in the context of COVID-19 and its impact on the UK aviation sector.

The COVID-19 pandemic has had an unprecedented impact on the aviation sector, both within the UK and worldwide, with UK traffic falling to levels not seen in decades. This has led to a collapse in airport revenues, which, combined with airports' high levels of fixed costs has led to the incursion of significant losses across the sector. UK airports have been required to seek additional financing, including taking on large levels of additional debt and equity, and to make use of government support schemes, to the extent these are available.

The purpose of this study is to analyse the impact of the COVID-19 pandemic on the UK aviation sector, both to date and in subsequent years, and to assess the extent to which new policy measures adopted by the UK government could assist the recovery of the sector.

Our Approach

To undertake this assessment, we have undertaken a review of the available literature, with data and information gathered from the following sources:

- Airports Council International (ACI);
- The Bank of England;
- British Business Bank;
- The Civil Aviation Authority (CAA);
- The European Commission & Eurostat;
- International Air transport Association (IATA);
- The International Monetary Fund (IMF);
- Journal of the American Medical Association;
- The Office of National Statistics (ONS);
- The Official Airline Guide (OAG);
- Open Table;
- UK Government departments; BEIS, HMRC & HM Treasury;
- Visit Britain;
- The World Bank;
- International government departments;
- Individual airport and airline financial statements and traffic statistical releases.

In addition, we have received data from AOA and a number of its members, and have conducted informal interviews with some AOA members.

This Report

The remainder of this report is structured as follows:

- Section 2 provides a brief overview of the UK aviation sector prior to the impact of COVID-19;
- Section 3 provides an overview of the impact of COVID-19 on the UK aviation sector in 2020;
- Section 4 describes UK government support that has been provided to the aviation sector;
- Section 5 sets out the traffic scenarios used to assess the impact on the aviation sector and the wider economy to 2025;
- Section 6, based on these scenarios, assesses the impact on the UK aviation sector;
- Section 7, based on the traffic scenarios, assess the impact on the UK economy to 2025; and
- Section 8 discusses the impact of additional potential government support and policy interventions.

Detailed descriptions of the assumptions and methodology used in our analysis are set out in Annex A.

The UK aviation sector



Airports

The UK is one of most mature aviation markets in the world and, prior to the COVID-19 pandemic, was also one of the largest. In 2019, 300 million passengers passed through UK airports, making it the fourth largest aviation market in the world and the largest in Europe.

In 2019, significant passenger traffic volumes were provided by Heathrow, which predominately serves international full-service carrier (FSC) traffic, by Gatwick and Manchester, which serve a mix of FSC and low-cost carrier (LCC) traffic, and by Luton and Stansted, which serve predominately LCC traffic.

Manchester provides the most capacity outside of London, and number of regional airports provide additional capacity on a mix of international and domestic routes. These include important connections between the nations of the UK, connections to major hub airports (in the UK and mainland Europe), and to island communities in the Scottish Highlands and Crown dependencies off the UK mainland (Channel Islands and the Isle of Man).

In 2019, significant freight traffic volumes were provided by bellyhold aircraft at Heathrow (and to a lesser extent Gatwick and Manchester), as well as by dedicated freighter aircraft operations at East Midlands and Stansted.

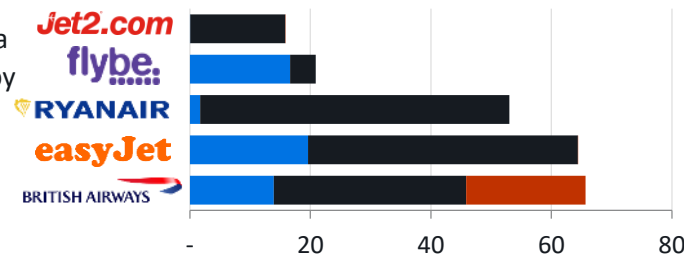
Airlines

Three airlines, easyJet, Ryanair and British Airways (BA), accounted for over half over the total UK's seat capacity in 2019, with the two LCCs catering predominately to short-haul international markets (with some domestic) and BA catering to a mix of domestic, short-haul and long-haul international markets.

Other major international operators included UK (and UK subsidiary) airlines: Jet2, Norwegian, TUI, Virgin Atlantic and Wizz Air as well as a large number of international airlines, which were concentrated at Heathrow but which also serve a number of other UK airports.

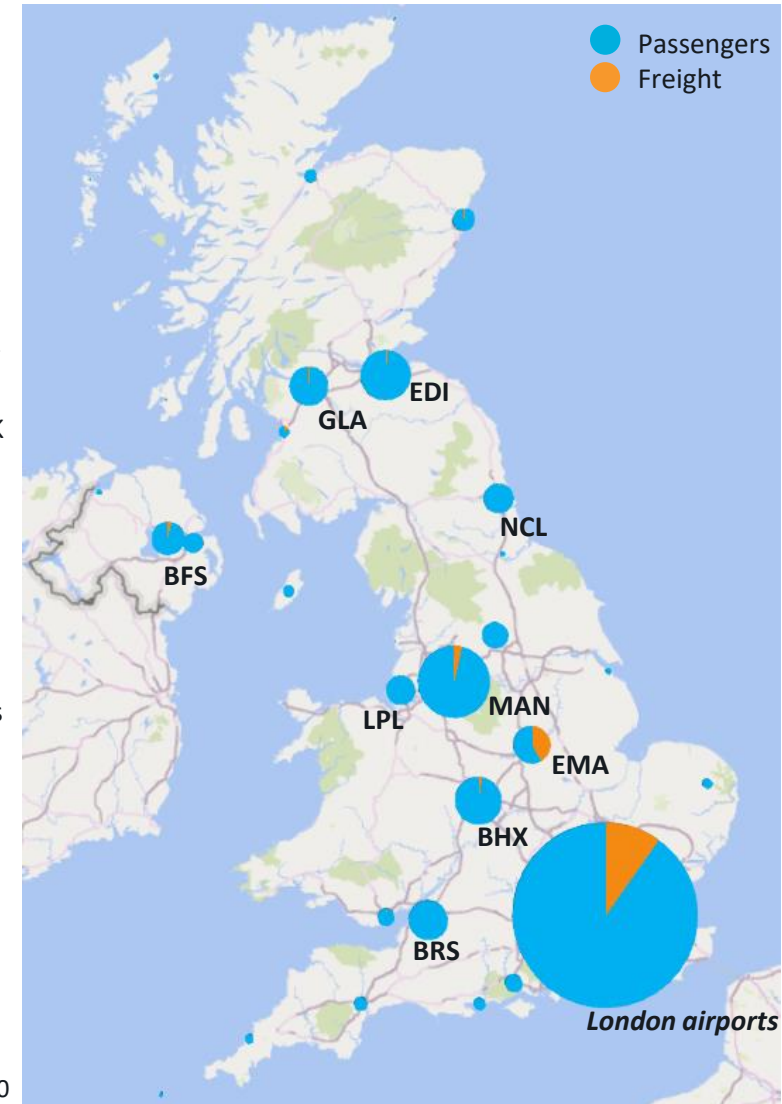
An addition to easyJet and BA, in 2019, a significant proportion of domestic capacity was provided by Flybe, which accounted for 29% of domestic traffic, but which ceased operations at the start of 2020 (Thomas Cook also ceased operations in late 2019). Loganair, which took over a number of Flybe's routes after it ceased operations is now the primary airline serving the Scottish Highlands and Islands.

UK top five airlines' UK seat capacity: 2019 (millions)



Source: OAG

UK airports work load units (1 passenger or 100kg of freight): 2019



Source: CAA

The UK aviation sector: traffic

2019

2020

2021-2025

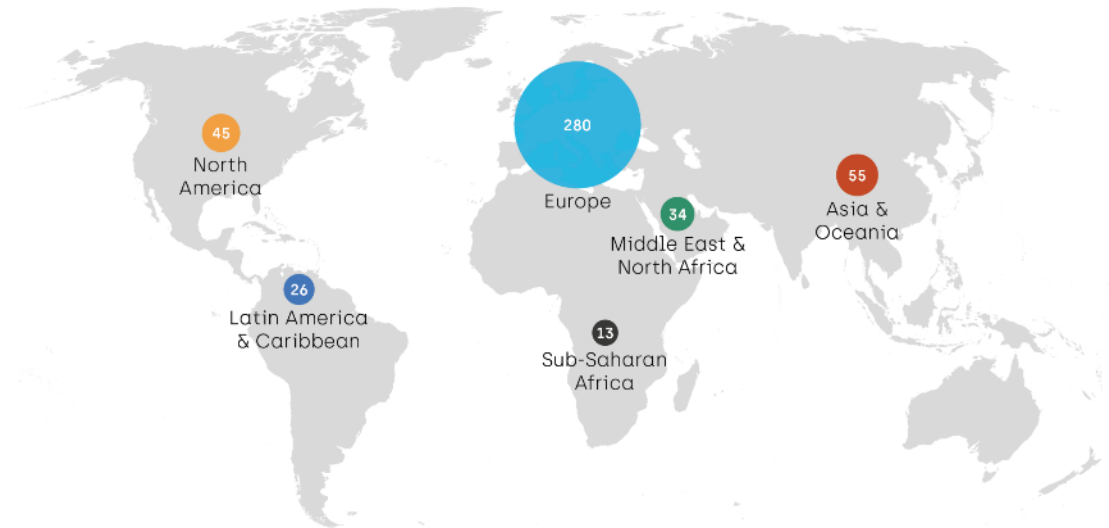
Destinations

European destinations accounted for close to three quarters (74%) of the seat capacity and over half (62%) of the destinations served by UK airports in 2019. Reflecting the UK's role as Europe's primary North American hub, North America was the largest intercontinental market in terms of seat capacity (10%), with, in spite of its relative size, 45 destinations compared to 55 in Asia. The majority long-haul routes are served by FSCs operating from Heathrow, Gatwick and Manchester, although a number of regional UK airports also served long-haul routes in 2019 (predominately to North America and hub airports in the Persian Gulf).

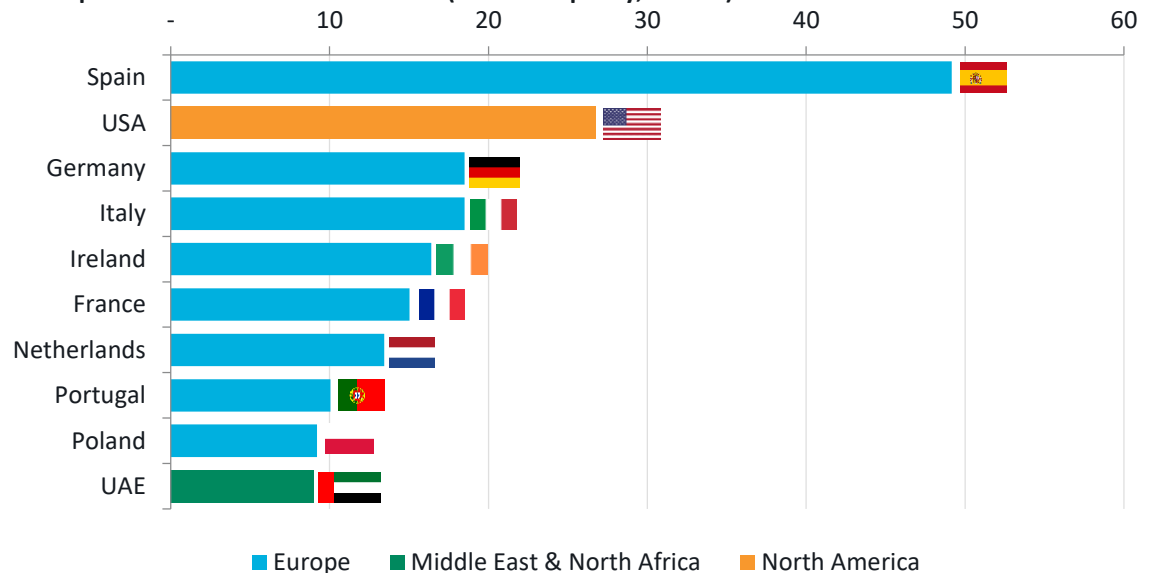
While some of the UK's largest markets are a combination of business and leisure, and inbound and outbound traffic (USA, Germany, France), other markets are predominately either large outbound leisure markets (Spain, Italy, Portugal), a large population living in the UK (Ireland, Poland), or connections to international hubs (Netherlands, UAE). The UK's large outbound leisure markets are served predominately by LCCs operating from a number of different airports, while other major markets are served by more of a mix of airlines.

Due to the UK's relatively small geographic size, domestic passengers (in terms of airport passengers) accounted for around 15% of total passenger traffic and a relatively small proportion of passengers at the majority of UK's larger airports. However, domestic traffic accounted for a larger share of traffic at many smaller airports serving routes not on the UK mainland.

Number of UK international destinations by region: 2019



UK top 10 international markets: 2019 (UK seat capacity, million)



Source: OAG

The UK aviation sector: economic impact

2019

2020

2021-2025

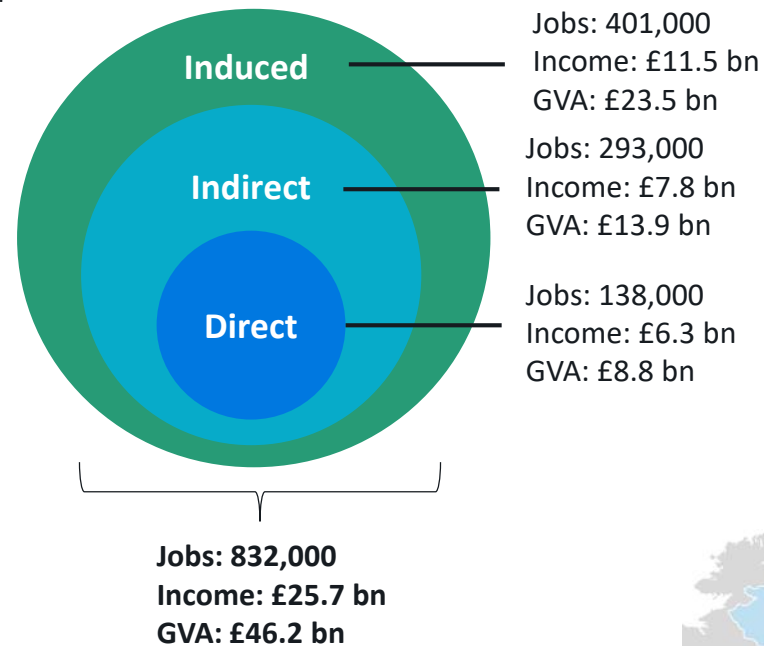
National economic contribution

As well as supporting and facilitating activity in other economic sectors, the aviation sector makes an important contribution to the UK economy. In addition to the sector itself, aviation supports a number of industries and jobs, including support and service industries at, or in the vicinity of airports, as well as wider support industries including manufacturing and professional services.

By taking account of direct, indirect and induced impacts, we estimate that the UK aviation sector supports **GVA of £46.2 billion, 832,000 jobs** and associated **income of £25.7 billion** (2016 prices).

Direct impacts relate to the employment, income and GVA generated by the sector itself, indirect impacts take account of the knock-on effects in the sector's supply chain, while induced impacts also include the impacts of employees' spending in the economy. A full description of each of the impacts and the methodology used to calculate them is set out in Annex A.

The economic contribution of the UK aviation sector has been estimated using a standard methodology based on the use of the latest (2016) Input-Output (I-O) tables produced by the Office for National Statistics (ONS). I-O tables show the outputs of each economic sector and what it purchases from each other sector. This approach gives the direct, indirect and induced impact of an economic industry or sector. A full description is contained in Annex A.

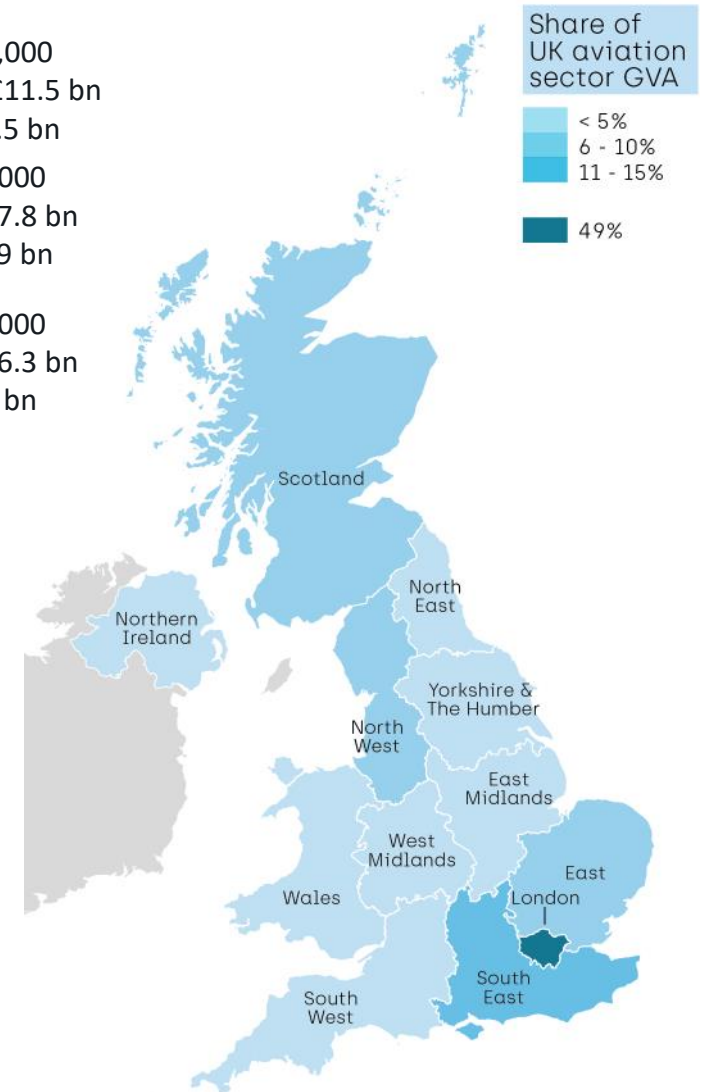


Regional economic contribution

The regions containing London's airports, London (49%), the South East (15%) and the East of England (10%), accounted for the majority of the UK's total aviation sector GVA in 2019.

The North West (6%) and Scotland (6%), as the two regions outside of the South East with highest level of passenger traffic activity, were the next two largest regional contributors.

UK regional share of UK aviation sector GVA: 2019



Source: ONS

Wider economic impact

The direct, indirect and induced impacts estimated using I-O tables capture economic activity directly from, or linked to, aviation. They do not include the wider economic, or 'catalytic' impacts, of the aviation sector, which capture how the aviation industry facilitates trade and tourism as well as contributing to productivity and GDP.

We have used the World Bank's Air Connectivity Index (ACI) to estimate catalytic impacts. This measures the economic potential arising from air connectivity through the proportion of world GDP directly accessible from the UK, based on the availability, frequency, and travel time of scheduled flights.

This analysis suggests that the share of global GDP 'reachable' from the UK by air was equal to around 15% of global GDP 2019, equivalent to £16 trillion. Connections to major European countries are very important due to a combination of the size of their economies, the high volume of flights and low travel times from the UK.

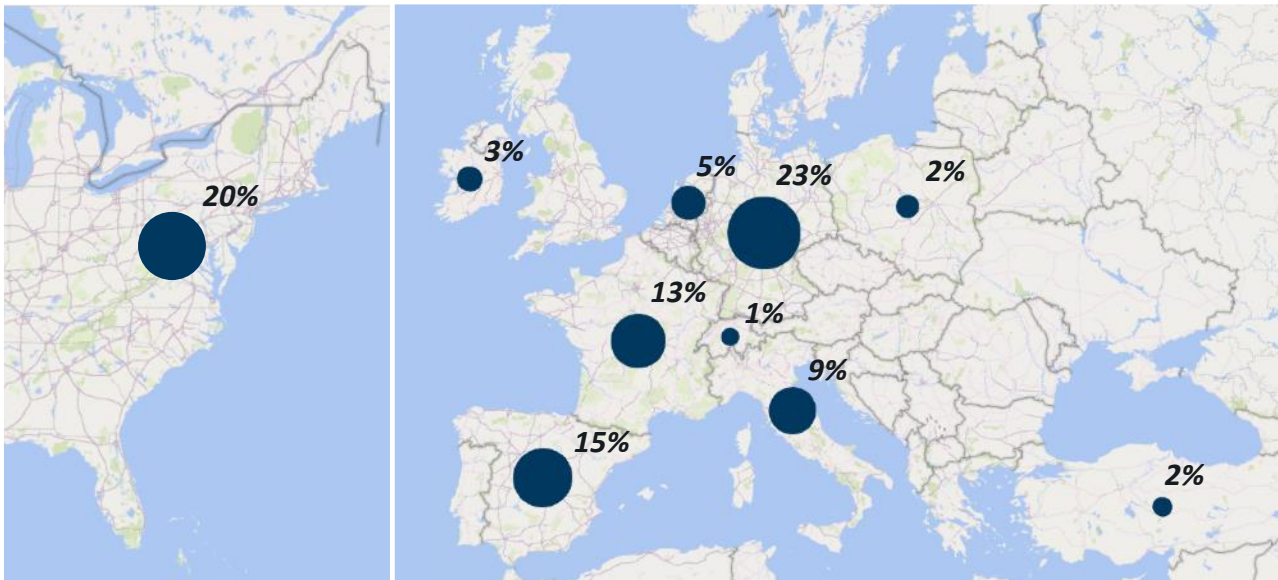
While Spain was the UK's largest international market (with the highest volume of flights) in 2019, its contribution to the UK's Air Connectivity Index (15%) was smaller than Germany (23%), and only slightly larger than France (13%), due its comparatively smaller GDP and longer average flight times from the UK.

Connections to the USA are also important due to the high volume of flights from the UK and the size of the US economy, in spite of the longer travel times relative to European countries. The USA accounted for 20% of the UK's Air Connectivity Index in 2019.

While the UK has some connections to large Asian economies, including China, India and Japan, the longer travel time and lower volume of flights to these destinations, relative to Europe and North America, mean they are less important in terms of contribution to the UK's Air Connectivity Index.

Air connectivity is also strongly linked to economic performance. IATA estimates that a 10% increase in air connectivity, relative to its GDP, "will boost labour productivity levels by 0.07%" and "boosts total factor productivity by 0.9%" (IATA Air Connectivity paper, 2020).

Share of UK Air Connectivity Index (10 largest contributors): 2019



Source: IMF, OAG, Steer analysis

7% of world GDP – £16 trillion – accessible from the UK in 2019

Impact of COVID-19



Impact of COVID-19: traffic

2019

2020

2021-2025

UK traffic levels

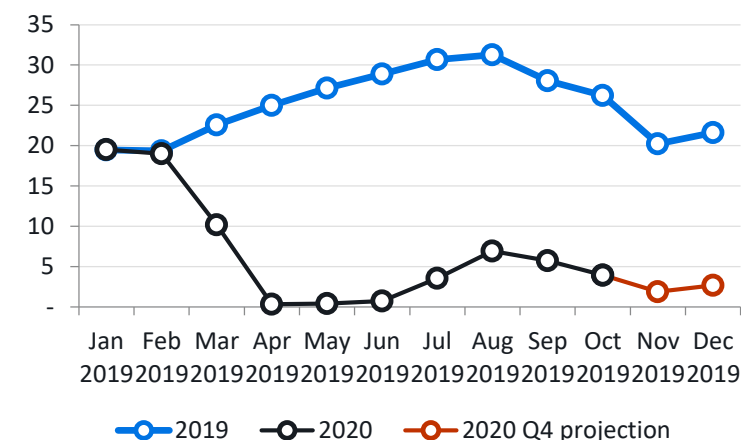
The COVID-19 pandemic has had an unprecedented impact on the UK aviation industry, with UK passenger traffic collapsing to levels not seen since the mid 1980s.

The grounding of flights and massive loss of capacity, caused by the original health emergency, has been exacerbated by a collapse in consumer confidence and uncertainty in relation to the UK Government's rules and restrictions. Over the first three quarters of 2020, passenger traffic was 72% lower compared to the first three quarters of 2019.

Although there was a partial recovery over the summer (in spite of the international travel restrictions), the UK government re-introduced tighter restrictions at the start of November, which forbade all but essential international travel, and reduced traffic significantly, but to levels slightly above those seen in April and May.

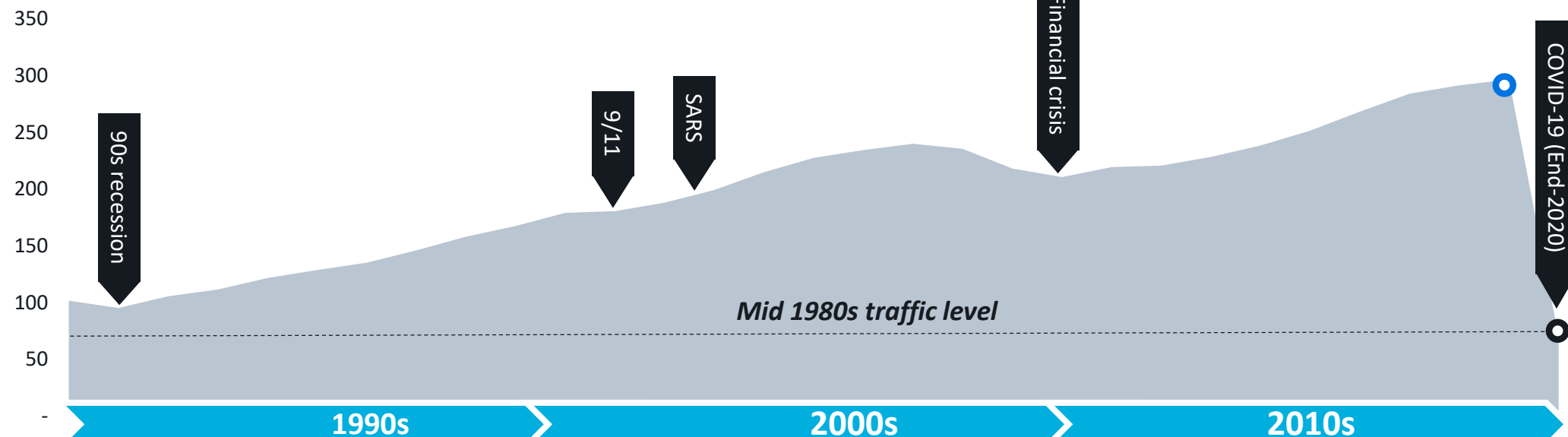
While the international travel restrictions from the UK were lifted at the start of December, a number of international travel restrictions in other countries have remained and have been severely tightened for the UK for the end of the December, which means traffic is likely to only increase slightly relative to November.

UK passenger traffic: 2019 & 2020 (million)



Source: CAA & Steer analysis

UK passenger traffic: 1990-2020 (million)



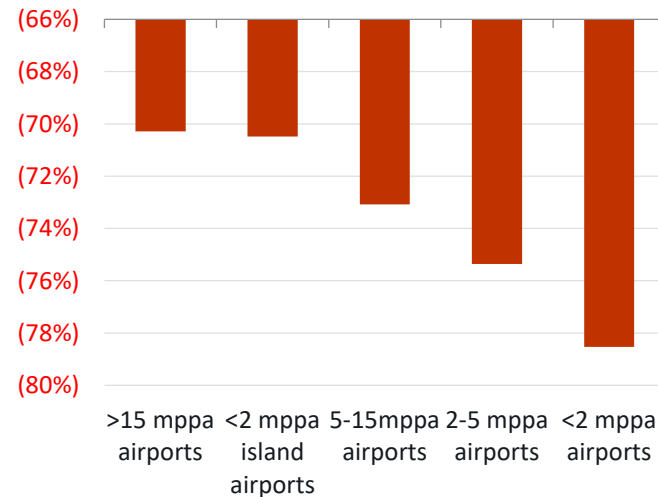
Source: CAA

Airport impact

When governments started to impose restrictions in March 2020, passenger traffic across all UK airports fell significantly, with traffic across all UK airports down over 99% in April compared to 2019. A number of smaller airports (including Newquay, London City and Teesside) ceasing commercial operations entirely between April and June.

While traffic has recovered slightly since the height of the pandemic in the UK, over the first three quarters of 2020, passenger traffic is still significantly down across all airports. Compared to 2019, it has fallen by at least 50% across all airports and by over 70% in the majority of cases.

Passenger traffic: 2020 reduction vs. 2019 (Q3)



Source: CAA

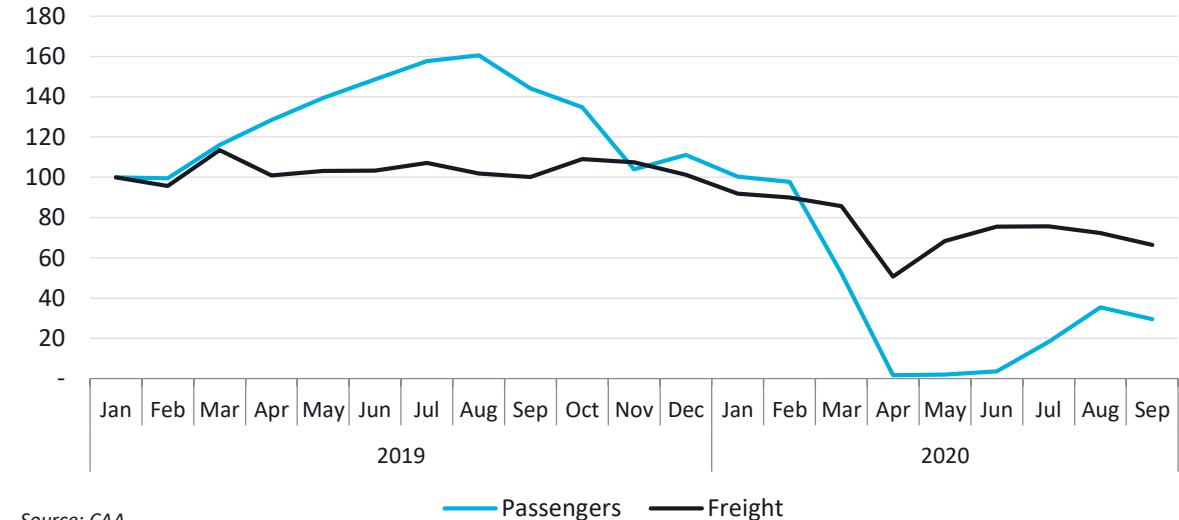
Smaller airports, with under two million passengers per annum (mppa), have been the worst affected, while the fall in traffic brought about by the pandemic has exacerbated the reduction in regional airline capacity in the first quarter of 2020 due to the collapse of Flybe.

Larger airports have fared slightly less badly, due initially to some residual traffic during the height of the pandemic from passengers returning home and from airlines reducing their operations down to core routes. Island airports under 2 mppa have fared better than their mainland counterparts due to having fewer alternatives to air travel.

Freight traffic has also decreased at almost all airports, although, due to the need to continue importing products, generally to a lesser extent than passengers. At a few more freight-orientated airports (including Stansted, East Midlands and Doncaster) freight traffic has increased.

In spite of its importance to the UK economy, freight traffic is a far smaller revenue stream for airports, as passenger traffic is the focus of most airports' operations. The continuation of freight traffic at some airports has therefore not, in financial terms, made up for the fall in passenger traffic.

UK passenger & freight traffic index (Jan 2019=100): 2019-2020 (Q3)



Source: CAA

Impact of COVID-19: traffic

2019

2020

2021-2025

Airline impact

Airline seat capacity has fallen significantly, and relatively evenly, across domestic (61%), short-haul international (57%) and long-haul international (62%) markets in the first three quarters of 2020 (compared to 2019). Major UK-based airlines' seat capacity has fallen by between around 50% and 75% over the same period, with the exception of Loganair (32%) and Wizz Air (8%).

Loganair has benefitted from some residual domestic demand, as well as the collapse of Flybe, while Wizz Air has aggressively expanded its operations during the pandemic, establishing multiple new bases in Europe, including Cardiff, Doncaster-Sheffield and Gatwick in the UK.

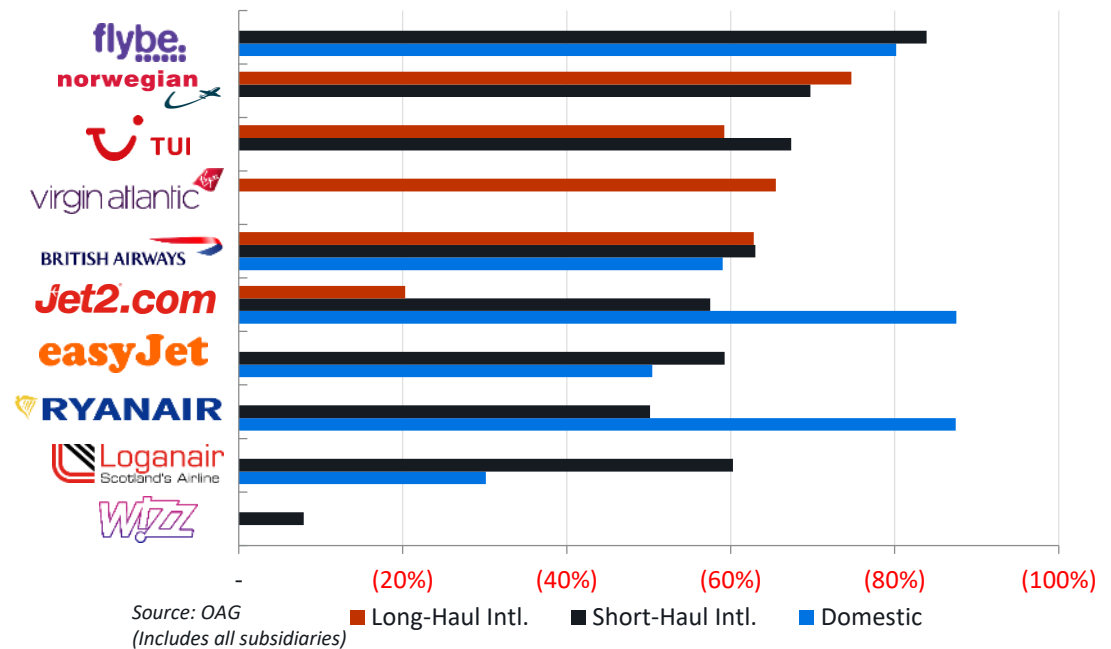
Destinations

Across the major world regions shown on slide 10, seat capacity to the UK was down by between 54% (Middle East & North Africa) and 67% (North America), and by between 75% (China) and 59% (India) across the world's major economies.

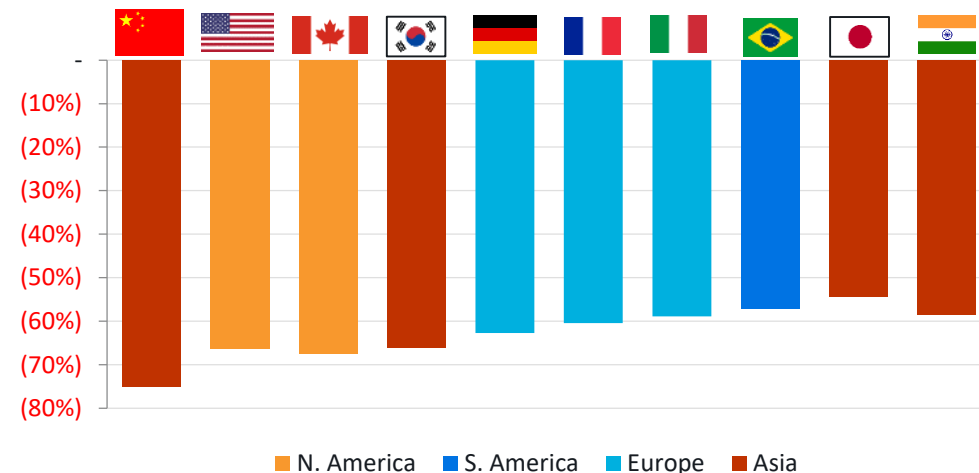
While the decrease in seat capacity appears to have been significant across all of the UK's international markets, the number of routes does not appear to have decreased to the same extent. In August 2020, during the partial traffic recovery in the summer, 296 international destinations were accessible from the UK, compared to 394 in August 2019.

This represents a decrease of 25%, compared to a 62% decrease in seat capacity between the two periods; this suggests, overall, airlines have reduced capacity to a greater than the reduction in the number of routes they are operating.

UK-based airlines seat capacity: 2020 reduction vs. 2019 (Jan-Sept)



Major world economies seat capacity to UK: 2020 reduction vs. 2019 (Jan-Sept)



Impact of COVID-19: airports (1)

2019

2020

2021-2025

Airport operating losses

Since the initial mass cancellation of flights in March 2020, airport revenues have followed the collapsing passenger traffic. Across UK airports**, revenues have fallen by close to 80% in the second and third quarters of 2020, compared to 2019.

In parallel, airports' ability to reduce operating costs (opex), in face of significantly reduced traffic volumes, has been constrained due to the high level of fixed costs. The need to remain open (in most cases) to provide connectivity has limited the limited scope for further reduction.

While airports have benefitted significantly from the government's Job Retention Scheme (JRS), and airports in Northern Ireland and Scotland have benefited from business rates holidays, the cost savings associated with these support schemes have not offset the fall in revenues.

Consequently, earnings, in EBITDA terms, have fallen to low or negative levels since March. Following losses of over £170 million in the second quarter of 2020 during the height of the lockdown in the UK, revenues recovered slightly in the third quarter, although almost all airports continued to sustain heavy losses.

Almost all airports continued to make operational losses, in EBITDA terms, during the third quarter of 2020. A small number of large airports made a small operational profit, which meant total losses across all airports, were relatively low in the third quarter of 2020. However, this was not representative of the majority of airports, which continued to sustain significant losses.

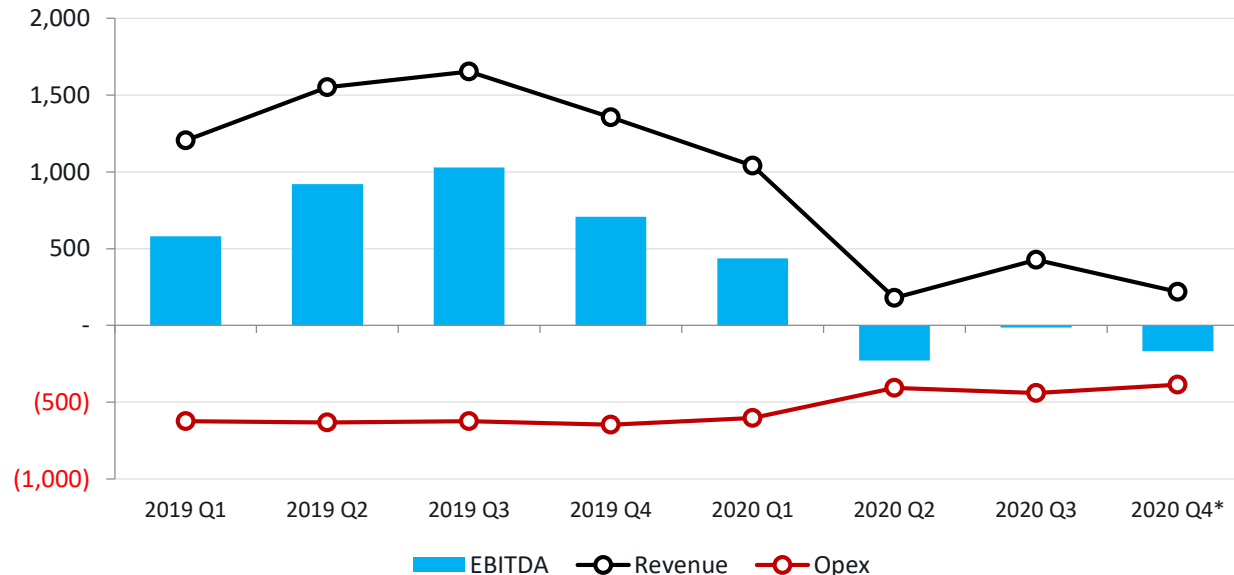
In spite of the partial traffic recovery during the summer, further losses are projected in the final quarter of 2020. The international travel restrictions introduced in November have significantly reduced traffic and have compounded the lower level of revenues usually seen during the winter season.

In addition to the operational losses, in EBITDA terms, airports have also continued to incur capital and finance costs. These include usual ongoing costs, such as debt repayment and interest charges, as well exceptional costs associated with handling the collapse in traffic and additional coronavirus-related operational requirements.

EBITDA vs. net profit

EBITDA (earnings before interest, taxes, depreciation & amortisation) measures profit without considering finance costs (such as interest), accounting practices (depreciation and amortization) or tax. It therefore provides a measure of *operational* profitability by considering only costs and revenues associated with day-to-day operations. Net profit, on the other hand, is revenue less *all* expenses and represents businesses' bottom line – businesses can therefore be simultaneously profitable in EBITDA terms but not net profit terms.

UK airports EBITDA: 2019-2020 (£ million)



Source: AOA & Steer analysis

*Projection

**Based on sample of UK airports provided by AOA representing c. 90% of airport operations.

Impact of COVID-19: airports (2)

2019

2020

2021-2025

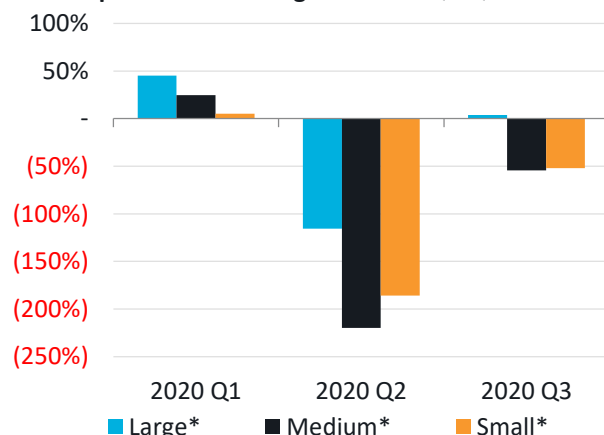
Airport losses by size

While all airports sustained heavy losses in the second quarter of 2020, in terms of EBITDA margin (averaging -128%), the losses sustained by small and medium-sized airports were proportionately greater. In addition, some large airports did not sustain losses in third quarter 2020, while small and medium-sized airports continued to do so.

Compared to smaller airports, overall, larger airports have experienced a slightly smaller reduction in revenue since March, which is likely due to the fact that many airlines have reduced their operations down to core routes at larger airports and the continued presence of freight traffic in some cases.

Due to the high level of fixed costs, in aggregate, airports have reduced their costs by around only 30% since March, relative to 2019.

UK airports EBITDA margin %: 2020 Q1-Q3



*Large: >15m 2019 UK Pax., Medium: 2.5m-15m 2019 UK Pax., Small: <2.5m 2019 UK Pax.

Coronavirus Job Retention Scheme

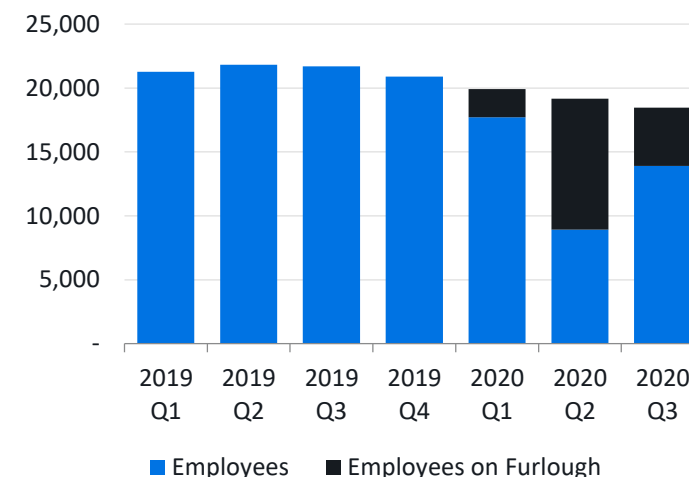
The majority of airports' cost savings appear to have been due to the JRS (or "furlough"). During the second quarter of 2020, over 50% of airport employees were on furlough, falling to 30% in the third quarter.

Across all airports collectively, this has allowed total operating cost savings of around 25%, without which airport losses in 2020 (as well to the end of the JRS in April 2021) would have been higher.

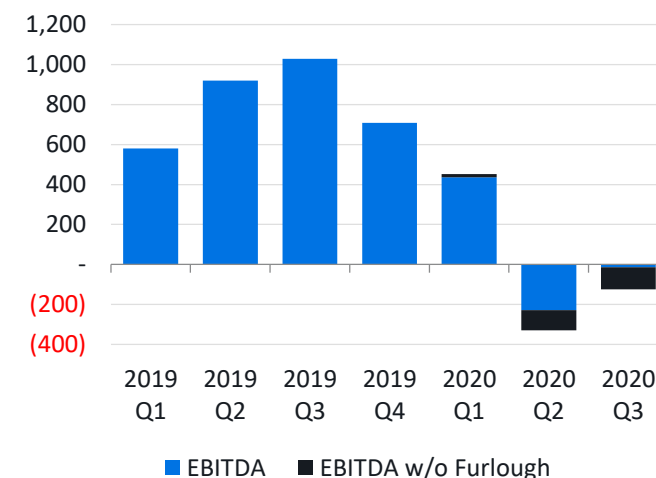
In addition to reducing airports' costs, as is the intention of the scheme, the JRS has prevented a significant number of job losses in the airport and wider aviation sector, beyond those redundancies which have already occurred. Across UK airport operators, there have already been over 3,000 job losses since the end of 2019 (not including those working at airports but not for an airport operating company).

There is also the possibility of further job losses when the JRS is due end at the end of April 2021, as it is likely the sector will still be in the very early stages of recovery and therefore not earning revenues sufficient to sustain pre-COVID levels of operating costs and staff levels.

UK airport employees: 2019-2020



UK airports EBITDA & JRS: 2019-2020



Airport liquidity

Since the collapse in traffic in March, airports have suffered high levels of cash outflows due to the collapse in revenues with lesser falls in operating costs. They have therefore needed to significantly increase their cash reserves in order to maintain their liquidity to sustain ongoing negative operating cashflows. Unlike airlines, airports have also not received additional liquidity through government loan schemes; the increase in airports' cash reserves have been largely funded by taking on significant levels of additional commercial debt as well as, in some cases, equity injections from shareholders. This, in general, has significantly increased the financial gearing of the UK airports sector.

Prior to the collapse in revenues and operating cash flows, UK airports had, in aggregate, agreed undrawn credit facilities many times larger than the size of the cash reserves on their balance sheet. However, many airports have now drawn down on these facilities in order to maintain their liquidity position. While some airports have agreed additional credit facilities with financial institutions, the availability of agreed credit facilities is now much lower than prior to the collapse of traffic and revenues.

In addition to increasing their liquidity and cash reserves through debt financing, airports have also sought to significantly reduce their capital expenditure (capex) in order to reduce cash outflows.

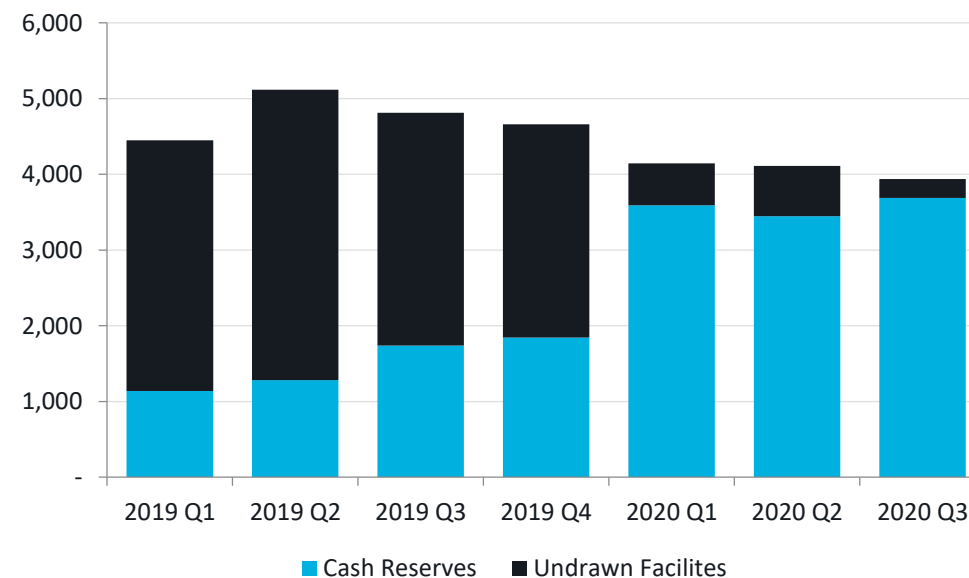
Where possible, capex has been reduced to levels required only for critical maintenance for existing infrastructure with many major projects delayed or cancelled. However, in some cases existing projects were continued to completion and to avoid cancellation costs. Therefore, while airports are seeking to minimise their capex, some are continuing to spend cash in order to complete ongoing projects.

The reduction in capex and deferral of other projects may have implications for capacity in the longer term once traffic has recovered.

While airports have, where possible, minimised their cash outflows and increased their cash reserves to the extent they have sufficient liquidity to sustain their businesses in the short to medium-term, for many it will take a number of years to recover their gearing and operating cash position from the impact of 2020 and will require ongoing support from shareholders and lenders.

Under current operating conditions, many airports are breaching their debt covenant conditions and therefore are reliant on the ongoing support and cooperation of banks and other lenders to temporarily waive these conditions.

UK airport cash reserves and undrawn facilities: 2019-2020 (£ million)



Source: AOA

Airport gearing

Due to the capital-intensive nature of their operations and the need to fund expansion projects, many airports are traditionally relatively highly leveraged; that is, they operate with relatively high levels of debt. In order to provide debt finance to airports, banks and other financial institutions, usually agree debt covenants (conditions airports must meet) with airports as a pre-requisite for providing loans.

These covenants usually take the form of, for example, a minimum debt service coverage ratio (DSCR) or gearing ratio and, under normal operating conditions, airports usually meet these conditions. However, since airports' revenues and EBITDA margins have collapsed, and they have taken on more debt to maintain their liquidity position, airports have not been meeting the covenant conditions.

This situation has required close cooperation between airports and banks and, in many cases, in recognition of the extraordinary circumstances, banks have issued covenant waivers in the short term for 2020 and 2021. Currently the focus for airports and their lenders is for airports to maintain sufficient levels of liquidity by taking additional debt, rather than meeting debt covenant conditions.

In addition, a number of quoted (that is, whose shares are traded) airport operating companies have recently been downgraded by credit rating agencies, reflecting the negative outlook for revenues in the short to medium-term

This will increase the cost of borrowing at a time when airports are highly reliant on raising debt in order to maintain their liquidity position. It is likely the cost of borrowing has also risen for non-quoted airports given the current conditions of the sector. However, the impacts of these increased costs need to be placed in the context of historically low base interest rates.

Given the current low levels of traffic and revenues, as well as the highly-leveraged position of many airports, it likely further covenant waivers and financial support will be needed for airports to remain solvent in operation. At most airports, banks have been willing to waive debt covenants in the short-term and provide further financial assistance, in recognition that, once traffic recovers, airports will be profitable and will be able to repay their debts.

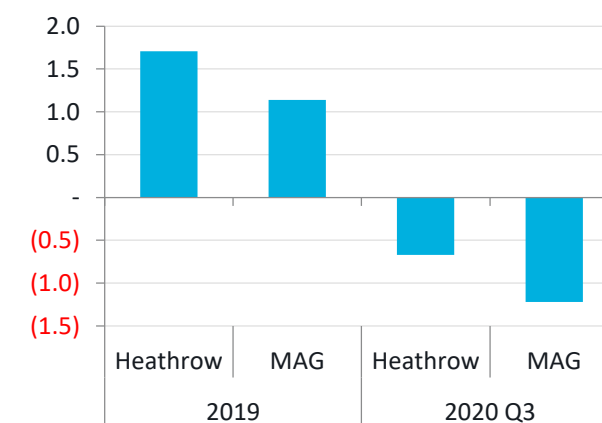
However, depending on the evolution of the virus, it is less clear that lenders and (where present) shareholders will continue to support smaller airports, whose recovery profile will be slower and which will be less profitable once traffic recovers.

At such airports, the cost of borrowing may become prohibitively high and they may not be able to maintain liquidity sufficient to continue operating.

Even where covenant waivers are granted, it will likely take many years for airports to repair their balance sheets through operational cashflows and hence move to more "usual" gearing ratios. This may require a combination of refinancing of debt and further equity injections, and may reduce the capacity to finance airport expansion and the maintenance of existing airport assets.

The debt service coverage ratio (DSCR) in 2019 and 2020 for Heathrow and MAG, as two airport operators with 2020 Financial Statements are available, are shown below.

Heathrow & MAG DSCR: 2019 & 2020 (Q3)



Source: Airport financial statements
Heathrow Jan-Dec 2019 & Mar-Sep 2020, MAG Apr 2019-Mar 2020 & Mar-Sep 2020

Impact of COVID-19: airlines (1)

2019

2020

2021-2025

Airline operational losses

As with airports, airline revenues have followed the collapse in passenger traffic since March; with revenues for the largest UK-based airlines over 80% lower in the second and third quarters, compared to 2019, leading to combined losses of over £2 billion over the period.

While airlines operate on lower margins than airports, they have a lower level of fixed costs and have been able to reduce their operating costs (opex) more effectively in response to lower levels of traffic due to lower levels of fixed costs.

With much reduced levels of flying, airlines have been able to significantly reduce their opex on fuel, maintenance and airport charges. Eurocontrol has also temporarily suspended air navigation charges for flights still operating.

The European Commission has also implemented a slot waiver at coordinated airports, which means airlines are not under pressure to continue operating routes with few or no passengers in order to maintain access to their slots.

Airlines have also benefitted from the UK government's JRS, as well through equivalent support schemes in other European countries where they employ staff. This has enabled staff cost savings of up to 33% in some cases, in addition to savings from staff pay cuts and at least 15,000 job losses across UK airlines.

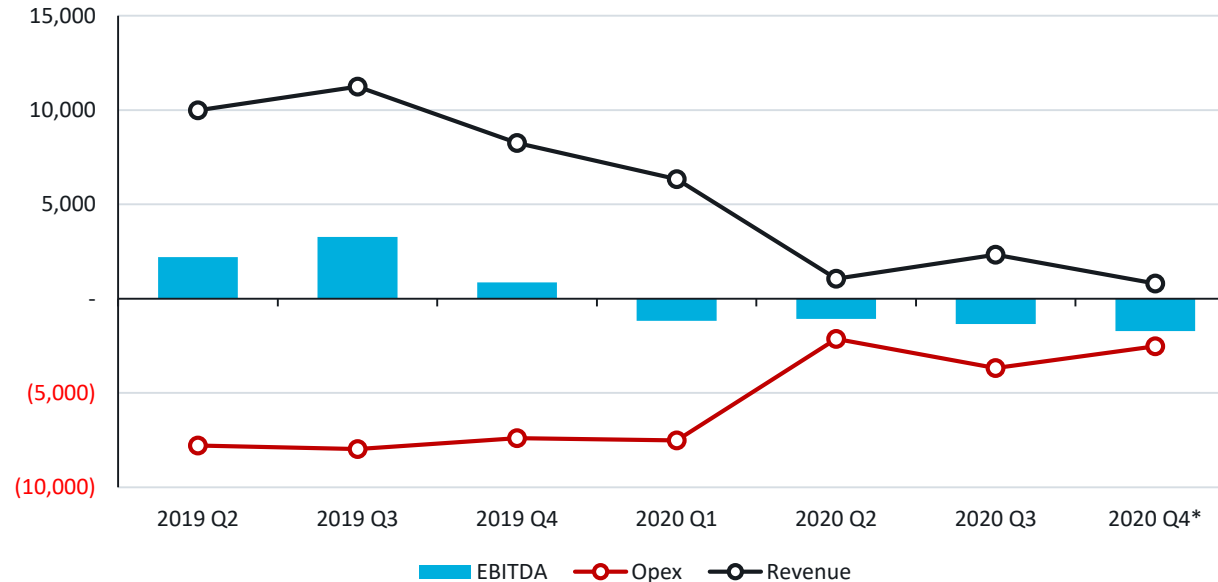
In general, LCCs have been able to make greater cost savings than FSCs, with some LCCs making a small operating profit, in EBITDA terms, during the partial traffic recovery over the summer.

However, in spite of this, airlines will continue to struggle to make consistent operational profits while traffic remains low, particularly during the winter season, which is traditionally less profitable.

As with airports, in addition to the operational losses, in EBITDA terms, airlines have also continued to incur capital and finance costs. These include usual ongoing costs, such as debt repayments and interest charges, as well as exceptional costs associated with handling the collapse in traffic and additional coronavirus-related operational requirements.

Airlines have also incurred finance costs, including multi-billion pound fuel and currency hedging ineffectiveness and discontinuation charges.

IAG, easyJet & Ryanair combined EBITDA: 2019-2020 (£ million)



Source: Airline financial statements & Steer analysis
*Projection

Airline liquidity and gearing

Due to the collapse in revenues and ongoing negative operational cashflows, airlines have been required to raise significant levels of additional finance in order to improve their liquidity position and cash reserves. As with airports, this has included injections of additional equity from shareholders and commercial loans from financial institutions, as well as loans from central governments.

However, unlike airports, several UK airlines have taken out state-backed loans, of between £300 million and £600 million, through the UK's COVID Corporate Financing Facility (CCFF) funded by HM Treasury and the Bank of England.

As well as receiving £300 million in loan support from the UK government, being jointly British and Spanish owned, IAG has also received £900 million in additional loans from the Spanish government.

Using a different approach, easyJet has raised over £1 billion through selling and leasing back part of its aircraft fleet to financial institutions.

Similarly to airports, airlines have also reduced their capex since March in order to reduce their cash outflows and maintain their cash and liquidity position. Many airlines have reduced their expenditure on fleet renewal and upgrades, and retired some of the oldest (and most expensive to maintain) aircraft in their fleets.

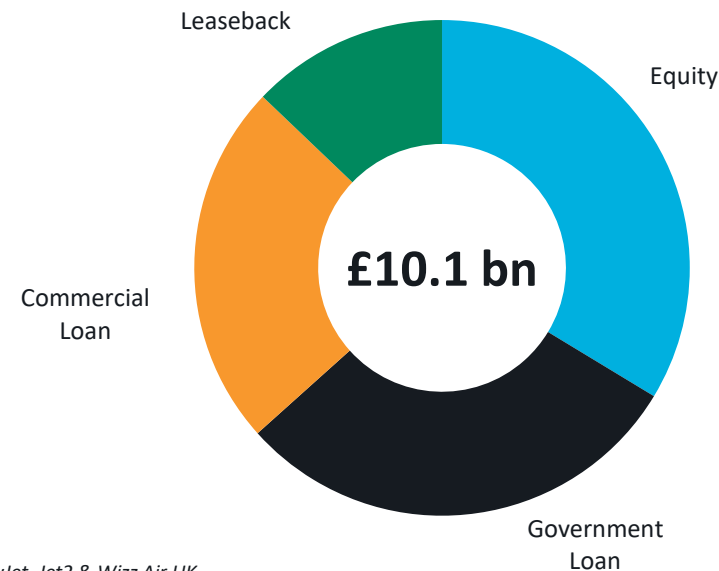
Like airports, a number of airlines, have also been downgraded by credit rating agencies, which is likely to increase the cost of additional commercial borrowing, reflecting the short to medium-term outlook for the aviation sector.

A number of UK-based airlines have been very badly affected by the collapse in traffic caused by the pandemic. In addition to the collapse of Flybe early in the year, a number have come close to bankruptcy.

Virgin Atlantic filed for US bankruptcy protection in August, and agreed a rescue package in September, while Norwegian, which has a UK subsidiary, filed for bankruptcy protection from creditors in Ireland in November.

It is likely that, once governments cease to provide financial support, some airlines, in the UK and more widely, will become insolvent and there will be a consolidation of market share by those in a stronger financial position – as Wizz Air has already started to do.

UK Airlines* financing as of November 2020 (£ billion)



*IAG, Ryanair, easyJet, Jet2 & Wizz Air UK
Source: Airline financial statements

COVID-19 support schemes



COVID-19 support schemes (1)

2019

2020

2021-2025

Sectoral comparison

The aviation sector has been amongst the industries most badly hit by the pandemic, with an almost total cessation of traffic during the first lockdown, a modest recovery over the summer period, followed by a further fall as the virus spread again during the autumn leading to more restrictions including the November lockdown in England.

Aviation and hospitality have been some of the worst affected economic sectors in the UK, although hospitality appears to have benefitted significantly from the government's Eat Out to Help Out scheme in August (see chart below).

UK Government support

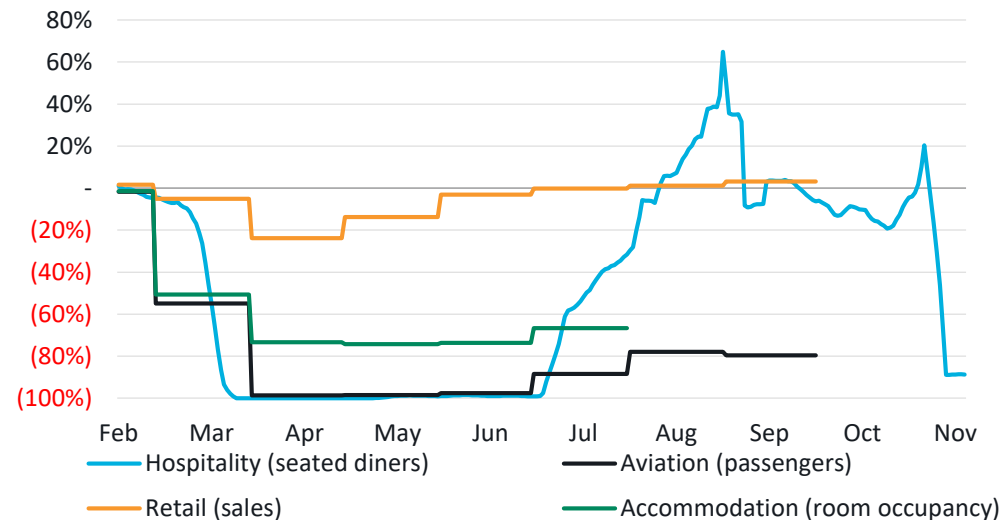
The UK government has introduced a range of support schemes for the economy during the pandemic, including:

- Coronavirus Job Retention Scheme (JRS, "furlough")
- Coronavirus Bounce Back Loan Scheme (BBLS) for small business
- VAT deferral
- Coronavirus Business Interruption Loan Scheme (CBILF) for small businesses
- Coronavirus Corporate Financing Facility (CCFF - 12 month Bank of England loan)
- Self employed Income Support Scheme (SEISS)

- Business rates relief (hospitality, leisure, retail)
- Small Business Grant Fund
- Coronavirus Large Business Interruption Loan Scheme (CLBILS; 3 year loan up to £300m, with 80% guaranteed by Government – cannot be used with CCFF).

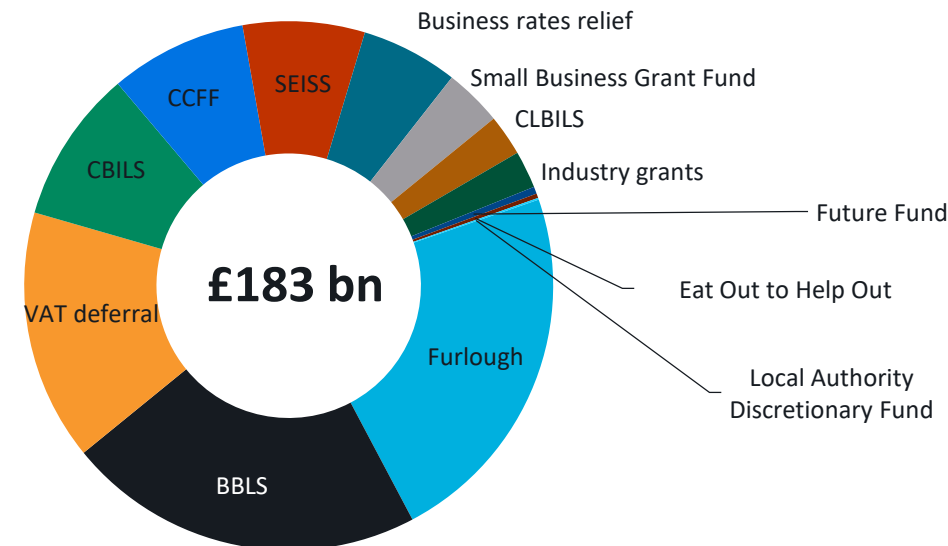
The JRS and the CCFF schemes have been used extensively by the aviation sector. However, note that business rates relief has **not** been offered to the aviation sector in 2020 (except in Scotland and Northern Ireland). Limited business rate relief (up to £8m) will be offered to airports in England in 2021. This covers rates costs for all but the four largest airports (Heathrow, Gatwick, Manchester, Stansted).

UK economic sectors activity index (Feb 2020=100): Feb-Nov 2020



Source: Office for National Statistics, Open Table, UK CAA, Visit Britain

COVID-19-related government support, as of October 2020



Source: HM Revenue & Customs, Bank of England, British Business Bank, HM Government

International financial support

While the UK aviation industry has made use of COVID-19-related economic support schemes, unlike many other countries, there has been very little sector-specific support for aviation (no Air Passenger Duty waiver or business rates support in England, though some limited support now promised for 2021), particularly given the relative size of the UK aviation sector.

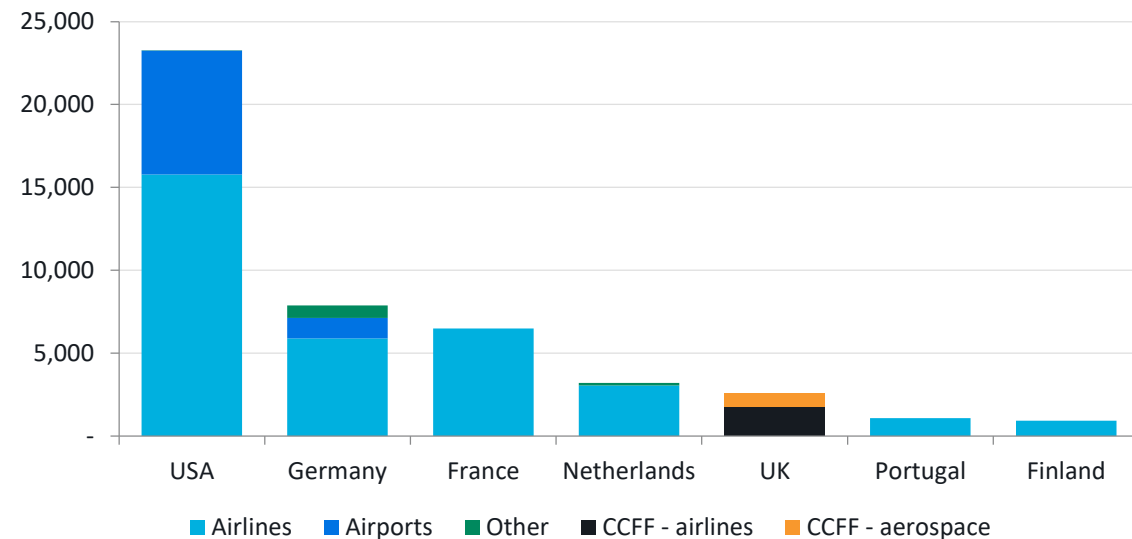
In contrast, foreign governments have provided significant support for their aviation industry, through the CARES Act in the US and state aid provided within Europe, most notable in Germany and France (requiring State Aid clearance from the European Commission).

The chart to the right shows the level of support for selected countries, excluding job retention support and other non-sector specific measures. The UK aviation industry's use of the Bank of England CCFF scheme, although not sector specific has been shown as a comparator. It should be noted that loans are currently repayable in early 2021, when the industry is likely to still be struggling to recover from the virus.

It is notable that in many countries, including the UK, that far more aviation-sector specific support has been provided to airlines than airports. However, significant support has been provided to airports in the USA as well as some support in Germany.

The lack of support provided to airports may be due in part to the fact that in many European countries, as well as the in USA, governments retain full or partial ownership stakes in many major airports, albeit often at local or regional level.

Aviation-specific COVID financial support for selected countries (£ million)

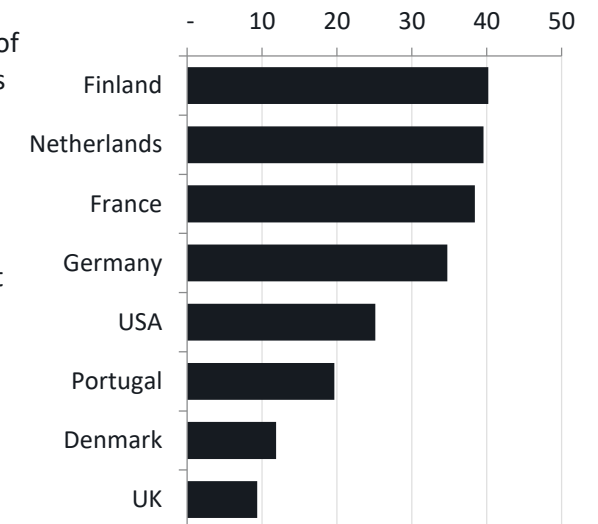


Source: EU State Aid declarations, Bank of England, US Treasury (as of October 2020)

National governments in France, Germany and Netherlands all have partial ownership stakes in some of the countries' major airport groups including Aéroports de Paris, Schiphol Group, Flughafen München and Flughafen Berlin Brandenburg

In the UK, while some local and city authorities, as well as devolved national governments, retain full or partial ownership shares in some airports, the UK government does not. A number of UK airports are also fully privately operated, with no local or regional government involvement. Therefore, any financial assistance provided to UK airports by central government would need to be provided in the form of business support – as opposed to direct financial assistance, which can be provided in cases where central governments have an ownership stake.

Aviation-specific financial support per passenger (£)



Source: EU State Aid declarations, Eurostat, Bank of England, US Treasury (as of October 2020, 2019 pax.)

Airport coronavirus testing

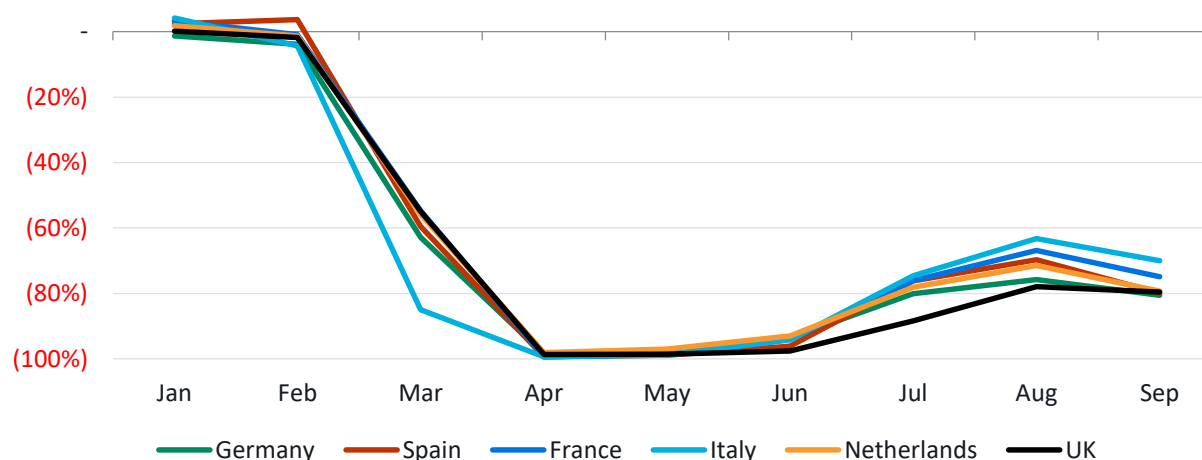
Over summer 2020, a number of countries introduced testing on arrival at the airport, with quarantine not required in the event of a negative test result. In some of these countries, including France, Germany and Italy, the partial traffic recovery over the summer was stronger than the UK.

The UK has imposed quarantine restrictions on passengers arriving from all but a small number of countries in a “travel corridor”. The imposition of this restriction, and the frequent changes to the list of countries on the corridor list (sometimes at short notice) resulted in a lack of clarity in relation to the rules and is likely to have contributed to reductions in passenger demand during the summer of 2020. It is also not clear to what extent the quarantine rules have been complied with, which, from a health perspective, will have limited their effectiveness.

From 15 December, a limited testing regime, which allows self-isolation for 5 days with a negative test, has been introduced in the UK. The UK also reduced its isolation period, for both international travellers and contacts of people with confirmed coronavirus within the UK, from 14 to 10 days on 14 December.

However, while the UK and number of other countries have introduced some form of testing regime, there is no single, coordinated international system of pre-departure tests, which would universally avoid the need for quarantine.

European markets passenger traffic: 2020 vs. 2019 monthly % change



To facilitate such a system, rapid tests are required, but there are trade-offs between different types of test exist – PCR, LAMP and Antigen. Possible pathways to a universal or internationally recognised testing regimes are discussed further in the section on policy options.

In the medium term, a coordinated system of vaccination certificates is also likely to be required as the vaccine is rolled out around the world.

European markets: August international travel rules

Country	Testing	Quarantine*
Italy	✓	14 days
Spain	-	None
France	✓	14 days 0 with test
Netherlands	✓	10 days
Germany	✓	14 days 0 with test
UK	-	14 days

* From non-approved countries

Source: National aviation and transport authorities

Traffic scenarios



Evolution of COVID-19

In September 2020, Steer presented a range of COVID-19 scenarios to the AOA, which were developed based on Steer's own internal analysis of the potential evolution of demand across transport sectors, as a basis for demand projections, driven by the ways in which the health crisis would evolve over the next few years.

The scenarios included a possible cycle of fear due to ongoing restrictions, virus mitigation in an adapted society and a return to some level of normal through a vaccine. These scenarios were updated in early November, to take account of the new restrictions introduced by the UK government in response to the second wave of the virus in the UK and Europe. To take account of different possible future evolutions of the situation, we have developed **three scenarios**.

Since then, a number of COVID-19 vaccines have successfully completed trials and are in the early stages of being rolled out; rollout for frontline health workers and those vulnerable to the virus has already begun in the UK. Mass rollout of the vaccines to the wider UK population is expected to begin in early 2021. Our three scenarios are therefore based on the evolution on the virus under the assumption that vaccines will begin to be rolled out to the general population in 2021.

A more detailed description of each of our three COVID-19 scenarios is set out below.

Traffic projections

Based on our three COVID-19 scenarios, we have developed **three traffic scenarios** that project the recovery of UK passenger traffic based on **six market segments**, split by journey purpose and journey type.

- Leisure:
 - Domestic;
 - Short-haul; and
 - Long-haul.
- Business:
 - Domestic;
 - Short-haul; and
 - Long-haul.

We have projected the recovery of each of these markets, relative to 2019 traffic levels, using CAA journey purpose survey data, the share of traffic to the UK's international markets in 2019, and analysis of the projected economic recovery of these markets, based on IMF World Economic Outlook projections. The recovery assumptions under each of the three traffic scenarios are discussed in more detail below.

Across all three scenarios, we have assumed demand remains low during winter 2020/21 and starts to recover, to varying extents, in late winter/early spring 2021, coinciding with the start of the large scale vaccine rollout.

All scenarios assume that the UK domestic traffic recovery is stronger than short-haul traffic, due to fewer travel restrictions, and that the short-haul traffic recovery is stronger than the long-haul recovery. This is due to better cooperation on international travel restrictions and regulations, as well as more effective mitigation of the virus (through a vaccine or otherwise) within Europe compared to many of the UK's long-haul destinations.

All scenarios assume leisure traffic recovers faster than business traffic, across domestic, short-haul and long-haul markets, due to reduced demand for business travel brought about by companies adopting more restrictive travel policies and the new remote working practices brought about by the pandemic.

The traffic projections under each of the three scenarios are used as the basis for the projections of aviation sector finances and UK economy impacts, set out in the following sections.

It should be noted that the ongoing Brexit negotiations also have the potential to have an impact on UK aviation traffic, particularly under a 'no-deal' scenario where UK citizens may not be permitted to enter the EU (due to third country COVID-19 restrictions). However, given the final outcome of the negotiations is currently unknown, we have assumed there is no adverse impact on UK aviation traffic arising from the form of the final future relationship between the UK and the EU.

Traffic scenarios: evolution of COVID-19

2019

2020

2021-2025

Scenario 1: Successful Vaccine

The vaccine starts to be rolled out to the general population from late winter/early spring 2021, with the full roll-out process taking place over a number of months in the UK. Through summer 2021, some uncertainty around the virus and restrictions will remain but winter 2021/22 is closer to the pre-COVID normal in terms of restrictions. The vaccine rollout worldwide takes more time, with the UK and world economies recovering over a number of years.

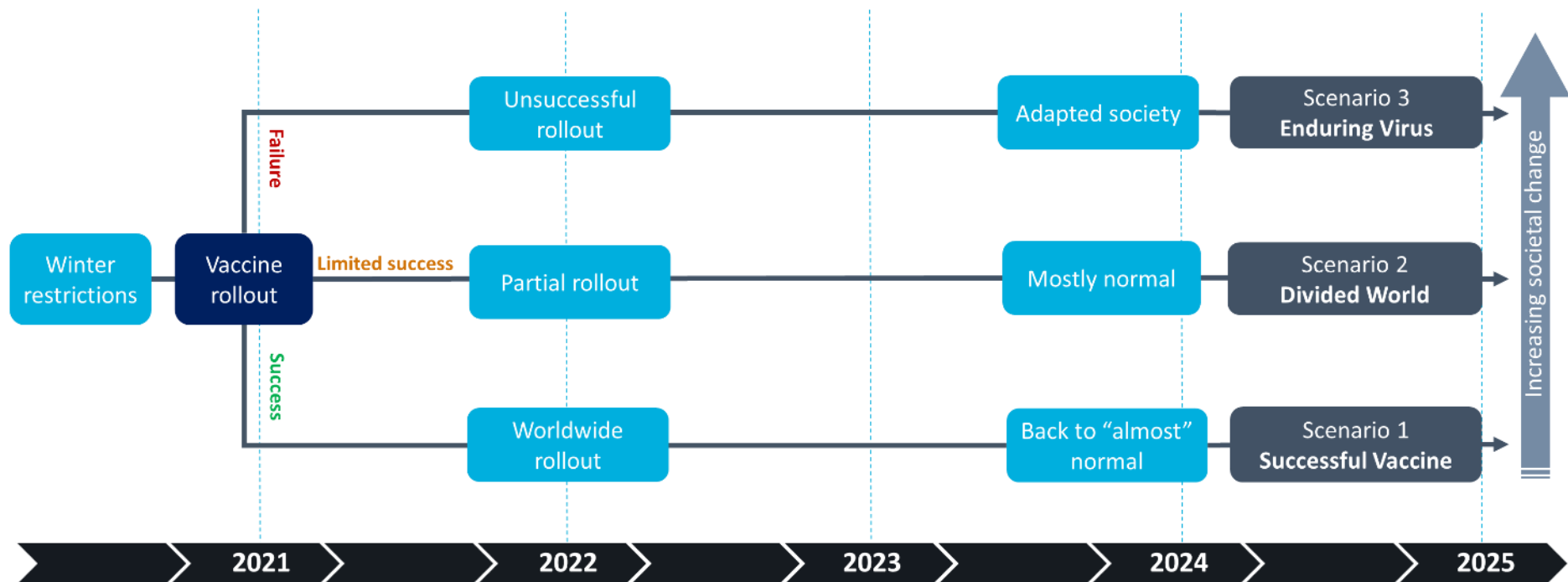
Scenario 2: Divided World

The vaccine starts to be rolled out to the general population from late winter/early spring 2021, with the process taking at least the rest of the year in the UK. The vaccine rollout is slow but without any major setbacks in most of the developed world, but there are bigger vaccine supply and logistical issues in many developing countries, with continuing health issues and restrictions in some countries.

Scenario 3: Enduring Virus

The vaccine starts to be rolled out to the general population from late winter/early spring 2021 but its effectiveness is limited, within the UK and internationally, due to, for example, the vaccine not reducing transmission, mutations of the virus or vaccine supply issues. The virus recedes slightly in the summer of 2021, but returns in winter, with tighter restrictions reintroduced. While the impact of the virus slowly recedes, and society is able to deal with it better through improved mitigation measures, the virus remains prevalent for a number of years.

Steer COVID-19 Scenarios: 2021-2025



Source: Steer

Scenario 1: Successful Vaccine

As the vaccine is rolled out from late winter/early spring 2021, there is a relatively strong recovery in summer 2021, although some level of uncertainty around international (particularly long-haul) travel remains. Winter 2021/22 is closer to normal in terms of restrictions, but traffic is still recovering to 2019 levels due to the ongoing slow recovery of the aviation sector and wider economy. As the vaccine is rolled out worldwide, overall traffic recovers steadily to overtake 2019 levels by 2025 (although international business and long-haul leisure traffic remain below 2019 levels).

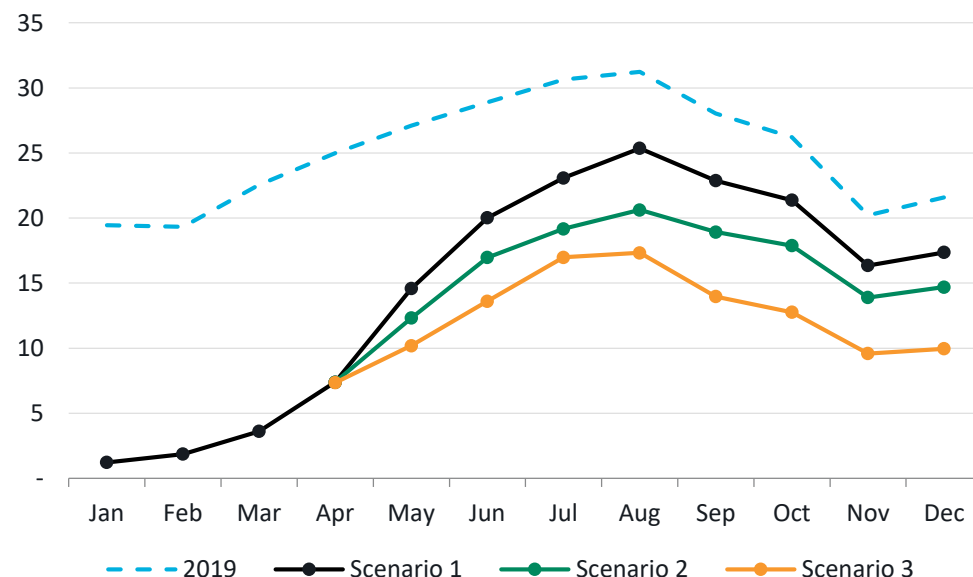
Scenario 2: Divided World

As the vaccine is rolled out from late winter/early spring 2021, traffic recovers throughout 2021, although slower than Scenario 1. The vaccine supply and logistical issues in many developing countries, mean continuing travel restrictions and/or incompatible regulations in many long-haul international, and some short-haul, destinations. The domestic recovery is as in Scenario 1, with short-haul markets recovering more slowly than Scenario 1 and long-haul recovering more slowly still – total traffic is still below 2019 levels in 2025.

Scenario 3: Enduring Virus

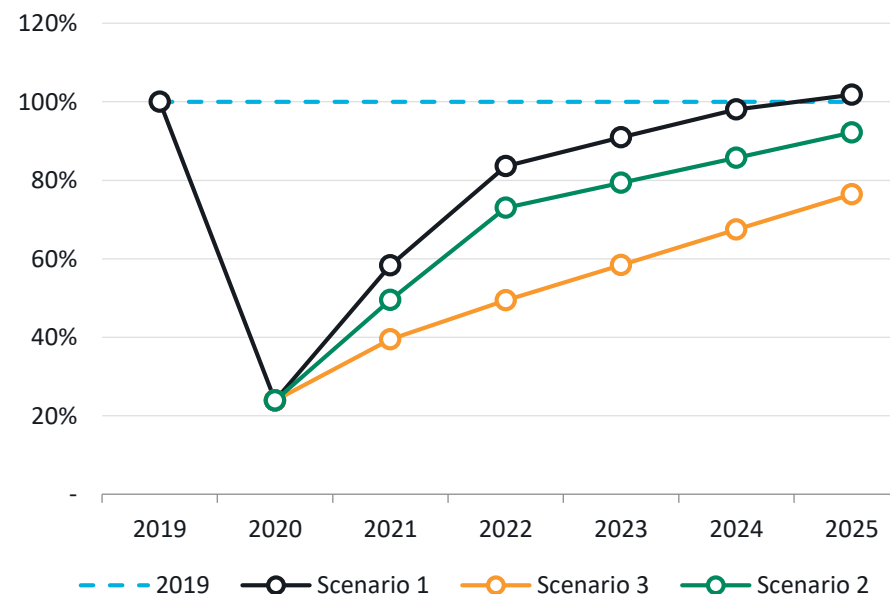
As the vaccine is rolled out from late winter/early spring 2021 with limited effectiveness within the UK and internationally, traffic recovers somewhat in the summer of 2021 but falls away in the winter (in addition to the seasonality impact) in line with the resurgence of the virus and tighter travel restrictions. Traffic grows weakly in the following years as the virus is still present but slowly recedes and testing for international travel improves. Total traffic is still well below 2019 levels in 2025. The relative recoveries of the domestic, SH and LH, and the leisure and business markets apply as in the other scenarios.

Steer Traffic Scenarios: 2021 (million passengers)



Source: Steer

Steer Traffic Scenarios: 2021-2025 (% of 2019 passengers)



Source: Steer

Aviation sector impact



Aviation sector impact: approach

2019

2020

2021-2025

Overview

To assess the impact of COVID-19 on the aviation sector in the coming years, we have modelled the evolution of UK airports' and airlines' finances, under each of the three traffic scenarios, from 2019 to 2025.

The modelling considers the evolution of the main airport operational, investment and financing cashflows from the 2020 level. Financial data in 2019 and 2020 has been collected from publicly-available financial statements supplemented by information provided by AOA.

In order to assess the impact of the traffic scenarios on airports' and airlines' operations and cash position, we have modelled a simplified version of cash flows, such that:

- Operating cash flows are equivalent to EBITDA earnings, that is, revenues less staff and non-staff operating costs (opex);
- Investing cash flows are equivalent to capital expenditure (capex) only; and
- Financing cash flows are equivalent to additional equity or debt inflows and outflows for debt repayment costs.

Cash flows for activities such as the purchase or sale of stocks or securities, the sale of assets or the payment of dividends, have not been projected.

Methodology

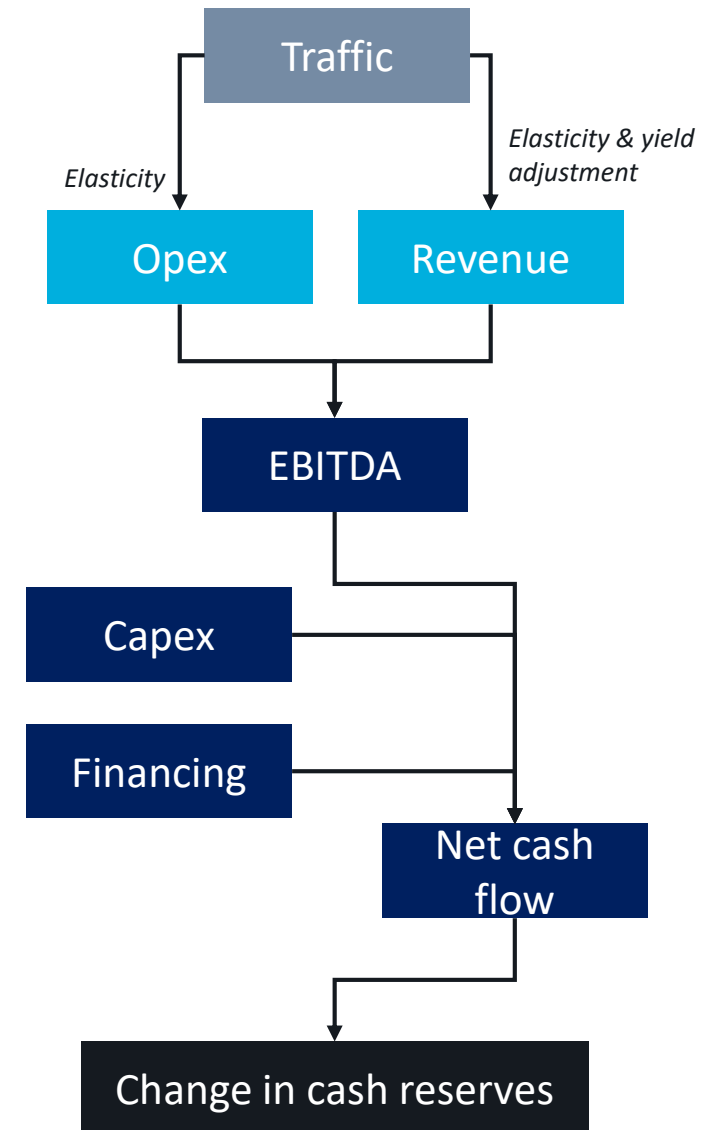
Revenues and opex (and therefore EBITDA), under each scenario, have been projected based on a relationship with traffic. Investing and financing cash flows have been projected based on historical levels, taking into account the level of traffic under each scenario.

In order to assess the impact of the traffic scenarios on airports and airlines, and to focus on the impact of operational and investment cash flows on the companies' liquidity and cash positions, the projections assume *no further additional debt or equity financing inflows after 2020*.

The assumptions used in the projections are based on analysis of data provided by the AOA, as well as publicly-available financial statements and rating agencies' decisions, and have been refined based on consultation with AOA members.

In the remainder of this section, large airports are those with over 15 million passengers traffic in 2019, medium-sized airports with between 2.5 million and 15 million passengers, and small airports are those with under 2.5 million passengers.

A full description of the modelling assumptions is provided in Annex A.



Aviation sector impact: airports 2021

2019

2020

2021-2025

2021 recovery

While traffic is projected to begin recovering from spring 2021 and airport finances are projected to improve relative to 2020, 2021 is still likely to be an extremely challenging year for UK airports.

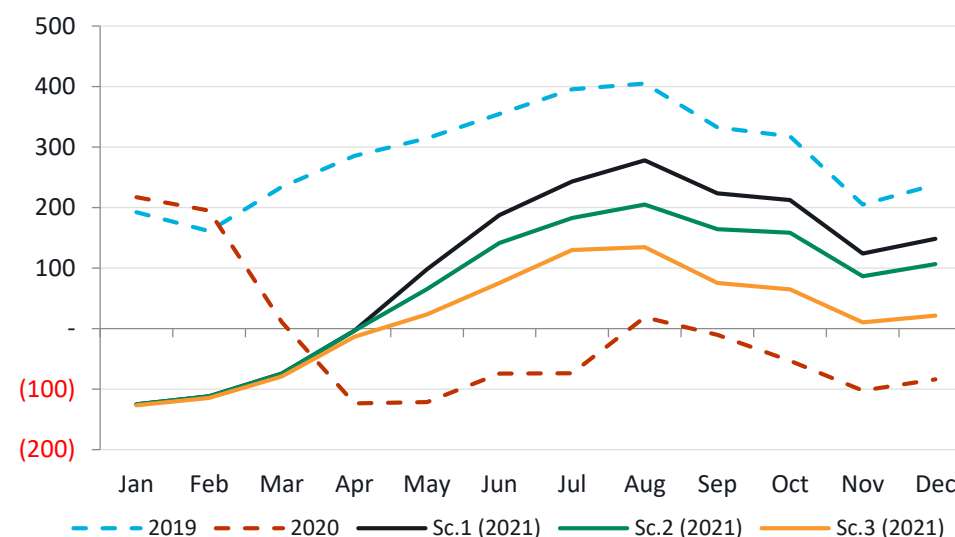
For the first quarter of 2021, airports are projected to continue sustaining losses as traffic levels remain extremely low, particularly in light of the latest restrictions, imposed in mid-December by a number of European and other countries, on those travelling from the UK due to the new strain of the virus.

Once traffic is projected to start recovering in the spring, airports will start to receive some passenger revenue. Large airports are projected to have positive earnings for the year, in EBITDA terms, through still at a significantly lower level than 2019. Medium-sized airports are projected, in aggregate, to make marginally positive earnings, though many medium-sized airports individually, along with many small airports, are projected to continue making losses in 2021.

In spite of the traffic recovery through 2021, the aviation sector will still be recovering from the significant losses of 2020 and will not be in a position to expand operational capacity (through additional staff or otherwise), while capex will continue to stay at the low critical maintenance levels of 2020 at the majority of airports. However, a number of airports will still be in process of completing major expansion projects (that started before 2020) and therefore will continue to incur significant capital costs.

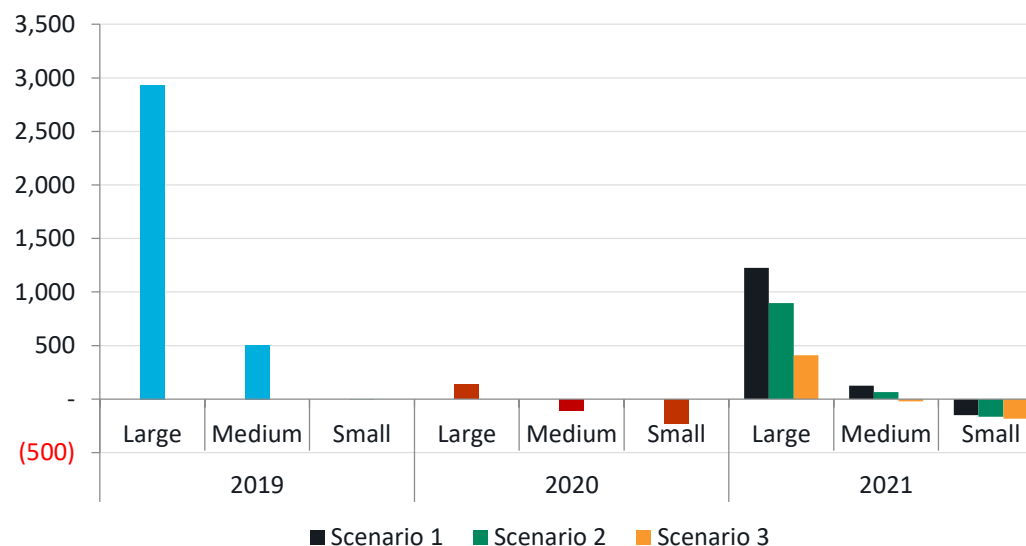
While passenger revenues will enable airports to recover some of their operating cash flows, many are projected to continue sustaining negative cash flows over the year once investing and financing cash flows after are taken into account and it will be number of years before cash flows recover to sustainable levels.

Projected UK airports aggregated EBITDA: 2019-2021 (£ million)



Source: Airport financial statements, AOA, Steer analysis

Projected UK airports aggregated EBITDA by airport size: 2019-2021 (£ million)



Source: Airport financial statements, AOA, Steer analysis

Operations

Airports are projected to continue making losses throughout the 2020/21 winter season while traffic and revenues remain low and operating costs (opex) remain relatively high, although are still somewhat reduced due to the Job Retention Scheme (JRS).

To varying degrees under each scenario, revenues are projected to start to recover with traffic from spring 2021, as the mass rollout of the vaccine allows the loosening of travel restrictions, with some larger airports making positive EBITDA returns in the summer of 2021. The JRS is due to end in April 2021, which will mean a step change increase in opex for airports, although staff requirements are likely to be lower than prior to when the scheme was introduced in March 2020, meaning there is the potential for significant job losses when the JRS ends, absent of further support.

Revenue and yields, opex

While total revenues will recover with traffic, per passenger yields will be lower than pre-COVID levels for a number of years.

On the aeronautical revenue side, airports will need to offer incentives and charges discounts to airlines in order to attract back traffic, particularly during the initial years of the recovery when total UK traffic will be lower and there will be a high degree of price competition between airports.

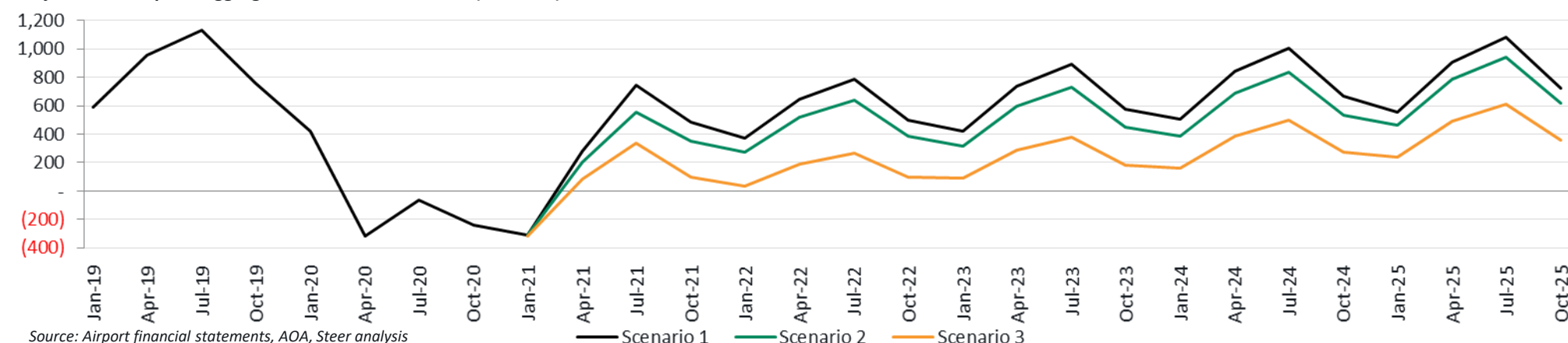
The aeronautical charges discounts and incentives offered are projected to be greater in the initial years of the recovery and at smaller airports. Under Scenario 3, due to the sustained lower level of traffic, charges discounts are projected to be greater and remain throughout the period. Yields are up to 25% lower than 2019 depending on the year and airport (further details are provided in Annex A).

On the non-aeronautical side, yields will initially be suppressed due to ongoing social distancing requirements in airport shops, bars and restaurants and, in the longer term, due to the ongoing depressed economic conditions and a lower passenger propensity to spend. Under Scenario 3, per passenger spend is projected to remain lower than Scenarios 1 and 2, reflecting the ongoing uncertainty around the virus and the wider economy. Yields are up to 15% lower than 2019 depending on the airport (further details are provided in Annex A).

The lower projected level of per passenger revenues mean that total revenues are not projected to recover to 2019 levels by 2025 even in Scenario 1.

Between 2021 and 2025, opex is projected to increase gradually but more slowly than traffic, reflecting the low proportion of variable (compared to fixed) costs.

Projected UK airports aggregated EBITDA: 2019-2025 (£ million)



Source: Airport financial statements, AOA, Steer analysis

Capital investment

Since March 2020, airports have reduced their capital expenditure (capex) down to the level of critical maintenance only and have cancelled and deferred a number of capital projects. This low level of capex is projected to continue throughout 2021, with the only major capex projects taking place are those that were already underway at the start of 2020.

After 2021, capex is projected to remain low with very few or no new airport development projects taking place. However, under Scenarios 1 and 2, as traffic and airport finances recover, more, but limited investment spending takes place after 2021, beyond the critical maintenance levels of 2020 and 2021. Under Scenario 3, capex remains low at close to critical maintenance levels throughout the period.

Financing

As has been discussed, due to the capital-intensive nature of their businesses, airports are traditionally relatively highly leveraged and have taken on further significant amounts of additional debt to increase their cash reserves and liquidity in 2020. It is likely to take a number of years for airports to repair their balance sheets through operational cash flows and move towards more normal gearing ratios (by reducing their levels of debt).

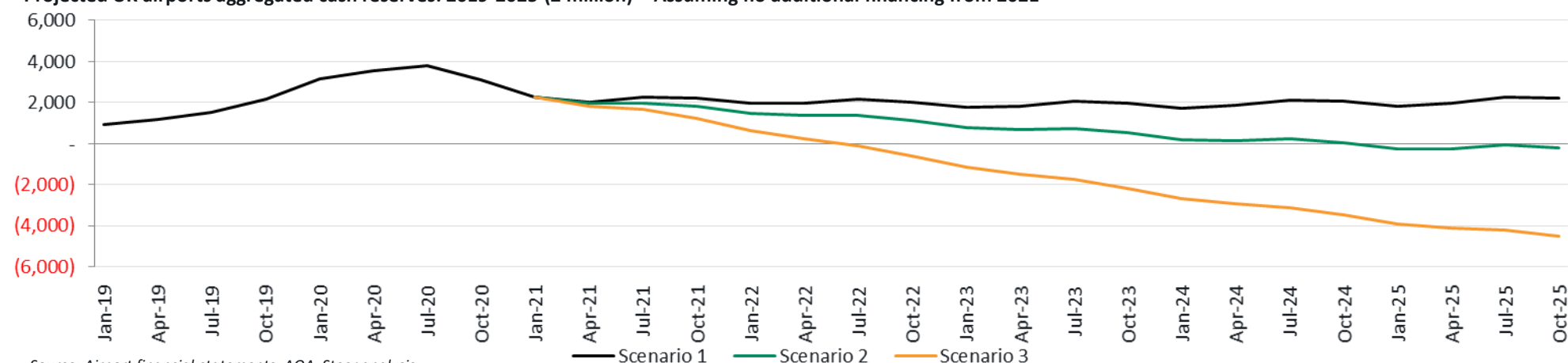
This is likely to involve a combination of refinancing and, where available, further equity injections, which means fund available for the expansion of operations and capital expenditure will be limited. In addition, airports will be required to continue making interest and debt repayments on the debt incurred prior to, and since, the impact of COVID-19.

Cash reserves

Under Scenario 1, after the start of the traffic recovery in spring 2021, airports are projected to be making a sufficient level of return from operations (net of capex and financing costs) to maintain their cash reserves, although capex is still significantly below 2019 levels. Under Scenario 2, assuming the same level of capex and slightly lower revenues, positive cash reserves are maintained throughout most of the period, but are depleted by 2025.

Under Scenario 3, at an aggregate level, ongoing operational losses, in addition to ongoing essential maintenance capex and financing costs, mean cash reserves are depleted by late 2022, implying the need for additional financing support. However, the projections differ across different classes of airports, with the smaller airports faring worse.

Projected UK airports aggregated cash reserves: 2019-2025 (£ million) – Assuming no additional financing from 2021



Source: Airport financial statements, AOA, Steer analysis

Aviation sector impact: airports by size (1)

2019

2020

2021-2025

EBITDA

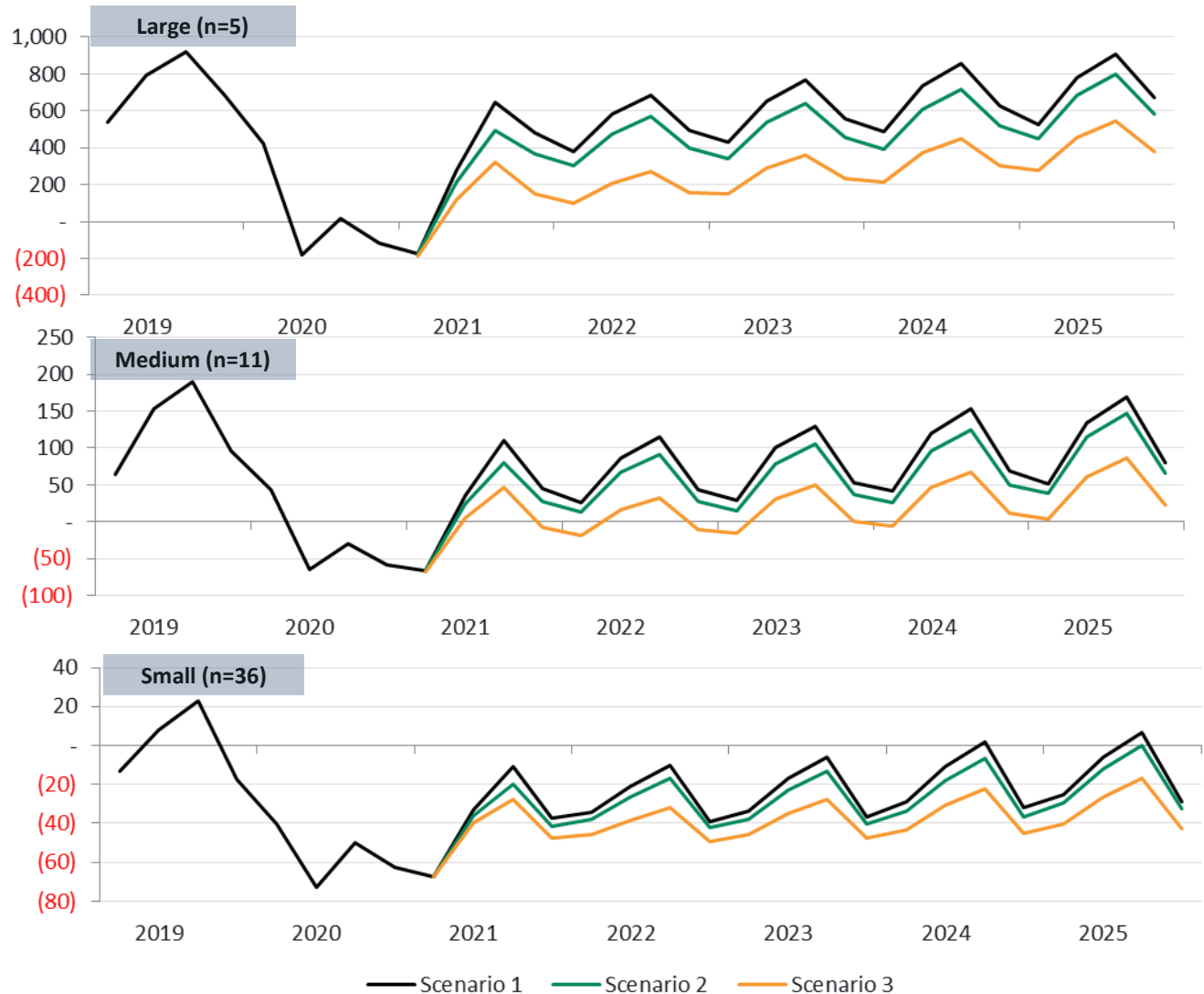
Following the start of the projected traffic recovery in the spring of 2021, revenues are projected to pick up significantly across all airports.

At **large airports**, this leads to positive EBITDA returns in each period from the summer of 2021 under each scenario. Due to the greater airline demand for slots at larger airports, and the relative strength of their commercial offer, there is only a small reduction in per passenger revenues relative to 2019.

At **medium-sized airports**, EBITDA returns are also positive from summer 2021 under Scenarios 1 and 2, but, due to the greater need to offer charges incentives to airlines and a less comprehensive commercial offer, the revenue recovery is slightly weaker than at larger airports. A more pronounced seasonality impact also reduces revenues to a greater extent during the winter and means EBITDA returns are not positive throughout the year under Scenario 3 until 2025.

At **smaller airports**, many of which do not traditionally make consistent positive returns and, in aggregate, made small negative EBITDA returns in 2019, annual EBITDA is projected to remain negative throughout the period. Small airports' greater need to attract traffic through charges discounts and a more simple commercial offer mean, relative to larger airports, revenues are slower to recover in line with traffic.

Projected UK airports aggregated EBITDA: 2021-2025 (£ million)



Source: Airport financial statements, AOA, Steer analysis

Aviation sector impact: airports by size (2)

2019

2020

2021-2025

Cash reserves

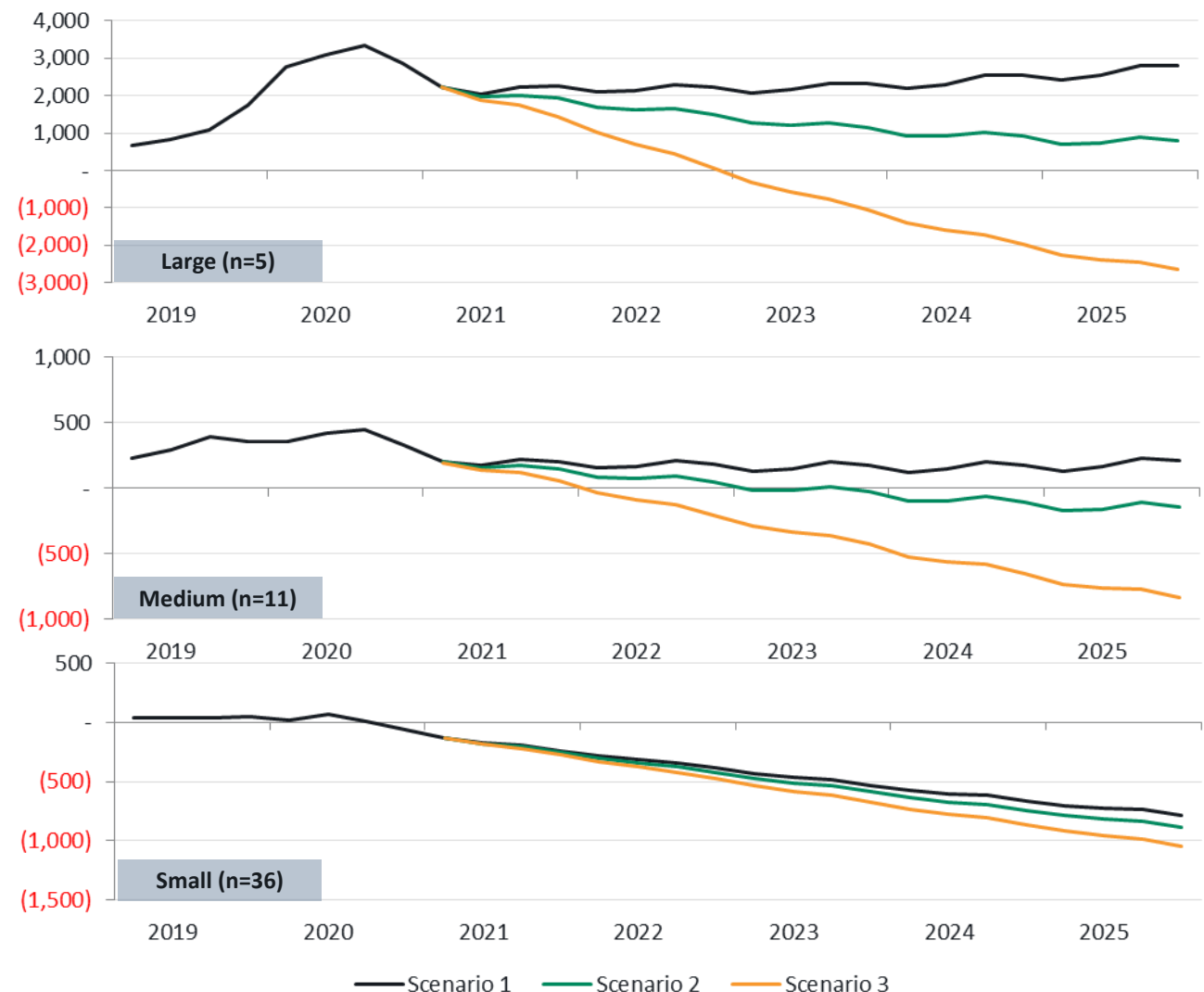
At **large airports**, positive EBITDA returns, net of capex and financing costs, are sufficient to maintain positive cash reserves throughout the period under Scenarios 1 & 2, but not under Scenario 3. At **medium-sized airports**, EBITDA returns, net of capex and financing costs, are sufficient to maintain positive cash reserves throughout the period under Scenario 1, but not under Scenarios 2 & 3. **Small airports** are not able to maintain positive cash reserves under any scenario without additional support.

In scenarios where normally profitable airports are unable to maintain sufficient cash reserves and liquidity in the short-term, it is likely that they will need ongoing support from banks and from shareholders in order to continue operations (although the scope for expansion will be limited to the need to repair their balance sheets reduce their levels of debt).

In addition, while many smaller, less profitable airports are fully or partially subsidised by local government, in order to, for example, maintain public service obligation (PSO) routes, others are not.

At airports where the recovery profile is slower, particularly under Scenario 3, and where it will be less profitable once traffic recovers, it is not clear that commercial banks and shareholders (where these are present) will continue financial support indefinitely in order to provide liquidity and for operations to continue implying the need for additional state support.

Projected UK airports aggregated cash reserves: 2021-2025 (£ million) – Assuming no additional financing from 2021



Source: Airport financial statements, AOA, Steer analysis

Recovery by region

As noted above, as the UK aviation sector begins to recover, the improvement to finances is likely to be somewhat uneven across airports, as airlines will look to build capacity on their most viable and highest yield routes first.

This means, on long-haul routes, airlines are likely to initially concentrate their capacity at Heathrow and Gatwick before reinstating long-haul routes at airports in other parts of the country. It is likely to be a number years before many airports' long-haul networks are able to fully recover – particularly in light of projected slower recovery of long-haul traffic relative to short-haul across all scenarios.

A number of UK airports in the North of England and Scotland have been building their long-haul networks in recent years, including to emerging markets in Asia and to major hub airports in the Persian Gulf. The loss of these of some or all of these connections will have significant negative implications for regional connectivity (discussed further below).

Although the impact is unlikely to be as pronounced as for long-haul, airlines are also likely to initially concentrate short-haul capacity on their most viable routes at the largest airports, which are predominately located in and around London.

As noted above, in order to attract traffic during the recovery, small and medium-sized airports in particular, which are mainly located outside of London and the South East, will need to offer incentives and discounts on airport charges. This means, at the majority of airports, the recovery of revenues to 2019 levels is likely to be slower than traffic recovery.

Consequently the finances of London airports are projected to recover faster than those of other regions of the UK, where small and medium-sized airports account for a much greater share of total passenger traffic.

Airport aggregated EBITDA by region as % of 2019: 2021 & 2025



Operations

Following the sustained operational losses throughout 2020, from the start of the traffic recovery in spring 2021, to varying degrees under each scenario, revenues are projected to start to recover with traffic, as the mass rollout of the vaccine allows the loosening of travel restrictions, with some airlines making positive EBITDA returns in the summer of 2021.

As with airports, the JRS is due to end in April 2021, which will mean a step change increase in opex, although staff requirements are likely to be lower than prior to when the scheme was introduced in March 2020.

Airlines are projected to make a small positive EBITDA return in the summer of 2021 under Scenarios 1 and 2, although this varies across different airlines depending on traffic mix.

Large LCCs, which generally have lower cost bases and more flexible operations, are able to scale up their operations faster in response to increased demand in summer 2021. In addition, these LCCs' routes are comprised predominately of short-haul traffic, which is projected to be one of the fastest recovering markets in 2021.

FSCs, generally with larger cost bases and less flexible operations, are slower to recover. The slower recovery of both business and long-haul traffic also slows the recovery of some FSCs.

Collectively, airlines are projected to have EBITDA gradually rising between 2021 and 2025, generally remaining negative during the winter seasons. In Scenarios 1 and 2, net EBITDA is positive by 2022 calendar year, whereas in Scenario 3, net EBITDA profitability is only reached in 2024.

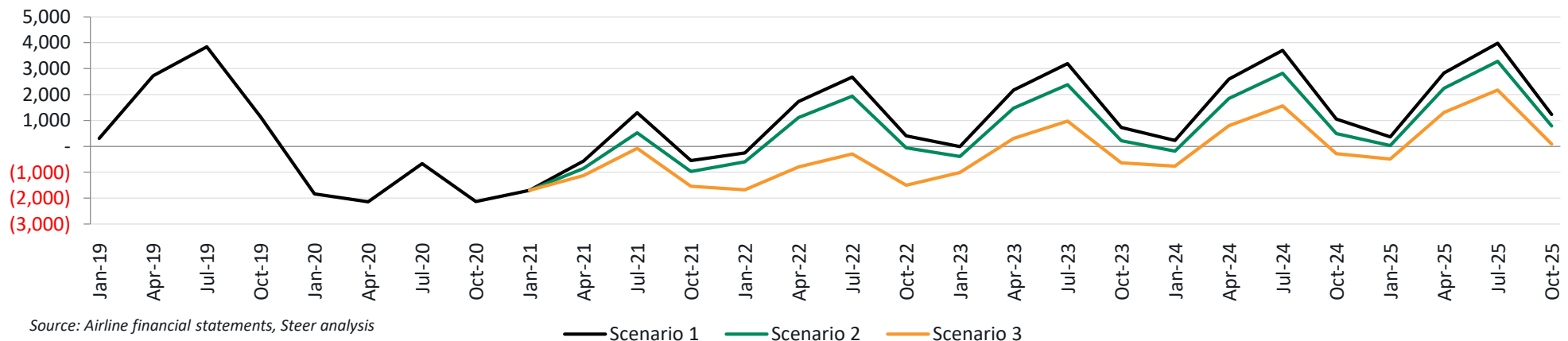
Capital investment

Since March 2020, similarly to airports, airlines have significantly reduced their capital expenditure (capex) on fleet replacement, renewal and maintenance, and have retired some their older and most expensive to operate aircraft.

This low level of capex is projected to continue throughout 2021, with the only essential capex taking place. While airlines are likely to defer purchase of new aircraft they will be required to continue maintenance on their existing aircraft.

After 2021, capex is projected to remain at the low levels of essential aircraft maintenance and, where necessary, renewal and replacement, across each scenario as traffic continues to recover.

Projected UK airlines aggregated EBITDA: 2019-2025 (£ million)



Financing

Since the collapse of traffic and operating revenues in March 2020, airlines have taken on significant amounts of additional financing to increase their cash reserves and liquidity, through a combination of additional equity, commercial loans and state-backed loans.

As with airports, it is likely to take a number of years for airlines to repair their balance sheets through operational cash flows and move towards more normal gearing ratios (by reducing their levels of debt), and therefore the scope for the significant expansion of operations (once demand has returned) and investment in fleet renewal will be reduced. Airlines will also be required to continue making interest and debt repayments on the debt incurred prior to, and since, the impact of COVID-19.

Most major UK-based airlines have taken steps to safeguard their position and significantly increase their liquidity and cash reserves since the start of the crisis. However, some airlines have filed for bankruptcy protection and have been required to agree financial rescue packages with shareholders, creditors and aircraft lessors.

While the traffic growth projections under the more optimistic scenarios should allow airlines to generate sufficient operational cash flows to repair their balance sheets, and to begin to repay their creditors over the coming years, if traffic remains low, it is not clear the shareholders and creditors will continue to support all airlines in the event of continuing cash outflows.

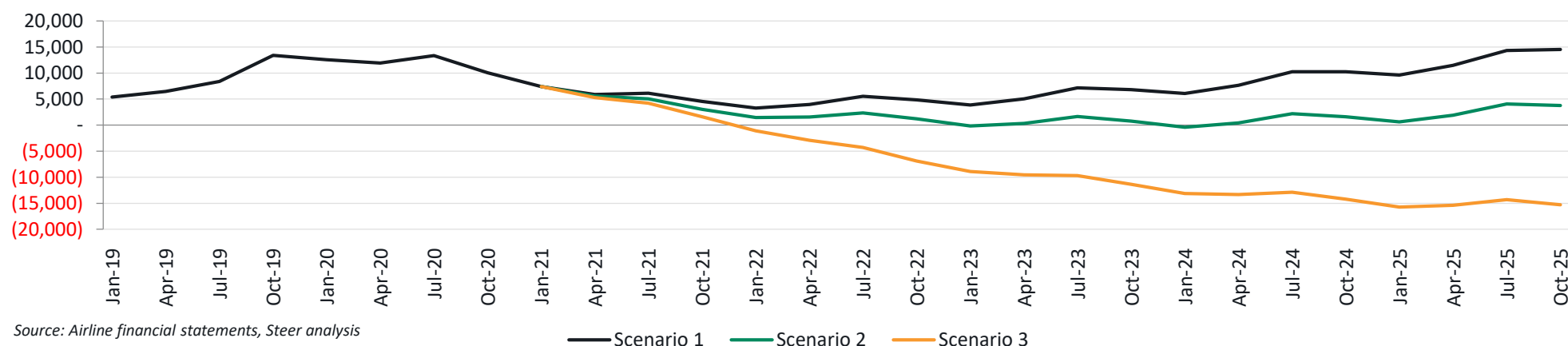
Cash reserves

Under Scenario 1, after the start of the traffic recovery in spring 2021, airlines are projected to be making a sufficient level of return from operations (net of capex and financing costs) to slowly grow their cash reserves, although capex and aircraft fleet replacement is still significantly below 2019 levels.

Under Scenario 2, assuming the same level of capex and lower revenues, airlines are unable to maintain a consistent positive cash balance throughout the period, implying the need for some additional financial support.

Under Scenario 3, at an aggregate level, ongoing operational losses, in addition to ongoing essential maintenance capex and financing costs, mean current cash reserves are quickly depleted, implying the need for additional for significant financial support, to the extent shareholders and creditors are willing to bear this.

Projected UK airlines aggregated cash reserves: 2019-2025 (£ million) – Assuming no additional financing from 2021



Economic impact



Economic contribution

Across each of the three scenarios, in 2021, the **economic contribution of the aviation sector is significantly reduced relative to 2019**, reflecting the reduced level of traffic and economic activity in the sector, as well as within the wider UK economy.

As has been the case in 2020, a reduced level of activity within the aviation sector will see less demand for suppliers' and associated businesses' goods and services, due to airports and airlines continuing to minimise the level of their operational and capital expenditure. Consumer confidence and spending in the wider economy is still relatively low due to the ongoing uncertainty around the virus and the economy.

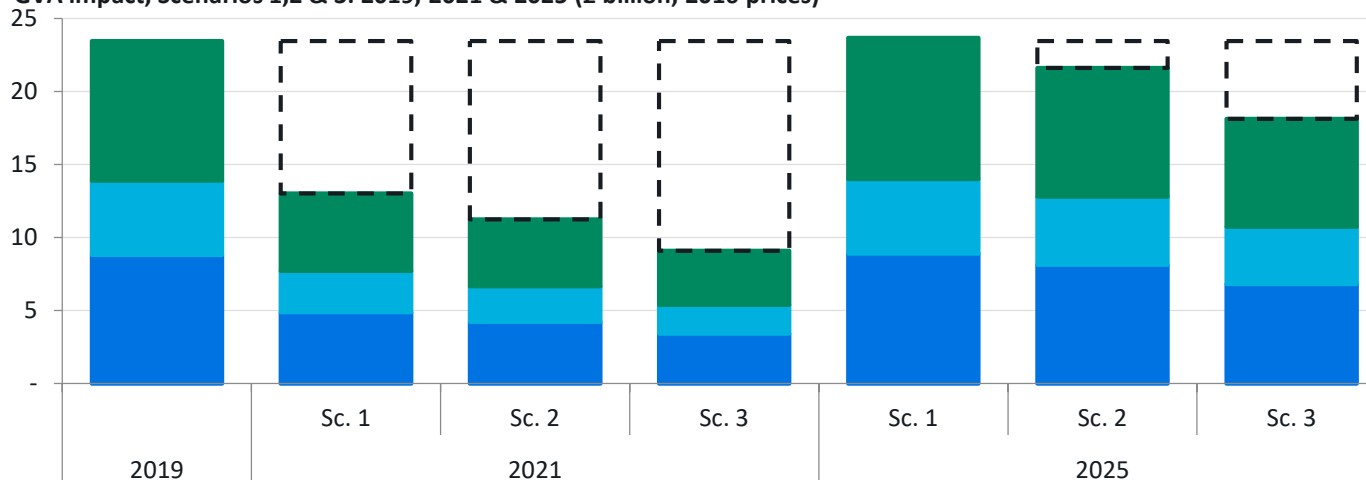
By 2025, under Scenario 1, traffic has recovered to the 2019 level and consequently economic activity with the sector has returned to its 2019 level. Businesses within the industry, as well as passengers, are more confident about the outlook for the sector, both from a virus and economic perspective, and are therefore willing to increase operational and capital expenditure in order to grow their operations, with benefits for suppliers and associated business.

Under Scenarios 2 and 3, the majority of 2019 economic activity has returned, but the sector is still recovering, with some level of uncertainty remaining in Scenario 3. In spite of the recovery, across all scenarios, by 2025, between £32 billion and £95 billion of GVA is projected to have been lost (relative to 2019 GVA).

Across the three scenarios, in 2021, the reduced level of economic activity in the sector leads to a reduction in employment of between 370,000 and 510,000 (and between £11 billion and £16 billion of income) relative to 2019. This reflects reduced need for staff within the sector, as well as within downstream sectors, such as construction staff for airport expansion projects.

By 2025, the level of employment has increased in line with the recovery of the sector, although employment is still lower relative to 2019 under Scenario 2 (65,000) and Scenario 3 (189,000).

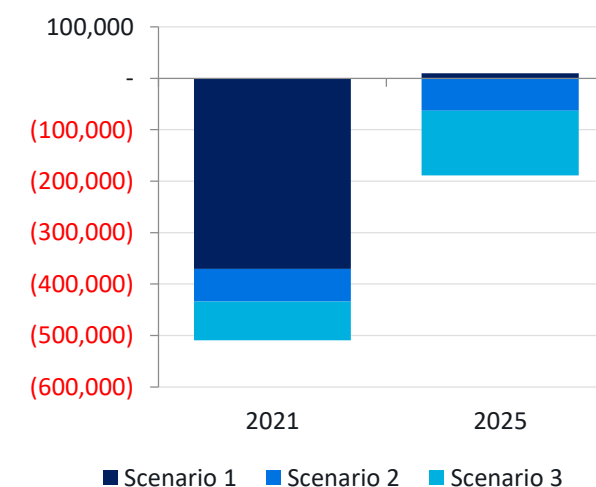
GVA impact, Scenarios 1,2 & 3: 2019, 2021 & 2025 (£ billion, 2016 prices)



Source: ONS, CAA, AOA & Steer analysis

■ Direct ■ Indirect ■ Induced — 2019

Employment impact range : 2021 & 2025 vs. 2019



Economic impact (2)

2019

2020

2021-2025

Regional economic contribution

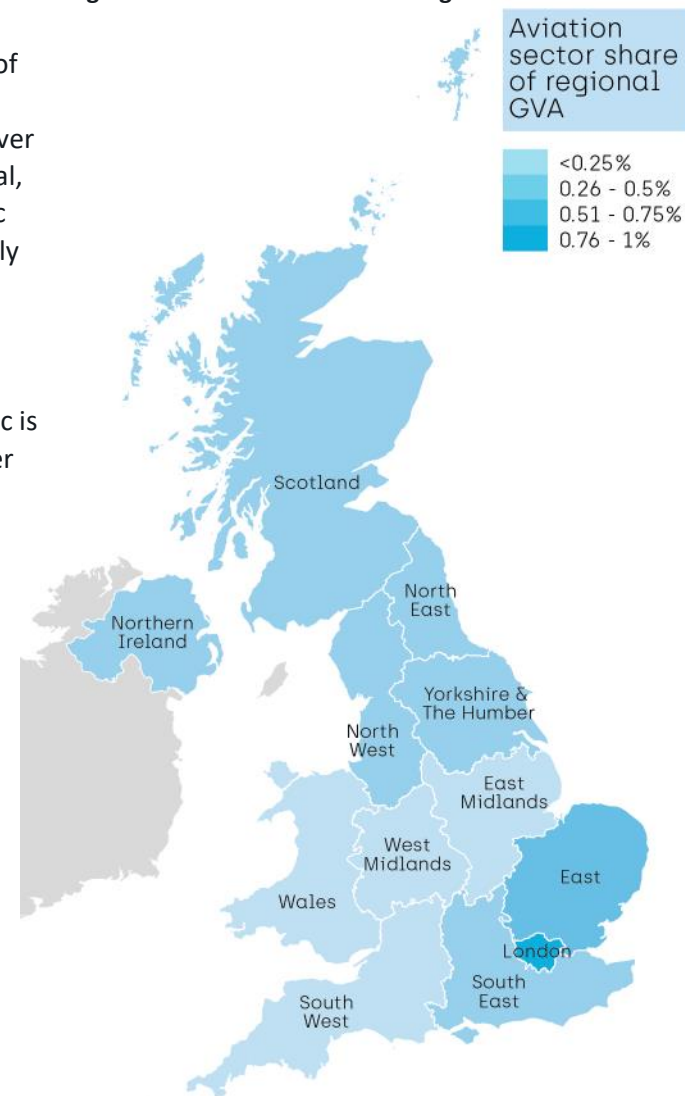
As one of almost 100 economic sectors under the SIC classification system, in addition to facilitating and enabling economic activity in other sectors, the aviation sector itself contributed 0.5% to UK GVA in 2019. At a regional level, the sector made similar or larger contributions in London (1.0%), the South East (0.5%), the North East (0.5%) and the East of England (0.6%).

In 2021, under Scenario 2 (shown for illustration as the central scenario), the regions most affected collectively by the reduction in aviation sector activity are those outside London and the South East.

To some extent this reflects the fact that, in each of these regions, there are a number of small and medium-sized airport that will take longer to recover than larger airports. These airports have, in general, been the worse affected by the reduction in traffic and therefore will be slower to recover, particularly in 2021 when the majority of the recovery will be concentrated at larger airports.

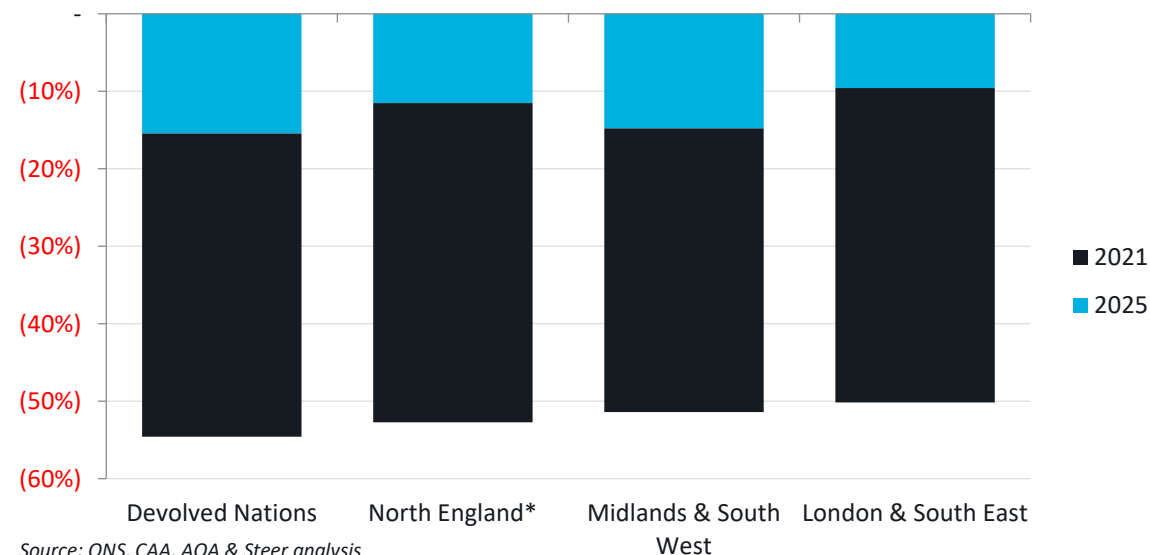
By 2025, under Scenario 2, more of the traffic has recovered but the economic impact of lower traffic is still felt the most in regions more reliant on smaller airports; Wales, Northern Ireland and Yorkshire & Humberside.

UK Regions aviation sector share of regional GVA: 2019



Source: ONS

UK Regions Scenario 2 GVA impact: 2021 & 2025 (vs. 2019)



Source: ONS, CAA, AOA & Steer analysis

* North West, North East & Yorkshire & Humber

Economic impact (3)

2019

2020

2021-2025

UK Air Connectivity Index (ACI)

As has been discussed above, a large proportion of the UK's international passenger traffic is on short-haul routes to European destinations, and large European economies account for a significant proportion of the UK's Air Connectivity Index (ACI) due to the high volume of seat capacity and short travel times.

North America, particularly the USA, is also important in terms of the volume of passenger traffic, the number of destinations and the UK's Air Connectivity Index. In spite of over 50 Asian destinations accessible from the UK, relative to North America, passenger traffic volumes to Asia, and their contribution to the UK's Air Connectivity Index, are low, particularly given the size of Asia's population and economy.

Under each of the three scenarios, short-haul European traffic, which accounts for the majority of the UK's Air Connectivity Index, is projected to be the fastest recovering market, with long-haul traffic recovering more slowly. Under each the scenarios, particularly Scenario 2, it is likely that the UK's most important long-haul markets in North America and East Asia will recover faster due to a more effective vaccine rollout compared to some other long-haul destinations.

The reduction in the UK's Air Connectivity Index in 2021 and 2025, in terms of the reduction in accessible world GDP, is shown to the right.

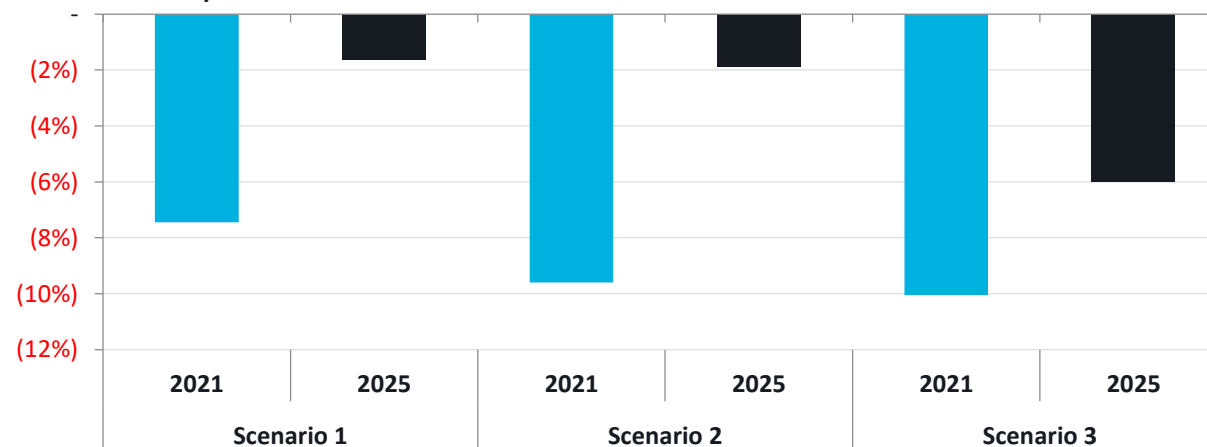
In 2021, across each of the three scenarios, the UK's Air Connectivity Index is projected to have fallen by between 7% and 10% relative to 2019. This reflects the reduction in traffic across each of the scenarios, but also the fact that the traffic recovery on short-haul European routes, which are the most important to the UK in terms of connectivity, account for the majority of the recovery in 2021.

Based on IATA estimates (discussed on Slide 12) this implies, relative to GDP, a reduction in labour productivity of up to 0.07% and a reduction in total factor productivity of up to 0.9%.

By 2025, in Scenario 1 and Scenario 2, total passenger traffic has recovered to close to (Scenario 2) or slightly above (Scenario 1) the 2019 level; however, due to the fact to the weaker recovery of some long-haul connections, the UK's Air Connectivity Index is slightly lower than the 2019 level. Under Scenario 3, total passenger traffic and the UK's level of connectivity is still well below the 2019 level.

As discussed, UK regions outside London and the South East are likely to disproportionately affected by the reduction in connectivity due to a disproportionate reduction in capacity (especially on long-haul routes).

UK Air Connectivity Index: % reduction vs. 2019



Fall in world
GDP access
vs. 2019
(£, trillion)

(1,194)

(264)

(1,539)

(303)

(1,611)

(963)

Source: IMF, OAG, Steer analysis

Policy options



Overview

To date, as has been discussed, the government has introduced a number of schemes to support the UK economy, although aviation-sector specific support has been relatively limited.

There are four broad areas, highlighted by the industry, in which the UK government and other UK authorities, including the CAA, could assist the aviation sector, these are:

- **Travel rules and agreements** in relation to the virus, which would provide clarity and more certainty for travellers and businesses.
- **Financial support**, which would enable airports and airlines to maintain cash reserves and liquidity, and reduce operating cash outflows, while the sector recovers over the coming years;
- **Tax relief** that either benefits airports and airlines directly or incentivises activity within the aviation sector; and
- **Revisions to slot regulation** that could assist airports and airlines financially, or support the recovery of traffic.

Each of these areas is discussed within the following slides and summarised below.

Testing and quarantine rules

Since international travel restrictions were first imposed, the UK's quarantine period for international travellers, as well those coming into contact with someone with a confirmed COVID-19 within the UK, was set at 14 days. However, since 14 December, this has been reduced to 10 days.

On 15 December, the UK introduced a testing regime and for international travellers (not on the UK's travel corridor list) under which the quarantine period is reduced if the traveller has a negative result from a test taken 5 days after arrival.

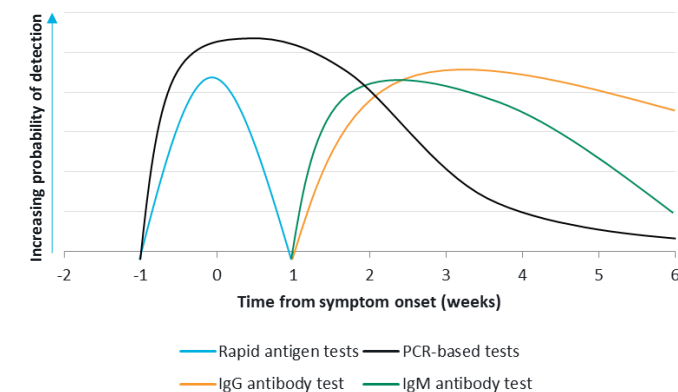
In addition to the UK, a number of countries have introduced forms of testing regimes, but there is currently no single, coordinated international system of pre-departure tests. When airport testing was introduced at Heathrow in October 2020 there was a lack of clarity on whether some European countries' authorities would accept the results of the tests.

In order for international testing regimes to work most effectively, relative to the current situation, tests will need to produce results more reliable results, in a shorter amount of time, at a lower cost to passengers and be more widely available.

There are currently test types available which could help to facilitate a more effective testing regime, although there are trade-offs between different types of test exist – PCR, LAMP and Antigen – in relation to the probability of detection and how long after exposure to virus test are effective (see chart).

There will also need to be cooperation between the UK and other international governments to agree the types of tests that can be used and mutual recognition of results in order to avoid, as much as possible, the need for quarantine on arrival from international destinations. An effective testing regime and mutual recognition on the types of tests that can be used will be important to have in place before spring 2021 and are necessary pre-requisite for traffic being able to start recovering.

Comparison of COVID-19 testing options



Vaccine recognition

As the vaccine is rolled out more widely to general populations throughout 2021, proof of immunisation may start to replace proof of a negative COVID-19 test as the primary means for avoiding quarantine after international travel. However, an important prerequisite for this will be the validation that the vaccine means individuals are no longer able to transmit the virus, which has not yet been confirmed.

A number of airlines have signalled their intention to require some form of vaccine passport once the vaccines become more widely available and IATA announced in November that it was developing a vaccine travel pass. This digital document would provide travellers with certification of their vaccination status and COVID-19 test results from medical facilities and share the information with airlines and border authorities.

This system already exists in much of the developing world through immunity passports for yellow fever; however, international cooperation between governments and mutual recognition of vaccine passports will be required in order for the projected traffic recovery in the coming years not to be impeded.

In the longer term, once the vaccine has been made available to the entire populations of the UK's main international markets and infection rates are sufficiently low, mutually recognised travel corridors, with no requirement for negative test results or vaccine passports are likely to be the pathway back towards more normal international travel.

Financial support

Financial support provided by the UK government to the UK aviation sector to date is as follows:

- Employee retention subsidies through the Job Retention Scheme (JRS), which has been utilised extensively by airports and airlines;
- £2.6 billion of Coronavirus Corporate Financing Facility (CCFF) loans to airlines and aerospace manufactures;
- Business rates relief for Scottish and Northern Irish airports, provided by the respective devolved governments (English airports are due to receive equivalent relief in 2021, up to the value of £8 million per airport).

The JRS is due to end in April 2021, and while the UK aviation sector recovery is projected to begin around this time, it is likely staffing requirements will be significantly lower compared to pre-COVID levels. There are therefore likely to be significant additional job losses within the aviation sector, especially as it will be one of the last sectors to recover, beyond those that have already, if the JRS is not extended.

The government CCFF loans, which have provided airlines with much-needed liquidity during 2020, are currently due to be repaid in 2021 when the sector will still be recovering. The loans are likely to be more beneficial to the industry if the repayments were delayed beyond next year, when the industry may be in a stronger operational and financial position.

Airports have not been provided with government loans through the CCFF or any other support scheme, such as CBILs, either because they did not qualify or because they considered the conditions of the loans to be too stringent (due to, for example, to required repayment in 2021).

The business rates relief planned for English airports in 2021 will provide some additional liquidity, although the £8 million limit means the relief will not meet the full costs of the four largest airports, only covering between 64% (Stansted) and 6% (Heathrow) of total business rates. An extension of the business rates support beyond 2021 would also provide additional relief and liquidity while traffic and airport finances will still be recovering.

The government could also support the industry with assistance or relief on sector-specific fixed costs imposed by regulatory requirements, including CAA fees, airspace modernisation and police costs.

In order for government financial support to provide airlines and airports with sufficient liquidity to continue operations, loans and other payments will need to be made available where and when they are needed, and not include unattractive repayment conditions. Should traffic not recover in the coming years, this will be particularly important for some smaller airports, which cannot rely on additional equity from shareholders when commercial creditors are no longer willing to provide debt financing.

Tax relief

In addition to providing business rate relief to airports, the UK government could also provide assistance to the sector through relief on aviation sector-specific taxes, namely, Air Passenger Duty (APD).

APD is a sales tax paid by all passengers purchasing tickets for flights departing UK airports and is one of the highest aviation taxes in the world. Providing relief on APD could allow airlines to incentivise additional traffic with lower fares and/or raise margins on fares (without a net increase in ticket prices) helping to repair their finances. Additional traffic would feed into additional revenues for airports.

APD has historically provided significant levels of tax revenue, therefore, the UK government is unlikely to provide APD relief in the long-term. However, while traffic levels (and associated tax revenues) are low, there would be less forgone tax revenue arising from APD relief during the recovery of the sector, which means it could be introduced for a limited period without reducing tax revenue in the long-term.

Tax relief, in particular ADP, could also be targeted at specific regions or on domestic routes (where passengers pay APD on both their outbound and inbound flight) in order to re-attract and maintain key routes in the short-term, in an attempt to address some of the regional connectivity discussed above.

From January 2021, the UK government plans to remove VAT relief on airside purchases at airports. While this does not incur any additional costs on airports, it will raise the costs for passengers, which is likely to suppress demand and reduce non-aeronautical revenues for airports when they will be looking to maximise revenues.

Revisions to slot regulation

In March 2020, the EU issued an airport slot waiver up to the end of the summer 2020 scheduling season, and an extension to the waiver to winter 2020 (which runs until March 2021) was announced in September.

EU slot regulations apply until end of the Brexit transition period but have been transposed into UK law so will continue unless changed. Following the end of the transition period, the UK can choose to deviate from EU rules should it wish.

In the UK, the slot rules apply at the five main London airports, Manchester, Birmingham and Bristol (in the summer season). The normal slot rules oblige airlines to use at least 80% of their take-off and landing slots in order to keep them the following year (the '80-20 rule'). The aim of the waiver was to protect the finances of airlines and remove the incentive to operate empty flights.

While traffic remains low the waiver has not had many consequences; however, once traffic starts to recover the it will need to be revisited.

It is within the interest of slot coordinated airports looking to quickly grow traffic, or airlines looking to gain access to new slots, for the 80-20 rule to be reinstated in summer 2021. On the other hand, it is within the interest of major airlines with a large number of slots (that may not all be used in the short term) and for airports looking to retain these airlines in the long term for the waiver to remain.

In response to these conflicting interests, the World Airport Slot Board has recommended that: airlines that return a full series of slots by early February be permitted to retain the right to operate them in summer 2022; a lower operating threshold of 50% for retaining slots be introduced for summer 2021; and exemptions from slot rules in the event of short-term border closures or quarantine measures imposed by governments. In December 2020, the European Commission proposed a threshold of 40% for slot retention, although this has not yet been formally approved.

These proposed measures may represent a compromise between the different interests of different industry actors. It remains to be seen whether these measures will be adopted and how acceptable they would be to the industry.

Policy options: summary

2019

2020

2021-2025

Area	Objective	Policy options	Considerations
Health requirements	Provide effective, clear and consistent international travel rules in cooperation with other governments	International recognised testing regime	These measures are key pre-requisites for international air travel to be able to recover and will require effective testing regimes, and extensive dialogue and cooperation with other governments (they are also a necessary pre-requisite for many of the other policy options to have material impact).
		Vaccine passports	
		Vaccine travel corridors	
Financial support	Provide airports and airlines with direct support such that they can maintain sufficient liquidity to continue operations in the short to medium-term	Continuation of JRS	Effective means of reducing opex in the short-term and retaining employees, and while the current scheme could be extended beyond April 2021, the government is unlikely to continue support in the long-term.
		Direct Loans	Effective means of providing liquidity, especially where commercial creditors and shareholders cannot, but needs to be sufficiently attractive to airports and airlines (costs can also be recouped by government).
		Business rates support	Effective means of reducing opex in the short-term while meeting obligations, while business rate support could be extended beyond 2021, the government is unlikely to continue support in the long-term.
		Support with other cost obligations; CAA fees, air space modernisation and airport police costs	
Tax relief	Incentivise passenger demand and airport spending	Relief of APD	APD relief is likely to incentivise passenger demand and give airlines an opportunity to recoup some lost revenues, and VAT relief is likely to incentivise some additional airport spending by passengers.
		Relief of airport VAT	
Slot regulation	Incentivise fair and efficient use of slots and airport capacity during the traffic recovery	Return to 80-20 rule	Likely to favour airports looking to quickly grow traffic and airlines trying to access slots.
		Continuation of waiver	Likely to favour incumbent airlines and airports with large incumbent airlines.
		Compromise 50-50 rule	Attempts to balance interests of airports and airlines.

Policy options: quantification

2019

2020

2021-2025

Area	Policy options	Projected impact (across the three scenarios)
Health requirements	International recognised testing regime	Absence of effective targeted health measures for international travel, under Scenario 1, could see traffic fall towards the level of Scenario 2; under Scenario 2, this absence could see traffic towards the level of Scenario 3. These could lead to falls in revenue of up to between £3.8 billion and £4.6 billion across airports and airlines in 2021.
	Vaccine passports	
	Vaccine travel corridors	
Financial support	Continuation of JRS	Opex savings of between £1.4 billion and £1.7 billion for airports and airlines if JRS were extended to the end of 2021, compared to savings of c. £0.5 billion (in 2021) under the current scheme due to end at the end of April (in addition to further job losses).
	Direct Loans	Would provide short-term liquidity , although loans would need to be repaid, albeit on what are likely to be less stringent terms than commercial loans.
	Business rates support	Annual savings of at least £230 million across all UK airports, compared to savings of between £50 million and £100 million under the UK government's current planned support scheme for 2021.
	Support with other cost obligations; CAA fees, air space modernisation and airport police costs	CAA regulatory charges savings of up to c. £95 million across the UK aviation sector and airport police cost savings of c. £80 million across all airports in 2021, as well additional air space modernisation costs.
Tax relief	Relief of APD	Relief on the cost of air fares for passengers worth between £1.6 billion and £2.3 billion in 2021.
	Relief of airport VAT	Relief on the cost of airport retail offerings for passengers worth between £100 million and £150 million in 2021.
Slot regulation	Return to 80-20 rule	The continuation of the waiver would be particularly beneficial for airlines looking to retain a wide portfolio of slots while not having to operate it all, as well as for airports looking to retain large based carriers (especially network carriers) in the longer term. On the other hand, the retraction of the waiver and a return to the 80-20 (or a compromise) rule could be more beneficial for airlines with more immediate growth plans that are looking to gain access to normally capacity-constrained airports, while at the same time allowing for some improved reliability for airports to plan their operations. These conflicting interests are likely to come to the fore as passenger demand starts to recover.
	Continuation of waiver	
	Compromise 50-50 rule	

Annex A: Methodology & assumptions

Methodology: aviation sector impact

Financial information (2019 & 2020)

Financial information, including revenues, operating costs (opex), capital expenditure and financing cash flow and cash reserves, has been taken from airport and airline financial statements in 2019 and, where available, in 2020. This has been supplemented by credit rating agency reports and press articles and, for airports, financial information provided by AOA.

For airports where up to date financial information is not available, data for 2019 and 2020 has been estimated based on financial information of airports within the appropriate ACI size category. For the last quarter of 2020 (for which financial data is not available), financial flows have been projected based on traffic levels from the CAA for October and estimated using OAG scheduled seats in November and December.

In number of cases, where airports are owned by either a parent company, a holding company or state authorities, their reported financial position is not true reflection of their operations or profitability – in such cases figures have been adjusted in order to make airports' finances more reflective their operations.

Financial projections (2021-2025)

Under each of the traffic scenarios, individual airport and airline financial information has been projected from 2021 to 2025, based, in most cases, on a direct or indirect relationship with passenger traffic. 2020 has been used a base year for the projections under each scenario.

Under each scenario, passenger traffic has projected as set out within the traffic scenarios section of this report.

Each piece of financial information has been projected on a monthly basis such that:

- Airport and airline revenues grow based on a relatively high elasticity relationship with passenger traffic (around 0.9) and, for airports, unit revenues (yields) are assumed to be lower than 2019. Under Scenarios 1 and 2, aeronautical yields are up to 20% lower than 2019 (with higher reductions at smaller airports) from 2021, although recover to close to 2019 levels by 2025; under Scenario 3, aeronautical yields are up to 25% lower than 2019 (with higher reductions at smaller airports) from 2021 onwards. Across all scenarios, non-aeronautical yields are up to 15% lower than 2019 (with higher reductions at smaller airports) from 2021 onwards.
- Opex remains relatively constant but grows slowly each year based on an elasticity relationship with passenger traffic, which is low for airports (around 0.3) and slightly higher for airlines (around 0.5). There are also step changes in opex to reflect the end of the Job Retention Scheme and, at airports, business rate holidays.
- EBITDA is the net total of opex and revenues.

- At airports, capex remains at 2020 levels in 2021 and, under Scenarios 1 and 2, increases by 10% each year from 2022 and, under Scenario 2, increases by 5% a year from 2022. Airline capex is assumed to remain at 2020 levels from 2021 to 2025 across all scenarios.
- Financing cash flows, equivalent to interest and debt repayments, are based, where available, on repayment schedules set out with financial statements. No additional debt or equity financing inflows are assumed after 2020.
- Net cash flows, equivalent to the change of cash reserves in each period, are the net total of EBITDA, capex, and financing cash flows.

All financial information for each year is presented in nominal prices.

Aeronautical yield reduction by airport (2021)

Scenario	Large	Medium	Small
Scenario 1	0-15%	15%	20%
Scenario 2	0-15%	15%	20%
Scenario 3	0-20%	20%	25%

Non-aeronautical yield reduction by airport (2021)

Scenario	Large	Medium	Small
Scenario 1	5%	10%	15%
Scenario 2	5%	10%	15%
Scenario 3	15%	15%	15%

Methodology: economic impacts (1)

Economic contribution (2019)

Economic value can be measured in different ways, but typically considers the impacts of an economic sector (or of a proposed project or intervention) on:

- employment (number of employees associated with the sector or intervention);
- income received as salaries by employees; and
- gross value added (GVA).

GVA is an important indicator which measures the revenues generated by an industry, after netting off the costs of its inputs, in particular its expenditure on the outputs of other economic sectors or on imports, hence the concept of “value added”. GVA can be measured for both economic sectors and for geographical regions within a country, allowing for comparisons between each of these. When totalled to cover the whole economy at national level, GVA broadly equates to gross domestic product (GDP), the standard measure for national economic output (the difference is an adjustment for taxes and subsidies on products).

The traditional approach to quantifying the economic impacts of an economic sector is to consider how its activity affects levels of employment, income and GVA. For each of these measures, it is possible to compute the “direct”, “indirect” and “induced” impacts using a recognised methodology. In addition, wider, catalytic, impacts can also be estimated (see section below), although the approach for this is less standard.

The calculation of direct, indirect and induced economic impacts is based on the use of Input-Output tables (I-O tables), produced by the Office for National Statistics (ONS), the latest available version being from 2016 (consistent with UK National Accounts Blue Book 2019 & UK Balance of Payments Pink Book 2019). I-O tables cross-tabulate what each industrial sector purchases from each other industrial sector (intermediate demand), and in addition include data on household and government expenditure, employees’ income and company profit, as well as taxes, capital investment, exports and imports.

Industrial sectors are classified according to Standard Industry Classification (SIC) codes and presented with I-O table at the relatively aggregated 2-digit SIC code level. SIC 51 (Air transport) includes air transportation services but not airport operations. By using ONS industry employment data, which is available at a 5-digit SIC code level, we have also included airport cargo and groundhandling operations (SIC 52.102 and 52.242) as well as wider airport operations and ATM activities (SIC 52.230) in our definition of the aviation industry.

We have assumed that the 5-digit SIC code aviation sector activities within SIC 52 have the same GVA and income per employee, and the same supply chain and knock-on activity in the wider economy, as SIC 51.

The direct, indirect and induced economic impacts of the aviation industry in 2019 can be calculated from the I-O table, by inspection for direct impacts and via standard techniques for the indirect and induced impacts.

Undertaking this analysis allows “multiplier effects” to be calculated, which capture the extent to which changes within the aviation industry impact the supply chain (indirect impacts) and how the employee income generated by such changes generates knock-on economic activity as this is spent in the wider economy (induced impacts). Multiplier effects are initially calculated for an industry’s output, and can then be converted into the corresponding effects on GVA, employment and income. The multipliers are shown on the following slide as the overall impact compared to the direct economic impacts, hence can be considered to be cumulative. The multiplier for direct effects is, by definition, equal to 1.

To estimate the economic impacts at a regional level, we have applied the UK-wide multipliers to regional GVA, which is available from the ONS at a 2-digit SIC code level. We have applied the same uplift to SIC 51 (Air transport) at regional level to capture the wider definition of the aviation industry.

All GVA and income impacts are presented in 2016 prices, consistent with the most recent UK I-O tables.

Methodology: economic impacts (2)

Air Connectivity Index (2019)

The Air Connectivity Index (ACI) has been calculated consistent with World Bank methodology¹, based on the capacity, frequency and travel times.

The number of seats, flight frequency and travel time to each destination from the UK has been taken from OAG Schedules Analyser and the 2019 GDP, in current prices purchasing power parity (PPP), has been taken from the October 2020 IMF World Economic Outlook (WEO) database.

The ACI, for each country, is function of the seat capacity travel time, and GDP, which has been adjusted to take account of the number of airport destinations with connections from the UK. The ACI for each country is then normalised in relation to the country with the largest ACI in the sample (Germany) in order to obtain comparable results across countries and years.

Economic Impacts (2021-2025)

Economic Contribution

To estimate the direct impacts in each year under each of the scenarios, we have uplifted the direct impacts in 2019 by total airline and airport revenues as a proxy for the level of economic activities within the aviation sector), in each year, relative to total airline and airport revenues in 2019.

The indirect and induced impacts have been estimated by applying the 2019 multipliers to the direct impacts estimated in each year.

Air Connectivity Index

To estimate the ACI in each year under each of the scenarios, we have categorised each of the UK's international destinations in 2019 as long-haul or short-haul, and assigned a share of business and leisure traffic, such that the weighted average of business and leisure traffic across all countries is consistent with CAA journey purpose travel survey data. Traffic to each of the UK's destinations, relative to 2019, therefore grows in line with the relevant markets in each of the scenarios.

For each year under each of the scenarios, the same ACI methodology as 2019 is applied, where the GDP for each destination country, for the relevant year, is based on the latest IMF WEO forecast.

Categories of economic contribution

Employment	Jobs generated or facilitated by the aviation industry.
Income	Remuneration earned by those employed in the aviation industry
GVA	The value of good and services produced by the aviation industry, net of input costs, i.e. contribution to GDP

Measures of economic contribution

	Employment	Income	GVA
Direct	Economic activity associated with activities within the aviation industry		
Indirect	Economic activity generated by upstream industries that supply and support the aviation industry		
Induced	Economic activity generated by (direct and indirect) employees of spending their income		

Aviation sector economic multipliers

Impact	Direct	Indirect	Induced
GVA	1	2.6	5.2
Employment	1	3.1	6.0
Income	1	2.2	4.1

¹ The Air Connectivity Index: Measuring Integration in the Global Air Transport Network (World Bank, 2011)

Methodology: policy options quantification

Area	Policy options	Assumptions on impact (all prices nominal)
Financial support	Continuation of JRS	JRS opex savings for airports (25%) and airlines (10%) in 2020 revised downwards in 2021 based on the traffic recovery and total opex across the three scenarios, with smaller opex savings for airports (10% to 15%) and airlines (4% to 6%) in 2021.
	Direct Loans	-
	Business rates support	Total airport business rate costs, based on public information (where available) and information provided by AOA.
	Support with other cost obligations; CAA fees, air space modernisation and airport police costs	CAA fees: Total CAA Safety & Airspace, Consumers & Markets and Aviation Security statutory and scheme charges revenue in 2019/20. Airport police costs: Total Metropolitan Police costs at Heathrow, as proportion of total opex (3%), applied across all airports in 2021.
Tax relief	Relief of APD	Total 2019/20 APD revenue revised down to 2021 traffic levels across the three scenarios, accounting for 2020/21 (applied January to March) and 2021/22 (applied April to December) APD rate increases.
	Relief of airport VAT	VAT rate (20%) applied to assumed retail proportion of airport revenue (20%) in 2021 across the three scenarios.
Slot regulation	Return to 80-20 rule	-
	Continuation of waiver	
	Compromise 50-50 rule	
Health requirements	International recognised testing regime	The range of total revenue loss for airports and airlines in 2021 is equivalent to total 2021 Scenario 1 revenue less total 2021 Scenario 2 revenue, and to total 2021 Scenario 2 revenue less total 2022 Scenario 3 revenue.
	Vaccine passports	
	Vaccine travel corridors	

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