

REVIEWS

BOOKS

Energy Derivatives: Trading Emerging Markets

Edited by Peter C. Fusaro and Jeremy Wilcox, Global Change Associates (www.global-change.com) Energy Publishing Enterprises (New York), 2000
275 pages, hardcover, \$85

The ultimate energy hedge is becoming possible as the commodity markets of oil, coal, gas, and electricity converge with the ancillary markets of weather, emissions, and bandwidth

Three megatrends are driving the transformation of the world's energy markets. First and foremost is the continuing deregulation, privatization, and consolidation of state energy monopolies. The second mover—perhaps predictably—is the information technology revolution, and the third—perhaps surprisingly—is the environmental movement.

The breathtaking pace of this change means that businesses are having to reinvent themselves and are facing increased levels of new kinds of risk. As a result, efforts to develop new financial products for these emerging energy markets are growing exponen-

tially, and they are being adopted to differing degrees. However, such instruments remain increasingly complex and bewildering to the layman.

In the book *Energy Derivatives: Trading Emerging Markets*, editors Peter C. Fusaro and Jeremy Wilcox aim to make some sense of this. The book is a compilation of essays by industry experts, examining all facets of the emerging markets in energy products (electricity, natural gas, coal) and the rather more esoteric trade in bandwidth, weather, and polluting emissions.

Fusaro and Wilcox take the reader through the latest market developments and examine them in layman's terms. By examining the interaction between physical networks for the supply of energy (power grids, gas pipelines) and the world's new virtual trading space (the Internet), the authors allow the reader to visualize a new energy marketplace in which physical reality and virtual reality meet.

Bandwidth and weather

Nowhere is this physical/virtual interface more evident than in the nascent markets for bandwidth. Somewhat surprisingly, the primary drivers in bandwidth trading are energy companies. The U.S. market for bandwidth derivatives could be worth \$350 billion by 2005—larger than those for power and natural gas.

Meanwhile, the high volatility associated with electricity markets has meant energy companies need to hedge volume risk as well as price risk to prevent outages. This has promoted the trading of weather derivatives.

Traditional weather damage insurance has been available to businesses for many years, but protection in the form of a derivative has only recently become available. According to essayist Andrew Feacham of Eurobrokers: "The market started during the summer of 1997 when two U.S. power companies, realizing they had

opposite weather exposure, entered into the first weather derivative swap contract for the upcoming winter season."

Since then, the U.S. market has grown to an estimated 2,500 deals with a total value at risk of around \$5 billion. Weather derivatives are increasingly becoming standard fare in utility company portfolios in the States, and markets have also been developing in Europe, East Asia, and Australasia. The European market alone is predicted to be worth \$8 billion within the next two years.

Nevertheless, we are now at the "make or break" time for global weather derivatives, according to Feacham. The products are still relatively illiquid, the market fairly opaque, and there is a notorious lack of published and affordable historical data. Feacham explains these problems and sketches the differences between the European and U.S. systems, suggesting how the market should evolve to survive.

Emissions trading

If you're thinking that energy companies are powerless to control the weather, then think again. The third driver of change in energy markets is environmental awareness, as manifested by energy company executives' attempts to mitigate some of the risks of climate change. Emissions trading markets—trading in the rights to pollute—are also a response to the historically prohibitive cost of the command and control approach to pollution control.

Among the emissions trading programs that essayists Garth Edward and Matthew Varilek of Natsource Tullet & Tokyo examine is America's successful SO₂ Allowance Program. The authors consider how the success of this initiative will now need to be reproduced on an international scale with a global greenhouse gas trading system, perhaps under the Kyoto Protocol.

Risk management tools

The book also takes a comprehensive look at the pure energy markets of electricity, gas, and coal by analyzing existing hedging tools and describing ongoing efforts to evolve these instruments. Essayist Patricia Hemsworth of the New York Mercantile Exchange homes in on worldwide progress and the problems associated with electricity derivatives since Great Britain pioneered retail electricity deregulation a decade ago. Looking further downstream, George Campbell of Scana Power Marketing attempts to fathom why “most retail electric marketing efforts are doomed from the start.”

Essayist Seana Lanigan, formerly of the International Petroleum Exchange (IPE), focuses on European natural gas markets, which—like electricity markets—are undergoing their own changes. European Union legislation is forcing many countries to break up state monopolies, and Lanigan explains that for some “this represents a revolutionary process of reform while for others it is an evolutionary process.”

Since electricity is changing, its main supplier—the coal market—is also doing so, and it is not far behind. Essayists Louise Croucher and Alan Gillespie of the OTC brokerage house Traditional Financial Services track the development of the coal derivatives market. As sophistication in the coal market grows, the focus on published indices will continue to sharpen.

The central role that indices play in the generation of electricity in Europe and the U.S. is examined by Antoine Eustache, an expert on infrastructure-related indices. Indices have fueled the emergence of an OTC financial market that could some day surpass the physical electricity market in size. This chapter looks at electricity indexing and examines whether the global trend toward indexing could expand into emerging markets for trading bandwidth and emissions.

The last chapters of the book focus on energy risk management trading systems. Energy freelancer Jim Banks examines end-to-end trading solutions, and Michael Coleman of FSD International looks at architectures for flexible trading. The pivotal role of the Internet in energy markets is also examined by editors Fusaro and

Wilcox, with a focus on electronic energy trading and the latest technological developments.

—Reviewed by Susannah Johnston, editor of *Platts' North Sea Crude Oil Markets newsletter*.

Real Options and Business Strategy Applications to Decision Making

Edited by Lenos Trigeorgis
Risk Books, 1999 (www.riskbooks.com)
372 pages

Although often mistaken for a risk management tool or technique, real options is actually a decision-making methodology—as the subtitle makes clear. The term itself refers to the value inherent in a physical asset that is derived from some future contingent decision (GLOBAL ENERGY BUSINESS, March/April 2001, p. 31). Business strategists with insufficient background in mathematical modeling will find the theory and practice of real options difficult to grasp. But it behooves them to get up to speed, because the corporate boardrooms of energy and other global companies can ill afford not to leverage the rigor that real options brings to strategic decision-making.

Real Options and Business Strategy comprises 14 chapters of theory and practice on the subject, as well as extensive bibliographic references. The compilation's structure is ideal, because it points both readers with different levels of expertise and specialists in different industries in the direction they need to take to learn more about real options.

For example, the first chapters describe the application of real options methodologies to decision-making about shareholder value, business strategy, and value-based management. The following chapters detail actual applications in industries ranging from pharmaceuticals to airlines to e-commerce. The book concludes with discussions of the value of acquiring information about natural resources—information that can help managers make better use of technology to run multinational operations.

Diverse voices, diverse uses

However, the real value of *Real Options*

and *Business Strategy* derives from the range of distinguished authors whose voices are heard in the book. From P. Balasubramanian, a professor of management information systems at Boston University, to Peter Carr, a principal at Bank of America Securities LLC and head of equity derivatives research at Columbia University, the reader is given plenty of insight to guide his or her further investigation of both the theoretical and practical sides of real options.

Can such academic insight inform practical decision-making? Absolutely. In fact, the recent collapse of stock prices listed on the technology-heavy Nasdaq might have been avoided had investors in, and managers of, new economy companies read the case study in Chapter 8, “Real Option Valuation for E-Business.”

In the case study, the authors—partners and associates of PricewaterhouseCoopers' financial advisory services in the U.S. and Europe—explain how structured discussions among the company's management team can identify the key decisions and uncertainties a company faces. They then describe the development and application of a “learning model” that captures changes in the level of uncertainty about the adoption of a new product or service over time by using accumulated information about the product of service it replaces. This model, in their words, “drives the valuation of the capacity expansion investment options available to the company's management.”

Where real options is—and isn't—a good fit

Energy company decision-makers will find Chapter 11, “The Valuation of Natural Resources,” especially pertinent. The author, Gonzalo Cortazar, a professor at the Pontificia Catolica de Chile and president of Cortazar & Schwartz Financial Research and Consulting, has worked extensively on real options valuation for natural resource companies for nearly 10 years.

Cortazar demonstrates why real options is a better methodology for valuing natural resource investments assets than the traditional discounted cash-flow technique. But he also emphasizes that “real option methodology is not an important tool” for all

types of investments. What Cortazar then provides is eminently useful—a framework that decision-makers can use to decide whether their particular business question lends itself to solution via real options techniques.

If there is a single thread that runs through the book, it is that the real options methodology is evolving—from its genesis as an equity-valuation into a serious tool for evaluating and managing capital investments. The mathematical complexity of real options and problems associated with gathering and quantifying data for analysis will likely continue to stall the adoption of real options by most industries. However, this book and its extensive bibliographical notations serve as a solid foundation for readers looking for an introduction to a growing body of real options research and applications.

—Reviewed by Bill Brocato, *Platts Products Editor for the U.S. Midwest, West Coast, and Northwest markets. He is based in Houston.*

REPORT

Electronic Energy Trading

By Peter Fusaro
Available at www.global-change.com,
June 2001
216 pages, in PDF format

In the third edition of the report “Electronic Energy Trading,” Peter Fusaro has compiled descriptions of numerous energy and energy-related e-trading businesses. As a reference for identifying players, their origins, and their recent successes and failures, the third edition is a useful compendium. Fusaro goes beyond reportage, however, and seasons the report with many conclusions that are so inadequately supported by argument and/or fact that they must be considered opinions. Therefore, as

an analytical or forecasting tool, this report is neither impressive nor useful.

Fusaro views Internet-based commerce as inexorably moving to dominate energy trading, a sort of manifest destiny that is presently, but only temporarily, being slowed by human inertia. He writes:

“The question, thus, becomes when not how will electronic trading transform energy market [sic]. It is not a technology-related problem since the technologies of the trading platforms are more than adequate. Electronic trading platforms still need to overcome the obstacles of human interaction and the fear of change by most people. After all, screens can’t play golf, go to sporting events, or take clients on junkets.”

The theme of technologic-determinism is maintained throughout the report, which concludes:

“Finally, it is worth remembering that electronic trading is an infinite market since the development of new technology is only dependent on time. . . . The greatest hurdle will continue to human not technological [sic].”

The evolution of the market species

When humans are faced with a choice of markets, they will pick the one that best serves their own interest. That a new market is handicapped relative to the status quo is to be expected, because of the liquidity premium faced by an early adopter of the new market. Thus, a new market must be superior to the status quo if it is to have a chance of success, and a new market that is not superior to the status quo will never succeed.

The status quo energy markets provide humans with more than sports and junkets; there is a rich fabric of information transferred in the language and processes of effective markets. It could easily be argued that e-markets in energy are fraught with technology-relat-

ed problems because they are inferior at conveying and processing the information relevant to energy commerce.

Early in the report, Fusaro seems to recognize that the new Internet-based energy markets are not absolutely superior to some status quo market processes:

“These relationships between traders and brokers are interwoven with added value, [that is], providing market intelligence to traders and the ability to trade large size lots without moving the market. Screen trading can never accomplish this feat.”

It may be that current Internet-based electricity trading platforms cannot transact large lots without moving the market, but it is incorrect to conclude that electronic trading can never provide a more satisfactory means of moving size than status quo approaches can. The financial markets have seen several successful electronic market processes designed specifically to aid institutional investors who routinely wish to move in size but were deterred from doing so by the information and incentive structures of markets dominated by floor specialists and brokers. For example, Instinet, Posit, and Lattice come to mind; each has its own set of tools designed to interface the interests of institutions with the underlying equity liquidity in ways less deleterious to the institutions’ interests.

Technology doesn’t make markets; the pursuit of self-interest makes markets. Markets evolve, and those that evolve to better serve the self-interest of their clientele become dominant and remain so until another contender becomes king of the hill.

Basic technologies are tools that can be well or poorly applied to a purpose—and the set of tools known as IT, though flashy, is quite basic. The more evolved technologies are those that direct the application of tools. In this sense, market design is the relevant technology for making better markets. Unfortunately, there is very little in Fusaro’s report that indicates how one contending power e-market differs from another or from the status quo. Nor does his analysis establish even a qualitative measure of what a superior market design would look like. ■

—Reviewed by Charles Polk, *president of Net Exchange (www.nex.com), San Diego.*

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