

Response to NERA on WACC for AIAL

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Introduction and Summary

1. Auckland International Airport Limited (AIAL) has released a revised pricing proposal for the PSE3 period (2017-22) to BARNZ, including a report it commissioned from NERA concerning the WACC and target return for aeronautical pricing. I have reviewed the NERA report and consider that it contains several errors and weaknesses.

Asset Beta

2. NERA's analysis of the asset beta for AIAL relies on a theory that is materially undermined by empirical evidence in the NERA report. Contrary to NERA's assertion that higher levels of capital investment will cause the asset beta to increase, there are consistently negative correlations between these variables in the data reported by NERA.
3. The NERA report also
 - a. Neglects the fact that 19 of the 35 capital projects scheduled for PSE3 have decision trigger points later than the first year and are therefore able to be deferred during PSE3; and
 - b. Mis-interprets its own evidence that recent asset beta estimates are increasingly imprecise; this evidence should *reduce* confidence in those estimates, but NERA draws the opposite inference.

Cost of Debt

4. Regarding the cost of debt, NERA seem to have confused levels and changes. NERA appear to have used the *level* of 10yr sovereign debt (extracted from the forward curve) as a proxy for AIAL's 2022 debt. A more reasonable interpretation is that the forward curve is a proxy for the market's expectation of the *change* in the cost of debt over PSE3. This expected change is 0.7% which is identical to AIAL's expectation for the change in the cost of its own debt over PSE3. I conclude that AIAL was correct in the first place.

Target Return

5. NERA say that AIAL should target returns in excess of the midpoint of its WACC range for two reasons: financeability and real options.
6. I do not accept either of these arguments. On financeability, my concerns are that no analysis is presented to show why customers should prefer AIAL to maintain an A- credit rating, that AIAL's credit rating can fall below A- while remaining "investment grade" and that in any case none of this will occur until the very end of PSE3.

7. Regarding real options, I note that the value of these options is reduced by competition and that in any case AIAL has complete freedom over the timing of its capital investments.

Asset Beta

8. NERA present a theoretical argument that a firm’s asset beta depends on its operational leverage and apply this argument to AIAL. The essence of the NERA argument is that since AIAL’s anticipated investment programme will cause fixed costs are to increase as a share of total costs, AIAL’s asset beta will increase “during the period of investment” (p.9).

9. In my opinion, this argument:
- a. Relies on a theory that is materially undermined by empirical evidence in the NERA report; and
 - b. Even if the theory were correct, the timing adopted by NERA is not.

10. In the balance of this section I explain these points and then comment on NERA’s proposed approach to estimating the asset beta for AIAL.

Theory vs Evidence

11. NERA present data on measures of capital investment and asset beta values for a sample of 14 airports (Table 2.1, p.8). The airports are a subset of the Commerce Commission’s benchmarking sample for which capital investment data are available. There are two investment measures from 2015 (capex per passenger and capex per dollar of revenue) and the asset betas are estimated over two time periods (2006-16 and 2011-16).

12. NERA’s theory is that higher levels of capital investment cause higher levels of profit volatility and therefore greater contributions to systematic risk which will show up in higher asset beta values. But the consistently negative correlations between investment and beta in Table 1, which were estimated from the NERA data, show that these data contradict the theory.

Table 1: Correlations in NERA Data Between Capex and Asset Beta

		Asset Beta Measures	
		2006-16	2011-16
Capex Measures	per pax	-0.296	-0.075
	% of turnover	-0.333	-0.06

13. Further investigation, by estimating linear regressions of the asset beta estimates on the capex measures confirms the negative relationship between capex and beta in these sample data, but the associated t-statistics indicate that these relationship are not

statistically significantly different from zero. Nevertheless, the correlation and linear regression evidence does materially undermine the theory on which NERA rely.

14. One obvious explanation is that other factors are also relevant: that the causal effect of increased capital investment on asset beta values is affected by other aspects of an airport's business. There are two ways in which this is likely to matter.
15. First, it is clear that the theory described by NERA (in section 2.2) is partial, relying on "*all else being equal*", which is rarely true. For example, if we compare AIAL to Copenhagen, we see slightly lower levels of capex in 2015 at Copenhagen (17% - 21% lower than Auckland) but much smaller beta values (less than ½ of those for AIAL). Oxera¹ compared these two airports (and others) and reported that Copenhagen served about 50% more passengers, three times the number of airlines and more than four times the number of destinations compared with Auckland. Copenhagen also faces more direct competition than Auckland, has a higher share of international passengers, and is at immediate risk of price regulation in the event that there is no agreement with airlines over pricing.
16. Second, NERA offer no empirical anchor for the theory on which it relies (i.e. the theory that increased operational leverage will increase a firm's asset beta), so NERA has no basis for assessing the scale or materiality of the assumed effect. All firms have some fixed costs and this item typically increases with output. Firm growth usually requires further investment, increasing fixed costs. Often, this growth-supporting capital investment reduces variable costs by making processes more efficient by reducing total average costs. This will of course increase operational leverage but the *effect on beta* will depend on the net impact of any extra risk incurred through more operational leverage and the risk-reduction benefit of all the advantages of extra scale.

Timing

17. NERA argue (p.9) that AIAL's asset beta will increase "*during the period of investment*" because investment will increase operational leverage. Even if this theory were correct (which is doubtful for the reasons discussed above), the NERA approach assumes that AIAL will be irrevocably committed to the proposed investment programme at the outset of PSE3, which is not correct.
18. The capex programme presented by AIAL extends throughout PSE3 and includes 35 distinct projects. Most of these projects are either not scheduled to begin until after FY2018 or have distinct steps in the capex schedule. The capital associated with these projects is not sunk from the start of PSE3. Rather AIAL retains the flexibility to defer these projects for any reason such as the Board deciding that:
 - a. demand signals are not sufficiently strong to support the planned expansion of capacity; or

¹ Oxera, Regulatory Regimes at Airports: an International Comparison, for Gatwick Airport, 23 January 2013.

- b. cost escalation has sufficiently undermined the business rationale for the proposed project(s).

- 19. In summary, even if there were strong evidence that the proposed capex programme will increase AIAL's asset beta (which there is not), this would not happen from the start of PSE3 because at that point AIAL will retain complete or partial flexibility over the timing of most of the capex projects.

NERA's Beta Estimates

- 20. The NERA report claims, incorrectly, that AIAL's beta has "*increased consistently*" since the release of the Masterplan in 2014. According to NERA's estimates of 1yr rolling asset beta values for AIAL (fig 2.5, p.11), the increases actually began one year before the Masterplan was released, and since that release the estimated betas for two of the three measures used by NERA have experienced declines since the Masterplan was released (the daily beta dropped immediately and the 4-weekly beta estimate dropped one-year later).
- 21. The NERA report is also questionable regarding the precision of these 1yr rolling asset beta estimates. NERA present a separate chart (fig 2.6, p.13) of the standard errors in their beta estimates and do not use these standard errors to test whether their asset beta estimates are statistically significantly different from zero. Nor does NERA present enough information for interested persons to conduct these tests independently.
- 22. Higher standard errors, and the absence of any significance testing, call into question NERA's view that AIAL's asset betas have actually been increasing. NERA draws the opposite inference however, arguing (p.12) that higher standard errors makes it "*even more important*" that AIAL's "*recent increase in beta estimates*" is built into PSE3 pricing.
- 23. In summary, NERA has not provided empirical support for its claim that AIAL's asset beta has been increasing. Despite having the data resources to test relevant hypotheses concerning AIAL's asset beta, no such tests have been undertaken. When read alongside the challenges to NERA's theory and the timing of its application as discussed above, it is difficult to have confidence in NERA's recommendations.

Cost of Debt

- 24. NERA presents (section 3) "*alternative evidence*" that it considers relevant to calculating the cost of debt. Its primary evidence is that the forward curve for 10yr NZ sovereign debt is increasing. I accept this evidence is correct but consider that NERA has erred in using it.
- 25. AIAL debt is not the same as 10yr NZ sovereign debt, so we clearly cannot assume that the level of the forward curve (NERA fig 3.1, p.20) is a direct estimate of the AIAL cost of debt.
- 26. While the *level* of yields are not comparable between AIAL and NZ sovereign debt, we can reasonably draw inference from the expected *increase* in debt yields over PSE3, i.e. between 2017 and 2022. The NERA chart suggests that this increase is 0.7% for NZ

sovereign debt (from 3.5% to 4.2%). This is exactly the same increase that AIAL is assuming for its own bonds over this period (from 3.29% to 3.99%), as NERA report on p.20. On this basis, the cost of debt used in AIAL's draft pricing proposal seems correct, and the NERA proposal seems likely to over-state the cost of debt.

Target Return

27. NERA's third main argument is that AIAL should target a return in excess of its WACC. Two reasons are advanced.
 - a. Financeability: NERA say that *"if Auckland Airport is exposed to considerable risk to its financeability as a result of anticipated capital investments, there is a strong case for setting the target return above its WACC"*.
 - b. Real options: NERA say that *"to take account of any real option premium, Auckland Airport should consider setting a target return towards the top end of its estimated range"*.
28. Neither of these arguments are convincing, for reasons explained below.

Financeability

29. NERA consider that maintenance of AIAL's current A- credit rating *"is an important factor to be taken into account"* and that *"it may make sense to include headroom in Auckland Airport's cost of debt"* during PSE3. This proposal raises several concerns.
30. First, NERA do not consider or explain how AIAL's customers will benefit from the ongoing maintenance of an A- credit rating. Given that NERA propose increasing the assumed cost of debt to provide *"headroom"*, i.e. just in case AIAL's rating falls during PSE3, it is important to compare the (certain) initial cost of that headroom to customers against the uncertain prospect that debt costs might increase during PSE3.
31. Second, the primary credit rating distinction that matters to investors is between investment grade debt, and other debt. Investment grade debt is rated BBB- or above by Standard and Poors and Baa3 or above by Moodys. AIAL's debt can therefore fall below A- while remaining investment grade.
32. Third, regulators and rating agencies look at a wide range of factors when assessing financeability and credit ratings, but NERA use only one measure (FFO/debt). As NERA has noted (p.25) when the CAA investigated financeability issues at Gatwick and Heathrow airports it *"calculated six key financial ratios"*.
33. Finally, even if we ignore all of these concerns, NERA's analysis has a timing problem in that the threshold it identifies as posing a risk to AIAL's credit rating is only reached at the end of PSE3. Depending on how the world evolves, it might therefore be relevant for PSE4. The case for charging AIAL's customers now for a risk that might arise at the end of PSE3 therefore seems weak, even if we ignore the first three concerns cited above.

Real Options

34. It is widely understood that monopolists do not willingly commit to investment until the expected value of the investment is sufficient to compensate for the real option to delay that commitment.² Firms in competitive markets may also have real options to delay investment, but they tend to be materially less valuable because of the risk that a competitive rival will pre-empt the investment.
35. NERA suggest (p.27) that AIAL may be being forced to invest earlier than it would prefer because it *“faces pressure from the general public, media and airlines to undertake capital expenditure to expand capacity at the airport”*. NERA advise (p.29) that AIAL should therefore *“consider setting a target return towards the top of its estimated range”*.
36. While I have no particular insight into the sensitivities of members of AIAL’s board of directors, it is difficult to believe that they would approve investment projects that are not in the best interests of AIAL. Certainly there are no legal or regulatory compulsions on AIAL to invest earlier than is commercially rational.
37. Given the total absence of any legal or regulatory obligation to invest, I consider that we should assume that AIAL has complete freedom to set its own capital investment programme, and that there is consequently no support from the real options literature for AIAL to target a return in excess of its WACC.

² This is sometimes expressed in terms of a “hurdle rate” that is so much greater than the firm’s cost of capital that it compensates for the loss of flexibility to delay investment. The real option value is zero whenever firms willingly invest, which is obviously a very common occurrence.