Performance Incentives in Electricity

National Association of Regulatory Utility Commissioners

Ohio Public Utilities Commission

Incentive Regulation

Use of penalties and rewards to induce utilities to achieve desired goals

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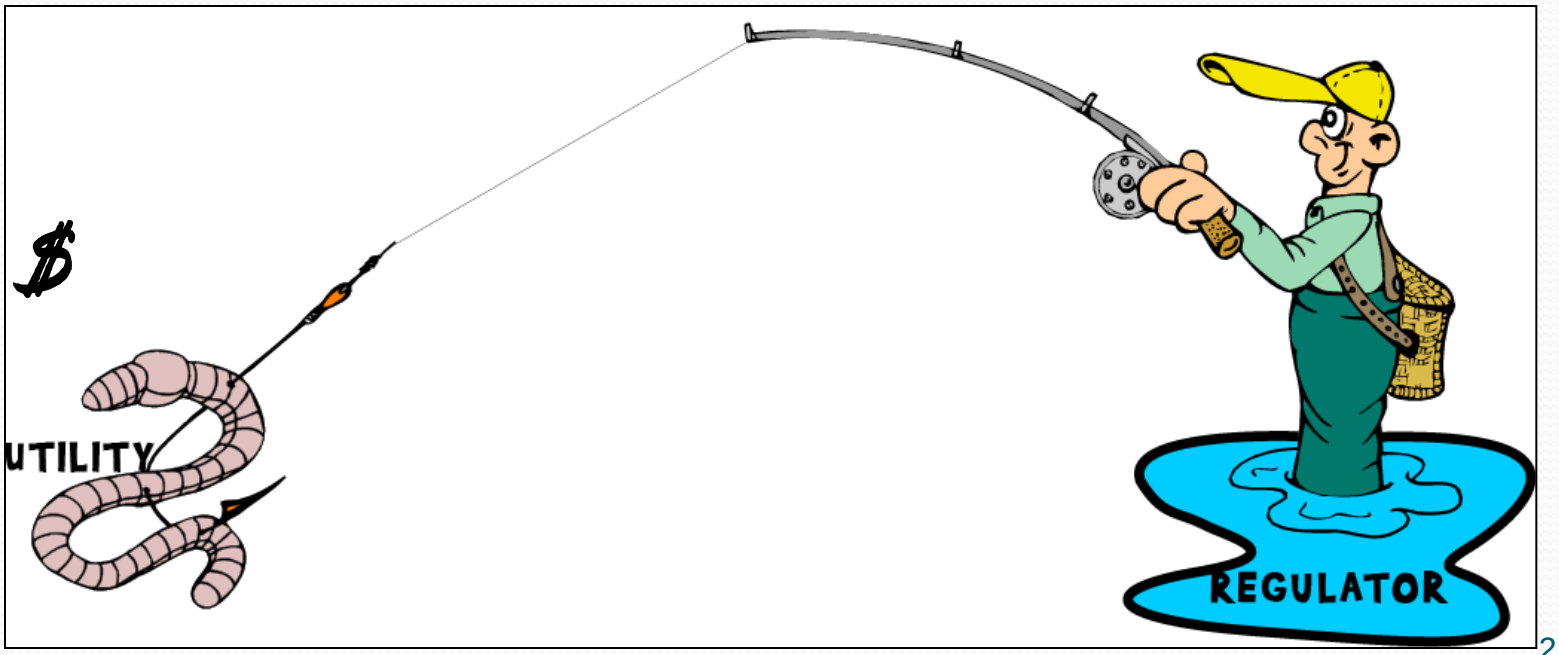

“All regulation is incentive regulation.”

Incentive regulation

- Recognizes the fact that the utility has better information than the rest of us, and uses it for profit maximization
- This should be used when the utility has some discretion in actually achieving the goals

“Regulation is an art, not a science.”

Motivation

"The Puritan hated bear-baiting, not because it gave pain to the bear, but because it gave pleasure to the spectators." *Thomas Babington Macaulay, History of England*

Some Key Ingredients

- Performance targets must be achievable
- Utilities AND Stakeholders set goals
- Utility discretion in how to get there
- Observable and verifiable
- The measures actually reflect utility performance and efforts

Example Measures

- Number of service interruptions
- Duration of service interruptions
- Call center response
- Cost thresholds

Implementation Issues

- Start too high=>no room for improvement or only at extremely high costs
- Start too low=>easy improvements, high reward with little or no effort
- Look for ***needed*** improvements

Rate of Return Regulation

- Prices set to generate allowed rate of return
- Used and useful plant
- Reasonable earnings
- Earnings stability
- Prices and revenues tied to cost of production/delivery
- Consumers bear risk
- Limited incentives for exceptional performance

Rate of Return

- Regulator set rate of return on capital investment
- Regulator decides what capital investment earns a return
- Regulator performs prudency test
- Utility allowed to recover expenses, depreciation, taxes

Revenue Requirement

- Allowed rate of return (r)
- Rate base (B)
- Expenses (E)
- Depreciation (d)
- Taxes (T)
- Assumed quantity of sales or consumer demand (Q)
- Price (P)

Revenue Requirement

Revenue Requirement

equals

E *plus* d *plus* T *plus* (B *times* r)

equals

P *times* Q

Rate of Return Regulation

- Prices set to generate allowed rate of return
- Used and useful plant
- Utilities allowed reasonable earnings
- Earnings stability
- Prices and revenues tied to cost of production/delivery
- Consumers bear risk
- Departure from earnings trigger regulatory reviews
- Limited incentives for exceptional performance
- Pass-through mechanisms used for variable expenses, such as fuel

Test Period

- Typically the 12 month period beginning six months prior to the date of the application is filed and ending six months subsequent to that date.
- In no event shall the test period end more than nine months subsequent to the date the application is filed.
- Revenue and expenses of the utility shall be determined during the test year.

Date Certain

- Shall fall within the test period, but be no later that the date of the application.
- Valuation of the “used and useful” property of the public utility shall be determined as of the date certain.

Cost of Service

- Detailed cost accounting and allocation
- Approximate costs incurred by a utility in providing the service and identifies the causes of the costs.
- Assign costs to various customer classes relative to their respective cost imposition.

Three Steps

1. Functionalization
   - Production
   - Transmission
   - Distribution

2. Classification
   - Customer
   - Demand
   - Energy

3. Allocation
   - Residential
   - Commercial
   - Industrial

Step 3 utilizes:

- Direct Assignment
- Number of Customers
- Class Energy Usage
- Class Demands

Positive Attributes

- Prices are reflective of costs
- Utility provided revenue stability
- Prevents against excessive over- and under- earnings
- Customer provided rate certainty
- Potential for cost containment with regulatory timing “lag”

Some Problems…

- Information intensive
- Subjective
- Contentious and costly proceedings
- They may also be frequent
- Cross subsidies can occur

And Potential Disadvantages

- If rate of return is not equal to the actual cost of capital, can lead to over- or under- investment
- When pass-through mechanisms are utilized for operating costs, price risk hedging is not needed or used
- Nor are there rewards for cost containment
- Consumer bears the risk
- No incentives for good performance
- Investment decisions may be perverted
- Long run cost reductions minimal
- Short-run costs reductions favorable to utility, a ‘”reward” due to regulatory “lag”

Price Cap Regulation

Theoretically…

- Price set arbitrarily
- Utility performance "determines" cost

Price Cap Regulation

In practice, however…

- Price cap is set under some semblance of rate of return regulation
- Rate of return regulation timing "lag" is used for performance gains
- Reviews are not contingent on earnings

Price Cap Regulation

- Set fixed price and let utility attempt to beat the price
- Increase in profits through good performance
- Reviews are not contingent on earnings
- In fact, next regulatory review time should be specified in advance

Price Caps

- Specify for long period of time (3-5 years)
- Based on estimated costs, and
- Fair rate of return enabled
- Price increase with inflation rate
- Costs change based on gains in efficiency

What is supposed to happen?

- Utility cost reductions
- Technology innovation
- Consumer protection against risk
- Not as information intensive
- Decrease in regulatory costs

Potential Downfalls

- Earnings instability may occur
- There will likely be a “cap” on even better performance
- Cost reductions may result in decrease in service quality
- No mechanism for social programs

Things to Watch for

- While cost containment might be done under the cap, the utility will likely "make up" for that as the next review period nears.
- Incentive disappears as that time nears
- Utility will increase spending to reflect higher cost for next price cap setting

Unintended Consequences

The utility might also earn higher profits when the estimated demand is less than actual demand…

EVEN WITHOUT good performance.

Revenue Cap Regulation

- Revenue earnings set
  - Fair return
  - Cost
  - Output
- Long period of time
- May or may not fluctuate with inflation

What is supposed to happen?

As consumer demand changes, so does the price

- Increase in demand, decrease in price
- Decrease in demand, increase in price

Price

- Per unit (per kwh)
- Flat (demand)

Revenue Cap Regulation

- Allowed revenues may or may not fluctuate with inflation rate
- Revenues can fluctuate with efficiency gains

Benchmarking

- Must find “comparable” utility or, alternatively, “create” a hypothetically efficient entity
- Performance measured in comparison to this entity
- Compensation based on relative performance
- Incentive to cut costs
- Can pick and choose operations or measure performance on the entire utility operations

Benchmarking Problems

Starting point difficult:

- Categories for benchmarking contentious
- Resources needed cumbersome
- Methodologies and assumptions are contentious.

Hybrid Approach

- Revenue/price caps
- Profit/revenue/cost sharing
- Targeted incentives
- Benchmarking

When to do What?

Rate of return regulation might be desired…

- When expected costs are difficult to predict
- When stable utility earnings are desirable
- When current utility operations are efficient

When to do What?

On the other hand, rate cap regulation is preferred…

- When stable and certain prices are desired
- When utility earnings are not problematic
- When regulatory proceedings are costly
- When utility operations are not efficient

Shared Mechanisms

- Political balancing act
- Utility can share profits with ratepayers and shoulder some of the risk (under rate of return regulation)
- Provide some incentive for cost containment and shared earnings in excess of allowed earnings
- “Shares” can change as costs/earnings deviate further from target