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Market Power in the New Zealand Electricity Wholesale Market 2010–2016

Recent research suggests that across the seven years 2010–2016 New Zealand electricity generators collected altogether $5.4 billion more profit than they would have settled for – making it pure gravy, or economic "rent" – through anti-competitive market power.

The study's novel methods throw timely light on a heated, high-stakes debate. For instance, Treasury dismissed as methodologically "worthless" the most comprehensive study (dating from 2009), which found market power rents of 25% of revenue. Certainly, extremely light regulation, like having no price cap, makes New Zealand ideal for investigating market power, a potentially big and fraught issue for the hydro-dominated system. It has been suggested that the country allows exercise of market power, broadly to let generators recoup their investment costs. But what if large surplus wholesale profits are occurring unnoticed?

This research departs from Treasury and fellow agencies' definitions (based on "long-run marginal cost" or LRMC) and instead follows most international economists and regulatory authorities. Market power rents mean the difference between market revenue and what a competitive benchmark would have given. The competitive benchmark was simulated using a complex, realistic, New Zealand-tested "computer agent-based model" of generating firms across the full network. The study used that model to simulate market revenue, too, because market and competitive benchmark modelling shared certain constraints, so this compared like with like. However, it also compared the competitive benchmark to actual prices as an alternative.

Competitive benchmarks for hydro are notoriously tricky. They depend on the value to generators of limiting supply and saving up water inflows for higher-demand times; but inflows cannot be saved up whenever storage lakes reach full. The study innovated by modifying the pure computer agent approach with a dynamic approach for knock-on water effects over time, then identifying the simulation best matching actual prices. (Simply using lake levels did "a surprisingly good job".)

The novel method, which the research found clearly superior and tracked actual prices well, is like an extra calibration step. It picks up structural changes, such as retiring some coal and gas and bringing on more wind and geothermal during this time, and partly privatising gentailers under Prime Minister Key in 2013. Unexpectedly, new low-cost generation introduced after privatisation did not seem to impact actual prices.

Whereas the simulated benchmark/actual prices combination yielded market power rents totalling $6.0 billion, or 39% of revenue, the simulated benchmark/simulated prices combination yielding $5.6 billion, or 37%, was judged sounder. Worryingly in either case, rents occurred despite those structural changes and other reforms in 2011: all should have alleviated market power. Yet, unexpectedly again, market power seemed no higher in dry years, which generators would be expected to exploit.

Studies overseas report similar rents, as does a non-government line of New Zealand research. Since a 2018–19 government Electricity Price Review using the rival LRMC definition found no market power, the debate remains live. Moreover, this study of the wholesale market expects some pass-through to the retail prices we all pay.

**For the full article by Stephen Poletti see "Market Power in the New Zealand electricity wholesale market 2010–2016", Energy Economics 94 (2021) 105078*