

Sioshansi, F. P. and Pfaffenberger, W., eds. 2006. *Electricity Market Reform: An International Perspective*, Elsevier Science, Amsterdam, 656 pp.

International electricity market reform began a quarter-century ago, and now is a good time to take stock. This collection takes the rather standard route of compiling various analyses of reforms by academics and industry experts, each focusing on a particular region – the usual suspects – with little comparative analysis between or among the studies. But one place where this book does stand out is in the introduction by Professor Paul Joskow.

Joskow proposes what he calls a “textbook architecture for restructuring and competition” with many variations, and supplements his ten structural components with a variety of lessons drawn from the papers in this book and elsewhere. I think we can get the most out of his architecture and the book by organizing regulatory and policy advice on restructured electricity markets into three categories: the preconditions for electricity market reform; design of wholesale electricity markets; and investment policies for both generation and transmission.

Strong political commitment to reform is one precondition, as Joskow notes, so that as problems arise they are addressed in ways that are consistent with the market approach. The real or perceived failure of reforms typically comes to light with extremely high electricity prices, and the immediate political pressure is to reduce prices through regulatory mandates that either undercut or downright ignore the nascent markets. Then the problem worsens in a vicious circle of regulatory uncertainty, an unfriendly investment client, and counterproductive policies. The cases treated in the book (California, Chile, and Ontario) are three illustrations of this point that immediately come to mind. This is not to suggest that reforms are always motivated by crises, and many other examples of evolving market designs are discussed in this book, including in Australia, continental Europe, and Britain.

Another important precondition is that policymakers have a sufficient understanding of the engineering and economics of electric power systems. The complexities of bulk power system operations and associated markets make can lead to naïve and harmful reforms that are difficult to thwart, further exacerbating the problems these reforms were trying to fix. It's important not to lose sight of the fact that the case for electricity markets is primarily an economic one – as discussed in a chapter by the editors – aimed at improving the industry's efficiency, which does not necessarily mean lower prices.

All too often, policymakers pursue market reforms to lower near-term electricity prices, not to increase industry efficiency. In addition, they typically have several other policy goals that are not always consistent with efficient market reforms. For instance, making the assumption that electricity market reforms should be measured against the bar of increasing social welfare, with which I agree, enables analysts to bring to bear the power of economics and operations research to perform their work. But using an economic or operations research framework risks missing some important aspects of the actual policy context, further complicating communications between analysts and policymakers, and again leading in some cases to poorly crafted reforms.

Once conditions are ripe for wholesale electricity markets, policy guidance turns to their design – the second category I suggested above. Here, I think this book does not make as clear as it should that there is a theoretically sound and empirically tested market design that accounts for the peculiarities of electricity; the one exception is the chapter that compares independent system operators (ISOs) in the United States. Because this book's discussion on successful wholesale market design is limited, it unintentionally leaves the impression that there is more uncertainty regarding what works than there should be.

In the Northeast United States, we've seen the successful implementation of a standard design of day-ahead and real-time markets based on security-constrained unit commitment and dispatch, locational marginal prices that embody the costs of transmission constraints, and with an Independent System Operator (ISO) administering the markets and operating the region's grid. This model is being adopted and implemented in other parts of the country. Still, there are important open issues; these include, among others: whether to have and how to design installed capacity markets; how to expand demand participation in the wholesale markets; how to address market power issues, particularly those related to generation units needed for reliability; and how to develop markets for ancillary services.

After establishing the preconditions for electricity markets and designing them, the generation and transmission investment problem – the third category – needs to be addressed. It is widely known and accepted that markets alone, even those with locational marginal prices, are unlikely to result in optimal transmission investment, and therefore some type of regulatory process is necessary. The solution to the transmission investment problem and its implications for generation investment is much less clearer than the solution for wholesale spot market problem, and the danger always exists with electricity markets that the reform, once put into practice, may be worse than the problem it was meant to solve. One interesting approach to the transmission expansion problem is Argentina's, which the book's preface notes is a public contest method in which transmission expansions are proposed and financed by the users while construction is put out to bid. Unfortunately, the coverage of Argentina in the case studies is superficial.

Since this book is organized by region rather than topic, it is sometimes difficult to compare the various solutions and experiences that are discussed. There are three parts besides

Joskow's, however, that are crosscutting. One is the preface by Professor Stephen Littlechild, which covers much of the same ground as does Joskow. The preface has what, in my view, is an unfortunate title: "The Market versus Regulation." Certainly, electricity reforms have raised important questions about which responsibilities are left to the market and which are left to regulated processes, with the transmission expansion decision being a good example. There are important areas of reform, however, where regulation and markets do not "compete" to provide the necessary service; instead, regulation establishes a market, such as for installed capacity, while the market provides the desired service and sets the price. Other crosscutting chapters, one mentioned previously, compare the independent system operators (ISOs) in the United States, and one on U.S. retail power markets.

Editors of future compendiums should consider organizing them in a way that allows for comparisons of the particular features of electricity market reforms across countries, not just within a country. The policy guidance this book offers would have been well served in this way. Nevertheless, this book makes its mark by explicitly linking specific policy guidance to worldwide experiences with electricity market reform.

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