Overview of Utility Regulation

Big Picture of Regulation - why would government regulate business?
- Protect consumers
- Maximize social welfare
- Redistribute wealth
- Simulate competition
- Increase efficiency (e.g., DWL from monopoly)
- Controlling natural monopolies (limit profits)
- Control externalities
- Set standards (indirect network effects; e.g., standard power outlets)

  - **Direct Network Effects** - number of consumers is part of the demand function (e.g., # of people on a phone network; # of people using an operating system)
  - **Indirect Network Effects** - complementary goods (e.g., # of titles available for a gaming system; # of software applications for an operating system)

- Controlling market structure
- Service to the poor (who aren't serviced by the market)

Two Groups - reasons boil down to two groups
- **Normative** - what should regulators do? (maximize social welfare)
- **Positive** - what are the results of regulation? (given regulation, what happens to welfare?)

Unstated Assumption - the government is not the service provider... but why not?
- **Incentive** - state-owned firm/managers have less incentive
- **Principal-Agent Problem** - for public company, all voters (even those who don't use the product) are the principals; they don't have much information or much impact; rents get captured by "rich and powerful" who manipulate the political process

Information Asymmetry - when private firm is agent, the government (principal) wants to limit the information asymmetry to limit rent to the firm:
- **Information** - government can try to gain more information by monitoring, auditing or yardstick regulation
- **Incentives** - government can use truth-telling mechanisms to get firm to reveal its private information
- **Market Structure (Competition)** - government can enter market directly or allow other firms to enter to compete with the agent (the firm will reveal information to customers when competing for their business)

Other Stakeholders - investors, customers, and citizens (principals of government) are all concerned about regulation; try to control government through:
- **Information** - media, watchdog groups, public hearings, public records, etc.
- **Institutional Design** - regulate the regulator; put limits on the regulatory agency (government) to constraint it to do what's right and limit influence of powerful lobbyists

Hold-Up Problem - regulator trying to renegotiate contract (regulation) after firm reveals private information; causes government to lose credibility... will study in Henisz & Zelner (3/10) and Lyon & Li (4/19)
Overview of Utility Regulation
Public Utility Research Center (PURC), Nov 2004
(notes from handout)

Purpose of Regulation -
• Provides stability
• Protects consumers from abuse of market power
• Guards consumers and operators against political opportunism
• Provides incentives for service providers to operate efficiently and make needed investments
• Improve sector performance relative to no regulation (p.2)
• Favor particular types of customers (p.2)

Normative Theories - focus on how regulation should be done (e.g., how to introduce competition, how to provide incentives for improved performance)
Positive Theories - focus on why regulation occurs (e.g., look at motivations for regulation affect regulation; look at roles of stakeholders and results of their advocacy)

For this overview, use
  Government - development of policies
  Regulator - implementation of policy; also called agency

Key Measure - assume regulation is intended to improve welfare (aggregate benefit... includes benefits to consumers and operators as well as externalities)
Distributional Issues - also important, but not the primary focus of the overview

When to Regulate -
1. Welfare objectives of the government are different from the objectives of the operator
2. Operator has an information advantage over the government
   Asymmetric Information - operator has private information about:
   • Its ability to operate efficiently
   • Patterns of customer demand
   • Effort required for operator to be efficient

Three Basic Approaches
  Competition
  Benefits -
  • In pursuit of profit, operator has incentive to provide service quality levels and price levels that are best for customers, subject to operator's need to cover its costs
  • Outcomes can reveal actual customer demand, the operator's innate ability to be efficient, and how much effort the operator is willing to exert to be efficient

Approaches -
1. Compete in Market - multiple providers compete for customers
   Everything Competitive - regulator wants to remove barriers to entry or competition (removing licensing restrictions or large licensing fees, reducing switching costs, and requiring access to essential inputs)
   Structural Separation - segregate potentially competitive portions of utility service from the non-competitive portions; prohibits a single operator from providing both the competitive and non-competitive portion of the service in
an attempt to ensure that the provider of the essential facility does not use its control of the essential facility to hinder competition

**Access Pricing** - rivals pay operator an access price for use of the non-competitive element of the service

2. **Compete for Market** - operators bid for right to be a service provider; used when competition in the market is infeasible or impractical

   **Efficient Auction** - promotes cost efficiency because the most efficient firm is also the firm that is able to pay the highest price for the right to be the monopoly

3. **Compete Across Markets** - comparing operators that serve different markets and rewarding those that provide superior performance (benchmarking or yardstick regulation)

   **General** - performance measure should be general in nature and be something operators can affect (e.g., cost per kilowatt hour); general performance measures allow operators to make economic tradeoffs

**Gathering Information**

**Outside Data** - reports to shareholders and taxing authorities

**Direct Reporting** - require operator to provide regulator with financial statements annually in accordance with a uniform system of accounts

**Operating Statistics** - annual or monthly information on...

- Prices
- Quantities sold
- Number of customers
- Number of employees
- Quality of services
- Sources of fuel or water
- Electricity generator or water treatment operating statistics

**Incentive Regulation**

**Rewards** - for operator using its private information to achieve government's objectives; reward should...

- Provide operator with additional units of something it wants (profit)
- Give the operator performance options that provide higher rewards for accepting more challenging performance goals
- Allow the operator to keep only a minimal reward

**Approaches** -

**Rate-of-Return** - also called cost-of-service; establishes an overall price level that allows the operator to receive accounting profits that are just equal to its cost of equity at the time the price level is set

**Price Cap Regulation** - also called RPI-X; establishes operator's overall price level by indexing the price level according to inflation minus an offset (X-factor); X-factor should reflect difference between this operator and the average firm in the economy with respect to their abilities to improve efficiency and to changes in input prices

**Revenue Caps** - similar to price cap except the inflation minus X formula applies to revenue rather than price

**Benchmarking** - also called yardstick regulation; provides competition between markets by comparing operators across markets

**Hybrid** - combine features of basic methods above

**Financial Analysis** - most forms of incentive regulation involve extensive financial analysis (operator's cost of capital, historical costs, projected costs
Accounting Separations - process of separating costs and revenues of regulated operations from non-regulated operations;  
Ring Fencing - some consider it synonymous with accounting separation; more broadly used for different regulatory treatment of different services

Tariff Design - price structure; efficient price structures cover total cost and align prices with marginal cost  
Multipart Pricing - operator charges separate prices for different elements of the service (e.g., connection fee plus usage fee)  
Ramsey Pricing - also called differentiated pricing or inverse elasticity rule; operator charges higher prices to customers with inelastic demand and lower prices to customers with elastic demand

Non-Price Issues -  
Service Quality - quality standards, mechanisms for monitoring quality, penalties for not meeting standards  
Environmental Regulation - similar to service quality in that it includes standards, monitoring and penalties or rewards  
Infrastructure Development - regulator may desire rapid system expansion beyond what a profit-maximizing operator in a competitive market would choose; use contract that sets out network deployment expectations (with rewards and penalties); other approaches: special franchises and subsidies for rural areas  
Access to Services for Poor - generally use combination of three basic elements: competition, service quality standards and subsidies

Regulatory Process - experts generally recommend institutional arrangements that...  
1. Focus country's political efforts on establishing laws under which the regulator can function property  
2. Make it easier for customers and their stakeholders to regulate the regulator  
Institutional Arrangements - include institutional design, methods for review and appeal of regulatory decision, mechanisms for encouraging ethical conduct, process for managing relationships with stakeholders  
Review and Appeal - regulatory decisions subject to ministry review can politicize regulation; some countries only use judicial review or establish administrative tribunals  
Ethical Conduct - adopting...  
Conflict-of-interest Standards - financial stakes in operators by regulators or family members, having recently worked for an operator or another stakeholder, serving as a consultant for a stakeholder or negotiating future employment or business arrangements with a stakeholder  
Codes of Conduct - cover issues like meetings with stakeholders, recording keeping procedures and political activities  
Stakeholder Relations - advisory boards, communication strategies, grievance procedures, relationships with government, consumers, operators, and investors  
PR - general dedicate trained staff to deal with press because public receives most of its information about regulation through newspapers and other media