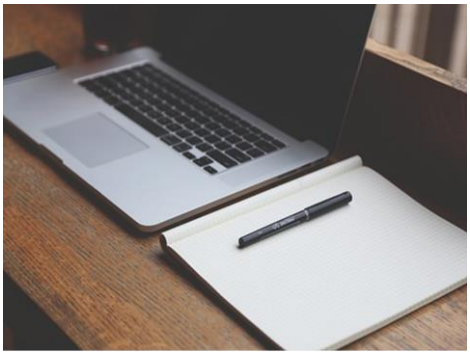
UTS preliminary decision: supplemental consultation

An economic perspective on the Authority's new steps

Kieran Murray

24 November 2020



Contents

Introduction

1. In its Supplementary consultation paper, the Authority describes three steps in its process for assessing whether an Undesirable Trading Situation (UTS) occurred late in 2019 (Electricity Authority, 6 November 2020, p. 7). These steps are:

   - Was there a confluence of circumstances and/or behaviours that made the situation unusual?
   - Did this unusual confluence of factors result in reduced competition?
   - If competition was reduced, did it lead to unusual market outcomes?

2. These three steps in the Authority's approach were not evident to me when I wrote my submission on the Authority's preliminary UTS decision (Murray, 17 August 2020), or when I wrote my cross-submission after reading all other submissions (Murray, 8 September 2020). In this paper, I review the Authority's additional steps by applying the same economic concepts as set out in my August report.

3. I structure my report to follow the Authority's three additional steps:

   - the confluence of factors
   - competition effects
   - unusual market outcomes.

The confluence of factors

Economic tests embedded in the UTS rule

4. In my August report, I describe how earlier explanations by the Authority of the UTS rule aligned with the economic literature analysing the effects of rules and standards on transaction costs and behaviour. The Authority had previously explained that UTS provisions are adopted by market providers because they cannot foresee all future eventualities (Bay of Plenty Energy Limited v the Electricity Authority, 2012, p. 90).

5. That interpretation is consistent with an economic analysis of the UTS provisions. This is because legal commands that provide greater specification in advance as to required behaviour (referred to as "rules" by economists) are preferable when the activities being governed are frequent or predictable. In these circumstances, it can be worthwhile to expend the resources necessary to formulate a precise rule. Legal commands expressed in more general terms, referred to as standards, are preferable if the event of concern might never arise or it is not possible to specify in advance all forms of behaviour, required or precluded. The UTS is a standard, and the examples set out in section 5.1(2) of the Code all illustrate situations where it is not feasible to define all variants of behaviour that might be harmful, and hopefully the behaviour guarded against will never occur.

6. An economic analysis of the UTS standard supports the Authority's observation that section 5.5 of the Code requires the Authority to restore normal operations of the market as soon as possible and so the normal operation of the market could not constitute a UTS (Bay of Plenty Energy Limited v the Electricity Authority, 2012, para. 88). That is, a UTS is a situation that would not have been permitted to arise if the rule drafters, who wrote the UTS standard, had instead written a specific rule addressing the unforeseen or rare event so that normal market operation could continue during that situation. As discussed in my August report, this interpretation of the UTS meets the test for interpreting standards developed in the economics literature (Murray, 17 August 2020, p. 4).

7. The economic rationale for a UTS therefore provides two tests for whether a situation gives rise to a UTS:

   - the event or circumstance is (or the events and circumstances in combination are) unforeseen or rare
   - the standard of behaviour required from participants can be imputed to the Code by figuring out the terms the rule drafters would have specified if, instead of the UTS standard, they had written a specific rule to fill a gap so that normal market operation would continue during the unforeseen or rare event.

8. These economic tests provide a means for assessing whether the confluence of circumstances and/or behaviours identified by the Authority are catered for by existing rules in the Code, or would necessitate an intervention by the Authority to fill a gap to restore normal market operations.

Identifying the factors to consider

9. The Authority describes the first step in its assessment as identifying whether there were circumstances and/or behaviours "which together or alone were unusual, and could have led to outcomes that were not reasonably expected under normal market operations" (Electricity Authority, 6 November 2020, p. 7).

10. A critical purpose of the wholesale market is to provide for a process of price discovery that collates and conveys information about a multitude of behaviours and circumstances and differing expectations as to future events.[1] In a market as dynamic as the wholesale electricity market, circumstances at any point in time are invariably unusual, if unusual is defined as differing from some estimate of average. If trading conditions were habitual then the price discovery function of the wholesale market would be largely redundant.

11. The Authority appears to infer that the UTS provides for it to intervene when outcomes in the market differ from those it expects on average. If this is the logic of the Authority's assessment process it would constitute a very serious change to the market design and should be the subject of a rule change proposal. I explained why the UTS is not a by-pass for a rule change in my August report (Murray, 17 August 2020, pp. 5 - 7).

12. It is possible the Authority described its approach poorly, and that what it intended to identify were circumstances and or behaviour which together or alone were so unusual such that the market ceased to *operate* normally. This is of course a very different test to whether circumstances or behaviour led to outcomes that differ from some estimate of average relationships. I return to this difference in tests in section 3 below, which considers the Authority's analysis of whether market outcomes were unusual.

Circumstances identified by the Authority

13. The five factors identified by the Authority as giving rise to an unusual confluence are (Electricity Authority, 6 November 2020, p. 8):

- a series of very large inflow events
- Contact using its automated spill gates for the first time during a flood event and motivated to avoid being the marginal generator
- Mercury trying to conserve water in anticipation of a scheduled HVDC outage, a planned Pohokura outage, and higher prices evident in the forward curve
- Genesis' claim that it is a price taker in the South Island

[1] Prior to the inception of the wholesale market, the Davidson inquiry into the 1992 electricity shortage—the last occasion on which New Zealand had been forced to curtail demand—concluded that "the lack of appropriate pricing signals … contributed to the event, because the necessary pricing information and financial incentives for ESAs and consumers to mitigate against the shortage were inadequate until the shortage actually existed" (Davidson, 1992, p. ix).

- Meridian's internal reporting indicating it was withholding generation to avoid the HVDC binding.

14. As noted above, a test of "unusual" cannot be the right filter for identifying an "undesirable" trading situation; a primary objective for the market is for it to operate during unusual circumstances (such as a cold, dry year). Rather, the test should be whether the circumstances (or combination of circumstances) are rare, or were unforeseen, such that they are not accommodated within the Code—that is, by the normal operation of the market. Putting it another way, the question is not how commonly the circumstances recur, but whether they were rare or unforeseen such that the market ceased to operate normally due to the absence of a Code provision that addressed the situation.

15. In this sense, the circumstances identified by the Authority are neither rare nor unforeseen, either individually or in combination:

    - the prospect that inflows to hydro catchments might exceed the ability to contain the flows in storage lakes and might exceed the ability to generate from hydro power stations is not an unforeseen event, nor a rare event; large capital works (for example, spillways) have been constructed and resources invested in planning to deal with these inflows
    - generators routinely offer generation plant (new and old) so as to operate without damaging equipment and operate within well-established dam safety requirements; a design feature of the New Zealand electricity market is that generators must structure their price offers so as to cater for their ramp rates, maximum generation capability and other physical characteristics
    - all hydro generators prepare their offers based on their expectations of future market conditions and available storage; again, this is a design feature of the New Zealand market
    - Genesis' ability to participate in the market was unchanged
    - generators routinely offer to reduce the incidence of transmission constraints binding (and the Authority does not show that this was a material factor in relation to the offer strategy of any generator during December 2019).

16. As the circumstances of December 2019 were neither rare nor unforeseen, it is reasonable to anticipate that they could be accommodated without disruption to the normal operation of the market. This conclusion can be tested by considering whether an additional, specific, rule would have been required to fill a gap in the rules to allow the market to operate normally during the circumstances of December 2019 (that is, if the drafters of the Code had written a specific rule instead of the UTS standard).

17. During the normal operation of the market, all generators prepare offers by applying a descending order of priority:

    - offers must ensure that the plant operates safely and within the terms of its consents
    - offers must allow the plant to be operated without damage
    - offers should maximise the firm's trading profit, taking into account all of its constraints such as the response of other generators and demand, its contract position, and the physical capabilities of its plant and the transmission network etc.

18. The Authority has not identified any evidence that any South Island generator was precluded, in December 2019, from submitting offers they perceived were in their commercial interest and could be filled safely. These offers were dispatched in accord with the normal operation of the market. There was no gap in the market rules where a (hypothetical) specific rule was needed to ensure the normal operation of the market.

19. The Authority clearly would have preferred generators, with plant in the South Island, to have offered greater quantities at even lower prices than they did. However, substituting the commercial judgement of generators with the Authority's view of a better outcome does not restore the normal operation of the market. Rather, it replaces it.

20. If the Authority had properly applied the first step in its process for assessing whether there was a UTS, it would have stopped its investigation at that first step. It would have been evident to the Authority that the factors it has identified did not cause the market to cease operating normally, and therefore no UTS arose.

Competition effects

Impact of confluence of factors on competition

21. The Authority says that its preliminary decision "identifies a number of factors that may have acted in combination to reduce competitive pressure on South Island hydro generators to reduce their offer prices in response to high inflows and consequent spilling" (Electricity Authority, 6 November 2020, p. 6). It observes that the impact on competition was not addressed in submissions. It says (Electricity Authority, 6 November 2020, p. 6):

> In this section, the Authority focuses upon its views on how a confluence of factors may have led to reduced competition and seeks further submissions on this point.

22. The difficulty in responding to the Authority's request for submissions on its view as to how the confluence of factors may have led to reduced competition is that the Authority does not provide any description or analysis of how the factors it identifies reduced competition. Nor was any reasoning provided by the Authority in its preliminary decision, which presumably explains why submitters did not address the issue in their submissions.

Factors identified by the Authority would not have reduced competition

23. Competition is a process of rivalry, analogous to a sporting event. Competition implies independence of action and the absence of collusion or coordination, where the conduct of each rival affects and constrains the conduct of others. No player in a competitive market can conduct themselves without regard to the behaviour of other players.

24. To have reduced competition, the factors identified by the Authority would have had to reduce rivalry between market participants (and to a degree sufficient to disrupt the normal operation of the market, if that reduction in rivalry is to constitute a UTS). As noted in paragraph 15 above, four of the five factors identified by the Authority form part of the backdrop of the market: generators routinely offer plant so as to operate without damaging equipment, base their offers on expectations of future market conditions, and structure offers so that transmission constraints do not bind, and Genesis' competitive position was not altered. The factor that was most obviously different in December relative to most counterfactuals is the very high inflows.

25. In an electricity wholesale market with a large proportion of hydro generation capacity and limited hydro storage (that is, a market typically defined as energy constrained rather than capacity constrained), a surge in inflows represents an increase in supply. Reduced to stylised supply and demand curves, the period under investigation would be drawn as an outward shift

of the supply curve.[2] In simple terms, suppliers are able to generate more electricity and the limited storage capacity means that the fuel must be used or spilt within a confined time period. In other words, the outward shift of the supply curve is associated with an increase, not a reduction, in competitive pressure in a market.

26. Since the rainfall increased the fuel available to hydro generators and therefore *increased competitive pressure* in the wholesale market, the second step in the Authority's process should have affirmed the conclusion the Authority ought to have reached from its first step; that no UTS arose.

[2] Entry level economic texts routinely refer to favourable natural conditions as an example of an outward shift in a supply curve, see for example: https://www.khanacademy.org/economics-finance-domain/microeconomics/supply-demand-equilibrium/supply-curve-tutorial/a/what-factors-change-supply

Unusual market outcomes

27. The Authority provides a set of what it refers to as "objective comparators". These comparators are pairwise correlations, estimated over a period of nine years, between selected variables. The Authority says that the comparator provides a basis for assessing whether the outcomes observed were unusual, and infers that any difference between observations during the investigation period and its comparator would be due to reduced competition (Electricity Authority, 6 November 2020, p. 8).

28. The Authority's approach is fundamentally flawed; its method does not provide it with useful information and, even if the methodology were corrected, it would not enable the sort of inferences that the Authority seeks to draw.

29. With regard to the Authority's methodology, there is no reason to expect, a priori, estimates of short-term (such as a month or the proposed UTS period) and long-term correlations (estimated over nine years) to be similar. Estimation periods are important for correlation analysis as idiosyncratic and seasonal factors that affect correlations in the short-run tend to average out in long-term correlations. Further, it is well established that the respective slopes of electricity supply and demand curves differ in the short-run and the long-run; this means the expected correlations between two related variables would differ in a normally-functioning market. (An implication of this latter point is the market would not be efficient at allocating resources at the margin if it performed in the time invariant way that the Authority's methodology assumes.)

30. The above comments point to two ways the Authority's correlation analysis is flawed:

    - First, the relevant comparator is a summary measure (for example, mean, median) of a set of short-term correlations (measured over a similar period as the proposed UTS period), not a nine-year average
    - Secondly, some measure of variability in the short-run correlations needs to be included to determine if the observed correlations in the UTS are sufficiently different; this measure of variability is analogous to statistical inference which takes into account sample variability when determining if the means from two different samples are statistically different at a given level of statistical significance.

31. The Authority's approach does not take either of these necessary steps. The variability of the short-term correlations and the lack of information conveyed by the nine-year average is clearly illustrated by the charts attached to Meridian's submission as Section H.

32. Turning to the usefulness of the approach (if a sound methodology were applied), the information provided by the analysis would not support the type of inferences drawn by the Authority:

    - Even if it were plausible that the short and long-term correlations should be similar (which is unlikely), a divergence from this correlation would not determine that the market was not operating normally; the market may simply be responding to new information.

- The Authority offers no analysis or reasoning for its inference that any observed difference between short-term correlations and long-term correlations is due to reduced competitive pressure. As noted above, the massive increase in fuel available to hydro generation would have increased, not decreased, competitive pressure in the wholesale market.

Conclusion

33. In its supplementary paper, the Authority sets out three steps which were not evident from its preliminary UTS decision. These steps are:

    - Was there a confluence of circumstances and/or behaviours that made the situation unusual?
    - Did this unusual confluence of factors result in reduced competition?
    - If competition was reduced, did it lead to unusual market outcomes?

34. In a market as dynamic as the wholesale electricity market, circumstances at any point in time are invariably unusual, if unusual is defined as differing from some estimate of average. The economic test embedded in the UTS is not whether circumstances are unusual. It is whether the circumstances (or combination of circumstances) are rare, or were unforeseen, such that they are not accommodated within the Code—that is, by the normal operation of the market.

35. In this sense, the confluences of circumstances identified by the Authority are neither rare nor unforeseen, either individually or in combination. The events of December 2019 were accommodated within the existing Code; there was no gap in the Code that needed to be filled to allow the market to operate normally.

36. The Authority clearly would have preferred generators, with plant in the South Island, to have offered greater quantities at even lower prices than they did. However, substituting the commercial judgement of generators with the Authority's view of a better outcome does not restore the normal operation of the market. Rather, it replaces it.

37. The Authority has not provided any description or analysis of how the factors it identifies reduced competition. The factor that is most obviously different in December relative to most counterfactuals is the very high inflows. An increase in inflows in a hydro generation system increases the fuel available to hydro generators, shifts the supply curve outwards, and *increases competitive pressure* in the wholesale market.

38. The Authority's 'objective comparator' analysis is fundamentally flawed. Its method does not provide it with useful information as there is no reason to expect, a priori, estimates of short-term and long-term correlations to be similar. Even if it were plausible that the short and long-term correlations should be similar (which is unlikely), a divergence from this correlation would not determine that the:

    - market was not operating normally; the market may simply be responding to new information
    - the divergence was due to decreased competitive pressure, especially as the increase in fuel would have increased competitive pressure.

39. If the Authority had properly applied the three steps described in its supplementary paper, it would have been evident to the Authority that the factors it has identified did not cause the market to cease operating normally, and therefore no UTS arose.

References

Anti-trust division. (2020, April 24). Retrieved from The United States Department of Justice: https://www.justice.gov/atr/competition-and-monopoly-single-firm-conduct-under-section-2-sherman-act-chapter-2

Bay of Plenty Energy Limited v the Electricity Authority , CIV-2011-485-1371 (High Court February 27, 2012).

Commerce Commission. (2019). *Mergers and acquisitions guidelines.* Wellington.

Davidson, S. R. (1992). *The Electricity Shortage 1992: the Report of the Electricity Shortage Review Committee.*

Electricity Authority. (30 June 2020). *The Authority's preliminary decision on claim of an undesirable trading situation.* Wellington.

Electricity Authority. (6 November 2020). *Preliminary decision on the claim of an undesirable trading situation: Supplemental consultation.* Wellington.

Froeb, L., & Werden, G. (1992). The Reverse Cellophane Fallacy in Market Definition. *Review of Industrial Organisation 7*, 241 - 247.

Murray, K. (17 August 2020). *The Authority's preliminary decision of an undesirable trading situation: an economic perspective.*

Murray, K. (8 September 2020). *Cross submission: UTS preliminary decision.*

Smith, R. (2014). Market Definition and Substitution Options. *Competition and Consumer Law Journal v 22(2)*.

Stocking , G. W., & Mueller, W. F. (1955). The Cellophane Case and the New Competition. *Economic Review, Vol. 45*, 29 - 63.

About Sapere

Sapere is one of the largest expert consulting firms in Australasia, and a leader in the provision of independent economic, forensic accounting and public policy services. We provide independent expert testimony, strategic advisory services, data analytics and other advice to Australasia's private sector corporate clients, major law firms, government agencies, and regulatory bodies.

'Sapere' comes from Latin (to be wise) and the phrase 'sapere aude' (dare to be wise). The phrase is associated with German philosopher Immanuel Kant, who promoted the use of reason as a tool of thought; an approach that underpins all Sapere's practice groups.

For more information, please contact:

Kieran Murray
Phone: ++ 64 4 915 7592
Mobile: ++ 64 21 245 1061
Email: kmurray@thinkSapere.com

Wellington	Auckland	Sydney	Melbourne	Canberra
Level 9 1 Willeston Street PO Box 587 Wellington 6140	Level 8 203 Queen Street PO Box 2475 Shortland Street Auckland 1140	Level 18 135 King Street Sydney NSW 2000	Office 2056, Level 2 161 Collins Street GPO Box 3179 Melbourne 3001	PO Box 252 Canberra City ACT 2601
P +64 4 915 7590 F +64 4 915 7596	P +64 9 909 5810 F +64 9 909 5828	P +61 2 9234 0200 F +61 2 9234 0201	P +61 3 9005 1454 F +61 2 9234 0201 (Syd)	P +61 2 6100 6363 F +61 2 9234 0201 (Syd)

www.thinkSapere.com

independence, integrity and objectivity