

# Incentive Regulation in the United States

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# Outline

- 1. Introduction
- 2. Price Cap Regulation
- 3. Performance-Based Regulation
- 4. RoR and CoS redux –electric distribution
- 5. “Guaranteed” Returns
- 6. Case: California Water
- 7. Summary and Conclusions
- 8. Future Directions

# Introduction

- Regulation originated in the US over a century ago
- Specialist “Independent” Commissions
- Cost of Service (CoS) or Rate of Return (RoR) dominant form
- Price Cap Regulation (PCR) some popularity for 20 plus years in telecommunications

# Cos/RoR

- Regulated firm typically makes its case in administrative law tribunal
- $RR = O + s(V-D)$
- $O$  = Operating Expenses
- $s$  = Allowed Rate of Return
- $V$  = Gross value of its property (rate base)
- $D$  = Accumulated Depreciation

# Process can be contentious

- O is typically not subject to much debate, e.g. union negotiated wages, pensions, fuel, etc.
- V and D normally not contentious
- Used and useful e.g. Averch-Johnson (1961)
- Nuclear power cost overruns, stranded costs
- s almost always a matter of debate

# Price Cap Regulation

- UK's extensive privatization and adoption of PCR
- Except for telecom PCR not employed significantly in the US
- Took different form – Crew and Kleindorfer (1996)
- Littlechild's (1983 and 1986) influential papers
- 1983 paper sees PCR is transition

# What is PCR?

$$\frac{\sum_{i=1}^n P_{it+1} Q_{it}}{\sum_{i=1}^n P_{it} Q_{it}} \leq (1 + \Delta \text{CPI}_t - X) + Y$$

# Objectives of PCR in the UK

- Successful Initial Public Offerings
- Reap efficiency benefits
- PCR by setting no limits on profits provided such an incentive
- Littlechild (1986) temporary arrangement
- X based on judgement

# PCR in the USA

- PCR in the US may predate PCR in the UK
- For UK monopoly regulation effectively began in the 80s
- US long history of CoS/RoR
- Quasi judicial proceedings
- Rent seeking
- X factor required formal process

# Telecommunications and PCR

- X justified as productivity offset
- 80s concern with new technologies
- 90s new technologies and competition
- PCR offered pricing flexibility
- Applied essentially to monopoly products
- 2000s the Internet and wireless
- Decline of wire-line service and demise of PCR

# PBR

- Energy utilities adopted PBR not PCR
- Less competition and technological change
- Dead bands and sharing
- Allowed RoR = 12%
- Range 15% and 9%
- If  $\text{RoR} > 15\%$  or  $< 9\%$  trigger rate hearing
- Dead band 13% - 11%
- 9%- 11% and 13%-15% sharing

# RoR and CoS redux –electric distribution

- PCR and PBR problematical
- Demand Side Management
- Reducing revenue antithetical to PCR/PBR
- Similarly renewables
- Restructuring – divestiture/separation of generation
- Competition in generation

# “Guaranteed Returns”

- Energy efficiency programs
- Separation of distribution and generation
- Including conservation programs in CoS
- Cross subsidies of renewables in CoS
- Attempt to “guarantee” returns
- Traditionally opportunity to earn return was guaranteed
- Guaranteed return closer to reality

# Managing “the Guarantee”

- Determine Revenue Requirements =  $R$
- Forecast next years volume/output =  $X'$
- Set rates =  $p$  so that  $pX' = R$
- If actual  $X < X'$  difference  $p(X' - X)$  placed in balancing account for recovery over 3 years
- Adjustments to balancing account occur yearly
- If  $X > X'$  balancing a/c positive  $\rightarrow$  reduced  $p$

# Case: California Water

- Water similar conservation issues to electricity
- Similar fixed costs of distribution system
- Purchase water akin to purchase power
- Supply/demand weather dependent
- California Public Utilities Commission (CPUC) applied lessons in energy to water with CPUC Water Action Plan 2005

# 2005 CPUC Water Action Plan Objectives

- **1. Maintain Highest Standards of Water Quality**
- **2. Strengthen Water Conservation Programs to a Level Comparable to those of Energy Utilities**
- **3. Promote Water Infrastructure Investment**
- **4. Assist Low Income Ratepayers**
- **5. Streamline CPUC Regulatory Decision-making**
- **6. Set Rates that Balance Investment, Conservation, and Affordability**

# CoS Redux Explained

- All 6 objectives except # 5 difficult to achieve under PCR
- Regulation form of non-transparent taxation and subsidy
- CoS gives regulators (and politicians) more power and flexibility

# Summary and Conclusions

- PCR revived in the postal sector
- Incentive regulation or PCR minimal in energy, water sectors, disappearing in telecommunications as traditional telcos move to minimally regulated Broadband and wireless
- Cos/RoR the dominant form

# Future Directions

- CoS/RoR may have peaked
- Renewable cross subsidies becoming expensive
- Especially if natural gas supply continues to expand
- Incentive regulation may have had its day in the USA

# References

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