Navarro has been very active and visible in analyzing and commenting upon the interplay between electric utilities, their regulatory agencies, electricity consumers, and electricity investors. His extensive experience in dealing with the subject has given him a perspective that is insightful. This book is, in the author's own words, "a nontechnical synthesis of extensive research and numerous academic articles" (p. xx). This nontechnical level of presentation is, however, the book's greatest strength and its greatest weakness.

While the book describes an important and dramatic problem, it has only summarized in cursory fashion the scientific evidence that shows the problem is real. From the point of view of the technical reader, therefore, it is lacking in evidence that a real problem exists. If one accepts the regulatory failure described by Navarro as a maintained hypothesis, the book is an excellent rendition of the consequences. If one is not inclined to accept the hypothesis, the book is short on the type of evidence that might lead to a change of mind.

The three principal penalties of regulatory failure are identified as excessive fuel costs, excessive costs of capital, and reduced reliability of electricity service. However, some effects of inadequate capacity are very difficult to describe in other than probabilistic terms, and what happens when a utility is five, ten, or twenty percent short of capacity is inadequately described. The information presented on fuel and cost of capital trends is drawn from the experience up through about mid-year 1983. Though it is impossible to know now whether the current trends in the world's fuel markets are only temporary or permanent, the drop in world oil prices to one half of their former values (as of February 1986) and the ready availability of natural gas at prices substantially below the prices that were projected for this fuel just a few short years ago have both weakened and dated the fuel cost impacts. The trend in declining interest rates generally, the record price levels of stocks and bonds achieved recently, and the reduced expectations for inflation have all reduced the severity of the cost of capital penalty. Moreover, it is precisely when the trends form in this direction that the "regulatory lag" that electricity utilities experience works to their financial advantage. Fortunately, an afterword is included that acknowledges these trends. Unfortunately, it is too general and cursory to deal completely with the implications.

A chapter is devoted to the politics of rate suppression. It examines the political, institutional, and ideological forces that continually push against the regulatory agencies charged with electric utility rate regulation. This chapter, in my mind, offers the most insight into the fundamental problem discussed by Navarro, and also the most compelling material in support of the notion that, though the penalties and costs of regulation have been softened by recent developments, they will reappear when circumstances are not so favorable. The forces that interact in each of the three alternative views of regulation described by Navarro result in regulatory outcomes in rate proceedings that, in his view, are generally not sufficient to allow utilities to earn a competitive rate of return. The result is rate suppression. In my view, the lack of accommodation of inflation in the ratemaking formula, combined with continual upward pressure on the real costs of electricity supply for legitimate environmental and safety reasons, is an important contributor regardless of the regulatory model used.

What can be done? An interesting menu of reforms is offered. Those that deal with the state Public Utility Commissions seem quite reasonable and well motivated. A possible federal role is also identified. The federal options offered seem less reasonable, but then they are suggested as appropriate only if the states fail to act. Whether reforms will be implemented, however, remains to be seen. If they are not, *The Dimming of America* sounds the warning as to the effects.

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The international oil market: A case of trilateral oligopoly. By ALESSANDRO RONCAGLIA. First English edition. Edited by J. A. KREGEL. Armonk, NY: Sharpe, [1983] 1985. Pp. vii, 180. $30.00, cloth; $14.95, paper. ISBN 0-87332-282-7. *JEL 85-1099*

This short book reviews the world petroleum industry, from its beginning in 1859 up to the

early 1980s. It is aimed at economists, but presumes no special background in the economics of oil. Although clearly written and reasonably well organized, it is very short on quantitative information and very long on assertions, which are often unsubstantiated and sometimes quite far fetched.

The 140 pages of text are divided into seven chapters: these are followed by a 4-page Chronology of Principal Events, 27 pages of Endnotes (making individual notes exasperatingly hard to find), a 6-page Bibliography and a 4-page Index. There are no graphs or numerical tables in the text, and only two short tables in the Endnotes.

Chapter One presents a brief introduction to the topic and an overview of what is to come. Chapter Two presents a nice description of the structure of the petroleum industry in its various stages—exploration, production of crude oil, transportation, refining into various products, and distribution. Chapter Three surveys a variety of economic interpretations of what determines the price of oil, ranging from Ricardo, through Adelman, Frankel, Penrose and others, including various OPEC economists. Yet there is little said about the magnitude and timing of the price increases of 1973–74 and 1979–80; a better treatment of these questions can be found in Gately (1984). Also objectionable is the questionable assertion that the "most generally accepted explanation of the increase in the price of crude oil in the 1970's—apart from the naive position which simply blames OPEC—is based on the scarcity of petroleum resources" (p. 24). The chapter concludes with a general description of "trilateral oligopoly": the oil companies, the producing countries, and the consuming countries. These are the respective subjects of the following three chapters.

Chapter Four presents an historical overview of the development of the international oil companies (the "majors") and the gradual emergence of the "independents" and the state oil companies, such as the Italian company ENI. It also has a 13-page appendix on the "The Rockefeller Empire," which includes the only 3 figures in the book. These depict the Rockefeller Group's "web of shareholding" in, respectively, the world of finance, oil companies, and other industrial sectors. According to the author these 3 figures "speak for themselves" (p. 71). Based upon a pair of 1978 staff studies of the U.S. Senate Committee on Governmental Affairs, this appendix would make good reading for conspiracy buffs. But it paints an unconvincing picture of "a complex set of links undoubtedly favouring implicit, if not explicit, co-ordination of the strategic decisions of the largest companies in the various sectors" (p. 77). It ignores, for example, the obvious question of why the oil companies themselves did not exploit the opportunities for higher prices during the 1950s or 1960s, rather than have OPEC reap the gains in the 1970s.

Chapter Five describes the oil producing areas, starting in Pennsylvania in 1859 and covering the super-giant oilfields discovered in the Persian Gulf in the period 1920–1960. It describes the formation of OPEC in 1960 and its sudden emergence in the early 1970s as a powerful force in the world oil market. Nicely described are the important role of Saudi Arabia and the various factors that strengthen or weaken OPEC.

Chapter Six discusses the role of the consuming countries, especially the U.S. There is substantial discussion of U.S. tax and antitrust policy, of the oil depletion allowance, the foreign tax credit, and the tax incentives for manipulating transfer prices within a multinational, integrated oil company. But the importance of the U.S. seems greatly overstated: "a determined American decision in favour of energy saving would have a multiplier effect which would spread over the entire industrialized world" (p. 95). Perhaps most far fetched is the assertion that the Fall 1973 price quadrupling was possible "because of the then existing disequilibrium between supply and demand of crude oil, which was caused by the re-opening of the US market to imports [the April 1973 abolition of US oil import restrictions]" (p. 132). Certainly, this action by the U.S. increased the demand for OPEC oil, but the world demand for OPEC oil had been increasing at an unsustainably high rate of 10 percent annually for the previous two decades.

Finally, Chapter Seven summarizes "Some Likely Future Scenarios and the New Oligopolistic Equilibria." The scenarios include three short-term possibilities (which cover a *very* wide range):

(1) a crisis scenario caused by some political upheaval, in which the price of crude oil would "explode" and there would be a state of "absolute scarcity";
(2) the "downward stability" scenario, described as most likely, in which the sluggish market of the early 1980s would continue, with gradual real price declines;
(3) the "breakdown scenario," in which "oil prices would fall, in a short time span, to below $10 a barrel"; (p. 125). This is said to be against the interests not only of the producing countries, but also of major industrialized countries as well

Also described, but less convincingly, are three long-term scenarios:

(1) the "fully competitive scenario," which might follow from the "breakdown scenario" discussed above;
(2) the (most likely) "as is" scenario, in which "major companies . . . maintain their respective market shares in product markets, also stabilising—more or less—the relative shares of producing countries in the market for crude oil, as part of their attempt to keep 'order' in the international petroleum market" (p. 136).
(3) "a triangular compromise: a joint agreement for the planning of . . . developments in the oil sector connecting the most important, if not all, amongst producing and consuming countries and oil companies. Cooperation in the oil sector should be inserted in a wider framework of multilateral cooperation for the stabilization of primary commodity markets . . . part of a wide ranging North-South agreement" (p. 138).

The last of these three, the "triangular compromise" or "new oligopolistic equilibrium," would seem a remote possibility at best.

Although this book has several strengths, unfortunately they are outweighed by its weaknesses, most notably its vagueness about the underlying numerical data and its complete lack of any serious quantitative analysis. Only occasionally are quantitative estimates provided, but these are often superficial and misleading. For example, in support of the argument that Saudi Arabia would not want the "breakdown scenario," the author observes that it is "more profitable for Saudi Arabia to sell 2 MMBD with an overall royalty of $28 per barrel, than to sell 13 MMBD but with a royalty reduced to $4 per barrel or less" (p. 128). There is no discussion of intermediate cases, nor any distinction between short-run and long-run effects of price declines on Saudi revenue, nor any analysis of the positive effects of lower oil prices on higher GNP growth.

The book suffers in comparison with those by Griffin and Teece (1982), Stobaugh and Yergin (1983) and, for careful quantitative analysis, with the Energy Modeling Forum (1982) study.

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The semiconductor business: The economics of rapid growth and decline. By FRANCO MALERBA. The Economics of Technological Change series. Madison: University of Wisconsin Press, 1985. Pp. viii, 264. $27.50. ISBN 0–229–10460–5. *JEL 86–0237*

Competitive edge: The semiconductor industry in the U.S. and Japan. Edited by DANIEL I. OKIMOTO, TAKUO SUGANO AND FRANKLIN B. WEINSTEIN. ISIS Studies in International Policy. Stanford: Stanford University Press, 1984. Pp. x, 275. $27.50. ISBN 0–8047–1225–5. *JEL 84–0856*

The first semiconductor was made in 1947. At that time, the electronics industry was mainly located in Europe and the United States. The 1950s saw the European electronics firms try to maintain their competitive positions by producing their own semiconductors. They failed. The 1960s saw U.S. dominance in semiconductor production. The 1970s, however, were years in which Japanese control of the electronics market grew steadily more