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Meditations on an imaginary electricity market

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A quick note about this paper

Over the summer, I indulged my interest in the philosophy of knowledge, logic and language. My reading list was long but I made good progress. A separate reading pile included a copy of the ACCC's latest inquiry into the National Electricity Market (NEM).

Before long, thoughts prompted by these two reading piles started swirling around and colliding in my mind. How do we know what we think we know about energy markets? How do the energy market regulators know what *they* think they know about energy markets?

Whereas the electricity system's engineering is bound to satisfy the required necessary conditions (the laws of physics) or it will fail, the electricity market's design and regulation faces no such binding constraint. Regulators are not bound to questioning the validity of their system of axioms, assumptions and inferences. So they don't.

This paper is not an essay *per se*. It does not seek to tell a story or prove an argument. Instead, it contains fifteen short meditations on the NEM, the challenges of the energy transition, and the knowledge system at the heart of the NEM's institutional arrangements. The meditations highlight some opportunities for ***rethinking how we think about*** the design, regulation and governance of the electricity market.

1. Introduction

Late last year, the Australian Competition and Consumer Commission (ACCC) released its latest report inquiring into the National Electricity Market (NEM).[1] The report is broadly divided between findings about consumer outcomes in the retail electricity market, and findings about the increasing challenges facing retailers seeking to hedge against spot price volatility.

Some of the ACCC's findings are straightforward observations about the market, while other findings might be more accurately described as conclusions or propositions. The ACCC findings are summarised in Section 2 of this paper.

For the most part the ACCC does not offer a commentary on what these findings mean for the design, regulation and governance of the electricity market; or how these arrangements may need to be reconsidered as thermal generation exits the market and electrification gathers pace. That is, the report does not examine the suitability of these arrangements in light of the challenges posed by the energy transition.

The meditations in Section 3 of this paper pick up where the ACCC's report leaves off.

Each meditation is worthy of a standalone essay, but that will need to wait. For now, **Meditations I to VIII** draw directly from one-or-more of the findings in the ACCC report while **Meditations IX to XI** draw on some broader observations about the electricity market. **Meditations XII to XV** reflect on the internal thought processes that are now constraining the required thinking about the NEM's future design, regulation and governance.

This paper, like the ACCC report, focuses on the wholesale and retail electricity markets though some of the meditations are also relevant to the reforms needed in network regulation.

For the avoidance of doubt, the term "regulator" is used broadly in this paper. It may variously refer to state, national or federal regulators, rule makers, market operators, legislators and/or policy makers. References to the NEM sometimes narrowly refer to the wholesale market, while at other times 'the NEM' refers to the broader supply chain of regulated service providers (generators, transmission and distribution networks, and retailers). The intended subject of these references can be inferred from the context in which they are used. For the sake of readability, references, cross-references and endnotes are used sparingly.

Section 4 offers a short postscript highlighting the urgency of ***rethinking how we think*** about the design, regulation and governance of the electricity market.

2. The ACCC's findings

This section outlines the ACCC's key findings as succinctly as possible. Some of the ACCC's findings are straightforward observations, while others might be more accurately described as conclusions or propositions.

The findings are presented broadly in line with the order in which they appear in the report, though some of the findings draw on commentary from more than one part of the report. For the sake of readability, the findings do not cross-reference the report.

Any omissions, or under- or overemphasis of the various findings, are entirely unintentional. Quotation marks are used to highlight terminology specifically used in the ACCC report.

FINDINGS

Most customers in the NEM have been exposed to full retail competition for over 20 years. Retail competition has evolved very gradually and now appears to be "plateauing".

Retailers offer low prices to attract new customers but then increase their prices over the "lifetime" of those customers. Customers must engage "continually" in the retail electricity market to avoid having their prices ratcheted up over time (the so-called, "loyalty penalty").

Many customers find navigating the electricity market difficult and many are disengaged.

Many customers are either "unwilling or unable" to engage with the retail electricity market, even when prompted (for example, by a best offer message].

The retail electricity market is becoming more complex and increasingly difficult for consumers to navigate.

Small retailers are important drivers of competition in the retail electricity market.

Spot price volatility is a longstanding feature of the NEM's gross pool wholesale market which, for the most part, has been managed by retailers using financial hedge products or vertical integration ('gentailers'). Retailers play an important role in insulating consumers from spot price volatility.

Spot price volatility is expected to increase as thermal generation exits the market and electrification gathers pace.

Financial hedge instruments will become “materially harder” to access and more expensive as the energy transition progresses. Managing spot market risk will become very complicated and could become “unmanageably complex”, particularly for small retailers.

New types of financial hedge products are needed. When, or even whether, they become widely available is highly uncertain.

Market participants are likely to turn to other strategies to manage their spot price risk, including: vertical integration (including storage for firming), virtual power plants (VPP), demand response and spot price pass-through.

Large retailers will have more options for effectively managing increasing spot price volatility because of their access to capital (vertical integration) and the size and diversity of their customer base (VPPs and demand response).

It is “critical” the conditions for competition in the wholesale and retail markets are supported through the energy transition. Effective competition is in the long term interests of consumers.

Consumers need to be “supported to engage” in the market to “receive the benefit of competition”.

Government measures may be needed to ensure small retailers have ongoing access to financial hedging products.

Government intervention in markets alters the incentives faced by, and behaviour of, market participants.

Designing markets to facilitate competition (and consumer choice and efficient outcomes for consumers) while appropriately regulating to protect consumers is a “finely balanced task.”

Regulatory interventions should be limited to addressing identified market failures.

3. Mediations

This section contains 15 meditations prompted by the ACCC's latest report inquiring into the National Electricity Market (NEM). **Meditations I to VIII** draw directly from one-or-more of the report's findings. **Meditations IX to XI** are prompted by the ACCC's findings but draw on broader observations about the electricity market. **Meditations XII to XV** reflect on the internal thought processes that are now constraining the required thinking about the NEM's future design (rules), regulation and governance.

I. Waiting for consumers to engage is like waiting for Godot.

In Beckett's famous play, Vladimir and Estragon meet by the roadside where they decide to wait for Godot. They eventually receive a message that Godot will not be arriving today but maybe he'll appear tomorrow. They decide to continue their wait. Some indeterminate time later (perhaps days) they receive another message: Godot is not coming. The play ends with Vladimir and Estragon unable to move on. They continue waiting.

For 20 years, report after report from the energy market regulators has found limited consumer engagement in the retail energy market; with many customers paying too much for their energy. These reports have invariably concluded that consumers would benefit from shopping around and should be encouraged and supported to do so. The ACCC finds similarly. And, although it acknowledges consumers are unlikely to engage at the required level, the report goes no further than recommending regulators continue to encourage and support consumers to engage in the market.

Like Vladimir and Estragon, the energy market regulators seem unable to move on. They continue to wait – to wait for the arrival of *homo electronicus*.

II. Consumer-shaming is not the appropriate regulatory response to poor consumer outcomes.

The ACCC report, like so many others from the energy market regulators, repeatedly refers to customers being "unwilling or unable" to engage with the market. This terminology exclusively attaches poor consumer outcomes to the actions of consumers (including actions dictated by consumers' individual circumstances). According to this framing, no-one else bears any responsibility for poor consumer outcomes.

After 20 years, regulators must stop 'consumer-shaming' when explaining poor consumer outcomes in the retail energy market. Regulators must openly accept their responsibility for these poor outcomes. After all, nothing happens in the energy market that is not made possible, and permitted, by the regulators' rules and regulations. If there is a mismatch between the rules and consumers' conduct – particularly as that conduct has barely changed in 20 years – then it is the regulators who must change how they speak, think and act.

III. Escalator economics is as strong as ever, even after 20 years.

The ACCC report has confirmed, yet again, that retailers' dominant marketing strategy is to compete on attracting new customers with highly discounted prices. Then, as soon as the regulations permit, retailers unilaterally start increasing the prices they charge those customers[2] – leading to what many, including the ACCC, call a "loyalty penalty". While retailers compete to attract new customers, they clearly experience little or no competitive pressure to retain them.

The report notes that retailers look to recoup their costs over a "customer's lifetime". It also finds the prices paid by customers who do not switch plan or retailer are likely to exceed the cost of their retailer's best offer, the median market retail offer, and the regulated default offer. Clearly, retailers are not just seeking to recoup their costs. They are extracting rents wherever they can.

Two decades of full retail competition and various updates to the consumer protection framework have failed to constrain retailers' escalatory pricing strategies. Indeed, the ACCC finds these strategies might be increasing in prevalence. The increasingly complex retail contracts foreshadowed in the report will only enhance retailers' opportunity to take advantage of escalator economics during the energy transition.

There is something inherently wrong with a regulatory system that sanctions providers of an essential service taking advantage of customers in this way.

IV. Consumer protections are not an effective palliative for the harm caused by market design.

The ACCC report, like many reports from the energy market regulators, regards market rules promoting competition and regulated consumer protections as opposing forces which must be "finely balanced". According to this view, market design and consumer protections arise exogenously of each other.[3] This is not the case. The need for consumer protections only arises because the system of market rules enables market conduct that places consumers in harm's way. There is no walking away from this observation.

Regulated consumer protections only attempt to relieve symptoms (harm) without dealing with the underlying cause (market rules). This is unacceptable. If the rules are the ultimate source of harm, then changing the rules is the only durable remedy – all the more so as the retail market becomes increasingly complex for consumers as the ACCC foreshadows.[4]

It is unsettling to realise that regulated consumer protections are being used to protect the rules rather than consumers.

V. The rules make energy affordability retailers' gift-to-give.

Energy affordability is not explicitly explored in the ACCC report, but it features prominently in broader discussions about the energy market and the energy transition. An efficient NEM will put downward pressure on the *average* price paid across all consumers. When retailers exercise market power, the prices paid by *individual* consumers can be dispersed around this average price despite the homogeneity of the product. The ACCC highlights the dispersion of prices paid by consumers, and therefore it highlights retailers' market power. Price dispersion has been a persistent feature of the NEM.

The market power exercised by retailers is the direct consequence of the NEM's design. Retailers decide to whom they grant access to the lowest prices. As the report makes clear, the most (least) affordable prices are reserved by retailers for the most (least) engaged consumers. In this sense, the NEM's design makes affordability (or the closest thing to it) retailers' gift to give. It is disconcerting that even after 20 years of so-called, full retail competition, retailers retain the market power to decide matters of equity.

VI. Is the wholesale electricity market imploding? If so, then what?

The NEM was designed as a compulsory, electricity only, gross pool, regional wholesale market. At the time (1990s), the reformers considered this design would produce the most efficient price signals for dispatch of existing generation and investment in new generation. This design probably achieved the first of these objectives reasonably well though the resultant spot price volatility meant a financial hedging market emerged to enable retailers (and generators) to manage volatility risk.[5]

Volatility is now increasing and, according to the ACCC it will continue to increase to potentially extreme levels with the ongoing penetration of large- and small scale renewable energy resources. The report finds existing financial hedge products will become increasingly scarce, and their replacement by more suitable financial hedge products remains highly uncertain. The report makes clear that other (physical) hedging strategies are unlikely be sufficient to fill the gap.

The report does not describe what happens next.

What is clear from experience, however, is that neither the community nor government will tolerate instability in the provision of an essential service. What that means in the years ahead is far from obvious. Even if the only thing that is currently predictable is that something unpredictable is bound to happen, then surely this inevitability must be factored into rethinking the NEM's market, regulatory and governance arrangements.

VII. Like water, market risk will follow the path of least resistance – all the way to consumers

The ACCC report identifies vertical integration, virtual power plants, demand response and spot price pass-through as the strategies retailers will increasingly use to manage their spot price risk as financial hedge products become unavailable or overly expensive. Vertical integration is capital intensive relative to the other options. This intensity represents a barrier to investment for small retailers. It also implies many or most retailers can be expected to pursue the other hedging strategies identified in the report. All these options rely on retailers contracting with consumers (directly or via intermediaries).

As the report makes abundantly clear, consumers have a poor record when it comes to contracting efficiently in the energy market – and that observation relates to vastly simpler contracts than the complex consumer contracts that will be required for virtual power plants, demand response and spot price pass-through.

Under these conditions, retailers will face compelling incentives to offload as much volatility risk as possible to consumers who, for the most part, will not be well-placed to identify, understand, manage, or price that risk. This process will not end well for consumers or their ongoing support for the energy transition.

VIII. It's an odd dilemma: Efficiency or competition?

The ACCC report seems to be torn between two competing interests. On the one hand, it finds large retailers ('gentailers') are well-placed to effectively manage increasing spot price volatility because of (i) their access to the capital required for vertical integration, and (ii) the volume and distribution of their customers allowing them to pursue effective demand management strategies. At the same time, the ACCC is concerned about the lessening of competition as small retailers have diminishing options for managing spot price volatility.

The report places much emphasis on the importance of small retailers in promoting competition. While it observes that some small retailers may be able to access storage and demand-based products, this observation seems more in hope than in fact. The report therefore concludes Government measures may be needed to ensure that small and new-entrant retailers have access to financial hedging contracts. It does not describe how this might be achieved or whether it is even possible to design such arrangements without government intervention distorting the market (a clear concern for the ACCC).[6]

The ACCC report rightly raises the complex suite of objectives that will need to be navigated in managing the energy transition. Nonetheless, it leaves readers facing an odd dilemma: should large retailers be left to manage volatility effectively or should governments intervene to support (protect?) small retailers so they can "effectively compete"?

IX. It should begin with choice, not the pursuit of price purity.

Over the past couple of decades, energy market regulators have consistently sworn fealty to the objective of delivering efficient price signals. In contestable parts of the NEM, this objective is pursued through rules seeking to enable a market-driven process of discovery– including discovery of consumer preferences.[7] Thereafter, market and regulatory design is predicated on consumers responding to those price signals in line with their preferences.

This conception of the competitive process does not take into account any incongruity between consumers' choice-sets and their preferences. For whatever reason, consumers' ability to express their preferences may be curtailed by either the choices available to them, or the way in which they exercise their choices. A market designed on the presumption of unrestricted consumer choice will, therefore, reward those who do, in fact, have unrestricted choices and it will penalise (harm) those who do not. Such arrangements represent a welfare transfer from one group of consumers to another – from those who do not comply with the regulators' presumptions to those who do.[8]

Provision of an essential service hardly seems the appropriate vehicle for effecting welfare transfers. How differently might the retail energy market be designed if constrained consumer choice was taken into account in its design?

X. The wholesale market looks more like a game than a market.

The NEM's wholesale market is an administrative invention created by its rules. The rules define all the possible actions that can take place in the market and, in so doing, they define the entire set of possible market outcomes.

Absent any other factors, the wholesale market was designed to drive each generator to offer the majority of its power near its short run marginal cost (SRMC). Clearly, the market is not absent any other factors. Thermal generators' five-minute bids bounce around in ways that could not possibly reflect their underlying cost structures. Clearly, generators are not only looking at their own costs. They are also looking at the bidding behaviour of their rivals and then balancing the expected settlement price against their likelihood of being dispatched. Given all generators act in this way – and given they all know they are all acting in this way – and given they all see the same market data[9] – makes bidding an almost entirely strategic exercise in which SRMC is only a minor consideration.

Generators' behaviour is now entirely out of kilter with the objective motivating the wholesale market's design. The absolute dominance of strategic bidding over SRMC-based bidding means the wholesale market has strayed very far from its theoretical foundations. The wholesale market now looks more like a game than a system of rules with a clear economic objective.

XI. Negative prices are weird but things get even weirder when retailers have market power.

Negative prices are pretty weird. Predictably repeated episodes of negative prices (eg. daily as in South Australia and Victoria) are even weirder. While their emergence in the NEM is readily explained, this does not lessen their weirdness. It suggests, however, market outcomes are now manifestly misaligned with the market's theoretical foundations.

Traditional regulatory thinking contends negative prices will stimulate some or all of: increased consumption, increased investment in storage, the withdrawal of bids, the exit of thermal generators, and the acceleration of electrification. Maybe so. But as far as consumers are concerned, negative wholesale prices are of limited benefit when coupled with retailers' market power.

Retailers with market power will seek to suppress demand and deepen or prolong periods of negative wholesale prices by *not* passing through negative wholesale prices to consumers. This allows retailers to earn revenue from customers and generators simultaneously. Can it get any better for a retailer? The rarity of negative retail prices is no accident and is further evidence of retailers' market power despite 20 years of full retail competition.

XII. There is a spectre haunting the NEM – the spectre of the *Theory of the Second Best*.

Even if energy market regulators were able to identify all the outcomes required from the future energy market (say, in a fully Integrated System Plan), and they could describe all the required inputs in technology-neutral terms, and they had defined all the preferred rules for market participation (say, in the National Electricity Rules), they could still not lay claim to having maximised the likelihood of a successful energy transition.[10] Little genuine progress will be made in preparing the NEM for the energy transition unless regulators start properly identifying and testing the necessary conditions on which their preferred rules rely – and then heeding the *Theory of the Second Best.*

This economic theory shows that if a preferred system of rules S requires N necessary conditions to be satisfied for an optimal outcome, but only Q conditions can be satisfied (where Q is a subset of N) then the second best option will generally not involve implementing S while seeking to satisfy Q conditions. This finding holds no matter how intellectually rigorous the theoretical foundations of S may be. Instead, the system of rules should be modified to S' and tested to see whether its necessary conditions N' are satisfiable. This process of refinement should continue until S^* comports with its N^* satisfiable necessary conditions.[11]

Regulators must transparently identify and test the necessary conditions on which their preferred rules rely. A successful energy transition cannot be left to market rules which simply rely on regulators' best endeavours to satisfy the relevant necessary conditions.

XIII. Enable it and they shall come. Really?

An enormous 'ecosphere' of commentary and advocacy swirls around the NEM. This ecosphere consists largely of statements of potentiality and petition – where potentiality is expressed in the form X *solves* Y (in the ecosphere's vernacular, "unlock X and it will solve Y*"*) and petitions are expressed as R *should enable* X.[12] Examples of X appear in Appendix A. Y represents challenges posed by the energy transition and R refers to one-or-more of the regulators identified in section 1. The conditions under which X solves Y are rarely scrutinised in the ecosphere. It is just assumed they will be satisfied if R enables X.

The regulators sit at the centre of this tempest of rivalling potentialities and petitions, deeply programmed not to 'pick winners'. Instead, they follow a strategy of *enablement* based on creating agnostic rules and regulations – technologically, commercially and temporally. They seek to enable competition on the basis it will produce the most efficient outcome.[13] In this regard, the regulators are also proponents of potentiality, but their X is competition and their Y is the National Electricity Objective ("to promote efficient investment in, and efficient operation and use of, electricity services"). The regulators operate on the basis that their role is limited to R enabling X, and thereafter X solving Y.

It is disconcerting that regulators' enablement strategy, when stripped to its core, relies on logic no more rigorous than the claims made in the NEM's ecosphere. Pursuing enablement as an act of faith is not good enough.

XIV. In the end, it's all about coordination.

The list of potential inputs to a successful energy transition is large (Appendix A) and growing. While many of these inputs overlap, coordinating their effective deployment represents the key challenge. Monumental pressures are bearing down on the energy system. Waiting to see if simply enabling markets to organise the resources needed to deliver a successful transition is a luxury that is no longer available.[14]

Internalisation is the alternative coordination strategy to enablement. It involves placing associated coordination needs into single entities. Doing so under appropriate governance arrangements would make those entities responsible for managing the risks, costs and externalities associated with particular system requirements and policy objectives.

One example that has been suggested would see responsibility for delivering reliable high voltage electricity to the substation (the bulk supply point) placed in one entity; and responsibility for managing predictable levels of net demand at the substation placed in a separate entity. The former would be responsible for coordinating investment in large scale renewable energy, transmission infrastructure and grid scale storage. The latter would be responsible for coordinating all activity and investment within its section of the distribution network. Markets would play a role in delivering new and innovative services to these coordinating entities.[15]

XV. Can the regulatory system change itself from within? Hmm…

The NEM's institutional arrangements reflect the steady-state conditions which held sway when the NEM was created. At the time, the system's inputs and outputs were known with near-certainty so there was little more for regulators to do *other than* promote efficiency. Competition was the vehicle assumed to achieve this objective. Institutional arrangements were consequently designed to promote competition wherever possible; and where competition was not possible, institutional arrangements were established seeking to mimic competitive outcomes.

Institutional arrangements always and everywhere reflect a knowledge system. Knowledge systems consist of definitions, axioms, assumptions and rules of inference (or reasoning). These elements of a knowledge system frame, guide and restrict how a problem is understood, how potential responses are formulated, and how every decision is made.[16]

For the past century, philosophers have grappled with questions about whether a knowledge system can challenge and modify its own axioms, assumptions and rules of inference. The answer is far from obvious. It requires a knowledge system to possess something called 'meta-reasoning' and the capacity for introspection.

Regulators established to promptly solve problems through rules and regulatory processes would become highly inefficient if they entangled themselves in higher-order reasoning about their own thought processes when confronted by a regulatory problem. To be clear, this is not a criticism of any one or more of today's energy market regulators. As the colloquialism states, 'They are what they are'. And they are what they are for a reason – but that reason belongs in, and was enabled by, the steady-state conditions of the 1990s and 2000s. Those conditions no longer exist.

In more recent times, the energy market regulators have become very fond of asking whether their rules and regulations remain "fit for purpose". Nary a regulatory report is published these days without these three little words. (They even make a cameo appearance in the ACCC report.) These meditations and recent history[17] highlight the severe inadequacy of this question. Focusing on whether rules and regulations remain fit for purpose is totally inadequate because it omits the questioner from the question. It exempts the regulators, and everything the regulators think they know, from scrutiny and challenge.

The energy transition urgently demands an answer to a more profound, critical and introspective question.

> Can the knowledge system at the heart of the NEM's institutional arrangements genuinely examine and *re*-form itself from within?

Until this cardinal question is answered, reviews into whether rules and regulations remain fit for purpose are just a way to pass the time.

4. POSTSCRIPT

This paper is not an essay. It does not 'tell a story', nor does it methodically compile evidence and arguments in support of a particular conclusion about the energy transition. Instead, it presents a series of meditations on the operation of the electricity market and its regulation. There is reason for concern.

The needs of the energy transition will not be satisfied by regulators hidebound to a knowledge system based on steady-state conditions which no longer exist. The energy transition does not just need more market rules and regulations simply seeking to accommodate emerging technologies, products, services and business models. Nor does it need slavish regulatory adherence to the theories of "some defunct economist" (Keynes). These traditional ways of thinking about the design and regulation of the electricity market are now the problem – not the solution.

Upcoming reviews into electricity market's design and regulation must not be wasted.

The energy transition demands unprecedented investment in critical and introspective thinking. It requires the building of a new knowledge system ('paradigm'). The above meditations highlight the opportunity for **rethinking how we think about** market, regulatory and governance arrangements in the NEM. Continuing to base the NEM's institutional arrangements on an outdated knowledge system will consign the NEM to an unstable and unsustainable future. The ACCC report shows that future is already here.

Appendix A

Examples of the potential elements of a successful energy transition

Some examples include (in no particular order):

- Two-Sided Markets (2SM)
- Dynamic Operating Envelopes (DOE) or Flexible Export Limits (FEL)
- Dynamic pricing
- Behind the meter storage
- Demand flexibility markets
- Vehicle to House (V2H) and Vehicle to Grid (V2G) technologies
- Community batteries and Community energy
- Energy efficiency standards and Investment in energy efficiency
- Renewable Energy Zones (REZ)
- Transmission build-out (network augmentation)
- Locational Marginal Pricing (LMP)
- Battery Energy Storage Systems (BESS)
- Network Tariff Reform (NTR) and Network Export Tariffs (NXT)
- Distribution System Operators (DSO) and Distribution Market Operators (DMO)
- Virtual Power Plants (VPP)
- Smart Grids
- etc

Note, in the statements of potentiality (X) mentioned in Meditation XIII, the input X may represent a vector containing more than one of the above elements.

ENDNOTES

[1] ACCC (2023) *Inquiry into the national electricity market. December 2023 Report*. Available at: https://www.accc.gov.au/about-us/publications/serial-publications/inquiry-into-the-national-electricity-market-2018-25/inquiry-into-the-national-electricity-market-december-2023-report?utm_source=ACCC+media+alerts&utm_campaign=dcab7cdc1e-EMAIL_CAMPAIGN_2023_12_14_11_47&utm_medium=email&utm_term=0_0b94b1dddb-dcab7cdc1e-%5BLIST_EMAIL_ID%5D

[2] The phenomenon of 'escalator economics' was first conjected from first principles in Ben-David (2015) *If the retail energy market is competitive then is Lara Bingle a Russian cosmonaut?* Available at: https://www.esc.vic.gov.au/sites/default/files/documents/If-The-Retail-Energy-Market-Is-Competitive-Then-Is-Lara-Bingle-A-Russian-Cosmonaut.pdf

It has been subsequently confirmed empirically many times, including in the ACCC's current report.

[3] According to this view, protections are implemented as a response to market conduct rather than market design. It does not delve into why or how the market's design enables that conduct. The market's design is treated as exogenous to the relationship between market conduct and a consumer protection framework.

[4] It might be argued that consumer harm is the consequence of market failure rather than the rules. That argument might be true in other markets but it does not hold in the energy market which only exists by virtue of its rules. Everything that happens in the energy market – including any market failures and any harms caused by a market failure – is the product of the market's design (rules).

[5] The second objective of promoting efficient investment in generation is far more questionable particularly with respect to the replacement of baseload generation – which helps explain why governments continue to intervene to promote investment in renewable generation and storage.

[6] See pp.111-114 of the ACCC report.

[7] In non-contestable parts of the energy supply chain, regulators apply methods seeking to produce prices reflecting a fictional competitive outcome for non-competitive services according to some defunct economist's pricing theory. (Noting Keynes' famous quote in *The General Theory of Employment, Interest and Money* (1936), "Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.")

[8] The transfer may be partially offset if the actions of 'responsive' customers results in lower system costs which are shared across all customers. The extent of any 'sharing' will depend on whether those responsive customers – and/or service providers – are able capture the benefits of these lower costs.

[9] Generators see AEMO's estimate of the predicted spot price for the next 48 hours and then for the next 30 mins (updated every 5 minutes), based on generators, offers which they can continue to re-bid up to 30 minutes before the relevant 5-minute trading interval.

[10] Doing so would be analogous to a chef planning a dinner menu, listing the needed ingredients and developing the required recipes; and then, having done so, concluding the meal will be a great success. This conclusion would be pre-emptive, speculative and invalid because the chef has not identified all the necessary condition for a successful meal – let alone tested whether those conditions are satisfied.

[11] An entirely different system of preferred rules (say, Z) could also be identified based on an alternative theoretical foundation, followed by a new process of confirming whether the necessary conditions (say, M) for Z are satisfied.

[12] Modelling is often provided in support of a petition, but its explicit and embedded assumptions are rarely transparent, let alone tested openly.

[13] As noted in Meditation I, IV and IX, the regulators have been far less agnostic about the conduct of consumers who are assumed to respond to price signals almost autonomously.

[14] For further discussion see Ben-David, R (2023a) *Rethinking markets, regulation and governance for the energy transition* (August) Available at: https://www.accc.gov.au/system/files/Ben%20David%20R.%20Rethinking%20markets%2C%20regulation%20and%20governance%20for%20the%20energy%20transition.pdf

[15] For further discussion see Institutional reform #4 in Ben-David, R (2023b) *Six institutional reforms for a timely energy transition* (September) Available at: https://www.linkedin.com/posts/ron-ben-david-753a7940_six-institutional-reforms-for-a-timely-energy-activity-7106515021681106944-Ckan/

[16] In an earlier paper, the author referred to regulators becoming beholden to their own 'regulatory traditions'. Regulatory traditions are the product of the knowledge systems discussed in Meditation XV. For further discussion see Ben-David, R (2023c) *On collision course: Economic regulation and the energy transition*. June. Available at: https://www.linkedin.com/feed/update/urn:li:activity:7078216230565806080/

[17] The Energy Security Board (consisting of energy market regulators) failed to meet expectations when asked to advise on a long-term, fit-for-purpose national electricity market design. As the author has previously noted, "History may show the regulators' failure to deliver a coherent plan for navigating the energy transition to be one of the great lost opportunities in Australia's economic history." Ben-David (2023a)