

# A biased view of infrastructure reform

ACCC/AER Regulatory Conference, Brisbane,  
Australia

*Paul Moy,*

*Global Head of Infrastructure & Private Equity*

*UBS Global Asset Management*

7-8 August 2014



# Introduction

---

- “The Environment for Successful Infrastructure Reform”
- The “brief”
  - Insights from experience
  - Economics of politics
- The recent Productivity Commission report on **Public Infrastructure** covers a wide range of material
  - The challenge is to cover something different
- Content
  - Key infrastructure attributes
  - Pre-conditions for reform in the 1980s
  - Behavioural economics
  - Cognitive bias in the NEM
  - Do governments overweight low probability outcomes
  - Regulatory policy and practice

# “Framing” the infrastructure reform conversation

---

- Essential services
  - Material health, social and income distribution impacts therefore politically sensitive
  - Security of supply / reliability is important
- Natural monopoly
  - Multi-firm production is higher cost
  - Technical and institutional change has made competition more viable in some sectors
- Asset specificity
  - Many infra assets have low or zero alternative use
- Long life assets
- Extensive externalities

*Each of the above suggest*

- *Public choice (government involvement) will always be an important influence on supply*
- *Private choice remains an important and underexploited determinant of demand*

# Public choice complicates service provision

---

- Time inconsistency – asset specificity means investment is discouraged in the absence of some form of policy or regulatory “commitment”
  - Government service provision
  - Independent regulation
  - Long-term concession agreements
- Technical change may alter cost structures and permit competition
  - Impact on commitment
  - Implications for institutional change
- The structure of government
  - Federal Vs unitary
  - History and practice
- Impact of broader policy

*Reform is as much about non-market failure as market failure*

# Pre-conditions for infrastructure reform in the 1980-90's

---

- Economic and fiscal stress
- Broader policy initiatives
- Low productivity in government owned infrastructure services

*Australian labour productivity by sector, 1986*

Sector	Relative Labour Productivity*
Agriculture	150
Mining	114
Manufacturing	76
Electricity, gas and water	54
Transport and communications	75

*\*Expressed as a ratio of the average of Australia, USA, West Germany, UK and Japan.*

**Source:** Industry Commission (1991)

- Why did reform not occur prior to the mid-80s?
- Was productivity so poor that even modest reforms would have produced results?
- Is future material reform conditional on another economic/fiscal crisis?

# A very brief introduction to behavioural economics

---

**Behavioural economics (BE) looks at cognitive biases and rules of thumb (heuristics) that people use to make decisions**

- Why BE in a discussion of infrastructure
  - The speaker brief requested “insights” and cognitive bias can inhibit real insight
  - The speaker brief also raised economics of politics – politicians, policy analysts and regulators are also likely to be subject to cognitive bias and other influences that are the focus of BE
- BE is central to the methodology debate in economics: “it is the predictive performance of the theory that matters Vs the theory must reflect the real world”
- A range of behaviours at each stage of the choice process can be impacted by cognitive bias etc (see Earl (2005) for an accessible summary)
  - Acquiring information e.g. availability bias, confirmation bias, anchoring and framing;
  - Processing information e.g. overweighting low probabilities; time inconsistency (present bias); overweighting small sample evidence etc
  - Decision choice e.g. loss aversion, reference dependence, status quo bias
  - Post-choice e.g. hindsight bias, attribution errors, regret

# Does anybody use behavioural economics?

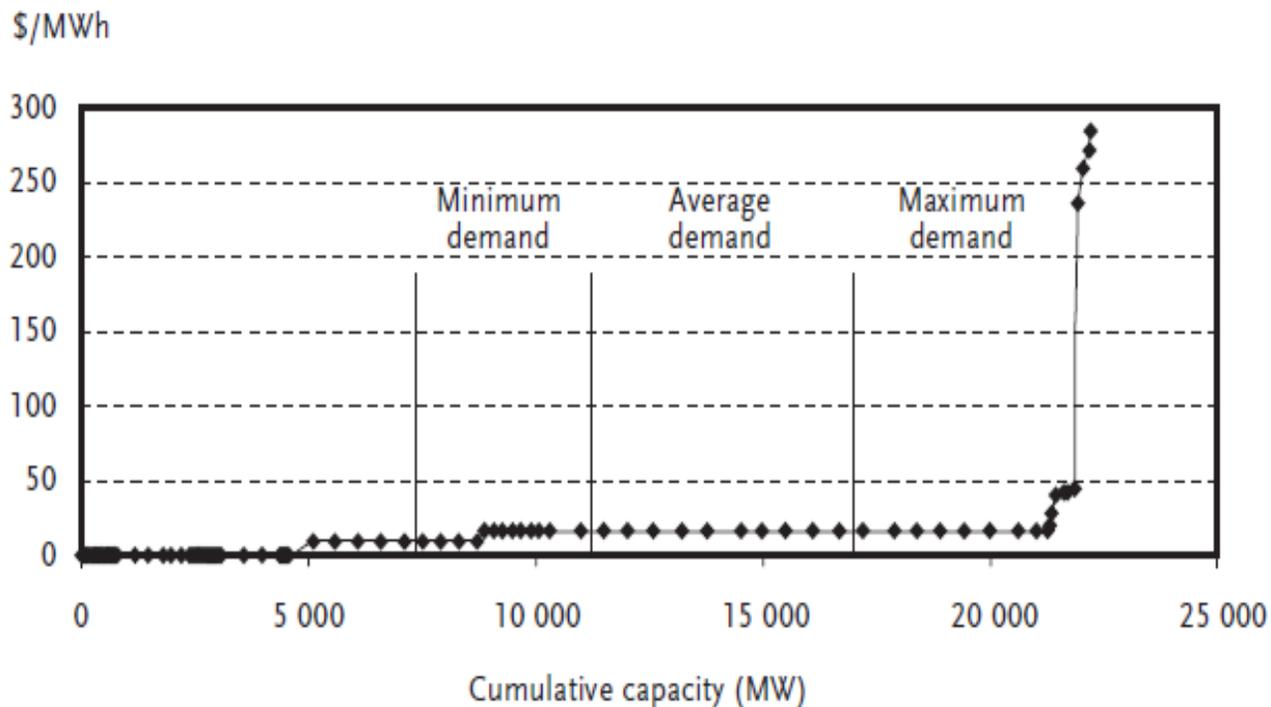
---

- Use is growing rapidly in regulation impacting consumer choice
  - Thaler and Sunstein “*Nudge: Improving decisions about health, wealth and happiness*”
  - Both the UK and US governments have set up policy units to make use of the insights from BE
- In finance it has had a range of impacts e.g.
  - Performance attribution assessment – separate the impacts of security research, portfolio construction, general market movements etc
  - Hedge fund strategies – invest the anomalies
  - Direct investment – “challenge” process to neutralise cognitive bias
- But behavioural public choice or behavioural political economy is in its infancy
  - Surprising since the dark art of ‘spin doctors’ is about framing information
  - We are all subject to the same bias – it is merely a matter of degree
  - Stephen Littlechild, of incentive regulation fame, recently published a piece under the nom de plume of the Regulatory Conduct Authority which pointed out the types regulatory error and bias that might impact regulators
- Health warning: it is tempting to use BE to explain everything by defining a bias that fits the facts – this presentation is guilty on that score

# NEM price collapse

- Starting conditions
  - Price anchor = LRMC, circa \$40 MWh
  - Reference point for reform = pre-reform bulk supply tariff, circa \$60 MWh
  - Excess capacity at reasonable capacity factors

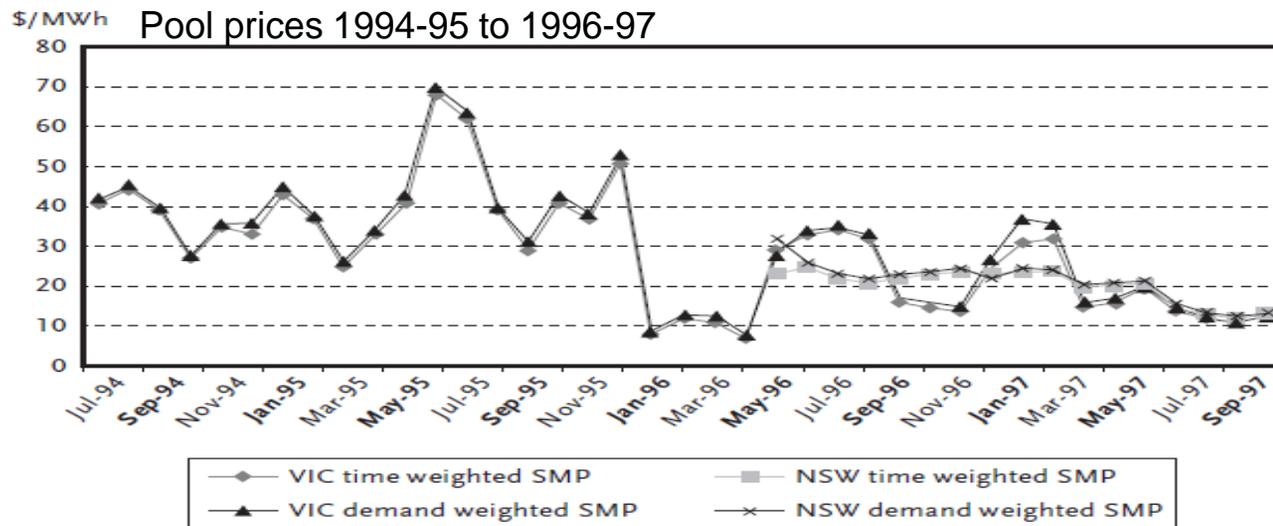
Combined NSW and Vic SRMC and Demand



# NEM behaving badly: p = \$10 MWh

*General view expressed in the media and the Victorian industry- 'Price collapse due to irrational bidding by NSW generators'*

- Early 1996 – lower than expected demand and high level of swaps in Vic market
- Q2 1996 – administered prices in NSW
- Q4 1996 – 1<sup>st</sup> tranche of contestable customers, generator contract offer based on high price
- Q2 1997 – 2<sup>nd</sup> tranche of contestable customers, retailers too optimistic, market over-contracted
- mid 1997 – markets merge and 3<sup>rd</sup> tranche of contestable customers, market over-contracted



# Insights from a price collapse event

---

- Conclusion from a natural experiment:
  - *generator bidding behaviour was rational*
    - Bid SRMC to swap cover – a Nash equilibrium
  - *Retailers exhibited optimism bias*
    - But market opening was an unusual and not repeated event
- But that's not all
  - *CfD cover is an effective means of controlling market power*
    - One function of vesting contracts
  - *Vesting contract design needs to be mindful of quantum and contract type*
    - Queensland and South Australian vesting contract strategy learned from this experience
  - *Vertical integration of retail and generation self-regulates market power in the pool*
    - Probably runs counter to policy analysts priors
  - *Contract prohibition was a major contributing factor to the Californian power crisis of 2000-01*
    - Incumbent utilities required to divest generation
    - Capacity shortage
    - Prohibition on contracting more than 20% of expected load

# 1998 Sydney drinking water crisis

---

- No policy / regulatory change
- No reservoir / treatment plant change in operational practices or procedures
- New testing procedures introduced
- New tests detect cryptosporidium and giardia
- Independent Commission of Inquiry
  - Scientific evidence suggests flood-waterborne contamination could bypass filtration barriers
  - Recommendations include major institutional change
    - Separation of Sydney Catchment Authority from Sydney Water
- There was no measured increase in cryptosporidium and giardia related illness
- What would the recommendation have been if the pre-inquiry structure had been the post-inquiry structure?

*Possible to conclude that the public policy response was driven by overweighting of the probability of a health crisis conditional on the newly measured levels of contaminants.*

# What price reliability?

---

- Popular debate in Australia on network tariff increases
  - “Prices are high because state governments “gold plate” their networks to garner high dividends”
- Attribution analysis needs to account for a range of factors
  - Differences in technical efficiency between private utilities and GBEs
  - Differences in institutional arrangements between transmission and distribution
  - Spillover effects on engineering construction costs from the mining boom (See recent Productivity Commission report)
  - Reliability standards
    - Can have a major impact on capital expenditure and therefore prices
    - Difference in reliability institutional arrangements between transmission and distribution
    - Network reliability standards in NSW and Qld were increased after major forced outages
    - Stated preference studies typically show willingness to pay (WTP) increases with outage duration and is higher for forced outages **but** there is evidence that WTP is lower if measured after an outage event. Experience can materially modify WTP.

*The sharp increase in network costs are likely to have multiple causes including reliability standards. Regulators are best placed to do a detailed attribution study which is likely to be more informative than the popular conclusion of “greedy governments”.*

# Regulatory policy and practice

---

From the mid 1980s independently administered incentive regulation became the benchmark for the infrastructure sector. How has it fared?

- Time inconsistency
  - Governments have struggled with maintaining independence. Policy change overrides regulatory commitment
  - The political climate conditional on the GFC has caused regulators to “re-weight” regulatory judgements in favour of lower tariffs
  - Fiscal stress has resulted in governments defaulting on commitments to subsidy-based policies
- Technical change has proceeded at pace opening up competitive alternatives to regulated services
- Regulatory complexity and transaction costs have increased enormously
- Regulators appear to suffer regret – a problem for incentive regulation
- Market innovations (eg electricity markets) have proven to be high maintenance
- More recent emphasis on the demand side through WTP and customer consultation
- Some suggestion that regulatory innovation has become an objective of itself

# Conclusion

---

## ***The future ain't what it used to be***” Yogi Berra, baseball coach

- Why did reform not occur prior to the mid-80s?
  - Conjectures
    - It takes time for economy-wide reforms e.g. trade protection, to exert pressure for reform
    - Technical change enabled some reforms e.g. electricity spot markets
    - Institutional change elsewhere showed the way
- Was productivity so poor that even modest reforms would have produced results?
  - Possible, although some of the reforms were fundamental and will continue to have a major influence
    - Electricity markets
    - Independent incentive regulation
    - Reform may require some of these early reforms to return to their roots
- Is future material reform conditional on another economic/fiscal crisis?
  - No, but future reform is likely to be less “big bang” and require insightful analysis
  - Developing the demand side of incentive regulation may not require major legislative initiatives and has received much less emphasis than other areas of reform

# Conclusion

***“I have met the enemy and it is us” (Pogo a.k.a. Walt Kelley, cartoonist)***

---

- In no specific order my thoughts from infrastructure reform from the mid 1980s include:
  - The pre-conditions were such that large gains were garnered from the most substantive of the reforms. Prospective gains may be perceived as smaller and more difficult to achieve
  - Behavioural economics may provide some insight into the political economy of infrastructure reform
    - Cognitive bias can inhibit insight to the detriment of policy design and regulatory determinations
  - The most wide-ranging reform, independent incentive regulation, has been beneficial but is fraying at the edges and has not been a complete solution to time inconsistency
  - Investors are best served by well designed policy as it has more chance of being sustainable
  - Policy innovation should not be an objective of itself
  - Regulators’ regret is weakening the “incentive” in incentive regulation and increasing the complexity and transaction costs of regulation
  - Developing the demand side of essential service provision is an important area for future reform. There are many lessons from BE and not all are obvious.
- I leave the final words on BE to Yogi Berra again

***“In theory there is no difference between theory and practice.  
In practice there is.”***

# Contact information

---

## **Paul Moy**

Group Managing Director  
Global Head of Infrastructure & Private Equity

UBS Global Asset Management (UK) Ltd  
21 Lombard Street  
London  
EC3V 9AH  
United Kingdom

T: +44 20 7901 5894  
M: + 44 7920 577 469  
E: paul.moy@ubs.com

[www.ubs.com](http://www.ubs.com)

