

Chapter I. General Concepts

Introduction

As the Overview explains, utility regulation can occur for several reasons. Common arguments in favor of regulation include the desire to control market power, facilitate competition, or stabilize markets. In general, though, regulation occurs when the government believes that the operator, left to his own devices, would behave in a way that is contrary to the government's objectives.²⁹ In some countries an early solution to this perceived problem was government provision of the utility service. However, this approach raised its own problems. Some governments used the state-provided utility services to pursue political agendas, as a source of cash flow for funding other government activities, or as a means of obtaining hard currency. These and other consequences of state provision of utility services often resulted in inefficiency and poor service quality. As a result, governments began to seek other solutions, namely regulation and private participation in service provision.

This chapter on General Concepts in utility regulation covers general themes in utility regulation. It is organized as follows. The following paragraphs describe recent utility market reforms, the development of utility regulation, market structure and how it relates to sector performance, and theories of regulation. References are organized by topic.

Utility Market Reforms

In the early and mid twentieth century many countries, especially in the developing world, sought to provide utility services by forming state-owned monopolies. By the latter part of the century, it became clear that state-owned monopolies were generally inefficient providers of utility services and ineffective in making these services broadly available to the public. Micro-management from politically-motivated government officials led state-owned operators to have excessive numbers of employees, provide service primarily to politically powerful groups, cross-subsidize services, and charge non-commercially-viable prices. Weak institutions allowed two types of political opportunism. In some instances, prices were kept artificially low so that state-owned operators needed government subsidies to finance investments and cover other costs. If fiscal constraints prevented the government from providing the subsidies consistently, then there was under investment and poor service quality. In other instances, the utility services would be used as cash cows to fund other government functions. This also resulted in under investment and poor service quality for the utility services. During the 1980s and 1990s, policy makers began to conclude that regulated, privately-owned service providers might be more effective than state-owned operators because private operators might be less subject to political opportunism and might operate more efficiently than state-owned enterprises, especially if subjected to competitive pressures, because profit motives provide clear and consistent incentives to control

²⁹ Recall that there is also a concern about the government's objectives. This concern implies a need for regulatory processes that enforce commitments, ensure that long term efficiency is not sacrificed for short term political expediency, and treat all stakeholders fairly.

costs, deploy infrastructure where demand is sufficient to cover costs, offer prices that encourage efficient utilization of the infrastructure, and innovate when customers find the innovation sufficiently valuable to pay for the improvement.³⁰ As part of this trend, countries began to introduce competition wherever possible and developed utility regulatory agencies that would enforce concession or licensing agreements and regulate prices.³¹

The shape of market reform has varied across sectors and countries. In telecommunications, liberalization and privatization have been the most prevalent features of market reform, although countries have varied in their degrees of market liberalization and privatization. Telecommunications regulators have generally focused on removing barriers to entry, ensuring efficient network interconnection,³² rebalancing prices³³ to reflect new competitive realities, and promoting access to telecommunications for the poor and for rural areas.³⁴ In electricity, industry restructuring³⁵ and privatization have been the most prevalent market reforms. Restructuring has generally involved structural separation that separates the sector into competitive generating companies and monopoly transmission and distribution companies. Establishing efficient market mechanisms for electricity has been particularly challenging. Markets for natural gas have experienced reforms along the lines of the electricity reforms – production and transport are separated from distribution, gas production has been opened to competition, and gas distribution is typically left to a local monopoly. Water reforms have varied greatly, ranging from complete privatizations as in the case of the U.K., to build-operate-transfer arrangements, to private management contracts, to incentive systems for state-owned monopolies.³⁶

Development of Regulation

Countries almost always establish regulatory agencies to improve sector performance relative to no regulation.³⁷ This means that the regulators generally focus on controlling market power and/or facilitating competition, although regulators are also often charged with ensuring service availability and system expansion, improving cost efficiency, attracting capital to the sector, improving sector stability, and generating government revenues from licenses and concessions.³⁸

In general, the overarching purpose of regulation is to improve sector performance relative to no regulation.³⁹ Sector performance can be measured in terms of net consumer surplus,

³⁰ The references in Section B discuss these trends.

³¹ Chapter II Section A examines the regulation of monopolies. Section G of Chapter I provides information on various regulatory instruments, such as license and concession agreements, as does Chapter VIII Section B.

³² Chapter II Section B covers market liberalization, including barriers to entry and interconnection.

³³ Chapter V covers tariff issues.

³⁴ Chapter V Section C and Chapter VI Section C cover issues of providing service to the poor.

³⁵ Chapter II Section B covers approaches to market restructuring. Section B in Chapter I examines the motives for restructuring.

³⁶ Incentive mechanisms are covered in Chapter IV and in Chapter VI.

³⁷ Section A covers the rationale for regulation.

³⁸ Section C covers common roles for regulators. Chapter VIII examines agency responsibilities and other issues in managing the regulatory process.

³⁹ Section D covers regulatory objectives and priorities.

service availability and system expansion, cost efficiency, affordability of prices, range of services offered, quality, and the rate of innovation.⁴⁰ In fulfilling this purpose, regulators are often called upon to implement policies for attracting capital to the sector and increasing investment, generating government revenues from licenses and concessions, encouraging the development of and effectiveness of competition in the market, increasing government success in issuing licenses, providing incentives for operators to improve efficiency, and facilitating universal access. Regulation has failed when it has not provided the stability and commercially viable tariffs needed by investors.

Regulatory agencies vary in their scope of authority and responsibilities. The three main issues in defining a utility regulator's role are the sector(s) covered, the regulator's role in relation to ministers, and the regulator's role in relation to other regulatory entities such as the competition agency. Sometimes the regulatory agency is sector specific, but multi-sector regulatory agencies are also popular. Typical duties include standard setting, regulating prices and service quality,⁴¹ monitoring performance, licensing, handling consumer complaints, providing policy advice to ministries and parliament, monitoring market competition, and settling industry disputes, such as inter-operator interconnection or payment disputes.⁴²

Because private and public sector participation in infrastructure can take several forms, ranging from state ownership to service and supply contracts to concession arrangements to full privatization, and because countries have varied legal systems and institutional endowments, regulators vary in the type of regulatory instruments they apply.⁴³ Regulation of state-owned enterprises is discussed below. Some countries issue licenses that set out the regulatory conditions under which the operator will provide its service. Other countries enter into contracts with operators, such as concession contracts or franchises.⁴⁴ Service and supply contracts include technical assistance contracts and complete management contracts. The government maintains ownership of the assets. Concession approaches include leasing and build-operate-transfer arrangements in which the private operator owns or is at least responsible for the assets for a set period of time. Privatization includes divestiture by the government and the development of new enterprises, often called build-own-operate, in which the private operator owns the assets until the operator chooses to retire or sell them.

Legislation may be needed to authorize the government to enter into service and supply contracts or to issue licenses or let concessions, however, the terms included in the contracts, licenses, and concession agreements govern the details of the private operators' and the government's rights and obligations. With privatization, legislation oftentimes governs the parties' rights and obligations, but these may be further defined in a license. Regardless of the form of ownership, some countries rely primarily upon statutes and laws that define the roles and responsibilities of all operators.

⁴⁰ We will set aside for the moment the possibility that the government may want to use regulation to favor particular political constituents.

⁴¹ Pricing is covered in Chapter II Section B and Chapter V. Service quality is covered in Chapter VI Section A.

⁴² In Chapter VIII, Section D discusses handling consumer complaints, other relationships, and negotiation, and Section A covers independence.

⁴³ Section F identifies special issues related to regulation of state-owned enterprises and Section G summarizes regulatory instruments. Chapter VIII Section B also provides information on choices of regulatory instruments.

⁴⁴ Chapter II Section C covers techniques for contracting and franchising.

Market Structure and Performance⁴⁵

Market structure refers to the number of firms in a sector and the nature of their interactions. Governments regulate market structure in various ways, including removing barriers to entry, restrictions on market concentration, and restrictions on vertical integration. Governments may also regulate market conduct, which includes controlling operators' pricing and production practices or providing incentives for appropriate conduct. Regulation of market conduct is traditionally viewed as a poor substitute for competition. As a result, regulators often encourage competition whenever practicable. The advantages of competition over regulated conduct include limited opportunities for political rent seeking, fewer information asymmetries, and better incentives to serve customer interests. When an operator is subject to at least some competitive pressures, regulators generally allow the operator pricing flexibility, ranging from deregulation to the opportunity to lower prices to long run marginal cost.

Sometimes regulators share responsibility for ensuring competitiveness of markets with a competition authority.⁴⁶ The competition regulator is generally concerned with all sectors and generally has three functions. The first function is to remedy anticompetitive conduct, such as collusion.⁴⁷ This function is generally ex post, meaning that the competition authority responds to activities that have already occurred. In contrast, utility regulators generally address competitive issues ex ante, meaning that they act to prevent anticompetitive conduct. The second function of the competition authority is to ensure that industry mergers do not significantly decrease competition. The third function is consumer protection, such as enforcing warranties and advertising claims. Sector regulators and competition authorities often cooperate in their efforts.⁴⁸

Regulating Public vs. Private Operators⁴⁹

Whether the regulator is regulating a publicly-owned operator rather than a privately-owned operator changes the nature of some issues. For example, government interference may be greater with a government-owned operator. It may also be less costly for the government to use direct control of a public enterprise to pursue the government's objectives, rather than use economic incentives for a private operator. However, direct control may lower operating efficiency for reasons indicated above. Also, a government's promise to not engage in political interference with utility operations is less credible with public ownership than with private ownership.

Incentive regulation can be more difficult with a publicly-owned operator. Because the government delegates day-to-day decisions to management, principal-agent problems arise even

⁴⁵ Section E discusses the regulation of market structure versus the regulation of market conduct. Chapter II examines various market structures and related regulatory issues.

⁴⁶ See Chapter II Section B and Chapter VIII Sections A and D for information on relationships with other agencies, such as competition authorities.

⁴⁷ Chapter II Section B examines anticompetitive conduct.

⁴⁸ Chapter VIII Section D discusses approaches for regulators to relate with customers.

⁴⁹ See Section F.

with public ownership. Using incentives to address these problems requires regulators of public enterprises to identify the objectives of the managers and provide incentives for improved performance. This problem is simplified in the case of private operators because they generally seek to maximize profit and the regulatory techniques of using profit incentives are well known. However, managers of public enterprises are generally more affected by political influence, government budgeting, and bureaucratic management than are their counterparts in privately-owned operators.⁵⁰

Ownership also affects other issues. Pricing is generally more efficient with private enterprises because the government must allow private operators' prices to cover costs over time in order to encourage investment.⁵¹ Competition is more complicated with public enterprises than with private enterprises. Public enterprises have had success thwarting competitive entry, but experience has shown that subjecting public enterprises to competition improves efficiency relative to public ownership with no competition. Also, the absence of equity markets for public enterprises complicates estimating the cost of capital. On the other side, the public sometimes raises concerns about private ownership of infrastructure industries, such as concerns about private investment incentives not capturing public needs for services and about foreign owners not understanding local markets and local needs.⁵²

Theories of Regulation⁵³

The development and techniques of regulation have long been the subject of academic research. Two basic schools of thought have emerged on regulatory policy, namely, positive theories of regulation and normative theories of regulation. Positive theories of regulation examine why regulation occurs. These theories of regulation include theories of market power,⁵⁴ interest group theories that describe stakeholders' interests in regulation,⁵⁵ and theories of government opportunism that describe why restrictions on government discretion may be necessary for the sector to provide efficient services for customers.⁵⁶ In general, the conclusions of these theories are that regulation occurs because 1) the government is interested in overcoming information asymmetries with the operator and in aligning the operator's interest with the government's interest,⁵⁷ 2) customers desire protection from market power when competition is non-existent or ineffective, 3) operators desire protection from rivals, or 4) operators desire protection from government opportunism. Normative theories of regulation generally conclude that regulators should encourage competition where feasible, minimize the costs of information asymmetries by obtaining information and providing operators with incentives to improve their performance,⁵⁸ provide for price structures that improve economic efficiency,⁵⁹ and establish

⁵⁰ Chapters IV and VI cover these techniques.

⁵¹ See, for example, the case study of India electricity in Bakovic, Tenenbaum, and Woolf, March 2003.

⁵² Section F of Chapter III covers issue of estimating the cost of capital.

⁵³ See Sections A and H.

⁵⁴ Chapter II addresses market power issues.

⁵⁵ Chapter VIII Sections A, C, and D address issues relevant to the effects of stakeholders in regulation.

⁵⁶ Limits to regulatory power and institutional mechanisms designed to limit opportunism are examined in Chapter VIII. Incentive regulation techniques discussed in Section IV include restrictions on regulatory discretion that are intended to limit opportunism.

⁵⁷ See Section H.

⁵⁸ See Chapters II, III, IV, and VII for techniques for overcoming information asymmetries.

regulatory processes that provide for regulation under the law and independence, transparency, predictability, legitimacy, and credibility for the regulatory system.⁶⁰

Principal-agent theory addresses issues of information asymmetry, which in the context of utility regulation generally means that the operator knows more about its abilities and effort and about the utility market than does the regulator.⁶¹ Principle-agent theory is applied in incentive regulation and multipart tariffs.⁶²

Concluding Observations

Even though regulation is often described as a principal-agent problem between the government and the operator, there are actually several principal-agent relationships involved. The regulator is an agent for the government, serving as the principal in the government's principal-agent relationship with the operator. The government seeks to control its regulator-agent through laws, courts, budget control, fixed terms, and transparency requirements rather than through incentives. There is also a principal-agent relationship between the customers, serving as the principal, and two agents, namely the government and the regulator. Customers regulate the government and the regulator through political processes and regulatory processes discussed in Chapter VIII.⁶³

The following chapters describe numerous mechanisms of regulation. Chapter II covers the Market Structure and Competition techniques. Chapter III is on Financial Analysis, which relates to both the information gathering and incentive regulation solutions to the information asymmetry between the regulator and the operator. Chapter IV focuses on using incentive regulation in Regulating Overall Price Level and Chapter V covers the related Tariff Design issues. Chapter VI focuses on Quality, Social, and Environmental Issues and Chapter VII examines additional Information Issues. Chapter VIII completes the discussion by examining the Regulatory Process, which is the public's main instrument for regulating the regulator.

⁵⁹ See Chapter V.

⁶⁰ See Chapter VIII.

⁶¹ See Section H. See Productivity Commission of Australia (2003) for a case study in how information issues affect regulatory policy.

⁶² Chapter IV covers incentive regulation and Chapter V discusses multipart pricing.

⁶³ See Chapter VIII for a discussion of mechanisms used to address these principal-agent relationships.

Case Studies

Bakovic, T., B. Tenenbaum, and R. Woolf, "Regulation by Contract: A New Way to Privatize Electricity Distribution?" Energy and Mining Sector Board Discussion Paper, Series Paper no. 7, March 2003.

Florida Public Service Commission, Inside the Florida PSC 2003, 2003.

Garg, A., M. Kabra, and R. Kacker, Regulatory Reforms in India: Effectiveness, Efficiency, and Impacts, The Energy and Resources Institute, New Delhi, India, 2003.

Guasch, J. Luis, and Pablo Spiller, Managing the Regulatory Process: Design, Concepts, Issues, and the Latin America and Caribbean Story, Washington, D.C.: The World Bank Group, 1999, Chapter 4.

Hill, Alice, and Manuel Angel Abdala, "Argentina: The Sequencing of Privatization and Regulation," in Regulations, Institutions, and Commitment: Comparative Studies in Telecommunications edited by Brian Levy and Pablo T. Spiller. Cambridge, U.K: Cambridge University Press, 1996, pp. 202-249.

Mota, Raffaella Lisbôa, "The Restructuring and Privatization of Electricity Distribution and Supply Business in Brazil: A Social Cost-Benefit Analysis," Working Paper WP 0309, University of Cambridge, Department of Applied Economics, January 2003.

OFWAT Final Determinations. Future Water and Sewerage Charges 2000-05: Periodic Review 1999. November 1999.

OFWAT, Ofwat Annual Report 2003-2004, 2004.

Paredes, Ricardo, "Redistributive Impact of Privatization and the Regulation of Utilities in Chile," Discussion Paper 2001/19, World Institute for Development Economics Research, United Nations University, Helsinki, June 2001.

Productivity Commission of Australia, "Review of the Gas Access Regime: Draft Report," Melbourne, Australia, 2003.

Spiller, Pablo T., and Clezly I. Sampson, "Telecommunications Regulation in Jamaica," in Regulations, Institutions, and Commitment: Comparative Studies in Telecommunications, edited by Brian Levy and Pablo T. Spiller. Cambridge, U.K.: Cambridge University Press, 1996, pp. 36-78.

Toba, Natsuko, "Welfare Impacts of Electricity Generation Sector Reform in the Philippines," Working Paper WP 0316, Department of Applied Economics, University of Cambridge, 2003.

Torero, Maximo, and Albert Pasco-Font, "Social Impact of Privatization and the Regulation of Utilities in Peru," Discussion Paper 2001/17, World Institute for Development Economics Research, United Nations University, Helsinki, June 2001.

Chapter I Cases by Topic Area

Table 1. Chapter I Cases by Topic Area

| | Cases | | | | | | | | | | | | |
|---|---|--|--------------------------------|--------------------------------------|------------------------|---------------------|-----------------------|--------------|---------------------|---|----------------------------|-------------|-----------------------------------|
| | Bakovic, Tenenbaum, and Woolf, March 2003 | Florida Public Service Commission, 2003. | Garg, Kabra, and Kacker, 2003. | Guasch and Spiller, 1999, Chapter 4. | Hill and Abdala, 1996. | Mota, January 2003. | OFWAT, November 1999. | OFWAT, 2004. | Paredes, June 2001. | Productivity Commission of Australia, 2003. | Spiller and Sampson, 1996. | Toba, 2003. | Torero and Pasco-Font, June 2001. |
| Chapter I. General Concepts | | | | | | | | | | | | | |
| A. Rationale for regulation | | | | | X | | | | | | | | |
| B. Rationale for reform of utility markets | | | X | | | X | | | X | | | X | X |
| C. Common roles of regulators | | X | X | | | | | | | | | | |
| D. Regulatory objectives and priorities | | X | | | | | X | X | | | | | |
| E. Regulation of market structure vs. regulation of conduct | | | | | | | | | | | | | |
| F. Regulation of public vs. private companies, of existing vs. new firms | | | | | | | | | | | | | |
| G. Regulatory instruments | | | | X | | | | | | | X | | |
| H. Information asymmetry and limits to regulation | | | | | | | | | | | | | |
| I. Law and Economics | | | | | | | | | | | | | |

References

- A. **Rationale for regulation, including regulation of monopolies and oversight of competitive markets, public interest theory, interest group theory, and the difference between normative and positive theories of regulation.**

Core References

Baldwin, Robert, and Martin Cave, Understanding Regulation: Theory, Strategy, and Practice, Oxford: Oxford University Press, 1999, Chapters 2-3.

Examines the rationale for regulation, including issues of monopoly and market power, externalities, information asymmetries, and public goods. Also summarizes positive theories of regulation, including public interest theories, interest group theories, and private interest theories.

Guasch, J. Luis, and Pablo Spiller, Managing the Regulatory Process: Design, Concepts, Issues, and the Latin America and Caribbean Story, Washington, D.C.: The World Bank Group, 1999, Chapter 2.

Explains contracting issues that give rise to regulation, including problems of government commitments to the operator, market failure, desire for cross subsidies, and interest group politics.

Kahn, Alfred. The Economics of Regulation: Principles and Institutions. Cambridge, MA: MIT Press, 1988, Reissue Edition, vol. I, Chapter 1.

Explains common reasons cited for regulation, including the importance of the sector, the existence of natural monopoly or market failure, the desire of government to use franchises or to encourage non market-based outcomes (such as service distribution), problems with destructive competition or undesirable discrimination, cream-skimming, and excessive non-price rivalry. Also describes the legal rationale for regulation in the U.S.

Newbery, David M., Privatization, Restructuring, and Regulation of Network Industries. Cambridge, MA: MIT Press, 1999, Chapters 1 and 4.

Describes normative and positive theories of regulation. Explains that “regulation ... is inevitably inefficient because of problems of information and commitment and, more fundamentally, because of inefficient bargaining between interest groups over potential utility rents.”

Sectoral References

ELECTRICITY

Newbery, David, “A Template for Power Reform,” in Public Policy for the Private Sector. Washington, D.C.: World Bank, September 1995.

Provides an overview of options for restructuring the electricity sector.

GAS

Juris, Andrej, “Competition in the Natural Gas Industry: The emergence of spot, financial, and pipeline capacity markets.” Note no. 137 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, March 1998.

Describes basic restructuring and trading arrangements in gas and pipeline markets.

TELECOMMUNICATIONS

Intven, Hank, Telecommunications Regulation Handbook. Washington, D.C.: World Bank, 2000, Module 1.

Provides an overview of reasons for regulation of private telecommunications operators.

Wellenius, Björn, “Telecommunications Reform – How to Succeed,” in Public Policy for the Private Sector. Washington, D.C.: World Bank, October 1997.

Explains role of regulation in telecommunications reforms.

WATER

Water Toolkit Module 1: Selecting an Option for Private Sector Participation. Washington, D.C.: World Bank, 1997.

Describes options for private sector participation in the provision of water services. Also gives a brief overview of why some countries choose private participation.

Key Words

Privatization, Regulation, Liberalization, Market Reform

B. Rationale for reform of utility markets (e.g. fiscal constraints, technological change, policy innovations, incentives for efficiency) and the elements of market reform, including private participation, liberalization, and regulation

Core References

Harris, Clive, Private Participation in Infrastructure in Developing Countries: Trends, Impacts, and Policy Lessons. Washington, D.C.: World Bank, 2003.

Explains the rise and fall of both public sector monopolies and private participation in infrastructure. Describes when private sector participation improves results and how important regulatory issues, such as pricing and competition, need to be addressed if private participation in infrastructure is to succeed.

Klein, Michael, and Neil Roger, “Back to the Future: The Potential in Infrastructure Privatization,” Note No. 30 in Public Policy for the Private Sector. Washington, D.C.: World Bank, November 1994.

Describes the cycles of private and public provision of infrastructure. Examines role of regulation in providing stability to the sectors.

Newbery, David M., Privatization, Restructuring, and Regulation of Network Industries. Cambridge, MA: MIT Press, 1999, Chapter 1.

Argues that the proper mode of provision of utility services – including private participation, public sector provision, liberalization, and regulation – can vary over time and depends on a country’s political, cultural, and institutional features. Examines the U.K. utility reforms in depth and contrasts with U.S. experience.

Sectoral References

ELECTRICITY

Hunt, Sally, Making Competition Work in Electricity. New York: Wiley & Sons, 2002, Chapters 1-2.

Describes reasons for restructuring electricity markets and the economics of the alternative industry structures.

GAS

Juris, Andrej, "Competition in the Natural Gas Industry: The emergence of spot, financial, and pipeline capacity markets." Note no. 137 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, March 1998.

Describes basic restructuring and trading arrangements in gas and pipeline markets.

TELECOMMUNICATIONS

Intven, Hank, Telecommunications Regulation Handbook. Washington, D.C.: World Bank, 2000, Module 1.

Provides an overview of reasons for regulation of private telecommunications operators.

Smith, Peter, "What the Transformation of Telecom Markets Means for Regulation," Note no. 121 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, 1997.

Examines the implications of dynamics of telecommunications technologies and markets for regulation.

WATER

Savedoff, William, and Pablo Spiller. "Government Opportunism and the Provision of Water," in Spilled Water: Institutional Commitment in the Provision of Water Services, edited by William Savedoff and Pablo Spiller. Washington, D.C.: Inter-American Development Bank, 1999, pp.1-34.

Describes roles that regulation may play in decreasing government opportunism for both private operators and public operators.

Other References

Wallsten, Scott J, "An Empirical Analysis of Competition, Privatization, and Regulation in Telecommunications Markets in Africa and Latin America," *Policy Research Working Paper 2136*. Washington, D.C.: World Bank, May 1999.

Examines the effects of telecommunications reforms in Africa and Latin America. Finds that privatization and an independent regulator together improve sector performance. Privatization alone yields few benefits and has some negative

effects. Competition increases per capita number of mainlines, payphones, and connection capacity, and decreases the price of local calls.

Key Words

Market Reform, Competition, Regulation, Franchising, Cross-subsidization, Privatization.

C. Common roles of regulators

Note: Readers should cross-reference this section with Chapter I Section D on objectives and priorities and with Chapter VIII Section A Subsection 2 on agency responsibilities.

Core References

Guasch, J. Luis, and Pablo Spiller, Managing the Regulatory Process: Design, Concepts, Issues, and the Latin America and Caribbean Story, Washington, D.C.: The World Bank Group, 1999, Chapters 2 and 3.

Describes the design of regulatory agencies and relates the design to the reasons for regulation. Provides a case study of Jamaica.

Kahn, Alfred. The Economics of Regulation: Principles and Institutions. Cambridge, MA: MIT Press, 1988, Reissue Edition, vol. I, Chapter 2.

Describes the basic economic functions of the utility regulator, focusing primarily on service quality, controlling the overall price level, and determining rate structure.

Smith, Warrick, "Utility Regulators: Roles and Responsibilities." Note no. 128 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, 1997.

Examines issues of sector coverage, relationships with ministers, and relationships with other government agencies.

Sectoral References

ELECTRICITY

Brown, Ashley C., and Ericson De Paula, "Strengthening of the Institutional and Regulatory Structure of the Brazilian Power Sector," World Bank Report on the PPIAF Project for Brazil Power Sector, Task 4, December 2002.

Examines regulatory roles in granting concessions, conducting auctions, and sector planning. Roles in auctions include setting the terms and conditions and ensuring

that auctions are conducted fairly and transparently. Describes potential conflicts of interest in having regulators involved in concessions and auctions. Also describes key considerations in deciding whether regulators should have roles in sector planning.

TELECOMMUNICATIONS

Henten, Anders, Rohan Samarajiva, and William H. Melody, "Designing Next Generation Telecom Regulation: ICT Convergence or Multisector Utility?" Center for Information and Communication Technologies, Technical University of Denmark, Lyngby, January 2003.

Examines how convergence raises new regulatory issues such as security, privacy and consumer protection. It may also lead to the integration of telecom and broadcast media regulation. Also examines advantages and disadvantages of multi-sector regulators.

Min, Wonki, "Telecommunications Regulations: Institutional Structures and Responsibilities." Working Paper no. 237, Organization for Economic Co-operation and Development (OECD), Washington, D.C., 26 May 2000.

Explains that there is a lot of variety among nations on the roles of regulators. Typical responsibilities of the regulator (or ministry) include licensing, interconnection, spectrum management, numbering, price regulation, universal service, and service quality.

Schwarz, Tim, and David Satola, "Telecommunications Legislation in Transitional and Developing Economies," World Bank Technical Paper No. 489, October 2000.

Examines the design of telecommunications legislation in transitional and developing economies for liberalizing and privatizing telecommunications. Provides a framework for debate on a policy level about a variety of issues. Also examines international best practice.

WATER

OFWAT, "The Role of the Regulator," 2002.

Describes Ofwat's roles and practices in the U.K.

Other References

Hayek, F.A., The Road to Serfdom. Chicago: University of Chicago Press, 1944 (reprinted 1994), Chapter 6.

Explains how expert agencies necessarily apply their value systems in carrying out their responsibilities.

Key Words

Regulation, Regulatory agencies, Service quality, Rates, Prices, Planning

D. Regulatory objectives and priorities, including trade-offs in objectives and achieving balance in pursuing objectives.

Note: Readers should cross-reference this section with Chapter I Section C on roles of regulators and Chapter VIII Section A Subsection 2 on agency responsibilities.

Core References

Baldwin, Robert, and Martin Cave, Understanding Regulation: Theory, Strategy, and Practice, Oxford: Oxford University Press, 1999, Chapters 2 and 4.

Describes theories of how regulators should regulate and basic regulatory strategies, such as command and control, self-regulation, incentive regulation, and competition.

Guasch, J. Luis, and Pablo Spiller, Managing the Regulatory Process: Design, Concepts, Issues, and the Latin America and Caribbean Story, Washington, D.C.: The World Bank Group, 1999, Chapters 2 and 16.

Describes the design of regulatory agencies and relates the design to the reasons for regulation. Summarizes lessons in regulatory design.

Kahn, Alfred, The Economics of Regulation: Principles and Institutions. Cambridge, MA: MIT Press, 1988, vol. I, Chapters 1 and 2.

Explains the traditional reasons for regulation. Describes the basic economic functions of the utility regulator, focusing primarily on service quality, controlling the overall price level, and determining rate structure.

Sectoral References

ELECTRICITY

Newbery, David M., Privatization, Restructuring, and Regulation of Network Industries. Cambridge, MA: MIT Press, 1999, Chapter 6.

Describes the goals and objectives of electricity regulation and electricity market reform. Summarizes U.K. case of electricity reform.

GAS

Armstrong, Mark, Simon Cowan, and John Vickers, Regulatory Reform: Economic Analysis and British Experience, Cambridge, MA: The MIT Press, 1999, Chapter 8.

Describes the goals and objectives of gas regulation and gas market reform. Summarizes U.K. case of gas reform.

TELECOMMUNICATIONS

Armstrong, Mark, Simon Cowan, and John Vickers, Regulatory Reform: Economic Analysis and British Experience, Cambridge, MA: The MIT Press, 1999, Chapter 7.

Describes the goals and objectives of telecommunications regulation and telecommunications market reform. Summarizes U.K. case of telecommunications market reform.

WATER

Shirley, Mary M., and Claude Ménard. "Cities Awash: A Synthesis of the Country Cases," in Thirsting for Efficiency, edited by Mary M. Shirley. Washington, D.C.: The World Bank, 2002, pp.1-41.

Describes the major issues facing water regulators and water sector reformers. Identifies lessons from a series of case studies.

Key Words

Bargaining, Information, Monopoly, Negotiation, Competition, Efficiency, Fairness, Objectives

E. Regulation of market structure vs. regulation of conduct

Core References

Baldwin, Robert, and Martin Cave, Understanding Regulation: Theory, Strategy, and Practice, Oxford: Oxford University Press, 1999, Chapters 4 and 16.

Describes basic regulatory strategies, such as command and control, self-regulation, incentive regulation, and competition. Examines basic approaches that regulators use to facilitate competition.

Klein, Michael, and Philip Gray, “Competition in Network Industries – Where and How to Introduce It.” Note no. 104 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, 1997.

Explains concepts of competition for the market, competition over existing networks, and competition among networks with practical examples. Describes various options for using competition in these sectors, including franchising, open access, pooling, and timetabling. Explains that how network competition is introduced and how effectively and easily it is implemented will vary from one network industry to another. General rules for deciding where and how to introduce competition are discussed.

Klein, Michael, and Neil Roger, “Back to the Future: The Potential in Infrastructure Privatization.” Note no. 30 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, 1994.

Describes problems of monopoly provision of utility services. Explains that competition can overcome some of the institutional weaknesses that limit the effectiveness of regulation.

Sectoral References

ELECTRICITY

Hunt, Sally, Making Competition Work in Electricity. New York: Wiley & Sons, 2002, Chapters 1-2.

Argues that competition is more effective than regulated monopoly for efficiently providing services. Competition assigns risks to shareholders while regulated monopoly assigns risks to customers. Technical complexity of electricity industry needs to be understood before adopting reforms.

TELECOMMUNICATIONS

Smith, Peter, "What the Transformation of Telecom Markets Means for Regulation." Note no. 121 in Public Policy for the Private Sector. Washington, D.C.: World Bank Group, 1997.

States that it is also becoming increasingly difficult to regulate telecommunications services separately due to increased substitutability of goods across sectors and a convergence within industries. Governments are finding it beneficial to use competition rather than regulation of conduct to improve sector performance.

Key Words

Competition, Cross-subsidization, Privatization, Regulation

F. Regulation of public companies vs. regulation of private companies, regulation of existing vs. new firms

Note: Readers should cross-reference this section with chapters on market structure, financial analysis, and pricing for information on these issues as they relate to public enterprises.

Core References

Eberhard, A. and M. Mtepa, "Rationale for restructuring and regulation of a low priced public utility: a case study of Eskom in South Africa," *International Journal of Regulation and Governance* 3(2): 77-102.

Uses the case of Eskom in South Africa to examine the rationale for reforming oversight of a publicly-owned operator. Examines issues of financial performance, price levels and trends, investment, labor costs, and incentives.

Irwin, T. and C. Yamamoto, "Some Options for Improving the Governance of State-Owned Electricity Utilities," The World Bank, Discussion Paper No. 11, February 2004.

Examines performance issues in state-owned electricity distributors and suggests options for improving performance. Considers applying private-sector company law, legislation and contracts, public reporting, corporate culture, pressure from lenders, listing minority shares, and techniques for alleviating the government's conflict of interest as owner and policy-maker.

Jones, Leroy P., "Performance Evaluation for State-owned Enterprises," in Privatization and Control of State-owned Enterprises, edited by Ravi Ramamurti and Raymond Vernon. World Bank Economic Development Institute, 1991, pp. 179-205.

Describes an approach for regulating state-owned enterprises. The approach consists of a performance evaluation system, a performance information system, and an incentive system.

Newbery, David, Privatization, Restructuring, and Regulation of Network Utilities. Cambridge, MA: MIT Press, 2001, Chapters 3 and 5.

Compares incentives and performance of public versus private enterprises. States that public enterprises are subject to greater government control and so serve the interests of the government. Private enterprises respond to profit incentives and so are governed by incentive regulation. Empirical studies find that public enterprises have lower prices than private enterprises, but studies of cost differences are inconclusive. Liberalization is complicated by public enterprises.

Ramamurti, Ravi, "Controlling State-owned Enterprises," in Privatization and Control of State-owned Enterprises, edited by Ravi Ramamurti and Raymond Vernon. World Bank Economic Development Institute, 1991, pp. 206-233.

Examines why state-owned enterprises have in general not been successful. Suggests a contracting system that could improve performance.

Ramamurti, Ravi, "The Search for Remedies," in Privatization and Control of State-owned Enterprises, edited by Ravi Ramamurti and Raymond Vernon. World Bank Economic Development Institute, 1991, pp. 7-25.

Provides an overview of problems and possible solutions in privatizing and regulating state-owned enterprises.

Sectoral References

GAS

Productivity Commission of Australia, "Review of the Gas Access Regime: Draft Report," Melbourne, Australia, 2003.

Examines the regulation of established systems versus "greenfield" systems.

WATER

Nigel Annett, Chris Jones, and Jeremy Liesner, “Glas Cymru - harnessing the fundamentals of water service delivery,” Regulatory Review, P. Vass, ed., Centre for Regulated Industries, Bath University, 2002/3.

Describes the strategy, operations, and financial make-up of Glas Cymru, a not-for-profit water operator in the U.K.

Key Words

Public enterprise, Private enterprise, State-owned enterprise, Competition, Liberalization

G. Regulatory instruments (primary and secondary legislation, licenses, concessions)

Core References

Baldwin, Robert, and Martin Cave, Understanding Regulation: Theory, Strategy, and Practice, Oxford: Oxford University Press, 1999, Chapter 4.

Describes basic regulatory strategies, such as command and control, self-regulation, incentive regulation, and competition. Examines basic approaches that regulators use to facilitate competition.

Guasch, J. Luis, and Pablo Spiller, Managing the Regulatory Process: Design, Concepts, Issues, and the Latin America and Caribbean Story, Washington, D.C.: The World Bank Group, 1999, Chapter 3.

Describes the basic regulatory instruments and provides examples of where they have been used. Considers legislation, presidential decrees, and contracts.

Gómez-Ibáñez, José, Regulating Infrastructure: Monopoly, Contracts, and Discretion. Cambridge, MA: Harvard University Press, 2003, Chapters 1-2.

Views infrastructure regulation as a contracting problem and examines the choice of regulatory instrument. Considers contract completeness, private contracts, concession contracts, and discretionary regulation. Also examines variants of these contract types and hybrids.

IPART, “Review of Electricity and Gas Licensing Regimes in NSW – Final Report,” Independent Pricing and Regulatory Tribunal of New South Wales, January 2003.

Examines IPART’s licensing scheme, considering transparency, compliance and monitoring costs, and incentives.

Sectoral References

ELECTRICITY

Bakovic, T., B. Tenenbaum, and R. Woolf, "Regulation by Contract: A New Way to Privatize Electricity Distribution?" Energy and Mining Sector Board Discussion Paper Series Paper no. 7, March 2003.

Describes a contracting approach to regulating electricity distribution companies. Identifies the key characteristics of this approach, how contracts deal with various financial issues, and how regulators deal with disputes.

TELECOMMUNICATIONS

Intven, Hank, Telecommunications Regulation Handbook. Washington, D.C.: World Bank, 2000, Module 2.

Describes how to write and issue a license to provide telecommunications services, including the objectives of licensing, the relationship with other regulatory instruments and with trade agreements, licensing new entrants versus incumbents, designing and auctioning spectrum licenses, and how to maintain transparency.

Schwarz, Tim, and David Satola, "Telecommunications Legislation in Transitional and Developing Economies," World Bank Technical Paper No. 489, October 2000.

Examines elements of telecommunications legislation for developing economies. Considers privatization, liberalization, WTO agreement, licensing, numbering, infrastructure sharing, competitive issues, property law, spectrum, and the structure and role of the regulatory agency.

WATER

Water Toolkit Module 1: Selecting an Option for Private Sector Participation. Washington, D.C.: World Bank, 1997.

Outlines the broad-brush analysis required to assess the need and potential for introducing private participation and selecting a mode of private sector participation.

The World Bank, New Designs for Water and Sanitation Transactions Making Private Sector Participation Work for the Poor, Washington, D.C.: The World Bank (undated).

Examines regulatory instruments and policies for improving water and wastewater services to the poor. Considers elements of water reform, legal and policy frameworks, contracts, tariff design, and reform strategies.

Key Words

Contract regulation, License, Regulation, Legal frameworks, Franchise, Concession, Legislation, Statute

H. Informational asymmetry, limits to regulation, and implications for using incentives versus command and control

Core References

Newbery, David. Privatization, Restructuring, and Regulation of Network Utilities. Cambridge, MA: MIT Press, 2001, Chapter 2.

Explains that the interaction between the regulator and the regulated firm can be modeled as a game in which the regulated firm has private information. The regulator chooses and announces the incentives that the regulator will provide the firm. Then the firm decides how it will operate. Next the regulator observes the operations and allows the firm the incentives promised. If the firm does not believe that the regulator will keep her commitment, the firm will not perform optimally.

Sappington, David E.M., and Dennis L. Weisman, Designing Incentive Regulation for the Telecommunications Industry. Cambridge, MA: MIT Press, 1996, Chapter 1.

Explains that incentive regulation is useful because the firm has (or can acquire) better information than the regulator about important aspects of the industry and the firm's objectives and the consumers' objectives are different. If the regulator had the same information that the firm has, then the regulator could simply micromanage the firm. If the firm had the same goals as consumers, then the firm would naturally do exactly what the regulator wanted the firm to do. In most situations, however, the firm has better information than the regulator and seeks to maximize its profits (whereas consumers seek to maximize their surplus), so incentive regulation can be used to improve the operator's performance.

Vickers, John, and George Yarrow, Privatization: An Economic Analysis. Cambridge, MA: MIT Press, 1988, pp. Chapter 2.

Explains that information asymmetry is at the heart of the economics of regulation. A fully informed regulator with complete authority could simply order the firm to choose the first-best outcome. However, regulators are never fully informed and have limited powers. “The problem for regulatory policy is one of incentive mechanism design – how to induce the firm to act in accordance with the public interest (which will depend on the state of technology and demand) without being able to observe the firm’s behavior.”

Key Words

Information, Information Asymmetry, Accountability, Forms of regulation, Price cap regulation, Rate-of-return regulation, Regulatory procedures, Commitment, Incentive Regulation

I. Law and Economics

Core References

Buscaglia, Edgardo, “Judicial Corruption in Developing Countries: Its Causes and Economic Consequences,” Berkeley Olin Program in Law & Economics, Working Paper Series, University of California, Berkeley, 1999.

Provides an overview of the economics of development and corruption. Describes how corruption affects economic development and remedies for corruption.

Buscaglia, Edgardo and William Ratliff. Law and economics in developing countries. Stanford, Calif.: Hoover Institution Press, 2000.

Examines the link between legal systems and reform of economic institutions and practices in developing countries. States that poverty largely results from flaws in legal institutions. Recommends substantive and procedural legal factors for developing countries, including recommendations on judicial review and dispute resolution.

North, Douglass C. Institutions, Institutional Change and Economic Performance. Cambridge, U.K.: Cambridge University Press, 1990, Chapters 12 and 13.

Explains the importance of institutions to the stability and performance of the economy.

Posner, Richard A. Economic Analysis of Law. Fifth Edition, New York, NY: Aspen Publishers, 1998, Chapters 1, 2, 9, 10, 12, 13, 19, and 20.

Explains economic principles that underlie laws in the common law context, specifically the U.S. Chapters cited cover basic economic approaches, monopoly, competition law, utility regulation, the choice between regulation and common law, the adversary system, and the process of rulemaking.

Key Words

Institutions, Law, Regulation, Corruption, Opportunism, Legal Process