



BOOK REVIEWS

Gas Prices in the UK: Markets and Insecurity of Supply, by PHILIP WRIGHT (Oxford Institute for Energy Studies: 2006), 162 pages, ISBN 0-19-929965-X £50.00 (\$90.00, €75.00)

During 2006, prices in the British within-day gas market varied between 255 pence and minus 4.5 pence per therm. This book, completed during 2005, does not analyze these particular movements, but provides a framework within which they can be understood. The book's central thesis is that replacing a vertically integrated industry with one based on market relationships has created much more risk for the companies operating in it. In turn, this has led them to adopt a variety of strategies to reduce risk, reintegrating into other segments of the gas industry or related businesses, but still leaves the industry in a situation where small changes in the balance of supply and demand can be magnified into dramatic price fluctuations.

The book is very well organized, taking the reader logically through the different features of the industry that affect price formation. The first chapter is an overview of the industry, with an account of the demand for gas in the UK, and its sources of supply – still overwhelmingly domestic, but with a sharp rise in net imports taking place. The chapter also describes the storage facilities that are essential in meeting demand at the winter peak. Changes in production from the UK Continental Shelf (UKCS) have also accommodated swings in demand, and so the UK has made much less use of storage, relative to its demand for gas, than most other European countries. As the UK's own production declines, more storage will be required. In the liberalized markets that the chapter describes, there are reasons to ask whether enough extra storage will be provided, given the temptation to enjoy a free lunch by allowing others to pay for spare capacity.

The second chapter covers the ownership of the UK gas chain. Even when nationalized, British Gas bought most of its supplies from independent producers, and this trend has continued after its privatization and eventual divestiture into BG, Centrica (trading as British Gas in the UK) and Transco (now National Grid Gas), which operates the transmission system. Seven companies (five of the international oil majors, Centrica and BG) produced three-quarters of the gas from the UKCS in 2003, and these companies also had significant stakes in offshore pipelines and gas terminals. Some of the producers sell directly to customers; others sell only in the wholesale markets; however, almost all the fields are operated according to engineering constraints, aiming to maximize their long-term output rather than to respond to short-term market incentives. The chapter makes good use of the (rather limited) data available on retail market shares – both domestic and non-domestic markets are rather concentrated, with slightly different (but overlapping) groups of suppliers. A key theme of the chapter is the

way in which different company structures reflect different ways of managing risk – some companies own storage, some have portfolios of power stations and can switch between coal- and gas-fired generation, and some may be able to pass price increases on to domestic customers.

The risks emerge through the UK's various gas markets, described in chapter 3 – a key message is that there is no such thing as a single market for gas in which supply and demand neatly adjust according to the textbook model. Instead, there are long-term contracts, over-the-counter trading, an On-the-day Commodity Market and arrangements for cashing out shippers with imbalances between their contracts and their physical positions. The total volume of trading in 2004, including futures contracts, was nearly seven times the level of physical deliveries.

Chapter 4 discusses the way in which wholesale prices are set, drawing on investigations into episodes of high prices by Ofgem, the regulatory office. These failed to find evidence of anticompetitive behavior, but provide a good illustration of how the markets have been operating. The chapter also shows that different gas markets in the UK have generally moved very closely together, which is what we would expect if traders were aware of possibilities for arbitrage, while gas and oil prices do not have a close relationship. In fact, the gas markets have moved even more closely together than the chapter suggests – the author calculates a correlation coefficient of 0.63 between the Heren and Spectron day-ahead price indices, but they follow different dating conventions. Trades done on June 1st for delivery on June 2nd are reported in the Heren price for June 1st (trading day) and the Spectron price for June 2nd (delivery day). Correcting for this, the correlation rises to 0.98. Spotting this one minor error (revealed by looking at figure 4.19, in which the two series clearly move together, one day apart) did not affect my confidence in the rest of the analysis.

The fifth chapter discusses the regulated costs of transmission and distribution. Several different charges are applied for bringing gas into the transmission system, moving it across the country, and delivering it to consumers, and the chapter shows how much of a customer's bill is made up of these charges. In 2003, they came to just under 30% of an average domestic customer's bill, but less than 10% of the bill for the largest non-domestic customers. The latter, interruptible customers, traded off lower transportation charges in return for agreeing to be cut off when capacity was low – another way for the industry to manage its risk.

Chapter 6 discusses retail prices. For non-domestic customers, these seem to follow wholesale prices closely, whereas prices to domestic customers are not as responsive. The costs of supply (administration and marketing), and profits, made up about one-fifth of the non-domestic price between 2002 and 2003, and there are substantial price differentials between suppliers and payment types.

The concluding chapter offers some lessons. The market appears to have been working well, both in the technical sense of transmitting supply-side problems into price signals, and in allowing companies to manage risk with a variety of hedging strategies. Nonetheless, some commentators are dissatisfied with the

high level of average gas prices in the UK. The author appears to have no sympathy for “the costly and tiring silliness of retail competition for homogeneous products like gas and electricity” (p. 160) but since there is no political constituency to support a drastic change of direction, he suggests two palliative measures. Price regulation might protect domestic consumers, while imposing a compulsory minimum level of storage would improve security of supply and eliminate minor shocks.

This book will be of interest to anyone who needs to understand the gas industry in the UK, or in Europe, given the way in which EU policy on energy liberalization has been heading. It is clearly written, and nicely produced, with a large number of useful color illustrations throughout. It follows the industry’s practice of using many different units – cubic meters, tonnes of oil equivalent, therms, and kilowatt hours – and since I can never remember the conversion factors, a table giving them would have been helpful.

The bibliography contains a good number of references, but almost all of them are from government, the regulator, or industry sources. This is because there has been very little academic work on gas prices in the UK or Europe. The author’s concluding thoughts include the suggestion that more research on the relationships between the gas and oil markets is needed. I would echo this suggestion, and hope that this excellent introduction to the topic will encourage more researchers to work on this important industry.

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Sustainable Fossil Fuel: The Unusual Suspects in the Quest for Clean and Enduring Energy, by MARK JACCARD (Cambridge: The Cambridge University Press 2005) 381 pages, ISBN 13- 978-0-521-86179-4 hardback, ISBN 13- 978-0-521-67979-4 paperback

In the past decade or two, at least one new front has opened in the war against fossil fuels. Many environmentalists have recognized that their long-standing fears of depletion of fossil fuels were baseless. They have shifted to the argument that the environmental impacts of fossil-fuel utilization are so baneful that an immediate push towards alternative energy is essential. (The mindless calls by U.S. politicians to end the addiction to oil is less a new third front than the foolish removal of the spike, which seemed to have been placed in the eighties, from the heart of the import-dependence vampire.)

Mark Jaccard develops the harmful-impact possibility. He argues that because fossil fuels are so amply available and attractive to use, the preferable

strategy is a shift to fossil-fuel utilization in forms that do not produce excessive global warming.

The book starts with an overview of his concept of sustainability, his doubts about the optimism about a rapid shift away from fossil fuels, and a sketch of the rest of the book. His second chapter delineates the scenario of 21st-century energy developments that seem the best reference case for his analysis. He is clearly aware of the pitfalls of prognosis but plunges ahead because of the needs of his argument. Since these are trends to be altered, the validity is not critical.

The main exposition starts in chapter 3 dealing with “efficiency,” nuclear, and renewables. The goal is to warn of the limitations of all three alternatives. Jaccard reaches a conclusion, which I have long advocated, that efficiency has been oversold by the Amory Lovins of the world. However, the route to this outcome is unduly circuitous. He starts by seemingly adopting thermodynamic efficiency as his norm and tosses in gratuitous jibes at economists. Eventually, he admits that the correct appraisals emerge from a full economic appraisal of all the costs and benefits. As shown later, this underplaying of the economics accompanied by economist jokes proves a chronic fault of the book. To be sure, Jaccard does assert that he is an economist and thinks accordingly. The issue is whether he does so as fully as desirable.

The nuclear section repeats the common tendency to overemphasize the environmental and proliferation issues and failing adequately to recognize that, at least in the United States, the crux of the retreat from nuclear was unfavorable economics made worse, if not caused, by clumsy regulation. The demonstrable defects of the antinuclear campaign should inspire skepticism about other environmental crusades. The renewable section provides appropriate cautions about each alternative.

Chapter 4’s treatment of the fossil-fuel supply prospects is even more problematic at dealing with the economics. The initial statements seem to make Hubbert-like “geological” evaluations a valid alternative to, instead of an egregious neglect of, economic principles. Jaccard again reaches reasonable conclusions by an unnecessarily convoluted route.

Chapter 5 on the problems of fossil-fuel use begins with an overwrought discussion of impacts than among other things tosses in the risks voluntarily assumed by coal miners. He then turns to review of mitigation by CO₂ capture or carbon storage.

Chapter 6 is described as comparing the alternatives. Again, waffling on economic principles mars the analysis. Jaccard uses the difficulties of accurately quantifying externalities as an excuse to use the even more problematic approach of multi-goal analysis. This is not helped by his choice of goals to include “extreme event” risk, geopolitical risk, and path dependence and using all three as reasons to fear nuclear power. The introduction of path dependence is particularly problematic. Neither the anecdotal David (1985) and Arthur (1989) articles that popularized the concept, the devastating attacks by Margolies and Liebowitz (2001), or the many intermediate evaluations are cited. This is unfortunate be-

cause the implication of the work is that path dependence is simply that it is costly to introduce a new technology. If that technology is efficient, the profits reaped will motivate introduction. The externality is one in which small numbers prevail and the Coase theorem is applicable.

However, it is the application of the large-event and geopolitical criteria that is most problematic. The large-event concept follows the antinuclear actions of the 1970s of making low-probability events (nuclear accidents) more important than high-probability events such as refinery and fossil-fuel boiler accidents. He manages inadvertently to undermine his contention that nuclear proliferation is the primary geopolitical risk by including Israel as an example of proliferation hidden in a civilian-nuclear program. Israel has no civilian nuclear power and nuclear-weapons activity still kept as hidden as possible. His discussion of oil risks is more equivocal than necessary because of neglect of Adelman's classic writings (1995).

The policy chapter starts with the basic case for taxes on greenhouse gas emissions and tradable emission permits as the favorable options. Then, he engages in yet another unfortunate retreat from such strong economic principles and advocates special programs to encourage such alternatives as low-emission motor vehicles. This would be objectionable in any situation and is particularly so in the context of the theme of the book that the desirability of all the alternatives is highly uncertain. Jaccard seems insufficiently alert to the wasteful outlays already amassed in energy and other policies in bestowing subsidies on alternatives. All too often the political clout of the proponents trumps economic attractiveness.

The main text ends with a chapter of ruminations on different perspectives on prospects. These range from alarmism to the optimism of Julian Simon. As might be expected, Jaccard places himself in the middle. After his bibliography, he presents his recapitulation. This starts with an integrated synopsis of the book and then provides overviews of each chapter and how to read it.

The book then is a welcome break from the calls immediately to foster movements away from fossil fuels. It thoughtfully works through the many thorny issues involved. As already noted at many points, the arguments are systematically undermined by reluctance to stand by economic principles. The key neglects include the centrality of Pareto efficiency as core of evaluation, the economics of natural-resource exploitation developed by Adelman, and the preference for emission taxes and permits. Another problem is inadequate recognition of the uncertainties about environmental impacts. In short, this book is a vast improvement over most calls for vigorous action and a must read for those concerned with energy prospects and how, if at all, public policy should seek to alter these developments. It would have been a great book had it more relentlessly stressed the importance of sound economics in the face of enormous uncertainties.

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