NERA
Economic Consulting

Substitutes and Complements for 'Traditional' Regulation

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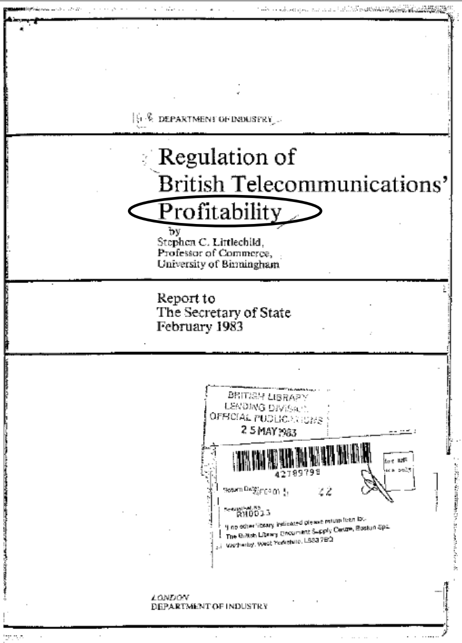
How Markets Work℠

CPI-X as Conceived…

NERA Economic Consulting


DEPARTMENT OF INDUSTRY

Regulation of
British Telecommunications'
Profitability

by
Stephen C. Littlechild,
Professor of Commerce,
University of Birmingham

Report to
The Secretary of State
February 1983

LONDON
DEPARTMENT OF INDUSTRY

CPI-X as Conceived…

13. A local tariff reduction scheme

BT would be required to set its tariffs in such a way that the LTI did not increase faster than RPI-X per cent, where X is a number to be negotiated.

Rate of return control, whatever the variant, …….is burdensome and costly to operate, reduces the incentive to efficiency and innovation, and distorts the pattern of investment.

CPI-X as Conceived…

Such controls are *easy to understand*, relatively *cheap and simple to monitor*, they *preserve the incentives to efficiency*, and they can be *focused precisely on the areas of concern* so as not to restrict the operation of the business in other respects.

The local tariff reduction scheme scores very highly on all criteria

CPI-X Today… ‘Easy to Understand’?

$$\frac{P_t}{P_{t-1}} = (1+\Delta CPI_t)\times(1-X)\times(1+D_t)\times(1+S_t)\pm(\text{pass through}_t)+(\text{contingent projects}_t)$$

$$D_t = \frac{\text{Demand Management Pass Through Amount}_t}{\text{Smoothed Revenue Requirement}_{t-1} - \text{Annual Foregone Revenue}_{t-2}} - \frac{\text{Demand Management Pass Through Amount}_{t-1}}{\text{Smoothed Revenue Requirement}_{t-2} - \text{Annual Foregone Revenue}_{t-3}}$$

where:

Demand Management Pass Through Amount$_t$ =
Non tariff demand management costs$_{t-2}$ +
Tariff demand management costs$_{t-2}$ +
Foregone revenue from non tariff demand management measures $_{t-2}$ +
Time value of costs and foregone revenue from t - 2 to t +
Deferred demand management pass through amount$_{t-1}$

$$S_{t-1} = \frac{(1+S'_{t-1})}{(1+S'_{t-2})} - 1$$

$$S'_{t-1} = (S''_{t-1} - Sb_{t-1}) + Sb_{t-2}$$

$$S''_{t-1} = \min(\max(S^{ROS}_{t-1} + S^{'CS}_{t-1}, \underline{S}), \overline{S})$$

$$S^{'CS}_{t-1} = \min(\max(S^{CS}_{t-1}, \underline{S}), \overline{S})$$

$$S^{ROS}_{t-1} = \sum_p ir_p \times \left[Tar_{p,t-2} - Act_{p,t-2}\right]$$

$$S^{CS}_t = \sum_p \min(\max(ir_p \times \left[Tar_{p,t-2} - Act_{p,t-2}\right], \underline{S}^{ICS}), \overline{S}^{ICS})$$

$$S''''_{t-1} = \frac{S'_{t-1}}{(1-X_0)}$$

Regulatory change events
Service standard events
Change in tax events
Climate change events
Smart meter events
Service provider proposed events

Capital expenditure uncertainty

CPI-X Today.. ‘Cheap and Simple’?

3,241 pages put before the AER by EnergyAustralia

116 pages on regulation of transmission in the Rules

3 pages devoted to RPI-X in Littlechild (1983)

The Australian CPI-X Experience

Two Evolutionary Themes

Industries and functions to which CPI-X is applied have been reduced, substantially

For residual natural monopoly functions, increasing sophistication to address ‘second tier’ incentive problems

Scope of CPI-X has Reduced

Industries now subject to light-handed forms of regulation each satisfy one or more critical conditions:

- Competition has emerged, e.g., telecommunications, energy retailing

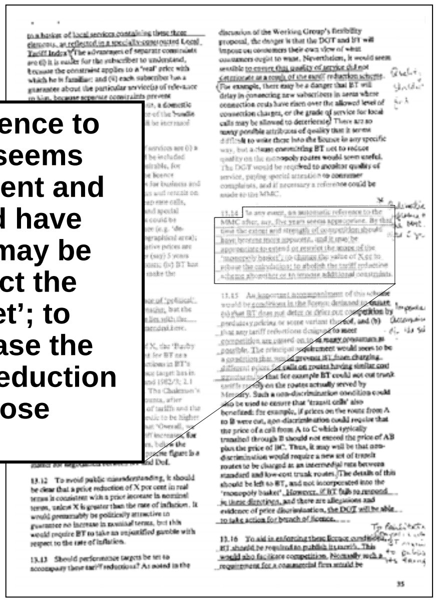
OR

- Customers have a degree of countervailing power, e.g., through
  - Being relatively small in number and well resourced
  - Being highly motivated, because the service represents a significant input cost
  - Having some form of ‘outside option’

AND

- The ‘counterfactual’ for unsuccessful negotiations is well understood by all

Prof Littlechild Anticipated This



In any event, an automatic reference to the MMC after, say, five years seems appropriate. By that time the extent and strength of competition should have become more apparent, and it may be appropriate to extend or restrict the scope of the 'monopoly basket'; to change the value of X or to rebase the calculation; to abolish the tariff reduction scheme altogether or to impose additional constraints.

But the Original Problem Remains

- For a core set of circumstances, traditional forms of regulation remain necessary, i.e., where:
  - There is an entrenched natural monopoly, i.e., electricity wires, water pipes, and some gas pipelines;

  AND
  - Customers are numerous, generally small, and poorly motivated
- Failure of the NZ "thresholds" experiment was predictable given:
  - Customers had no countervailing power; and
  - Upon breach of a threshold, the counterfactual was highly uncertain
- Traditional forms of regulation are inescapable, because traditional monopolies remain in place

CPI-X…
Has Reality Defeated the Concept?

- Does today's best practice still meet its originally claimed attributes:
  - Easy to understand?
  - Relatively cheap and simple to monitor?
  - Preserves the incentive to efficiency?
- Over the past 7-10 years much complexity has evolved in response to perceived shortcomings
- TFP has been suggested as a 'simpler' variation and, while it has advantages: "Be careful what you wish for….."
- In the words of Professor Littlechild

  "[N]o scheme is ideal… Despite its defects, the local tariff reduction scheme is *significantly preferable to the available alternatives"*
- Looking ahead, when substitutes are scarce
  - Complexity is here to stay, but things need to be kept in perspective
  - Ad-hoc, incremental change risks compromising the underlying objective
  - Robust, flexible institutions and regulatory frameworks are the critical safeguard

Institutions Remain Critical

- Institutional and regulatory arrangements for electricity networks and gas pipelines are now highly developed
  - Separation of rule making (AEMC) and rule enforcement (AER)
  - Establishment of a single, cohesive legal objective
  - Emphasis on transparency, predictability, due process and public consultation
- Arrangements for water lack cohesion, with still much scope to facilitate competition and wind back the reach of traditional CPI-X regulation
- In energy, the quest for due process and predictability of outcomes also carries some risks
  - Is the CAPM really the best and only way to determine the regulatory WACC?
  - Does a review of WACC parameters that is constrained as to how it takes into account the GFC make sense?
  - Is 'serial incrementalism' always the best approach to amending the Rules?

Key Messages

- ‘Modern’ CPI-X regulation has evolved to become more sophisticated, and better targeted
- ‘Lighter-handed’ substitutes now have a prominent place in the landscape, and their scope will continue to expand
- ‘Traditional’ CPI-X regulation has no effective substitutes for addressing ‘traditional’ entrenched monopolies
- Institutions are the critical complement for guiding constructive evolution