MacAvoy, Paul W., Price Formation in Natural Gas Fields: A Study of Competition, Monopsony, and Regulation

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The economic characteristics and behavior of the domestic petroleum industry have been the subject of numerous studies in the postwar years by academic economists. Professor MacAvoy in this volume analyzes one of the most controversial aspects of this industry—pricing of natural gas in the field and the economic reasons for the regulation of field prices by the Federal Power Commission. While the book deals primarily with the period 1950-1960, the analysis and conclusions are applicable to the still unsolved problem of gas producer regulation today.

The book logically divides into three parts. The first part1 outlines the technical and institutional framework, describes the supply and demand concepts in this particular industry, and discusses expected price and output behavior under several different theoretical market structures—competition, monopoly, and monopsony (buyer monopoly). The second part2 is a painstaking statistical analysis of actual market structures and price behavior during the 1950's in the three major gas supply areas of the United States—West Texas and New Mexico, the Texas-Louisiana Gulf Coast, and the southern Mid-Continent area, and contains a comparison of what actually occurred vis-a-vis market structures and prices with the theoretical norms established earlier in the book. The third part3 draws some policy conclusions with respect to the desirability of regulation and the economic effects of regulation, given the conclusions about market structures and market behavior in the three areas.

Gas producer regulation has been debated in the courts and Congress and before the Federal Power Commission for almost twenty years, and much of this debate has centered on whether or not gas

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2. Chs. 5-7.
3. Ch. 8.
producers hold monopoly positions in the gas supply areas and thus enjoy monopoly prices and monopoly profits. This book should settle this question once and for all at least for the period up to 1960; seller monopoly has not existed to any significant degree in the major gas supply areas. In fact, quite the reverse has been true. Monopsony prevailed in all three areas to some degree and for some years during the 1950's. It quite obviously existed in all areas immediately after the war, but has broken down or is breaking down in most areas because of the entry of new pipelines and the expansion of old pipelines in each area. Competition is growing in all areas.

To determine the type of market structure, Professor MacAvoy sets up several criteria, all of which he justifies in his theoretical discussion. He theorizes that higher prices will be paid—

1. For larger volumes of gas under competition than for small volumes, while under monopsony the same prices will be paid no matter what volumes are purchased;
2. For gas located nearer the "end" of transmission under competition, while under monopsony the same prices will be paid regardless of location;
3. For long-term contracts under competition, while under monopsony the term of contract will have no effect on price or might possibly result in higher prices for long-term contracts;
4. In most instances if contracts do not have "favored nation" or "renegotiation" clauses.

By taking data from actual contracts on file with the Federal Power Commission between purchaser pipelines and producers, MacAvoy finds that the conditions one would expect from monopsony held true in West Texas-New Mexico until the late 1950's when a new purchaser entered the area. Similarly, monopsony prevailed in the Gulf Coast area in the late 1940's and did not break down until the 1950's when new lines were built and old lines were expanded. In the Panhandle-Hugoton area, monopsony was not as evident; however, in the smaller Mid-Continent fields, far distant from the central supply area, monopsony prevailed even in the late 1950's.

With respect to regulation, the author concludes

... the Commission [Federal Power Commission] need not have set prices in order to have prevented [seller] monopoly, given the predominant presence of competition or monopsony. ... The problem
to be solved by regulation seems not to have existed, so that the court mandate was given for 'wrong' reasons. The necessity for Federal Power Commission regulation is doubtful.4

The conditions which might justify regulation absent monopoly are those which create "economic rents" which accrue to producers because of unique location or other conditions. Regulation may be justified to bring about a transfer of such "rents" from producers to consumers. Given monopsony and regulation, the assumption is that the lower than competitive prices under monopsony are passed on to consumers so that monopsony profits do not result. Even if regulation does accomplish this, and it may not, there remains the more basic question of whether society benefits, in a net sense, from such regulation. MacAvoy takes the position that it is likely that the fixing of prices below this competitive equilibrium level not only takes away producers' rents, but also causes a net social loss (in a consumer surplus sense). Unconnected consumers lose more because of a supply shortage than connected consumers gain from the lower than equilibrium price.

This volume was initiated as a doctoral dissertation and later expanded and revised into this work. It is written primarily to an audience of economists who are comfortable with economic concepts and jargon. Others will find part of it, especially the theoretical parts, difficult reading. This is not to say the book is not readable. MacAvoy has put the theory into relatively simple geometry and has relegated to footnotes and appendices the more complicated mathematics. His regression analysis is skillfully done, and the reader is apt to overlook in the summary tables the tremendous data gathering and processing task involved. The book is short and compact and perhaps would have had wider appeal if more of the details of the industry had been explained to the economist and more of the details of the theoretical concepts had been spelled out for the non-economist. Subtle points seem at times to get lost in the brevity.

The economist may chafe a bit at the strictly short-run analysis with respect to market structure and behavior and the drawing of policy conclusions which are more long term in character. In particular, the discussion of supply is almost entirely in terms of the cost of developing already found reserves. The author, and per-

haps wisely so, does not attempt to define the long-run supply curve for gas, though the long-run supply may be the crucial policy consideration. The demand side also seems truncated. The intrastate market is not included in the statistical analysis and is not given much attention in the discussion. This market may have behaved somewhat differently from the interstate market. Lack of data probably explains this omission. The discussion of the demand curve for gas stresses the "derived" nature of demand and the dependence of demand in the field on demand by final consumers. It is at best difficult to estimate empirically the demand curve for any commodity or service. To do so for a service whose retail price is a regulated monopoly price, and whose retail market involves legal price discrimination among classes of customers, is even more difficult. Demand becomes critical, since one argument for producer regulation has been that pipelines do not bargain for the lowest possible field price, but rather take any price and pass it on to the retail distributor. Fuller discussion of these aspects would have been helpful.

The author has carefully distilled a mountain of meaningless raw data which exists in the Federal Power Commission files and brought forth an incisive volume which gives insight into gas producer regulatory problems that can be found nowhere else. It is certainly essential reading for anyone who works in the area of gas producer regulation, be he economist, lawyer or engineer. The solution to the chaos of producer regulation has not been found in part because there exist incorrect ideas of what the structure of the industry looks like and how it behaves. This book should effectively sweep aside several widely held misconceptions that hamper national policy making for natural gas, and hopefully it should point out what regulatory paths will be most fruitful.

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