

Characterizing the Efficiency and Effectiveness of Regulatory Institutions

Sanford V. Berg

Distinguished Service Professor, University of Florida, PURC

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Introduction: This study briefly surveys contributions to our understanding of performance-drivers in infrastructure sectors. One task facing analysts and policy-makers involves evaluating the impacts of particular features of regulatory institutions. Here, particular attention is given to methodologies for evaluating regulatory agencies, since regulatory governance is one of the key factors influencing sector outcomes.¹ There is strong evidence that regulatory institutions matter, as studies find positive links. For Example, Gutierrez (2003) shows that better regulatory systems (as characterized in an index) affect cost containment and telecommunications network deployment.²

A key issue is how to characterize a good regulatory regime. Many studies have utilized elements of regulatory processes or sources of agency legitimacy (decrees or legislation) as indicators of regulatory effectiveness. However, one could argue that the high performance of a sector is perhaps the best indicator of sound regulation. Of course, limited funding for the agency, lack of legal authority to obtain benchmarking data, or political interference could also explain poor sector performance—even if regulatory processes are otherwise sound. Also, poor management or union constraints could harm cost containment. So we cannot judge the regulator solely on the basis of *sector performance*—the entire regulatory system needs to be accounted for. Nevertheless, an undue emphasis on process should be avoided as well.

A number of methodologies have been utilized in characterizing regulatory systems. Seven are summarized below to illustrate the range of approaches and to direct attention to the fact that (independent) external groups are already evaluating agencies that implement national infrastructure policies. Extensive rankings of agency have been prepared for states in both Brazil and India, for example. A number of groups have proposed regulatory assessment instruments that provide comparisons of legal systems and associated clarity of regulatory authority, regulatory autonomy, capacity-building, tariff design, financial sustainability of the agency, and regulatory strategies towards key stakeholders.³ We can expect to see these methodologies utilized by international organizations and investors as they evaluate prospects in developed and developing countries. Features of these approaches are described below.

¹ For a more comprehensive survey of studies, see Estache, Antonio, Sergio Perelman and Lourdes Trujillo (2007). "Infrastructure Reform in Developing Economies: Evidence from a Survey of Economic Performance Measures," in *Performance Measurement and Regulation of Network Utilities*, edited by Coelli T., and Lawrence, D., Edward Elgar Publishers, Northampton MA. The study contains six pages of references and comprehensive summaries of over fifty studies.

² Gutierrez, Luis H. 2003. "The Effect of Endogenous Regulation on Telecommunications Expansion and Efficiency in Latin America." *Journal of Regulatory Economics*, 23(3):257-86.

³ New surveys and assessment tools keep emerging. With a budget of over \$3 million, the new Africa Infrastructure Country Diagnostic (www.infrastructureafrica.org) will conduct studies and collect data on infrastructure in East and Southern Africa—from Egypt to the Republic of South Africa. Also, see *Getting Africa on Track to Meet the MDGs on Water and Sanitation: A Status Overview of Sixteen African Countries*, December 2006 (African Development Bank, EU Water Initiative, Water and Sanitation Program, UNDP). The report includes a quantitative and qualitative assessment of overall (water) sector and subsector sustainability, including institutional and financial sustainability for rural/small town WS and sanitation and urban WS and sanitation. For a study focusing on customers, drawing upon data from around the world, see "The Role of Consumer Organizations in Electricity Sector Policies and Issues: Results of Global Survey," NARUC, 2006.

1. WRI Good Governance Indicators: Transparency, Participation, Accountability, and Capacity⁴: This initiative, funded by the World Resources Institute, establishes a set of sixteen policy indicators and fifteen regulatory indicators, focusing on social and environmental implications of processes. A complete listing is provided later in this report. There are four to eight elements driving each indicator. For example, the “Effective functioning of the legislative committee” indicator is evaluated in terms of eight elements: (1) disclosure of interests, (2) active committee, (3) reasoned reports, (4) proactive committee, (5) public consultations, (6) transparency of submissions to committee, (7) transparency of committee reports, and (8) reporting by executive. The emphasis on process is understandable, but the level of detail required for data collection seems excessive. Developed to evaluate Indian electricity regulatory commissions (and then extended to several nations), the framework provides a thorough set of indicators. However, assessing decisions and sector performance would seem to be crucial if one were to gauge the actual effectiveness of regulation. The WRI approach by itself could be viewed as elevating form over substance.

2. Regulatory Governance: Autonomy, Decision Making, Decision Tools, Accountability—Assessment and Measurement of Brazilian Regulators⁵: With support from the World Bank and PPIAF, a team of Brazilian researchers developed an assessment tool that was then applied to twenty-one regulatory agencies in that nation. Agencies were ranked based on agency design and regulatory processes. The tool evaluated four main categories (where the number of questions is shown in parentheses: I. Autonomy (26); II. Decision-making (22); III. Decision tools (27); and IV. Accountability/Control (21). There are a total of 96 questions, but indicators are also based on subsets: a regulatory governance index (83), a more parsimonious index (43) and a de facto index (28). The entire set is very comprehensive. For example, IV-21 in the Accountability category asks the time it takes for the agency to make a decision: the interviewer seeks maximum, minimum, mean, and mode (within four categories): up to one month, one to six, six to twelve, more than twelve months. Similarly, Autonomy asks about ministerial interference (I-5 and I-7), the jobs directors held prior to appointments (I-21) and their post-term jobs (I-24). In the Decision-making area, the survey asks who makes ten different types of decisions (II-2), where different weights are given to the seven authorities listed. Thus, the survey is very comprehensive, providing a vast amount of information on processes. This assessment tool resembles the WRI approach. Determining the weights to be given the myriad of factors is a difficult task.

3. WGA World Governance Assessment--Surveying Local Stakeholders⁶: The World Governance Assessment started at the United Nations University in 1999 and has been operating as a project at the Overseas Development Institute in London since 2004: sixteen countries are evaluated in their large study, focusing on six principles in six areas. A book, reports results from a questionnaire that utilizes 41 questions and is divided into 7 parts. The project involves a country reporter who interviews leaders from ten stakeholder groups: Government, Parliament Civil Service, Business Media, Religious Organizations, the Legal and judicial field, Institutions of higher education, Non-governmental Organizations, and International Organizations. As such, the compilations represent comprehensive evaluations of the policy process. There is no focus on performance: the research “examines rules rather than results.” The six

⁴ Shantanu Dixit, Navroz K. Dubash, Crescencia Maurer, Smita Nakhooda (2007). *The Electricity Governance Toolkit: Benchmarking Best Practice and Promoting Accountability in the Electricity Sector*, June, World Resources Institute, National Institute of Public Finance and Policy, and Payas-Pune http://electricitygovernance.wri.org/files/EGI%20Toolkit%202007_0.pdf

⁵ Paulo Correa , Carlos Pereira , Bernardo Mueller, and Marcus Melo (2006). *Regulatory Governance in Infrastructure Industries: Assessment and Measurement of Brazilian Regulators* (April), PPIAF-World Bank. http://www.ppiaf.org/documents/recent_publications/RegulatorygovrpaperNo3.pdf

⁶ Goran Hyden, Kenneth Mease, Marta Foresti and Verena Fritz (2008). *Governance Assessments for Local Stakeholders: What the World Governance Assessment Offers*, Overseas Development Institute Working Paper 287, p. 3. http://www.odi.org.uk/publications/working_papers/WP287.pdf

principles, reflecting universal values inspired by the Universal Declaration of Human Rights, are (1) participation, (2) fairness, (3) decency, (4) accountability, (5) transparency, and (6) efficiency. The Team created proxy indicators for these concepts. Field tested twice, the instrument continues to evolve. Thus, the framework is particularly useful for characterizing the divergent perspectives of different stakeholder groups, focusing on political morality rather than economic efficiency.

4. *Actors, Arenas and Policies*⁷: An Inter-American Development Bank project examines the political economy of factors affecting sector productivity. While the study applies to any sector, the framework offers valuable perspectives on performance. This approach to evaluating the performance of economic institutions focuses on “stories” that emerge from different perspectives. The research team proposes to gather information from participants representing key socioeconomic interests, using structured. Their multi-dimensional matrix includes (1) Political Actors (key socioeconomic interests), (2) Mechanisms utilized by socioeconomic actors in their political demands (including campaign contributions and media campaigns), (3) Venues: arenas of the policymaking process, (including political institutions), and (4) Policy domains (policy areas—time frames, institutions, and historical context). The framework will be utilized by the IADB for a project on “The Political Economy of Productivity.” The focus is on developing an understanding of the political economy environment which affects both regulatory processes and sector performance.

5. *Institutional Assessment: Sector Laws, Policies, Administration, and Performance*⁸: A World Bank-funded study of the water sector by Saleth and Dinar contains a comprehensive questionnaire to be administered to country experts, specialists, and policymakers. The questions are general enough to be applied to other infrastructure sectors. The purpose of the instrument was to obtain a cross section of information on national characteristics. The questions ask about Water Law, Water Policy, and Water Administration. The resulting indicators are then used to link institutions to actual sector performance. Here, performance is taken to be multidimensional: physical performance (supply and demand), operational performance (ease of making sector allocations and production efficiency), and financial performance (cost recovery and pricing efficiency). The approach underscores the importance of moving beyond issues of accountability, transparency, and inter-agency conflict resolution to outcomes. Policies are based on the law, and the administration/implementation of those policies determines sector performance. The framework yielded a database that was used in subsequent empirical research. The approach illustrates the value of evaluating an entire regulatory system rather than focusing only on processes utilized by a sector regulator. It also demonstrates that qualitative information can be incorporated into econometric studies. Thus, it provides a useful basis for subsequent policy analyses.

6. *Drivers of Change: Sector Governance and Political Economy*⁹: The UK Department for International Development funded the Overseas Development Institute to develop a framework for evaluating how donor groups can evaluate (and improve) governance in the water sector. The methodology applies to other infrastructure sectors as well. The project adopted an interdisciplinary approach to governance: emphasizing the changing role of government, the impacts of institutional

⁷ Maria Victoria Murillo, Carlos Scartascini, and Mariano Tammasi (2008). “The Political Economy of Productivity: Actors, Arenas, and Policies: A Framework of Analysis,” Inter-American Development Bank Research Department Working Paper # 640 (June).

⁸ R. Maria Saleth and Ariel Dinar (1999). Evaluating Water Institutions and Water Performance,” World Bank Technical Paper No. 447. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/21/000094946_99090305381648/Rendered/PDF/multi_page.pdf

⁹ Janelle Plummer and Tom Slaymaker (2007). “Rethinking Governance in Water Services,” Overseas Development Institute, Working Paper 284, October. http://www.odi.org.uk/publications/working_papers/WP284.pdf See *Improving Governance and Fighting Corruption in the Electricity Sector: A Sourcebook*, World Bank: Energy Sector Board. Chapter 12 identifies a number of frameworks for evaluating governance.

complexity, and relationships among different levels of government, key actors, and civil society. The *Drivers of Change* approach asks six questions. Besides considering process issues, the framework identifies sector drivers of change. It also acknowledges the importance of incentives in determining sector outcomes: (1) Who determines who gets what, where, and how? (2) What are the incentives that influence these actors? (3) What are the external factors that interact with these incentives? (4) How do these change over time? Key issues include government effectiveness, financial management, transparency, engagement of civil society, and pro-poor policies. Thus, the framework emphasizes the “big picture.”

7. *Infrastructure Regulatory Systems*¹⁰: This World Bank book by Brown, Stern, & Tenenbaum (BST) is the “gold standard” for assessing the effectiveness of infrastructure regulatory systems. The volume provides a comprehensive listing of critical standards, carefully defines terms, and provides numerous links to the literature. Three types of evaluations are included in the volume’s appendices. The increasing level of detail provides insights into institutional design, the regulatory process, market structure, and other features of the electricity industry. The questions could be adapted to address issues in other infrastructure sectors as well. The purpose of the assessment tool is to extract background information and to highlight areas of concern. The approach incorporates regulatory governance/process indicators into the survey; however, the surveys include a number of questions about market structure as well. Furthermore, the volume emphasizes the importance regulatory decisions. Rules and incentives affect actual infrastructure performance. The emphasis on both substance and process gives the framework a balance that is lacking in some other survey instruments. It is good to know the role of citizen participation or the clarity of regulatory responsibilities. However, if the analysis gives minimal attention to actual sector performance, the implications for reform are limited.

In addition, more comprehensive studies can investigate links between components of the index and sector performance.¹¹ The authors develop a regulatory experience index that reflects the gradual impact of effective regulatory governance over time. Based on their econometric modeling effort, the authors conclude that the index has a strong positive impact on electricity distribution company performance. We can expect more comprehensive studies in the future, given the growing availability of time series data on regulatory governance and sector performance.

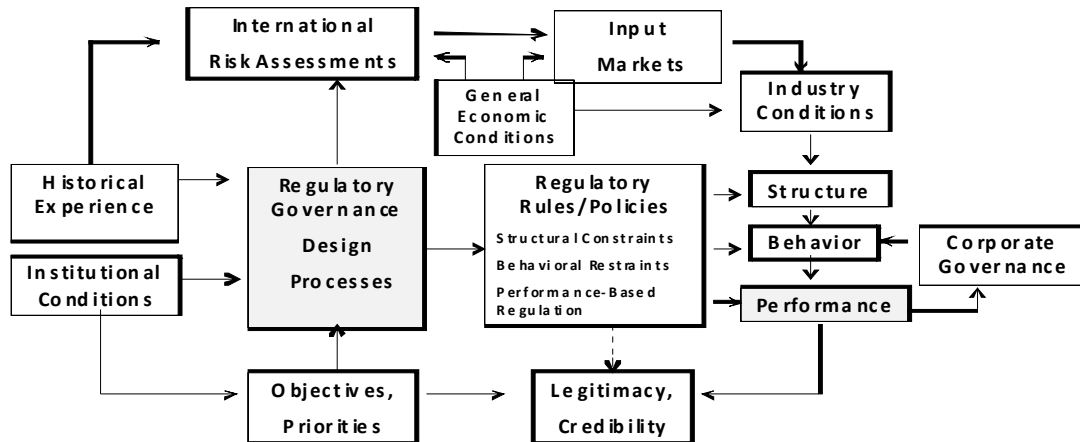
Factors Affecting Sector Performance: As we have seen, some approaches emphasize governance based on the design of regulatory institutions, some focus on the process (especially on transparency and citizen participation), and others highlight how incentives link to sector performance. Figure 1 from Berg (2000) identifies factors affecting infrastructure performance and citizen perceptions—especially (a) the legitimacy of regulatory institutions from the standpoint of investors, multilateral banks, and donors, and (b) the credibility of the agency in the eye of citizens (both those receiving service and those as yet un-

¹⁰ Ashley C. Brown, Jon Stern, and Bernard Tenenbaum (2006). *Handbook for Evaluating Infrastructure Regulatory Systems*, (The World Bank: Washington D.C.) xx-397. The South East Europe Benchmarking Report at http://ec.europa.eu/energy/gas/benchmarking/doc/2/sec_2003_448_en.pdf has many features identified in the Brown, Stern & Tenenbaum framework. It contains both regulatory process elements and sector performance elements. A questionnaire developed by Pierce Atwood is available at <http://www.seecon.org/infrastructure/sectors/energy/documents/benchmarking/questionnaire.pdf>. Also see *Improving Governance and Fighting Corruption in the Electricity Sector: A Sourcebook*, World Bank: Energy Sector Board. Chapter 12 identifies a number of frameworks for evaluating governance. For factors affecting transparency, see *Regulatory Transparency: International Assessment and Emerging Lessons: A Final Report for the World Bank*, from NERA Economic Consulting, June 6, 2005.

¹¹ Andres, Luis; Jose Luis Guasch, Sebastian Lopez Azumendi (2008). “Regulatory governance and sector performance: methodology and evaluation for Electricity distribution in Latin America.” Public Policy Working Paper WPS 4494. http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166093&entityID=000158349_20080128115512

served).¹² The article outlined how organizational resources, the legal mandate, and core agency values affected decisions that determine structure, behavior and performance in regulated industries. The Figure illustrates the factors influencing sector performance. Actual performance, in conjunction with national priorities (promised performance) affects the legitimacy and credibility of the regulatory system. Note the many factors other than regulatory governance (agency design and processes) that affect sector performance.

Figure 1. Factors Affecting Sector Performance and Regulatory Credibility



The framework depicted in the Figure facilitates the identification of links between industry conditions (including economies of scale and scope), market structure (including vertical integration), institutional constraints, regulatory policies, and sector performance. Quantitative analyses of trends are facilitated when decisions can be placed in their legal and institutional context. Given the range of methodologies available to policy analysts, we can expect national regulatory systems to be benchmarked more systematically as the financial community, international donor agencies, and citizen groups expand their work in this area.¹³ The number of surveys and quantitative studies seems to grow exponentially. The Brown, Stern, and Tenenbaum (BST) framework is particularly useful for characterizing the elements of the regulatory system that are more easily quantifiable: the skeleton of the system. Stories (or narratives) are also needed to gauge the muscle that overlays the skeleton and of the health of the body’s organs. Thus, each of the methodologies outlined above sheds light on processes (and often, on performance).

Concluding Observations: Sustainable sector outcomes generally reflect the “Five Cs” of a sound regulatory system. These are strategies for engaging the public and policymakers:

Coherence: Establish the tariffs according to the required output and levels of service quality; seek mechanisms for promoting access by low-income consumers. Reality-based business plans are crucial for long term financial sustainability of infrastructure service providers.

¹² Berg, Sanford (2000) “Sustainable Regulatory Systems: Laws, Resources, and Values,” *Utilities Policy*, Vol. 9, No. 4, 159-70.

¹³ Nation-specific evaluations are beginning to appear. See Gustavo Gomez and Amy Mahan (2007), “An Institutional and Practical Evaluation of URSEC---Uruguay’s Communication Regulator—and its Relationship with Citizens,” WDR Dialogue Discussion Paper 0706 at www.relateonline.org.

Creativity: Support incentives for cost-containment and new technologies for sector providers. Social tariffs and subsidies are required to facilitate universal access to low-income consumers. The non-served groups also need to be reached with innovative solutions as operators expand access to services.

Communication: Serve as a catalyst for bringing together different infrastructure stakeholders. Proactive regulators can reduce social conflicts in these sectors. Agencies have to consider all stakeholders and their key concerns when making decisions. Consumers are the first (not the last) to be consulted in network expansion decisions. Regulators need to be able to communicate strategically, without being political.

Collaboration: Promote interactions with related agencies and organizations; for example, for water this would include water resource managers, social service organizations, public health agencies, and environmental groups. Furthermore, collaborations with agencies in other countries can strengthen regulatory capacity, as lessons and data are shared.

Credibility: Seek transparency and consistency in the regulatory process since cash flow will be driven by future decisions. The new agency's credibility depends heavily on data collection and analysis. Regulators need to document past trends, define baselines, and identify reasonable targets—based on current best practice.

These principles are neither new nor original, but when they are ignored by those developing and implementing policy, the results can be damaging. For example, predictability and transparency are two elements lacking in many regulatory jurisdictions. Regulators need to be consistent in both process and in the substance of decisions. Transparency implies clear rules and functions that give operators confidence in the professionalism of those providing oversight. The public is seldom fully aware of current infrastructure policies and rules. Best practice regulatory institutions need to take a more active role in educating the public and in communicating sector developments to all stakeholders. It is said that “the fewer the facts, the stronger the opinion.” One way to reduce the divisive role of rhetoric is to introduce information about the costs and benefits of different policy options. If the regulatory process is transparent, stakeholders (including political leaders) will better understand regulatory decisions. Furthermore, regulatory incentives can have different impacts on public and private utilities.¹⁴

Brown, Stern, and Tenenbaum (2006) emphasize three meta-principles: *Credibility*, *Legitimacy*, and *Transparency*. In addition, the authors implicitly recognize *Efficiency* as a fourth meta-principle. After all, if policy can create a positive-sum game, then it is easier to get buy-in from stakeholders. After all, increased efficiency in the sector means that more resources can be devoted to poverty alleviation without creating new fiscal burdens. While far more politicians have run on a platform of fairness than on efficiency, the latter deserves to be highlighted in evaluations of regulatory performance.

Ultimately, the credibility and legitimacy of a government agency depend on the acceptance and understanding of the regulatory process by the consumers and other stakeholders. The population that is expecting to receive services is directly affected by tariffs and quality of service. The impact of infrastructure reform depends on national circumstances, income distribution and growth, and the legal system. Legitimacy, and some degree of social acceptance, will only be achieved on a record of accomplishments. Staff expertise, learning from regulatory experiences elsewhere, and the use of regulatory instruments like benchmarking are the basis for the future infrastructure improvements and poverty reduction in emerging markets.

¹⁴ In a study of electricity distribution firms in the Ukraine, the author (along with two other researchers) found that privately-owned utilities appeared to inflate their costs of service (given the cost-plus nature of regulation adopted there) but they also significantly reduced technical and commercial losses (theft) relative to state-owned enterprises (again in response to incentives to do so). The results suggest that care must be taken when evaluating utility performance; regulatory rules can have different impacts on utilities with different types of ownership: Berg, Sanford, Chen Lin and Valeriy Tsaplin (2005), “Regulation of State-Owned and Privatized Utilities: Ukraine Electricity Distribution Company Performance,” *Journal of Regulatory Economics*, Vol. 28, No. 3, 259-287. Also see Burns, P., Jenkins, C., Mikkers, M., and Reichmann, C. (2007), “The Role of the Policy Framework for the Effectiveness of Benchmarking in Regulatory Proceedings,” in Coelli and Lawrence, op. cit.