# Forecasting air freight demand March 2018

## Forecasts for the 2018-2022 period, prepared by IATA Economics

- We forecast industry-wide freight tonne kilometres (FTKs) to grow by 4.9% on average over each of the next five years, helped by a stronger economic and trade backdrop than we saw over much of the previous five year period.
- In keeping with the performance seen since 2014, we expect air freight to continue to outperform global goods trade modestly between 2018 and 2022. This is a key area of uncertainty and a prime area for our future research.
- Our baseline forecasts are just one way in which freight demand could develop. We have explored alternative scenarios to illustrate a range of possible outcomes in industry-wide FTKs over the forecast time horizon.

### Introduction

This paper presents IATA's forecasts for air freight volumes over the next five years (as measured by air freight tonne kilometers, or FTKs). The layout of the paper is as follows:

The first section discusses the key relationships that underpin growth in air freight volumes, and explains how the strong performance seen in 2017 fits in with this framework. The next section details our forecasts for air freight volumes over the next five years at an industry-wide level and for selected major trade lanes; this section includes a discussion of the key risks to the outlook. The final section explores alternative scenarios to illustrate a range of possible outcomes over the forecast time horizon.

### Section 1 – our forecasting framework

#### The key building blocks of air freight demand

The strength of demand for air freight each year depends on the broader health of global goods trade flows, as well as factors specific to air freight. These influences are captured by two key relationships:

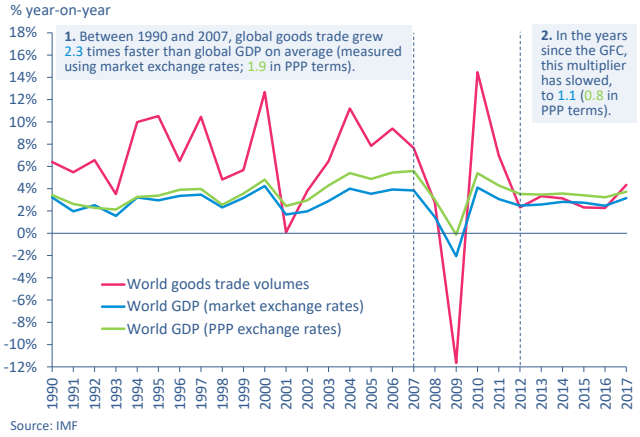
1) The relationship between global GDP growth and global goods trade growth; and,
2) the relationship between global goods trade growth and that of air freight volumes.

#### How much trade is generated by a given amount of economic activity...

The first of these relationships has seen a big change since the global financial crisis (GFC).

As shown in Figure 1, in the decades before the GFC it was usual for global goods trade to grow at around two times the pace of global GDP. (The exact multiplier depends on whether you measure GDP using market or purchasing power parity exchange rates – see Figure 1.) This was set against a backdrop of deepening globalization, including the fragmentation of global supply chains.

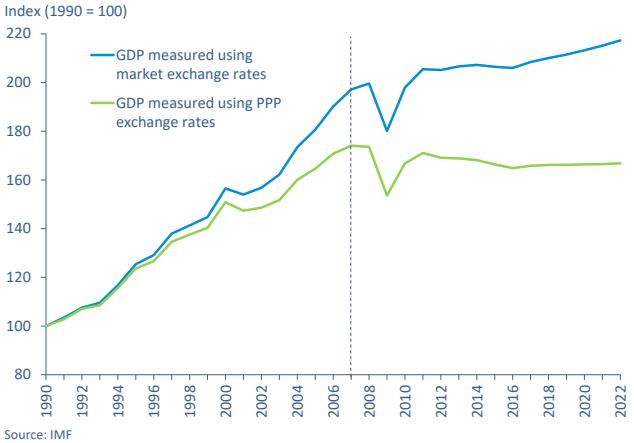
**Figure 1 –** Global goods trade and GDP growth




However, in the years since the GFC, global goods trade has only grown broadly in line with global GDP, and the long-standing upward trend in the goods trade/GDP ratio has stopped. (See Figure 2.)

This slowdown in trade growth has been the subject of much research and a number of reasons have been put forward to explain it, including protectionism, a slowdown in the fragmentation of supply chains/on-shoring, and a broader decline in investment growth.[1]

**Figure 2 –** Ratio of goods trade to GDP




[1] For example, see ECB, 'Understanding the weakness in global trade', Occasional Paper Series, no.178 Sept 2016, www.ecb.europa.eu/pub/pdf/scpops/ecbop178.en.pdf

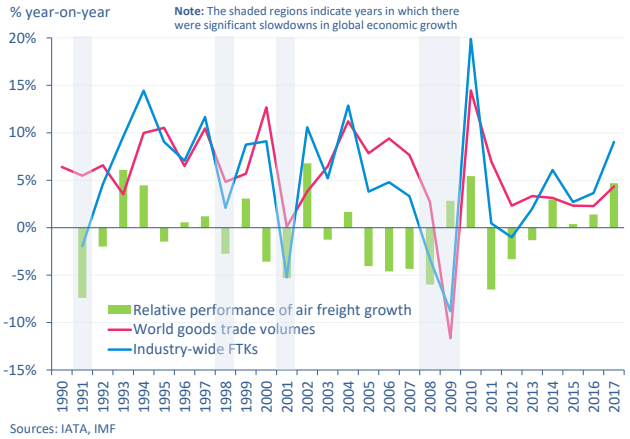
The big question of relevance to the future of air freight is when/if the ratio will return to pre-crisis norms (which we'll come back to later on).

### …and how does this relate to air freight demand?

The second key relationship of relevance to the performance of air freight is that between freight volumes and global goods trade. On average, year-on-year growth in air freight volumes has tended to grow slightly more slowly than growth in global goods trade volumes over the past 30 years or so (around 0.95 times the pace), albeit with distinct periods of over- and under-performance.

Air freight has tended to underperform in periods of relative economic stability, partly related to modal shift to sea freight (this was certainly the case in the mid-2000s).[2] However, air freight has tended to outperform global goods trade strongly during the upturns following significant global economic slowdowns over the past 30 years. (See Figure 3.)

**Figure 3 –** Global goods trade and FTK growth




Sources: IATA, IMF

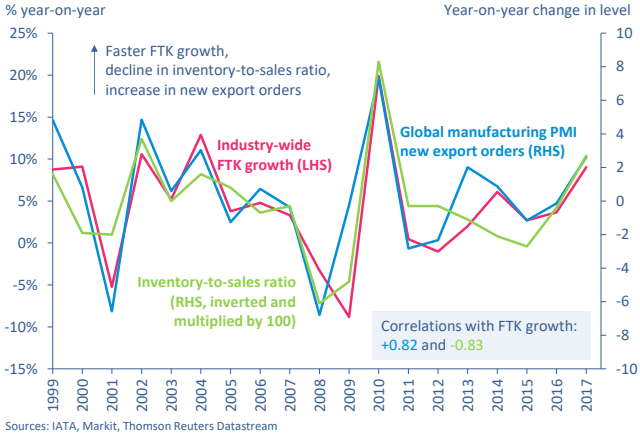
The cyclical outperformance of air freight growth relates in large part to its ability to move goods quickly and its key role in the restocking cycle. As shown in Figure 4, periods in which the inventory-to-sales ratio have fallen sharply have been consistent with strong demand growth for air freight volumes in the past. Similarly, periods when global manufacturing firms have reported rising demand for their exports have also been closely correlated with freight growth.

### Stronger global trade backdrop helped in 2017…

The two key relationships help to explain what drove the strong growth in air freight volumes seen in 2017.

A stronger global trade backdrop certainly helped. According to the International Monetary Fund (IMF), global goods trade volumes increased by 4.3% in 2017 – the strongest year of growth since 2011 – alongside a broad-based pick-up in global economic activity. (Again, see Figure 1.) Having fallen below 1.0 during the previous two years, the goods trade to GDP multiplier increased to 1.4 in 2017. This was above the average seen since 2012, albeit still well below the 2x level that was the norm in the decades leading up to the GFC.

**Figure 4 –** FTK growth versus cyclical indicators



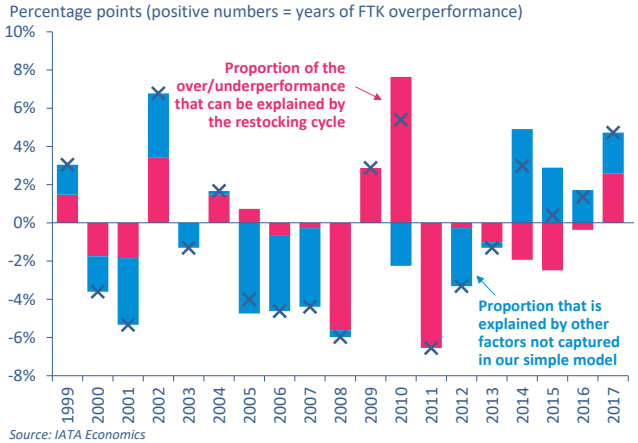

Sources: IATA, Markit, Thomson Reuters Datastream

### …but cyclical FTK outperformance evident too

However, FTKs grew more than twice as fast as global trade volumes in 2017 as a whole, which was the widest margin of outperformance since 2010. (Again, see Figure 3.) This outperformance largely reflects the boost from the restocking cycle, which was also evident in buoyant demand for global manufacturing firms' exports.

On average, we estimate that every 0.01-point year-on-year decline in the inventory-to-sales ratio is consistent with annual air freight growth outperforming its world trade counterpart by around 0.9 percentage points. Given the magnitude of the fall in the inventory-to-sales ratio seen last year, this factor explains around half of air freight's outperformance relative to global goods trade in 2017. (See Figure 5.)

**Figure 5 –** Year-on-year FTK growth minus year-on-year global goods trade growth




*Source: IATA Economics*

A number of factors are likely to be contributing to the remainder of the outperformance, including the long-awaited pick-up in investment seen last year, notably in Europe, as well as the impact that growing sectors

[2] See: www.iata.org/whatwedo/Documents/economics/modal-shift-cargo-mar14.pdf

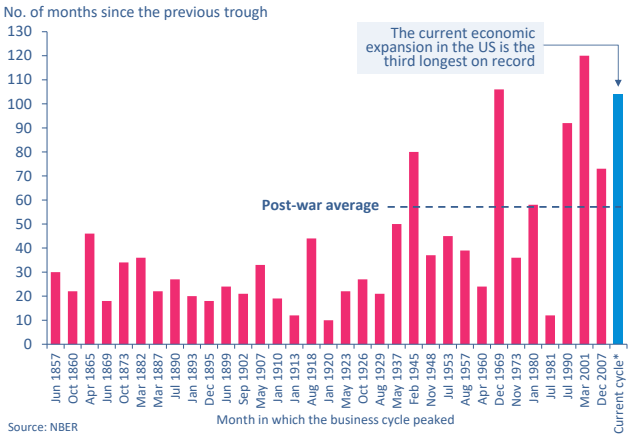
such as e-commerce and pharmaceuticals are having on air freight growth. The extent to which the latter continues is a key consideration and uncertainty for the forecasts.

## Section 2 – outlook over the next five years

### This benign period of economic growth *will* end, but when?

The global economy is currently enjoying its broadest-based pick-up in growth in many years, although the long length of time since the last recession means that some people worry that it is 'due' a downturn. Certainly, as shown in Figure 6, the ongoing period of expansion in the US economy is closing in on being the second longest on record – well above the post-war average of 58 months.

**Figure 6 –** Length of economic cycles in the US




Of course, no two business cycles are the same and they do not 'die of old age'; indeed, the length of the current period of expansion has been helped in large part by the extraordinarily accommodative monetary policy settings seen in recent years, which are still only being normalized very slowly. However, at the time of writing, signs of rising wage inflation pressures in the US, as well as the expected stimulus to activity from President Trump's tax package, are causing investors to reappraise the scope of future interest rates rises. Pronounced increases in interest rates have typically been one factor that has ended periods of economic expansion in the past.

All told, history would suggest that we are highly likely to see an economic downturn at some point within the next five years, although we cannot say when. The key point is that any set of macroeconomic forecasts looking into the future should be viewed as a trend projection through the cycle, rather than precise estimates from year to year.

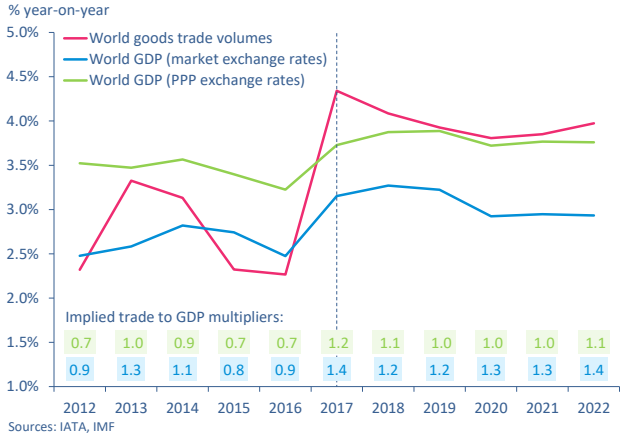
### More supportive economic and trade backdrop…

With this caveat in mind, the general expectation is that the outlook for air freight over the next five years will be supported by a brighter economic and trade backdrop than we saw between 2012 and 2017. (There is, of course, a wide range of forecasts about how economic growth will develop in the future. We have used the latest from the IMF's bi-annual *World Economic Outlook* publication.)

Having accelerated in 2017, global GDP growth is expected to remain relatively robust over the next five years. The IMF forecasts real GDP growth to average 3.1% between 2018 and 2022, compared to 2.8% during the previous five years (measured using market exchange rates; the corresponding PPP-based figures are 3.8% and 3.5%). Similarly, global goods trade is also forecast to grow more quickly than it did in the 2012-2017 period. The IMF forecast global goods trade growth to average 3.9% between 2018 and 2022, up from 3.1%.

The IMF's forecasts are consistent with an increase in the global goods trade to GDP multiplier over the coming five years compared to that seen between 2012 and 2017. (See Figure 7.) Nonetheless, the ratio is expected to remain well below the 2 times average that was the norm in the decades before the GFC. Alternative scenarios, which explore different possibilities in this key relationship, are included in section 3.

**Figure 7 –** IMF forecasts of growth in global GDP and goods trade




### …and further modest FTK outperformance in 2018

As shown in Figure 3 earlier, traditionally years in which air freight growth has far exceeded that of global goods trade have been followed by underperformance as the restocking cycle has waned.

Having outperformed global goods trade by the biggest margin in seven years during 2017, business surveys are currently consistent with air freight outperforming global goods trade growth again in 2018, albeit much more modestly than last year.

Indeed, having increased to a fresh seven-year high in January 2018, the new export order books component

of the global manufacturing PMI is currently 1.3 points higher than its average during the whole of 2017. While there is a long way to go this year, we estimate that this is consistent with industry-wide FTK growth outperforming world trade growth by around 1 percentage point in 2018.

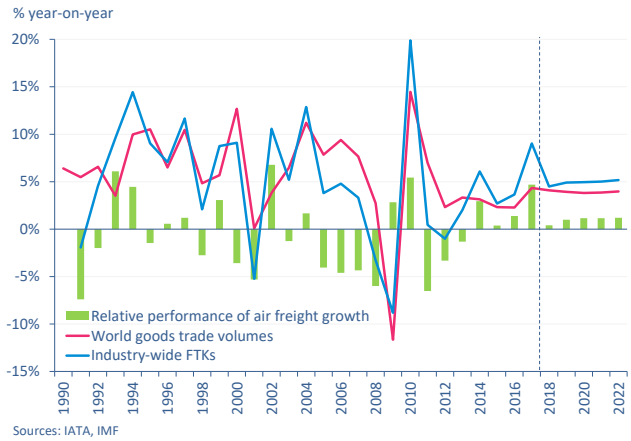
Based on the IMF's forecasts for goods trade, this implies FTK growth in the region of 5.3% in 2018, and is consistent with an FTK to goods trade multiplier in the region of 1.1, down from 2.1 in 2017.[3]

## Can air freight decouple from global goods trade?

The big question is how the relationship between air freight and global goods trade will settle in the later years of the forecast period.

Typically modal shift has eaten into air freight's market share during periods of economic stability.[4] However, we have now seen FTK growth outperform global goods trade growth in every year since 2014. As shown in Figure 5, the bulk of this outperformance has not been explainable by the usual 'cyclical' indicators of demand. This suggests that other factors – potentially the increasing importance of areas such as e-commerce and pharmaceuticals – are helping air freight growth to 'decouple' from global goods trade.

**Figure 8** – Forecast relationship between air freight and global goods trade




Sources: IATA, IMF

In our baseline forecast we expect that this modest decoupling between air freight and goods trade growth continues across 2019-2022, with a degree of FTK outperformance broadly in line with the average seen since 2014. (See Figures 8 and 9.) This is a key area of uncertainty and a prime area for our future research.

[3] For reference, the World Trade Organization (WTO) is currently forecasting world goods trade growth of 3.2% in 2018, within a range of for 1.4-4.4%. However, the WTO has indicated that this forecast is likely to be revised higher during the next update in early-April: https://www.wto.org/english/news_e/news18_e/wtoi_12feb18_e.htm

[4] Again, see: www.iata.org/whatwedo/Documents/economics/modal-shift-cargo-mar14.pdf

**Figure 9 –** Key forecast numbers

| % CAGR, unless specified otherwise | 2012-2017 (actual) | 2017-2022 (forecast) |
|---|---|---|
| A *Global GDP (market ex. rates)* | 2.8% | 3.1% |
| B *Global GDP (PPP ex. rates)* | 3.5% | 3.8% |
| C Global goods trade | 3.1% | 3.9% |
| *Trade to GDP multiplier (=C/A)* | 1.12 | 1.28 |
| *Trade to GDP multiplier (=C/B)* | 0.88 | 1.03 |
| D Industry-wide FTKs | 4.7% | 4.9% |
| *FTK to trade multiplier (=D/C)* | 1.52 | 1.25 |

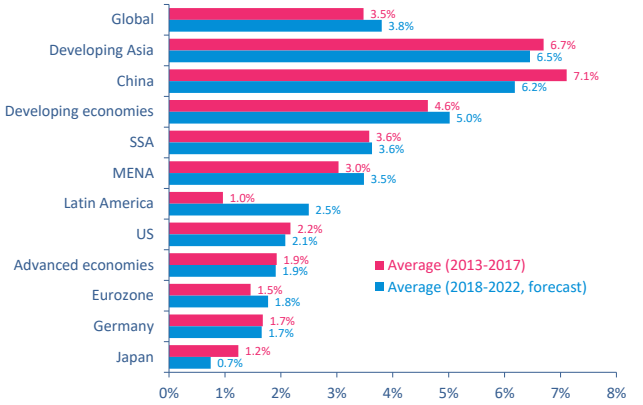
Sources: IMF, IATA

## Assessing the outlook for the major trade lanes

While global economic growth is forecast to increase in aggregate over the next five years, this masks a wide range in regional and country-level performance.

Economic activity in the so-called advanced economies is expected to grow at a broadly similar pace over the next five years than it did in the previous five, with modest slowdowns in the US and Japan being offset by stronger growth in the Eurozone. (See Figure 10.) The latter is likely to support inbound demand for air freight into Europe on the key trade lanes between North America and Asia over the next five years.

**Figure 10 –** Real GDP growth (selected regions and countries, PPP exchange rates)



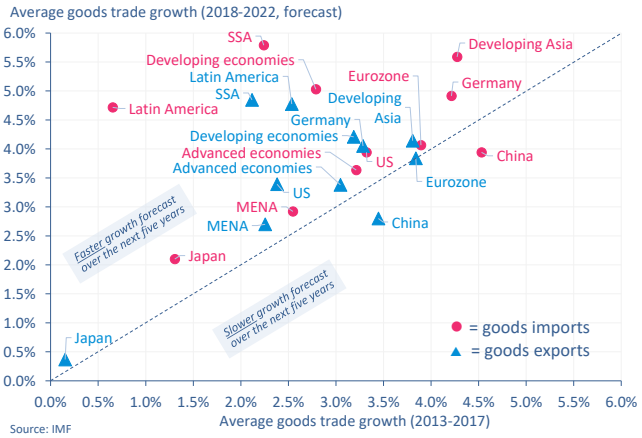

Source: IMF

GDP growth in the developing group of countries is expected to accelerate over the next five years, helped by stronger activity in energy-producing countries including Brazil and Russia.

There is a similar range in expectations for global goods trade at a regional and country level. Stronger economic growth in the developed economies is expected to translate into faster goods import growth over the next five years. (See Figure 11.) Sub-Saharan Africa is also expected to see strong goods trade growth over the next five years, linked in part to FDI inflows from Asia. (Recall that African airlines flew around 25% more international FTKs in 2017 than

they did in 2016, helped by a surge in FTKs flown on the Africa to Asia market segment.)

**Figure 11 –** Goods trade forecasts; selected regions and countries

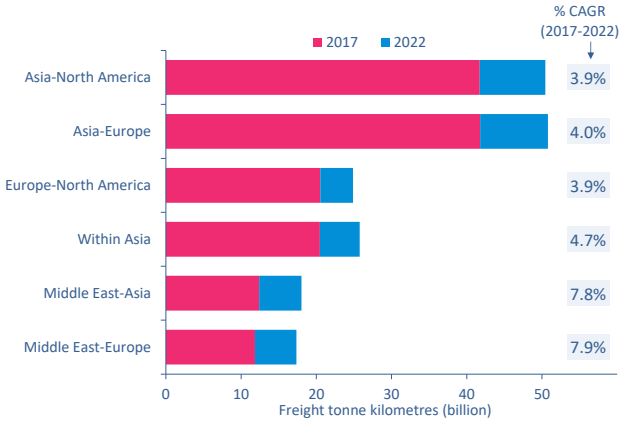



Source: IMF

Notably, China is the only major region or country expected by the IMF to see a slowdown in goods trade growth over the next five years. However, we expect this impact to be felt most acutely by bulk shippers and sea freight as demand for heavy materials linked to investment declines. In fact, we see opportunities for air freight as the country moves towards a more consumer-led growth model.

All told, we expect to see robust FTK growth on the segment-based trade lanes to, from and within Asia over the next five years. As mentioned earlier, a stronger economic backdrop in Europe is also expected to drive faster growth on the key trade lanes to and from the region over the forecast horizon than in the previous five years. (See Figures 12 and 13.)

**Figure 12 –** FTK forecasts by major trade lane




Source: IATA

| FTK growth (% CAGR, segment-based trade lanes) | 2012-2017 (actual) | 2017-2022 (forecast) |
|---|---|---|
| Asia-North America | 5.2% | 3.9% |
| Asia-Europe | 1.1% | 4.0% |
| Europe-North America | 2.2% | 3.9% |
| Within Asia | 3.7% | 4.7% |
| Middle East-Asia | 8.3% | 7.8% |
| Middle East-Europe | 8.3% | 7.9% |

Source: IATA

**Figure 13 –** Selected economic and trade metrics by major region

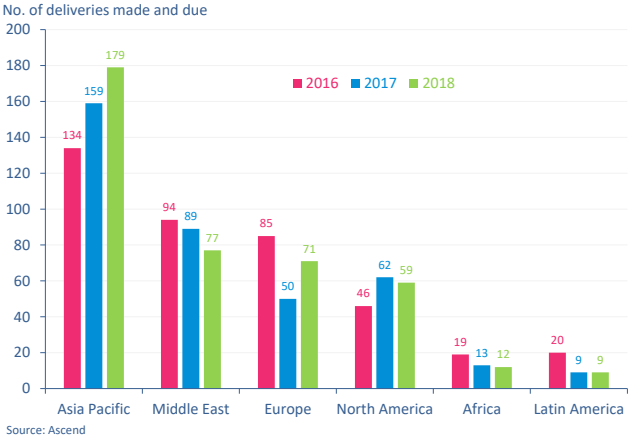
| | Share of global GDP (%)* | Real GDP growth 2012-2017 | Real GDP growth 2017-2022 | Trade (% of GDP)** |
|---|---|---|---|---|
| Asia Pacific | 35% | 5.6% | 5.4% | 54% |
| North America | 28% | 2.1% | 1.9% | 30% |
| Europe | 25% | 1.4% | 1.8% | 83% |

*2017 at market exchange rates **2016

Sources: IMF, World Bank

Having stalled in 2017, we expect the upward trend in traffic passing through the Middle East to resume over the forecast period, linked partly to ongoing strong growth in the widebody fleet in the region. 77 widebodies are due to be delivered to carriers based in the region in 2018 – down slightly from the amount made in the previous two years, but still the second highest of all regions. (See Figure 14.)

**Figure 14 –** Widebody aircraft deliveries by region




Source: Ascend

## Key risks, uncertainties, and opportunities…

The baseline forecasts presented above are just one way in which air freight demand could develop over the coming five years. As always, there are many risks and uncertainties on both the upside and the downside, which range in nature, severity, and likelihood.

One key risk is to the economic backdrop. The global economy is currently experiencing its broadest-based cyclical growth pick-up since 2010. However, some economists argue that unorthodox central bank policies since the GFC have created asset bubbles in financial and housing markets rather than driven a sustainable path to economic growth; by encouraging credit and debt expansion, these policies pose a threat to financial stability and potential economic growth in the future. To the extent that such risks eventuate, this could see slower economic growth

than in the baseline, and translate directly into lower demand for air freight.

### …including from trade protectionism…

A more specific risk to global goods trade volumes is that posed by protectionism. After decades of globalization and the breaking down of borders, there is a risk that policymakers continue down a more inward-looking path. Certainly, recent years have seen politicians embrace more national solutions; the recent imposition of tariffs on steel and aluminium imports by the US are a case in point. Once again, a pick-up in protectionism would weaken the underlying operating environment for air freight in the coming years.

Geopolitical risks could also play a key role in shaping the composition of growth and traffic in the air freight industry in the years ahead, particularly in the Middle East. Airlines based in the region have increased their share of industry-wide FTKs from less than 4% in 2000 to almost 14% at present. If, for example, regional unrest or conflict were to deter traffic from using the region's major hubs, this could see European and Asia Pacific airlines regain some of the market share that they have lost in recent decades. Of course, similar geopolitical tensions and risks exist in other regions too.

### …as well as on the upside

Not all uncertainties are negative. Indeed, in a converse situation to that noted earlier, if economic activity turns out to be stronger than forecast in the baseline, this will translate directly into stronger demand for air freight. Moreover, while the US has become openly more hostile to trade openness, it is worth noting that the other countries involved in the now defunct Trans-Pacific Partnership, for example, are determined to reach a new agreement without the US's involvement. Any progress on new or amended trade agreements could help to reinvigorate global trade flows in the future and to subsequently help boost air freight demand. Meanwhile, and as noted earlier, new and fast-growing areas such as e-commerce and pharmaceuticals appear to offer opportunities for air freight to potentially decouple altogether from the link with global goods trade in future years.

It is worth noting that only around 1% of total goods trade volumes are flown by air (although around 35% in value terms). Even a very small increase in this share over a short-period of time would be consistent with sizeable FTK outperformance relative to global goods trade. To illustrate, if the share were to rise by just 0.1 percentage points over five years, this would see air freight growth outperform wider goods trade by around 2 percentage points each year. Such a shift could happen if key air freight sectors like e-commerce or pharmaceuticals outperform other areas of the economy.

## Section 3 – scenario analysis

The risks and opportunities discussed in the previous section can be examined in the framework established earlier. Any factors such as trade protectionism that result in less global goods trade being generated by a given amount of economic activity, and/or slower global economic growth than in the baseline, fit into our framework by reducing the first of our key multipliers.

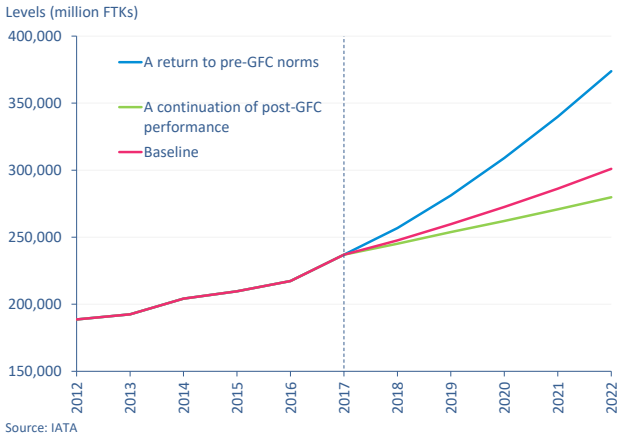
Similarly, any factors that allow air freight to outperform global goods trade on a consistent basis will show up in our framework as a stronger FTK to air trade multiplier than we have seen in the past.

### Two alternative scenarios

To help explore the range of possibilities over the coming five years, we have produced two illustrative alternative scenarios to our baseline, which primarily flex the key relationship between global GDP growth and global goods trade.

Figure 15 provides an overview of the scenario outcomes. Detailed charts relating to the scenarios can be found in the appendix.

**Figure 15 –** FTK scenarios




### *A) A return to pre-GFC norms*

In this scenario, global GDP growth is assumed to be stronger than in the baseline, averaging 3.6% each year over the next five years; this is broadly in line with the pace seen in the 'great moderation' in the run-up to the GFC.

Moreover, the global goods trade to GDP multiplier is assumed to recover over the forecast horizon from 1.4 in 2017 back to around the 2.0 level that was the norm in the two decades leading up to the GFC. The relationship between goods trade and FTK growth is assumed to be unchanged from the baseline.

The 'return to pre-GFC norms' scenario sees industry-wide FTKs growing by 9.5% each year on average over the next five years – almost double the pace seen in the baseline. This results in a cumulative 14% more FTKs being flown over the five-year forecast horizon than in the baseline scenario.

### *B) A continuation of post-GFC performance*

In this scenario, we assume that global GDP growth is unable to maintain the pace seen in 2017: annual GDP growth is assumed to average 2.7% over the forecast horizon, slightly below the average pace over the previous five years.

Moreover, the modest recovery in the goods trade to GDP multiplier expected by the IMF in the baseline scenario is also assumed to be too optimistic: the multiplier between goods trade and GDP is expected to fall back towards 1.0 over the forecast horizon, in keeping with the experience seen between 2012 and 2016. As in the previous scenario, the relationship between goods trade and FTK growth is assumed to be unchanged from the baseline.

The 'continuation of post-GFC economic and trade performance' scenario is consistent with FTK growth of 3.4% per year on average between 2018 and 2022 – 1.5 percentage points slower than in the baseline. All told, this results in a cumulative 4% fewer FTKs being flown over the forecast horizon than in the baseline.

## Conclusion

We forecast industry-wide FTKs to grow by 4.9% on average each year between 2018 and 2022, helped by a stronger economic and trade backdrop than we saw over much of the previous five year period. In keeping with the performance seen since 2014, our forecasts assume that air freight continues to outperform global goods trade modestly over the next five years. This is a key area of uncertainty and a prime area for our future research.

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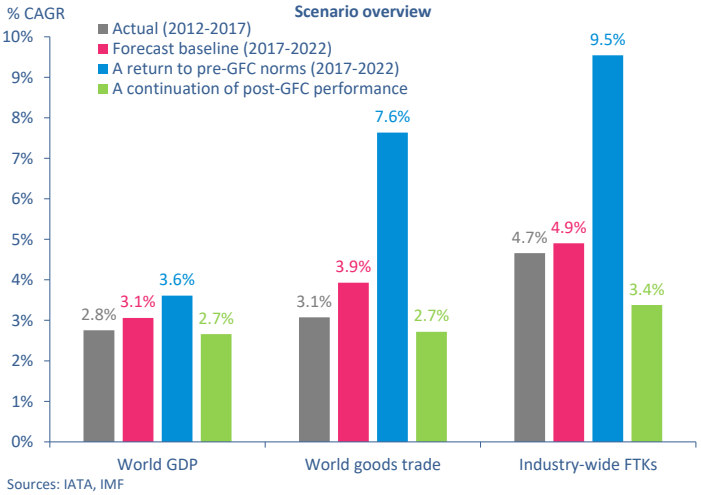
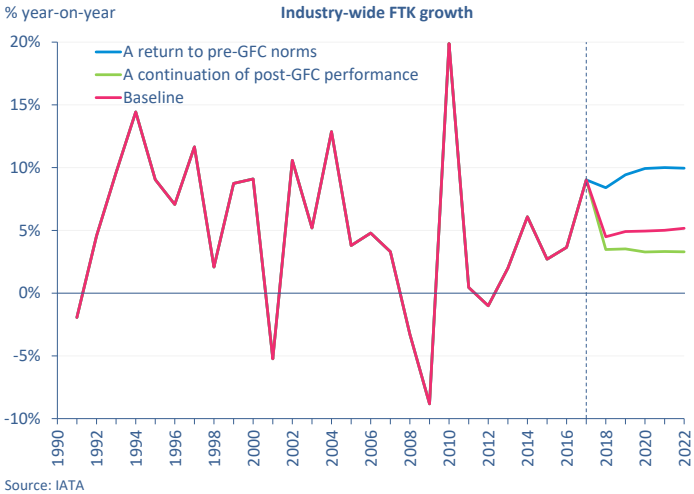
March 2018

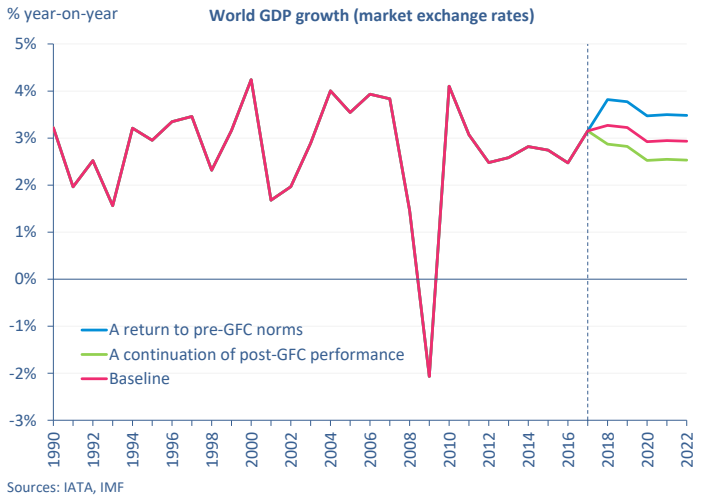
## Appendix: detailed scenario overview




Sources: IATA, IMF




Source: IATA




Sources: IATA, IMF


Sources: IATA, IMF