

Case Studies on Incentives in Electricity Regulation

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Purpose of The Session

- You will be given five (5) example cases with respect to incentives in electricity regulation.
- Four of the five examples are based on the use of price cap regulation applied to the wires (transmission or distribution) part of the industry.
- The other example deals with price caps and other contracting issues for generation.
- The goal is for you (participants) to think about how you might solve each of the problems posed by the cases.
- The solutions may involve changing the regulatory mechanisms in some way.

Examples of Mechanisms

- Revenue caps
 - Rate-of-return type methodologies
 - Sharing rules (on costs, revenues, or profits)
 - Modifying the price caps in some way
 - Targeted incentives on items such as service quality
 - Hybrid mechanism
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- In the case of generation, applying sharing rules or...
 - Applying different contracting methods.

Group Analysis of the Cases

- Following the time to look at each case, participant groups will offer up solutions they have designed and these will be discussed.
- Following the discussion of participant solutions, an actual example of the case will be presented as well as other potential solutions to the problem or solutions that were actually implemented.

Case 1: Price Caps on Generation

- As reforms have taken place, it has been the desire of regulators and politicians to fix the price of energy to help protect customers from potential price volatility and market power.
- In this particular case load serving utilities were forced to buy power on the open market, but sell the power at a capped rate.
 - Must buy through the spot market.
 - Have very little self-owned generation to serve load.
- This can lead to two separate problems:
 - First, if the market price is lower than the capped rate, this could lead to perceived cost savings to consumers that are not being passed on.
 - Second, if the market price is higher than the capped price, load serving utilities can be bankrupted, and consumers do not see the real price for power.
- What are the potential solutions to this problem?

Case 2: Boosting Profits Without Efficiency Gains

- Suppose we are looking at a wires utility (distribution or transmission) or a gas pipeline company that is subject to price cap regulation and under this price cap, they are expected to make efficiency gains beyond the X-factor to make extra profits.
- However, the utility, observing how the price review has been done, believes that it can simply increase the volume of power (or gas) over the forecast volume to increase profits without truly reducing costs.
- How would you change the mechanism in order to induce cost reductions, yet not discourage increasing volume when consumers demand it?

Case 3: Aggressive Cost Cutting and Cost Efficiency, but Losses

- This case is the converse of the previous case.
- Here the utility does actively seek to reduce costs, but for some reason cannot operate the business profitably.
- In the background is a government policy that strongly encourages energy conservation due to extenuating circumstances (think about a hydro power dominated system that is in the middle of a drought).
- How can this situation be changed so that the utility will be rewarded for its cost cutting, but not interfere with the conservation policy?

Case 4: Timing of Cost Reductions (Efficiency Gains)

- As the regulator you have implemented a price cap regime for a 5-year period. You have decided on an X-factor of 5% per year so that prices in real terms are about 25% less at the end of price cap period.
- During this period, you observe aggressive cost reductions in the first couple of years, but as you get closer to the next price review, you see the cost reductions are either not as aggressive, or costs actually start increasing.
- Along with this you observe “excessive” profits that are not politically sustainable and customers feel like they should benefit from these cost savings.
- How would you modify the regulatory mechanism to solve this problem?

Case 5: Implementing Price Caps Without Experience, Information, or Resources

- You are a new regulator and as such, have yet to build up your human resources capabilities and information gathering capabilities.
- Still, you are forced to implement a price cap regulatory mechanism by law.
- How might you implement price caps initially to give your agency time to build up its capabilities and yet induce efficiency gains by the utility? And avoid potential problems of “excessive” profits or losses?

Actual Cases And Potential Solutions

Case 1: California, USA

- During the first two years of market operation, the prices paid by load serving utilities were half of the capped price at which they sold energy.
- Of course, between Spring 2000 and Fall Winter 2001, we know what happened...market prices went up, but the capped price remained.
- Potential Solutions:
 - Allow the load serving utilities to hedge (sign long term contracts or options) against market price volatility. This could also be done through generation ownership.
 - Allow the capped price to move. Part of the problem is that consumers were not getting the right price signal.
 - Allow sharing of profits and losses as a move toward getting the incentives right.

Case 2: UK Distribution

- During the first price review period, distribution companies were making large profits, and this resulted in a political backlash through an excess profits tax.
- Solutions Implemented:
 - Implement a hybrid mechanism where 50% of the revenues are fixed and not based on volume of power.
 - A full revenue cap was not instituted as it was believed that this would discourage increasing volumes that customers may demand.
- Other Potential Solutions:
 - Go to a full revenue cap with targeted incentives on volumes that would allow for greater profitability if targets are met.

Case 3: Brazil

- During 2001 Brazil, which has about 95% of its power derived from hydroelectric units, faced a major drought.
- Since the price cap mechanism recovered distribution costs on a per kilowatt-hour basis, and with 20% load reductions targeted, this meant that it would be difficult for distribution utilities to recover costs.
- There is now talk of government taking over these utilities once again as private investors look to get out.
- Potential Solutions:
 - Move to a full revenue cap. By completely divorcing volumes from cost recovery and profitability, conservation goals can still be met without jeopardizing the utilities' viability.

Case 4: UK

- During the first price review period, cost increases were actually observed over time, and got worse as the next price review approached.
- Despite this, profits were deemed excessively high from a political point of view.
- Moreover, it was deemed that many of the efficiency gains could easily have been made during the first review period, but utilities wanted to project the idea that these would be difficult to achieve (to get favorable treatment at the next review).
- Solution Implemented:
 - A P_0 adjustment was introduced. This was a one time price decrease at the beginning of the price control period and then lower X-factors would be used during the period.
 - Politically sellable in that consumers would benefit immediately, and it forces the utilities to make efficiency gains as soon as possible.
 - Also seen as giving a more stable financial profile going forward.

Case 5: Argentina (Gas)

- Initial price control period (93-97) set $X=0$. The regulator ENARGAS had only been recently established and needed time to build capacity.
- For the next control period (98-02) X averaged 4.7%, but was implemented in a “one-off” fashion similar to a P_0 adjustment.
- Allowing firms to reveal their potential for efficiency gains, along with studies conducted by consultants, allowed for better use of information.