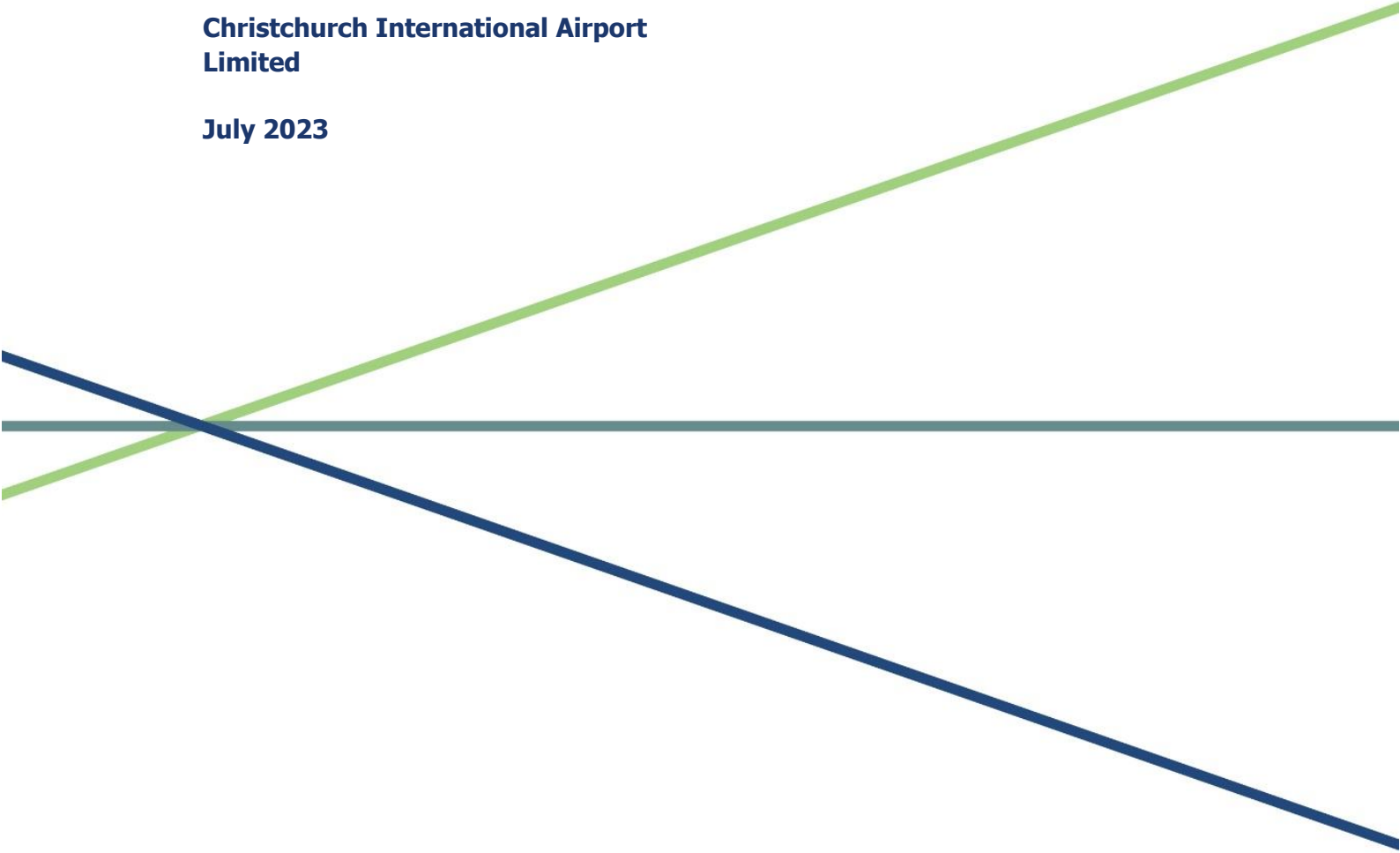


# Airport comparator sample selection

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## 1. Introduction and Summary

### 1.1 The Commission's new comparator filtering approach

1. The New Zealand Commerce Commission (“Commerce Commission” or the “Commission”) has published its draft decision on cost of capital for the Input Methodologies Review 2023,<sup>1</sup> which has proposed a very different approach to airport comparator firm selection (filtering) relative to the approach applied in the two previous Input Methodology reviews. The new filters the Commission has applied are:
  - a. a more sophisticated test for liquidity of firms:
  - b. exclusion of firms that are deemed to have an unreliable beta estimate:
  - c. exclusion of firms from markets that are not deemed to be comparable to the New Zealand market; and
  - d. exclusion of firms that have negative gearing (i.e., cash holdings in excess of debt).
2. The Commission has also made an adjustment for the estimated effect of Covid-19 on asset betas.
3. Whilst we agree with the Commission's use of a more sophisticated test for the liquidity of firms – which is well justified in theory – in our view the remaining filters applied by the Commission have not been fully described or justified against financial economic principles, and suffer from a range of serious flaws. We note that the practical result of the Commission's new methodology is that the comparator sample has reduced to approximately a third of the former number (from 23 to 8), and the asset beta estimate (unadjusted for Covid-19) reduces from 0.79 to 0.63.<sup>2</sup> We have reviewed the report prepared by CEG for NZ Airports Association on this matter,<sup>3</sup> and agree with its conclusions that the end-result of the Commission's new filtering method is to deliver a sample of firms whose fundamental risk characteristics differ materially to the New Zealand airports.
4. We summarise our reasons for these views below.

### 1.2 Resulting sample has very different risk characteristics to the New Zealand airports

5. A principal finding of the CEG report is that the effect of applying the new filters is to result in a sample of firms whose fundamental systematic risk characteristics are materially different to those of the target New Zealand airports. In particular, CEG demonstrates that the smaller sample comprises:

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<sup>1</sup> Commerce Commission (14 June 2023), Cost of capital topic paper, Part 4 Input Methodologies Review 2023 – Draft decision.

<sup>2</sup> Commerce Commission (14 June 2023), p.69.

<sup>3</sup> CEG (July 2023), Critique of 2023 IM Draft Decision on Asset Beta for NZ Airports.

- a. a number of firms whose regulatory frameworks would be expected to result in a much lower level of systematic risk compared to the New Zealand airports;
  - b. a majority of firms that are subject to much greater capacity constraints than the New Zealand airports, with capacity constraints serving to reduce cash flow variability and hence systematic risk;
  - c. a number of firms that have material operations in markets outside of the one in which its shares are listed, which would be expected to depress the beta compared to a firm that is listed and operates in the same market (i.e., the New Zealand airports); and
  - d. a much lower volatility of demand, and reduced sensitivity of demand growth to economic growth, which would also predict a lower level of systematic risk compared to the New Zealand airports.
6. We also agree with CEG's conclusion that the sample under the Commission's previously applied filters more closely resembles, on average, the characteristics of the New Zealand airports. Lastly, we agree with CEG that a comparison of the average beta from the large sample against the estimated beta for Auckland International Airport Limited – if done over a sufficiently long period – is a reasonable further check of whether the sample of firms provides an accurate prediction of the asset beta for the New Zealand airports. This check confirms the other evidence discussed above that the larger sample is more representative of the New Zealand airports.

### **1.3 Applying a liquidity filter is valid, and results in a higher asset beta estimate**

7. The Commission applies a liquidity filter based on the bid-ask percentage and free float percentage that have been observed. We believe that a liquidity filter is justified in theory as illiquid trading is likely to result in artificially depressed beta estimates. We note that there are a range of other measures that the Commission could have applied to test for liquidity – such as the number of market analysts covering the stock and the free float market cap (the product of the market capitalisation and free float percentage) – although these other measures largely support the Commission's findings.
8. We agree with the Commission's exclusion of the 4 firms for liquidity reasons, and also agree with CEG that the Commission should also have excluded Flughafen Wien on these grounds (the other liquidity measures also support excluding this firm). Applying this filter to the larger sample raises the average of that sample by 0.04 (for the four firms the Commission identified) and 0.07 (if Flughafen Wien is also excluded on this basis).

### **1.4 It is a fallacy to apply an “unreliable beta estimation” filter to inherently imprecise beta estimates**

9. Beta estimates are inherently imprecise, and indeed this imprecision is predicted by theory given that the beta will only explain the systematic portion of an asset's total risk, and not the portion that is diversifiable. Accordingly, in our view, there is no *a priori*

reason to exclude an observation because a beta is considered to be imprecise,<sup>4</sup> rather this imprecision should be addressed by assembling a large sample of comparable entities.

10. In addition, the Commission's measure of "unreliability" is unusual in that it is not based on a measure of standard error of the estimate, or perceived stability over time. Rather, it is simply based on the difference in beta estimates obtained with different sampling intervals (i.e., the maximum beta differential between 4-weekly, weekly and daily return interval beta estimates), and with the maximum allowed differential set at 0.20. The key flaws of this test are that:
  - a. there are well-known issues that cause downward biases from using daily return intervals,<sup>5</sup> and so this test is more likely to identify cases where such biases exist and so 4-weekly or weekly estimates should be preferred; and
  - b. to this end, we note that the daily estimates are the "low" value in three-quarters of the cases the Commission's excludes, which would increase to 100 per cent if the "threshold" was increased from 0.20 to 0.40.
11. The problems with this new filter the Commission applied are magnified by its significance: all else constant, this filter eliminates almost half of the wider sample, and causes the sample average (unadjusted for Covid-19) to reduce by 0.16.

## **1.5 FTSE Equity Country Classification and MRPs are flawed measures of "market comparability"**

12. In our view, the primary screen for the set of comparable entities should be the nature of the relevant firm's operations, and the similarity to the risk of the target entities. As discussed above, the fact that the broader sample has fundamental risk characteristics that are similar on average to those of the New Zealand airports provides a strong reason not to apply any further geographical screen.
13. Furthermore, even were such a screen to be applied, there are flaws in the screens the Commission has applied.
  - a. First, we show that the FTSE Country Classification is directed only to the breadth of mainly derivatives financial instruments in the various markets, which is unrelated to systematic risk, and is also not an indicator of whether betas can be estimated reliably.
  - b. Secondly, with respect to the MRP filter that the Commission applies, we agree with CEG that there is no valid reason why markets with higher MRPs should be excluded. However, we also show that there are alternative measures of relative MRP to the Fernandez survey method that the Commission has placed sole reliance on. For

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<sup>4</sup> In contrast, where an unusual event that is specific to a firm has occurred that would be expected to cause a bias in its beta estimate, then there may be a case to exclude the firm. An example of this is where a firm has been subject to a take-over process and this has caused its share price to be maintained at a level based on the offer price for the firm rather than the firm's operations.

<sup>5</sup> The two sources of biases that may arise are where shares are thinly traded, and where a firm's operations are opaque, both of which may cause a delay between an event occurring and its effects being observed in the share price. We discuss these further in the text.

example, Damodaran produces estimates of market risk premiums for a wide range of countries, which provide no basis for firms from China to be excluded.

## **1.6 Economic theory does not support the exclusion of firms without debt in their capital structures**

14. The Commission's exclusion of 4 firms with negative net debt on the basis that they have "unusual capital structures" finds no support in economic theory, although it has a relative minor impact on the average beta estimate (negative 0.03).

## **1.7 There should be no adjustment for the effect of Covid-19 on estimated betas**

15. We agree with CEG's view that the most robust approach to addressing the potential impact of the Covid-19-19 pandemic on estimated betas is to simply allow the increment to flow through to the beta estimates that are applied. Attempting to estimate and then adjust for the Covid-19 impact is complex and will necessarily introduce an additional element of subjectivity, and so reduce the predictability of the Part 4 regime. In addition, to achieve NPV=0 the Commission will need to commit to adding an increment to beta estimates for "possible pandemics" for all time, long after the recent events have been forgotten. The Commission should reflect on how believable such a commitment may be.
16. We note that passing through changes in asset betas in full where there are material changes from one pricing period to the next may cause material changes to prices that may not be consistent with encouraging the efficient utilisation of the assets and the long-term interests of customers more generally. However, there are other measures in the regulatory framework that can be applied to manage the trajectory of prices over the medium to long term – namely depreciation – which has already been a feature of some of the New Zealand airports' past pricing decisions.

## 2. Elaboration

### 2.1 Effect of the new filters applied by the Commission

17. Table 1 below shows the broader sample of airport firms, the firms the Commission has included in its sample (shaded in light green) and the reasons (in terms of the filter that was violated) provided as to why each of the remaining firms were excluded. The asset betas indicated are those estimated by CEPA prior to any adjustments being made for Covid-19.

**Table 1 – Asset beta of airport comparator sample – effect of individual filters**

Ticker	Company name	Country	Average Beta (W&M)	Liquidity	Beta est. Unreliable	Market Comparability	Negative Gearing
FHZN SW Equity	Flughafen Zurich AG (Switzerland)	Switzerland	0.69	0	0	0	0
FRA GR Equity	Fraport AG (Germany)	Germany	0.45	0	0	0	0
ADP FP Equity	Aéroports de Paris (France)	France	0.62	0	0	0	0
FLU AV Equity	Flughafen Wien AG (Austria)	Austria	0.39	0	0	0	0
AENA SM Equity	Aena SME SA (Spain)	Spain	0.82	0	0	0	0
694 HK Equity	Beijing Capital International Airport Co Ltd (HK Hong Kong)		0.70	0	0	0	0
SYD AU Equity	Sydney Airport	Australia	0.48	0	0	0	0
AIA NZ Equity	Auckland International Airport Ltd (NZ)	New Zealand	0.98	0	0	0	0
KBHL DC Equity	Kobenhavns Lufthavne (Denmark)	Denmark	0.38	1	0	0	0
TYA IM Equity	Toscana Aeroporti SpA (Italy)	Italy	0.35	1	1	0	0
ADB IM Equity	Aeroporto Guglielmo Marconi (Italy)	Italy	0.80	1	1	0	0
MIA MV Equity	Malta International Airport PLC (Malta)	Malta	0.99	0	1	0	0
357 HK Equity	Hainan Meilan International Airport Co Ltd (HK) Hong Kong		0.76	1	0	0	0
MAHB MK Equity	Malaysia Airports Holdings Bhd (Malaysia)	Malaysia	1.04	0	1	0	0
000089 CH Equity	Shenzhen Airport Co (China)	China	0.75	0	0	1	1
600004 CH Equity	Guangzhou Baiyun International Airport (China) China	China	0.99	0	1	1	0
600009 CH Equity	Shanghai International Airport (China)	China	0.80	0	1	1	1
600897 CH Equity	Xiamen International Airport Co (China)	China	1.02	0	1	1	1
ASURB MM Equity	Grupo Aeroportuario del Sureste (Mexico)	Mexico	0.94	0	1	1	0
GAPB MM Equity	Grupo Aeroportuario del Pacifico (Mexico)	Mexico	1.16	0	1	1	0
OMAB MM Equity	Grupo Aeroportuario del Centro Norte (Mexico)	Mexico	1.16	0	1	1	0
GMRI IN Equity	GMR Airports Infrastructure Ltd (India)	India	0.38	0	0	1	0
AOT TB Equity	Airports of Thailand PCL (Thailand)	Thailand	1.13	0	1	1	1
All (N=23)			0.77	4	11	9	4
Averages of sub-samples			<b>Average</b>	<b>Change</b>			
NZCC Filtered Sample (N=8)			0.64	-0.13			
Eliminate for liquidity only			0.81	0.04			
Eliminate unreliable estimates only			0.62	-0.16			
Eliminate for market comparability only			0.67	-0.10			
Eliminate for negative gearing only			0.74	-0.03			

Source: CEPA, Commerce Commission and Incenta analysis. Note that the betas shown are taken from the CEPA report and so were extracted to two decimal places, and so totals may differ to those reported elsewhere due to this rounding.<sup>6</sup>

18. The effect of the new filters the Commission has applied is to substantially reduce the size of the sample of firms (from 23 to 8), and to the average beta (from 0.77 to 0.64). Moreover, whilst some filters have a modest impact only (the “liquidity” and “negative gearing” filters affecting few firms), the “unreliability” and “market comparability” filters each eliminate (all else constant) more than a third of firms (and almost a half in

<sup>6</sup> For example, the Commerce Commission reports the overall average as 0.79 (c.f. 0.77 reported here) and the average of its selected sample as 0.63 (c.f. 0.64 reported here): Commerce Commission (14 June 2023), p.69.



the case of “unreliability”) and have a profound effect on the estimated beta (when applied in isolation, reducing the sample average by 0.16 and 0.10, respectively).

## 2.2 Characteristics of the set of comparable entities

19. In our view the methodology applied to derive a set of comparable entities for any activity (in this case the regulated activities of New Zealand airports) must look at first principles to assess the drivers of the systematic risk of that activity. That is, how close are the characteristics of potential comparators that drive the sensitivity of the relationship between an airport’s stock price and the value of the relevant domestic market? CEG’s report is focused on that goal, as it looks at risk fundamentals such as:
- a. *Nature of the regulatory regime* – firms in the Commission’s narrow sample have a revenue cap or discretion as to the length of the regulatory period, which can reduce risk. At Vienna and Copenhagen, prices are adjusted on a rolling basis for passenger volume changes and subject to a revenue cap, thereby eliminating volume risk. Other airports in the narrow sample have discretion in their regulatory or pricing frameworks that is not available to New Zealand airports.<sup>7</sup>
  - b. *Underlying demand risk* – the Commission’s narrow sample has highly capacity constrained airports that have lower demand risk. CEG’s Figure 4-1 shows that based on the Capacity Utilisation Index (CUI) the New Zealand airports are far less capacity constrained than all the airports in the narrow sample.<sup>8</sup>
  - c. *Passenger volatility* – with firms in the Commission’s narrow sample having a much lower “demand beta” than Auckland Airport. Measured by standard deviation of passenger growth and “demand beta” (correlation of demand volatility to GDP volatility), CEG finds that narrow sample airports have lower absolute and relative volatility than Auckland (AIAL).<sup>9</sup>
  - d. *Non-synchronous markets of listing and operations* – CEG shows that AdP and Fraport have more than half of their operations based in other countries (i.e., outside of France and Germany respectively) whose economies / stock markets are not perfectly correlated with the home countries, resulting in a downward biased to beta.<sup>10</sup>
  - e. *Lower underlying asset risk reflected in gearing* – with the lower gearing observed in the narrow sample compared to the Commission’s previous sample indicating a higher capacity to take on debt finance.<sup>11</sup> In support of CEG’s view, we note that credit rating agencies examine the historical performance of different industries in economic downturn periods when assessing their ability to sustain greater debt finance. Industries and firms assessed to have greater survivability in economic

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<sup>7</sup> CEG (July 2023), section 4.1.

<sup>8</sup> CEG (July 2023), section 4.2.

<sup>9</sup> CEG (July 2023), section 4.2.

<sup>10</sup> CEG (July 2023), section 4.4.

<sup>11</sup> CEG (July 2023), section 4.5.

downturns can achieve investment grade credit ratings with higher gearing levels, which is likely to be inversely related to their asset betas.

20. We agree with CEG that as the result of a misdirected approach the Commission derives a materially smaller sample that is unrepresentative of the characteristics of the New Zealand airports. This has been shown by CEG in its Figure 3-3, as the Commission's reduced sample has over the period since 2005 been a far less accurate predictor of the systematic risk of Auckland Airport, than the well-established sample has been. Beta estimation is inherently inaccurate, which means it would be inappropriate at a point in time to rely on a single observation of beta over say a 5-year or 10-year period of observation. However, CEG has estimated 5-year betas for Auckland Airport with returns data spanning 23 years, and the evidence clearly and consistently indicates an asset beta that is best approximated by the Commission's traditional sample. We agree with CEG's conclusion that the Commission's established larger sample is far more likely to produce a more accurate and more stable estimate of the equity beta of the New Zealand airports.
21. In the remainder of this report, we give further consideration to the individual filters that the Commission has used to reduce its sample from 23 to 8, and also comment on the solution to the "Covid-19 effect" adjustment issue that has been proposed by CEG.

### 2.3 Liquidity

22. The Commission barely discusses the concept of liquidity, before applying several measures in a wholly opaque manner. From the discussion it can be inferred that low trading liquidity will result in unreliable beta estimates: an illiquid firm may be expected, other things being equal, to indicate a lower beta than a more liquid firm. The variables that the Commission considered in determining whether trading in a stock is liquid were the "bid-ask spread" as a percentage of price, and the "free float" percentage. However, as noted by CEG, the reader is left to "back solve" what actual thresholds it applied in determining whether a firm was considered liquid.
23. Bid-ask spreads and free float percentage are not the only measures of liquidity that are applied in the marketplace, and no measure can on its own be considered definitive. Alternative measures include:
  - a. Number of analysts following the stock – This variable has some inherent reinforcement, since greater liquidity (market trades) creates the value that supports market analysts, while the presence of market analysts will also enhance liquidity via the distribution and analysis of stock-specific information and how it interacts with market-level information.
  - b. Free float market capitalisation (in USD) – This is the market value of a stock that is actually subject to trading on a daily basis (not held long term by government or institutional shareholders), and is calculated as the free float percentage multiplied by the market capitalisation.
24. In Table 2 we display the four indicators of liquidity, which demonstrates a degree of unanimity. A high bid-ask spread is correlated with low free float percentage, low free

float market cap and a low number of market analysts following the stock. In particular, we find that the three comparators with a free float market cap below USD100 million have virtually no analyst following, and the highest bid-ask spreads. Based on the alternative measures it is apparent that almost all of the mainland Chinese, and all of the Mexican, Indian and Thai comparators have a high level of stock liquidity. While the Commission has assessed Flughafen Wien as “liquid” despite a higher bid-ask spread than Hainan Meilan (0.77 per cent vs 0.63 per cent), we note that the former also has a much lower free float percentage, lower free float market cap and far fewer analysts following the stock compared with the latter. Based on the wider consideration of liquidity characteristics shown in Table 2, Hainan Meilan is the only comparator *excluded* by the commission on liquidity grounds that we would question. On liquidity characteristics it is far superior (more liquid) to all the other comparators excluded by the Commission, and also superior to Flughafen Wien, which the Commission included.

**Table 2 – Alternative indicators of stock liquidity of airport comparators**

Ticker	Country	Company name	Average Beta (W&M)	Bid-Ask Spread	Free Float %	Free Float Market Cap \$USm	No. of Analysts
FHZN SW Equity	Switzerland	Flughafen Zurich AG (Switzerland)	0.69	0.12%	61%	2,856	19
FRA GR Equity	Germany	Fraport AG (Germany)	0.45	0.15%	40%	1,607	25
ADP FP Equity	France	Aéroports de Paris (France)	0.62	0.10%	36%	4,521	21
FLU AV Equity	Austria	Flughafen Wien AG (Austria)	0.39	0.77%	10%	288	3
AENA SM Equity	Spain	Aena SME SA (Spain)	0.82	0.08%	46%	8,782	30
694 HK Equity	Hong Kong	Beijing Capital International Airport Co Ltd (HK)	0.70	0.33%	100%	3,122	14
SYD AU Equity	Australia	Sydney Airport	0.48	na	na	na	na
AIA NZ Equity	New Zealand	Auckland International Airport Ltd (NZ)	0.98	0.11%	82%	5,413	12
KBHL DC Equity	Denmark	Kobenhavns Lufthavne (Denmark)	0.38	1.14%	1%	100	0
TYA IM Equity	Italy	Toscana Aeroporti SpA (Italy)	0.35	2.64%	27%	62	1
ADB IM Equity	Italy	Aeroporto Guglielmo Marconi (Italy)	0.80	1.17%	22%	68	2
MIA MV Equity	Malta	Malta International Airport PLC (Malta)	0.99	na	70%	590	0
357 HK Equity	Hong Kong	Hainan Meilan International Airport Co Ltd (HK)	0.76	0.63%	77%	1,077	11
MAHB MK Equity	Malaysia	Malaysia Airports Holdings Bhd (Malaysia)	1.04	0.18%	38%	934	19
000089 CH Equity	China	Shenzhen Airport Co (China)	0.75	0.14%	42%	997	15
600004 CH Equity	China	Guangzhou Baiyun International Airport (China)	0.99	0.09%	42%	2,235	22
600009 CH Equity	China	Shanghai International Airport (China)	0.80	0.03%	32%	5,247	29
600897 CH Equity	China	Xiamen International Airport Co (China)	1.02	0.10%	29%	210	1
ASURB MM Equity	Mexico	Grupo Aeroportuario del Sureste (Mexico)	0.94	0.15%	41%	2,415	17
GAPB MM Equity	Mexico	Grupo Aeroportuario del Pacifico (Mexico)	1.16	0.14%	88%	6,214	18
OMAB MM Equity	Mexico	Grupo Aeroportuario del Centro Norte (Mexico)	1.16	0.14%	81%	2,014	16
GMRI IN Equity	India	GMR Airports Infrastructure Ltd (India)	0.38	0.11%	35%	922	2
AOT TB Equity	Thailand	Airports of Thailand PCL (Thailand)	1.13	0.36%	28%	8,144	25

Source: Bloomberg and Commerce Commission

- In our view it is valid to eliminate businesses on the basis of illiquidity to derive a better estimate of the beta for a benchmark airport business, and we agree with the exclusions the Commission has made but furthermore consider that Flughafen Wien should also be excluded on this basis.

## 2.4 Beta estimate unreliable

- The Commission also developed a novel test of the “reliability of the beta estimate” by subtracting the lowest beta estimated using either daily, weekly or 4-weekly frequency intervals from the highest beta estimated using one of those frequencies. Our view is that

there is no fundamental merit in investigating whether beta estimates are “unreliable” as beta estimation is inherently imprecise.

27. The test proposed by the Commission is unique, and in our experience has not been applied by any other regulator or been investigated in the financial economics literature. The Commission has applied its method in a theoretical vacuum, with no discussion or peer review by its own advisers. In proposing its test, the Commission has ignored the literature that has addressed the question of whether betas using monthly, weekly or daily data are more reliable. In other words, whether high frequency or low frequency return intervals are likely to provide a superior estimate of the systematic risk of a firm?
28. There is a theoretical basis for why beta estimates using different frequencies are more or less reliable. The idea that firms whose shares are “thinly” traded may result in downward biased betas where high-frequency returns (e.g., daily return intervals) are used has been accepted in the finance literature for decades.<sup>12</sup> In addition, more recent literature has provided an alternative reason as to why beta estimates may be downward biased where high-frequency returns are applied, which is based on the concept of opacity: the speed at which market news can fully influence stock prices.<sup>13</sup> That theory holds that with high frequency returns an opaque firm’s stock price will not fully incorporate the latest news, while at lower frequencies all firms are likely to have fully impounded information into prices. Examples of this literature are Gregory *et al* (2016)<sup>14</sup> who repeated the Gilbert *et al* (2014)<sup>15</sup> analysis of UK firms for a number of countries and added new explanatory variables. For example, Gregory reported that the weighted average monthly beta for 4,355 (2,208) listed UK (Australian) firms was 1.028 (1.028), while the weighted average of weekly betas for the same stocks was 0.843 (0.908).<sup>16</sup>
29. The Commerce Commission’s report references that in the 2016 IM Review “a recent study of evidence [Gregory *et al*] implies that low frequency beta estimates should always be preferred to high frequency beta estimates.”<sup>17</sup> However, the Commission does not investigate this matter, and alternative positions, or draw substantive conclusions before devising its test. There is no discussion of why the implied threshold of approximately 0.20 in beta differential is appropriate.
30. In the case of the airport comparator sample, consistent with the opacity theory, we find that in both 5-year periods the daily betas are most likely (relative to 4-weekly or weekly estimates) to be the minimum beta estimate. Daily beta estimates constitute the “low”

<sup>12</sup> This literature is discussed in: Gregory, A., Hua, S. and Tharyan, R. (2018), “In Search of Beta”, *British Accounting Review*, Vol. 50, Issue 4, pp.425, 427, 438.

<sup>13</sup> Note that “thin trading” and “opacity” are independent concepts. Bias due to “thin trading” occurs because the absence of sufficient trade in shares during a given interval means that changes in the underlying value of a share may not find its way into the observed share price. The bias due to “opacity” results because, even though there may have been material trade in shares during an interval, the share price still may not fully reflect changes in the underlying value.

<sup>14</sup> Gregory, A., Hua, S. and Tharyan, R. (2018), “In Search of Beta”, *British Accounting Review*, Vol. 50, Issue 4, pp.425-441.

<sup>15</sup> Gilbert, T., Hrdlicka, C., Kalomidos, J., and Siegel, S. (2014), “Daily Beta is Bad for Beta: Opacity and Frequency-Dependent Betas,” *Review of Asset Pricing Studies*, Vol. 4 (1), pp.78-117.

<sup>16</sup> Gregory, A., Hua, S. and Tharyan, R. (2018), Table 1.

<sup>17</sup> Commerce Commission (14 June 2023), p.80.

value in over three-quarters of the cases the Commission's excludes, and this would increase to 100 per cent if the "threshold" was increased from 0.20 to 0.40.

## 2.5 Market comparability

31. The Commission has almost without discussion applied the financial market classifications of the FTSE Equity Country Classification and the country market risk premium (MRP) as its indicators of "market comparability," i.e., comparability to the New Zealand market. Neither of these measures is appropriate to the task of deriving a robust sample that is reflective of the systematic risk characteristics of New Zealand airports, while this measure alone causes a very marked reduction in the size of the sample that the Commission derives.
32. Regarding the FTSE Equity Country Classification, this is more a measure of the breadth of securities markets available in a country and cannot be regarded as an indicator of the comparability of the New Zealand stock equities market and other markets for beta estimation. For example, the Commission appears to exclude mainland Chinese, Thai and Mexican firms from the sample on grounds that these are "Advanced Emerging" or "Secondary emerging", but these firms have some very large (multi-billion dollar) free float market caps, have very high levels of liquidity (e.g., bid-ask spread), are followed and reported on by dozens of research analysts in the market. In China's case, its stock market measured by market value is among the largest in the world.
33. If we look into the criteria that FTSE applies in allocating countries into the "developed" "advanced emerging" and other buckets, we find in the cases of China, Thailand and Mexico that all of them possess "formal stock market regulatory authorities" who actively monitor the market. Key requirements for market making in equity securities, like "transparency – market depth information / visibility and timely trade reporting process", "sufficient competition to ensure high quality broker services" and "implicit and explicit [transactions costs that are] reasonable and competitive" are observed by FTSE in each of those markets. The market characteristics that are absent and cause them not to be classified as "developed" are attributes like stock lending, short sales and a developed derivatives market.
34. We agree with CEG's view that the MRP of the markets that the comparators are located is not relevant as beta is a relative concept. What is more important is the market and operating characteristics.<sup>18</sup> Having said that, we note that MRP is another variable that is unobservable, and that the approach applied by the Commission is to rely on the 2022 study done by Pablo Fernandez. He has published a series of annual MRP estimates for a range of countries based on a questionnaire survey. As can be seen in Table 3 below, the survey used by the Commission (2022) has been updated and the 2023 are somewhat higher in most countries including New Zealand. The table also shows country risk premiums estimated by Damodaran, who begins with a "mature country risk premium" set at 5.94 per cent for 2023, and adds a country risk premium specific to each country

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<sup>18</sup> As an example, in a report we prepared on the Port of Melbourne's asset beta, we included mainland China comparators, but made an adjustment to their estimated beta on the basis of them having more material non-landlord port operations than the target firm (Port of Melbourne). See, Incenta (28 May 2020), *Estimating the Port of Melbourne's equity beta*, Port of Melbourne, pp.37-39.

(which is based on observable credit default swap spreads for government securities). New Zealand is counted as a mature country with zero country risk, while markets like France and Hong Kong have country risk premiums close to 1 per cent added, which brings them quite close to mainland China, but still far away from countries like Italy and Mexico. These variations highlight the fact that it is not useful to exclude businesses from the airport comparator sample on MRP grounds.

**Table 3 – Alternative country market risk premiums**

Ticker	Country	Company name	MRP	Delta to	MRP	Delta to	MRP	Delta to
			Fernandez 22	NZ 22	Fernandez 23	NZ 23	Damodaran 23	NZ 23
FHZN SW Equity	Switzerland	Flughafen Zurich AG (Switzerland)	5.8%	0.1%	5.6%	-0.7%	5.9%	0.0%
FRA GR Equity	Germany	Fraport AG (Germany)	5.7%	0.0%	5.7%	-0.6%	5.9%	0.0%
ADP FP Equity	France	Aeroports de Paris (France)	5.9%	0.2%	6.0%	-0.3%	6.8%	0.9%
FLU AV Equity	Austria	Flughafen Wien AG (Austria)	5.8%	0.1%	6.8%	0.5%	6.6%	0.7%
AENA SM Equity	Spain	Aena SME SA (Spain)	6.7%	1.0%	6.6%	0.3%	8.7%	2.8%
694 HK Equity	Hong Kong	Beijing Capital International Airport Co Ltd (HK)	6.5%	0.8%	6.8%	0.5%	7.0%	1.0%
SYD AU Equity	Australia	Sydney Airport	6.3%	0.6%	6.2%	-0.1%	5.9%	0.0%
AIA NZ Equity	New Zealand	Auckland International Airport Ltd (NZ)	5.7%	0.0%	6.3%	0.0%	5.9%	0.0%
KBHL DC Equity	Denmark	Kobenhavns Lufthavne (Denmark)	5.8%	0.1%	6.2%	-0.1%	5.9%	0.0%
TYA IM Equity	Italy	Toscana Aeroporti SpA (Italy)	6.0%	0.3%	7.1%	0.8%	9.7%	3.8%
ADB IM Equity	Italy	Aeroporto Guglielmo Marconi (Italy)	6.0%	0.3%	7.1%	0.8%	9.7%	3.8%
MIA MV Equity	Malta	Malta International Airport PLC (Malta)	na	na	na	na	7.4%	1.5%
357 HK Equity	Hong Kong	Hainan Meilan International Airport Co Ltd (HK)	6.5%	0.8%	6.8%	0.5%	7.0%	1.0%
MAHB MK Equity	Malaysia	Malaysia Airports Holdings Bhd (Malaysia)	7.0%	1.3%	7.6%	1.3%	8.0%	2.1%
000089 CH Equity	China	Shenzhen Airport Co (China)	8.7%	3.0%	8.6%	2.3%	7.2%	1.2%
600004 CH Equity	China	Guangzhou Baiyun International Airport (China)	8.7%	3.0%	8.6%	2.3%	7.2%	1.2%
600009 CH Equity	China	Shanghai International Airport (China)	8.7%	3.0%	8.6%	2.3%	7.2%	1.2%
600897 CH Equity	China	Xiamen International Airport Co (China)	8.7%	3.0%	8.6%	2.3%	7.2%	1.2%
ASURB MM Equity	Mexico	Grupo Aeroportuario del Sureste (Mexico)	7.4%	1.7%	7.7%	1.4%	9.2%	3.3%
GAPB MM Equity	Mexico	Grupo Aeroportuario del Pacifico (Mexico)	7.4%	1.7%	7.7%	1.4%	9.2%	3.3%
OMAB MM Equity	Mexico	Grupo Aeroportuario del Centro Norte (Mexico)	7.4%	1.7%	7.7%	1.4%	9.2%	3.3%
GMRI IN Equity	India	GMR Airports Infrastructure Ltd (India)	6.9%	1.2%	8.5%	2.2%	9.2%	3.3%
AOT TB Equity	Thailand	Airports of Thailand PCL (Thailand)	7.0%	1.3%	8.1%	1.8%	8.7%	2.8%

Source: Fernandez (2022, 2023), Damodaran (2023)

## 2.6 Negative gearing

35. The Commerce Commission also considers that “negative leverage” should be a reason for excluding firms from the comparator sample and excludes four businesses on that basis. Again, the Commission has not explained why in theory or in practice the way that a business is financed matters to its market value. The key proposition of the highly influential Modigliani & Miller (1958) theorem is that firm value is invariant to the financing of the firm by equity or by debt.<sup>19</sup> That is, there is no theoretical basis for excluding firms on the basis that they have negative debt, i.e., surplus cash.
36. From Table 2 above we know that the four businesses excluded by the Commission on the basis of having negative debt all have substantial free float market caps, low bid-ask spreads, and with the single exception of Xiamen International Airport, have dozens of market analysts following them. The Commission has not explained why the beta estimates for such businesses should be excluded from its previous wider sample.

<sup>19</sup> Modigliani, Franco and Merton H. Miller, (June 1958) “The Cost of Capital, Corporation Finance and the Theory of Investment,” *The American Economic Review*, Vol. 48, No. 3, pp.261-297.

## **2.7 Covid-19 risk adjustment**

37. On making its adjustments for the estimated effect of the Covid-19 pandemic on beta risk the Commission derives a lower asset beta than in the 2016 IM Review, which we consider to be implausible. The uncertainties involved in estimating the Covid-19 effect and pandemics in general now and on an on-going basis creates the potential for regulatory error. CEG has proposed a solution that would require no adjustment to be made for the “Covid-19 effect” so that it would flow through with reversing processes taking place naturally over time. CEG proposes that this is the most objective and replicable approach to take in these circumstances, arguing that in NPV terms the result will be close to zero. We support this approach as being the most practical manner by which such a complex issue can be resolved. Whilst this approach could potentially introduce short term price effects, we believe these can be managed by other means, namely depreciation or like adjustments (which both CIAL and WIAL have already applied in other contexts).