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TESTING THE VIABILITY OF USING THE POSNER FRAMEWORK FOR DETECTING COLLUSIVE PRICE BEHAVIOR USING ECONOMIC EVIDENCE: A CASE STUDY

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TESTING THE VIABILITY OF USING THE POSNER FRAMEWORK FOR DETECTING COLLUSIVE PRICE BEHAVIOR USING ECONOMIC EVIDENCE: A CASE STUDY

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

PAMELA J. CAMERON

NORMAN, OKLAHOMA

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TESTING THE VIABILITY OF USING POSNER'S FRAMEWORK FOR

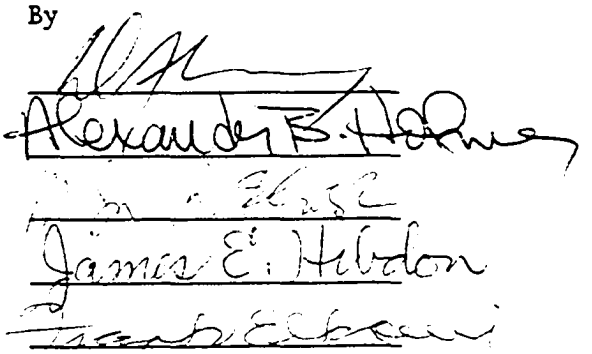
DETECTING COLLUSIVE PRICE BEHAVIOR USING

ECONOMIC EVIDENCE: A Case Study

A DISSERTATION

APPROVED FOR THE DEPARMENT OF ECONOMICS

By



PREFACE

There are federal antitrust statutes, and they are quite brief and readable compared to the Internal Revenue Code. But their operative terms - "restraint of trade", "substantially lessen competition", "monopolize" are opaque... The courts have spent many years interpreting, or perhaps more accurately supplying, their meaning, but the course of judicial interpretation has been so marked by contradiction and ambiguity as to leave the law in an exceedingly uncertain and fluid state... The antitrust field is in need of a thorough rethinking...and the essential intellectual tool for this process of rethinking - besides simple logic and common sense - is the science of economics.

Richard A. Posner

Antitrust Law: An Economic Perspective

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TESTING THE VIABILITY OF USING POSNER'S FRAMEWORK FOR DETECTING COLLUSIVE PRICE BEHAVIOR USING ECONOMIC EVIDENCE: A Case Study

CHAPTER I

STATEMENT OF OBJECTIVE

On the premise that the goal of antitrust law is to promote consumer welfare, the basis of judgment in an antitrust case should be the impact on competition in the economic sense of the word. The proof in a Section 1 Antitrust case, then, would focus on the economic evidence of collusive behavior (where collusive behavior is defined in the broad sense of resulting in a restriction of output and the creation of, or increase in, dead weight loss in that market).

Since the early 1970's a number of writers, influenced heavily by the Chicago school of thought, have been advocating reform of the antitrust laws to reflect a greater emphasis on economic efficiency in interpreting and administering the law. These scholars have argued that the goal of antitrust law should be to promote competition, and the criteria by which business conduct is judged should be its impact on efficiency of the market. If there has been a restraint of trade it will be reflected in market conditions.

One such writer, Richard Posner, has presented a set of economic indicia which he visualized as a framework for evaluating the market and the behavior of firms within the market; for detecting collusive behavior without reliance on evidence of an explicit conspiracy. Many others, including George Stigler, Robert Bork, Peter Asch, Joseph Seneca, Donald Hay, Derek Morris, J. Bain, A. Phillips, and F. M. Scherer, have analyzed the relationship between collusion or cooperation and market/firm characteristics. Posner, however, has

included the most comprehensive set or list of economic indicia in his proposal. The purpose of this study is to apply the economic framework, incorporating rate of return regulation and the automatic pass through of a purchased gas cost clause, and considerations unique to the natural gas industry and assess the efficacy of using economic analysis to establish the proof or absence of collusive price behavior. The application will be made to an actual price-fixing suit brought pursuant to Section 1 of the Sherman Act against a natural gas utility.

The relevance lies in: (1) testing the efficacy of using purely economic evidence to determine whether or not there is any proof of price-fixing. Such a determination impacts the relevance of economic analyses in antitrust cases and the economic treatment of tacit and overt collusion. George Stigler, for example, has treated oligopoly pricing as a special case in a general economic theory of collusive pricing with full-blown cartels at one end of the spectrum and tacit collusion (collusion effectuated by a purely tacit meeting of the minds) at the other end.

(2) The extension of the basic economic framework to encompass antitrust activity in a regulated industry. Economists have devoted relatively little attention to the application of antitrust law in regulated industries.

(3) The ability to rely on economic evidence effects the legal distinction between tacit and overt collusion. Tacit collusion or oligopoly is generally considered to be beyond the reach of the antitrust laws because, by definition, it does not involve detectable acts of agreement or communication.

The end result of this study will not be a measurable number. It

will be an application and evaluation of a proposed response to an important question. That question being; "can proof of a Section 1 violation reasonably be determined solely by economic evidence?" If so, that has important economic and legal implications because, as mentioned above, it removes, in part, the legal distinction between tacit and overt collusion. In addition, a contribution will have been made to the understanding of the relevance and limitations of economic analysis in the application of antitrust law.

Hypothesis: The economic viability of the Posner proposal can be tested by subjecting Posner's ideas to empirical analysis.

Methodology:

1. Evaluate the economic and legal framework upon which the Posner proposal is based.
2. Introduce regulation into the basic framework and assess the impact.
3. Apply the Posner approach empirically to an actual Section 1 case.
4. Evaluate the economic viability of the approach on the basis of the case study application and the consistency of the approach with the economic and legal framework.

Richard Posner, a leading member of the Chicago School, has argued that the reform necessary for the control of price-fixing and oligopoly is to redirect the enforcement of Section 1 of the Sherman Act from its present emphasis on proving the fact of a conspiracy or attempt to fix prices, in the criminal-law sense of the words, to a search for economic evidence of collusive price behavior in the market.1 He argues further that whether or not there is a lurid conspiracy to fix prices in the form of secret hotel or backroom meetings is less important than whether the price behavior in the market actually indicates collusion. There are economic means of evaluating price behavior; economic evidence that can be employed to identify markets which are prone to collusion and to detect the actual existence of collusion in those markets.

Posner's primary concerns were 1) that potentially serious cases of collusive behavior go untouched by the law because there is a lack of criminal evidence on the colluders, and 2) that tacit collusion (conscious parallelism, oligopolistic interdependence) is often taken as being fundamentally different from explicit collusion and thus cannot be punished as a form of price-fixing even though the impact on the market or "results" may be the same. He is advocating a legal system that punishes effective collusion, however created, rather than just certain methods of collusion. "In terms of the substantive economic objectives of antitrust policy, it is a detail whether a cartel is buttressed by all or any of the facilitating devices that cartels in markets not governed by the Sherman Act employ, or whether it achieves its end by purely tacit collusion; in either case the objection is to the cartel price rather than to the means by which that

price is set initially and then maintained".[2]

As part of his work in this area, Posner has devised a method; a list of indicia compiled from the economic literature which he suggests can be useful in distinquishing cartels from competition when 'conspiratorial evidence' is not helpful or is not present, i.e. the type of economic evidence referred to above.

Posner's ideas have not been subjected to systematic empirical examination. Neither have his ideas been extended to cover the regulated sector of the economy. The focus of this study will be to use the Posner framework as a starting point, adjusted and augmented where necessary, to develop an analytical, economic package of evidence suitable for use in a court of law.

The first step in the analysis is to review the list of indicia put forth by Posner to determine the application of each to the natural gas industry (in general) and the case (in particular).

The second step is to extend and/or modify the list of indicia to reflect the differences in market conditions that are due to regulation and institutions unique to the regulated natural gas industry. For example, rate of return regulation, if effective, theoretically eliminates the possibility of above-normal profits for the regulated firm. What implications then will this have for using excess-profits as a possible indicator of, or a motive for collusion? How are motives effected by the differential treatment of certain types of costs for regulatory purposes? Should an administered price be used as evidence in a price-fixing case? How is the analysis affected if the firm (industry) is regulated by distinct agencies at the federal and state level? These and other questions must be answered if the analysis is

to be extended to be applicable to the regulated natural gas industry.

The third step involves gathering and assimilating the data/information necessary to quantify or otherwise evaluate the theoretical indicia developed in the first two steps. It is expected that some of the required information will be available in published sources. Such sources include publications by industry groups (such as the American Gas Association), the regulating agencies (Form 2's, Cost of Gas Reports), financial rating companies (Moody's, Value Line, etc.), the government (e.g. D.O.E. and Department of Commerce), and the company or companies involved (annual reports, 10K's). Information not readily available in published sources may be obtainable or compiled from company records, interviews, or surveys.

Finally, the evidence will be evaluated on the basis of availability and quality relative to its significance as a key market indicator. Any special problems or anomalies created by the introduction of regulation will be delineated. The overall efficacy or viability of the approach is dependent upon the cost and likely comprehension of jurors, as well as, the analytical power of the evidence and will be evaluated on this basis.

To be useful the economic evidence presented must be understandable by a jury of what Herbert Spencer has called 'a group of twelve people of average ignorance'. Not one of these twelve, or the judge for that matter, is likely to have had any training at all in economics. In fact, many (if not most) will have no formal education beyond high school. Consequently, the efficacy of using an economic approach in antitrust cases will depend not only on the economist's analytical powers and the quality of available data, but also upon the

ability to summarize, interpret and communicate the results of the analysis to the jury and/or the judge. One aspect of this study will, therefore, be an emphasis on 'packaging techniques' for presenting the evidence.

There has been very little practical work done to aid the analyst (economist or lawyer) in the proper approach to determining injury or evaluating welfare implications when, there is 1) a rate of return constraint on one of the accused, and 2) an automatic flow-through provision for the cost in question (an institution that is found primarily in the regulated natural gas and electric utility industries). In order to make this analysis the basic welfare models used to illustrate the social costs of monopoly are reviewed and extended to include both the regulatory constraint (the normal profits criteria imposed by regulatory authorities in setting rates under rate of return regulation) and the impact of automatic flow-through clauses for increases in certain costs.

Chapter II summarizes the economic literature. Chapter III provides a summary and the background for the case which will be used in the case study application. There are legal issues which must be addressed since the analysis involves the interaction of law and economics. These issues are addressed in Chapter IV. Chapter V is a brief history of regulation as it has been applied to the natural gas industry.

Footnotes to Chapter I

[1]Richard A. Posner, Antitrust Law: An Economic Perspective, (Chicago: University of Chicago Press, 1976), pp. 40-42

[2]Ibid., pp. 54-55.

CHAPTER II

SUMMARY OF LITERATURE

The Structure-Conduct-Performance Link

Over the recent years there has been a "renaissance" in economic theory--a rediscovery of the validity, usefulness, and relevance of microeconomics. Many of the ideas discussed in this chapter are the result of the new emphasis on microeconomic theory and tools which began with a group of economists who have become known popularly as the "Chicago School".

In the field of Industrial Organization changes in the way of thinking have occurred over the decade. The 'trinity' (i.e. structure-conduct-performance) has been retained but the simple characterization of structure as the exogenous determinant of behavior and performance is giving way to new ideas and theories governing the relationship between structure, performance, and conduct. Certainly, there is a much greater emphasis on behavior (advertising, price formation, research and development). The causal relationship between these variables is being questioned and scrutinized very carefully, both theoretically and empirically. Simple correlations are no longer considered satisfactory proof of causation. Traditionally, causation was assumed to run from structure to behavior to performance. Empirical findings of no correlation between performance (profitability) and the 'causal' variables such as concentration (structure) were not explainable.

Until recently most industrial organization students were taught that when a few firms sell most of the product in a market, prices are

higher than they would be if atomistic competition prevailed--and that either tacit or explicit collusion would occur with high concentration, i.e., the structuralist doctrine. In fact, the usual word used is 'control' (i.e., if a few firms control the market) which implies some sort of coercive power.

Yale Brozen argues that unless this coercive power is granted by government, firms in a concentrated market do not have it.[1] Additionally, in reference to the historical treatment of concentration (market structure) as a causal variable, he asserts that the emphasis was displaced from collusion to concentration as a cause of supra competitive pricing. The underlying assumption was that the cost of reaching and policing agreements is smaller with a fewer number of firms making collusion in concentrated industries more probable.[2] These arguments are representative of the philosophy of the Chicago School of Economics.

The problem, of course, is collusion, not concentration. But historically concentration gradually came to be thought of as the problem itself.

However, under the new theories alternative explanations are beginning to appear. Asch and Seneca[3] suggest, for example, that profit rate may relate to collusive behavior in two ways: (1) collusion may increase profits above the levels that could otherwise be obtained (the traditional theory) or (2) unsatisfactory profit performance could induce firms to engage in collusion. Their empirical findings would support the latter.[4]

On the topic of the structure-performance link, Harold Demsetz summarized the essence of the new thinking when he wrote:

> The structure of an industry is determined largely by the degree to which scale economies prevail, or by the comparative efficiencies of firms; but no good theoretical link has been forged between the structure of the industry and the degree to which competitive pricing prevails, because no good explanation has been provided for how present and potential rivals are kept from competing without some governmentally provided restrictions on competitive activities.[5]

Demsetz (who is frequently cited by Chicagoans), was discussing the lack of theoretical and empirical confirmation for the traditional-structuralist approach. He goes on to argue that the evidence which has accumulated in recent years raises serious doubts about the importance of 'traditional' sources of monopoly vis-a-vis the importance of government intervention to protect industries from competition. Like Dominick Armentano,[6] Demsetz concludes that it is quite plausible that government intervention constitutes the main threat to a competitive economy, the only lasting source of entry barriers.

A. Phillips in "An Econometric Study of Price Fixing, Market Structure and Performance in British Industry in The 1950's"[7] also attacks the naivete of the traditional structure-goals-performance approach. He would substitute a process of search by the firm over time seeking to improve its performance by acting on structure or changing its conduct. In Phillips' analysis, the more the firm falls short of its profit expectations the more it will search for means to improve its position. The means it will use in oligopoly may include the attempt to form collusive agreements with the other firms in the industry.

The level of support for the proposition that industry concentration implies little or nothing about the competitiveness of

the industry and that deconcentration by legal action is bad policy is growing.[8]

It is only logical that eventually the new thinking began to influence those working in the field of antitrust. The "Chicago School" of thought, became influential doctrine during the 1970's. The new theory or approach being advanced disregards traditional antitrust "structural" and "socio-economic" standards and is supported instead by the development of the more micro-quantitative methods. While traditional, structuralist theorists are still recommending stricter antitrust laws and advocating more dissolution, the new approach (which opposes such recommendations) appears to have reached a level where it could be supplanting the traditional theory as the prevelant mainstream antitrust economic doctrine.

Growth in the Chicago Approach to Antitrust

In the past, court decisions have reflected the traditional structuralist approach--sometimes referred to as the Harvard School. But the new thinking has gained considerable influence following the powerful works of individuals such as Robert Bork[9] and Richard Posner[10] (two of the Chicago School's leading advocates). The Chicago School's philosophy is pervading the bar, the bench, and the academic literature in law and economics. Both Posner and Bork have been appointed as federal circuit judges, and Judge Bork has been referred to in the literature as a potential Supreme Court appointee. In late 1981 Richard Posner was appointed by President Reagan to the United States Court of Appeals in Chicago. Frank Easterbrook, who is also out of the Chicago School, is expected to join the same Court sometime in early 1985 according to a recent article in the Wall Street

Journal.[11] Another Chicagoan, Antonin Scalia, was appointed to the United States District Court of Appeals for the District of Columbia (the D.C. Circuit) which is also where Judge Bork serves. The D.C. Circuit is probably second only to the Supreme Court in terms of influence on antitrust matters since a large proportion of antitrust cases, including Federal Trade Commission (FTC) cases, are appealed to that Court.

The Antitrust Division of the Department of Justice has embraced this new thinking, possibly signaling the beginning of a whole new policy approach that transcends changing political administrations.[12] Since the Reagan appointment of William F. Baxter as Assistant Attorney General, the Antitrust Division personnel are beginning to follow a policy that finds its origins in Bork's The Antitrust Paradox and the writings of Richard Posner (as opposed to following antitrust case law precedent).[13]

In 1984 the Section of Antitrust Law of the American Bar Association shifted the emphasis of its debates to what it calls the market-efficiency model as a source of legal norms to curtail antitrust intervention in business decisions. Previous debates focused on the structuralist model as a source of legal norms used to rationalize antitrust intervention designed to prevent or break-up certain types of industry structures which had been associated with anti-competitive conduct under the 'structuralist' or traditional economic theory.

The Chicago philosophy has gained credibility in large measure because microeconomists and antitrust scholars in general are becoming convinced that the science of economics has reached a level where behavior can be analytically judged anticompetitive (or not) through

economic models.

Differences between Chicagoans and Structuralists: Antitrust

Judge Bork in his text describes the basic disagreement between the Chicago School and the more traditionalist thought as involving two issues: (1) the goals or values that the law may legitimately and profitably implement and, (2) the validity of the law's vision of economic reality.

Bork asserts that a consideration of the virtues appropriate to law as law demonstrates that the only legitimate goal of antitrust is the maximization of consumer welfare and that current law lacks these virtues precisely because the Supreme Court has introduced conflicting goals; primarily the survival or comfort of small businesses.[14]

> A consumer oriented law must employ basic economic theory to judge which market structures and practices are harmful and which beneficial. Modern antitrust has performed this task very poorly. Its version of economics is a melange of valid insights and obviously incorrect--sometimes fantastic--assumptions about the motivations and effects of business behavior.[15]

Economists such as Scherer[16] who take the 'structuralists' approach have criticized the antitrust agencies for their inactivity and the antitrust laws for their impotence. Chicagoans like Posner, Bork, and Armentano criticize antitrust, but from the opposite viewpoint. These critics would argue that the application of the laws has been too strict, excessive, or misdirected, and the result has been a perverse impact on efficiency and competition.

Economic Perceptions

The Chicagoans tend to believe that the traditional approach has actually stifled innovation and healthy competition and that competitive forces should be allowed greater freedom from litigation

and government interference. Much of the difference in the two approaches centers around the role of the market competitors themselves. Structuralists tend to believe strongly in the preservation of the largest possible number of competitors as a means of ensuring a more competitive market and greater efficiency.

From a structuralist point of view, the role of antitrust should be to provide or preserve the framework for competition, letting the results take care of themselves. Critics of this approach would argue that it was this kind of thinking which led the legislature and courts to extend the scope of 'unfair competition' to the point where business, especially small businesses, are effectively protected from competitive extinction, no matter how well deserved.

Chicagoans stress the fact that competition is dynamic and any artificial protection of competitors is inconsistent with the objective of promoting consumer welfare, since elimination of weak competitors is part of a healthy competitive market. Growth toward oligopoly or monopoly may also be part of the healthy competitive process and thus, is not evil in and of itself. Within this view, any non-competitive elements in concentrated industries would require only a rule of reason type enforcement of the Section 1 rule against price fixing and market division to control. Other business practices such as price discrimination, reciprocity, resale price maintenance and pricing agreements which are regarded in the traditional approach as automatically anticompetitive would not be automatically condemned under a Chicagoan philosophy, but instead would be subject to efficiency tests to determine their impact on competition. Chicagoans may consider these practices as possibly promoting efficiency and as a

means of generating better service or product at a lower price. Within the Chicago school the possible social harm from any given form of conduct would tend to be evaluated from the perspective of its theoretical significance, likelihood of occurrence, and its quantitative impact on competition. The difficulty of this approach lies in finding the appropriate mechanisms for deciding whether the challenged behavior is indeed a legitimate means of achieving better service or product at a more competitive price.

Competition is always a dynamic process, not a state of static, known conditions, where suppliers continuously contrive to offer better alternatives to the buyers in the market. It is a process of discovering opportunities for profit, and then exploiting them by adjusting behavior and market conditions.

> Competition is the equilibriating process, not the equilibrium condition, in which businessmen attempt, in the absence of perfect knowledge and homogeneous products, to more closely coordinate their supply plans with the anticipated plans of other market participants.[17]

Business Practices

Bork, Posner, Armentano, Stigler,[18] Demsetz, Brozen, and others have argued that there is a real perversity inherent in the orthodox competitive perspective (structuralist perspective) because it leads to treatment as resource-misallocating, the very business practices that are, in fact, essential to any competitive process. Invariably, somewhere in the text of these arguements will be the now familiar quote from Joseph Schumpeter's classical work in which competition is described not as static, but as a continuous process of "creative destruction" that comes from the--

> ". . . new commodity, the new technology, the new source

> of supply, the new type of organization--which commands a decisive cost of quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms, but at their foundations and their very lives".[19]

The question, of course, is whether such conduct simply reflects, as opposed to changes, competitive conditions.

According to Bork, the Supreme Court, without compulsion by statute, and certainly without explanation, has inhibited or destroyed a broad spectrum of useful business structures and practices. Internal growth, in his view, has become dangerous and growth by merger "practically impossible". Cooperative ventures between independent businesses have been outlawed through a misapplication of the sound policy against price fixing and market division, and the Court has destroyed the most useful forms of manufacturing control over distribution.[20]

Practicality

Those arguing against a Chicagoan approach frequently advance the argument that, as a practical matter, the Antitrust Division, the Federal Trade Commission, and the courts are ill-equipped for the task of distinguishing efficient from inefficient impact. As regards business conduct and performance[21] the data, predictions, and judgments needed for analysis may be costly, unreliable, or even unavailable. This contributes to a preference among many for the traditional approach with its emphasis on market structure and per se rules against certain broad types of conduct.

Some critics of an economic-results type approach to antitrust, such as Alfred Kahn, admit that they might be persuaded if "objective standards capable of commanding general acceptance had in fact been

developed".[22]

Discussion

A factor contributing to the problem or differences is that throughout the history of the antitrust laws--as they were made, interpreted, and applied--there has been in economic theory a well developed theory of monopoly and an accepted theory of pure competition, but no widely accepted theory dealing with imperfect competition or oligopoly. Our theories of monopoly and competition were eagerly embraced by those studying antitrust for (in the static framework) they clearly showed the 'evils' of monopoly and monopoly power. One need only draw the diagram of monopoly with its downward sloping demand curve and related marginal revenue curve and super-impose on that diagram the competitive equilibrium with output expanded to the point where price equals marginal cost to illustrate allocative efficiency and the superiority of competition over monopoly. Life is very simple when dealing solely with this static framework. Productive efficiency is assumed so all that is needed to promote allocative efficiency is to promote, provide, or protect a competitive market structure. From an antitrust perspective it followed naturally that the laws should be used to protect the number of competitors in a market (more competitors would mean more competition) and to prevent certain types of behavior known or believed to be associated with[23] more concentrated market structures. It was implicitly assumed that if the market structure and conduct links are properly policed, performance will take care of itself.

Within this framework natural monopoly is handled by direct public utility type regulation, but economies of scale, evidence of

positive correlation between size (or concentration) and innovation (R & D, etc) or conduct which leads to both greater efficiency and greater concentration present a real dilemma. One which cannot be dealt with effectively under per se rules against certain types of conduct.

The economic reality is that pure competition is not the alternative to monopoly, the economy and the firm are not static, and sometimes there must be a trade-off between allocative and productive efficiency.

It must be emphasized that competition or a competitive market structure is not an end in and of itself; it is the results which the idealized competitive market produces, according to the static theory, that are desirable.

Part of the problem also is that there has always existed a populist hostility to big business, a hostility that is currently reinforced by the suspicion that major corporations, and especially oil companies and utilities, are somehow to blame for economic hardships that have their origins elsewhere. For example, in the politics of an OPEC, in federal regulation of natural gas prices, in large federal deficits, or in bad weather, for that matter.

The structural model's simplicity,[24] and the congruence of its economic implications with other political concerns of antitrust law (e.g., high levels of concentration suggested not only inefficient behavior but also politically undesirable concentrations of wealth and power) made it intuitively appeaing to the legal world--at least among those who accepted efficiency as a primary goal of antitrust law. By the mid-1970's the model was being attacked by Chicagoans who believed that the structuralist model was too often misleading in its

conclusions. It also was being attacked by those who believed that its economic interpretation resulted in too great an emphasis on efficiency as a goal.

Interdependence Theories and Collusion: The Basis for Posner's Approach

The Oligopoly Problem: Conventional Approach

In the early 1930's Professor Chamberlin distinguished oligopolistic interdependence by concluding that each oligopolist "is forced by the situation itself to take into account the policy of his rival in determining his own, and this cannot be construed as a 'tacit agreement' between the two".[25]

Subsequently, the conventional analysis of collusive pricing has assumed that there is a fundamental difference between explicit collusion and oligopoly pricing which would include concepts/theories such as price leadership and conscious parallelism. These pricing theories embody a certain interdependence among firms--a meeting of the minds which is currently beyond the reach of the antitrust laws. According to Posner, this point of view was given its authoritative expression in a 1962 article by Donald Turner where he argues that, as a rule, oligopoly pricing or consciously parallel action is outside the realm of agreements covered by Section 1 of the Sherman Act.[26]

In essence Turner argues that parallel interdependent decisions as to basic price and similar price matters are devoid of anything that might reasonably be called an agreement when such decisions simply involved independent responses to the same set of economic facts. Parallel interdependent decisions to adopt rigid delivered-price systems, indulge in practices patently exclusionary of competitors, or

to impose resale price maintenance, however, may be condemned as conspiracy.

Hay and Morris[27] also argue that cooperation can be developed simply from market experience backed by rational consideration of the alternatives without any buttressing cartel mechanisms being necessary. They view cartels as a solution to situations where the process of learning from experience does not work. Within this context 'agreement' would not be equated with collusive price fixing and the usual remedies for antitrust violations (i.e. injunctions, treble damages, dissolution, etc.) would be ineffective as a solution.

Chicago Approach to The Oligopoly Problem

The catalyst and theoretical basis for Posner's proposed economic approach is the theory of oligopoly advanced by George Stigler in the late 1960's.[28] In "A Theory of Oligopoly"[29] Stigler asserts that a satisfactory theory of oligopoly cannot begin with an assumption regarding the way in which a firm views its interdependence with any other firm. He assumes instead that oligopolists wish to collude to maximize joint profits, but that collusion is impossible under certain circumstances and easier under some circumstances than others. The feasibility is assumed to lie in the costs of policing the collusive agreement. He assumes, also, that collusion can take many forms (of which the most comprehensive is outright merger), but once effected and a price structure agreed upon, any firm will gain larger profits by secretly violating the agreement than by conforming to it. The subsequent analysis is based on the probability of detection and enforcement costs. The factors which determine the ease with which price cutting is detected by rivals are the determinants of the Stigler

oligopoly model. The model is actually a systematic accounting of the factors governing the feasibility of collusion.

The factors discussed include homogeneity of product, number and relative size of buyers per seller, frequency of change in identity of buyers, absolute and relative size of each buyer's purchase, number and size of sellers, the Herfindahl index of concentration, and importance of non-price competition. All these factors are included in Posner's list of indicia.

The model is followed by a discussion of the results of two empirical studies which suggest that the level of prices is not very responsive to the actual number of rivals. These results are consistent with the model which predicts that the number of buyers, the proportion of new buyers, and the relative size of firms are as important as the number of sellers.[30]

Posner, in his evaluations, came up against the internal difficulties of the interdependence theory and found the theory "inadequate". Building on Stigler's analysis instead, he has produced what he calls a unified theory of collusive pricing which provides the basis for his economic approach to evaluating the evidence of collusive pricing behavior. Posner was looking for an alternative approach to the question of collusive pricing in the absence of provable conspiracy. He was seeking a way to get beyond what he called the "cops-and-robbers"[31] approach to price fixing (i.e. based on evidence of a firm's conspiracy) and in so doing maybe even solve the problem of tacit collusion. His approach was to assume that a firm's decision to collude, whether expressly or tacitly, is based on a weighting of the potential gains of collusion against the potential

cost (the Stigler concept). By examining the factors which impact the benefits and costs of colluding, George Stigler (and others) identified market characteristics that were considered conducive to collusion and the specific economic symptoms of effective collusion. This provides a framework for the purely economic approach to detection and proof of collusion advocated by Posner.

Summary

In summary, a theory or policy is not well suited to serve consumer interests if it does not consider the effects on consumers. Under the structuralist approach to antitrust results are not independently tested for; they are assumed, asserted, or simply ignored. All 'agreements' (contracts, partnerships, mergers, sales agencies, or whatever) implicitly involve an agreement not to compete at least on some level or in some dimension. Whether or not that restraint benefits consumers depends on the circumstances. A "results" type approach is admittedly more complex. However, as economists become more actively involved in sharpening their antitrust tools and stream-lining the process, the process will diminish in complexity. As to the criticism that the courts are ill-equiped to deal with economic efficiency issues, the Supreme Court's decisions in such cases as GTE Sylvania,[32] Broadcast Music,[33] General Dynamics,[34] and Brunswick[35] are an indication that the courts are at least willing to entertain an economic analysis/results approach to antitrust cases (i.e., to ascertain the competitive effects of the challenged conduct) even though this type of analysis is necessarily more complex.

Collusion and Consumer Welfare

The Monopoly Problem: Impact of a Restraint on Efficiency

If maximization of consumer welfare through the fostering of competition is the goal of antitrust then the economic theory of monopoly provides the basis for interpreting the antitrust laws.

In the traditional analysis the 'cost of monopoly' is associated with the output restriction and subsequent misallocation of resources. The higher than competitive price paid by consumers results in a transfer of consumer surplus to producer--with no net loss to society.

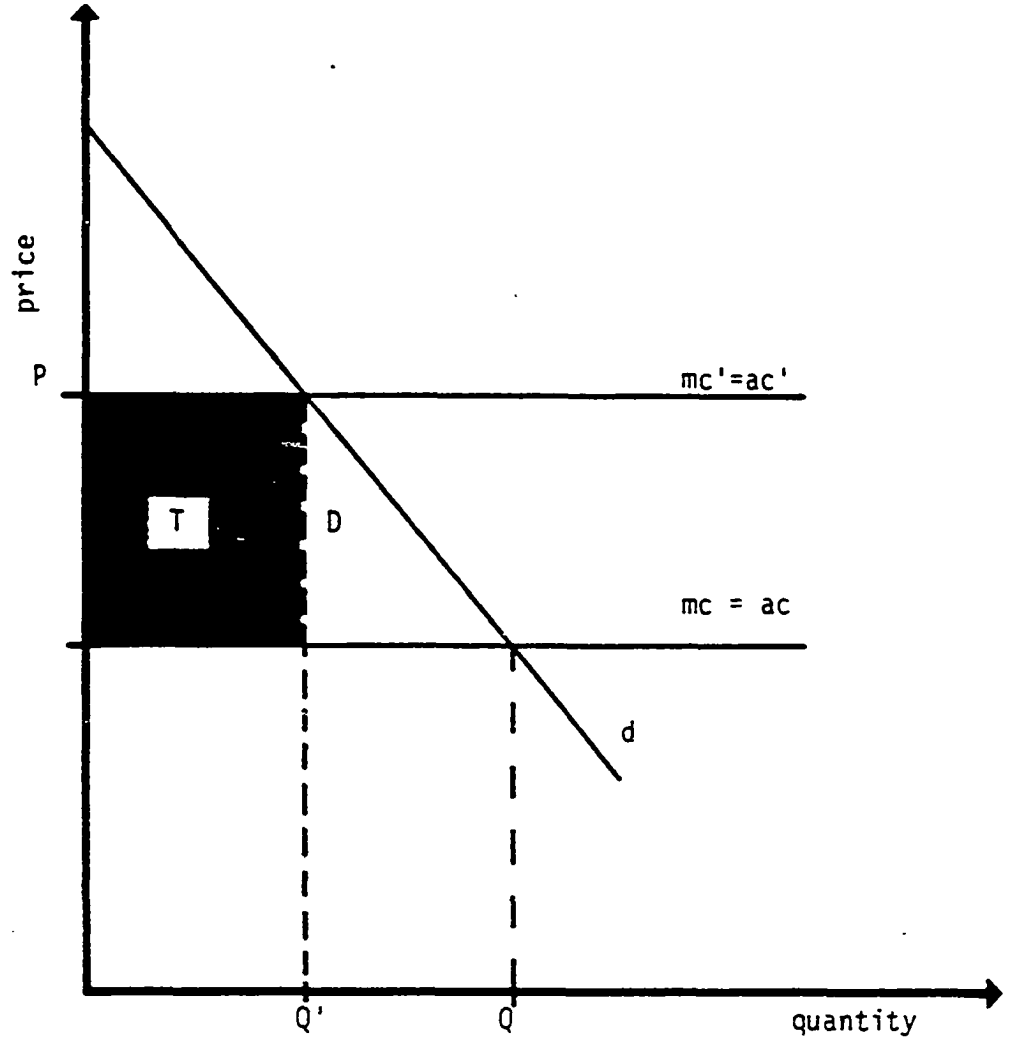
In the context of antitrust law and policy these so-called transfers take on special significance. In fact, the court-accepted measure of antitrust 'damages' is the transfer of consumer to producer surplus.

Also significant in antitrust analysis is the fact that the lure of monopoly profits will attract real resources in the firm's efforts to monopolize. The costs of resources used in this process are costs of monopoly just as much as the costs resulting from the substitution and misallocation of resources.[36] In other words, there is a transformation of expected monopoly profit into cost. This is because a monopolist (or would-be monopolist) will expend real resources to gain and hold the monopoly position and cartel members will have incentive to spend real resources on non-price forms of competition in order to engross a larger share of the cartel profits. The process of spending resources on non-price competition is assumed to continue until, at the margin, costs have risen to the monopoly price. The opportunity costs of these resources are considered social costs of monopoly, too.[37] The expenditures on monopolization or non-price

competition may produce a socially valuable by-product (e.g., better service, greater variety) but are generally assumed to be less than the costs. If consumers valued the additional services (or whatever) above its cost, presumably the services would have been produced in a price-competitive market.

The analysis is depicted in Figure 1 where MC=AC is the competitive marginal/average cost and d is the demand.

Fig. 1. The social costs of monoply.



Within this simple model the social costs of monopoly is the sum of the deadweight loss and the additional loss resulting from expenditures to become a monopolist or expenditures on non-price competition. Such expenditures result in a shift of the MC=AC curve up to the level MC'=AC'. Marginal costs rise to the level (P) where the industry is earning only a normal return. The result is transformation of the potential monopoly profits (the shaded area) into higher industry costs.

In his treatment of the costs of monopoly Posner describes the traditional analysis as being short sighted because it generally ignores the fact that an opportunity to obtain a lucrative transfer payment in the form of monopoly profits will result in real resources being expended by sellers, in an effort to prevent being charged monopoly prices. "The costs of the resources so used are costs of monopoly just as much as the costs resulting from the substitution of product that cost society more to produce than the monopolized product".[38] The process of expenditure of resources on non-price competition will continue until the firm's costs have risen to the monopoly price level P in Figure 1. If there are partially offsetting benefits to this kind of activity (the non-price competition has some value to the consumer)
the result would be an outward shift of the demand curve in Figure 1. Where non-price competition is unfeasible, Posner argues, firms will spend real resources on forming or gaining admission to cartels or otherwise maintaining a monopoly position.

This process of competing to become or maintain a monopoly is assumed to continue until, at the margin, the expected benefits are

just equal to the costs incurred (T if Figure 1). The competing process may not impose a cost on society. Where firms entering a market to capitalize on monopoly profits add to the industry output and put downward pressure on price or where existing firms expand output to the same end there is no cost to society. (Unless these firms have higher costs than the monopolist or monopolizing firms). This type of 'competing for monopoly power' is treated as a market response that reduces the expected gains from monopolizing by decreasing the monopolist's power over price.

The foregoing analysis indicates that traditional measures of monopoly costs or monopoly profits may be improper. Traditionally, estimates of monopoly cost are based on the divergence of actual and some 'average' rate of return. The existence of persistent above-average returns is attributed to monopoly. Within the Posner framework this estimate will tend to be downwardly biased (i.e. understate the social cost) because the competition for monopoly tends to transform expected monopoly profits into real costs which drives the rate of return down toward competitive levels.

Empirical investigations have shown that the relationship between high rates of return (profitability) and collusion or concentration is clouded, at best. In their study Asch and Seneca[39] found that firms characterized by low profits demonstrated a greater tendency toward collusive behavior. As mentioned, Stigler and Palmer found profitability to be insignificantly correlated with concentration or collusion except at very high levels of concentration.

Transfer Model Illustrating the Monopoly Problem

There are potentially three 'levels' of involvement in any

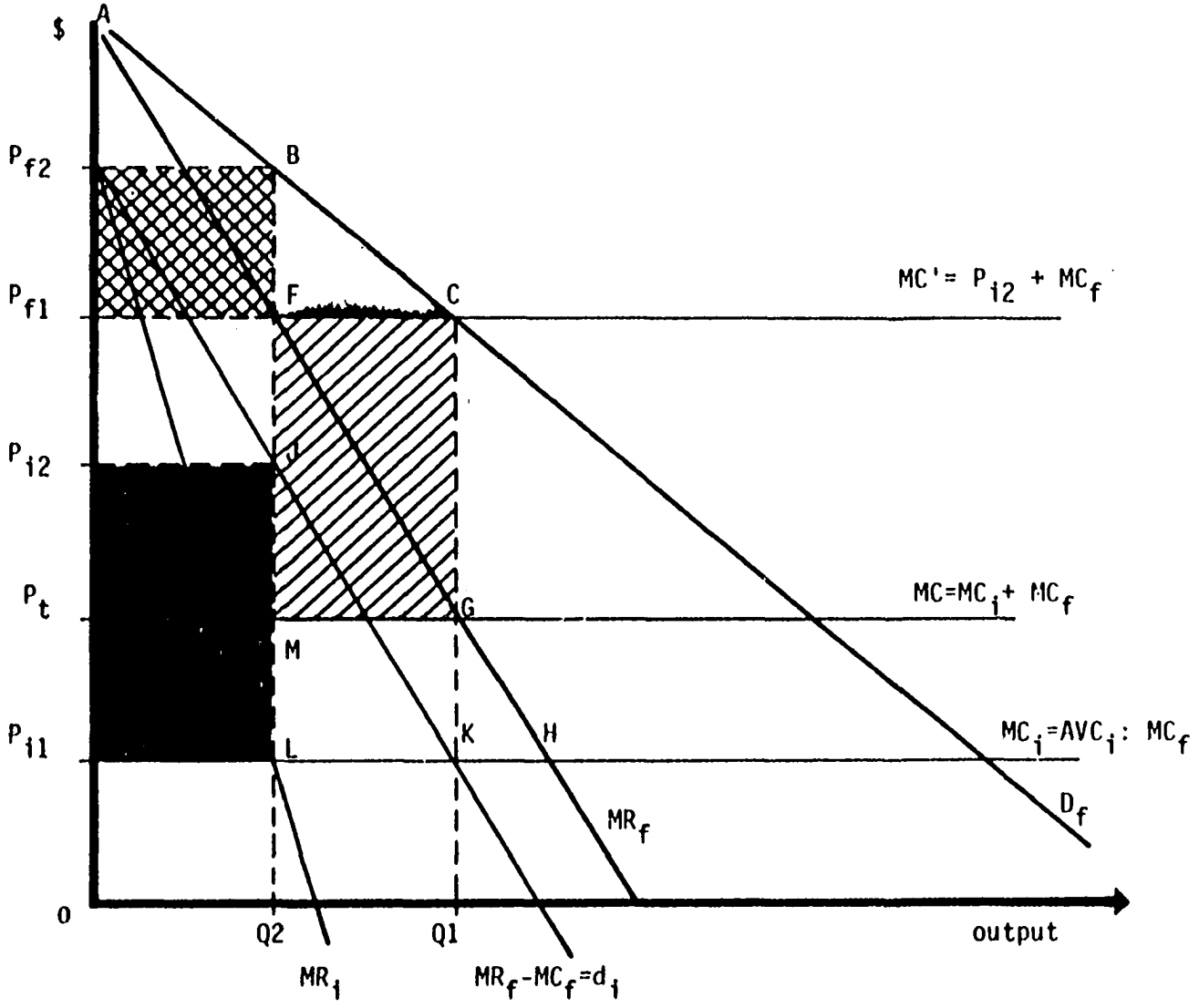
antitrust case, i.e. manufacturing, wholesale and retail [or production, middle processing, and ultimate consumer]. It is useful, therefore, to analyze a model that can track the effect of an anticompetitive act (e.g., an overcharge) from the first level to the ultimate consumer.[40]

This model is introduced because, as the title suggests, the case study involves a regulated utility charged with conspiring to raise the price of a resource at the 'production level' or 'first level' and subsequently benefiting by passing the increased costs on to the ultimate customers at the 'third level'.

Figure 2 is helpful in illustrating the problem. It shows the demand (D_f) faced by an intermediate firm. This is the retail demand for the final product. The marginal revenue curve associated with D_f (MR_f) can be used to derive the intermediate firm's demand for the intermediate good. The intermediate firm here is assumed to be a monopoly. The derived demand for the intermediate good is obtained by subtracting the intermediate firm's marginal cost of processing (MC_f) from the marginal revenue generated by the sale of the final product (MR_f) or $d_i = MR_f - MC_f$. The intermediate firm is assumed to purchase units of the unprocessed good so long as the marginal revenue generated by the sale of the processed good (MR_f) less the cost of processing (MC_f) is greater than the price paid for the unprocessed good.

Figure 2

Fig. 2. Transfer model.



The line labeled $MC_i = AVC_i$ is the average cost of the unprocessed good and is assumed for simplicity to be constant. AVC_i represents the market cost of the unprocessed good to the intermediate firm in the absence of any collusive behavior.

Initially, producers are selling Q1 units of the unprocessed good to the intermediate firm at a competitive price of P_{i1} which the intermediate firm, in turn, sells for a finished price of P_{f1}. The total cost to the intermediate firm (OP_tGQ1) is the total cost of purchasing the unprocessed good ($OP_{i2}KQ1$) plus the total processing costs.[41] Total revenues from the sale of Q1 units would be ($OP_{f1}CQ1$). The difference, of course, is profit.

Assume now collusive behavior which results in an anticompetitive price increase at the production level. The price of the unprocessed good goes to P_{i2}. At P_{i2} the quantity demanded by the intermediate firm (d_i) falls to Q2 and the producer's (of the unfinished good) marginal revenue (MR_i) is equal to the marginal cost of production (MC_i). At Q2 the intermediate firm's new marginal cost MC' is equal to marginal revenue (MR_f) and the retail price of the product goes to P_{f2}.

The increase in the retail price of the good is the distance P_{f1} to P_{f2}. Prior to the collusive increase in price at the production level there was a dead weight loss represented by the area CGE.[42] As a result of the price increase the dead weight loss has increased to BME.[43]

Revenues to the intermediate firm have changed from ($OP_{f1}CQ1$) to ($OP_{f2}BQ2$). The associated change in total cost to the intermediate firm is represented by the difference between (OP_tGQ1)

and ($OP_{f1}FQ2$). Revenues to producers have changed from ($OP_{i1}KQ1$) to ($OP_{i2}JQ2$). Total costs of the producers of the processed good have decreased from ($OP_{i1}KQ1$) to ($OP_{i1}LQ2$).

At Q1 units and a retail price of P_{f1} there was a monopoly transfer of ($P_tP_{f1}CQ$) associated with that equilibrium. At P_{f2} and Q2 units there will be a transfer of ($P_{f1}P_{f2}BF$). Whether or not the intermediate firm is better off at the new equilibrium ($P_{f2}Q2$) depends on the elasticity of demand (D_f) between P_{f1} and P_{f2} and the structure of costs. If the intermediate firm is a rational monopolist he will not be operating in the inelastic portion of the demand curve and any price increase will lead to a proportionately greater decrease in quantity demanded.

Antitrust and Economics

The penalties for violation of the antitrust laws include:

1. financial penalties paid to the state,
2. treble damage payments to injured private parties,
3. incarceration,
4. corporate surgery: dissolution, divorcement, and divestiture.

The penalties as they exist serve various goals. Deterrence is usually put forth as the primary goal by economists and lawyers with training in economics.[44] Other goals include compensation to those injured by antitrust violations and, in the case of private treble damages, self-enforcement.

Regarding the deterrence function, the efficiency criterion requires that the penalty imposed equal the social cost of the violation discounted by the probability of being caught and punished.

If the expected value to the would-be violator of a particular deed is greater than the expected punishment cost, the violator will not be deterred.[45]

Efficient Deterrence

Elzinga and Breit[46] have analyzed the efficiency of the penalties and the efficient level of enforcement or deterrence in a model which treats antitrust as a 'public good. They conclude that fines are the most efficient penalty. Like Posner and others, Elzinga and Breit dismiss the treble damage penalty as creating perverse incentives. Incarceration is discounted since it is difficult to translate a monetary sum (expected monopoly gain or social cost) into a nonpecuniary cost (e.g., a number of days in prison) and because imprisonment is a much costlier sanction for society to administer than the collection of a fine.[47] Corporate surgery is also costly compared to 'fines' as an alternative. Under the law corporate surgery is considered a remedy rather than a penalty. To economists that is a distinction without a difference. The argument for corporate surgery usually assumes that this type of structural relief will result in the capture of the welfare triangles. But structural relief does not make economic sense if, as argued by the non-structuralists, the industry's structure is not related to that industry's performance or if the welfare loss due to monopoly is de minimus[48].

William Page[49] in a 1980 article concerning the appropriateness of using private damages as a deterrent to anticompetitive conduct stresses the fact that the efficiency loss to society should determine the level of deterrence (and thus the penalty). He recognizes, however, that the efficiency loss does not coincide with the losses

that individual actors suffer from antitrust violations.

> Many violations are forms of aggressive competition that have crossed the indistinct line into the region that the law deems predatory. Analogously, other violations involve integrations of productive or distributive processes that result in real economies. Although there may be no social cost--or harm to consumers--from these nominal violations, the harm to competitors or distributors may be quite concrete. This flaw is more serious than the use of an incorrect multiple to discount for the probability of apprehension, because individual injury may bear no relation at all to the social cost of the violation.[50]

Pages's concern was the efficient level of deterrence, but he concluded that to achieve this goal, the courts must analyze in each case the 'competitive effects of violations'. Page would likely agree that analyzing the competitive effects requires that the available, relevant economic evidence be presented and evaluated for its impact on competition and this step is of paramount importance.

Treble Damages

In a private suit where damages are an issue, it is argued that the amount of damages awarded should equal the efficiency loss to society attributable to the defendants conduct, discounted by the likelihood of the violation being discovered. But, the efficiency loss to society that should determine this level of deterrence does not coincide with the individual losses that are incurred as the result of an antitrust violation.

According to Page the private injury equals the monopoly profit (in the limit). So, he concludes that the traditional measure of damage is economically sound because, although the monopoly profits are a transfer, they flow from the aspect of the conduct that causes inefficiency. They are created by the same output restriction that creates the dead weight loss.

Antitrust Injury

Of significant consequence and indicative of the Chicago influence on the Supreme Court is a recent (Supreme Court) decision in which the Court specifically tied guilt to the concept of efficiency loss for the first time. In Brunswick Corp. vs. Pueblo Bowl-O-Mat, Inc. the concept of 'antitrust injury' was created; a concept clearly founded on economic welfare criteria.[51]

Articles on the subject of this 1977 Supreme Court decision are beginning to appear. The concept essentially ties the procedural law to the enhancement of competition by requiring that the damage liability (in a private suit) must flow from the anticompetitive aspect of an unlawful practice. This is significant in that it is further evidence of the growing momentum toward a more economic approach to antitrust.

William Page argues that the substantive law, although retaining many liberal rules of liability, now recognizes that the predominant goal of antitrust enforcement is the promotion of competition, rather than the protection of small and inefficient businesses and that with Brunswick the procedural law has also begun to recognize the same goal (by imposing limits on the kinds of injuries for which private plaintiffs may recover). Page further alleges that the fact that the courts and litigants have not been uniformly receptive to the concept of antitrust injury indicates the lack of understanding of the conceptual basis (economic efficiency) for identifying antitrust injury and suggests that the tools of economic analysis are what is needed to give content to the concept.[52]

Posner's Framework: Background and Theory

Posner develops his economic indicia and the 'economic proof' position taken in antitrust analysis as a result of what he calls "a unified theory of collusive pricing".[53] In his work in this area he has relied heavily on prior work by Stigler[54] where oligopoly pricing was treated simply as a special case in the general economic theory of collusive pricing.[55] The concern, of course, was for effective antitrust laws. But as mentioned previously, Posner considers the law ineffective in the absence of explicit evidence of conspiracy, and in the case of purely tacit collusion where it cannot be applied even if the result is obvious market inefficiency. For Posner these difficulties argued for an alternative approach to the question of collusive pricing. Under his proposed approach it is irrelevant whether the anti-competitive impact is the result of a clandestine cartel or achieved by purely tacit collusion.

The approach rests on the presumption that a firm's decision to collude, whether expressly or tacitly is made by weighing the potential gains to the firm from colluding against the costs of colluding. By examining the factors which influence the benefits and costs of colluding and which identify the kinds of market settings conducive to collusion, he has devised a set of economic indicia that can be used to detect collusive behavior and thus yield economic proof of collusion (explicit or tacit).

This approach as he "envisaged" it would proceed in two stages. The first, of course, involves defining the criteria for determining whether or not the market conditions are propitious for the emergence

of collusion.[56] The exercise of market power requires conditions favorable to collusive behavior whether it is tacit or explicit.

STAGE ONE

These conditions favorable to collusion are:

1) Market concentrated on the selling side. Posner briefly discusses the four and eight-firm concentration ratios. A footnote tells the reader that while none of the various market structure measures are entirely satisfactory, he has a preference for the Herfindahl. In the merger guidelines issued June 14, 1982 by the Justice Department, a shift was made from the familiar four-firm concentration ratio to the Herfindahl Index; or the Herfindahl-Hirschman Index as it was called.[57] However measured, there is no threshold level defined in Posner's text above which collusion becomes an attractive proposition. Concentration, of course, interacts with the other predisposing characteristics, and the most that can be said is that different levels of concentration create a presumptive danger of collusion in the minds of different economists.

2) No fringe of small sellers. It makes a difference in a market, a concentrated market where for example the four largest firms have 90% of the market, whether there are only two or three firms (total) or 125 firms total. It is much easier to coordinate the pricing of three firms than that of 125 firms. While it is not necessary to obtain the agreement of the little firms in order to collude effectively (as long as the "little firms" are unable to expand their output sufficiently to offset the output restriction of the colluding sellers), still, any

segment of the market that is not inside the colluding circle constitutes a limitation or hindrance on the power of the colluders to fix the price.

3) Inelastic demand at the competitive price. The relationship between the elasticity of demand at the market price and the potential gains from collusion is straight-forward and well documented. Unfortunately, elasticities are both difficult to measure and to interpret.

The problem is magnified by the possibility that the point on the demand curve at which the elasticity is to be measured (the competitive price) may be different from the point at which the industry is actually selling. A high, measured industry elasticity might indicate that collusion was unattractive in that market (because a price increase would yield a sharp decrease in revenues), or it could mean that successful collusion had forced the market price into the region of the demand curve where any further increase in price would be unprofitable.

But sometimes, as Posner explains, there may be indirect evidence that can be evaluated. If other sellers make an identical product, it may be possible to infer that the demand is highly elastic, since presumably a price increase would cause consumers to switch promptly to the other sellers. Or if a product has no good substitutes, that is at least some evidence that demand is inelastic at that price. Caution is of course advised since the other sellers may, for example, have higher marketing costs. It may thus be necessary to recognize the existence of geographical submarkets.

While a finding that demand is highly elastic is of ambiguous significance, a finding that demand is inelastic at current market price is "rather good evidence that the sellers are not colluding--at least not effectively".[58]

4) Entry takes a long time. Entry is related to elasticity since the entry of firms will affect the elasticity of demand. Where elasticity is not quantitatively measurable and must be inferred from qualitative evidence, the rapidity of entry is a very important piece of evidence. But it is not unambiguous. In fact, new entry that is frequent and rapid may be a symptom of collusive pricing rather than a deterrent to it. A close scrutiny of the cost/production relationship must be made in this case.

Barriers to entry in the sense of higher long-run costs of production for a new entrant than those borne by the existing firms imply the existence of a range within which the firms in the market can increase the price above the competitive level without losing sales to new entrants. Posner considers these barriers rare and places greater importance on factors which increase the length of time required for new entry by making the production process a complex one. (e.g., vertical integration and economies of scale).

5) Many customers. Cheating among colluders is least likely when detection is prompt and ease of detection is inversely related to the concentration on the buying side. Successful collusion is more likely in industries where any cheating is likely to be detected. The fewer the number of buyers, the more difficult it

will be to attribute a loss in sales to the cheating of a cartel member, since the loss may have been the result of a random defection. Additionally, the likelihood of detection increases with the number of buyers who are favored.

6) Standard product. The less standardized (more customized) a product, the more difficult it will be for sellers to collude effectively. Heterogeneity makes it less possible to agree on a single price, and complex price schedules reflecting differences in product are difficult to agree upon without detection by antitrust enforcers. In addition, such complex price schedules make detection within the group more difficult.

7) The principal firms sell at the same level in the chain of distribution. The feasibility of collusion is reduced when some members sell at lower levels in the chain of distribution than others.

8) Price competition more important than other forms of competition. Where the product is a fungible commodity, price reduction may be the only way to attract business away from a competitor; if so, eliminating price competition would be highly rewarding. But if other forms of competition are important--service, quality, etc.--the only effect eliminating price competition may have is to channel resources into non-price competition, competing away any higher profits obtained by increasing price above the competitive level.

9) High ratio of fixed to variable costs. Where fixed costs are relatively high, competition may be relatively unstable and may lead to frequent bankruptcies among competing firms. If

bankruptcy is more costly than a failure to obtain the difference between a competitive and monopolistic rate of return, then the benefits of monopoly pricing will be rated higher than they would be in an industry where competitive pricing might lead to bankruptcy.

10) Demand static or declining over time. Collusion is more difficult to police when demand is changing over time, since cheating may result not in the loss of customers to the victimized firm, but simply in a failure to gain its share of the new customers.

It is also possible that declining demand and profits will produce or increase the incentive to collude.

11) Sealed bidding. When bids are sealed it is easier for colluding sellers to detect cheating.[59]

12) The industry's antitrust "record". In a market conducive to collusion there is likely to be a history of attempts at express collusion, some of which may have been detected and, thus, an existing "record" produced. However, absence of a record is not decisive. It may indicate only the lack of detection.

STAGE TWO

If an analysis of the foregoing criteria indicates a possibility of collusion, the next step in Posner's approach is to look for more specific evidence. [Recall Posner's work is directed toward Justice Department investigations as opposed to private suits. Thus, the first stage was necessary to determine whether or not it is (in a sense) worth while to expend the additional resources necessary to obtain more

concrete economic proof].

The evidence considered at the second stage are:

1) Fixed relative market shares. If the major firms in the market have maintained nearly identical market shares over a substantial length of time, according to Posner, there is good reason to believe that they have divided the market. Under competition it is more likely that market shares will fluctuate as one or another pulls ahead in the struggle for customer sales.

2) Price discrimination. Persistent discrimination may be evidence of monopoly because it is inconsistent with pricing in a competitive market. It is important to distinguish this kind of persistant discrimination (a symptom of monopoly) from the temporary, sporadic discrimination that frequently accompanies, (1) a movement from one equilibrium to another in competitive markets, and (2) the disintegration of a cartel which frequently takes the form of selective, discriminatory discounts (chiseling).

There are objections to using price discrimination as evidence of unlawful collusion. The discrimination may be the result of monopoly power of individual firms, (e.g., copyrights) and not the result of collusion, or even the result of cost differences. Where there are joint costs, prices may not reflect the marginal cost of serving that class of customer without being discriminatory in any sense relevant to inferring collusion or monopoly power.

3) Exchanges of price information. Where the market contains many small sellers, the exchange of price information may serve

the salutory purpose of reducing price variance based on inadequate knowledge, and thus, enhance competition. Where there are few sellers the problem of inadequate knowledge is less likely to be serious (since it is easier to keep tabs on rival prices if there are only a few). Therefore, the argument that exchanges of price information is sought for collusive purposes is stronger. Systems of exchanging price information are likely to be good evidence of price fixing in the second case, but not in the first.[60]

4) Regional price variations. If a product is sold in different geographical markets and if prices are fixed in certain of these markets, one will observe a regional price variation. There may be cost differences as an explanation, but usually these can be taken into account.[61] A note of caution is extended in cases where the product is sold nation-wide. Most price-fixing cases, however, involve regional or local rather than national conspiracies.

5) Identical bids. If the item is not standardized, identical sealed bids are useful in proving price fixing. If the item is standard, however, identical bids are consistent with competition.

6) Price, output, and capacity changes at the formation of the cartel. The formation of a cartel will usually be accompanied by a rise in price and a reduction in output, unless demand is increasing. A simultaneous price increase and quantity decrease, unexplained by costs or demand may be good evidence of the initiation of price fixing.

Unexplained sudden excess capacity is also an indication of a price fixing scheme. Excess capacity will gradually disappear as the cartel stabilizes. If unstable, the cartel members may elect to maintain their excess capacity as a backup and for bargaining power. Continued excess capacity combined with new entry would be difficult to explain without positing collusive pricing.

7) Industry-wide resale price maintenance. When the resale price is fixed, it is more difficult for members to cheat. Any discounts to a dealer will likely generate windfall gains to the dealer, but not additional sales.. But the fact that resale price maintenance is engaged in by competing sellers has ambiguous implications. It could mean simply that each seller decided that it was in his own best interests to control the resale price. Usually, this is true only when the product is sold in conjunction with expensive services provided by the dealer (e.g., elaborate displays).

8) Declining market shares of leaders. Supracompetitive pricing will attract new firms to capitalize on the above-normal profits. Price reduction to repel entry is possible, but according to Posner the firms will normally do better by maintaining an above-normal price, allowing their share to gradually decline. Thus, a long term decline in market share is a possible symptom of price fixing.

9) Amplitude and fluctuation of price changes. There is basis in economic theory for the proposition that a monopolist (or cartel) will react to cost or demand changes with smaller changes in

price than would sellers in a competitive market that is similar. Also, that the cartel price will be less volatile than the comparable competitive price--because of difficulty and risk in renegotiating a cartel price.

10) Demand elasticity at market price. Since a monopolist never operates in the inelastic portion of the demand curve, if demand is found to be inelastic at the current market price, that price is not a monopoly price. A finding that demand is elastic has ambiguous implications. An inference of monopolization could be made, however, if demand were elastic at the current price, but the product had no good substitutes.

11) Level and pattern of profits. In some cases the presence of abnormally high rates of return could infer collusion. The measurement problem is serious and high returns could obviously be due to exceptional efficiency or escalating demand. Additionally, collusion may not be accompanied by high profits since the members could have competed away their monopoly profits in various forms of non-price competition.

While proof of monopoly profits may be difficult to obtain, changes in industry profit levels and the profit levels of specific subsets of firms within the industry may be easier evidence to obtain--and easier to establish than whether or not a profit or profits in the market are above the competitive level.

12) Basing-point pricing. The purpose of basing-point pricing is to facilitate collusion by simplyfing the pricing procedure. It is plainly incompatible with competition.

Summary of Posner Approach

Stage One: Procollusive Industry Characteristics	Stage Two: Firm Evidence
1. Market concentrated on the selling side.	1. Fixed relative market shares.
2. No fringe of small sellers.	2. Price discrimination.
3. Inelastic demand at competitive price.	3. Exhanges of price information.
4. Entry takes a long time.	4. Regional price variations.
5. Many customers.	5. Identical bids.
6. Standard product.	6. Price, output, capacity changes at the formation of the cartel.
7. The principal firms sell at the same level in the chain of distribution.	7. Industry-wide resale price maintenance.
8. Price competition more important than other forms of competition.	8. Declining market shares of leaders.
9. High ratio of fixed to variable costs.	9. Amplitude and fluctuation.
10. Demand static or declining over time.	10. Demand elastic at market prices.
11. Sealed bidding.	11. Level and pattern of profits.
12. The industry's antitrust "record".	12. Basing-point pricing.

Posner, however, does not provide his readers any decision criteria, any empirical formulae, or other aids in "implementing" his approach. He simply sets forth the concept with an assuranace to readers that, while there are admitted practical/empirical problems associated with the approach, with time "economists and lawyers will refine the theoretical and empirical economics of price fixing to the point where the law against price fixing can be administered in accordance with its substantive economic objectives".[62] In other words, while conceding that the initial cases brought under such an approach will be protracted and unwieldy, with time economists will refine the process and tools to the point where conclusive results can be reached from quantitative/empirical findings rooted in microeconomic theory. The only advice given takes the following form:

> In some cases, at least, many different types of evidence will point in the same direction, and where that occurs the probative force of each one considered in isolation is strengthened. Suppose, for example, that all twelve types of evidence discussed pointed toward collusion. Each type of evidence might be vulnerable to criticisms of one sort or another that would be persuasive in the asence of other evidence, yet the criticisms might be wholly insufficient to persuade a reasonable trier of facts to disregard the uniform results of twelve different tests of collusive behavior.[63]

The principle goal of this investigation is to make a contribution toward overcoming those practical/empirical problems associated with the approach, and to refine the process and define the problems, tools, exhibits, and decision techniques through example applying to a specific case.

Footnotes to Chapter II

[1]Yale Brozen, "The Concentration-Collusion Doctrine" in Industrial Concentration and The Market System, eds. Eleanor Fox and James Halverson, p. 90, American Bar Association, Section of Antitrust Law, 1979), also Yale Brozen, "Competition, Efficiency, and Antitrust," Journal World Trade Law 3(1969): 659.

[2]Brozen, on the basis of empirical studies is convinced that where concentration rules, costs and prices are lower than they would be if the market had been prevented from becoming concentrated.

[3]Peter Asch and Joseph J. Seneca, "Characteristics of Collusive Firms," Journal Industrial Economics 23 (March 1975): 223-237.

[4]Ibid, p. 236 "...collusion resistant categories include: profitable firms that are also fast growing, small, non-diverse, or located in advertising-intense markets. Small firms tend not to collude, but the tendency is much more pronounced where concentration is high. Profitable firms tend also not to collude, but the tendency is stronger where barriers to entry are high." p. 236.

[5]Harold Demsetz, "Two Systems of Belief About Monopoly" in Industrial Concentration: The New Learning eds. Harvey J. Goldschmid, H. Michael Mann, J. Fred Weston, (Boston: Little, Brown & Co., 1974), pp. 166-167.

[6]Dominick T. Armentano, Antitrust and Monopoly: Anatomy of a Policy Failure, (New York: John Wiley & Sons, Inc., 1982).

[7]A. Phillips, "An Econometric Study of Price Fixing, Market Structure and Performance in British Industry in the Early 1950's," in Market Structure and Corporate Behavior, ed. K. Crowling (London: Gray-Mills, 1972), pp. 175-92.

[8]See Section 3 "Is There a Relationship Between Concentration and Competition?" in Industrial Concentration and The Market System.

[9]Robert Bork, The Antitrust Paradox, (New York: Basic Books, Inc., 1978).

[10]Richard A. Posner, Antitrust Law: An Economic Perspective, (Chicago: University of Chicago Press, 1976). Also, Richard A. Posner, Economic Analysis of Law, 2nd ed., (Boston: Little Brown and Co., 1977).

[11]"Judicial Mavericks," Wall Street Journal, December 19, 1984, p. 1.

[12]See for example David Bickel, "The Antitrust Division's Adoption of a Chicago School of Economic Policy Calls For Some Reorganization: Is The Division's Policy Here To Stay?" Houston Law Review 20 (1983): p. 1083. Bickel describes the new policy as de-emphasizing the traditional and court-adjudicated approach of the past, concentrating instead on two areas; 1) the criminal per se offenses and 2) horizontal mergers and acquisitions.

[13]Ibid., pp. 1083-1085. According to Bickel there have already been major changes in the antitrust enforcement policy of the Department of Justice and the FTC. Only in the area of criminal per se offenses does the policy resemble the traditional policy and even in this area policy is changed in the sense that enforcement actions require greater justification. He believes that in the civil antitrust areas, actions (horizontal mergers, for example), are now being scrutinized under a more lenient 'Chicagoan' philosophy and in other areas "Chicagoanism" has undoubtedly become an accepted governmental approach to antitrust.

[14]The original Sherman Act was directed toward consumer protection. However, the Courts and Congress have come to interpret the law in terms of protection of competitors, not consumers. This is rather obvious in the wording of subsequent amendments to the Sherman Act. For example, the Clayton Act, Section 4 (dealing with private suits and treble damages), states that anyone injured in his "business or property" by means of anything forbidden by the Sherman Act is entitled to recover treble damages. Use of the term "business or property" implies that Congress was concerned with injury to business competitors, not consumers. In fact, consumers were denied standing to sue until Reiter (1979). See, for example, Jerry Santangelo, "Configurations of Antitrust Law: Judge Posner's Applications of His Economic Analysis to Antitrust Doctrine", DePaul Law Review 32 (1983): 839.

[15]Bork, Antitrust Pardox, p. 8.

[16]F. N. Scherer, Industrial Market Structure and Economic Performance, 2nd ed. (Chicago: Rand McNally College Publishing Co., 1980).

[17]Joseph Alois Schumpeter, Capitalism, Socialism, and Democracy, (New York: Harper and Row, 1962), p. 126. Schumpeter goes on to say "...perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency. It is hence a mistake to base the theory of government regulation of industry on the principle that big business should be made to work as the respective industry would work in perfect competition."

See also, J. M. Clark, "Toward A concept of Workable Competition," American Economic Review 30 (June 1940): 241. Clark's theory held that if society's goal is socially optimum economic performance from real world industries, it will probably not be

achieved imposing all the structural and behaviorial conditions of perfect competition. The obvious example is where economies of scale prevail. Imposing the structural requirments of many independent firms will not yield the efficient or socially optimal outcome. Clark reasoned further that by imposing any one of the conditions of perfect competition when all the other conditions of perfect competition cannot be met might yield greater harm than good.

Clark was not quarreling with a proper use of the competition ideal as a standard. However, he points out that the use of the perfectly competitive standard at times leads to "undesirable results" in that it does not afford reliable guidance to the factors which are favorable to the closest available working approximation to that ideal.

[18]George Stigler, The Organization of Industry, Homewood, Ill: (Richard D. Irwin, Inc., 1968).

[19]Joseph Alois Schumpeter, Capitalism, Socialism, and Democracy. (New YorkHarper and Row, 1962), p. 84.

[20]Bork, Antitrust Paradox, p. 4.

[21]And even market structure, for that matter, but to a lesser degree.

[22]Alfred Kahn, "Standards for Antitrust Policy" in Monopoly Power and Economic Performance, ed. Edwin Mansfield, 4th ed., (New York: W. W. Norton & Co., 1978), p. 241.

[23]And presumably to cause.

[24]Inferences about efficiency could be drawn from such readily available factors as concentration ratios and market share distribution.

[25]E. H. Chamberlin, The Theory of Monopolistic Competition, 7th ed. (Cambridge Mass: Harvard University Press, 1958).

[26]Donald Turner, "The Definition of Agreement Under The Sherman Act: Conscious Parallelism and Refusals to Deal", Harvard Law Review, 75 (Feb.1962), p.655.

[27]Donald A. Hay, and Derek J. Morris, Industrial Economics: Theory and Evidence.

[28]See Posner's statements in Antitrust Law at page 47 specifically, and the general comments made throughout Chapter 4.

[29]Stigler, Organization of Industry, Chapter 5.

[30]Stigler also looked at the correlation between three different measures of profitability and two measures of concentration.

Profitability was measured by (1) the rate of return on all capital (including debt), (2) the rate of return on net worth (stock-holder's equity), and (3) the ratio of market value to book value of the common stock. Concentration was measured by the traditional four-firm market share (output) and the Herfindahl (H). He found that all correlations showed the expected positive relationship but that in general there was not a significant relationship between profitability and concentration when H was less than 0.250 or the four-firm share was less than 80 percent. These results have been supported by others. John Palmer, for example, in an empirical study published in the Journal of Economic Issues found that concentration does not significantly alter the proclivity to collude until very high levels of concentration are reached. Peter Asch and Joseph Seneoa came to similar conclusions. They found no significant association between number of firms in the industry and collusion. Also, size, alone, was not found to be clearly associated with collusive behavior. What they did find was that certain combinations of factors defined categories that were collusion "prone". For example, unprofitable firms that were also large or diverse; consumer-goods firms in highly concentrated industries; and firms in highly concentrated industries characterized by low entry barriers.

[31]Posner, Antitrust Law, p. 47.

[32]Continental T.V. Inc. vs. GTE Sylvania, Inc., 433 U.S. 36 (1977).

[33]Broadcast Music, Inc. vs. CBS, Inc., 441 U.S.1 (1979).

[34]United States vs. General Dynamics Corp., 415 U.S. 486 (1974).

[35]Brunswick Corp. vs. Pueblo Bowl-O-Mat, 429 U.S. 477 (1977).

[36]Richard A. Posner, "The Social Costs of Monopoly and Regulation," Journal Political Economics 83 (1975): pp. 807. See also, Posner, Antitrust Law, Chapter 2.

[37]See for example, Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft," Western Economics Journal 5 (June 1964): 224-32.

[38]Posner, Antitrust Law, p. 11.

[39]Asch and Seneca, "Characteristics of Collusive Firms," pp. 228-229.

[40]The use of this type model in antitrust analysis was introduced by Jeffrey Harrison in "The Lost Profits Measure of Damages in Price Enhancement Cases," Minnesota Law Review 60 (751). The model as specified at page 774, however, is incorrect. I have omitted that

error in the analysis that follows. Transfer pricing refers to the method for setting a price on a good that is transferred between divisions within a firm (profit centers) and is covered in Hirshliefer, "On The Economics of Transfer Pricing." Journal of Business (July 1956): 172.

Temporarily, any regulatory problems are ignored and the focus will be on the passing through of the overcharge at each stage and the economic cost.

[41]The processing cost per unit (MC_f) is also assumed to be constant and equal to the purchasing cost per unit, e.g. if the unprocessed good costs $1.00, the processing is $1.00 per unit and $MC=MC_i + MC_f$ would be $2.00.

[42]Recall that the intermediate firm is assumed to be a monopolist.

[43]MBCG represents the value to society of the units (Q1-Q2) over and above the cost to society of the resources needed to produce those units. BCF represents the value to consumers of those units above the added cost to the intermediate firms of producing those units. (P_{f1} P_{f2} B F) represents the transfer from consumer to intermediate firm surplus.

[44]See for example Kenneth Elzinga and William Breit. The Antitrust Penalties, p. x-xi, or William Page, Section II, Posner, page 221.

[45]See Posner, Antitrust Law, Chapter 10 and Page "Antitrust Damages and Economic Efficiency," p. 472.

[46]Kenneth G. Elzinga and William Breit The Antitrust Penalties: A Study in Law and Economics, Yale Univ. Press, 1976.

[47]A fine would imply a transfer from the violator to society (the state or consumers) while incarceration would result in real resources being expended to imprison the violator in addition to the reduction in output by that individual.

[48]Reference here is to Richard A. Posner, "The Social Costs of Monopoly and Regulation," Journal Political Economics 83 (1975): 807 and Arnold C. Harberger, "Monopoly and Resource Allocation" American Economic Review 44 (May 1954): 77-87.

[49]William Page, University of Chicago Law Review, 47:467 (1980).

[50]Page, p. 477.

[51]Brunswick vs. Pueblo, 429 V. S. 477 (1977).

[52]Page, pp. 468, 470-71.

[53]Posner, Antitrust Law: An Economic Perspective pp. 47-55 (1976).

[54]George J. Stigler, "A Theory of Oligopoly," in The Organization of Industry, Homewood, Ill: Richard D. Irwin, Inc. (1968).

[55]In his analysis cartels are assumed to vary in design from the formal cartel (outlawed by the Sherman Act) to the cartel where collusion is purely tacit--effectuated by a "meeting of the minds" only. Merger is considered the ultimate collusive form.

[56]In Posner's vision the first stage has two purposes; one, to enable forecasts to concentrate their resources in markets where they are likely to be most productive, and two, to permit ambiguous conduct to be evaluated.

[57]The Herfindahl-Hirschman Index or HHI is given by

$$HHI = S_i^2$$

where S is the market share of the $_i$th firm.

[58]Posner, Antitrust Law, p. 57.

[59]If a seller other than the one designated to submit the low bid wins, cheating is detected instantaneously.

[60]"Antitrust, The First Amendment, and The Communication of Price Information", Temp. L. Q. 939-982, Fall 1983.

"To the extent that price communication is commercial speech, having at least potential non-collusive functions, enforcement of antitrust and trade regulation laws against firms merely for engaging in such speech may be constitutionally impermissible government action."

Under the first amendment, price communication cannot be subjected to antitrust regulation absent factors indicating anticompetitive intent.

See Accord Maginnis, "The Exchange of Price Information..." 48 Fordham L Rev. 1005 (1980) and Sullivan "First Amendment Defenses," 46 Mo L Rev. 517 (1981).

[61]Objections to the use of discrimination in proving collusion include arguments that 1) discrimination should be encouraged because it results in greater output levels by a monopolist, and 2) using price discrimination to prove collusion will only deter price fixers from discriminating (eliminating only a symptom of collusion, not the

collusion itself).

[62]Posner, Antitrust Law, p. 77.

[63]Posner, Antitrust Law, p. 75.

CHAPTER III

CASE STUDY

San Juan Basin

The San Juan Basin is a relatively mature natural gas producing field located in northwest New Mexico. Commercial drilling began in the basin in the 1930's.

Structurally, the Basin is stratigraphic. The Basin is also relatively shallow. There are three primary producing horizons. The shallowest production is at twelve hundred feet in the Pictured Cliffs horizon. The Pictured Cliffs horizon reaches a depth of four thousand feet. The Mesa Verde horizon runs four to six thousand feet deep. The Dakota horizon ranges from fifty-five hundred to a depth in excess of eight thousand feet. Permeability is low in the San Juan, which means the wells tend to be long-lived, but not prolific producers. Low permeability also implies a longer pay-back period. For example, in the Gulf coast area a well might produce several million cubic feet of gas a day compared to one-half million cubic feet per day for a San Juan Basin well. Although the San Juan well may produce longer, the much lower volume per day means it will take a longer period of time to realize a return on the investment in drilling costs and gathering system.

The geology of the Basin affects the exploration and production costs. Because the San Juan is stratigraphic the sands tend to be continuous which, ceteris paribus, reduces the risk of drilling dry holes. Drilling costs tend to increase geometrically with depth. An average Pictured Cliffs well (approximately three thousand feet) in

1970 took eight to ten days to drill and cost sixty or seventy thousand dollars. A typical Mesa Verde well (5,500 feet) in the early 1970's would have cost approximately one hundred and twenty-five thousand dollars. As elsewhere, drilling costs were rising very rapidly in the 1970's.

The typical gas purchase contract in the San Juan Basin usually had a term of twenty years or life of the lease, fixed price escalations of one cent every five years for twenty years, and some type of indefinite price escalation clause. The term 'life of lease' is interpreted to mean that the contract is in force as long as there is production from the lands covered by the lease.

The Federal Power Commission (FPC) had proscribed Favored Nations Clauses in any new contracts (in Interstate Commerce) in 1961 but had permitted price redetermination every five years and Area Rate Clauses (or FPC clauses). Thus, interstate contracts written since the early 1960's contained area rate clauses but not Favored Nations Clauses.

There are three major purchasers in the San Juan Basin. El Paso Natural Gas Company is the largest purchaser in the basin. El Paso is an interstate pipeline buying (and producing) gas in Texas, New Mexico, and Oklahoma for delivery to California. Northwest Pipeline Company is also a large interstate pipeline. Formerly a part of the El Paso system, Northwest runs from the San Juan Basin to the Pacific Northwest. Northwest buys gas in the Rocky Mountain area and Canada for redelivery to customers primarily in the Pacific Northwest states. Southern Union Gas Company buys both interstate and intrastate gas in the San Juan. Except for Amoco, which bought some intrastate gas for certain facilities in Farmington, New Mexico, Southern Union was the

only purchaser of intrastate gas in the San Juan in 1976.

General Background of the Case (MDL-403)

Southern Union Company is a holding company. Its affiliates include Gas Company of New Mexico which is the regulated gas utility serving Santa Fe and Albuquerque, and Southern Union Gathering Company (Gathering Company). Gas Company of New Mexico (Gas Company) buys gas (intrastate) for resale to its retail customers. Gathering Company buys both interstate and intrastate gas only in the San Juan Basin.

Southern Union is a vertically integrated company with subsidiaries engaged in the exploration, transmission, processing, and sale of natural gas and related by-products. Southern Union operates as a gas distribution utility in Arizona, New Mexico, Oklahoma, and Texas. In New Mexico, the utility business is conducted through the division named Gas Company of New Mexico.

Southern Union has a history of forming various gas exploration and production subsidiaries which supply in part Southern Union's New Mexico utility operations. Several exploration and production subsidiaries were formed and eventually "spun-off" as independent companies over time. Although operated independently, there were over-lapping directorates. Southern Union Gathering Company (Gathering Company) was formed as a subsidiary of Southern Union Company to provide a vehicle for purchasing and selling gas in the interstate market. Gathering Company also buys gas at the wellhead for sale in the intrastate market.

Corporate Profile
Southern Union Company

Divisions	Subsidiaries
Southern Union Gas Co.	Southern Union Refining Co.
Gas Co. of New Mexico	Southern Union Gathering Co.
The Gas Appliance Co.	Western Gas Interstate Co.
	Southern Union Supply Co.
	Southern Union Realty Co.
28.5%-Owned Co.	Enersol Company
Southern Union Production Co.	

Source: Southern Union Company, 1976 Annual Report.

Gas Company is regulated by the New Mexico Public Service Commission. Gathering Company, as an interstate purchaser, falls under FPC (now the Federal Energy Regulatory Commission or FERC) jurisdiction. Both eventually became subject to the New Mexico Gas Pricing Act passed in 1977[1] which established ceiling prices for intrastate natural gas supplies.

In New Mexico the Public Service Commission was created by the Public Utility Act to administer the public policy of the state. The law requires regulation and supervision of public utilities to insure reasonable and proper services will be available at fair, just, and reasonable prices. The Commission has the power and jurisdiction to regulate and supervise all public utilities with respect to retail rates. A utility may not change its rates without prior notice to the Commission and approval by the Commission.

Purchased Gas Adjustment Clauses

Prior to the early 1970's and the adoption by most utility

Commissions of Purchased Gas Adjustment Clauses (PGA's) any rate increase by a utility required the Commission to conduct a public hearing to determine whether the proposed rate is just and reasonable. The retail gas rate can be thought of as having three components: cost of service, return on assets, and the cost of purchased gas. When gas costs began to rise rapidly many State Commissions adopted some type of policy to allow, with certain restraints, the utility to pass on all or part of the purchased gas costs to retail customers without the necessity of a full-blown, costly, rate hearing.

PGA clauses of this type usually require the utility to bill the cost-of-gas component separately. The gas utility files a monthly or quarterly cost-of-gas report with the regulating Commission. The cost-of-gas report lists all gas purchases by the utility for the period, the seller, the volume, and the price (or total payment) for each transaction. From the report, an index or cost-of-gas factor will be calculated in accordance with a formula approved by the Commission. The regulating body reviews, audits, or otherwise considers the report before allowing the utility to charge the requested price based on the cost-of-gas factor. If, in its judgement, the Commission decides there is a question as to the just and reasonableness of the rate, the Commission may order the rate suspended pending a public hearing, disallow a portion of the request, or otherwise act on the request. However, once a formula has been approved, filings and approvals become 'mechanical' and usually go unchallenged.

All other costs are handled through the traditional rate proceeding.

The New Mexico Public Service Commission approved and adopted a

PGA clause for Southern Union in 1972. In August of 1973, the PGA was revised and amended to require in the cost-of-service report a separate listing of all gas purchases from the following: (1) wholly or partially owned subsidiaries, (2) sellers owned in whole or in part by officers or directors of Southern Union, and (3) sellers having interlocking directors with Southern Union. In August of 1977 the Commission approved a successor to the then existing PGA clause, known as Rate Rider 4, which changed the methodology of calculating the cost of gas factor as applied to the customer bills. In December of 1980 the Commission adopted General Order Number 36 which was a standardized PGA clause for all natural gas utilities under its jurisdiction.

Natural Gas Contracts

Until the early 1980's natural gas in the San Juan Basin was sold exclusively under long-term (usually 20 years or life-of-lease) contracts to inter and intra state pipelines. Historically, pipelines required the long-term commitments of supplies (assurance of an adequate supply of revenue producing gas) in order to justify the large expenditures necessary to construct a pipeline and/or the gathering system and to secure the loans needed to make the investment.

In return, the producers required protection or compensation for the risks associated with a 20 year or life-of-lease commitment. The required inducement varied by producer and region, but generally took the form of some type of definite and/or indefinite price escalation clause. These clauses allow the producer/supplier to receive some price increase during the life of the contract, while committing or dedicating the gas to a buyer for an extended period of time. The

typical long-term gas purchase contract commits the producer to sell to the purchaser (usually a pipeline) all the then-flowing gas and all gas produced in the future from the lands or horizons covered by the contract. Thus, the flowing gas and all reserves are 'dedicated' to the pipeline/purchaser. Once the acreage has been dedicated, producers do not have the option to offer any gas production covered by the dedicated acreage to other buyers.

Definite price escalation clauses specify that the price paid to the producer will change by a predetermined, fixed amount at some specified point in time. For example, the contract may specify that the price will increase by three cents every year commencing one year from the date of the contract.

Indefinite price escalation clauses are limited only by the imagination of the contracting parties (and the FERC). In this type of escalation clause the price change is tied to some other "variable". One such indefinite escalator is the 'favored nations' clause (sometimes referred to as 'most favored nations'). The clause provides that in the event the purchaser pays a higher price to any supplier of gas in a specified geographic area or geological formation, then the purchaser is obligated to pay the same higher price to the producer with the favored nations clause.[2]

Another type of indefinite price escalation clause is the 'area rate' or 'J & R' clause. This clause entitles the producer to a higher price if and when the FPC or successor agency determines a higher "just and reasonable" rate for a geographic area or category of gas. Thus, the producer's price change is tied to rates set by the FPC, now FERC.

Other indefinite price escalation clauses are simply 'price

redetermination' clauses. The contract will contain a provision that at certain designated times the price will be redetermined or renegotiated. The determinant may be specified, but frequently the determination is to be made by agreement of the parties with a provision that if an equitable agreement cannot be reached some type of arbitration board will be selected to hear and decide the issue.

One type of 'price redetermination' clause that is not tied to a specified variable is the 'fair market value' clause. This clause requires the parties, at a specified date, to consider the fair market value of the gas and set the renegotiated price accordingly. There will likely be differences of opinion on what the fair market value of the gas is or how the fair market value is to be determined.

All the above mentioned categories of price escalation clauses were common in the gas purchase contracts of the San Juan Basin. Because the FPC had proscribed 'favored nations' clauses in the early 1960's, interstate contracts written since that time did not contain such clauses. The interstate contracts did, however, contain 'FPC' clauses which effectively granted the highest allowed price to any seller, once that price had been paid to any other seller in the San Juan Basin. Because the San Juan is a mature basin (the contracts date back to the 1930's) many contracts were written prior to the mid-1960's. These contracts (both interstate and intrastate) typically contained definite price escalations at five year intervals--in addition to the indefinite price escalators. These fixed price increases at five year intervals had been the primary form of price escalation until the early 1970's.

Many of Southern Union's contracts contained 'fair market value'

redetermination clauses effective after twenty years. In both the interstate market and the intrastate market a number of contracts covering large volumes of gas which had been written in the 1950's were scheduled for redetermination in the 1972-1974 period. Through the 'favored nations' and 'FPC' clauses the results of these fair market value redeterminations would greatly impact the general level of prices in the Basin.

Many of Southern Union's intrastate gas purchase contracts in the San Juan Basin were executed during the 1950's and 1960's. These long-term contracts typically contained a definite price escalation clause which called for a predetermined increase every five years and a 'fair market value clause' effective January 1, 1974 or January 1, 1979, depending on the execution date. Many of these contracts also contained a 'favored nations clause'. Once a 'fair market value' price was determined and became effective, the 'favored nations' clauses in other San Juan Basin contracts would entitle those producers to receive that higher price also.

Beginning in 1972, some of the producers selling gas to Southern Union under these contracts which called for redetermination in January of 1974 began negotiating the fair market value. About this same time El Paso, the largest purchaser of gas in the San Juan, began renegotiating its contracts with San Juan producers on a "vintaged" basis.[3]

In response to the fair market value inquiries from producers Southern Union decided in 1973 to offer producers essentially the same 'deal' which El Paso had successfully offered its San Juan producers. A contract amendment was sent to all producers offering a 'vintaged'

price tied to FPC decisions. Approximately 30% of the producers accepted the proposal. The remaining producers, however, refused the offer asserting that by virtue of their favored nations and fair market value clauses, they were entitled to be paid the highest price for all their gas, regardless of vintage.

In 1974 Southern Union began paying vintaged prices to all San Juan producers regardless of whether or not the producer had signed the 1973 amendment. The New Mexico Commission in late 1973 had authorized Southern Union to charge its New Mexico retail customers as if it were paying the highest prices for all gas (as opposed to the vintaged price actually paid) and the difference was escrowed in a Contingency Fund pending further action and orders by the Commission.

In September of 1974 two producers, Consolidated and Conoco, filed suit against Southern Union in the District Court of Santa Fe County, New Mexico. The producers claimed that the vintaged price being paid was not reflective of the fair market value and sought the highest price for all gas. The Commission sought to intervene in the producer litigation as did the Attorney General of New Mexico. The Commission's petition to intervene was denied. The Attorney General's petition was granted. In his intervention, the Attorney General asserted that the favored nations clauses were void and should not be enforced, and he further asserted that the producer-plaintiffs (i.e. Consolidated and Conoco) and the defendant (Southern Union) were engaged in price fixing in violation of Section 1 of the Sherman Act.

In November of 1974, Southern Union received a letter from an attorney representing a number of other gas producers in the Basin who were asserting claims almost identical to those of the Conoco and

Consolidated lawsuits. Then in February of 1975, Aztec, another producer and former subsidiary of Southern Union filed the same suit against Southern Union in the State District Court in Dallas, Texas.

In March of 1975 the Consolidated and Conoco suits were consolidated. In response to the letter of November 1974 threatening further suits, Southern Union had sent letters to all producers in the San Juan Basin. The letter referred to the pending lawsuits and requested that no additional lawsuits be filed pending litigation of the favored nations and fair market value issues and assuring producers they would all be offered the same terms dependent on the outcome of the current litigation.

In October the District Court of Santa Fe rendered a partial summary judgement ruling that favored nations clauses should be void and contrary to public policy unless they are construed to include vintaging. The court held against the Attorney General on the antitrust claim. The opinion of the Judge did not address the fair market value issue. The producers immediately filed an appeal in the New Mexico Supreme Court. Aztec counsel continued to press the lawsuit pending in Dallas.

In March of 1976 while the appeal was still pending, Southern Union's outside counsel wrote advising Southern Union that he felt there was little chance of success on the appeal and encouraging Southern Union to consider a possible settlement.

Monies accumulated in the Contingency Fund as the FPC continued to increase the regulated price of new gas in the interstate market. In January of 1974 the interstate vintaged ceiling prices for old (flowing) and new gas were 24.5 cents and 28.5 cents per MCF

respectively (at 15.025 psia) in the Rocky Mountain area. On June 21, 1974 the FPC issued Opinion 699[4] establishing a nationwide wellhead price of 42 cents per MCF (14.73 psia) for all gas sold in interstate commerce from wells commenced on or after January 1, 1973 or from wells dedicated to interstate commerce on or after that date. On December 4, 1974 the FPC issued Opinion 699-H (amending 699) establishing the rate (for gas from wells commenced on or after January 1, 1973 or dedicated to interstate commerce on or after that date) at 50 cents retroactive to June 21, 1974. In August, Opinion 742 was issued establishing an official 'small producer' rate of 130% of the just and reasonable rate otherwise applicable. Thus, a small producer qualifying under 699-H (50 cents) would be entitled to 65 cents (130% of 50 cents). In March of 1976 the interstate ceiling price for gas qualifying under 699-H was 52 cents for a large producer and 67.6 cents for a small producer (14.73 psia).

The New Mexico Commission, which controlled the Contingency Fund, however, did not continue to allow for the collection of revenues on the basis of the highest approved FPC price, thus Southern Union faced increased financial exposure in the event of an adverse ruling in the appeal. (i.e. if the court ruled that producers were entitled to the single highest price paid for all their gas under favored nations clauses).

Southern Union had unsuccessfully contacted the producer-litigants in August and September of 1975 about a possible settlement. In March 1976, Aztec, by now taken over by Southland, approached Southern Union with a settlement offer which included a base price of 67.6 cents, retention of favored nations clause, and a price

redetermination clause. Aztec had rejected a proposed settlement at 67.6 cents in September of 1975. Southern Union countered with an offer of 67.6 cents base price and a biennial price redetermination beginning in 1978 based on the arithmetic average of the three highest prices paid by qualified purchasers in the San Juan (in return for the favored nations clause). The offer was extended to both Consolidated and Conoco concurrently. Negotiations continued until late May when Southern Union filed with the New Mexico Commission a motion for settlement approval referring to a tentative agreement which had been reached with Aztec/now Southland.

Aztec/Southland would not agree that the settlement was conditioned on Commission approval, and Southern Union, apparently desiring Commission approval, resolved the issue by including in the settlement a statement to the effect that the settlement was not subject to regulatory approval but withheld signature on the document until Commission approval had been obtained. On June 22, 1976 the Commission issued an order in Case No. 1179 approving the settlement and directing that approximately $16 million of the Contingency Fund be paid to San Juan producers and the remaining $7 million returned to customers as a refund.

In early July the producer litigation was dropped and the Attorney General agreed to release and dismiss its claims in the producer litigation. On July 26, 1976 the FPC issued Opinion 770 establishing a new ceiling price of $1.42 for gas from wells commenced on or after January 1, 1975.

The settlement terms included the 67.6 cents base price (15.025 psia) effective March 26, 1976, a 1.3 cent escalation on January 1,

1977, a 10 cent escalation effective April 1, 1977, and annual price redeterminations commencing April 1, 1978 tied to the average of the two highest separately negotiated prices in San Juan and Rio Arriba Counties (the San Juan Basin) and the two highest separately negotiated prices paid in any other New Mexico county by a bona fide purchaser of gas for resale under a contract with a term of not less than two years.

In response to the settlement, a class action antitrust suit was filed in December of 1978 against Southern Union, the producers involved in the producer litigation described above, and Southern Union Production Company (SUPRON). The plaintiffs in the litigation included the retail consumers of natural gas served by Southern Union's gas distribution utility (Gas Company of New Mexico) and Public Service of New Mexico (PNM) which is an electric utility purchasing gas from Gas Company. The antitrust suit alleged that Southern Union and the producers conspired to artificially inflate the price of intrastate natural gas at the wellhead. (Several actions were filed and eventually consolidated). Plaintiffs charge that by collusive and contrived court action and settlement, by triggering of favored nations clauses, and by the PGA authorized by the New Mexico Commission, the defendants artificially raised the wellhead price of intrastate gas and simultaneously the retail price of gas to New Mexico consumers.

Plaintiffs argued that Southern Union should not have settled the producer litigation on the terms agreed to in the 1976 settlement. In this respect, plaintiffs disagree with the conclusions drawn by Southern Union and its counsel regarding the likely outcome of an appelant decision on the favored nations issue. Implicitly plaintiffs also disagree with the opinion of the New Mexico Commission and the

Attorney General regarding the just and reasonableness of the settlement terms.

Plaintiffs alleged that because the New Mexico Public Service Commission had allowed Southern Union to raise its retail price to reflect increases in gas costs Southern Union was free to settle the litigation on terms favorable to its interests as a producer (through its ownership interests in SUPRON).' Plaintiffs alleged that by offering a uniform settlement, Southern Union orchestrated a horizontal price-fix among producers which continued through the annual price redetermination clause.

The question was whether the 1976 settlement agreements and the conduct leading up to the agreements injured competition or restrained trade.

The antitrust trial was bifurcated. The liability trial resulted in a guilty verdict against the defendants. Before the damage issue came to trial the verdict was overturned and the entire case was scheduled for retrial. By March of 1984 all defendants had negotiated a settlement with plaintiffs.

Assuming the settlement goes through as planned, the case will never be tried, either on economic or 'conspiracy' grounds.[5] The settlement terms require approval by the judge handling the case, and on some of the issues approval is required by the New Mexico Public Service Commission, the Federal Energy Regulatory Commission, and the Federal Trade Commission.

As part of the Southern Union settlement, the New Mexico Public Service Commission has approved, with conditions, the proposed sale of Gas Company to PNM.[6] Among the conditions, the Commission rejected a

proposed plan by PNM to renegotiate existing contracts with suppliers. The Commission order would also prevent PNM, if it acquires Gas Company, from exploring for or producing gas.[7]

Footnotes to Chapter III

[1]SFCS/SCORCS/SENATE BILLS 101 AND 136, approved March 28, 1977. Later amended and extended. SCONCS/SENATE BILL 255, approved April 9, 1981.

[2]A typical favored nations clause might read: Any other provision... not withstanding, if at any time while this agreement remains in effect Buyer shall purchase, at the wellhead, gas which is produced by any other(s) than Seller from a field and horizon which produces part of the gas hereunder at a higher price than is being paid Seller, giving due consideration to quality, volume, and pressure, then Buyer shall pay such higher price to Seller.

[3]Vintaging refers to pricing gas according to the age or 'vintage' of the well from which it is produced or the age of the contract under which it is sold. The development and significance of vintaging in the interstate market is explained fully in Chapter V under the section on Natural Gas Regulation.

[4]All Opinions and Orders referred to in this paragraph are documented and explained in greater detail in Chapter V under the section on Natural Gas Regulation.

[5]Some of the same contracts, issues, and parties are also now involved in another, separate antitrust case; a case which ironically involves a charge of conspiracy to fix prices at below market value. The case, Jicarilla Apache Tribe, Plaintiff-Appellant-Cross-Appellee vs. Supron Energy Corp., Southland Royalty Co., James Watt, Secretary of The Interior, Gas Co. of New Mexico, Defendants-Appellees-Cross-Appellants, involves gas production from wells located on the Jicarilla Reservation which is sold (Southern Union, the gas purchaser) and consumed in New Mexico. In other words, the plaintiffs allege a conspiracy to artificially fix the price of intrastate gas in the San Juan Basin at below market value. The plaintiff's antitrust claims were based on the long-term gas purchase contracts which had been entered into between the Tribe and Southern Union.

The lower court found no evidence of price-fixing or restraint of trade. It found that the gas purchase contracts were typical of those used in the San Juan Basin since the 1930's by other purchasers, and although similar in form, were the result of independent business judgement. The appelate court affirmed the trial court rulings and further stated that the existence of most-favored nations clauses in the contracts was significant, since their use was incompatible with any conspiracy to fix gas prices at below market value. [Jicarilla Apache Tribe vs. Supron Energy Corp. U.S. Court of Appeals, Tenth Circuit, Nos. 81-1680, 81-1860, 81-1871, 81-1874, 81-1939. Filed February 24, 1984, appeal from U.S. District Court, Dist. of New Mexico].

[6]Interestingly enough, a group of farmers, including the farming group that brought the original price-fixing complaint, has filed suit in United States District Court at Albuquerque, New Mexico, alleging the proposed purchase of Gas Company by PNM--which is key to the settlement--would violate federal antitrust laws. The suit claims Southern Union's proposed sale of the gas distribution utility to PNM (the electric distribution utility) would "tend to create a monopoly in the retail sale and supply of energy to state consumers," which they contend could prevent them from being able to buy energy at competitive, fair-market prices.

See discussion in Electric Utility Week, January 7, 1985, p. 4.

[7]Facts taken in part from Statement of Uncontested Facts in Support of Southern Union Defendants' Motion for Summary Judgement in RE New Mexico Natural Gas Antitrust Litigation, MDL Docket No. 403 in the United States District Court for the District of Colorado.

CHAPTER IV

LEGAL ISSUES WHICH AFFECT ECONOMIC ANALYSIS

In addition to a knowledge of the substantive law, the economist practicing his trade in an antitrust court must understand and conform to the procedural law and rules of evidence which govern and limit the scope of testimony. Thus, Chapter IV is devoted to an understanding of the legal framework within which the economist must work; particularly those issues with the greatest potential bearing on the adoption of an efficiency approach to antitrust.

The case study involves a charge of price-fixing. Price-fixing is a per se violation of the antitrust laws. This means that price-fixing conduct is illegal without any investigation into the reasonableness of price or the market impact. There is no defense for a per se violation, other than to prove the alleged conduct did not, in fact, occur. The existence of per se violations brings up some interesting questions/problems in the application of an economic approach to proof of guilt.

Additionally, the fact that the case is a private, class action, suit introduces legal elements which the economist must be aware of and consider in the analysis. For example, the penalty in a successful private suit is treble the amount of 'damages' which the plaintiff can reasonably prove were sustained as a result of the illegal conduct. In a class action suit, proving damages involves the introduction of economic or market tests into the trial process. Historically, however, there have been very few class action antitrust suits. Most private antitrust suits are brought by competitors who have been injured in their business and the awarding of damages, consequently,

based on loss of business (profit or revenue). The reasons for this are explained below in the section which discusses standing to sue.

Per Se Rules of Illegality

The Rationale For Per Se Rules

According to Justice Thurgood Marshall, per se rules always contain a degree of arbitrariness. They are justified on the assumption that gains from imposition of the rule will far outweigh the losses and that significant administrative advantages will result.[1]

The Supreme Court adopted the per se rule against price-fixing to deal with the arguments frequently encountered that the agreed upon price was reasonable and, therefore, legal. In the Addyston Pipe case[2] the Court had recognized that restraints "ancillary" to lawful productive conduct are themselves lawful and that sometimes these ancillary restraints entail cooperation among competitors. But by 1940 the courts had reversed this approach and permitted no inquiry into economic justification. The Supreme Court has stated that the benefits of price agreements are irrelevant.

> Whatever economic justification particular price-fixing agreements may be thought to have, the law does not permit an inquiry into reasonableness. They are banned because of their actual or potential threat to the central nervous system of the economy.[3]

Not all would agree with this policy. John McGee, for example, states that there is no obvious per se reason for per se rules in antitrust.[4] In a per se violation the plaintiff is guilty--in the absence of any showing that the net volume of output is reduced and in the absence of any showing that consumers are not getting the preferred mix of products.

Still, the basis for the rule of per se illegality is frequently cited as being economic. The presumption being that certain types of agreements have no other purpose than the elimination of competition. It has been recognized, however, that some restrictions on rivalry are socially valuable, and guidelines for judging these were provided in the concept of "ancillary restraint". To be ancillary, and therefore legal, the agreement eliminating competition must be subordinate and collateral to a separate, legitimate dealing.[5] The implicit goal is efficiency and the implication is that where increases in productive efficiency outweigh the negative impact on allocative efficiency, the consumer benefits, and the deed is legal. The point still remains that the foundation for antitrust law is consumer welfare, and it is inconsistent and illogical to make certain deeds illegal per se without any investigation of whether or not there was an impact on consumer welfare. It is even more inconsistent and illogical to assume damages can be determined and awarded where there is no injury to competition (to consumers).

Since no justification is possible for a per se violation, the court does not examine the reasonableness of the practice. If the practice occurred, the law is violated. The per se approach focuses on the existence of the practice and not on the rationale behind it.

It has been agrued that the per se approach actually nurts, rather than helps, consumers in many instances and that it is procedurally a poor means of carrying out the basic objective of antitrust policy (i.e., promoting efficiency and competition).

Posner argues that "the per se rule against price fixing, the merger rules, the rules governing competition in the distribution of

goods, the tie-in rule, ...reflect above all an endeavor...to set antitrust free from any dependence on economic principles".[6] Robert Bork points out in his classic and often cited work The Antitrust Paradox, that "the rule has become somewhat skewed over time, and on occasion produces undesirable results" and that "it an be easily shown price fixing and market division are beneficial in certain circumstances".[7]

Arguments supporting the unsoundness of per se illegality in price-fixing cases can also be found in Frank Easterbrook's 1981 article on maximum price fixing. In reflecting on the court's position which makes any price-fixing agreement illegal regardless of its economic justification and any inquiry into the reasonableness outside the law, he notes that at the same time the court "regularly sustains business ventures that engage in price fixing far more successfully than any cartel",[8] (e.g., mergers, joint ventures, partnerships, etc. which suppress price competition by organizing production through other methods). He considers the term 'price-fixing' analytically meaningless; he considers it nothing more than a label given to arrangements that have been found to be illegal per se. And in almost every paragraph of the article, the message is clear: it is necessary to analyze each arrangement or agreement for its effects on market efficiency before condemning the action as illegal. It is the arguments about the effect of a practice on quantity and price that should be controlling in antitrust analysis. He argues that the court has been willing to undertake investigations into the economic impact and is capable of entertaining arguments about the effect of a practice on quantity and price. He further believes that, through contributions

such as Posner's indicia and the econometric tools available, the courts are capable of making a determination under a rule of reason/economic approach.

A quote from Armentano summarizes his position on per se rules:

> If these collusive agreements are not effective, however, or if there are non-price-competitive factors that outweigh the welfare losses associated with conspiracy, a per se approach to such agreements can be misleading even from a neoclassical perspective. One could argue the relative costs and benefits of collusion when non-price-competitive factors are important, or when the explicit alternative to conspiracy is either multiple bankruptcies, merger, or government regulation. Finally...it is not scientifically demonstrable from a subjective perspective that social efficiency and welfare are reduced when ever market outputs are voluntarily restricted.[9]

McGee states that if there is a defensible rationale, it must be empirical. If, for example, there exists overwhelming empirical evidence that most horizontal agreements are hurtful, then a per se rule would make sense. But, he asks, "where is the evidence"? It is time, he argues, to reexamine the propriety of per se rules, especially those against horizontal agreements.

McGee believes there probably is more evidence (theoretical or empirical) for a per se rule against horizontal agreements than other business practices, but that whether, because of simple expediency or something inherent in the legal process, per se rules tend to creep outside those areas where they make the most sense.

McGee goes on to argue that the quality of law should not be judged wholly in terms of the cost and simplicity of litigation. Results matter.

Belief that a results approach would make enforcement impossible implies either (1) that the relevant issues cannot be handled by litigation, or (2) that the net result is to lose more than is gained.

These alternatives imply in the first case a belief that it is not possible to make rationally defensible law with regard to such issues or in the second case that empirical evidence is needed.

McGee argues strongly that in each case complainants should be required to show that net outputs and consumer benefits are likely to be reduced (implying open inquiry into the efficiency impact in each case) and the defendant should be permitted to defend himself in terms of the quality of results.[10]

George Bittlingmayer[11] notes that while agreements among competitors are governed by the per se rule against price fixing because of the belief that unrestricted competition promotes public welfare, a careful analysis of market equilibrium reveals that the conditions necessary to assure the existence of a competitive equilibrium are rather stringent and may not exist. Under such circumstances, he argues, that not only the fact of price-fixing but also various details of the agreement can be interpreted as attempts to stabilize the market through private regulation. He concludes that the costs of the per se rule against price-fixing have probably been greater than is generally thought because the rule often forces firms to find other, costlier solutions to the unavoidable problem of market coordination.

Even Scherer (a leading structuralist) admits that because of the complexity of the market structure/behavior/performance link that it is almost certain that there are at least some market conditions under which agreements to fix "reasonable" prices will yield better economic performance than "unfettered competition".[12] Scherer, however, apparently believes that there are sufficiently few such cases that the

costs of litigation would outweigh the benefits which applying a per se prohibition bestows upon the public. His personal assessment, based on limited empirical evidence, is that the social gains of allowing restrictive agreements on a selective basis (where the net impact on economic performance is positive) are quite modest. But the costs of an expanded rule of reason are thought to be large based on a qualitative assessment.

> An expanded rule of reason case would surely have to go further, examining economic and social variables connected with the agreement in question and perhaps analyzing both past industry performance and projecting future trends to reach a balanced judgement on the agreement's reasonableness.[13]

But if the policy is to promote economic efficiency and the standard of judgement is the impact on economic performance, this is precisely what needs to be done. The cost in terms of money and 'high level talent' that would be needed to try a case (which Scherer considers excessively high) can be reduced once a framework for analyzing economic proof of injury has been established and tested. As Posner points out, the initial cases brought under an economic approach will be long and unwieldy. However, as experience and application increases, economists and lawyers can refine the technical process to the point where an economic standard can be reasonably adminstered and a blind reliance on per se prohibitions (of general categories of behavior) in hopes that the social benefits outweigh the social costs will not be justifiable.

Damages

A class action suit such as the one involved in the Case Study is a private suit. In any private suit there will be two 'parts' to the

case. The first involves proof of the conspiracy which is referred to as the liability portion of the trial. The second part, and equally critical, is the establishment of damages. Proof of measurable damages must be determined before any penalties can be assessed.

Basically the private damage suit involves:

1. the proof of an antitrust violation (the conspiracy) by the defendant,
2. the proof that the plaintiff was indeed damaged by the violation, and
3. the proof of the extent of the damage.

To undertake either of the first two steps the plaintiff must demonstrate that he has standing to sue.[14] The plaintiff must also establish both an injury to his business or property and that this injury is connected to the antitrust violation. The law makes a distinction between proving the fact of damage and proving the amount of damage. Frequently the trial is bifurcated into a liability trial (steps 1 and 2) and if the plaintiff is successful, a damage trial.

This procedure is inconsistent with the rulings that certain types of behavior are per se illegal; i.e., that guilt is established, and an unreasonable restraint of trade presumed--without any demonstration of harm to the public. But the Supreme Court has ruled that in cases of per se violations, an unreasonable restraint of trade will be presumed--without any demonstration of harm to the public.

The antitrust injury concept implies that the question of damages does not materialize unless the court finds that a violation has occurred and there is economic evidence of efficiency loss and that the plaintiff (or society) has been injured as a result. Under Brunswick the purpose of the inquiry is to determine whether and to what extent

the plaintiff's injury flows from the kind of injury to which the substantive law is directed.

This becomes a dilemma especially where a class action suit is involved. Analytically it makes no sense to make a deed illegal without proof of injury to competition and then require proof of injury to competition in order to successfully bring suit and sue for damages. This is particularly true now that the Supreme Court has ruled that the damage liability must flow from the anti-competitive aspect of an alleged unlawful practice. The anti-competitive aspect is the harm to the public.

The courts have said that to recoup damages the injured party must present proof of the damages and that this evidence must be, (1) based on a theory of damages on which an estimate of monetary loss can be based, and (2) that although the proof of amount need not be exact, it may not be based on speculation or guess work. In other words, there must be sufficient evidence to enable a jury to make a reasonable estimate.

Damage Theories

The "theories" that have to date been accepted by the courts are essentially based on overcharge-type considerations.

1) Competitive Price Theory: Under this theory the illegal price is compared to the price which the competitive market would have yielded.

2) Wrongful Conduct Theory: This theory allows the plaintiff to recover only the price difference caused by the unlawful conduct that exercised or increased the monopolist's market control.

Note that unlike the Competitive Price Theory, the plaintiff does not recover the increment between the price in a competitive market and the price resulting from the illegal behavior, but recovers the difference between the illegal price and the price that would prevail were the defendant's monopoly power exercised legally.

Note also that neither of these theories ties the damage in any way to economic loss or the economic cost of monopoly, only to the transfer of consumer surplus to producer.

Damage Measures

Whether operating under the Competitive Price or the Wrongful Conduct Theory, a technical means of measurement is necessary; a way to determine what the price would have been absent the illegal conduct. Several methods have been used in various cases.[15] These include:

1) Before and After: As the name implies the Before and After measure infers a price by comparing the situation prior to the impact of the violation with the situation during the period of violation.

2) Yardstick: Developed in the movie antitrust cases, this measure compares the defendant's price with prices charged by a similar producer or producers in a comparable market untainted by the anti-competitive conduct.

3) Anticipated Revenue/Profit: Not strictly applicable in class action price fixing cases, this technique is used in cases where damage is measured by the showing of a loss of profits or revenue to the plaintiff as a result of the defendants illegal conduct.

4) Net Back Price: This procedure has been used where there is no market per se for the product (i.e. no yardstick) for determining what the product would have sold for in the absence of a conspiracy, so the market price of a 'related good' is used instead.[16]

These techniques or measures are designed to comply with the above mentioned theories and reflect the court's attitude toward damages and the preoccupation of the legal system with the transfer--and only that portion of the total transfer that represents the conversion of consumer surplus to increased monopoly revenues.

Economic Measure of Damages

Posner argues that the traditional measure of cost/damages (i.e. the difference between the competitive price and the collusive price multiplied by the number of units sold at the collusive price) in price-fixing cases is an incorrect measure because it leaves out the cost resulting from the reduced output. He further argues that the welfare cost is not insuperably difficult to measure since the only additional information required is the elasticity of demand at the collusive price. In his article "The Social Costs of Monopoly and Regulation"[17] Posner provides formulas for estimating the social cost. The social cost is assumed to be equal to the transfer plus the deadweight loss (welfare triangle). It is also assumed in this article that a reliable estimate of elasticity is available.

The problem with this argument is that a reliable estimate of the elasticity is not always available, even at the alleged collusive price. In some industries, the retail market for natural gas for

example, the good is not sold at a single price, but under very complicated, multi-part, declining-block tariffs which frequently differ by class of customer, or time of year. This does not mean that measurement is impossible, only that in some cases it may not be as straight-forward as Posner's article indicates.

Standing To Sue

The defendants in the case (MDL-403) argued for dismissal on the grounds that the plaintiffs did not have standing to sue. Standing to sue refers to the legal right under the law to bring suit. The argument advanced by the defendants was that the plaintiffs were not direct purchasers from all the defendants. The legal guidelines used in determining standing to sue are discussed below beginning with the parens patriae doctrine, which provides the least controversial vehicle for a consumer-oriented private suit.

Parens Patriae

The parens patriae doctrine permits individual states, as quasi-sovereigns, to protect their interests by bringing suit in antitrust cases. Under the parens patriae doctrine any state attorney general can bring a damage suit in federal court on behalf of all persons residing in the state who may have been injured by an alleged violation of the federal antitrust laws.[18] For example, the State of Illinois in its capacity as parens patriae has recently brought an antitrust suit against Panhandle Eastern Pipeline Company. The state alleges its citizens were irreparably harmed by Panhandle's transportation policy when several state institutions contracted with

natural gas producers for supplies of natural gas, and attempted to arrange transportation of these supplies on Panhandle. The suit alleges that the guidelines governing transportation were anti-competitive and the agencies were consequently forced to buy their supplies of natural gas from the local gas utility at higher costs. (U.S. District Court, Central District of Illinois, No. 84-1048).

Class Action

Federal Rule of Civil Procedure 23(b)(3), or Rule 23, governs the requirements of citizens in filing a class action suit in an antitrust case. Rule 23 requires:

(1) questions of law or fact common to all class members must predominate over individual questions,

(2) the class action must be superior to other available methods of adjudication, with special emphasis on manageability, and

(3) individual notice must be received by all members of the class to the extent possible.

The manageability requirement of superiority is frequently not met due to the fact that class actions may involve thousands or even millions of prospective members which must be identified and notified. Additionally, a process of equitable distribution of any damage award to each member on a rational basis must be worked out. The stringency of these requirements has a dampening effect on the number of class action antitrust suits. In fact, the 94th Congress concluded that the class action is not a viable technique for consumer damage recovery under the antitrust laws.[19]

Passing On

The class action suit has been limited by the elaborate requirements mentioned above, and by recent rulings regarding the 'passing on' defense and the right of indirect purchasers to bring suit. As mentioned above, the defendants in MDL-403 argued for dismissal on the grounds that plaintiffs lacked standing to sue because they were not direct purchasers from all of the defendants. Under legal precedent at the time, indirect purchasers were denied standing to sue. An indirect purchaser is one who purchases, not from the alleged violator, but from a middleman or intermediary firm who has purchased from the alleged violator. Natural gas consumers in New Mexico do not purchase their gas directly at the wellhead, thus they are indirect purchasers. The plaintiffs, however, were successful in arguing that by virtue of the PGA clause of the utility co-defendant, they had standing to sue.

In Hanover Shoe[20] the Court held that an antitrust violator may not assert a passing-on defense in order to escape civil liability for an illegal overcharge if the the direct purchaser has proved injury and amount of damages. After the Hanover decision lower courts were undecided as to whether the Hanover reasoning implied that the courts must deny standing to indirect purchasers. In Illinois Brick[21] the Court ruled that plaintiffs who purchase goods indirectly cannot recover damages for overcharges passed on to them through the chain of distribution; the cause of action for the overcharge resides solely with the direct purchaser.

Hanover was a suit against a monopolist by a customer (of the monopolist). The Court held that an antitrust violator may not defend

such a suit by proving that the customer passed on all or part of the illegal overcharge to its own customers, since that would unduly complicate the litigation and could result in a violator retaining the fruits of its illegal conduct.

Illinois Brick involved down-chain plaintiffs suing members of a cartel. The Court held that the plaintiff could not recover an illegal overcharge passed on by an intermediate firm which had purchased from a cartel member, reasoning that the offensive use of passing-on should be denied (since the defensive use was denied) to preclude duplicative treble-damage liability.

The Court considered the primary aims of the treble damage remedy--compensation of victims and deterrence--and concluded that attempting to allocate damages to each individual in the chain would undermine the deterrent effect by: (1) diluting the interest of any one purchaser in suing, and (2) rendering the litigation too burdensome and too costly for the parties and the judicial system. As mentioned, the Court was also concerned that multiple recoveries would result if both the direct and the indirect purchasers were permitted to sue. That was in 1977.

Since Illinois Brick, the federal courts have generally rejected indirect purchasers' (i.e. consumers) price-fixing claims, except where injunctive relief has been sought, or where the case fits into one of two exceptions which were recognized in Illinois Brick: i.e., (1) there is a pre-existing cost-plus contract, or (2) the indirect purchaser is owned or controlled by its customer.

The lower courts have held that in order to qualify under the pre-existing cost-plus contract exeption, the plaintiff must show: (1)

that there was a pre-existing contract between the direct purchaser and its customers, (2) that the contract provided for an automatic pass-on of the full amount of the overcharage, (3) that the direct purchaser was insulated from injury by the contract, and (4) that the contract committed the indirect purchaser plaintiff to buy a fixed quantity regardless of price.

In Illinois Brick the cost-plus exception is limited to those cases in which the effect of the price fixing upon the indirectly affected party is determined without reference to the interaction of supply and demand.

Another exception to the Illinois Brick rule which has been endorsed by lower courts, although not addressed by the Supreme Court, involves the situation where the purchaser alleges a vertical price-fixing conspiracy between the manufacturer and an intermediate firm selling to the purchaser. The plaintiff in such a case has been considered a direct purchaser of a member of the conspiracy. This co-conspirator rule has been recognized by a number of courts.[22]

Conclusions

Per se rules of illegality against certain types of business conduct are at least potentially inconsistent with an economic approach to antitrust which would judge the challenged conduct on the basis of its impact on competition or efficiency. Legally, there are problems of consistency in private suits involving per se violations since the Court has ruled in Brunswick that the damage award must flow from the anti-competitive aspect of the conduct. The anti-competitive aspect is the restraint on trade, the harm to the public, or the inefficiency

created. Yet, in cases of per se violations an unreasonable restraint of trade is presumed without any demonstration of harm to the public. Thus damages, which must flow from the anti-competitive aspect of the conduct, could be awarded without any investigation into the impact on competition (i.e. on efficiency).

The problems of manageability associated with the class action suit are substantial, which makes the parens patriae suit a more efficient method of dealing with antitrust violations. In addition, since consumers may not purchase goods directly, they would be denied standing under Illinois Brick. However, this may be changing. A more recent Supreme Court decision, Reiter vs. Sonotone Corp.,[23] may make it easier for indirect purchasers to gain standing to sue.

In Reiter a class action suit was brought against a hearing aid manufacturer alleging that because of antitrust violations the class had been forced to pay illegally fixed higher prices for hearing aids and related services. Treble damages were sought under Section 4 of the Clayton Act which provides that any 'person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws' may bring suit and recover treble damages. Respondents moved to dismiss on grounds that the plaintiff had not been injured in her 'business or property'. The District Court held that under Section 4 a retail purchaser is injured in 'property' if it can be shown that antitrust violations caused an increase in the price paid for the article purchased, but the question was certified to the Court of Appeals which reversed the decision. It held that retail purchasers who are not injured in a commercial or business nature are not injured in their business or property. The Supreme Court, however, upheld the

District Court--consumers who pay a higher price for goods as a result of antitrust violations do sustain an injury in their property within the meaning of Section 4.

Footnotes To Chapter IV

[1]U. S. vs Container Corporation of America, 393 U.S. 333, 341 (1969).

[2]175 U.S. 21 (1899).

[3]United States vs. Socony-Vacuum Oil Co. Inc., et al, 310 U.S. 150, 218 (1940).

[4]John S. McGee, "Why Not Deregulation for Antitrust" published in Industrial Concentration and The Market System, ABA (1979).,/,

[5]Bork, Antitrust Paradox, p. 27.

[6]Posner, Antitrust Law, p. 236. Posner attacks per se illegality by also arguing that it is generally true that the law of price fixing punishes the attempt to fix prices regardless of its consequences and ignores supracompetitive pricing, however serious, that does not generate the kind of evidence which can be used to establish a traditional criminal conspiracy. Since lawyers and judges are more comfortable with conspiracy doctrine than price theory, the displacment of emphasis from the economic consequences to the fact of conspiring is natural. But it is inconsistent with an effective antitrust policy.

[7]Bork, Antitrust Paradox, p. 263. See also John S. McGee, "Why Not Deregulation for Antitrust," published in Industrial Concentration and The Market System: "The courts have swept within the rule forbidding price fixing many practices such as exchange of price information among competitors and the fixing of maximum or minimum resale prices by a seller, which are often pro-competitive rather than anti-competitive." p. 31.

[8]Frank H. Easterbrook "Maximum Price Fixing", University of Chicago Law Review 48 (Fall 1981): 886.

[9]Armantano, Antitrust and Monopoly, p. 133.

[10]McGee, pp. 54-55.

[11]George Bittlingmayer, "Price-Fixing and The Addyston Pipe Case", in Research in Law and Economics, vol. 5, 57-130, 1983 JAI Press, Inc.

[12]Scherer, Industrial Market Structure, pp. 509-510.

[13]Ibid., p. 509.

[14]The issue of standing to sue is dealt with in greater detail in the next section of this chapter.

[15]There is a question as to whether Congress intended the damage award in private actions to be primarily a tool for deterring anti-competitive activity or a device enabling the recompensing of injured parties. If the purpose of the private treble damage is deterrence, it makes certain sense that someone--anyone--should be awarded damages even if they were not directly injured. However, if compensation is the goal, then those not injured by anti-competitive activity have no business in court (even if their suit attacks a bona fide antitrust violation), and a greater role for the government as the agent of enforcement is implied. For a more detailed treatment of damage 'measures' see Harrison, Jeffrey, "The Lost Profits Measure of Damages in Price Enhancement Cases" Minn. L. Rev. Vol. 64:751 (Section IV).

[16]For example, in the Vanadium Cases, since there was no evidence showing what the ore would have sold for in a market absent a conspiracy, the jury was instructed to calculate damages to ore miners based on the profit spread between the cost of the ore to the defendant and the price received by the defendant for the refined ore. Inferring a price based on commodity value could fall in this category.

[17]Richard A. Posner, The Social Costs of Monopoly and Regulation," Journal of Political Economy, 83 (August 1975): 807-827.

[18]The Hart-Scott-Rodino Antitrust Improvements Act was passed in 1976. It contained provisions for the parens patriae suit. Before this act, consumers had no practical means of redress in the event of antitrust violation as will be explained in the sections on class-actions and passing-on.

[19]For a more detailed discussion of the inherent problems of class action suits, see, Patricia O'Donnel-Gaynor. "The Antitrust Improvements Act of 1976," Cleveland State Law Review, 31 (Winter 1982): 107-143.

[20]Hanover Shoe, Inc. vs. United Shoe Machinery Corp., 392 U.S. 481 (1968).

[21]Illinois Brick Co. vs. Illinois 431 U.S. 720 (1977).

[22]See, e.g., In re Anthracite Coal Antitrust Litigation, 1978-1 Trade Cases paragraph 62,059 (M.D. Pa); In re Cement and Concrete Litigation, 1978-1 Trade Cases paragraph 62,069 (D. Ariz.).

[23]Reiter vs. Sonotone Corp., 442 U.S. 330 (1979).

CHAPTER V

REGULATION

Introduction

The setting for the case study is the natural gas market during the period of negotiation between Southern Union and producers in and around 1976. Regulation pervades all aspects of this case since natural gas was and is regulated at the production, transmission, and distribution levels. To understand the market and evaluate the performance of individual firms within this environment requires an understanding of the regulatory process, how that regulation was changing, and how the changes were likely to impact conduct or performance in that market (at that time). Matters are complicated by the fact that one of the defendants in the case is a regulated utility (at the distribution level) falling under the jurisdiction of the state regulatory commission.

Because the case involves a regulated utility it is necessary to include a discussion of regulatory practices and the impact of those practices on the utility's financial performance. Since the motive for price-fixing is assumed to be financial enhancement it is necessary to analyze the financial constraints imposed on the utility by regulation.

In return for operating a franchise a utility's prices are controlled by the regulatory body and it is required to provide a specified level of service (i.e. there is an obligation to serve). This will have an effect on the utility's financial policies vis-a-vis the financial policies of other, non-regulated companies.

Regulatory commissions are by no means uniform in their actions,

but the result of numerous Supreme Court decisions has been regulation based on the rate of return of the firm with the objective being that the firm should be allowed to earn a rate of return that is commensurate with the return earned by comparable firms (comparable in terms of risk) and which will allow the firm to attract the capital necessary to carry out its obligations and to maintain its financial integrity. In economic terms this implies setting price equal to average total costs and, thus, restricting the firm to a normal return (zero economic profit).

The Supreme Court, however, has determined that the regulated utility should be allowed to earn a 'fair' rate of return and the rates it charges consumers must be 'just and reasonable'.

Regulation

One of the first things a student in the public utilities area learns is that there is both a legal and an economic rational for regulation and that the course of regulation has been determined primarily by a series of Supreme Court decisions beginning with Munn vs. Illinois[1] and culminating in FPC vs. Hope Natural Gas.[2]

These decisions have resulted in a comparable earnings or commensurate return approach to allowed rate of return with emphasis on ability to attract capital.

The Supreme Court has interpreted a 'fair' return to imply that the capital employed by the regulated utility should earn the same return as capital subject to the same level of risk, (which infers a market-related standard). Additionally, the Court has said that it is the end result which determines justness and reasonableness, as opposed

to the means by which those results are obtained. If the return to the investor is commensurate with returns being earned on investments that are comparable in terms of risk, and if that return is sufficient to insure the financial integrity of the firm and to allow that firm to maintain its credit and attract capital, then the return is fair.

Regulation and Antitrust

Some scholars may consider antitrust to be another form of regulation. However viewed, antitrust differs in its principle from classical regulation in terms of methodology.[3] Whereas historically, antitrust law focused on creating or maintaining the conditions necessary for a competitive outcome through its control over market structure and behavior, regulation focuses primarily (but not exclusively) on performance. As a surrogate for the market, regulation imposes the results of the competitive process through its control over performance. Thus, in terms of the market structure-behavior-performance link antitrust and regulation tend to operate through control over different links in the structure-performance chain. And, although many economists view regulation and antitrust as 'alternatives' almost as if they were mutually exclusive means of achieving the same ends,[4] the fact is that the number of antitrust suits filed against regulated firms is significant and is growing. The absence of antitrust as a topic in most textbooks and articles on regulation and vice-versa, is indicative of this 'mutually exclusive' attitude among economists or, at least, the lack of attention given regulation by antitrust experts. Legally certain exemptions exist, but regulated industries are not out of the

reach of the antitrust laws.

Jurisdiction

Consequently, one of the issues raised when considering regulation and antitrust simultaneously is the that of jurisdiction. Both regulation and antitrust seek to affect outcome through control over one or more variables in the structure-conduct-performance chain. There is concurrent and sometimes conflicting judicial and administrative jurisdiction. For example, in the area of mergers where administrative action (approval) is a precondition, the Justice Department has the power to request or seek judicial antitrust veto of the merger. And it is not the case that regulators are confined to (for example) appraising a merger's effects on solvency while the antitrust court appraises its anticompetitive effects. Regulators are frequently required by law to consider the anticompetitive effects.

It is well established that regulated industries are not per se exempt from antitrust law. A great deal of regulated conduct has long been subject to antitrust scrutiny. The courts have not favored claims of antitrust immunity and all too often, the antitrust protection thought to apply to conduct complying with regulatory goals has proven illusory.

Whether the conduct of a regulated company is free from antitrust challenge depends upon the existence of (1) an express statutory exemption, (2) implied immunity, (3) immunity under the filed tariff doctrine, or (4) state action immunity.

Express Statutory Exemption covers instances in which the regulatory statute contains an express grant of antitrust immunity.

For example, Congress provided an exemption for collective rate-making by motor and rail carriers in the Reed-Bulwinkle Act of 1948.

Implied Immunity covers areas where analysis of the regulatory statute may imply immunity. The Court has used two alternative tests to determine whether conduct subject to regulation is impliedly immune. One, if the conduct involved must adhere to a standard under the statute that is inconsistent with the competitive standard of the laws then the doctrine of implied immunity applies. Two, if the conduct is subject to pervasive regulatory authority as defined in Hughes Tool[5] and Pan American[6] then the action is impliedly immune.

The Filed Tariff Doctrine bars customers from challenging filed tariffs under the antitrust laws and is intended to prevent duplicative and inconsistent remedies since a customer has remedy through administrative proceeding pursuant to the application of regulatory statute. It does not apply, however, to antitrust challenges to tariffs by competitors, or in suits by customers where the regulatory scheme does not itself provide a remedy. It has also been held inapplicable in price squeeze cases since a price squeeze claim involves a challenge to the relationship between wholesale and retail rates filed, not a challenge to the wholesale or retail rates filed.

State Action Immunity rests on the principles of federalism. Uncertainty exists as to whether conduct must be compelled by a state in order for immunity to result. The state action defense to antitrust claim originated in Parker vs Brown.[7] California had enacted a law authorizing a commission to supervise a program to fix and stabilize the price of raisins. The program would have violated the Sherman Act had it been accomplished through private action, but the Supreme Court

held that the program was not unlawful because the Sherman Act is "a prohibition of individual and not state action."[8]

Noerr-Pennington Doctrine

Under the Noerr-Pennington Doctrine a utility's attempts to influence executive, legislative, administrative, or judicial action, regardless of intent or purpose, are immune from antitrust attack. In both the Noerr[9] and Pennington[10] cases the action sought in order to accomplish an anticompetitive end was within the legitimate authority of the governmental officials petitioned. The officials had the authority to consider the anticompetitive effects of the actions sought and the discretion to produce those effects or not. Under Noerr-Pennington if an agency or commission has jurisdiction over a utility's rates, any request by the utility would be protected even if the action sought had anticompetitive effects. That is, to be protected under this doctrine, requests for governmental action that will produce anticompetitive results must be directed to agents of government who have the responsibility for and an interest in considering the competitive effects of those actions, and the power to decide whether to produce those effects.[11]

Primary Jurisdiction

Essentially, the problem of jurisdiction in regulated industries has evolved into a question of the application of a rule giving primary jurisdiction to the administrative tribunals. A doctrine of primary jurisdiction was first enunciated in Texas & Pacific Ry. vs. Abilene Cotton Oil Co.[12] Abilene had sued for damages alleging unreasonable

rates. The railway company argued as a defense that the rates had been duly filed with the ICC. The Supreme Court ruled that the "action must start with the Commission which body alone is vested with power originially to entertain proceedings."[13] The reason given was to prevent a conflict arising between the regulatory agency and the courts because of any divergence in determining reasonableness of rates.

Since the Abilene Case the Courts generally have taken the position that while regulated firms or industries are not outside the antitrust laws, the regulating agency should be consulted first. In a 1952 decision,[14] the Court stated that cases raising issues of fact not within the conventional experience of judges, or cases requiring the exercise of administrative discretion should be decided first by the regulating agency. The facts, after being appraised by specialized competence, serve as a premise for legal consequences to be judicially defined (i.e. a record is produced). The reason given is that;

> Uniformity and consistency in the regulation of business entrusted to a particular agency are secured, and the limited functions of review are more rationally exercised, by preliminary resort to the agency for ascertaining and interpreting the circumstances underlying legal issues to agencies that are better equipped than courts by specialization, by insight gained through experience, and by more flexible procedure.[15]

However, in reality the regulating Commission and the federal court may simultaneously deny or claim jurisdiction in an antitrust case.

The Economics

Under a structuralist approach to antitrust the doctrine of primary jurisdiction makes sense. A policy geared toward structure is not necessarily suitable for analyzing 'behavior' and 'results'. The

regulating commission with its greater industry expertise and just and reasonable standards might be considered better able to judge a challenged price or challenged conduct. Under an economic/results approach to antitrust, however, this would not necessarily be true. The regulating body will concentrate on the 'just and reasonableness' of the price, not its anti-competitive aspects.

That the regulating agency is presumably more knowledgeable of the industry in question is important under a results approach, for this approach necessarily takes into account particular circumstances of the market. However, regulatory commissions and staffs are not generally trained in the application of economic theory to determine the impact on efficiency of challenged conduct. Review of a challenged price or policy by a body which originally sanctioned that price or policy is not likely to be fruitful from an efficiency point of view if the regulatory body has goals other than efficiency in setting the policy (or price) initially. The objective of the regulatory process is not necessarily efficiency.

Standards of Judgement

Assuming that regulation does not supersede antitrust, a second question arises as to whether or not a regulated firm should be tested by ordinary antitrust standards. Does the existence of regulation qualify the applicability of antitrust law or its objective?

The answer to these questions is that the standard by which conduct or performance is judged is not affected by regulation, but the penalties and remedies must take into consideration the role the regulatory body has played in the evolution of any challenged conduct

or performance. It may well be that the objective of efficiency is in direct conflict with the objective(s) of the regulating entity. Anticompetitive conduct may be promoted, or even mandated by the regulating entity. In this case, any remedy must necessarily consider the involvement of the regulator.

The basic approach and analysis will not change as a result of regulation. However, because "circumstances" are different, the way in which some variables are measured and their relative importance may change.

Natural Gas Regulation

Historical Development

In addition to the traditional utility-type regulation which applied to the distribution company, the wellhead price of natural gas sold in interstate commerce and the transmission of natural gas in interstate commerce were both subject to federal jurisdiction. In the San Juan Basin, as was the case generally, the majority of gas produced and purchased was going into the interstate market. The section of the natural gas market not regulated by the Federal Power Commission (FPC), i.e., the intrastate market, was heavily influenced by developments in the interstate market and vice-versa. Thus, in order to evaluate the intrastate market of the San Juan Basin at the time of the alleged conspiracy, it is necessary to understand the federal policy and the rapidly changing developments in the interstate market prior to the time of the alleged conspiracy.

Although natural gas has always been produced in association with oil there was not a widespread, commercial market for gas until the

advent of high pressure pipelines after World War II. Prior to 1938 there was no federal regulation of natural gas. The Natural Gas Act (NGA), [15 U.S.C. section 717] was passed in 1938 to regulate all 'sales for resale' by interstate pipelines to local distribution companies (LDC's) or other pipelines. Wellhead prices were non-jurisdictional until a Supreme Court decision in 1954 extended NGA coverage to independent gas producers and authorized the FPC to regulate gas sales to interstate pipelines.[16] The basic regulatory tools of the FPC included power over rates which is administered under the cost-based, just and reasonable standard of sections 4 and 5 of the NGA and the certification of sales and facilities which is administered under the public convenience and necessity standard of Section 7.

The purpose of the Natural Gas Act was in large part to address the problems created by the fact that state regulators had the power to regulate local distribution companies, the FPC had authority over the prices at which the interstate pipelines sold to local distribution companies, but there was no jurisdiction over the price at which producers sold to the interstate pipelines. In 1954 the Supreme Court ruled that Congress had intended the Act to also give the FPC the authority over the price at which producers sold their gas to the interstate pipelines. The price at which natural gas was sold in the intrastate market was not brought within the FPC's jurisdiction at this time.

The regulatory problem for the FPC soon became overwhelming since it had only the one instrument for regulating at that time, i.e., cost of service/rate of return rate making which was applied on a firm-by-firm or case-by-case basis. The Commission itself estimated it

would take eighty-three years, with the then available resources, to complete its 1960 caseload.[17] It was obvious that utility-style regulation would not work to regulate the price of natural gas at the wellhead.

Area Rate Regulation

The FPC abandoned its case-by-case approach in favor of areawide pricing in 1960.[18] The nation was divided into five geological producing zones or areas. Initially, temporary ceiling prices were set at 1958-1959 market levels[19] and area rate proceedings to determine prices based on area average costs were begun. Optimism that this approach would be more manageable and efficient was unwarranted. It took five years for the FPC to finally come to a decision on the price (to replace the interim rate) in the first region (area) considered. The Permian Basin decision[20] was handed down in 1965. It took another three years before the Southern Louisiana decision[21] was handed down. By the end of the decade there had been no rulings in the other areas.

By this time the Commission had also determined that it was faced with a rent control problem, not a monopoly power problem. And it approached the problem by trying to develop a two-tiered pricing system. The tiered system would transfer rents to consumers by keeping down the price of low-cost, older gas, while at the same time encouraging exploratory and development drilling by allowing higher prices for new gas (vintaging). At least, that was the hope.

BY the early 1970's, with area rate making a policy failure and declining reserves additions (higher prices had failed to provide the

necessary incentive to stop the declining additions to total reserves), the FPC began to focus on adopting a nation-wide ceiling rate and policies designed to cope with the developing shortages of natural gas in the interstate market.

While supplies in interstate commerce were already declining due to the general decrease in drilling activity, the unregulated intrastate market, with its ability to offer higher prices, was bidding away an increasing proportion of the new reserve dedications.[22] At the same time (early 1970's) demand was growing. OPEC-induced increases in oil prices made natural gas--the average price of which was being held down by FPC ceilings--more attractive to consumers (industrial, commercial, and residential). Additionally, several severe winters in the mid-70's exacerbated the supply-demand imbalance by contributing to the growing demand for natural gas. In the early to mid-1970's conservation was not yet a major force in the natural gas markets. Demand was still climbing. Because of the price controls, producers could not charge more for existing supplies to limit demand on the available gas, nor did they have sufficient incentive to increase the available supply.

Shortages in The Industry

In 1968 for the first time in the nation's history, more gas was consumed than discovered and the ratio of reserves to production reached a new low as it continued to decline. The reserves to production ratio of 13.3 trillion cubic feet (tcf) was well below the 20 to 1 ratio considered standard at that time.[23] During the 1960-1970 period the number of wells brought on line declined 25% while

consumption more than doubled.[24] The amount of gas flowing in interstate commerce as a percentage of total marketed production was declining. Between 1965 and 1975 the percentage of total production moving in the interstate market fell from 61 to 53 percent.[25] In the Permian Basin almost all the additions to reserves in the decade after 1965 were committed to the intrastate market.

Because the intrastate market was not regulated, intrastate buyers could, and did, bid the new gas reserve dedications away from the interstate pipelines which were confined to the low ceiling rates set by the FPC. The intrastate market, which until the late 1960's had followed the interstate market, began to expand rapidly. The superior ability of the intrastate market to bid new reserves away from the interstate market is illustrated in Table 1.

Table 1. Lower 48 States, net reserve additions in the interstate and intrastate markets.

Year	Total Net Reserve Additions Tcf(1)	Net Interstate(2) Reserve Additions Tcf	Percent	Net Intrastate(3) Reserve Additions Tcf	Percent
1964	20.1	10.7	53	9.4	47
1965	21.2	13.3	63	7.9	37
1966	19.2	14.1	73	5.1	27
1967	21.1	14.8	70	6.3	30
1968	12.0	9.5	79	2.5	21
1969	8.3	6.0	72	2.3	28
1970	11.1	0.1	1	11.0	99
1971	9.4	1.9	20	7.5	80
1972	9.4	(0.2)	0	9.6	100
1973	6.5	1.2	18	5.3	82

(1) AGA (2) Form 15
(3) Derived assuming that intrastate reserve additions are equal to the difference between total AGA reserve additions and reserve additions committed to the interstate market per Form 15.

Moody, 1974--The Gathering Storm, 26 Oil & Gas Institute 1,4 (Matthew Bender, 1975).

The low ceiling prices established in the interstate market were one advantage the intrastate market had in the late 1960's and early 1970's. The interstate market suffered also from the smaller reserve requirements of intrastate pipelines and because where final sales were within the producing state there was a much shorter time lapse between contract negotiations and deliveries. It wasn't necessary in the intrastate market to secure FPC approval, both of price and the need for the pipeline. In the interstate market the pipeline had to apply for and be granted a certificate of public convenience and necessity before a pipeline or gathering system could be built. The application could take months and the outcome was uncertain.

The uncertainty about price and the buyer-seller relationship was an important factor from an investment point of view, and so, for this reason and those given above, producers naturally preferred to sell their gas in the intrastate market where possible.

In conjunction with the expansion of the intrastate market there was increased consumption of gas and rapid economic and population growth in gas producing states, especially Texas, Oklahoma, and Louisiana, where the abundant supply[26] and low transportation costs made gas attractive for use as boiler fuel and feedstock.

In 1970 utility/industrial consumption of gas was 831.8 billion cubic feet (Bcf) which by 1975 had increased to 4,473 Bcf (nearly 25% of total United States marketed production).[27] In the meantime, the closing of factories and schools in the northeast and the industrial midwest, and even residential shortages continued. By the early 1970's curtailment of industrial gas consumers by the interstate pipelines had become a growing reality. Curtailment priorities set by the pipelines

and the FPC put industrial gas users in some areas of the country at a great disadvantage.

The Shortages and Nationwide Rate Regulation

With the first indications of gas shortages the FPC began re-evaluating its policies and there followed a rapid succession of changes and price increases in the interstate market designed to provide producers with the necessary incentives for increased gas exploration and to eliminate the disadvantage of the interstate pipelines relative to intrastate pipelines in terms of the ability to successfully bid for new reserves.[28]

FPC Ceiling Prices 1972-76

In response to the developments of the late 1960's and early 1970's the FPC initiated a very complex set of pricing responses which included vintaged, area and national rates with numerous exceptions and exemptions. The exemptions and other non-price measures taken by the FPC during this period are summarized below. The major price changes are summarized in this section.

Between 1971 and 1973 the FPC had established area rates in the range of 19 to 24 cents per thousand cubic feet (Mcf). For example, initial Rocky Mountain area rates of 22.5 cents to 24 cents for new gas were set in 1971[29] for the various sub-areas; new in this case referred to gas sold under contracts dated after June 17, 1970. By contrast, in Opinion 639 (issued in 1972) the FPC reported intrastate prices for gas sold under contracts dated September 15, 1971 through September 15, 1972 of 43 to 53 cents per Mcf (thousand cubic feet).[30]

By June of 1974, the FPC had abandoned areawide pricing altogether. Opinion 699[31] established a national ceiling price for all gas drilled on or after January 1, 1973 or first dedicated to interstate commerce on or after that date. The ceiling rate of 42 cents per Mcf was approximately double the preexisting ceiling rates, but was still well below the price Texas and Louisiana producers were receiving for gas sold intrastate. Opinion 699-H[32] issued in December of 1974 increased the ceiling rate by eight cents. Under Opinion 699-H the base rate for all gas sold in interstate commerce from wells commenced on or after January 1, 1973 was 50 cents per Mcf with an annual escalation of one cent. Under the same Opinion special rates for the Rocky Mountain area of 35 cents per Mcf were established for gas which did not qualify for the uniform national rate. Per Opinion 742[33] small producers[34] were allowed to collect 130% of the national rate or 65 cents per Mcf. Opinion 749[35] established a uniform national rate of 29.5 cents per Mcf for gas not qualifying under Opinion 699-H, except in those areas where special area rates (e.g., the special Rocky Mountain area rate of 35 cents) had been established.

The next major price change came in July of 1976. At this time, with the one cent escalation the FPC ceiling rate for 'new' gas was 52 cents for large producers and 67.6 cents per Mcf for small producers (for gas from wells commenced on or after January 1, 1973). In Opinion 770[36] a new ceiling rate of $1.42 for 'new' gas was set. New gas was now defined as gas from wells commenced on or after January 1, 1975. Quarterly escalations of one cent were applicable to the new rate.

Under Opinion 770 for gas previously qualifying under Opinion

699-H (i.e. gas from wells commenced between January 1, 1973 and January 1, 1975 or gas first dedicated to interstate during that period) the established price was increased to $1.01 with no escalators. This gas became known as biennium gas. Later that year the price for biennium gas was changed to 93 cents with a one cent annual escalation--but the $1.42 for new gas (with quarterly escalations) was upheld.[37]

There was no distinction made between small and large producers for gas qualifying and sold pursuant to the provisions for new gas under Opinions 770 and 770-A.

Opinion 770 increased the national ceiling rate from 52 cents (large producer) and 67.6 cents (small producer) to $1.42 for new gas in July of 1976. Prior to Opinion 770 the weighted average price of gas sold in interstate commerce for the first six months of 1976 was 92 cents per Mcf.[38] The fact that the average price is higher than the ceiling rate for new gas reflects the other measures that were undertaken by the FPC during the early 1970's to alleviate the shortages and attract supplies of natural gas into the interstate market. The major opinions and orders issued by the FPC discussed in this section and the section following are summarized in Tables 2 and 3. The basic pricing provisions are summarized in Table 4.

Other Measures

In addition to the rapid increases in ceiling rates, the FPC was attempting to deal with the market imbalances in other, less direct ways. Rulings were issued regarding advance payments, emergency sales and limited term certificates (temporary immunity from jurisdiction for

certain types of sales), self-help programs, small producer incentives, optional pricing, and special incentives for rollover contracts.[39]

Advance Payment and Prepayments

The FPC authorized interstate pipelines to offer interest-free loans (advance payments) to independent and affiliated producers in return for a commitment from the producer to sell the gas produced to the interstate pipeline at regulated prices (i.e. a dedication of the reserves developed with the advance payment). The payback period was five years, beginning with first deliveries and the pipeline was allowed to include these advance payments in its ratebase.[40] When the program was terminated five years later, $3.3 billion had been paid or was irrevocably committed.

Table 2. Summary of FPC Opinions

OPINION	DATE ISSUED	REFERENCE	DOCKET NO.	COMMENT
770A	Nov 5, 1976	56 FPC 2698	RM 75-14	National Rates New (post 1975 = $1.42, biennium = $0.93)
770	Jul 27, 1976	56 FPC 509	RM 75-14	National Rates New (post 1975 = $1.42, biennium = $1.01)
	Aug 4, 1975	Appendix A	BNG	
	Sep 29, 1975	Appendix B	OEC (revised)	
	Jul 29, 1975	Appendix B	OEC	
753(A&B)	Jan 30, 1976	55 FPC 400	Pennzoil/Royalties based on market value	
742B	Aug 2, 1976	56 FPC 757	R-393	Reaffirming 742A
742A	Jul 27, 1976	56 FPC 637	R-393	Small Producer Rocky Mt. & Permian = $0.405. (No special rate for small under 770)
749	Dec 31, 1975	54 FPC 3090	R-478	J&R Rates flowing gas = $0.295
742	Aug 28, 1975	54 FPC 853	R-393	Small Producer 130%
699H	Dec 4, 1974	52 FPC 1604	R-389-B	National Rates New (73-74) $0.50
699B	Sep 9, 1974	52 FPC 700	R-389-B	Emergency provisions reinstituted
699A	Aug 2, 1974	52 FPC 263	R-389-B	All renewal contracts qualify/new
699	Jun 21, 1974	51 FPC 2212	R-389-B	National Rates New (73-74) $0.42
662	Aug 7, 1973	50 FPC 390	AR 70-1	Permian II
659	May 30, 1973	49 FPC 1154	CI 73-293	Belco/Tennessee $0.45
658	Apr 11, 1973	49 FPC 924	R-425	Rocky Mt. Area Rates $0.24
639	Dec 12, 1972	48 FPC 1299	R-371	Appal. Area rates all renewal contracts get new rate.
468	Aug 5, 1965	34 FPC 159	CI 60-435	First use of vintaging/Permian I

Table 3. Summary of FPC Orders

ORDER	DATE ISSUED	REFERENCE	DOCKET NO.	COMMENT
533	Aug 28, 1975	54 FIC 821	Rm 75-25	FPC urging interstate customers to buy directly. Direct sales.
491	Sep 14, 1973	50 FPC 742	RM 74-3	60 increased to 180 days
481	Apr 12, 1973	49 FPC 992	R-458	Reduced pressure-deeper drilling. Special relief.
465	Dec 29, 1972	48 FPC 1550	R-411	Advance payments
455	Aug 3, 1972	48 FPC 218	R-441	Optional pricing. Wells drilled after Apr 6, 1972, or not previously sold in interstate can get price greater than ceiling if forego indefinite price escalations.
441	Nov 10, 1971	46 FPC 1178	R-411	Advance payments
435	Jul 15, 1971	46 FPC 68	R-389	Initial Rocky Mt. rates, $0.24 San Juan Basin
428B	Jul 15, 1971	46 FPC 47	R-393	(Small producers exempt from area
(428	Mar 18, 1971	45 FPC 454	R-393	(rate ceiling and filing require- (ments (i.e. deregulated).
431	Apr 15, 1971	45 FPC 570	R-418	Curtailment plans-limited term with pre-granted abandonment.
418	Dec 10, 1970	44 FPC 1574	R-404	60 day emergency/non-jurisdictional
402(A)	May 6, 1970	43 FPC 707	R-386	Emergency/exempt status unaffected
329	Dec 8, 1966	36 FPC 925	R-298	Area rate clauses ok'd. (FPC clauses)
232		25 FPC 379		
232A	Mar 31, 1961	25 FPC 609	R-153	Proscribed indefinite price clause but permitted price redetermination each 5 years.
410,410A,441,464		Oct 1970-Dec 1972		Permitting rate base treatment of prepayments.

Table 4. Summary of Interstate Natural Gas Prices

Applicable Date	Applicable FPC Order	Base Price	Escalations	Btu Adjustments	Gathering Fees	Remarks
1-1-73 - Present well Commencement date.	770-A	$1.42/Mcf	1¢ per quarter as of 10-1-72	Upward and downward from 1,000 on a proportionate basis.	Anadarko Basin Hugoton & Panhandle Fields 2½¢/Mcf. All other fields in Anadarko 1¢/Mcf.	Special relief may be obtained in particular cases by filing S.R. well depth greater than 15,000. — Advanced payments are allowed according to previous agreements, but price per Mcf is reduced. — Wells drilled before 1-1-73, but 1st dedicated to interstate after 1-1-73 eligible - 2¢/Mcf yearly escalation.
					Permian Basin 1½¢/Mcf	
					Rocky Mt. Area 1¢/Mcf	
					So. Louisiana Area .5¢/Mcf	
1-1-73 Until 1-1-75 well commencement date.	770-A	Major-93¢/Mcf Small-$1.300 per Mcf	1¢/year as of 1-1-73 1.5¢/year as of 1-1-73	Upward and downward from 1,000 on a proportionate basis.	Same as Above	FPC order 742 established & defines major and small producer category. Determinant factor is sale of more than 10 Bcf of gas annually.
Prior to 1-1-73 Note: Permian & Rocky Contracts executed 10-1-68 until 1-1-73	749 141-A&B 661 Permian & Rocky Mtn. Rates	Major-18½¢/Mcf Small-11½¢/Mcf Major-24¢/Mcf (2) 33¢/Mcf (3) Small-40.5¢/Mcf	NA NA	Upward and downward from 1,000 on a proportionate basis.	Same as Above Permian Basin 1½¢/Mcf	Producer may seek special relief by filing. Floor of 18¢/Mcf established *Special Permian & Rocky rates apply only to 10-1-68 until 1-1-73. Prior to 10-1-68, was 15½¢ Major-11¢ Small Rate.
Expiring or Rollover Contracts with commenced prior to 1-1-73 & not sold in interstate commerce prior to 1-1-73	770-A Reaffirms 699-H	Major-11¢ Small 61.6¢	1¢/Mcf/year 1.5¢/Mcf/year	Upward and downward from 1,000 on a proportionate basis.	Same as Above	

RECOMPLETION DATA . . . . . EXISTING WELL BORE TO A FORMERLY NON-PRODUCTIVE RESERVOIR

Prior to 1-1-73	Prior to 1-1-73	1-1-73 - 1-1-75	Prior to 1-1-73	After 1-1-73	After 1-1-75	Original Well Commencement Date
Prior to 1-1-73	1-1-73 - 1-1-75	1-1-73 - 1-1-75	After 1-1-73	After 1-1-73	After 1-1-75	Recompletion Date
Major Small 18½¢* 15¢*	Major Small 11¢ $1.42	Major 93¢ Small $1.300	Major Small 11¢ $1.42	Major Small 93¢ $1.300	$1.42	Applicable Price

1. * See Applicable Permian & Rocky Pricing for 10-1-68 until 1-1-73.
2. Generally must be deep hole and show new reserves for Recompletion Price...Uphole completions are not eligible for 770A Prices. Deep hole completions are eligible for 770A prices.
3. New well in an existing productive or formerly productive unit must show recovery of previously unrecoverable reserves to be eligible for 770A Prices.

Emergency Purchases and Self-Help Programs

Considered by many industry experts as probably the most successful of the various FPC programs to deal with the shortages and curtailments during the period 1969 through 1977, these programs began in 1970 with Orders 418[41] and 402-A.[42] Under the emergency sales provisions of these orders intrastate pipelines and producers were authorized to make 'emergency' sales to interstate pipelines for periods of up to sixty days (later extended to 180 days) without going through the formal FPC certification process and without jeopardizing their exempt status (i.e. without subjecting themselves to FPC jurisdiction permanently).

The first self-help program was instituted in 1973.[43] These programs allowed (for the first time) local distribution companies and certain industrial users to go directly into the field and buy gas from producers at market rates. This meant these direct purchasers could legally pay prices for the gas at the wellhead which exceeded the federal ceiling prices. The buyer would then arrange for an interstate pipeline to carry the gas on a contract basis. The self-help programs were designed to alleviate the problem of shortages by allowing the buyer to circumvent the pipeline and offer producers higher-than-regulated prices.

Optional Pricing

Under Order 455[44] issued in August of 1972 pipelines in a critical supply situation could purchase new gas reserves under long-term contracts at rates higher than the applicable ceiling price. In return, the producer agreed to give up future price escalation clauses in the contract. An important provision of optional pricing

was that the Commission could not later change the price negotiated. In its first application, the FPC approved a price that exceeded the applicable area rate by 70 percent.[45]

Small Producer Incentives

In 1971 the FPC exempted small producers, that is a producer selling less than 10 million Mcf in interstate commerce annually, from certain filings and area rate ceilings.[46] Small producers were still required to obtain certificates of convenience and necessity before the gas could flow into the interstate system.

Additionally, under Opinion 742 small producers were allowed to collect 130 percent of the new national and flowing gas rates otherwise applicable (as discussed above).

Special Incentives for Rollover/Renewal Contracts

In Opinion 699 the FPC had established the ceiling rate for "new" gas where new referred to jurisdictional sales of natural gas from wells commenced on or after January 1, 1973. However, in an attempt to divert gas from the intrastate market and discourage gas under expiring interstate contracts from flowing into the intrastate market upon expiration of the contract, gas under expiring contracts, although drilled prior to January 1, 1973, was permitted the 699 rate.[47] In other words, old gas under rollover (intra to interstate) and renewal contracts (interstate) was allowed the new gas rate.

The Natural Gas Policy Act: 1978-82

Prompted by the persistence of the shortages, the next major regulatory change in the natural gas market came about in 1978 with the

passing of the Natural Gas Policy Act (NGPA).

In adopting the NGPA, one of the Congress' motivating purposes was to eliminate the dual market that distinguished interstate and intrastate sales of natural gas. This integration of the two markets was to be effected by assuming control over previously unregulated intrastate prices, a scheme of gradual, partial removal of federal price controls over natural gas at the wellhead and by provision for more efficient transportation of natural gas.

The NGPA created twenty-six categories of gas according to their vintage and a number of other production-related characteristics. Each category had a separate statutory ceiling price and schedule for price escalations. In 1977 the FPC had become the Federal Energy Regulatory Commission (FERC) under the Department of Energy Organization Act. FERC assumed all the FPC responsibilities involving natural gas, with the exception of import/export authorizations which were assigned to the Economic Regulatory Administration (ERA).

The NGPA was to result in a system of partial and phased deregulation of interstate gas. Deregulation was to be 'phased' in the sense that originally, wellhead ceilings were to be relaxed gradually until 1985 when all price controls would be removed.[48] Deregulation was 'partial', however, because old gas (Sections 104 and 106 gas) was not deregulated, even after 1985. This gas was to remain subject to the price ceilings and escalation schedules of the NGPA.

While FERC control was ultimately to be 'partially' diminished in the interstate market, federal jurisdiction was extended into the intrastate market for the first time under the NGPA. The intrastate provisions of the NGPA, which were an unprecedented encroachment on

state powers, were justified and ultimately upheld in the courts on the grounds that intrastate sales 'affected' interstate commerce. This was another attempt to close the gap between the interstate and intrastate markets, in order to eliminate the shortages of the interstate market.[49]

The NGPA had keyed the escalation of gas prices to world oil prices. In 1981 crude oil prices had reached the $40 per barrel range. By late 1982 crude oil prices on the spot market had fallen to around $30 and in March of 1983 OPEC had lowered its official price to spot market levels in an attempt to prevent an uncontrollable price collapse. But at the very time world oil prices had been falling, gas prices had escalated. The shortages of natural gas had been replaced by a glut in the market--a gas 'bubble' as it was to be called.

A further description of the political developments leading up to the NGPA is provided in Appendix A.

Footnotes to Chapter V

[1]94 U.S. 113 (1877)

[2]320 U.S. 591 (1944)

[3]The aim or goal is usually, though not unanimously, considered to be the same--promoting the efficient allocation of resources or the competitive outcome.

[4]cf. Breyer, "Antitrust . . . typically accompanies the absence of regulation, p. 156 in a chapter entitled 'Alternatives to Classical Regulation.' Also, even Kahn seems to view regulation and antitrust as if they were mutally exclusive domains. He refers to . . . "learning to apply the antitrust laws to newly deregulated industries" (p.14), and "to the extent that previously tightly regulated industries enter the domain of general antitrust" [in Craven, Industrial Organization, Antitrust and Public Policy].

[5]409 U.S. 363 (1973).

[6]371 U.S. 296 (1963).

[7]Parker, Director of Agriculture, et al vs. Brown. 317 U.S. 341 (1943).

[8]Ibid., p. 352 "The state in adopting and enforcing the prorate program made no contract or agreement and entered into no conspiracy in restraint of trade or to establish monopoly but, as sovereign, imposed the restraint as an act of government which the Sherman Act did not undertake to prohibit."

[9]Eastern Railroad President's Conference et al vs. Noerr Motor Freight, Inc. et al., 365 U.S. 127 (1961).

[10]United Mine Workers of America vs. Pennington, et al. 381 U.S. 657 (1965)

[11]For an interesting discussion of this topic see "The Electric Utility Price Squeeze as An Antitrust Cause of Action," John Lopatka, U.C.L.A. Law Review, vol. 31, No. 3, Feb. 1984, pp. 608-636.

[12]204 U.S. 426 (1907).

[13]Ibid., p. 429.

[14]Far East Conference vs. United States, 3142 U.S. 570 (1952).

[15]Ibid., p. 581.

[16]Phillips Petroleum vs. Wisconsin, et al. 347 U.S. 672 (1954).

[17]24 FPC 537 (1960), p. 545.

[18]24 FPC 547 (1960).

[19]MacAvoy, Price Controls and the Natural Gas Shortage, p. 13. Actually, the interim rates were based on average contract price for a recent 12-month period in each of the five areas.

[20]34 FPC 159 (1965). The ceiling for "new" gas was 16.5 cents and 14.5 cents for "old" gas. This decision introduced the concept of vintaging in gas wellhead rates.

[21]40 FPC 530 (1968).

[22]In 1965, less than one third of the nation's gas reserves were dedicated to the intrastate market. By 1975, nearly half of total reserves were committed to intrastate customers who were able to outbid interstate pipelines for virtually all new gas discoveries that were not committed by law (Outer Continental Shelf) to the federal domain.

[23]Table 14, U.S. Natural Gas Supply.

[24]Elizabeth Sanders, The Regulation of Natural Gas: Policy and Politics, 1938-1978, (Philadelphia: Temple University Press, 1981), p. 125.

[25]Ibid.

[26]While some would argue that industry will not relocate unless the price of the resource is lower, it was obvious, especially by the mid-1970's, that security of supply was (and still is) of equal if not greater importance to industrial users than price.

[27]Sanders, The Regulation of Natural Gas, p. 127.

[28]A summary of key FPC Opinions and Orders relevant to this section can be found in Tables 2, 3, and 4.

[29]Order 435, 46 FPC 68 (1971).

[30]48 FPC 1299, 1304 (1972).

[31]51 FPC 2212, (1974) issued June 21, 1974 in Docket Number R-389-B.

[32]52 FPC 1604, (1974).

[33]54 FPC 853 (1975).

[34]A producer selling less than 10,000 MMcf annually in interstate commerce.

[35]54 FPC 3090 (1975).

[36]56 FPC 509 (1976).

[37]Opinion 770-A, 56 FPC 2698 (1976).

[38]Calculated by the FPC and reported in Opinion 770-A.

[39]The term "rollover contract" refers to a contract that has expired by its own terms and been "rolled over," usually into interstate commerce.

[40]Rates base treatement means the pipeline was able to earn the allowed rate of return on those monies. Orders authorizing prepayments and governing the rate base treatment included 410, 410-A, 441, and 464 issued between October of 1970 and December of 1972.

[41]44 FPC 1574 (1970).

[42]43 FPC 707 (1970).

[43]Order 533, 54 FPC 821, (1975).

[44]48 FPC 218 (1972).

[45]Belco Petroleum Corp., 49 FPC 1154 (1973). This order was eventually overturned on review in Consumers Union vs. FPC, 510 F.2d 656 (D.C. Cir. 1974).

[46]Order No. 428, 45 FPC 454 (1971).

[47]See for example, Opinion 699, p. 2274, R-389-B dedications include: (1) Sales made pursuant to contracts executed on or after January 1, 1973 where such gas has not been previously sold in interstate commerce except pursuant to 18 CFR Sections 2.70, 2.68, 157.22, or 157.29. (These sections deal with emergency and direct sales). (2) Sales made pursuant to contracts executed on or after January 1, 1973 where the sales were formerly made pursuant to permanent certificates of unlimited duration, under contracts which expired by their own terms on or after January 1, 1973.

[48]Deep gas, that is gas below 15,000 feet, was exempt from price controls.

[49]In addition, the NGPA and the Power Plant and Industrial Fuels Use Act (FUA) further extended the reach of federal pricing into the end-use markets. The incremental pricing provisions of the NGPA placed the bulk of higher gas costs on industrial customers and the FUA contained a number of provisions designed to force a reduction in the

use of gas by large industrial plants and electric utilities.

CHAPTER VI

Implementing Economic Tests for Detection of Collusive Price Behavior in A Court of Law

A. Introduction

B. Section One

1. Basic Welfare Model--non-regulated, profit maximizing monopolist,

2. Regulated Monopolist, constant costs,

3. Regulated Monopolist, decreasing costs.

C. Section Two

1. Market Conditions Conducive to Collusion: Stage One

2. Evidence of Collusive Behavior: Stage Two

D. Summary and Conclusions

CHAPTER VI

IMPLEMENTING ECONOMIC TESTS FOR DETECTION OF COLLUSIVE PRICE BEHAVIOR IN A COURT OF LAW

Introduction

The Posner framework using economic theory for the detection of anticompetitive behavior in a court of law is based on several behavioral models which link the costs of collusion to the benefits (motivation) and liklihood of success. As discussed in Chapters I and II, the theoretical economic models define the key market structure and performance variables and certain expected relationships between these variables. In Posner's model these variables are classified or divided into two sections and the analysis proceeds in two stages. In the first stage structural conditions of the market are evaluated to determine whether or not the market is theoretically conducive to successful collusion. Stated differently, the intent in Stage One is to determine if and to what extent there are grounds for suspicion by examining the structural conditions of the market. The second stage focuses on the measurement and interpretation of performance variables related to the firms in question.

The structure and the performance variables included in Posner's list of indicia are summarized below:

Stage One	Stage Two
Market Structure variables conducive to collusion	Performance variables-evidence of collusive behavior
. Market concentratedon the selling side.	. Fixed relative market shares.
. No fringe of small producers.	. Price discrimination.
. Inelastic demand at the competitive price.	. Exhange of price information.
. Entry takes long time.	. Regional price variations.
. Many customers.	. Identical bids on nonstandard products.
. Standardized product.	. Price, output, and capacity changes at the formation of the cartel.
. Firms selling at the same level in the distribution chain.	. Industry-wide resale price maintenance.
. Price competition more important than non-price competition.	. Declining market shares of the leaders.
. High ratio of fixed to variable costs.	. Amplitude and fluctuation of price changes.
. Demand static or declining.	. Level and pattern of profit.
. Sealed bidding.	. Basing point pricing.
. Industry's antitrust record.	

The indicia in both sections were compiled from the economic literature. Neither section, however, includes a discussion of or a reference to regulation. The failure to consider regulation is perhaps, due to the fact that historically, antitrust activity in regulated industries was limited, or perhaps because regulation and antitrust were viewed as being applicable to separate domains as discussed in Chapter V. Antitrust activity in regulated industries has, however, been growing.

In the context of this particular case regulation is an important structural element and, consequently, must be analyzed to determine its impact on the basic premis of the underlying theoretical models, i.e.,

that the firm's decision to collude is made by weighing the potential gains against the costs of colluding.

In the following section of this chapter the potential costs and benefits to the regulated utility are evaluated by extending the basic welfare model to include rate of return regulation and a Purchased Gas Adjustment Clause, then tracing the impact of an overchange at the wellhead.

In sections two and three the indicia put forth by Posner in his proposed first and second stages are evaluated and subjected to systematic empirical examination where necessary and plausible. A determination is made as to the application of each in the case under consideration and the natural gas industry in general.

Section One

Since rate of return regulation involves administered prices and profits for the utility, an allegation of price-fixing raises the question of incentive. In this case, the plaintiff alleged that because of the utility's Purchased Gas Adjustment clause it was able to pass through in total the overcharge at the wellhead, while certain individuals with interests in both the utility and SUPRON stood to gain by virtue of their stock ownership in the production company. However, if after allowing for the PGA, the impact on the utility was negative, those same individuals could be adversely affected by virtue of their stock ownership in the utility. The analysis of the impact of an overcharge at the wellhead on a regulated natural monopolist under assumptions of constant and declining average cost is depicted in Figures 3, 4, and 5.

In addition, stockholders in Southern Union Company would likely suffer a negative impact from higher gas prices because of the company's involvement in gas processing activities. Southern Union Refining Company (SURCO) is a wholly owned subsidiary of Southern Union Company. SURCO owns and operates three gas processing plants in Northwest New Mexico. The Lybrook plant buys wet gas from GASCO for the purpose of extracting certain entrained liquids or liquid hydrocarbons (other than methane). In return SURCO pays GASCO the average wellhead price for the gas used in processing, plus a gathering charge.

SURCO also operates two plants at Kutz Canyon (Kutz 1 and Kutz 2). Gas processed at these plants is purchased and gathered by Gathering Company. Unlike Lybrook, GASCO takes ownership of this gas at the tailgate (after it has been processed). Kutz 1 processes gas sold in interstate commerce, and Kutz 2 processes gas sold in intrastate commerce.

A decrease in the price of liquids or an increase in the cost of gas will directly impact the total revenue generated by SURCO at the processing plants and therefore will influence the rate of return of the plants. The impact on revenues could be sufficient to lower the rate of return on the processing plants below that authorized for the regulated portion of the system. (An increase in gas price increases the fuel and shrinkage cost to be reimbursed by the processing plants to the purchaser of the gas).

Consequently, in evaluating the impact on profits one must consider the combined effect on both the regulated utility and its unregulated affiliates.

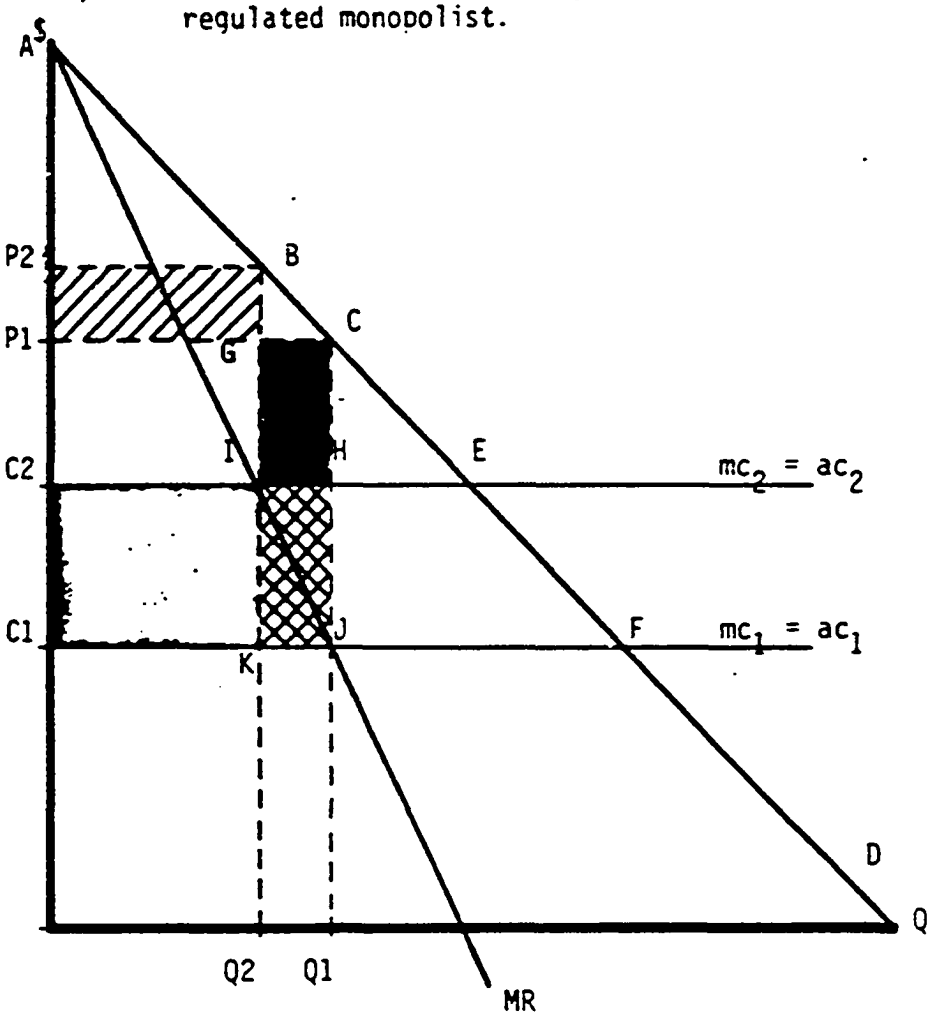
Basic Welfare Model--Non-regulated, profit maximizing monopolist

In Figure 3, a simplified model is presented to focus on the monopoly cost of an anticompetitive restriction in output--the result of collusive price fixing by the owners of a resource used in the production of good Q. It is assumed that the firm is a monopolist operating at an initial equilibrium price P1 and quantity Q1 and that, for simplicity, this monopolist faces a linear demand curve D and constant average cost AC_1 equal to marginal cost MC_1.

Recall that the economic costs and 'antitrust damages' in this situation will be based on the incremental loss due to the illegal conduct, as opposed to the losses measured from an initial starting point represented by a competitive optimum. In other words it is not the impact of anticompetitive collusive restrictions on a competitive market that is being analyzed, but the impact of collusive restrictions where the defendant is a regulated monopolist at the retail level.

In Figure 3, an alleged conspiracy to raise the price of the input would manifest itself in an increase in the monopolist's average costs; this is represented by a shift of the $MC_1 = AC_1$ curve in an upward direction by the amount of the increase in price of the input.

Fig. 3. Illustration of efficiency impact on a non-regulated monopolist.



The curve $MC_2 = AC_2$ represents the new, higher cost of an input to the monopolist. A new equilibrium is established at a price of P2 and output or sales of Q2. The increase in the input price to the monopolist has been partially passed on through the increase in the price of the final good. The legal concept of gross overcharge is C2 minus C1 multiplied by the new volume or the shaded area (C1C2IK); and the amount passed on to the consumer is represented by the area (P1P2BG). At the retail level damages would be legally defined as the area (P1P2BG). The antitrust courts have generally defined damages to be the difference between the illegally enhanced price and the price which would have prevailed in the absence of illegal conduct.

From an economic point of view the overcharge passed on to consumers by the monopolist is not the economic cost inflicted on society. There is a monopoly gain--a transfer from consumer surplus to producers associated with the area (P1P2BG). However, the losses associated with the diminution in volume must also be considered. The area (GCJK) reflects a loss in producer surplus because prior to the anticompetitive behavior that increased the input price, the monopolist was able to sell the additional units (Q1 minus Q2) at a price (P1) above the cost (C1) of producing those units. Thus, (P2P1BG) would not represent the monopolist's unjust enrichment. Nor does it represent the consumer's loss/injury or the social welfare cost.

(BCJK) does, however, represent a net economic loss to society. Prior to the increase in input price there was a dead weight loss of (CJF) associated with the existence of the monopoly. At the new equilibrium the dead weight loss increases to (BFK); the difference being (BCJK). (GCJK) was part of the producer/monopolist surplus that

is now dead weight loss and (BCG) is a net decrease in the consumer surplus.

(KJQ1Q2) represents a loss of revenue to the producers (suppliers of the input to the monopolist) which is offset by the increase in price of their good from C1 to C2. The net impact on revenues to these suppliers will be (C1C2IK) less (KJQ1Q2).

Regulated Monopolist, Constant Costs

Figure 4 is essentially the same as Figure 3 in terms of the underlying assumptions-with the exception that now there are two additional constraints. One, it is assumed that the monpolist is regulated and constrained to normal profits (zero economic profit) and two, that any increase in the cost of the input in question is allowed to be instantly passed through to the consumers in the form of a higher price by means of an automatic flow-through clause, e.g., a PGA.

The initial equilibrium is determined to be at a price P1 with output at Q1. In a regulated industry rates are usually designed to allow the utility, a monopolist, to cover all legitimate expenses plus earn a return on equity commensurate with the risks associated with that investment and sufficient to maintain its financial integrity and attract necessary capital. This is generally interpreted to mean a return that is comparable to that being earned by other firms of comparable size and risk. In economic terms this implies that the firm should be allowed to earn a normal profit. This is accomplished by setting the price (P1) equal to the average total cost of the firm (AC_1).

Fig. 4. Illustration of efficiency impact on a regulated monopolist under the assumption of constant average costs.

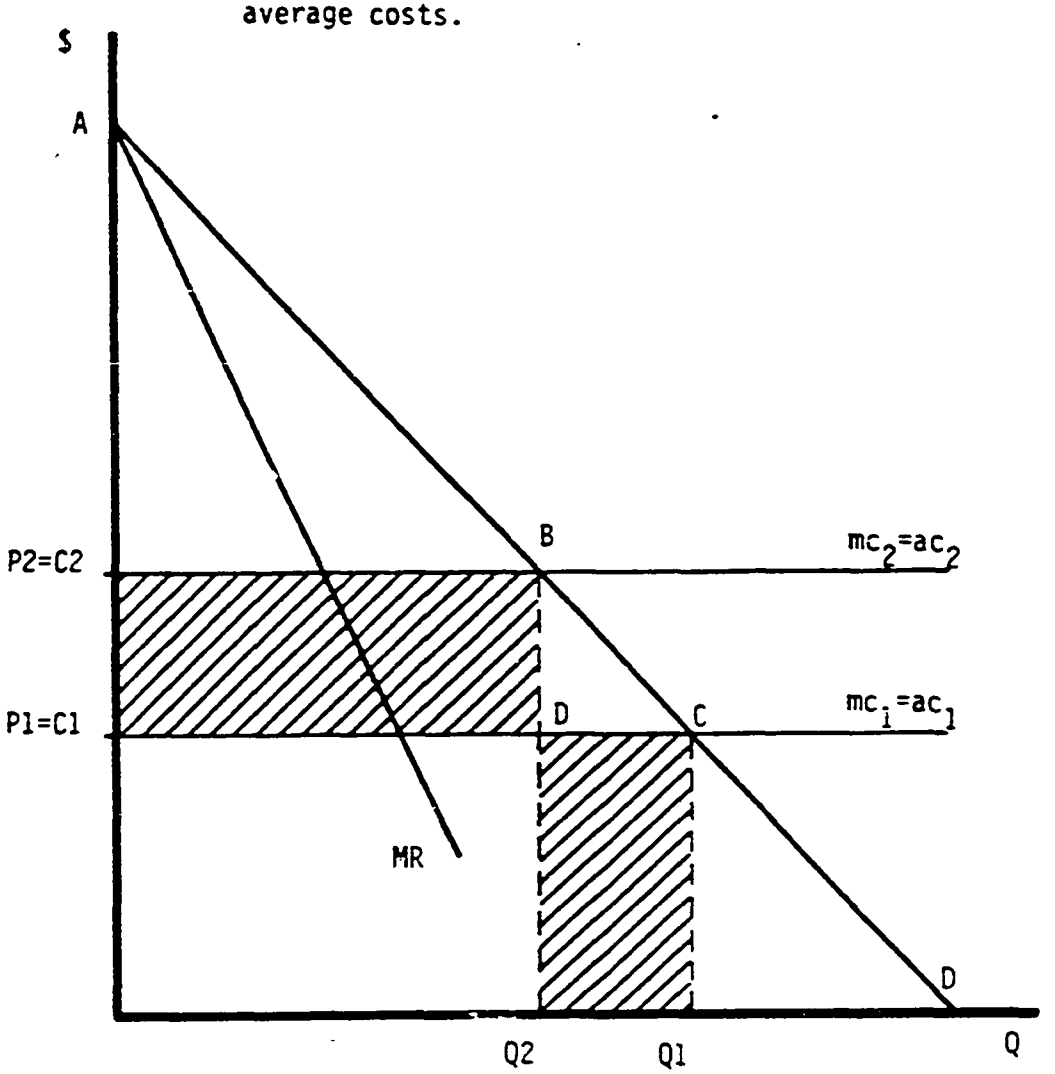
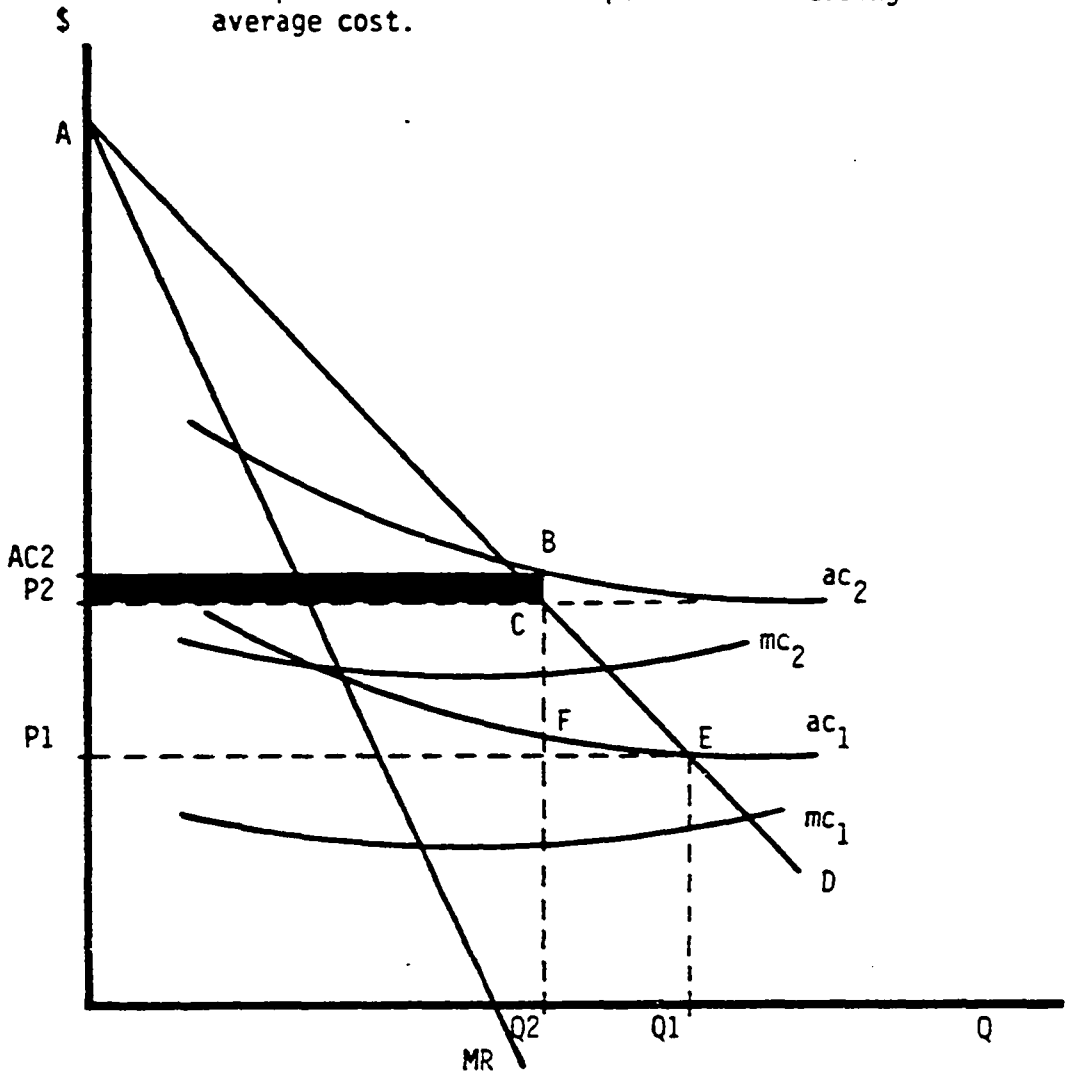


Fig. 5. Illustration of efficiency impact on a regulated monoplist under the assumption of decreasing average cost.



In Figure 4 the simple case of constant costs is presented. In this model the overcharge at the producer level (in the input price) is reflected in an increase in average costs from AC_1 to AC_2. With a purchased gas adjustment clause, or similar automatic cost adjustment clause, the price is allowed to rise by the full amount of the increase in input cost to the regulated firm, ceteris paribus. Price then goes up to P2 and the quantity demanded falls to Q2.

To the utility there is an increase in revenues resulting from the higher price equal to (P1P2BD) that is just offset by the increase in cost (C1C2BD). There is also a reduction in revenues resulting from the decrease in sales (DCQ1Q2) that is just offset by the reduction in the cost of producing those units. Assuming effective regulation the net impact on the utility's profits will be nil.

The consumer surplus will be reduced from (AP1C) to (AP2B). Part of this is the transfer of (C1C2BD) to the utility. The area (BCD), however, represents a net economic loss to society.

Regulated Monopolist, Decreasing Costs

In Figure 5 the assumption of constant costs is removed.[1] It is still assumed that the initial equilibrium (P1, Q1) represents zero economic profit due to the rate of return constraint ($P1=AC_1$). The increase in the input cost is assumed to be equal to the difference between AC_1 and AC_2 and is reflected in the new price P2. By passing through to its customers the total increase in input cost the utility will sell Q2 units. At Q2, however, average cost (AC_2) is greater than the total price that can legally be charged consumers (P2) and, due to regulatory lag, the utility will suffer at least a

temporary loss. In other words, the utility will not be earning its allowed return because costs, other than the input in question are not being covered by a price of P2 at Q2 units of output. Because the utility is not earning its allowed return it will eventually file a rate case. At the next hearing the utility's situation will be re-appraised and new rates set equal to the higher average costs based on the lower levels of consumption.

In this case the utility has not been unjustly enriched as a result of the conspiracy which increased the cost of the input. Even though the PGA allowed the increased costs in question to be flowed through, the utility will suffer temporary losses due to regulatory lag when demand and average costs are declining. Again, there has been a transfer of consumer surplus which ultimately went to producers of (P1P2CF) and an increase in the dead weight loss.

Based on the above analysis, the existence of a PGA would not necessarily provide earnings protection for a utility participating in a conspiracy to increase the price of an input. The inability of a utility to achieve the allowed rate of return is referred to as attrition.

Given the existence of regulatory lag and economies of scale in gas distribution the utility depicted in Figure 5 would earn less than its allowed rate of return, at least until the next rate case. A rate case before a state regulatory commission is lengthy and expensive. A rate case may take several months to prepare for filing. After filing, it usually takes at least six to nine months before a final decision is handed down and any newly authorized rates go into effect. Further, there is always the risk that the requested increase in rates will be

denied in full or in part. In addition, the uncertainty and profit variance will affect the company's financial ratings and thus, its cost of capital. Consequently, it is questionable whether the existence of a Purchased Gas Adjustment clause would provide sufficient protection from attrition to allow the utility to engage in a conspiracy which raises the price of its key variable input without a negative impact on earnings, and subsequently, the net worth of the firm.

In the context of the Posner framework this would have to be viewed as additional evidence or indicia. It is a relevant element not considered in his "Unified Theory of Collusion."

The 'Economic Cost' of Antitrust Violations

In Figures 3 through 5 the various dimensions of the economic costs are depicted, i.e. the dead weight losses sometimes referred to as the social cost, and the various 'transfers'. On the social costs the economic literature is bountiful. On the 'transfers' the literature is almost silent--having been generally interpreted as a normative, rather than a positive economic problem. In the search for economic evidence of anticompetitive behavior the existence and magnitude of every transfer becomes important. Although not directly measuring the injury to competition or the total damage to consumers, the transfers do result from the same phenomena (e.g., collusion) which creates or increases the welfare loss. Historically, in antitrust cases the courts have focused their attention on the transfer of consumer surplus primarily because damages were defined as the overcharge to the buyer on the units actually bought.

Section Two

Market Conditions Conducive to Collusion: Stage One

Beyond the discussion in Section One, the overall analysis of market structure variables should be little affected by the presence of regulation. For example, if a high degree of concentration is more conducive to collusion in unregulated markets, there is no a priori reason to believe that concentration would not have the same facilitating effect in a regulated market. Similarly, while regulation may be the source of entry barriers in an industry, the impact on the ability to collude successfully would be the same. Consequently, in Section Two, the market structure variables will be measured and assessed in terms of standard industry interpretations.

The case involves a charge of price fixing in the intrastate wellhead market (for natural gas) of the San Juan Basin. During the mid 1970's, however, there were two distinctive, but related markets for natural gas: the intrastate and the interstate. These were not totally independent markets and although the various producing areas are geographically separated, the forces of supply and demand (particularly) were not restricted to geographically isolated areas. Therefore, the analysis of these market variables cannot be restricted only to conditions in the intrastate market of the San Juan.

The empirical application begins with an investigation of the structural conditions of the market. The evidence presented herein in characteristic of the type of evidence which could reasonably be used to test the Posner proposition.

Market Concentrated on the Selling Side

Industry concentration ratios are available but provide little information on the degree of market power held by the buyers or sellers of natural gas involved in this case. In addition, these ratios do not consider the increasingly important differences between the interstate and intrastate markets. Limited data is also available by "major producing regions," but these data do not include the San Juan Basin separately. The San Juan, if considered at all, is usually included in the Rocky Mountain category. Regional data available for the mid 1970's concentrated on the Permian, Texas Gulf Coast, and Louisiana offshore regions.[2]

More informative is an analysis of the number and market shares of the producers in the intrastate market of the San Juan in 1976.

In 1976 Southern Union Company purchased intrastate natural gas in the San Juan Basin under one hundred one (101) different intrastate contracts. Gas Company of New Mexico purchased under fifty three (53) operating intrastate contracts. Gathering Company purchased under forty eight (48) separate intrastate gas purchase contracts.

For the period July through December (1976) Gas Company purchased a total of 10,091,508 Mcf in volumes ranging from 276 Mcf to 3,458 Mcf per contract. Gathering Company purchased a total of 10,142,366 Mcf during the same period in volumes ranging from seven (7) Mcf to 3,565,732 Mcf per contract. The defendants Conoco and Consolidated accounted for a total of 5.3% of Southern Union's intrastate purchases during this period and SUPRON's (in which Southern Union had a 28.5% ownership at that time) sales were 13.3% of total purchases. Together the codefendants supplied 18.6% of Southern Union's intrastate

purchases. This information is summarized in Table 5.

In the gas industry, a firm's output reflects its past success in exploring and developing reserves. Control over industry capacity implies control over the undeveloped resource base (reserves). Given the existence of the geological uncertainties involved in exploration and development this type of long range control is unlikely to be affectuated through collusive price agreements between a few large producers in the market.

Table 5. Volumes and Percentages of Purchases from SUPRON, Conoco, and Consolidated.

	SUPRON (Mfc)	CONOCO (Mcf)	CONSOLIDATED (Mcf)	Company TOTAL (Mcf)
Gathering Company	1,149,383	206,616	79,746	10,142,366
Gas Company	1,550,496	219,463	558,262	10,091,508
Total	2,699,879	426,076	638,008	20,233,874
Percent of Total	13.3%	2.1%	3.2%	

Source: Compiled from data supplied by Southern Union from internal records of volumes purchased and payments made by well by month.

Table 6 shows a breakdown of volumes supplied in the intrastate market by seller. The producers of intrastate gas in the San Juan Basin include an array of large and small independents as well as many of the large integrated companies. The asterisks indicate companies that were ranked among the largest in the nation in 1979. These giants were not the largest suppliers of intrastate gas in the San Juan Basin, but formed an interesting second fringe. A third fringe of numerous

producers supplying less than 1% is also present.

The largest four suppliers accounted for approximately 63% of the intrastate market and the largest eight-supplier ratio was 83%. Of the alleged conspirators only SUPRON appears in the four-firm concentration ratio and Conoco is eighth in the eight-firm concentration ratio.

There was a large fringe of small producers. Ten percent of intrastate sales were supplied by 33 of the 44 contracting firms shown in Table 6.

Table 6. Intrastate Sales by Producer Ranked by Volume of Sales.

CONTRACT NAME	VOLUME	NUMBER OF CONTRACTS	% INTRA-STATE SALES	CUMMULATIVE %
Southland Royalty (Aztec)	4850564	4	24	24
Caulkins	3458104	1	17	41
Unicon (SUPRON)	2699879	10	13	54
Amoco	1814988	4	9	63
Petroleum Corp. of Texas	1486930	2	7	70
Crown Central	1254270	1	6	76
Energy Reserves	825976	2	4	80
Consolidated	626585	7	3	83
*Tenneco	557531	12	3	86
Chaparral	452219	3	2	88
*Conoco	426073	3	2	90
*Gulf	335976	5	2	92
*El Paso	263251	6		94
Depco	180342	2	less than 1%	
W. M. Gallaway	135620	3		
Kingwood	132491	1	.	
*Atlantic Richfield	93702	2	.	
Amerada Hess	76943	1	.	
*Mobile	73556	1	.	
Grace Petroleum	69568	1	.	
McElvain	52295	2	.	
Southwest Production Co.	49370	1	.	
Dugan	49072	2	.	
Adobe	36154	2	.	
Skelly	32153	3	.	
Western Associates	25500	1	.	
Mountain States	21715	2	.	
Northern Natural	20469	1	.	
*Texaco	18584	1	.	

Table 6. (continued)

Union Texas	16281	1	.		
Flag Redfern	14880	2	.		
Billy J. Knott	10759	1	.		
Barber	9768	1	.		
Reeding & Bates	8730	1	.		
Producing Royalties	8310	1	.		
Johney Myers	7780	1	.		
*Exxon	7690	1			.
Claude Smith	7000	1			.
Merrion	6871	1			.
Cayias	6089	1		.	.
Seagram	3256	1			.
L. G. Stearns	2677	1			.
Kennedy	2615	1			.
Atlas	1273	1			.

* Listed by AGA as one of the top twenty producers by sales, in 1979.

Source: Compiled from tapes filed by Southern Union in MDL403 containing information on volumes, payments, contract information, spud date, and NGPA classification for each well.

Concentration in the San Jaun Basin was much greater on the buying side than on the selling side of the market. Southern Union was one of only three major purchasers of natural gas in that Basin. Southern Union was the only major purchaser of intrastate gas although Amoco was buying intrastate gas at that time. The majority of the gas was going into the interstate market where El Paso maintained a dominant position.

Inelastic Demand at Competitive Price[3]

Most gas of the 1970's, including that sold in the San Juan, was sold to pipelines under long-term contracts with take-or-pay provisions (which make pipeline purchases downwardly inflexible), in addition to both definite and indefinite price escalators. The primary purchasers

of pipeline supplies were local distribution companies which purchased the gas under contracts with minimum bill obligations. The regulated distribution companies, in turn, sold the gas to residential, commercial, and industrial consumers. At the end-use level price sensitivity depends on the degree of fuel switching and conservation possible. Consequently, the short-run elasticity of demand for most fuels, including natural gas, is generally considered to be relatively low.

Balestra,[4] for example, states that total demands for most commodities such as natural gas are quite insensitive to price changes. He found incremental demand to be more responsive with elasticities averaging less than one but increasing over time. That study used data for the period 1957 to 1962. Elasticity was estimated to exceed one in the final year of the study (1962). In a study by Kraft, Kraft and Reiser[5] using data for the period 1950 through 1972, the demand for natural gas was estimated to be fairly inelastic in the short run. The long-run elasticity for the household/commercial sector was 2.667 and the long-run elasticity for the industrial sector was 0.924. Short-run elasticities were 0.339 and 0.583 for the industrial and household sectors, respectively.

Atkinson and Halvorsen estimated the elasticity of demand for natural gas by electric utilities to be 2.55 in a study using monthly data for the period 1972-1974.[6]

Table 7 summarizes the estimates of the elasticity from several natural gas demand studies undertaken prior to 1976. There are very few studies available and the results are varied. Consequently, one cannot make definite statements regarding the elasticity of demand, or

rely on elasticity evidence in this case. As pointed out earlier, a high measured elasticity may indicate that collusion was an unprofitable proposition to the sellers in the market because the price increase would cause a large decrease in total revenues; or it may be indicative of successful collusion which has pushed the price up into the region of the demand curve where further increases in price would be unprofitable. Thus, even if elasticity were not difficult to measure and results had been consistent, the interpretation is not without ambiguities.

Table 7. Summary: Elasticity of Demand for Natural Gas.

Author	Demand	Elasticity
Atkinson, Halvorsen	Electric Utility	2.55
Balestra	General/Incremental	less than one (increasing over time)
Kraft, Kraft, Reiser	Industrial short-run	0.339
	Residential short-run	0.583
	Industrial, long-run	0.924
	Residential, long-run	2.667

Entry Takes A Long Time

Lead time involved in the exploration process varies, but the San Juan was a mature basin. Most drilling was developmental. The length of time required to complete a well in the Pictured Cliffs or Mesa Verde horizons was eight to ten days in the mid-1970's. An average well in the Pictured Cliffs horizon cost $60 to $70 thousand to drill in 1970 (average depth around three thousand feet). By the mid-1970's costs had increased by approximately 50%. In the early 1970's the cost

to drill a Mesa Verde well was approximately $125 thousand (average depth about 55 hundred feet). A well in the Dakota formation would have cost $175 to $200 thousand in the early 1970's and $200 to $250 thousand in the mid-1970's. Seven to ten thousand wells had been drilled in the San Juan Basin by the late 1970's.[7] Drilling rigs are mobile, usually leased, and are easily moved from one area to the next.

A comparison of these costs with national average costs per well and average drilling costs per foot, shown in Table 8, indicate drilling costs in the San Juan were comparable to national averages. Obtaining drilling permits and leases would have been more time consuming than the actual drilling, but were not major entry deterrents in the traditional sense.

Greater entry barriers exist in the gathering and transmission of natural gas. The building of pipeline transmission and gathering systems is expensive and time consuming. Large capital investments are required, right-of-ways must be obtained, and for interstate systems, a certificate of public convenience and necessity is required before construction may begin. Barriers to entry are generally attributed to one or more of the following: exclusive control by existing firms of some essential production input or process, some minimum scale of plant required for marginally efficient operation, large capital requirements, an absolute cost advantage enjoyed by existing firm(s), or highly effective product differentiation. None of these barriers is significant in the production of natural gas.

There are no apparent economies of scale in the exploration and production of natural gas. A large company can drill more dry holes than a small company without facing cash flow problems or bankruptcy.

New firms may be at some disadvantage if existing firms have leased the best deposits (best in the sense of easiest and cheapest to find), but there is no evidence of this in the San Juan. With regard to product differentiation, there is virtually no way for a gas producer to invest profitably in product differentiation. Entry barriers then, were significant only on the 'buying' or 'purchasing' side of the market.

Table 8. Estimated Cost of Drilling and Equipping Gas Wells in The United States

Year	Gas Wells Drilled	Footage (000's ft)	Cost ($000's)	Average Depth per Well (feet)	Average Cost per Well (Dollars)	Average Cost per Foot (Dollars)
1959	5,049	27,585	508,895	5,464	100,791	18.45
1960	5,262	29,078	540,178	5,526	102,600	18.57
1961	5,674	30,444	537,434	5,366	94,719	17.65
1962	5,858	31,432	568,772	5,366	97,093	18.10
1963	4,779	25,678	441,426	5,373	92,368	17.19
1964	4,874	27,494	510,564	5,641	104,752	18.57
1965	4,772	26,493	486,100	5,552	101,865	18.35
1966	4,060	24,974	543,251	6,151	133,806	21.75
1967	3,558	21,762	501,661	6,116	140,995	23.05
1968	3,324	20,532	493,736	6,177	148,537	24.05
1969	3,927	23,695	606,005	6,034	154,318	25.58
1970	3,844	23,093	617,583	6,007	160,662	26.74
1971	3,679	22,122	612,854	6,013	166,582	27.70
1972	5,086	28,885	802,385	5,679	157,764	27.78
1973	6,427	36,337	997,932	5,654	155,272	27.46
1974	6,695	37,131	1,266,540	5,546	189,177	34.11
1975	7,654	43,376	2,005,410	5,667	262,008	46.23
1976	8,904	48,366	2,407,418	5,432	270,375	49.78
1977	11,479	62,513	3,599,099	5,446	313,538	57.57
1978	13,306	72,819	4,978,821	5,473	374,179	68.37

AUTHORITY: JOINT ASSOCIATION SURVEY.
Published in Twentieth Century Petroleum Statistics, 1980, DeGolyer and MacNaughton.

Many Customers

In Stigler's model costs of collusion are less where cheating is promptly and easily detected. Ease of detection is inversely related to concentration on the buying side of the market. With a smaller number of major buyers it is argued that it will be more difficult to attribute a loss of sales to cheating by a member of the cartel since the loss may have resulted from the random defection of a single buyer. Additionally, cheating is easier when it involves granting a lower price to a single large buyer, rather than to many smaller buyers, since the likelihood of detection increases with the number of entities involved.

This traditional argument relating the number of customers to 'cheating' within the cartel and ease of detection is inapplicable in this case, since 1) the alleged conspiracy is not purely horizontal, and 2) the dedication of reserves under long-term contracts virtually eliminates the possibility of defection.

There was no advantage to offering secret price concessions where the purchaser had contracted for all reserves (production) under the lease for twenty years. A purchaser switching to a lower-priced producer would have had to violate his legally executed contract. In the mid-1970's there was no well developed spot or short-term market. Only newly discovered gas on undedicated acreage would have been 'competing' in the traditional sense.

Additonally, gathering systems are expensive and immobile, making defection unlikely even if it had not meant breaking a contract. Consequently, in this case, the significance of the 'number of customers' variable relates more to the degree of market power on the

buying side since the buyer is an alleged co-conspirator.

Standard Product

The product, unprocessed natural gas at the wellhead, is quite homogeneous. Within producing regions, be that a field or basin, the quality of the gas tends to be uniform and the drilling conditions, permeability, porosity, depths, and other variables affecting supply will generally not vary significantly. There are quality differences in Btu content and pressure (if compression is required the product will command a lower price), but these tend to be minor and are adjusted for in the contracts.

Vintaging by the FPC introduced an artificial distinction in the San Juan Basin, as it did elsewhere. Old, or flowing, gas is not chemically different from new gas, nor is it distinquishable in the eyes of purchasers. The product, natural gas at the wellhead, is standardized within the basin. As mentioned previously, there was no incentive for producers or sellers of natural gas to invest in product differentiation.

The more standardized the product is, the greater the ability of sellers to collude effectively. Homogeniety of product makes it easier for firms to agree upon a single price. Otherwise, sellers would have to agree upon a more complex set of prices reflecting differences in quality, which is more difficult to do without overt negotiations of the type likely to attract the attention of antitrust enforcers.

The Principal Firms Sell at the Same Level in the Chain of Distribution

Where some members of a cartel sell at different levels in the

chain of distribution, the enforcement of the cartel is more complicated and the feasibility of collusion is reduced.

Since Southern Union was both a 'producer' and a 'buyer' of gas in the San Juan, all the firms in the alleged conspiracy did not sell at the same level in the distribution chain. Additionally, Southern Union was primarily a purchaser and distributor. The producing affiliate (SUPRON) was in the process of being spun-off. At the time of the alleged conspiracy, Southern Union owned 28% of SUPRON's stock. Any advantage to Southern Union would have had to come through this ownership of stock in SUPRON and would have had to be sufficient to offset any negative impact on the distribution company and SURCO. The same argument would apply to the directors who held stock in SUPRON. These individuals also held stock in Southern Union.

Price Competition More Important Than Non-Price Competition

In the natural gas market of the 1970's, non-price competition was definitely as important, if not more important, than the base contract price. A producer is necessarily concerned with the cash flow from his investment over the life of the contract. This return to the producer will be influenced not only by the original base price per unit of gas, but also (and equally) by the other provisions he is able to negotiate in the contract. The purchaser will be concerned with (in addition to base price) the quality and security of the supply, stability of price, duration of the contract, and connection costs. Consequently, there will be trade-offs between price and the non-price provisions in the contract.

Some of the more important non-price determinants include:

1. Take-or-Pay: The take-or-pay commitment was critical to the producer's cash flow from an acreage. It assured the producer a certain minimum stream of guaranteed revenues from that acreage and discouraged the pipeline company from indiscriminately shutting in wells which could be potentially damaging to the well or the reservoir. Gas from wells dedicated to the purchaser under long-term contracts was not free to be sold to any other purchaser if not taken. Without some type of minimum take obligation the producer runs the risk of sudden volatile interruptions in sales and thus revenues for prolonged periods.

Consequently, there is a trade-off between price and take-or-pay provisions. A purchaser willing to give high take-or-pay obligation would have been able to secure gas at a lower price than one not offering a generous take-or-pay.

2. Right to the Liquids: Another important negotiating point was the right to the liquifiable hydrocarbons in the gas stream. When natural gas is produced it contains suspended hydrocarbons such as propane and butane which are commercially valuable. The liquifiable hydrocarbons can be extracted either before or after the gas enters the pipeline. Therefore, both producer and pipeline purchaser may have an interest in processing the gas and the right to those liquids could be an important element in the bargaining.

3. Connection Costs: Once the wells are completed they must be physically connected to the pipeline. The responsibility for putting in the gathering system and metering equipment may be assigned to either the producer or the pipeline purchaser. Since these connection costs may be substantial, requiring large, up-front cash outlays, the

responsibility for these costs will be a factor in determining the price and in choosing a buyer. Where two potential buyers are offering dissimilar prices for the gas, but one has agreed to install all necessary gathering equipment, a rational producer may well take the lower price in exchange for the agreement to install the gathering system.

4. Advance Payments: The practice and purpose of offering advance payments or prepayments to producers was discussed in Chapter V. The success of such practices and continued popularity (where allowed) of prepayments is indicative of the trade-off between unit price and the net present value of the cash flow.

5. Price Escalation Clauses: The escalation of the price over the term of the contract is important to both the producer and the purchaser when gas is being sold under long-term contracts. Because the producer is concerned with the overall return over the life of his investment, concessions on current price may be made in return for what is perceived as favorable provisions for future escalation. To minimize uncertainty, purchasers may offer higher current prices and generous fixed-price escalators in return for indefinite price escalations in the contract.

6. Size of Revenues: A large 'package' of gas backed by considerable reserves could command a premium because gathering and administrative costs per unit of gas purchased are lower and because security or reliability of supply is also a consideration.

7. Quality and Pressure: Within producing fields or basins quality and pressure of supplies will tend to be uniform. However, quality and pressure differences will influence price. The gas stream

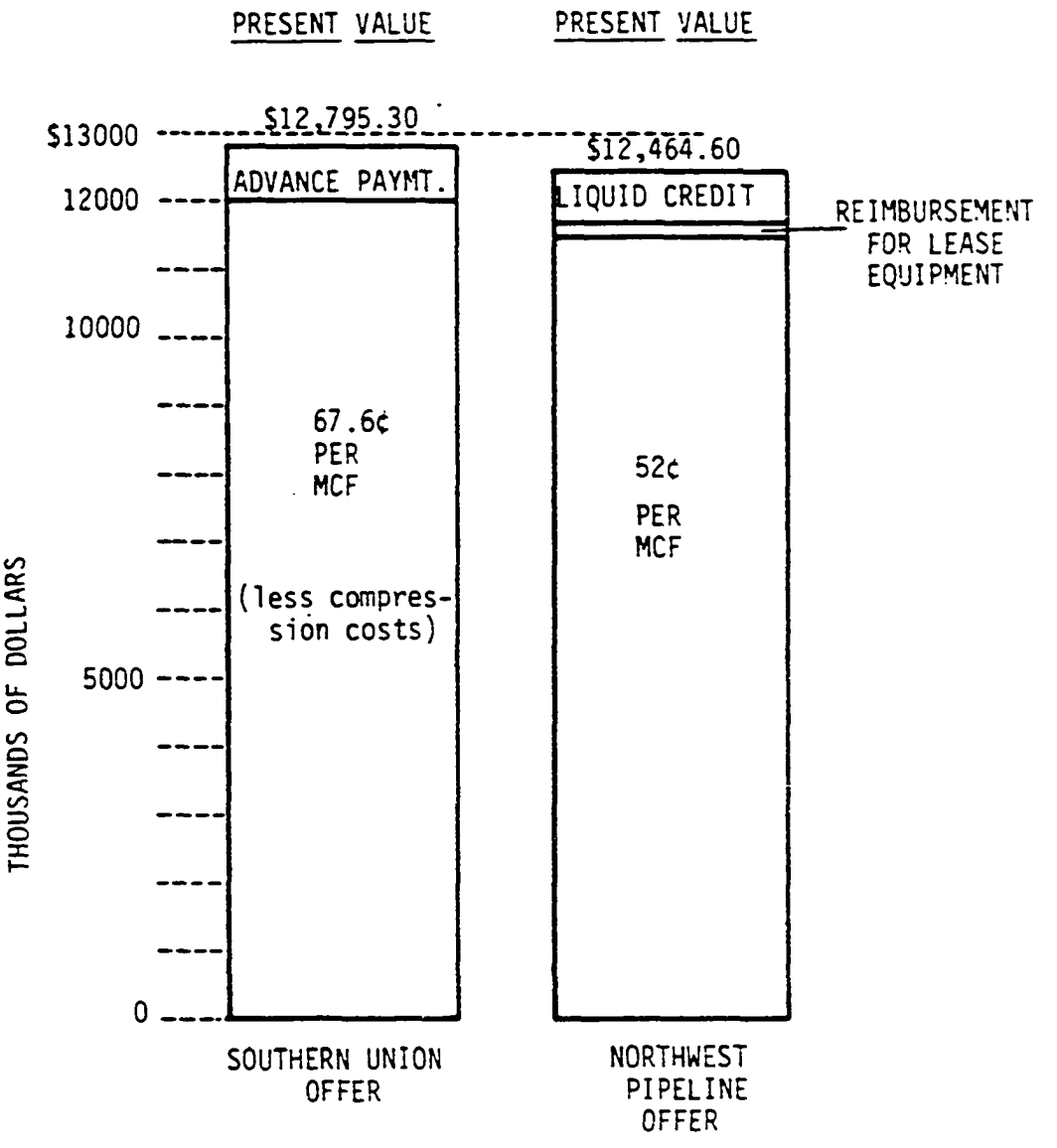
may contain water vapor, sulphur, and other impurities which are physically damaging to the pipeline and reduce the heating value of the gas. Where gas does not meet minimum quality standards it must be processed. When such processing expenses are incurred it will be reflected in the price. Also, the gas must enter the pipeline at sufficient pressure to maintain the line pressure, otherwise additional compression costs will be incurred.

The importance of the non-price provisions in contracting for natural gas is illustrated in Figure 6. In Figure 6, the results of an analysis of two actual offers for a package of gas in the San Juan Basin are summarized. Although the price offered by Southern Union (67.6 cents per Mcf) was substantially greater than the offer by Northwest Pipeline (52 cents per Mcf) the present value to the producer of these respective offers was remarkably close.

The Gas Contract Department of the supplying producer explored various alternatives to market and develop the gas in the Gallegos Canyon Area including advance payments, direct sales, and construction of a company-owned chemical complex. After rejecting the possibility of a direct sale or a company-owned ammonia-urea complex, attention was focused on a more conventional "Advance Payment Program" with the existing pipeline companies in the area. El Paso was contacted first but refused any consideration for advance payments. Subsequently, negotiations were undertaken with Northwest Pipeline and Southern Union. Northwest initially offered an advance payment but was required to withdraw the offer when the FPC ruled jurisdictional pipelines could no longer make advance payments. Although precluded from making advance payments, Northwest devised a counter-proposal that was

considered comparable on a present worth basis to the Southern Union offer, which included a higher base price and an advance payment. According to an internal memo, the final decision to take the Southern Union offer was based on a consideration of certain "intangible factors," since both offers were considered comparable in terms of present worth.

Fig. 6. Comparison of ten year cash flow.



High Ratio of Fixed to Variable Costs

The argument relating the ratio of fixed to variable costs to the incentive to collude assumes that because fixed costs do not vary with the level of output, they cannot be reduced to adjust to a decline in demand. These firms will be particularly vulnerable to economic developments which force a reduction in price or output and thus will rate the benefits from monopoly pricing higher than would firms in low fixed cost industries.

The premise rests on the dynamic interaction between cost structures and business conditions. Evidence suggests that industries characterized by high overhead costs are particularly susceptible to pricing discipline breakdowns when a cyclical or secular decline in demand leads the industry to operate at below capacity. Scherer suggests[8] this tendency appears to be especially marked in industries with heavy investments in natural resource deposits and those utilizing highly capital-intensive production processes. When demand falls below levels where the firms are operating at capacity, the firms with high fixed costs must cut prices more sharply and incur a more severe erosion of profits than would a similarly situated firm with low fixed costs. This is because, ceteris paribus, marginal costs must decline more steeply with reduced output from the point of minimum average cost (designed capacity) for a firm with higher fixed costs.[9] Faced with the (relatively) greater financial crisis, the managers/owners' (of the high fixed cost firms) decision-making horizon shortens and attention turns to immediate remedies in which certain risks may be ignored.

The production of natural gas is not a high fixed-cost activity. Drilling rigs may be owned by the producer or leased, are mobile and

re-used over and over again. The argument relating high fixed costs to the sensitivity of firms to downturns in price or demand, and thus the benefits of collusion, would not apply on the production side of the market.

Natural gas distribution, on the other hand, is a relatively high fixed cost industry, but the type of risk inherent in the argument relating a high ratio of fixed costs to the proclivity to collude is mitigated by regulation. That is, the 'used and useful' criteria combined with rate of return regulation reduces the risk by offering the utility the opportunity (a sufficient price) to earn at least a fair market return on any investment in fixed plant.

Demand Static or Declining Over Time

The exact point at which the demand for natural gas leveled off and began to decline is uncertain.

Total production and consumption of natural gas was growing until 1973. Natural gas production in the United States peaked in 1973 (see Tables 9 and 10). Demand, however, continued to increase beyond 1974 as evidenced by the continued shortages and curtailments.

Figures for curtailments of natural gas under "firm" contracts indicate that the amount of gas curtailed by interstate pipelines was 343.5 Bcf in 1971[10] and 555.4 Bcf in 1972[11] for the months April through October. These estimates underestimate the actual unsatisfied demand or curtailments since they do not include curtailments of "interruptible" sales, curtailments in the intrastate markets, or the would-be users who simply left the market.

Atkinson and Halvorsen estimated the difference between predicted

and actual gas consumption of electric utilities in a model designed to provide a measure of the extent of gas curtailments. Their results indicated shortages of 10% to 33% for the winter months of 1974. The results are summarized below.

Predicted and Actual Fuel Consumption

1974, Billion Btu

	October	November	December
predicted	341,283	302,790	285,837
actual	309,627	247,926	213,534
	31,656	54,864	72,303
difference	10.22%	22.13%	33.86%

Source: Scott E. Atkinson and Robert Halvorsen, "Demand for Fossil Fuels by the Electric Utilities," p. 62.

Although not proven statistically, it is likely that demand may have begun leveling off after the first round of energy price increases following the oil embargo of 1973. Certainly by 1978 and the second major round of energy price increases, conservation and fuel switching had become important factors affecting the demand for natural gas.

Table 9. Gas Utility Industry Sales: Trillions of Btu's.

	New Mexico	United States
1970	135.6	16,041.9
1971	128.8	16,679.5
1972	135.3	17,082.1
1973	142.4	16,479.9
1974	140.4	16,000.3
1975	142.5	14,862.9
1976	152.5	14,813.5
1977	148.4	14,340.9
1978	136.9	14,748.4
1979	134.7	15,440.4

Excludes sales for resale

Source: Gas Facts, A Statistical Record of the Gas Utility Industry, American Gas Association, Department of Statistics, 1974 through 1979.

Table 10. Gross Production of Gas in The United States
(Millions of Cubic Feet)

	Gas Wells	Oil Wells	Total	Marketed Production[1]
1966	13,893,921	5,139,918	19,033,839	17,206,628
1967	15,346,853	4,904,923	20,251,776	18,171,325
1968	16,539,925	4,785,075	21,325,000	19,322,400
1969	17,489,415	5,189,780	22,679,195	20,698,240
1970	18,594,658	5,191,795	23,786,453	21,290,642
1971	18,925,136	5,162,895	24,088,031	22,493,012
1972	19,042,592	4,973,517	24,016,109	22,531,698
1973	19,371,600	4,695,602	24,067,202	22,647,549
1974	18,669,212	4,180,581	22,849,793	21,600,522
1975	17,380,293	3,723,237	21,103,530	20,108,661
1976	17,190,655	3,753,123	20,943,778	19,952,438
1977	17,415,983	3,681,088	21,097,071	20,025,463
1978	17,394,213	3,914,602	21,308,815	19,974,033
1979				19,702,192[2]

Source: Gas Facts, A Statistical Record of the Gas Utility Industry, American Gas Association, 1979.

1 Marketed production equals total gross production less volumes used for repressuring and volumes vented and flared.

2 1979 value published in Twentieth Century Petroleum Statistics, 1980. DeGolyer and MacNaughton.

Sealed Bidding

Since all producers were offered the same terms in the settlement negotiation process, it can be argued that the pricing was public. Sealed bidding in the usual sense was not commonplace in the natural gas industry.

Industry's Antitrust Record

A summary of the investigations instigated by the Antitrust and Monopoly Committee into the natural gas industry and the actions of the FPC was presented in the Appendix to Chapter V. There was considerable

interest in the industry concentration and the emphasis was on the degree to which the industry was workably competitive and the future role of regulation. The interest, however, was stimulated by accusations that producers were withholding gas from the market in order to create a shortage and put upward pressure on prices. No charges were ever filed against any producer and, in the end, the general consensus was that the shortages were real and that the gas producing industry was sufficiently competitive to preclude a conspiracy by producers.

Within the San Juan Basin the major antitrust activity involved the forced divestiture by El Paso of its Northwest system in the early 1970's. The newly created entity, Northwest Pipeline, became the third major pipeline purchaser in the Basin.

Summary

The task of this section was a structural analysis of the market to determine whether the environmental conditions are conducive to monopolistic behavior. The two main elements of structure are seller concentration and condition of entry.

Concentration is a quantification of the degree to which a small number of firms may potentially control the market's productive capacity. It may indicate the degree of interdependence perceived by major producers and their influence on market price.

The condition of entry determines the relative ability of smaller firms and potential entrants to create new capacity in response to monopolistic pricing levels by the dominant firms, i.e., they define the long-run potential for successful collusion.

High concentration and impeded entry (entry takes a long time) are complementary conditions, usually considered necessary for the long-run success of collusion among producers. Structurally, the wellhead market was not a likely candidate for successful collusion.

Although fewness of purchasers is considered a detriment to collusion in the Posner framework, concentration on the buying side would be a pro-collusive element in this case study, because the alleged price-fix was not a pure horizontal conspiracy among producers. The market was highly concentrated on the buying side.

The length of time required for entry was not a major barrier for producers in the market. Purchasers of natural gas, however, would have encountered substantially greater difficulties in terms of time and effort.

The product was standardized, which is a pro-collusive market element, but the importance of non-price competition would have made effective agreements difficult. It would have been necessary to agree not only on price, but on take-or-pay, royalty and tax treatment, term, and other forms of non-price competition. Additionally, there would have been differences in compression and gathering costs. The fact that the firms did not sell at the same level in the chain of distribution would also have been a limiting factor.

Evidence regarding the elasticity of demand and the growth of demand (static, declining, or increasing), is inconclusive.

High fixed costs to variable costs and sealed bidding were not important structural elements of the natural gas industry.

There was no history of antitrust activity among producers in the San Juan except for the allegations made by the Attorney General's

office in the original suits brought by the producers against Southern Union. Otherwise, the only antitrust activity involved the divestiture of Northwest Pipeline by El Paso, who were purchasers (not producers).

In general, the natural gas market of the San Juan was not structurally conducive to collusion at the production level. The evidence suggests that a horizontal price fix among producers would have been unlikely to succeed. Additionally, the technical nature of the production process did not lend itself to output restrictions which necessarily accompany the decision to collude and raise prices. Although it is possible to shut wells in or operate below capacity, the contract requirements, lease agreements, and potential damage to the well or reservoir would make a reduction in output undesirable. Because of drainage, a decision by certain producers to operate below capacity while fringe producers are not cutting back production could reduce permanently the total production over the life of those wells. The buying side of the market was concentrated and a more likely candidate for collusion. However, there were no allegations of collusion among or between buyers. The allegation was of conspiracy between a buyer and three producers.

EVIDENCE OF COLLUSIVE BEHAVIOR: Section Two, Stage Two

The second stage is designed to develop the evidence necessary to test for the existence of collusive pricing without reliance on evidence of overt acts of collusion. The sorts of evidence--evidence of collusive behavior--put forward in Posner's framework include:

1. Fixed relative market shares
2. Price discrimination

3. Exchanges of price information
4. Regional price variations
5. Identical bids
6. Price, output, and capacity changes at the formation of the cartel
7. Industry-wide resale price maintenance
8. Declining market share of leaders
9. Amplitude and fluctuation of price changes
10. Demand elasticity at market price
11. Level and pattern of profits, and
12. Basing-point pricing.

Obviously, certain of these indicators are more significant than others and some, such as Industry-wide Resale Price Maintenance and Basing-point Pricing, are not applicable in this case. The development of the economic evidence follows, beginning with the Level and Pattern of Profits.

Level and Pattern of Profits

If regulation is effective one would not expect to find supra-normal profits over a prolonged period of time in a regulated utility. The existence of supra-normal profits, however, is possible and does occur in regulated firms. For many reasons a utility may exceed its allowed rate of return, just as it is possible a utility may not achieve its allowed return. If a utility is 'healthier' than average (for whatever reasons) for lengthy periods the noticable impact is more likely to be in the appreciation over time of the net worth of the firm as reflected in its stock price than in prolonged, above

average returns.

If the utility is vertically or horizontally integrated, however, one could logically look to the profits in any unregulated affiliates. A regulated subsidiary could, for example, be channeling cash assets to an unregulated parent through its annual dividend payments.

Additionally, a standard economic indicator of monopoly power, the divergence of price and marginal cost, would not be applicable to a regulated utility. Under rate of return regulation the administered price is designed to approximate average total cost, not marginal cost (assuming the rates are designed to recover the full cost of service and a normal return on investment). Thus, the standard for comparison in judging price or the profitability of a regulated firm would be an appropriate industry norm.

While no two firms are ever identical, standards of comparability can be determined and a group of comparable companies selected. Where firms are similar in terms of operations (type of business), size and risk, one would expect, at least on average, the performance of these companies to be similar. By comparing the price/performance of the firm(s) alleged to have been involved in the conspiracy with these comparable companies, it can be established whether or not the price/performance of the accused firm(s) is above normal. Above normal price and performance, unexplained by market factors, in an industry conducive to collusion would be partial evidence of collusion. Properly selecting the set of comparable companies will eliminate most market factors that do not apply equally to the firm(s) under investigation. It is always possible, of course, that superior performance is the result of greater efficiency and superior

management. Therefore, above normal performance must be considered only in conjunction with the other indicators of this secion.

First, the trend in Southern Union's stock price will be evaluated to determine whether there was an unusual (by comparison) appreciation in the net worth of the company as reflected in the stock price. In this case the market to book ratio will also be of interest. For stocks, book value per share is the firm's total equity in common stock, paid-in capital, and accumulated retained earnings, divided by shares outstanding. Market value reflects the investors estimation of the capitalized future net cash flows. Since market value is dependent upon expected earnings and book value reflects historical costs, a substantial increase in market to book value after the alleged conspiracy could indicate an expected improvement in performance relative to past performance. An increase in market to book ratio relative to comparable companies could also be indicative of superior performance. Return on equity for Southern Union and comparable companies is also evaluated. Although the return on equity from utility operations is regulated, each of these companies has income from other operations, including oil and gas production or gas processing. In addition, since it may be possible for a utility to divert income to a parent/holding company, the return on equity may be revealing.

For the reasons discussed in Section One[12] it is more likely that any benefit to Southern Union would come about through its ownership interest in Southern Union Production Company (SUPRON); i.e., the value of Southern Union's 28.5% holding of SUPRON stock. Consequently, an analysis of SUPRON's stock price/performance is

undertaken using the same techniques employed in the analysis of Southern Union.

Southern Union

In choosing a set of companies comparable to Southern Union, the Natural Gas Industry section of Value Line (1981) was utilized to obtain a list of traded gas companies. Then Standard & Poor's Energy Stocks Handbook (Volumes 2 and 3) was used to eliminate companies that were not comparable in terms of the mix of operations. The Energy Stocks Handbook contains a business summary which gives the contributions to revenues and operating profits by business segment and an overall description of the company and its operations. For Southern Union, gas utility operations accounted for 54% of revenues and 28% of profits, gas processing operations accounted for 9% of revenues and 47% of profits, oil refining and marketing accounted for 36% of revenues and 14% of profits, and oil and gas production accounted for 1% of revenues and 11% of profits in 1980. Consequently, diversified gas companies with at least 50% of revenues contributed by utility operations and some involvement in either gas processing or oil and gas production were selected. This produced a list of companies that were comparable in terms of operations. The next step was to eliminate those companies that were not comparable in terms of size.

As an indicator of size, data on total revenues and net plant for 1975 were evaluated. (The period just prior to the alleged 1976 conspiracy). Using figures from Value Line, Southern Union had net plant of $309.4 million in 1975 and revenues of $352.2 million. The 1975 revenues for diversified gas companies ranged from less than $50

million to over $5.6 billion. Companies with revenues under $100 million or over $900 million in 1975 were excluded. Similarly, companies with net plant of less than $100 million or in excess of $900 million were also excluded. Through this process of elimination nine companies were identified as being comparable to Southern Union in terms of size and type of operations. These companies are:

	1975 Revenues ($Mil)	1975 Net Plant ($Mil)
Atlanta Gas Light Co.	258.1	270.8
Brooklyn Union Gas Co.	267.2	414.4
Enserch Corporation	716.6	824.5
Entex, Inc.	190.9	154.8
Equitable Gas Co.	136.4	241.6
Houston Natural Gas Corp.	819.8	485.9
Kansas-Nebraska Natural Gas Co.	142.0	205.8
Mountain Fuel Supply co.	138.6	258.9
OneOK, Inc.	255.0	299.6
Southern Union	352.2	309.4

Source: Value Line, July 17, 1981.

Table 11 shows average stock prices of Southern Union and the nine comparable companies for the period 1973 through 1980. This period includes the 1976-77 period that is of particular interest, plus three prior years and three following years. The trend for Southern Union shows a decline in 1974 and 1978. All other years show an increase with the largest increases in 1976 and 1980. The trend for the nine comparable companies is very similar. On average there is a decline in stock price in 1974 and 1978. As with Southern Union, there is an increase in all other years with the largest increases occuring in 1976 and 1980.

Since the conduct in question occurred in July of 1976, the

increases in 1976 and 1977 are of special interest. The increase in the average price of Southern Union stock was 26.48% and 1.39% respectively for these periods. The nine comparable companies experienced average increases of 32.46% and 13.05% for the same periods. Thus, in terms of trend in stock price and magnitude of changes there is no evidence of extraordinary increases in the net worth of Southern Union as measured by the value of its stock.

Table 12 presents market to book ratios for the same group of companies. Market to book ratios for Southern Union and the nine company average exhibit a trend similar to the trend in average stock prices. There is a general decline in market to book ratios in 1974 and again in 1978, except for Southern Union stock which experienced a decline in 1977. All other years show an increase with the largest increases occurring in 1976 and 1980. The market to book ratio for Southern Union is higher than the average in 1976 and 1977.

The higher ratios in 1976 are likely the result of the general improvement in performance experienced by these companies in 1976. The ratio in 1977 is only six basis points higher than the average. Considering the divergence from the average consistently exceeded six basis points prior to 1976, this distinction is unlikely to be significant. The increase in 1976 is of greater magnitude and deserves closer attention. Southern Union's average stock price increased 26.48% in 1976 compared to an average increase of 32.46% for the comparable companies. This suggests that the large increase in market to book ratio relative to comparable companies is due more to the lack of increase in book value than to an increase in market expectations relative to book value.

Thus, there is no evidence of abnormal performance reflected in this variable.

Table 11. Average Stock Prices for Southern Union and Comparable Companies

	1973	1974	1975	1976	1977	1978	1979	1980
Southern Union	15.35	12.75	14.35	18.15	18.40	15.30	18.10	25.30
Percent Change		-16.94	12.54	26.48	1.38	-16.85	18.30	39.78
Atlantic Gas/Light	13.75	11.75	12.00	14.20	15.60	15.65	15.45	14.25
Percent Change		-14.55	2.13	18.53	9.86	.32	-1.28	-7.77
Brooklyn Union Gas	21.70	15.95	14.45	18.05	20.30	20.05	21.90	21.75
Percent Change		-26.50	-9.38	24.91	12.47	-1.23	9.25	-0.68
Enserch Corp.	14.15	10.70	7.05	11.50	13.50	13.75	15.80	24.15
Percent Change		-24.38	-34.11	63.12	17.39	1.85	14.91	52.84
Entex, Inc.	3.95	2.75	3.70	6.20	8.80	11.35	15.20	15.25
Percent Change		-30.38	34.55	67.57	41.94	28.98	33.92	0.33
Equitable Gas Co.	10.50	8.90	8.85	11.10	12.25	11.50	13.70	23.60
Percent Change		-15.24	-0.56	25.42	10.36	-6.12	19.13	72.26
Houston Natural Gas	13.60	11.60	22.40	30.45	30.70	23.90	31.70	49.15
Percent Change		-14.71	93.10	35.94	.82	-22.15	32.64	55.05
Kansas-Nebraska Gas	13.05	12.95	12.90	14.80	20.70	18.20	18.70	28.20
Percent Change		-0.77	-0.38	14.73	-13.35	-12.08	2.75	50.8
Mountain Fuel	41.00	35.75	35.10	38.10	41.90	33.75	29.80	40.00
Percent Change		-12.80	-1.82	8.55	9.97	-19.45	-11.70	34.23
OneOK, Inc.	14.75	12.60	14.45	19.30	24.70	21.20	22.40	31.20
Percent Change		-14.58	14.68	33.56	27.98	-14.17	5.66	39.29
Nine Co. Average Percent Change		-17.1	10.92	32.46	13.05	- 4.89	11.70	32.93

Source: Value Line, 1981.

Table 12. Ratio: Average Market Price/Book Value

	1973	1974	1975	1976	1977	1978	1979	1980
Southern Union	1.32	1.01	1.06	1.55	1.44	1.13	1.19	1.44
Atlantic Gas & Light	0.87	0.70	0.66	0.76	0.77	0.70	0.66	0.57
Brooklyn Union Gas	1.01	0.73	0.67	0.84	0.91	0.86	0.89	0.84
Enserch Corp.	1.7	1.20	0.73	1.10	1.18	1.19	1.32	1.68
Entex, Inc.	1.88	1.17	1.34	1.84	1.94	1.89	2.07	1.81
Equitable Gas Co.	0.88	0.70	0.65	0.76	0.81	0.70	0.74	1.08
Houston Natural Gas	2.70	1.83	2.69	2.89	2.20	1.47	1.70	2.24
Kansas-Nebraska Gas	1.34	1.18	1.16	1.18	1.50	1.20	1.21	1.69
Mountain Fuel	2.42	1.97	1.63	1.63	1.65	1.21	1.04	1.26
OneOK, Inc.	1.35	1.08	1.15	1.36	1.48	1.10	1.09	1.40
Nine Co. Average	1.58	1.17	1.19	1.37	1.38	1.15	1.19	1.40

Source: Value Line.

Analyzing the return on equity (Table 13) Southern Union actually experienced a decline in 1976 relative to 1975, whereas the comparable companies generally experienced a higher return on equity in 1976 than in 1975. Southern Union increased its return on equity in 1977, but the return (16.7%) was well below the nine-company average of 19.9%. In 1978, the return on equity for Southern Union falls to 15.1% compared to a decline to 18.0% for the comparable companies. The provisions of the NGPA went in effect in November of 1978 and disproportionately impacted returns for all gas utilities depending upon the existence and flexibility of the purchased gas adjustment clause allowed in the various state jurisdictions, the percentage of Section 102, 103, and 107 gas produced by the affiliate production company, or the degree to which the gas processing unit was negatively impacted by the higher NGPA prices. Consequently, the higher than average returns of 1979 and 1980 are of less significance.

Table 13. Percent Return on Equity

	1975	1976	1977	1978	1979	1980
Southern Union	17.4	15.9	16.7	15.1	22.4	22.6
Atlantic Gas & Light	14.6	8.9	15.2	15.2	11.4	12.8
Brooklyn Union Gas	10.6	9.9	11.8	12.5	13.4	13.6
Enserch Corp.	14.5	14.5	15.8	11.6	15.9	20.7
Entex, Inc.	24.2	27.4	36.5	34.6	29.7	21.6
Equitable Gas Co.	13.0	14.0	11.9	14.1	18.7	21.7
Houston Natural Gas	25.2	29.2	27.2	22.3	20.6	25.0
Kansas-Nebraska Gas	15.3	21.8	18.8	18.1	16.5	16.6
Mountain Fuel	13.5	16.8	17.6	11.2	12.5	12.1
OneOK, Inc.	16.1	21.9	24.1	22.1	15.6	18.0
Nine Co. Average	17.8	18.3	19.9	18.0	17.1	18.0

1973 and 1974 data not available from Standard & Poor's Energy Stock Handbook.

Source: Energy Stocks Handbook, Standard & Poor's Corporation, Volume 2 No. 1, Volume 3 No. 1.

Conclusion: Southern Union

Measured in terms of stock price there is no eveidence of extraordinary increase in the net worth of Southern Union, either in 1976 or the year after. The trend in stock prices follows that of the comparable companies through 1980 with Southern Union's performance being rather poor relative to these companies until 1979 (after the NGPA).

The market to book ratios show improvement in 1976 and 1977 as do the market to book ratios for the nine comparable companies. As with stock price, the tend in market to book ratios tends to follow the comparable company average closely.

In terms of return on equity, Southern Union performed rather poorly compared to comparable companies until 1979. Consequently, there is little or no evidence of dramatic improvement in net worth or

profit performance following the July 1976 settlement agreements. Neither is there any evidence of superior performance relative to the comparable companies.

SUPRON

For the reasons discussed in Section One of this chapter, the Southern Union Company was most likely to benefit from higher wellhead prices through ownership of stock in SUPRON, the producing company in which it held a 28.5% interest. An extraordinary increase in the value of its interest in SUPRON should, ceteris paribus, enhance the net worth of the Southern Union Company. Since Southern Union was in the process of divesting itself of this producing company, a motive may have existed to maximize the value of this stock. The motive is not assured since SUPRON was a major supplier of natural gas to the utility division of Southern Union Company. The analysis in Section One suggests the impact on the utility and the processing operations of higher wellhead prices would likely be negative. Nevertheless, if company officials or directors perceived the impact on the utility would be neutral because of the PGA and a minimal impact on processing operations there could have been sufficient motivation to take actions which maximized the value of SUPRON and its stock.

In addition to the stock price appreciation, there is also the possibility that Southern Union could benefit from the dividend payments on the SUPRON stock held. The potential from this source, however, would have been nebulous. At least one-half the companies in this classification (small, high risk, fast growing exploration and production companies) paid no dividends. Where dividends were paid

they were usually very small and unpredictable. SUPRON had neither declared nor paid dividends until 1976. The dividend payment in 1976 was two cents per share. Prior to this time, the only dividend declared had been in 1969 (according to Value Line which does not specify whether that dividend was actually paid[13]). The two cent dividend represented an average annual yield of 0.6% (less than one percent). Considering Southern Union was in the process of divesting itself of SUPRON and thus, was not looking for a long-term source of dividend income, it is not realistic to assume a conspiracy could have been motivated by potential dividend income.

The financial performance of SUPRON was evaluated by analyzing the trend in the performance of this company relative to comparable companies. The next step then is to look at the stock price, and overall performance of SUPRON in comparison with other natural gas producers of comparable size.

In selecting producers for comparison, techniques similar to those employed in choosing companies comparable to Southern Union Company were used. Size, as measured by assets and revenues during the period 1975-1977, was used. Many of these companies were growing at extremely high rates and revenues were volatile compared to many traded companies, especially utilities . Oil and gas companies involved primarily in exploration and production are characterized by high risk and tend to exhibit highly volatile returns, diverse capital structures, and large stock price movements. Although standards of comparability still exist, greater caution must be exercised in drawing conclusions from comparisons. For example, while most utilities will maintain fairly constant and comparable capital structures, a

producer's debt ratio may go from 5% to 96% in a five-year period[14] and some producers have no debt in their capital structure, while others consistently maintain an 80-90% debt ratio over years. Thus, a comparison of return on equity has little evidentiary significance. Return on total capital is more meaningful under these circumstances. however, even this number is of questionable comparability as these companies tend to acquire and dispose of assets frequently, increasing the volatility of the total capital structure in ways which may or may not have significant impacts on the current revenue stream (e.g., the purchase of undeveloped or unproven reserves may substantially increase the debt of the company without immediately impacting the revenue stream).

It should also be noted that smaller exploration and production companies were frequently formed, bought-out, merged, or otherwise absorbed and thus many of the most active gas producers of this era did not exist long (independently). Available historical data was limited and frequently had to be pieced together from back issues of Value Line Investment Survey and Standard and Poor's Energy Stocks Handbook. Back issues of these publications are not retained by most libraries and had to be obtained from individuals.

In selecting companies comparable to SUPRON, the first step was to identify companies that were primarily engaged in the exploration and production of natural gas, as opposed to oil. Value Line and Standard and Poor list hundreds of "oil and gas producers." Many of these companies are diversified into other areas such as pipeline transmission, refining, overseas exploration, chemical processing, etc., and were eliminated.

In 1976 SUPRON had total assets of $90 million and revenues of $41.6 million. Companies with assets in the $30 million to $125 million range and revenues over $10 million but under $74 million were identified. From these companies a check was made as to the relative production of oil and gas by these companies. This process of elimination resulted in eight companies that could be considered comparable in terms of size and primary line of business. These companies are presented in Table 14.

Table 14. BUPRON and Comparable Companies

Company	1976 Total Assets ($ Million)	1976 Revenues ($ Million)	1980 Natural Gas Production Bcf	1980 Oil Production Bbl
BUPRON Energy Corp.	90	41.6	21.5	520,349
Adobe Oil and Gas	84	37.1	8.4	1,391,121
American Quasar Petroleum	98	16.7	8.5	635,000
Dorchester Gas	72	34.1	24.6	600,000
Energy Reserves Group	113	60.0	23.2	3,200,000
Felmont Oil	58	21.5	10.0	687,942
Patrick Petroleum	82	41.1	8.6	768,571
Universal Resources	34	11.2	7.6	519,236
Woods Petroleums	46	16.8	17.2	786,940

Note: Energy Stocks Handbook Volumes 2 and 3 were earliest volumes available. Therefore, production data for 1980 was earliest data available from this or other published sources.

Sources: Standard and Poor's Energy Stocks Handbook Volumes 2 and 3.

Since the expected benefit to Southern Union would be through the appreciation in the stock value of its holding in SUPRON, the average market price for SUPRON and the eight comparable companies are the main point of interest in the analysis of SUPRON. Table 15 presents the average stock prices for these companies for the years 1972 through 1979, as well as the percentage change in the average stock price for each year.

As mentioned, stock prices for exploration and production companies tend to be very volatile. The price of SUPRON stock rose an average of 26.8% in 1976. This, however, compares to an increase of 47.4% in 1975 (the year prior to the alleged conspiracy). SUPRON stock rose a healthy 64.8% in 1977, which might be suggestive of the impact of a conspiracy were it not for the fact that comparable companies' 1977 stock prices were up 13.5% to 97.2%, with half of these companies experiencing increases which were greater than 65%. Compared to the comparable companies, SUPRON's performance in 1978 was relatively poor, with average price falling from $5.85 per share to $5.50 per share. 1979 was an exceptional year for SUPRON, as well as for most natural gas producers. This year (1979) was the first full year NGPA prices were in effect and it was also the time of the second major shock in international oil prices. For the year of the alleged conspiracy (1976) and the ensuing two years SUPRON did not out-perform the comparable companies. While SUPRON's stock appreciated significantly in 1977, half of the similar companies experienced even greater growth in stock value.

Table 15. Average Market Price of Stock, Supron and Comparable Companies

	1979	1978	1977	1976	1975	1974	1973	1972
Supron	11.15	5.50	5.85	3.55	2.80	1.90	2.05	1.80
Percent Change	102.7	-6.0	64.8	86.8	47.4	-7.3	13.9	
Adobe	17.45	10.90	8.90	6.50	5.35	4.75	6.15	6.00
Percent Change	60.1	22.5	36.9	21.5	12.6	-22.8	2.5	
American Quasar	11.60	10.75	9.50	5.70	3.70	3.15	5.20	2.55
Percent Change	7.9	13.2	66.7	54.1	17.5	39.4	103.9	
Dorchester	10.10	5.85	5.90	5.20	4.85	2.75	3.00	2.00
Percent Change	72.6	-0.8	13.5	7.2	76.4	-8.3	50	
Energy Reserves Grp	6.56	3.13	2.38	1.63	1.94	-	-	-
Percent Change	109.6	31.5	46.0	-16.0				
Felmont	13.40	7.90	7.30	4.15	3.35	3.65	4.20	4.60
Percent Change	69.6	8.2	75.9	23.9	-8.2	-13.1	-8.7	
Patrick	12.05	6.80	9.65	6.65	5.40	4.70	4.25	4.40
Percent Change	77.2	-29.5	45.1	23.1	14.9	10.6	-3.4	
Universal Resources	8.81	5.94	6.63	4.00	2.31	1.94	3.56	5.06
Percent Change	48.3	-10.4	65.8	73.2	19.1	-45.5	-29.6	
Woods Petroleum	16.55	14.35	14.20	7.20	3.80	-	-	-
Percent Change	15.3	1.1	97.2	89.5				
Average	57.6%	4.5%		55.9%	34.6%		22.1%	-19.8% 19.1%

Source: Value Line, June 19, 1981 and Standard & Poor's Energy Stocks Handbook, Vol. 2, No. 1 and Vol. 3, No. 1.

Although the expected benefit to Southern Union (of the alleged conspiracy) would stem from an appreciation in the value of the SUPRON stock it was holding, it is also necessary to evaluate the financial performance of SUPRON relative to similar companies. Tables 16, 17, and 18 compare Return on Total Capital, Return on Equity, and Market to Book Ratios for these companies.

The percent earned on total capital is displayed in Table 16. As can be seen, SUPRON showed a return to total capital that was higher than the eight-company average in all years except 1976. The significant differences occur in 1975 and 1979, whereas one would logically expect the more significant differences to occur in the year of the alleged conspiracy (1976) and the year immediately following.

Return on equity is presented in Table 17. Although strict comparability is diminished for the reasons given above, it is interesting to note that SUPRON's performance is relatively poor except in the years 1975 and 1979. Thus, compared to these similar companies, Southern Union's equity interest in SUPRON earned below average returns for the year of the alleged conspiracy and the two years immediately following.

Table 16. Percent Earned Total Capital

	1979	1978	1977	1976	1975
SUPRON	16.4	10.4	12.5	8.1	15.9
Adobe Oil and Gas	9.8	7.5	6.9	9.4	7.5
American Quasar	6.0	6.1	9.6	8.3	12.0
Dorchester Gas	17.0	13.4	14.4	20.3	17.4
Energy Reserves Group	8.2	NM*	6.5	4.5	6.2
Felmont Oil	14.1	10.6	7.1	7.1	2.5
Patrick Petroleum	4.2	6.3	5.0	6.6	14.1
Universal Resources	5.4	7.1	11.9	7.6	7.5
Woods Petroleum	18.5	17.9	27.2	29.7	26.6
Eight Company Average	10.40	8.61	11.08	11.68	11.73

* Not meaningful

Source: Value Line: Energy Reserves and Universal Resources calculated from Standard & Poor's Oil and Gas Stocks Handbook.

Table 17. Return on Equity

	1979	1978	1977	1976	1975	1974	1973
SUPRON	18.3	12.2	15.2	NM*	17.3	16.4	10.7
Adobe Oil and Gas	17.0	12.4	11.4	12.2	9.0	26.1	17.5
American Quasar	5.9	8.6	20.4	16.7	38.4	29.0	2.7
Dorchester Gas	31.3	24.6	20.9	28.2	28.7	36.6	28.2
Energy Reserves Grp	16.1	NM*	8.3	4.6	6.9	14.6	NM*
Felmont Oil	16.0	12.2	8.1	8.2	2.5	11.3	11.4
Patrick Petroleum	2.3	11.1	7.3	9.3	19.6	22.9	19.8
Universal Resources	9.8	12.6	17.3	10.7	9.8	7.1	0.7
Woods Petroleum	20.6	22.7	32.3	36.9	NA	NA	NA
Eight Company Average	14.84	13.02	15.75	15.85	16.41	21.09	11.47

*Not meaningful.

Source: Standard & Poor's Oil and Gas Stocks Handbook.

Market to book ratios for SUPRON and the eight comparable companies are provided in Table 18. There is no substantial increase in SUPRON's market to book ratio, either in absolute terms or relative to the comparable companies, which would indicate an expected improvement (by investors) in performance relative to past performance, in the year of the alleged conspiracy or the following year.

Table 18. Ratio: Market to Book Value

Company	1979	1978	1977	1976	1975	1974	1973	1972
SUPRON	3.55	1.77	2.07	1.45	1.58	1.27	1.62	1.59
Adobe Oil and Gas	3.08	2.26	2.05	1.60	1.42	2.01	3.29	4.55
American Quasar	6.10	5.19	5.14	7.04	5.97	7.50	16.77	8.79
Dorchester Gas	1.92	1.52	1.98	2.16	2.69	2.07	3.30	3.17
Energy Reserves	3.33	1.78	1.34	1.04	1.09	-	-	-
Felmont Oil	2.22	1.51	1.58	0.96	0.84	0.92	1.18	1.45
Patrick Petroleum	2.52	2.52	4.00	1.30	1.16	1.23	1.39	1.74
Universal Resources	1.47	1.06	1.29	0.91	0.61	0.60	1.19	1.68
Woods Petroleum	3.06	2.96	3.51	2.40	1.78	-	-	-
Eight Company Average	2.96	2.35	2.61	2.18	1.95	2.39	4.52	3.56

Source: Computed from Value Line.

Conclusion: SUPRON

The analysis of stock price and other financial indicators suggests that for the year of the alleged conspiracy and following two-year period there was no extraordinary enhancement of stock price or returns. SUPRON's profit performance relative to comparable companies improves significantly in 1979. This improvement comes three years after the alleged anticompetitive conduct occurred. While some lag is to be expected before the effects of a conspiracy would be

reflected in a company's financial statistics, the impact of a price increase in mid-1976 would be felt long before 1979. There was an absolute improvement in performances in 1979 for most gas companies, but this was a direct result of the impact of the NGPA and the second round of major price shocks in oil prices.

Regional Price Variations

Where a product is sold in separate geographical markets it is possible to compare the questioned price with the price charged in these other areas. Since regional price variations may be the result of differences in cost or even the elasticity of demand faced by producers, these potential differences must be taken into account.

In this case, it is possible to identify other basins with similar cost characteristics by selecting basins that are geologically comparable to the San Juan Basin. Differences in demand were taken into account by eliminating basins serving highly industrialized local markets (such as the Texas Gulf Coast region), or basins served by numerous pipelines supplying the industrial midwest (such as Louisiana onshore).

In an unpublished study Professor Pigott[15] of the University of Oklahoma identified several basins which were considered geologically analogous to the New Mexico San Juan Basin. The criteria used to delineate those basins similar to the San Juan include:

1. Age of basin sediments
2. Paleoenvironments and sediment composition
3. Thickness and depths of coeval sediments
4. Hydrocarbon exploration history

5. Gas reservoir characteristics
   a. age
   b. depth
   c. trap type
   d. other

6. Gas production statistics, and
7. Basin location with respect to market.

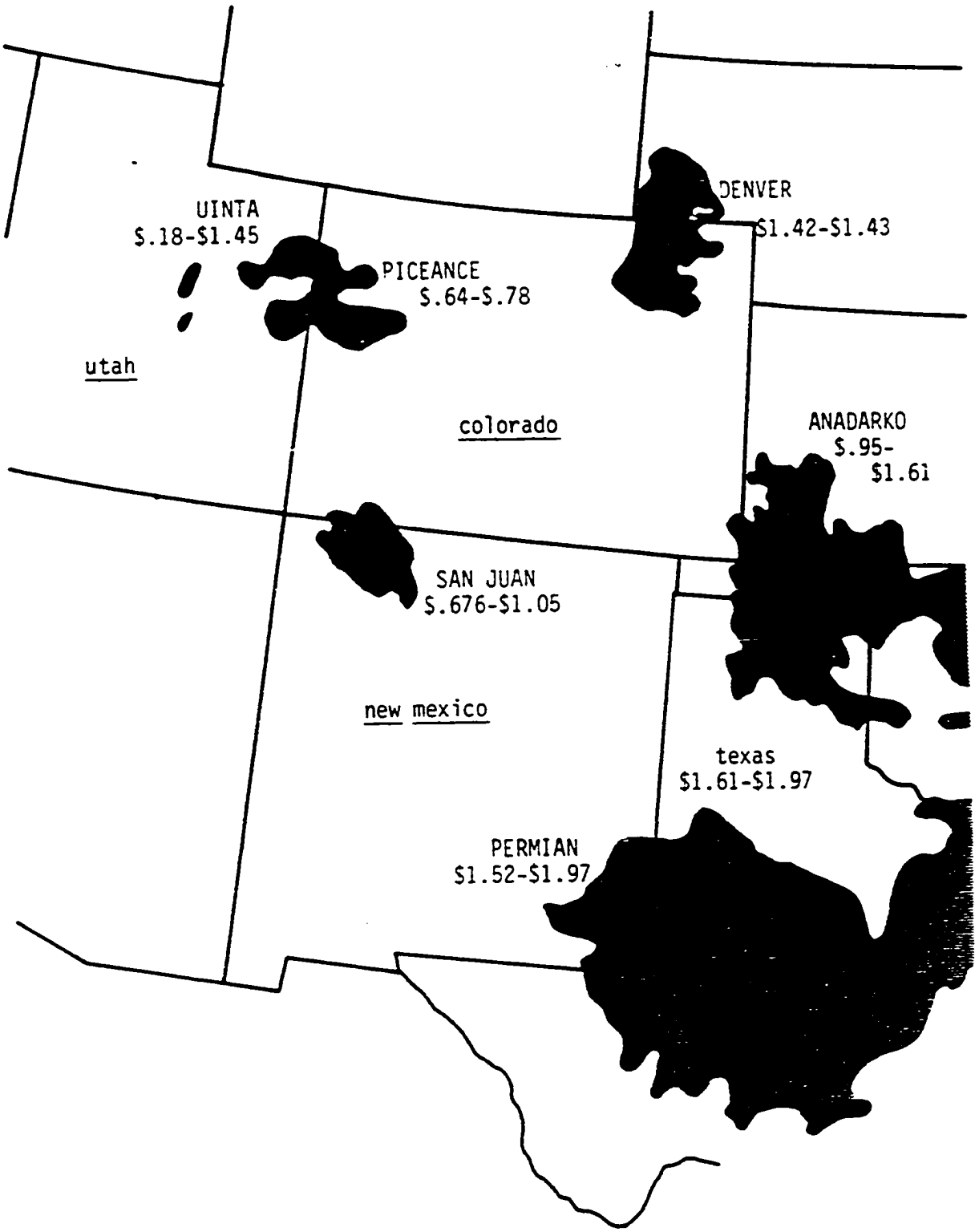
This evaluation identified the Piceance Basin in Colorado, the Permian in Texas and New Mexico, and the Uinta Basin in Utah as being most comparable to the San Juan Basin. The Denver Basin was also identified as comparable except in terms of remaining gas reserves.

Except for the Permian Basin, which has a relatively large number of pipeline purchasers operating in the basin, each of these basins is characterized by a large number of producers and a small number of purchasers. The Piceance and Uinta Basins were very similar to the San Juan in that either one or two major interstate pipelines dominated the market. In all three areas natural gas was sold in the intrastate market under long-term contracts which generally included both definite and indefinite price escalators.

The primary intrastate purchasing companies in these basins during the mid-1970's were identified using FERC opinions and orders. Price information was gathered by telephone from individuals who were knowledgeable of contract terms and pricing during the period 1976 through 1978. This information in combination with information available from published sources was used to develop Figures 7, 8, and 9, which compares gas prices in the basins identified above. Because considerable published information is available on price for Texas and Oklahoma, and these producing areas are geographically close to the San Juan, this information was included in Figures 7-9.

The prices displayed in these Figures represent intrastate prices paid under existing or renegotiated contracts and do not contain prices paid under new contracts.

Fig. 7. Intrastate flowing gas prices for the second half of 1976.



1976 Second Half

In July of 1976 Southern Union began paying $0.676 per Mcf for intrastate gas. In October, under the redetermination provisions of the settlements, that price escalated to $1.053 per Mcf. Figure 7 illustrates the range of prices paid for intrastate gas in the comparable basins. The price paid for intrastate gas under existing contracts in the Uinta Basin ranged from $0.18 (old contracts which contained no price redetermination provisions) to $1.45. (Sources and explanations of prices for Figures 7-9 are provided in Appendix B). In the Piceance the price paid ranged from $0.635 to $0.78. The intrastate price paid under new contracts was higher (up to $1.45 per Mcf). The lower prices reflected in the Figures for the Piceance are prices actually paid under intrastate contracts with Favored Nations clauses and were being bitterly fought in court by the producers. Permian prices for flowing gas ranged from $1.52 to $1.97 per Mcf. Prices in other regional basins such as the Denver, Anadarko (Oklahoma), and Texas Gulf Coast are presented for comparison.

In comparison with the price paid for flowing gas in these basins, the Southern Union price is neither exceptionally high, nor exceptionally low. Permian prices were higher, Piceance prices were lower, while in the Uinta prices varied and were both higher and lower.

Fig. 8. Intrastate flowing gas prices for 1977.

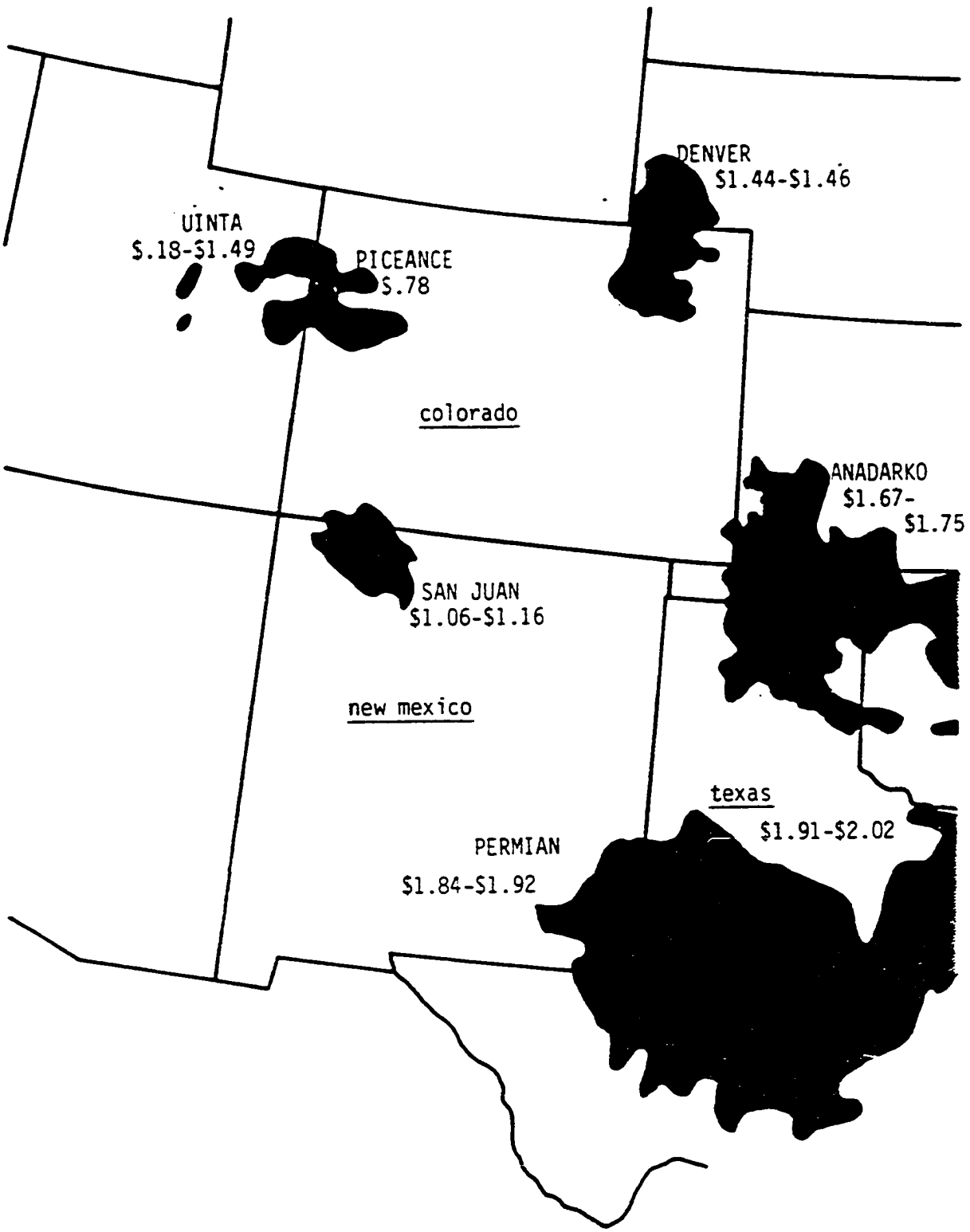
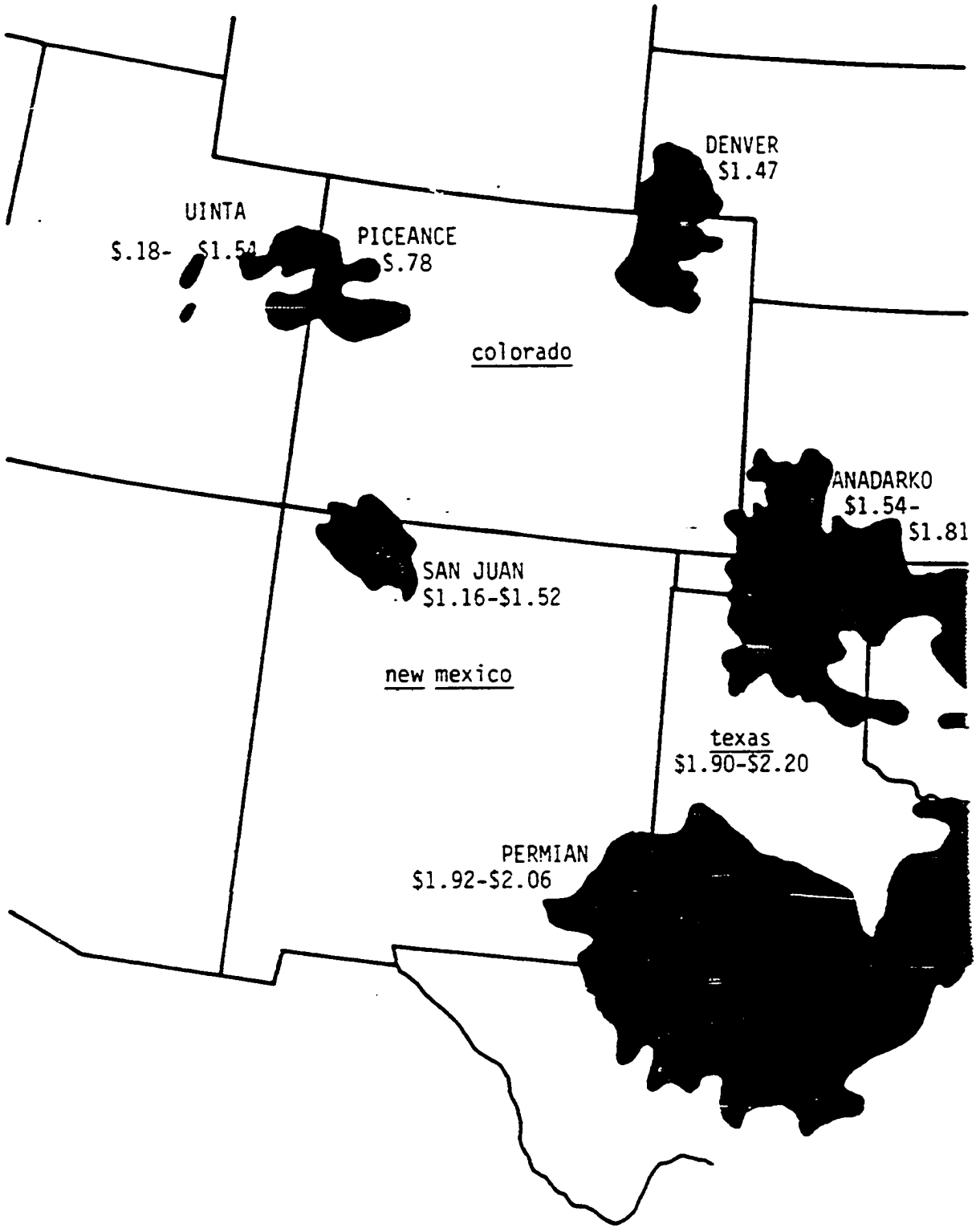


Fig. 9. Intrastate flowing gas prices for 1978.



For 1977 and 1978, (Figures 8 and 9) the pattern is repeated. Compared to the Southern Union price, Piceance prices were lower, Permian prices higher, and in the Uinta prices were both higher and lower. In comparison with other regional basins, San Juan intrastate flowing gas prices were relatively low.

Conclusion: Regional Price Variation

The regional price variations for flowing (as opposed to new) gas summarized in Figures 7-9 do not indicate unusually high prices in the San Juan Basin.

Price, Output, and Capacity Changes at the Formation of the Cartel Price

Theory predicts the successful formation of a cartel will be followed by a rise in price, a reduction in output, and the creation of excess capacity, unless demand is increasing. By definition there was an increase in price at the time of the alleged conspiracy since the conduct in question involved a settlement with producers of the redetermination level for price under the existing contracts.

The question then becomes whether or not the increase which did occur was uncommonly high and accompanied by a reduction in output and the creation of excess capacity unexplained by market conditions. Unfortunately, available statistics on production, revenues, and well completions for the companies involved in the alleged conspiracy do not separate the intrastate San Juan Basin data from the overall company data. In an actual case, it would be possible to obtain this information from internal records through legal channels. Reserve data and drilling records would be required in order to identify capacity

changes. Actual reserves could be used as an indicator or measure of capacity, however, reserves to production ratios coupled with well completion data would be more revealing. An increase in the reserve/production ratio, certeris paribus, could be evidence of excess capacity. Drilling activity or well completions as measured by the annual new well connections to Southern Union's San Juan supply system fell in 1976 (see Table 19). It was not possible however, to separate or identify the producers involved. Reserve/production ratios industry-wide were generally declining in the mid-1970's due to the declining additions to reserves. The shortages and curtailments which continued into 1976 indicate that nationally there was an excess of demand relative to deliverability. Thus, with excess demand nationally and declining additions to reserves, a finding of excess capacity in the intrastate could be regarded with suspicion.[16]

Table 19. Southern Union's New Well Connections
National Reserve/Production Ratio, 1974-1979

Year	Annual New Well Connections	U.S. Reserve/Production Ratio
1974	18	11.0
1975	74	11.3
1976	66	11.1
1977	93	10.7
1978	138	10.0
1979	135	9.9

Source: Annual new well connections to Southern Union's Northwest New Mexico supply system from defendant's Exhibit 3841. Reserve/Production ratio from DeGolyer and MacNaughton, p. 75.

Volumes are dedicated under long-term contracts. The producibility of each well under a contract is established by

engineering reports and any reduction in output would be immediately detectable. Shutting in a producing well is potentially damaging to the well and costly to the producer. Even if there were no risk to the well, it implies a reduction in cash flow (revenues) with a negligible offsetting reduction in production costs.

Thus, any output changes would more likely be reflected in reduced drilling on lands covered by the contract. Offset drilling requirements and due diligence clauses in most leases would hinder the ability of producers to restrict output in this manner.

The amplitude of the price change at the time of the settlement in question is of interest although the price has already been compared to regional price variations. Depending on the vintage, the price increase at the time of the settlement was 0%, 30%, or 65%. Table 20 is a summary of average percentage increases in natural gas prices between 1975 and 1976. The average national gas price increase in the major producing states ranged from 38% to approximately 85%. The average for New Mexico was 39.5%. The 30% or 65% increase in 1976 is easily within the range represented in Table 20. Because these figures represent 'averages', obviously some increases were higher and some lower.

Table 20. Percentage Increase in Average Wellhead Prices of Natural Gas, 1975-1976

New Mexico	39.5%
Colorado	84.6%
Texas	84.6%
Oklahoma	56.9%
United States	30.3%

Source: Gas Facts, 1979 and Energy Data Reports, Natural Gas Annual, DOE/EIA-0131 (76).

Prior to the settlement Southern Union was paying essentially FPC vintaged prices for intrastate gas, which meant prices in May or June would have ranged from $0.41 per Mcf to $0.676 per Mcf for new gas, depending upon whether the producer qualified as 'small' or 'large' under FPC rules. The settlement resulted in a base price of $0.676 for all gas as of July 1976.

It is also important to compare this price to interstate prices and the likely perceptions of producers as to what would constitute a reasonable price for their gas. Interstate prices are significant in that the majority of the gas flowing in the San Juan was dedicated to interstate commerce (including a significant percentage of the gas purchased by Southern Union). Prices for 'new' gas in the interstate market were rising rapidly and under the Favored Nations clauses and FPC clauses would likely be the triggering device in Southern Union's intrastate contracts.

It was known at the time the settlement negotiations were ongoing that the FPC was soon to issue Opinion Opinion 770 which would set the new "new" gas rate for interstate gas. Expectations regarding the

'new' rate under 770 could have been influenced by the preliminary studies released by the FPC's Office of Economics (OEC) and Bureau of Natural Gas (BNG).

These recommendations are summarized below:

BNG Recommendations		
August 1975	85.32 cents	- 169.99 cents
OEC Recommendations		
July 1975	46.62 cents	- 62.55 cents
Sept. 1975 (revised)	56.45 cents	- 68.77 cents

Source: Bureau of Natural Gas, Docket No. RM75-14 Appendix A. Office of Economics of the Federal Power Commission, Docket No. RM75-14, Appendix B, July 29, 1975, revised September 29, 1975.

The weighted average cost of natural gas in the interstate market for the period of January through June, 1976 was $0.92 per Mcf, broken down as follows:

Type of Sale	Volume (Bcf)	Total Revenue Millions	Average Price (cents/Mcf)
Opinion 699	112.7	$ 60.35	53.5
Optional Pricing	46.8	67.41	144.0
Small Producer	52.1	38.76	74.4
Limited Term	13.1	8.74	63.8
60-day Emergency	63.0	90.06	142.9
	288.3	265.31	92.0

Source: 56 FPC 2698, p. 2769

With BNG and OEC recommendations out in 1975 which exceeded $0.676 and considering the FPC was approving optional and emergency sales with prices exceeding $0.676, it is reasonable that the producers and Southern Union expected Opinion 770 to set a rate at least equal to $0.676 per Mcf. In July, of course, Opinion 770 came out with a new rate of $1.44 per Mcf.

The significance of the potential triggering of Favored Nations

clauses is reflected in Table 21. This table lists all contracts which were not subject to Favored Nations escalation and the volumes purchased under these contracts compared to the total volumes purchased for the period July 1976 through December 1976. Of Southern Union's non-jurisdictional San Juan Basin purchases, only 5.2% were not subject to escalation under a Favored Nations clause. Of these volumes, 40% had no recourse to escalation under the 1973 amendments. That is, 60% by volume of those without Favored Nations clauses would have been entitled to escalation under the 1973 amendment provisions. Stated differently, 96.6% (by volume) of Southern Union's purchases could potentially escalate under either a Favored Nations clause or an FPC clause. Since Gathering Company purchased jurisdictional gas in the San Juan, Southern Union was necessarily paying FPC prices and would be paying the FPC vintaged price for "new" gas when Opinion 770 was issued. This would automatically trigger the Favored Nations and FPC clauses in non-jurisdictional contracts. Thus, what was happening in the interstate market and expectations regarding the "new" gas Opinion 770 rate are relevant to the determination of reasonableness of the settlement price.

Figure 10 illustrates the significance of the increase when Opinion 770 was issued in July of 1976. Figure 11 illustrates the relative level of the settlement price compared to the various vintaged rates. Figure 11 summarizes the interstate prices as of late July (1976). In this figure the settlement price ($0.676/Mcf) is compared to the schedule of interstate rates.

Table 21. Contracts Without Favored Nations Clause, 1976

Contract Number	Volume (Mcf)	Not Signed 73 Amend.
71	8,310	
171	33,764	
3654	276	
5886	25,500	
6287	93,462	X
6489	24,832	
6499	6,089	
6655	77,307	
6658	38,653	
6659	38,653	
6796	81,534	
6871	16,281	
6873	9,768	X
6891	3,256	X
6892	206,610	
6909	7,000	
6945	36,084	X
6952	206,610	X
6868	73,556	X
7142	16,395	
7211	40,926	
7412	no production	
10243	no production	
10593	16,100	
Total Mcf	1,060,966	422,736
Southern Union Total	20,233,874	Mcf
	5.2%	

Source: Computed from information filed by Southern Union in MDL-403.

Fig. 10. Trend of natural gas rates, 1965-1976.

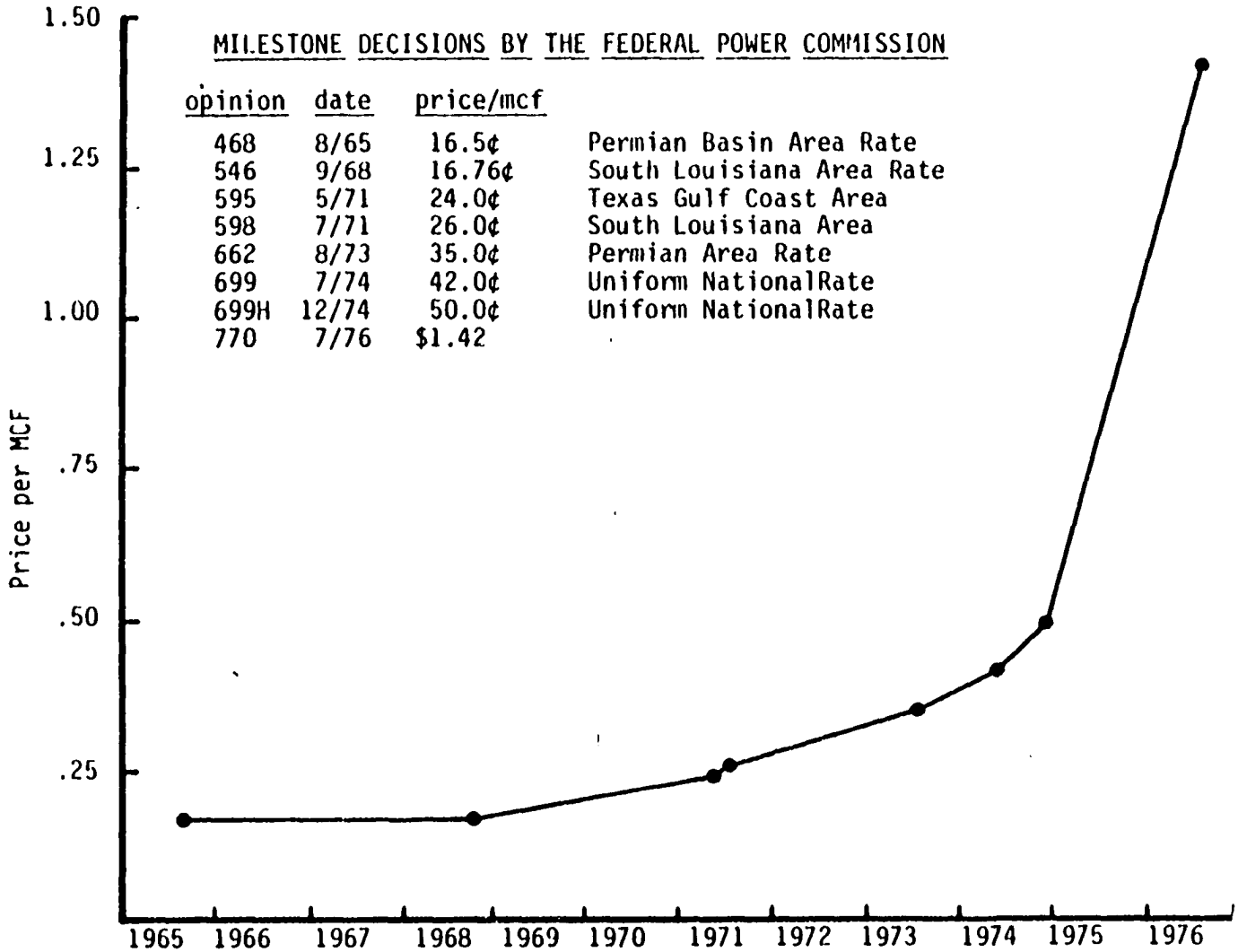
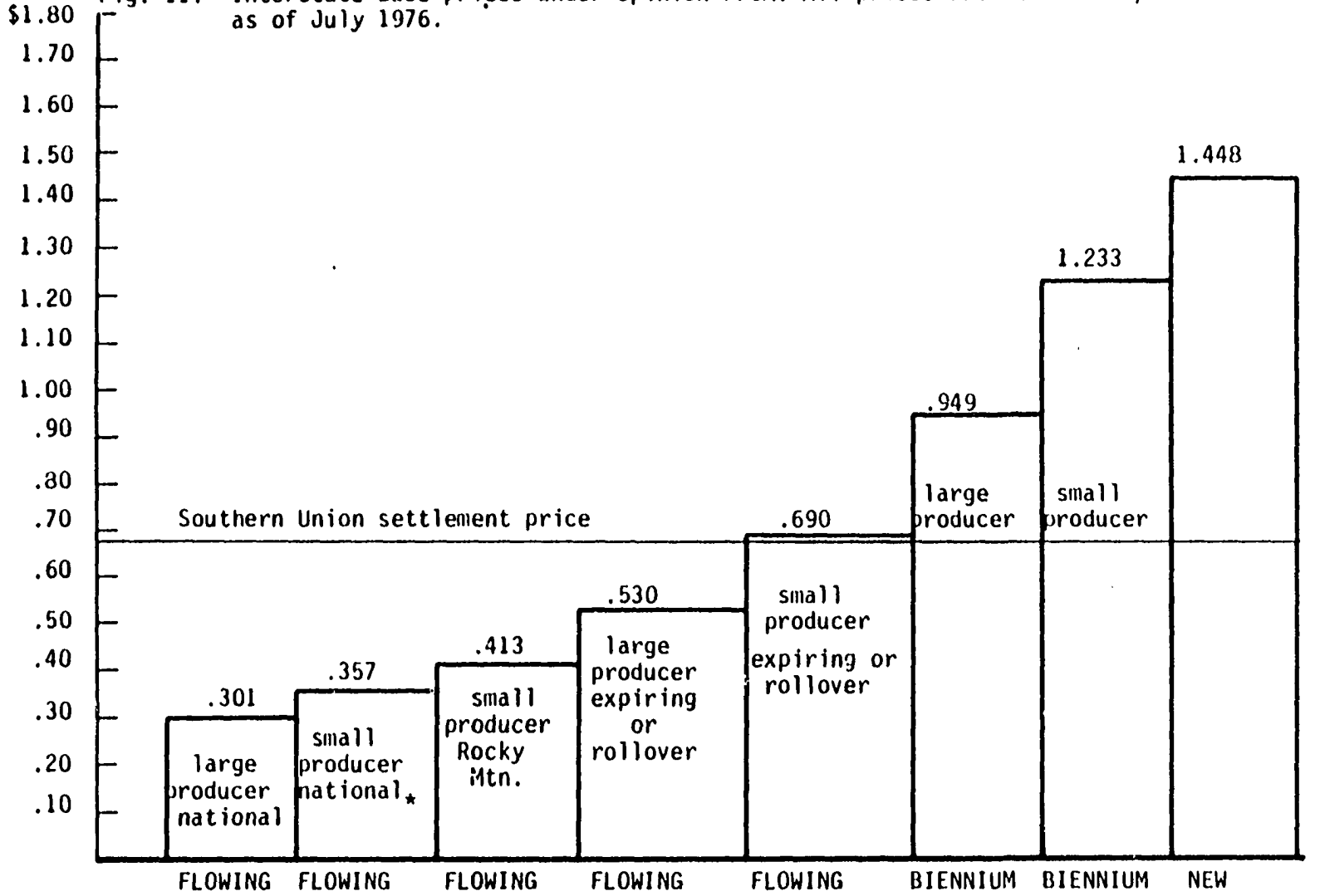


Fig. 11. Interstate base prices under Opinion 770A. All prices are at 15.025 psia as of July 1976.



* Also, large producer, Rocky Mountain Area.

Conclusion: Price, Output, and Capacity Changes

The results of this section support the conclusions in the section on Regional Price Variations by comparing the price increase to the increases occuring in the interstate market. This is significant in that interstate prices were triggering the indefinite price escalation clauses in Southern Union's contracts. As with intrastate prices in other basins, the $0.676 per Mcf was neither the highest nor the lowest price being paid in the interstate market in July of 1976. Considering that 96.6% of Southern Union's gas could potentially have escalated to $1.44 per Mcf in July, the $0.676 per Mcf does not seem unreasonable.

Evidence on output and capacity changes was not available. Even were it possible to get the necessary data on reserves and well completions, it would be difficult to prove "excess capacity" existed. Output, or the volumes to be purchased, was fixed by contract. Producers would have no incentive to reduce output under existing contracts. Future output could be reduced by reduced infill drilling or failure to develop other leases. However, producers were limited in the ability to do this, as well, through the 'due diligence' clauses in their contracts with royalty owners. A lease is forfeited if the terms of the lease are not met.

Amplitude and Fluctuation of Price Changes

There is a theoretical basis for believing that a cartel will react to demand and cost fluctuations with smaller, less frequent changes in price than would sellers in a competitive or non-collusive market. The reasoning lies in the difficulty and legal risk associated

with changing the cartel price.

For purposes of this section the price paid by Southern Union was compared to the price paid in a comparable region (basin) under similar circumstances for the period 1975 up to the NGPA (November 1978). There were, however, no allegations of antitrust violations in the comparable basin affecting the price or the market.

The prices paid by Western Slope Gas Company under intrastate contracts were chosen for this comparison because of the number of similarities in circumstances, as well as, firm and market comparability.

Western Slope purchased natural gas under both intrastate and interstate contracts in the Piceance Basin. The Piceance Basin was determined to be one of the basins geologically comparable to the San Juan in the Pigott study. Thus, supply characteristics of the markets were comparable. With respect to market demand characteristics the basins are also comparable. Both basins are in non-industrialized, sparsely populated areas served by only three or four pipelines. In both basins the majority of the gas was going into the interstate market for ultimate delivery to the West Coast.

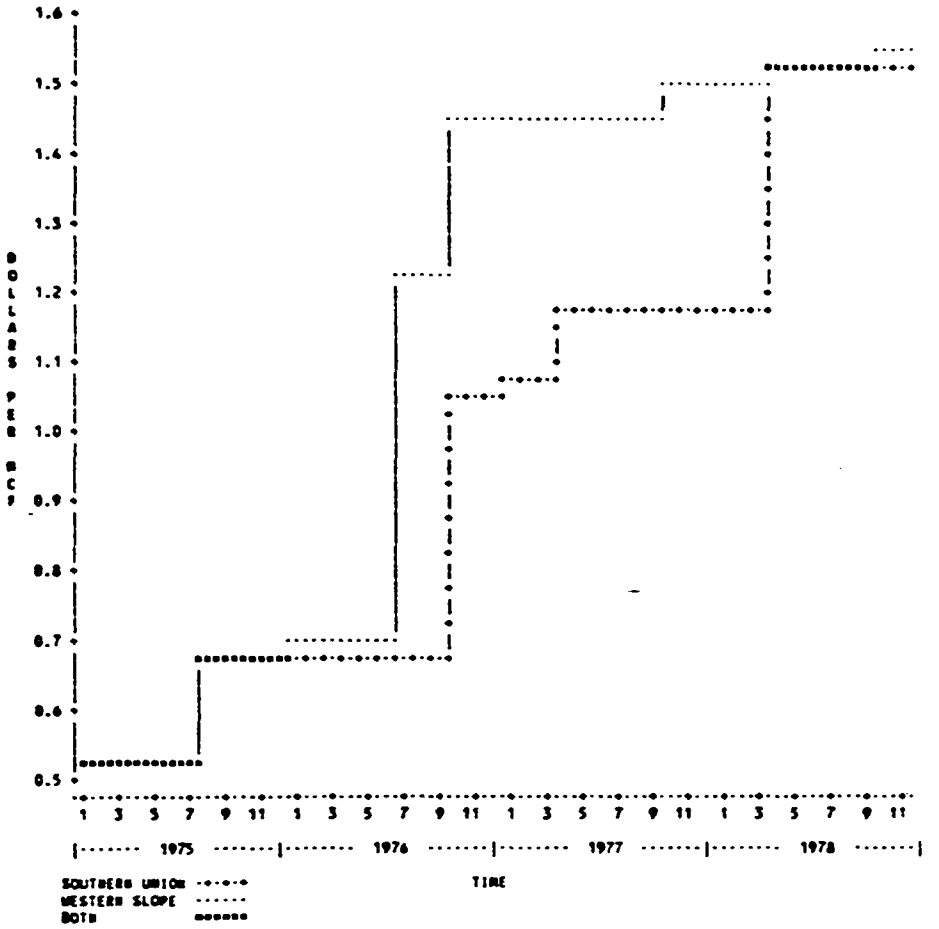
There were also many structural similarities between the companies. Western Slope was a pipeline purchaser affiliated with a large distribution company. Western Slope was also sued by its intrastate producers (during the same period Southern Union was sued by its producers), over the issue of Favored Nations clauses being triggered by the highest FPC vintaged price. Like Southern Union, Western Slope also sent letters to producers asking them not to bring additional law suits in the matter as all would be treated equally

according to the outcome of the ongoing suit.

Monthly data on the highest intrastate price paid by both companies was obtainable for the period dating back to January 1975. After the NGPA the highest price paid tracked the ceiling prices of the NGPA for both companies, as well as other intrastate natural gas buyers.

Figure 12 shows graphically the highest prices paid by these two companies. (Both paid vintaged prices at various times during the period).

Fig. 12. Comparison of the highest price paid by Southern Union and Western Slope (January 1975 to NGPA).



Overall, for Southern Union, price goes from $0.52 per Mcf in Jaunary 1975 to $1.53 (rounded) in November 1978. The Western Slope price goes from $0.52 to $1.54 per Mcf over the same period. Southern Union experiences fewer price changes, but the price is always less than or equal to that being paid by Western Slope when rounded. At the time of the alleged violation the settlement price in the Southern Union suit increased from $0.5202 per Mcf to $0.676 per Mcf, a 30% increase. At the same point in time the Western Slope price went from $0.6895 to $1.2332 per Mcf, a 79% increase. Three months later Southern Union's price goes up 56% while Western Slope's price increases 18%. Throughout the rest of the period they both experience smaller, periodic changes.

For the period depicted the mean Southern Union price is $0.9718 per Mcf and a standard deviation of $0.3496, and the mean Western Slope price is $1.1409 per Mcf with a standard deviation of $0.4231. The smaller standard deviation in the Southern Union price is an indication of lower price variance in that market.

The correlation between the two price series is 0.8898 (Pearson correlation coefficient or 0.96486 using the Spearman correlation coefficient). The lower variance of the Southern Union price is statistical evidence that the market alleged to have been cartelized did experience smaller less frequent changes in price. However, the lower mean and high degree of correlation would not suggest a theoretical conspiracy to raise price above the market or competitive price. Since demand and cost conditions were similar in the two markets one would expect a higher overall price in the market suspected of collusion. The differences in the frequency and magnitude of price

changes for both these firms is determined by the redetermination clauses in the existing contracts, not the difficulty and legal risk associated with changing a cartel price.

Demand Elasticity at Market Price

The theoretical relationship between elasticity of demand at the market price and evidence of collusion is based on the assumption of profit maximizing price behavior on the part of the firm. If demand is found to be inelastic at the current market price, that price is not the result of a collusive agreement whereby the firms in the market have conspired to restrict output and raise the price to the monopoly level for the purpose of maximizing industry profits. The profit maximizing price will not be in the inelastic portion of the demand curve. It should be noted, however, that a regulated price which is set to approximate average cost may be in either the elastic or the inelastic portion of the demand curve. Thus, the elasticity of demand will not have the same economic significance in regulated markets.

An independent estimate of elasticity was not undertaken, however, as Posner points out it may be possible to make inferences regarding the elasticity of demand.

Although in the San Juan the product was homogeneous, the number of producers was large and barriers to entry were not a major factor. The sensitivity of wellhead purchases of natural gas to price was limited.

The take-or pay provisions that were common in both the existing and newly negotiated gas purchase contracts in the mid-1970's and the long-term nature of these contracts necessarily reduced the sensitivity

of wellhead purchases to changes in price. The ability of the pipeline purchaser to respond to an increase in price by reducing the amount purchased was limited by the contract.

Additionally, the gas purchased intrastate in the San Juan was for local distribution which was primarily residential and commercial. The elasticity of demand in the residential and commercial end-use sectors is low, at least in the short-run since substitution (fuel switching) involves relatively large outlays to replace gas burning appliances.

Exchange of Price Information

Given the rapidly changing market conditions, the large number of individuals and small producers, the state of confusion of the market, and the limited amount of new reserve dedications in the San Juan, an exchange of information between producers regarding the price or market value of their existing supplies could not reasonably be construed as "facilitating" in the Posner context. There were no "trade associations" or publications disseminating up-to-date information and frequently there was more than one producer involved in a contract. Joint ventures of this type were common in the industry and although each producer was usually free to contract his or her part of the production separately, some communication between parties was logically required.

As to any communication between Southern Union and the producers charged as co-conspirators, Southern Union was a buyer--and gas buyers cannot buy unless there is communication with producers.

Price Discrimination

Price discrimination would not be evidence of collusion in this case. The FPC vintaging created price discrimination in the interstate that would not have occurred in competitive markets with spillover effects in the intrastate market. Vintaging was an integral part of the interstate natural gas market and a key issue in the case. Also, the existence of long-term contracts implies some customers will be paying different prices due to the date of contract.

The various definite and indefinite price escalation clauses common to the industry and the San Juan Basin would result in different prices, as well. Selling to different buyers in the San Juan at different prices could also be the result of:

- division of inter and intrastate markets
- trade-offs between price and non-price forms of competition (if referring to base prices)
- gathering and compression costs
- quality adjustments
- emergency sales and other FPC created categories for exemption from ceiling prices (small producer/large producer distinction, self-help programs, etc.)
- pre-payments or advance payments.

Fixed Relative Market Shares

Regarding the use of fixed relative market shares as evidence of collusion, the market share of each producer will depend on a producers share of the stock of proved reserves. "Proved reserves" is essentially an ex post concept that refers to resources that have already been developed and will have, for the most part, been dedicated to purchasers under long-term contracts. Market share calculations based on control of proved reserves are inexact and unreliable due to

the geological uncertainty involved in exploration and development. Maintenance of market share would imply a control over certainty of reserves and the producibility of those reserves that is not geologically plausible. Thus, the variable "fixed relative market shares" is not an appropriate indicator of collusive behavior for this particular market.

Additionally, the takes under Southern Union's long-term contract were clearly defined and inflexible. These contracts covered all the gas from acreage dedicated under that contract, including wells to be drilled in the future, and contained take-or-pay provisions (usually around 80%), which allowed primarily only seasonal differences in takes.

Conclusion: Fixed, Relative Market Shares

Yearly production volumes are determined by the underlying reserves. The contract usually entails dedication to the pipeline purchaser of all reserves underlying the lease (at least up to a certain specified depth or horizon). The contract specifies the sale of a certain percent of an entire gas deposit, the ex ante quantification of which is based on the reserve estimate agreed upon by the buyer and seller. The ability to divide the market and maintain identical market shares over a substantial period of time was beyond the control of producers. the reservior is specified in the contract.

Declining Market Shares of Leaders

In the Posner framework, a long-term deline in the share of the market held by a cartel will appear as firms enter the market to capitalize on the supra-normal profits caused by the cartel price.

For the reason given in the preceding section, it would be impossible to determine the market share of any particular group of firms over time. One could measure volumes or Mcf's sold, but control of the market requires control of reserves. Data on annual reserves of each firm which are dedicated to the intrastate market in the San Juan Basin are not publicly available. Even if available, reserve estimates are imprecise at best and are continually revised as drilling proceeds and the base of geological information is modified.

Conclusion: Declining Market Share of Leaders

The data needed to determine whether the market share of the producers alleged to have conspired actually declined over time would only be available in internal records of firms with acreage dedicated to Southern Union and is unreliable. Such information, even if dependable, would not necessarily be evidence of the existence of a cartel price, since all producers were offered the same price--a policy which Southern Union had adhered to in the past. The uniformity of prices would continue into the future through the uniformity of escalation clauses.

Industry-Wide Resale Price Maintenance
Identical Bids
Basing Point Pricing

The remaining indices in the Posner list for this section are not applicable to this particular case. Industry wide resale price maintenance refers to the control by the producer over the retail price of the good. The retail price of natural gas is controlled by the various state commissions and is not subject to agreement between producers and distributors.

Identical bids refers to the sealed bidding procedure used in certain industries but was not a practice employed in the natural gas market of the San Juan Basin. Similarily, basing point pricing was not a practice employed in the natural gas market of the San Juan.

Summary: Chapter VI

The investigation of the level and pattern of profits as reflected in stock price, equity return, and market to book ratios showed no evidence of extraordinary improvement in the net worth of either Southern Union or SUPRON immediately following the alleged conspiracy. A comparison of prices in geologically comparable basins revealed prices that were both higher and lower than the settlement price. Prices in these regions continued to be both greater and less than the intrastate price paid under the settlement agreements for the two year period following the settlement.

Profit/performance is relatively straight forward to evaluate once standards of comparability are established. Output and capacity changes are not straight forward concepts when evaluating the natural gas industry. Marketed production in the United States peaked in 1972. Shortages and curtailments in the interstate market continued until approximately the time of the NGPA. Simultaneously, capacity in terms of additions to reserves and new well connections was generally declining due to the artifically low regulated prices in the interstate market. Under such circumstances it would be difficult to prove that a reduction in drilling activity was necessarily the sign of a reduction in "output" at the formation of a cartel.

The terms 'output' and 'capacity' are not uniquely divisible in

the natural gas industry as would be the case in most industries. It is possible to shut a well in, interrupt the daily flow of a well, or reduce the daily flow from a well. However, in so doing it is also very possible that the capacity of the well will also be affected. Capacity, whether measured by proved reserves or deliverability, may dissipate when wells are shut-in or shut back.

To evaluate the amplitude and fluctuation of price changes, the intrastate price paid by Southern Union for an extended period--both before and after the questionable conduct--was compared to the prices paid by another firm under very similar circumstances. The results indicated fewer price changes of smaller magnitudes. However, because the amplitude and frequency of price changes is predetermined by the pricing provisions at the time the contracts are signed, this would not be the result of hesitancy on the part of cartel members to risk detection. (Recall that the theory suggests the cartel price change will be smaller and less frequent because agreement on the new price requires communication and increases the risk of detection).

An independent estimate of elasticity was not calculated, but a fairly inelastic demand in the short run can be inferred from the analysis of the contracts (with producers) and the fact that the ultimate consumer of of San Juan intrastate gas were primarily residential and commercial consumers. History has proven that the longer term consumption of natural gas is more sensitive to price. This is evidenced by the surplus of deliverability which has existed for the past three or four years.

There is no evidence of any type of formal exchanges of price information such as trade associations, marketing associations, or

trade publications. The extent to which producers discussed price among themselves is unknown. However, given that the "Do Not Sue" letter was sent to all of Southern Union's intrastate producers and the key issue was vintaging of Favored Nations clauses and how to determine fair market value, it is likely these producers were communicating with each other and with producers outside the San Juan where similar issues were being faced or litigated.

Price discrimination is considered potential evidence of monopoly power because it is inconsistent with competitive market pricing. In the natural gas industry discrimination is the result of regulation and the timing and provisions of long-term contracts. Price discrimination would not be evidence of collusion.

With regard to the maintenance of market share, it would be geologically or technically infeasible for the accused firms to maintain nearly identical or fixed market shares over a substantial length of time. The future deliverability of a well or of future infill wells under a lease cannot be assured. (The settlement agreement in question covered a finite number of leases already under contract).

Evaluating natural gas prices, whether for regional comparisons or for amplitude and fluctuations, would on the the surface appear to be straight forward since natural gas is a fairly homogeneous, fungible product. Unfortunately, due to the vagaries of the industry, determining standards for comparison and interpreting changes requires an intense understanding of the regulation involved and the terms and conditions of the contracts, especially the numerous pricing provisions.

In collecting regional price information, for example, it was necessary to establish first that the prices being quoted or presented applied to intrastate gas being sold under existing or renegotiated contracts; secondly, that the contract provisions were not significantly different from those in the San Juan, and thirdly, that the price was a base price (did not include any unusual adders), for pipeline quality gas.

Similarity of contract provisions was insufficient for comparison purposes. The basic supply (cost) and demand characteristics of the basin (producing region) also had to be established as comparable. Although economists are expert at evaluating markets in general, establishing the supply or cost comparability of natural gas basins required the expertise of a geologist since the geologic structure of the basin is the major determinant of cost.

Although a separate estimate of elasticity of demand was not made, for the reasons discussed above, it is likely (but not conclusive), that the short-run demand was inelastic both before and after the price change. Since a monopolist would not be operating in the inelastic portion of the demand curve, the theoretical literature suggests that if demand is inelastic at the market or selling price, that price is not a cartel price.

The results of the Stage Two application have been condensed in Table 22. There were twelve indicia in Stage Two of Posner's approach. Three variables were not applicable to the natural gas industry. Of the remaining variables analyzed the results indicate no evidence of collusive behavior for all but one of Posner's indicia. The determination on 'Amplitude and Fluctuation of Price' was inconclusive.

From the Posner perspective, the preponderance of evidence in Stage Two indicates no collusive behavior.

Table 22. General Summary of Section Two Findings

Level and Pattern of Prices	\ Southern Union	Stock price	no evidence
	\	Market/Book	no evidence
	\	Return on equity	no evidence
	\ SUPRON	Stock price	no evidence
	\	Market/Book	no evidence
	\	Return on equity	no evidence
	\	Return total capital	no evidence
Regional Price Variations	\ Settlement in mid range		no evidence
Price, Output, Capacity	\ Price increase less than new rate		
	\ in interstate market.		no evidence
changes at formation	\ Output not measured-not significant		no evidence
	\ Capacity not measured, not under control of producer.		no evidence
Amplitude and Fluctuation	\ Prices showed smaller variance,		
of Price Change'	\ but also lower mean.		inconclusive
Elasticity of Market	\ Not measured, inelastic		
price	\ demand inferred.		no evidence
Exchange of Price	\ No evidence of formal communication.		no evidence
Information	\		
Price Discrimination	\ Existed by regulation.		no evidence
Fixed Relative Market	\ Not measured, technologically/geologically		
Shares	\ not controllable.		no evidence
Declining Market	\ Not measured, technologically/geologically		
Share of Leaders	\ not controllable		no evidence
Industry Wide Retail	\		not applicable
Price Maintenance	\		not applicable
Identical Bids	\		not applicable
Basing Point Pricing	\		not applicable

Footnotes to Chapter VI

[1]Because of minimum bill and take or pay considerations and economies of scale in natural gas distribution, a gas utility would not be operating on the upward sloping part of the average cost curve. Thus the analysis is not extended beyond the constant and decreasing average cost cases.

[2]According to a Staff Report of the Bureau of Economics to the Federal Trade Commission published in early 1979, seller concentration in the production sector of the natural gas industry was relatively moderate. Based on reserves or production, the share of the largest eight producers was approximately 45%, with the largest share held by a single producer being 11% to 12%. The figures were found to be comparable to the median for all manufacturing and below those levels most commonly identified with monopolistic behavior. The report also found that because integration between production and the interstate pipeline sector was low, producers faced potentially strong bargaining pressure from purchasers. Integration was found to be somewhat higher in the intrastate market although not of a level or nature to pose a competitive threat.

Joint venture activity was found to be extensive and increasing but the current levels were not judged to be a competitive problem. Analysis of ownership patterns on non-producing leases in the Federal offshore area did, however, reveal evidence which was interpreted to suggest attempts at monopolistic supply control by the major producers in this area of the industry. (See, Joseph P. Mulholland, The Economic Structure and Behavior in The Natural Gas Production Industry, Staff Report of the Bureau of Economics to the FEDERAL TRADE COMMISSION, February 1979, findings summarized in Chapter I).

Since many natural gas producers are also fully integrated petroleum companies involved in production, transportation, and refining of crude oil, concentration ratios based on total assets would not be representative indexes of market power in the gas producing industry. Thus, industry concentration estimates generally focus on sales or reserves.

[3]Due to the complexities of the natural gas market an independent estimate of the elasticity of demand is beyond the scope of this dissertation.

[4]Pietro Balestra, The Demand for Natural Gas in The United States, Amsterdam: North-Holland Publishing Company, 1967. p. 40.

[5]John Kraft, Arthur Kraft, and Eugene Reiser, "A National Energy Demand Simulation Model" in A. Bradley Askin and John Kraft, ed., Economic Dimensions of Energy Demand and Supply, Lexington Books, D. C. Heath and Company, Lexington, Mass, 1976.

[6]Scott E. Atkinson and Robert Halvorsen, "Demand for Fossil Fuels by Electric Utilities" in Econometric Dimensions of Energy, Demand an Supply, p. 60.

[7]Testimony of A. M. Weiderkehr, President and Chairman of Supron, MDL 403.

[8]Scherer, Industrial Market Structure, p. 206.

[9]Scherer, Industrial Market Structure, p. 207-209.

[10]FPC News, Volume 5, No. 48 (December 1, 1972), p. 1.

[11]FPC News Release No. 19640, September 17, 1973.

[12]The relative impact of higher wellhead prices on Southern Union's gas processing operations and the likely negative impact on utility operations due to regulatory lag are discussed in Section One.

[13]Value Line reports a dividend yield of zero for that year, which suggest that although the dividend was declared, it was not actually paid.

[14]See for example, Sundance Oil, 1975-1980.

[15]Pigott, John D., Geological Evaluation of Basins Analogous to the New Mexico San Juan Basin, School of Geology and Geophysics, University of Oklahoma, February 1983.

[16]The declining addition to reserves in the interstate market is explained by low regulated prices in an era of rapidly increasing costs. The intrastate market, however, was able to attract an increasing proportion of the total reserves decovered by offering higher prices.

CHAPTER VII

CONCLUSIONS

The objective of this study was to test the viability of the proposition put forth by Richard Posner that by implementing his approach collusion could be detected using purely economic evidence. For purposes of implementing the proposed approach an actual price-fixing case (Chapter III) filed pursuant to Section 1 of the Sherman Act was selected. Posner did not generalize his framework to include regulation. Since the case involved an industry that is subject to regulation, an understanding of the regulatory environment (Chapter V) and its impact on the theoretical framework is necessary. The legal literature was surveyed (Chapter IV) to determine whether regulation or the type of case (class action) created any legal issues which could have a bearing on the economic, theoretical framework or the implementation.

Legal

With respect to the legal issues, there are certain theoretical inconsistencies with the end-result approach to antitrust generally advocated by the Chicago school of thought (which includes Posner's proposal), and the concept of antitrust injury. Per se rules of illegality against certain types of conduct are inconsistent with an approach which judges conduct on the basis of its impact on efficiency or resource allocation in that market. It is analytically unsound to make a deed illegal without proof of injury to competition (per se concept), and yet require proof of injury to competition (antitrust injury concept), in order to successfully bring suit and collect

damages.

The damage theories and measures which have been accepted by the courts are not necessarily inconsistent with the Posner approach. The traditional measures do not include the welfare loss in the damage calculation, but to the extent that the transfers (traditional measures) are created by and associated with a welfare loss, they are not inconsistent.

The precedent established in Illinois Brick, which denied standing to indirect purchasers, could have a long-run deterrent effect on the number of class action suits. That decision is also inconsistent with the concept of antitrust injury.

Regulation

There are four conclusionary points stemming from the introduction of regulation into the Posner framework.

1. The introduction of regulation complicates, but does not preclude the practical implementation of the Posner proposition. Naturally, regulation is an important structural element. Within Posner's Unified Theory of Collusive Pricing, however, there is no a priori reason to believe that his structural variables (concentration, entry barriers, homogeneity of product, inelastic demand, number of customers, non-price competition, and ratio of fixed to variable cost), would not have the same faciliting effect on the ability to collude in a market where regulation is present.

2. Regulation does create problems in interpreting the results in Stage Two of the proposal. Much greater caution and a full understanding of the regulation involved is required in the

analysis/interpretation of any data relating especially to price or profit. Where price discrimination, regional price variations, and price changes are the direct product of pervasive regulation, these variables cannot be used as economic evidence of collusive price behavior.

In the case study, price discrimination and regional price variations in the intrastate market were a by-product of interstate regulation. Nevertheless, it was still possible to make regional price comparisons by identifying comparable sub-regions within the broader defined FPC regions. Price discrimination, however, was determined to be inappropriate for evidentiary purposes primarily because of the regulatory spillover effects.

Even within industries where profit is limited by regulation, firms may still have motive to conspire to increase the net worth of the company. The net worth of the firm is reflected in its stock price and other financial variables. Consequently, it is still possible in a manner typical of regulatory and legal proceedings, to make inferences about performance by identifying an appropriate set of comparable companies and examining the trend in these financial variables over time. Southern Union was actually a holding company of which the regulated division was a part. However, this type of performance evaluation would be generally applicable regardless of corporate structure.

3. A significant and surprising result of the analysis of regulation relates to the theoretical assessment of the rate of return constraint and purchased gas adjustment clause (PGA) on the motives of the regulated firm. The model developed in Section One of Chapter VI

indicates that under the realistic assumptions of declining average costs and demand that is neither perfectly elastic or inelastic, the existence of an automatic cost flow-through mechanism (PGA) would not provide earnings protection for a utility participating in a conspiracy to increase the price of an input. This is an important consideration relevant to Stage One of the Posner proposal. Stage One identifies the key structural elements which impact the likelihood of successful collusion. The rate of return constraint and automatic cost flow-through mechanisms are an integral part of regulation.

4. Of more general significance, purchased gas adjustment clauses and fuel adjustment clauses in the natural gas and electric utility industries were instituted to prevent attrition due to regulatory lag (and to reduce the number of rate case filings) when input prices are increasing rapidly. The theoretical model developed in Chapter VI suggests that where the cost of the input in question is increasing rapidly, ceteris paribus, the utility will not be able to achieve the allowed rate of return. Heretofore, the ability of these automatic cost flow-through mechanisms to accomplish the goal of providing earnings protection from rising input costs has not been questioned from a policy perspective. Obviously, the ability of the utility to attain the allowed rate of return will be influenced by other factors. But, the problem of attrition due to rising oil, gas, and coal prices in the electric and gas utility industries was believed to have been satisfactorily resolved by the adoption of adequate cost or fuel flow-through clauses.

Case Study

The results of the case study application suggest that the basic framework (as modified to include regulation), can be used to determine the absence of collusion in the intrastate natural gas market of the San Juan Basin.

Applying the Posner framework resulted in a determination that the market was not conducive to a horizontal price fix among producers. The alleged violation involved a charge that the utility purchaser was motivated to participate because it was effectively insulated from higher gas prices by virtue of the PGA. The analysis in Section One of Chapter VI, however, indicates that the PGA would not provide the alleged insulation.

Virtually all of the variables investigated in Stage Two indicated no evidence of collusion.

Under the Posner proposition economic evidence can be used to detect the presence or absence of collusion. Where the industry is determined not to be conducive to collusion and the preponderance of evidence in Stage Two indicates no collusion, there is sufficient reason to conclude that there was no anti-competitive restraint in the market.

Efficacy of the Posner Approach

There are two issues involved in testing the efficacy of the Posner proposition. One concerns the degree to which the overall approach is practical and whether or not objective standards can be developed for the various indicia. The second concerns the theoretical limitations on the application of the approach which will determine its

acceptability.

Widespread Applicability

With respect to general applicability of the proposition there are four substantive points of conclusion.

1. The majority of the criticism to date of Posner's proposal focuses on the impractical nature of the approach and the lack of objective standards for guaging the variables or indicia. The case study application proves that the approach can be practically implemented with existing economic tools and that objective standards can be developed for certain key variables.

The proper selection of a set of comparable companies can provide boundaries for determining whether or not the price and profit variables (and the variance therein) fall within a workably competitive range of values. These variables will be the key variables in Stage Two. Other variables such as 'fixed relative market share,' 'declining market share of leaders,' or 'basing point pricing,' do not require the development of objective standards. For other variables, such as elasticity, objective standards do exist.

2. Posner undoubtably assumed a level of generality regarding Section 1 cases of collusion that does not exist in reality. The fact that he did not extend his framework to include regulation has been discussed. Nor does he consider the possibility of a price-fixing agreement which is not purely horizontal. As the case study proves, however, the basic framework could be applied under these circumstances.

3. A fundamental limiting factor, however, will be the ability

to develop boundaries which establish the zone of reasonableness or the workably competitive range of values for the price and profit variables. Unless this can be done, the analyst is without objective standards for evaluating the key variables in Stage Two. Only when dealing with a true, national oligopoly is one likely to encounter a situation where comparable companies outside the alleged cartel cannot be found. Thus, the approach would have widespread applicability with respect to industry structure.

4. Using price trend data, price and profit variability, and regional price comparisons, (i.e. the Posner indicia), it will be possible in most cases to establish whether the price in question falls within a workably competitive zone. If, however, the price is determined to be outside the workably competitive zone, price theory cannot actually establish that an overt collusive restraint of trade occurred. The tools of marginalism are not capable of distinguishing whether the non-competitive or above-normal price so determined was achieved by anti-competitive methods (overt collusion, predatory pricing, etc.), or competitive methods (superior management, economies of scale, better product, lower costs, etc.).

Consequently, it is possible to establish that there is no evidence of anti-competitive behavior using the Posner proposition, but not possible to prove anti-competitive behavior did, in fact, occur. Such a conclusion (i.e. the Posner framework could be used to prove non-guilt), suggests a strong defensive role for the Posner framework.

Acceptance

In addition to widespread applicability, an approach should also

be capable of gaining widespread acceptance. A major problem with the Posner approach, however, is that to the extent that the preponderance of evidence (price, profit, etc.) is found to be outside the boundaries of the workably competitive range in an industry conducive to collusion, there is no way to distinguish whether the cause is overt, as opposed to, tacit collusion.

Within the Posner proposition (Chapters I and II), it is immaterial whether the cause is overt or tacit collusion. He argues that it is the cartel price which is objectionable, regardless of how it is achieved. A cartel price is simply a non-competitive or monopoly price. The basic tools of price theory can technically distinguish only between a competitive price and a non-competitive price. Either price approximates marginal cost (and in the long run, average total cost), or it does not.

Technically, the Posner framework could be used to detect the presence or absence of collusion, only if tacit collusion can be equated with overt collusion.

Posner felt that widespread acceptance of his approach was hindered because lawyers are more comfortable with conspiracy theory than with price theory. It is more likely that widespread acceptance of his approach will be hindered to a far greater degree because economists in general are not comfortable with equating tacit and overt collusion. Proof of oligopolistic or monopolistic price is not proof of overt collusion.

APPENDIX A

Legislative Reaction to FPC Regulation

The actions of the FPC in the 1973-1976 period drew considerable political outrage even though the new rates being established were still below the unregulated price of new intrastate gas. In 1973, the Antitrust and Monopoly Subcommittee of the Senate Judiciary Committee held hearings on the degree of concentration in the petroleum industry. At the request of the Subcommittee's chairman the FTC was asked to analyze producer records. This was the result of the growing concern that producers were withholding gas purposely to create a shortage and raise prices and that the reserve statistics gathered by the AGA (which was the primary source of such information prior to 1970) were suspect.The FTC reported that the AGA reserve estimates did reflect significant underreporting by producers. The FPC, however, produced evidence for the Subcommittee based on their own survey which implied that the AGA's statistics were overstated, that the shortage was real, and that gas production was sufficiently competitive to preclude any conspiracy on the part of the producers.

In addition to the Senate Judiciary Committee's investigation, the FPC became the subject of several other such 'investigations'. The ninety-third and ninety-fourth Congresses produced a number of House and Senate Commerce Committee hearings dealing with the shortage and possible solutions. In addition to the Senate's request that the FTC conduct an investigation on reserves and concentration in the industry (mentioned above), the House Commerce Committee (Commerce Oversight Subcommittee) directed the General Accounting Office to conduct a probe of the FPC's operations and the ties of FPC personnel to the industry.

Cries came from pro-consumer groups and congressmen to have the FPC's 1976 ceiling price on new gas ($1.42) appealed judicially. The appeal was made and the FPC's decision was upheld by the federal courts.

Over the same period several bills were introduced into the House and Senate dealing with the natural gas problem. Opinions 770 and 770-A slackened some of the growing demand for decontrol on the part of producers but increased the consumer forces demand for some kind of statutory revision. Various bills were introduced between 1973 and 1976. The consumer forces were calling for more legislative intervention and a reduction of the FPC'S power over prices, the end to the inter/intrastate distinction (the intrastate exemption), and a statute to prevent gas needed for residential and certain preferred industrial uses from being "squandered" in utility and industrial boilers, especially in the producing states where such use had been growing. In 1973 and 1974, the Senate Commerce Committee held hearings on a bill which contained elements of these demands in that it extended federal price controls to the intrastate market and established a national price range of forty to sixty cents which the FPC would have to adhere to in setting new ceiling rates.This bill also exempted small producers from the ceiling for a period of five years. Attempts were made to add the control of new oil prices to the bill, as well. S2506 died in committee.

In 1975 the same committee came up with a new version which was called "The Natural Gas Production and Conservation Act of 1975" (S692). It contained a statutory price range (now up to a range of forty to seventy-five cents), embodied intrastate controls, a "strong coal conversion requirement" and a provision allowing small producers

to charge 150% of the large producers rate. Before S692 came to the floor the producing states put forth their deregulation bill as an amendment to a short-term gas emergency bill. The supporters of S692 attempted to deflect the deregulation amendment by proposing their own alternative which would have raised the ceiling to $1.30 and extended controls to the oil industry as well. This amendment failed; the deregulation alliance held. Similar bills were put forth in the House. In the House, however, the consumer alternative passed by a narrow margin.

Although the "Natural Gas Production and Conservation Act of 1975" did not pass, elements of this bill and various proposals made during the 1973-1975 period did eventually become law when the Natural Gas Policy Act of 1978 (NGPA) was passed.

The two opposing proposals were never taken to conference, so the House and Senate were spared the job of trying to reconcile the two bills. The winter of 1976 was mild so the demand on emergency sales legislation slackened and the FPC's new rate of $1.42 had eased demand for decontrol.

APPENDIX B

Comparison of Highest Price Paid Southern Union and Western Slope January 1975 to NGPA)

		Southern Union	Western Slope
1975	Jan	.5202	.5202
	Feb	.5202	.5202
	Mar	.5202	.5202
	Apr	.5202	.5202
	May	.5202	.5202
	Jun	.5202	.5202
	Jul	.5202	.5202
	Aug	.676	.6763
	Sep	.676	.6763
	Oct	.676	.6763
	Nov	.676	.6763
	Dec	.676	.6763
1976	Jan	.676	.6895
	Feb	.676	.6895
	Mar	.676	.6895
	Apr	.676	.6895
	May	.676	.6895
	Jun	.676	.6895
	Jul	.676	1.23322
	Aug	.676	1.23322
	Sep	.676	1.23322
	Oct	1.053	1.45864
	Nov	1.053	1.45864
	Dec	1.053	1.45864
1977	Jan	1.066	1.45864
	Feb	1.066	1.45864
	Mar	1.066	1.45864
	Apr	1.166	1.45864
	May	1.166	1.45864
	Jun	1.166	1.45864
	Jul	1.166	1.45864
	Aug	1.166	1.45864
	Sep	1.166	1.45864
	Oct	1.166	1.49944
	Nov	1.166	1.49944
	Dec	1.166	1.49944
1978	Jan	1.166	1.510
	Feb	1.166	1.510

Mar	1.166	1.510
Apr	1.5275	1.520
May	1.5275	1.520
Jun	1.5275	1.520
Jul	1.5275	1.530
Aug	1.5275	1.530
Sep	1.5275	1.530
Oct	1.5275	1.540
Nov	1.5275	1.540

Prices are base prices per Mcf @ 15.025 psia.

Source: Southern Union, Western Slope response to interrogatories in Civil Action No. 76-F869, U.S. District court, District of Colorado.

TEXAS INTRASTATE

NATURAL GAS PRICES

Houston Natural Gas	Weighted Average System Cost
July 1975 - July 1976	$ 1.61 overall 1.52 Permian
July 1976 - July 1977	$ 1.91 overall 1.84 Permian
July 1977 - July 1978	$ 2.02 overall 1.92 Permian (plus 15 cents add-on)

Coastal States	Average Annual Intrastate
1976	$ 1.85 - 1.90 average for year
1976 - 1978	$ 1.75 - 2.00 range

Lone Star Gas	Highest paid Price
1973 first half	$ 0.50 Texas wide
1973 second half	0.90
1974 first half	1.30
1974 second half	1.40
1975 first half	1.90
1975 second half	1.97 (highest until 1978)

	Texas Railroad District No. 8
1976 first half	$ 1.95
1976 second half	1.97
1977 first half	2.00
1977 second half	2.04
1978 first half	2.04
1978 second half	2.06
1979 first half	2.12

West Texas Gathering Contract	Year	Intrastate Contracts Price in That Year
1	1976	$ 1.7573/MMBtu tailgate
	1979	1.8715
	1981	2.88
2	1977	$ 1.77/MMBtu
	1979	1.88
	1980	1.98
	1981	2.31
	1982	2.971

Jan.	1983	3.274	
3	1977	$ 1.95	effective 1-1-77
	1980	2.11	
	1981	2.58	
	9-1-81	$ 2.886	

no tax reimbursement

OKLAHOMA
NATURAL GAS PRICES
1974 - 1977

	Volume	Value	Average Value Cents/Mcf	%Volume P>70 Cents
1974 1st QUARTER				
INTRASTATE	93,284,959	27,277,152	29.24	3.90
INTERSTATE	274,243,939	55,315,081	20.17	.30
TOTAL	367,528,898	82,592,233	22.47	1.20
1974 2nd QUARTER				
INTRASTATE	93,314,510	33,325,969	35.71	11.30
INTERSTATE	2454,377,536	52,628,915	2.14	.70
TOTAL	2547,692,046	85,954,884	3.37	3.60
1974 3rd QUARTER				
INTRASTATE	95,993,405	37,281,871	38,84	15.90
INTERSTATE	258,204,274	55,858,763	21.63	1.00
TOTAL	354,197,679	93,140,634	26.30	5.00
1974 4th QUARTER				
INTRASTATE	97,532,105	41,277,968	42.32	23.00
INTERSTATE	273,934,161	60,695,503	22.16	1.40
TOTAL	371,466,266	101,973,471	27.45	7.00
1975 1st QUARTER				
INTRASTATE	100,421,590	44,975,059	44.79	26.26
INTERSTATE	266,415,393	60,809,493	22.83	1.44
TOTAL	366,836,983	105,784,552	28.84	8.23
1975 2nd QUARTER				
INTRASTATE	97,988,849	52,647,724	53.73	36.17
INTERSTATE	249,815,971	60,067,657	24.04	2.19
TOTAL	347,804,820	112,715,381	32.41	11.77

1975 3rd QUARTER				
INTRASTATE	104,558,479	64,510,198	61.70	40.99
INTERSTATE	238,485,978	62,245,272	26.10	4.00
TOTAL	343,044,457	126,755,470	36.95	15.28
1975 4th QUARTER				
INTRASTATE	100,266,573	72,468,279	72.28	45.16
INTERSTATE	260,489,635	69,350,413	39.31	5.02
TOTAL	360,756,208	141,818,692	39.31	16.18
1976 1st QUARTER				
INTRASTATE	115,964,382	97,587,546	84.15	51.69
INTERSTATE	258,861,044	74,282,237	28.70	6.42
TOTAL	374,825,426	171,869,783	45.85	20.42
1976 2nd QUARTER				
INTRASTATE	107,963,272	102,696,374	95.12	56.07
INTERSTATE	233,588,755	75,107,444	32.15	8.37
TOTAL	341,552,027	177,803,818	52.06	23.45
1976 3rd QUARTER				
INTRASTATE	100,607,927	103,968,641	103.34	58.58
INTERSTATE	228,506,264	85,689,796	37.50	11.28
TOTAL	329,114,191	189,658,437	57.63	25.74
1976 4th QUARTER				
INTRASTATE	121,372,633	137,560,687	113.34	64.01
INTERSTATE	257,287,963	115,803,912	45.01	17.48
TOTAL	378,660,596	253,364,599	66.91	32.40
1977 1st QUARTER				
INTRASTATE	131,692,247	156,801,474	119.07	66.46
INTERSTATE	263,914,924	142,344,340	53.94	23.06
TOTAL	395,607,171	299,145,814	75.62	37.51

1977 2nd QUARTER

INTRASTATE	113,849,172	145,780,761	128.05	71.53
INTERSTATE	237,794,588	145,024,453	60.99	28.30
TOTAL	351,643,760	290,802,214	82.70	42.29

1977 3rd QUARTER

INTRASTATE	108,670,175	139,585,590	128.45	70.76
INTERSTATE	226,609,876	146,400,077	64.60	31.98
TOTAL	335,280,051	285,985,667	85.30	44.55

1977 4th QUARTER

INTRASTATE	98,661,411	128,625,887	130.37	71.39
INTERSTATE	248,414,843	161,765,331	65.12	32.41
TOTAL	347,076,254	290,391,218	83.67	43.49

Source: Document from CEMR Estimated Natural Gas Quarterly Report

*Percentage of the volume sold at prices in excess of 70 cents (rounded).

INTRASTATE NATURAL GAS PRICES
IN OKLAHOMA

		Overall Average $ [1]	Average Renegotiated [2]	Average New [3]
1975 -	1	.45	.76	.96
	2	.54	.88	1.33
	3	.62	1.15	1.34
	4	.72	1.44	1.43
1976 -	1	.84	1.09	1.50
	2	.95	1.48	1.62
	3	1.03	.95	1.48
	4	1.13	1.61	1.63
1977 -	1	1.19	1.67	1.72
	2	1.28	1.68	1.66
	3	1.28	1.68	1.73
	4	1.30	1.75	1.48
1978 -	1		1.81	1.69
	2	1.35	1.67	1.81
	3		1.54	1.64
	4		1.68	1.87

Source: 1. Estimated Natural Gas Quarterly Report, CEMR

2. FPC Form 45 (Price used is for 1st month of the quarter). Prices are rounded to nearest cent.

3. FPC Form 45

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