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Economic Commentary on Airport WACC Submissions

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Executive Summary

As part of a scheduled review of input methodologies (IMs), the Commerce Commission has recently issued draft decisions on the information disclosure (ID) regime to which three New Zealand airports are subject. This report responds to airport submissions on the draft decisions. It was commissioned by BARNZ and represents the independent views of the author.

Several issues associated with the Commission's reporting on WACC estimates are considered. The airports object to the Commission's plan to report the mid-point of its WACC estimate and a standard error. These objections have no validity if the WACC estimate is considered to follow a normal probability distribution, since only the mean and standard deviation (estimated by the standard error) is required to define a complete normal distribution.

The airports argue that the Commission should instead publish either the entire distribution curve or all of the percentiles from the 5th to the 95th. They say that the *mid-point is subject to a material risk of mis-estimation.* While this is true of *any* estimated parameter, this risk is *higher* for all percentiles other than the mid-point.

If one estimates any percentile of a distribution, that estimate has a standard error and it will be a different standard error for different percentiles. The fact that (by definition) there are more observations around the centre of a probability distribution means that measures of central tendency (mean, median) can be estimated more precisely than any percentile in the tail of the distribution.

When this information is set alongside the Commission's stated intention to incorporate a variety of information (not just the target WACC) in assessing airport profitability, the Commission's proposals seem entirely reasonable.

The airports also argue for an unspecified uplift to the WACC. This issue has been discussed at length during the recent "further work on WACC" work-stream and the Commission is referred to five reports Covec has supplied in that context (detailed below). In addition, this report further explains how consultation with airlines and dual till regulation work together to help ensure that efficient investment is not deterred.

In essence, airlines and airports are both concerned about the quality of passenger experiences in airports and consultation allows these views to be accommodated by airports. Airports are additionally concerned to maximise traffic through their facilities because of the associated dual till earnings; airlines also prefer more passengers to fewer. Thus, both the quality and quantity of passenger travel is likely to be stimulated under the existing system. Finally, if there were evidence that efficient investment is being deterred, the airports would be best placed to provide that evidence.

1 Introduction

1. As part of a scheduled review of input methodologies (IMs), the Commerce Commission has recently issued draft decisions on the information disclosure (ID) regime to which three New Zealand airports are subject. The proposed changes in requirements for these airports can be summarised as being to:

    a. Require airports to disclose a forward-looking indicator of profitability following each price setting event;

    b. Loosen the ID rules concerning revaluation of land and the use of inflation indexation;

    c. Require airports to disclose any non-standard depreciation policies and their proposed treatment of revaluation gains;

    d. Require airports to explain why their targeted rate of return differ from the Commission's estimate of WACC (if it does differ); and

    e. Set initial (2010) RAB values for land by interpolating between MVAU valuations from 2009 and 2011.

2. In addition, the Commission intends to no longer publish the 25th and 75th percentiles of its WACC estimates for airports, but instead publish the mid-point and an estimate of the standard error.

3. The airports have each made separate submissions as has the NZ Airports Association (NZAA). Collectively, these submissions take issue with the Commission's intentions regarding publishing its own WACC estimates and raise several other points concerning the way the ID regime operates or should operate.

4. In this response, I consider the Commission's publication of its WACC estimates first (in section 2), and then discuss other issues in section 3.

2 Publication of WACC Estimates

5. The NZAA submission argues against the Commission's draft decision to publish the mid-point and an estimate of the standard error of its WACC estimate on the grounds that:

    a. "*the uncertainty in estimating WACC must be fully and clearly conveyed to interested parties*" (¶58);

    b. The Commission's proposal "*fails to adequately highlight the uncertainty and judgment associated with either the mid-point estimate or the standard error estimate*" (¶65);

    c. The Commission's proposal will create in the minds of interested persons "*a misleading assumption about the accuracy of the WACC IM mid-point estimate as a reference point*" (¶67); and

    d. The Commission's proposals breach s53F(1) of the Commerce Act because they "*require the airports to apply the WACC IM to calculate and disclose the percentile equivalents*" (¶69).

6. Each of these points is discussed below.

2.1 Context

7. By way of context it is useful to summarise three statutory purposes that need to be kept in mind throughout this analysis.

    a. The purpose of ID regulation is to ensure that sufficient information is readily available to interested persons to assess whether the overall purpose of Part 4 of the Commerce Act is being met (s53A).

    b. The overall purpose of Part 4 is to promote the long-term benefit of consumers by promoting outcomes that are consistent with outcomes produced in competitive markets (s52A).

    c. The purpose of IMs is to promote certainty for suppliers and consumers in relation to the regulatory rules, requirements, and processes (s52R).

8. The airports' objections to the Commission's draft decision to publish its estimate of the mid-point and standard error of its WACC distribution amount to arguing that "*interested persons*" will be better equipped to "*assess whether the overall purpose of Part 4 is being met*" if the Commission publishes much more information about the *distribution* of its WACC estimate. In particular, the NZAA submission (pp. 11 – 18 inclusive) asks that the Commission publish a full probability distribution function (pdf) curve for its WACC estimate, or tabulate the values of that function at regular intervals from 5% to 95%.

9. To assess this argument, we need to start by understanding the state of knowledge about the WACC and the way this varies across the probability distribution for the WACC.

2.2 Knowledge of Relevant Parties

10. There are two groups of people to consider here: those internal to the regulated firm, and those looking in from the outside.

2.2.1 Executives and Managers of Regulated Firms

11. The weighted average cost of capital (WACC) for any firm or project is the percentage return that firms need to pay to external suppliers of debt and equity capital. A firm's WACC depends on the proportions of debt and equity capital it uses, and the costs of each component; these costs are ultimately determined in markets.

12. Firms are not constantly accessing debt markets, so they only receive periodic insight into their costs for debt capital. Equity market information arrives much more frequently for listed firms, but not for unlisted firms. In both cases, once shares are issued the firm retains the share capital and shareholders bear the risk associated with variation in returns, though there is an important feedback look by which firms have incentives to keep investors happy.

13. As a result, managers generally do not know their WACC with certainty. This is quite different to other input costs, such as labour and materials, for which accurate cost information is usually readily available.

14. If managers and boards generally don't know their WACC, then how do they decide which projects to pursue? Economists generally assume that firms do this by seeking to maximise profits. There are exceptions, notably when a firm is owned by its customers, but this is not the case for the airports involved in these proceedings.

2.2.2 External Analysts

15. Managers internal to a firm probably have limited knowledge of their WACC, but they still know a lot more than anyone else. Shareholders, prospective shareholders, market analysts and regulators are all less informed than executives and board members of the firm.

16. This is why current and prospective investors in firms generally receive only single point estimates of the WACC. For example, PWC has been reporting its estimates of the cost of capital (WACC) for listed NZ companies for six years. It consistently reports a single point estimate with no information as to the uncertainty around that value.[1] This information is used by private and institutional investors to assess the financial performance of firms in which either investment or divestment of capital is contemplated.

17. Regulators are in a similar position to investors when it comes to assessing the WACC for a regulated firm. Even if these firms did know their WACC with certainty (which is very unlikely) they would have no incentive to truthfully reveal it to the regulator. Thus, regulators are obliged to compile their own WACC estimates.

[1] http://www.pwc.co.nz/publications/appreciating-value/edition-6-march-2015-deal-activity-ipo-and-listed-share-price-performance/

2.3 Statistical Precision

18. In his advice to the Commission, Professor Yarrow recognised that there is a trade-off between publishing more information and publishing accurate information and he leaned towards the latter. The following passage is instructive, from the Commission's Topic 6 paper at ¶52.[2]

> *Given these points, in my view the purpose of s53A would be best served by publication of the regulator's views on the relevant cost of capital, with no further judgments added. That would involve specification of such parameters of the probability distribution of the WACC as might feasibly be estimated. If legislation or administrative expediency requires a point estimate, this would amount to a single estimate of central tendency (estimate of the mean, median or mode), but additional information on parameters such as the estimated variance, upper and lower bounds, 5th and 95th deciles, skewness, etc. would be of value and would merit publication if considered sufficiently reliable. (emphasis added)*

19. In the highlighted sections, Professor Yarrow is acknowledging that there is little merit in publishing extra parameters of the WACC distribution if these are unreliable. In statistical terms, this relates to the precision of the estimates.

20. Some probability distributions, notably the normal distribution, are completely characterised by two parameters. Thus if the Commission's WACC distribution is normal, or can reasonably be assumed to be normal, then the draft decision to publish the mid-point and an estimate of the standard error is actually complete disclosure. It allows any interested person to compile the entire distribution.

21. However when quantiles (e.g. percentiles) of a distribution are estimated separately, the precision of these estimates declines with distance from the mid-point. This is an inevitable consequence of the fact that fewer observations are available at the tails of the distribution. Figure 1 illustrates this fact by showing relative standard errors in the case of quantile regression estimates of percentiles from 5% to 95%. It was compiled from work by Parzen (2004)[3] who shows that the confidence interval for quantile p is proportional to $(p(1-p)/n)^{-1/2}$.

22. NZAA asks the Commission to publish all of the percentiles from the 5th to the 95th. This would give the false impression that all percentile estimates are equally reliable. Unless separate standard errors or confidence intervals were reported for each of these percentile estimates, interested persons would be misled rather than properly informed. A similar concern arises in respect of NZAA's request for the Commission to publish an entire probability distribution curve. This would be un-necessary if one was willing to assume the distribution was normal (see paragraph 20 above), and would otherwise run into the same problem of less precise estimation in the tails of the distribution.

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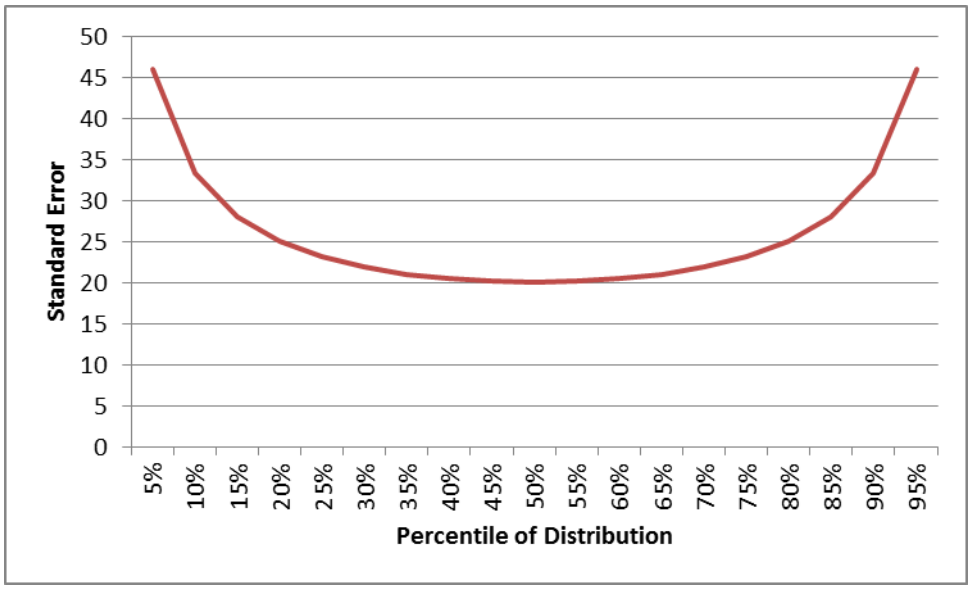
[2] Commerce Commission, Input methodologies review draft decisions, Topic paper 6: WACC percentile for airports, 16 June 2016.

[3] Emanuel Parzen, 2004, Quantile Probability and Statistical Data Modeling, Statistical Science, 19, pp 652 – 662 at section 13.

Figure 1: Relative Standard Errors for Unbiased Quantile Regression Estimates, n=100



23. My understanding is that, like all external analysts, the Commission does not have sufficient information to separately estimate all of the quantiles of the WACC distribution. Even if it did, those estimates would become less precise with their distance from the mid-point. Thus, from the perspective of informing interested persons, I consider that reporting the mid-point and an estimate of the standard error is a reasonable response to the inherent uncertainty associated with estimating WACC.

24. Put slightly differently, while there is truth in the NZAA's claim (at ¶110) that "*the mid-point is subject to a material risk of mis-estimation*", all of the other percentiles (which NZAA believes the Commission should publish) are subject to a higher risk of mis-estimation.

2.4 Statutory Requirements

25. The NZAA submission argues that the proposed amendment breaches s53F(1) of the Act because it "*will require an airport to disclose WACC percentile equivalents for their cost of capital and forecast IRR*". This obligation appears at paragraph 84 of the Commission's Topic 6 paper. It would require airports to use the Commission's mid-point and standard error information to calculate the percentile of the Commission's distribution that corresponds to the airports' own cost of capital estimate and forecast IRR. It seems that NZAA is arguing that in order to make these calculations, airports would need to "apply the WACC IM".

26. This is ultimately a legal question. However it seems to me that NZAA have mis-interpreted s53F. This section is intended to provide an exception to s52S for firms subject to ID regulation only. Whereas s52S says that all firms must apply every relevant IM, s53F allows firms subject to ID only to not apply pricing methodologies or WACC methodologies. The distinguishing feature of ID only regulation is that the pricing and rates of return of firms is *not regulated*, and this lack of regulation is achieved through s53F. To "apply" an IM therefore seems to be equivalent to requiring a firm to "respect" it, to "comply" with it and more generally to "be constrained" by it.

27. In my opinion, the Commission's draft decisions explicitly do not force airports to be constrained by the Commission's estimate of WACC.

28. I note that NZAA also objects to the Commission's draft decision to require airports to publish "evidence that provides justification for differences between their WACC and our estimate of the WACC; and their targeted return and their WACC" (¶84.4 of the Topic 6 paper). NZAA claims (at ¶110 – 111) that this is not airports' responsibility and that "*the onus will be on the Commission to prove that targeted returns that happen to be above the regulatory WACC estimate are not in the long-term interests of consumers*".

29. This argument may reflect a mis-understanding about the purpose of ID, which is to provide information so that interested persons may draw their own inference. Now that the Commission's transitional review under s56G has been completed, to my knowledge no party, including the Commission, is obliged to draw inference regarding whether the purpose of Part 4 is being met. ID regulation enables inference but does not compel it. The obligations on the Commission are stated at s53B(2)(b) as being to "*publish a summary and analysis of that information for the purpose of promoting greater understanding of the performance of individual regulated suppliers, their relative performance, and the changes in performance over time*".

30. That said, if it transpires that ID disclosures allow one to conclude that the purpose of Part 4 regulation is not being met, then there would be a case for considering more direct regulation of prices and quality. Normal standards of regulatory policy making would then dictate that those proposing regulation would indeed bear the onus of proving that the purpose of Part 4 is being met. But this situation is outside the normal operation of ID regulation.

3 Other Issues

32. The airports have raised two other issues that deserve comment. These are

    a. That airports should be allowed an uplift beyond the WACC mid-point;

    b. That the downwards adjustment of 0.05 to the asset beta is unjustified;

33. We respond briefly to these comments below.

3.1 Uplift to WACC

34. The airports argue that there should be an uplift applied to the WACC though they do not say how large this should be. NZAA (pp. 24 – 31) takes issue with the Commission using the mid-point of its WACC estimate as a starting point for profitability assessment, arguing that "*airports come under strong pressure from airlines to apply the mid-point regulatory WACC in pricing"* and that "*it is wrong to think that consultation protects against the risk of under-investment - it is more likely that airlines will seek a lower pricing WACC*".

35. The essential argument is that efficient investment will be deterred if the Commission does not announce that all regulated airports should be free to earn more than the WACC mid-point. In our view and for the reasons described below, this argument is without merit.

36. The issues arising from this claim have been previously analysed in considerable detail during the Commission's "further work on WACC" work-stream.[4] Covec participated in that work and we refer the Commission to our five previous reports on this topic, dated 30 April 2014, 28 August 2014, 11 September 2014, 30 September 2014 and 9 March 2016.[5]

37. Based on the analysis in these reports, we reiterate our view that a general uplift beyond the mid-point is unjustified for airports. Important reasons include that:

    a. Airports are subject to ID regulation only, not price-quality controls;

    b. The ID regime is founded on a dual-till regime; and

    c. Regular consultation with airlines is likely to promote efficient investment.

38. Regarding consultation with airlines, the NZAA submission is incomplete. Certainly it is true that, other things being equal, airlines "*will seek a lower pricing WACC*". However airlines *also* want efficient aeronautical investment and, as the customer-facing entities for such investment, they are well placed to assess what investments are efficient. It is difficult to imagine, and NZAA does not explain, why airlines would actively block efficient investment. If there is evidence this

[4] http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/further-work-on-wacc/

[5] Covec, Estimating WACC for Airports in New Zealand, 30 April 2014; Covec, WACC Percentile Issues, 28 August 2014; Covec, Cross Submission on WACC Percentile Issues, 11 September 2014; Covec, Cross Submission on Dobbs and NZIER, 30 September 2014; Covec, Airport WACC: Comments on Emerging Views and Professor Yarrow, 9 March 2016.

has occurred, NZAA could and should provide it. Otherwise, the Commission should assume that consultation with airlines does indeed guard against the deterrence of efficient investment.

39. The effect of consultation on promoting efficient investment is supported by the dual till system of regulation. Airlines and airports are both concerned to ensure that their passengers' travel experience is not undermined by lack of efficient airport investment. Airports also have very strong incentives to promote passenger volumes. This is *because* airports earn complementary unregulated revenues from higher passenger flows due to the dual till system. Obviously, increased passenger volumes are also desirable for airlines.

40. Thus, consultation and the dual till structure work together to help ensure that airport investments are efficient whether they are aimed at improving the travel experience for end-users or servicing more travellers.

41. It is notable that none of the airports supply any evidence of under-investment. The Bush/Earwacker report summarised by NZAA (at ¶142 – 144) would have been the ideal place to present such evidence, but it instead focussed on theoretical possibilities and evidence from other countries. This indicates that the regime has not deterred efficient investment to date.

42. Rather than offer all of the airports a WACC uplift in case this situation might change in the future, the overall purpose of Part 4 would be better served by considering specific examples as the need arises. This is consistent with the Commission's stated intention to take a broad view of airport businesses when reviewing disclosed information.

3.2 Asset Beta

43. The airlines are seeking to over-turn a decision of the Commission in 2010 to adjust the asset beta inferred from its comparative sample of airports downwards by 0.05. The NZAA submission appears to argue that the asset beta should be increasing in the proportion of airport revenues that are regulated. Rather than explain why this should be so, NZAA uses data from the Commission's Topic 5 paper to argue that it is an empirical fact.

44. There are sound reasons to expect the asset beta of an airport to decrease with the proportion of its revenues that are aeronautical. Firstly, it is generally true that regulated firms have more stable earnings than unregulated firms. For example, Riddick (1992) finds that[6]

> *Analytic results, simulation results, and actual empirical estimates provide evidence that regulation reduces, but does not eliminate, stochastic systematic risk.*

45. Secondly, in the case of a dual till regulated airport, it would be reasonable to expect that consumer decisions over retail spending on food and clothing inside an airport would be more discretionary than choices over whether or not to travel. This would suggest that retail spending in airports would vary more than passenger numbers with the business cycle and personal disposable income.

[6] Riddick, L.A. 1992, The effects of regulation on stochastic systematic risk, Journal of Regulatory Economics, 4, pp. 139 – 157.

46. Airports are well placed to test these arguments empirically, since they hold information on the volatility of demand by for passenger travel and retail spending as it affects their own business. Such evidence would be rather more compelling than debates over the interpretation of benchmarking sample. In the absence of such evidence it is difficult to see a reason to change the Commission's existing practice.