HOUSTONKEMP
Economists

Comment on the Commerce Commission's draft asset beta methodology

Report for Wellington International Airport Ltd

19 July 2023

Report authors

Brendan Quach

Johnathan Wongsosaputro

Contact Us

Sydney
Level 40
161 Castlereagh Street
Sydney NSW 2000

Phone: [redacted]

Disclaimer

Contents

Figures

Tables

Executive summary

We have been asked by Wellington International Airport Ltd (WIAL) for our opinion on the economic rationale and merits of the New Zealand Commerce Commission's (Commission's) draft decision on its 2023 review of the airports input methodologies (IM).

The Commission ('Commission') published its draft decisions on 14 June 2023, which includes a cost of capital topic paper that sets out the Commission's draft decisions on individual cost of capital parameters.

In particular, the Commission has reached the draft decision that the midpoint asset beta for airports is 0.55. This compares with the Commission's previous midpoint asset beta of 0.60 for airports in the 2016 IM.

The Commission has made several modifications to its asset beta methodology compared to that adopted in its 2016 IM, namely:

- removing the downward adjustment of 0.05 from the average asset beta of the comparator sample;
- updating the asset beta estimate up to September 2022, resulting in an asset beta of 0.79;
- applying a country filter to the comparator sample, resulting in an asset beta of 0.63; and
- adopting a new method that uses the pre-COVID asset beta estimate and adjusts it for the impact of the risks associated with COVID-like events, resulting in an asset beta of 0.55.

We agree with the Commission's finding that there is no evidence to support the 0.05 downward asset beta adjustment. We also agree with the need to update the asset beta estimate for more recent data since the 2016 IM was published seven years ago.

In the remainder of this report, we assess the rationale and merits of the two remaining changes to the Commission's asset beta methodology, namely, the application of the country filter when identifying the comparator sample and the new method for incorporating the risks of COVID-like events.

In preparing this report, we have read and agreed to comply with the *Code of Conduct for Expert Witnesses* in the High Court Rules. We confirm that the matters set out in this report are within our area of expertise.

Role and impact of the Commission's airport asset beta estimates

The three regulated New Zealand international airports are subject to 'information disclosure' regulation. Under this framework:

- the Commission sets the airport asset beta estimate and a corresponding midpoint weighted average cost of capital (WACC) methodology as part of its seven-year IMs;
- the Commission uses the asset beta estimate and midpoint WACC methodology in the IMs as the starting point for deriving a rate of return target that applies to its review of each individual airport's five-yearly price setting events (PSEs); and
- each airport will consult and discuss the terms of five-yearly price setting individually with their substantial airline customers.

This framework suggests that when setting the airport asset beta and midpoint WACC methodology in the IMs, the Commission should aim to derive estimates that can be applied broadly by all three airports and to promote regulatory certainty by adopting a consistent and predictable methodology. This will reduce the likelihood that individual airports will need to use bespoke asset beta and WACC estimates that include an uplift to adjust for differences between their own systematic risks and that of the comparator sample.

In addition, the Commission also should assess the reasonableness of its estimates by reference to various 'cross-checks'. This will promote regulatory certainty, predictability and confidence in the Commission's asset beta methodology.

The rate of return target for a regulated airport will affect economic outcomes in two ways, namely that it will:

- affect an airport's incentive to invest in its assets and to raise the capital required for such investments, thus affecting dynamic efficiency in the aviation sector and the economy; and
- affect airport revenues and prices that airlines pay for regulated airport services, but any reduction in aeronautical charges that airlines do not pass through will transfer wealth from airports to airlines.

Taking into account the above economic outcomes, the Commission should be cautious about putting excessive weight on short term and directly observable considerations that involve reducing the airport asset beta and midpoint WACC estimates, while putting insufficient weight on longer term dynamic efficiency considerations that may be more difficult to observe.

Furthermore, the Australian Productivity Commission (PC) observes that airlines have weak incentives to pass reductions in aeronautical charges on to consumers in the form of lower airfares. This suggests that reducing airport revenues through reducing the midpoint airport asset beta from 0.79 to 0.55 will contribute little towards achieving the section 52A(1)(c) purpose of sharing efficiency gains with consumers through lower prices. Instead, it may delay airport investment and lead to congestion and poor quality service, which will be detrimental to consumers over the long term.

The PC's analysis is broadly applicable to New Zealand's context, given that:

- the downstream market for air travel is highly concentrated and airlines have the ability to price discriminate, thus giving them little incentive to pass cost savings on to consumers; and
- reducing the midpoint airport asset beta from 0.79 to 0.55 will reduce WIAL's per-passenger charges by approximately $3, which is minimal in the context of overall airfares, but corresponds to roughly one fifth of WIAL's current average charge of approximately $15 per passenger and therefore a greater than 20 per cent impact on the return on aeronautical investment;
    - these average charges are currently artificially low due to WIAL's agreement with airlines to cap prices and defer revenue during the pandemic and its immediate aftermath.

Consequently, the PC's analysis suggests that lowering the aeronautical charges of New Zealand airports will mostly result in a transfer of wealth from airports to airlines, and thus will contribute little towards achieving the section 52A(1)(c) purpose of sharing efficiency gains with consumers through lower prices. This may also harm consumers if it results in the delay of required airport investments.

Review of the Commission's comparator sample

The draft decision for the 2023 IM adopts an airport comparator sample with only eight airports, including five European airports. This is materially smaller than the sample of 23 comparator airports that CEPA, the Commission's consultant, identifies using the sample selection methodology from the 2016 IM. Among others, the most important modification in the draft decision is that the Commission has applied a country filter, with the effect of including only airports from countries that FTSE classifies as 'developed'.

In our view, the issue of whether a country filter should be applied involves a trade-off between bias and variance. A smaller sample of comparator firms is likely to generate estimates with lower bias if it contains firms that closely match the systematic risks of the benchmark efficient airport, but these estimates are likely to be volatile and more sensitive to idiosyncratic external shocks that affect individual comparators. Conversely, a larger sample may introduce bias if it includes firms with systematic risks that are less comparable to the benchmark efficient airport, but its estimates tend to have less variance and are more likely to be closer to the 'true' parameter estimates over shorter time periods.

We consider that the assessment of the advantages and disadvantages associated with different filters, ie, the trade-off between bias and variance, is likely to vary across industries. One important consideration for assessing this trade-off is whether the industry exhibits systematic risks that are uniform or diverse.

In the case of airports, which exhibit diverse systematic risks, the possible marginal benefits of reducing the variances of the asset beta and gearing estimates through obtaining a larger sample that does not apply a country filter are likely to outweigh the marginal costs of potentially introducing additional bias from including firms operating in markets that may differ substantively from New Zealand. This is consistent with reasoning set out by the Queensland Competition Authority (QCA) and the Supreme Court of Western Australia (WASC).

Furthermore, the Commission has not carried out detailed analysis to demonstrate that the characteristics of individual airports in its smaller sample make them more appropriate comparators for the three regulated New Zealand international airports. This is inconsistent with regulatory precedent by courts in New Zealand and Australia and by other airport regulators, which either used a broad comparator sample or carried out detailed analysis of each comparator in a smaller sample.

There are also several inconsistencies in the Commission's methodology for identifying comparator airports for its small sample, namely that the Commission:

- has applied an inconsistent treatment of Chinese airports;
- has inappropriately excluded Japan Airport Terminal Co Ltd, which the WASC includes as a comparator for Perth Airport;
- has not applied its country filter consistently, since the Commission has included ADP, AENA and Fraport, which operate a large number of airports, including in non-developed countries; and
- has not applied its liquidity filter consistently by inappropriately including Vienna Airport, as well as including the delisted Sydney Airport.

It is also relevant that the United Kingdom Civil Aviation Authority (CAA) excludes Sydney Airport and Auckland Airport from its comparator sample for Heathrow, with the CAA's consultant advising that Auckland Airport operates in a different geographical market and is likely to be exposed to different risks compared to larger European airports.

As such, it is unclear that the smaller comparator sample in the draft decision will necessarily generate airport asset beta estimates that are more unbiased compared to the asset beta estimates generated using the larger sample based on the 2016 IM methodology. Consequently, the airport asset beta estimate in the draft decision will be a less appropriate starting point for setting the WACC at each regulated New Zealand international airport's PSE, which makes it more likely that each of the three airports will need to develop their own bespoke asset beta estimates with appropriate uplifts that adjust for differences between their own systematic risks and that of the comparator sample, thus increasing the length and cost of consultations and discussions.

Finally, the smaller comparator sample in the draft decision will be more sensitive to the future addition or removal of individual airports, which may arise due to factors such as new listings or delistings. This increased volatility creates additional uncertainty for investors, and may make it more difficult for airports to raise capital for investments.

Taking all of these factors into account, we consider it appropriate for the Commission to expand its airport comparator sample by omitting the country filter. This will:

- reduce the variance of the beta estimate without necessarily increasing the bias of the estimate compared to that of the Commission's smaller sample;
- reduce the need for detailed assessments of individual comparators and subjective decisions regarding whether individual companies should be included or excluded; and

- increase regulatory certainty while reducing the length and cost of consultations and discussions between airports and airlines, ultimately benefitting consumers in the long term.

Review of adjustment for COVID-like risks

The 2016 IM derives the benchmark asset beta by calculating the sample average asset beta observed over the last two five-year periods, and then taking the average of the two.

The draft decision for the 2023 IM adopts a different method that starts with a long-term pre-COVID-19 average asset beta estimate of 0.53 and applies a premium of 0.02 to account for the risk of future COVID-type events, resulting in a benchmark asset beta of 0.55.

This approach is a form of ex-ante compensation for the risks of future asymmetric COVID-type events. It implicitly assumes that the Commission:

- can estimate the expected length and frequency of future COVID-type events, as well as the resulting impact on asset betas; and
- will apply the uplift in perpetuity.

The Commission's method of estimating the 0.02 asset beta premium for the risk of future COVID-like events is based on the methodology formulated by Flint, consultant for the CAA. However, the Commission has applied the CAA's approach incorrectly, and has assumed that future COVID-like events will have shorter durations compared to those assumed by the CAA and Flint. Furthermore, Flint has characterised its analysis as illustrative and speculative, meaning that the Commission's method for estimating the premium for COVID-like events is ultimately based on arbitrary assumptions of the probability, length and impact of future COVID-like events.

The draft decision framework requires airports to bear the risks of such events occurring at different length, frequency, impact and spacing compared to the Commission's assumptions. However, consumers are best placed to bear the risks of such high-impact-low-probability events, given that:

- these risks can be spread across the diverse base of consumers; and
- the prices paid for aeronautical services tend to constitute only a small proportion of airfares, which reduces the impact on travel decisions and results in a comparatively low level of deadweight loss.

Finally, the draft decision's method for estimating the 0.02 asset beta premium for the risk of future COVID-like events creates additional regulatory uncertainty for investors, making it more difficult for the regulated airports to raise capital for investments in line with the Part 4 purpose. This occurs because:

- the Commission's methodology in an individual IM is not binding on future IMs, which creates uncertainty regarding whether the Commission will apply the same 0.02 uplift in perpetuity, or will modify or remove the uplift in future IMs; and
- it is difficult to specify and delineate the circumstances for which the Commission will and will not apply the draft decision approach.

The Commission can address the above issues by instead committing to applying the estimation methodology from the 2016 IM, which takes the average asset betas observed from the last two five-year periods without applying an additional asset beta uplift. This method allows any COVID-affected observations to have no impact on the asset beta estimate after 10 years, and means that the Commission:

- can compensate for the risks of future COVID-like events as they materialise instead of conducting speculative analysis about their length, frequency, impact and spacing;
- will be allocating the risks associated with future COVID-like events to consumers, who are best placed to bear the risks of such high-impact-low-probability events; and

- will promote regulatory certainty by applying a well-established method that does not require an additional asset beta uplift to be provided in perpetuity for future COVID-like events that are difficult to specify and delineate.

Alternatively, the Commission can commit to adopting the average asset betas observed from the last three five-year periods without applying an additional asset beta uplift. This will confer similar benefits to the 2016 IM methodology, but will also smooth the impact of COVID-like events over a longer period, such that any COVID-affected observations will have no impact on the asset beta estimate after 15 years.

CEPA's asset beta estimates suggest that this alternative approach will result in an asset beta of 0.745 using data up to September 2022.

Cross-checks for the determined asset beta

We assess the draft decision's 0.55 airport asset beta estimate against three cross checks.

First, we compare the draft decision's airport asset beta against the 2016 IM estimate. We observe that the draft decision's 0.55 airport asset beta is 0.05 lower than the 2016 IM estimate, with the difference increasing to 0.10 when compared against the 2016 IM estimate prior to the 0.05 downward adjustment, ie, 0.65.

This material decline in the airport asset beta relative to the 2016 IM estimate is anomalous, given that regulatory precedent recognises that COVID-19 has had adverse impact on the risk of airport investments. This suggests that the Commission has not used an appropriate asset beta methodology in its draft decision.

Second, we compare the draft decision's airport asset beta estimate against the asset beta for Auckland Airport, which is the only regulated New Zealand international airport that is publicly listed. The Commission's asset beta estimates for Auckland Airport over varying periods are materially higher than the 0.55 airport asset beta estimate in the draft decision. This suggests that the Commission may have underestimated materially the asset beta of the benchmark efficient airport. Further, since 2016 the asset beta for Auckland Airport increased in both the period leading up to COVID-19 and was further elevated in the period during and following the pandemic. Again, this suggests that the Commission's draft decision to reduce the asset beta to 0.55 in 2023 from its previous value of 0.60 is misplaced.

Finally, we compare the draft decision's airport asset beta estimate against regulatory precedent from the 2016 IM, as well as international precedent from the CAA, CAR and WASC. The 0.55 airport asset beta estimate in the draft decision is lower than the midpoint airport asset betas set out in regulatory precedent, which suggests that the Commission may have underestimated materially the asset beta of the benchmark efficient airport.

In addition, this cross check suggests that the Commission's 0.55 airport asset beta estimate likely cannot be applied across Auckland Airport, Wellington Airport and Christchurch Airport, given that it results in a lower asset beta compared to other airports that mostly are significantly larger.

1. Introduction

We have been asked by Wellington International Airport Ltd (WIAL) for our opinion on the economic rationale and merits of the New Zealand Commerce Commission's (Commission's) draft decision on its 2023 review of the airports input methodologies (IM).

The Commission ('Commission') published its draft decisions on 14 June 2023, which includes a cost of capital topic paper that sets out the Commission's draft decisions on individual cost of capital parameters.[1]

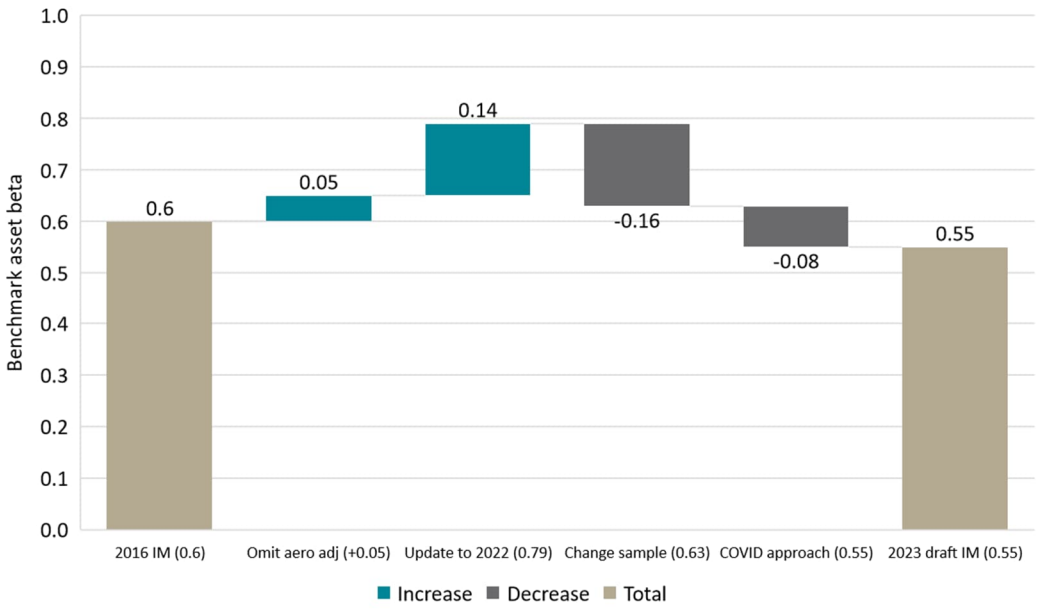
In particular, the Commission has reached the draft decision that the midpoint asset beta for airports is 0.55. This compares with the Commission's previous midpoint asset beta of 0.60 for airports in the 2016 IM.[2]

The Commission has made several modifications to its asset beta methodology compared to that adopted in its 2016 IM, namely:

- removing the downward adjustment of 0.05 from the average asset beta of the comparator sample;
- updating the asset beta estimate up to September 2022, resulting in an asset beta of 0.79;
- applying a country filter to the comparator sample, resulting in an asset beta of 0.63; and
- adopting a new method that uses the pre-COVID asset beta estimate and adjusts it for the impact of the risks associated with COVID-like events, resulting in an asset beta of 0.55.

The cumulative impact of these methodological changes on the midpoint asset beta is shown in figure 1.1 below.

Figure 1.1: Impact of changes to the Commission's asset beta methodology



Source: HoustonKemp analysis of: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023.

[1] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023.

[2] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.29, 4.83.

We agree with the Commission's finding that there is no evidence to support the 0.05 downward asset beta adjustment.[3] We also agree with the need to update the asset beta estimate for more recent data since the 2016 IM was published seven years ago.

In the remainder of this report, we assess the rationale and merits of the two remaining changes to the Commission's asset beta methodology, namely, the application of the country filter when identifying the comparator sample and the new method for incorporating the risks of COVID-like events.

In preparing this report, we have read and agreed to comply with the *Code of Conduct for Expert Witnesses* in the High Court Rules. We confirm that the matters set out in this report are within our area of expertise.

1.1 Experience and qualifications

In this section we summarise our experience and qualifications.

About HoustonKemp

HoustonKemp is a specialist economic consulting firm dedicated to applying economics to complex problems arising in competition, finance, policy and regulation matters.

HoustonKemp was established in 2014, when its founding partners, Greg Houston and Adrian Kemp, broke away from a US-based global economic consulting firm in order to provide services that better meet the needs of clients in the Asia-Pacific region. Our head-office is in Sydney and was incorporated in April of 2014. Since its establishment, our firm has grown to include 24 professional staff and three support staff.

Our experts have been at the forefront of virtually every significant regulatory development for more than two decades. We have played substantial roles in shaping policy, planning, regulation, and pricing of major infrastructure in the Asia Pacific region. Our relevant industry experience spans airports, ports, rail, roads, heavy vehicles, electricity, gas, water and communications.

We have a long track record of advising regulated businesses in New Zealand, which includes:

- advising Vector on the impact that an expected decline in the utilisation of gas will have on future regulatory outcomes;
- preparing two expert reports for the New Zealand Airports Association and for Powerco, which review the Commission's approach to setting the regulatory weighted average cost of capital (WACC) percentile for the 2016 IM; and
- advising Orion in relation to the Commission's proposed WACC for electricity lines businesses for the 2010 IM.

Brendan Quach

Brendan has worked as a consulting economist, specialising in network economics and finance in New Zealand, Australia and the Asia Pacific region. Over a period exceeding 20 years, Brendan has advised clients on the application of regulatory principles to airports, maritime ports, telecommunications, electricity transmission and distribution networks, water networks and gas pipelines. He has provided advice on application of the building block approach, incentive mechanisms, operating and capital allowances, financing, pricing and asset valuation to businesses, a regulators and governments.

Brendan is a specialist in the cost of capital for use in regulatory price reviews and contract arbitrations. He has authored reports on all aspects of the cost of capital including equity estimation techniques, the impact of tax imputation credits, and estimating benchmark debt costs.

[3] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.75-4.80.

Brendan holds a Bachelor of Economics and a Bachelor of Laws, both from the Australian National University.

Johnathan Wongsosaputro

Johnathan is an economist with eight years' experience working on a wide range of regulatory projects, with a particular focus on cost of capital issues. Johnathan has advised clients in several jurisdictions, including New Zealand, Australia, Fiji, and Singapore. These clients span a wide range of sectors, including airports, ports, energy, telecommunications, radio broadcasting, and intellectual property.

Prior to joining HoustonKemp, Johnathan was a Senior Economist with the Competition Economists Group. Johnathan graduated from the University of Sydney with first class honours in econometrics and a Bachelor of Laws. He also holds a Graduate Diploma in Legal Practice from the University of Adelaide and a Graduate Certificate in Data Engineering from the Australian National University.

1.2 Structure of this report

The remainder of this report is structured as follows:

- section 2 reviews the role and impact of the Commission's airport asset beta estimates;
- section 3 reviews the Commission's approach for identifying its airport comparator sample;
- section 4 reviews the Commission's method for adjusting the asset beta for COVID-like risks; and
- section 5 compares the Commission's determined asset beta against reasonable cross-checks.

2. Role and impact of the Commission's airport asset beta estimates

The three regulated New Zealand international airports are subject to 'information disclosure' regulation. Under this framework:

- the Commission sets the airport asset beta estimate and a corresponding midpoint WACC methodology as part of its seven-year IMs;
- the Commission uses the asset beta estimate and midpoint WACC methodology in the IMs as the starting point for deriving a rate of return target that applies to its review of each individual airport's five-yearly price setting events (PSEs); and
- each airport will consult and discuss the terms of five-yearly price setting individually with their substantial airline customers.

This framework suggests that when setting the airport asset beta and midpoint WACC methodology in the IMs, the Commission should aim to derive estimates that can be applied broadly by all three airports and to promote regulatory certainty by adopting a consistent and predictable methodology. This will reduce the likelihood that individual airports will need to use bespoke asset beta and WACC estimates that include an uplift to adjust for differences between their own systematic risks and that of the comparator sample.

In addition, the Commission also should assess the reasonableness of its estimates by reference to various 'cross-checks'. This will promote regulatory certainty, predictability and confidence in the Commission's asset beta methodology.

The rate of return target for a regulated airport will affect economic outcomes in two ways, namely that it will:

- affect an airport's incentive to invest in its assets and to raise the capital required for such investments, thus affecting dynamic efficiency in the aviation sector and the economy; and
- affect airport revenues and prices that airlines pay for regulated airport services, but any reduction in aeronautical charges that airlines do not pass through will transfer wealth from airports to airlines.

Taking into account the above economic outcomes, the Commission should be cautious about putting excessive weight on short term and directly observable considerations that involve reducing the airport asset beta and midpoint WACC estimates, while putting insufficient weight on longer term dynamic efficiency considerations that may be more difficult to observe.

Furthermore, the Australian Productivity Commission (PC) observes that airlines have weak incentives to pass reductions in aeronautical charges on to consumers in the form of lower airfares. This suggests that reducing airport revenues through reducing the midpoint airport asset beta from 0.79 to 0.55 will contribute little towards achieving the section 52A(1)(c) purpose of sharing efficiency gains with consumers through lower prices. Instead, it may delay airport investment and lead to congestion and poor quality service, which will be detrimental to consumers over the long term.

The PC's analysis is broadly applicable to New Zealand's context, given that:

- the downstream market for air travel is highly concentrated and airlines have the ability to price discriminate, thus giving them little incentive to pass cost savings on to consumers; and
- reducing the midpoint airport asset beta from 0.79 to 0.55 will reduce WIAL's per-passenger charges by approximately $3, which is minimal in the context of overall airfares, but corresponds to roughly one fifth of WIAL's current average charge of approximately $15 per passenger and therefore a greater than 20 per cent impact on the return on aeronautical investment;

> these average charges are currently artificially low due to WIAL's agreement with airlines to cap prices and defer revenue during the pandemic and its immediate aftermath.

Consequently, the PC's analysis suggests that lowering the aeronautical charges of New Zealand airports will mostly result in a transfer of wealth from airports to airlines, and thus will contribute little towards achieving the section 52A(1)(c) purpose of sharing efficiency gains with consumers through lower prices. This may also harm consumers if it delays airport investment.

2.1 Impact on individual consultation between airports and airlines

Part four of the *Commerce Act* subjects Auckland, Wellington and Christchurch international airports to 'information disclosure' regulation. This regulatory framework involves the Commission reviewing airport pricing decisions to promote greater understanding of their performance.[4]

Under the information disclosure framework, the Commission uses its airport asset beta and associated midpoint WACC estimates to assess whether the airports are earning excess profits. The information disclosure framework has two important implications on the manner in which the Commission's airport asset beta and WACC point estimate are applied, namely that:[5]

- the Commission estimates an airport asset beta as part of the IMs, with the asset beta estimate being used to calculate the midpoint airport WACC, but each of the three airports can propose a different target return during their individual price setting events (PSEs); and
- the Commission's WACC estimate forms part of individual consultations between individual airports and airlines, but the consultation may incorporate a range of factors that differ from the Commission's underlying assumptions, thereby resulting in outcomes that may differ substantially from the Commission's estimates.

For example, in its review of WIAL's 2019-2024 PSE, the Commission stated that its midpoint WACC estimate was the appropriate starting point for assessing WIAL's target return,[6] but:

- further considered that the upper end of its range for a reasonable return was 5.72 per cent to 5.74 per cent, compared to the 5.67 per cent midpoint IM WACC estimate;[7] and
- accepted that WIAL's proposed 5.88 per cent target return was reasonable and consistent with promoting the long-term benefit of consumers.[8]

Consequently, the two implications above suggest that when setting the airport asset beta and the airport WACC estimate in its IMs, the Part 4 purpose of promoting the long-term benefits to consumers of regulated services can best be achieved if the Commission:

- derives estimates that can be applied broadly by all three airports, in terms of being consistent with the systematic risks faced by each airport;
- promotes regulatory certainty by adopting a consistent and predictable methodology; and
- assesses the reasonableness of its estimates by reference to various cross checks.

[4] See: NZCC, https://comcom.govt.nz/regulated-industries/airports/our-role-in-airports, accessed 4 July 2023.

[5] This contrasts with price-quality regulation, under which the maximum revenues of electricity distribution businesses and gas pipelines are constrained directly by the allowed revenues set by the Commission. See: NZCC, https://comcom.govt.nz/regulated-industries/gas-pipelines/our-role-in-gas-pipelines, accessed 5 July 2023.

[6] NZCC, *Review of Wellington Airport's 2019-2024 price setting event*, Final report, 28 September 2022, para X8.

[7] Here, the Commission departed from its IM methodology by applying a BBB+ credit rating and a longer debt tenor for WIAL. See: NZCC, *Review of Wellington Airport's 2019-2024 price setting event*, Final report, 28 September 2022, paras X1, X9.

[8] In coming to this conclusion, the Commission observed that WIAL had consulted on its target return and made subsequent revisions that were accepted by most major airline customers. See: NZCC, *Review of Wellington Airport's 2019-2024 price setting event*, Final report, 28 September 2022, para X6, X18.

In doing so, the Commission will facilitate consultation and discussion between airports and airlines. This will reduce the need for airports to generate bespoke asset beta and WACC estimates for each individual price setting event, which likely will involve costly and protracted negotiations.

In contrast, if the Commission instead derives estimates that can only be applied narrowly or changes its methodology in an unpredictable manner, then this is likely to introduce additional regulatory uncertainty while hindering discussions between airports and airlines. It also increases the likelihood that individual airports will need to use bespoke asset beta and WACC estimates that include an uplift to adjust for differences between their own systematic risks and that of the comparator sample. This is likely to be a costly and contentious process that further increases regulatory uncertainty and ultimately will be detrimental to consumers over the long term.

We analyse the Commission's draft decision asset beta methodology in subsequent sections, including reviewing the Commission's comparator sample in section 3 below and reviewing the Commission's adjustment for COVID-like risks in section 4 below.

We also consider that the use of reasonable 'cross-checks' will promote regulatory certainty, predictability and confidence in the Commission's asset beta methodology. We conduct these cross-checks in section 5 below, where we compare the airport asset beta estimate from the 2023 IM draft decision against:

- the airport asset beta estimate from the 2016 IM;
- Auckland Airport's asset beta; and
- airport asset beta estimates from international regulatory precedent.

These cross-checks demonstrate that the Commission's draft decision is likely to have materially underestimated asset beta.

2.2 Impact on economic outcomes

The rate of return target for a regulated airport will affect economic outcomes in two main ways.

First, the rate of return target will have an impact on economic efficiency, whereby a target that is too low will affect dynamic efficiency by making it more difficult for airports to raise capital for investing in assets. The opposite applies when the rate of return target is set too high, which gives airports an incentive to over-invest. However, the impact of setting a rate of return target that is too low tends to occur over the long-term and typically is more difficult to observe.

Second, the rate of return target will affect airport revenues and prices that airlines pay for regulated airport services, but the subsequent impact on consumer airfares will depend on the extent that airlines pass through their cost savings or cost increases onto consumers. Any reduction in aeronautical charges that airlines do not pass through will result in a wealth transfer from airports to airlines.

In considering this issue, the PC observes that airlines have weak incentives to pass reductions in aeronautical charges onto passengers, and that anticompetitive behaviour by airlines may lead to higher prices for consumers if it delays airport investment and leads to congestion.

We discuss these two economic outcomes in sections 2.2.1 and 2.2.2 below.

2.2.1 Impact on dynamic efficiency

The overall purpose of Part 4 is to promote the long-term benefits to consumers of regulated services.[9]

[9] *Commerce Act 1986* s 52A(1). Also see: NZCC, *Amendment to the WACC percentile for price-quality regulation for electricity lines services and gas pipeline services*, Reasons paper, 30 October 2014, para 2.31.

In the context of the cost of capital IMs, the Commission considers that giving effect to the Part 4 purpose requires setting a cost of capital consistent with that faced by firms in workably competitive markets, ie, neither too high nor too low.[10]

This is consistent with the High Court of New Zealand's judgment that workably competitive markets generate outcomes reasonably close to the three main types of economic efficiency,[11] namely:[12]

- **productive efficiency**, whereby producers use inputs in such a manner as to minimise costs, subject to technological constraints;
- **allocative efficiency**, whereby resources are allocated within the economy to the uses in which they have the highest value, taking into account consumers' preferences such as quality of service; and
- **dynamic efficiency**, whereby efficient decisions are made over time, including decisions relating to investment and/or innovation that can improve productivity as well as the range and quality of services.

The Commission also recognises in a separate topic paper for the 2023 draft IMs that dynamic efficiency considerations under the s 52A(1)(b) purpose must be balanced against considerations regarding underinvestment or excessive profits under the s 52A(1)(c) purpose:[13]

> Concerns about dynamic efficiency and the strength of incentives for suppliers to make efficient investment choices in line with s 52A(1)(b) are relevant considerations that we have balanced with concerns about underinvestment or excessive profits (s 52A(1)(c)) in forming our draft decision…

The harm resulting from a midpoint WACC that is too high can be observed directly and immediately in the form of higher charges for regulated airport services.

In contrast, the harm that arises from a midpoint WACC that is too low tends to occur over the long term, whereby airports will have less ability to raise capital for replacing, upgrading and investing in new assets. This foregone investment eventually results in congestion at airports and a lower quality of service that will be detrimental to the long-term interests of consumers.[14]

In particular, WIAL has informed us that the Commission's draft decision to reduce the airport asset beta from 0.79 under the 2016 IM methodology to 0.55 using the draft decision methodology, ie, a methodological change that reduces the asset beta by 0.24, will reduce the price of its airport services by approximately $3 per passenger. This reduction is minimal in the context of overall airfares, but will reduce WIAL's revenues by roughly one fifth, or $100 million per pricing period.

Such a large reduction in revenues is likely to impact investors' appetites to invest over the long run because:

- the lower midpoint WACC directly reduces the incentive for investors to finance investments by the airports; and
- the disproportionately large impact arising from regulatory discretion indirectly reduces investment certainty and confidence in the Commission's application of the regulatory framework.

Taking into account the above considerations, we consider that the Commission should be cautious about putting excessive weight on short term and directly observable considerations that involve reducing the

[10] NZCC, *Part 4 input methodologies review 2023*, Process and issues paper, 20 May 2022, para 6.5.

[11] *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC 3289, para 14.

[12] See: NZCC, *Part 4 input methodologies review 2023*, Process and issues paper, 20 May 2022, para 10.39.

[13] NZCC, *Financing and incentivising efficient expenditure during the energy transition topic paper | Part 4 input methodologies review 2023*, Draft decision, 14 June 2023, para 3.195.2.

[14] See: NZCC, *Input methodologies review decisions | Topic paper 6: WACC percentile for airports*, 20 December 2016, paras 151-152.

airport asset beta and midpoint WACC estimates, while putting insufficient weight on longer term dynamic efficiency considerations that may be more difficult to observe.

This level of caution is consistent with the Commission's draft reasoning for maintaining a WACC uplift for electricity distribution businesses, which is intended to mitigate against the risk of major supply outages and to reduce the risk of under-investment in other types of investment:[15]

> Therefore, the main reason we have set a WACC uplift is to mitigate against the risk of under-investment relating to service quality generally and contributing to major supply outages in particular. However, higher WACC may incentivise greater investments of all kinds, and compared to setting the WACC at the mid-point, a WACC uplift should also reduce the risk of under-investment in other types of investment as well.

The PC also made a similar observation in 2013 when it reviewed Australia's national access regime for infrastructure services:[16]

> **The Commission considers that the consequences for efficiency from setting access prices too low are, all else equal, likely to be worse than setting access prices too high.** This is because deterring infrastructure investment (from setting access prices too low) is likely to be more costly than allowing service providers to retain some monopoly rent (from setting access prices too high) (PC 2008b). **The Commission noted in its recent review of electricity regulation that regulators should err on the side of allowing higher returns to regulated businesses to allow for this asymmetry** (PC 2013a). (emphasis added)

We further note the Commission's observation in the 2016 IM that consumers would not benefit from incentivising increased investment in circumstances where suppliers were at or beyond the optimal level of investment:[17]

> Professor Vogelsang also observed that if suppliers are already at or past the optimal level of investment, there is no benefit to consumers in incentivising increased investment.
>
> Consequently, in the 2014 WACC percentile decision, we did not reiterate our previously stated position that dynamic efficiency considerations would always be favoured over allocative efficiency, or solely link the promotion of dynamic efficiency with the promotion of investment.

However, this observation is unlikely to apply to the three regulated New Zealand international airports at this point. In particular, all three airports are undergoing expansion programs to meet future growth in passengers and aircraft movements,[18] which suggests that none of the three airports is currently at or past the optimal level of investment.

2.2.2 Wealth transfer from airports to airlines

One of the outcomes set out in the Part 4 purpose is for suppliers of regulated goods or services to share with consumers the benefits of efficiency gains in the supply of the regulated goods or services, including through lower prices.[19]

In its 2014 decision on amending the WACC percentile for electricity lines services and gas pipeline services, the Commission concluded that a consumer welfare approach is more consistent with the s 52A purpose compared to a total welfare approach that considers the sum of consumer surplus and producer surplus. A consumer welfare approach considers both the distributional and efficiency effects of higher prices

[15] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 6.43.

[16] Australian Productivity Commission, *National access regime*, Productivity Commission inquiry report, 25 October 2013, p 104.

[17] NZCC, *Input methodologies review decisions | Framework for the IM review*, 20 December 2016, paras 141-142.

[18] See: WIAL, https://www.wellingtonairport.co.nz/vision/blueprint-future/, accessed 6 July 2023. Auckland Airport, https://corporate.aucklandairport.co.nz/news/latest-media/2023/building-the-gateway-new-zealand-needs, accessed 6 July 2023. Christchurch Airport, https://www.christchurchairport.co.nz/about-us/who-we-are/master-plan/, accessed 6 July 2023.

[19] *Commerce Act 1986* s 52A(1)(c).

on consumers, although the Commission's final decision involves exercising judgement without assigning numeric weight to quantitative estimates of producer surplus and consumer surplus.[20]

In this context, it is important to note that airports conduct consultations and discussions primarily with airlines instead of consulting directly with consumers. Consequently, the impact that a reduction in airport charges will have on consumers will be dampened considerably if airlines do not pass through such reductions on to passengers in the form of lower airfares. Instead, any reductions that do not get passed through will result in a wealth transfer from airports to airlines.[21]

The PC made this observation in its 2011 public inquiry of airport regulation, finding that changes in airport charges would mostly transfer wealth between airlines and airports:[22]

> The extent to which airlines can price discriminate against passengers (including the degree to which it can discriminate which passengers pay airport charges) reduces the welfare effects of an increase in airport charges. **In practice, airport charges make up such a small proportion of total airfares that even large increases in these charges are unlikely to have significant welfare effects, and will largely represent a 'distribution' between airlines and airports**… (emphasis added)

Similarly, the PC observes in its subsequent 2019 public inquiry of airport services that the degree of pass through depends on the competitiveness of the downstream air transport market:[23]

> Airlines operating in a competitive market for air transport would pass through in full a change in aeronautical charges to passengers. When the downstream market is competitive, the percentage change in the final ticket price would be proportional to the percentage of the ticket price comprised by the aeronautical charges. For example, a 10 per cent increase in aeronautical charges from $10 to $11 would increase a $100 fare by $1, or one per cent. Based on Gillen, Morrison and Stewart (2007), a one per cent average increase in aeronautical charges would lead to a fall in demand from a business passenger of around 0.07 per cent, and a fall in demand from a leisure passenger of about 0.15 per cent.
>
> The higher the proportion of aeronautical charges to the total price of a ticket, the closer the link between passenger elasticity of demand for air transport and for airport services.

However, the PC considers that airlines have weak incentives to pass reductions in aeronautical charges onto passengers:[24]

> Airline participants stated that an airport-specific negotiate-arbitrate framework would lead to lower aeronautical charges, and hence lower operating costs for airlines. **Airlines have weak incentives to pass through any reduction in aeronautical charges to passengers in the form of lower airfares.**
>
> Airfares are set in a market — ultimately they reflect what passengers are willing to pay. **Qantas Group acknowledged in its submission following the draft report that increasing aeronautical charges would not lead to higher ticket prices, and the reverse is also true — lower aeronautical charges would not be automatically passed through to lower airfares.**
>
> > For example, increasing airport charges from $20 to $30 on a $199 airfare shifts $10 to the airport and leaves an airline $169 instead of $179 with no change in demand. In reality, the all-inclusive fare adjusts over time to settle at a new market equilibrium in line with capacity,

[20] NZCC, *Amendment to the WACC percentile for price-quality regulation for electricity lines services and gas pipeline services*, Reasons paper, 30 October 2014, paras 2.30, 2.35, 2.38-2.39.

[21] This feature distinguishes airports from electricity distribution businesses and gas distribution pipelines, which serve domestic consumers directly. For these businesses, reductions in allowed revenues will reduce prices for consumers directly.

[22] Australian Productivity Commission, *Economic regulation of airport services*, Inquiry report, 14 December 2011, pp 72-73.

[23] Australian Productivity Commission, *Economic regulation of airports*, Inquiry report, June 2019, p 92.

[24] Australian Productivity Commission, *Economic regulation of airports*, Inquiry report, June 2019, pp 305-306.

> demand and economic conditions, which has been trending downward over the past 15 years. (emphasis added)

The PC further explains that airlines use price discrimination to set ticket prices based on consumers' willingness to pay, instead of setting prices based on the cost of providing the service:[25]

> Airlines use price discrimination (charging different prices for the same service) to maximise their revenues and profits. Price discrimination leads to ticket prices that are closer to the value that consumers place on them. Consumers with a higher willingness to pay can select themselves into higher price services (such as business class tickets). People who have a lower willingness to pay can select cheaper tickets (such as economy class tickets or promotional fares). Airlines can match their services to consumers' demands and can increase their profits at the same time.
>
> **Airlines that have the ability to price discriminate have little incentive to pass on cost reductions to passengers — their pricing decisions are based on what passengers are willing to pay, not solely on the cost of providing the service. Airlines only benefit from reducing their ticket prices if it leads to people changing their behaviour in ways that increase profits. If an airline already has high rates of capacity utilisation at current ticket prices it has little incentive to reduce airfares, even if airport charges fall.** (emphasis added)

Finally, the PC observes that anticompetitive behaviour by airlines can lead to higher prices for consumers if such behaviour delays airport investment and leads to congestion:[26]

> Contrary to the claim made by the airlines and A4ANZ, airfares could be higher if, for example, anticompetitive behaviour successfully delayed necessary airport investment, and this resulted in congestion.

Thus, the PC's analysis shows that:

- the extent to which airlines have an incentive to pass on cost savings depends on the competitiveness of the downstream market, such that airlines operating in a concentrated market with high barriers to entry have little incentive to pass on cost savings; and
- the ability to price discriminate further reduces any incentive for airlines to pass on cost savings to end consumers.

In New Zealand's context, we note that the downstream market for air travel is highly concentrated, with Air New Zealand having had over 80 per cent market share of the domestic network for more than a decade.[27] This level of concentration is materially higher than that observed for Australia's domestic aviation market, where Qantas Group had 61.3 per cent of the market share for domestic passengers over the 12 months to April 2023.[28]

Furthermore, the methods that airlines use for setting airfares has continued to grow in sophistication.[29] This increased sophistication further increases airlines' ability to price discriminate, thereby further reducing their incentive to pass on cost savings to end consumers.

Thus, the PC's observations for the Australian aviation market back in 2019 are likely to apply even more strongly in New Zealand's current context, given that the New Zealand market for air travel is more concentrated than the Australian market while airlines' price discrimination methods continue to grow more

[25] Australian Productivity Commission, *Economic regulation of airports*, Inquiry report, June 2019, pp 305-306.

[26] Australian Productivity Commission, *Economic regulation of airports*, Inquiry report, June 2019, pp 305-306.

[27] Air New Zealand, *2021 annual data book*, p 5.

[28] Qantas Group had a market share of 60.8 per cent in April 2023, including 36.1 per cent for Qantas and 24.7 per cent for its subsidiary Jetstar. See: ACCC, *Airline competition in Australia*, Final report, June 2023, p 19.

[29] For example, the airline industry is transitioning towards dynamic offers, including using algorithms and artificial intelligence to determine prices in real time instead of using pre-filed fares and rules. See: Touraine, S, *The industry transformation to dynamic offering*, Journal of Revenue and Pricing Management, 20, 2021, pp 611-614. IATA, *Dynamic offers factsheet: the road to customer centric air retailing*, p 3.

sophisticated. Consequently, a reduction in airport charges will mostly result in a wealth transfer from airports to airlines.

This observation is also supported by the current high rates of capacity utilisation at major airlines, for which the PC's analysis suggests will give airlines little incentive to reduce airfares even if airport charges fall. Specifically:[30]

- Air New Zealand's load factor as at December 2022 was 87.5 per cent compared to 83.4 per cent pre-COVID, resulting in a net profit after tax of $213 million that is 42 per cent higher than its $150 million pre-COVID net profit after tax, and an operating cash flow of $972 million that is more than double its $482 million pre-COVID operating cash flow;[31] and
- Qantas' load factor as at December 2022 was 85.4 per cent compared to 84.5 per cent pre-COVID, resulting in $1 billion profit after tax for the half-year ending 31 December 2022 that is more than double its $463 million profit after tax for the half-year ending 31 December 2018;[32]
    - Qantas' return on invested capital as at 31 December 2022 is 33 per cent, compared to 19.5 per cent as at 31 December 2018.

The PC's findings thus suggest that the Commission should consider how the change in its asset beta methodology will impact consumers. As section 2.2.1 above shows, the draft methodology reduces the midpoint airport asset beta from 0.79 to 0.55, in turn reducing WIAL's revenue by approximately one fifth.

However, the Commission's draft decision does not include consideration of the extent to which airlines will pass through their cost reductions on to consumers in the form of lower airfares. The PC's conclusions suggest that airlines have little incentive to do so, meaning that reducing airport revenues in this manner will contribute little towards achieving the section 52A(1)(c) purpose of sharing efficiency gains with consumers through lower prices.

The PC's 2019 inquiry report does not include empirical analysis about the impact of changes in airport charges on airfares. However, we note that the PC's earlier 2011 inquiry report analysed Australian airfare and airport charges data for the Melbourne-Sydney route, and concluded that airport charges did not have a significant impact on airfares:[33]

> These data suggest that even if increases in airport charges are passed on fully to customers, such increases are unlikely to significantly impact on the ticket prices paid by consumers, limiting any reduction in patronage (and associated welfare losses).

Consistent with this, the Australian Airports Association's submission to the PC's 2019 inquiry includes a report by InterVISTAS that calculates Australian airport charges represent approximately:[34]

- 8 per cent of the average Australian all-in airfare on domestic flights; and
- 7 per cent of the average Australian all-in airfare on trans-Tasman services and international services.

InterVISTAS further suggests that air travel has a low price elasticity of demand with respect to airport charges, ie, between -0.11 and -0.14. This means that changes to airport charges will only have a limited impact on traffic volumes, with a 5 per cent increase in airport charges leading to a traffic decline of only 0.6 per cent.[35]

[30] The load factor is defined as demand divided by capacity, ie: number of revenue passengers carried multiplied by the distance flown; divided by number of seats operated multiplied by the distance flown. See: Air New Zealand, *2023 interim financial results*, Investor presentation, 23 February 2023, p 31.

[31] Air New Zealand, *2023 interim financial results*, Investor presentation, 23 February 2023, pp 23-24.

[32] Qantas, *Appendix 4D and consolidated interim financial report for the half-year ended 31 December 2022*, p 5.

[33] Australian Productivity Commission, *Economic regulation of airport services*, Inquiry report, 14 December 2011, p 92.

[34] InterVISTAS, *The impact of airport charges on airfares*, 2018, p ii.

[35] InterVISTAS, *The impact of airport charges on airfares*, 2018, p ii.

InterVISTAS also cites a case study where the US government did not collect ticket taxes from airlines for a seven-month period in 1996. This occurred because the government's legal authority to collect airline ticket taxes lapsed before being reinstated by Congress in August 1996. The US Government Accountability Office (GAO) found that carriers raised their 'base' airfares in a manner that maintained or increased gross fares compared to those charged prior to the lapse.[36]

The GAO considered that airlines could have been attempting to capture some of the revenue that ordinarily would have been remitted to the government, but acknowledged that there could have been other exogenous factors for these changes in base fares.[37]

It follows from the discussion above that there is little evidence that reductions in aeronautical charges will contribute towards achieving the section 52A(1)(c) purpose of sharing efficiency gains with consumers through lower prices, given:

- the PC's observation that airlines operating in a concentrated market and with the ability to price discriminate will have little incentive to pass on cost reductions to passengers;
- InterVISTAS' estimate that airport charges make up only a small proportion of airfares and have little impact on traffic volumes; and
- the US GAO's finding that airports maintained or increased gross fares during a seven-month period in 1996 when the US government did not collect ticket taxes from airlines.

[36] United States General Accounting Office, *Summary Analysis of Federal Commercial Aviation Taxes and Fees*, 12 March 2004, p 8. InterVISTAS, *The impact of airport charges on airfares*, 2018, p 65.

[37] United States General Accounting Office, *Summary Analysis of Federal Commercial Aviation Taxes and Fees*, 12 March 2004, p 8.

3. Review of the Commission's comparator sample

The draft decision for the 2023 IM adopts an airport comparator sample with only eight airports, including five European airports. This is materially smaller than the sample of 23 comparator airports that CEPA, the Commission's consultant, identifies using the sample selection methodology from the 2016 IM. Among others, the most important modification in the draft decision is that the Commission has applied a country filter, with the effect of including only airports from countries that FTSE classifies as 'developed'.

In our view, the issue of whether a country filter should be applied involves a trade-off between bias and variance. A smaller sample of comparator firms is likely to generate estimates with lower bias if it contains firms that closely match the systematic risks of the benchmark efficient airport, but these estimates are likely to be volatile and more sensitive to idiosyncratic external shocks that affect individual comparators. Conversely, a larger sample may introduce bias if it includes firms with systematic risks that are less comparable to the benchmark efficient airport, but its estimates tend to have less variance and are more likely to be closer to the 'true' parameter estimates over shorter time periods.

We consider that the assessment of the advantages and disadvantages associated with different filters, ie, the trade-off between bias and variance, is likely to vary across industries. One important consideration for assessing this trade-off is whether the industry exhibits systematic risks that are uniform or diverse.

In the case of airports, which exhibit diverse systematic risks, the possible marginal benefits of reducing the variances of the asset beta and gearing estimates through obtaining a larger sample that does not apply a country filter are likely to outweigh the marginal costs of potentially introducing additional bias from including firms operating in markets that may differ substantively from New Zealand. This is consistent with reasoning set out by the Queensland Competition Authority (QCA) and the Supreme Court of Western Australia (WASC).

Furthermore, the Commission has not carried out detailed analysis to demonstrate that the characteristics of individual airports in its smaller sample make them more appropriate comparators for the three regulated New Zealand international airports. This is inconsistent with regulatory precedent by courts in New Zealand and Australia and by other airport regulators, which either used a broad comparator sample or carried out detailed analysis of each comparator in a smaller sample.

There are also several inconsistencies in the Commission's methodology for identifying comparator airports for its small sample, namely that the Commission:

- has applied an inconsistent treatment of Chinese airports;
- has inappropriately excluded Japan Airport Terminal Co Ltd, which the WASC includes as a comparator for Perth Airport;
- has not applied its country filter consistently, since the Commission has included ADP, AENA and Fraport, which operate a large number of airports, including in non-developed countries; and
- has not applied its liquidity filter consistently by inappropriately including Vienna Airport, as well as including the delisted Sydney Airport.

It is also relevant that the United Kingdom Civil Aviation Authority (CAA) excludes Sydney Airport and Auckland Airport from its comparator sample for Heathrow, with the CAA's consultant advising that Auckland Airport operates in a different geographical market and is likely to be exposed to different risks compared to larger European airports.

As such, it is unclear that the smaller comparator sample in the draft decision will necessarily generate airport asset beta estimates that are more unbiased compared to the asset beta estimates generated using the larger sample based on the 2016 IM methodology. Consequently, the airport asset beta estimate in the draft decision will be a less appropriate starting point for setting the WACC at each regulated New Zealand international airport's PSE, which makes it more likely that each of the three airports will need to develop their own bespoke asset beta estimates with appropriate uplifts that adjust for differences between their own systematic risks and that of the comparator sample, thus increasing the length and cost of consultations and discussions.

Finally, the smaller comparator sample in the draft decision will be more sensitive to the future addition or removal of individual airports, which may arise due to factors such as new listings or delistings. This increased volatility creates additional uncertainty for investors, and may make it more difficult for airports to raise capital for investments.

Taking all of these factors into account, we consider it appropriate for the Commission to expand its airport comparator sample by omitting the country filter. This will:

- reduce the variance of the beta estimate without necessarily increasing the bias of the estimate compared to that of the Commission's smaller sample;
- reduce the need for detailed assessments of individual comparators and subjective decisions regarding whether individual companies should be included or excluded; and
- increase regulatory certainty while reducing the length and cost of consultations and discussions between airports and airlines, ultimately benefitting consumers in the long term.

3.1 Use of a country filter for identifying comparator airports

The draft decision excludes from the airport comparator sample several airports that the Commission considers as not comparable to a major airport trading in New Zealand.

One criterion that the Commission has used to remove potential comparators is a country filter,[38] whereby the Commission uses as indicators:[39]

- the FTSE equity country classification; and
- the market risk premium.

The Commission has not set out precise thresholds for excluding specific airports from its comparator sample, choosing instead to apply judgement based on information from different indicators.[40] Nevertheless, we observe that the comparator sample in the draft decision only includes airports from countries that FTSE classifies as 'developed'.[41]

The only exception to this observation is Beijing Capital International Airport, which is included in the comparator sample even though the airport is located in China, which FTSE classifies as 'secondary emerging'.[42] However, the Commission appears to have adopted the reasoning from Qantas' submission,

[38] The Commission also refers to other criteria, namely: firms with unusually variable asset beta estimates; firms with unusual business financing structures; and firms with business characteristics that are not comparable to a major airport operating in New Zealand. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.43.2-4.43.4.

[39] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.43.1.

[40] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, p 4.44.

[41] See: FTSE Russell, *FTSE Equity Country Classification September 2022 | Annual Announcement*, 29 September 2022, p 5. NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.45.

[42] FTSE Russell, *FTSE Equity Country Classification September 2022 | Annual Announcement*, 29 September 2022, p 5. NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.45.

which retains Beijing Capital International Airport on the basis that it trades on the stock exchange in Hong Kong, which FTSE classifies as a developed territory.[43]

We also note that the Commission has excluded HNA Infrastructure Company Ltd, which operates Haikou Meilan International Airport in China and trades on the stock exchange in Hong Kong. However, the Commission excludes it due to liquidity issues instead of market comparability.[44]

The Commission's draft decision to adopt a country filter marks a departure from the 2016 IM, which included airports from a wide range of countries without applying a country filter.[45]

The draft decision justifies the adoption of a country filter by referring to regulatory precedent from the United Kingdom and Australia, namely:[46]

- the CAA, which includes airports from France, Germany and Spain while excluding Auckland Airport and Sydney Airport;
- the Australian Energy Regulator (AER), which excludes international energy companies from its sample; and
- the Western Australian Economic Regulation Authority (ERA), which only includes energy companies from Australia, Canada, New Zealand, United Kingdom and United States.

In our view, the issue of whether a country filter should be applied involves a trade-off between bias and variance. This trade off arises because the 'true' asset beta of the benchmark efficient airport is unobserved and must be estimated, commonly through taking some average of the asset beta calculated from a sample of comparator firms.

In practice, the asset beta and gearing for an individual comparator firm in the sample often will be subject to idiosyncratic variations at different points in time, which may not reflect the systematic risks of the benchmark efficient firm that apply at that point in time.

The Irish CAR makes the same observation when formulating the comparator sample for Dublin Airport:[47]

> NERA argue that our approach to keeping all comparator airports in the sample and assigning them weights should be replaced with focusing on a smaller sample that is best comparable to Dublin Airport. **We disagree since, apart from the difficulties of determining a small sample that is "best" comparable to Dublin Airport, our approach also avoids systematic over or underestimation of risks and minimises estimation errors due to random noise. Also, using a weighted average of a relatively large sample is a central factor that allows for regulatory consistency over time. Larger samples decrease the risk of random noise or irrelevant comparator airport characteristics biasing the Beta estimate. In addition, our approach means that the sample selection process does not have to be repeated from scratch at every determination, leading to improved regulatory predictability.** (emphasis added)

As such, the sample of comparators should be chosen to balance the objectives of ensuring that the parameter estimate derived from the comparator sample matches that of the benchmark efficient firm:

- on average in the long run, ie, reducing bias relative to the 'true' estimate; and
- over shorter time periods, ie, reducing variance relative to the 'true' estimate.

[43] FTSE Russell, *FTSE Equity Country Classification September 2022 | Annual Announcement*, 29 September 2022, p 5. NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.37.

[44] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, table A1.

[45] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.31.

[46] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, p 4.38.

[47] Commission for Aviation Regulation, *Decision on an Interim Review of the 2019 Determination in relation to 2020 and 2021*, Commission Paper 12/2020, 22 December 2020, p 147.

A smaller sample of comparator firms is likely to generate asset beta and gearing estimates that reflect the 'true' parameter estimates on average in the long run, ie, lower bias, only if it contains firms that closely match the systematic risks of the benchmark efficient airport. However, the regulatory precedent set out in section 3.1.2 below suggests that the Commission's smaller sample may not contain more appropriate comparators for airports in New Zealand.

Nevertheless, even if such close comparators can be found, this small sample is likely to generate estimates that are volatile and that may deviate from the true parameter estimates over shorter time periods due to idiosyncratic external shocks that affect individual comparators at various points in time, ie, higher variance.

Conversely, a larger comparator sample may include firms with systematic risks that are less comparable to the benchmark efficient airport, ie, bias may be introduced. However, this larger sample is likely to generate estimates that are more stable and are more likely to be closer to the 'true' parameter estimates over shorter time periods since idiosyncratic external shocks that affect individual comparators are more likely to offset one another, ie, lower variance.

In sections 3.1.1 to 3.1.2 below, we discuss:

- how the bias-variance trade-off favours omitting the country filter when calculating asset betas for the airport industry, and favours using a sample that is large and diverse; and
- inconsistencies between the Commission's application of a country filter and regulatory precedent for airports..

Taking all of these factors into account, we consider it appropriate for the Commission to expand its airport comparator sample by omitting the country filter.

We note that the WASC's judgment for Perth Airport uses similar reasons to adopt a broad comparator sample based on the 2016 IM airport comparator sample, whereby the Court:[48]

- considers that an alternative sample of European airports do not constitute the best comparators to Perth Airport;
- rejects the use of a country filter; and
- excludes illiquid and delisted airports.

> There are a number of difficulties with Dr Hern's approach. **First, Sydney Airport and a number of the Tier 2 comparator airports do not in fact appear to be 'best' comparators to PAPL. This emerges both from consideration of the nature of the airports (for example, in terms of size, international hub status, extent of international operations and passenger numbers) and in the course of undertaking the relative risk assessment (for example, customer concentration risk).**
>
> **Secondly, at a conceptual level, the views presented by Dr Hern regarding the necessity for similar country risks are unpersuasive.** Thirdly, the sovereign credit rating threshold Dr Hern employs to determine countries with similar risks to Australia appears arbitrary and to be a technique not generally employed by regulators. Dr Hern only identifies a Singaporean energy regulator, an Italian energy regulator and a Spanish energy regulator as having explicitly used sovereign credit rating criteria to select relevant comparators.
>
> It is preferable to start from Dr Hird's and the NZCC's sample set of 26 comparator airports for which asset beta estimates are available. **As agreed between Dr Hird and Dr Hern, it is then appropriate to exclude the six illiquid and delisted airports**, resulting in a sample set of 20 airports. (emphasis added)

[48] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 264-266.

3.1.1 The bias-variance trade-off favours omitting the country filter for airports in favour of a large and diverse sample

We consider that the assessment of the advantages and disadvantages associated with different filters, ie, the trade-off between bias and variance, is likely to vary across industries. That is, the marginal benefit and marginal cost arising from applying a specific filter may differ for different industries, such that it may be optimal to use one of set of filters for regulated firms in a particular industry while using a different set of filters for regulated firms in other industries.

In addition, we consider that an important consideration for assessing this trade-off is whether the industry exhibits systematic risks that are uniform or diverse.

For industries that feature a large number of firms for which the systematic risks are fairly uniform, it is easier to identify potential comparators with systematic risks that closely match that of the benchmark efficient firm. In such circumstances, expanding the sample by relaxing or omitting various filters such as country filters may result in the inclusion of firms that are less comparable to the benchmark efficient firm, which may introduce bias while having immaterial impact on the variance of estimates.

The opposite applies for industries that feature a smaller number of firms for which systematic risks are fairly diverse, where it is difficult to identify comparators with systematic risks that closely match that of the benchmark efficient firm. In such circumstances, expanding the sample by relaxing or omitting filters such as country filters is less likely to introduce substantial additional bias, and is more likely to reduce the variance of estimates.

Consistent with the above discussion, our empirical analysis in section 3.2 below suggests that there are several drawbacks to introducing a country filter, namely that it results in a small comparator sample that:

- generates more volatile estimates across regulatory periods since fluctuations in the estimates for individual companies will be less likely to offset one another overall; and
- increases the influence of outlier firms on the final parameter estimate.

Similarly, the QCA refers to the unique characteristics of its regulated firms as justification for using a different approach for identifying comparators compared to the approach used by the AER:[49]

> The point of using a pure-play method is to establish comparators with a similar level of systematic risk in order to determine the cost of capital to the firm. Ideally these firms would be identical to the benchmark firm for which we are trying to determine the cost of capital. **Unfortunately, due to the unique nature of the firms that are subject to our regulatory regime, there are very few, if any, listed firms that fulfill this condition. As a result, we must look to identify other firms that share similar risk characteristics as the benchmark firm. These comparators will not be alike in some ways, and any analysis should take such differences into account when assessing risk.**
>
> **These issues will not be as relevant for regulators setting the cost of capital where listed pure play comparators do exist. Presumably, in the case of the AER, if it considers that it already has a sample of firms that meets its 'pure play' definition, then we would share the view that populating that sample with firms with a different level of risk would introduce bias into the sample.** (emphasis added)

This line of reasoning is consistent with the WASC's judgment for Perth Airport, where the WASC rejects the arguments raised by Qantas' expert regarding the importance of restricting the comparator sample to airports

[49] The above quote refers to the QCA's assessment that restricting comparator samples to include only firms in the same industry will not necessarily generate a better estimate of beta. However, a similar principle applies when assessing the range of countries that should be included in the comparator sample, since omitting a country filter is an alternative method for expanding the comparator sample. See: QCA, *Rate of return review*, Final report, November 2021, p 69.

with similar country risks, as well as other characteristics such as demand and revenue risk and operating leverage.[50]

Instead, the WASC considers that:[51]

- the Commission's 2016 IM sample of comparator airports that does not apply a country filter constitutes better comparators compared to an alternative sample that only includes Sydney Airport, Auckland Airport and four European airports; and
- the view that it is necessary to limit the sample to comparators with similar country risks is unpersuasive.

Drawing from the QCA's reasoning described above, we consider that the AER and ERA decisions cited in the draft decision are less relevant for assessing the asset betas of airports in New Zealand.

In particular, airports exhibit diverse systematic risks, such that different airports may respond differently to external shocks. This diversity arises because the systematic risks faced by airports can differ materially depending on a wide range of factors. For example, the WASC concludes that a small sample of six airports, (Sydney Airport, Auckland Airport, Vienna Airport, Aeroports de Paris, Fraport and Zurich) may not be the best comparators for Perth Airport in terms of:[52]

- the extent of international operations, passenger numbers and customer concentration risk;
- the size of the airport, which may limit the types of aeroplanes that can be accommodated; and
- the status of the airport as a 'hub' or 'spoke'.

This contrasts with utilities such as those regulated by the AER and ERA, for which most firms in the same industry tend to transport largely similar products in a low-risk environment and for which differing firm sizes are less likely to translate to materially different systematic risks.

As a result, beta estimates for airports are more likely to vary substantially across firms. This means that the marginal benefits of reducing the variances of the asset beta and gearing estimates through obtaining a larger sample that does not apply a country filter are likely to outweigh the marginal costs of potentially introducing additional bias from including firms operating in markets that may differ substantively from New Zealand.

Consistent with this, the scatterplot in figure 3.1 below shows the asset beta percentiles for the airport and energy comparators, taken from CEPA's report. It shows two sets of samples, namely:

- the airport and energy comparators that CEPA derives using the 2016 IM methodology;
  - we note that CEPA has omitted Japan Airport Terminal Co Ltd from its airport comparator sample, but as section 3.1.2 below discusses, regulatory precedent from the WASC includes Japan Airport Terminal Co Ltd as a comparator for Perth Airport;[53] and
- the airport and energy comparators that the Commission adopts in its draft decision.

The asset beta for each comparator in figure 3.1 is the average of weekly and four-weekly asset betas set out in CEPA's report for the 2017-2022 and 2012-2017 periods.[54]

It can be seen from figure 3.1 that the asset betas for both CEPA's and the Commission's draft decision energy comparators (green dots) are relatively uniform, with over 70 per cent of comparators exhibiting asset

[50] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 235-236.

[51] The Court also rejects the use of sovereign credit ratings for identifying countries with similar risks to Australia. See: *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 262-265.

[52] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 263-264.

[53] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 para 267.

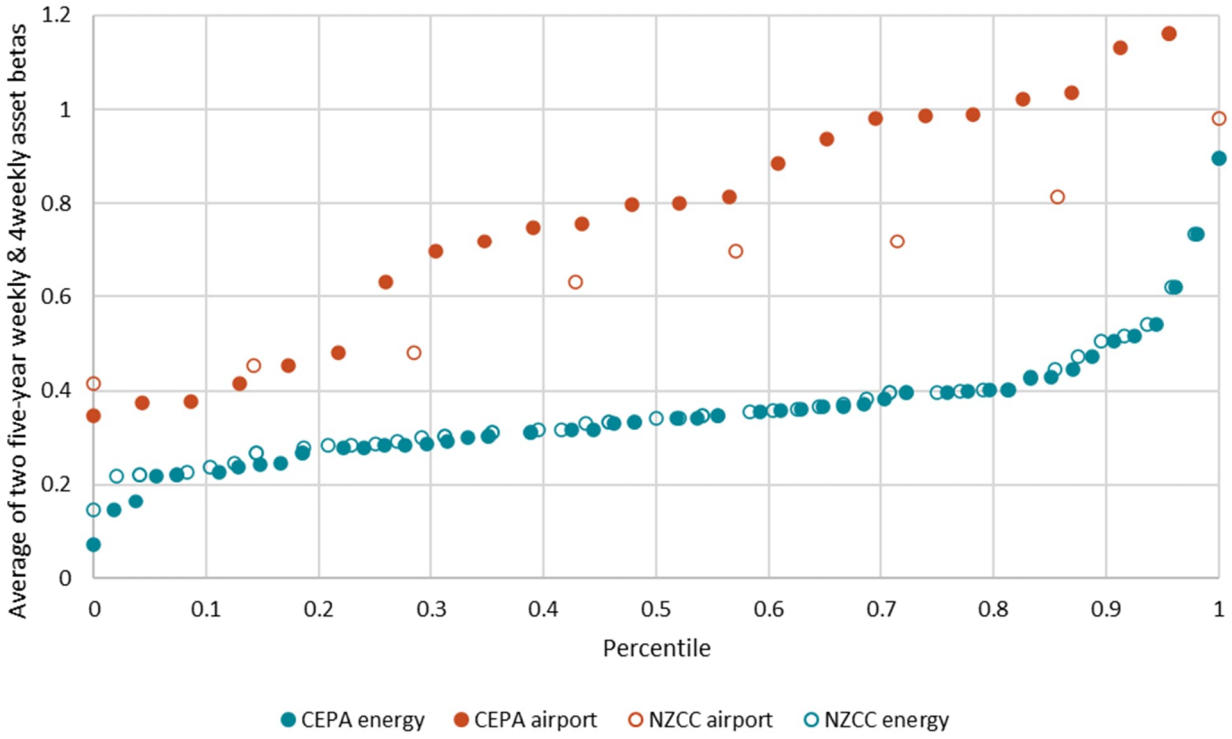
[54] See: CEPA, *Review of cost of capital 2022/2023*, 29 November 2022, pp 55-58.

betas clustered between 0.2 and 0.4, although a lower proportion of energy comparators have asset betas outside this range.[55]

Conversely, the airport comparators exhibit more diverse asset betas, and are spread fairly evenly across the full asset beta range, ie, 0.35 to 1.16 for CEPA's airport comparators and 0.42 to 0.98 for the airport comparators in the draft decision. This observation applies to both CEPA's airport comparator sample based on the 2016 IM methodology (solid orange dots) and the smaller sample from the Commission's draft decision (unfilled orange dots).

Such diversity in systematic risks across firms within the port and airport industries distinguishes the decisions made by the WASC from that of decisions made for utility industries.

Figure 3.1: Asset beta percentiles for airport and energy comparators



Source: CEPA, Review of cost of capital 2022/2023, 29 November 2022, pp 55-58. HoustonKemp analysis. We generate percentiles using Excel's 'percentrank' function. The number of dots may be less than the sample size due to multiple observations having the same percentile.

Thus, when evaluating the trade-offs between using a smaller sample with comparators that are more similar to the benchmark efficient airport against a larger sample with comparators that are less similar to the benchmark efficient airport, we consider that the diversity of characteristics across different airports results in varied systematic risks, such that the trade-offs favour the latter approach.

It is also unclear to us that including comparator firms operating in developing countries necessarily introduces bias to the parameter estimates. In particular, the QCA explains that the sovereign risks associated with developing countries may not affect the beta estimates of the comparator firms operating in those countries.

[55] 40 of 55 comparators (73 per cent) in CEPA's energy sample and 37 of 49 comparators (76 per cent) in the Commission's energy sample have asset betas between 0.2 and 0.4. The 49 comparators for the Commission's energy sample in figure 3.1 exclude AusNet Services and DUET Group, which the Commission includes in its draft decision comparator sample, but which are delisted.

This is because the relative systematic risk of firms within developing countries may be unchanged, ie, that the sovereign risks may be captured in market returns such that estimated betas are unaffected by these risks:[56]

> Generally, we consider that firms originating from developed countries are preferable to those from developing or emerging economies, as the former are more likely to operate within a more stable political and business environment and are subject to a well-developed system of property rights and legal protections. **However, if after reviewing firms operating in developed countries, we are still concerned with the size of our industry sample, we will turn to investigate firms operating in developing countries to potentially generate a larger sample.[220] In investigating firms operating in developing countries, we will have particular regard to country-specific factors that may make inclusion of certain firms unsuitable…**
>
> Where possible, we will try and include relevant, listed companies from a range of different countries to limit the concentration of firms coming from any one country. However, this approach may not be possible if firms in other countries are less relevant—that is, if they are exposed to substantially different risks—relative to the benchmark we are trying to assess…
>
> [220] **While firms operating in developing countries might face a greater level of sovereign risk, this may not necessarily be reflected in beta estimates of those firms, as the relative systematic risk of firms within the country may be unchanged**. (emphasis added)

Furthermore, both the 2016 IM and the QCA identify several benefits of adopting a large sample, namely that:[57]

- including firms from a wider cross-section of countries reduces the impact that individual country-specific effects will have on beta estimates;
- using a larger sample reduces the need to make subjective decisions regarding whether specific companies should be included or excluded;
  - Sapere explains that this approach assumes any lack of comparability for individual companies included in the sample will average out across the sample, such that detailed checking for comparability is not required;[58] and
- a larger sample provides regulatory predictability and reduces the impact of anomalous beta estimates.

Consistent with this, the QCA's decision for Queensland Rail's 2020 draft access undertaking refers to a comparator sample of 'Class 1 railroads' that includes railways in Russia, China and India,[59] although we note that the QCA ultimately calculates the benchmark asset beta and gearing using its sample of toll roads as an upper bound and a large sample of regulated energy and water businesses as a lower bound after considering a range of industries.[60]

Based on the above reasoning, we consider that it is more appropriate to use a comparator sample without a country filter when estimating the benchmark asset beta for a firm operating in an industry with diverse systematic risks, such as airports.

We consider that the method that the Commission adopted for identifying comparator airports in the 2016 IM is particularly appropriate in the context of the 2023 IM, since it:

[56] QCA, *Rate of return review*, Final report, November 2021, pp 73-74.

[57] QCA, *Rate of return review*, Final report, November 2021, pp 71-72. NZCC, *Input methodologies review decisions | Topic paper 4: cost of capital issues*, 20 December 2016, para 277.1.

[58] See: Sapere, *The cost of capital input methodologies for fibre*, Prepared for Chorus, 27 January 2020, para 121.

[59] See: Incenta, *Estimating Queensland Rail's WACC for the 2020 DAU - asset beta, benchmark gearing, and credit rating*, Report for the QCA, April 2019, p 53.

[60] The QCA also considered comparator samples containing ports, airports and North American pipelines. See: QCA, *Queensland Rail 2020 draft access undertaking*, Decision, February 2020, pp 34-38.

- generates a large and geographically diverse sample that includes airports in the Asia Pacific region; and
- includes 'hub' and 'spoke' airports.

These characteristics are appropriate in the context of assessing the asset betas for the three regulated New Zealand international airports, all of which are comparatively small airports in the Asia Pacific region.

3.1.2 The Commission's application of a country filter is inconsistent with regulatory precedent for airports

The Commission states that other regulators prefer to use a sample of relatively close comparators.[61] However, the Commission has not carried out detailed analysis to demonstrate that the characteristics of individual airports in its smaller sample make them more appropriate comparators for the three regulated New Zealand international airports.

This is inconsistent with regulatory precedent by Courts in New Zealand and Australia and by other airport regulators, which either used a broad comparator sample or carried out detailed analysis of each comparator in a smaller sample.

Such analysis would include comparisons of factors such as each airport's: size; international hub status; extent of international operations; passenger numbers; and customer concentration risk.[62] Had the Commission carried out these comparisons, then the analysis likely would show that the three regulated New Zealand international airports have materially different characteristics compared to the comparator airports in the smaller sample that the draft decision adopts.

In the remainder of this section we provide more details of the regulatory precedent for both approaches.

Regulatory precedent that used a broad comparator sample for airports

The WASC's judgment for Perth Airport accepts the broad comparator sample from the 2016 IM after removing Japan Airport Terminal Co Ltd and six illiquid and delisted airports.

In that judgment, the Court also finds that an alternative smaller sample consisting of Sydney Airport, Auckland Airport, Vienna Airport, Aeroport de Paris, Fraport and Zurich does not contain the 'best' comparators to Perth Airport when considering factors such as size, international hub status, extent of international operations, passenger numbers and customer concentration risk.[63]

The WASC's judgment for Perth Airport also:[64]

- includes Japan Airport Terminal Co Ltd in its accepted comparator sample, concluding that the fact non-aeronautical services comprised a significant part of Japan Airport Terminal Co Ltd's operations is not a basis for excluding it as a comparator;
- considers the necessity for similar country risks unpersuasive; and
- applies an asset beta uplift of 0.03 to Perth Airport compared to the sample average asset beta;

We note that the WASC's judgment for Perth Airport specifically rejects several arguments that Qantas uses in its submission, and which the Commission draws on when identifying the airport comparator sample in the

[61] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.38.

[62] See: *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 para 264.

[63] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 262-267, 279-280.

[64] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 262-267, 279-280.

2023 IM draft decision.[65] These arguments that Qantas' submission refers to and that the WASC rejects include:[66]

- the use of a country filter; and
- the exclusion of firms with significant revenues from non-aeronautical services.

In addition, Qantas' submission proposes to remove comparator airports with limited market index diversification, particularly Auckland Airport due to its high representation in its local index.[67] However, in its judgment for Perth Airport, the WASC also rejects an alternative methodology by Qantas' expert, who similarly argues that evidence on market integration, ownership structure and market index size means that some weight should be placed on the regional index.[68] The Court concludes that the asset beta for New Zealand airports should be calculated with reference to a local index and includes Auckland Airport as a comparator for Perth Airport.[69]

Aside from the WASC's judgment for Perth Airport, the HCNZ in 2013 similarly accepted the broad comparator sample of airports in the 2010 IM. In doing so, the HCNZ rejected PwC's analysis that excluded nine airports, particularly, all Mexican and Chinese airports.[70]

In that case, PwC had argued that Mexican and Chinese airports operated in 'developing countries' with different institutional and market environments compared to New Zealand. PwC suggested that there would be less confidence that the relationship between the economic returns of these airports and the market as a whole would be a good proxy for the relationship that would exist in New Zealand.[71]

However, the HCNZ found PwC's 'developing country' argument unpersuasive, since:[72]

- Mexico at that time had been a member of the OECD for almost 20 years;
- classifying China's economy as 'developing' was not informative; and
- the broad comparator sample of airports in the 2010 IM was somewhat of a middle ground among those that were advocated before the Commission.

Regulatory precedent using a smaller airport comparator sample after detailed analysis

Regulators that adopt a smaller airport comparator sample have done so only after carrying out detailed analysis of individual airport comparators.

For example, the Irish CAR sets the benchmark asset beta for Dublin Airport based on advice from Swiss Economics. This advice involves calculating a weighted average asset beta from its comparator sample of seven airports, whereby the weights are assigned based on similarities in terms of:[73]

[65] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.43.

[66] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 265-267. Qantas, *Re: CEPA Report on Aspects of the Cost of Capital Input Methodologies for the 2023 Review*, Letter, 17 February 2023, p 1.

[67] Qantas, *Re: CEPA Report on Aspects of the Cost of Capital Input Methodologies for the 2023 Review*, Letter, 17 February 2023, p 1.

[68] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 269.

[69] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 270-272.

[70] *Wellington International Airport Ltd & others v Commerce Commission* [2013] NZHC 3289, paras 1,559-1,569.

[71] *Wellington International Airport Ltd & others v Commerce Commission* [2013] NZHC 3289, paras 1,559-1,569.

[72] *Wellington International Airport Ltd & others v Commerce Commission* [2013] NZHC 3289, paras 1,559-1,569.

[73] Commission for Aviation Regulation, *Decision on an Interim Review of the 2019 Determination in relation to 2020 and 2021*, Commission Paper 12/2020, 22 December 2020, pp 140-148. Swiss Economics, *Dublin Airport cost of capital for 2022 interim review*, Final report, 15 December 2022, pp 51-53. Swiss Economics, *Dublin Airport cost of capital for 2019 determination*, Final report, 30 September 2019, pp 43-49.

- economic regulation, ie, length of regulatory period, involvement of regulator, till approach, price or revenue control, and within period adjustments for volume risk;
- demand structure, ie, annual passengers, annual flights and aeronautical revenue share; and
- business structure, ie, geographical diversification and public listing.

In the draft decision, however, the Commission has switched to a smaller sample of airports without carrying out the detailed analysis required to ensure that its airport asset beta estimate is reflective of the systematic risks faced by each regulated New Zealand international airport.

Instead, the Commission has modified its selection criteria by removing:[74]

- firms listed in developing countries and in countries with a materially different market risk premium; and
- firms with unusually variable asset beta estimates or negative leverage.

In the absence of additional detailed analysis regarding the comparability of individual airports in the draft decision's smaller sample, it is unclear that this sample will necessarily generate airport asset beta estimates that are more unbiased compared to the asset beta estimates generated from the larger sample updated using the methodology in the 2016 IM.

Specifically, the Commission's draft decision adopts a sample of eight airport operators, consisting of five European airports, as well as Auckland Airport, Sydney Airport and Beijing Capital International Airport.[75]

However, there are also additional reasons to exclude some of the comparators further, including that:

- a consistent application of the Commission's country filter would exclude Beijing Capital International Airport, which operates in China;
- Sydney Airport should be excluded since it was delisted on 10 March 2022, with regulatory precedent from the CAA and CAR also supporting its removal;[76]
  - the Commission's draft reasoning for its inclusion also will no longer apply for the 2030 IM, since Sydney Airport would have been delisted for approximately eight years by then; and
- a consistent application of the Commission's liquidity filter would exclude Vienna Airport, given its low free float percentage of 10.00 per cent.[77]

We also note that in a recent draft decision, the CAA excluded from its comparator sample Sydney Airport due to its delisting and Vienna Airport due to unreliable beta data.[78]

The removal of some of the above airport operators potentially reduces the comparator sample further to include as few as five firms.

In addition, the sample of eight airports in the draft decision contains three operators that operate a large number of airports, namely:

[74] Aside from including the delisted Sydney airport as a comparator, the Commission has not changed its approach of excluding firms that are delisted, are not involved in regulated airport operations, have a low percentage aeronautical revenues, or a low percentage of days traded. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.43.

[75] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, table A1.

[76] See, for example: Commission for Aviation Regulation, *Decision on an interim review of the 2019 determination in relation to 2023-2026*, Commission paper 7/2022, 23 December 2022, para 10.27. Flint (advisor to the UK CAA), *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 36.

[77] When identifying its energy comparator sample, the Commission flagged that Avangrid Inc had a low free float percentage of 18.30 per cent. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, table A1, table B1.

[78] CAA, *Economic regulation of NATS (En Route) plc: Provisional Decision for the next price control review ("NR23")*, CAP 2553 July 2023, footnote 103.

- ADP manages and operates more than 20 airports on all continents, including Zagreb airport in Croatia (frontier country), Amman airport in Jordan (frontier country) and Santiago airport in Chile (secondary emerging country);[79]
- AENA operates 46 airports and two heliports in Spain, and has full ownership of Northeast Brazil Airport Group (advanced emerging country), along with stakes in Luton Airport and 16 other airports in Colombia (secondary emerging country) and Mexico (advanced emerging country);[80] and
- Fraport Group, the operator of Frankfurt Airport, operates 28 airports including one airport in Russia (unclassified country), one airport in Turkey (advanced emerging country), one airport in India (secondary emerging country), one airport in Peru (frontier country), and two airports in Brazil (advanced emerging).[81]

The draft decision has not carried out a detailed analysis of the individual airports in the comparator sample. As such, it is unclear whether a consistent application of the Commission's country filter will also exclude ADP, AENA and Frankfurt Airport, given their substantial operations in developing countries.

In any case, it is also unclear whether comparators such as ADP, AENA and Frankfurt Airport, which each operate multiple airports around the world, will closely match the systematic risks of the benchmark efficient airport, given that the operators of all three regulated New Zealand international airports each operate a single airport. This further suggests that the small sample adopted in the draft decision may not necessarily generate airport asset beta estimates that are more unbiased compared to the estimates generated from the larger sample updated using the methodology in the 2016 IM.

If these three operators are further excluded then the sample will shrink to only two firms, ie, Auckland Airport and Zurich Airport, which we consider to be insufficient to generate a reliable estimate of the asset beta for the benchmark efficient airport. In section 5.2 below we use Auckland Airport's asset beta as a cross check against the asset beta estimate in the draft decision.

It is also relevant that the UK CAA includes airport operators from France, Germany and Spain in its comparator sample for Heathrow but excludes Sydney Airport and Auckland Airport. In particular, the CAA's advisor, Flint, states regarding Auckland Airport that:[82]

> … because Auckland operates in such a different geographical market it is likely to be exposed to different risks compared to larger European airports even in more benign times, as the [Competition and Markets Authority] concluded in its redetermination for [NATS (En Route) PLC] in 2020.

Flint also makes similar arguments regarding Sydney Airport, and further notes that the takeover of Sydney Airport potentially undermines its informative value:[83]

> We also note that its distinct geographical market increases the probability that it faces different risks to a European airport such as Heathrow, as the CMA concluded in its NERL redetermination.
>
> Since the cut-off date in our August 2021 report, we note that Sydney has also been subject to takeover and its stock is no longer traded. News associated with the potential takeover of Sydney airport is likely to have had significant influence over its share price activity both since August, and beforehand – potentially further undermining the informative value of Sydney as a comparator.

The Commission's draft decision states that Sydney Airport and Auckland Airport have been excluded from the CAA's comparator sample because 'the economies are not considered comparable to the UK'.[84] While

[79] ADP, https://www.parisaeroport.fr/en/group/strategy/airport-network, accessed 11 July 2023.

[80] AENA, *Strategic plan 2022-2026*, pp 6, 38.

[81] Fraport, https://www.fraport.com/en/our-group/our-airports-and-subsidiaries.html, accessed 11 July 2023.

[82] Flint, *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 33.

[83] Flint, *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 36.

[84] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.38.1.

the smaller comparator sample in the draft decision does not include any airports in the UK,[85] the CAA's decision nevertheless further calls into question the appropriateness of estimating the benchmark asset beta for New Zealand airports using a sample where five of the eight comparators are European operators.

We also note that the CAA's regulatory task is to set the WACC and asset beta for Heathrow Airport, which is an international hub that is the eight busiest airport in the world.[86] This contrasts with the Commission's task of deriving WACC and asset beta estimates for comparatively smaller airports in New Zealand.

As such, we consider that caution should be applied when drawing from CAA precedent that uses large European hub airports as comparators for Heathrow and using the same approach for regulated airports in New Zealand, especially since the estimated asset beta for Auckland Airport is materially higher than those observed for the comparator sample in the 2023 IM draft decision. We discuss this observation further when conducting the asset beta cross-checks in section 5 below.

Thus, in the absence of detailed analysis of individual comparator airports, the Commission's switch to a smaller sample means that the airport asset beta estimate in the IM will be a less appropriate starting point for setting the WACC at each regulated New Zealand international airport's PSE.

Instead, it is likely that each of the three airports will need to develop their own bespoke asset beta estimates by assessing the comparability of each comparator against their own individual circumstances. This is likely to increase the length and cost of consultations and discussions between airports and airlines, which will be detrimental to consumers over the long term.

3.2 Impact of removing a single firm from the sample

One additional consideration when selecting the comparator sample is that the sample may not remain static over time even if a consistent methodology is used. Specifically:

- additional comparators will be added if a privately owned airport becomes listed, or if an airport that previously was illiquid starts to trade with sufficient liquidity; and
- comparators will be removed if a comparator airport is delisted or no longer trades with sufficient liquidity.

The average asset beta derived from a larger sample tends to be less sensitive to the addition or removal of individual firms, since the impact of a single addition or removal will be spread across a larger number of firms.

This issue is particularly relevant for the 2023 IM and 2030 IM, since Sydney Airport was delisted on 10 March 2022. Notwithstanding the issues that we discuss in section 3.1 above regarding the inclusion of Sydney Airport as a comparator in the draft decision for the 2023 IM, we note that Sydney Airport would have been delisted for eight years when the 2030 IM is set. Consequently, the Commission's draft reasoning for including Sydney Airport will no longer apply for the 2030 IM.

We assess the impact of potential additions and removals of individual firms by calculating two asset beta sensitivities, namely:

- the average asset beta after removing the observation with the largest asset beta; and
- the average asset beta after removing the observation with the smallest asset beta.

[85] Market-based asset beta estimates are not available for UK airports since none of them is publicly traded.

[86] See: Heathrow, https://www.heathrow.com/latest-news/what-makes-a-hub-airport, accessed 13 July 2023. Airports Council International, https://aci.aero/2023/04/05/international-travel-returns-top-10-busiest-airports-in-the-world-revealed/, accessed 13 July 2023.

We then calculate the difference between these two asset beta estimates. This difference measures the maximum variability of the average asset beta derived from each sample when one comparator firm is removed.

We use the Commission's R programming code to conduct this analysis using five-year rolling windows ending in the 120 months from 31 July 2013 to 30 June 2023 for:[87]

- the sample of eight comparator airports that the Commission adopted in the draft decision; and
- the 29 unique comparator airports across the samples in the 2016 IM and in CEPA's report;[88]
  - we use the 2016 IM sample up to 30 September 2017 before switching to CEPA's sample from 31 October 2017 onwards.[89]

Table 3.1 shows the difference in asset beta when removing the largest observation from each sample compared to removing the smallest observation, calculated as an average across different time periods.[90]

We observe that when removing the observation with the largest asset beta versus removing the observation with the smallest asset beta:

- the average asset beta differs by 0.04 to 0.05 on average for the updated 2016 IM sample, depending on the time period;
- the average asset beta differs by 0.07 on average for the 2023 draft IM sample; and
- if Beijing Airport, Sydney Airport and Vienna Airport are removed from the 2023 draft IM sample as section 3.1.2 above explains, then the average asset beta differs by 0.11 to 0.12 on average, depending on the time period.

Table 3.1: Average difference in asset beta when removing the largest observation vs smallest observation

	31 Jul 2013 – 30 Jun 2023	Up to 28 Feb 2023	From 31 Mar 2023
Updated 2016 IM sample	0.04	0.04	0.05
2023 draft IM sample	0.07	0.07	0.07
2023 draft IM sample without Beijing Airport, Sydney Airport and Vienna Airport	0.11	0.11	0.12

Source: Bloomberg, HoustonKemp analysis using the Commission's R programming code.

These results suggest that the 2023 draft IM sample is more sensitive to potential additions and removals of individual firms, compared to the updated 2016 IM sample.

[87] The Commission's R code is available at: NZCC, https://comcom.govt.nz/regulated-industries/input-methodologies/input-methodologies-for-electricity-gas-and-airports/input-methodologies-projects/2023-input-methodologies-review#projecttab, accessed 10 July 2023.

[88] The 2016 IM used a sample with 26 comparator airports. CEPA's sample updates the 2016 IM sample by adding three airports (AENA, Airports Corporation of Vietnam and Aeroporto Guglielmo Marconi di Bologna) and removing six airports (Venice Airport, Sydney Airport, Airport Facilities Co, Japan Airport Terminal Co, TAV Havalimanlari Holding and Aerodrom Nikola Tesla), resulting in 23 comparators. There are 29 unique comparator airports across both samples.

[89] CEPA estimated asset betas for different five-year periods, with the most recent period ending in September 2022. As such, our analysis switches to CEPA's sample from 31 October 2017, ie, five years before the end of CEPA's most recent five-year period.

[90] For each month, we first calculate the average of the weekly and four-weekly asset betas for each airport comparator, and then calculate the sample averages excluding the comparator with the highest or lowest asset beta, before taking the difference between the two sample averages. We then calculate the average of this difference across the various time periods. We note that the results for the updated 2016 IM sample are unchanged regardless of whether Sydney Airport is excluded and/or whether Japan Airport Terminal Co Ltd is included.

Consequently, the smaller sample adopted in the 2023 draft decision is likely to generate average asset betas that are more volatile to the composition of comparator airports, such that the maximum impact of potential additions and removals of individual firms is larger than that of the updated 2016 IM sample. This creates additional uncertainty for investors, and may make it more difficult for airports to raise capital for investments.

4. Review of adjustment for COVID-like risks

The 2016 IM derives the benchmark asset beta by calculating the sample average asset beta observed over the last two five-year periods, and then taking the average of the two.

The draft decision for the 2023 IM adopts a different method that starts with a long-term pre-COVID-19 average asset beta estimate of 0.53 and applies a premium of 0.02 to account for the risk of future COVID-type events, resulting in a benchmark asset beta of 0.55.

This approach is a form of ex-ante compensation for the risks of future asymmetric COVID-type events. It implicitly assumes that the Commission:

- can estimate the expected length and frequency of future COVID-type events, as well as the resulting impact on asset betas; and
- will apply the uplift in perpetuity.

The Commission's method of estimating the 0.02 asset beta premium for the risk of future COVID-like events is based on the methodology formulated by Flint, consultant for the CAA. However, the Commission has applied the CAA's approach incorrectly, and has assumed that future COVID-like events will have shorter durations compared to those assumed by the CAA and Flint. Furthermore, Flint has characterised its analysis as illustrative and speculative, meaning that the Commission's method for estimating the premium for COVID-like events is ultimately based on arbitrary assumptions of the probability, length and impact of future COVID-like events.

The draft decision framework requires airports to bear the risks of such events occurring at different length, frequency, impact and spacing compared to the Commission's assumptions. However, consumers are best placed to bear the risks of such high-impact-low-probability events, given that:

- these risks can be spread across the diverse base of consumers; and
- the prices paid for aeronautical services tend to constitute only a small proportion of airfares, which reduces the impact on travel decisions and results in a comparatively low level of deadweight loss.

Finally, the draft decision's method for estimating the 0.02 asset beta premium for the risk of future COVID-like events creates additional regulatory uncertainty for investors, making it more difficult for the regulated airports to raise capital for investments in line with the Part 4 purpose. This occurs because:

- the Commission's methodology in an individual IM is not binding on future IMs, which creates uncertainty regarding whether the Commission will apply the same 0.02 uplift in perpetuity, or will modify or remove the uplift in future IMs; and
- it is difficult to specify and delineate the circumstances for which the Commission will and will not apply the draft decision approach.

The Commission can address the above issues by instead committing to applying the estimation methodology from the 2016 IM, which takes the average asset betas observed from the last two five-year periods without applying an additional asset beta uplift. This method allows any COVID-affected observations to have no impact on the asset beta estimate after 10 years, and means that the Commission:

- can compensate for the risks of future COVID-like events as they materialise instead of conducting speculative analysis about their length, frequency, impact and spacing;
- will be allocating the risks associated with future COVID-like events to consumers, who are best placed to bear the risks of such high-impact-low-probability events; and

- will promote regulatory certainty by applying a well-established method that does not require an additional asset beta uplift to be provided in perpetuity for future COVID-like events that are difficult to specify and delineate.

Alternatively, the Commission can commit to adopting the average asset betas observed from the last three five-year periods without applying an additional asset beta uplift. This will confer similar benefits to the 2016 IM methodology, but will also smooth the impact of COVID-like events over a longer period, such that any COVID-affected observations will have no impact on the asset beta estimate after 15 years.

CEPA's asset beta estimates suggest that this alternative approach will result in an asset beta of 0.745 using data up to September 2022.

4.1 Estimating the COVID-19 uplift

'COVID-like' risks are a form of asymmetric risk, in which the distribution of returns is truncated at one extreme without an offsetting truncation at the other extreme, ie, the firm's payoffs are asymmetric.[91]

In particular, the Commission has historically categorised the risks of such high-impact, low-frequency events unrelated to firm operations as 'type I risks':[92]

> Type I risks are risks that are generally unrelated to the day-to-day operations of the firm and arise through infrequent events that could produce large losses (and in some cases strand assets). Examples include natural disasters such as earthquakes, **pandemics**, terrorist threats, or large, unexpected policy shifts that could force the shutdown of an operating plant before the end of its economic life. (emphasis added)

The Commission's draft decision considers five options for setting an airport asset beta that incorporates the risks of future COVID-like events.[93] The draft decision adopts the method of:[94]

- starting with a long-term pre-COVID-19 average asset beta estimate, which the Commission calculates at 0.53; and
- applying a premium of 0.02 to account for the risk of COVID-type events occurring in the future, resulting in an airport asset beta of 0.55;
  - presumably, the Commission will also remove observations affected by future COVID-type events when setting the airport asset beta in future IMs.

The Commission's long-term pre-COVID-19 average asset beta estimate appears to use inconsistent time periods. Specifically, the Commission calculates the long-term pre-COVID-19 average asset beta using four-weekly and weekly asset betas for:[95]

- the five-year period from 2007 to 2012;
- the five-year period from 2012 to 2017; and
- the period from 2018 to February 2020.

Thus, the draft decision uses three estimation periods with different lengths instead of the 2016 IM's approach that calculates the benchmark airport asset beta as the average of two estimation periods with the same length, ie, two five-year asset betas.

[91] NZCC, *Fibre input methodologies: Main final decisions – reasons paper*, 13 October 2020, para 6.995.

[92] This contrasts with 'type II risks', which arise from the threat of competitive entry or expansion that generates asset stranding risks. See: NZCC, *Fibre input methodologies: Main final decisions – reasons paper*, 13 October 2020, para 6.998.

[93] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.66.

[94] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.66.3, 4.70.

[95] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.54.1, footnote 145.

Furthermore, while the Commission has not set out the precise months and dates for the above three periods, the description in the draft decision suggests that the Commission may have inexplicably omitted the two-month period from 1 January 2018 to February 2018.[96]

Notwithstanding the above observations relating to the asset beta estimation periods in the draft decision, the Commission's method for incorporating the risks of future COVID-like events is a form of ex-ante compensation, whereby regulated firms receive additional compensation for the risks of future asymmetric events, with no further compensation when such asymmetric events eventually occur.

This method implicitly assumes that the Commission:

- can estimate to a reasonable degree of precision the expected length and frequency of future COVID-type events, as well as the resulting impact on asset betas; and
- will apply the uplift in perpetuity.

This method is at odds with the Commission's earlier views in its fibre IM. In that decision, the Commission observed that ex-ante compensation is difficult to measure and may require additional ex-post compensation even after ex-ante compensation has been provided.[97]

In addition, this method allocates the risks of future COVID-like events on to the regulated airports, which will receive windfall gains if future COVID-like events are longer and more frequent than the Commission assumed, and vice-versa. This is particularly problematic since airports have little scope to influence the probability of such type I asymmetric risks from occurring.[98]

In contrast, the estimation methodology from the 2016 IM does not apply any asset beta uplift as ex-ante compensation for future COVID-like events. Instead, it provides compensation for future COVID-like events by incorporating expectations observed from market data over the last two five-year periods, including the COVID-affected observations. These observations will eventually have no impact on asset beta estimates after 10 years.

If the 2016 IM methodology is applied consistently in future, then the observed future changes in investor perceptions of COVID-like risks will be incorporated into future asset beta estimates accordingly. This approach does not require the Commission to generate estimates about the expected length, frequency and impact of future COVID-like events, or to apply an uplift in perpetuity.

In sections 4.1.1 and 4.1.2 below we discuss:

- how the Commission's draft decision methodology uses an arbitrary assessment of the probability and impact of future COVID-like events; and
- why consumers are best placed to bear the risks of future COVID-like events.

We conclude that the Commission's reasoning from the fibre IMs supports retaining the asset beta estimation methodology established in the 2016 IMs instead of adopting the draft decision's method of providing an uplift to pre-COVID asset betas.

[96] In another paragraph of the draft decision, the Commission states that it estimates Auckland Airport's pre-COVID-19 asset beta as the weighted weekly average of: the two years to 28 February 2020; the five-year period from 2012 to 2017; and the five-year period from 2007 to 2012. This omits data from January 2018 and February 2018. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.62.1, footnote 153.

[97] NZCC, *Fibre input methodologies: Main final decisions – reasons paper*, 13 October 2020, para 6.1017.1-6.1017.2.

[98] NZCC, *Fibre input methodologies: Main final decisions – reasons paper*, 13 October 2020, para 6.1017.3.

4.1.1 Arbitrary assessment of the probability and impact of a COVID-like event

The Commission derives the 0.02 asset beta premium as the midpoint of a pandemic adjustment range from 0 to 0.04, whereby:[99]

- the lower bound asset beta adjustment of 0 reflects an assumption that a COVID-19-like event occurs once every 50 years and last three months, ie, equivalent to 0.5 per cent of the time; and
- the upper bound asset beta adjustment of 0.04 reflects an assumption that a COVID-19-like event occurs once every 20 years and last 18 months, ie, equivalent to 7.5 per cent of the time.

The Commission draws its methodology from a report by Flint, which the CAA applied when setting the beta for Heathrow.[100]

In setting the lower bound and upper bound for the asset beta adjustment, the Commission has referred to:[101]

- its own weighted average of pre-COVID-19 and COVID-19-affected asset beta estimates for Auckland Airport;
- its own weighted average of pre-COVID-19 and COVID-19-affected asset beta estimates for its comparator sample; and
- TDB Advisory's weighted least squares regression estimates for Auckland Airport.

Notwithstanding methodological issues regarding the Commission's numerical estimates,[102] the Commission's methodology:

- applies the CAA's approach incorrectly; and
- ultimately relies on an arbitrary assessment of the probability and impact of a future COVID-like event.

In our view, this results in the Commission potentially underestimating materially the impact of COVID-19 on the forward-looking asset beta faced by New Zealand airports when determining the COVID-19 uplift.

First, while the Commission cites the CAA as precedent for calculating the impact of pandemics on the asset beta,[103] the Commission's approach of taking the weighted average of pre-COVID-19 and COVID-19-affected asset beta estimates differs from the approach set out in Flint's advice to the CAA.

Specifically, Flint calculates its COVID adjustment using a linear ordinary least squares (OLS) regression that applies different weights to observations from pre-COVID and COVID-affected observations.[104] This generates different estimates compared to the Commission's approach of taking the weighted average of pre-COVID betas and COVID-affected betas.[105]

[99] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.62.3, 4.62.4.

[100] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.60-4.64.

[101] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.62-4.64. TDB Advisory, *Auckland Airport's asset beta: COVID-19 adjustment using Flint study*, 26 January 2023.

[102] For example, the Commission derives its pre-COVID-19 asset beta of 0.53 using two five-year periods and one period that is slightly longer than two years, while its COVID-19 asset beta is derived using a small sample of ten weekly observations. The Commission has not explained why it has chosen these periods. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.54.1-4.54.2.

[103] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.58.

[104] Flint, *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 12.

[105] Flint's report for Heathrow obtains a COVID-adjustment of 0.01 to 0.06 using the weighted average of pre-COVID and COVID-affected observations, compared to 0.02 to 0.11 using its OLS regression. See: Flint, *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 46.

While Flint's report did consider the weighted average of pre-COVID betas and COVID-affected betas, it only did so as an alternative cross-check that it considered insightful but less appropriate:[106]

> *Our alternative cross-check method provides insightful results, but is based on a less appropriate estimation method*
>
> CEPA argues that we should place greater weight on the results of our cross-check (or averaging) method. **Our cross-check method takes simple (arithmetic) averages of two betas using the same dataset as our preferred method and based on equivalent weights to represent COVID-like events of lower frequencies (such as once every 20 to 50 years).**
>
> We agree with CEPA that the results of our cross-check method differ from our preferred method because the cross-check method does not capture the strength of the statistical relationship between more-extreme observations (in the COVID-period) and the observations from the more benign pre-COVID period. However, the adoption of an average of widely differing betas from adjacent time-periods is not an established regulatory technique.
>
> **Importantly, the cross-check method also loses some of the inherent statistical properties of the data used. Specifically, our preferred approach captures both the scale and strength of the beta relationship experienced during the different periods of our two (COVID and non-COVID) datasets. The approach of averaging betas only captures the scale of the beta.**
>
> We note there is a risk that our OLS estimation technique is biased by the variation in relative movements in different time periods (COVID-affected and non-COVID affected). However, it is not possible to conclude that the result arising from the cross-check method resolves any biases, since it is not possible to meaningfully test and compare the statistical properties of its simple averaging technique. (emphasis added)

TDB Advisory's report uses a weighted least squares approach that is consistent with Flint's method, but only carries out the analysis for Auckland Airport.[107]

Second, the Commission's methodology ultimately is based on arbitrary assumptions of the probability, length and impact of future COVID-like events. In particular, Flint's report acknowledged that its analysis was illustrative and speculative:[108]

> We also reiterate that our analysis is based on **speculated** future 'COVID-like' events exhibiting identical properties to COVID-19. Should events of lesser or greater consequence occur, or should the impact on the aviation sector be different in scale, this would also influence our **illustrative** beta impact. (emphasis added)

In addition, the Commission's assumption that the pandemic lasts for a period of three months to 18 months is materially shorter than Flint's August 2021 report that used a period of 17 months to 30 months.[109] The Commission:

- has not explained how it obtained its assumptions about the lower bound and upper bound on the length of future COVID-like events;[110] and

[106] Flint, *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 15.

[107] TDB Advisory, *Auckland Airport's asset beta: COVID-19 adjustment using Flint study*, 26 January 2023.

[108] Flint, *Support to the Civil Aviation Authority: Estimating Heathrow's beta post-COVID-19*, August 2021, p 17.

[109] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.62.3, 4.62.4. Flint, *Support to the Civil Aviation Authority: Estimating Heathrow's beta post-COVID-19*, August 2021, p 17.

[110] The Commission may have chosen its assumptions as approximations to: the 10-week lockdown period in New Zealand; and its assertion that the asset beta of its sample was elevated for a period of about 18 months. However, the Commission has not shown that these periods are appropriate approximations of the lower bound and upper bound of the lengths of future COVID-like events, and has not set out the calculations for its assertion that the asset beta of its sample was elevated for 18 months. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.62, 4.66.4.

- has not referred to Flint's updated report in May 2022, which used a higher upper bound of 39 months compared to the 30-month upper bound from its earlier report.[111]

Given the uncertainty regarding the frequency, length and impact of any future COVID-like events, we consider that the Commission should instead continue to apply the estimation methodology from the 2016 IM, which takes the average asset betas observed from the last two five-year periods.

The draft decision criticises the estimation methodology from the 2016 IM on the basis that it places too much likelihood on a COVID-19-type event occurring during the term of the IMs:[112]

> We do not consider it appropriate to use option 4 [continuing to use the average of the last two five-years] because in our view this would place too much likelihood of a COVID-19-type event occurring during the term of the IMs.

Notwithstanding the lack of evidence about the likelihood of a COVID-19-type event occurring during the term of the IMs, this criticism is only valid if the Commission were to apply an asset beta uplift of 0.10 in perpetuity.[113]

We consider it appropriate for the Commission instead to retain the 2016 IM estimation methodology by taking the average asset beta from the last two five-year periods without applying an additional asset beta uplift. This method means that any COVID-affected observations will eventually have no impact on the asset beta estimate after 10 years.

In this way, the Commission does not need to conduct speculative analysis about the frequency, length, and impact of any future COVID-like events, and instead can compensate based on the market response for such risks as they materialise.

4.1.2 Consumers are best placed to bear the risks of events with low probability and high impact

The Commission's draft decision framework of applying a COVID adjustment based on assumptions of the probability, length and impact of a future COVID-like event effectively allocates to the regulated New Zealand international airports the risks associated with such events.

Specifically, the draft decision framework requires airports to bear the risks of:

- the Commission using incorrect assumptions about the expected length and frequency of future COVID-like events;
- the Commission's methodology incorrectly estimating the impact that the risk of future COVID-like events will have on airport asset betas; and
- future COVID-like events occurring in clusters instead of being spaced evenly across time, potentially leading to extended periods over which the true underlying asset beta may deviate substantially from the Commission's estimates.

The Commission considered how best to compensate for such type I asymmetric risks when setting the fibre IMs. In that decision, the Commission observed that:[114]

[111] Flint, *Support to the Civil Aviation Authority: H7 updated beta assessment*, May 2022, p 30.

[112] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.68, 4.66.4.

[113] This 0.10 uplift is the difference between the asset beta estimate from the 2016 IM, ie, 0.63, and the Commission's pre-pandemic asset beta estimate of 0.53. See: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.66.1, 4.66.4.

[114] NZCC, *Fibre input methodologies: Main final decisions – reasons paper*, 13 October 2020, para 6.1017.

- ex-ante compensation is difficult to implement because it is impossible to identify the appropriate level of compensation;[115]
- if the costs of the risk eventually turn out to exceed the quantum of any insured costs, then it is likely that ex-post compensation will still be required regardless even if ex-ante compensation was already provided, since ex-post compensation after a catastrophic event occurs may be to the long-term benefit of end-users;
- the regulated firm has less scope to influence the probability of events such as earthquakes or pandemics occurring, which reduces the risk of moral hazard in which the regulated firm lacks incentives to avoid or mitigate such risks; and
- regulators could make ex-post adjustments with the benefit of hindsight.

Similar considerations apply when considering how type I asymmetric risks associated with COVID-like events affect airport asset betas. In particular:

- the appropriate uplift to compensate for future COVID-like risks is also difficult to estimate; and
- airports have little scope to influence the probability of future COVID-like events.

We also note that consumers are best placed to bear the risks of such high-impact-low-probability events since:

- such risks can be spread across the diverse base of consumers; and
- the prices paid for aeronautical services tend to constitute only a small proportion of airfares,[116] such that variations in aeronautical charges will have a comparatively small impact on travel decisions, and thus result in a relatively low level of deadweight loss.

This contrasts with the circumstances for individual regulated airports, which are less able to spread the risks of such high-impact-low-probability events, and for which the impact of the event on their operations will be disproportionately large.

Furthermore, if a COVID-like event results in an airport becoming unable to raise capital for investments, then this will have a comparatively large impact on its ability to serve travellers, thus resulting in a high level of deadweight loss.

As such, we consider it appropriate for the Commission to retain the 2016 IM estimation methodology by taking the average asset beta from the last two five-year periods without applying an additional asset beta uplift. In our view, allowing the impact of any COVID-affected market observations to wash out of the asset beta estimate after 10 years (or potentially 15 years) is more appropriate than the draft decision's approach of conducting arbitrary assumptions about the probability, length and impact of such events.

4.2 Regulatory risks

The draft decision does not set out how the COVID-19 uplift will be applied in future IMs. In particular, it is unclear whether the Commission will apply the same 0.02 uplift in perpetuity, or will modify or remove the uplift in future. This raises regulatory risks for the regulated airports if investors are concerned about the risk of the Commission modifying or removing the uplift in future IMs, which in turn will make it more difficult for the regulated airports to raise capital for investments in line with the Part 4 purpose.

[115] In the fibre IM, the Commission was concerned that ex-ante compensation would be biased upward since regulated firms have an incentive to claim additional compensation if the ex-ante compensation is insufficient to cover the impact of the asymmetric event when it eventually occurs, but will remain silent otherwise.

[116] Australian Productivity Commission, *Economic regulation of airports*, Inquiry report, June 2019, p 234.

The Commission considers that COVID-19 provided new information that the market had previously not included in its assessment of the airport asset beta:[117]

> Our view is that it is likely that COVID-19 provided new information that had not been included in the market's assessment of the airport asset beta, that the spike in the asset beta during the early stages of COVID-19 would be repeated in future pandemics, and that investors have repriced and reweighted airports in their efficient portfolio of investments…

In theory, if the Commission considers that the 0.02 asset beta uplift incorporates the increased risk of future COVID-type events, then such an uplift would need to be applied in perpetuity in order for the ex ante NPV=0 condition to be met.

However, even if the Commission were to clarify that such an uplift would be applied in perpetuity, such a statement will not be binding on its future IMs, and thus will provide little regulatory certainty for investors.

Furthermore, it is inherently difficult to specify and delineate the circumstances for which the Commission will and will not apply the draft decision approach, ie, applying an uplift to a pre-COVID event asset beta.

For example, imagine that another pandemic event occurred before the next IMs, but with different:

- lockdown periods and lockdown restrictions;
- fiscal policy and monetary policy reactions; and
- impact on returns for airport equities and the market index.

Investors would have no regulatory certainty regarding whether the Commission would treat such an event as:

- a 'COVID-like' event, in which case the airport asset beta in the subsequent IM would be calculated by taking a measure of the pre-COVID asset beta and applying an uplift based on the COVID-affected beta and the Commission's assumptions regarding the probability, length and impact of future COVID-like events; or
- an event that is not COVID-like, in which case the airport asset beta in the subsequent IMs would be calculated as the average of the last two five-year asset betas.

It would be difficult, if not impossible, to delineate in a sensible manner the entire range of permutations for which a future pandemic event would be treated as a COVID-like event or non-COVID-like event.

Consequently, the methodology set out in the draft decision for adjusting the airport asset beta for COVID-like risks reduces regulatory certainty for investors and makes it more difficult for the regulated airports to raise capital for investments in line with the Part 4 purpose.

Once again, the Commission can address these issues by retaining the 2016 IM estimation methodology that takes the average asset beta from, at least, the last two five-year periods without applying an additional asset beta uplift. This approach:

- is well established from previous IMs, such that continuing to apply it will increase regulatory certainty by demonstrating the Commission's commitment to the methodology;
- does not require an additional asset beta uplift to be provided in perpetuity, and thus eliminates the regulatory uncertainty that such an uplift would be modified or removed in future IMs; and
- does not require the Commission to draw a distinction between which future circumstances would be treated as a COVID-like event or a non-COVID-like event.

[117] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.67.

4.3 Smoothing the impact of COVID-like events using a 15-year period

As an alternative approach, the Commission can instead commit to adopting the average asset betas observed from the last three five-year periods without applying an additional asset beta uplift.

This alternative approach will confer similar benefits to the 2016 IM methodology, since it also means that the Commission:

- can compensate for the risks of future COVID-like events as they materialise instead of conducting speculative analysis about their length, frequency, impact and spacing;
- will be allocating the risks associated with future COVID-like events to consumers, who are best placed to bear the risks of such high-impact-low-probability events; and
- will promote regulatory certainty by applying a well-established method that does not require an additional asset beta uplift to be provided in perpetuity for future COVID-like events that are difficult to specify and delineate.

In addition, extending the asset beta averaging period from 10 years to 15 years will smooth the impact of COVID-like events over a longer period, such that any COVID-affected observations will have no impact on the asset beta estimate after 15 years.

If this change is applied consistently in all future periods, then this approach can be expected to lower the asset beta estimates in PSE4 and PSE5 while raising the asset beta in PSE6. Over time, the net effect of this change is expected to be zero, whereby the asset beta risks observed over the COVID-19 period are recovered over a 15-year period instead of over a 10-year period.[118]

CEPA's asset beta estimates suggest that this alternative approach will result in an asset beta of 0.745 using data up to September 2022.[119]

[118] See: CEG, *NZCC comments on asset beta estimates for airports*, February 2023, paras 90-91.

[119] This is the average of the weekly and four-weekly asset betas over the three five-year periods from 2007 to 2012, 2012 to 2017 and 2017 to 2022. See: CEPA, *Review of cost of capital 2022/2023 | New Zealand Commerce Commission*, 29 November 2022, p 11, table 2.4.

5. Cross-checks for the determined asset beta

We assess the draft decision's 0.55 airport asset beta estimate against three cross checks.

First, we compare the draft decision's airport asset beta against the 2016 IM estimate. We observe that the draft decision's 0.55 airport asset beta is 0.05 lower than the 2016 IM estimate, with the difference increasing to 0.10 when compared against the 2016 IM estimate prior to the 0.05 downward adjustment, ie, 0.65.

This material decline in the airport asset beta relative to the 2016 IM estimate is anomalous, given that regulatory precedent recognises that COVID-19 has had adverse impact on airports. This suggests that the Commission has not used an appropriate asset beta methodology in its draft decision.

Second, we compare the draft decision's airport asset beta estimate against the asset beta for Auckland Airport, which is the only regulated New Zealand international airport that is publicly listed. The Commission's asset beta estimates for Auckland Airport over varying periods are materially higher than the 0.55 airport asset beta estimate in the draft decision. This suggests that the Commission may have underestimated materially the asset beta of the benchmark efficient airport.

Finally, we compare the draft decision's airport asset beta estimate against regulatory precedent from the 2016 IM, as well as international precedent from the CAA, CAR and WASC. The 0.55 airport asset beta estimate in the draft decision is lower than the midpoint airport asset betas set out in regulatory precedent, which suggests that the Commission may have underestimated materially the asset beta of the benchmark efficient airport.

In addition, this cross check suggests that the Commission's 0.55 airport asset beta estimate likely cannot be applied across Auckland Airport, Wellington Airport and Christchurch Airport, given that it results in a lower asset beta compared to other airports that mostly are significantly larger.

5.1 Draft IM implies airport asset betas declined between 2016 and 2022

As section 1 above describes, the draft decision applies a midpoint airport asset beta of 0.55, compared to the previous airport asset beta of 0.60 in the 2016 IM.[120] This means that the Commission's asset beta estimate for the benchmark airport has declined by 0.05 between 2016 and 2022, with the difference increasing to 0.10 when comparing against the 2016 IM estimate prior to the 0.05 downward adjustment.

We consider this observation to be anomalous, since it is unlikely that the asset beta for the benchmark efficient airport would have declined over the period, given the Commission's view that investors have repriced and reweighted airports in their efficient portfolio of investments, given the spike in asset beta during early stages of COVID-19.[121]

Consistent with this, we observe in:[122]

- figure 5.1 below that the five-year asset betas for all eight airports in the draft decision airport comparator sample have increased since March 2016;[123] and

[120] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.29, 4.83.

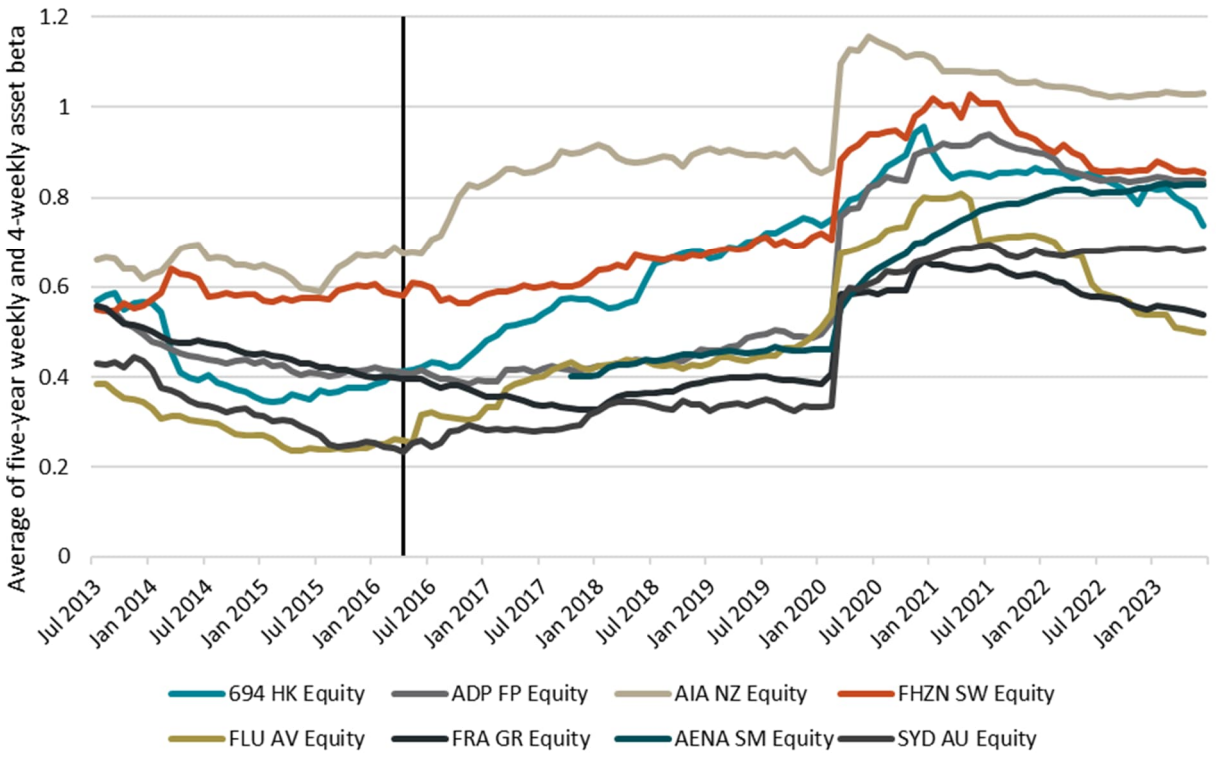
[121] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.67.

[122] We use the Commission's R programming code to calculate five-year rolling windows, as described in section 3.2, whereby we use the 2016 IM sample up to 30 September 2017 before switching to CEPA's sample from 31 October 2017 onwards. We have not adjusted the samples further to account for delistings or illiquidity.

[123] The 2016 IM calculated asset betas for four consecutive five-year periods, with the most recent five-year period ending on 31 March 2016. See: NZCC, *Input methodologies review decisions | Topic paper 4: cost of capital issues*, 20 December 2016, para 287.

- figure 5.2 below that the average five-year asset beta across CEPA's updated 2016 IM comparator sample has also increased since March 2016;
  - we use the 2016 IM sample up to 30 September 2017 before switching to CEPA's sample from 31 October 2017 onwards.[124]

Figure 5.1: Historical five-year asset betas for the comparator sample adopted in the draft decision

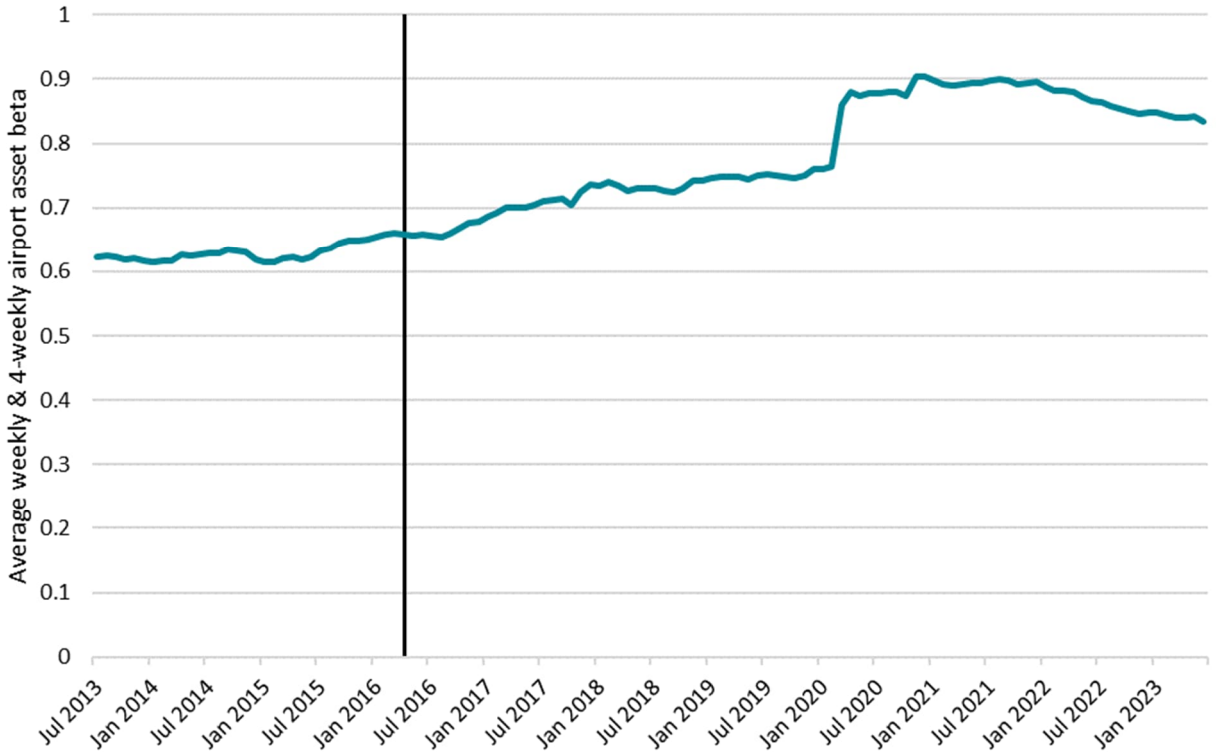


Source: Bloomberg, HoustonKemp analysis using the Commission's R programming code.

[124] CEPA estimated asset betas for different five-year periods, with the most recent period ending in September 2022. As such, our analysis switches to CEPA's sample from 31 October 2017, ie, five years before the end of CEPA's most recent five-year period.

The chart in figure 5.2 excludes data for the de-listed Sydney Airport from October 2017 onwards and, consistent with the WASC's judgment for Perth Airport, continues to include Japan Airport Terminal Co Ltd as part of the updated 2016 IM comparator sample. However, alternatively including Sydney Airport and excluding Japan Airport Terminal Co Ltd does not change the observation that the average five-year asset beta across the comparator sample has increased since March 2016.

Figure 5.2: Historical average five-year asset betas for CEPA's updated 2016 IM comparator sample



Source: Bloomberg, HoustonKemp analysis using the Commission's R programming code. Chart uses the 2016 IM sample up to 30 September 2017 before switching to CEPA's updated sample from 31 October 2017 onwards.

Furthermore, we observe that:

- the Commission states in its September 2022 final report for WIAL's PSE4 that 'airports are still experiencing a difficult operating environment because of the COVID-19 pandemic';[125]
- the UK CAA acknowledges that the aviation sector was 'significantly adversely affected by the COVID-19 pandemic', and considers that the pandemic has resulted in higher asset betas for comparator airports that will persist over the long term, although not to the extent observed in 2020 and 2021;[126] and
- the Irish CAR states that 'the onset of the COVID-19 pandemic had an unprecedented impact on the aviation industry, including on Dublin Airport, and states that there has been a general trend of increasing airport asset betas.[127]

Consequently, the estimated decline in airport asset betas between the 2016 IM and the draft decision suggests that the Commission has not used an appropriate asset beta methodology in its draft decision.

[125] NZCC, *Review of Wellington Airport's 2019-2024 price setting event*, Final report, 28 September 2022, para X5.3.

[126] CAA, *Economic regulation of Heathrow Airport Limited: H7 final proposals | section 3: Financial issues and implementation*, CAP2365, June 2022, paras 9.52, 13.138.

[127] Commission for Aviation Regulation, *Decision on an interim review of the 2019 determination in relation to 2023-2026*, Commission paper 7/2022, 23 December 2022, paras 1.3, 10.16.

5.2 Use of Auckland Airport's asset beta as a cross check

The asset beta for Auckland Airport is a highly relevant cross check for the Commission's airport asset beta estimate. This is because Auckland Airport is the only regulated New Zealand international airport that is publicly listed.

Consistent with this:[128]

- the Commission's draft decision assesses the COVID-19 premium based on data from Auckland Airport, in addition to carrying out an assessment using its comparator sample; and
- TDB Advisory replicates Flint's analysis of the COVID-19 premium using Auckland Airport data only; and
- the Commission's draft decision observes that Vector has a high bid-ask spread and low free float percentage, but the Commission has decided to include Vector in its energy comparator sample, noting that Vector also has a low asset beta variability and is 'an important comparator because it is the only New Zealand firm in the sample.'[129]

Consequently, Auckland Airport's asset betas can be used as a cross-check against:

- the airport asset beta adopted in the Commission's draft decision; and
- the change in the airport asset beta between the 2016 IM and the draft decision.

Table 5.1 below shows the Commission's estimates of asset betas for Auckland Airport over varying periods, including the three five-year periods between 2007 and 2022, and other intervals that the Commission uses when calculating the adjustment for COVID-like risks.

Table 5.1: The Commission's estimates of asset betas for Auckland Airport

	2007-2012	2012-2017	2017-2022	2018-Feb 2020	Feb-May 2020	May 2020-Sep 2022
Weekly	0.69	0.97	1.06	0.78	1.24	0.95
4-weekly	0.67	0.90	0.99	-	-	-

Source: NZCC, Cost of capital topic paper | Part 4 Input Methodologies Review 2023, Draft decision, 14 June 2023, para 4.62, footnote 153, table A3.

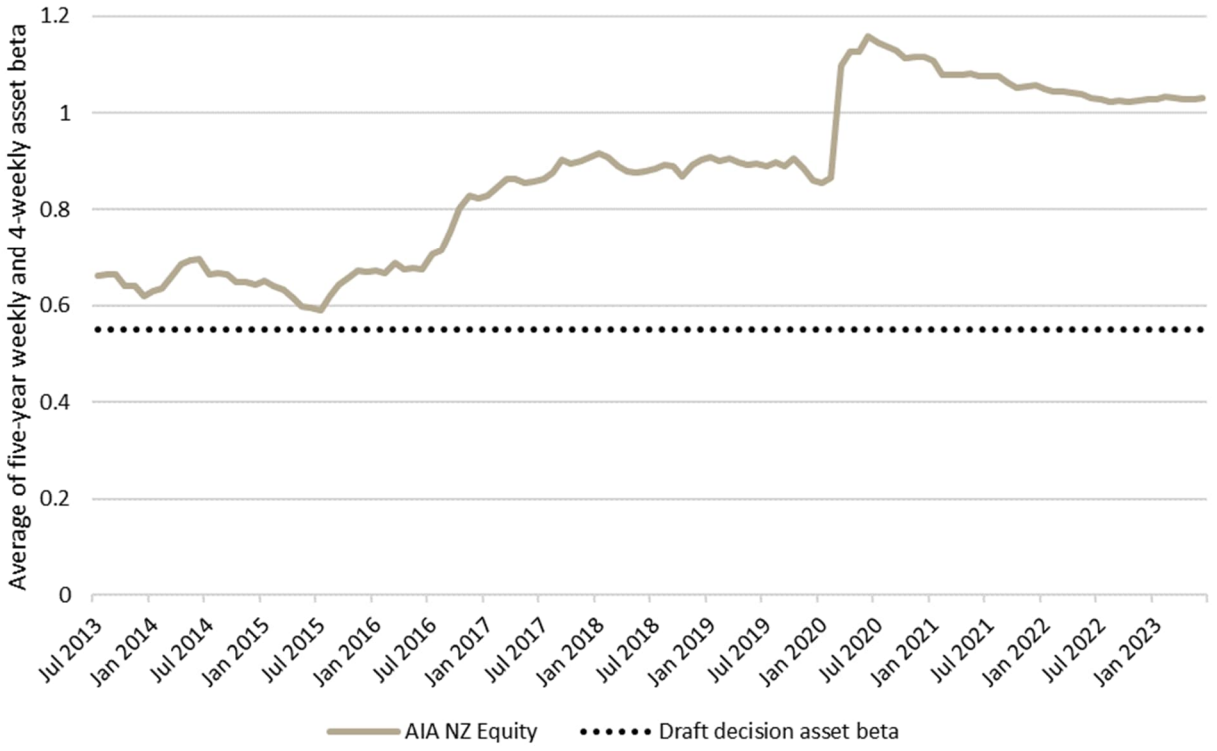
It can be seen from table 5.1 that Auckland Airport's asset beta estimates across all these estimation periods are materially higher than the Commission's 0.55 airport asset beta estimate in the draft decision. Consistent with this, figure 5.3 below shows that Auckland Airport's five-year asset beta estimates from June 2013 onwards have been consistently higher than 0.55.

Thus, this cross check suggests that the Commission may have underestimated materially the asset beta of the benchmark efficient airport.

[128] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 4.61-4.64.

[129] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.93.

Figure 5.3: Historical five-year asset betas for Auckland Airport



Source: Bloomberg, HoustonKemp analysis using the Commission's R programming code.

We note that Qantas has submitted that Auckland Airport should be excluded from the airport comparator sample because it contributes 6 per cent to the local index. Qantas alleges that this causes Auckland Airport's beta estimate to be biased upwards because its beta estimate is overrepresented in systematic risk.[130]

The 2023 IM draft decision includes Auckland Airport in the comparator sample.[131] While the Commission has not provided its reasoning for including Auckland Airport as an airport comparator, this choice is consistent with the Commission's reasoning for including Vector in its energy comparator sample. As discussed above, the Commission considers Vector 'an important comparator because it is the only New Zealand firm in the sample.'[132]

Notwithstanding Auckland Airport's similar importance as the only New Zealand firm in the airport comparator sample, Qantas' reasoning does not justify excluding Auckland Airport since:

- a 6 per cent weight is unlikely to generate material bias; and
- Auckland Airport's equity beta historically has been higher than one, such that any potential bias would be downward, ie, Auckland Airport's equity beta would be underestimated.

The intuition behind Qantas' argument is that the equity beta for a single firm is calculated by regressing the firm's equity returns against the returns of the market index. The equity beta thus measures the expected

[130] Qantas, *Re: CEPA Report on Aspects of the Cost of Capital Input Methodologies for the 2023 Review*, Letter, 17 February 2023, pp 1, 5. Also see: NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.36.

[131] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.45.

[132] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, para 4.93.

change in the return of the firm's equity in response to a 1 per cent increase in the returns of the market index.

In the extreme scenario where a firm makes up the whole market index, then the equity beta for that firm is equal to one. This is because the calculation regresses the firm's equity returns against itself, ie, a 1 per cent increase in the return of the market index is also expected to increase the return of the firm's equity by 1 per cent, since the firm itself is the market index.

Following this logic, a firm's equity beta will converge to one as it makes up a larger proportion of the market index. Specifically:

- the equity beta estimate for a firm whose 'true' equity beta exceeds one will be biased downwards, such that the true equity beta will be higher than the estimated equity beta, while the true asset beta will be higher than the estimated asset beta; and
- the equity beta estimate for a firm whose 'true' equity beta is less than one will be biased upwards, such that the true equity beta will be lower than the estimated equity beta, while the true asset beta will be lower than the estimated asset beta.

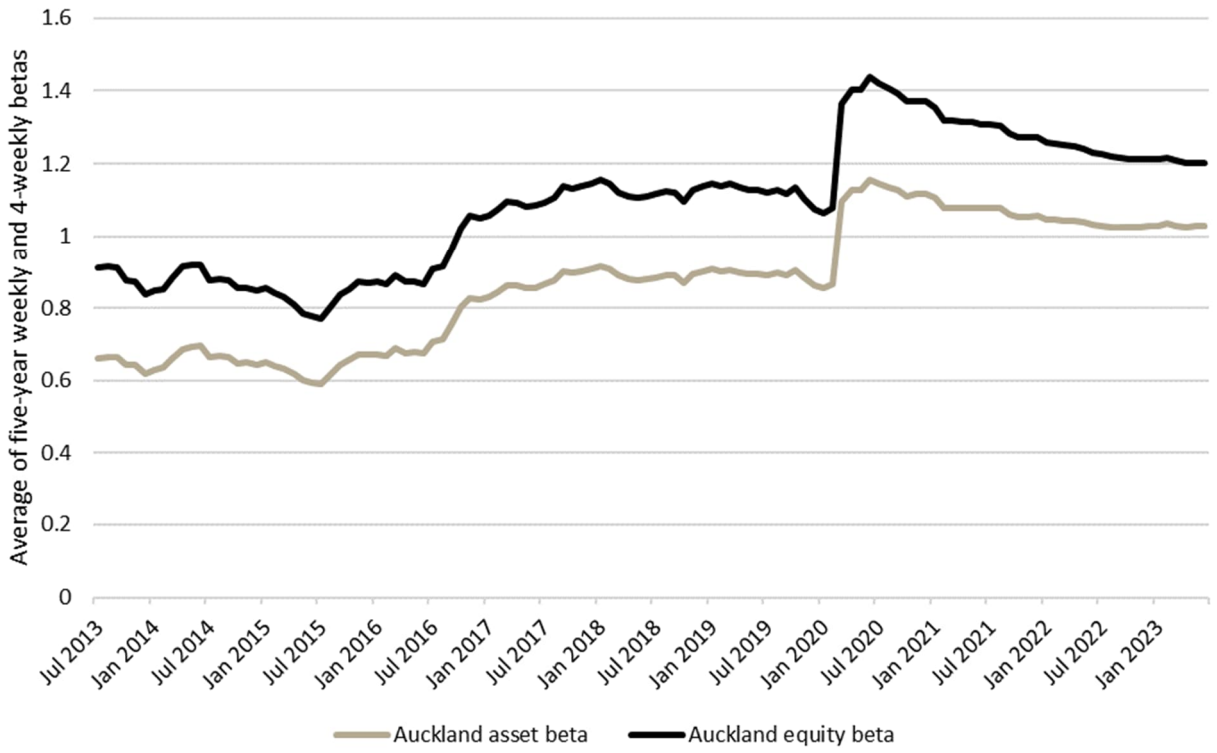
However, we consider that a 6 per cent weight remains acceptably low, such that the equity beta and corresponding asset beta estimated for Auckland Airport are unlikely to be biased materially.

In addition, figure 5.4 shows that Auckland Airport's estimated five-year equity beta has exceeded one from September 2016 onwards, ie, approximately 2/3 of the time over the last 10 years. This implies that, to the extent that Auckland Airport's estimated equity beta is biased due to its high weight in the market index, then such a bias will cause the estimated equity beta and the resulting asset beta to be too low.

Given that Auckland Airport's asset beta is above the average observed for the comparator sample adopted in the 2023 IM draft decision, removing such bias would require an uplift to be added to the sample average asset beta.

Conversely, removing Auckland Airport as a comparator will reduce the sample average asset beta further, which will only serve to worsen the downward bias in the estimated benchmark asset beta.

Figure 5.4: Historical five-year asset betas and equity betas for Auckland Airport



Source: Bloomberg, HoustonKemp analysis using the Commission's R programming code. The outputs of the Commission's R programming code include asset betas and gearing, but do not include equity betas. As such, we modify the code to calculate equity beta as the asset beta divided by (1 – gearing).

5.3 Airport asset beta estimates from international regulatory precedent

The Commission previously included asset beta reasonableness checks as part of its 2016 IM and 2010 IM. These reasonableness checks referred to estimates from:[133]

- other regulators, namely the CAA and CAR;
- third party broker reports; and
- submissions to the IM.

However, the 2023 IM draft decision carries out reasonable checks on the midpoint airport post-tax WACC estimate without carrying out the same reasonableness checks on the airport asset beta estimate.[134]

Figure 5.5 below compares the 0.55 airport asset beta estimate from the 2023 IM draft decision against regulatory precedent, namely:

- the 2016 IM calculated an average asset beta of 0.65, which the Commission reduced to 0.60 after applying a 0.05 downward aeronautical adjustment;[135]

[133] See: NZCC, *Input methodologies review decisions | Topic paper 4: cost of capital issues*, 20 December 2016, para 487, figure 12. NZCC, *Input methodologies (airport services)*, Reasons paper, December 2010, para 6.5.23, figure 6.4.

[134] NZCC, *Cost of capital topic paper | Part 4 Input Methodologies Review 2023*, Draft decision, 14 June 2023, paras 7.35-7.43, figure 7.2

[135] NZCC, *Input methodologies review decisions | Topic paper 4: cost of capital issues*, 20 December 2016, paras 474, 486.

- the CAA's June 2022 final proposal for Heathrow Airport calculates an asset beta range of 0.52 to 0.73 after adjusting for the impact of the pandemic; [136]
  - the CAA subsequently reduces this to a range of 0.44 to 0.62 to incorporate the impact of a traffic risk sharing mechanism, which is not applicable to the 2023 IM; and
  - the CAA's March 2023 final decision for Heathrow Airport adopts the same asset beta range of 0.44 to 0.62;
- the CAR's December 2022 decision for Dublin Airport applies an asset beta range of 0.59 to 0.61, before adopting the midpoint of 0.60;[137] and
- the WASC's February 2022 judgment for Perth Airport states that the best estimate of the asset beta for Perth Airport as at 30 June 2018 was 0.75, which includes an uplift of 0.03 above the 0.72 average observed for the comparator sample accepted by the Court.[138]

The figure shows that the 0.55 airport asset beta from the 2023 IM draft decision is lower than the midpoint airport asset betas set out in regulatory precedent.

In addition, the asset beta for the benchmark efficient airport is likely to be higher than those applied in the regulatory precedent shown in figure 5.5. This is because:

- the CAA and CAR decisions have been made for Heathrow Airport and Dublin Airport, both of which are materially larger than the three regulated New Zealand international airports; and
- the 2016 IM and WASC decision for Perth Airport generated pre-COVID asset betas, but airport asset betas are likely to have increased since then.

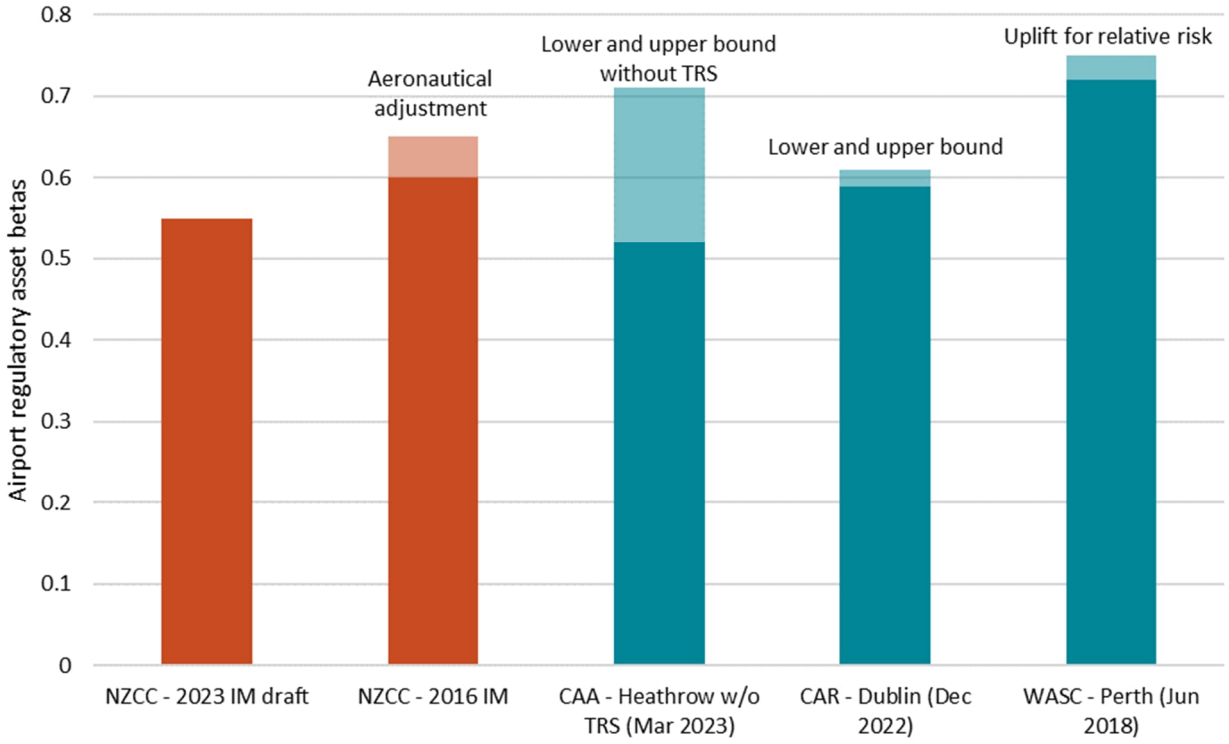
Thus, this cross check suggests that the Commission may have underestimated materially the asset beta of the benchmark efficient airport.

[136] CAA, *Economic regulation of Heathrow Airport Limited: H7 final proposals | section 3: Financial issues and implementation*, CAP2365, June 2022, table 9.2. CAA, *Economic regulation of Heathrow Airport Limited: H7 final decision | section 3: financial issues and implementation*, CAP2524D, March 2023, table 9.6.

[137] Commission for Aviation Regulation, *Decision on an interim review of the 2019 determination in relation to 2023-2026*, Commission paper 7/2022, 23 December 2022, table 10.2.

[138] *Perth Airport Pty Ltd v Qantas Airways Ltd [No 3]* [2022] WASC 51 paras 279-281.

Figure 5.5: Airport asset beta estimates from regulatory precedent



Source: Regulatory decisions.

HOUSTONKEMP
Economists

Sydney
Level 40
161 Castlereagh Street
Sydney NSW 2000

Phone: [redacted]