COMPETITION ECONOMISTS GROUP

Economic Review of BARNZ and Covec

A REPORT FOR NZ AIRPORTS

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1 Introduction

1. This report has been prepared by CEG for the New Zealand Airports Association (NZ Airports). It reviews certain aspects of the submission of the Board of Airline Representatives New Zealand (BARNZ)[1] and the supporting economic report by Covec[2] that were lodged in response to the Commerce Commission's (Commission's) Draft Decision on the appropriate weighted average cost of capital (WACC) percentile for energy businesses.[3] It also considers a separate matter in relation to the WACC range for information disclosure (ID).

2. Specifically, NZ Airports has asked us to address the following questions:

   1) *The BARNZ submission and the Covec report both conclude that only a consumer welfare standard should be employed when selecting the appropriate WACC percentile. In your opinion, from an economic perspective, how robust is this conclusion and the analyses that underlies it?*

   2) *The BARNZ submission questions whether the Commission's draft proposed amendment to use a 67th percentile WACC estimate for regulated energy businesses is consistent with the over-arching purpose of Part 4 set out in s52A – it appears to favour the mid-point. In your opinion, from an economic perspective, how robust is this conclusion and the analyses that underlies it?*

   3) *In your opinion, has anything in this consultation process to date – including in the submissions on the Draft Decision – suggested that the range of uncertainty surrounding the mid-point WACC has decreased in a manner that would justify the Commission narrowing the WACC range for information disclosure purposes?*

3. We answer these questions in the remainder of this report, which is structured as follows:

   - **section two** addresses question 1 and explains why the welfare standards proposed by BARNZ and Covec have not been well specified, and appear to place excessive weight on consumer surplus;
   - **section three** addresses question 2 and sets out why it cannot reasonably be said that promoting a "workably competitive market outcome" requires the adoption of a mid-point WACC in the manner suggested by BARNZ; and

1 Board of Airline Representatives New Zealand, Submission on proposed amendment to the WACC percentile for energy businesses, 29 August 2014 (hereafter: "BARNZ submission").

2 Covec, *WACC Percentile Issues, Prepared for BARNZ,* 29 August 2014 (hereafter: "Covec report").

3 Commerce Commission, *Proposed amendment to the WACC percentile for electricity lines services and gas pipeline services*, 22 July 2014 (hereafter: "Draft Decision").

- **section four** addresses question 3 and describes why the new information before the Commission suggests that the standard errors set out in the IM understate the uncertainty in the distribution around the mid-point. It follows that, this information does not support a narrowing in the WACC range for ID.

4. In a number of places throughout the remainder of this report we draw upon material contained in three of our previous reports: *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014; *Economic Review of Covec Report, A Report for the NZ Airports Association and the Electricity Networks Association*, June 2014; and *Review of the use of the 75th WACC percentile, A Report for Orion,* May 2014.

2 The Appropriate Welfare Standard

5. In this section we consider the appropriate welfare standard for the Commission to apply when determining the appropriate WACC percentile and, in particular, whether it is appropriate to adopt a "consumer welfare" standard. Specifically, we address the following question from NZ Airports:

> *The BARNZ submission and the Covec report both conclude that only a consumer welfare standard should be employed when selecting the appropriate WACC percentile. In your opinion, from an economic perspective, how robust is this conclusion and the analyses that underlies it?*

6. We begin by describing the rationales that BARNZ and Covec adopt to arrive at the conclusion that only a consumer welfare standard is appropriate. We then explain the theoretical and practical shortcomings with their analyses that imply that such an approach cannot be correct as a matter of economics.

2.1 Summary of BARNZ's and Covec's analyses

7. BARNZ contends in its submission that the legislative purpose statement clearly precludes the Commission from taking into account a total welfare standard when deciding upon the appropriate WACC percentile or, indeed, making any decision under the Part 4 regime. It states that: [4]

> *"The Commission considered that it was inappropriate to only use a total welfare standard when undertaking its loss analysis. This is where the Commission erred, because, in fact, a total welfare standard is wholly outside of the ambit of s52A and is not appropriate to use at all…*
>
> *…The consumer welfare standard, which maximises benefits to consumers from both an efficiency and distributional standpoint, achieves this legislative intention. It encompasses consideration, and maximisation, of both efficiency and distributional outcomes. There is no need to go beyond the consumer welfare standard which, through seeking to maximise benefits to consumers from both an efficiency and distributional standpoint, is wholly aligned and consistent with s52A and provides the appropriate framework for the balancing exercise needing to be undertaken between ensuring, on the one hand, sufficient incentives to invest exist and, on the other hand, the ability to earn excess returns is limited…*

4 BARNZ submission, pp.8-9.

…The Commerce Commission would therefore be acting outside the statutory parameters of Part 4 if it uses the total welfare standard to identify the upper bound of the appropriate WACC percentile."

8. BARNZ then asserts that the Commission has not based its Draft Decision solely upon a consumer welfare approach. It suggests that the upper bound – and possibly also the lower bound – of the Commission's "reasonable WACC range" has been influenced inappropriately by total welfare considerations:[5]

"The lower bound identified by the Commission of the 60th percentile WACC estimate was the product of the work undertaken by Oxera, which considered savings to consumers, investment effects and reliability effects, however Oxera's report is not clearly based on a consumer welfare standard. Box 4.1 in Oxera's report is ambiguous as to which standard is adopted. So it is not even clear that the lower bound represents the consumer welfare standard, consistent with maximising benefits to consumers from both efficiency and distributional standpoint.

The upper bound identified by the Commission of the 75th percentile WACC estimate was the product of work previously undertaken by the Commission in setting the 2010 WACC percentile WACC estimate. The Commission notes Professor Vogelsang's observation at paragraph 5.24.5 that 'a switch from consumer welfare to total surplus as the welfare criterion would strengthen the case for potentially going up to the 75th percentile'. Thus the 75th percentile estimate appears to be based on the total welfare standard."

9. It is worth noting at this point that we, and various other advisors, have already pointed out that the Oxera report *is* based purely on a consumer welfare standard, despite the discussion in Box 4.1 of its report that suggests such an approach is inappropriate. BARNZ consequently concludes that:[6]

"…the Commission either needs to adopt its consumer welfare based estimate of the appropriate WACC percentile (which appears to be 60% although this is not entirely clear) or, if it wishes to continue to calculate the appropriate WACC percentile by identifying and then averaging an upper and lower bound of the appropriate WACC percentile, then it should do so applying the consumer welfare standard encapsulated within s52A to identify both ends of that range."

10. Covec begins by exploring the appropriate welfare standard to adopt when deciding *whether* to regulate (which is not the relevant question here). It argues that markets for which regulation is contemplated will almost always be characterised by inelastic

5 BARNZ submission, pp.8-9.

6 *Ibid.*

demand, which reduces the static efficiency gains associated with price reductions (i.e., the "size of the triangles"). Covec concludes that:[7]

> *"…we can conclude that the smaller the total surplus impact of a price change, the more vulnerable are consumers, i.e., the lower the price elasticity of demand… A total welfare standard would therefore be utterly perverse as a threshold for imposing economic regulation…*
>
> *…Why would Parliament restrict regulation to situations where consumers are clearly and durably exposed to the exercise of substantial market power and then impose a welfare standard that would make regulation virtually impossible in exactly that situation?"*

11. We do not agree with this statement even when analysed on its own terms. As we discuss below, a steep demand curve reduces the total welfare losses from a given increment of above cost pricing. In this sense, total welfare losses associated with a given level of monopoly pricing will be lower when demand is inelastic. However, a steep demand curve also increases the profit maximising level of the increment above cost that will be applied absent regulation. When this second factor is recognised it no longer follows that total welfare losses from monopoly pricing will be low in industries with steep demand curves.

12. Equally importantly, Covec caveats the above statement in footnote 2, where it explains that it is based only on an analysis of *static* efficiency issues. As we explain subsequently, this serves to further undermine the above proposition since a key channel through which long term benefits to consumers may be delivered via regulation is through impacts upon *dynamic* efficiency. This represents a key oversight in the Covec report.

13. Having dismissed a total welfare standard as being appropriate when deciding *whether* to regulate, Covec then turns to the question of *how* to regulate. It concludes that a consumer welfare standard is appropriate, provided that the focus is on *long term* consumer benefits. It contends that, having regard to the long term avoids scenarios such as confiscation that would ultimately harm consumers:[8]

> *"While Martin Lally's scenario of allowing zero return on sunk assets would benefit consumers in the short run, the longer term costs to consumers would more than outweigh those benefits. A consumer welfare standard readily avoids this problem.*
>
> *Regarding efficient new investment, if the expected return on the required additional capital is too low, consumer interests will be harmed by deferral*

7 Covec report, p.3.

8 Covec report, pp.4-5.

or cancellation of the investment. It is therefore in consumers' interests that the WACC not be set so low as to preclude efficient new investment."

14. In other words, Covec suggests that there is an important trade-off between the short and long term interest of consumers – both of which it considers can be analysed within the consumer welfare framework it contemplates. Covec concludes by suggesting that the Commission should:[9]

"…revisit the balancing analysis it has undertaken and remove any weight it has attached to a total welfare standard. Doing so might result in a lower WACC percentile."

15. In our opinion, there are two key errors in the BARNZ submission and the Covec report. First, they both assume that it is appropriate for the Commission to adopt a "pure" consumer welfare standard with zero weight given to producer welfare. In our view, this is an extreme assumption and cannot be read into the Part 4 purpose statement in the manner suggested. Second, they both assume that the Commission has *not* applied a consumer welfare standard. This assumption is wrong as a matter of fact – this is precisely what the Commission has done.

2.2 The Commission *has* used a consumer welfare approach in its Draft Decision

16. Both BARNZ and Covec appear to believe that the Commission has not adopted a consumer welfare approach to arrive at its Draft Decision and that, if it did, this would result in a lower WACC. That is not the case. As we explained in our previous report, although the Commission *claims* to have had regard to both total and consumer welfare, there is no evidence that it has done so. Rather, to arrive at is "reasonable WACC range", the Commission appears to have:

- ostensibly taken Oxera's recommended range (the 60th to 70th percentile), which is based on the application a pure consumer welfare standard; and
- increased the "upper limit" to account for some of the shortcomings in Oxera's analysis such as its exclusive focus on reliability investments – none of which have anything to do with the consumer welfare standard employed.

17. It is consequently unclear why BARNZ and Covec have taken exception to the approach taken in the Draft Decision. The Commission has done precisely what they have suggested – albeit perhaps inadvertently, i.e., it appears to have placed 100% weight on consumer welfare and no weight whatsoever on producer welfare. There is therefore no basis for either BARNZ or Covec to conclude that revisiting the welfare standard might result in a lower WACC percentile.

9 Covec report, p.5.

18. Furthermore, there are a number of theoretical and practical flaws in the analyses presented by BARNZ and Covec. Once these shortcomings are recognised it is apparent that the welfare standard that they have proposed – and which the Commission seems to have adopted, deliberately or otherwise – is inappropriate and has almost certainly resulted in the appropriate WACC percentile being underestimated. We identify those flaws in the following sections.

2.3 The appropriate welfare standard when deciding *whether* to regulate

19. Covec's conclusion that a consumer welfare standard that focuses on "long term outcomes" is appropriate starts with the proposition that, under a total welfare standard, it would be "virtually impossible"[10] to introduce regulation in those markets most in need of it. To put it colloquially, this is because those markets will have the "smallest triangles", i.e., the reductions in deadweight loss stemming from lower prices will be small, because the market demand curves will be steep.

20. Covec's conclusion is not correct because it fails to take into account the fact that a more inelastic demand curve will, in the absence of regulation, result in the profit maximizing monopoly price being set higher. So, while it is true that the deadweight loss from the *same level* of above cost pricing will be higher for a "flatter" demand curve, a monopolist faced with a "steeper" demand curve will *price higher* than one with more price sensitive customers. Once this is recognised, the static efficiency costs of monopoly can easily be higher for a more inelastic demand curve.

21. Consider the example in Figure 1 below that compares a more inelastic and a less inelastic demand curve in a situation where:

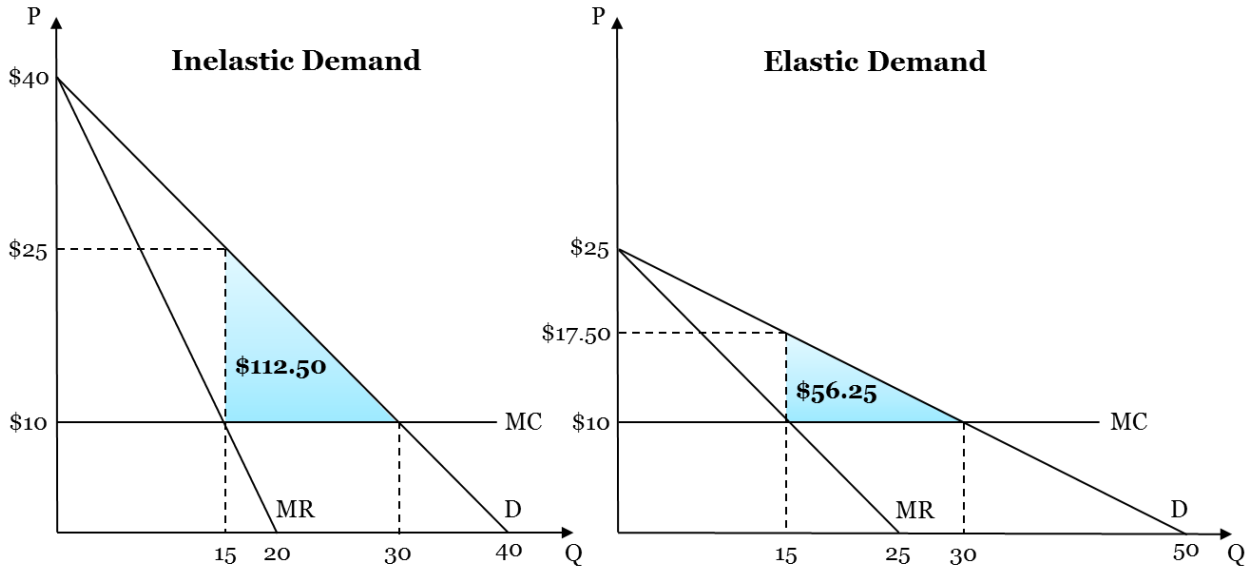
    - marginal cost is the same ($10 in each example);
    - the competitive level of output is the same for each demand curve, i.e., both demand curves cut the marginal cost curve at an output of 30 units; but
    - one demand curve is steeper (more inelastic) than the other (in this example one has half the slope of the other).

22. The profit maximising monopoly output is found by setting quantity such that the marginal revenue (MR) from an incremental sale is equal to the marginal cost (MC). As constructed, this is achieved at an output of 15 units under both demand curves. That is, under both demand curves the profit maximising monopoly strategy involves the same reduction in output relative to the competitive level, i.e., a reduction from 30 units to 15 units.

[10] Covec report, p.3.

23. However, the deadweight loss (the shaded triangle[11]) is twice as high for the inelastic demand curve. The reason is that the profit maximising price is significantly higher for the inelastic demand curve. If prices were both set at $17.50 (the profit maximising price for the elastic demand curve) then the deadweight loss would, as Covec states, be lower for the inelastic curve. However, Covec fails to take into account the fact that the monopoly price will be *higher* with more inelastic demand curve, and that this effect can more than outweigh the effect it observes.

Figure 1 Inelastic vs. elastic demand



24. Moreover, static efficiency improvements are not the only benefits that can arise from regulation. As Covec itself recognises,[12] the focus in the purpose statement is on the *long-term* nature of consumer interests. In this respect, the *dynamic* element of efficiency is equally, if not more important. By way of illustration, consider the classic, text book problems associated with monopoly service providers:

- the reduction of output in order to increase prices and profits;
- the reduced focus on best meeting the changing needs of customers; and
- the increased focus on actions aimed at entrenching monopoly status.

25. The consequences brought about by these incentives typically involve poor quality of service, a lack of innovation, inefficient levels of investment and, often, anticompetitive conduct. Undoubtedly these consequences entail productive and allocative inefficiency. However, significant longer-term consequences could also

11 Representing the difference between the value placed on lost sales and the cost of those sales.

12 Covec report, p.4.

arise through the potential dynamic efficiency loss arising from actions and investments directed at things other than best serving customer needs.

26. Indeed, one of the principal criticisms of the highly unorthodox consumer welfare standard that Covec proposed in its previous report was the perverse short-term incentives that it would create, i.e., it might require the confiscation of past investments. Covec seeks to address this criticism (unsuccessfully, in our view[13]) by claiming that such actions would not be in the *long term* interest of consumers, since it might result in capital flight and underinvestment.

27. In other words, Covec is essentially saying that the long term dynamic inefficiency costs of regulating in this manner would outweigh any the short term benefits from lower prices.[14] It is unclear why Covec has highlighted the importance of dynamic efficiency in its discussion of *how* to regulate, but has not recognised that it is equally, or even more, important to decisions about *whether* to regulate.[15] This is a puzzling inconsistency.

28. In summary, it is simply incorrect to conclude that if the primary objective of regulation is the pursuit of improvements in total welfare – i.e., overall efficiency – that regulation would rarely (or never) be imposed. Rather, the static and dynamic efficiency benefits of imposing regulation could conceivably outweigh the attendant costs of imposing it.[16] This contrasts with the stark – and quite artificial – trade-off between efficiency- and distribution-based objectives postulated by Covec.

29. Covec's case against adopting a total welfare standard when deciding whether to regulate therefore rests upon a false premise. Once that error is recognised, Covec's criticism of a total welfare standard simply falls away. There is no need to consider transfers from producers to consumers as "welfare improving" in order to make a case for regulation, i.e., there is no need to deviate from strict application of a total welfare standard. Certainly, there is no basis to conclude that zero weight should be given to producer welfare.

30. Moreover, as we explained in our critique of Covec's first report,[17] if transfers of consumer and producer welfare are to be treated differently, there are two important constraints on that exercise. First, positive weight should only be placed

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13 *See* section 2.4.1.

14 As we explain in section 2.4.1, this will not necessarily always be the case, which represents a key failing in the welfare standard proposed by Covec.

15 Although Covec concedes in footnote 2 that "dynamic efficiency is important", it does not explore the implications of this for its analysis.

16 Of course, in other circumstances there will be dynamic efficiency *costs* of imposing regulation.

17 CEG, *Economic Review of Covec Report, A Report for the NZ Airports Association and the Electricity Networks Association*, June 2014, pp.5-11.

upon transfers that result in the elimination of *excess profits* – zero weight should be placed on transfers that would result in losses to producers. Second, transfers should not be given the same weight as genuine efficiency gains, i.e., reductions in deadweight loss.

2.4 The appropriate welfare standard when deciding *how* to regulate

31. Having concluded – incorrectly – that a consumer welfare standard must be employed when deciding whether to regulate, Covec then goes on to conclude that there is no reason not to apply the same standard when deciding *how* to regulate. This conclusion – which is supported by BARNZ – is asserted rather than demonstrated. In our opinion, that conclusion is incorrect.

32. Both ourselves and Dr Lally highlighted that Covec's previous report appeared to suggest that the Commission should be setting the WACC percentile so as to maximise static consumer surplus, even if that resulted in suppliers not recovering their costs, i.e., incurring economic losses. In its latest report, Covec concedes that such an approach would be inappropriate but argues that it does not actually result from application of its approach. It states that:[18]

> *"…the "long term" qualifier on consumer benefit, which features in the stem of s52A, captures all of the relevant supply side effects. In our view, having regard to the long term easily avoids the absurd scenario that bothered Martin Lally because confiscation would induce capital flight which would hurt consumers quite quickly.*

33. Covec and in turn, BARNZ, are therefore suggesting that a consumer welfare standard can be applied in a way that avoids the counterintuitive outcomes identified by ourselves and Dr Lally, including the potential confiscation of investments. They contend that a consumer welfare approach can be employed that balances the "short and long term interests of consumers", giving greater weight to the latter, i.e., to dynamic efficiency considerations.

34. In other words, Covec appears to be saying that by focusing on consumers' "long term" interests, it will never be to their advantage for the WACC to be set at a level that results in regulated prices that are below the costs of supplying the service in question, i.e., it will never be consistent with the purpose statement to allow the confiscation of past investments. Let us suppose that Covec is correct. What welfare standard is it then proposing?

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18 Covec report, p.4.

35. If it is true that the objective of focussing on the "long term" interests of consumers is in large part to insure against situations in which "producers" are harmed in the short term, with negative consequences for "consumers" in the long term, then why not simply focus on total welfare? Or, at the very least, why not place a positive weight on producer welfare? Neither the Covec report nor the BARNZ submission provides a satisfactory response to these questions.

36. It is not particularly illuminating simply to state that the Commission should "balance the short and long term interests of consumers", since this could be taken to mean many things.[19] Indeed, as we noted above, this could quite easily be interpreted as describing a *total welfare* standard that encompassed both static and dynamic efficiency considerations. It is conceivable that this is precisely what Covec means by a "long term" consumer welfare standard. It is unclear.

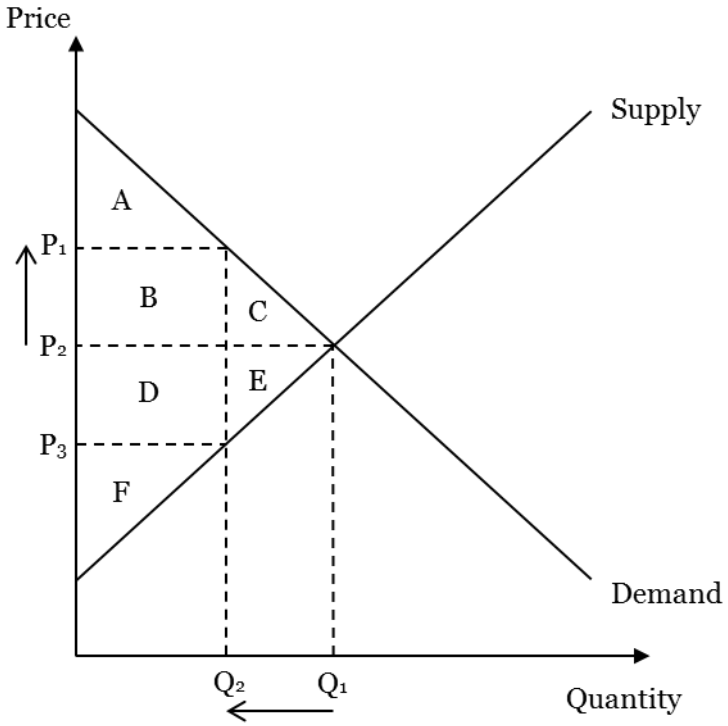
37. If a "long term" consumer welfare approach is not intended to be synonymous with a total welfare approach, then how precisely is the balancing between short-and long-run consumer interests envisaged by Covec to be done? In the absence of any guidance on this point, the consumer welfare standard proposed by Covec and BARNZ is simply too vague to be of any assistance. Other critical conceptual questions also remain unaddressed including, for example:

    - the respective weights to be given to changes in deadweight loss *vis-à-vis* transfers between consumers and producers; and
    - whether any weight at all is to be given to producer welfare in their frameworks – something that is not precluded from a consumer welfare approach.

38. We broached these matters in some detail in our previous report and it is worth briefly recapping that analysis. This is again assisted by considering the simple demand and supply chart set out in Figure 2 below. Imagine that the Commission was considering an increase in the WACC percentile which would increase the regulated price from P2 to P1. It is worth considering how Covec and BARNZ might measure the effect on welfare using their proposed frameworks and to contrast that with a total welfare approach.

[19] Indeed, on one (albeit highly unlikely) interpretation, this could be describing a *total welfare* standard that encompassed both static and dynamic efficiency considerations.

Figure 2 Total welfare vs. consumer welfare



39. At a price of P1, consumer surplus (CS) is equal to the triangle A and producer surplus (PS) is equal to the area B+D+F. At a price of P2, CS is equal to the area A+B+C and PS is equal to the area D+E+F. Under a total welfare standard, the welfare analysis is straightforward. The change in static efficiency is equal to the increase in deadweight loss, i.e., to the triangle C+E. The question is then: is this static efficiency cost outweighed by the potential long term dynamic efficiency cost of underinvestment (estimated by Oxera as being $1-3bn per annum)?

40. In our opinion, there is absolutely no reason why a total welfare analysis of this kind could not be used to determine the appropriate WACC percentile. Indeed, it balances the relevant short term static and long term dynamic efficiency consequences and promotes outcomes consistent with those observed in workably competitive markets (we explore this further in section 3). In short, it is an economically robust way to go about setting the appropriate WACC percentile.

41. In contrast, the approach that Covec and BARNZ are recommending the Commission to take is less clear and will almost inevitably be less robust. It is possible that they are suggesting that the Commission compare the dynamic efficiency costs (estimated by Oxera to be $1-3bn) with the reduction in consumer

surplus, i.e., the area B+C. However, as we explained in our previous report,[20] there are a number of problems with such an approach:

- only one source of deadweight loss is captured in this analysis, i.e., the reduction in consumer surplus represented by triangle C is accounted for, but the reduction in producer surplus represented by triangle E is not; and
- the reduction in consumer surplus arising from the bare transfer of wealth represented by rectangle B is given the same weight as the reduction arising from the increase in deadweight loss represented by triangle C.

42. Such an approach is without any economic foundation, because:

- there is no basis for valuing $1 of lost consumer welfare arising from an increase in deadweight loss the same as a $1 arising from a bare transfer of wealth – the latter should be substantially discounted (or disregarded); and
- there is no basis for valuing $1 of lost consumer welfare arising from an increase in deadweight loss at $1, and $1 of lost producer welfare arising from an increase in deadweight loss at $0 – they are indistinguishable.

43. A further problem with any such approach is that there is no weight whatsoever placed upon the increase in producer surplus, which is also represented by the rectangle B. This is a bare transfer of wealth from consumers to producers. As we explained in our previous report, the trouble with this approach is that it seeks to make a distinction between "consumers" and "producers" that it is simply not possible to make in practice.[21]

44. Consumers may also be direct shareholders, indirect owners of Government/council owned businesses and/or employees of the relevant companies. It is therefore inaccurate to say that "rectangle B" represents a transfer from a discrete category of "consumers" to a separate category of "producers". Many of those people will be one and the same. It would consequently be perverse to give no weight to producer surplus in a welfare analysis – doing so may make consumers worse off, on average.

45. Take the simple example of a government owned business, such as Transpower. If its returns decrease due to a regulatory action, this will reduce government revenue and, all other things being equal, require an off-setting reduction in spending or an increase in taxes. There is no reason to think that the benefit that the average New Zealander will receive through lower electricity prices will exceed the costs associated with reduced government spending and/or higher taxes.

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20 CEG, *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014, section 3.3.1.

21 CEG, *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014, section 3.2.

46. In other words, as a matter of economics, applying a consumer welfare standard to "promote the long term interests of consumers" in the manner postulated by Covec and BARNZ cannot reasonably involve simply comparing the change in consumer surplus to the potential long term dynamic consequences. However, because neither Covec nor BARNZ attempts to grapple with these important matters of design and implementation, it is unclear precisely what they *are* proposing. As we said earlier, "long term" consumer welfare could well be synonymous with total welfare.

2.5 Conclusion

47. Covec and BARNZ both maintain that a total welfare standard cannot be used to guide decisions about whether and how to regulate. However, these contentions are based on a misunderstanding of the basic economics of the regulation of network businesses. In particular, as Covec itself concedes in its report, the long term dynamic efficiency consequences of over- or under-investment that also important for such decisions, and these can be readily considered within a total welfare framework that does not consider distributional objectives.

48. The suggestion that only a consumer welfare standard must be employed when selecting the appropriate WACC percentile therefore has no foundation as a matter of economics. A total welfare standard can and arguably should be used. Indeed, Covec's suggestion that the pitfalls associated with a consumer welfare standard can be avoided by taking a "long term" focus could reasonably be reinterpreted as saying: "the shortcomings of a consumer welfare approach can be avoided by employing a total welfare approach."

49. If a "long term" consumer welfare approach is *not* intended to be synonymous with a total welfare approach, then how precisely is the balancing between short-and long-run consumer interests envisaged by Covec to be done? In the absence of any guidance on this point, its framework is simply too vague to be of any assistance. There is no description provided of how the Commission should go about operationalising their proposed framework. For example, neither Covec nor BARNZ attempt to explain:

- the respective weights to be given to changes in deadweight loss *vis-à-vis* transfers between consumers and producers;
- whether any weight at all is to be given to producer welfare in their frameworks – something that is not precluded from a consumer welfare approach; and
- the relative weights to be given to dynamic as opposed to static efficiency considerations, i.e., short term versus long term effects.

50. For the reasons set out in our previous report, it would be highly inappropriate to give the same weight to transfers and changes in deadweight loss. It would also be perverse to give zero weight to producer surplus, including because consumers and

producers are largely indistinguishable in practice. Neither Covec nor BARNZ offer any views on these points, and so it is unclear how they would propose to address these implementation issues.

51. Ultimately, for the reasons described above, these matters are moot because, despite Covec's and BARNZ's assertions to the contrary, a total welfare approach can and arguably should be used to determine the appropriate WACC percentile. In this respect, it is worth noting that the Draft Decision appears *not* to have been informed in any way by a consideration of total welfare in the manner suggested by Covec and BARNZ. If total welfare was considered – which we believe it should be – this would materially increase the recommended WACC percentile.

3 Competitive Market Outcomes

52. In this section we consider whether the purpose statement – which requires the Commission to promote "workably competitive market outcomes" – precludes it from allowing any significant uplift upon the mid-point WACC in the manner suggested by BARNZ. Specifically, we address the following question:

> *The BARNZ submission questions whether the Commission's draft proposed amendment to use a 67th percentile WACC estimate for regulated energy businesses is consistent with the over-arching purpose of Part 4 set out in s52A – it appears to favour the mid-point. In your opinion, from an economic perspective, how robust is this conclusion and the analyses that underlies it?*

53. We begin by describing the rationale that BARNZ relies upon to arrive at the conclusion that a significant uplift is not permissible. We then explain why its analysis is wrong as a matter of theory and why adopting the 67th percentile will not lead to "permanent expectation of excess returns" in practice.

3.1 Summary of BARNZ's analysis

54. BARNZ questions whether the Commission's draft proposed amendment to use a 67th percentile WACC estimate for energy businesses regulated under Part 4 is consistent with the over-arching purpose of Part 4 set out in s52A. It notes that the Commission is required to promote workably competitive outcomes and contends that the outcome of adopting the 67th percentile:[22]

> *"…does not resemble one of a workably competitive market where returns often fall below the mid-point of the cost of capital. The expectation of earning a normal mid-point return should in the words of the High Court be an 'attractive proposition for a regulated supplier' compared with outcomes in workably competitive markets and should be sufficient to incentivise investment by itself without the need for any uplift significantly above the mid-point. The expectation of earning above a normal mid-point return is by contrast excessively generous."*

55. BARNZ goes on to contend that:[23]

[22] BARNZ submission, p.7.

[23] *Ibid.*

"It is still not clear that permitting returns above what would be a normal level in a workably competitive market to be targeted will be in consumers' long term interests. It will:

- *Provide a return greater than that considered necessary in a workably competitive market to incentivise investment;*
- *Create a permanent expectation on the part of regulated suppliers of excess returns (contrary to s52A(1)(d)) – albeit at a lower level than the previous 67th percentile; and*
- *Not provide the right incentives to stimulate productive or dynamic efficiency (contrary to s52A(1)(b)) – which are more likely to be stimulated by 'necessity, not plenty' to paraphrase the High Court merits review decision."*

56. In our opinion, there are a number of problems with this line of reasoning. First, it is predicated on the mistaken belief that adopting the 67th percentile will result in an expectation of "excessive returns". Second, it rests on an interpretation of the purpose statement that reveals a misunderstanding of the dynamics of workably competitive markets.

3.2 The 67th percentile is highly unlikely to result in excess returns in practice

57. BARNZ's analysis is based on the assumption that applying the 67th percentile will mean that businesses expect to receive returns that exceed the "true WACC", i.e., "above normal profits". BARNZ appears to consider that any return that is expected to exceed the "mid-point WACC" is excessive. The trouble with this proposition is that there is no reason to think that applying the 67th percentile of the Commission's WACC range will mean that a business will earn returns that exceed the "true" (unobservable) mid-point WACC.

58. Rather, a business may earn above or below the true WACC. The Commission is simply attempting to reduce the probability of a business earning below the true midpoint WACC (in order to reduce the expected level of costs associated with consequent underinvestment). This is true even if the Commission has arrived at the best (unbiased) estimate of the midpoint WACC and of the distribution around that midpoint, and has fully compensated for the expected level of all other costs.

59. However, in our view, this is demonstrably *not* the case. Consequently, even on an expectational basis, it does not follow that adopting the 67th percentile makes it more likely than not that investors will receive a return above the true midpoint. Indeed, as we and other advisors have pointed out throughout the consultation, there is good reason to think that if the 67th percentile of the Commission's WACC range is adopted that businesses:

- will not expect to earn a return equal to the *true* 67th percentile, which the Commission has underestimated; and
- will not necessarily even expect earn a return equal to the *true* (unobserved) mid-point WACC.

60. First, the Commission has not made any allowance in its Draft Decision for asymmetric cash-flow risks. As we explained in our previous reports,24 there are numerous reasons why a business would not expect to earn returns equal to the mid-point if the WACC percentile was set at that level. We identified these sources of negative cash flow asymmetry as including:[25]

    - The prospect of distribution infrastructure being stranded by new technologies before the costs of those investments have been recovered (the Commission's financial model applies straight-line depreciation over asset lives of 45-years, on average). We explained that the potential for this to occur in the next 10 to 20 years is a real concern for investors (let alone the longer run).
    - The prospect for low frequency but high impact events (such as earthquakes, tsunamis, etc.) to occur. Natural disasters of this type are not currently compensated for in businesses' price paths and, as we explain below, the Commission has made it clear that it will not allow lost revenues to be recovered in a customised price path (CPP).[26]
    - The cash-flow risks arising from the potential costs of insolvency. The prospect of these costs being incurred by a business is related to and may increase as a result of the other factors described above, e.g., a natural disaster may prompt customers to invest in substitutes for network supplied electricity, increasing the risk of asset stranding and heightening the risk of bankruptcy.[27]
    - The fact that higher than expected demand can be expected to increase profits by less than lower than expected demand reduces them due to the asymmetric responses of costs to demand. That is, the amount by which costs go up when demand is higher than expected is more than the amount by which they fall when demand is less than forecast.[28]

61. These factors mean that if a mid-point WACC is used, a business' expected revenues will not equal its expected costs. The existence of substantial negative asymmetric

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24 CEG, *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014, section 5.3.

25 CEG Report, section 3.1.2.

26 Commerce Commission, *Setting the customised price-quality path for Orion New Zealand Limited, Final reasons paper*, 29 November 2013, paragraph C5.2.

27 CEG, *Review of the use of the 75th WACC percentile, A Report for Orion,* May 2014, section 4.4.

28 CEG, *Review of the use of the 75th WACC percentile, A Report for Orion,* May 2014, section 4.1.

cash-flow risks means that it is simply incorrect to suggest that an above mid-point WACC will inevitably result in excess returns. Rather, our preliminary analysis suggested that asymmetric cash-flows alone more than justify the existing the 72bp increment currently provided by the 75th percentile under the DPP.[29]

62. Second, it is apparent that the Commission's methodology for determining the *mid-point estimate itself* – including its application of the term credit spread differential (TCSD) to determine the cost of debt – is significantly understating the "true" median. As we explained in our previous report, addressing the shortcoming in the TCSD would materially increase the WACC and bring it more into line with the values used by international regulators and New Zealand analysts.[30]

63. Third, it is plain from the Commission's analysis in the Draft Decision that its current *range around the mid-point* is significantly understated. As we explained in our previous report,[31] the Commission implicitly concedes that it has not accounted for all relevant forms of uncertainty in its existing WACC range, including those associated with model error and intra-period fluctuations in parameters such as the risk free rate. This serves to further depress the WACC.[32]

64. There is therefore no reason to think that adopting the 67th percentile – or even something higher – would result in businesses earning excessive returns. The uncertainty around the true WACC and the problems identified with the Commission's mid-point estimate and range will mean that its estimate of the 67th percentile may well be lower than the true midpoint. Moreover, even if the Commission's 67th percentile is more likely than not to be above the true (unobservable) midpoint WACC, any such increment is likely to be required to compensate businesses for the expected costs of asymmetric cash flow risks, i.e., before any consideration is given to asymmetries in social costs.

65. However, even if there were no asymmetric cash flow risks and the Commission's estimates of the mid-point WACC and its WACC range were perfect (none of which are true), it would still be in the long term interests of consumers – and producers – for the WACC to be set significantly above the mid-point. Indeed, this is the fundamental question that the Commission has been exploring throughout this consultation, as we explain below.

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29 CEG, *Review of the use of the 75th WACC percentile, A Report for Orion,* May 2014, section 4.

30 CEG, *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014, sections 4.2 and 5.1.

31 CEG, *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014, section 5.2.

32 This is because the 67th percentile of the Commission's artificially narrow WACC range will be lower than the 67th percentile of the "true", wider WACC range.

3.3 An above mid-point WACC is not inconsistent with competitive outcomes

66. The Commission's sole focus throughout this consultation has been on whether the social costs of mistakenly under-estimating the true WACC exceed the social costs of over-estimating it. After reviewing the new evidence that it has gathered, the Commission reaches a firm conclusion on this point in its Draft Decision. It states that it considers that it is appropriate to use a WACC significantly above the mid-point estimate for price-quality regulation, because:[33]

> *"[T]he potential costs of under-investment from a WACC that is too low are likely to outweigh the harm to customers (including any over-investment) arising from a WACC that is too high."*

67. The rationale for providing an up-lift upon the mid-point WACC to reflect asymmetries in social costs has been well demonstrated by the evidence provided to the Commission as part of this consultation. The increment is, in large part, to protect the long term interests of consumers. Consumers would prefer to pay $1 in the form of higher prices now if it means that they avoid even greater long term costs associated with potential under-investment.

68. For the reasons set out in our previous reports (and the reports of the Commission's experts), this asymmetry in social costs exists. It is therefore in the best interest of consumers for the WACC to be set in a way that accounts for it. In contrast, setting the WACC at the mid-point would consign them to paying the higher long term costs associated with under-investment, which could be avoided by incurring the lower short term cost associated with higher prices. This would clearly be irrational and not in anyone's interest.

69. BARNZ seems to be saying that that any up-lift upon the mid-point WACC can be expected to result in "above-normal returns", which it claims is impermissible under the purpose statement.[34] The basis for this contention is not altogether clear. It could be that BARNZ is suggesting that such an up-lift is unwarranted because there is no such asymmetry in social costs. If so, then suffice it to say that we disagree with that contention for the reasons set out extensively in our previous reports.

70. Alternatively, BARNZ could be saying that even if such an asymmetry does exist, an up-lift would *still* not be permissible under the purpose statement because one does not see analogous outcomes in workably competitive markets. If that is indeed what

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33 Draft Decision, p.8.

34 We have already explained why this is wrong in practice, since the up-lift is required to compensate for errors in the Commission's methodology and for asymmetric cash-flow risks. But even if those factors are set aside, and one assumes that the up-lift is only required to account for asymmetries in social costs, BARNZ's position remains difficult to comprehend.

BARNZ is suggesting, then it is quite perplexing since, if such an asymmetry exists then, by definition, rational consumers would *want* the WACC to be set above the mid-point. It is also clearly wrong as a matter of economics.

71. BARNZ has not recognised that consumers in workably competitive markets will often agree to pay suppliers a price that will result in "above normal returns" for all manner of reasons. Some of those potential reasons include the following:

- A customer and a supplier may sign a contract that has certain incentive properties that provide the supplier with the expectation of an above normal profit provided it meets certain quality criteria that are critical to its interests. The customer may prefer that its suppliers are earning above normal profits if this makes them more attentive to its needs.
- In a similar vein, a customer may prefer to deal with a long-standing supplier with an established track-record of delivering high-quality service – perhaps for a higher price than less established competitors. Other suppliers may offer lower prices, but entail a greater risk of long-term costs, and there may also be material additional costs associated with switching suppliers.

72. This behaviour is perfectly rational and will often lead to some suppliers earning sustained "above normal" returns. These rents do not stem from the exercise of market power – they are "infra-marginal rents" that are commonplace in competitive markets. It is in the best interest of customers to provide suppliers with those rents, since it may serve to minimise their costs in the long term and it is the pursuit of such rents which drives investment and innovation in a market economy.

73. This is entirely analogous to energy customers paying prices based on an above mid-point WACC in order to avoid facing the more substantial long term costs associated with under-investment. In both cases, a near term cost is incurred to reduce or avoid the prospect of an even larger long term cost. It is therefore entirely consistent with a workably competitive market outcome for the Commission to include an uplift to account for the asymmetry in social costs.

74. There is an extensive body of literature that addresses these issues. Wherever the price paid for a service alters its quality of supply (rather than the quality itself determining the price) similar issues arise. Indeed, in his seminal work *Wealth of Nations* (1776), Adam Smith addressed precisely this issue in relation to wages paid to suppliers of labour:

> *"A plentiful subsistence increases the bodily strength of the labourer and the comfortable hope of bettering his condition and ending his days perhaps in ease and plenty animates him to exert that strength to the utmost."*

75. This quote can be thought of as a precursor to modern theories of "efficiency wage models" where firms pay above market rates to suppliers of labour in order to induce greater effort.[35] Joseph Stiglitz (with Akerloff and Spence) won the Nobel Prize in economics for work applied to a range of circumstances where causation runs from price to quality, not the other way around. As Stiglitz noted:[36]

> *"These are instances in which price serves a function in addition to that usually ascribed to it in economic theory: It conveys information and affects behavior. Quality depends on price. Of course, in standard economic theory, higher-quality items will sell at higher prices: Prices depend on quality. But here, beliefs about quality, about what it is that is being traded, depend (rationally) on price."*

76. In summary, BARNZ is wrong to conclude that in workably competitive markets customers would not be prepared to agree to above normal prices if this induced higher quality of supply. They would. Our point is not to say that the effect of the Commission's decision will be to set a regulatory WACC that allows above normal returns (as set out above, we do not consider this is the case). It is simply to say that BARNZ's interpretation of workably competitive markets cannot dictate the choice of regulatory WACC in the way it has suggested.

3.4 Conclusion

77. BARNZ's contention that an above mid-point WACC would result in excessive returns that are not permissible under the purpose statement is wrong for two key reasons. First, adopting a 67th percentile WACC does not mean that investors will receive a return above the "true" midpoint WACC in practice – it does not even mean that investors will expect to do so. Indeed, our preliminary analysis has suggested that the expected costs of asymmetric cash flow risks alone appear to more than justify the current 75th percentile increment.

78. Second, BARNZ's contention is predicated on a misunderstanding of the dynamics of competitive markets. Consumers in such markets can and do agree to "above normal" prices for superior quality in the near term to avoid even higher costs in the long term, e.g., problems with reliability. This is entirely analogous to energy customers paying prices based on an above mid-point WACC in order to avoid the more substantial long term costs associated with under-investment.

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35 George Akerlof and Janet Yellen (1986), "Efficiency Wage Models of the Labor Market", *Cambridge: Cambridge University Press* (ISBN 0-521-31284-1).

36 Stiglitz, J. (1987), "Causes and consequences of dependence of quantity upon price", *Journal of Economic Literature*, March 1987.

4 Uncertainty and the ID Range

79. In its Draft Decision, the Commission proposes to narrow the WACC range for information disclosure (ID) purposes from the 25th-75th percentile to the 33rd-67th percentile. In this section, we consider whether the Commission's consultation process has reduced the uncertainty surrounding the mid-point WACC in a manner that would justify this tightening. Specifically, we address the following question from NZ Airports:

> *In your opinion, has anything in this consultation process to date – including in the submissions on the Draft Decision – suggested that the range of uncertainty surrounding the mid-point WACC has decreased in a manner that would justify the Commission narrowing the WACC range for information disclosure purposes?*

80. In short, our answer to this question is "no". The Draft Decision has instead served to highlight the fact that the Commission has significantly *underestimated* the uncertainty surrounding the current mid-point WACC estimate. As we explained in our previous report:[37]

- the Commission's assumed WACC distribution ignores the impact of the potential for model error in determining the WACC;
- the standard error associated with estimating a cost of debt for a BBB bond at any maturity substantially exceeds that assumed by the Commission; and
- the Commission's estimates of uncertainty do not capture intra-period variations in the risk free rate, the market risk premium and the cost of debt.

81. The proposal to narrow the WACC range for ID purposes implies that the uncertainty around the WACC estimate has been reduced, i.e., that there is *less* margin for error. In our view, that is simply not the case. For the reasons set out above, there appears to be no basis for contracting the existing range and there appears to be good reason for it to be broadened.

37 CEG, *Economic Review of Draft Decision on the WACC Percentile, A Report for NZ Airports,* August 2014, section 5.2.