

A Global Overview, But Not Enough Analysis

Reviewed by *Richard L. Gordon*

**ELECTRICITY MARKET REFORM:
An International Perspective**

Edited by *Fereidoon S. Sioshansi*
and *Wolfgang Pfaffenberger*

654 pages; Amsterdam, NL: Elsevier, 2006

This year's entry into the electricity reform literature is *Electricity Market Reform*, and it offers 20 takes on the situation in many countries around the world.

The first four chapters provide very different overviews. The longest and most far-reaching is the introduction by Paul Joskow. It is preceded by a terse foreword by Stephen Littlechild, now returned to academia after serving as the electricity regulator in the United Kingdom. The editors produce (as Chapter 1, appearing after Joskow) a conventional editors' overview. Then Günter Knieps of the University of Freiberg reviews some of the theoretic issues about restructuring. The remaining chapters are case studies.

JOSKOW'S INTRO MIT's Joskow deserves extensive consideration because he so well expresses the thinking that dominates the restructuring debate and guides the writers of the subsequent chapters.

He frames his appraisal around a 10-component "textbook" model of restructuring. The basic premises are that government ownership is undesirable; the industrial components — generation, transmission, and distribution — differ radically in their potential competitiveness; and those components can readily be separated from each other. Thus, privatization is Step 1; separation, Step 2; and division of generation into enough units to

produce competition, Step 3. However, the natural-monopoly features of transmission necessitate creation of an independent system operator and perhaps also a regional transmission monopoly (Step 4). In Step 5, spot markets must be created for electricity supply and perhaps for other things such as capacity maintenance. The monopoly is then regulated in Step 6. In Step 7, prices are unbundled to separate payments to the unregulated generating sector from those to the regulated transmission sector. In Step 8, public policy ensures that monopoly distributors charge market prices for the generated power they deliver. That requires Step 9: good regulation. Finally, Step 10 is the creation of the necessary transition mechanisms.

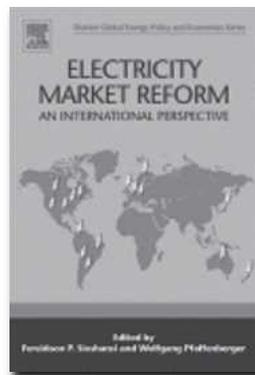
This appears as a synthesis of what has worked well in successful electricity restructurings. However, it is not the only possible view. At least twice in the book, authors cite versions of Robert J. Michaels' attack on the premise that disintegration imposes no major costs. Moreover, the concern over natural monopoly may be overblown. Joskow does acknowledge that regulation can cause harm; it can be argued that this is not just a possibility, but so inevitable that regulation should never be employed.

The bulk of Joskow's discussion covers 14 conclusions about the experience. The first three and last two comprise an argument that reform design is difficult, must be taken seriously, must be continuously reevaluated, and is best guided by the 10-step textbook plan. The other, largely obvious but difficult-to-implement conclusions relate to specifics:

- Spot markets must be well designed and integrated.
- "Market power is a significant poten-

tial problem in electricity markets, but the cure can be worse than the disease." (This is so important that Joskow italicizes it.)

- Good regulation of transmission is difficult but important.
- Ensuring adequate investment in transmission is also difficult and important.
- Adequate investment is generally problematic.
- Environmental policy must be well designed.
- Good retail market design is critical.
- One solution could be integrating generation with retail supply, but that might create market power.
- Wholesale spot markets should be made more responsive to demand.



Clearly, the validity of Joskow's central argument depends on the correctness of his reform model. Several of the supporting points reflect the internal contradictions of this approach to electric power. The first problem is the failure to recognize the inherent defects of regulation. The second is the cautious appraisals of competition. Normally, economists argue that competitive markets anticipate and respond well to changing market conditions. The concerns over investment adequacy thus tacitly imply some departure from the traditional model of competition. What is absent is clear expression of the nature of the discrepancy and how best to overcome it. One possible explanation, which the case studies repeatedly recognize, is the problem of regulation restricting market responses. Joskow and many of the case studies thus perpetuate the timidity of "textbook" approaches to public utilities. They dare not suggest feasible regulation may be harmful.

NORTH AMERICA Six chapters cover North America, five on the United States and one on Canada. Europe rates four

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contributions; Latin America, three; Asia-Pacific, also three.

The U.S. chapters stress the rise of independent system operators (ISOs). We have three regional case studies — James Sweeney of Stanford University on the familiar California case; Parviz Adip of the Public Utility Commission of Texas and Jay Zarnika, formerly at the commission and now heading a consulting firm, on the Electric Reliability Council of Texas (EROCT); and Joseph Bowring of the PJM (for “Pennsylvania, New Jersey, and Maryland,” the original coverage areas) Independent System Operator on that organization, which has recently extended its membership south and west.

Sweeney nicely condenses and updates his previous book on California. He deals with the problems that create pressure to restructure, the restructuring, and the 2001 electricity crisis. On the last, he presents a balanced argument that serious supply problems in California were aggravated by gaming the market by suppliers. He stresses that the cost-pressure crisis was turned into a financial crisis by regulation preventing cost recovery. The treatments of EROCT and PJM are clear and complete surveys of the design and operation.

The overview of U.S. ISO experience by Richard O’Neill and Udi Helman of the Federal Energy Regulatory Commission, Benjamin Hobbs of Johns Hopkins University, and Ross Baldik of the University of Texas is largely devoted to examination of the numerous issues about system design and operation. This review is preceded by a survey of the history of regulatory reform. The next sections deal with market design issues and how different ISOs have responded. The last two sections then give a summary appraisal. The discussion of design distinguishes and summarily evaluates many issues; even experienced observers will find the exposition demands inordinately close examination. A major failing of the discussion is its failure to consider the full implications that desires to limit market power may prevent attainment of income needed to justify investments. It is another example of the inherent defect of imposed restructuring.

The freshest chapter in the book is

by Taff Tschamler, from a U.S. consulting firm, who provides a review of retail markets. He excellently surveys the concept of default service and the overall experience with retail competition. His analysis suggests, but does not explicitly acknowledge, that default supply requirements are crutches for regulators afraid to trust markets. This insight and its implications for the textbook approach to restructuring are also left implicit in the rest of the book.

Michael J. Trebilock of the University of Toronto and Roy Hrab of the Ontario Energy Board did the Canada review. It is largely a good review of Ontario’s proposals to disintegrate and slowly privatize its power industry, and the quick repudiation when tight demand and removal of nuclear capacity produced a price spike. Alberta is briefly treated.

EUROPE With Europe, we have three region-specific chapters and an overview on overall European Union policies. David Newbury of Cambridge University provides a lucid discussion of the much reviewed British case. He examines the replacement of a unified day-ahead market by multiple institutions, a change he finds questionable.

Eirik S. Amundsen of Bergen University, Lars Bergman of the Stockholm School of Economics, and Nils-Henrik M. von der Fehr of the University of Oslo produced the survey of the Nordic market. The chapter solidly reviews the situation with stress on experience and perhaps inadequate treatment of the reforms.

Gert Brunerkreeft of Tilburg University in the Netherlands and Dierk Baunknecht, who is with a research institute in Germany, survey Germany. The discussion proves a problematic treatment of an inherently messy situation. Germany is at the end of an overly prolonged effort to slow the contraction of the German hard coal sector. Bizarrely, just as efforts started substantially to reduce CO₂ emissions, a nuclear phase-out was adopted to attract the Green Party into a coalition government. While many countries are trying to increase the number of generating firms, Germany allowed its nine generation and transmission firms to merge into four. The

chapter skips lightly over the issues and ruminates on problems of regulation and ensuring efficient investment levels. The discussion of regulation expresses a need for controls despite recognition of the drawbacks of such intervention. The treatment of investment then recognizes that regulation often is a hindrance.

Reinhard Haas and graduate student Nenad Keserik of the Vienna University of Technology and Jean-Michel Glachant and Yannick Perez of the University of Paris provide the European overview chapter. It argues that failure to adopt the textbook model dooms competition. The chapter is most valuable in its overview of the industry, EU reform proposals, and the uneven resulting response. The analysis urges more competition in generation, separation of transmission from generation, and better regulation. The first probably suffices.

LATIN AMERICA Latin America includes chapters on Chile by Ricardo Raineri of the Pontificia Universidad Católica de Chile, Brazil by João Lizardo R. Hermes de Araújo of the Federal University of Rio de Janeiro, and Argentina and Colombia in a single, too short chapter by Isaac Dyrer and graduate student Santiago Arango of the Universidad Nacional de Columbia, and Erik R. Larsen of the University of Italian Switzerland.

Raineri provides a useful description of a Chilean restructuring that was very close to the “textbook” model and relates the stories of the crises that were endured. His analysis is limited to a number of specific criticisms. While these are presented without elaboration, this is justified by their clear validity. The treatment creates a clear impression that the regulation maintained in this restructuring has impeded efficient industry operation. A bonus of the chapter is its review of how dependence on natural gas from Argentina was undermined by ill-advised Argentine government efforts to use price controls on natural gas as a means to subsidize Argentinean consumers.

Araújo’s discussion of Brazil indicates the emergence of heavy government involvement during the era of stress on centrally planned economic development. In particular, privatization of generation stalled under reform-minded

administrations and was repudiated by an anti-reform government. Araújo seems sympathetic to regulation, which he deems greatly improved, and to retained government ownership of hydroelectric resources.

The chapter on Argentina and Columbia suggests a pre-restructuring situation of maintaining low prices that led to poor service. The textbook mix of privatization, creation of a regulator, and setting up a spot market was adopted.

ASIA-PACIFIC Finally, Australia, New Zealand, and Japan each rate a chapter. The first is by Alan Moran of the Institute of Public Affairs in Melbourne; the second by Geoff Bertram of Victoria University; the last by Mika Goto and Masayuki Yajima of the Central Research Institute of the Electric Power Industry.

Australia is an interesting case and Moran presents it well. The three largest Australian states initially owned vertically integrated electricity operations. While Victoria privatized, New South Wales and Queensland only disintegrated their ventures. A national grid with a regulator and a manager was created. Moran, more than most contributors, recognizes that the alleged monopoly in transmission is limited by competition from local generation and that regulation may discourage efficient investment.

New Zealand faces the problems of small total market size and the division of the country into two main islands. Thus, a large, well-connected network is infeasible. Bertram's review well describes the changes but poorly analyzes them. The inherent difficulties are ignored and excessive faith in regulation prevails.

Changes in electricity market structure in Japan have been modest. Competition in generation and retail sales was encouraged, and a power exchange was established. The vertical structure was maintained.

CONCLUSION Thus, the book draws on an unusual mix of academics who are long-time contributors to the debate such as Littlechild, Joskow, Sweeney, and Newbury. It also draws on newer academic participants, people from research institutes, and those associated with the industry.

The presence of fresh voices is not always beneficial. Too often, the insiders are restrained or even strong defenders of their organizations. Some language problems also arise. Most critically, the result is that the contributions are more descriptive and less analytic than is typical for such anthologies.

This, nevertheless, is a typical useful survey of electricity restructuring that updates and adds subjects not covered in recent prior efforts. As noted, the discussions have the usual tendency to accept the "textbook" approach; the reliance in many cases on insiders led to more restrained discussions than is ideal. **R**

Road to the Future

Reviewed by George C. Leef

STREET SMART: Competition, Entrepreneurship, and the Future of Roads

Edited by Gabriel Roth

564 pages; Somerset, N.J.: Transaction Publishers, 2006

Suppose the United States government had a monopoly on the production of clothing. Given what we know about government monopolies, we can predict that the American clothing industry would be highly inefficient, with acute shortages of some items and an overabundance of others, poor quality, and scant attention for the possibilities of innovation. If people were convinced that government had to produce all clothing, they would put up with those inefficiencies and give no thought to the vast improvements that free enterprise and competition could bring.

Substitute "roads" for "clothing industry" and you have the subject matter of *Street Smart*. In this comprehensive volume, editor Gabriel Roth has assembled

20 essays that collectively make a powerful case that streets and roads can and should be provided by the free market.

Other than K-12 education, it is hard to think of any sector of American life where the market is so thoroughly stymied as in the provision and maintenance of roads. In her foreword to the book, Mary E. Peters, the new secretary of transporta-

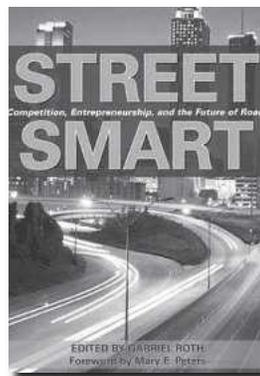
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tion, observes, "The same market forces that took us from Ma Bell's black, boxy, static, rotary dial telephone to today's era of wide consumer choice can relieve congestion, operate roadways more efficiently, and improve the safety of our highways." Readers who find themselves stuck in traffic jams a lot might enjoy having this book on hand as a useful diversion.

THEORY Gabriel Roth is a research fellow at the Independent Institute who formerly worked for 20 years as a transportation economist for the World Bank and has authored several previous books in this field. He leads off this book with an excellent essay entitled "Why Involve the Private Sector in the Provision of Public Roads?" His answer is that we pay a very high price for our reliance on political control. It leads to excessive congestion because road users do not pay for their use, but to a large extent they impose costs on others. Furthermore, maintenance costs are higher than they need to be because of the well-known political tendency to skimp on hum-drum budget items

until there is a "crisis." A third cost is that government planning and funding lead to wasteful projects such as Boston's "Big Dig" (whose first fatality occurred after the book's publication). Roth provides solid evidence that private road construction is done more efficiently and that private roads are better managed and maintained.

In the first of a series of chapters dealing with theory, arguments, and ideas,



transportation economist John Semmens contends that roads “can and should be treated as profit making assets.” He concentrates on the undesirability of funding roads through taxes, noting, “The lack of a direct link between payment for U.S. roads and services condemns highways to a persistent imbalance between needs and revenue sources.” Semmens shows why the market’s profit signals are the key to a road system that operates efficiently, and then tackles several myths that cause many people to dismiss the feasibility of a private road network. He refutes the common notions that roads are “public goods” that can only be supplied by government and that they are natural monopolies. In a later essay, Semmens argues convincingly that safety would be much improved under a privatized highway system.

Florida State economics professor Bruce Benson contributes an essay arguing that the “holdout problem” does not justify compulsory right-of-way purchases of private property or a government monopoly on roads. University of Minnesota engineering professor David Levinson then examines the political economy of private road provision and maintains that it is possible to envision political coalitions forming that would push the United States toward commercialization and eventual privatization of roads.

Another section of the book is devoted to the pricing problem. One essay examines the system that has been adopted in Singapore, which author Gopinath Menon says has dealt with the problem of congestion with “the most advanced pricing system in the world.” The technology for electronic road pricing (no need for old-fashioned toll booths that slow traffic down) enables that small nation to charge drivers according to the time and location of their driving, with a resulting decrease in congestion. Other essays examine the success of private toll roads in southern California and the question of how revenues from congestion pricing should ideally be spent.

HISTORY The next few essays delve into the fascinating history of private roads. In Britain, Bruce Benson notes that, private roads were common well into the 18th century. They were developed initially because it was in the interest of commu-

nity members, particularly merchants, to contribute to their construction and maintenance. The Industrial Revolution, Benson also argues, could not have proceeded if it had not been for the existence of private roads to transport raw materials and goods. Why did the private road system eventually collapse? Benson shows that the reason was interference by the government, especially in refusing to allow owners to collect tolls in accordance with market demand.

Daniel Klein of George Mason University and John Majewski of the University of California, Santa Clara examine the history of toll roads in America. Free enterprise built many roads in the United States in the first half of the 19th century and they proved to be popular (although not always very profitable). For example, the private Pittsburgh Pike was much preferred by travelers to the federal government’s National Road, which covered the same general route. The Pike cost much less to build and was kept in better condition than the National Road. Klein and Majewski conclude, “Looking back, one might say that the American people ran an experiment: 100 years with extensive, privately managed toll roads, and then another 100 years primarily of government managed ‘freeways.’ The historical record suggests that road provision is another case where the advantages of private ownership, relative to government ownership, and of user-fees, relative to tax financing, apply.”

Fred Foldvary of the Cal State, East Bay contributes a chapter on streets as private sector public goods, looking at numerous free market developments where the streets are owned and managed by the enterprise. Walt Disney World in Florida is a prime example, but there are many others. Readers will probably be surprised to learn that, in Sweden, private road associations manage two-thirds of the country’s road network; another essay shows that such management produces favorable results. This section of the book concludes with an essay by transportation engineer and economist Gunter Zietlow on the efficiencies that are realized when road construction and maintenance are bid out rather than performed by a government monopoly.

IMPLEMENTATION The final section of the book takes on the vital question: How do we get there from here? An essay by J. K. McLay, who has held numerous government positions in New Zealand, recounts the history, successes, and setbacks of his country’s steps toward road privatization. He shows that New Zealand made considerable strides over the span of a decade, but recently obstructionism from environmentalists has prevented further progress. Other essays look at the measures that have been taken in Great Britain – under the Blair government – toward putting private enterprise back into the highway system, and at the road privatization efforts under way in nations as disparate as Finland, Ghana, Australia, and South Africa. With the idea of road privatization popping up all around the globe, it is hard not to think that this is an idea whose time has finally come.

In the book’s penultimate chapter, the Reason Foundation’s Robert Poole and *Innovation Briefs* editor Kenneth Orski explain how high occupancy toll (HOT) networks could greatly reduce traffic congestion in urban areas. In many cities, we already have high occupancy vehicle (HOV) lanes that are supposed to encourage carpooling and thereby reduce the number of vehicles on the road at peak times. Poole and Orski argue at length in favor of transforming HOV lanes into a network of HOT lanes. “By changing the access requirement from vehicle occupancy to willingness to pay a market price (for cars) but allowing super high-occupancy vehicles (buses and van-pools) to use the lanes at no charge, we can accomplish three important goals,” they write. Those goals are to generate new revenue to develop today’s fragmented HOV lanes into a seamless network, to provide a congestion-free alternative for all motorists, and to provide lanes for bus rapid transit services. Poole and Orski make a strong case that HOT networks would be far more efficient than the light-rail rapid transit systems that many people are touting as the transportation “solution.”

Finally, in the last chapter of the book, *TOLLROADSnews* editor Peter Samuel examines the prospects for road privatization. One obstacle he identifies is pop-

ulist demagoguery. For example, when the Maryland legislature passed a bill in 2001 to allow any driver to pay extra to gain admittance to HOV lanes in the state, Gov. Parris Glendening vetoed it on the grounds that it was “unfair” for the wealthy to have better transportation options. Samuel rebuts that cheap pandering by pointing out that a faster trip could be just as beneficial to a non-wealthy person. People are always better off with more options. Nevertheless, demagoguery is among the obstacles that will be encountered. Overall, Samuel is optimistic that the enormous benefits of

road privatization will eventually win out.

CONCLUSION *Street Smart* is an extremely valuable compilation of theory, arguments, and evidence in support of the proposition that a network of privately owned streets and roads operating on the user-fee principle is feasible and far superior to the old model of tax-financed, government-operated streets and roads. Road privatization should be to the early 21st century what the communications revolution was to the 20th and, hopefully, this book will play an important role in bringing that about. **R**

is dissipated, even in the realm where they best apply and most belong.

In *Net Neutrality or Net Neutering*, Progress & Freedom Foundation scholars Tom Lenard and Randy May edit a series of essays that, with one exception, takes after the openness camp.

LAYERS It is hard to pin down what exactly the Internet is. There are several versions, with convergence around the idea that the things making up the Internet can be described as a series of layers. At the bottom, there is the physical layer — the wires, cables, and fibers that Internet communications travel over. Next there is the logical layer, the routing rules that send packets of data from origin to destination. Next there is the application layer — the programs that people use to create content and send it from one place to another. (Think of e-mail programs, browsers, and the like.) Finally, there is the content layer. This is the actual material people send to each other in those e-mails, the websites that show up on their screens, and so on.

Robust protection of property rights is the best approach for the physical layer. People invest in and maintain things they own and can profit from. Tangible things that are un-owned or shared tend to see overuse and neglect. This is because no one benefits sufficiently from maintaining resources, but anyone can benefit from using them. The 2003 Cato Institute book *What's Yours Is Mine: Open Access and the Rise of Infrastructure Socialism* appropriately criticized the trend against property rights in favor of mandatory sharing of communications infrastructure.

Given how essential property rights are for the Internet's physical layer, some in the property rights camp believe strongly that the same principles apply equally well to higher layers, to logic and content — intellectual assets toward the top of the stack. This viewpoint has some good authority behind it: the U.S. Constitution, for example, empowers Congress to secure authors' exclusive rights to writings and discoveries so as to promote the progress of science and the useful arts.

Net Neutering?

Reviewed by Jim Harper

NET NEUTRALITY OR NET NEUTERING: Should Broadband Services Be Regulated?

Edited by Thomas M. Lenard and Randolph J. May

225 pages; New York, N.Y.: Springer Publishing, 2006

In 2004, *New Republic* editor Franklin Foer published a book called *How Soccer Explains the World: An Unlikely Explanation of Globalization*. Faithful soccer fans in the United States particularly were pleased by the book's publication. Perhaps it would help to validate their sport, so long an underling in American professional athletics.

The book is a series of interesting vignettes about the involvement of soccer in world events and the involvement of world events in soccer. An early chapter, for example, explores Red Star Belgrade, a top Serbian team allegedly owned by a notorious gangster complicit in the Balkan wars of the 1990s.

Though it is an entertaining read, the book ultimately does not weave soccer and globalization together particularly well. It provides no soccer-based explanation for politics, society, or war. Soccer is a fine sport — under-appreciated in the United States — but it does not real-

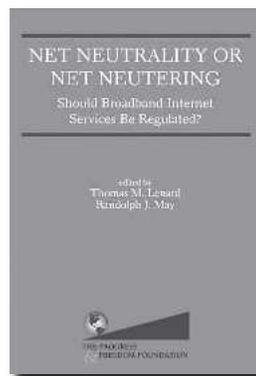
ly explain the world. Oversold by its title, the book slightly disappoints.

So it is with some organizing theories being advanced for the Internet. Smart and dedicated advocates have good ideas about how to maintain Internet infrastructure and organize people's use and enjoyment of this powerful communications tool. But, oversold by their proponents, the ideas ultimately may disappoint.

Two camps each have a bold and important organizing theory for the Internet. In one camp are property rights advocates. They believe — correctly — that property is an essential societal institution. Property is a constant that has not been displaced by modern technology or new business models.

The other camp correctly sees a future where openness and sharing are dominant motifs. Property and capital matter, yes, but these advocates prioritize the Internet's role as an economic and social ecosystem. In the online world still being created, communities produce information goods, and communities are the locus of essential social and political activity.

Each of these camps overplays its hand. Each tries to “explain the world” with a theory that fits only a part of it. The result is that the power of their ideas



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But there is also evidence that property rights in intellectual goods are not always needed. Humans' natural drive to create — for the sheer joy of it and to accumulate reputational assets among other things — means that there is a growing amount of “peer production” of information assets like protocols, computer programs, commentary, and entertainment. Indeed, there is evidence that property rights in intellectual assets retard production and innovation, especially when the scope of a given right is too broad or the term too long. Analysis and debate in this area should continue.

The net neutrality debate is the product of spillover in the opposite direction, however. Like their colleagues in the property rights camp, the proponents of peer production, open standards, and open source also seem to believe that their way of thinking “explains the world.” They see it working well in the logic and content layers — it does — and they imagine it could work well in every layer of the network.

SHARING Proponents of network neutrality regulation would rather not let Internet service providers hold their facilities separate from the rest of the community and use them any way they please. Doing so could allow ISPs to deny equal treatment to certain destinations on the Internet or to disfavor applications that they do not control or get special payment from. Given insufficient competition — a “given” to which the debate always returns — it is easy to imagine the relatively small number of large ISPs controlling Internet users' experience. They might prevent people from accessing the full range of ideas and information that the Internet offers.

The solution put forward by the openness camp is to apply sharing rules to the physical layer of the Internet. Communities create vast repositories of Internet content just for the joy of sharing. Groups of volunteers and corporate donors are creating wonderful applications and giving them away for free. Various consortia have come up with the protocols that operate the logical layer free of property claims. Why not have a

community determine the best use of the physical layer? We already have representatives of the U.S. Internet community assembled to carry out our will: Congress and the Federal Communications Commission . . .

Hold it right there, say most of the contributors to *Net Neutrality or Net Neutering*. From a variety of perspectives, they weigh in against the facile conclusion that public utility regulation of broad-

It is a pity that the good economic minds in this book must play defense against a bad idea rather than go on offense.

band access can or should advance the public's varied interests in (1) fast, (2) inexpensive access to a (3) wide-open and (4) secure Internet.

THE LAST MILE In the opening chapter, volume co-editor Tom Lenard and economist David Scheffman introduce the most important element of the net neutrality debate: the level of competition in broadband. Listing the options for getting Internet access through the bottleneck “last mile” to the home, they find provision of broadband to be “intensely competitive.” They also examine Internet access as an information distribution business, pointing out that non-neutrality is common in distribution networks.

Lenard and Scheffman probably lose some credibility with skeptics by finding too easily that there is such a high level of competition. And their comparison of Internet access to the distribution function that comes “bundled” with sales of retail goods is unlikely to persuade. The Internet is a very special and different thing.

In what is probably the best chapter in the book, Vanderbilt University Law School professor Christopher Yoo exposes the crucial flaw of proposals for network neutrality regulation. The object is to have as open and competitive an Internet as possible, but, Yoo points out, “any chain of production will only be as efficient as its least competitive link, which in the case of broadband is the last mile. This insight suggests that the major net-

work neutrality proposals are focusing on the wrong policy problem.” Rather than regulating to foster competition among applications, content, and ISP services, policy efforts should focus on competition in last-mile technologies. Ironically, Yoo points out, network neutrality regulation would likely retard or forestall greater competition in the physical layer.

In addition, Yoo upends the “equality” premise supporting net neutrality regulation. Though equal treatment of every packet traversing the Internet sounds good in the current environment, the current environment is not a given. There is no reason why the future should not hold out a range of ISPs, each designed (and discriminating against packets) for a certain purpose:

The first network could be optimized for conventional Internet applications, such as e-mail access and website access. The second network could incorporate security features designed to appeal to users focusing on e-commerce. The third network could employ policy-based routers that prioritize packets in the manner that allows for more effective provision of time-sensitive applications such as VoIP.

It is not Yoo's prediction that these distinct, optimized networks are inevitable, but net neutrality regulation would almost assuredly bar such developments and many others not yet conceived.

OPEN HIGHWAY In his chapter, Adam Thierer takes on the assumption that ISPs would do the things proponents of net neutrality regulation most fear: forcing consumers into particular applications or controlling the content they see. Leaving open the possibility of Yoo's multiple networks, Thierer argues that consumer demand will probably force ISPs to keep their networks open. Were ISPs to interfere with the routine uses consumers want to make of the Internet, this would reduce the attractiveness of their networks and invite competitors to pursue their customers. Once again, competition among broadband providers is at the fore. Proponents of network neutrality broadband regula-

tion probably see ISPs acting in more insidious ways than Thierer's argument reaches, but it remains true that the lower the quality of an ISP's product along the openness dimension, the more susceptible it is to competition.

In the sole chapter supporting broadband regulation, Consumer Federation of America director of research Mark Cooper argues for network neutrality regulations in a variety of ways. He points out, for example, that common carriage rules have a long lineage in American law. Indeed, he argues that open highways of communication and commerce are a "cornerstone of capitalism."

Like the Lenard and Scheffman article's analogy to distribution in the retail sector, Cooper's analogy from canals and turnpike trusts (now highways) to the Internet does not quite work in this very special case. If there were a strong analogy, roads and highways would be equally open to all that can travel their surfaces just as the Internet can carry any data transmitted using TCP/IP. Anyone trying to take a Segway on the Interstate would quickly find that the owners of such facilities tightly restrict against all but a few "applications" — automobiles and just one or two carefully delimited alternatives.

As to the ever-present competition issue, Cooper claims that opponents of regulation believe "competition exists between two networks and that that is all the American economy needs." This is a straw man, but it does reveal how blasé many opponents of bureaucratic regulation are about broadband competition. The broadband market offers few alternatives, some price competition, and some quality competition — and not enough of any. It is difficult to navigate among what offerings there are, and switching costs are high. The conclusion that broadband is "intensely competitive" just does not ring true.

Cooper also has a good point about the Internet and "democracy" (in its broad sense). Like any market system, an open, competitive Internet disperses power. But the conclusion in favor of regulation is ironic: a central authority must prevent the operation of the market in order to achieve the things that are achieved by operation of the market?

Cooper seems to believe that, despite their empowerment, consumers will meekly give up the freedom they enjoy in current models of Internet provision and accept a return to the past era of monolithic media and communications, so regulators must step in.

PUBLIC GOOD? In their chapter, economists Bruce Owen and Gregory Rosston provide interesting insight when they cast Lawrence Lessig's argument in favor of network neutrality regulation in economic terms. (Because he is mentioned throughout the book, it is regrettable that Lessig is not one of the contributors.) According to them, Lessig treats the Internet as a public good — something that costs nothing to provide to any user after the first and that is non-rivalrous in consumption. He also sees positive network externalities at work — the benefit to all users as more people use a network. The confluence of these two economic concepts brings Lessig to see net benefits coming from net neutrality regulation.

The flaw in this thinking, they point out, is that there is no public good if there is no one to produce it. Assigning property rights in access to users of the Internet, rather than to producers, results in an efficient price of zero, which leads to "no long run supply of Internet services." The real solution is price discrimination among users of Internet access because they value access differently. This is something network neutrality proposals would ban.

In a final chapter, economist Joseph Farrell concludes inconclusively, emphasizing the many unknowns in deciding between laissez-faire and a regulatory network neutrality regime. He explores the many facets of competition in the duopoly of DSL and cable — eschewing the oft-used hermetic seal between "monopoly" and "competition."

CONCLUSION For economically versed opponents of network neutrality regulation, *Net Neutrality or Net Neutering* is a gratifying read. The contributors have a variety of insights that, while stated in complex terms, illustrate the weakness of arguments in favor of public utility regulation of Internet service providers.

The challenge in this debate, however, is not so much to debunk net neutrality as to convince people who are not carefully weighing the arguments. Any of the fine authors contributing to this volume would have a hard time competing for influence against people like popular music creator Moby. His advocacy in favor of regulation draws headlines and sweeps aside weeks and months of diligent economic argumentation about consumer welfare.

Many proponents of "openness" and "free culture" sound anti-property themes, but most of their preferred modes of production are no more an attack on the concept of property than donating clothing to charity is. Extending openness and sharing to the Internet's physical layer through net neutrality regulation is a stretch, though. Openness does not explain the world.

Arguing against them, the advocates of orthodox property rights in the logic and content layers may be overplaying their hands too, exhibiting too much hostility to forms of production made more powerful and relevant by the Internet. In doing so, they may be losing credibility with potential friends of property — particularly among the young — who will choose what works over what feels like an overly strict allegiance to traditional property regimes.

Consumers do benefit when firms compete to serve them. And competition is at the heart of the debate about network neutrality. Given a multiplicity of providers, no ISP could conceivably control enough Internet communications to control consumers' experience. Given enough competition, there is no need for net neutrality regulation.

It is too bad that proponents of network neutrality have seen fit to pour their energies into regulation, rather than promoting competition among last-mile Internet access options. Were they to do that, they would undoubtedly find allies among their opponents in this debate. It is a pity that the good economic minds in this book and at the Progress & Freedom Foundation must play defense against a bad idea rather than going on offense with the good ideas that will promote an open, competitive Internet benefiting all. **R**