

BOOK REVIEWS

Electricity Restructuring: The Texas Story, edited by L. LYNNE KIESLING and ANDREW N. KLEIT, Washington, DC: AEI Press, 244 pp. ISBN: 978-0-8447-4282-3

“Let a thousand flowers bloom” was the premise for the introduction of electricity markets in the continental United States approximately fifteen years ago. In regions of the country with tight power pools—New England, New York, and PJM—those power pools were transformed into Independent System Operators (ISOs), although at their inception they adopted different models within their centralized unit commitment and dispatch framework. California initially set up both a power exchange (PX) and an ISO, separating the market from dispatch and operations. Some states permitted retail-electricity markets, and some encouraged integrated utilities to divest their generation assets. Other regions, for example, the northwest and southeast, took minimal approaches, implementing open transmission access but little else.

Over time, the number of different market variations decreased as the industry and its federal and state regulators jettisoned failed models and converged on working ones. Lynne Kiesling and Andrew Kleit’s edited volume of nine chapters reviews the Texas experience and concludes that it was essentially successful. The volume includes numerous high-quality chapters that explain the evolution of Texas electricity markets that economists, policy analysts, and industry players would find engaging.

Texas has a vibrant retail-electricity market with over sixty active suppliers selling approximately one hundred products. Developers have built over 25,000 megawatts (MW) of generation with 100,000 MW of additional capacity in the development queue.

Examining Texas’ wholesale and retail markets is informative. If it were a country, ERCOT, the Electricity Reliability Council of Texas, would be eleventh biggest electricity system in the world with 5.6 million customers. It has two features unique to the United States. First, ERCOT is regulated solely by the Public Utility Commission of Texas (PUCT). Originally, Texas avoided having its electric utilities regulated under the Federal Power Act by not being connected to the transmission system of other states, and it has maintained this situation, despite now having direct current interconnections with other states. David Spence and Darren Bush describe the back and forth among Texas, the Federal Energy Regulatory Commission (FERC), and the courts that has enabled Texas to maintain its electricity-regulatory independence. Second, Texas has an energy-only market. Unlike the ISOs, which have installed capacity markets to ensure resource adequacy, Texas does not.

The editors attribute Texas' success to three reasons. First, they note that Texas maintained its political support for electricity markets even in the face of adverse events that might have disrupted the implementation of markets. The importance of political commitment to electricity markets cannot be overstated. Implementing these markets takes years and, therefore, there is a risk that external events may occur that undercut the justification for markets, in particular, political promises of lower prices. In the case of Texas, one such event was the dramatic increase in natural-gas prices during 2006-2009, resulting in corresponding increases in wholesale and retail electricity prices. To its credit, the Texas legislature and policymakers stuck to their vision and continued to push forward market-oriented reforms.

The second factor that the editors attribute to Texas' success is transparency and decentralized coordination. Here, they are less persuasive. They do not make at all clear what "decentralized coordination" means in the context of electricity markets. Texas, over the last decade, has moved from a decentralized, balancing real-time market with zonal prices to a nodal-pricing model based upon centralized unit commitment and dispatch, which is in the final stages of implementation. Eric Schubert and Parviz Adib in their chapter on the evolution of the Texas market, describe why zonal pricing did not work in Texas. It failed for the same reasons it failed when tried in PJM, New England, and California: local congestion within zones was systemic and frequent, new generation units located on the wrong side of transmission constraints, and uneconomic and confusing dispatch resulted from out-of-market solutions to local congestion. The editors' highlighting of transparency is, however, on the mark. Nodal pricing is more transparent than zonal pricing because it avoids the out-of-market payment mechanisms and true-ups that obscure market prices that occur with zonal pricing.

The third factor the editors attribute to Texas' success was the ability of the policy-making process to adopt market rules based upon analysis that was consistent with competition. Eric Schubert, Shmuel Oren, and Parviz Adid's description of ERCOT's energy-only electricity market provides a good example. Texas chose not to adopt the installed-capacity markets based upon resource-adequacy requirements that ISOs have adopted. Instead, Texas implemented a scarcity-pricing model leveraging the Australian experience along with other policies to ensure that energy-only pricing would be sufficient to compensate owners of peaking generation, while protecting consumers from excessively high prices.

Many of the authors note the importance of the role of the PUCT. As the single regulator for 85% of Texas (all of ERCOT), it is able to coordinate transmission and retail-access policy in an integrated fashion with wholesale-market developments. For example, Texas transmission-interconnection policies result in transmission owners, not generators, paying for the interconnections, subject to review in the regional transmission-planning process and PUCT approval. This encourages entry, perhaps inefficient entry, compared to FERC's policy in which generation developers pay for the costs of interconnection. In addition, the PUCT has jurisdiction over municipal utilities and cooperatives, whereas FERC does not.

This edited volume systematically covers the Texas experience. Other chapters discuss the build up to competition, the role of distributed generation, the competitiveness of the wholesale markets, retail markets, and market monitoring. Texas' retail market is noted as being more successful than other states, particularly New York, Illinois, and Maryland. The PUCT estimated that retail markets have offered products at substantially lower costs than what would have occurred without retail access.

Despite not being subject to federal regulation, the Texas experience is similar but not identical to much of the rest of the country. It had to transform its initial wholesale market design, like California. Its political environment with its belief in competition and its single regulatory model, however, allowed Texas to implement comprehensive reforms despite some challenges along the way.

Frank A. Felder
Rutgers University

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Carbon Energy Taxation: Lessons from Europe, edited by MIKAEL SKOU ANDERSON and PAUL EKINS. (New York: Oxford University Press, 2009) Hard-bound, 313 pages, ISBN – 978-0-19-957068-3

Carbon Energy Taxation presents ten chapters by European environmental analysts, mostly economists, that discuss the repercussions of tax systems to curb greenhouse-gas (GHG) emissions. The work focuses on systems in the European Union (EU), stressing environmental-tax reforms (ETRs) in a key half-dozen EU countries – Denmark, Finland, Germany, the Netherlands, Sweden, and the United Kingdom with Slovenia's lack of action as a contrast. In addition, some contributions highlight practices being proposed in other countries. For example, Chapter 9 covers the interplay between carbon taxes and cap-and-trade systems, a topic under discussion in the United States Congress.

Carbon Energy is divided into four parts with two chapters in Parts I, III, and IV and four in Part II. Part I, Pricing of Carbon in Europe, reviews the history of ETRs in Europe and how different pricing and revenue recycling mechanisms alter country competitiveness. Part II, Industry-Sector Competitiveness, describes empirical studies that investigate how ETRs affect industry-sector competitiveness. Part III, Country Competitiveness and Carbon Leakage, extends Part II by looking at country-wide competitiveness across the covered six European countries and giving detailed estimation and discussion of losses of business to countries not imposing carbon taxes. Part IV, Implications for Future Climate Policy, summarizes the first three parts and predicts of how the lessons learned from ETR in Europe can help stabilize global emissions at safe levels. A potential drawback of ETRs treated throughout the anthology is how environmental reform affects competitiveness. Some countries fear that ETRs cause domestic industry to become less competitive with foreigners.

Part I starts with a chapter by Anderson, "Carbon-Energy Taxation, Revenue Recycling and Competitiveness," briefly describing the birth of carbon taxation and the ETR general mechanism for curbing GHGs. Some early examples of ETR arose after the 1988 Toronto climate conference, which involved pledges by Finland, Sweden, and Denmark to cut emissions by up to 20 percent. Chapter 1 gives a short discussion of a possible "double dividend" that made ETRs more attractive. It argues that since correctly administered pollution taxes correct market failures by internalizing an externality, they do not share the distorting properties of other taxes. Moreover, a fiscally neutral package can be adopted by replacing distorting income or corporate taxes by carbon taxes (p. 7).

Although this seems a win-win scenario, some economists have found theoretical and empirical evidence against a double dividend. The value of after-tax income may actually fall because the resulting rise in commodity prices outweighs the tax cuts. The benefits may prove too small and slowly realized. Such criticisms forced finding other justifications.

Chapter 2 by Stefan Speck and Jirina Jilkova focuses on designs of ETRs in different European countries. The history of environmental taxation in the six main countries and Slovenia are all separately discussed. While the country tax systems had different starting points and tax-shift programs, they share common dual objectives of reducing emissions and supporting employment. The former objective has been accomplished with direct or indirect taxes on energy-intensive goods. Meanwhile, countries have taken different strategies to protect employment, primarily basing their focus on the structure of their economies. Some of the strategies include reducing income tax rates, reducing social-security contributions, and reducing employer's social-security contributions.

The chapter fails to provide meaningful statistics on how the policies influenced prices of the taxed goods, making it difficult to understand impacts. It does, however, give a simple description of the different country policies, which helps in understanding the motivations and possible repercussions of such policies.

The authors identify features of ETRs that may threaten a company's competitiveness, including (1) energy share, (2) trade exposure, (3) market power, and (4) the potential for improving technological efficiency. Competitiveness determines the extent of "carbon leakage," the shifting emissions to countries without ETR. If certain industries are exceptionally competitive, firms within the industry are more prone to relocate as a result of ETRs. The relocation merely transfers emissions from one area to another, which "leaks" emissions from the ETR region to a non-ETR region. As standard tax-incidence theory indicates, the extent of displacement depends on supply and demand elasticities.

Chapter 3 by John Fitz Gerald, Mary J. Keeney, and Susan Scovy "Assessing Vulnerability of Selected Sectors Under Environmental Tax Reform: The Issue of Pricing Power," addresses the problem of competitiveness by estimating the price-setting ability of firms in six ETR countries. The goal is to determine which sectors can pass cost increases (such as environmental taxes) on to consumers and how well they can do so. They postulate that if the country is a small

part of the world market, then a firm within the market is more exposed to competitive pressures and is more likely to cause carbon leakage by relocating to a non-ETR region.

Chapter 4 by Roger Salmons and Alexander Miltner examines how alternative forms of data can alleviate problems with measuring *price competitiveness* across firms or countries. The authors present and explore a simple theoretical model that illustrates how three factors – the share of global production, export intensity, and profitability – can be used as a proxy for price competitiveness. The model shows that in general, when a sector's competitiveness improves, the three factors increase. The theoretical results are then used to assess trends in competitiveness across seven ETR countries.

Chapter 5 “The Impact of Energy Taxes on Competitiveness: A Panel Regression Study of 56 European Industry Sectors” by Martin K. Enevoldsen, Anders Ryelund, and Anderson investigates the occurrence of “a Porter effect” in sectors exposed to emissions taxes. Harvard Business School Professor Michael Porter claims that, contrary to the standard efficient-market presumption, ETRs may actually produce incentives improve a country's competitiveness. The chapter argues “The original Porter hypothesis states that high national environmental standards will encourage domestic industries to innovate and hence improve competitiveness, in particular when the regulatory standards anticipate requirements that will spread internationally” (page 100).

The authors identify three possible outcomes – (1) radical where energy taxes induce firms to seek energy-efficient procedures, innovate and produce more green products, to an extent that ultimately improves general economic conditions and increases market power, (2) mitigating where economic gains from innovation achieved by the pressure of the energy taxes reduce the negative effects of higher energy prices, and (3) its absence.

Using an econometric model and data from the COMETR data set, the study estimates the relationships among energy taxes, competitiveness, and output. The results suggest that a substantial mitigating Porter effect exists. Furthermore, the authors conclude that the effect is composed mostly of demand-related green innovation, while supply-related gains from substitution are less significant.

The chapter by Andersen and Speck on “Energy-Intensive Industries: Approaches to Mitigation and Compensation” explores the robustness of the results by individually considers the effects of seven different European countries' mitigation and compensation schemes. The details help distinguish between universal and country-specific impacts.

The two chapters of Part III, both by Terry Baker, Sudhir Janankar, Hector Pollitt, and Phillip Summerton undertake two tasks. Chapter 7 uses the Energy-Environment-Economy model for Europe (E3ME) to estimate the impact on competitiveness of energy-tax schemes by various European countries. Chapter 8 then uses the estimates from E3ME to diagnose the level of carbon leakage associated with the ETRs throughout Europe. Part III continues stress on the six main countries and Slovenia. The chapter “The Effects of Environmental Tax

Reform on International in the European Union: Modeling with E3ME” describes the principles behind the E3ME model.

Key findings in Chapter 7 cover employment effects, changes in gross domestic product (GDP), investment and output effects, all helping to diagnose the effect of ETRs on country level competitiveness. One noteworthy result is that employment *increases* in some ETR countries. The authors attribute the increase to using revenue from environmental taxes to cut other distortionary taxes and reduce employer’s social contributions. As a result, consumer income increases and labor costs are reduced, which boosts spending and increases the labor force. The effect on unemployment is intimately related to the effect on GDP. The study finds that all six main ETR countries have an increase in GDP as a result of the ETR. The reason given is “tax distortions in the labor market are reduced by the revenue-recycling measures” (p. 183).

The simulation results in chapter 8 present a surprising outcome. Over the period 1995-2005, carbon leakage is modest or does not take place. The authors reason that because ETR energy taxes are relatively small, the increase in energy unit costs is less than cost of relocation.

Part IV discusses both the similarities and differences between two key environmental policies – carbon taxes and emissions trading – and lessons learned from the European history of ETRs. Chapter 9 by Ekins discusses the fundamentals of carbon taxation and carbon trading. The author identifies carbon-price volatility as one drawback of cap-and-trade systems. Since the beginning of EU Emissions Trading Scheme (ETS) in 2004, the price of carbon has fluctuated from a low of 10 Euros per ton of CO₂ equivalent emissions to 30 Euros per ton of CO₂ equivalent emissions. Such price fluctuations deter investment in low-carbon technologies. The author reports that ETRs can play a significant role in future cap-and-trade programs by eliminating some of the price volatility. By setting a carbon tax at a floor price of carbon, the carbon price can be bounded below by the designated carbon tax. The author states “an advantage of the tax in this context would be that it would give assurance to low-carbon investors of a minimum carbon price” (p. 251).

The last chapter by both editors draws lessons from Europe’s carbon-energy taxation policy. The authors cover much ground in discussing background on present-day climate-change findings by the Intergovernmental Panel on Climate Change (IPCC), the role of carbon-energy taxation in limiting GHG emissions, how large-scale measures of ETRs may affect competitiveness, and how to balance the tradeoff between GHG stabilization and international competitiveness. The results provided in this book reveal that European country ETRs have played a significant role in reducing relatively small quantities of emissions without hindering competitiveness and without reducing unemployment. The authors praise ETRs in this respect, but also indicate that it poses a challenge about whether the results extend to greater reductions in emissions. Moreover, the authors recognize that more than just European countries must partake in ETRs or other equivalent forms of emissions-reduction policies to curb climate change.

For example, the final chapter spends a substantial time focusing on how China may affect the rates of carbon leakage with more stringent emissions policies.

In the end, *Carbon Energy Taxation* hammers home the idea that ETRs can and will play a key role in confronting climate change, and it defends its idea with simple empirical analysis in each of the 10 chapters.

Benjamin Leard
Cornell University