Institut du Québec

Aerospace update

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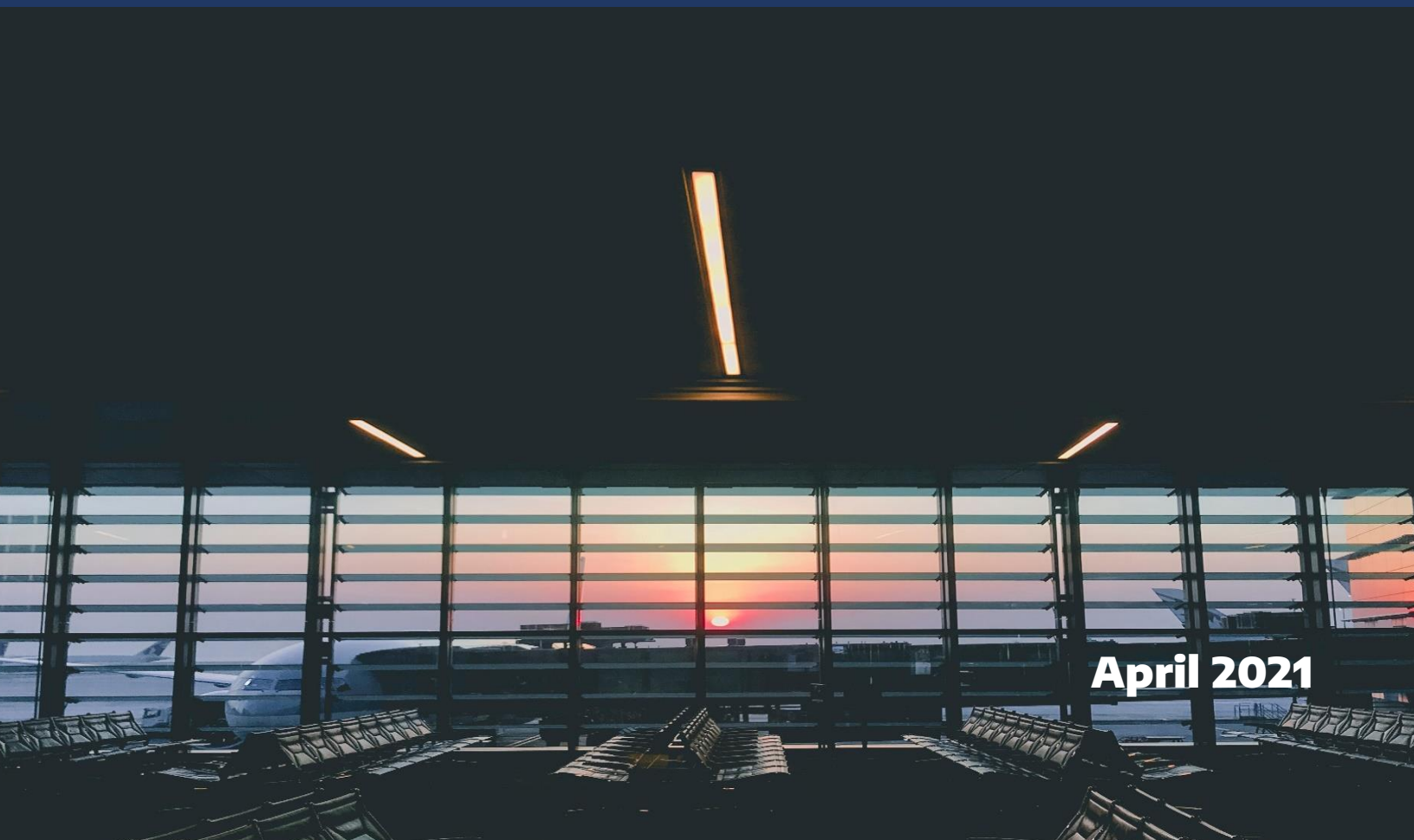
Analysis by Alain Dubuc, Adjunct Professor, HEC Montréal



April 2021

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Institut du Québec is a non-profit organization focusing its researches and studies on the socioeconomic issues that Quebec is facing. It aims to provide public authorities and the private sector with the necessary tools to make informed decisions, and thus help build a more dynamic, competitive and prosperous society.

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Executive Summary

The two aerospace reports[1][2] published by the Institut du Québec in May 2020 were written before the outbreak of the COVID-19 pandemic, whose effects have been especially severe for this industry.

We are therefore taking advantage of the publication of an English translation of these studies to provide a brief update to assess the impact of the pandemic on this sector. It shows that the crisis has not changed the main conclusions of the two reports. On the contrary, it makes them even more relevant.

The first study demonstrated how aerospace is a strategic industry, because of its remarkable contribution to the development of the Québec economy and that of Canada as a whole. Not only for its quantitative contribution –GDP or employment levels – but also for its structuring role in areas that help ensure the competitiveness of the economy and its long-term success. These include foreign trade and international presence, research and innovation, and the strengthening of advanced manufacturing activities.

The second study showed that public policies in favor of this industry do not reflect its importance and that Canada, despite being a world-class player in the field, does not give it a support comparable to that of other nations fortunate enough to have such an industry. The report concluded that the Canadian government must recognize the strategic nature of aerospace and develop innovative ways of supporting it to ensure its sustainability and prevent it from being progressively dismantled.

The pandemic in no way changes these two major findings. However, what was a warning a year ago is now turning into a cry of alarm.

While the pandemic has hit the aerospace industry as hard in Canada as in the rest of the world, the gap between the anemic support measures offered by Canada and the massive effort by other countries is such that the Canadian industry, already weakened by this crisis, will be at a disadvantage compared to its international competitors and limited in its ability to grow if nothing is done quickly.

The shock to the aerospace industry is understandable. Its development is closely linked to that of air transport, with which it forms an ecosystem. It is first and foremost the airlines that have been buying aircraft to meet demand, which has been growing for decades, or to renew their fleets, and that use support and maintenance infrastructures. Another segment of the industry responds to different cycles – the defence and space industry. But in Canada it accounts for only 12%[3] of its sales.

We have seen a domino effect where health constraints have drastically limited air transport, especially international air travel, with cascading consequences for aerospace: lower maintenance

[1] Alain Dubuc, *Acting strategically – Aerospace support policies*, Institut du Québec, may 2020.
[2] Alain Dubuc, *An analysis grid to identify strategic industries – The aerospace case*, Institut du Québec, may 2020.
[3] Innovation, Science and Economic Development Canada, State of Canada's Aerospace Industry, Report 2018, 2019.

requirements; loss of revenue and cash flow problems for carriers, thus impacting their financial capacity to acquire aircraft; and downward revisions to airlines' future needs.

This situation requires a brief detour into air transport, which was not the subject of the initial reports, because it allows for a better assessment of threats to aerospace and a better understanding of the public policies proposed by the various levels of government.

The impact of COVID-19 on air transport

Globally, the International Civil Aviation Organization (ICAO), in its analysis of the impact of COVID-19[4], estimates that air passenger traffic fell by 60% in 2020, bringing it back to its 2003 level: the number of seats plunged by 50% and the number of passengers by 60%. A total of 1.8 billion people flew in 2020, compared with 4.5 billion in 2019.

The United Nations agency reports financial losses of $370 billion related to the pandemic, to which must be added losses of $115 billion from airports.

The International Air Transport Association (IATA) reports a 70.2% decline in revenue passenger-kilometres, the industry's standard measure, between October 2020 and October 2021[5].

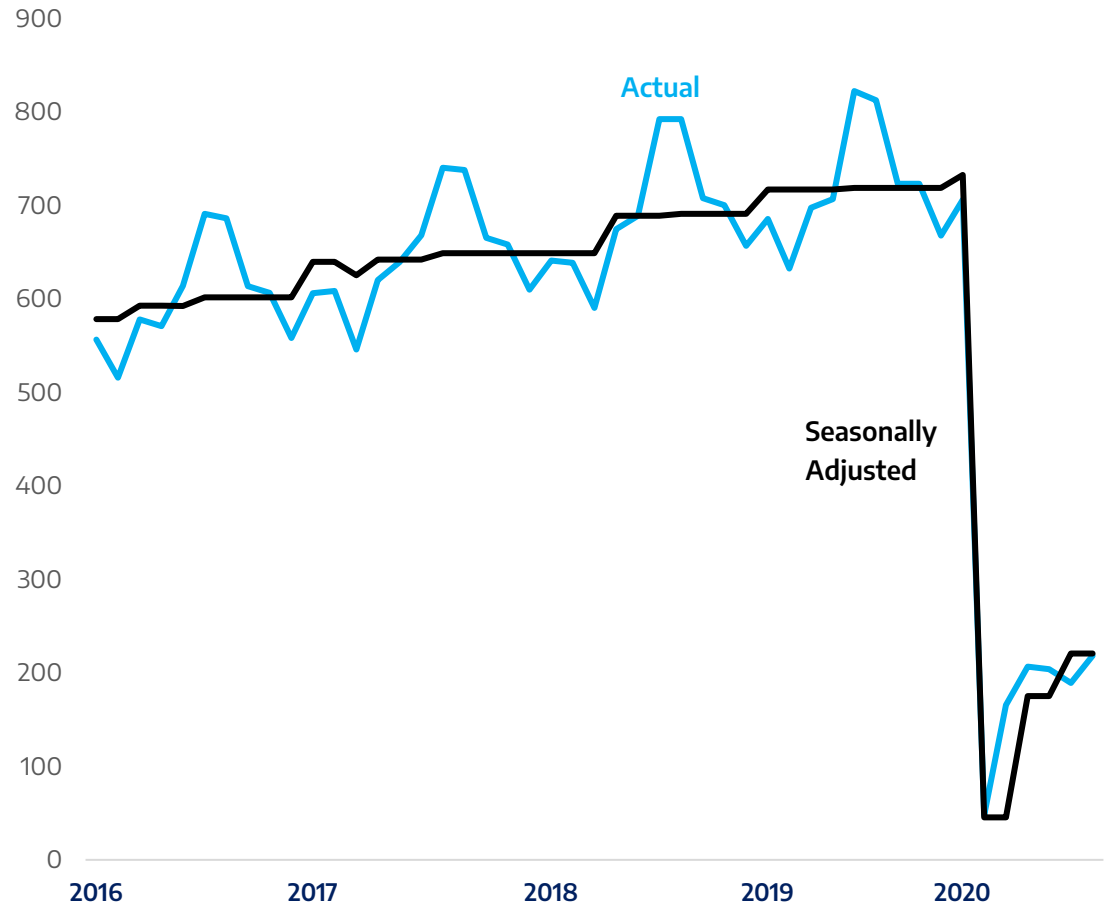
Overall, according to both organizations, due to state-imposed constraints, losses were greater for international travel than for domestic flights. Air cargo was less affected because it is less impacted by health restrictions and more dependent on the contraction of global trade and disruptions in supply chains. The decline in cargo transport, which is much smaller, is around 10%.

[4] ICAO, Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis, 2021.
[5] IATA, Presse release No. 105, Dec. 8, 2020, "Passenger Recovery Disappoints in October"

Graph 1

Air Passengers Volume Per Km

(Actual and monthly seasonally adjusted data; billion per month)



Source: IATA Economics, IATA Monthly Statistics

Because of this collapse, the airline industry has been by far the most affected by the pandemic and health constraints. In addition, a rapid return to previous levels of activity is not expected, as was the case for some sectors when constraints were lifted. The impact of COVID-19 on consumer attitudes toward tourism, business travel practices, and the fragility of airlines may hinder a return to normalcy.

This is what IATA[6] predicts: "We assume a vaccine(s) is deployed in the second half of 2021, but it looks likely that there will be production and distribution challenges that mean it will only be in late 2021 and in 2022 when air travel rises back substantially. On this basis, we don't expect 2019 levels to be regained until around 2024."

The global environment has not spared Canadian carriers. Air Canada laid off approximately 22,000 employees and cancelled numerous regional routes to offset the effects of an approximately 80% reduction in seats. The airline's revenues in the third quarter of 2020 dropped to $757 million from

[6] IATA, Outlook for Air Transport and the Airline Industry, 2020.

$5.5 billion a year earlier. Air Transat, which is more affected because it offers only international flights, saw its revenues reduced by 96% in the third quarter, or $28.4 million compared with $693 million a year earlier. These events had a significant impact on the company, whose sale to Air Canada, which was set at $18 per share in August 2019, was revalued at $5 per share. The two compagnies agreed to call off the deal April 2, 2021, when they learned that the European Commission would oppose the transaction. WestJet, Canada's other major carrier, grounded 70% of its aircraft.

The pandemic is putting numerous pressures on Canadian airlines. On the one hand, their operations, and therefore their revenues, are being significantly curtailed. But on the other hand, their expenses remain high due to the steep cost of health measures and the significant level of their fixed costs, including fleet financing. In addition, they cannot rely as much as Europe or the United States on a large domestic market, where internal flights are less constrained.

Added to this is the impact on airports, the nodal points of the air transport infrastructure. In the case of Québec, Montreal-Trudeau International Airport had to deal with a 14.5 million passenger decline in 2020, 71% fewer than in 2019, resulting in a half-billion dollar shortfall in revenues compared to expected revenues. For the last six months of 2020, the decline in activity totalled 90%.

For Canada as a whole, scheduled air transportation, the portion of the industry affected by travel constraints, experienced a decline in employment, in unadjusted terms, from 66,958 to 46,866 between December 2019 and August 2020, or -30%[7]. Employment subsequently recovered, but will certainly fall back in early 2021, with increased constraints on international travel. This decline is comparable to what is observed in the three most affected industries, which are -9% for information/culture/leisure, -25% for accommodation/food services, and -15% for other services. In the airline industry, job losses are not as severe as the reduction of the level of activity, because carriers kept employees either through federal support programs or because of safety and certification requirements.

The impact of COVID-19 on the aerospace industry

The pandemic quickly sent shockwaves through the aerospace industry. Several airlines have already, in the short term, abandoned or postponed their aircraft orders. In the longer term, the industry's future plans may be jeopardized, either for financial reasons or because of more lasting impacts on air transport.

According to the international consulting firm Deloitte[8]: "Therefore, the outlook for aircraft deliveries over the three to four years appears dismal, analysts expecting a drop from an expected 5,000 to 6,000 units before the crisis to a more realistic 3,000 to 4,000 aircraft. As a consequence, as airlines either cancel or postpone orders, aircraft manufacturers undergo the emergence of 'white-tail-fleets', as many aircraft are left unaffected at an advanced stage of the manufacturing process." (In aeronautics, the term 'whitetail' describes a manufactured aircraft that is not sold.)

In Canada, the world's fifth largest aerospace industry, the shock of the pandemic is mitigated by the structure of the industry. It should be noted that 69% of activity is attributable to manufacturing operations and 31% to maintenance, repair and overhaul (MRO) services. Within the manufacturing activities, there is a high degree of diversification, which protects, at least partially, a portion of the industry from the setbacks of the carriers.

[7] Statistics Canada, Chart 14-10-0201-01.
[8] Deloitte, Post Covid-19 Aerospace Industry, An opportunity to embrace the 4.0 Era?, 2020.

Canada is not a major producer of aircraft for airlines, like the United States with Boeing or France with Airbus, with the exception of Bombardier's CSeries, taken over by Airbus under the name A220. Canada also produces small commercial planes, but they amount to a small volume: the CRJ, a small regional jet, has been sold by Bombardier to Mitsubishi and is nearing the end of production, while the Q Series, a turboprop regional jet, also sold by Bombardier, has limited production.

That being said, a large number of suppliers and specialized producers in Québec and Canada have been directly affected by the decline in demand from airlines. This is also the case for maintenance activities, which are suffering from the significant reduction in flight hours. However, CAE's operations, with its flight simulators and pilot training, have held up well during the crisis. Furthermore, a significant portion of manufacturing activities in Québec and Canada are not necessarily geared towards air carriers: business aircraft, on which Bombardier is focusing its activities and expects a worldwide decline in deliveries of approximately 30% year-over-year; helicopters, with Bell Helicopter Textron; and small engines with Pratt & Whitney. Approximately 12% of production is for defence and 2% for space, which are less dependent on market conditions than on public policy.

Nevertheless, despite this diversification, the impacts have been significant. Aéro 2Montréal, the organization that represents Québec's aerospace cluster – about half of Canada's industry – estimates that 4,300 jobs have been eliminated in Québec in the aerospace manufacturing sector, or about 10% of the industry's 42,000 or so jobs. The percentage decline could be higher for the approximately 90,000 jobs Canada-wide, due to the greater concentration of maintenance activities outside Québec.

For example, Bombardier, the largest company in the sector, cut 2,500 jobs, including 1,500 in Québec, in part because the crisis has had an impact on its cash flow, and another 1 600 jobs in February 2021, including 800 in Canada. Airbus reduced its workforce by 200 people, in part due to Air Canada's decision to cancel the order for 12 A220 aircraft; the company will maintain production rates at three aircraft per month instead of four. Pratt & Whitney announced layoffs, as did Héroux-Devtek and Mitsubishi.

In addition to the direct effects of the pandemic on prime contractors and their suppliers, such as the cancellation and postponement of orders and reduced production rates, there will be a cascading effect of measures that companies will take to streamline their operations and reduce costs to adapt to the profound changes that the crisis will impose on the industry.

These declines may seem modest when compared to those that have hit, for example, accommodation and food services. But it should not be forgotten that production cycles are long in this industry, which contributes to postpone the shock of the crisis: currently, part of the production is being maintained to deliver aircraft ordered before the pandemic. But the postponement of orders will affect producers for many years after the end of the crisis.

Moreover, in the specific case of aerospace, fears stem from the potentially irreversible nature of job losses. Since this industry employs a highly skilled workforce, there is a great risk that employees who have lost their jobs will redirect elsewhere and that, when the return to normalcy arrives, the industry will no longer have access to the human resources needed to begin the recovery. These job losses also have an effect on the attractiveness of Québec and Canada, since one of the factors that led many foreign companies to invest here is the pool of qualified workers. Finally, these layoffs have a disastrous effect on the appeal of aeronautics training programs, especially for young people, with the result that shortages that were already a problem before the pandemic become more acute afterwards.

This crisis is also having other, more lasting, impacts. Aeronautics is a globalized industry. The pandemic has forced many companies to reduce their manufacturing capacity. Others will tend to repatriate activities to their home countries, such as Mitsubishi, which has abandoned its plans for a research centre in Québec and will likely carry out these activities in Japan. It is not certain that Québec and Canada will recoup these losses, and it is therefore possible that at the end of this crisis, the industry's manufacturing capacity will be reduced.

In addition, there are the challenges that were already present before the pandemic. These were noted in the IDQ reports: the degree of competition and global transformation of the industry; its difficult transition to the 4.0 era; the growing need for new types of aircraft and the pressure to reduce the industry's carbon footprint. These challenges will all be exacerbated by the shock imposed by the health crisis.

These threats were eloquently described in a document produced by the Chamber of Commerce of Metropolitan Montreal, in collaboration with Aéro Montréal, entitled "Relançons Montréal" [9] (Relaunch MTL). It includes air transport and aerospace as one of the key drivers of its strategy to revive the metropolis:

> "Significant resources will need to be deployed for successful implementation. Like other countries that have already committed extraordinary resources to ensure the survival of their aerospace sectors, our governments must act quickly, with the means and creativity necessary for a multi-year recovery. This means recognizing the full strategic importance of aerospace and air transportation in the economy of the metropolis, of Québec and of Canada."

Montreal, it should be remembered, is the third largest aerospace centre in the world, after Seattle and Toulouse.

Support policies for air transport

The response by government authorities to air transport was significant and swift. According to a KPMG[10] study, the amounts deployed by various governments already totalled US$84.6 billion by the end of April. Most of this amount, US$58.2 billion (68.8% of the total), had been deployed in the Americas, compared to US$13.6 billion in Europe (16.1%) and US$12.7 billion in Asia Pacific (15.1%).
The details of these government efforts, however, show significant disparities between countries, as shown in the following table. As of April, the U.S. had allocated approximately US$60 billion to support the industry – US$50 billion for carriers and US$10 billion for airports. France provided US$7.6 billion in loans and loan guarantees to Air France. The German government provided a €6 billion support package for Lufthansa, including a temporary equity stake.

[9] CCMM and Aéro Montréal, Enhanced Action Plan to Strengthen the Aerospace and Air Travel Sectors, 2020.
[10] KPMG, Aviation Finance Series, In the news today: on-going significance of the COVID-19 impacts on the aviation industry, 2020.

Table 1

Confirmed State Support For Airlines As Of April 26, 2020

(Millions of USD)

Country	Amount
UK	740.0
France	7,600.0
Sweden	499.0
Denmark	170.8
European Air Navigation Service Providers	1,190.0
Finland	645.0
Germany	2,200.0
Iceland	0.7
Norway	552.0
Singapore	7,747.0
South Korea	1,528.0
Hong Kong	627.5
New Zealand	524.3
Taiwan	1,600.0
Somoa	0.4
Australia	710.5
Canada	200.0
United States	58,000
Chile	0.0
Senegal	74.6
Total	**84 609.7**

Source: KPMG

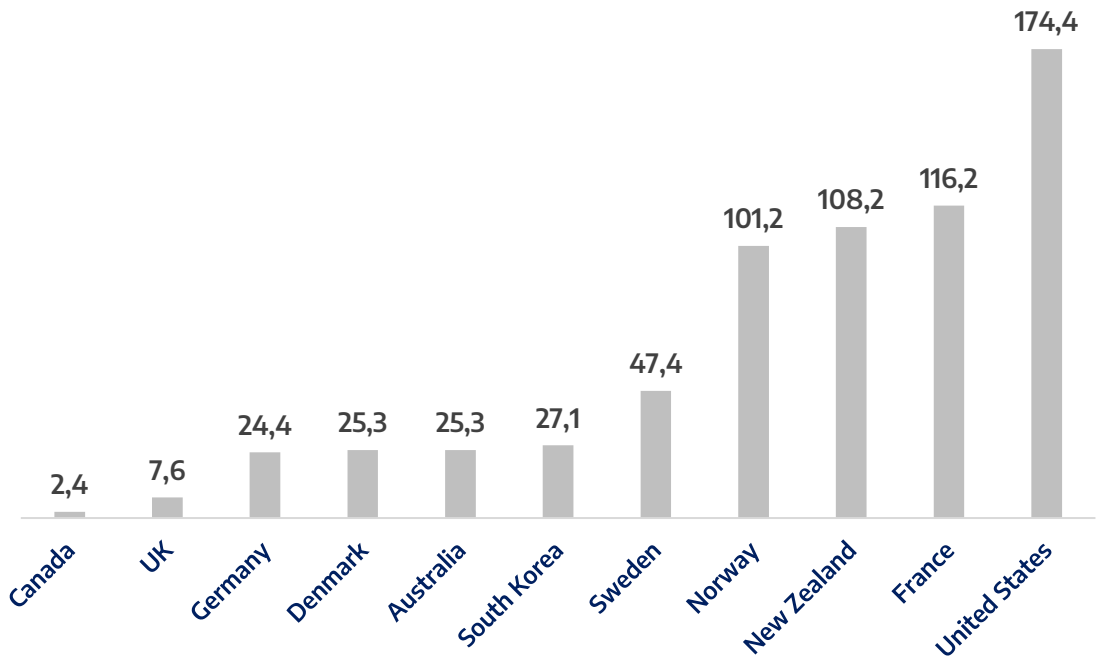
Canada, for its part, by April, according to this table, had only committed US$200 million to its airline industry. The Canadian response is clearly an anomaly.

This can be seen when these amounts are converted into per capita support to the aeronautics industry. At $5.25 per capita in April, Canada was in a class of its own. Of course, this summary illustration should be interpreted with caution because the efforts made by different countries depend on a variety of factors, such as their level of wealth, geography, and the relative importance of their air sector.

Graph 2

Confirmed State Support For Airlines As Of April 26, 2020 Per Capita

(USD per capita)



Source: KPMG

This total has increased since April 2020. Also according to IATA[11], in December, total government aid in various forms rose to US$173 billion. To this should be added a second tranche of support announced in January 2021 by the Trump administration, i.e. US$15 billion for 12 American airlines to support job preservation, 30% of which will have to be repaid at a low interest rate.

However, till the beginning of the month of April 2021, the federal government had still not announced any additional assistance to the industry, other than the employment support program offered to all companies, although discussions with carriers began to show some traction.

These gaps are difficult to understand for a country like Canada, where air transportation is particularly important because of its economy – a small open economy whose success is largely based on foreign trade and trade with the rest of the world – and especially because of the size of its territory, which makes air connections absolutely vital. For these reasons, Canada should be a country that values its air transportation situation, that supports the maintenance of a strong domestic airline industry to avoid dependence on foreign entities for these vital activities, and that takes steps to avoid disruptions to this absolutely essential activity.

As of March 2021, a year after the outbreak of the pandemic that devastated air travel, the Government of Canada had yet to announce concrete measures to assist the industry. In part, this can be explained by the philosophy that has inspired policies adopted to address the economic impacts of the pandemic. The federal government, by far the major driver of these policies, has favoured the path of massive transfers to individuals who have lost their jobs, the Canadian

[11] IATA, Best Practices for COVID-19 Market Stimulation, 2021.

Emergency Benefit (CERB), and to businesses to maintain jobs (CEWS). This comprehensive approach has also led the government to exclude industry-specific assistance policies, apparently in order to avoid one-upmanship between industries and regions.

While this comprehensive and uniform approach had definite macroeconomic effects in mitigating the economic downturn, it became less and less appropriate as several sectors returned to their normal pace of activities while others faced specific problems that general transfer policies could not solve.

It was at this stage that political factors came into play, which initially resulted in a surprisingly slow adjustment to a rapidly changing context. For months, the federal government responded to calls for help from the airline industry by referring to the amounts paid to carriers through the CEWS – $490 million for Air Canada and $35 million for Air Transat – even though this employment support could not compare to the support programs enjoyed by competing carriers in other countries.

In fact, it was not until November 8, 2020, eight months after the onset of the crisis, that the central government formally announced its intention to intervene to support the airline industry, with a statement by the Minister of Transport[12]. A few weeks later, on November 30, the federal government's Economic Statement[13] devoted one and a half pages, out of 270, to air transportation, announcing relatively modest measures mainly for regional transportation and airports, but not for air travel.

However, the Minister's statement, which could have given a boost to the industry, instead led to a confrontation that had still not been resolved by the springtime of 2021. In the statement, Minister Marc Garneau acknowledged the importance of the industry: ""A strong and competitive air transport industry is vital for Canada's economy and the well-being of Canadians. Due to our vast geography, Canadians rely more heavily on air travel than other countries." He also acknowledges the severity of the shock it has suffered: "The pandemic has hit the air sector harder than any other and it is facing a delayed and slow recovery. With passenger levels still down almost 90%, air carriers and airports have been forced to take drastic measures to remain viable."

However, the Minister chose to make any assistance conditional on one element: that Canadian airlines reimburse consumers for tickets for flights that have been cancelled due to the pandemic rather than offer them a credit for another flight.

By doing so, Canadian airlines are penalizing consumers. They are also differentiating themselves, in a way that is not to their credit, from American and European airlines, which have given cash refunds for missed flights. It is the role of the federal government to put an end to this practice and to impose the necessary measures on the carriers. In addition, it is also normal for the government to impose conditions on the carriers in exchange for the assistance it would provide them.

[12] Transport Canada, Statement by Minister Garneau on measures to protect Canadians from the impact of COVID-19 on the airline industry, November 8, 2020.

[13] Finance Canada, Supporting Canadians and Fighting COVID-19, Fall Economic Statement 2020.

However, it is far from clear that the Canadian government had taken the right approach. Minister Garneau chose to do so by issuing an ultimatum: “Before we spend one penny of taxpayer money on airlines, we will ensure Canadians get their refunds.”

It is clear that this approach had been a failure, since, on the airlines’ side, federal assistance was still pending and, on the consumers’ side, ticket refunds were not made. Canada, for now, was losing on both counts.

This is undoubtedly due to the fact that in Europe and the United States, the early announcement of substantial financial support assured carriers that they would have the cash flow to make these repayments without risk to their cash flow. In Canada, repayment is presented as a precondition without any guarantee of adequate assistance and without any details on what form and how much assistance would be provided. Canada should address these interrelated issues – passenger reimbursement and carrier support – in a comprehensive manner, as other major industrialized economies have done, rather than imposing pre-conditions that lead to paralysis.

It is also understandable that these kinds of issues can lead to difficult negotiations and arm wrestling between government and carriers, particularly the monopoly carrier, Air Canada. For example, if the government chose the ultimatum route, Air Canada’s abandonment of regional routes can be interpreted as pressure tactics amounting to blackmail. However, this confrontational logic led to an impasse that did not serve the public interest because it weakens and makes more vulnerable a sector that is essential to Canada’s economic development. It would be desirable for the Canadian government to be able to establish more constructive ties with Canada’s national airline.

It took a new minister of Transport, Omar Alghabra, who replaced Marc Garneau, and a new deputy minister of Finance, Michael Sabia, knowledgeable about those issues, for the problem to be solved at last. The Government of Canada reached an agreement with Air Canada on April 12, 2021, providing for a 5,9 billion aid package and provisions to refund passengers. This deal was reached one year later than in peer countries.

Support for the aerospace industry

Governments in countries with an aerospace industry have also increased initiatives to support the sector. The French government has granted €15 billion in aid to Airbus, including €1.5 billion for research aimed at having a carbon-neutral aircraft by 2035. Brazil made a US$600 million loan to Embraer. In the United States, after Boeing announced a US$60 billion aid program in loans and guarantees for the industry as a whole, to which the Senate was open, the company in the end turned down this avenue and chose to solve its liquidity problems with a US$27 billion bond financing.

In Canada, the federal government has been silent on the issue and does not mention aerospace in its economic statement. In this respect, it is being consistent because this non-interventionist approach is in line with its past behaviour. Indeed, the Trudeau government has set itself apart from its predecessors, whether Liberal or Conservative, by putting an end to specific support programs for aerospace and by refusing to respond to the demands of the industry, of the Québec government and of specialists in the field to recognize the strategic nature of the aerospace industry and to draw up an aerospace strategy. We have described these issues in our two studies.

However, it must be pointed out that the federal government, in this regard, is not following the very clear and insistent recommendations by the body it created to advise it on how to emerge from the pandemic crisis, the Industry Strategy Council, chaired by Monique Leroux. In its report[14], "Restart, Recover and Reimagine Prosperity for All Canadians: An Ambitious Growth Plan for Building a Digital, Sustainable and Innovative Economy," this Council, composed of business leaders, proposes a strategy of which one of the three pillars is to support the recovery of sectors hardest hit by the pandemic and thus to move away from the doctrine opposed to specific sectoral interventions. The Council also very clearly identifies aerospace as one of the industries requiring support:

> "Targeted action is urgently needed to support the hardest hit sectors of the Canadian economy— airlines, airports and aerospace, resources of the future (particularly oil and gas), and tourism, hospitality, and culture. Timely and flexible support to these sectors will help stabilize them, prevent long-lasting impacts and position them for eventual recovery."

The report also eloquently describes the issues this raises:

> "The catastrophic drop in air travel worldwide has created ripple effects on Canadian airports and the country's aerospace sector. Aviation and aerospace are highly inter-reliant as travellers affect aviation demand, which in turn drives demand for aerospace products and services. Both are in urgent need of targeted assistance to avoid collapse."

It should be noted that while the Council advocates emergency financial assistance for the aviation sector, its recommendations to the federal government in support of aerospace focus on long-term structuring interventions rather than emergency financial support, loans or grants.

> "The sector will also need investments in environmentally sustainable aviation and aerospace technologies to remain competitive. A mix of policy tools, including support for airlines, renewed innovation funding and procurement could reinvigorate the Canadian aerospace sector and supply chain. Canada boasts a diverse base of manufacturing firms in the industry. The Government could help position the Canadian aerospace sector for future long-term growth by investing in sustainable aviation and technology areas, such as hybrid electric propulsion and advanced biofuels."

These recommendations on courses of action are in line with the industry's representations, be it Aéro Montréal in Québec, the Aerospace Industries Association of Canada (AIAC) for all of Canada, the Government of Québec, or the Montreal economic community. They consist of calling on the government to take long-term initiatives that would allow Canada to maintain its technological leadership and competitive capacity, for example by supporting research and development of carbon-neutral aircraft, as France has done in its support measures for Airbus, or to meet the challenges specific to the aerospace industry raised by the digital shift[15].

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[14] ISC, Industry Strategy Council, "*Restart, Recover and Reimagine Prosperity for All Canadians: An Ambitious Growth Plan for Building a Digital, Sustainable and Innovative Economy*." 2020.

[15] Cirano, Le Québec économique 9, Perspectives et défis de la transformation numérique, chapter 18, L'aérospatiale numérique au Québec

This is what was proposed in the recommendations of the IDQ reports, which emphasized the importance of placing support for aerospace within such a strategic framework and focusing on technological advances rather than financial support measures. These avenues, which were already advocated before the pandemic, could also ensure a way out of the crisis, with the difference that the sense of urgency is now more acute and the consequences of inaction are greater.