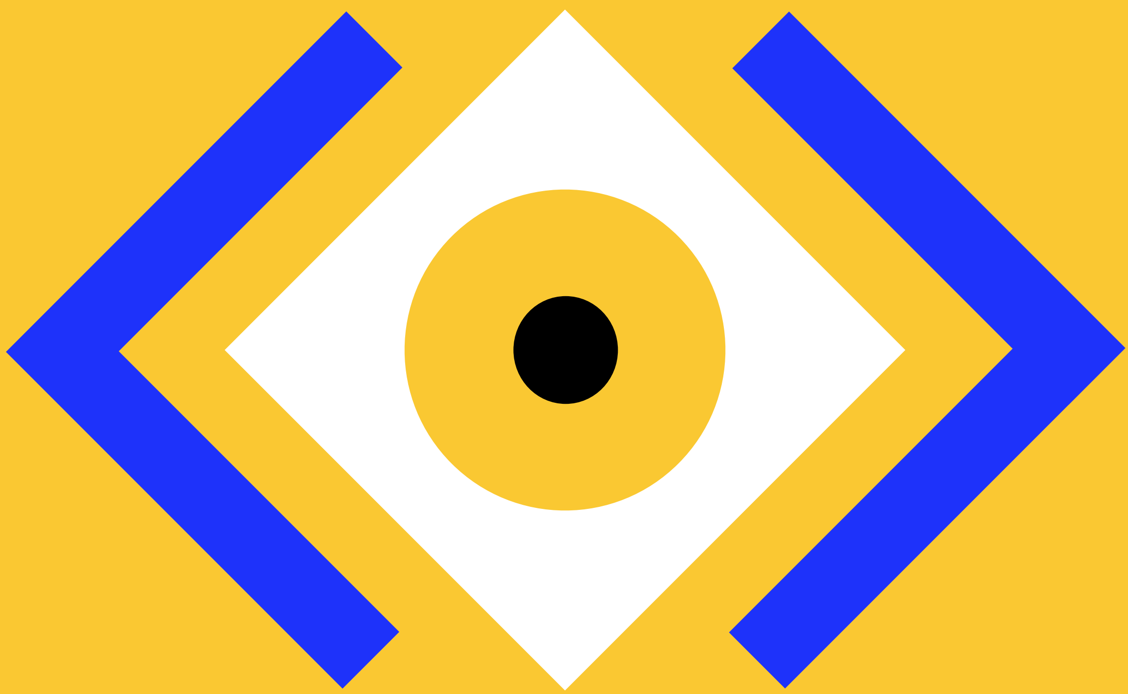
December 2023

Global Outlook for Air Transport

A local sweet spot



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Global Outlook for Air Transport
A local sweet spot

This semi-annual report takes a broad look at developments in the airline industry, the context in which it is operating, and the challenges it is facing.

Main takeaways:

- The global long-term trends that propelled the 20th century's unparalleled economic achievements are if not in reverse, certainly becoming less supportive. Much of the 20th century's success was enabled by the expanded use of fossil fuels. That economic model has passed its zenith. It will take a successful energy transition to set the world on a new path towards sustained – and sustainable – growth and better economic outcomes for all.

- 2023 has been a year when air transportation very nearly returned to its pre-pandemic pace of activity, and a year of renewed financial profitability for the industry. In many ways, 2023 is likely to be a local sweet spot for the industry, as the same pace of growth and financial recovery is unlikely to be matched in 2024 and beyond.

- Industry-wide passenger traffic, measured in revenue passenger-kilometers (RPKs), grew by 40.1% year-on-year (YoY) through September 2023 and reached 92.9% of pre-pandemic levels. All regions, except Asia Pacific, are expected to reach or surpass their 2019 traffic levels in 2023. In the long run, global passenger traffic looks set to double by 2040.

- The cargo sector continued to face challenges in 2023, with a slowdown in demand due to macro-economic headwinds and a slowdown in global trade. Despite a decline in cargo tonne-kilometers (CTKs) from 2022 levels, signs of improvement emerged in the second half of 2023. Regional variations were observed, with Latin America achieving annual growth in CTKs, and North America and Africa surpassing their pre-Covid levels. Overall industry CTKs are expected to remain below 2022 levels in 2023, with a forecast 4.5% growth in 2024.

- The industry is returning to profitability in 2023, only three years after the historic loss of nearly USD 140 billion in 2020. This is a stunning performance and a testimony to the industry's resilience, adaptability, and hard work. Total airline revenue is expected to reach 107% of 2019 earnings, with operating profits of USD 41 billion.

- The net profit forecast for the whole industry this year is USD 23.3 billion. While this is a positive development, the levels of profitability are far from being exceptional. For some perspective, nearly half this amount was realized by one single oil company in just the third quarter of this year, while a large technology company nearly matched our full-year industry profits in that single quarter. Air transportation's net profit margin is a slim 2.6% in 2023, compared to 11% and 22% for the companies just mentioned, respectively. Airlines' profits in 2023 equate to USD 5.44 per passenger – less than a cup of cold brew coffee in Geneva. While stunningly resilient, our industry is still lacking in robustness.

- Passengers around the world have clearly voted with their wallets, showing the world that they deem air transportation necessary, even in the face of record-high jet fuel prices in relation to crude oil prices. Passenger satisfaction is as high as 82% in a survey of 8,000 air travelers [1], and 91% say that air transportation is necessary [2]. Our world needs to be connected, and air transportation is a necessary and indispensable form of connectivity. The top line development in our industry shows how important air transportation is, and the industry has been able to meet expectations, bouncing back so rapidly from a near total halt.

- However, the industry remains the weakest link in the aviation value chain and the expected net profits also reveal its vulnerabilities. In the short term, airlines need to improve their profit margins and strengthen their balance sheets after the pandemic. In the longer term, ensuring air transportation's access to renewable energy sources will allow our industry to play its full part in creating a growing global economy that is sustainable, inclusive, and equitable.

1 IATA 2023 Global Passenger Survey (GPS).
2 IATA Passenger Trends and Insights 2023. The IATA passenger insights survey was conducted 26 April 26-3 May 2023 with a sample of 4,700 recent travelers. It covers 11 markets (Australia, Canada, Chile, France, Germany, India, Japan, Singapore, UAE, US, and UK). Sample size in each market was 500 apart from Chile, Japan, Singapore and UAE where it was 300. This Is Motif Ltd prepared the questionnaire and analysis based on data collection and tabulation by Dynata http://www.thisismotif.com

1. Long-term trends are becoming less supportive

Taking the long view, over up to 100 years, it must be said that the 20th century arguably delivered history's most stunning progress in terms of improved economic outcomes globally. The number of persons living in poverty fell dramatically and global income distribution became more equitable than ever before. This was possible thanks to many factors, including the radical advances in transportation and communications which brought down the cost of transporting goods and services around the globe, and facilitated the dissemination of knowledge and ideas. In the wake of the Second World War, the rules-based international world order that emerged along with enduring peace provided the backdrop against which cross-border activity could flourish. A further enabling trend was the spread of democracies around the world and the economic policies frequently associated with this phenomenon (Chart 1).

From where we currently stand in the 21st century, many of the favorable conditions that contributed to the past century's success seem to be waning. Unhelpful long-term trends are not necessarily driving the business cycle, and economic performance can still both overwhelm and underwhelm at any given point in time. However, we will be able to assess the business cycle's oscillations with greater clarity if put into the context of the emerging structural trends.

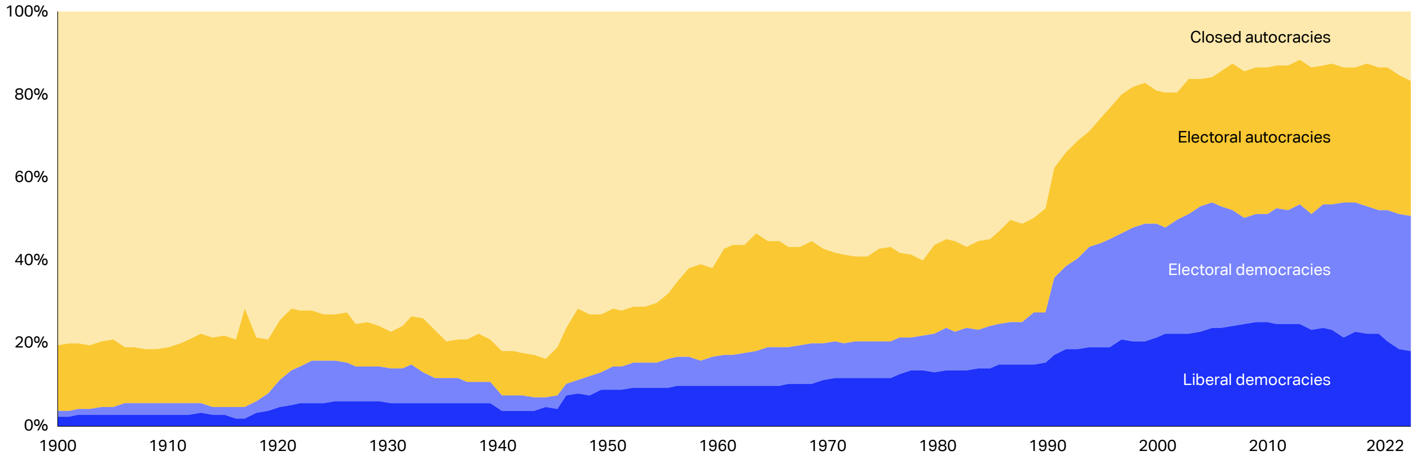
Political regimes

While not an absolute determinant, economic growth is more likely to be sustained under democracy than under autocracy[3]. The share of electoral and liberal democracies in all the world's political regimes was as high as 54.3% in 2004, for instance. It then declined progressively to 50.5% in 2022. Closed and electoral autocracies made up the remaining 49.5% of the world's political regimes.

Conflicts

The Uppsala Conflict Data Program reports that 2022 saw the highest number of violent conflicts since the Second World War. State-based conflicts number 56, up from a 2010 low of 30. The global economic impact of violence was put at USD 14.4 trillion in 2020 by the Institute for Economics & Peace[4]. Applying the observed increase in state-based conflicts to this number, the cost is likely to have exceeded USD 15 trillion in 2022, or 15% of 2022 nominal world GDP. In addition to the cost inflicted upon warring nations, there is also the opportunity cost of military spending. World military spending rose to USD 2.2 trillion in 2022, adjusted for inflation, the highest level ever recorded in SIPRI data, and equivalent to 2.2% of global GDP[5]. That is money that could have covered more than half of the estimated worldwide annual clean energy investments needed to deliver the energy transition, according to the International Energy Agency, not to mention the benefits it could have brought to schools, health systems, infrastructure, and many more productive areas[6].

Chart 1: Political regimes



Source: OWID based on Lührmann et al. (2018)

3 Patrick A. Imam and Jonathan R. W. Temple, "Political Institutions and Output Collapses", IMF Working Paper WP/23/36, February 2023.
4 Institute for Economics & Peace, Business & Peace Report 2021: Peace: A Good Predictor of Economic Success, Sydney, May 2021.
5 Nan Tian et. Al., "Trends in world military expenditure, 2022", SIPRI Fact Sheet, Stockholm International Peace Research Institute, April 2023.
6 "Net Zero by 2050", IEA, May 2021.

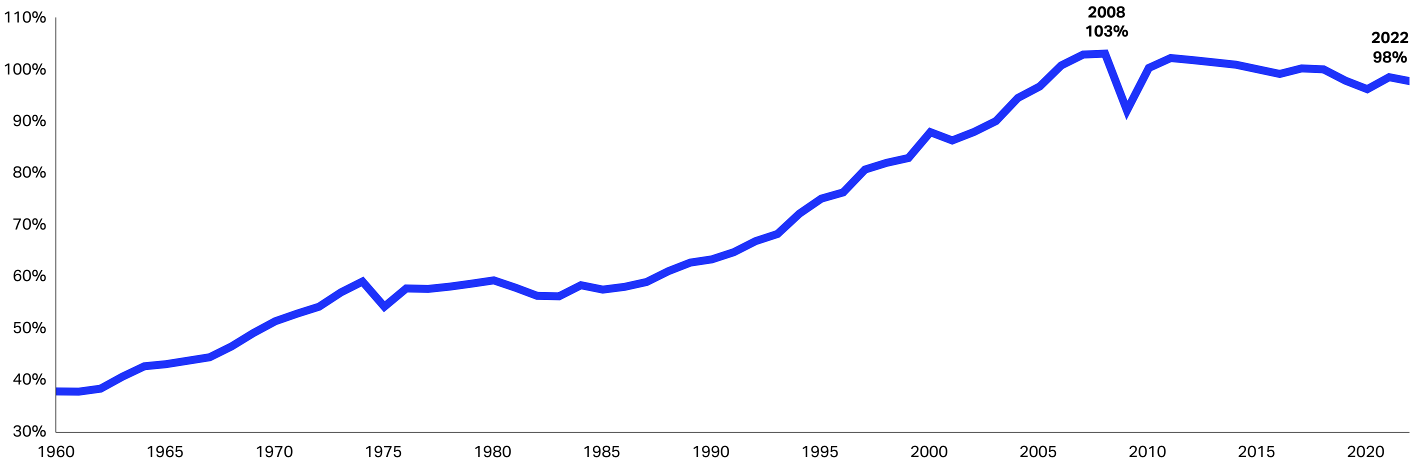
Navel gazing

These evolutions will as a rule promote more inward-looking economic policies or force such behavior upon economies suffering conflict. Signs that this might be happening can be found in the decline in the real (inflation adjusted) world exports-to-GDP ratio (Chart 2). This ratio peaked at 103% in 2008 and fell back to 98% in 2022. World trade can of course slow for many reasons other than the direct impacts of political regimes and violent conflict. Trade fluctuates in response to changes in the composition of trade, slower GDP growth, the nature of trade regimes, and evolutions in global supply chains, for instance. These factors too though are themselves often influenced by trends in political regimes and armed conflicts. It is noteworthy in this context that the IMF counts nearly 3000 new trade barriers imposed globally in 2022 – a threefold increase from 1000 such measures taken in 2019[7].

Turning from trade to capital, the flows of foreign direct investments (FDI) have been on a downward trend since 2007 and declined by 24% in 2022 compared to 2021 (Chart 3). Both mergers and acquisitions (M&A) and greenfield investment projects contribute to the weaker trend in this form of cross-border activity. Moreover, M&A activity is fairly concentrated in a handful of countries. Nearly half of total M&A activity in 2022 concerned only five advanced economies: the UK, the US, Australia, the Netherlands, and Sweden.

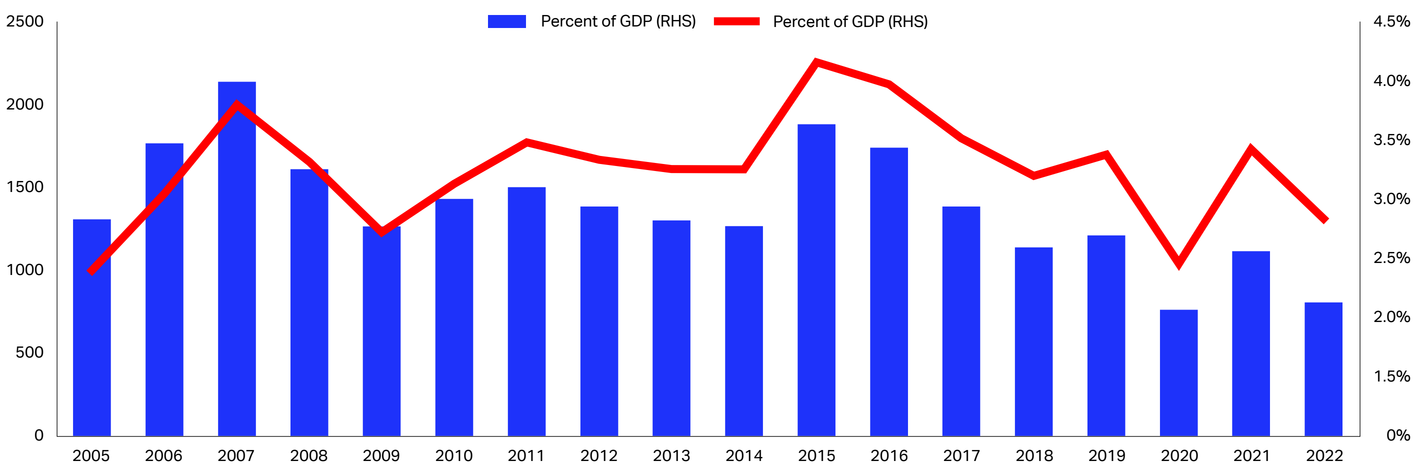
Some of these developments have of course been influenced by the Covid pandemic. In the general trend towards more inward-looking economic policies, the pandemic disrupted supply chains and exacerbated the fragmentation that we can observe in both trade and cross-border investment.

Chart 2: Real World Exports-to-GDP ratio, indexed (2015 = 100)



Sources: WTO Stats and World Bank World Development Indicators
Note: The ratio is the world export volume index over world GDP in constant 2015 US dollars index

Chart 3: Global foreign direct investment flows, USD billion (left) and % of GDP (right)



Source: OECD – Global foreign direct investment flows

7 "The High Cost of Global Economic Fragmentation", IMF, August 2023.

Fewer of us

Simultaneously, the world is seeing a declining rate of growth in the working-age population (Chart 4). The average global GDP growth rate since the 1970s, when the working population hit a trough, has been around 3%. All other things being equal, a drop in the working-age population would point to a lower GDP growth rate going forward. Of course, other things are rarely equal, and technological progress, coupled with the drop in transportation costs which accelerated the dissemination of new technologies, allowed output growth to outpace population growth since the 1970s. Total factor productivity, or the ratio of output over the combined inputs of capital and labor, as well as technology and innovation and the resulting impacts on efficiency, has flattened out since the Global Financial Crisis and is weakening in mature economies (Chart 5). In this, we can see signs of the weaker investment and working population trends.

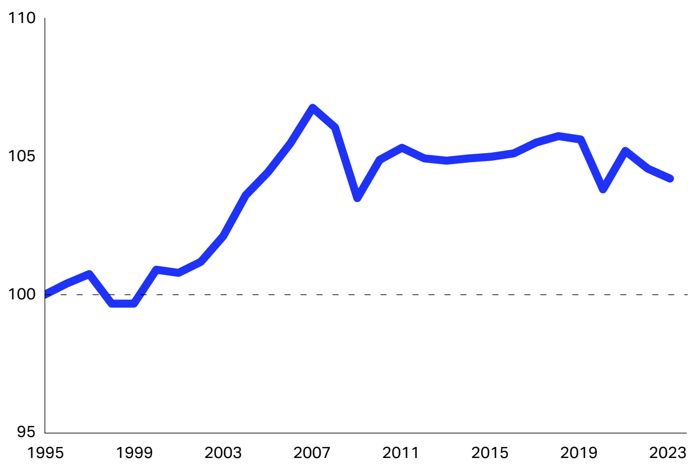
Declining potential GDP growth

All this points to lower potential GDP growth. The US Congressional Budget Office estimates the US' potential growth rate at 1.8% at the end of 2023, down from 6% in 1952 (Chart 6). The Carnegie Endowment for International Peace expects China's long-term growth rate too will be situated in the vicinity of 2%[8]. In the European Union, the potential growth rate is likely lower, at around 1.5%, while in Japan it is probably lower still, at around 1%[9]. Globally, long-term growth might be just over 2% annually[10]. That is most unfortunate because of the many challenges that lie ahead, and none of those are greater than that of climate change.

Climate change

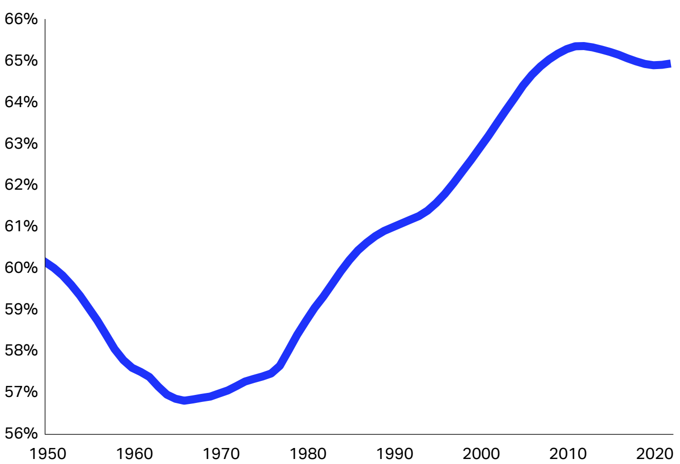
Climate change itself will likely weigh on the potential GDP growth rate. Worsening climate conditions looks set to reduce the number of hours worked as well as the effectiveness of labor[11]. Natural disasters will bring infrastructure costs in their wake. As many as 376 million persons have been forcibly displaced since 2008 because of climate events and natural disasters, with a record 32.6 million people in 2022 alone, according to the Internal Displacement Monitoring Centre. IEP, the Institute for Economics & Peace, predicts that 1.2 billion people could be displaced globally by 2050 due to climate change and natural disasters. The likely associated increased social tensions will only reinforce the already discernable trends of more political and economic fragmentation, capping economic growth rates further.

Chart 5: Total factor productivity (index, 1995 = 100)



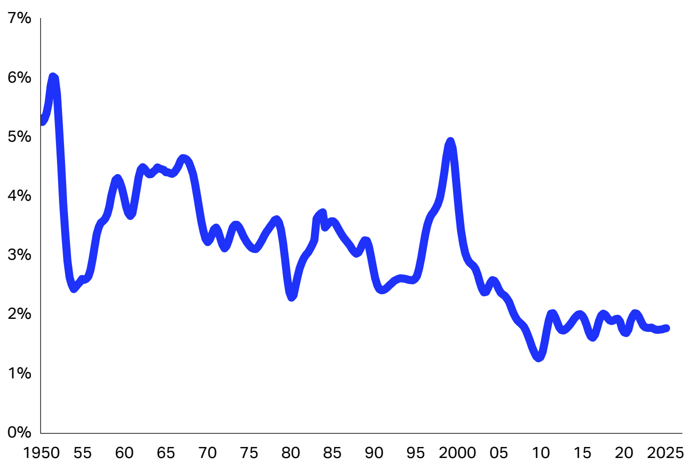
Source: Total economy database

Chart 4: Global working age population, % of total population



Source: OECD

Chart 6: US real potential GDP growth rate



Source: Federal Reserve Bank of St. Louis, US Congressional Budget Office

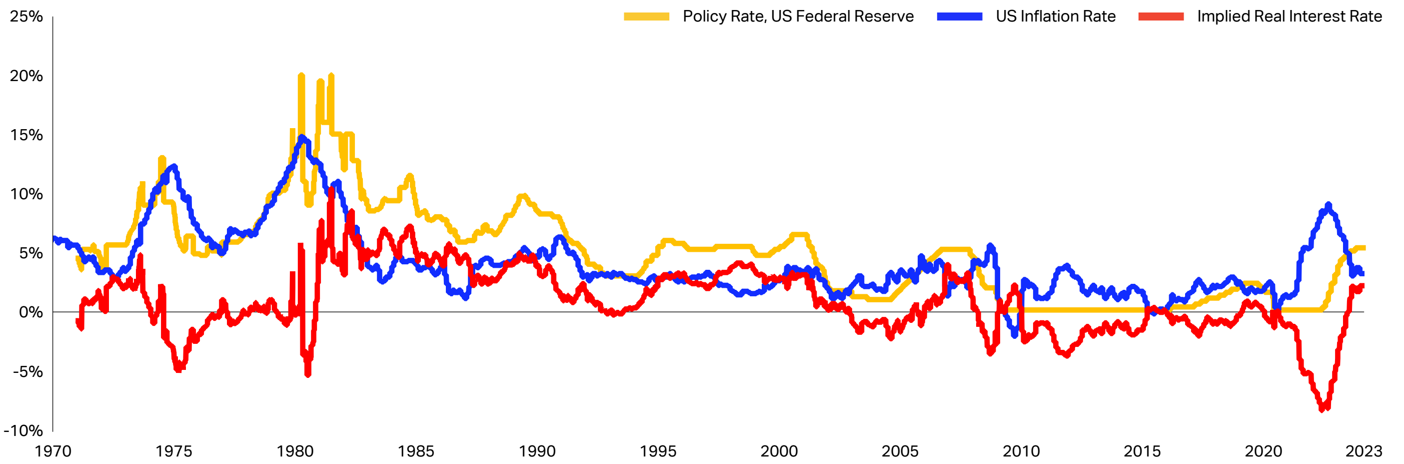
8 Michael Pettis, "Can China's Long-Term Growth Rate Exceed 2-3%?", Carnegie Endowment for International Peace, April 2023.
9 Arsov and Watson, "Potential Growth in Advanced Economies", Reserve Bank of Australia, December 2019.
10 "Falling Long-Term Growth Prospects: Trends, Expectations, and Policies", World Bank, March 2023.
11 Dasgupta et. Al., "Effects of climate change on combined labour productivity and supply: an empirical, multi-model study", The Lancet Planetary Health, July 2021.

Restricted policy space

With greater relevance to the current business cycle, this situation could have been mitigated by expansionary fiscal and monetary policies. The room for further fiscal expansion is limited given that total global debt (household, corporate, and government) rose to a new record high of USD 307 trillion in the first half of 2023, according to the Institute of International Finance, bringing the global debt-to-GDP ratio to 336% [12]. General government debt has fallen somewhat in advanced economies, to 112% of GDP in 2022, from 123% in 2020, though still higher than the 104% of GDP recorded in 2019 [13]. In the US, the ratio was 121% in 2022, higher than in France, Spain, and Portugal, and only 23 percentage points lower than Italy's 144%. The number of countries in debt distress in the world has doubled from 2015 levels, a problem that could point to local, if not global, financial instability [14]. China's room for fiscal expansion is also limited, not because of a high general government debt to GDP ratio, 77% in 2022, but because total government debt is likely around 140% of GDP [15]. Moreover, China's tax system depends upon an investment-led growth model, reliant on property taxes, that is no longer delivering the necessary revenue. Tax reform should be addressed, but this would need to entail new taxes on households and consumers, in turn limiting a more consumption-led economic growth model. Given the global debt burden, it is most likely that global taxation will continue to increase going forward.

If global fiscal expansion is limited, it could have been possible to expect monetary policy to be more accommodative. However, the combination of tight labor markets and sticky prices is likely to keep nominal interest rates relatively high for the foreseeable future. This is a departure from the unusual low-interest-rate era that followed the Global Financial Crisis and that closed with the US Federal Reserve's first interest-rate hike in this cycle in March 2022. Real, inflation-adjusted, policy rates are still low in most countries, given the relatively high rates of inflation, notably in the US and in Europe (Chart 7). Financial conditions have more room to ease in China, for instance, particularly given China's 0% inflation rate as of September 2023 [16]. However, all the trends discussed here point to structurally higher inflation than the three-decades-long low inflation environment the world experienced broadly since the 1990s.

Chart 7: US nominal policy- and real interest rates, and inflation (CPI)



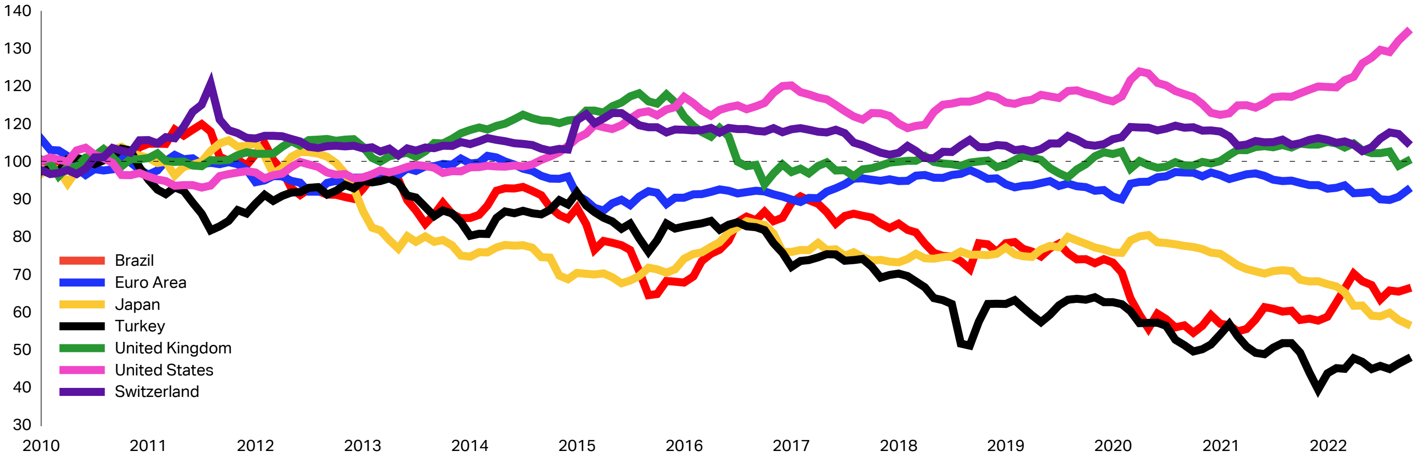
Source: MacroBond

12 "Global Debt Monitor", IIF, September 2023.
13 "Fiscal Monitor", IMF, October 2023.
14 "Debt Dynamics", IMF Annual Report 2022.
15 Quinn and Wright, "The Myth of China's Fiscal Space", Rhodium Group, August 2023.
16 "Global Financial Stability Report: Financial and Climate Policies for a High-Interest-Rate Era", IMF, October 2023.

Going green

As uncertainty increases and the economic and political landscape becomes more fragmented, risk appetite will fall, and money will flow to relatively safer havens. Unless the world loses faith in the US economy, and abstracting from fluctuations in the business cycle, the US dollar – affectionately called "the greenback" – is most likely to continue to be the world's preferred safe-haven asset. This will tend to increase the value of the US dollar versus most other currencies. Trade weighted and inflation adjusted, the US dollar is now around 25% stronger versus its trading partners' currencies than in 2010 (Chart 8). This too tends to have a dampening effect on global growth in most regions.

Chart 8: Real Effective Exchange Rates (2010=100)



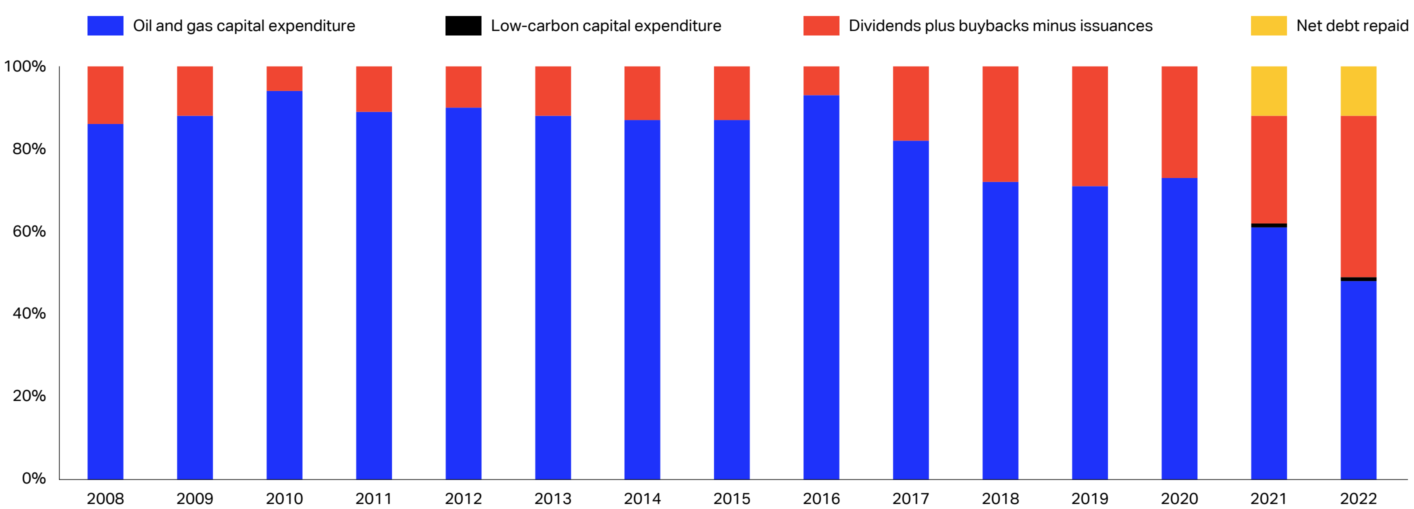
Sources: BIS, Macrobond

Set me free [17]

In sum, the longer-term and structural trends that we see in the global economy point to reduced cross-border activity, a lower GDP growth potential, and greater economic and political fragmentation. The associated more inward-looking economic policies will likely lead to structurally higher inflation and nominal interest rates. Tax burdens are destined to grow because of the lack of economic growth and high debt obligations. Conflict and climate issues will heighten the appeal of safe-haven assets such as the US dollar. Such an outlook begs the question of whether the world will be able to deliver a successful energy transition and replace most of the fossil fuels used today with renewable fuels. Indeed, the IEA's estimate of USD 4 trillion per year of annual investments in renewable energy that such an outcome would necessitate looks vastly more challenging in a low-growth economy. Nevertheless, it is possible. Technological change could surprise on the upside and progress could come more rapidly than currently expected. Policies could become more supportive of the energy transition, and capital could reallocate more swiftly than anticipated. All stakeholders need to unite in the effort, including the oil and gas sector. Today only the smallest of fractions of the oil and gas industry's recent unprecedented cash flow is allocated to clean energy technologies, while dividends and share buybacks have reached record highs (Chart 9).

Yet it is precisely the energy transition that could reverse the unhelpful long-term trends and propel the global economy into a new era of improved economic outcomes for all. A world set free of its energy constraint would be something utterly unprecedented. Abundant, sustainable, and cheap energy accessible to all would have a profound and transformational impact on politics and economics in the world. To be sure, new challenges would arise. But the energy transition is the one overarching objective that all our world leaders, regulators, and all of us must pursue with single-minded focus, without compromise, and with unwavering persistence.

Chart 9: Distribution of cash spending by the oil and gas industry



Source: World Energy Investment, 2023, IEA 2023

17 The Supremes, "You Keep Me Hangin' On", 1967.

2. Air transportation is back, but the pace of growth will slow

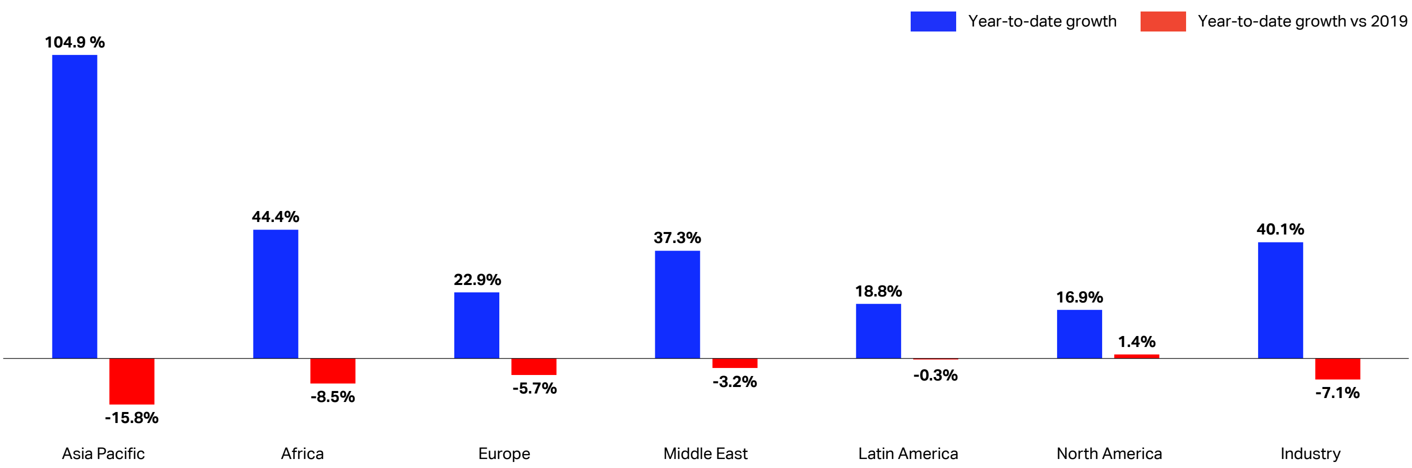
Air passenger traffic

Recent development and outlook

Global demand for air travel remained strong in 2023, with the industry steadily approaching 2019 levels of passenger traffic. Following a significant 64.9% YoY upturn in 2022, industry-wide passenger traffic, measured in revenue passenger-kilometers (RPKs), surged by 40.1% in the first nine months of 2023, compared to the same period in the previous year. This strong performance was reflected across all regions, with North American carriers leading the recovery, benefiting from an early reopening and robust domestic demand. The reopening of Chinese markets in January also played a pivotal role in accelerating global passenger traffic recovery in 2023, particularly reviving travel in the Asia Pacific region (Chart 10).

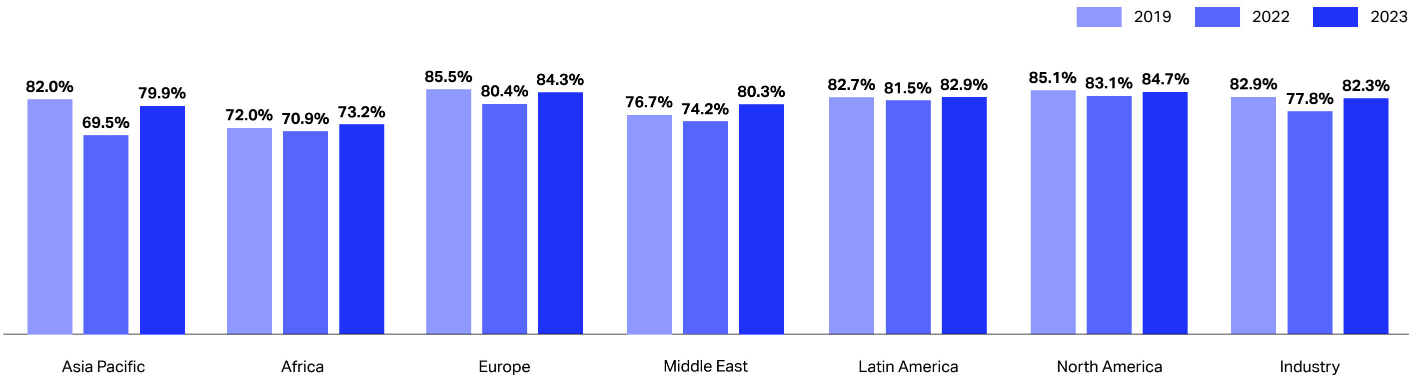
The passenger load factor (PLF), a measure of airline seating capacity utilization, has steadily improved since its low point in 2020, converging to pre-pandemic levels by the end of 2022. The global PLF reached 82.3% during the first nine months of 2023, which is broadly in line with the load factor achieved during the same period in 2019. This underscores the delicate balance between demand and capacity that airlines maintain as air travel recovers globally. During this period, airlines in Africa, the Middle East, and Latin America surpassed their respective pre-pandemic PLFs, indicating enhanced operational efficiency for the carriers in these regions (Chart 11).

Chart 10: RPKs per airline region of registration, year-to-date % annual change (January – September)



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Chart 11: Passenger Load Factor by airline region of registration, year-to-date % share of available seat-kilometers (ASKs) (January – September)



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Pent-up passenger demand continued to boost domestic air travel in 2023, sustaining growth even after surpassing pre-pandemic levels in April. The recovery in domestic traffic was significantly helped by China's reopening, marking the end of its zero-Covid policy which had been in place for the previous three years. As China's domestic market contributes over 25% to global domestic RPKs, the reopening had a substantial impact on restoring global domestic RPKs, which stood 5.0% above 2019 levels in September 2023 (Chart 12).

Despite the slower reopening of international markets, international RPKs also experienced rapid expansion in2023, growing to a level that in September 2023 sits only 7% below the equivalent figure for 2019. As a result, total passenger traffic, including both domestic and international across the industry, was just 2.7% below the levels observed in September 2019 (Chart 12). A complete recovery appears imminent, contingent upon the restoration of international connectivity to and from the Asia Pacific region. Other factors, including the wars in Ukraine and the Middle East and their associated potential to restrict airspace and impact on international operations, will continue to influence the evolution of international traffic.

Table 1: Air passenger forecast summary

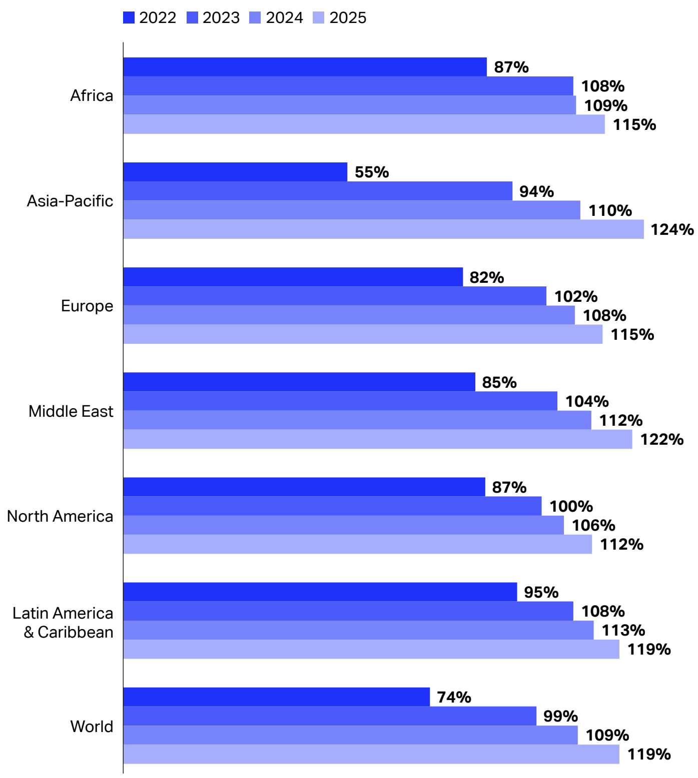
Region	Recovery year	CAGR (2019 - 2040)	Additional passengers by 2040, millions
Africa	2023	3.6%	169.7
Asia Pacific	2024	4.5%	2,536.8
Europe	2023	2.2%	701.4
Middle East	2023	3.6%	264.1
North America	2023	2.2%	558.5
Latin America & Caribbean	2023	2.8%	304.0
World	2024	3.4%	3,923.0

Sources: IATA Sustainability and Economics, Tourism Economics (September 2023 release)

Air passenger traffic across the regions has nearly returned to pre-pandemic levels. Globally, the number of air passengers is projected to recover fully to 2019 levels by the end of 2024 (Chart 13).

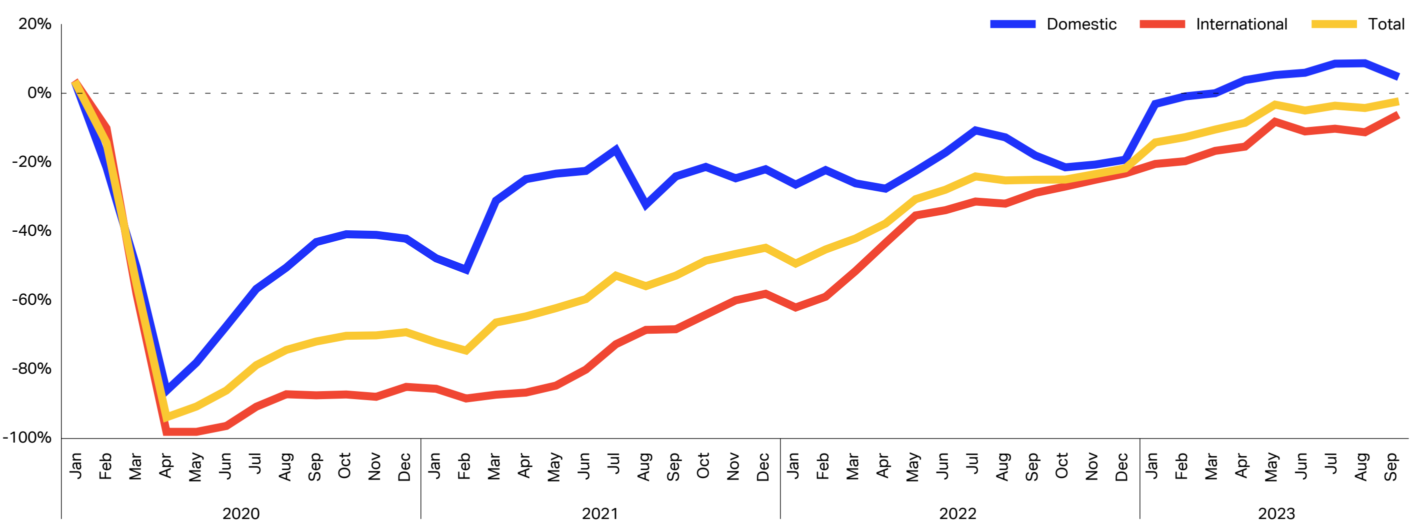
All regions are expected to reach their pre-pandemic passenger levels by the end of 2023, except for Asia Pacific, where full recovery is anticipated in early 2024, as the gradual ramp-up of airline operations and the return of tourism are poised to drive further growth in this region.

Chart 13: Regional passenger totals, % share of 2019 levels



Sources: IATA Sustainability and Economics, Tourism Economics (September 2023 release)

Chart 12: Industry RPKs, % YoY change compared to 2019 levels



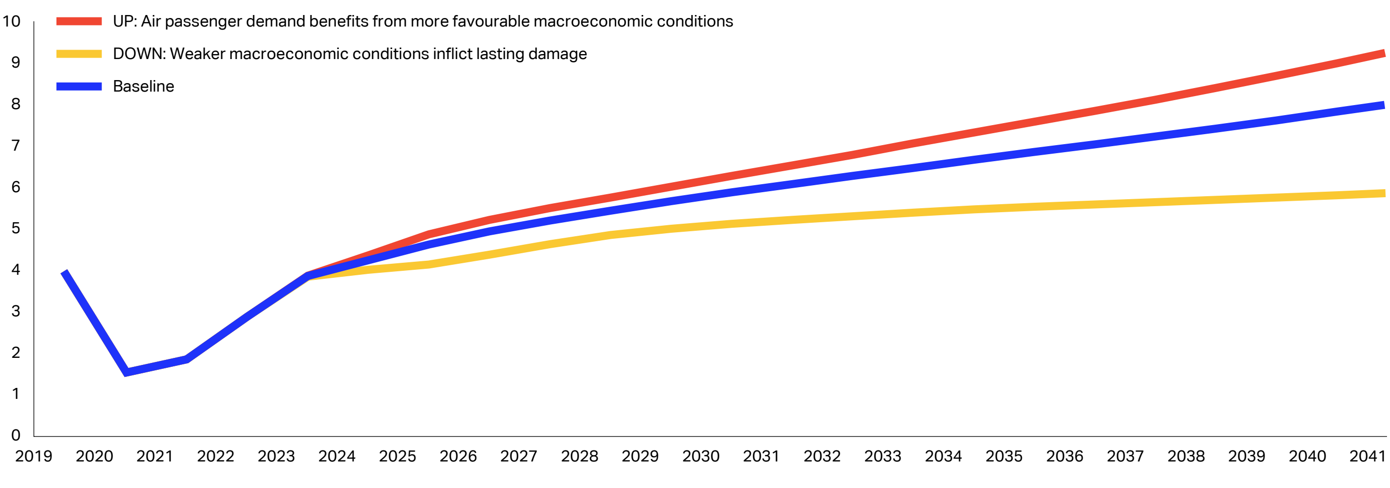
Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Over a longer horizon, the Asia Pacific region is likely to see the most rapid growth in passenger traffic among all regions. An annual increase of 4.5% in the number of passengers is forecast for the region between 2019 and 2040, bringing the regional total to over 4 billion in 2040, at which point the region would make up more than half of global passenger demand (Table 1). India, in particular, is expected to contribute significantly to this growth, with a forecast annual passenger growth rate of 6% over the same horizon, resulting in an additional half a billion air passengers per year over the next 20 years.

At a global level, air passenger growth will continue to increase, but at a slower pace compared to that experienced during the past 3 years. Between 2023 and 2040, the number of air passengers is forecast to increase by 4.2% annually. This would be a radical slowdown from the exceptional 36% annual growth rate seen over the past three years, as markets emerged from the depths of the Covid crisis. Having restored traffic to pre-pandemic levels, this deceleration will nevertheless allow the number of industry-wide air passenger journeys to more than double from the 2019 level, to reach 7.8 billion by 2040.

There is of course a considerable range of uncertainty around any such long-term forecast. On the upside, air passenger demand could benefit from more favorable macro-economic conditions such as normalizing supply chains and lower inflation rates, allowing for an earlier unwinding of the current monetary policy tightening. Conversely, on the downside, risks prevail regarding the strength of the business cycle and the impact and extent of the wars in Ukraine and the Middle East. These could cap the available airspace and curtail growth in international traffic, especially on routes between Europe and Asia Pacific (Chart 14).

Chart 14: Global air passenger journeys, billion



Sources: IATA Sustainability and Economics, Tourism Economics (September 2023 release)

Connectivity and contribution to the wider economy

Air transport is a necessary and important contributor to global economic development. The returning connectivity between countries and cities – enabling the flow of goods, people, capital, technology, and ideas, supports the global business cycle and helps mitigate the many mounting clouds on the horizon (Table 2).

The Covid pandemic brought an abrupt and substantial decline in connectivity in 2020, with the number of unique city pairs falling by more than 28% and eliminating almost 6,000 routes. The recovery since that time has been more subdued, as travel restrictions were removed gradually and unequally around the world. Despite the observed recovery in the number of city pair routes, it is important to note that the frequency of service on those routes is slower to be restored to pre-pandemic levels, and the return of capacity will lag the recovery in the absolute number of city-pair connections

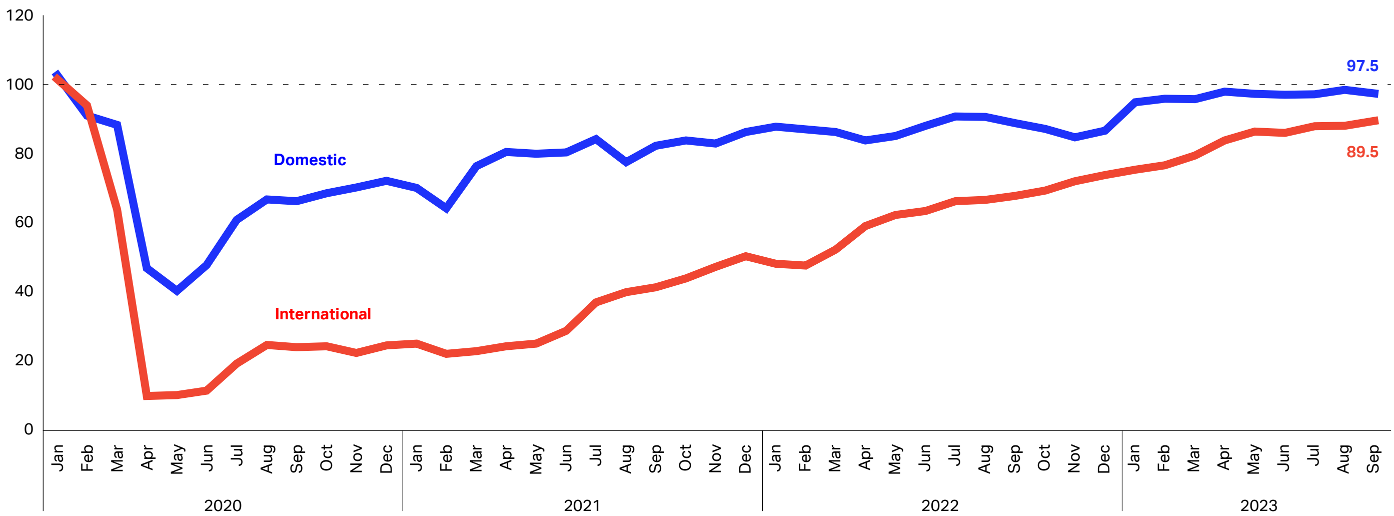
IATA's connectivity index measures scheduled passenger capacity weighted by the economic scale of destinations served (Chart 15). International connectivity has recovered to 89.5% of pre-pandemic levels and domestic connectivity to 97.5%, an increase of 12 percentage points compared to 2022. Connectivity has been impacted by the restrictions related to flying to and from Russia. At the global level, the effect is limited but regionally and for specific trading partners and key markets, traffic has been disrupted in a more substantial manner. Overall and following the reopening of the Chinese market, the international recovery in air connectivity is expected to improve further in 2024.

Table 2: The wider economic contribution of air transport

Worldwide airline industry	2019	2020	2021	2022	2023e	2024f
Unique city pairs	21,736	15,621	16,846	19,665	21,985	22,976
compared to 2013	30%	-10%	-5%	6%	12%	10%
Real price, USD/RTK 2018USD	77.6	73.1	77.6	77.2	70.2	66.8
compared to 2013	-31%	-35%	-31%	-31%	-38%	-41%
Value of trade carried, USD billion	6,482	5,961	7,570	8,486	8,052	8,025
% change over year	-2.7%	-8.0%	27.0%	12.1%	-5.1%	-0.3%

Source: IATA Sustainability and Economics

Chart 15: IATA Global Air Connectivity Index, Jan 2020 – Sep 2023, 2019 = 100



Source: IATA Connectivity Index, using data from OAG

Air cargo traffic

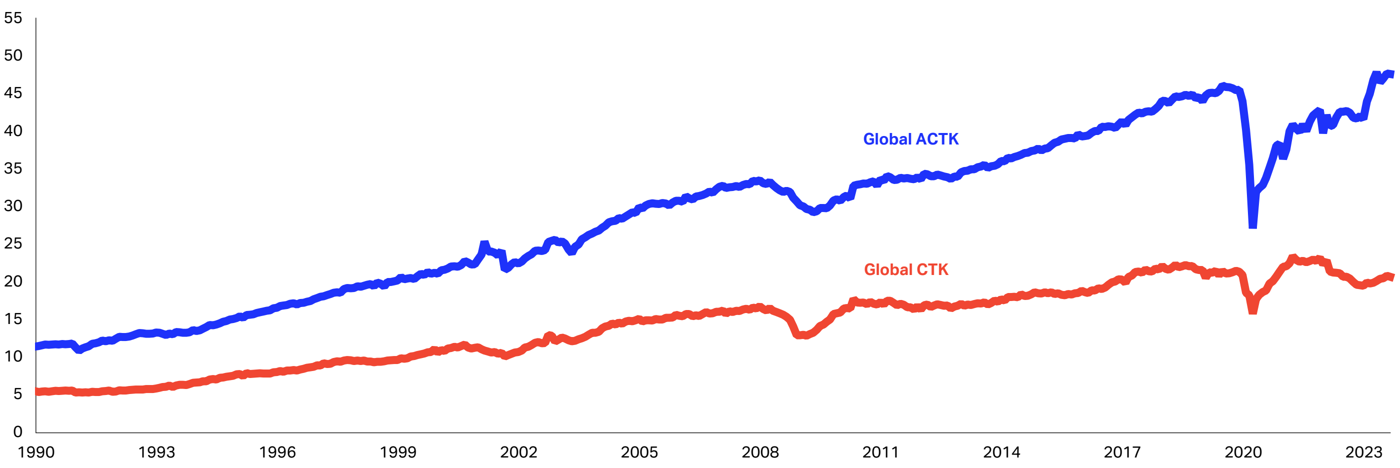
Following a robust performance during the pandemic and especially in 2021, global air cargo demand faced considerable challenges in 2022, including a slowdown in global trade and economic growth, the war in Ukraine, high inflation in key markets, and elevated global oil prices, all of which exerted significant downward pressure on cargo markets.

Industry-wide cargo tonne-kilometers (CTKs) started to contract in early 2022, and fell every month until the middle of 2023. Although trade and exports have remained sluggish, CTKs have managed to rebound since then, improving from the double-digit declines earlier this year to almost 2% YoY growth as of September (Chart 16).

Cargo capacity, measured in available cargo tonne kilometers (ACTKs), nevertheless expanded consistently since the beginning of 2023, driven mostly by the resurgence of passenger aircraft belly-hold capacity on international routes. Consequently, global air cargo capacity surpassed the pre-Covid level in April 2023. As of September, industry wide ACTKs exceeded its pre-pandemic level by 4% (Chart 17).

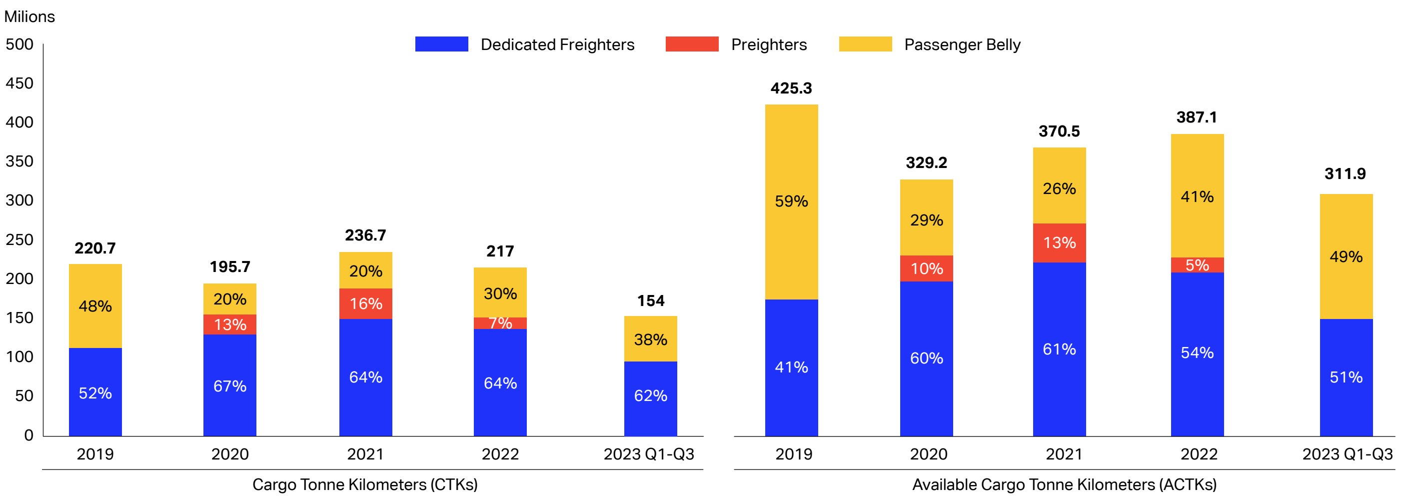
Passenger aircraft belly-hold capacity as a share of total ACTKs has risen to 49% year-to-date (YTD) in 2023, from a low of 20% in 2020 (Chart 17). Over the past two years, the capacity for international cargo transported in the belly space of passenger aircraft has risen markedly, nearly doubling its proportion relative to the diminishing role of dedicated cargo aircraft. In the meantime, the temporary conversion of passenger aircraft to cargo carriers (termed "preighters") has been phased out. The incoming capacity in the belly hold of passenger aircraft has caused a decrease in the cargo load factors (CLF) on international routes. The downward trajectory of CLFs will likely stabilize once passenger and cargo traffic levels realign with pre-pandemic norms.

Chart 16: Seasonally adjusted global ACTK and global CTK, billions



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Chart 17: Recovery trends in international air cargo traffic and capacity, total international cargo by business type, 2019-2023 Q1-Q3



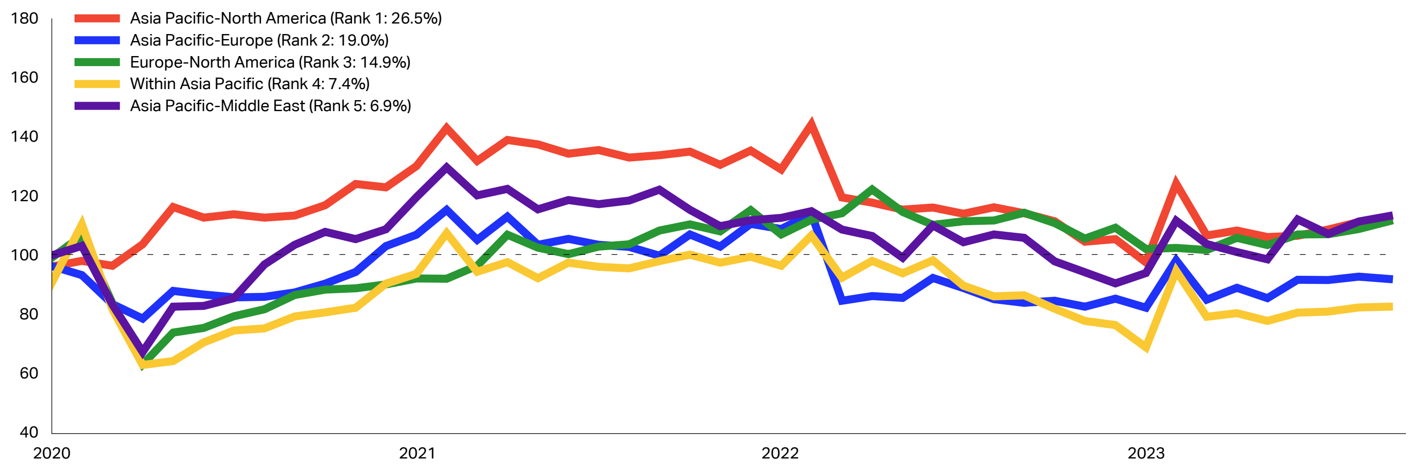
Source: IATA Connectivity Index, using data from OAG

Among the top five route areas, which represented 75% of international CTKs in 2019, three remained resilient through September 2023. The Asia Pacific-North America, Europe-North America, and Asia Pacific-Middle East route areas consistently maintained CTKs above their pre-pandemic levels in the first half of 2023. This sustained performance underscores their resilience in the face of broader market challenges.

In contrast, reflecting the slowdown in regional economies as well as geopolitical conflicts, the Asia Pacific-Europe and the within Asia Pacific markets remained below their 2019 CTK levels throughout the January to September 2023 period (Chart 18).

Industry CTKs fell short of the pre-Covid level by 4.7% (Chart 19). Latin America is the only region to achieve growth in YTD CTKs compared to 2022, even though the region's cargo demand stands 2.4% below 2019 levels. Compared to 2019, the regions of North America and Africa were the only ones to see higher CTKs on a YTD basis in 2023.

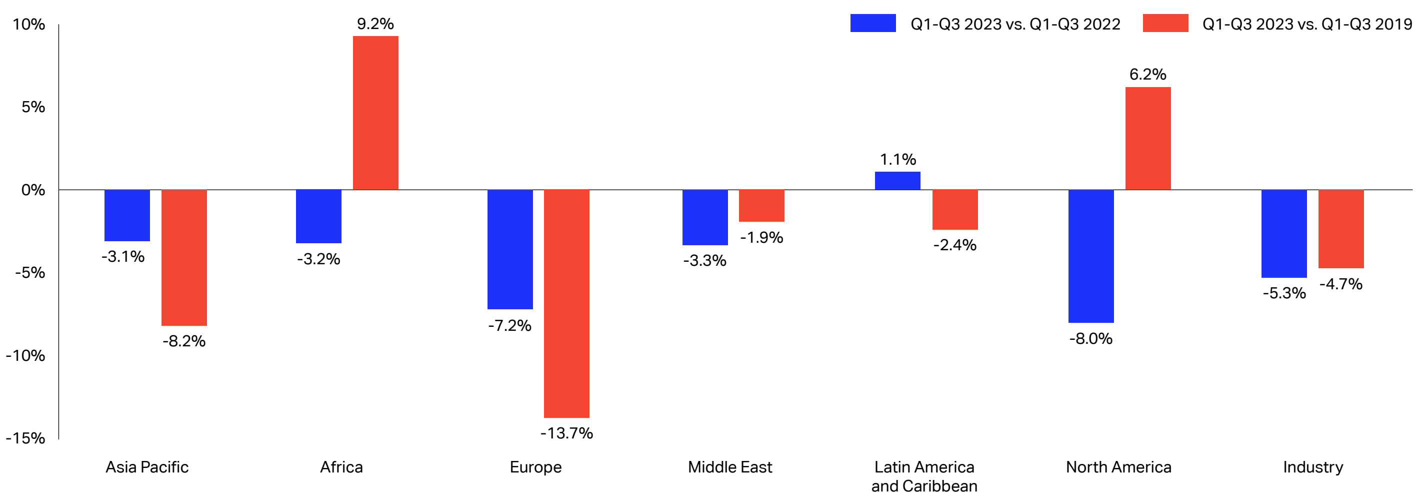
Chart 18: International CTKs by route area – top 5 route areas (indexed, 2019 = 100)



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

Notes: Rankings are based on the route area shares of 2019 international CTKs (% shares are provided in parentheses)

Chart 19: Year-to-date (Q1-Q3) 2023 CTKs compared to the same period in 2022 and 2019



Sources: IATA Sustainability and Economics, IATA Monthly Statistics

3. Airline Financial Performance

Overview

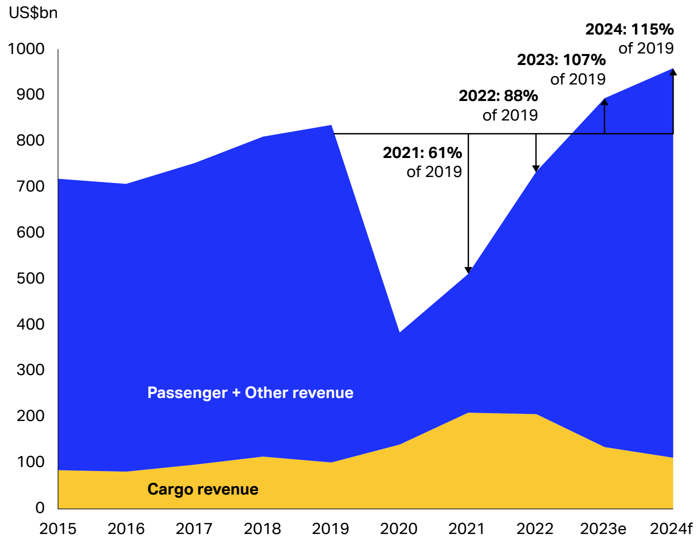
Despite the rapid growth in passenger demand and the absence of travel restrictions, the aviation industry is still grappling with the aftermath of the pandemic, during which it recorded a historic loss of almost USD 140 billion. In the face of many challenges, including wars, oil price volatility, elevated interest rates, and staff shortages, which all weigh on its financial performance, we nevertheless expect a return to profitability in 2023. This is a remarkable feat, realized in an equally remarkable short period of time.

Data published since our mid-year financial forecast show a stronger than previously anticipated industry-wide financial performance. The better-than-expected results have been seen most notably in North America, Europe and Asia Pacific. At the industry level, we currently estimate the overall net post-tax profit to reach USD 23.3 billion in 2023, with a slim operating profit margin of 4.5% (Chart 20).

Further recovery in international travel in Asia Pacific underpins our expectations for 2024. At the global level, the industry is expected to generate a net profit of USD 25.7 billion next year, with a still modest 2.7% net profit margin. The key financial figures can be found in Table 3 below.

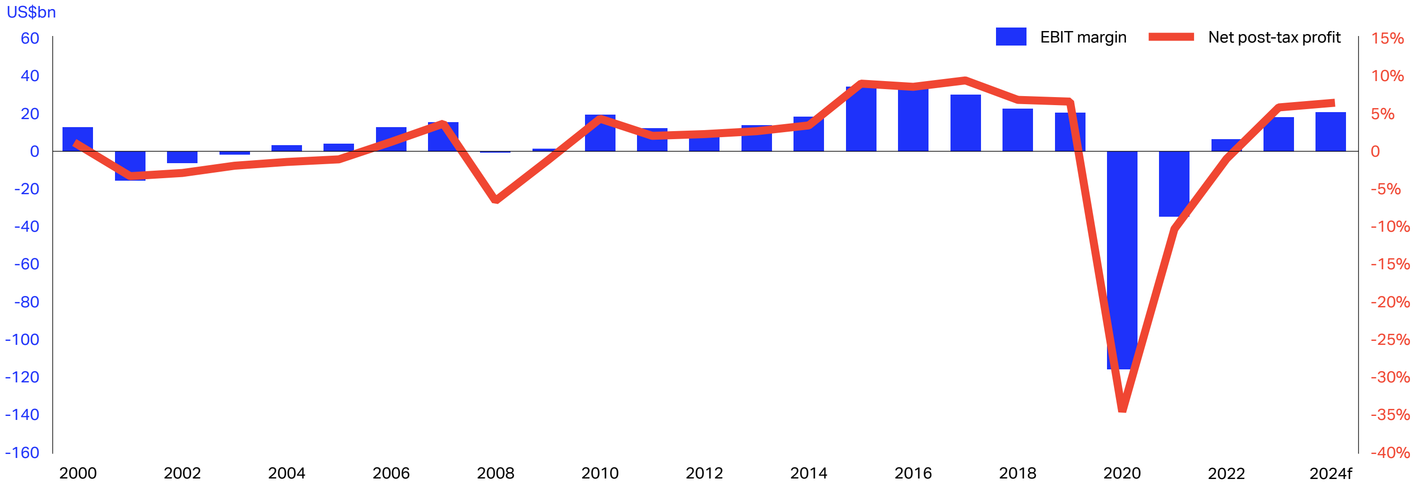
Industry wide, total airline revenue is forecast to recover to around 107% of the pre-Covid level in 2023 (Chart 21). Air passenger revenue will climb to around USD 642 billion and be partly offset by somewhat lower air cargo revenue, following the exceptional cargo revenues of the past couple of years. Even so, at around USD 135 billion it will still be some 34% higher than its pre-Covid level.

Chart 21: Global airline revenue



Sources: IATA Sustainability and Economics, The Airline Analyst

Chart 20: Global airline profitability



Sources: IIATA Sustainability and Economics, The Airline Analyst

Table 3: Key air finance figures

Worldwide airline industry	2019	2020	2021	2022	2023e	2024f
Spend on air transport, USD billion	876	396	528	763	936	1 008
% change over year	3.6%	-54.8%	33.2%	44.6%	22.6%	7.7%
% global GDP	1.0%	0.5%	0.5%	0.7%	0.9%	0.9%
Real return fare, USD/pax (2018USD)	315	216	231	284	288	283
compared to 2013	-36%	-56%	-53%	-42%	-42%	-43%
Real freight rate, USD/kg	1.79	2.77	3.49	3.73	2.53	2.00
compared to 2013	-19%	25%	57%	68%	14%	-10%
RPKs, billion	8,688	2,974	3,623	5,974	8,271	9,082
% change over year	4.1%	-65.8%	21.8%	64.9%	38.4%	9.8%
CTKs, billion	254	229	272	250	241	252
% change over year	-3.2%	-9.9%	18.8%	-8.1%	-3.7%	4.5%
World GDP growth (real), %	2.5%	-3.5%	6.3%	3.5%	3.0%	2.9%
World trade growth, %	0.3%	-5.1%	9.8%	3.0%	0.8%	3.3%
Aircraft departures, million	38.9	16.9	20.1	27.8	36.8	40.1
% change over year	2.1%	-56.5%	18.5%	38.4%	32.6%	9.0%
ASKs, % change over year	3.3%	-56.6%	18.7%	40.2%	33.0%	8.9%
Passenger load factor, % ASK	82.6%	65.2%	66.9%	78.7%	82.0%	82.6%
Cargo load factor, % AFTK	46.8%	53.8%	56.1%	49.9%	43.2%	43.9%
Weight load factor, % ATK	70.4%	70.0%	59.5%	61.7%	66.9%	67.7%
Breakeven load factor, % ATK	66.4%	66.4%	76.7%	67.0%	65.8%	64.6%

Source: IATA Sustainability and Economics

The key assumptions underpinning our financial forecast include:

- A global GDP growth rate of 3.0% this year and 2.9% in 2024, broadly in line with the long-run average rate of growth.
- Inflation pressures easing gradually throughout 2023 and 2024, following a peak in 2022. Real interest rates, though now positive, should remain relatively low in a long-term perspective after many years of negative real interest rates.
- The USD is expected to hold its strength or strengthen further versus most other currencies.
- Labor markets are tight and unemployment rates will climb only slowly from the current low levels.
- An average crude oil price of around USD 85 per barrel in 2023 and USD 85 - 90 per barrel in 2024. The jet fuel crack spread is expected to narrow but stay above its long-term historical average.
- The passenger and fleet growth assumptions are consistent with the information laid out in the sections above, and highly dependent on the continued strong recovery in the China market.
- The outlook also depends critically on the evolution of the wars in the Middle East and Eastern Europe, which we assume will not spread.

Revenue development

In dollar terms, passenger revenues are projected to reach USD 642 billion in 2023, a remarkable increase of 47% from 2022, and exceeding 2019 levels by 7%. Reflecting capacity constraints, including delays in aircraft deliveries worldwide, the passenger load factor will likely increase to 82% this year, bringing about elevated yields across most markets. Passenger revenue growth is expected to slow markedly in 2024, to 12%, but from the much higher 2023 base. We anticipate still strong passenger demand, half of which will come from Asia Pacific. With capacity continuing to return in 2024, especially in Asia Pacific, growth in yields is set to decelerate.

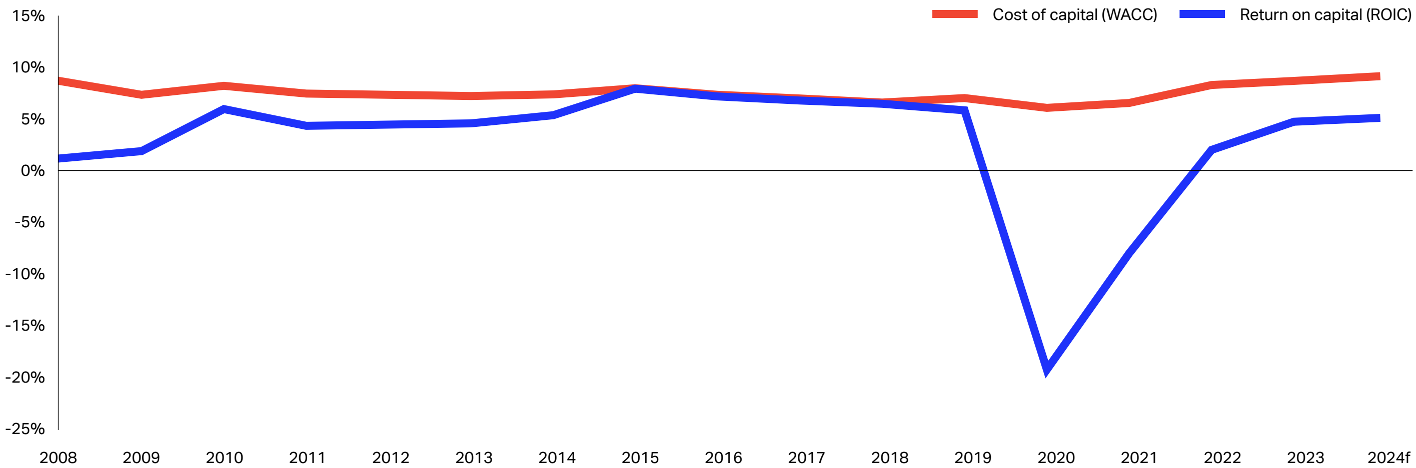
In 2023, cargo revenue is expected to decline by 35% YoY, driven by both lower demand and falling freight rates. North America and Europe are the regions particularly affected by lower demand. Cargo capacity is returning as more passenger aircraft re-enter service, while freight rates are impacted by competition from lower maritime cargo rates. We expect cargo revenue to continue to decline, and the split between passenger and cargo revenue to revert to the pre-pandemic shares of 88% and 12% respectively. The forecast increases in cargo demand (CTK) of 4.5% will be fully offset by a further erosion of freight rates. Freight rates are nevertheless most likely to remain above the pre-pandemic levels.

Capital providers

Historically, the air transport industry has struggled to deliver the returns which equity investors expect to receive for risking their capital. Put another way, the return on invested capital (ROIC) has typically been lower than the weighted average cost of capital (WACC) in the air transport industry. While this holds true for the industry as a whole, it is not necessarily the case in each region. In the four years prior to the pandemic, we estimate that equity investors in Europe and North America did receive returns above the cost of capital, helping the industry's apparent move towards a more sustainable financial future.

The pandemic changed all of that, plunging the industry into a record loss in 2020 and causing a significant deterioration across financial metrics including ROIC. Since that low point, we have seen a recovery in the industry's financial performance as well as in traffic volumes. With ROIC turning positive again in 2022 at just shy of the 2% mark, the metric is expected to continue to increase in 2023 and 2024 reaching 4.7% and 4.9% respectively, again driven by the financial outcomes in North America and Europe in particular. At the same time, however, the cost of capital has increased in 2023 and is expected to remain elevated in 2024, as interest rates around the world have risen in response to the sharp inflationary impulse. This has maintained a sizeable gap between ROIC and WACC. (Chart 22, Table 4).

Chart 22: Return on capital invested in airlines globally, 2008-2024f, % of invested capital



Source: IATA Sustainability and Economics

Table 4: Summary of key financial metrics

Worldwide airline industry	2019	2020	2021	2022	2023e	2024f
ROIC, % invested capital (IC)	5.8%	-19.3%	-8.0%	2.0%	4.7%	4.9%
EBIT margin, % revenue (rev)	5.2%	-28.8%	-8.6%	1.6%	4.5%	5.1%
Net post-tax profits, USD billion	26.4	-137.7	-41.0	-3.8	23.3	25.7
% revenue	3.1%	-35.8%	-8.0%	-0.5%	2.6%	2.7%
USD per passenger	5.80	-78.38	-17.91	-1.09	5.44	5.45

Source: IATA Sustainability and Economics

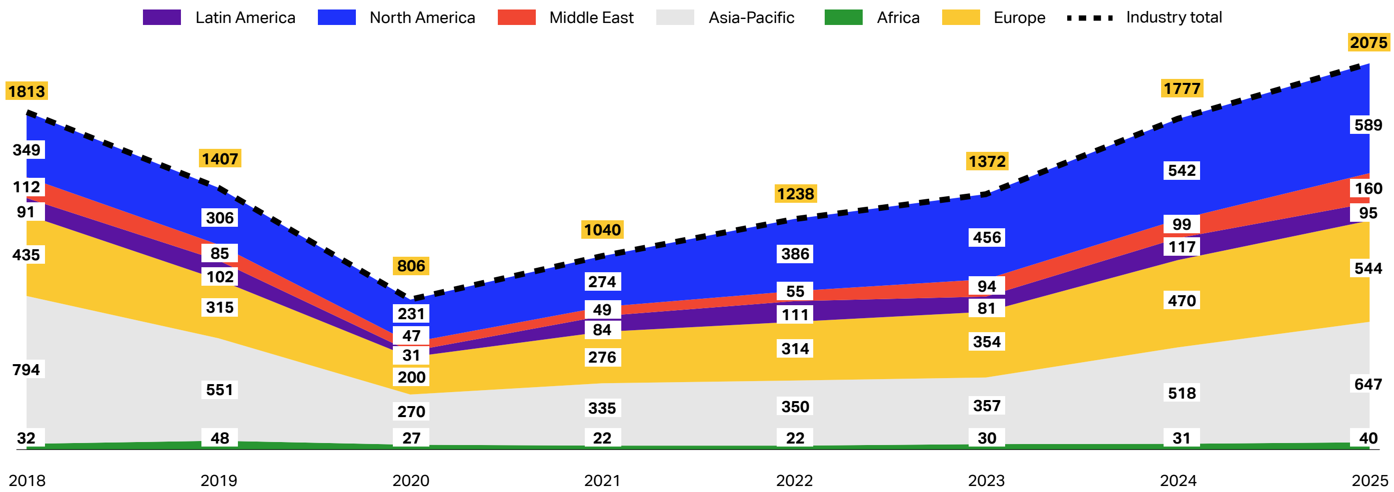
Aircraft

Aircraft deliveries will increase in 2023 compared to 2022, albeit remain below 2019 levels. The number of aircraft scheduled for delivery in 2023 has been revised lower, reflecting the ongoing supply chain issues that have created production delays.

However, seeking to acquire more fuel-efficient and quieter equipment, airlines around the globe have continued to place large orders for new commercial jets. The number of new aircraft deliveries will reach 1,777 in 2024 and 2,075 in 2025 according to current schedules – a record in the history of commercial aviation.

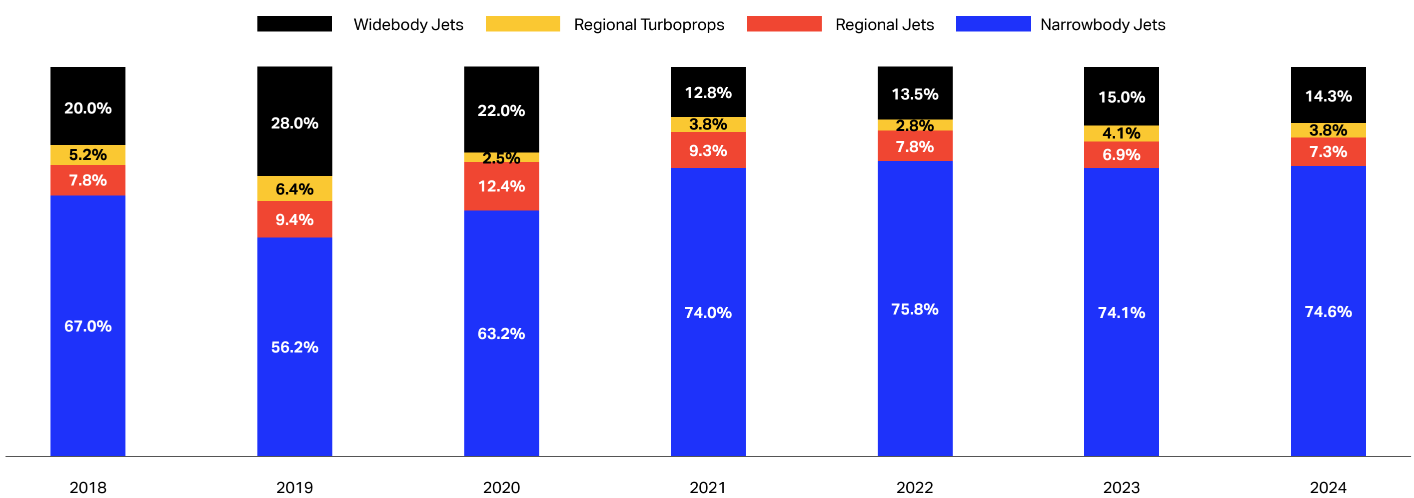
The increase in demand for new airplanes is, unsurprisingly, driven by the three largest regional markets: Asia Pacific, Europe, and North America (Chart 23). The industry's orders are now more oriented towards narrowbody aircraft, a market trend that has persisted through and since the pandemic. The number of orders for regional aircraft and widebody jets has stagnated, while those for new generation narrowbody jets has increased over the past years (Chart 24).

Chart 23: New aircraft deliveries by airline region of registration, 2018-2025 (scheduled and delivered)



Sources: IATA Sustainability and Economics, Cirium Fleet Analyzer

Chart 24: New aircraft deliveries by class, % share of total



Sources: IATA Sustainability and Economics, Cirium Fleet Analyzer

Labor

Global unemployment rates are generally at or around historically low levels. This is contributing to labor and skill shortages in many countries and across a broad spectrum of industries, including aviation. The time taken to recruit, train, undertake the necessary security checks and other requirements before staff are "job-ready" continues to present challenges for the industry in 2023.

Staff shortages resulted in significant disruption during the peak Northern Hemisphere summer period last year. While the situation started to stabilize this year, with notably fewer disruptions, tight labor markets and persistent inflation translate into upward pressure on wages. For air transport, we expect that the labor and skill shortages observed in 2023 will gradually dissipate next year. Nonetheless, wages will rise with the higher cost of living, and the industry will have to keep up with the employment needs dictated by the strength of the demand for air transportation (Table 5).

Fuel

The outbreak of war in Europe in February 2022 caused a sharp increase in global oil prices. The price of jet fuel rose further still, exceeding USD 175 per barrel in the summer of 2022, causing the spread between jet fuel and crude oil prices (jet crack spread) to climb above USD 60 per barrel.

In 2023, crude oil prices again increased in the second half of the year but have so far remained below the levels of 2022. The main driver of this trend is the war in the Middle East, which poses a risk to the stability of oil production and exports, as well as OPEC's production curbs. We estimate the average crude oil price in 2023 at USD 85 per barrel and see the crack spread remaining high at USD 30.6 per barrel, reflecting the limited refining capacity allocated to jet fuel. According to our estimates, the aviation industry will consume between 450k and 500k tonnes of sustainable aviation fuel (SAF) at USD 2500 per tonne (or 2.8x jet fuel), which will add USD 756 million to the industry fuel bill in 2023.

In 2024, we forecast that crude oil prices will remain high between USD 85-90 per barrel, depending on the evolution of the geopolitical situation in the Middle East, and the production decisions of OPEC. If it decides to increase its output targets to meet the growing demand, the price could drop. Clearly, a sharper decline in global GDP growth could also push the price lower. In our central scenario, the crack spread should narrow to 30%, down from 36% in 2023, equivalent to USD 26 per barrel (Table 6).

The aviation industry will increase its use of SAF and carbon credits to reduce its carbon footprint. We estimate that SAF production could rise to 0.53% of airlines' total fuel consumption in 2024, adding USD 2.4 billion to next year's fuel bill. In addition, the carbon offsetting and reduction scheme for international aviation (CORSIA) is a global market-based carbon offsetting mechanism designed to stabilize international aviation emissions. The CORSIA-related costs are estimated at USD 1 billion in 2024. These costs will add more pressure to the already fragile profitability of the industry.

Table 5: Key industry labor metrics

Worldwide airline industry	2019	2020	2021	2022	2023e	2024f
Labour costs, USD billion	189	160	162	175	194	206
% change over year	3.5%	-15.2%	0.8%	8.2%	11.3%	6.1%
Employment, million	2.93	2.56	2.61	2.75	2.94	3.05
% change over year	0.3%	-12.6%	2.0%	5.0%	7.0%	4.0%
Productivity, ATK/employee	526,003	335,264	382,109	445,100	516,068	529,144
% change over year	2.5%	-36.3%	14.0%	16.5%	15.9%	2.5%
Unit labour costs, USD/ATK	0.123	0.187	0.162	0.143	0.128	0.128
% change over year	0.6%	52.2%	-13.3%	-11.6%	-10.3%	-0.5%

Table 6: Fuel

Worldwide airline industry	2019	2020	2021	2022	2023e	2024f
Fuel spend, USD billion	190	80	105	215	271	281
% change over year	6.8%	-58.0%	31.8%	104.2%	26.1%	3.8%
% opex	23.9%	16.1%	18.9%	29.7%	31.7%	30.8%
Fuel use, billion liters	359	196	236	292	357	377
% change over year	1.0%	-45.3%	19.9%	23.8%	22.5%	5.4%
Fuel efficiency, fuel/100 ATK	22.1	21.7	22.4	22.6	22.3	22.1
% change over year	-1.8%	-1.8%	3.2%	1.2%	-1.2%	-1.2%
Fuel price, USD/barrel	79.7	46.6	77.8	135.6	115.5	113.8
% change over year	-7.4%	-41.5%	67.0%	74.3%	-14.8%	-1.5%
% spread over oil price	22.6%	11.6%	10.1%	35.0%	36.0%	30.0%

Source: IATA Sustainability and Economics

Regions

The financial performance of all regions is expected to improve in 2023 compared to 2022, and to exceed our mid-year expectations. However, the regions have recovered at different speeds, according to their response to the Covid pandemic and its aftermath (Table 7). Based on the latest data available, we estimate that three regions will generate a net profit in 2023, led by North America.

North America remains the standout region in terms of financial performance in air transportation. As the first market to return to profitability (in 2022), the North American carriers are expected to build on this performance in 2023, and deliver a net profit of USD 14.3 billion, supported by a high passenger load factor and higher yields. Consumer spending has remained solid, despite cost-of-living pressures, and the demand for air travel is robust. We expect air passenger demand to exceed its pre-Covid level this year. In 2024 higher passenger demand (RPK growth of 6%) and elevated load factors remaining at 85% are expected to further strengthen revenue development and operating profitability.

Europe is likely to end 2023 with a stronger than expected performance, notwithstanding the various capacity issues and supply side constraints the region faces. European carriers will likely deliver a net profit of around USD 7.7 billion in 2023. With strong demand for air travel set to continue in 2024, net profits should increase to around USD 7.9 billion, and a net profit margin of 3% in 2024. The key risks to the region's performance relate to the tight labor market, the war in Ukraine and in the Middle East, as well as ongoing concerns about the economic outlook in some key countries inside and outside of this region.

Asia Pacific shows remarkable revenue growth in 2023 and is expected to be responsible for half of the world's RPK growth this year. This is very much thanks to the gains seen in the domestic markets of China, India, and Australia, all recovering at a faster rate than the rest of the world currently. However, international travel in the region remains subdued, especially in China, where it is still 40% below the pre-Covid levels. This indicates that there is still a lot of pent-up demand for cross-border travel in the region, which will likely boost the future growth prospects regarding air transportation. Despite robust revenue growth, the region is expected to see a loss in 2023 of USD 0.1 billion, and return to profitability in the second half of 2024.

Latin America has seen a steady improvement in financial performance since 2020 but is expected to generate a loss of around USD 0.6 billion in 2023. The performance of airlines across the region has been very mixed; some are performing strongly, while others find themselves in considerable financial difficulties including being in or coming out of chapter 11 proceedings. In part, this a consequence of the economic and social turmoil observed in the region. The trend of financial improvement is nevertheless clear, with the net profit margin going from -11% in 2021 to an estimated -2% in 2023 and a forecast -1% in 2024.

The **Middle East** is expected to deliver a strong financial performance in 2023, likely recording a net profit of around USD 2.6 billion, coupled with a 6% net profit margin. The Middle East carriers have been swift to rebuild their international networks and continue to operate important global hubs. The region's financial recovery is supported by still significant RPK growth that is likely to reach almost 35% in 2023. A net profit of around USD 3.1 billion at a 5% net profit margin is expected in 2024.

Carriers based in **Africa** are expected to generate a loss of around USD 0.5 billion in 2023. Africa remains a difficult market in which to operate an airline, with economic, infrastructure, and connectivity challenges all impacting the industry's performance. Despite these challenges, there is robust demand for air travel. Underpinned by this demand, the industry will continue to move towards profitability following the Covid disruption, though we still foresee a modest loss in 2024.

Table 7: Regional financial performance

Worldwide airline industry	2019	2020	2021	2022	2023e	2024f
Africa						
Net post-tax profit, USD billion	-0.3	-1.8	-1.1	-0.8	-0.5	-0.4
Per passenger, USD	-2.7	-58.0	-24.7	-10.2	-5.1	-4.5
% revenues	-1.8%	-29.9%	-14.6%	-7.1%	-3.4%	-2.7%
RPK growth, %	4.7%	-68.2%	17.0%	84.8%	40.1%	7.3%
ASK growth, %	4.5%	-62.1%	18.5%	51.5%	38.4%	9.4%
Load factor, % ATK	59.6%	51.4%	53.3%	62.2%	63.7%	63.0%
Breakeven load factor, % ATK	55.6%	60.1%	57.0%	64.2%	63.9%	62.9%
Asia/Pacific						
Net post-tax profit, USD billion	4.9	-44.8	-13.7	-13.6	-0.1	1.1
Per passenger, USD	2.9	-59.3	-17.4	-13.9	-0.1	0.6
% revenues	1.9%	-39.6%	-10.4%	-8.7%	-0.1%	0.5%
RPK growth, %	4.7%	-62.0%	-12.8%	31.9%	98.1%	13.5%
ASK growth, %	4.4%	-53.8%	-6.1%	15.6%	77.9%	10.6%
Load factor, % ATK	72.3%	63.8%	63.3%	65.6%	66.9%	69.0%
Breakeven load factor, % ATK	69.6%	85.5%	70.9%	71.4%	67.1%	67.0%
Middle East						
Net post-tax profit, USD billion	-1.5	-9.6	-4.9	1.4	2.6	3.1
Per passenger, USD	-6.8	-142.0	-59.8	7.1	11.2	13.3
% revenues	-2.7%	-35.1%	-15.0%	2.6%	4.3%	4.8%
RPK growth, %	2.3%	-72.1%	8.5%	144.6%	34.6%	6.3%
ASK growth, %	-3.3%	-61.7%	21.2%	67.2%	28.0%	10.7%
Load factor, % ATK	63.5%	54.7%	54.9%	62.9%	62.9%	63.4%
Breakeven load factor, % ATK	67.7%	68.3%	61.5%	59.7%	59.1%	59.6%
Latin America						
Net post-tax profit, USD billion	-0.7	-11.9	-7.0	-3.9	-0.6	-0.4
Per passenger, USD	-2.2	-131.4	-52.6	-17.5	-2.5	-1.1
% revenues	-1.8%	-73.7%	-31.9%	-10.7%	-1.5%	-0.8%
RPK growth, %	4.2%	-62.5%	40.5%	62.9%	16.3%	7.4%
ASK growth, %	2.9%	-58.9%	37.3%	54.4%	14.4%	7.8%
Load factor, % ATK	69.2%	64.4%	66.6%	68.8%	68.3%	69.1%
Breakeven load factor, % ATK	65.3%	82.6%	72.6%	71.7%	68.4%	68.7%
North America						
Net post-tax profit, USD billion	17.4	-35.1	-2.3	9.1	14.3	14.4
Per passenger, USD	17.0	-84.7	-3.2	8.9	12.5	13.5
% revenues	6.6%	-25.2%	-1.1%	3.0%	4.2%	4.0%
RPK growth, %	4.0%	-65.1%	74.6%	45.6%	16.0%	6.3%
ASK growth, %	4.4%	-51.0%	41.1%	28.7%	14.6%	6.0%
Load factor, % ATK	66.0%	52.1%	59.2%	64.0%	64.8%	65.2%
Breakeven load factor, % ATK	57.8%	66.3%	62.7%	60.1%	60.2%	60.8%
Europe						
Net post-tax profit, USD billion	6.5	-34.5	-12.1	4.1	7.7	7.9
Per passenger, USD	5.42	-85.96	-22.8	4.18	6.86	6.39
% revenues	3.1%	-41.7%	-11.0%	2.3%	3.5%	3.3%
RPK growth, %	4.2%	-69.5%	27.5%	101.7%	22.3%	10.5%
ASK growth, %	3.5%	-62.3%	29.8%	69.9%	18.4%	8.8%
Load factor, % ATK	74.9%	65.2%	66.2%	73.6%	74.6%	76.1%
Breakeven load factor, % ATK	71.3%	82.8%	72.1%	70.6%	69.8%	71.5%

Source: IATA Sustainability and Economics

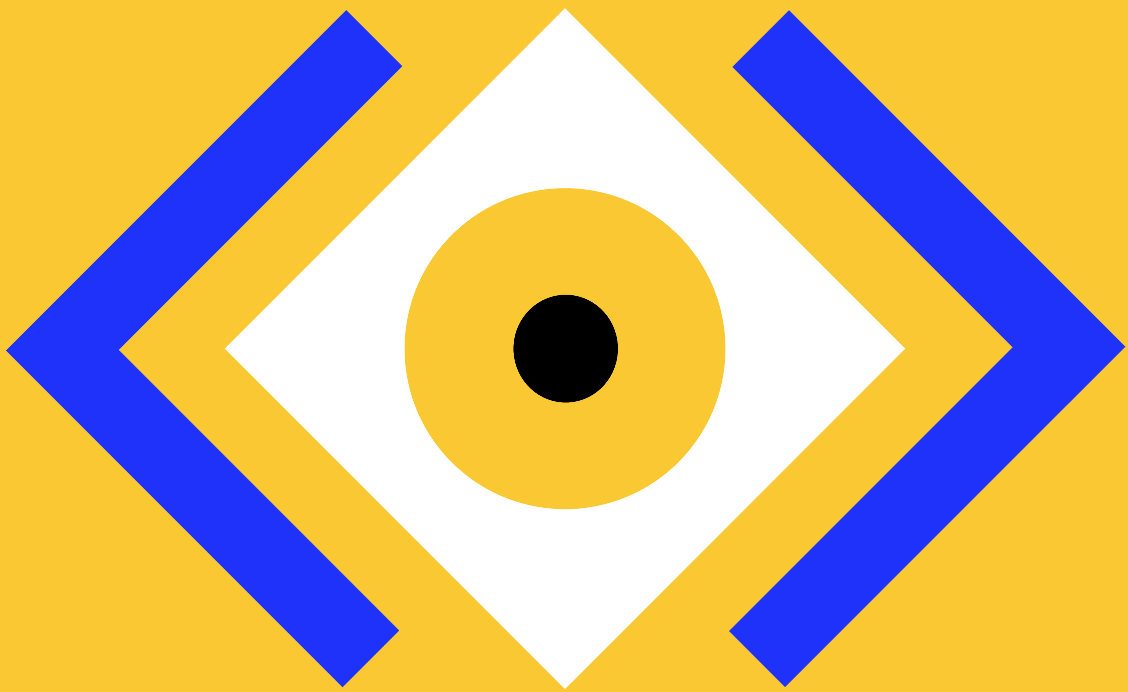
Risks

Although the airline industry should see further growth in passenger demand in 2024, it will also have to deal with the uncertainties arising from economic and geopolitical factors. With net profits of just USD 23 billion and a net margin of 2.6%, resulting from revenues of USD 896 billion and USD 855 billion in expenses in 2023, the industry's profitability is fragile and could be affected (positively or negatively) by many factors:

- Despite easing inflation, low unemployment rates, and consumers' desire to travel in 2023, the risk of a sharper economic slowdown has not disappeared. Interest rates remain high in response to persistent inflation and tight labor markets. Developments in China are a particular risk to the global business cycle. Should unemployment rise significantly, the industry's outlook could shift negatively.
- As much as 20% of the European airspace is closed due to the war in Ukraine. The main effect of this regrettable situation has been seen on the routes flown, rather than on global traffic numbers. Much of the affected traffic has been rerouted via Turkey and the Middle East, for example. A currently unanticipated peace could deliver the potential for cost improvements with lower oil prices and efficiencies from the removal or easing of airspace restrictions. The war in the Middle East has pushed oil prices higher again, and OPEC countries' output decisions will also influence future prices. Clearly, any escalation in these conflicts could produce a radically different scenario for the world and for global aviation.
- Supply chain issues continue to impact global trade and business. Airlines have been directly impacted by delays in the delivery of aircraft parts and of aircraft, limiting capacity expansion and fleet renewal.
- On the regulatory front, the industry could face rising costs of compliance, and additional costs pertaining to passenger rights regimes, regional environment initiatives, and accessibility requirements.

The airline industry is expected to experience slower growth in 2024 as global traffic should finally reach the pre-pandemic level, ending a high-growth recovery phase. Industry profitability will still be fragile, and airlines will have to navigate the uncertainties arising from economic and geopolitical factors, supply chain issues, and regulatory costs to progress towards improved financial health. That financial health is not only a question of profitability, but also of balance sheet strength. Although pandemic-era public support for airlines is being repaid (and has been already in a number of cases), airlines are still left with more debt than prior to the crisis. This comes at a time when costs are rising and challenges are mounting, none more impactful than that of the changing climate.

Air transportation is an industry with remarkable resilience, able to bounce back swiftly from even a near total cessation of activities. The world, the transportation sector, and the aviation value chain, all have an interest in an air transportation industry that is not only resilient but also robust and able to withstand various shocks without falling over in the first place. This is so because our collective economic outcomes depend on the free flow of goods and persons – a flow in which air transportation plays an indispensable and important role.



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