

Doug Watt
Manager Market Monitoring
Electricity Authority – Te Mana Hiko
Wellington

By email: doug.watt@ea.govt.nz

Review of Electricity Authority paper “Market Monitoring Review of structure, conduct and performance in the wholesale market (since the Pohokura outage in 2018)”

Subject

The Authority is reviewing the wholesale market with the research question: are spot prices determined competitively?

The Authority has requested a peer review of the two resulting papers. The first is an empirical paper that is diagnostic in nature. The second is a discussion paper that explores the potential responses to what the first paper has identified.

For the Market Monitoring Review paper you have advised that the Authority are specifically interested in:

- The quality of the evidence
- Interpretation of the evidence
- Any evidence that could be added

This letter provides my overall review of the Market Monitoring Review paper.

In undertaking this review of the paper I have relied upon the information provided by the Authority, including some information supplied by certain market participants to the Authority on a confidential basis. Consistent with my role as specified, I have not attempted to independently verify the analysis underlying the assertions made in the paper.

In the course of preparing this letter I have benefited from discussions with David Hunt and his colleagues at Concept Consulting Ltd (who are also undertaking a review for the Authority). However, the opinions expressed in this letter should not be interpreted as representing the views of others.

Except as expressly provided for in my engagement terms I do not accept liability for errors or omissions in this letter or for any consequences of reliance on its content or conclusions or related correspondence.

My assessment of the quality of the evidence in the draft paper

The draft paper assembles an impressively detailed analysis of a wide range of relevant data on the structure, conduct and performance of the wholesale (ie generation) electricity market over the period since the outage. The analysis compares the period since the outage with earlier periods across a variety of dimensions.

Gas contractual price data has been obtained that usefully confirms the relevance of the spot gas price series.

The evidence is complex and consequently considerable manipulation of data is involved in its presentation in the draft paper. Accordingly, I suggest that, subject to resource availability, the Authority could indicate that it would make the raw data underlying the analysis available to interested parties if requested, except where data is confidential.

The regression analysis detailed in Appendix A of the paper provides convincing statistical evidence of a structural shift in the spot price market dating from the Pohokura outage. The confirmation of the relevance of the spot gas series enhances the credibility of the regression analysis.

Appendix A provides the results of a comprehensive set of statistical tests and derivation of confidence parameters for the coefficients. Those tests indicate the regression results are relatively robust in technical terms.

On the other hand, the discussion of the reasonableness of the coefficients in terms of their expected causative role in influencing the spot price is limited. Consequently, some submitters may undertake further analysis of this aspect. It is possible that such further analysis might expose anomalies in how the regression results compare with the expected relationships.

As indicated above, I suggest the Authority should be ready to provide the full data series on which the regression is based, on request, albeit that a large amount of data is involved, being daily series.

The scale of the shift as indicated by the coefficient on the dummy variable is very large – around \$45/MWh. This provides significant support to the proposition that there was a structural change in the spot market, dating from around the time of the 2019 Pohokura outage.

Two issues remain:

1. A residual issue as to whether the size of the structural shift indicated by the regression analysis is a robust result given that a few of the coefficients seem somewhat anomalous, in particular the very high coefficient on wind generation. As noted above, the paper provides only a very limited discussion of the reasonableness of the coefficients;
2. The more fundamental issue is the extent to which the structural shift reflects the effects of a form of gas supply uncertainty which is not reflected in gas prices, as opposed to the shift reflecting the exercise of market power throughout the period since the Pohokura outage.

I categorise the first issue as a residual concern because the regression seems technically robust. I discuss the second of these issues in the next section of this review, since it relates to interpretation of the evidence.

My assessment of the interpretation of the evidence in the draft paper

My overall conclusion from reviewing the draft is that the evidence provided by analysis of the structure, conduct and performance analysis of the electricity generation market indicates that one (and sometimes more than one) generator has had the ability to exercise substantial market power, as that term is defined in the economic literature, for significant periods since the Pohokura outage (“the outage”) in 2018.

What can be said with high confidence is that Meridian's agreement to provide NZAS Limited with the CFD described as the Tiwai Agreement in January 2021 implies it expects to have substantial market power during the term of the agreement.¹ Secondly, the Authority's 2019 UTS decision can be viewed as indicating that Meridian exercised market power.²

The analysis in the paper, however, does not allow a definitive assessment of the overall extent to which these generators have actually exercised their market power since that outage, setting aside the Tiwai agreement and the UTS period.

The obstacle to a conclusion regarding the exercise of market power is the question of whether uncertainty regarding gas supply was modifying behaviour in ways other than through the gas price itself.

Thus, the most significant obstacle to a medium confidence assessment on the extent to which market power has been exercised is the issue regarding gas supply that became apparent after the Pohokura outage. That outage was followed by a series of gas supply disruptions resulting from specific problems and more importantly production from Pohokura has exhibited a trend decline since mid-2020 as illustrated in Fig 6.

It is plausible therefore that much of the structural shift is attributable to increasing uncertainty regarding gas supply over the medium term as Pohokura output has trended downwards. In as much as this uncertainty is not easily translated into a quantifiable variable, it is difficult to see how it could be captured in a regression. Gas storage data obtained at the suggestion of Concept Consulting has not been able to solve this difficulty. When combined with gradually increasing demand and rather dry conditions over the period, the consequence of the gas uncertainty is that it is not feasible to demonstrate that Meridian or other generators have undertaken any sustained exercise of market power on a day-to-day basis (as opposed to during the UTS period and in regard to the Tiwai agreement).

The draft draws attention to indications of an exercise of significant market power such as a higher level of offers over \$300/MWh and reduced price elasticity in regard to hydro storage levels. While these observations suggest the exercise of market power, the detailed analysis is not able to completely refute the argument that the observations could instead reflect gas supply uncertainty.

My assessment of evidence that could be added

The paper assembles a very comprehensive set of data. Data on gas contractual prices and on gas storage has now been obtained. Accordingly, it is hard to identify additional information or analysis of the way generation offers have been affected by uncertainty regarding medium term gas supplies, that would provide a basis for more robust conclusions.

What would be needed is a way to determine a limit to the influence of medium term gas price concerns. If available, that would open the way to a judgement as to whether the structural shift is firm evidence of the exercise of market power.

¹ No alternative explanation of the entry into an agreement with price well below the expected spot price is apparent.

² This is not to say that Meridian violated the Commerce Act since that Act prohibits the exercise of market power only under specific conditions.

What can be concluded is that the Tiwai CFD agreement's size and the price incorporated in it indicate it would not have been entered into in by a generator which had a substantially lower market share. Secondly the effect of the agreement is that Meridian has higher market power in the spot market than if the smelter ceased to consume power.

Conclusion

In summary, the paper provides a very comprehensive and well presented analysis of the relevant data. The regression analysis is technically very thorough and provides robust evidence of a structural change in the influences on spot prices, dating from the Pohokura outage.

The regression analysis cannot however pin down the extent to which the change reflects uncertainty regarding medium term gas supplies, over and above the direct effect on spot gas prices, versus the exercise of market power.

Aside from the regression, the data presented in the paper does provide indications that during the review period spot prices were at times not determined competitively. As the paper concludes however definitive evidence of the exercise of market power was not found.

One, and in some periods more than one, generator has often had market power. They may well have exercised market power during the period. The gas supply uncertainty is however potentially an alternative influence on spot prices, which limits the extent to which it can be definitively assessed that market power has been exercised.



Pat Duignan
Munro Duignan Limited
PO Box 2500
Wellington
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