BOOK REVIEWS

A Policy of Discontent: The Making of a National Energy Strategy by VITO A. STAGLIANO, (Tulsa, Oklahoma: Pennwell Press, 2001). 446 pages, ISBN 0-87814-817-5.

Vito Stagliano provides an insider's view of the making of the National Energy Strategy (NES), which led to the subsequent Energy Policy Act of 1992. At the time, he was a career Federal Executive and Deputy Assistant Secretary of Energy. His view of energy policy making shows us that like sausages you may not want to watch energy policy being made. However, unlike sausages, you may not want to consume the policy once it has been made.

The author starts with a nice overview of U.S. Federal Energy policy. He begins with the early 1930s during the Roosevelt administration, when natural resource planning came under the purview of the federal government. He traces some of the New Deal Policies including the formation of the Tennessee Valley Authority, the Bonneville Power Administration, and the Federal Power Commission. Early oil policies included the oversight of the Interstate Oil Compact Commission under the auspices of the Connolly Hot Oil Act, while the Natural Gas Act gave the Federal Government authority over the interstate natural gas market.

During World War II, Secretary of Interior Ickes was given authority to buy and sell foreign oil to ensure supplies to the allies as well as to control domestic prices and ration civilian use of oil. In the decade after the war, energy policy centered on the use of nuclear power for civilian uses leading to the Atoms for Peace Program, antitrust action against oil companies, which was subsequently dropped, federal sponsorship of synthetic fuels, and Federal control of wellhead prices of gas sold in interstate commerce. As cheap foreign oil flooded world markets, synfuels proved uneconomic. The US placed first voluntary and then mandatory import controls to protect the domestic oil industry, which probably contributed to the formation of OPEC in 1960.

The energy crises of the 1970s saw the next big wave of energy legislation. Few of the first policies relied on markets forces. Many of the policies were disappointing. More money was flung at synfuels. There was unrealistic talk of energy self sufficiency. Corporate auto fuel efficiency (CAFÉ) and building code standards were passed. The U.S. Department of Energy, the International Energy Agency, and a strategic petroleum reserve were set up. Oil and gas remained under price controls and natural gas was forbidden to be used in new power plants. Crisis rhetoric abounded that would be recycled later with the formation of the Energy Strategy. Although conservation and renewable

technology were not controversial, energy price decontrol and energy taxes were.

However, nearing the end of the decade of the 1970s, the failure of market intervention had become apparent and the stage was set for price deregulation in oil and gas and more competition in the electricity market. This move toward market forces was continued by the Reagan administration with a brief interlude of opposition to large Soviet gas pipelines from Siberia to Western Europe.

After the brief historical policy introduction to set the stage, the majority of the book focuses on the 'ins and outs' of the making of the U.S. National Energy Strategy (NES). The NES evolved out of critiques that the Reagan administration had not had an energy strategy. These critiques were further fueled by the increasing evidence of nuclear contamination in the U.S. military nuclear program. Under the guise of national security and secrecy, the U.S. Department of Energy had not adhered to the nation's health, safety and environmental laws.

The book deals with the personalities and peccadilloes of the major players involved including James Watkins the Secretary of Energy, who led the NES initiative, Henson Moore, the Deputy Secretary of Energy, Linda Stuntz, Deputy Under Secretary of Energy, and the book's author as Deputy Assistant Secretary of Energy. These major architects were often opposed by members of what were referred to as the Troika Agencies - Michael Boskin and Richard Schmalensee of The Council of Economic Advisers (CEA), Nicholas Brady, the Secretary of Treasury, and Richard Darmon and others at the Office of Management and Budget (OMB). In addition, Whitehouse Chief of Staff John Sununu, the President, members of Congress and others played a role in the formation of the strategy.

Watkins maintained a commitment to developing a national consensus for NES. Eighteen public hearings were held from August 1989 to August 1990. These hearings were opposed by the Troika and John Sununu as they were likely to stimulate too many interventionist suggestions that would have to be opposed by the President. And indeed, over 500 suggestions came to the fore that illustrated the heterogeneous nature of U.S. society. The only consensus was the support for conservation and solar power, while there was much disagreement on nuclear, coal, energy taxes, and the means to satisfy objectives.

Policy actions suggested in the interim NES report based on some of the hearings and released in April 1990 included support for integrated resource planning, enhancing energy efficiency, increasing use of renewable energy, streamlining technology transfer from national labs to the private sector, improving mathematics and science education and pollution prevention and waste minimization.

In support of the project, a comprehensive modeling project - the National Energy Modeling System (NEMS) was developed and studies were commissioned by national labs on global warming, conservation and efficiency,

renewable energy, and technology transfer. Watkins wanted to analyze all 500 options. The Troika insisted analysis of so many options was infeasible and even objected to the smaller number actually analyzed. They believed that the analysis should focus on key objectives of the administration, particularly regulatory reform, not the topics gleamed from the public hearings. However, sixty-seven options were actually analyzed by October of 1990 and dispatched to agencies involved with NES for their comments. These topics could be loosely included into for categories: (1) energy security, (2) the electricity sector, (3) environmental policy, and (4) research, development, technology transfer and education. Former ineffective policies such as synthetic fuel initiatives, oil quotas or price controls and federally mandated fuel choice and technologies were notably absent from consideration.

Iraq's attack of Kuwait and the subsequent Gulf war, while the NES was being developed, once again focused attention on energy security. The book outlines some of the events during this time, the details of the oil embargo on Iraq, DOE's analysis and recommendations for oil markets, the responses of the Senate and the House, and the debate on using the strategic petroleum reserve (SPR) to lower oil prices during this period. DOE wanted to release oil early on to quell the markets, whereas the Whitehouse and others wanted to wait and see. The chronology of events relating to the SPR supports earlier critics, who argued that bureaucratic inertia and risk aversion would lead to great hesitancy to use the SPR.

During this period, work on NES continued. Six cabinet meetings took place from November 1990 to January 1991 in which the sixty-seven options were debated and crafted into the final document released in February. The final document was much narrower than the broad agenda proposed by the U.S. DOE with many of the tax, rebate, and efficiency standards having been removed. The author notes that the two main innovations to the NES were that it did not translate a call for reduced oil imports into import controls or tax increases and it called for regulatory reform in the electricity industry.

The last chapter deals with the Congressional conversion of NES into the Energy Policy Act of 1992 (EPAct) until the final anticlimactic signing of a bill by President W.H. Bush on an oil rig in Louisiana. As with the making of NES, the author follows in great detail the people and events as they unfolded in the Congress and uses the same care in documentation with a multitude of references.

The epilogue briefly outlines the energy policy and events in the Clinton administration – the failed BTU tax, the rise of gas guzzling and unsafe SUVs, the Kyoto Protocol signed but never sent to Congress, failure to issue regulations for alternative fuels for private vehicle fleets as called for in EPAct, the California power crisis, and OPEC's increasing control of the market at the turn of the century.

The book has an index and would be appropriate for a general audience. It should be of interest to those concerned about the political process and the various counteracting forces that impinge upon it – national versus international, energy consuming regions versus energy producing regions, and interests versus entitlements. It demonstrates how the ambitions, skills, and preferences of the policy makers and the politicians come together to form the policies that become the laws of the land. It will be a disappointment to those who want the details of or critical economic analysis of the NES or the Energy Policy Act of 1992.

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Power System Economics: Designing Markets for Electricity, by STEVEN STOFT, (IEEE Press/Wiley-Interscience Press, May 2002), 496 pages. ISBN 0-471-15040-1

How do you find the right answer to a market design question? At a recent meeting, the head of a major organization in the business of designing and implementing restructured electricity markets stated that it's whatever the stakeholders collectively decide.

This conception that there are no right answers known in advance is usually extended in one of two ways. There's the pessimistic view that market design choices are an exercise in pure political power by stakeholders and regulators. The optimistic view holds that somehow the process of consensus results in the best possible result. To the extent that these consensus discussions are guided by reason and evidence, business acumen or "many" years' experience (in a regulated world, of course) provides that kernel of intellectual insight that shapes the final outcome.

This is not to say that stakeholder input is not valuable or even critical to the design of markets. Stakeholders have specific insights, based on their business models, that Independent System Operators (ISOs) lack. They also have a vested interest in protecting their businesses — an important impetus for the prioritization of tasks and the type of market rules that are necessary. While ISOs are nominally independent of market participants, it would be naïve, however, to think that they are completely objective or have no preferences, some of which may not be based solely on the social welfare goals of efficiency and reliability.

There is, however, some well founded cynicism about the ability to determine appropriate market design elements. It is based on years of hearing at least two sides to many issues articulated by well respected experts sponsored by different camps, and by the belief that if you follow the money, you can

determine an advocate's point of view without even hearing that person speak. Part of the cynicism, however, comes from ignorance. If one does not know what one is talking about, all points of view seem equally viable, particularly in a design process that relies heavily on inputs from all parties. Alternatively, since all market participants are tainted, any input they might have is self-serving and should be heavily discounted — if not outright ignored.

Steven Stoft's makes an excellent attempt to address this ignorance problem in his book. His stated goal is to provide a practical introduction to power-market design, which he accomplishes mightily, thanks in large part to the simple and easily verifiable examples he provides throughout the book's five major sections (power market fundamentals; reliability, price spikes and investment; market architecture; market power; and locational pricing) and forty-four chapters. Stoft, moreover, divides his conclusions into two categories: results and fallacies. Results are key points that should be understood in each topic; fallacies are popular misconceptions that result in confusion and, presumably, poor market design choices.

Stoft does not have a religious belief in competitive markets: he believes that competitive markets, like regulated markets, must be designed well. Experience, he argues, has shown that mediocre designed competitive markets are superior to badly regulated systems (England), but that poorly design markets are worse than mediocre regulation (California).

Part One of the text covers the basic engineering and economics one needs to think intelligently about market design. The author distinguishes between market structure and architecture. The former refers to properties of the market closely tied to technology and ownership, and has its historical roots in the structure-conduct-performance model of industrial organization a half century ago. Structure consists of reliability requirements, the transmission and policy, the availability of demand elasticity, the extent of long-term obligations by suppliers, and supply concentration (which has been the almost exclusive topic of structure). Architecture includes submarkets and their interrelations, economically connected primarily through the ability to arbitrage but also connected physically, such as in wholesale spot markets, wholesale forward markets, and ancillary services markets.

Part Two is a discussion of the interrelationship between reliability, energy price spikes, and investment in generation capacity. Stoft's primary point here is that competitive electricity markets require explicit regulatory demand for a combination of real-time energy, operating reserves, and installed capacity backed by a regulatory pricing policy. The need for regulatory demand is due to the extreme difficulty the power supply system has in storing its output, and because of two demand-side flaws: the lack of metering and real-time billing and the lack of real-time control of power flow to specific customers. Pricing policy is necessary because the ISO cannot sell for a profit and, during shortages, must decide either to continue to buy power at extremely high prices only to resell it at that price to customers, which it cannot curtail their load, or to stop

purchasing the power. Building on the foundation Stoft establishes, he goes on to discuss whether price spikes will recover generators' fixed costs, tradeoffs between price spikes and capacity requirements, and inter-control area competition for reliability.

Parts Three and Five address the fundamental elements of properly designed electricity markets. Topics include two-settlement systems, locational (congestion pricing) ancillary services, unit commitment issues, and markets for reserves. Stoft addresses both the theory and the practice of electricity markets, although he gives the latter a somewhat abbreviated treatment. Part Four presents and codifies some important results regarding market power analyses: the difference between economic and regulatory definitions of market power, the potential for monopsony power by demand, the limitations of Herfindahl-Hirschman and Lerner Indexes in modeling market power, and the need to focus on withholding in proving the exercise of market power.

One major topic that this book does not address, and which has recently come to the forefront of market design issues, is transmission planning and expansion. Whether and under what conditions regulated transmission companies should be required to build transmission because the "market" has not done so are critical questions. They are part and parcel of market design because of the feedback loop between transmission planning and expansion policies and market behavior. If transmission planning and expansion policies are inconsistent with market design — for example, if they result in the socialization of the costs of regulatory mandated projects — the incentives that make markets work can be disrupted. In addition, transmission plays a critical role with respect to the reliability benefits of capacity markets, which is another element of market design that must be considered. Thus, transmission planning and expansion policies must come under the topic of market design and analyzed accordingly. Again, this is missing from Stoft's text.

Nevertheless, the author has successfully taken on a substantial task: to ferret out results from fallacies in the design of competitive power markets. His work should be used, not only to direct decisionmakers to the right answers when they exist, but also to make the point that even when there is no right answer, there are plenty of wrong ones to avoid.

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Energy and Environment: Multiregulation in Europe edited by PIOTR JASINSKI AND WOLFGANG PFAFFENBERGER (Aldershot, UK: Ashgate Studies in Environmental Policy and Practice, December 2000), 179 pages, ISBN 0-7546-1311-9.

This book consists of seven case studies that focus on the tradeoffs in regulation between energy and the environment in an increasingly integrated Europe. The energy regulator wants to decrease energy prices to increase consumer welfare, while the environmental regulator wants to increase prices to decrease energy use. The studies include the European Union's (EU) energy and environment policy, renewable energy sources (Germany and Britain), energy and environmental regulation in transitional economies (Poland and Lithuania), energy efficiency in Germany, and fiscal energy issues in Britain.

The first paper provides an overview for the book by reviewing the common EU energy and environmental policy and the interaction between the two types of policy. There has been a dramatic shift in energy policy from energy security in earlier years towards the "quality" of energy supply, which in this context can mean less polluting or more economical. This policy shift is also reflected in the shift from energy planning towards market liberalization with energy regulation where appropriate. This regulation is usually aimed at lowering prices. At the same time, environmental policies have very often been standard setting and applied in a heavy-handed manner.

Conflicts between policies and nations are also apparent within particular fuels. Coal is a prime example where national subsidies have encouraged coal use, while current EU economic and environmental goals want to discourage its use. Prior to 1989, there was little EU electricity policy. Since then steps have been taken to create a single electricity market by increasing price transparency. Competition is being increased by extending market access across national boundaries and to independent power producers, distribution companies, and large consumers. However, the environmental proposals within these policies for integrated resource planning and a carbon tax have been watered down.

The common energy policy goals for 2010 include market integration, sustainable development, environmental protection, and supply security. Tools applied to these goals include integration of energy and environmental objectives, full cost pricing of energy, promotion of renewable energy sources, and improved energy efficiency. However, the author sees difficulties in reconciling the different priorities of energy and environmental regulation in the EU, which will only become more difficult as more members join in the coming decade.

The remainder of the book deals with aspects of energy and the environment by specific countries. Four of the papers – two for Britain and two for Germany, deal with the problem of promoting nonfossil, (clean from a climate change perspective) energy sources. The fossil fuel levy (FFL) in

England and Wales in 1989, which was around 10% of a customer's electricity bill, was designed to protect nuclear power, although it may have had some other positive by products including improved energy security, environmental protection and technological benefits.

The nonfossil fuel obligation (NFFO) in Britain, the subject of the second paper, is more directly the result of environmental considerations. As for the FFL, it was introduced in 1989 with the adoption of the Electricity Act. It required all public electricity suppliers to generate a certain amount of their generating capacity from nonfossil sources with the nuclear part of NFFO separated from other renewables.

The two papers on Germany look at energy efficiency and renewables. Energy efficiency has implications for energy security, long-term energy supply, and the environment. The author uses statistical evidence to show that the energy intensity of industry in 1996 was 40% below that of 1973 as the result of less fuel used in products as well as inter- and intra-sectoral changes of economic structure. German energy efficiency policies have included informational and advisory services for consumers, financial subsidies and tax relief.

The second paper on Germany concentrates on the development of renewable energy, the barriers to renewable energy, and how the barriers can be removed. It provides data on the present use of renewable energy (currently about 2% of the German supply of primary energy) along with the technical potential and production costs for renewables. Policies aimed at renewables have included emission regulation (standards), subsidized interest rates, and tax allowances. The author also suggests other instruments to promote renewables including energy taxes for electricity production from fossil fuels or nuclear energy, legal fixation of electricity price (from renewable energy), and a quota for power from renewable energy.

Two of the papers are concerned with energy and the environment in transitional countries. The first deals with the problems of environmental and energy policies in Poland. As with other centrally planned economies, the Polish economy was capital intensive with poor environmental quality, and was economically inefficient with essential inputs allocated administratively. Firms were operating under soft budget constraints, so there was no need to pay much attention to price stimuli. General system inefficiency and inadequate environmental policy both contributed to poor environmental quality. After independence in 1989, the author shows with considerable statistical support that Poland improved its environmental performance. He argues that this progress cannot be explained by the increasing of economic efficiency and energy efficiency. Rather he claims that the pollution reduction was the result of more effective enforcement accompanied by sharply increased environmental investment expenditures.

However, I disagree with his contention and believe that the economic crisis and new economic conditions (self-financing, closing of economically inefficient coal mining, etc.) were the main reasons for the environmental

improvements. For example in Poland, government anti-pollution measures produced a rather limited response from the economy because of the resistance of large energy companies and utilities who were to implement the emission standards.

The Poles passed a new Energy Law in 1997. The Law favors non-conventional energy with distributors required to buy the electricity or heat generated from such sources. It establishes surveillance over the energy sector by the Energy Regulatory Authority, which controls the prices of energy sources excluding hard coal. Although coal reserves are reasonably plentiful in Poland, it is a high-polluting energy source, and policies for fuel switching are being contemplated. The Energy Law considers regulations that can stimulate renewable energy sector development such as subsidies, investment credits, the inclusion of external costs in the price of energy, and the obligation for the energy distribution companies to buy electric energy from renewable sources. However, some of these measures, such as the inclusion of external costs in the price of energy in my opinion are quite difficult to implement and as practice shows, such regulations very often cannot be enforced properly.

In the second paper on transitional economies, the author begins with the now familiar story about excessive pollution under a planned system. He describes energy demand and supply in Lithuania, energy and environmental regulation including regulatory institutions, regulatory tools, and the application of international experiences. His description of current energy supply was somewhat hard to follow, but the development of the energy and environment regulation is quite detailed. He describes development of the institutional and legal framework, the stimulation of renewable energy, the restructuring of the energy sector and its regulation. The main observation is that all of the energy sectors have been vertically integrated, but by the end of the 90s, the Government should have approved separation of electricity distribution from transmission.

In the case of Lithuania, there has been significant reduction of final energy demand and the consequent emissions due to the economic crisis, which is common for countries in transition. An environmental protection Law was passed in January 1992, which established the general principles for environmental protection. Their national Environment Protection Strategy was prepared and approved in 1995. It defines the main priority goals in relation to the environmental protection to reduce SO_2, CO_2, and NO_x emissions from stationary sources and establishes measures in order to achieve them.

While the book does not have the breadth to be an overall handbook in energy and environmental regulation, it does contain many tables and facts that would be useful for readers and regulators interested in the particular topics. The choice of topics seems a bit stochastic, but they do provide more general lessons for others considering various energy policies.

The successes of the large US market in the last decade may be providing some of the European impetus for liberalizing and integrating their

markets. However, this book clearly demonstrates some of the tensions and inconsistencies that they may face. For example, uniform environmental regulations might not provide the most economically efficient regulations, privatization is particularly sensitive in transitional economies, and there are problems created by different levels of development. Missing from the book was some discussion of the role that large energy companies play in the European market and some of the uncertainties of environmental effects.

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Alternating Currents: Electricity Markets and Public Policy by TIMOTHY J. BRENNAN, KAREN L. PALMER AND SALVADOR MARTINEZ (Washington, D.C.: Resources for the Future, 2002), 224 pages, Paper, ISBN 1-891853-07-4, Cloth, ISBN 1-891853-52-X.

Books that introduce readers to a subject are the most difficult to write. The authors must understand everything about the subject, be able to imagine what it is like to know very little, and conceive of a plan to move the reader from the latter to the former state through the use of ordinary language rather than jargon.

For the most part *Alternating Currents* anticipates such questions and answers them in an accessible manner. For example, it explains terms like kilowatt-hour, combined-cycle gas turbine, ancillary services, and loop flow. It also describes the history of electricity regulation in the United States and its restructuring in Chile, the United Kingdom, California, and Pennsylvania. Terms such "stranded costs" and "securitization," which figure so prominently in restructuring discussions, are defined. For example, the book explains how California was able to offer a ten-percent rate cut to customers by converting private depreciation of generation units to state debt (securitizing) at the expense of federal taxpayers.

The discussion of the California crisis is particularly refreshing because of the absence of simple explanations. The chapter correctly argues that California had bad luck (hydroelectric shortage and weather-induced natural gas price increase) as well as poorly designed institutions (16-part bidding system and separation of electricity and reserve markets) that resulted in high prices and shortages. In addition, the chapter cautions that neither market power nor the absence of long-term contracts are promising as central causes of California's difficulties.

The second part of the book consists of eleven chapters that discuss policy issues. Many of the chapters discuss industrial organization issues such as natural monopoly and the regulatory difficulties that exist because generation

is potentially competitive while transmission and distribution probably are not. Another chapter explains transmission pricing including two-part tariffs and postage-stamp and locational-marginal pricing.

Their discussion of the characteristics of the transmission system (p. 20) as well as the controversy over state versus federal regulation (p. 133) is very useful because it emphasizes the discrepancy between the electrical engineering characteristics of the transmission system and the shared regulatory responsibilities of the federal and state governments. "Although different portions of transmission grids in different states may be owned by different companies, the fact that electric currents take all paths between destinations implies that the 'grid' is, in effect, a single entity that crosses state lines." (p. 133).

Not only are electricity transmission and generation economic complements, they also are economic substitutes. Generation can be built close to load or far away accompanied by a transmission link. Ideally, market forces determine the least-cost electricity-supply strategy. However, in the partially deregulated real world, transmission lines are paid for by all customers of the utility that owns the line whereas generators are paid for only by the customers who use the power. Thus the current regulatory regime biases choices toward transmission because people other than the beneficiaries (p. 133) pay the costs

I think highly of the work of the electricity scholars at RFF. My only criticism, which may be unfair for an introductory survey book, is that the authors only allude to some of the topics about which a naïve observer would inquire, rather than tackle them head on. The discussions give the reader very little sense of the intensity of the controversies that continue to exist among electricity experts, particularly about transmission.

In their discussion of locational marginal pricing, for example, the authors only allude to the problems involved in optimal transmission expansion. In normal competitive markets, the existence of rents signals investors to invest in a particular sector to expand supply and reduce prices (and the rents). Locational marginal pricing signals the existence and economic cost of (and rents created by) transmission congestion, but because transmission is a regulated monopoly, normal market forces do not expand capacity and dissipate the rents. (For an example of just how much transmission congestion can increase electricity prices—and with apologies for the shameless self promotion of Regulation—see "Competition Requires Transmission Capacity: The Case of the U.S. Northeast" by Douglas R. Hale, Thomas J. Overbye, and Thomas Leckey, *Regulation* 23(2): 40-45). In fact, the recipients of the rents have strong incentive to resist capacity expansion through political means such as cooperating with environmental groups—a classic "bootlegger and baptist" coalition ("Bootleggers and Baptists: The Education of a Regulatory Economist" by Bruce Yandle, *Regulation* 7(3): 12-16).

Such a coalition is the likely outcome if stakeholder boards such as a non-profit Independent System Operator (ISO) govern transmission systems.

Again the authors just hint at the existence of controversy over the governance of transmission, "Some observers have expressed a concern that the non-profit nature of ISOs may make them more susceptible to political pressure that could prevent providing transmission and distribution service at least cost." (p. 79) But that one sentence does not really convey to the reader the intensity of the conflict about transmission organization. The ISO is radical industrial organization because it separates ownership of transmission (by the utility) from control (ISO boards consist of non-owner stakeholders including consumer and environmental members). For a fuller discussion of those issues see, "Can Nonprofit Transmission Be Independent?" by Robert J. Michaels, *Regulation* 23 (3): 61-66.

Chapters ten and eleven provide excellent summaries of the very technical issues associated with balancing the supply and demand for electricity in real time and providing emergency reserve power. The authors briefly discuss the conflicts between engineering and economic views of generation adequacy, "NAERO (North American Electric Reliability Organization) may need to broaden its definition of service reliability from an engineering goal to an economic concept . . . "(p. 125).

The discussion of generation adequacy does little to convey to the reader the vigorous debate about whether prices or administrative installed-capacity requirements can or should be used to induce generation supply expansion. The authors maintain, "In a competitive market, adequacy of electricity supply will be resolved largely in the marketplace. During periods of peak demand, when available generating capacity is more fully utilized, the market price of electricity is bid up (p. 123)."

Their statement reflects my own view, but after the California debacle many electricity analysts now favor state-mandated capacity requirements so that prices are not bid up. Even those who believe in market forces realize that the political system is unwilling to allow investors to keep rents earned during periods of tight supplies. If investors are worried about being allowed to keep profits, how can market forces be relied upon to induce new generating capacity?

In writing *A Shock to the System* (RFF, 1996) and *Alternating Currents*, Tim Brennan, Karen Palmer, and their colleagues at RFF have provided invaluable one-stop shopping electricity-policy reference tools for scholars, policy makers, and students. All readers of this journal should have a copy on their shelves.

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Las estrategias de diversificación de las empresas eléctricas (Electric Utilities Diversification Strategies) by ENRIQUE LOREDO FERNÁNDEZ, (Madrid, Spain: Editorial Civitas/Electra de Carbayín, 2000), 249 pages, ISBN 84-470-1498-3.

Loredo combines agency theory with a resource-based view to explain the diversification strategies of British electricity firms (the Regional Electricity Companies, RECs). When a company develops its competitive potential, a series of its resources and capabilities cannot be fully exploited in the present businesses. This idea is taken from Penrose (1959). Those resources and capabilities will be applied to diversified businesses where they can offer superior rents. The new businesses start when the transaction costs involved in the selling of those resources and capabilities are too high.

This book begins by describing the transformation of the electricity regulatory framework in Britain, and its higher levels of competence. Together to this issue, the firms in the electricity industry expanded into new markets or in new businesses in non-regulated activities. The work is aimed at determining what theoretical framework best explains this diversification strategy from the Organizational Economics. It gives details about the strategies of the RECs in the "British experiment" of restructuring, liberalization and privatization started in 1983 with the Energy Act.

The point (p. 29) is—following Montgomery (1994)—that the agency theory and the resource-based view are the most popular perspectives in academia and in managerial environments.

From the first theory (agency theory) he derives the *framework hypothesis 1* (p. 55): "With separation among owners and managers, and when the governance mechanisms are not efficient, there will be a positive relationship between the free cash flow and the diversification investments."

From the second one (resource view), he develops the *framework hypothesis 2* (p. 90): "The diversification decision depends on the actual resources, the complementary assets needed and the characteristics of the desired market." (Resources here encompass, not only energy, but all the resources available to a firm). He aptly synthesizes the theory relying heavily on Penrose with emphasis on her original version (Penrose, 1959).

How are the two perspectives integrated? On this point, essential for his research, Loredo would offer a deeper analysis. He admits (p. 90) that "both theories start from essentially different premises", but "is it possible that they cannot be absolutely contradictory" (quoting Montgomery, 1995). The author establishes that "their conclusions could be complementary," because each one of them underline different aspects of the diversification process.

Then (p. 90), the argument becomes a bit feeble: "Marginal profitability of diversification projects will decrease [due to the fact that resources lose rent generating capability when they are used in applications far from the original one], from the point of view of the maximization of profit adopted by the Resource-based view." It would be useful to provide a deeper

insight on the complementarities between the resource-based view and the theory of the agency.

Scanning the literature, we can discuss that point. Wernerfelt (1989: 7-8) shows several critical resources with an almost unlimited capability (blueprints) and others with limited capability in the short term, but unlimited in the long term (cultures). It is right that, under certain conditions, resources suffer an erosion process, losing partially their value (Rumelt, 1984: 558), but it is also true that they can resist several kinds of erosion arising from environmental changes (Amit and Schoemaker, 1993: 38).

Summing up, we see in Loredo's arguments a static resource-based view perspective. Several authors have complemented that perspective, enhancing the potential of the theory. For instance, Kogut and Zander (1992: 384 ff.) explore the firm behavior from the idea of "combinative capability". This capability allows the firm to synthetize and to apply internal and external knowledge searching new combinations of pre-existing knowledge. Markides and Williamson (1994) analyze the relationships between related diversification, core competencies and the company performance. They say that the core competencies act as catalysts of a "production function" which uses the firm strategic assets. Lastly, Teece, Pisano and Shuen, in a well-known paper (1997), underline the critical character of the adaptation, integration and reconfiguration of organizational skills, resources and functional competencies in order to attain the firm goals in a changing environment.

In short, this integrative approach is interesting, bold and relevant, but it could be improved with a sound analysis of the links and crossed potentials between the agency theory and the resource-based view.

Loredo applies that theoretical perspective to the RECs, showing convincingly the effects of leveraging the resource-base of each utility to develop some diversification strategies. He notices the importance of intangible assets on the diversification decisions of the RECs.

On the applications to the energy markets, this book offers a relevant analysis of how the RECs tackled the gas business using its existing capabilities.

In sum, Loredo has done a useful exercise on the specific aspects of the changes in business behavior arising from the regulatory modifications enacted in the last decades.

This is especially interesting for analysts of those countries that have just begun developing electricity deregulation schemes, and also for people in nations with deregulation already in progress that have suffered distribution shocks and other related problems.

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