31 January 2024

Mr David Barrett
Acting Assistant Director
Infrastructure & Transport – Access & Pricing Branch, Infrastructure Division

By email: David.Barrett@accc.gov.au

Dear Mr Barrett,

RE: Airservices Australia draft price notification 2024-2026

The Qantas Group (**Qantas**) operates regional, domestic and international passenger and freight services, employing over 27,000 people. Domestically, Qantas serves over 65 destinations and is Airservices Australia's (**Airservices**) largest and most diverse, customer.

The air traffic control services provided by Airservices are a fundamental enabler of all aviation activity within Australia. Over 66 million passenger movements are facilitated by Airservices each year and it manages 11 per cent of the world's airspace. The effective operation of Airservices is therefore essential for Australia's aviation sector, which has a substantial economic impact through its own activities and as an enabler of other industries. Given this, and noting Airservices' purpose is to provide safe, secure, efficient and environmentally responsible services, Qantas sees the following as key priorities for Airservices:

1. Ensuring return to a consistently delivered level of service standards that are tracked and reported on against clear performance targets, including through further investments in workforce where appropriate;
2. Accountability for delivering its sustainability target of a 10 per cent reduction in emissions per flight in Australian airspace by 2030; and
3. A reasonable price path for industry over an agreed term.

Further information on items 1 and 2 is as set out in **Attachment A** to this submission.

Airservices' charges represent Qantas' largest service provider expense behind the purchase of fuel. Fair and reasonable pricing is therefore of utmost importance to Qantas, and we welcome the opportunity to make a submission to the Australian Competition and Consumer Commission (the **Commission**) in respect of Airservices' draft pricing notification for the 2024 to 2026 period.

Qantas supports the use of a Building Block Model approach by Airservices as a tool to validate pricing. However, such a tool is only effective if it is supported by detailed information to validate inputs and sufficient time to engage in genuine consultation. In this review process, we have received only

limited information regarding important Building Block assumptions and have been afforded only limited time to review. This is partly as a result of material changes in the Airservices draft notification that was made on 27 September 2023.

Notwithstanding its use of a Building Block Model and noting the limitations referred to above, we note that that the 19 per cent[1] price increase sought by Airservices over 2.25 years is premised on a number of important assumptions, in particular, Airservices has:

- Set pricing for an unusually short pricing period of 2.25 years from April 2024 to June 2026;
- Included the 9 months from July 2023 to March 2024 within its building block calculations, despite that period being prior to the pricing period in review;
- Applied a demand forecast that appears to be out of date and conservative; and
- Applied a high WACC to calculate returns, primarily as a result of its economic expert incorrectly applying filters to determine an appropriate asset beta.

Qantas has undertaken our assessment on the basis that relevant building block inputs should be based on the period from April 2024 to June 2026 (rather than July 2023 to June 2026). We seek clarification on whether this approach is correct, and in particular whether:

- The 9 months from July 2023 to March 2024 should or should not be included within building block calculations for the purpose of pricing the period from April 2024 to June 2026; and
- The demand forecast should be updated to have regard to actual recent demand, or should be based on forecast information that was available at June 2023.

Pending confirmation on our questions above, it is possible that Airservices' revenue could exceed full cost recovery by $104 million PV. Under such a scenario, a price increase as low as 2.9 per cent over 4.25 years would be justified. We provide further detail on this in **Attachments B and C** of our submission.

Qantas would welcome the opportunity to discuss any aspect of our submission with the Commission.

Yours sincerely,

Matthew Hudson
Executive Manager, Commercial Airports, Fuel & Leasing

[1] Australian Competition & Consumer Commission, *Airservices Australia draft price notification 2024-2026*, November 2023, p.4, <https://www.accc.gov.au/system/files/ACCC%20issues%20paper%20%20Airservices%20Australia%20draft%20price%20notification%202024-2026_0.pdf>

Attachment A

1. Service Standards

Qantas is concerned about the proposed increase in fees in circumstances where Airservices has not delivered the OneSKY program, has not provided consistent services and was responsible for close to 20 per cent of delays at the country's four biggest airports in financial year 2023[2]. There should be a requirement for Airservices to track and report on performance against clear targets to ensure benefits are delivered for the increased cost.

The inconsistency of service is demonstrated by the sustained increase in Traffic Information Broadcast by Aircraft (**TIBA**) events. A TIBA event occurs when usual air traffic control services are unavailable, and pilots are responsible for self-separating their aircraft from other aircraft in airspace by broadcasting their whereabouts. In calendar year 2023, 247 TIBA events impacted a total of 1,599 Qantas flights.

For safety reasons, Qantas will only operate in TIBA airspace when there are no other options or with appropriate additional procedures to manage the operation. Accordingly, TIBA events significantly impact operations, causing delays, cancellations, re-routes and procedures by flight crew to manage the temporary outages. Further, where pilots are forced to fly around uncontrolled airspace, this significantly increases fuel burn and emissions. Qantas experienced more than 100 delays and 10 flight cancellations in one day in June 2023 after airspace near Brisbane was closed due to an insufficient number of controllers. This issue extends beyond Qantas to the broader industry. A survey of 5,500 members by the Australian Federation of Air Pilots found almost a third were experiencing delays several times a month because of airspace restrictions.[3]

In April 2023, Airservices introduced the Performance and Customer Experience (**PACE**) Program outlining the action plan to build resilience and resolve ongoing staffing issues. The PACE Program identified additional headcount is required in the majority of key locations and would be met by Q2 FY23/24 with TIBA/TRA to return to '0' at the same time. Following the introduction of PACE, service variations stabilised and there was a steady decline in TIBA events. However, since November 2023 this trend has reversed and TIBA events have almost doubled in comparison to the months prior, indicating the PACE program is not on track to deliver within the defined timelines.

A return to full air traffic services must remain the key priority for Airservices with the PACE Program focused on delivering:

- A return to full air traffic service levels with nil TIBA events;
- Air traffic control tower hours as outlined in ERSA (Enroute Supplement Australia); and
- Airport acceptance rates unencumbered by staffing constraints.

[2] Airservices Australia Australian Aviation Network Overview Financial Year 2023. Link here.

[3] Article: Flying blind: Pilots slam chronic shortage of air traffic controllers. By Robyn Ironside, The Australian, 14th July 2023.

2. Sustainability Targets

Airservices' Environmental Strategy is targeting a 10 per cent reduction in emissions per flight in Australian airspace by 2030.[4] Industry has limited visibility on how Airservices intends to deliver this target during a time when service variations are significantly contributing to increased fuel burn and emissions.

A modest reduction in flight times has, on a cumulative basis, a substantial impact on emission reduction to the extent that, if Qantas flights between Brisbane and Melbourne, and Brisbane and Sydney, were each reduced by one minute, this would reduce emissions by over 3 million kilograms each year.

Qantas strongly encourages Airservices to refocus its organisational effort on specific air traffic management initiatives that would deliver sustainability benefits, including:

- **TIBA Events** Addressing the continuous prevalence of TIBA events;
- **User Preferred Routes** Minimising the limitations and constraints enabling their use;
- **Noise Abatement** Balancing the assessments of noise abatement procedures against noise benefits, particularly where noise benefits are marginal. For example:
  - Requirements to use full runway length departures increase taxi times of aircraft for negligible noise benefit; and
  - Approach procedures in Brisbane Airport manoeuvring aircraft over water to minimise noise which Airservices estimates adds 37 nautical miles per flight creating an additional 700 kilograms of carbon emissions per flight[5];
- **Parallel Runway Monitoring (PRM)** (a method to observe aircraft on final approach that allows shorter spacing between aircraft and increased efficiency) at Sydney Kingsford Smith Airport would improve arrival rates in poor weather, reducing congestion and delays. This is presently not implemented due to shortages in staff and systems;
- **Required Navigation Performance – Authorisation Required (RNP-AR)** – increasing the availability of RNP-AR flight paths to equipped aircraft;
- **Continuous Descent Operations and Continuous Climb Operations** Expanding their use, which drives less thrust and less fuel;
- **Enhanced Holding Predictability** Introducing enhanced holding predictability to reduce holding times. For example, Long Range air traffic flow management (which manages the timing of a long-haul flight to its destination to enable sequencing on the runway without a holding pattern) is a viable option in the Australian airspace structure, particularly given Airservices is the sole provider of large tracts of enroute airspace; and
- **Sydney Basin Flight Paths** A comprehensive review of the Sydney Basin flight paths would deliver significant operational benefits, improve fuel efficiency, and reduce related emissions.

[4] Airservices Environmental Sustainability Strategy 2021-2016, pg. 4. Link here.

[5] Article: Brisbane flight path changes push more aircraft out to sea. By Robyn Ironside, The Australian, 17 October 2023.

Question 1 - The ACCC seeks stakeholder views on the appropriateness of Airservices' proposed price increases, including the timing and magnitude of each of the 4 price increases.

Qantas supports Airservices' use of a Building Block Model framework to support its pricing proposal. However, in our view proposed inputs into that model have led to prices that are greater than what could reasonably be applied. Further, Airservices' utilisation of a model that includes July 2023 to March 2024 appears to incorporate prior period losses.

The table below sets out key Building Block Model inputs used by both Airservices and Qantas. Positions taken by Airservices on key inputs (including on WACC, pricing period term and demand forecast) have resulted in a proposed weighted average price increase of 19 per cent[6]. An alternative set of input assumptions would instead have resulted in a weighted average price increase of 2.9 per cent.

Figure 1: Qantas' view of reasonable pricing, using revised BBM inputs and timing

		Adj. 1	*Adj. 2*	*Adj. 3**	
BBM Inputs	**Airservices (3Y)**	**Qantas (3Y)**	**Qantas (2.25Y pro-rata)**	**Qantas Reasonable (4.25Y pro-rata)**	***Reference***
Opex	$3,014m	$3,014m	$2,232m	$4,302m	*Question 8*
Capex	$445m	$445m	$333m	$2,115m	*Question 10*
WACC	8.93%	7.57%	7.57%	7.57%	*Question 13*
Pricing Term	3 years	3 years	2.25 years	4.25 years	*Question 2*
BBM Revenue Target	$3,524m	$3,492m	$2,594m	$5,260m	
Enroute *(SRT MTOWkm)*	433m	464m	362m	723m	*Question 6*
Terminal Nav. *(MTOW)*	177m	184m	143m	284m	*Question 6*
ARFF *(MTOW)*	176m	183m	142m	282m	*Question 6*
Apr-24 %	6.0%	3.5%	0.7%	1.2%	
Sep-24 %	5.3%	2.8%	-0.1%	0.5%	
Jul-25 %	3.4%	1.8%	0.0%	0.3%	
Jan-26 %	3.0%	1.6%	-0.1%	0.2%	
Jul-26 %	-	-	-	0.4%	
Jul-27 %	-	-	-	0.2%	
Price increase % total	17.8%	9.7%	0.4%	2.9%	
Average price inc. %	4.4%	2.4%	0.1%	0.5%	
Revenue outcome @ Qantas demand FCST	$3,681m	$3,492m	$2,594m	$5,260m	

* *BBM has been extended using FY27 numbers as provided in the draft pricing proposal. FY28 estimate is calculated using FY27's operating cost with a 2.5% increase, depreciation held the same as FY27 (reflecting uptick from OneSKY).*

Note: *Qantas assumed inflation factored into Airservices' BBM allowable revenue calculation, per industry common practice*

[6] Australian Competition & Consumer Commission, *Airservices Australia draft price notification 2024-2026*, November 2023, p.4, <https://www.accc.gov.au/system/files/ACCC%20issues%20paper%20%20Airservices%20Australia%20draft%20price%20notification%202024-2026_0.pdf>

The key adjustments made by Qantas in the table above are as set out below. We would welcome an opportunity to discuss the methodologies used with the Commission.

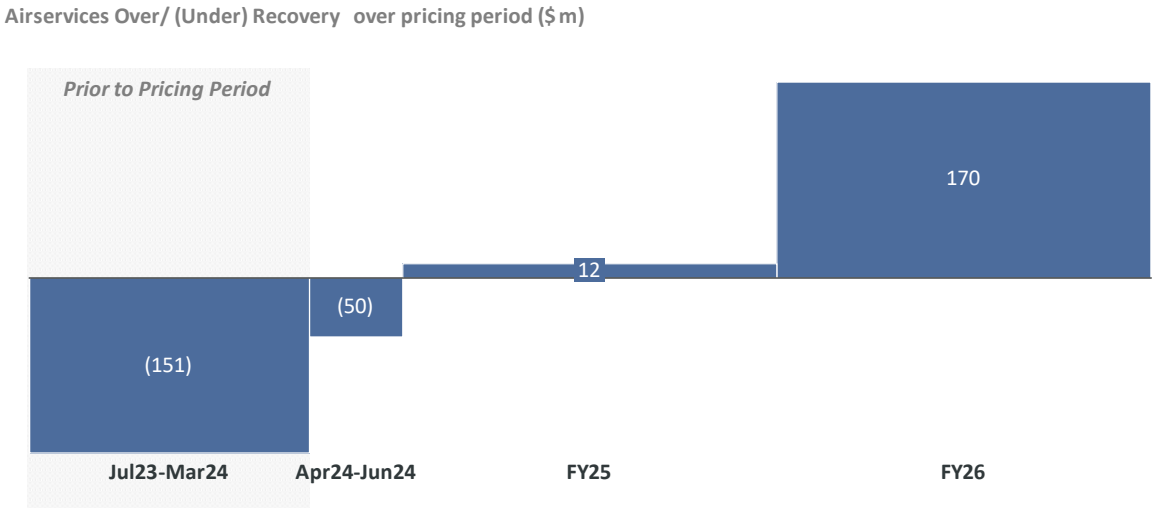
Adj1. Adjusted Airservices' submission to reflect reasonable WACC and demand forecast (Question 6, Question 13)

Adjusting WACC and demand forecasts results in an estimated over-recovery of $156m ($106m NPV) over the 3-year period (FY24-25) that Airservices has used to assess their proposed pricing period.

Adj2. Removed 1Q-3Q24 from over/ under-recovery BBM analysis (Question 3)

Airservices has included the three quarters of financial year 2024 prior to the commencement of their pricing period in their calculation of over/under recovery. This has resulted in an overstatement of the proposed price increase, by including a material under-recovery from the previous pricing period. This concept is demonstrated in Figure 2 below, whereby the largest portion of under-recovery ($151m) in the 3-year pricing period occurs in the period from July 2023 to March 2024, which is prior to the price increases being assessed (driven by flat prices and lower activity in that period).

Figure 2: Qantas' view of reasonable pricing, per revised BBM inputs and timing



Qantas Analysis

Adj3. Extended Airservices' pricing period to 4.25 years (expiring June 2028) (Question 2)

- As set out in our response to questions 2 and 3 below, a 2.25-year pricing period increases price volatility and provides no incentive for Airservices to improve operating efficiencies. A pricing period from 1 April 2024 to 30 June 2028 would be more appropriate.

Question 2 - The ACCC seeks stakeholder views on the appropriateness of the length of time (that is, April 2024 until June 2026) of Airservices' draft price notification. Specifically does the proposed shorter duration for the long-term pricing agreement:

- **Provide stakeholders with a sufficient level of pricing certainty;**
- **Provide an incentive for Airservices to improve efficiency; and**
- **Balance out uncertainties and less extensive consultation.**

Airservices has provided insufficient clarity on its reasons to shorten the proposed pricing period to 2.25 years. It is not clear to Qantas why the reasons for doing so as set out in Airservices submission:

- Uncertainty in the business environment; and
- Need to consult more extensively on long term pricing matters including OneSKY and Western Sydney Airport, as well as potential airfield expansions at Melbourne and Perth cannot be dealt with under a typical pricing term.

Although Airservices has not explained what "uncertainty in the business environment" means, we assume that this refers to potential uncertainty regarding demand projections. It is our view that demand levels have now sufficiently recovered to significantly reduce this risk for Airservices and others. According to the International Air Transport Association, air travel has now reached 99 per cent of 2019 levels and the gap is rapidly closing as people continue to travel despite economic headwinds[7]. Qantas has demonstrated confidence in its ability to invest, announcing multi-billion-dollar fleet renewal orders, including new Airbus A350s, Boeing 787s and Airbus A220/A320/ A321XLRs.

With regard to long term pricing matters, Qantas notes that OneSKY has been in development for many years. We acknowledge that potential airfield expansions at both Melbourne and Perth remain subject to consultation but note in any event that these will not be delivered for many years.

It is also not clear why a shorter pricing period would provide incentives for Airservices to improve efficiency. On the contrary, under a Building Block Model, efficiency incentives are typically likely to be greater under longer contract terms.

In any event, Airservices' priority over the immediate term should be on service effectiveness rather than service efficiency. This is critical for the industry, given that in financial year 2023 close to 20 per cent of delays in Australia's four biggest airports were caused by inconsistent delivery of service by Airservices[8].

Rather than deliver benefits for industry, the shorter pricing period risks uncertainty on prices in the longer term, and a potential larger increase in the next pricing period.

For these reasons, Qantas prefers a longer term pricing period and suggests a 4.25-year period expiring 30 June 2028.

[7] https://www.iata.org/en/pressroom/2024-releases/2024-01-10-01/

[8] Airservices Australia Australian Aviation Network Overview Financial Year 2023. Link here.

Question 3 - The ACCC seeks stakeholder views on the proposed price path, including the impacts on stakeholders of the over- and under- recovery of costs resulting from the proposed approach to reduce price volatility.

Qantas does not agree that Airservices has taken steps to reduce price volatility.

We acknowledge that Airservices has not sought to precisely match prices to building blocks in each year of the agreement and has instead compared a pre-determined series of price increases to an allowable revenue from the Building Block Model.

Rather, price volatility has potentially increased as a result of the proposal to shorten the price proposal to 2.25 years.

Qantas also notes that the proposed pricing period appears to be misaligned with the Building Block Model that Airservices has used to inform the pricing. The Building Block Model covers the period from 1 July 2023 to 30 June 2026, whereas the relevant pricing period is from 1 April 2024 to 30 June 2026, as outlined in Qantas' response to Question 1.

We seek clarification from the Commission whether the inclusion of the period from 1 July 2023 to 31 March 2024 is considered appropriate.

Question 4 - The ACCC seeks stakeholder views on the exclusion of the following investments in the current draft price notification:

a. **the vast majority of capital expenditure related to the OneSKY program;**
b. **new services at Western Sydney International Airport;**
c. **expanded services for new runways at Perth and Melbourne airports; and**
d. **services related to managing uncrewed aircraft in shared airspace.**

Qantas agrees with proposed approach of only charging customers for investments that have been completed and are ready for use. We would welcome confirmation by the Commission that this approach represents an appropriate application of Aeronautical Pricing Principles, noting that airports commonly seek to require airline customers to pre-fund airport investments prior to those investments being available for use.

We support the exclusion of investments relating to OneSKY and Western Sydney International Airport, noting that these programs will not be completed within the proposed pricing period. We also support the exclusion of potential future investments regarding potential new runways at Perth and Melbourne and note that in any event that those runway expansions remain subject to consultation.

Airservices should not require existing airlines to subsidise the services of uncrewed aircraft in shared airspace. Instead, Airservices should seek alternative funding models regarding commercial uncrewed operators, particularly as the market for commercial drone operations grows.

Question 5 - The ACCC seeks stakeholder views on whether there are any other investments or expenditure which have been excluded from this draft price notification, but which stakeholders believe should be included.

In November 2023, CASA issued a direction to establish controlled airspace around Ballina Airport from 2025. The Airservices proposal does not appear to include any detailed information regarding this investment.

Question 6 – The ACCC seeks stakeholder comments on the reasonableness of Airservices' aviation traffic forecasts, including:

a. the methodology used by TFI and the accuracy of its forecasts
b. how Airservices forecasts compare to other forecasts being used by the industry;
c. the degree of volatility expected in aviation traffic forecasts over the next 6-12 months; and the term of the draft price notification.

Qantas understands the approach used to determine Airservices' aviation traffic forecast is as follows:

- Airservices engaged TFI to produce a traffic forecast to support Building Block Model pricing;
- TFI produced a high and low traffic forecast, by applying a number of inputs into an unspecified model; and
- Airservices applied TFI's low traffic forecast for international and high traffic forecast for domestic, to determine its final pricing proposal.

There are a number of material problems with this approach, as summarised below:

1. The TFI forecast was completed using outdated information;
2. The methodology used by TFI to produce demand forecasts is not clear;
3. The TFI report appears to place disproportionate weight on downside risks to central forecasts; and
4. In any event, the approach taken by Airservices to apply the low forecast for international and high forecast for domestic appears to be arbitrary at best.

1. The TFI forecast was completed using outdated information.

The TFI forecast was produced in June 2023 and appears to be based on data from the first quarter of 2023. This data was prepared at least 12 months prior to the commencement of the pricing period. This is not consistent with best practice methodology, under which demand forecasts should reflect the best available data as at the beginning of the pricing period.

Given the level of uncertainty in the first half of 2023, a forecast based on data up to 12 months old is unlikely to reflect the most current aviation outlook. For example, at the beginning of 2023, China still had travel restrictions in place and there was uncertainty on when Chinese carriers would return to Australia. However, with the easing of restrictions over 2023, by October the number of return services from China to Sydney had increased from 4 to 85 per week.

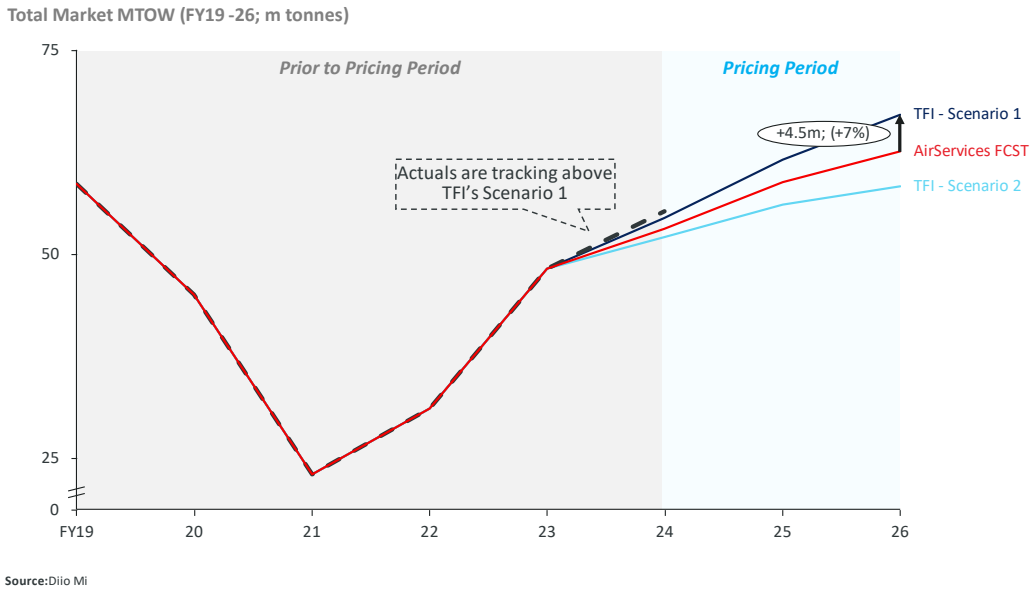
As set out in Figures 3 and 4 below, demand has continued to grow throughout 2023 and 2024 at a rate above TFI's "optimistic" Scenario 1.

Qantas considers that if the TFI forecast had correctly been undertaken using most recent available data, it is likely that a demand forecast at, or above Scenario 1 would have been considered as the central forecast scenario. Updating the forecast update to reflect most recent available data would not have been onerous for either TFI or Airservices. We note that TFI appeared to anticipate that this would be required in the following comment in section 1.1 of their report:

> *"TFI prepared the forecasts contained in this Report over April and May 2023 based on data from earlier in the year. TFI intends to include the actual outcome for FY23 and review further the market response to interest rate rises before finalising this review"*[9].

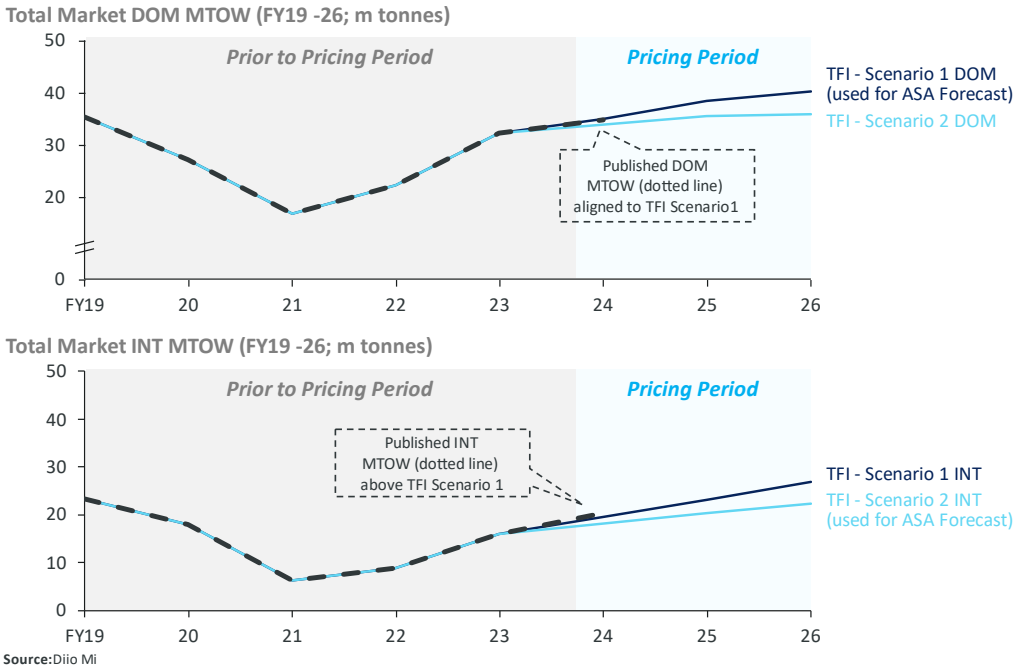
Failure to undertake this update appears to represent a flaw in the methodology applied to set demand forecasts. Notwithstanding this, we seek clarification from the Commission on whether it considers this approach to be appropriate – noting also that Airservices has undertaken its broader review using a Building Block model commencing 1 July 2023.

Figure 3: Total Market MTOW (FY19-26; m tonnes)



9 https://www.accc.gov.au/system/files/Drafting%202024%20LTPA%20Draft%20Notification%20%28Nov%20Update%20-%2016-11-23%29.pdf TFI report, section 1

Figure 4: Total Market MTOW (FY19-26; m tonnes)



Source: Diio Mi

2. The methodology used by TFI to produce demand forecasts is not clear.

While Qantas notes that TFI's report includes extensive commentary, it is not clear how the information presented in that report has been used to drive data-driven forecast scenarios.

The key statements made by TFI regarding forecast methodology, as set out in section 1.3 of their report include:[10]

- "Models were estimated to explain changes in passenger demand over time…;
- A number of economic drivers were tested for the models…;
- The models are structured in the log-linear form so that the estimated coefficients also represent the estimated demand elasticities…; and
- A review of current literature and market assessments was undertaken…"

Without access to those models, it is not possible to comment on the appropriateness of the methodology undertaken. For instance, it is not clear what assumptions TFI has made with regard to demand elasticities and therefore whether TFI has assumed that Airservices' proposed price increases will result in dampened forecast activity.

[10] https://www.accc.gov.au/system/files/Drafting%202024%20LTPA%20Draft%20Notification%20%28Nov%20Update%20-%2016-11-23%29.pdf

3. The TFI report appears to place disproportionate weight on downside risks to central forecasts.

Qantas notes that in section 1.2 of its report, TFI has regard to International Monetary Fund and Reserve Bank of Australia GDP forecasts. TFI then adjusts those forecasts in Scenarios 1 and 2 – with those adjustments weighted to downside risks (for example: "*For GDP Australia TFI adds 0.5pp per year for Scenario 1 and subtracts 1pp per year for Scenario 2"*).

TFI provides no justification for this approach, apart from to include a series of anecdotes inferring downside risk to those GDP forecasts.

4. In any event, the approach taken by Airservices to apply the low forecast for international and high forecast for domestic appears to be arbitrary at best.

Airservices has taken a blend of TFI's scenarios for their forecast, using Scenario 1 for domestic activity and Scenario 2 for international. Airservices does not explain its reasons for taking this arbitrary approach. The effective outcome is a near midpoint outcome between the two TFI forecasts, whereby traffic returned to pre-COVID volumes by financial year 2024 for domestic and financial year 2026 for international (as shown in Figure 3). This appears inconsistent with the recovery trend as evidenced by actual activity throughout 2023 and the third party benchmarks set out in section 6 of the TFI report.

It appears that Airservices has applied a conservative demand forecast to protect the organisation against downside risk. This is borne out by the statement in Appendix 1.4 of their submission:

> *"With Airservices not proposing any risk sharing, given the importance of providing industry with price certainty through its ongoing recovery, Airservices believes its application of the proposed traffic forecast, with potential impact of volume variations, is appropriate."*

Qantas is concerned by this approach, which in effect transfers downside demand risk to its customer airlines.

Reasonable volume forecast

For the reasons set out above, the demand forecast applied by Airservices appears to be flawed. The forecast range has been set using an unspecified methodology and with outdated information. In any event, parts of that forecast range have been arbitrarily selected to produce a conservative demand forecast in order to protect Airservices against downside risk.

Qantas estimated financial year 2024 market MTOW by analysing published capacity (Diio Mi). This is a standard approach used by industry for market capacity/MTOW forecasts. The analysis demonstrated that Airservices' forecast appears to be low, particularly for International, resulting in a conservative market forecast in the order of 7 per cent lower than Qantas estimates.

As illustrated in Figures 3 and 4, published MTOW is tracking above TFI's Scenario 1. In these circumstances, Qantas believes that it would be more appropriate to use the higher demand forecast for the calculation of over/under recovery and pricing. Qantas' proposed forecast is aligned to the trends observed from recent schedule data for financial year 2024, as set out in Figure 5.

Figure 5: Reasonable Demand Forecast – Qantas Estimate[11]

Qantas' Reasonable Volume Forecast						
Service	**Basis**	**4Q24**	**FY25**	**FY26**	**FY27**	**FY28**
Enroute	SQRT MTOWkm *(m)*	136	156	173	178	183
Terminal Nav	MTOW *(m)*	55	62	68	70	72
ARFF	MTOW *(m)*	54	62	67	69	71

Question 7 – The ACCC seeks stakeholder comments on whether Airservices' estimates of the likely impact of the price changes on airline fees and passenger ticket prices appear accurate.

[c-i-c]

Question 8 - The ACCC seeks stakeholder comments on Airservices' operating costs in the draft price notification, including:
a. The appropriateness of estimated operating costs, and
b. Airservices' incentives for, and effectiveness in, containing and reducing its operating costs.

The Airservices submission provides limited information regarding operating costs and Qantas is unable to comment on the appropriateness of the estimates provided.

Qantas remains aligned with programs undertaken by Airservices to drive efficiency improvements, where those programs do not impact the organisation's ability to maintain reasonable service levels. Given recent operational performance has remained well below historical on-time performance averages[12], we are strongly supportive of additional labour investment where appropriate to maintain and improve those service levels.

A 2.25-year pricing period provides almost no incentive for Airservices to contain and reduce its operating costs, as the cost of delivering cost reduction programs is unlikely to be recovered within the pricing period. Notwithstanding this, it is Qantas' view that Airservices primary focus within this period should be on stabilising operations and improving service levels.

Question 9 – The ACCC seeks stakeholder comments on:
a. the appropriateness of capital investments driving the change in asset values between the previous (2011) pricing agreement and the present opening value
b. the adequacy of Airservices' capital expenditure to date in meeting the needs of users, and
c. the efficacy of Airservices' capital expenditure as demonstrated by an increase in capacity, reliability, safety, and quality of services.

Noting that OneSKY, Western Sydney International Airport, new runways and uncrewed services have been excluded from the asset base, the movement appears appropriate. Please refer to Qantas' response to Question 10 in relation to part b and c of this question.

[11] Growth rates sourced from analysis of Diio Mi schedule data and comparison to TFI report.
[12] Airservices Australia, *Australian Aviation Network Overview*, December 2023, p.2. Link here.

Question 10 – The ACCC seeks stakeholder comments on Airservices' proposed capital expenditure projects included in the draft notification, including the:

a. **appropriateness of the capital projects included;**
b. **prudency of estimated capital costs for the capital projects;**
c. **appropriateness and effectiveness of the decision-making process undertaken by Airservices in determining the capital projects to be undertaken; and**
d. **extent to which Airservices' capital expenditure is driven by regulatory requirements, such as requirements by the Civil Aviation Safety Authority or international policies.**

Qantas recognises the importance of investment in programs that improve efficiency for industry and cope with increasing demand. Qantas supports the capital expenditure projects included in the draft pricing notification in principle, however it remains difficult to assess their adequacy and effectiveness in the absence of the corresponding business cases outlining costs, benefits, and delivery timelines.

The OneSKY program has been running for almost a decade with multiple delays to its delivery schedule. The program would benefit from additional oversight to monitor the OneSKY delivery schedule and ensure its benefits are delivered at the earliest opportunity. Qantas welcomes the Remediation Plan noted on page 71 of the Draft Notification but seeks independent oversight of this plan to ensure timely delivery.

Qantas is generally supportive of the decision-making process undertaken by Airservices in determining capital projects. Airservices typically consults well on proposals and is receptive of feedback and prioritisation requests, however a lack of detailed data from Airservices' on program costings, benefits realisation and implementation timeframes makes it difficult for industry to make informed decisions.

Qantas largely accepts that CASA is a key driver of Airservices' capital expenditure. However, as we have outlined in other submissions, regulatory requirements and the capital expenditure that follows should transition from a prescriptive approach towards risk-based and outcome-focused regulation, more closely aligned with international standards.

Question 11 - The ACCC seeks stakeholder comments of Airservices' OneSKY capital expenditure program, including the appropriateness of:

a. **accounting for the vast majority of the program in a future price notification, by using an 'as commissioned' approach to recognising the cost of this capital, as opposed to an 'as incurred' basis; and**
b. **capital expenditure included in the regulatory asset base in this draft price notification on an 'as incurred' basis (the Early Voice Communications System, Operational Equipment Rooms, and Facilities refurbishment work).**

As set out in our response to Question 4, Qantas agrees with the proposed approach of accounting for capital investments on an 'as commissioned approach' as opposed to an 'as incurred' basis.

Qantas does not support accounting for capital expenditure on an 'as incurred' basis, as that approach is comparable to charging customers for services that they have not received. Qantas notes the investments in question in this instance appear to already have been commissioned and in use.

Question 12 – The ACCC seeks stakeholder comments on Airservices depreciation forecasts.

Airservices' depreciation forecast appears reasonable on the basis it uses existing asset cost and existing asset useful life and depreciates these assets on straight line basis across their respective useful life. New assets are added in accordance with its forward plan, and depreciation begins at its projected date of commission which we consider appropriate. Qantas note capex additions, and the associated depreciation, has been relatively consistent year-on-year to financial year 2027 which aligns to the methodology as outlined by Airservices.[13] Without further information on OneSKY's projected useful life, it is difficult to comment on the appropriateness of their depreciation forecast in financial year 2027, however the increase in depreciation from financial year 2026 to financial year 2027 does not appear materially inconsistent with their stated methodology.

Question 13 - The ACCC seeks stakeholder comments on the reasonableness of: Airservices Australia draft price notification 2024-2026

a. Airservices' proposed rate of return on capital, as well as each of the individual parameters, and

b. the methodology Airservices uses to estimate the WACC parameters.

Qantas has engaged Cambridge Economic Policy Associates (**CEPA**) to undertake a detailed review of the WACC proposed by Incenta on behalf of Airservices. The CEPA report is attached to our submission.

CEPA has estimated a nominal vanilla WACC of 7.57 per cent, compared to the Incenta submission of 8.93 per cent. The primary difference between the submissions relates to asset and equity betas.

Qantas considers that the filtering approach undertaken by CEPA to determine beta is consistent with Australian and international regulatory precedent, including the New Zealand Commerce Commission in their recent findings on Airport Input Methodologies.[14]

In contrast, the approach undertaken by Incenta generates an outlier outcome. Qantas notes that Incenta acted on behalf of Christchurch Airport as part of the review.

Qantas therefore disagrees with the methodology used by Airservices to determine some WACC parameters as well as the proposed rate of return on capital of 8.93 per cent. Qantas instead agrees with the return proposed by CEPA of 7.57 per cent. Details of this, including the individual parameters, are set out in the attached CEPA report.

The combined impact of this is 135bps, which equates to a $32m allowable revenue difference over the two years. Qantas believes this is significant and requires amendment.

[13] Airservices Australia Draft Price Notification 2024-2026, 13 November 2023, p. 55.

[14] https://comcom.govt.nz/regulated-industries/input-methodologies/input-methodologies-for-electricity-gas-and-airports/airports-ims

Further, Incenta has departed from Airservices' own AAA credit rating, adopting a BBB+ rating based on other Australian regulatory decisions for infrastructure. We consider that a rating of BBB+ is not aligned with the sample of comparators identified by CEPA or with the Commission's past decisions.

Question 14 - The ACCC seeks comments on the appropriateness of:
a. the selected domestic and international comparators to develop estimates of the parameters, and
b. the chosen sample periods, and particularly, the exclusion of the Covid-19 pandemic period from estimating the asset beta and gearing level.

The attached CEPA report provides a detailed response on appropriate comparator sets to develop estimates of WACC parameters.

Qantas agrees a 5-year sample period is reasonable and consistent with regulators globally. We also agree that the volatility caused by the COVID period is an aberration to long term asset beta estimates and its exclusion is sensible.

Question 15 - The ACCC seeks stakeholder comments on the appropriateness of Airservices adopting the same cost allocation methodology in the development of this draft price notification as it applied in previous price notifications. This includes the appropriateness of:
a. a 'standard costing' approach to standardising cost inputs across location and time;
b. an activity-based approach in determining the cost of each service at each location;
c. the cost allocators used to attribute costs to each service location; and
d. a 'dual till' approach to segregate costs of notified services from non-notified services.

Qantas supports Airservices' 'standard costing' approach using activity-based model for assessing costs at each location. This represents a standard costing approach is appropriate for a business like Airservices that is predominantly labour driven. Activity based models generally provide an opportunity to assess how high and low maturity drivers have changed over a time, and we note this has not been disclosed in detail in Airservices' draft price notification. While Qantas generally supports Airservices' cost allocation methodology, we note that the ability to benchmark cost drivers from year to year, or against industry comparators, is limited.

Qantas notes the adoption of a dual-till approach by Airservices. A dual till pricing approach can be problematic in the context of airport authorities, where passengers provided by airlines under one till deliver high margin revenue to airports under a second till. We note that activities covered by the second till for Airservices appear to be generally clearly separable from aviation services provided to airlines, and on this basis support a dual-till approach for Airservices. We are unable to comment on the reasonableness of cost allocations between tills without further information on how costs are specifically allocated to the non-notified services.

Question 16 - The ACCC seeks stakeholder views on the appropriateness of capital city basin pricing approach adopted for terminal navigation charges.

Qantas supports economically efficient pricing enabling the cost of services to be recovered while minimising undesirable distortion in the market. The complexity and challenges of this approach are well understood, and any model needs to reflect the challenges associated with the delivery of essential services to the regional and remote communities while maximising all aspects of the national

interest. Managing the cost of providing services to the aviation industry should reflect an integrated approach to all aspects of the service model and not solely focus on cost recovery on a geographical basis.

Question 17 - The ACCC seeks stakeholder views on the pricing structures across enroute navigation, terminal navigation, and ARFF services.

Qantas supports the pricing structures across enroute navigation, terminal navigation, and ARFF services. Qantas understands the need to recover terminal navigation and ARFF costs on a network basis and supports this approach.

Question 18 - The ACCC seeks stakeholder views on:

a. Airservices' proposal not to change the structure of its prices for the current draft price notification;

b. the appropriateness of weight-based pricing mechanisms for terminal navigation, enroute navigation, and ARFF services, including whether the charges promote efficient use of the services; and

c. the appropriateness of the charging basis for:

i. enroute navigation services

ii terminal navigation services

iii. ARFF services, and the interim prices for ARFF service upgrades, and

iv. general aviation, and other.

Qantas supports the current methodology for pricing and encourages increased focus on productivity, sustainability, and efficiency without compromising safety. Qantas acknowledges Airservices' willingness to work with industry and supports the further evolution of this into agreed performance metrics.

Qantas considers the current weight-based pricing methodology for the above charges to be largely balanced and equitable. We note the move from MTOW as outlined by individual airlines to a deemed MTOW was appropriate in the prior pricing arrangement, however further consideration of simplifying the charging arrangement is warranted.

Qantas supports the pricing structures across enroute navigation, terminal navigation and ARFF services. Qantas understands the need to recover terminal navigation and ARFF costs on a network basis and supports this approach.

Question 19 - The ACCC is interested in stakeholder views regarding the appropriateness and effectiveness of Airservices' performance measurement and monitoring system, including:

a. the performance outcomes, indicators, baselines, and targets

b. reporting of progress towards delivery of performance outcomes, and

c. mechanisms to ensure progress against its performance metrics.

Qantas notes the service performance commitment provided by Airservices in section 7 of the draft price notification. While Qantas appreciates the opportunities to engage on these matters through existing Governance models, the targets and criteria listed in Table 18 (page 34) are not sufficient to drive meaningful change or improved efficiencies. The performance targets also don't outline the root

cause analysis that has been undertaken to understand what is preventing Airservices' ability to deliver the targets today.

Qantas encourages Airservices to undertake further consultation on the performance metrics with industry to:

- Outline the root cause analysis undertaken to detail the current limitations preventing Airservices from delivering full air traffic service levels and airport acceptance rates unencumbered by staffing constraints;
- Develop appropriate solutions and programs of work to address the limitations and constraints;
- Develop appropriate stretch targets within agreed timeframes to deliver meaningful change; and
- Outline the reporting mechanisms that Airservices will use to track and monitor targets.

As Airservices notes in the Draft Pricing Notification[15], 'levels of reliability have not been consistently delivered to the desired service standard'. Airservices is clearly having ongoing challenges delivering fundamental components of air traffic services. Qantas has experienced a significant number of TIBA or similar service variations events occurring in Australian airspace. Most recently:

- In December 2023, 47 Service Variations impacted a total of 185 Qantas flights;
- On New Years Eve, the East Group (the entire eastern border of Australian controlled airspace) had two outages that impacted 16 Qantas flights; and
- On 13 January, an outage in the Byron area impacted 48 Qantas flights resulting in 6,352 passengers being impacted.

As set out above, Airservices has a set number of targets within the PACE Program. These need to be prioritised and addressed to ensure a return to full air traffic services remains the key priority for Airservices. These targets should be incorporated within the key performance indicators outlined in Section 7, Table 18 of the Draft Price Notification.

Further consultation with industry on the methodology used to set the targets and the programs underpinning them would be welcomed. This consultation should also outline the mechanisms to ensure progress against performance metrics (i.e., monthly reporting) together with the programs of work or other activities that will enable Airservices to reach the targets. This will ensure the performance targets are accepted by industry and that appropriate governance models are used to track and monitor anticipated outcomes and benefits within the agreed timelines.

[15] Page 34 of the Airservices Australia Draft Pricing Notification.

Question 20 - The ACCC seeks stakeholder comments on the appropriateness and adequacy of Airservices' internal drivers of efficiency, including:
a. budget processes to drive cost savings
b. formal decision-making processes to drive productivity
c. a robust performance management system
d. efficiency benchmarking and targets
e. reporting requirements to its shareholder, and
f. consultation with stakeholders.

Over the last twelve months, Airservices has engaged industry in transparent and open conversations on operational matters. This has allowed Airservices to:

- Understand the challenges facing industry;
- Develop more robust reporting frameworks; and
- Introduce an enhanced Governance Framework.

Airservices has developed several internal engagement mechanisms, programs such as PACE and, an extensive number of capital programs remain underway, with additional programs due to commence shortly.

The adequate delivery of air traffic services is the core business of Airservices and while continued strategic developments remain important, Qantas strongly encourages Airservices to ensure their key priority remains a return to full air traffic services and that they are resourced appropriately to do so.

To enable this, Airservices would benefit from:

- Further consultation with industry on Performance Targets for air traffic services and the supporting Performance Management System to enable delivery within agreed timeframes;
- Continued focus on prioritisation of both operational and strategic projects to ensure that a return to full air traffic services remains the key priority for Airservices; and
- Development of appropriate efficiency benchmarking targets for all capital programs to ensure that Airservices Sustainability Targets remain on track and programs of work are delivered within agreed timeframes and budget.

Airservices continues to develop opportunities for modernisation and operational efficiencies. However, several recent examples have identified that these service improvements have not been supported by the required change management frameworks to establish, develop, and implement or performance management systems to track and monitor post implementation.

In Section 4.3 Service Improvements and Expansions (Page 65), Airservices outlines several service improvements 2017-2023. The below examples present an opportunity for further review to ensure that business cases outlining cost and staffing to support their establishment are in place:

- Airservices consolidated the Cairns Terminal Control Units into major air traffic control Centres 'reducing infrastructure footprint and producing greater operational and staff efficiency' (Page 65). However, in financial year 2023, Cairns, Rockhampton and Mackay experienced ~150 TIBA events where, a typical overnight TIBA event at Cairns will disrupt two

international Jetstar services arriving from Japan creating delays and misconnections for approximately 600 passengers.

- Airservices Surveillance Flight Information Services was established at Ballina but has been unavailable 44 times since June 2023.

Question 21 - The ACCC is interested in stakeholder views on Airservices' ability to balance service capacity, reliability, safety, and quality, with driving business efficiency.

Refer to Qantas' response to Question 20.

To balance service capacity, reliability, safety, and quality while driving business efficiency Airservices must ensure their business is appropriately resourced to deliver adequate and reliable air traffic services.

Question 22 - The ACCC is interested in stakeholder views regarding the international benchmarking information provided by Airservices, including:

a. the appropriateness of the comparison Air Navigation Service Providers (appendix 8.1)
b. the appropriateness of the comparison pricing metrics, and
c. conclusions drawn from the international comparisons.

Qantas fails to see the relevance of the benchmarking data provided by Airservices as it does not appear to be normalised for varied for service offerings, post-COVID recovery and business structures. The benchmarking also fails to benchmark the costs of services against the efficiency and level of service provided.

Question 23 - The ACCC seeks comments on the effectiveness of Airservices' consultation processes in the development of its draft price notification. In particular, the extent to which Airservices has:

a. **provided industry with sufficient information and opportunity to give feedback on the proposal during its consultation process, and**
b. **made appropriate revisions to the draft price notification in response to stakeholder feedback.**

Qantas values stakeholder engagement and the ability to provide feedback. However, we do not consider sufficient detail has been provided as part of that process to be able to properly understand Airservices' pricing proposal – including with regard to demand forecasts, opex forecasts, capex program costings and benefits realisations. Qantas also notes that the draft pricing which was used for consultation was not the same as the draft pricing that was submitted to the Commission.

Question 24 - The ACCC seeks stakeholder views on Airservices' future engagement models, including:

a. the extent to which Airservices has engaged with its customers on these models
b. what model should be implemented, and
c. the extent to which the model(s) would allow stakeholders to consider whether capital expenditure is undertaken prudently and efficiently.

As set out above, Qantas values stakeholder engagement but notes that future engagement would benefit from detailed data sharing upfront. Any changes to future models would benefit from early communication and detailed data sharing to ensure industry can appropriately assess.

Question 25 - The ACCC seeks stakeholder views on the lack of arrangements for Airservices to share downside risk or excess recoveries with its customers.

The pricing proposal presented by Airservices has already transferred downside demand risk to airline customers.

Under a Building Block framework, unit pricing is determined by dividing an "allowable" revenue target by a demand forecast. A lower demand forecast therefore results in a higher unit price.

As set out in our response to Question 6, Airservices has applied a conservative demand forecast in its pricing proposal. This has resulted in a higher unit price. As stated in Appendix 1.4 of their submission (and set out again below), Airservices appears to have done so to capture upside demand benefits and to protect itself against downside demand risk.

> *"With Airservices not proposing any risk sharing, given the importance of providing industry with price certainty through its ongoing recovery, Airservices believes its application of the proposed traffic forecast, with potential impact of volume variations, is appropriate."*

Qantas seeks a balanced risk framework within this pricing period. We believe the simplest way to achieve this in the timeframe available would be the application of a reasonable demand forecast to set unit pricing.

Attachment C: CEPA Report attached.

Airservices Australia: asset beta, gearing and credit rating

Qantas

31 January 2024

FINAL REPORT

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EXECUTIVE SUMMARY

CEPA has been engaged by Qantas to provide advice on the asset beta, gearing and credit rating that should be applied to estimate the weighted average cost of capital (WACC) for Airservices Australia (Airservices). The WACC will be used to set charges for declared services from April 2024, for a period of two years.

Our report responds to the asset beta, gearing and credit rating (and by extension cost of debt) assumptions proposed for Airservices by Incenta.

Asset beta

In the Capital Asset Pricing Model (CAPM), the asset beta term is intended to cover systematic risk; that is, risk that investors cannot mitigate through diversifying into a broader portfolio of companies. Data from equity markets is often used to estimate historic asset betas, to inform judgements on the forward-looking value. It is common to estimate asset betas with reference to a local stock market index where the company is listed, as a proxy for a diversified portfolio.

When a regulated entity such as Airservices is not listed, an estimate of their asset beta must rely on data from listed companies which may be considered comparators; that is, companies considered by investors to be investment substitutes and have similar systematic risk. By similar systematic risk, we mean that the relationship between the comparator's future value and the chosen stock market index is similar to what we would expect for Airservices and its associated index.

We have considered a range of potential comparators operating in the aviation sector, including listed airports and ENAV, the provider of en route and navigation services in Italy. We find that there are no listed comparators that closely correspond to Airservices' characteristics across all dimensions. Therefore, there is judgement involved in deciding which of the available – imperfect – comparators can most usefully inform an assessment of Airservices' beta. In exercising our judgement, we have removed comparators where:

- it is reasonable to expect that the empirical asset betas for comparator firms are unreliable – for example, poor quality stock market data; and
- we are confident that they differ from Airservices in a way that could materially affect their asset beta and we can apply the filter in a consistent way to all potential comparators.

In relation to the first principle, we, like Incenta, consider it is reasonable to exclude comparators whose shares do not trade liquidly. However, we apply a less restrictive bid-ask spread threshold of 1%, rather than 0.5% adopted by Incenta.

In relation to the second principle, we have reached different conclusions to Incenta. In particular:

- Incenta believe that it is not appropriate to apply a country filter based on equity index provider classifications. We consider that it is reasonable to remove comparators located in emerging markets from the comparator sample. This reflects our assessment of evidence suggesting that these comparators face materially different demand characteristics to Airservices (Box E1).
- Incenta believe that ENAV should be excluded from the comparator sample, because its risk sharing arrangements reduce its systematic risk exposure relative to Airservices. We consider it is appropriate to retain ENAV within the sample. Airservices has put risk-sharing arrangements in place in the past and its current pricing proposal only exposes it to demand fluctuations over a 2-year period (approximately). The airport comparators include firms with no risk-sharing, or for whom the risk-sharing arrangements are opaque. In this context, excluding ENAV is selective – particularly considering its similarity to Airservices on other dimensions, such as the nature of the services it provides and the basis of pricing for these services.

Box E1 - Beta comparators and demand characteristics

As beta is related to changes in value, the nature of long-term growth expectations is a relevant factor for determining appropriate comparators. In the context of air travel, demand is composed of residents of the country in question ('local demand') and international passengers ('international demand'). We expect local demand to be more sensitive to fluctuations in the local economy than international demand. Accordingly, the relative importance of local and international demand to future value is relevant to beta.

We can make two observations on factors that impact demand characteristics and growth options for airports, that vary across countries:

- Firstly, there is evidence that income elasticity of demand varies with levels of economic development, and that demand may be more sensitive to changes in income at lower income levels.
- Secondly, there is evidence that growth in local passenger volumes is a more important contributor to the future value of aeronautical service providers located in emerging markets, compared to those in developed markets.

This suggests a possible hypothesis: All else equal, comparators located in emerging economies where there is (i) relatively higher income elasticity of demand and (ii) scope for material growth in passenger demand from residents of that country can be expected to face materially different systematic demand risk to airports located in developed markets. Accordingly, we think it is reasonable to remove comparators that appear to be at a different stage of development with respect to demand for air travel, compared to Airservices. To implement this proposal, we have considered three indicators that relate to the nature of local demand for air travel: trips per capita; growth in trips per capita; and GDP per capita.

On this basis, we have identified a comparator sample of 11 firms, comprising 10 airports and ENAV. When weighting all beta estimation periods and frequencies equally, the 25th and 75th percentile results for this sample provide a range of 0.34 to 0.62, around a mean of 0.47 and median of 0.41.

We consider that an asset beta of 0.5 is reasonable for Airservices. This compares to a value of 0.7 proposed by Incenta. Our recommendation reflects:

- The comparator sample evidence, across both listed airports and ENAV. Indeed, ENAV – arguably the closest listed comparator to Airservices – has a materially lower estimated beta (0.32 across weekly and monthly estimates). While we do not advocate for placing excessive weight on a single comparator, the ENAV estimate provides comfort that 0.5 is a reasonable assumption for Airservices even when ample allowance is made for differences in risk-sharing arrangements.
- An asset beta of 0.5 is broadly consistent with the ACCC's past decisions for Airservices (0.55), noting that Airservices has not provided evidence of a material change in risk since the ACCC's most recent decision.
- It is in line with the lower bound of the Civil Aviation Authority's (CAA) most recent assessment of the pre-pandemic asset beta for NERL (0.5-0.6), Airservices' counterpart in the UK.

Gearing

Consistent with Incenta's approach, we consider it is reasonable to adopt the average gearing of the comparator sample. Based on the comparator sample, we propose a gearing assumption of 22%. This is similar to the 21% assumption proposed by Incenta, although derived from a different comparator sample.

Credit rating

In relation to the credit rating, we observe that:

- Of the comparators that are rated, the ratings fall in a range of A- to A+.[1]
- The CAA used an A rating to determine the cost of embedded and new debt for NERL in its most recent price control.
- The ACCC's past decisions for Airservices have accepted a rating assumption of AAA, rejecting past proposals to reduce the rating to AA (Airservices' standalone credit rating at the time).[2]
- Airservices' own S&P credit rating is currently AAA inclusive of Government ownership, or BBB- on a standalone basis.[3]

These factors suggest Incenta's proposed BBB+ rating may be too weak. The basis for their proposal is Australian infrastructure regulatory decisions, including for energy, broadband and water networks. However, the evidence from the listed comparator sample and regulatory decisions related to air navigation services is more relevant for Airservices, and points to a notional credit rating of A.

Overall WACC

The table below presents an overall WACC for Airservices, if our recommended assumptions for the asset beta, gearing and credit rating are substituted for those proposed by Incenta. This produces a nominal vanilla WACC of 7.57%, compared to Incenta's estimate of 8.93%.

All other parameters, including the methodology for calculating the cost of debt, are as proposed by Incenta. Consistent with our terms of reference, we do not comment on these other parameters in this report.

Table E.1: WACC estimates for Airservices

Parameter	Incenta estimate (31 July 2023)	With CEPA estimate of asset beta, gearing, credit rating
Risk-free rate	4.09%	4.09%
Market risk premium	6.20%	6.20%
Gamma	0.57	0.57
Inflation	2.96%	2.96%
Asset beta	0.70	0.50
Gearing (debt / debt + equity)	21%	22%
Equity beta	0.89	0.64
Credit rating	BBB+	A
Term of debt (years)	10	10
Return on debt (pre-tax nominal)	**6.35%**	**5.84%**
Return on equity (post-tax nominal)	**9.61%**	**8.06%**
Nominal vanilla WACC	**8.93%**	**7.57%**
Real vanilla WACC	**5.80%**	**4.48%**

[1] We note that AENA was rated Baa1 (BBB+) in 2015, and upgraded to A3 (A-) in 2018.

[2] ACCC (2011), *Airservices Australia price notification – Final Decision*, September 2011, pp.29-31.

[3] S&P Global Ratings (2021), *Airservices Australia Outlook Revised to Stable After Similar Sovereign Action: 'AAA/A-1+' Ratings Affirmed*, 7 June 2021. Available at: https://disclosure.spglobal.com/ratings/en/regulatory/article/-/view/type/HTML/id/2661466.

1. INTRODUCTION

CEPA has been engaged by Qantas to provide advice on the asset beta, gearing and credit rating that should be applied to estimate the weighted average cost of capital (WACC) for Airservices Australia (Airservices). The WACC will be used to set charges for declared services from April 2024.

1.1. LEGISLATIVE AND REGULATORY CONTEXT

Airservices Australia (Airservices) provides terminal navigation, en route navigation, and aviation rescue and firefighting services that are declared as notified services under section 95X of the *Competition and Consumer Act 2010* (CCA). Under section 95Z of the CCA, Airservices is required to submit a price notification to the Australian Competition and Consumer Commission (ACCC) before increasing the prices for these declared services.

In assessing price notifications, the ACCC is required to have particular regard to the following statutory criteria set out in subsection 95G(7) of the CCA:

- the need to maintain investment and employment, including the influence of profitability on investment and employment,
- the need to discourage a person who is in a position to substantially influence a market for goods or services from taking advantage of that power in setting prices, and
- the need to discourage cost increases arising from increases in wages and changes in conditions of employment inconsistent with principles established by relevant industrial tribunals.

In relation to the weighted average cost of capital (WACC), the ACCC interprets its duties as requiring a *"reasonable rate of return on capital"*, that is *"commensurate with the risks faced by the firm"*.[4]

1.2. AIRSERVICES' DRAFT PRICE NOTIFICATION

In September 2023, Airservices submitted a draft price notification to the ACCC. The notification proposes updated charges for its services that would apply from April 2024, to at least the end of FY2026 (just over 2 years).[5] Once the ACCC's assessment of this notification is complete, Airservices proposes to begin consultation on another (FY2027) agreement that will consider a more complex range of issues.[6]

In the past, Airservices has submitted price notifications at varying intervals ranging from one to seven years.[7] Although formally there is no restriction on how frequently Airservices can submit price notifications, historically the ACCC has encouraged Airservices to reach agreement with its customers on long-term price agreements.[8]

The draft notification sets out charging and risk-sharing arrangements for the declared services, summarised in the table below.

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[4] ACCC (2009), *Statement of regulatory approach to assessing price notifications*, June 2009, p.12.

[5] Airservices (2023), *Draft Price Notification 2024 - 2026*, November 2023, p.5.

[6] Airservices (2023), p.5.

[7] Specifically: 1 year (2002 and 2003); 2 years (2024-2026, the draft 2023 price notification); 5 years (2004-2008, 2012-2016); and 7 years (2017-2023, albeit with a voluntary price reduction in 2019).

[8] For example, in 2003 the ACCC objected to a temporary 12-month adjustment to prices. Incentivising Airservices to implement longer pricing agreements was a key reason for objecting. ACCC (2023), *Decision – Airservices Australia Proposed Price Increase*, June 2003, pp.20-21.

Table 1.1: Airservices' proposed pricing and risk sharing approach

Airservices' proposed pricing and risk sharing approach
Airservices' draft notification provides an explanation of the proposed pricing and risk sharing arrangements. The basis of charging differs by service line: [9] • **En route services** relate to air traffic management outside of tower and approach airspace. These services are charged on a network basis and do not vary by location. En route charges are based on a combination of distance flown and maximum take off weight (MTOW). Both distance and MTOW are based on 'deemed' values for particular routes / aircraft. • **Terminal navigation services** cover tower and approach services. These services are charged on a location-specific basis, with a cross subsidy existing between major international airports and nearby secondary airports. Terminal navigation charges are set on a $ / (deemed) MTOW basis. • **Aviation rescue and fire fighting (ARFF)** services are charged under a hybrid arrangement that includes a base level network charge plus location-specific category charges for large aircraft. These charges are also set on a $ / (deemed) MTOW basis. Unlike previous pricing agreements, Airservices' 2023 notification does not propose any risk sharing arrangements (e.g., associated with demand forecasting risk).[10] Historically, risk sharing arrangements have provided trigger points for prices to be reviewed and potentially adjusted if:[11] • aggregate activity levels deviated above or below forecast levels by 5% or more in a financial year; • actual capex as a result of revised priorities and/or timing differed from the forecast level by 20% or more within a single year, or by 10% cumulatively (i.e., less than a 90% performance against program); and/or • new regulatory requirements called for a change in service levels that result in a net change in costs. Airservices prices are determined on a dual till basis.[12]

1.3. AIRSERVICES' PROPOSED ASSET BETA, GEARING AND CREDIT RATING

Incenta has provided an expert report on WACC that is included in Airservices' draft price notification.[13] Incenta's proposed assumptions for the asset beta, gearing and credit rating are summarised in the table below.

[9] Airservices (2023), pp.38-40.

[10] Airservices (2023), pp.40-41.

[11] Airservices (2015), *Long Term Pricing Agreement July 2016 – June 2021 Discussion Paper*, March 2015, p.13.

[12] Airservices (2023), p.42. Activities from which Airservices derives other revenues includes services to the Department of Defence, airports, and data sales.

[13] Incenta (2023), *Review of Weighted Average Cost of Capital for Airservices Australia*, September 2023.

Table 1.2: Incenta's proposed asset beta, gearing and credit rating for Airservices

Parameter	Estimate	Approach
Asset beta	0.70	**Beta sample** Incenta's relative risk analysis concludes that Airservices faces similar systematic risk to airports. The asset beta estimate is based on a wide sample of 17 international comparators. The sample is made up of listed airports, filtered to remove those with (i) a bid-ask spread greater than 0.5% and (ii) less than 3 years of stock market data available. Incenta explicitly reject applying a country filter to select comparators. Incenta also exclude ENAV, the air traffic control provider for Italy, on the grounds that it has materially lower demand risk exposure compared to Airservices. **Beta estimation** Incenta has estimated weekly and monthly asset betas over the two five-year periods to December 2019 (i.e., 1 January 2010 to 31 December 2014 and 1 January 2015 to 31 December 2019). To determine a point estimate, Incenta take a simple average of the weekly and monthly betas over both time periods. They then round this figure (0.72) to 0.70. Incenta deliberately do not consider any impact of the Covid-19 pandemic on asset beta, as instructed by Airservices.
Gearing	21%	Gearing is based on the asset beta comparator sample and estimation periods (2010-2014 and 2015-2019). Incenta has taken a simple average of both periods to derive the point estimate. If gearing is negative for any comparator (i.e., if cash excludes debt), Incenta has rounded the gearing estimate to zero.
Credit rating	BBB+	Incenta consider that a benchmark credit rating of BBB+ is appropriate, because this is aligned with Australian regulatory decisions for other infrastructure services. Incenta consider that applying Airservices' actual rating of AAA would be inappropriate, as this reflects government ownership.

Source: Incenta (2023).

2. COMPARATOR SAMPLE

This section sets out our assessment of an appropriate sample of listed firms, to inform the asset beta, gearing and credit rating for Airservices.

2.1. PRINCIPLES FOR COMPARATOR SELECTION

In the Capital Asset Pricing Model (CAPM), the equity beta term is intended to cover systematic risk; that is, risk that investors cannot mitigate through diversifying into a broader portfolio of companies. Data from equity markets is often used to estimate historic equity betas, to inform judgements on the forward-looking value. It is common to estimate equity betas with reference to a local stock market index where the company is listed, as a proxy for a diversified portfolio.[14]

Equity beta includes the effect of debt on returns, while an asset beta has these effects removed. Accordingly, the asset beta allows risk to be compared across firms with different capital structures. In regulatory contexts, observed equity betas are converted to asset betas to estimate an asset beta of the regulated firm. The asset beta is then 're-levered' using an appropriate gearing assumption to derive the equity beta to be used in the CAPM formula.

When a regulated entity such as Airservices is not listed, an estimate of their asset beta must rely on data from listed companies which may be considered comparators; that is, they are considered by investors to be investment substitutes and have similar systematic risk. By similar systematic risk, we mean that the relationship between the comparator's future value and the chosen stock market index is similar to what we would expect for Airservices.

The table below sets out characteristics that may be relevant to systematic risk. This draws on the factors used by Incenta to assess the relative risk of Airservices and their proposed comparator sample. While these factors are a reasonable starting point, some may be more material than others for assessing Airservices' beta. [15]

Table 2.1: Characteristics of the regulated services

Characteristic	Comment
Nature of the services	The nature of the services fundamentally impacts the nature of future demand and cash flows.
Pricing basis	The basis of pricing impacts what demand metric drives the value of the business. There may be differences between demand metrics within the same industry – for example, between passenger numbers and maximum take-off weight (MTOW) in the context of air travel.
Pricing flexibility	Pricing flexibility affects how the firm can respond to positive or negative changes in demand by adjusting prices. While this factor can be expected to impact beta, the directional effect is not clear cut, as the effect will depend on the nature of the demand shock (positive or negative) and the firm's response given the level of flexibility available to them.
Demand	Demand characteristics affect the sensitivity of returns to economic shocks. For example, the ACCC's past decisions for aeronautical services assessed variations in income elasticity of air passenger demand at Australian airports, depending on whether passengers were business / leisure, international / domestic and inbound /

[14] We highlight theoretical concerns with this approach in Section 2.4.

[15] These, or similar, factors have been considered in other regulatory decisions on beta. For example, see: Lally, M. (2008), *The Weighted Average Cost of Capital for Gas Pipeline Businesses*, 28 October 2008, p.47 onwards; and Swiss Economics (2019), *Dublin Airport Cost of Capital for 2019 Determination – Final Report*, 30 September 2019, p.43 onwards.

Characteristic	Comment
	outbound.[16] Returns were judged more sensitive to categories considered to have higher income elasticity (as measured against Australian national income) – e.g., domestic outbound leisure – and less sensitive to categories with lower income elasticity – e.g., international inbound business.
Growth options	The asset beta captures movements in expectations of future firm and stock market returns. Accordingly, long-term growth and return expectations are relevant for beta. Specifically, we expect beta to be higher where future growth is more strongly linked to local economic conditions, and by extension the local stock market proxy for a diversified portfolio.
Regulatory arrangements / risk sharing	If the firm is subject to economic regulation, this may change how the factors above affect returns: • Pricing flexibility can be impacted by regulatory allowances that fix revenues or prices for a time. • Exposure to demand risk within the regulatory period can be affected by whether prices or revenues are capped, whether under-recovery of allowed revenues can be recouped in future periods, and the presence of demand risk sharing mechanisms.
Market power	While some recognise the potential impact of monopoly power (or price elasticity of demand), the evidence on the extent and direction of the effect appears to be inconclusive.[17] The presence of regulation – which applies to Airservices and many of the potential comparators – may also offset any underlying effect. Therefore, we do not consider this factor further.
Operating leverage	Operating leverage represents the ratio of fixed costs to variable costs – the higher the proportion of fixed costs, the higher the operating leverage. All else equal, a firm with lower operating leverage may be able to reduce profit volatility (and beta) by adjusting variable costs as economic conditions change, to a greater extent than a firm with a higher proportion of fixed costs. Consistent reporting of costs as fixed or variable is generally not available. Assessments of operating leverage therefore tend to rely on proxy measures, which all suffer from limitations. While it is entirely possible that operating leverage for Airservices could differ from some potential comparators, we have not attempted to control for this factor in the comparator selection.

Source: CEPA analysis

We have considered these factors[18] when forming our view of the preferred comparator sample for Airservices (Section 2.5). We find that there are no listed comparators that closely correspond to Airservices' characteristics across all dimensions. Therefore, there is judgement involved in deciding which of the available – imperfect – comparators can most usefully inform an assessment of Airservices' beta. In exercising our judgement, we have removed comparators where:

- it is reasonable to expect that the empirical asset betas for comparator firms are unreliable – for example, poor quality stock market data; and
- we are confident that they differ from Airservices in a way that could materially affect their asset beta and we can apply the filter in a consistent way to all potential comparators.

[16] For example, see ACCC (2002), *Sydney Airports Corporation Ltd – Aeronautical Pricing Proposal – Decision*, May.

[17] For example, see Lally (2008)

[18] Other than market power and operating leverage, for the reasons stated above.

2.2. INITIAL LONG LIST

To develop an initial long list of comparators, we:

- Identified listed comparators that fall within potentially relevant Bloomberg classifications, namely 'Airport Services' (GICs) and 'Transport Operations and Services' (BICs).
- Removed comparators with less than 36 months of trading data.[19,20]
- Conducted an initial desktop review of Bloomberg descriptions to remove comparators that were clearly irrelevant (e.g., not operating in the aviation sector).

It is worth highlighting that in the last step, we also excluded comparators that are not en route / navigation service providers or airports, but that nonetheless operate in the aviation sector. This includes companies that provide services to airlines and airports, such as refuelling, aircraft maintenance, catering and ground handling services. In principle, there may be similarities between demand for these activities and demand for the declared services that Airservices provide – for example, to the extent that both are correlated to MTOW volumes. However, we opted to exclude these firms from the comparator sample on the grounds that:

- They typically operate in competitive markets and are not subject to economic regulation (as opposed to Airservices and airport comparators, which are either statutory or natural monopolies and often – but not always – regulated). Therefore, it is possible that they face a demand curve with different characteristics have different restrictions on their pricing.
- There appeared to be limited publicly available information on the nature of their pricing / contracting / risk-sharing arrangements, to inform a view on their similarity or difference to Airservices on this front.

At the end of this step, we were left with 40 comparators, comprising airports and ENAV. Similar to Airservices, ENAV provides en route and navigation services in Italy.

2.3. LIQUIDITY FILTERS

Incenta has applied a filter to remove comparators whose shares do not trade liquidly. We agree that applying a filter to account for liquidity concerns is reasonable. Low liquidity may affect the reliability of empirical beta estimates, as observed movements in share prices may not correspond to movements in the stock market index in a way that is representative of the underlying systematic risk relationship.

Incenta have filtered for liquidity by removing comparators whose bid-ask spread exceeds 0.5%.[21] They explain that this is the threshold adopted by the New Zealand Commerce Commission in its draft 2023 Input Methodologies Review. As far as we are aware, there is no hard and fast rule as to the appropriate bid-ask spread level. Less restrictive thresholds have been used on other regulatory processes. For example:

[19] We have adopted this filter to align with Incenta in this instance. Although there are differing views on the minimum length of trading data required to derive informative beta estimates, we did not identify any 'borderline' cases ruled out by this filter that would otherwise have been useful comparators.

[20] We have applied this filter individually to each of the two five-year beta estimation periods. For example, if a comparator has 36 months of data available in 2010-14 but is not listed in 2015-19, we still use their beta estimate from the 2010-14 period.

[21] The bid-ask spread measures the gap between the price at which shares are offered for sale (ask) and requested for purchase (bid), expressed as a percentage of the average of the two prices.

- In advice to the Port of Melbourne, Houston Kemp applied a bid-ask spread threshold of 1% in determining its proposed comparator sample.[22]
- The Queensland Competition Authority (QCA) applied a threshold of 1% when determining the comparator sample for the Gladstone Area Water Board (on CEPA's advice).[23]
- NERA applied a threshold of 1% in its advice to UK telecommunication sector regulator Ofcom on BT's beta.[24]
- Frontier Economics recommended bid-ask spread as a measure of liquidity in advice to the Dutch competition authority ACM, noting that 1% is a reasonable threshold.[25] Their report cites a range of regulatory precedent in support of a 1% threshold.[26]

A 0.5% threshold may be overly restrictive. Accordingly, we have adopted a 1% threshold. As explained in Section 3.1, we have used the same five-year periods as Incenta to estimate comparator betas (2010-14 and 2015-19). If a comparator is within the threshold for one of the five-year periods but exceeds it in the other, we still include evidence from that comparator in the period the threshold is met.[27]

[22] Houston Kemp (2023), *Estimation of the weighted average cost of capital and forecast inflation for the Port of Melbourne*, May 2023, p.20. Houston Kemp also considered a market capitalisation filter (which removed firms with market capitalisation less than US$100m as at the estimation date) and trading days filter (which removed firms that were not traded on more than 20 per cent of available trading days).

[23] CEPA (2019), *Advice on an appropriate asset beta, capital structure, credit rating, and debt risk premium for GAWB's 2020-2025 pricing period*, December 2019, p.12.

[24] NERA (2018), *Update of the Equity Beta and Asset Beta for BT Group and Comparators*, January 2018, p.53.

[25] Frontier Economics (2020), *Criteria to select peers for efficient beta estimation,* January 2020, pp.7-8. Frontier noted that the threshold could be applied flexibly in light of other information on the comparator's suitability.

[26] In addition to the Ofcom example noted above, this included BNetza (Germany, energy), E-Control (Austria, energy) and CNMC (Spain, energy). Frontier also noted the use of the Amihud measure by IPART (NSW, energy/water/transport) and free float above 25% by Ei (Sweden, energy).

[27] Incenta appear to have applied the filter based on the average bid-ask spread over the entire 10-year beta estimation period (i.e., 2010-2019), rather than in each 5-year period. Incenta (2023), p.9.

Table 2.2: Comparators included by increasing the bid-ask spread threshold from 0.5% to 1.0%

Comparator	Period	Bid-ask spread	% non-trading days	% free float
Airports Corporation of Vietnam	2015-2019	0.61%	4%	57%
Grupo Aeroportuario Centro Norte*	2010-2014	0.72%	4%	61%
Flughafen Wien (Vienna)	2010-2014	0.66%	5%	50%
Hainan Meilan International Airport	2010-2014	0.99%	6%	46%
Aeroporto Guglielmo Marconi (Bologna)	2015-2019	0.89%	3%	49%
SAVE Group SPA (Venice)	2010-2014	0.83%	3%	30%

Source: CEPA analysis of Bloomberg data.

Notes: (1) A full list of bid-ask spreads and other liquidity indicators is provided for the full long-list of comparators in Appendix A. (2) % of non-trading days is calculated as the proportion of available trading days, rather than total days in the five-year beta estimation period. The former may be less than the latter if the company was listed or delisted part way through the estimation period. (3) The comparators listed here are included only in the estimation periods indicated above. Some either did not pass the threshold, or were not listed for at least 36 months, in the other period. (4) Grupo Aeroportuario Centro Norte was included in Incenta's asset beta sample, although our analysis indicates that they would fail the 0.5% bid-ask spread threshold in the 2010-2014 period, if considered in isolation (rather than applying the filter based on the entire 2010-2019 period).

We also considered other information – percentage of non-trading days and percentage of free float – to inform a view on which comparators should be excluded for liquidity reasons. This suggests it is reasonable to include these comparators, subject to further investigation.

At the end of this step, we were left with 25 comparators, again comprised of listed airports and ENAV.

2.4. COUNTRY FILTERS AND DEMAND CHARACTERISTICS

2.4.1. Country filters

Incenta consider it is inappropriate to exclude comparators based on the development status of their country of listing, as measured by equity index providers such as the FTSE Russell country classification. Incenta argue that:

> *"The FTSE measure of a "developed market" is a flawed measure of the comparability of a country because it refers to the breadth of derivatives and financial instruments in different markets, and not to the ability of the share markets in those countries to price stocks to allow a valid beta to be estimated."*[28]

From a theoretical perspective, considering beta evidence from international comparators is *generally* problematic.[29] Implementing the CAPM requires us to define a diversified portfolio for the investor in the firm of interest. The most common approach, at least in regulatory contexts, is to assume a domestic portfolio – i.e., an Australian portfolio in the context of Airservices.[30] This naturally points to Australian comparators being the most

[28] Incenta (2023), p.8.

[29] See for example Australian Energy Regulator, *Rate of return – CAPM and alternative return on equity models – Draft working paper*, August 2020, Section 5.5 and Partington, G. and Satchel, S., 2020, *Report to the AER: Alternative asset pricing models*, June 2020, p.30.

[30] This is not the only, nor necessarily the best, assumption that could be made. For example, in practice the representative investor may be better characterised by assuming a portfolio with both international and domestic stocks. However, varying the assumption of a domestic portfolio may require changes to other CAPM parameters – such as the risk-free rate and market risk premium – which are beyond the scope of this report.

relevant for estimating beta – as their returns can be measured against the Australian stock market as a proxy for a diversified portfolio.

However, in practice there may be few relevant Australian comparators. This is the case for Airservices, where the only relevant Australian firm with recent stock market data is Sydney Airport (delisted since 2022). Relying solely on a single comparator is widely considered unacceptable, as its measured beta may reflect idiosyncratic factors that are not strictly relevant to the regulated services. Accordingly, many regulators rely on evidence from international beta comparators.[31] Again, betas for these comparators are commonly measured against a local stock market index in the firm's own country of listing. There are likely to be material differences in the composition of international stock markets compared to the Australian stock market. Accordingly, the measured beta of international comparators against international stock market indices may not be representative of the risk faced by an Australian investor in Airservices, who is assumed to hold a domestic portfolio.

This may be one reason why, in practice, some economic regulators choose to restrict the comparator sample to firms listed in countries that are considered similar to the local economy, at least on certain dimensions. Broadly speaking, we can observe that the comparator samples in many recent regulatory decisions correspond to 'developed' or 'advanced emerging' country classifications of equity index providers. However, the basis of and reasoning for these filtering decisions is not always made explicit.

Nonetheless, examination of potential comparators suggests reasons why those drawn from particular countries may be more suitable than others, depending on the circumstances. For example, in the case of Airservices (or aeronautical services more broadly) we suggest that the nature of future growth expectations may differ materially depending on local economic conditions. We expand on this point in the following section.

2.4.2. Demand and growth characteristics

As outlined in Section 2.1, as beta is related to changes in value, the nature of long-term growth expectations is a relevant factor for determining appropriate comparators. In the context of air travel, demand is composed of residents of the country in question ('local demand') and international passengers ('international demand'). We expect local demand to be more sensitive to fluctuations in the local economy than international demand. Accordingly, the relative importance of local and international demand to future value is relevant to beta.

We can make two observations on factors that impact demand characteristics and growth options for airports, that vary across countries:

- Firstly, there is evidence that income elasticity of demand varies with levels of economic development, and that demand may be more sensitive to changes in income at lower income levels (Box 1).
- Secondly, there is evidence that growth in locally-originating passenger volumes is a more important contributor to the future value of aeronautical service providers located in emerging markets, compared to those in developed markets (Box 2).

Further evidence in relation to both factors is set out in Appendix B

[31] The Australian Energy Regulator (AER) is a notable exception in Australia, relying only on Australian comparators when determining the appropriate beta for regulated energy networks.

Box 1 – Income elasticity of demand

A range of studies supports a view that income elasticity may decline as income levels increase (see Appendix B.1). This may be because after a certain point monetary constraints are no longer binding, but other constraints (e.g., free time, preferences) become important.[32]

For example, InterVISTAS (2007) report on price and income elasticity of demand for air travel. In relation to income elasticity, they observe a "strong, positive relationship" between air travel per capita and income per capita.[33] In their words, *"[…] as income per capita grows, air travel per capita grows, and the growth in air travel is faster than the growth in income. These types of two dimensional analysis typically show some taper among the nations with the highest per capita incomes. That is, the income elasticity appears to decline somewhat at higher incomes, although staying elastic above 1.0."* [34]

The InterVISTAS report provides recommend assumptions on income elasticities at the route and market level, across three country groupings, reflecting higher assumed elasticities for developing as compared to developed economies, with the magnitude of the difference varying by length of haul.

Table 2.3: InterVISTAS (2007) - Income elasticity of demand by region (market level)

Length of haul	US	Other developed	Developing economies
Short haul	1.6	1.3	1.8
Medium haul	1.7	1.4	1.8
Long haul	1.8	1.5	2.0
Ultra long haul	2.0	2.2	2.5

Source: InterVISTAS (2007), p.37.

Box 2 – Drivers of demand

A variety of sources project that future growth in the demand for air travel is highest in emerging markets, and that this growth is closely linked to local economic conditions (see Appendix B.2).[35] For example:

- Airbus (2017) expect that emerging markets will account for the largest share of origin and destination traffic by 2036. Specifically, the share of travel between emerging markets was projected to increase from 29% in 2016 to 40% by 2036.
- IATA (2017 and 2019) note a material difference in propensity to travel between low/middle income and high income countries (Figure 2.1), indicating significant potential for future growth in trips per capita for emerging markets (Figure 2.2).
- IATA (2017) and Boeing (2017) highlight that drivers of demand vary across countries, with demand in emerging markets driven primarily by living standards (i.e., changes in income), while demand trends in developed economies relate more to price and demographic factors. For example, IATA (2016) find that rising living standards are the most important driver of growth in China, India, Mexico, Turkey and Thailand (Figure 2.3), as air travel becomes more accessible to residents of these countries. This

[32] See Franz et al (2022), p.4 and UK Department for Transport (2013), p.20 – summarised in Appendix B.1.

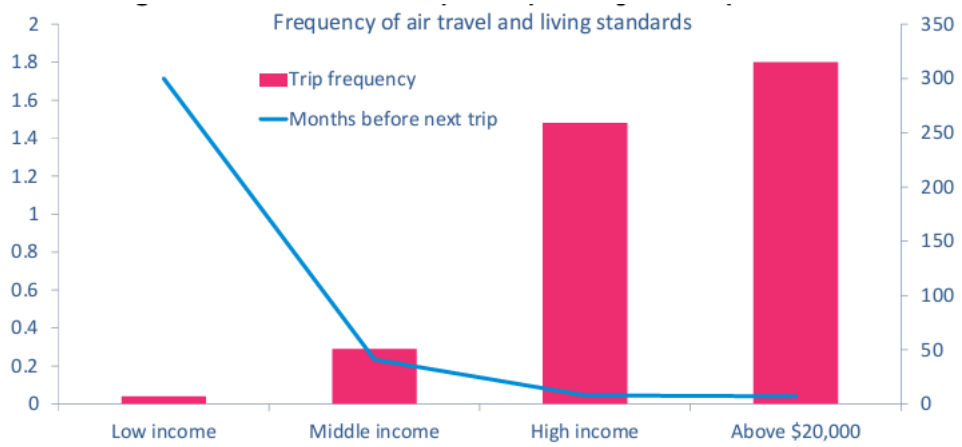
[33] Inter*VISTAS* (2007), *Estimating Air Travel Demand Elasticities*, 28 December, p.36

[34] Inter*VISTAS* (2007), *Estimating Air Travel Demand Elasticities*, 28 December, p.36

[35] We have focussed on sources from within the beta estimation period (i.e., up to December 2019). However, the trends identified are generally still in evidence as of today.

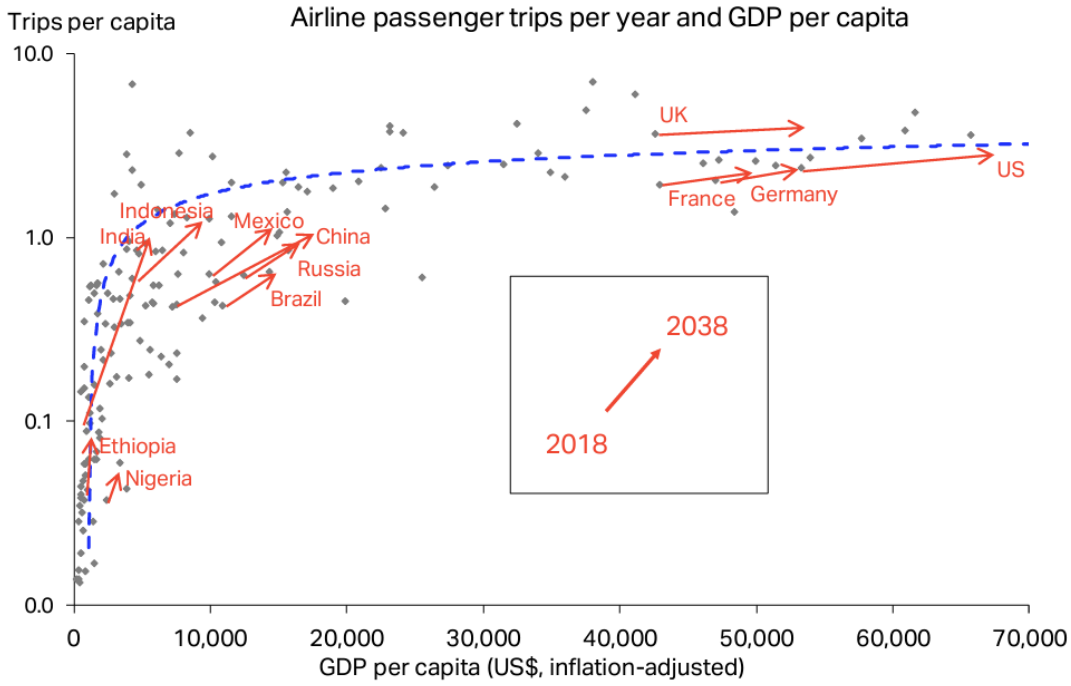
contrasts to developed economies such as Australia, France, Germany, Italy and Japan where changes in living standards account for a smaller proportion of projected growth.[36]

Figure 2.1: IATA (2017) - Propensity to travel by income level



Source: IATA (2017), p.14

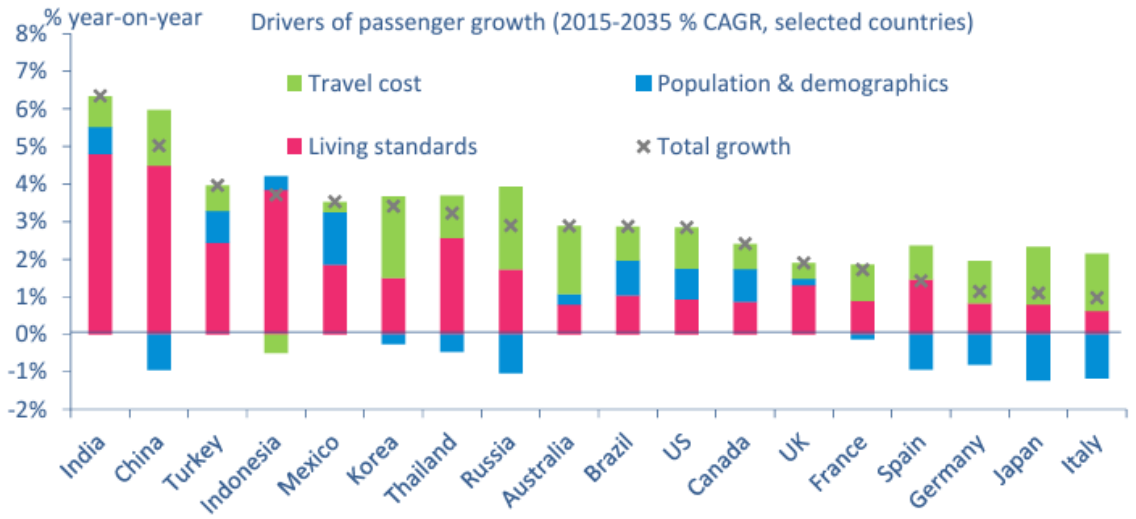
Figure 2.2: IATA (2019) - Expected change in propensity to travel



Source: IATA (2019), p.1.

[36] In IATA (2017), Spain stands out as a developed market with a higher proportion of growth driven by changes in living standards. Nonetheless, the total projected growth rate suggests that the overall propensity travel is not expected to change materially in Spain, unlike in the emerging economies highlighted above.

Figure 2.3: IATA (2016) - drivers of passenger growth 2015-2035



Source: IATA (2016), p.17.

This suggests a possible hypothesis: All else equal, comparators located in emerging economies where there is (i) relatively higher income demand elasticity and (ii) scope for material growth in local passenger demand can be expected to face materially different systematic demand risk to airports located in developed markets. This suggests that beta evidence from comparators operating in emerging markets may be less relevant to Airservices.

This does not mean that all developing country comparators will necessarily have systematically higher observed asset betas. As outlined in Section 2.1, many factors can impact beta. Nonetheless, we consider that the nature of growth opportunities creates a substantively *different* demand dynamic between developed and emerging markets.

Accordingly, we think it is reasonable to remove comparators that appear to be at a different stage of development with respect to demand for air travel, compared to Airservices. To implement this proposal, we have considered three indicators that relate to the nature of local demand for air travel:

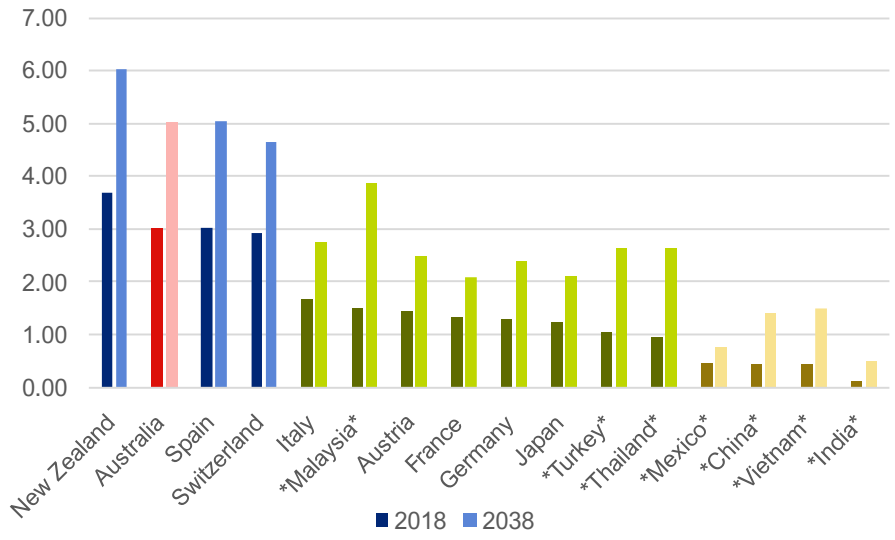
- Propensity to travel. This provides an indication of air travel market maturity.
- Projected growth in propensity to travel. This provides an indication of the relative magnitudes of future growth prospects.
- GDP per capita. This provides an indication of whether we might expect material differences in income elasticity for locally originating passengers.

Indicator 1: Trips per capita

Drawing on data from Airbus (2019)[37], we can observe flights per capita for the remaining long list of comparators, at a point in time close to the end of the beta estimation period (2018). On this indicator at least, there appears to be a substantive difference in the local demand for air travel in Australia (indicated in red), as compared to Mexico, Vietnam, China and India (indicated in gold). In these four emerging markets, flights per capita in 2018 were 4-15% of the level observed in Australia.

[37] Airbus, 2019, *Global Market Forecast 2019-2038 – Dataset*.

Figure 2.4: Airbus (2019) - Passenger trips per capita (2018 and 2038)



*Source: CEPA analysis of Airbus (2019). * denotes an emerging market.*

There is also a difference between Australia and the countries indicated in green (flights per capita 1.0-2.0). This includes some emerging markets: Thailand, Malaysia and Turkey. This indicates that this metric may not perfectly capture differences in growth opportunities. For example, Bloomberg Intelligence highlight that relatively higher reported flights per capita in certain emerging markets does not mean future growth potential driven by rising incomes is necessarily limited. In particular, they note that *"Malaysia's 2.0 air trips per capita in 2019 and Thailand's 1.1 were high relative to their GDP per capita, likely due to the countries' territorial fragmentation."*[38,39] Similarly, the particularly high number of flights per capita for Australia and New Zealand (relative to other developed economies, e.g., Italy, Spain, France, Germany, Austria and Japan) may reflect geographic isolation and a lack of modal competition for travel between major population centres.

Nonetheless, the relatively modest number of flights per capita in many emerging markets is clearly viewed by industry participants and commentators as an indicator of high future growth potential (see Appendix B.2). Accordingly, we consider it a reasonable indicator of the relative maturity of air travel demand between countries.

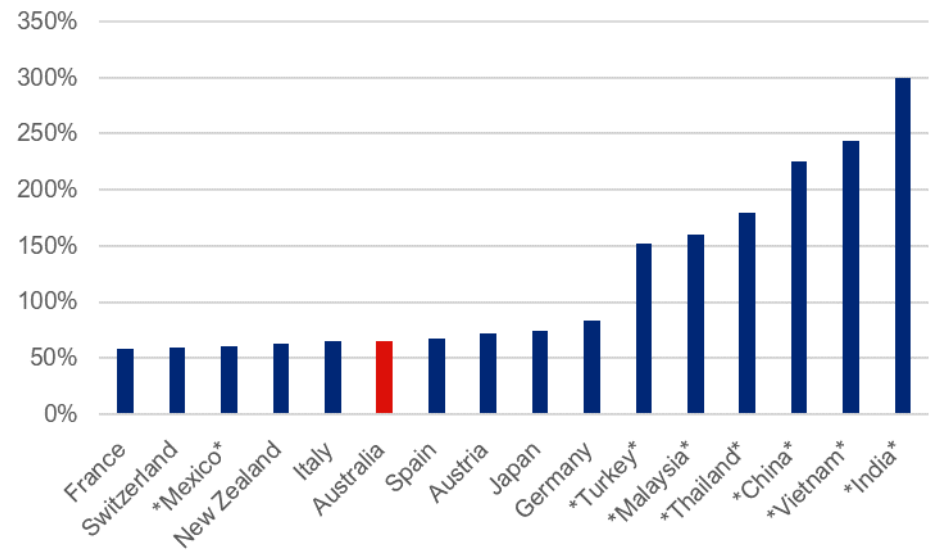
Indicator 2: Growth in trips per capita

Again considering Airbus (2019) data, the figure below presents the projected percentage change in trips per capita from 2018 to 2038. This indicates a materially different demand outlook for Australia as compared to the emerging markets represented in our potential set of comparators (i.e., Turkey, Malaysia, Thailand, China, Vietnam, India).

[38] Bloomberg Intelligence (2023). We note that their estimates of propensity to travel do not precisely correspond to those of Airbus. However, the relative position of countries appears to be consistent across the sources we have reviewed.

[39] Similarly, PwC (2014) highlighted that geography, competition (e.g., increase in low cost carrier penetration) and availability of air services may all impact a population's propensity to fly, in addition to income. PwC, 2014, *Propensity to fly in emerging economies*, 2014, p.21.

Figure 2.5: Airbus (2019) - Projected percentage change in trips per capita (2018 to 2038)



*Source: CEPA analysis of Airbus (2019). * denotes an emerging market.*

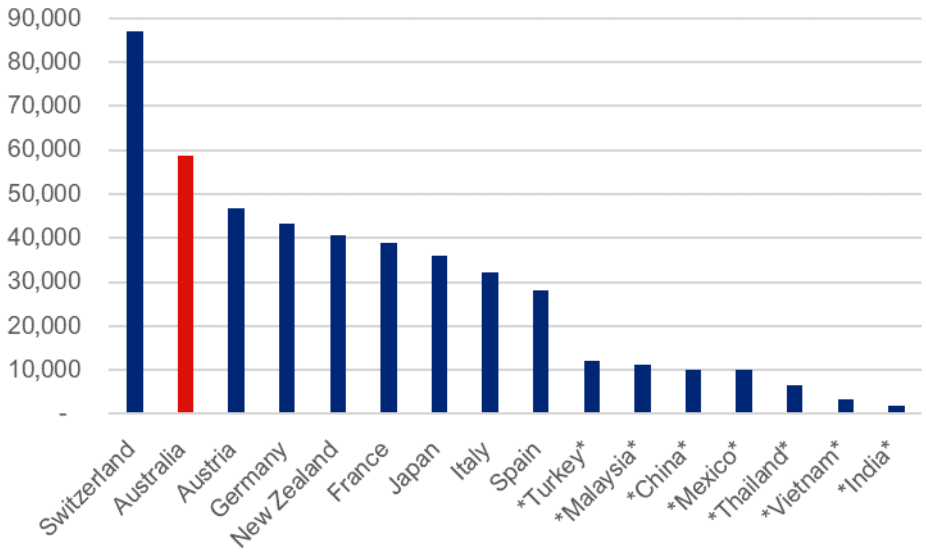
Mexico stands out in the figure above as an emerging market for which Airbus (2019) project a more modest percentage change in trips per capita, similar to that of Australia and the other developed markets. Nonetheless, as indicated by Figure 2.3 above, evidence from IATA (2016) indicates that future growth in living standards is a key driver of growth for Mexico and other developing economies. In contrast, in Australia and other developing markets, factors such as demographic change and the price of air travel play a more important role in future growth. Accordingly, although growth in propensity to travel may be similar between Mexico and Australia, the drivers of this growth may be very different.

Indicator 3: GDP per capita

As outlined in Box 1 and Appendix B.1, there is evidence that income elasticity of demand for air travel may decline as incomes rise. The figure below presents GDP per capita for each comparator country in 2019. Unsurprisingly, there is a clear difference between the developed and emerging markets represented in the potential comparator sample. Relevantly, the emerging markets are below the level of GDP per capita (~US$10,000 - $20,000) where changes in GDP appear to be associated with increasingly smaller changes in propensity to travel (see Figure 2.2 and similar evidence in Appendix B.2).[40]

[40] As outlined in Appendix B.2, industry projections comment on GDP per capita thresholds of $US10,000 and $US20,000 as indicators of market maturity.

Figure 2.6: 2019 GDP per capita (US$ 2015)



Source: CEPA analysis of World Bank Data.

Summary

On this basis of the analysis outlined above, we propose to exclude comparators operating in China, India, Malaysia, Mexico, Thailand, Turkey and Vietnam from the sample. This is because we expect the systematic risk exposure of their future demand growth to be materially different from that of Airservices.

Some of the remaining comparators are airport groups, with operations outside their home market, including in emerging markets. This includes ADP and Fraport. In particular, up to December 2019:

- ADP managed 25 airports, of which three were located in France, six elsewhere in Europe, and the remainder in the Middle-East, Africa and South America.[41]
- Fraport also managed 25 airports, one located in Germany, 15 in other high income European countries, and the remainder in middle- or low-income countries in Eastern Europe, South America and Asia.[42]

This raises two implications for the appropriateness of these comparators for assessing the asset beta of Airservices. Firstly, as groups with substantial international operations, we might expect these comparators to have lower systematic risk as measured with respect to the stock index in their home markets of France and Germany. Secondly, they have a level of exposure to demand in emerging markets that – as we have argued above – can be expected to have rather different characteristics to the demand faced by Airservices.

On the other hand, analysis of their financial statements indicates that France and Germany have historically been the primary drivers of value for ADP and Fraport respectively. For example, in 2019 French operations contributed to 82% of EBITDA for ADP and German operations contributed to 62% of EBITDA for Fraport (Table 2.4).

On balance, we consider that while there may be differences in the nature of demand faced by ADP, Fraport and Airservices, these are less significant than the emerging / developed market comparison discussed above. Additionally, we find that excluding these comparators would not materially change range or mean value of the asset betas estimated for the comparator sample (Section 3.2). Accordingly, we have maintained ADP and Fraport in the comparator sample. At the end of this step, we have 11 comparators remaining (10 airports and ENAV).

[41] ADP (2019), *Investor Day 2019 – International Activities*, p.4.

[42] Fraport (2019), *2019 Annual Report*, p.29.

Table 2.4: Analysis of ADP and Fraport financial results

Firm	Metric	2019	2010	Average 2010-2019
ADP	Paris/total revenue	78%	100%	93%
	Paris/total EBITDA	82%	NA (100% in 2011)	94%
Fraport	Frankfurt/total revenue	60%	80%	76%
	Frankfurt/total EBITDA	62%	66%	69%

Source: CEPA analysis of Bloomberg data, spot-checked against annual reports (2019 and 2015). For ADP, figures pre-2015 may reflect reporting differences. Revenue and EBITDA include non-aeronautical activities.

2.5. OTHER RELATIVE RISK FACTORS

We have reviewed publicly available information on each of the remining 11 comparators, to assess their similarity or otherwise to Airservices. Our findings are summarised in the table below, with further detail and sources set out in Appendix B. We have focussed on the factors described in Section 2.1: nature of the services provided; pricing basis; pricing flexibility; regulatory arrangements; and demand risk mitigation.[43]

In summary, we find that all comparators are similar to Airservices on some dimensions, but different on others. Further, there is insufficient detail to exclude comparators on these factors in a consistent way. This differs from Incenta, who propose to exclude ENAV on the basis that the tariff risk sharing mechanism embedded in its regulatory framework exposes it to materially lower systematic risk than Airservices. We accept that ENAV's risk sharing mechanism substantially insulates it from demand fluctuations within its five-year regulatory period. However, we suggest that publicly available information does not allow us to control for differences in the regulatory framework consistently across the comparators. For example, the regulatory regime that applies to Japan Airport Terminals is opaque. In this context, excluding ENAV in isolation is selective.

Further, it is not apparent that the risks faced by ENAV and Airservices are sufficiently different to justify ENAV's exclusion from the comparator sample. In particular:

- Airservices' past pricing agreements have, like ENAV, incorporated demand risk sharing arrangements. Historically, this has included provision for review of charges if aggregate activity levels deviated above or below LTPA forecast levels by 5% or more in a financial year. This threshold is not so different from the arrangements for ENAV.[44] Both sets of arrangements have been applied in the context of five-year pricing periods.
- There are differences in how demand risk sharing is applied for ENAV and Airservices. For example, we understand that Airservices' historic risk sharing arrangements established triggers for prices to be *reviewed*, but not necessarily automatically *adjusted*.[45] While Airservices could independently lower prices, it was required to notify the ACCC of proposed increases. Accordingly, any price increase to offset lower than expected activity levels would have been subject to the ACCC's acceptance. This differs from the case of ENAV, where the risk sharing arrangements are a pre-agreed feature of the regulatory framework.

[43] We do not consider market power or operating leverage, for the reasons stated in Section 2.1.

[44] As described in Appendix C, ENAV take on 100% of demand risk in a +/-2% 'dead band'. Demand risk is then split between ENAV (30%) and the airlines (70%) in the range of -2% to -10% and +2% and +10%. Finally, airlines take on 100% of demand risk if the deviation between planned and actual traffic is above or below 10%.

[45] ACCC (2004a), *Preliminary View – Airservices Australia Draft Price Notification*, November 2004, pp.24-25.

Nonetheless, in past reviews, the ACCC set Airservices' asset beta at the lower end of the range implied by contemporaneous airport regulatory decisions, reflecting its pricing and risk-sharing arrangements.[46]

- Although Airservices has not proposed risk sharing in this price notification, as far as we are aware it was able to do so. If this outcome is voluntary, it is hard to justify excluding ENAV due to a lack of risk sharing arrangements. Further, as this price notification will apply for just over two years[47], Airservices is only exposed to fluctuations in activity levels within this period.
- Finally, of the comparators, ENAV is the most similar to Airservices in terms of the services it offers and the basis of pricing (i.e., a combination of MTOW and distance, as opposed to MTOW, passengers and/or time for most of the airport comparators).

Given the considerations outlined above, we have maintained the final sample of 11 comparators, including ENAV, to inform our estimate of Airservices' asset beta, gearing and credit rating.[48]

[46] In 2003, the ACCC indicated that an appropriate beta for Airservices was at the lower end of the range it had determined in earlier aeronautical pricing decisions. The 2003 decision reflected Airservices' pricing practices up to that point, including 12-monthly adjustments proposed in 2002 and 2003. ACCC (2003), *Preliminary View – Airservices Draft Price Notification*, May 2003, pp.36-37.

Subsequently in 2004, Airservices proposed a five-yearly pricing agreement with the demand risk sharing arrangements described above. The ACCC considered that because the risk-sharing arrangements were not prescriptive, it was not clear whether Airservices was taking on more risk than in the past, when prices had been reset at intervals of less than five years: *"While Airservices has taken a short-term approach to setting prices in the past, it is not the case that it had adjusted prices each year; rather it did bear some measure of risk—that is, there had been an implicit set of 'trigger points' in Airservices' decisions as to whether to adjust prices or to seek price increases.* […] *it is unclear whether the activity trigger mechanisms embodied within the pricing proposal entail any significant increase in Airservices' level of risk."* ACCC (2004b), *Final Decision – Airservices Australia Price Notification*, December 2004, p.8.

[47] Assuming it is replaced at the end of FY2026.

[48] Our sample for Airservices includes Japan Airport Terminals (JAT). In past reports on the cost of capital for airports, we have excluded JAT from the comparator sample. This reflects differences in our terms of reference for those reports and/or the services being considered.

Table 2.5: Characteristics of Airservices and comparators

Comparator	Country of operation	Regulatory framework, pricing, demand risk	Primary basis of pricing
Airservices	Australia	Regulated prices. Dual till. No specified pricing period (~two years for 2023 notification). No demand risk sharing proposed in 2023 notification (but has applied in the past).	MTOW / distance
AENA	Spain	Regulated prices. Dual till. Five-year pricing period. No sharing of downside demand risk, but regulatory agreement may be revisited if deviations from forecast demand exceed a pre-defined level.	MTOW / passengers / time
Aeroporto Guglielmo Marconi	Italy	Regulated prices. Dual till. Four-year pricing period. Demand risk sharing if deviations from forecast demand exceed a pre-defined level.	MTOW / passengers
ADP	France*	Regulated prices. Hybrid till. Five-year pricing period. Demand risk sharing if deviations from forecast demand exceed a pre-defined level.	MTOW / passengers / time
Auckland Airport	New Zealand	Price monitoring regime. Dual till. Five-year pricing period. No regulated demand risk sharing, but airport is free to negotiate arrangements with airlines.	MTOW / passengers / time
ENAV	Italy	Regulated prices. Till unclear. Five-year pricing period. Demand risk sharing if deviations from forecast demand exceed a pre-defined level.	MTOW / distance
Fraport	Germany*	Regulated prices. Dual till. No specified pricing period. No formal demand risk sharing, but undefined pricing period provides flexibility to respond to changes in demand.	MTOW / passengers / time
Flughafen Wien	Austria	Regulated prices. Dual till. One-year pricing period. Formula for annual price changes set out in legislation; scope to re-determine prices for extreme changes in demand.	MTOW / passengers
Flughafen Zurich	Switzerland	Regulated prices. Hybrid till. Up to four-year pricing period. No demand risk sharing identified.	MTOW / passengers / time
Japan Airport Terminal	Japan	Prices approved by relevant minister. Till and pricing period unclear. No demand risk sharing identified. Limited information generally on the regulatory framework.	Passengers
SAVE SpA	Italy	Regulated prices. Dual till. Five-year pricing period. Demand risk sharing if deviations from forecast demand exceed a pre-defined level.	MTOW / passengers / time
Sydney Airport	Australia	Price monitoring regime (light touch). Dual till. Pricing period determined through negotiation with airlines. No regulated demand risk sharing, but airport is free to negotiate arrangements with airlines.	MTOW / passengers / time

Source: CEPA analysis of public data (annual accounts, regulatory decisions). Notes: Commentary relates to arrangements applying during the beta estimation period; current arrangements may differ for some airports. (*) Indicates comparators with substantial international operations, see Section 2.3.

3. ESTIMATES

This section sets out the comparator beta, gearing and credit rating estimates, and our proposed assumptions for Airservices.

3.1. ESTIMATION APPROACH

The next stage after selecting the sample is to derive empirical beta estimates for the comparators. There are several ways in which beta and gearing can be estimated. Our approach is set out in the table below.

Methodology	Description
Estimation period	This is the period over which beta is estimated, for example whether the last five or ten years of data is used. There are trade-offs involved: a longer horizon provides more observations in the OLS regression, but assumes that characteristics of the firm have remained constant for the period. Since the beta should estimate forward looking risk, a longer return horizon may capture information that is weighted too heavily on older evidence. On the other hand, shorter horizons may be less statistically robust and may inappropriately weight 'noisy' fluctuations in the estimates. We have focused on a time horizon that takes in the past 10 years (1 January 2010 to 31 December 2019). Within this horizon we have calculated asset beta estimates for two five-year periods (2010-2014 and 2015-2019). As Airservices instructed Incenta not to account for Covid when estimating beta (i.e., only use data drawn from the period before the pandemic, up to 31 December 2019), we also estimated the beta up to 31 December 2019. We consider that this approach provides a sufficiently long period to allow for 'noisy' fluctuations in the beta over time, while also considering evidence that reflects current market conditions and investor perceptions.
Market index	Whether beta is estimated against a local, regional or international market index. Within the CAPM framework, the beta is intended to reflect risk that cannot be eliminated through investment in a diversified portfolio of assets. When estimating empirical beta estimates, the market index selected represents the diversified portfolio. For the purposes of this analysis, we have estimated the asset beta based on local indices, which we understand to be aligned with the ACCC's typical approach.
Frequency	The return specification determines the period over which returns are calculated. Conventional options include daily, weekly, monthly, and annual returns, although theoretically, return frequency can be any discrete period over which prices are recorded. Using a higher return frequency (e.g., daily) increases the number of observations in the OLS regression. However, this may introduce a non-trading bias.[49] We have calculated the equity betas on the basis of weekly and monthly observations. For weekly estimates, there can be differences depending on that day of the week is chosen as the reference. We have estimated an 'all weekday' beta to deal with this issue.
De-leveraging formula	Which de-leveraging formula is used to transform equity betas into asset betas and vice-versa, including whether a debt beta is applied. We have de-levered the equity betas, based on each comparators leverage, using the Brealey-Myers formula. We have assumed a zero debt beta for the purposes of this report.
Gearing	We calculated gearing on the basis of average net debt and market capitalisation over the estimation period.

[49] A nontrading bias is when the equity stock in question does not trade every day but the market does, which reduces correlation with the market index for reasons that do not relate to systematic risk.

Methodology	Description
	Some listed firms have negative net debt – that is, debt less cash and cash equivalents is below zero. Where net debt is negative, the company's gearing will also be negative, since net debt is the numerator in the gearing calculation. In these cases, Incenta has opted to set gearing to a floor of zero. In our sample, this issue only impacted Aeroporto Guglielmo Marconi (Bologna Airport) – and setting negative gearing values to zero made no appreciable difference to the beta estimates for this comparator (or averages for the sample overall).
Estimation procedure	OLS regression has been used to estimate the equity betas for each comparator.

Credit ratings have been observed as of today, rather than during the estimation period.

3.2. COMPARATOR ESTIMATES

Empirical estimates for asset beta, gearing, and credit rating for each comparator are set out in the table overleaf. A reported value of "n/a" reflects comparators for which insufficient data was available in the period (i.e., less than the 36-month cut-off).

Table 3.1: Summary of comparator estimates by period

Comparator	Asset beta					Gearing					Credit rating *
	Weekly All Days		Monthly		Average all	Weekly All Days		Monthly		Average all	
	2010 to 2014	2015 to 2019	2010 to 2014	2015 to 2019		2010 to 2014	2015 to 2019	2010 to 2014	2015 to 2019		
AENA	n/a	0.42	n/a	0.48	**0.45**	n/a	28%	n/a	28%	**28%**	A3(A-)
Aeroporto Guglielmo Marconi	n/a	0.41	n/a	0.36	**0.39**	n/a	1%	n/a	1%	**1%**	n/a
ADP	0.45	0.48	0.34	0.53	**0.45**	29%	21%	29%	21%	**25%**	A
Auckland Airport	0.69	0.94	0.62	0.86	**0.78**	24%	20%	24%	20%	**22%**	A-
ENAV	n/a	0.29	n/a	0.35	**0.32**	n/a	5%	n/a	4%	**5%**	n/a
Fraport	0.47	0.39	0.46	0.40	**0.43**	43%	38%	43%	38%	**40%**	n/a
Flughafen Wien	0.26	0.25	0.23	0.40	**0.29**	42%	14%	42%	14%	**28%**	n/a
Flughafen Zurich	0.55	0.63	0.40	0.65	**0.56**	27%	9%	27%	9%	**18%**	A+
Japan Airport Terminal	0.64	1.15	0.64	1.34	**0.94**	27%	11%	26%	11%	**19%**	A+
SAVE SpA	0.27	n/a	0.28	n/a	**0.28**	15%	n/a	15%	n/a	**15%**	n/a
Sydney Airport	0.33	0.37	0.27	0.39	**0.34**	46%	35%	46%	35%	**41%**	n/a
Simple average	**0.46**	**0.53**	**0.41**	**0.58**	**0.47**	**32%**	**18%**	**32%**	**18%**	**22%**	
25th percentile	**0.32**	**0.38**	**0.28**	**0.39**	**0.34**	**26%**	**10%**	**26%**	**10%**	**14%**	
50th percentile	**0.46**	**0.41**	**0.37**	**0.41**	**0.41**	**28%**	**17%**	**28%**	**17%**	**25%**	
75th percentile	**0.58**	**0.60**	**0.50**	**0.62**	**0.62**	**42%**	**26%**	**42%**	**26%**	**35%**	
Maximum	**0.69**	**1.15**	**0.64**	**1.34**	**1.34**	**46%**	**38%**	**46%**	**38%**	**46%**	
Minimum	**0.26**	**0.25**	**0.23**	**0.23**	**0.23**	**15%**	**1%**	**15%**	**1%**	**1%**	

3.3. Other evidence

We have considered the Civil Aviation Authority's (CAA) past decisions for NATS (En Route) (NERL – UK traffic control provider). Consistent with the beta estimation period, we have focussed on decisions that are relevant to the pre-Covid 19 period.

In October 2023, the CAA published its decision on the NR23 price control for the 2023 to 2027 period[50]. Although this decision reflected the CAA's judgement on how Covid-19 had impacted the risk faced by NERL, it included references to WACC parameters without the impact of the pandemic. Key elements of its decision were:

- A "pre-Covid" beta of 0.52 to 0.62. This was based on the UK Competition and Markets Authority's (CMA) decision on NERL's appeal of the previous RP3 price control.[51]
- A "pre-Covid" gearing assumption of 29.4%.[52]
- In relation to the cost of debt, the CAA estimated: (i) an embedded cost of debt based on NERL's past bond issuance (based on A-rated indices); and (ii) a cost for new debt issued during the pricing period, again based on A-rated bond indices.[53]

In its advice to the International Airlines Group on the asset beta for NERL, CEPA disagreed that 0.5-0.6 was a suitable pre-pandemic beta estimate. This was because, unlike the estimates for Airservices in this report, the analysis reflected Covid-impacted data from early 2020.[54]

3.4. Recommended parameters for Airservices

In summary, we recommend:

- An asset beta of 0.5 (compared to 0.7 proposed by Incenta).
- Gearing of 22% (compared to 21% proposed by Incenta).
- A credit rating of A (compared to BBB+ proposed by Incenta).

Our reasons are set out below.

3.4.1. Asset beta

We have considered the following factors in relation to the appropriate asset beta:

- Evidence from the comparator sample. When weighting all estimation periods and frequencies equally, the 25th and 75th percentile results provide a range of 0.34 to 0.62, around a mean of 0.47 and median of 0.41. Within this range, ENAV has an average asset beta of 0.32. ENAV is the closest comparator in terms of services offered and pricing, although its demand risk sharing mechanism may somewhat reduce its exposure to systematic volume risk compared to Airservices.
- The ACCC's past decisions for Airservices, which have set an asset beta of 0.55 for Airservices (see table below), at the lower end of the range of the ACCC's contemporaneous decisions on the asset beta for the

[50] CAA (2023), *Economic regulation of NATS (En Route) plc: Final Decision for the NR23 (2023 to 2027) price control review*, October 2023.

[51] CAA (2022), *Economic regulation of NATS (En Route) plc: Appendices to initial proposals for the next price control review ("NR23")*, October 2022, p.27.

[52] CAA (2022), p.19.

[53] CAA (2022), pp.36-38.

[54] CEPA (2022), *NERL Cost of Capital – Response to the CAA's Initial Proposals*, 12 December 2022, pp.15-16.

aeronautical services provided by Australian airports. The asset beta of 0.7 proposed by Incenta represents a material increase to the ACCC's past decisions. We have not identified reasons to think that Airservices' systematic risk exposure has materially changed since the last determination[55], and Airservices has not addressed this in its price notification.

- The CAA's decision for NERL of 0.52 to 0.62, noting CEPA's views that this decision overestimated the pre-pandemic asset beta for NERL.

Based on the above analysis, we consider that an asset beta of 0.5 is reasonable for Airservices. This reflects the comparator sample evidence, across both listed airports and ENAV. Indeed, ENAV – arguably the closest listed comparator to Airservices – has a materially lower estimated beta (0.32 across weekly and monthly estimates). While we do not advocate placing excessive weight on a single comparator, the ENAV estimate provides comfort that 0.5 is an entirely reasonable assumption for Airservices even when ample allowance is made for differences in risk sharing arrangements. Finally, an asset beta of 0.5 is broadly consistent with the ACCC's past decisions for Airservices, and with the lower bound of the CAA's decision for NERL.

Table 3: Previous ACCC views on Airservices' beta

Previous ACCC views on Airservices' asset beta
In its most recent (2011) decision on Airservices' asset beta, the ACCC accepted Airservices proposed estimate of 0.55. This was despite noting that when considered against other contemporaneous regulatory decisions, the asset beta appeared high. However, the ACCC was prepared to accept the beta estimate on the basis of consistency with its earlier decisions and no apparent change in risk.[56] The earlier decisions were: • In 2002, the ACCC considered the appropriate range for Airservices' asset beta was 0.55 to 0.75, based on a comparison of asset betas used in previous aeronautical pricing decisions. The ACCC subsequently decided that an asset beta of 0.7 was likely to reflect Airservices' systematic risk.[57] • In 2003 the ACCC considered an asset beta at the lower end of the range (0.55 to 0.7) would be more appropriate, based on Airservices' short-term approach to pricing.[58] The ACCC noted that relevant considerations included the duration of the pricing period, the volatility of earnings (considering the relationship between volumes and GDP), and the carry forward of over/under recoveries. • In the 2004 decision, the ACCC noted that the risk sharing arrangements between Airservices and its customers was unclear, and therefore it was also unclear whether Airservices' risk had changed since 2002/2003. It therefore considered that an asset beta of 0.55 was appropriate, at the lower end of the previously determined range.[59]

3.4.2. Gearing

Consistent with Incenta's approach, we consider it is reasonable to adopt the average gearing of the comparator sample. This is an accept approach to determining a notional gearing estimate for an efficient service provider, rather than relying on the regulated company's own capital structure (which can introduce perverse incentives). Use of the comparator sample average is also appropriate considering that we, and Incenta, have adopted a zero debt beta assumption (consistent with Australian regulatory precedent). In this context, applying the average gearing of the comparator sample is important to avoid unintended effects on the overall WACC.

Based on the comparator sample, we propose a gearing assumption of 22%. This is similar to the 21% assumption proposed by Incenta, although derived from a different comparator sample.

[55] Noting that: the beta estimation deliberately excludes any impact of the Covid-19 pandemic; the absence of risk sharing arrangements proposed in the draft notification appears to be a voluntary decision; the pricing period is for a period of approximately two years, less than previous price notifications.

[56] ACCC (2011), *Airservices Australia draft price notification – Preliminary view*, July 2011, pp.53-54.

[57] ACCC (2002), *Position Paper (2002 Price Notification)*, July 2002, pp.39-41.

[58] ACCC (2003), *Final Decision (2003 Price Notification)*, June 2003, pp.41-43.

[59] ACCC (2004), *Final Decision (2004 Price Notification)*, pp.99-100.

3.4.3. Credit rating

In relation to the credit rating, we observe that:

- Of the comparators that are rated, the ratings fall in a range of A- to A+.[60]
- The CAA used an A rating to determine the cost of embedded and new debt for NERL.
- The ACCC's past decisions for Airservices have accepted a rating assumption of AAA, rejecting past proposals to reduce the rating to AA (Airservices' standalone credit rating at the time).[61]
- Airservices' own S&P credit rating is currently AAA inclusive of Government ownership, or BBB- on a standalone basis.[62]

These factors suggest Incenta's proposed BBB+ rating may be too weak. The basis for their proposal is Australian infrastructure regulatory decisions, for generally more capex intensive networks including energy, broadband and water networks. However, the evidence from the listed comparator sample and regulatory decisions related to air navigation services is more relevant, and points to a notional credit rating of A.

3.4.4. Overall WACC

The table below presents an overall WACC for Airservices, if our recommended assumptions for the asset beta, gearing and credit rating are substituted for those proposed by Incenta. This produces a nominal vanilla WACC of 7.57%, compared to Incenta's estimate of 8.93%. All other parameters, including the methodology for calculating the cost of debt, are as proposed by Incenta.[63] Consistent with our terms of reference, we do not comment on these assumptions in our report.

Table 3.2: WACC estimates for Airservices

Parameter	Incenta estimate (31 July 2023)	With CEPA estimate of asset beta, gearing, credit rating
Risk-free rate	4.09%	4.09%
Market risk premium	6.20%	6.20%
Gamma	0.57	0.57
Inflation	2.96%	2.96%
Asset beta	0.70	0.50
Gearing (debt / debt + equity)	21%	22%
Equity beta	0.89	0.64
Credit rating	BBB+	A
Term of debt (years)	10	10
Return on debt (pre-tax nominal)	**6.35%**	**5.84%**
Return on equity (post-tax nominal)	**9.61%**	**8.06%**
Nominal vanilla WACC	**8.93%**	**7.57%**
Real vanilla WACC	**5.80%**	**4.48%**

[60] We note that AENA was rated Baa1 (BBB+) in 2015, and upgraded to A3 (A-) in 2018.

[61] ACCC (2011), *Airservices Australia price notification – Final Decision*, September 2011, pp.29-31.

[62] S&P Global Ratings (2021), *Airservices Australia Outlook Revised to Stable After Similar Sovereign Action: 'AAA/A-1+' Ratings Affirmed*, 7 June 2021. Available at: https://disclosure.spglobal.com/ratings/en/regulatory/article/-/view/type/HTML/id/2661466.

[63] The cost of debt is calculated as the 20 business day average (to 31 July 2023) of 10-year A-rated corporate bond yields, sourced from Bloomberg and the RBA.

Appendix A COMPARATOR SAMPLE FILTERING

The table below sets out our initial long list of comparators, and the reasons for excluding potential comparators from the final sample. Red text denotes comparators excluded from the final sample.

Table A.1: Comparator sample filtering

Comparator	Country	Free-Float %		Average bid-ask spread		% non-trading days		Reason for exclusion
		2010 to 2014	2015 to 2019	2010 to 2014	2015 to 2019	2010 to 2014	2015 to 2019	
Airports Corporation of Vietnam	Vietnam	N/A	57.19	N/A	0.61	N/A	40%	Demand characteristics
Airports of Thailand	Thailand	25.29	25.65	0.37	0.37	6%	6%	Demand characteristics
Japan Airport Terminal Co	Japan	58.93	57.01	0.20	0.17	6%	6%	
GMR Airports Infrastructure	India	25.45	32.05	0.24	0.27	5%	6%	Demand characteristics
Grupo Aeroportuario del Sureste	Mexico	53.49	68.64	0.26	0.13	3%	4%	Demand characteristics
Grupo Aeroportuario del Pacifico	Mexico	73.08	71.42	0.23	0.13	4%	4%	Demand characteristics
Shanghai International Airport	China	46.62	31.82	0.11	0.06	7%	7%	Demand characteristics
Aerodrom Nikola Tesla ad Beograd	Serbia	16.85	17.36	1.20	1.41	24%	4%	Liquidity
Grupo Aeroportuario Centro Norte	Mexico	61.44	67.20	0.72	0.14	4%	4%	Demand characteristics
TAV Airports Holding	Turkey	N/A	46.51	0.33	0.15	4%	4%	Demand characteristics
Kobenhavns Lufthavne (Copenhagen)	Denmark	3.10	3.08	1.30	1.06	6%	4%	Liquidity
Guangzhou Baiyun International Airport	China	35.80	35.62	0.16	0.10	7%	7%	Demand characteristics
AENA	Spain	N/A	48.88	N/A	0.08	N/A	4%	
Shenzhen Airport Co	China	37.55	39.63	0.26	0.14	8%	7%	Demand characteristics
Beijing Capital International Airport	Hong Kong	77.75	81.02	0.30	0.25	5%	6%	Demand characteristics
Malaysia Airports Holdings	Malaysia	32.66	40.73	0.43	0.22	6%	6%	Demand characteristics
Auckland Airport	New Zealand	70.48	62.89	0.27	0.16	4%	4%	
ADP (Paris)	France	37.19	32.75	0.12	0.11	2%	2%	
Xiamen International Airport	China	31.52	30.05	0.16	0.11	7%	7%	Demand characteristics
Flughafen Zurich	Switzerland	56.64	61.58	0.19	0.14	4%	4%	

Comparator	Country	Free-Float %		Average bid-ask spread		% non-trading days		Reason for exclusion
		2010 to 2014	2015 to 2019	2010 to 2014	2015 to 2019	2010 to 2014	2015 to 2019	
Flughafen Wien (Vienna)	Austria	50.00	13.45	0.66	0.47	5%	5%	
Fraport (Frankfurt)	Germany	35.03	40.13	0.13	0.08	2%	3%	
Hainan Meilan International Airport	Hong Kong	46.39	42.77	0.99	1.33	6%	8%	Demand characteristics / Liquidity (2015-2019)
ENAV	Italy	N/A	47.41	N/A	0.17	N/A	33%	
Malta International Airport	Malta	N/A	69.90	N/A	N/A	44%	22%	Liquidity
Aerporto Guglielmo Marconi (Bologna)	Italy	N/A	48.79	N/A	0.89	N/A	13%	
Toscana Aeroporti	Italy	20.64	32.45	3.43	2.18	15%	10%	Liquidity
Aerodromi Republike Srpske	Bosnia and Herzegovina	N/A	100.00	158.76	100.00	98%	99%	Liquidity
Manas International Airport	Kyrgyzstan	N/A	N/A	N/A	N/A	100%	100%	Liquidity
Omskiy Aeroport	Russia	5.98	6.10	N/A	150.00	100%	100%	Liquidity
Aeroprt Tolmachevo	Russia	0.93	0.04	N/A	N/A	100%	100%	Liquidity
International Airport Almaty	Kazakhstan	100.00	N/A	N/A	N/A	100%	100%	Liquidity
Anapa Aiport	Russia	46.30	97.50	N/A	133.33	100%	100%	Liquidity
Investimentos e Participacoes em Infraestrutura	Brazil	43.57	75.00	N/A	N/A	100%	100%	Liquidity
Kurumoch International Airport	Russia	28.05	100.00	N/A	N/A	100%	100%	Liquidity
Koltsovo Airport	Russia	3.83	7.72	N/A	N/A	100%	100%	Liquidity
Podgorica Airport	Montenegro	N/A	100.00	N/A	N/A	N/A	100%	Liquidity
Swissport Tanzania	Tanzania	N/A	72.76	N/A	N/A	41%	43%	Liquidity
Sydney Airport	Australia	87.40	98.50	0.30	0.16	3%	3%	
SAVE/SpA/Venezia	Italy	30.49	40.51	0.83	0.70	3%	45%	

Source: CEPA analysis of Bloomberg data.

Appendix B DEMAND CHARACTERISTICS – SUPPORTING EVIDENCE

This appendix provides more detail on the evidence we have considered to assess whether potential comparators may face demand for air travel that has different characteristics to that of Airservices. The discussion focusses on evidence related to the countries in which potential comparators are located, covering both developed markets (Australia, New Zealand, Austria, Germany, France, Spain, Switzerland, Italy) and emerging markets (China, India, Thailand, Malaysia, Turkey, Mexico, Vietnam).

B.1. INCOME ELASTICITY OF DEMAND

This section summarises evidence for how the income elasticity of demand for air travel may vary with income. This includes: (i) studies exploring the relationship between income elasticity and income; and (ii) income elasticity assumptions applied in air travel demand forecasts.

This evidence suggests it is reasonable to expect that, all else equal, income elasticity may be higher at lower income levels – and therefore higher overall for emerging economies relative to developed economies.

B.1.1. InterVISTAS (2007)[64]

InterVISTAS (2007) report on price and income elasticity of demand for air travel, with a focus on price elasticity. In relation to income elasticity, they observe a *"strong, positive relationship"* between air travel per capita and income per capita.[65] In their words:[66]

> *"[…] as income per capita grows, air travel per capita grows, and the growth in air travel is faster than the growth in income. These types of two dimensional analysis typically show some taper among the nations with the highest per capita incomes. That is, the* ***income elasticity appears to decline somewhat at higher incomes****, although staying elastic above 1.0."* **(CEPA emphasis)**

The InterVISTAS report provides recommend assumptions on income elasticities at the route and market level, across three country groupings. InterVISTAS considered it reasonable to assume higher elasticities for developing markets (compared to developed economies), with the magnitude of the difference varying by length of haul.

[64] Inter*VISTAS* (2007), *Estimating Air Travel Demand Elasticities*, 28 December 2007.

[65] Inter*VISTAS* (2007), p.36.

[66] Inter*VISTAS* (2007), p.36.

Table B.1: InterVISTAS (2007) - Income elasticity of demand by region

Length of haul	US	Other developed nations	Developing economies
Route level			
Short haul	1.8	1.5	2.0
Medium haul	1.9	1.6	2.0
Long haul	2.0	1.7	2.2
Ultra long haul	2.2	2.4	2.7
Market level			
Short haul	1.6	1.3	1.8
Medium haul	1.7	1.4	1.8
Long haul	1.8	1.5	2.0
Ultra long haul	2.0	2.2	2.5

Source: InterVISTAS (2007), p.37.

B.1.2. Franz et al (2022)[67]

Franz et al (2022) project demand for civil aviation post Covid-19, across a range of scenarios. In all scenarios, they assume that income elasticity decreases as GDP per capita (and revenue-per-passenger kilometres) increases. They consider that:[68]

> *"When working with income elasticities, recognising that they are not universally valid is essential. There is undoubtedly a clear relationship between increased income and demand for air travel for impoverished countries.* ***However, people will not fly more even though they have more income at a certain point.*** *This is because the monetary budget constraint at a certain income level is not binding anymore, but other constraints, like limited vacation time or interest in international travel, become dominant, which can be mimicked by a decreasing income elasticity for civil air travel. Similarly,* ***once a higher amount of demand in this sector is already achieved, the essential long-distance mobility service is already fulfilled, and the link to income will become weaker.****"* **(CEPA emphasis)**

Their modelling approach adopts a starting income elasticity assumption of 1.55 for all countries. Once a country is projected to reach a threshold level of GDP per capita (USD 40,000), assumed income elasticities then gradually decline, resulting in a divergence across countries depending on their forecast economic growth.

The authors note that: [69]

> *"[a]n initial income elasticity of 1.55 for all countries may seem too high, especially for developed countries, yet due to the saturation process of income elasticity […],* ***this high initial income elasticity will decline rapidly for developed countries while it will remain high for developing countries. Thus this high initial income elasticity helps to draw a realistic picture across different countries.****"* **(CEPA emphasis)**

[67] Franz, S., Rottoli, M., and Bertram, C., 2022, *The wide range of possible aviation demand futures after the COVID-19 pandemic*, Environmental Research Letters, 17 064009.

[68] Franz et al (2022), p.4.

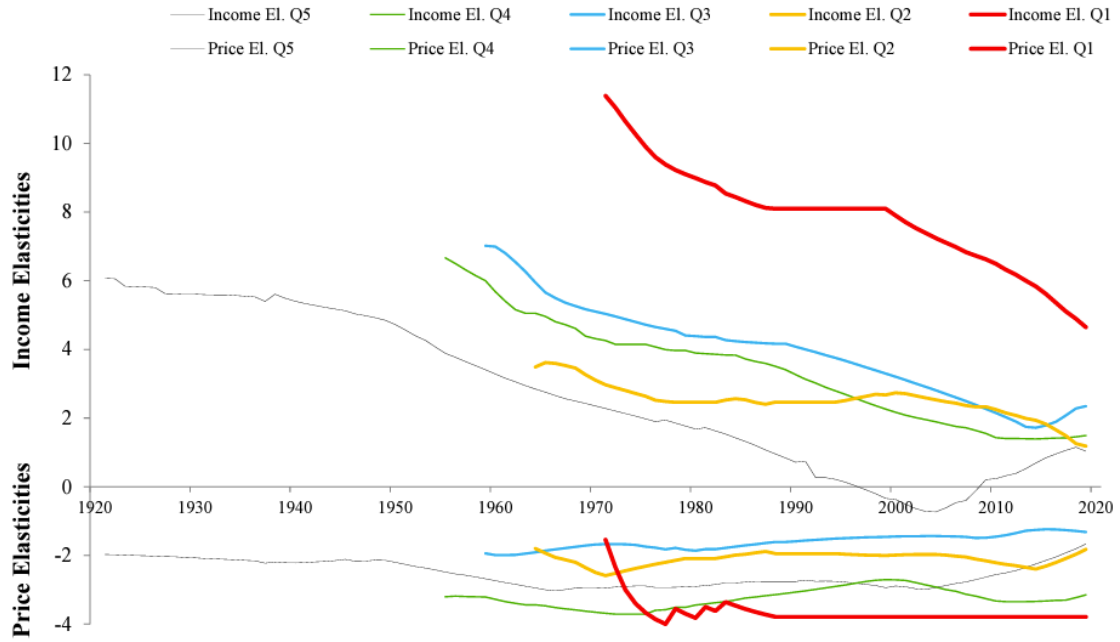
[69] Franz et al (2022), pp.4-5.

B.1.3. Fouquet and O'Garra (2020)[70,71,72]

Fouquet and O'Garra (2020) consider the behavioural, welfare and environmental impacts of reduced air travel during and after the Covid-19 pandemic. Their research includes an analysis of air travel demand to estimate income and price elasticities, drawing on passenger air travel data in the UK.

They find that income elasticities for passenger air travel tend to decline with rising income levels, as has been found for land transport and energy services.[73] Their findings are illustrated in the figure below. Fouquet and O'Garra observe some subtleties in the results. As shown in the figure below, the ordering of demand curves does not strictly follow income. For example, in some periods the estimated income elasticity for the second income quintile sits below that of the wealthier third and fourth quintiles (i.e., is in some periods measured as being less elastic). Nonetheless, the paper concludes that overall *"it is clear that willingness to pay values are generally higher for the richer income quintiles than the poorer income quintiles".*[74]

Figure B.1: Fouquet and O'Garra (2020) – Income and price elasticity of demand for air transport by income quintile in the United Kingdom, 1920-2019



Source: Fouquet and O'Garra (2020), p.12.

[70] Fouquet, R. and O'Garra, T., 2020, *The behavioural, welfare and environmental impacts of air travel reductions during and beyond COVID-19*, Centre for Climate Change Economics and Policy Working Paper 372/Grantham Research Institute on Climate Change and the Environment Working Paper 342. London: London School of Economics and Political Science.

[71] Büchs and Mattioli (2021) find a similar result in their analysis of UK air passenger data: "[…] *in relative terms, income elasticity was stronger among low income and other disadvantaged groups. In relative terms, their participation in flights as well as numbers of flights decreased more during the recission compared to higher income groups, and increased more strongly in its aftermath"*. Büchs, M. and Mattioli, G., 2021, *Trends in air travel inequality in the UK: From the few to the many?*, Trave Behaviour and Society 25 (2021) 92-101, p.97.

[72] Strale (2022) conducts a similar analysis to Fouquet and O'Garra (2020) using Swedish data, investigating the impact of household income on the demand for international air travel. The author reaches similar conclusions – i.e., that demand is more income elastic at lower income levels than at higher income levels. Strale, J., 2022, *Household level heterogeneity in the income elasticities of demand for international leisure travel*, Tourism Economics, Vol. 28(8), 2154-2175.

[73] Fouquet and O'Garra (2020), p.11.

[74] Fouquet and O'Garra (2020), pp.12-13.

B.1.4. UK Department for Transport (2022) [75]

The UK Department for Transport (DfT) prepares projections of air passengers, aircraft movements and CO^2 emissions at UK airports, to inform policy development in the aviation sector.

In 2022, they published the results of econometric modelling to determine price and income elasticities for air travel. This included estimated income elasticities for UK and foreign residents, and for travel between the UK and international destinations.[76]

We assume that the reported income elasticities between the UK and international destinations capture demand from both UK residents *and* residents of foreign countries, and therefore reflect a blend of the income elasticities of both groups with respect to their home economy. Nonetheless, the following observations appear to be consistent with a hypothesis that income elasticities in lower income countries may be higher than in higher income countries:

- Estimated income elasticity for the 'Rest of the World' category (1.8) is higher than for the 'Southern Europe', 'Rest of Europe' and 'OECD' categories (1.1 – 1.2).
- Estimated income elasticity for all foreign residents (1.6) is higher than for all UK residents (1.1).

B.1.5. UK Department for Transport (2017) [77] and (2013)[78]

Earlier iterations of the UK DfT's demand modelling reflected assumptions related to differences in market maturity.[79] The DfT noted that:[80]

> *"*[…] *as with most markets,* ***one might expect there to be some form of product cycle in aviation, with rapid early demand growth giving way to slower growth in later years****. Various possible explanations for this phenomenon are suggested in the literature.* ***One explanation, specific to the market for leisure air travel, is that as the frequency of overseas trips increases, the time available for additional trips diminishes. This reduces the likelihood over time that the response to additional income will be an increase in demand for more leisure travel."*** **(CEPA emphasis)**

To reflect the impact of maturation in their projections, the DfT divided air travel demand into market segments, defined by passenger nationality (UK or foreign), origin/destination, and purpose of travel. Assumed income elasticities declined over time, starting from the year when each segment was assumed to start showing signs of maturity. In effect, the 'fairly mature' and 'least mature' market segments were assumed, respectively, to reach full maturity 5 and 15 years after the 'most mature' segments.[81]

The logic underpinning the allocation of maturity assumptions to segments was as follows: [82]

- **Most mature** – which included markets for business and leisure travel within the UK, that had already experienced rapid growth, and had seen growth slow recently. It was expected that the effects of maturity on income elasticity would emerge in the near future.

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[75] UK DfT, 2022, *Econometric Models to Estimate Demand Elasticities for the National Air Passenger Demand Model*, March.

[76] UK DfT (2022), p.23.

[77] UK DfT, 2017, *UK Aviation Forecasts*, October.

[78] UK DfT, 2013, *UK Aviation Forecasts*, January.

[79] In its 2022 report discussed above, the DfT flagged that consideration of the maturity assumptions was out of scope. However, it is *"likely to continue to make assumptions of this kind going forward"*. UK DfT (2022), p.5.

[80] UK DfT (2013), p.20.

[81] The assumed maturity start dates for each category were: 'most mature' (2010), 'fairly mature' (2015) and 'least mature' (2025). UK DfT (2013), p.23.

[82] UK DfT (2013), p.45.

- **Fairly mature** – which included two distinct segments:
    - Markets for business and leisure travel between the UK and Western Europe / non-European OECD countries. These markets had experienced rapid growth in the period used by the DfT to estimate starting income elasticities, and were considered to have less potential for rapid growth in the future than in the past.
    - Markets for UK resident leisure travel to newly industrialised countries (NICs) and less developed countries (LDCs). These markets experienced very rapid growth in the period used by the DfT to estimate starting income elasticities, producing elasticity estimates among the highest of any of the DfT's models. While the high estimated income elasticities might have indicated low maturity, it was anticipated that these markets would be affected by maturity sooner than the 'least mature' segments.
- **Least mature** – which included business travel and non-UK resident leisure travel between the UK and NICs/LDCs. The DfT noted that these segments included low income countries with the highest projected GDP growth rates and significant scope for further growth.

B.1.6. Eurocontrol (2018)[83]

Eurocontrol (2018) provide projections of air travel volumes to inform long-term planning for the aviation sector in Europe. The projections assume different income demand elasticities by region, to reflect perceived differences in market maturity.[84] This reflects a general expectation of different air travel demand potential across European countries, reflecting varying levels of economic development and market maturity:[85]

> *"Growth will not be uniform across Europe.* […] *States in Eastern Europe will grow more quickly than Western ones (this remains true for each scenario).* […] ***These Eastern states have typically less traffic than in Western Europe at the start of the horizon (except Turkey) thus a higher potential for growth than in Western Europe, as they are less mature economies, are developing faster (than in Western Europe) and there is more potential for air traffic growth.*** **(CEPA emphasis)**

In relation to Turkey, Eurocontrol projected that it:[86]

> *"will show the biggest increase in terms of daily flights (compared to 2017) and is expected to handle around 4,700 more flights per day in 2040 than it did in 2017 in the most-likely scenario.* ***This additional traffic, driven by the opening of the Istanbul New Airport, will mainly be domestic traffic (60%).*** *The remainder will be international traffic, the top two flows being Middle-East (9%) and Germany (5%)."* **(CEPA emphasis)**

B.1.7. ATAG (2020)[87]

ATAG (2020) consider the development of the aviation sector to 2050 and beyond, in the context of decarbonisation. They comment on differences in trends and drivers of demand for air travel across countries, including the relationship between demand and economic growth: [88]

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[83] Eurocontrol (2018), *European Aviation in 2040 – Challenges of Growth – Annex 1 – Flight Forecast to 2040*,

[84] Eurocontrol (2018), p.23.

[85] Eurocontrol (2018), p.33.

[86] Eurocontrol (2018), p.34.

[87] Air Transport Action Group (ATAG), 2020, *Waypoint 2050: Balancing growth in connectivity with a comprehensive global air transport response to the climate emergency*, September.

[88] ATAG (2020), pp.34-35.

*"**Once a country reaches a certain level of living standards — approximately $20,000 per capita — further gains in incomes tend not to be associated with as much increase in the number of trips taken on average by its inhabitants each year.** For those countries above this income / living standard threshold, future growth in air travel will be driven less by future economic development and increases in living standards, and more by the other main drivers of air travel in the long run: population growth, including any changes to the demographic structure of the population, and future changes in the price of air travel. For countries below the $20,000 threshold level of living standards, however, a given increase in incomes would be expected to have a bigger effect and produce a proportionately larger rise in air travel per capita."*

"Future improvements in living standards in the G7 group of countries [(Canda, France, Germany, Italy, Japan, the UK, the US, and the European Union)] *are estimated to translate into air travel growth of just 0.6-1.3% per year over the coming 20 years. That said, given the higher starting points of the highly-developed countries, even reasonably modest rates of growth will correspond to sizeable increases in living standards and air travel in absolute terms. This underlines that such markets, while more mature and developed, will remain important markets for air travel expansion well into the future."*

*"**There is a clear distinction between advanced and emerging economies.** India tops the pile of the large emerging market economies, with improvements in living standards alone expected to translate into air market growth of around 4.9% a year over the next 20 years. Indonesia and China are also towards the top, with economic development alone expected to underpin air travel growth of 3.6%-3.7% respectively each year. Economic development in other large emerging market economies, including Vietnam (4.8% per year) and Turkey (2.2%), is expected to drive substantial air market growth over the next two decades."* **(CEPA emphasis)**

B.1.8. ICAO

The International Civil Aviation Organisation (ICAO) has in the past developed long-term traffic forecasts to inform member States, air navigation planning groups and other stakeholders. In 2016, ICAO published long-term forecasts for both passengers and cargo. Their passenger forecasts were segmented into 50 route groups, with each group assigned to a tier reflecting income level, market maturity and an associated income (GDP) elasticity of demand.[89] The ICAO's forecasting methodology document further explains that:[90]

*"The long-term passenger model uses a tiered approach to align and group ICAO route groups by their level of economic development and aviation maturity. **This is done so that the relationship between income and air travel demand (in economic terms, the elasticity of air travel demand with respect to income) can be more appropriately aligned with the economic environment of each route group. For example, it allows for clustering route groups with developing economies and aviation markets (e.g., route groups that include China), so they have income elasticities that are consistent with their level of maturity.** As incomes grow over time, route groups will move across the tiers."* **(CEPA emphasis)**

The tiers were based on World Bank definitions of lower-middle, upper-middle and high-income economies. More specifically:[91]

"The first tier represents route groups with early developing countries (e.g., African countries) and goes up to a real GDP of less than US$1,005 per capita [in real 2010 $US]*. The second tier represents route groups with developing nations (e.g., China) and its range is $1,005 to $12,276. The final tier*

[89] ICAO (2016a), *ICAO Long-Term Traffic Forecasts – Passenger and Cargo*, July 2016, p.7.

[90] ICAO (2017), *Developing a Long Term Air Traffic Demand Forecast Model*, p.3.

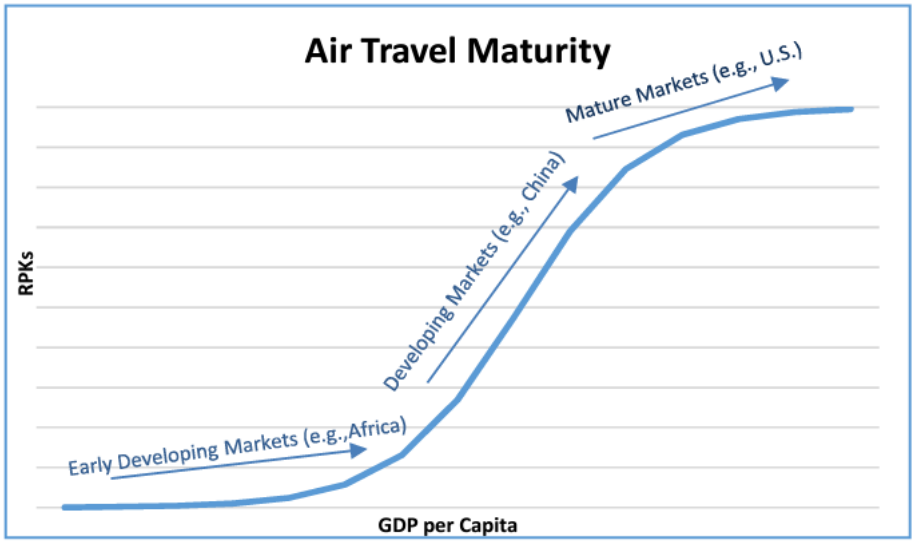
[91] ICAO (2017), p.6.

captures route groups containing mainly developed, or mature, countries (e.g., U.S.) and ranges upward from $12,276."

This approach reflected ICAO's view that markets for air travel could be categorised across three levels of maturity:[92]

> *"As countries and regions become wealthier and more connected to the global economy the demand for air travel increases. Rising income per capita leads to increasing trips or revenue passenger kilometers per capita: consumers have more disposable income to spend on travel and growing employment and business activity leads to increasing business travel.* […] *As a country develops and its income grows the factors noted above will be part of the process via which its aviation market matures. This process is observed in a stronger relationship between real GDP per capita (a national income measure) and air travel demand.* […] *Over time, the relationship between income growth and travel demand will mature (move towards an asymptote), as a country's economy, and aviation sector, matures.* [Figure B.2] *below presents this idea in terms of an S-curve.* ***The S-curve, where the y-axis represents RPKs with GDP per capita on the x-axis, shows the strengthening relationship between RPK and income for developing countries relative to early developing countries, depicted by a steepening slope, and then its moderation as the transportation sector matures in more developed economies*** *(shown through a tapering of the slope of the curve)."* **(CEPA emphasis)**

Figure B.2: ICAO - Development of air traffic markets



Source: ICAO (2017), p.5.

ICAO considered that different stages of market maturity would be accompanied by different degrees of income elasticity of demand:[93]

> *"As economies and aviation markets develop, the relationship between travel demand and income will evolve. This reflects the fact that the* ***elasticity of demand for travel with respect to income will start relatively low, but will then increase as these countries income and aviation connectivity develops. As economies (and aviation markets) develop further and mature, the relative strength of demand will moderate."*** **(CEPA emphasis)**

[92] ICAO (2017), pp.4-5.

[93] ICAO (2017), p.5.

B.1.9. Zhang and Graham (2020)[94]

Zhang and Graham (2020) review interactions between the aviation sector and regional economy, noting that air transport can be both a cause and an effect of economic growth. They find that such a bi-directional relationship is more likely to prevail in less developed economies, whereas for more developed economies the direction of causality is more likely to be uni-directional (i.e., from air transport to economic growth).[95] This suggests that demand for air travel in developing markets may be more sensitive to economic growth (i.e., more income elastic) than in developed markets.

In the authors' words:[96]

> *"The first stream draws results from the US and Europe, which are higher income countries with mature aviation markets. Studies from these economies tend to decline the feedback causal link: this link is either not present at all in a causal sense or only weakly evident conditional on certain constraints.* ***It appears plausible that the air transport is a relatively mature or even saturated market in these economies*** *such that the size of industries, and the rhythm of economic activities supporting the supply and demand for air transport have reached a relatively stable equilibrium.* ***The demand for air transport is thus not sensitively or promptly affected by an incremental change of an economic indicator such as income or employment.***
>
> *Contrarily, the second stream mainly consists of studies from economies in Asia-Pacific and South/Middle America where aviation markets are relatively immature. In these contexts, feedback causal link from economic growth to air transport growth dominates the other direction of the causal relationship. Among these studies, it is worth highlighting Baker et al. (2015) and Brida et al. (2016b). Baker et al. (2015)'s analysis focuses only on Australian regional and remote airports, where the more mature metropolitan airports are excluded. Brida et al. (2016b)'s analysis on the Mexican aviation market, using the same econometric method, obtains a divergent conclusion from the same authors' study on Italy, Brida et al. (2016a).* ***This further confirms that the air travel demand in the less-developed market is more sensitive to economic growth."*** **(CEPA emphasis)**

B.1.10. Gallet and Doucouliagos (2014)

Gallet and Doucouliagos (2014) reports on a meta-analysis of the income elasticity of air travel, drawing on published estimates from earlier studies.[97]

They find that after controlling for other study characteristics, the literature included in their review indicates that income elasticity has historically been largely insensitive to location – with similar estimates reported across the regions of North America, Asia, Australia and New Zealand, and Europe.[98] However, the authors caution against inferring that income elasticities are similar across regions at a given point in time:[99]

> *"In particular, our analysis being historical in nature assesses the income elasticity across markets and time.* ***Accordingly, it may be that earlier studies tended to focus on markets (e.g., North America and Europe) which at the time were of a similar maturity to markets examined by more recent***

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[94] Zhang, F. and Graham, D.J., 2020, *Air transport and economic growth: a review of the impact mechanism and causal relationships*, Transport Reviews, 40(4).

[95] Zhang and Graham (2020), p.1.

[96] Zhang and Graham (2020), pp.12-13.

[97] Many of the other studies we reference above are not captured in Gallet and Doucouliagos (2014), as they were published at a later date.

[98] Gallet and Doucouliagos (2014), p.150.

[99] Gallet and Doucouliagos (2014), p.150.

studies (e.g., Asia). *Thus, although from a historical perspective the income elasticity estimates appear similar across regions, at any given point in time they may differ nonetheless."* **(CEPA emphasis)**

We also note that:

- The authors highlight that an assumption of similar income elasticity across regions is contrary to contemporaneous industry demand forecasts (e.g., Boeing).[100]
- The structure of Gallet and Doucouliagos' meta-analysis may not capture differences between emerging and developed markets. For example, regions were not defined with reference to the level of economic development, and the regions applied may include countries with a range of income levels (e.g., Singapore vs. other South-East Asian nations).

B.1.11. Bourguignon and Darpeix (2016)[101]

Bourguignon and Darpeix (2016) investigate the relationship between economic development and air traffic, across different regions and countries. Contrary to the other studies cited in this section, the authors find no significant differences in the GDP-elasticity of air traffic between developing regions, nor between them and developed countries.[102] They also conclude that:

- The GDP-elasticity of air travel appears to be significantly lower than commonly thought.
- The GDP-elasticity estimates presented in the paper are rather imprecise, due to imperfect data coverage and limited observations.

B.1.12. Nguyen (2023)[103]

Nguyen (2023) investigates the causality between economic growth and air transport (both passengers and freight) across different regions in Asia. The data cover the period 1975 to 2019, albeit with some gaps for certain countries. The countries represent a range of lower middle income, upper middle income and high income economies.

The author's findings include that long-run income elasticity estimates range from 1.33 to 1.57, *"implying that air passenger transport in Asia and regions in Asia are income-sensitive, and there is little difference in income elasticity among regions"*.[104] Further, Nguyen (2023) finds that *"when per capita income is low, income elasticity is also lower. As per capita income increases, income elasticity also increases. However, when per capita income increases to a high level, income elasticity shows signs of decreasing."* [105] This reflects the author's estimates of income elasticity for each region, and the relative proportions of lower-middle income, upper-middle income and high-income countries included in each region (see table below). The author notes that one reason for these results could be that some of the high-income countries have high-speed rail systems that compete with air travel.

We consider that as the results are considered by regions, which represent a blend of countries at different income levels, the results do not conclusively point to a particular relationship between income elasticity and income level. Further, the number of low/middle/high income countries within a region may not account for differences in

[100] Gallet and Doucouliagos (2014), p.150.

[101] Bourguignon, F. and Darpeix, P.-E., 2016, *Air Traffic and Economic Growth: The Case of Developing Countries*, Paris School of Economics Working Paper No. 2016-09, HAL: halshs-01305412.

[102] Bourguignon and Darpeix (2016), p.22.

[103] Nguyen, Q. H., 2023, *The causality between air transport and economic growth: Empirical evidence from regions in Asia*, Research in Transportation Business & Management, 47 (2023) 100948.

[104] Nguyen (2023), p.10.

[105] Nguyen (2023), p.10.

population by country. For example, although the East Asia region includes four high-income economies, one upper-middle income country and one low-income country, when weighted by population China (upper-middle income) would dominate the sample.

Table B.2: Nguyen (2023) - Income groups and elasticities by region

Region	Countries (income group)	Estimated income elasticity
South Asia	India (L), Bhutan (L), Sri Lanka (L), Pakistan (L), Bangladesh (L) and Nepal (L)	1.33
East Asia	Mainland China (U), Hong Kong (H), Macao (H), Japan (H), South Korea (H) and Mongolia (L).	1.46
Central Asia	Turkmenistan (U), Uzbekistan (L), Kyrgyzstan (L), Tajikistan (L) and Kazakhstan (U)	1.49
Southeast Asia	Brunei Darussalam (H), Indonesia (L), Laos (L), Malaysia (U), Myanmar (L), Philippines (L), Singapore (H), Thailand (U) and Vietnam (L)	1.57
West Asia	Turkey (U), Israel (H), Iran (L), Jordan (U), Kuwait (H), Saudi Arabia (H), Oman(H), United Arab Emirates (H), Bahrain (H), Georgia (U) and Azerbaijan (U)	1.51

Source: Nguyen (2023), p.10 and p.3. Notes: (L) = lower middle income, U = upper middle income, H = high income.

B.2. DRIVERS OF DEMAND

This section summarises evidence in relation to differences in the drivers of demand for air travel. This indicates that demand growth associated with rising incomes (i.e., demand linked to local economic conditions) is likely to be a more important factor for airports located in emerging markets, compared to those located in developed economies.

B.2.1. IATA[106]

IATA prepares long-term projections of air travel demand. Their findings present a consistent view of differences in the drivers of growth for developed and emerging markets.[107]

IATA's publications note that there is higher growth potential for passengers located in emerging markets – including China, India, Mexico, Thailand, Malaysia and Vietnam – compared to developed economies such as Australia. For example, IATA (2019) highlights that:[108]

> *"Air travel markets are reaching maturity in most developed economies. The rise in the frequency of air travel of the average citizen – which underlies the expected growth in air passenger demand over the next 20 years – will occur mainly in the world's emerging markets.* […]
>
> [Figure B.3] *shows the relationship between the average frequency of air travel (the number of flights to, from, within a country divided by its population) and living standards, measured by GDP per capita. The logarithmic shape of the line of best fit demonstrates that air travel markets mature.* ***Once GDP***

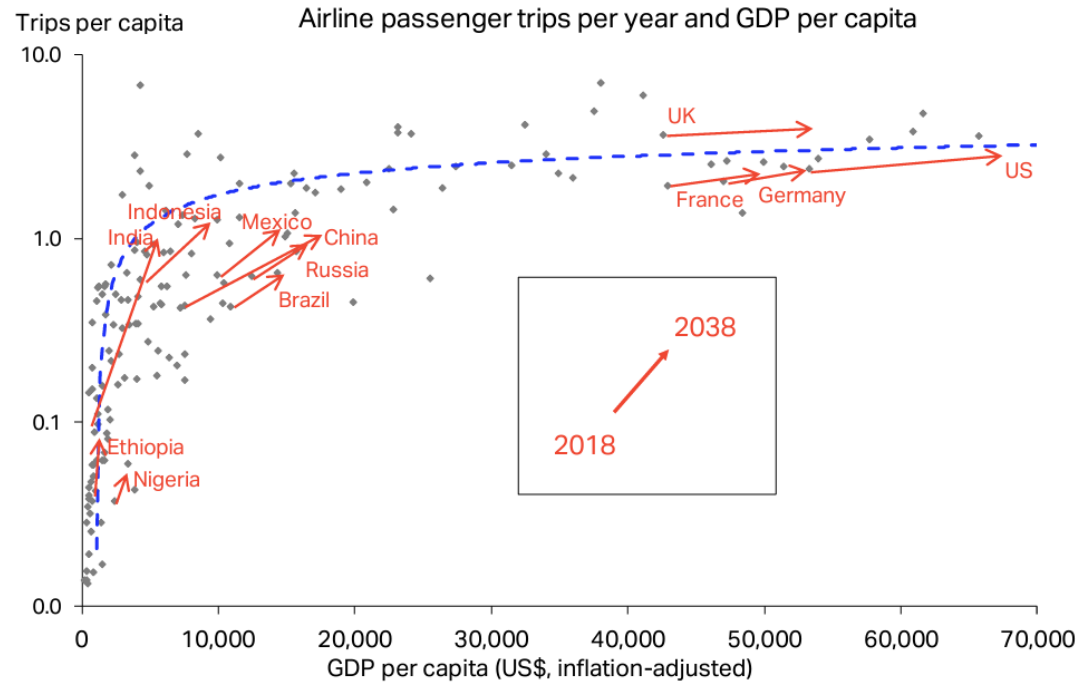
[106] IATA (2015), *Challenges of high growth: Global aviation outlook*, Global Challenges to Improve Air Navigation Performance, February 2015. IATA (2016), *Outlook for air travel* markets, June 2016. IATA (2017), *The outlook: what we know, the known unknowns and the unknown unknowns*, 7 March 2017. IATA (2018),

[107] For transparency, we have focussed on publicly available summaries of IATA's findings. More detailed projections and commentary can be purchased from IATA.

[108] IATA (2019), *IATA Economics Chart of the Week – Air travel flattens in developed markets, rises in emerging markets*, April 2019.

***per capita reaches $20,000 trip frequency flattens. The average citizen does not wish to fly much more frequently, despite increases in living standards.*" (CEPA emphasis)**

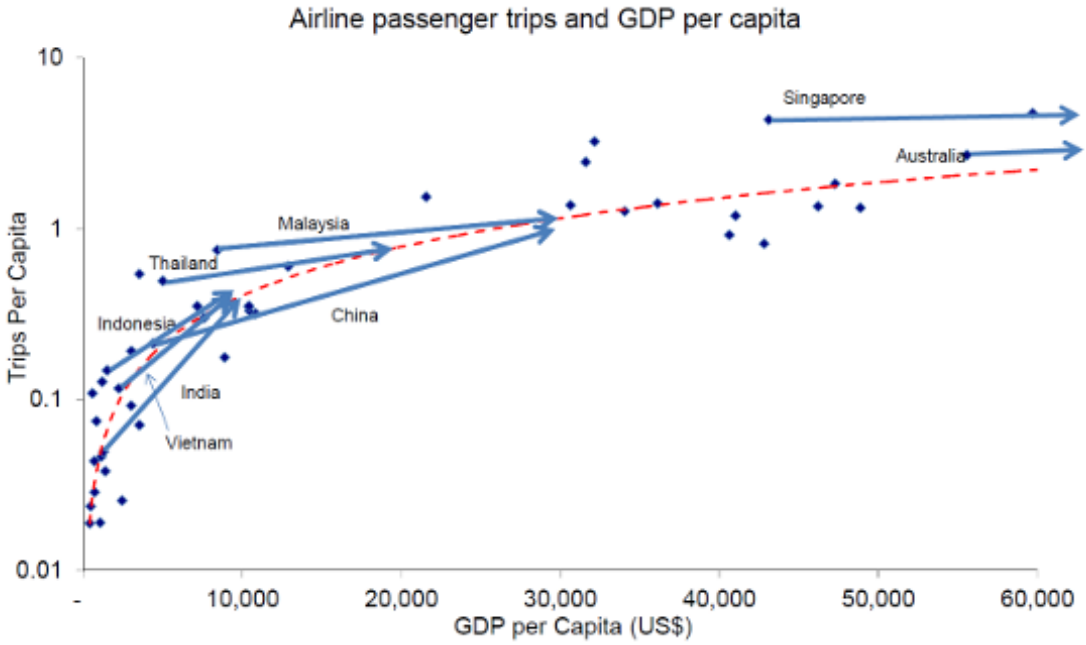
Figure B.3: IATA (2019) – expected changes in trip frequency



Source: IATA (2019), p.1.

Similar projections have been provided in other IATA publications, such as IATA (2017) – see Figure B.4.

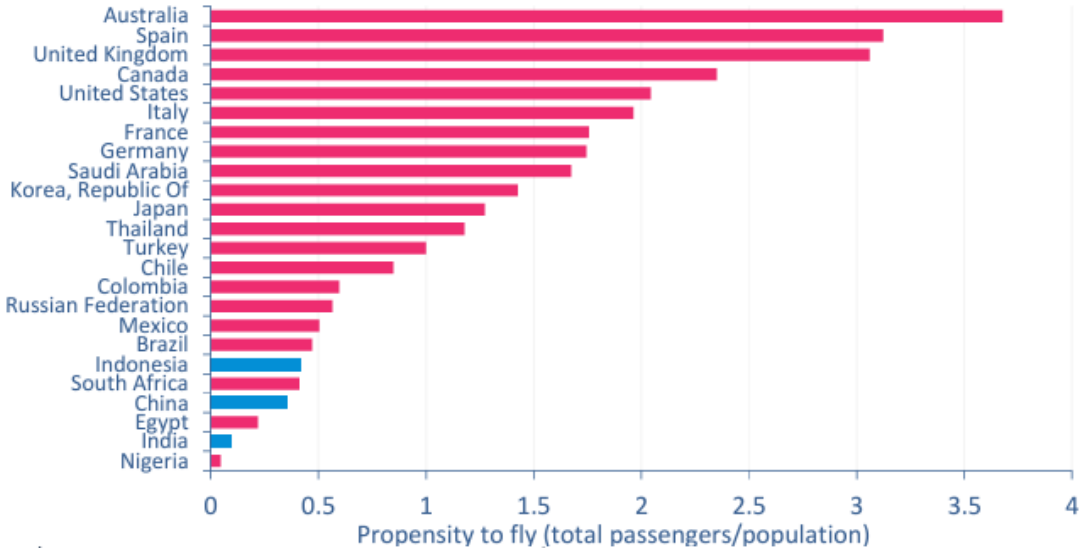
Figure B.4: IATA (2017) - expected changes in trip frequency



Source: IATA (2017), p.15.

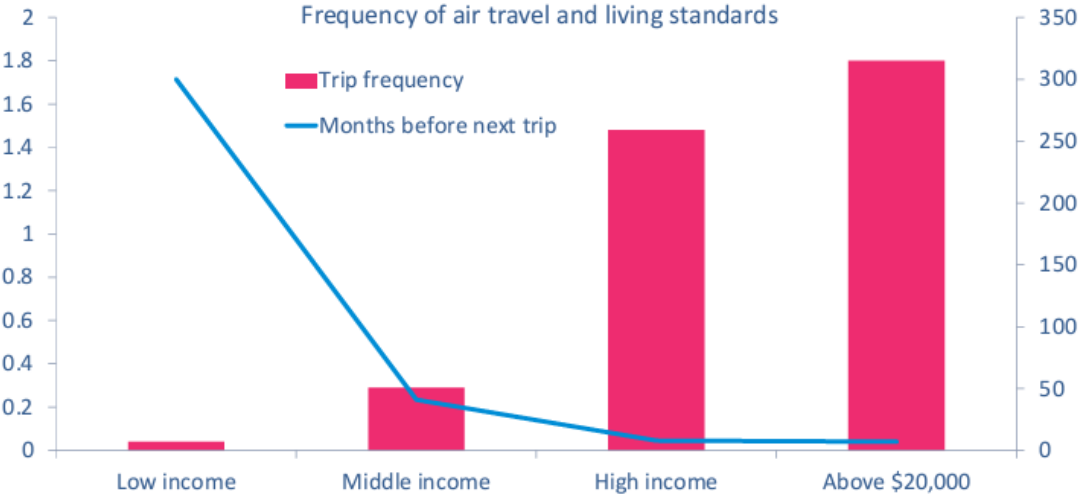
IATA (2017) also highlights that: (1) variations in the number of air trips per capita indicates significant potential for future growth in emerging markets (Figure B.5) and (2) the level of trips per capita changes markedly when moving from low/middle income countries to high income countries (Figure B.6).

Figure B.5: IATA (2017) - Potential for growth in air travel



Source: IATA (2017), p. 13.

Figure B.6: IATA (2017) - differences in propensity to travel across income levels

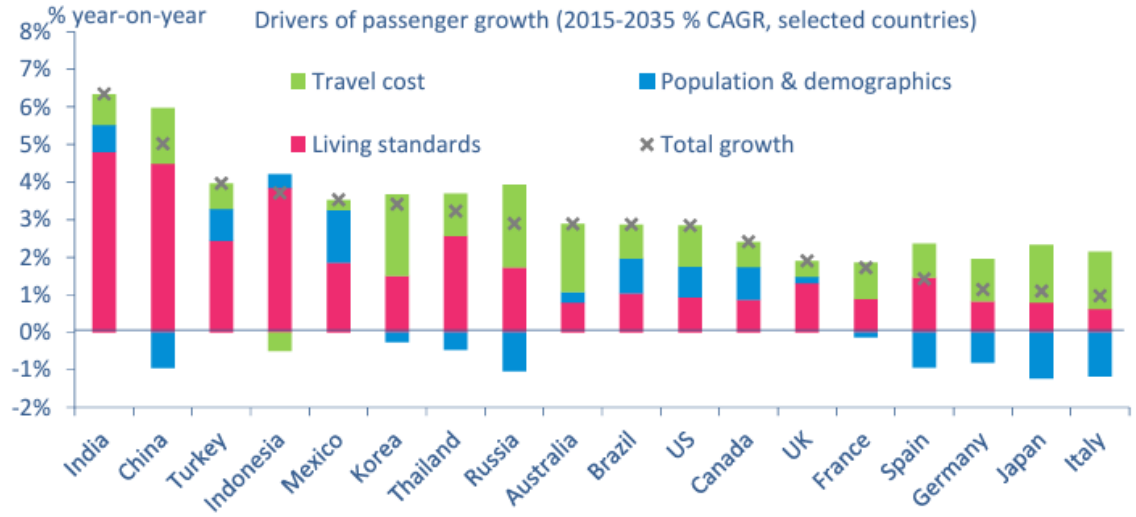


Source: IATA (2017), p.14.

IATA also considers that rising living standards are a key driver of expected air travel growth in emerging markets. For example, IATA (2016) indicates an expectation that rising living standards are the most important driver of growth in China, India, Mexico, Turkey and Thailand. This contrasts to developed economies such as Australia, France, Germany, Italy and Japan where living standards account for a smaller proportion of projected growth.[109]

[109] In IATA (2017), Spain stands out as a developed market with a higher proportion of growth driven by changes in living standards. Nonetheless, the total projected growth rate suggests that the overall propensity travel is not expected to change materially in Spain, unlike in the emerging economies highlighted above.

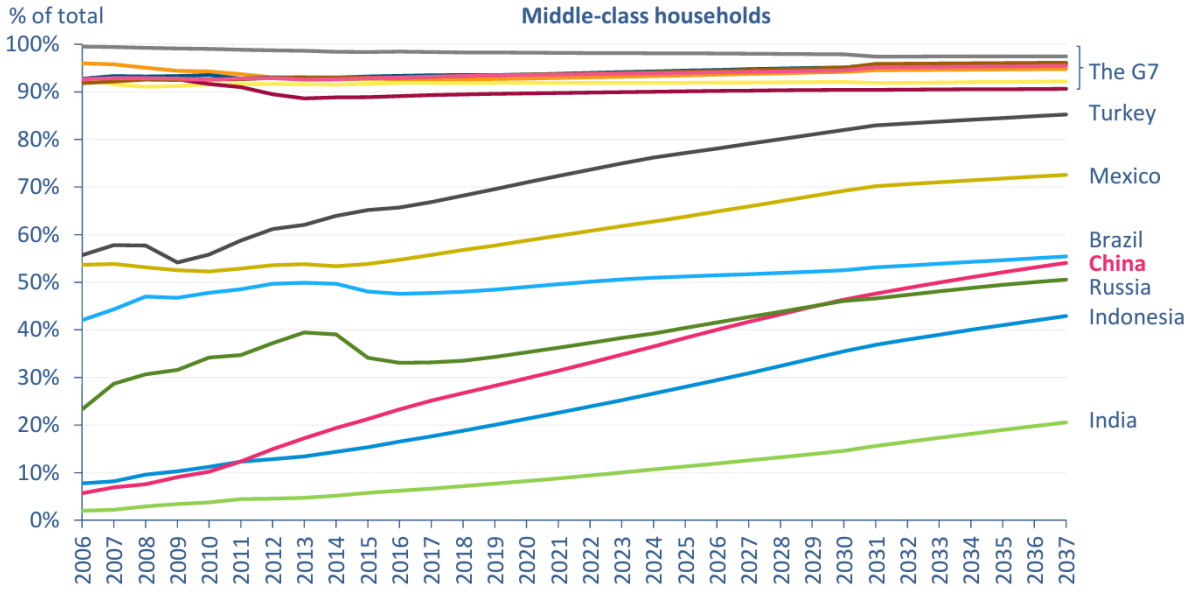
Figure B.7: IATA (2016) - drivers of passenger growth 2015-2035



Source: IATA (2016), p.17.

Consistent with this picture, IATA (2018) highlights anticipated changes in the proportion of middle-class households within the overall population. This indicates substantial growth in middle-class households in emerging markets (including Turkey, Mexico, China and India) compared to minimal change in developed markets.

Figure B.8: IATA (2018) - projected change in middle-class households



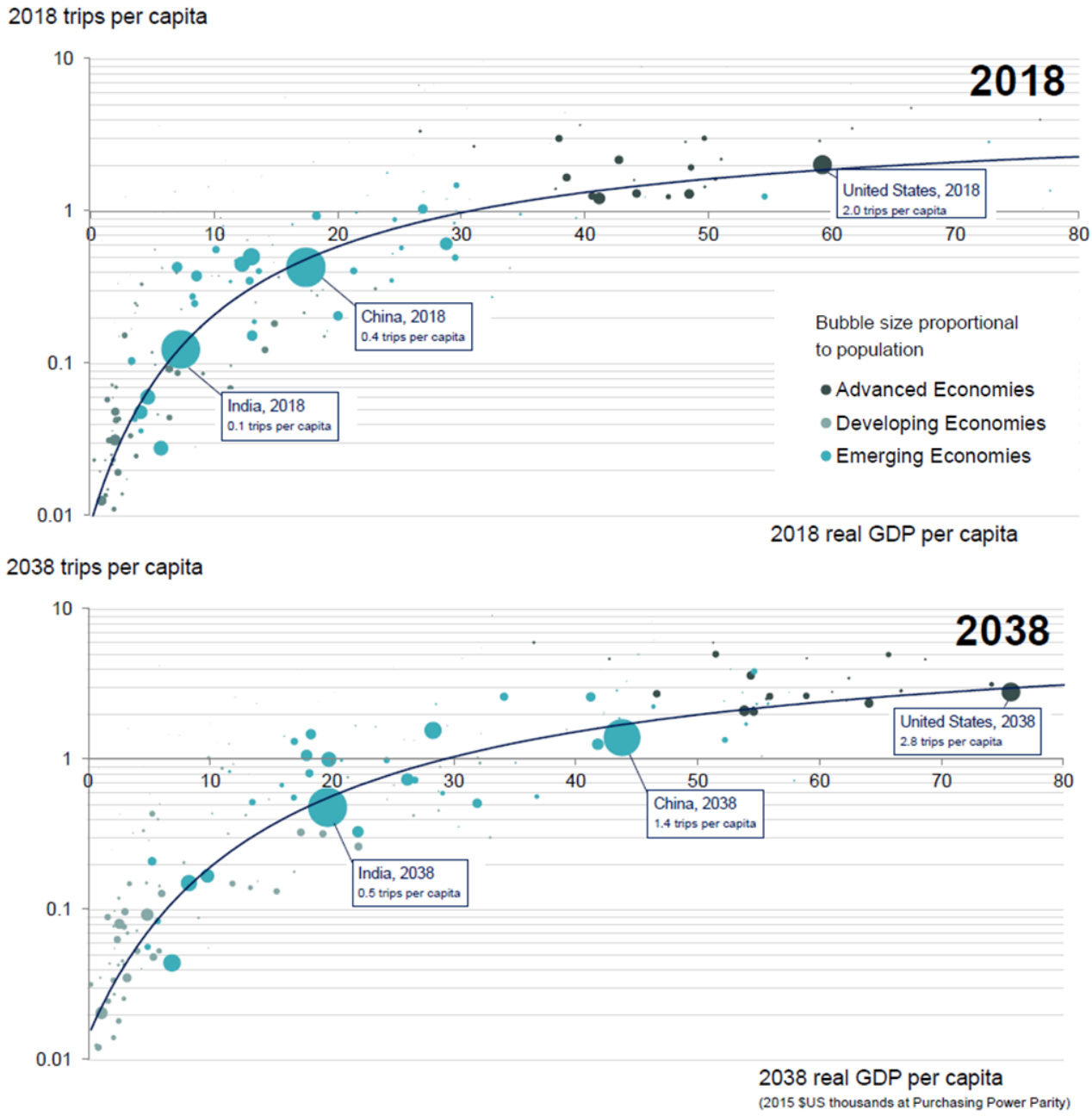
Source: IATA (2018), p.20.

B.2.2. Airbus

Airbus prepares an annual outlook for the demand for air travel and aircraft sales. Airbus (2019) project substantial growth in annual trips per capita in developing markets, from 0.35 in 2018 to 0.95 in 2038 (see figure below).[110]

[110] Airbus (2019), *Global Market Forecast 2019-2038.*

Figure B.9: Airbus (2019), projected change in trips per capita 2018-2038



Source: Airbus (2019), pp.7-8. CEPA formatting.

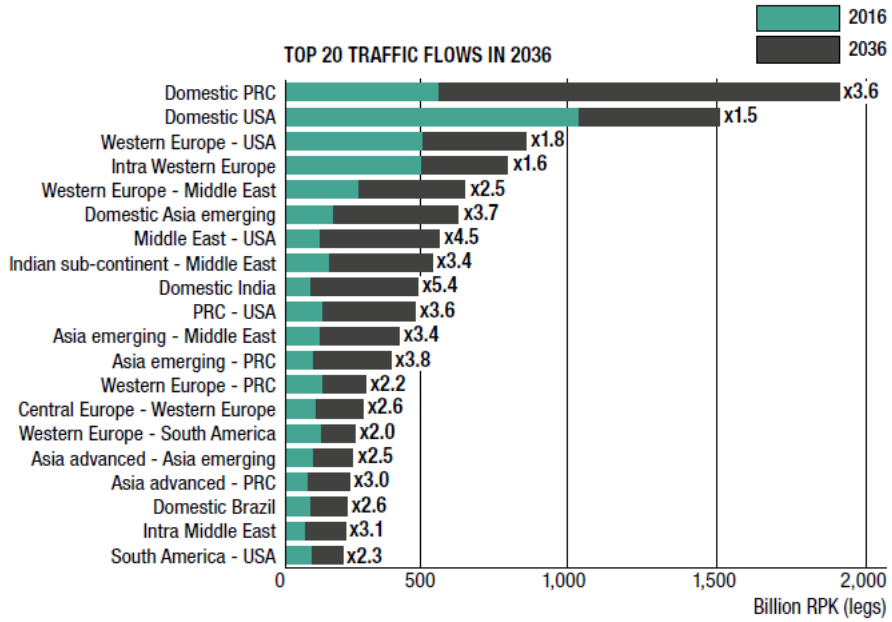
Similar themes are reflected in more recent Airbus publications. For example, the Airbus 2023 global market outlook[111] anticipated modest growth in mature market segments (dominated by travel between high income countries) and stronger growth in Asia and the Middle East, led by India and China. The projected growth in domestic travel within China, India and other emerging Asian markets suggests that travel by residents of these countries is an important contributor to growth.[112] In particular:

[111] Airbus (2017), *Global Market Forecast 2017-2036*.

[112] Domestic demand will also capture changes in the number of foreign residents travelling within these countries.

- Domestic passenger growth over 2016-2036 was projected to grow by 3.6x in China, 5.4x in India and 3.7x in other emerging Asian markets. This compared to 1.5x in the US and 1.6x within western Europe. See Figure B.10.
- Travel between emerging economies was expected to grow (2016-2036) at a CAGR of 6.2%, compared to 4.8% between advanced and emerging markets, and 2.5% between advanced markets. See Figure B.11.

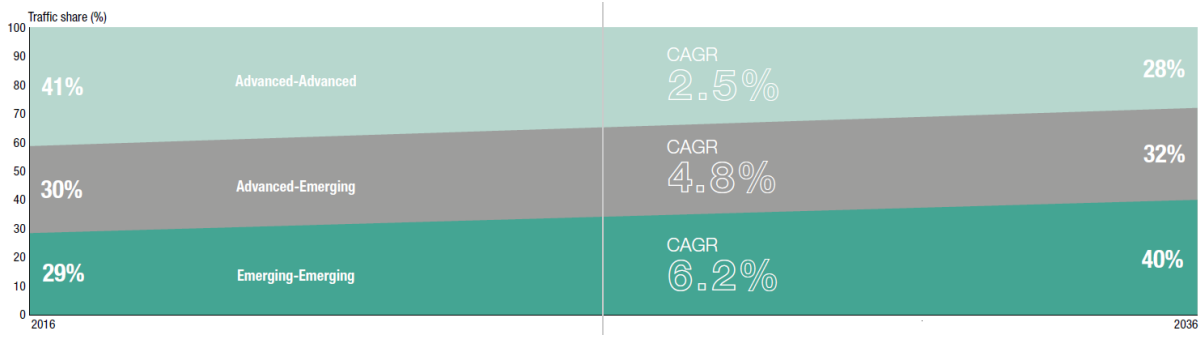
Figure B.10: Airbus (2017) - Top 20 traffic flows by 2036



Source: Airbus (2017), p.26.

Given this growth, Airbus (2017) project that emerging markets will account for the largest share of origin and destination traffic by 2036.

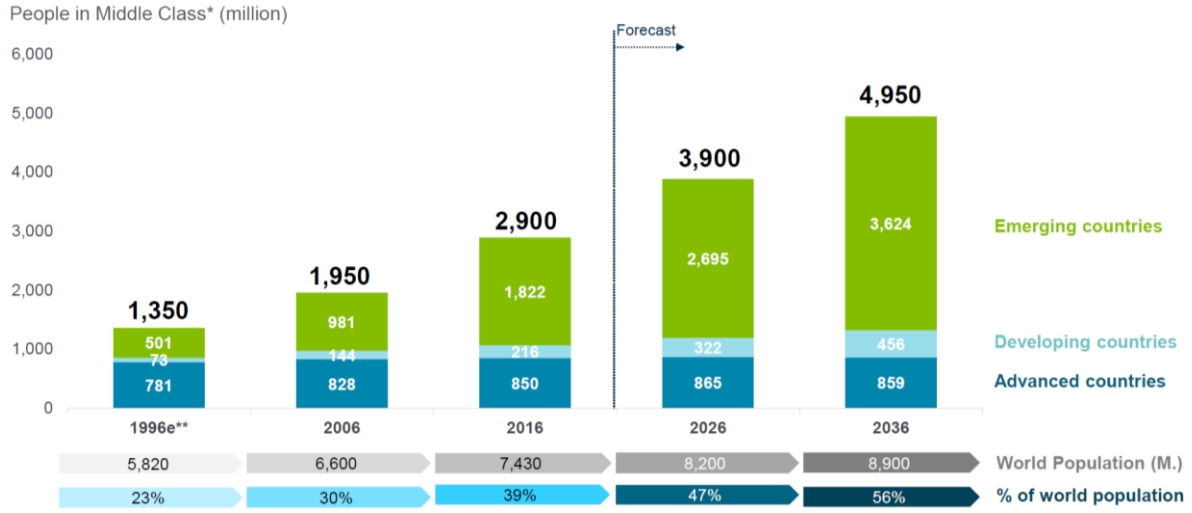
Figure B.11: Airbus (2017) - Projected traffic share



Source: Airbus (2017), pp.26-27.

Like IATA, Airbus highlights the importance of the emerging middle class to future passenger growth. Again, this indicates a linkage between growth prospects for airports located in emerging markets and local economic development.

Figure B.12: Airbus (2017) - Change in middle class population



*Source: Airbus (2017), p.9. Notes: *Households with yearly income between $20,000 and $150,000 at PPP in constant 2016 prices. **Estimate for 1996 split by region. Total % of world population is rounded to the nearest 50.*

B.2.3. Boeing

Boeing prepare an annual outlook for air travel and aircraft demand. Boeing (2017) notes a clear difference in growth prospects for emerging and developed markets, and differences in the drivers of that growth: [113]

> *"Like the global economy, world traffic varies by market. Over the next two decades, fast growth in China's domestic market will make it the largest domestic market in the world, and traffic within Asia is set to become the largest travel market.* […] ***In the more mature aviation markets, such as North America and Europe, domestic growth rates are below the global average; increasing connections to emerging markets provide more opportunities for growth****. These differing growth profiles result in an increasingly diverse global air travel market. Twenty years ago, the majority of passengers travelled on airlines based in Europe or North America, but today that number has shrunk to 48 percent, and by 2036, it will be 36 percent."*[114]
>
> ***"Demand changes as countries develop economically.*** *Emerging markets throughout the world show that* ***air travel is one of the first discretionary expenditures added as consumers join the global middle class****. As emerging market demand starts to develop, it may take the form of non-scheduled services to leisure destinations. Later, the same demand may migrate to scheduled services of low-fare carriers or to network airlines.*
>
> ***In developed markets, demand for essential travel has been met, so growth comes from discretionary travel. In these markets, GDP per capita matters less than other factors*** *such as the availability of vacation days earned and the funds needed to travel, consumer confidence, service pricing, and service quality (e.g., the availability of nonstop flights)."*[115] **(CEPA emphasis)**

[113] Boeing (2017), Boeing (2017), *Current Market Outlook 2017-2036,* p.19.

[114] Boeing (2017), p.19.

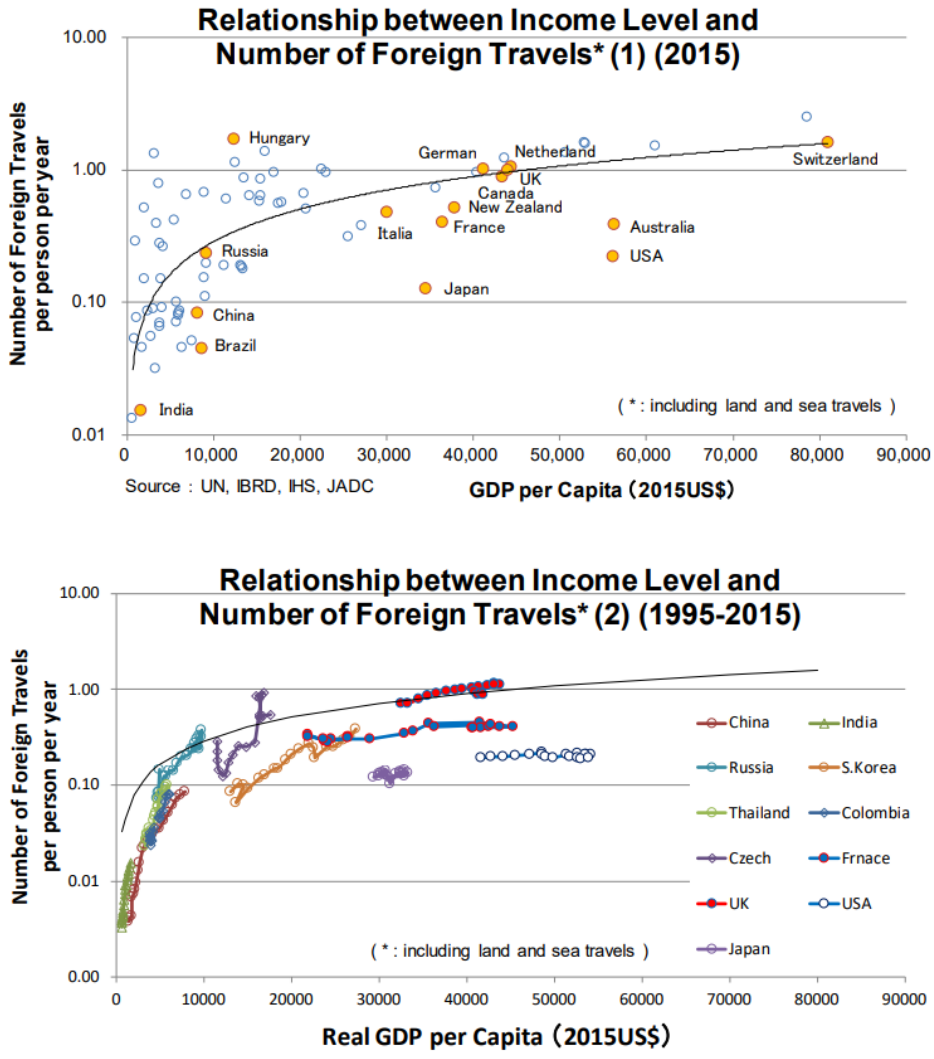
[115] Boeing (2017), p.55.

B.2.4. JACD

The Japan Aircraft Development Corporation (JACD) prepares annual forecasts of demand for air travel and aircraft. Their 2019 outlook noted that: [116]

> *"Looking at the relationship between income level and the number of foreign trips, it is understood that the more GDP per capita increases, the more demand for foreign travel increases.* ***It is especially apparent that in countries whose GDP per capita is still low and less than $10,000, demand for foreign travel tends to increase rapidly with the increase of their GDP per capita. In comparison, such demand in economically mature countries is less sensitive to GDP per capita.*** *It is expected that hereafter, if economic growth and rise of income level are followed by population expansion in emerging countries, a massive new middle class will be created, and consequently, demand for aviation will increase substantially."* **(CEPA emphasis)**

Figure B.13: JACD (2019) – Relationship between international travel and income

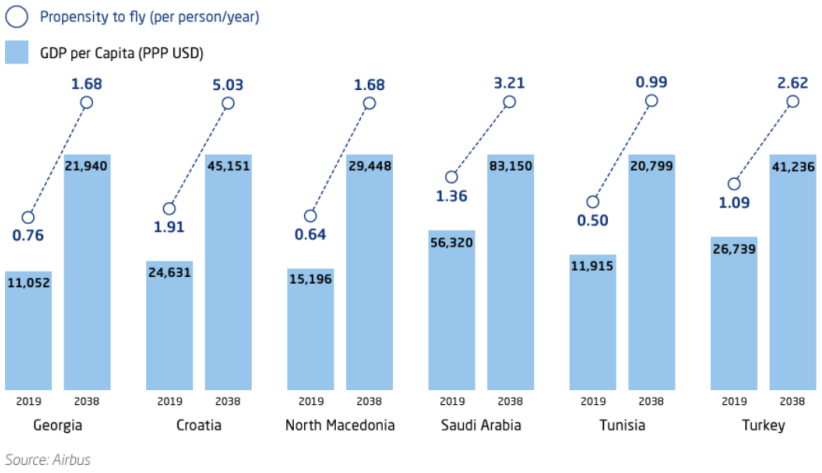


Source: JACD (2019), p.24.

[116] JACD (2019), *Worldwide Market Forecast 2019 – 2038*, March 2019.

B.2.5. Other industry commentary

The following section sets out other relevant commentary from airports, airlines, and equity analysts covering the sector. In summary, these sources indicate industry perceptions that demand for air travel has different characteristics in developed and emerging markets. In particular, emerging market demand is driven substantially by increasing wealth and the proportion of the population that are middle class. This supports a view that airports located in emerging markets are exposed to passenger growth that is driven by local economic conditions.

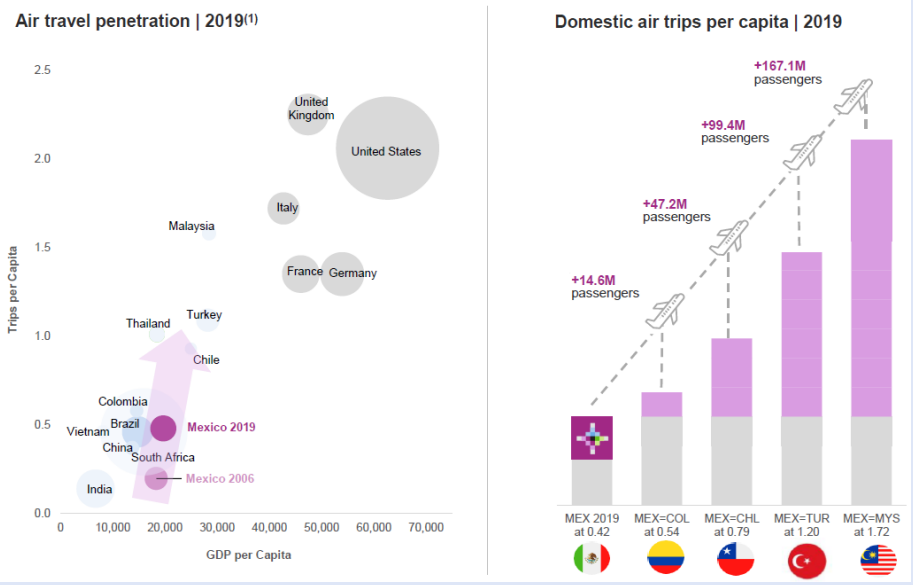
Country	Who	Commentary
Turkey	TAV (2019)[117] (Airport)	*"There are several long term macro trends that have shaped and are continuing to shape the future of aviation industry. One of these trends is the growth of the middle class in emerging economies which leads to urbanization and higher propensity to fly. In the last decade, 40 percent of new passenger traffic in the world has come from emerging economies. It is estimated that the global middle class will grow 50% over the next 20 years to 5.9 billion people from 3.9 billion today."*[118] *"All countries where TAV Airports operates in are expected to have a significant increase in both GDP per capita and propensity to fly in the following 20 years."*[119]  *Source: TAV (2019), p.36.*
Mexico	Volaris (2022)[120] (Airline)	Volaris note that the Mexican air travel market is at an early stage of growth. They consider that future growth in trips per capita, towards levels seen in comparable economies, present a significant growth opportunity.

[117] TAV 2019 Annual Report.

[118] TAV 2019 Annual Report, p.22.

[119] TAV 2019 Annual Report, p.36.

[120] Volaris (2022), *Just getting started…*, Investor Day presentation, 6 December 2022.

Country	Who	Commentary
		Growing trips per capita toward levels in comparable markets presents significant capacity opportunity  *Source: Volaris (2022), p.20.*
China	China Southern Airlines (2022)[121] (Airline)	*"China's civil aviation industry has huge potential for development, with an average annual growth rate of 11% in passenger traffic in the 10 years before 2020, but only 0.47 flights per capita, while the number of flights per capita in the U.S. has remained stable at 2.3-2.7, which is 5-6 times higher than China's."*
	SWS Research (2019) (Equity analyst covering Shenzhen Airport)	*"According to the International Air Transport Association (IATA), the average number of flights taken per person shows strong correlation with per capita GDP.* ***With GDP and consumption power improving, we believe the number of flights taken per person in China will grow to a similar level to that of western countries."*** *"After comparing per capita flights per annum, we find the Greater Bay Area's 2.9 flights per capita lags far behind the 10.7 flights of the Los Angeles Bay Area and the 6.6 flights of the New York Metropolitan Area,* ***illustrating significant development potential****."* ***"Shenzhen Airport is at the early stage of its development cycle****, during which period non-aviation businesses begin to generate revenue, while revenue from the aviation business has recently demonstrated a nearly linear growth trend."*
	Bloomberg Intelligence (2019). (Equity analyst, covering Shanghai Airport)	*"China is emerging as a dominant force driving global air travel demand. It had 550 million air passenger trips in 2017, double the number in 2010 as it transitioned into an upper-middle-income economy. It already ranks as the world's second-largest aviation market by passenger volume, at 65% of the U.S., the world's No. 1 market.* ***Yet it had just 0.4 air trips per capita in 2017 which implies much room to grow, as that's well below 2.6 in the U.S., 1.4 in Germany, and 1.0 in Japan."***

[121] https://www.csair.com/en/about/investor/yejibaogao/2022/resource/48d90604203fb7f0f582c10bee6beb5a.pdf, p.45

Country	Who	Commentary
Thailand, Malaysia, Vietnam	Bloomberg Intelligence (2023). (Equity analyst covering Airports of Thailand, Malaysia Airports, Singapore Changi and Airports Corporation of Vietnam)	*"Airports of Thailand, Malaysia Airports, Singapore Changi and Airports Corp. of Vietnam* ***should be capable of sustained traffic growth as regional air-travel demand expands****. The number of high and upper-middle income households in emerging Southeast Asian countries is projected to almost double to 57 million in 2030 from 30 million in 2019, according to the World Economic Forum. High and middle-income households are likely to be concentrated in major cities, with easy access to airports.* ***Rising disposable incomes could drive discretionary spending on travel. Strong demand for outbound travel is expected in Singapore, Malaysia and Thailand given their plenitude of middle-class households. Vietnam, Indonesia and the Philippines could also emerge as a driving force, fuel by 6-8% annual growth in disposable income per capita.****"* *"Asia airports' long-term growth potential is supported by increased urban clustering in the region. The number of Asian cities with populations above 500,000 is projected to reach 752 by 2030, according to a United Nations forecast, making it easier for airports, airlines, and other aviation service providers to secure a commercially viable passenger base. China and many Asian countries are building airports in secondary cities, which should enhance air-transport access.* ***An additional 500 million people may be living in urban areas by 2030, which are more likely to have efficient transport systems that give people greater access to airports.****"*

Appendix C RELATIVE RISK ANALYSIS

This appendix summarises the key characteristics of each comparator included in the sample. Our research has, as far as possible, focussed on characteristics that were known or applied in the beta estimation period, i.e., up to 31 December 2019.

AENA	
Profile	Aena (a state-owned company) owns 46 airports and two heliports in Spain, including Madrid and Barcelona. Aena also has assets outside Spain, with direct interests in 23 international airports, including London Luton (51% equity) and 100% of the Northeastern Group of airports (6) in Brazil.[122,123] Aena's revenues are derived from aeronautical activities, commercial activities and real estate services.[124]
Basis of pricing (aeronautical services)	Aeronautical charges are levied on the basis of tons (e.g., landing services), passengers (e.g., passenger handling and security services), and time (e.g., aircraft parking and air bridge services).[125]
Form of economic regulation	Aena operates under a RAB-based price cap (maximum annual revenue per passenger), set on a dual till basis.[126] The inputs to charges are determined through a five-yearly Airport Regulatory Document (DORA). The DORA is approved by the Spanish Government, rather than an independent economic regulator. However, the National Commission on Markets and Competition (CNMC) has an advisory role in the DORA process and in monitoring compliance against the DORA. [127]
Pricing period	The DORA applies for a five-year period.[128]
Demand risk	Aena bear volume risk during the pricing period, unless exceptional circumstances defined in the DORA arise. The 2017-2021 DORA defined an exceptional circumstance as an annual increase (in any year over 2017-2021) of passenger traffic across the entire network which exceeds the initially predicted values by 10 percentage points.[129] Such circumstances may, where appropriate, result in a modification of the DORA. The 2017-2021 DORA does not appear to account for unforeseen *reductions* in demand relative to forecast.

[122] Aena Fact Sheet, available at:https://www.aena.es/en/shareholders-and-investors/general-information/fact-sheet.html. Last accessed January 2024.

[123] Luton and 'Ohers (international and adjustments) respectively accounted for 1% and 4% of EBITDA in 2019. Aena (2020), *2019 Results Presentation – 2019 full year results*, 26 February 2020, p.11.

[124] Aena Fact Sheet.

[125] Aena (2024), *Price Guide 2024 – January Edition*. Available at: https://www.aena.es/en/airlines/prices.html.

[126] Airport Regulation Document (DORA) 2017-2021, p.45 and pp.49-52. Available at: https://www.aena.es/en/shareholders-and-investors/financial-and-economical-information/regulation.html.

[127] DORA 2017-2021, p.8.

[128] DORA 2017-2021, p.10.

[129] DORA 2017-2021, p.24.

Aeroporto Guglielmo Marconi di Bologna	
Profile	The company's primary activity relates to the operation of Bologna Airport. Other activities include a cargo and mail handling business operating out of Bologna Airport and a 24% stake in a cruise terminal.[130] The airport activities include both aviation and non-aviation services. Aviation services involve the management, maintenance and development of the airport's airside and landside infrastructure, including security and passenger services. Non-aviation services mainly involve real estate and other commercial developments at the airport, such as parking, retail concessions and advertising services.
Basis of pricing (aeronautical services)	The company derives revenue from aviation services through:[131] • Passenger services fees – based on the number of departing passengers. • Take-off and landing fees – based on MTOW and the type of flight. • Parking fees – based on MTOW. • Freight fees – based on the weight of cargo. • Refuelling fees – based on the quantity of fuel supplied. • Security and passenger service fees – based on passenger numbers.
Form of economic regulation	Up to 2019, two authorities had regulatory responsibilities related to airport charges in Italy.[132] Under these arrangements: • The Ente Nazionale per l'Aviazione (ENAC) and Bologna Airport entered into regulatory agreements ("Contratto di Programma"), determining quality targets, environmental targets and planned capital investments.[133,134] • The methodology for determining airport charges was set by the Transport Regulatory Authority (RTA).[135] Under the charge setting methodology that applied as of July 2017, charges were set on a dual-till basis using a building block model. [136]
Pricing period	Charges are set for four-year periods (most recently, 2016-2019 and 2023-2026).

Demand risk	The charging model applying from July 2017 (and up to the end of the beta estimation period) contained provisions for demand risk sharing. Specifically:[137]
	• A mechanism related to forecast vs. actual traffic over an entire regulatory period.
	  ○ If the deviation was positive and above a defined threshold, 50% of the associated revenue would be set aside in a fund for future infrastructure investments.
	  ○ If the deviation was negative and below a defined threshold, 50% of the associated lost revenue would be recovered from charges in the subsequent regulatory period.

[130] 2019 Annual Report, p.11. Available at: https://media.bologna-airport.it/System/2179531/AdB-Annual-Report-2019.pdf.

[131] 2019 Annual Report, p.13.

[132] Masutti A. (2019), *Landmark ruling of the Court of Justice of the European Union on airport charges: Case C-379/18*. Available at: https://www.ibanet.org/article/696541E3-0C63-4FD7-872A-1CDBF4CB61AD.

[133] See: https://media.bologna-airport.it/System/2186356/Contratto-di-programma-en.pdf.

[134] 2019 Annual Report, p.35.

[135] ART(2012), *Decree-law No 1 of 24 January 2012 – Urgent measures for competition, infrastructure development and competitiveness.* Available at: https://www.autorita-trasporti.it/wp-content/uploads/2022/10/Decree-law-no-1_2012-artt-71-82_Airport-charges-1.pdf.

[136] ART (2017), *Airport Charges Regulatory Model 1: For airports with traffic over 5 million passengers per year*. Available here: https://www.autorita-trasporti.it/wp-content/uploads/2022/07/Model-1-Annex-A1_Decision-no.-92_2017.pdf.

[137] ART (2017), section 8.13. The thresholds mentioned in this paragraph were to be set through consultation with airport users.

Aeroporto Guglielmo Marconi di Bologna	
	• During a regulatory period, if annual deviations in traffic compared to forecast were above/below a defined threshold, an adjustment could be requested for charges applying to the remaining years of that regulatory period.

ADP	
Profile	Groupe ADP manages and operates (directly or via subsidiaries TAV Airports and GMR Airports) more than 20 airports located in France (including Paris) and internationally (including Croatia, Jordan, Chile, Turkey).[138] GMR Airports (India's largest airport operator) joined Groupe ADP's network in 2020.[139] ADP initially acquired a stake in TAV Airports in 2012. ADP's regulated activities under the French Civil Aviation Code include aeronautical services, airport real estate, rental revenues and car parks. Non-regulated revenues are derived from commercial activities, diversification real estate, and airport safety and security.[140]
Basis of pricing (aeronautical services)	Charges for aeronautical services are based on MTOW (landing and parking fees), time (parking fees) and passengers (passenger handling).[141]
Form of economic regulation	The Paris airports operate under the Economic Regulation Agreement (ERA) set between ADP and the Government. The third ERA related to the period 2016 to 2020 (five years). These agreements establish a ceiling for the annual change in charges over the period and set objectives for service quality and associated financial incentives.[142] The regulatory framework operates on a 'hybrid till' basis, with activities such as car parks falling within the scope of regulation.[143] For ADP's non-home airports, we have not found evidence that a similar regulatory regime is in place. In some cases, there are contractual concession agreements, with different characteristics.
Pricing period	Five years. However, the Paris airports have the ability to terminate the agreement and must submit annual airport charge proposals for approval by the French Transport Regulatory Body (ART).[144]
Demand risk	The most recent ERA (up to its abandonment in 2020 due to the Covid-19 pandemic) contained mechanisms for partial volume risk sharing between the airport and airlines. Specifically, charges could be adjusted (up or down) if annual traffic levels moved outside a buffer zone (annual growth rates 0.5 percentage points above or below the baseline

[138] See: https://www.parisaeroport.fr/en/group/strategy/airport-network. Last accessed January 2024.

[139] See: https://www.parisaeroport.fr/en/group/strategy/gmr-airports. Last accessed January 2024.

[140] ADP (2019a), *Business Model & Financial Outlook – 2019 Investor Day*, pp.4-5. Available at: https://www.parisaeroport.fr/docs/default-source/groupe-fichiers/finance/relations-investisseurs/journ%C3%A9es-investisseurs/2019/en-groupe_adp_investor-day_business-model-financial-outlook.pdf?sfvrsn=81edfbbd_2.

[141] ADP (2019b), *Fee Schedule for Services Rendered*, fees for 1 April 2019 to 31 March 2020). Available at: https://www.parisaeroport.fr/docs/default-source/professionnel-fichiers/service-aux-entreprises/adp-tarifs-2019-homologues-en.pdf?sfvrsn=57e4f5bd_2.

[142] ERA 2016-2020, pp.13-25. Available at: https://www.parisaeroport.fr/docs/default-source/groupe-fichiers/finance/relations-investisseurs/r%C3%A9gulation/2016-2020/2016-2020-economic-regulation-agreement.pdf?sfvrsn=242508bd_8.

[143] ADP (2019a), pp.4-5.

[144] For example, ADP requested early termination of ERA 2016-2020 due to the impact of the Covid-19 pandemic. See here: https://presse.groupeadp.fr/termination-2016-2021era/?lang=en.

ADP	
	level). The fee adjustment provided that 50% of the surplus or 20% of the shortfall in the projected income from aeronautical charges would be offset (within pre-defined limits).[145]

Auckland International Airport	
Profile	Auckland International Airport is the major international airport in New Zealand, serving more than 75 per cent of all international visitors to New Zealand prior to the Covid-19 pandemic. Auckland Airport provides both aeronautical (airfield, terminal facilities, aircraft and freight facilities) and non-aeronautical services (e.g. retail outlets, car parks and property leases).
Basis of pricing (aeronautical services)	Charges for aeronautical services are set on the basis of MTOW (landing fees), hourly rates (parking fees), and passengers (terminal facility fees).[146]
Form of economic regulation	Auckland Airport operates under a dual till framework, with only aeronautical activities subject to economic regulation. The form of regulation is an information disclosure regime.[147] The information disclosure regime involves:[148] • Annual disclosure and monitoring of financial performance, quality (as measured by reliability measures, passenger satisfaction and operational improvement processes), capacity utilisation indicators and capital investment. • A price setting disclosure following the setting of standard aeronautical prices (every five years) which provides information on the basis for pricing and targeted returns.
Pricing period	Prices are set for a period of five years.[149]
Demand risk	There are no demand risk sharing arrangements prescribed in the regulatory framework, although Auckland Airport may choose to negotiate these with individual customers and/or propose arrangements as part of its five-year price setting disclosure.[150]

ENAV SpA	
Profile	ENAV's core business is in the management of regulated air traffic control services in Italy, operating across 45 airports and four area control centres.[151] ENAV also undertakes some unregulated activities, including airspace design, flight inspections, meteorology and

[145] ERA 2016-2020, pp.15-17.

[146] See: https://corporate.aucklandairport.co.nz/investors/regulation. Last accessed January 2024.

[147] See: https://corporate.aucklandairport.co.nz/investors/regulation. Last accessed January 2024.

[148] See: https://corporate.aucklandairport.co.nz/investors/regulation. Last accessed January 2024.

[149] See: https://corporate.aucklandairport.co.nz/investors/regulation. Last accessed January 2024.

[150] For example, in its review of Auckland Airport's third price setting event (PSE3), the New Zealand Commerce Commission (NZCC) noted that the airport's approach to demand forecasting constituted a form of demand risk sharing. NZCC (2018), *Review of Auckland International Airport's pricing decisions and expected performance (July 2017 – June 2022)*, 1 November 2018, paragraph B69.

[151] See: https://www.enav.it/en/what-we-do/we-manage-italian-airspace. Last accessed January 2024.

ENAV SpA	
	training.[152] Unregulated activities accounted for 2% of revenues in 2019, some of which was derived from international operations.[153]
Basis of pricing (aeronautical services)	Regulated services include en-route services (handling of air traffic crossing Italian airspace) and terminal services (providing assistance to aircraft during approach, takeoff and landing).[154] Charges are structured as €/service unit.[155] • For en-route services, a service unit is a function of distance travelled within Italian airspace and the certified aircraft weight. • A service unit for terminal services is the aircraft certified weight.
Form of economic regulation	ENAV are supervised by the Italian Civil Aviation Authority, but subject to Regulation 2019/317 issued by the European Commission (EC). Regulation 2019/317 sets out a framework for determining regulated charges, including incentive schemes and traffic risk sharing. The framework includes provision for European Union-wide performance targets. [156] Within this framework, ENAV is subject to price cap regulation – generating regulated revenue through charging airspace users regulated tariffs for en-route and terminal air navigation services. The price cap is to be determined by a cost base that includes staff costs, operating costs, depreciation costs, cost of capital, and exceptional costs, also taking into account expected inflation and traffic growth. These charges are set at the start of each regulatory period. Regulation 2019/317 (Article 25) provides that member states can choose to deduct commercial (i.e., unregulated) revenues from the cost base used to determine regulated charges. We have not been able to identify whether this has been applied to ENAV.
Pricing period	5 years - ENAV are currently in regulatory period RP3, which runs from 2020-2024[157]
Demand risk	As is required by EC Regulation 2019/317 (Article 27), ENAV are subject to a traffic risk sharing mechanism. The difference between planned and actual traffic is shared as follows: • ENAV take on 100% of demand risk in a +/-2% 'dead band'; • Demand risk is split between ENAV (30%) and the airlines (70%) in the range of -2% to -10% and +2% and +10%; and • Airlines take on 100% of demand risk if the deviation between planned and actual traffic is above or below 10%. This is shown graphically below:

[152] See: https://www.enav.it/en/investors/investing-in-enav/unregulated-business. Last accessed January 2024.

[153] ENAV Annual Financial Report 2019, p.39.

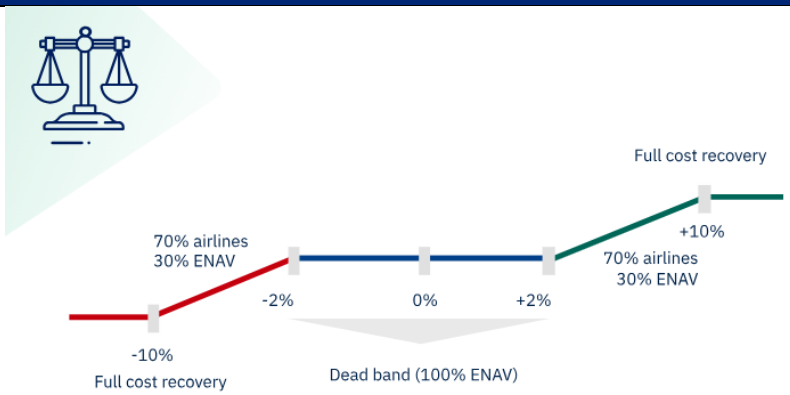
[154] See: https://www.enav.it/en/investors/investing-in-enav/business. Last accessed January 2024.

[155] See: https://www.enav.it/en/investors/investing-in-enav/business. Last accessed January 2024.

[156] The regulations are available here: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.056.01.0001.01.ENG.

[157] See: https://www.enav.it/en/investors/investing-in-enav/business. Last accessed January 2024.

ENAV SpA



Source: https://www.enav.it/en/investors/investing-in-enav/business. Last accessed January 2024.

This adjustment to ENAV's unit charge is applied on a backward looking annual basis (i.e., a loss in year N is recovered in year N+1).[158]

Fraport

Profile	Fraport operates a global portfolio of airports and airport-related companies (as of FY2019, 31 airports in 11 countries).[159] In addition to Frankfurt (Germany), the group's operations are located in Greece, Slovenia, Bulgaria, Russia, Turkey, China, Hong Kong, India, Peru, Brazil, and the United States. In Frankfurt, the group's operations involve aviation (including airside and terminal management), retail and real estate (including parking and leases), and ground handling (including passenger, baggage and cargo services). Fraport participates in international ventures through asset deals, concessions, and 'Operational Readiness and Airport Transfer' projects (i.e., consulting support to airport operators).[160]
Basis of pricing (aeronautical services)	Fraport derives regulated revenues at Frankfurt Airport from: [161] • Landing and takeoff charges – based on MTOW, aircraft noise category, departure/arrival time, passenger numbers and/or freight volumes. • Parking charges – based on size, time and location. • Noise abatement charges – based on passenger numbers and/or freight volume, aircraft noise category and departure/arrival time. • Security charges – based on passenger numbers and/or freight volume. • Passenger charges – based on passenger numbers.
Form of economic regulation	Charges for regulated services at Frankfurt Airport are subject to approval under Section 19b of the German Aviation Act (LuftVG).[162] The Hessian Ministry of Economics, Energy, Transport and Housing (HMWEVW) is the authority responsible for approving charges. The LuftVG does not prescribe a detailed methodology for setting charges, although these should reflect efficient provision of the services.

[158] See: https://www.enav.it/en/investors/investing-in-enav/business. Last accessed January 2024.

[159] Fraport Visual Fact Book 2019, p.5.

[160] Fraport Visual Fact Book 2019, pp.9-10.

[161] Fraport Visual Fact Book 2019, p.41.

[162] The part of the LuftVG dealing with airport charges (Section 19) is available here (in German): https://www.gesetze-im-internet.de/luftvg/__19b.html.

Fraport	
	Frankfurt Airport charges are regulated on a dual till basis. [163]
Pricing period	The LuftVG does not specify a particular pricing period. Accordingly, Fraport has flexibility to determine how often it requests adjustments to charges at Frankfurt Airport. However, Fraport is required to provide airport users with a draft justifying its pricing proposal at least six months before the new charges are intended to apply (Section 19(3)(1)). Similarly, the proposal must be submitted to the regulatory authority at least five months before the intended application date (Section 19(3)(2)).
Demand risk	The flexibility around the frequency of applying for pricing adjustments allows the airport to respond to demand fluctuations rapidly (noting that charges are still subject to regulatory approval before they take effect).

Flughafen Wien	
Profile	The Flughagen Wien Group comprises three international airports in Austria (Vienna), Malta and Slovakia, in addition to the Bad Vöslau airfield (also in Austria).[164] The group's operations include: airport services (operation an maintenance of Vienna Airport terminals); handling and security services (aircraft and passenger handling, security checks); retail and property services (advertising, shopping, lounges, parking, rental of office and cargo space); and operations in Malta, Solvakia and other operating segments. Vienna Airport is the main driver of group financial outcomes, accounting for >85% of revenues in FY2019.[165]
Basis of pricing (aeronautical services)	Regulated airport services are derived from:[166] • Landing, parking and airside infrastructure fees – based on MTOW. • Passenger, landside infrastructure and security fees – based on passenger numbers. • An infrastructure fee for fuelling – based on the volume of fuel.
Form of economic regulation	The regulated services described above for Vienna Airport are subject to price cap regulation. The price cap formula and process for adjustments are set out in the Austrian Airport Charges Act, in place since 1 July 2012.[167] The Act specified a maximum annual change in regulated services charges. This is determined as the rate of inflation less 0.35x traffic growth, where traffic growth is calculated as the three-year average (with each year defined as the 12-month period from 1 August to 31 July). If traffic growth is negative, the maximum adjustment to charges is set at the rate of inflation.[168] The Airport Charges Act allows the airport to apply to the Federal Minister for Transport, Innovation and Technology to recalculate the maximum permissible airport fee to account

[163] Fraport Visual Fact Book 2019, p.17.

[164] See: https://www.viennaairport.com/en/company/investor_relations/company. Last accessed January 2024.

[165] See: https://www.viennaairport.com/en/company/investor_relations/company. Last accessed January 2024.

[166] Flughafen Wien 2019 Annual Financial Report, p.19. Available at: https://www.viennaairport.com/jart/prj3/va/uploads/data-uploads/Konzern/Investor%20Relations/Jahresfinanzberichte/VIE_JFB_2019_en.pdf.

[167] The Act is available here: https://www.ris.bka.gv.at/eli/bgbl/I/2012/41. Last accessed January 2024, using an English translation.

[168] Flughafen Wien 2019 Annual Financial Report, p.19. See also Clause 2 of the attachment to the Act.

Flughafen Wien	
	for: the costs of large capacity-expanding aviation-related investments; new legal regulations or official orders affecting civil aviation; or the introduction of new services.[169]
Pricing period	Regulated charges may be fixed for a maximum of one year.[170]
Demand risk	The Airport Charges Act provides that if traffic falls by more than 25%, charges can be determined using an alternative mechanism to the standard formula described above. Specifically, charges can be re-determined to achieve full recovery of appropriate and efficient costs.[171]

Flughafen Zurich	
Profile	The firm's main operations are the Zurich Airport in Switzerland. In addition Flughafen Zurich is involved in the operation of eight airports in Latin America and (as of 2019) obtained a concession to construct and operate new airport in India.[172] International operations contribute minimally to the company's financial performance, accounting for approximately 2% of EBITDA in FY2019.[173] The company's operations include regulated aeronautical services in Switzerland, unregulated non-aviation services in Switzerland (commercial, real estate) and international airport operations.[174]
Basis of pricing (aeronautical services)	Charges for aeronautical services are set based on MTOW (landing, parking), time (parking), and passengers (passenger and security charges).[175]
Form of economic regulation	Aeronautical charges are determined by the Federal Office of Civil Aviation (FOCA) and specified in the Ordinance on Airport Charges.[176] The Swiss Federal Council has in the past overturned proposals from FOCA.[177] To set charges, the airport operator should seek a negotiated agreement with airport users. If an agreement cannot be reached, or the result of the negotiation is rejected by FOCA, the airport operator may submit a charging proposal to FOCA for approval. These charges should be calculated in line with Section 4 of the Ordinance.[178] Charges are set on a hybrid till basis. Charges for aeronautical services should reflect the costs of providing those services, less a 'transfer payment' equal to 30% of the profits derived from non-aeronautical services.[179]

[169] See Clause 6 of the attachment to the Act.

[170] See Section 8 of the Act.

[171] See Clause 7 of the attachment to the Act.

[172] See: https://www.flughafen-zuerich.ch/en/company/flughafen-zuerich/international-business/international-projects. Last accessed January 2024.

[173] Flughafen Zürich (2020), *Full Year Results 2019 – Presentation to investors &* analysts, 10 March 2020, pp.27-30. Available at: https://presspage-production-content.s3.amazonaws.com/uploads/2731/investorpresentationfy2019pdf.pdf?10000.

[174] Flughafen Zürich (2020), p.26.

[175] See: https://www.flughafen-zuerich.ch/en/business/airlines-and-handling/flight-operations/charge-regulation. Last accessed January 2024.

[176] An English translation of the current Ordinance is available here: https://www.fedlex.admin.ch/eli/cc/2012/328/en.

[177] S&P Ratings Direct (2019) Flughafen Zurich AG, July 2019.

[178] See Section 2 of the Ordinance.

[179] Article 34 of the Ordinance.

Flughafen Zurich	
Pricing period	Under the Ordinance (Article 10): • The published schedule of charges must specify when the airport operator will next initiate proceedings for adjusting charges. • This date may be at most four years after the charges come into force (i.e., the pricing period is a maximum of four years, plus the time required for negotiation of new charges). Under Article 11, the airport operator may only initiate an earlier charge review if (i) extraordinary circumstances arise which affect the cost of operating the airport or (ii) there are unforeseeable changes to the airport's regulatory environment that have a substantial impact on costs. On the other hand, FOCA may initiate a review at any time if it considers that charges do not comply with the law.
Demand risk	We have not identified demand risk sharing mechanisms. As noted above, the Ordinance provides for a review of charges in certain circumstances, which do not include differences between expected and outturn demand.

Japan Airport Terminal Co	
Profile	Japan Airport Terminal Group (JAT) is responsible for the construction, maintenance and operation of Haneda Airport (Tokyo) passenger terminals (domestic and international). In addition, JAT receives revenues associated with sales of merchandise, food and beverages within the terminals it operates.[180] JAT also provides services (merchandise sales, duty free, food and beverage) at other international and domestic airports across Japan.[181] JAT also operates overseas airports: Palau International Airport (announced in 2017)[182] and New Ulaanbaatar Airport (announced in 2019)[183]. JAT's scope is narrower than other airport operators in our sample, the airside assets (runways, taxiways, apron, security facilities, etc) are owned and operated by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).[184]
Basis of pricing (aeronautical services)	Revenues from JAT's terminal facility management business are derived from:[185] • Rents received from tenants using the terminal buildings (e.g., airlines, shops). We have not identified any information on the nature of these rental payments.

[180] TIAT (2023), p.19.

[181] JAT (2020), *Earnings Presentation Material – April 1 2019 to March 31 2020 (FY19)*, 10 June 2020, pp.32-33. Available at: https://www.tokyo-airport-bldg.co.jp/files/en/ir/Presentations_20200610_1330_en.pdf.

[182] JAT (2017),*Sojitz and Japan Airport Terminal Join Project to Manage Operations at Palau International Airport*, 21 August 2017. Available at: https://www.tokyo-airport-bldg.co.jp/files/en/ir/170821_en.pdf.

[183] JAT (2019), *Participation in New Ulaanbaatar International Airport Operation Project in Mongolia*, 5 July 2019. Available at: https://www.tokyo-airport-bldg.co.jp/files/en/ir/190705_en.pdf.

[184] JAT (2020), p.32. Steer Davies Gleave (2016), *Study on airport ownership and management and the ground handling market in selected non-EU countries*, June 2016, pp.70-71.

[185] Tokyo International Air Terminal Corporation (TIAT) (2023), *The 17th Term Business report*, p. 18. Available at: https://www.tiat.co.jp/en/blister/docs/95c21294ce577e839f0dc10d7c2b2cb11141fcdb.pdf. JAT is the parent company of TIAT, who manage the international terminals at Haneda.

Japan Airport Terminal Co	
	• Passenger service facility charges (PSCF). These are levied on departing / arriving domestic passengers, departing international passengers, and international passengers in transit. These are per passenger charges.[186] • Facility usage fees from airlines, related to the use of facilities such as boarding bridges, luggage handling systems and gates. We have not identified any information on the nature of these fees. As the MLIT is responsible for managing airside infrastructure, it is they (rather than JAT) who receive landing charges and air navigation service charges.[187]
Form of economic regulation	JAT may apply to the MLIT to amend charges for the services it provides.[188,189] We have been unable to identify further details on the nature of the price-setting framework, including the regulatory till.
Pricing period	It appears that prices are not reviewed at regular intervals. For example, the International PSFC at Haneda appears to have been revised in 2010, 2019 and 2022.[190] The domestic PSFC appears to have been amended in 2005, 2011, 2014 and 2022.[191]
Demand risk	It is not clear whether there are or are not any arrangements within the regulatory framework, or commercial agreements between JAT and its customers, that mitigate demand risk. Shareholder presentations dated just after the onset of the Covid-19 pandemic make no mention of risk sharing.[192]

SAVE S.p.A.	
Profile	SAVE Group's airport management operations are focused on developing the infrastructure and route network of the Venice-Treviso airport system in Italy.[193] The group includes Venice Marco Polo Airport, Treviso Airport, Verona Airport (since 2014) and Brescia Airport (since 2014), and a stake in the Brussels Chareloi airport in Belgium. SAVE S.p.A. was delisted in 2017. Prior to delisting, Venice Airport contributed the majority of the group's revenues – more than 85% in FY2017.[194] Aviation-related revenues included aviation fees and tariffs and

[186] See here: https://www.jal.co.jp/jp/en/inter/airport/psfc/ (last accessed January 2024).

[187] See here: https://www.mlit.go.jp/en/koku/koku_fr1_000006.html (last accessed January 2024).

[188] TIAT (2022), *Revision of International PSFC at Haneda Airport*, 21 January 2022. Available at: https://www.tiat.co.jp/en/news/1e378986fd525c5bb92c62bd9f528bb768dd0eed.pdf.

[189] Article 93 of the *Regulation for Enforcement of the Civil Aeronautics Act* sets requirements for parties to notify the Minister of Land, Infrastructure, Transport and Tourism of airport charges or any change thereof. The notification must include the category and amount of charges, a comparison of the old and new charges (if a change is proposed), the reasons for the change, and documents describing the basis for calculating the charges. A publicly available English translation of the Regulation is available from Japanese Law Translation at: https://www.japaneselawtranslation.go.jp/en/laws/view/4052#je_ch5sc1at38 (last accessed January 2024).

[190] Based on a review of press releases available at: https://www.tiat.co.jp/en/news/.

[191] JAT (2022), *Domestic Passenger Terminal Buildings – Regulations for the Use of Passenger Service Charges.* Available at: https://tokyo-haneda.com/site_resource/flight/pdf/psfc_dms_en.pdf.

[192] JAT (2020).

[193] See: https://www.grupposave.it/en/the-group/profile-and-activities.html. Last accessed January 2024.

[194] 2017 Annual Report, p.13. Available here: https://www.grupposave.it/upload/comunicati/1545046385/save_group_consolidated_fs_31_december_2017.pdf.

SAVE S.p.A.	
	cargo handling. Non-aviation related revenues included ticketing, parking, advertising and other commercial activities.
Basis of pricing (aeronautical services)	Fees for aviation services were levied on a per passenger, per ton, and time basis, depending on the charge.[195]
Form of economic regulation	Unlike Bologna Airport (see above), at least up to SAVE's delisting in 2017, Venice Airport's charges were established under a regulatory agreement established with ENAC in 2012 (without oversight of the RTA).[196,197] Charges were set using a building blocks model, on a dual-till basis.[198]
Pricing period	The agreement with ENAC had a duration of 10 years, divided into two five-year tariff sub-periods.[199]

Demand risk	The agreement with ENAC provided for revision of charges, at the request of ENAC or SAVE, in the event of significant deviations compared to forecast traffic.[200]
	In addition, the charging methodology provided for: [201]
	• An adjustment at the end of each five-year sub-period, related to the deviation in forecast vs. actual traffic over that period.
	  ○ If the deviation was within -/+ 5%, SAVE would bear the traffic risk.
	  ○ If the deviation was positive and greater than +5%, 50% of the associated revenue would be set aside for infrastructure investments in the next sub-period.
	  ○ If the deviation was negative and less than -5%, 50% of the associated lost revenue would be recovered from charges in the next sub-period.
	• In the event of annual traffic deviations in excess of -/+6%, ENAC or SAVE could request an adjustment for charges applying to the remaining years of the agreement.

Sydney Airport	
Profile	The company operates Sydney Airport, located in Australia. It was delisted in 2022. Sydney Airport's revenues derive from both aeronautical and non-aeronautical services.

[195] See: https://www.veneziaairport.it/societa-trasparente/altri-contenuti/diritti-e-corrispettivi.html. Last accessed January 2024.

[196] 2017 Annual Report, pp.31-32.

[197] The documents related to the agreement with ENAC are available here (in Italian): https://www.enac.gov.it/aeroporti/gestioni-aeroportuali-regolazione-tariffaria/contratti-di-programma/contratti-di-programma-ai-sensi-della-l-3-agosto-2009-n-102-e-ss-mm/stipulati/enac-save-aeroporto-di-venezia. Last accessed January 2024.

[198] ENAC (2012), *Documento Tecnico di Regolazione Tariffaria*, p.1 and Section 11 onwards. Available here (in Italian): https://www.enac.gov.it/sites/default/files/allegati/2018-Ott/Documento_Tecnico_26.10.2012.pdf.

[199] ENAC (2012), p.1.

[200] ENAC (2012), p.1.

[201] ENAC (2012), pp.16-17.

Sydney Airport	
Basis of pricing (aeronautical services)	The airport's conditions of use pricing for aeronautical services (which may differ from negotiated agreements) reflect per passenger, per MTOW and time-based charges.[202]
Form of economic regulation	Sydney Airport is subject to 'light-handed' economic regulation which is limited to a price and quality monitoring regime administered by the ACCC.[203] Charges and terms are subject to direct commercial negotiations between the airport and airlines, including the contract period, risk-sharing and any within-period adjustments.[204] These commercially negotiated contracts are not made publicly available. The ACCC conduct annual monitoring of the revenues, costs, and profits of aeronautical services at Sydney Airport, as well as some non-aeronautical services, namely car parking and landside access activities. The monitoring approach is dual till, with aeronautical and non-aeronautical services considered separately.[205] While charges are not set by a regulator, the Australian Government has issued a set of Aeronautical Pricing Principles that monitored airports, such as Sydney, are required to follow when negotiating with airlines and setting aeronautical prices. Although these are not enforceable, the Productivity Commission has considered them in its periodic assessment of whether an airport has exercised market power.[206] Regional services at Sydney Airport, however, are subject to a price cap on aeronautical services and facilities. This applies to airlines operating flights between Sydney and regional NSW destinations. The Airport must notify the ACCC before prices can be increased for these services.[207]
Pricing period	As the contracts Sydney Airport negotiates with airlines are commercially confidential, it is not possible to understand the period over which prices are fixed, or whether the prices set can be reopened. Our understanding is that typically prices will be agreed for periods of 5-7 years.
Demand risk	The exposure of Sydney Airport to demand risk is dependent upon the contracts it negotiates with airlines, which are not publicly available. Our understanding is that agreements do not generally provide for demand risk sharing adjustments within the agreed pricing period.

[202] Sydney Airport (2023), *Aeronautical Charges from 1 January 2023*. Available at: https://assets.ctfassets.net/v228i5y5k0x4/3ATrrzNUZFbY9nZvMcbWmL/be7beaee2c542bf384bba45b4dcda0ed/Table_of_Charges_COU_Version_3.5_-_1_January_2023.pdf.

[203] ACCC (2023), *Airport monitoring report 2021-22*, August 2023, p.20.

[204] Productivity Commission (2019), *Economic Regulation of Airports – Inquiry Report*, 21 June 2019, Section 4.1.

[205] ACCC (2023), p.20.

[206] ACCC (2023), p.18.

[207] Productivity Commission (2019), pp.227-228.

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