Book Reviews

William A. Vogely, ed., *Economics of the Mineral Industries*, 4th edition. New York: American Institute of Mining, Metallurgical and Petroleum Engineers, 1985. vi + 660 pages. No index.

Few readers of *The Energy Journal* will want to read this book straight through, but many would benefit from reading large portions and from having it at hand as a reference work. Four chapters (out of nineteen) are devoted explicitly to energy topics, but since all energy sources are mineral-based, there is not much which does not relate to energy production.

In Part 1, Minerals and the Economy, "Minerals and Economic Growth," by John G. Myers and Harold J. Barnett, updates Barnett's well-known work with Chandler Morse. The tendency of mineral prices to decline in the long term may have been halted in the 1970s, but "there is not convincing evidence that minerals are truly becoming relatively more scarce" (p. 17). (Price movements since 1980 have strengthened the authors' thesis.) "Minerals and the Developing Economies," by Charles J. Johnson and William S. Pintz, tells how to get the most out of transnational corporations without killing the goose. "International Trade in Mineral Commodities," by Henry N. McCarl and Gerry Waters, is less interesting because there is less to be learned of general principles.

Part 2, Principles of Mineral Economics, contains two impressive chapters: "Production of Mineral Commodities," by Richard L. Gordon, and "Mineral Resource Information, Supply, and Policy Analysis," by DeVerle P. Harris (who summarizes here his recent book). The Gordon chapter is a full-dress review of microeconomic theory applied to minerals, extremely valuable in uniting the theory of the individual firm, market organization, and limits on competition. A too-brief exercise on coal reflects the author's long experience. The Harris chapter begins at the other extreme, with a discussion of crustal abundance, and then works through the transition to reserves and supply. Neither of these chapters is easy going, but both are strongly recommended. It is a sobering thought that they are talking about the same things, but the translation is very difficult. "Theory of Mineral Demand," by Gary A. Campbell, is less successful simply because demand is much more a matter of individual minerals. I wish he had paid attention to durable (metals) versus non-durable uses (oil, coal, gas), with uranium perhaps an intermediate case.

Part 3, Mineral Industry Analysis, contains a useful how-to chapter, "Mineral Investment and Finance," by Alfred Petrick Jr. "Energy Modeling," by Walter C. Labys and David O. Wood, reduces to order the "explosion in formal modeling of energy systems and markets" in the past decade and should be both an introduction and a valuable reference. "Mineral Models," by Labys, Frank R. Field, and Joel Clark, is oriented more to models of the non-energy minerals.

In Part 4, Structure and Performance of the Major Mineral Sectors, "The Metals," by John E. Tilton, will be useful even to those not interested in metals as such, because it gives a view of several markets in motion: the interaction of demand,

supply—particularly in the long term—and market control. "The Economics of Coal and Nuclear Energy," by Richard Newcomb and Michael Rieber, traverses the debris of wrecked hopes of cheap electric power. The treatment of uranium supply is rather outdated, since it ignores the expansion of resources and reserves outside the USA (table 4.11.2) after 1981, though the collapse of prices is noted. Robert D. Deacon and Walter J. Mead, "The Oil and Gas Industry: Regulation and Public Policy," includes an analysis of the world oil market, and states briefly Mead's well-known thesis that the price explosion resulted not from a cartel but from the substitution of owners' low discount rates for operators' high discount rates, leading to restricted production, hence higher prices in 1973–77; while the 1979–81 explosion "was due to the market, not OPEC" (pp. 491–492). There is also a discussion of competition in crude oil, including "market-demand-prorationing" which flourished mightily in 1936–70; environmental protection; national security; taxation of oil and gas; price controls. These are mostly unedifying stories which need to be told.

Richard L. Gordon's "Energy Policy Issues," begins Part 5, Public Policy and the Minerals Industries. It is essentially a statement and application of welfare economics, a "theory [which] is often more a warning about the pitfalls of policy design than a definite guide. Nevertheless, the lessons are too important to ignore." (p. 536). I found particularly interesting the treatment of mineral leasing, and of taxation in decreasing-cost industries, including the severe limitations on benign discrimination (Ramsey pricing).

The last five chapters, on Environmental Regulation, are rather disappointing, because each is too brief and overlaps with the other. "The Implementation of Environmental Law," by Lawrence J. MacDonnell, seems the most useful, particularly to the non-lawyer.

There is no index, which would probably have been prohibitively expensive. Perhaps there will be in the fifth edition, which one would hope would be as successful as this one.

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Susan Owens, *Energy, Planning and Urban Form*. London: Pion Ltd., 1986, 116 pages. (In the U.S. and Canada from Methuen Inc., New York.)

This book is concerned with the links between energy and spatial structure at the regional, sub-regional and local scales; the possible effects of energy constraints on urban and regional economic trends; and the potential to modify urban form as a means of reducing energy requirements for transport and for space heating. Compared with other aspects of the demand for energy, these concerns have been little studied and, as Dr. Owens shows in her book, in some countries they have received even less

attention from policy makers. Given that rich, post-industrial economies have high levels of energy use at least as much from the energy intensive patterns and styles of living and the associated systems of transport which they have chosen to develop as from the energy careless technology which they determined to use under low-price energy availability, the failure to date to give close attention to the relationships this book examines may seem surprising.

Dr. Owens demonstrates why this is not really surprising—though this is not the intent of her book. In the empirical part of her analysis of the energy savings achievable by changes in the spatial structure of society and its transport systems, she stresses the difficulties which appear to be involved in persuading consumers to forgo their preferences for living space and personal mobility—and the equally difficult task involved in persuading societal planners to take the energy component on board in their work. The case studies of such efforts (in Portland, Oregon and Davis, California in the U.S., in Milton Keynes in the U.K., in Aarhus in Denmark, and in Melbourne, Australia), though showing that some energy-saving action can be taken under specific, highly favorable circumstances, are more impressive in demonstrating just how little has been achieved in spite of more than a decade of high energy prices and a general perception of energy as an increasingly scarce commodity. Dr. Owens' plea for "robustness" in the energy aspects of spatial and transport planning thus seems likely to be even less well heeded under present-day lower-price and glut conditions.

In a way, the weakness of the response, as she portrays it, to the potential for more energy-efficient economies relates to significant omissions in the range of case studies presented. This is most notable in Dr. Owens' failure to consider the much stronger policy orientation to, and implementation of, energy aspects of spatial economic developments in many West European countries. One thinks in this context of the high quality and completely integrated urban and inter-urban passenger transport systems of Switzerland and Austria; of the efficient and low-cost Paris regional transit authority; and of the planned grid for transmitting heat in West Germany; of the new and expanded towns and cities of Sweden conceived and built with efficient combined heat and power systems as a central consideration; and of comprehensively planned energy efficient patterns of urban development in the Netherlands. All these developed within the context of operational democracies with high average incomes per capita; parameters which Dr. Owens suggests, from the perspective of British and U.S. experience, as creating near-impossible barriers to more efficient energy use approaches to the spatial organization of wealthy western societies.

Nevertheless, her book, including a long and useful bibliography on the countries she examines, provides an excellent overview of the energy demand issues involved in the spatial organization of high income, private expenditure oriented economies. And the book is interesting and revealing in its critique of the Anglo-American political and policy approaches and attitudes. This critique, however, provides a geographically biased presentation of where energy use/spatial structures relationships now stand in terms of attitudes and policy implementation. A second edition of the book will need to correct this bias by extending the range of the empirical work to encompass many more countries. This would greatly enhance the book's utility as an

introductory analysis and appraisal of this important and much neglected aspect of energy demand studies.

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Mohan Munasinghe, *Rural Electrification for Development—Policy Analysis and Applications*. Boulder, Colorado: Westview Press, 1987.

Munasinghe's comprehensive book covers much more than just rural electrification. He provides the basics for developing and analyzing rural electrification plans including an introduction to project analysis methods and specifics on power system planning and pricing policies. He brings together all the tools in a clearly and concisely written text which can be used as resource material for electricity planners as well as policy makers.

This book will have different uses for different levels of readers. For readers without a background in the quantitative tools used, or in power system planning, this book will produce an understanding of what goes into rural electrification planning. A comprehensive book of this nature, however, cannot include the methodological detail required to derive and develop all the mathematics. A background in quantitative analysis is needed actually to gain the full benefits from this book. For those readers with power system planning background, the material provides the tools for performing the necessary assessments, and can be used as a learning and reference text.

The book can be separated into four major sections. The first, Chapters 1–3, introduces the concepts of rural electrification planning and policy and outlines objectives, policy instruments, methodological framework, and project analysis.

The second section (Chapters 4–6) is important for rural energy planners who have not dealt specifically with electric sector planning. This section includes power system optimization, distribution system losses and engineering and design criteria methods. It provides models and examples to help understand power system planning. All too often analysts do not understand the concepts of electric system planning and why a truly integrated rural energy plan needs to incorporate these ideas. These chapters which present material different from others on rural energy, may be the most important.

The third section deals with demand analysis and pricing. The pricing chapter is a summary of previous works by Munasinghe and is well written. The demand analysis chapter is perhaps the weakest and is relegated to a few pages. While it does not detract seriously from the overall quality of the book, it is disappointingly brief.

The final section contains case studies and examples from Asia and South America including Indonesia, Malaysia, India, Brazil, and Costa Rica. These are very interesting and informative and provide excellent applications of the tools presented in the book. They contain actual calculations of the models as well as policy formulation. The case studies cover rural energy policy analysis, pricing policies, power system optimization and reliability, as well as a short piece on decentralized technologies.

Munasinghe's book is an important contribution because it provides in one volume the many different aspects of an integrated rural energy planning framework. It will be useful as a learning tool and reference for many different levels of planners.

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Khong, Cho Oon, *The Politics of Oil in Indonesia: Foreign Company-Host Government Relations*. Cambridge, England: LSE Monographs in International Studies, Cambridge University Press, 1986, 253 pages.

This book covers six basic topics: (1) the form and content of agreements between foreign oil companies and Indonesia, (2) financial provisions of these agreements, (3) control of this extractive industry, (4) the effect of multinationals on development, (5) negotiation and contractual change, and (6) regional relations in Southeast Asia. This clearly written scholarly piece is very useful for readers interested in a case study or institutional, historical detail on Indonesia.

As in other resource-rich developing countries, the government of Indonesia needs foreign technology and capital to develop its resources. Conversely, the companies that can provide these inputs are primarily interested in the rate of return they secure. Thus, financial terms are central to all agreements between host and multinationals, and the author provides a fairly detailed picture of such arrangements for Indonesian oil.

Governments must also reconcile this foreign investment with national aspirations and desires for control over its resources while fitting it into overall development plans. Wider regional or international agreements such as the ASEAN Council on Petroleum (ASCOPE) and OPEC are relevant as is the possible destabilization of other industries by the entry of foreign companies.

The author outlines the evolution of agreements between foreign oil companies and the state oil company, Pertamina. The concessionary system evolved into work contracts and then into production sharing. He argues that these changes were often more in form than in substance because of the deficiencies of Pertamina as a representative of the Indonesian government. Pertamina lacks the information to ensure policy goals are met. However, companies must supply Pertamina with information, and it is able to observe the decision processes of the foreign companies. Its expertise thus should increase, and a more effective tool of control should evolve.

Since development has a high priority for host countries, the author considers linkages of the usual sort and puts them into the Indonesian oil industry context. Given the high-technology, capital-intensive nature of the Indonesian oil, he fears linkages between the petroleum industry and the local economy are and will remain weak except between the oil companies and Pertamina.

As relationships evolved, conflicts have arisen, and their resolution is considered. Since conflicts often have been resolved in an adversarial way, the author suggests that more provisions for change should be included in contracts. Furthermore, companies should expect revision once a project proves commercially viable.

There is a digression on Southeast Asian regional considerations, including the information sharing through the ASEAN Council on Petroleum, sharing agreements, rival government claims of offshore areas, and company-host relationships in other countries. Since none of these other Southeast Asian nations are major oil producers, a comparison with another major oil producer with strikingly different experiences might have been of interest to more readers.

The nonantagonistic point of view of this book is refreshing. The author's generalizations are useful but unstartling. For example, since companies and host countries often interact with different perceptions of their relative bargaining strength and have different goals, the author urges countries and companies to consider problems from each others' point of view. Although a government oil company may be a source of information and control, the abuses of Pertamina point to a need for accountability on the part of the company. Also, if governments are corrupt and weak and lack clear goals, their relations with multinationals will be less effective in terms of overall development.

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Jeffrey A. Dubin, *Consumer Durable Choice and the Demand for Electricity*. Amsterdam, New York and Oxford: North Holland, 1985. Distributed by Elsevier Science, New York. 265 pages.

Dubin's book examines one of the most important problems facing energy demand modelers: the linkage between energy consumption and capital stocks. This book uses advanced techniques and is, therefore, geared primarily to a technical audience. Nevertheless, the basic framework for evaluating energy conservation policies could interest analysts associated with natural gas and electric utility planning.

Energy demand is analyzed first by examining discrete choices involving the acquisition of energy-consuming durable goods and then by focusing on the utilization of this equipment, and thereby, energy consumption. The neoclassical conditions of utility maximization are derived in Chapter 1. Dubin finds that equipment choice

and fuel use are endogenous decisions. The model requires detailed technical information, which is developed in Chapter 2.

In the third chapter, the model of appliance choice is specified and estimated. As with many econometric studies, the availability and quality of data are major problems. In Appendix A Dubin presents a description of the procedures to sort out incomplete or inconsistent observations. This discussion is quite thorough. To estimate fuel choice, some measure of gas availability is needed. But since it does not exist in the data base (the National Interim Energy Consumption Survey (NIECS) of 4081 households completed in 1978), Dubin must resort to proxies, which he admits may introduce measurement error.

Another measurement problem concerns the specification of marginal electricity prices, discussed in Chapter 4. Given declining block rate structures, the price of electricity is endogenous. Dubin shows that, if this endogeneity is ignored in estimation, price elasticities of demand can be substantially biased. He uses a two-part tariff to approximate the unobserved rate schedules.

The fifth chapter addresses some econometric issues that arise in joint estimation of the discrete choice and fuel demand models. The joint model is cast as a switching regime model, with known regimes (fuel choices). Dubin shows that instrumental variable estimation dominates in terms of efficiency.

These methods, however, are not used in the estimation of the model presented in Chapter 6. The demand models for electricity and natural gas are estimated with ordinary least squares. The numerous explanatory variables are well chosen, including the probabilities of appliance-fuel choice, energy usage from the engineering models, and interaction variables. Separate models are estimated for each month. Dubin finds that the thermal models may be overestimating utilization and claims that this does not diminish the forecasting capability of the model, but he provides no discussion supporting this assertion. Another finding is that endogeneity of usage and system choice occurs seasonally. The results are plausible, but the possibility of inaccurate estimates of the standard errors, which are the basis for these inferences, should be cause for hesitation.

Individual price effects and the price elasticity of electric water heating provide most of the seasonal variation in the price elasticity of demand for electricity. The price elasticities for space heating and air conditioning demand are negligible, bouncing around either side of zero. Very similar results are found for natural gas demand.

An annual model is estimated for analyzing the long-run impacts of energy conservation policies on the level and utilization of the appliance stock. The estimated coefficients for electricity demand generally display the same pattern as the monthly estimates. For natural gas demand, however, price and income sensitivity result largely from space heating. In fact, the estimated price elasticity for water heating is positive.

The policy simulations are run from 1978 to the year 2000 and assume that the price of natural gas rises relative to the price of electricity. Therefore, the base forecast shows increased usage of electricity from higher shares for electric space and water-heating systems. Natural gas consumption falls substantially. Increased insulation lowers electricity consumption from the base forecast. Window treatments like double glazing are found to increase both electricity and natural gas consumption. I found this result surprising, but unfortunately it is not discussed. Increased insulation is

estimated to be the most effective natural gas conservation policy. In contrast, turning thermostats down in winter and up in summer is the most effective policy for reducing electricity consumption.

In summary, Dubin presents probably the best examples of hybrid engineering-economic models. While one can quibble endlessly about specific assumptions and data, the models developed have substantial intuitive appeal and probably provide the best framework for analyzing "micro" energy conservation policies. The robustness of this approach to input assumptions, however, remains a major question.

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William A. Donnelly, *The Econometrics of Energy Demand: A Survey of Applications*. New York, Westport and London: Praeger, 1987. 328 pages.

Although this book makes very few original contributions, it provides a useful illustration of the artistic and scientific aspects of model building. It emphasizes specifying models that conform to the quality and availability of data. These considerations are well known to experienced energy economists. Given their importance, perhaps they deserve repeating, particularly for students. Donnelly's book provides some useful tricks and insights. The models are relatively simple and, therefore, contrast sharply with those presented by Dubin (reviewed above).

The book begins with an overview of policy modeling. One rule Donnelly stresses is *Occam's razor*: do not compound hypotheses unnecessarily. Simple and accurate models are to be preferred to complex, fuzzy ones for policy analysis. Chapter 1 also discusses various modeling methodologies, pointing out the advantages and drawbacks of each. The discussion of the systems dynamics approach within the context of judgmental forecasting may be misplaced although I agree with his distaste for *ad hoc* methodologies that do not clearly state their assumptions.

On the other hand, analysts would classify Donnelly's dynamic models of electricity and gasoline demand as *ad hoc*. Alternative dynamic models, however, may not be immune to hidden assumptions, as Donnelly shows in his discussion of the capital vintage model. He maintains that these elaborate models may not be needed, for instance, to explain variations in gasoline consumption. This is probably true in forecasting but sometimes untrue in policy analysis. A simple partial adjustment model is rather ill-equipped to examine policies like speed limits or efficiency standards.

Chapter 2, on modeling theory, is really a comparison of judgmental forecasting, mathematical programming, time-series analysis, econometric analysis, and hybrid procedures. Simple formulas are presented to convey the essential features of these techniques. The discussion of their strengths and weaknesses is well-balanced.

Electricity demand modeling is examined in Chapter 3. Static and dynamic formulations are compared and alternative functional forms are tested. Considerable regional variation is found in the own-price elasticities of electricity demand in Australia. The chapter concludes with a comparison of electricity demand forecasts for Tasmania.

The fourth chapter examines gasoline demand modeling. Simple reduced-forms of static and dynamic models are estimated because vehicle stock data are unavailable. National and state level models for Australia are estimated. The estimated elasticities are carefully compared with numerous other studies.

Translog models of Australian aggregate manufacturing and the iron and steel industry are estimated in Chapter 5. The analysis is thorough but assumes static equilibrium. There has been a great deal of research on dynamic models in recent years and some of this should have been incorporated. An evaluation of these models based on Occam's razor would have been interesting. In addition, presenting the translog estimates that violate concavity, or give negative share predictions and positive own-price elasticities, would have been helpful.

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Jacqueline Lang Weaver, *Unitization of Oil and Gas Fields in Texas, A Study of Legislative, Administrative, and Judicial Policies*. Washington, D.C.: Resources for the Future, 1986. 555 pp.

Professor Weaver has undertaken an impressive demonstration that state petroleum law remains an inadequately resolved public policy issue. Specifically, she provides an in-depth evaluation of efforts to unitize petroleum production in Texas. the roles of the legislature, the Texas Railroad Commission, and the courts are examined.

The legislative history involves limiting legislation on unitization to allowing voluntary efforts, but refusing to pass what is generally called a compulsory unitization law. Such laws allow unitization when the vast majority of affected parties agree, rather than when unanimity is secured.

However, the Texas Railroad Commission, with considerable support from the State Supreme Court, has used its powers to ensure that unitization is at least as heavily employed in Texas as in states with compulsory unitization laws. In essence, the Commission has concluded that its dual responsibilities to prevent waste and protect property rights necessitate forcing unitization. Only unitization can ensure more efficient production without confiscating property from some land owners. The Texas Supreme Court has generally supported this reasoning.

Professor Weaver argues that this approach is, nevertheless, inferior to passage of an effective compulsory unitization law. Actual Texas practice involves moving slowly

and overly compensating small producers and land owners. Thus, the requisite production efficiency is ensured, but excess drilling is not eliminated. Moreover, the overcompensation practice implies, as Professor Weaver notes perhaps too cursorily, that only projects with high payoffs can be undertaken. Further problems are that the Commission's strongest weapon of threatening production curtailment may be less potent in the present era of producing at 100 percent of the maximum allowable rate and that the outcome arose by what Professor Weaver sees as a clear misinterpretation of the legal mandate. She argues for a compulsory unitization law perhaps more frequently than even those who agree with her may feel appropriate. But she recognizes that even where actual compulsory unitization laws are on the books, they have not been strong enough and political barriers remain formidable.

The book is an excellent example of a growing tendency of legal scholars to recognize and incorporate the economic principles that should guide public policy. It deserves attention by policy makers, corporate decision makers, petroleum attorneys, and serious students of energy and other public policies. To be sure, the value of different parts of the book will differ for each reader. I found the discussions of legislation and of Railroad Commission procedures fascinating but the discussion of legal issues tedious. Fortunately, excellent chapter summaries make it possible to get the gist of the argument without reading everything.

A final, more technical problem is the conflict between Professor Weaver's preparation of the manuscript in law journal style (with an emphasis on extensive footnotes and no provision of a bibliography) and RFF's decision to relegate these notes to 162 pages at the rear of the book. This is clearly inconvenient. Incorporating more of the substantive material in the text and using a referencing system similar to that used in this journal would have been preferable.

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Joseph P. Kalt and Frank C. Schuller, eds. *Drawing the Line on Natural Gas Regulation: The Harvard Study on the Future of Natural Gas*. Westport, Conn.: Quorum Books, 1987. 267 pages.

Drawing the Line on Natural Gas Regulation is the report of the Harvard Study on the Future of Natural Gas, conducted under the auspices of the Harvard Kennedy School's Energy and Environmental Policy Center. It consists of a series of ten essays and assorted critiques or comments on the essays by study participants, drawn from academia, industry, regulatory agencies and consulting firms. For this reviewer and practitioner in natural gas matters, this book is, on balance, a disappointment. For those uninitiated in the intricacies of natural gas regulation or the current problems facing the industry, a few of the chapters provide relatively useful overviews of the

history and structure of the industry—although some of these overviews are inexplicably outdated for a book published in 1987. For example, the chapter by John Sawhill (McKinsey and Co.) discusses the supply and demand outlook for natural gas, but it presents no gas demand statistic more recent than 1984. Similarly, George Hall's (Charles River Associates) concluding essay on "Getting From Here to There," in addition to containing at least ten pages of now-repetitive background material, advocates (quite correctly) the deregulation of old gas prices but fails ever to mention the FERC's early-1986 promulgation of Order No. 451, which purports to help achieve just this objective. Perhaps the mixed timeliness of the essays is a testament to the difficulties of coordinating a study/working group of this type.

The Harvard Study apparently set out to write an authoritative analysis of the current gas industry transition, hoping or intending to present a diverse set of views. Certainly many of the contributors are authorities (notably William Hogan and Joseph Kalt in the energy economics field), but the views presented are not particularly diverse. Diversity comes only in the very brief essay critiques, where two to three pages of review are insufficient for any in-depth analysis or rebuttal. (One senses some of the commenters' frustrations on this score in their essay critiques). The editors, in their introduction, state that "throughout the study, participants have held different and, at times, diametrically opposed views on the major policy questions" (p. 8). If so, these views were rarely treated in the main essays. In this reviewer's opinion it would have been far superior to eliminate a few of the less weighty or repetitive essays and replace them with expanded versions of a few of the more interesting post-essay critiques (notably John Boatwright's and Cathy Abbott's), eliminating the rest.

Which raises the question of substance. Despite the claim of "diversity", it is transparent that this book's collection of essays has a "view", and the "view" is a pretty conventional one. It contains basically four elements which can be characterized as follows:

1. Market mechanisms must replace (as much as possible) regulation, as determinants of the supply and demand for gas and gas services.
2. Gas transmission and distribution remains a monopoly, however, and must be regulated to preclude anticompetitive abuse.
3. New regulation must stress the "unbundling" of services.
4. Open "access" to pipeline transportation services will solve most of the distortions which have been built up in the system.

There is nothing wrong with these tenets, but they have not been given new vitality nor are they any easier to implement as a result of this text. Addressing the first point, Bill Hogan's philosophical essay on the "Boundaries between Regulation and Competition" is thought-provoking and worth reading (and only fifteen pages), but fails to translate its philosophical concerns for the balancing of equities along the regulatory/competitive boundary into any prescriptions for current policy. The question of monopoly and pipeline market structure is addressed by both Joe Kalt's and Harry Broadman's essays. Kalt's essay is a little more appropriately circumspect than Broadman's as to the importance of purely structural features (such as what a Hirfindahl-Hirschman Index purports to measure) when attempting to draw an inference about market power in a regulated industry, and it has at least some quantitative content which most of the book lacks.

The last three essays of the book appear to constitute its policy recommendations. These essays by Frank Schuller (Dartmouth College), Carmen Legato (gas industry lawyer), and George Hall (a former FERC Commissioner) should have been promising, yet they are probably the most disappointing in the book. Hall identifies the core of the underlying transition problem in the industry, namely the need for take-or-pay contract adjustment between producers and pipelines and how this interacts with the regulated tariffs and obligations at the other end of the pipeline. But beyond a brief review of the elements of FERC Order No. 436 and its likely impacts he provides very little current help other than to say that these problems are painful: "with or without government assistance, [the industry] must reach accommodation soon". Based on his experience, George Hall surely has more to say prescriptively than this chapter indicates. Schuller's essay, in a style attributed to Porter's *Competitive Strategy* books, is a vague and out-of-date series of platitudes, frequently confusing readers by equating industry attempts to cope during the transition (such as through "special marketing programs", an old example in any case) with evidence of the likely long-run structure of the industry. This chapter is badly in need of an economic framework for analyzing industry structure. Finally, don't be fooled by Legato's essay title "The Role of Regulation in Risk Allocation." This is not a financial economist's discussion of risk, return and regulation. Instead, it is a lawyer's translation into the language of economics the hopes and desires of his clients to avoid any responsibility for the costs associated with the gas industry transition while retaining all the associated benefits.

Readers might have been better served had these talented authors caucused to develop a more encompassing view of how the industry can be restructured to perform more effectively (or how the current restructuring could be better implemented), rather than merely reiterating historical stresses, sectoral complaints, and idealized targets.

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Richard P. Mattione, *OPEC's Investments and the International Financial System.* Washington, D.C.: The Brookings Institution, 1985.

Since some Arab oil-exporting countries became wealthy, there has been no lack of speculation about the motives and behavior of Arab investors in foreign markets. This book quantifies the foreign investments of key Arab oil exporters, discusses their investment strategies, and analyzes what threats, if any, these investments pose to the workings of the world financial system or individual markets. Although the book thoroughly demonstrates that OPEC's investments have mainly followed common

commercial criteria, the book lacks a strong theoretical discussion of what havoc an investor wielding $50–100 billion might wreak. Some good analysis of the effects in individual markets is presented briefly, but Mattione's discussion will not calm the fearful.

The stock of OPEC's foreign assets as of 1982 is described in reasonable detail, considering that most of this information has been gleaned from newspaper accounts and government reports that aggregate the data. The study is good in showing how changes in these investments were frequently related either to the passage of time, which permitted longer-run investment strategies to be devised and implemented, or to changes in financial markets—especially in Germany and Japan. But 1982 was already three years past when the book was written. The information has surely been superseded both by the need to draw on foreign reserves to pay for current expenditures in many countries and by the tremendous change in the value of the dollar.

A solid discussion of the current account of the balance of payments explains how surpluses arise. But the capital account is not discussed very much. In several key OPEC countries, trade data are reasonably accurate and the governments know what they earned on their foreign assets, what they paid for services, and what their foreign assets are. Most of the other items are frequently guesses. Looking at just the current account may overstate the foreign assets of the governments, since unreported imports or private capital outflows were also funded by the current account surplus. In a book that hopes to explain how surpluses are estimated and used, these methodological issues are important. Recently, for example, some OPEC countries treated trade arrears as capital inflows, while in other countries private capital outflows were rising as a proportion of the current account surplus. To overemphasize the current account is to miss these important developments and their impact on net foreign assets.

The book includes some very effective discussions on where and why the funds were placed and how the investments were not disruptive. There is also a good effort—given the data constraints—to show that the investments differed by country according to some reasonable speculations about variations in strategies and goals. On this point, some speculation about how investment goals might change now that the income from those investments is a larger proportion of government revenue would have been welcome.

Finally, the issue of what threat these investments pose to the financial system is raised. To convince the reader that the threat is minimal, the argument should have set up some extreme circumstances and asked what an investor bent on creating chaos could do. The author clearly plays down the potential impact of OPEC investments, without much discussion of how the financial system works and how the market would react to such a threat. For example, the study states: "if all dollar-denominated OPEC placements were in the domestic U.S. market, the market might be overly dependent on OPEC funding." It then goes on to argue that the placements are not just in the U.S., so the market is not vulnerable. This one-sentence assertion hardly constitutes an acceptable answer to a serious question.

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  Financing Energy Development: Trends and Prospects, Gerald Pollio
  Risk-adjusted Performance Measures for Diversified Public Utility Firms, H. L. Brewer and Morteza Rahmatian
  Electric Utility Competition: Lessons from Others, Tapan Munroe
  Financing the Energy Industry: An Economist's Perspective, Jeanette Garretty
  Energy Demand in Developing Countries and Third World Response to Changes in the International Oil Market, Mohammed Al-Sahlawi and Roy Boyd
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