CHAPTER 1.4

Global Air Passenger Markets: Riding Out Periods of Turbulence

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The future growth of global air passenger traffic will undoubtedly be subject to unanticipated shocks. While the nature and timing of these shocks cannot (by definition) be predicted, looking at how the industry has come through previous shock events can help to assess how it is likely to fare in the face of future shocks.

As shown in Figure 1, in the past global air passenger traffic has always seemed to bounce back strongly from short-term upheavals.[1] Using a similar methodology as Njegovan (2006)[2] we have examined the statistical characteristics of global air passenger traffic since 1950 and find evidence that global air passenger traffic has indeed reverted to an underlying growth path over the long run (See Annex A.)

Part of the reason why global air traffic has proven so resilient relates to the large declines in the real cost of air travel seen over time. Between 1950 and 1970, the dawn of the jet age, global air passenger traffic increased by over 10% per year as rapid technological improvements brought down the cost of jet travel by an average of over 5% a year. There was a significant change in the trend growth rate of air travel in 1970, as indicated by our statistical analysis. Nonetheless, the real cost of air travel has still fallen by 1.7% per year on average since 1970 and the underlying rate of air traffic growth has averaged 4.4% per year.

The resilience of air travel also reflects increases in living standards and disposable incomes over time. All told, it has become increasingly affordable for more and more people to fly over time. With a projected 400 million people in emerging and developing countries joining the middle class in the coming five years, the long-term upward trend looks set to continue. In fact, global air passenger traffic is expected to more than double over the coming 20 years.[3]

THE 'PASSENGER GAP'

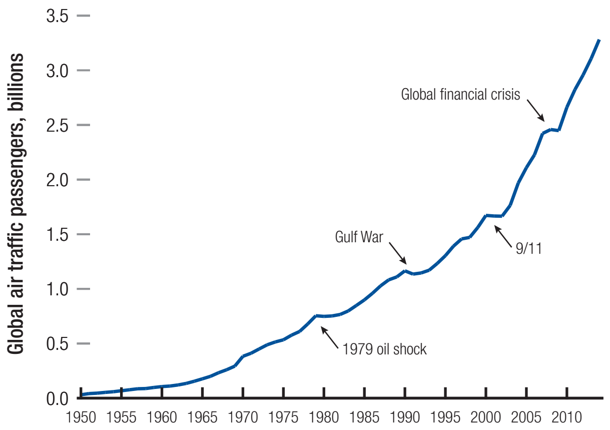
By comparing the level of global passenger traffic in each year with the long-term trend levels, the impact of shock events can be analyzed more closely. The blue bars in Figure 2 show the estimated 'passenger gap' from 1950 to 2014, with a positive figure indicating that passenger traffic is above its trend level (and vice versa). Figure 3 highlights the passenger gap in the years surrounding four notable shocks to global aviation.

Interestingly, in the year before each of the four shocks, global air traffic was well above the trend level, suggesting that the effects of each shock may be overstated—part of the decline could be accounted for by a cyclical reversion to the trend.

However, each shock is different.

Relative to the trend level, the 1979 oil shock saw the shallowest, but longest lasting, downturn, with the global recession of the early 1980s accounting for the persistence of a negative passenger gap until 1987.

Figure 1: Global air passenger traffic trend, 1950-2014
(IATA Forecast for 2014)



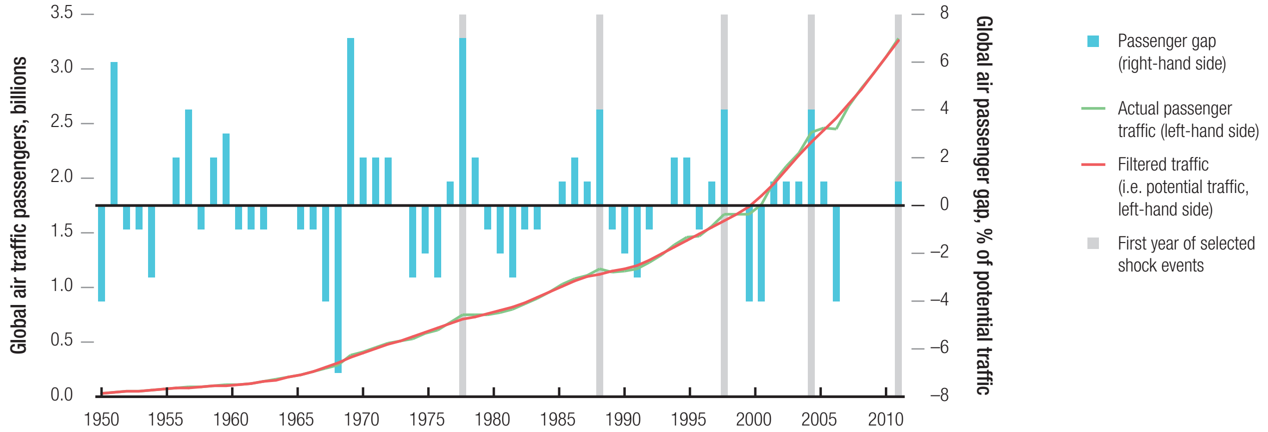
Source: IATA.

The relative drops in passenger traffic were deepest following the combined 2000–2001 shock of the dotcom bust and 9/11, and the 2008 shock of the global financial crisis—but in both cases, traffic had returned to its trend level within four years. Since recovery from the last shock, global air passenger traffic has been growing more or less in line with the long-term trend.

While the industry has historically been able to constantly adapt its operations and business models to new challenges and external shocks, it should not be taken for granted that resilience will be always automatic. The industry's ability to bounce back from future unanticipated shocks will be influenced by factors outside its control, most notably the regulatory environment.

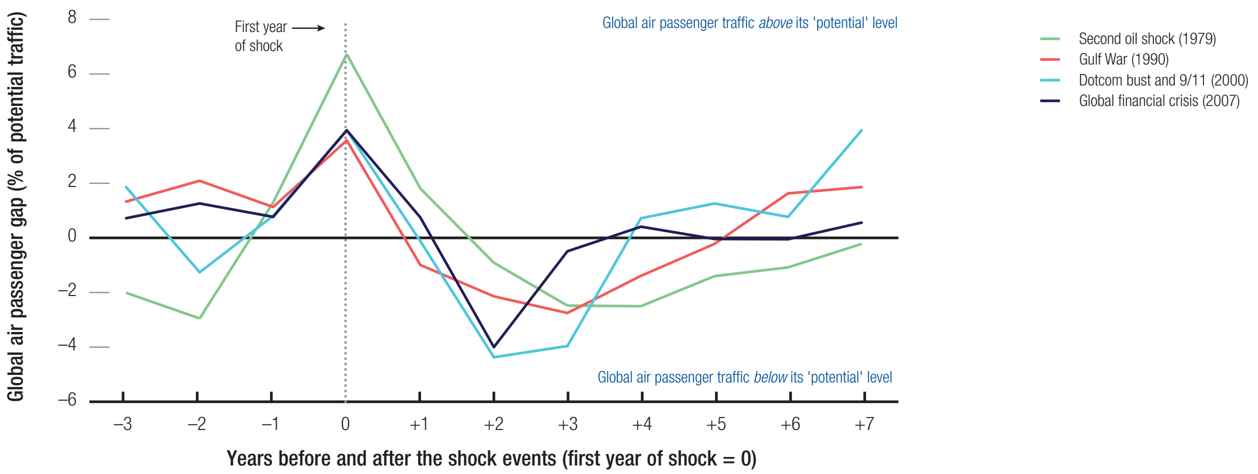
A patchwork approach, consisting of uncoordinated country or region-specific regulations, reduces the

Figure 2: Global air passenger traffic and the 'passenger gap', 1950–2014



Source: IATA.

Figure 3: Global air 'passenger gap' before and after selected shock events



Source: IATA.

industry's ability to respond to shocks. For example, varying slot allocation procedures and differing requirements on each end of a route can inhibit the ability of airlines to optimize their network and operate as many services as possible.

On the other hand, certain government policies can also help the industry, and by extension the economy, return to trend-reverting behavior or even improve the overall growth picture. For example, an opening of the intra-African aviation market by African states would stimulate travel and tourism and deliver a range of economic benefits.

A smarter regulatory approach is key to enabling the industry to get back on its feet as quickly as possible, and regulations should be frequently reviewed to check if they are meeting the stated objective. Policy design principles such as consistency with international conventions and proportionality would also facilitate a smarter regulation approach – and allow air passenger markets to better cope with turbulence.

REFERENCES

Njegovan, N, "Are Shocks to Air Passenger Traffic Permanent or Transitory? Implications for Long-Term Air Passenger Forecasts for the UK", *Journal of Transport Economics and Policy,* vol. 40, no. 2, May 2006, pp. 315-328.

NOTES

1 This fits in with the findings of previous research for the UK, German and Australian air passenger markets: Njegovan, N., "Are Shocks to Air Passenger Traffic Permanent or Transitory? Implications for Long-Term Air Passenger Forecasts for the UK", *Journal of Transport Economics and Policy,* vol. 40, no. 2, May 2006, pp. 315-328.

2 Njegovan analyzed the statistical properties of long-run air passenger traffic data for the UK and four other major developed air markets to find that the effects of shocks on air passenger traffic in the UK, Germany and Australia have been largely transitory in nature.

3 www.iata.org/pax-forecast.

Table 1: Unit-root test results

	Sample period	Year of break	Zivot-Andrews t-statistic	Significance level (%)	Pre-break growth (%)	Post-break growth (%)
Global air traffic	1950—2014	1970	—5.59	1%	10.7%	4.4%

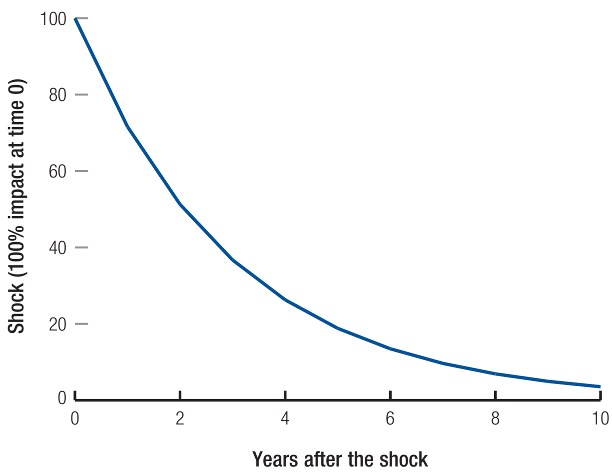
Source: IATA.

Table 2: Model parameter estimates

Parameter	Global Equation
α	3.085 (0.0010)
β	0.030 (0.0016)
θ	0.046 (0.2715)
ψ	–0.018 (0.0018)
δ_i	0.716 (0.0000)

Note: p-values in brackets
Source: IATA.

Figure 4: Impulse response function of global air passenger traffic to a shock (100%) in time 0



Source: IATA.

ANNEX A—STATISTICAL TESTING AND TREND MODEL SPECIFICATION

Following Njegovan (2006), we use the Zivot and Andrews sequential trend break model to investigate the statistical characteristics of the global passenger traffic series. This approach allows for a one-time change in the behavior of each of the series over time, which, in our case, is estimated to have taken place in 1970.

Having confirmed that global air passenger traffic has reverted to an underlying growth trend over time, we estimated the following global air passenger traffic model:

$$y_t = \alpha + \beta_t + \theta DU_t + \psi DT_t + \sum_{i=1}^{k} \delta_i y_{t-1} + \epsilon_t$$

where y_t is the logarithm of total global annual passenger numbers, t is the time trend and DU_t and DT_t are dummy variables that take the values:

$$DU_t = 1 \quad \text{if } t > T_{break}, \quad 0 \text{ otherwise}$$
$$DT_t = t - T_{break} \quad \text{if } t > T_{break}, \quad 0 \text{ otherwise}$$

The estimated parameters for the model for global air passenger traffic are shown in Table 2, while Figure 4 shows how a shock to global air passenger traffic in time 0 persists in the years following the event.

Approximately 72% of the impact of the initial shock persists one year after the event. Two years on, the effect of the shock on global air traffic is down to just over half of the initial effect, while after five years the effect is just under one-fifth of the initial impact.