Book Reviews

Hans-Wilhelm Schiffer, *Struktur and Wandel der Energiewirtschaft in der Bundesrepublic Deutschland* (Cologne: Verlag TÄU Rheinland, 1985), 185 pages.

This book is about the current status and future prospects for West German energy. A short introductory chapter describes German energy consumption patterns. The next chapter (which constitutes over half the book) presents an overview of the oil, hard coal, lignite, natural gas, and electricity sectors. In each case data are provided on production, international trade, consumption, and the firms participating in the sector. Schiffer then discusses energy prices. First, he gives an overview of the price formation process for each sector and then reviews price trends. The next chapter describes patterns of energy used from 1973 to 1984 with emphasis on how adjustment was made to the rise in world oil prices. The various efforts to promote faster response are discussed in Chapter 5, and Chapter 6 reviews various forecasts of German energy use (with stress on a 1984 study by the consulting firm PROGNOS). The last two chapters briefly discuss the energy problems facing West Germany and some aspects of energy policy.

Since much of the material is tabular and the text is written fairly simply, people with German skills as primitive as mine can grasp the gist of the book. It provides a good, quick descriptive overview of energy in West Germany. Schriffen does not try to go to the next stage of analyzing the material.

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Mary Ann Tétreault, *Revolution in the World Petroleum Market* (Westport: Quorum Books, 1985), 271 pages.

Shemuel Meir, *Strategic Implications of the New Oil Reality* (Jerusalem: The Jerusalem Post; and Boulder; Colo.: Westview Press, 1987), 107 pages.

Ole Gjølberg and Inger-Lise Eilersen, *Oil Products—Studies of Price Relationships, 1975–1985* (Oslo: Norwegian Fund for Market and Distribution Research, 1986), 73 pages.

Fereidun Fesharaki and Hossein Razavi, *Spot Oil, Netbacks, and Petroleum Futures, Special Report 1063* (London: Economist Intelligence unit, 1986), 100 pages.

The literature on changes in the world oil market continues to proliferate. However, the contributions have been piecemeal. Nothing matching the economic rigor of

Adelman, the careful journalism of Hartshorn, or even the biased but thorough view of Sampson has yet appeared. The material reviewed here is more of the potpourri. Tétreault sets (and fails to attain) the most ambitious goal—a new history of oil. What she does give us is a collection of assorted data that will add a bit to our understanding. The five chapters successively treat the old order in oil: the trends of the post-1973 period; and the respective effects of oil developments on oil companies, importing countries, and exporting countries.

The review of history plods over much-traveled ground. Not only is nothing added to prior work, she discloses both an anti–oil-company and an anti-Israel bias. The "Zionist state," as she terms it, is called "perhaps the most unfortunate legacy of colonialism . . ." In contrast, Chapter 3 is a very useful survey of price behavior and its causes from 1974. The waxing of OPEC and the forces (such as rival suppliers) which caused its waning are well explained. The remainder of the book makes good points, but they are more scattered and impressionistic than would be preferable. The treatment of oil companies is best described as selected illustrations of institutional adaptation. We learn of the creation of national oil companies in OPEC countries and elsewhere and get a discussion of how four of them worked. Other topics include Aramco's adaptation, takeovers (with emphasis on Gulf-Chevron), and entry into coal. The parts are generally satisfactory; the problems are incompleteness and some questionable economic analyses.

The equally selective importing-country policy chapter works less well because the anecdotes are less well chosen. Tétreault starts with a description of the creation of IEA, veers off into criticism of the economically oriented approach of Ronald Reagan, and gets bogged down in details when she returns to IEA. She then discusses assorted supply augmentation efforts (including Argentina's failure to get World Bank financing, which she seems to deplore) and superficially treats conservation, efforts to improve relations with the Arabs, and the costs of higher oil prices. She would have been better off concentrating on IEA and discussing it more fully.

The topic selection and execution is much more successful in the exporting country chapter. Here we get good capsule views of OPEC, OAPEC, some of the main non-OPEC producers, Arab foreign aid, and, finally, Kuwait as a case study in use of oil wealth.

Meir presents an Israeli view of world oil after the price drop. His stress is on how the price declines blunted the threats to Israel, but a sense is also conveyed that the threats may have been exaggerated. He begins with a summary of oil-market developments and then turns to the financial impacts of the fall of oil prices. He notes that the Arab effort to build pipelines to lessen vulnerability to Iranian attacks have made Arab oil producers more vulnerable to Israel, since it is close to the pipeline terminals. Then he discusses rather breathelessly a variety of political issues associated with the rise and fall of OPEC prices—mostly political and military pressures on Israel. The gist of the discussion is that at most Israel was strained more. The Arabs could not secure military dominance, purchase sustained international support, or destroy the Israeli economy or even its oil supplies. The monograph is quite summary and most interesting as an illustration of how time and experience have moderated our views on oil power.

What Gjølberg and Eilertsen have prepared is really a long article. In it they give an eleven-page survey of prior statistical work relating to oil prices, define simple hypotheses of price behavior, present data on behavior, and show the results of some statistical analsyses of the behavior. The price data cover gasoline, gas oil, naphtha, and heavy fuel oil. Particular attention is given the variation over time in the differences among prices. Statistical measures are provided on the variability of spreads. The next section correlates ratios of various product prices to the ratio of heavy fuel oil prices to crude oil prices. They also find that changes in the relative price of products tend to lag changes in the relative prices of different crude oils and that OPEC price announcements have no effect on the market. Finally, the regularity of seasonal price variation is tested and found unstable. This modest effort derives and presents some interesting data on price behavior.

Fesharaki and Razavi provide a typical Economist Intelligence Unit booklet—a short, lucid overview for the busy, interested, well-heeled reader. They discuss the well-publicized increase in spot buying of oil, the growing tendency to base contract prices on spot prices, the rise of futures markets, and the device (particularly favored by Saudi Arabia) of selling oil at a price equal to produce prices less an allowance for refining and transportation costs. They begin by describing why these devices have arisen and how they make the market function more smoothly. Descriptions are provided on spot trading, spot-related deals, netback contracts, and futures. The role of spot contracts is discussed separately, and the study concludes with a discussion of the impacts of these institutions on OPEC. As would be expected, the review is long on description and short on analysis. The information is helpful; I found the discussions of netbacks and the problems of keeping them close to spot prices particularly useful.

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Richard L. Gordon, Henry D. Jacoby, and Martin B. Zimmerman, eds., *Energy: Markets and Regulation: Essays in Honor of M. A. Adelman* (Cambridge: M.I.T. Press, 1987), 406 pages.

M. A. Adelman is the dean of academic economists concerned with the analysis of energy markets. He is both a scholar's scholar and a man of very practical concerns. His work is widely read, discussed, and thought about by both academicians and men of affairs. Everyone who works in energy economics has been and continues to be influenced by Adelman's ideas and questions. The thirteen papers in this volume are a coherent, readable whole that is very much in the tradition of Adelman's own work. That is to say they are excellent.

The economic identification of the world oil market and the analysis of the supply and demand forces in institutionally rich yet sophisticatedly simple terms has been an Adelman gift to all his students and readers. Oil is the fuel most able to supply a variety of demands. Oil also has the lowest unit costs for long-distance, worldwide transportation. Hence, Adelman's early interest in tanker economics and his encouragement of Zenon Zannetos to initiate, years ago, the definitive work that he continues in this volume with "Oil Tanker Markets: Continuity Amidst Change." Oil knits together world energy markets, and tankers knit together the world oil market.

Phillip Verleger continues a core set of Adelman themes in "The Evolution of Oil as a Commodity." Verleger has been a leader in the formal development of the implications—such as two-way price volatility—of an increasingly complete world oil market. In that context, Adelman has repeatedly addressed the roles of the vertically integrated international companies and OPEC. Verleger brings Adelman's analysis forward to the present, and his observations are complemented by "Cartel Theory and Cartel Experience in International Minerals Markets," in which Jeffrey MacKie-Mason and Robert Pindyck use cartel experience in other minerals markets to amplify the Adelman-based lessons that Verleger draws from the changing structure and operation of the world market and recent oil-market experience.

As with belling the cat, taxing rents efficiently is difficult to achieve. Paul Eckbo reviews tax developments in the world oil market in "Worldwide Petroleum Taxation: The Pressure for Revision." Eckbo observes that the level of taxation and distortive nature of fiscal regimes increased as oil prices rose. He finds that more neutral tax regimes would permit profitable exploration and development of smaller, higher-cost reservoirs at lower prices. Eckbo also diagnoses likely adjustments in prominent tax regimes such as the United States, United Kingdom, China, and Indonesia. But efficient correction of distorted incentives requires an understanding of how resources become supplies and how cost and output vary in mineral and petroleum production. Here, too, Adelman has been in the van, and his pioneering work is a foundation upon which Gordon Kaufman and Paul Bradley continue to build. The Kaufman chapter is a review by the master of "Oil and Gas Resource and Supply Assessment." Bradley's "Cost and Output Analysis in Mineral and Petroleum Production" is a further extention of his highly regarded work. Kaufman and Bradley address the geologic and economic roots of uncertainty for which Adelman has always had such a keen appreciation.

Natural gas, coal, and nuclear power compete with oil in the world energy market. Economics, politics, and regulation intertwine complexly at the margins of this competition. Adelman has blazed trails here as well. In "Coal Policy in Perspective" Richard Gordon develops a classic Adelman argument that clumsy rent appropriation and narrowly focused protectionsim are not offsetting maladaptions. Martin Zimmerman examines "The Evolution of Civilian Nuclear Power" in the United States from the standpoint of another Adelman perspective: Regulation cannot erase costs; it can only disguise and distort their incidence and, perhaps, magnify their impact. U.S. natural gas markets have provided fulsome examples of this Adelman principle. In "Adapting to Change in Natural Gas Markets" Paul Carpenter, Henry Jacoby, and Arthur Wright illuminate the correctness of Adelman's early-1960s analysis of the impending consequences of natural gas regulation and the difficulty of unsticking oneself from the regulatory tarbaby.

Market intervention shifts the margins of competition among fuels. It also shifts the grounds upon which nations relate to each other. No Adelman *Festschrift* would be complete without a thoughtful and incisive analysis of the relationships between

American and Canadian oil-import and pricing policies in the years before and after 1973. In "Living under a Shadow: U.S. Oil Policies and Canadian Oil Pricing" Campbell Watkins does just that.

Adelman's original work was in industrial organization and antitrust. There, a longstanding debate has revolved around the intellectual and empirical content of the notion of shared monopoly. Shared regulation, however, through the authority of the state to impose costs, clearly can have an effect upon resource allocation. In "The Record of the Environmental Protection Agency in Controlling Industrial Air Polution" Paul MacAvoy demonstrates that in the regulation of air pollution the effect has not been good. Too many cooks are known to spoil the soup. MacAvoy shows that when the broth is stone soup, too many regulator-cooks impose the cost of carrying too many stones.

Regulation may also be ineffective in situations where the constraints—prices, performance characteristics, rates of returns—are nonbinding in the market circumstances that obtain. In "Public Policy and the Private Auto" Robert Crandall and Theodore Keeler find that, under previously prevailing price expectations, the corporate average fuel economy (CAFE) standards of 1975 probably have had little effect on the fuel efficiency of cars. The question now, however, is whether CAFE standards can be justified in a market environment where prevailing price expectations make them a binding constraint. Is it better for regulation to be ineffectively efficient or effectively inefficient?

The prize for witty exposition of a major review, assessment, and outline of the future research agenda goes to Ernst Berndt and David Wood for "Energy Price Shocks and Productivity Growth: A Survey" Berndt and Wood conclude that increases in energy prices had a larger and more-important negative effect on measured productivity growth than previously believed, but that other factors were also at work and are not yet clearly understood. Now there has been a reversal in oil prices, and the microelectronic revolution is transforming the technology of production processes. New data are accumulating for the specification and testing of the empirical implications of the interactions among energy, capital, and productivity. Berndt and Wood point the way.

This *Festschrift* clearly stands out because of the unity of these thirteen papers. Each paper is interconnected with all of the others through their relationships to Adelman's own work. Such a strong and unwavering focus on and derivation from the seminal contributions of the honoree is an objective of *Festschrifts* that is seldom attained. All of the papers take off from Adelman's work and come back to it. This is unusual and commendable. But then M. A. Adelman is an unusually commendable contributor to our understanding of energy markets. He has built a solid foundation upon which the analyses in this *Festschrift* are constructed. Each paper makes a contribution to the literature in honoring Adelman. That is appropriate.

The warm preface by Charles Kindleberger extols the virtue of Morry Adelman as a human being and sets the "feel" of this *Festschrift*. It is a nice feel. It sets up nicely. The conversational tone of many of the essays is a positive attribute of the book. It highlights the very warm nature of Morry Adelman himself. It is consistent with how much of the discourse in energy economics takes place—in conference corridors, seminars, telephone calls, hotel lobbys, airport departure lounges, and so forth—and embellishes the solid analytics underlying each piece. This consistent feature of all the essays cannot have happened by accident. It is done gracefully. The editors deserve a compliment for having pulled it off so nicely.

M. A. Adelman has been president of the International Association of Energy Economists. We are justifiably proud of him.

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C. D. Trengove, ed., *Australian Energy Policies in the 80's* (North Sydney: Allen & Unwin), 1986), 252 pages.

Michael T. Hatch, *Politics and Nuclear Power: Energy Policy in Western Europe* (Lexington, Ky.: The University Press of Kentucky, 1986), 219 pages. $22.00.

These two books take radically different approaches to the subjects covered. The Australian study is an economic analysis of the topics considered critical. Separate chapters cover price controls and trade restrictions, environmental issues, government ownership, market power in oil, market power in gas, and a resource rent tax. All this is preceded by an overview of Australian energy markets. The work was done at the Centre of Policy Studies at Monash University. The authors take antiiintervention positions similar to those in the U.S. energy policy literature. Every chapter including the introductory one combines a discussion of both the facts and the relevant economic theories. The latter are presented at a level presuming some prior knowledge—probably mastery of the basic principles course in microeconomics.

The introduction tries the ambitious task of summarizing basic price theory, efficiency, equity, competition and monopoly power, exhaustible resource economics, uncertainty, and property rights together with assorted facts about energy in Australia.

The price control chapter is one of the strongest; it analyzes price control schemes for LNG and taxation of crude oil. It shows the perverse effect of prior Australian policy of varying taxes with field size, which created an enormous cost penalty for expanding beyond the two size thresholds of 2 and 15 million barrels per year. The environmental chapter stresses the imperfect property right allocation problem as the source of environmental difficulties. The author urges greater use of improved property right allocations. He recognizes the limits to private solutions and adopts the familiar proposition that pollution taxes are the preferable government tool (atuo emission controls are used an an illustration of public policy). The discussion of principles is extremely lucid and sensible; the factual discussion is very limited.

The public ownership chapter also is an excellent review of concepts with a limited empirical content. A particularly good discussion is provided of what conditions produce a natural monopoly and of the drawbacks of both government ownership and regulation.

The two competition chapters are more heavily oriented to empirical issues. The authors conclude that markets for oil, and particulary refined products are workably competitive but that "bilateral" monopoly (mostly the monopsony power of the gas utilities) produces inefficiencies in natural gas.

The tax chapter maintains a good balance between developing the theory of rent taxation and applying it to actual and proposed Australian policies. The discussion introduces and carefully deals with Australian efforts to use petroleum tax policy to produce production incentives.

The editors do not indicate what audience they sought to reach. The book seems excellent for use in energy seminars in Australian universities and for educating those economically literate (or sufficiently determined) who have a strong interest in energy. Some chapters are very good overviews of the theoretical issues, and others have good data on Australian conditions. Reading these will provide insights to experienced energy economists.

However, the book does not optimally utilize the opportunities available. The ideal book would have been a more broadly accessible one explaining more fully Australian policies and possibly comparing them to those elsewhere. A pruning of Chapter 1, the appendices to various other chapters, and excessively long quotations of other authors could have easily freed space to cover such omissions as coal and uranium policy and the details of environmental regulation and governmental ownership.

Hatch's main title is a more correct description than his subtitle. The coverage is limited to policymaking, predominantly nuclear. The coverage is West Germany, France, and the Netherlands. Two chapters cover world oil developments since World War II and overall policy responses to them in the three countries. Thus we learn of German coal protectionism, French efforts to find alternative oil suppliers supposedly more secure than the Anglo-Saxons, and the more mixed Dutch approach. The next two chapters, the longest section in the book, report on the political controversies slowing German nuclear development. The French and Dutch experiences—a centralized government implementing a vigorous nuclear expansion and a weak series of governments unable to act forcefully—are then more briefly described. The descriptions are useful.

The key issue is whether we have a sample of countries biased to support a theory of nuclear development determined by political conditions. The only appropriate choice is that of France as the most nuclear-orineted country. The stress on West Germany seems dubious. As the book fails to make clear, West Germany has a far greater nuclear program than the other major energy-consuming countries, Britain, and Italy. Even more striking is that the Dutch choice can be contrasted to the Belgian case. Here another country with severe domestic political problems raised the nuclear share in total generation to 60 percent—compared to 65 percent in France. Had more countries been viewed, a more complex and correct view of nuclear power might have emerged.

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Gérard Gaudet and Pierre Lasserre, eds., *Ressources Naturelles et Théorie Économique* (Quebec: Les Presses de l'Université Laval, 1986), 363 pages.

This book seeks to make the fruits of modern developments in natural resource economics available to a French-speaking audience. The material encompasses fourteen papers prepared for a summer-1984 conference at Laval University. Nine of the papers are from people at Anglophone universities and probably are translations of English text. (The introduction notes some papers are translations but does not identify them.) All are exercises in mathematical economics, mostly involving applying techniques of maximization subject to constraints to complex problems. While ordinary calculus dominates, some calculus of variations or optimum-control-theory models appear.

The first essay by Robert D. Cairns deals with the problem of an equitable allocation over time of a stock of minerals produced in a cylindrical structure in which ore grade declines as output extends from the center. He follows Robert M. Solow in using a criterion, supposedly suggested by Rawl's *Theory of Justice*, of constant per-capita consumption and assumes linearly increasing capital stocks.

In the next paper Graciela Chichilnisky developes an open-economy, macroeconomic model Leontief technology (fixed-input coefficients), with the industrial good more oil-intensive (relative to labor) than the consumer good and with no capital used to produce consumer goods to examine the impacts of oil price increases on production, consumption, profits, and employment. She shows that higher oil prices in importing countries do not inevitably harm all sectors of the importing country's economy. Chichilinsky then teams with Geoffrey Heal and D. McLeod to treat the debts of natural-resource producing and exporting countries. They start with a model similar to the one in the prior essay, adapt it to debt, and show how the consequences differ with the structure of the economy.

Robert S. Pindyck suggests a means for measuring the Lerner monopoly power exerted over time by the monopolist of an exhaustible resource and examines his behavior in a simple model of exploiting an imperfectly known set of resources. The proposed measure is one minus the ratio of the discounted total of monopoly marginal costs, including Hotelling rents, to the discounted total of efficient prices.

Abraham Hollander and Pierre Lasserre deal with the optimum behavior of a monopolist whose product eventually is scrapped and recycled. Tracy Lewis, Robin Lindsey, and Roger Ware treat bilateral monopoly in exhuastible resources by adapting various "Stackelberg" models (i.e., ones in which at least one participant is sophisticated about the response his actions will produce).

Gérard Gaudet and Pierre Lasserre briefly review the effects of taxing an exhaustible resource. Sheldon Switzer and Stephen Salant present a modification of the exhaustible resource model that explicitly treats optimizing investment in producing capacity. Jean-Thomas Bernard presents a model of optimum development of hydroelectric capacity. Jean-Jacques Laffont and Michel Moreaux analyze an alleged market failure in allocating resources between vinyards and sand and gravel pits in Bordeaux. Philippe Crabbé treats the values of options on natural resources. Shantayanan Devarajan develops a model of exploration and extraction with uncertainly. Following the deplorable tradition that has developed in this realm, he defines exploration as reserve augmentation and analyzes when it is desirable to augment reserves. The critical problem here is that rational decisions on exploitation should already encompass estimates of prospective discoveries. The remaining two essays treat renewable resources.

Overall this is a solid set of essays is mathematical economics. Symposium organizers rarely manage to get a representative sample of critical work or even major new findings, and this is no exception. It is hardly a comprehensive view of the literature and is clearly not for beginners. Rather, it provides extensions of much prior work primarily of interest to specialists in natural resource theory. Thus, there will be few readers in any language, and costs of translating so much into French may well exceed benefits.

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