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ANTITRUST ALCHEMY: LIQUID ASPHALT TO BLACK GOLD

BY DAVID R. KAMERSCHEN AND DAVID C. NEVELN**

A. INTRODUCTION

In the Middle Ages one of the chief aims of chemistry was to change the baser metals into gold. In recent years, some neo-alchemists have actually been successful in perhaps an equally miraculous transmutation, *viz.*, turning liquid asphalt¹ into black gold using the antitrust laws as a catalyst.

The liquid asphalt (hereinafter LA) industry has been a favorite for antitrust litigation since, in a landmark case,² the State of Georgia charged LA suppliers with conspiring to fix prices and to suppress free and open competition in the sale of LA to the State Highway Department. The U.S. Supreme Court in its decision not only found the sup-

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1. "Asphalt" is a bituminous substance which is a constituent of crude oil and is produced as a residue in the refining process for the manufacture of gasoline. In highway construction and maintenance, the three major grades are asphaltic cement (AC), medium cure asphalt (MC), and rapid cure asphalt (RC). In Kansas, MC is by far the most important grade, volumetrically speaking, in maintenance work. Public bodies also on occasion purchase some emulsions for maintenance work.

2. *State of Georgia v. Evans*, 316 U.S. 159 (1942).

pliers guilty, but also said that states are eligible to receive treble damages under the wording of section 7 of the Act of Congress of July 2, 1890, 15 U.S.C., commonly known as the Sherman Act.

This began the LA industry's experience in the judicial system. More recently, private firms and public bodies have initiated antitrust litigation involving the sale of LA in at least ten states.³ A number of the suits have resulted in attractive returns to the plaintiffs, both through favorable court decisions as well as through handsome out-of-court settlements. As a result of finding this veritable pool of black gold in antitrust litigation, the number of LA firms being taken to court has greatly increased in recent years.

The modest contribution of this communication is to suggest—on the basis of our own consulting experiences as well as on the findings in two recent theses by Dwight B. Keen (1968) and Dale Rodney Funderback (1971)⁴—that because of special market conditions, business firms in the LA industry are particularly susceptible to antitrust litigation and may be found guilty of antitrust violations when in fact their conduct conforms to that which could be expected of independ-

3. The states include Alabama, California, Colorado, Florida, Iowa, Kansas, Massachusetts, New Mexico, and Oklahoma. The interested reader can find references to these cases in various issues of the *Antitrust & Trade Regulation Reporter*. While we read a large part of the materials presented in some of the Oklahoma litigation, our own personal consulting experience has been limited to some of the Kansas litigation. The litigation in New Mexico is doubly interesting because it also goes into the question of state immunity which was raised in the *Evans* decision and later in *Parker v. Brown*, 317 U.S. 341 (1943). In *New Mexico v. American Petrofina, Inc.*, 501 F.2d 363 (9th Cir. 1974), the Court of Appeals for the Ninth Circuit held that a state is not liable for violations of sections 1 and 2 of the Sherman Act. New Mexico, on behalf of itself and other public bodies in New Mexico similarly situated, brought suit against Shell Oil and five other asphalt suppliers for alleged antitrust violations. Shell counterclaimed, contending that New Mexico and some of its political subdivisions conspired as customers of asphalt to fix prices and to eliminate competition in violation of sections 1 and 2 of the Sherman Act. The District Court for the Northern District of California dismissed the counterclaim, holding that the Sherman Act is not applicable to the conduct of a state. The case reached the Ninth Circuit on interlocutory appeal under 28 U.S.C. 1292(b) (1970), and the court of appeals affirmed. The court based its holding on the questionable suitability of the two principal remedies of the Sherman Act when applied to a state, the absence of any mention of state action in either the act or the legislative history, and the language of the leading case *Parker v. Brown*.

4. D. Keen, *The Asphalt Price Fixing Dilemma* (June, 1968) (unpublished MA thesis, Wichita State University) and D. Funderback, *Economic and Legal Implications of Liquid Asphalt Pricing in Oklahoma, 1961-1965* (May, 1971) (unpublished Ph.D. dissertation, Oklahoma State University) [hereinafter cited as *Funderback*]. Part of the latter dissertation was published in his article *Price Fixing in the Liquid Asphalt Industry: Economic Analysis Versus the "Hot Document,"* 7 ANTITRUST L. & ECON. REV., 61-74 (1974) [hereinafter cited as *Price Fixing*]. We are indebted to Richard H. Leftwich, Head, Department of Economics at Oklahoma State University—one of the expert witnesses testifying in *State of Oklahoma v. Allied Materials*,—for sending us a copy of Funderback's thesis which was written under the direction of Professor Larkin Warner. We have drawn especially heavily on the Funderback thesis for a number of our factual comments as well as for corroborating our experiences in Kansas with his impressions of Oklahoma. The reader is urged to peruse Funderback's excellent thesis for a more detailed discussion of conditions in the various Oklahoma LA markets.

ent, profit maximizing entities. We would like to make it clear at the outset that our comments will be broad generalizations and therefore will not necessarily apply to the triable issues and to the litigants in any particular LA case. Our primary aim is to explain the general proclivity for both antitrust prosecution and unfavorable outcomes in LA markets without prejudging the innocence or guilt of the defendants in any particular case.

B. HOLY TRINITY OF INDUSTRIAL ORGANIZATION: MARKET STRUCTURE, CONDUCT, AND PERFORMANCE

No analysis of the organization in an industry such as LA would be complete without relating it to the market structure, conduct, and performance (the latter is sometimes referred to as behavior) in that industry. Briefly, industrial organization scholars posit a basic model in which there is a causal flow from the basic supply and demand conditions to market structure, to conduct, and to performance.⁵ Industrial organization specialists are especially interested in the causal flow from market structure to conduct and performance, seeking ultimately to predict market performance from a careful observation of market structure, conduct, and the basic conditions. While it is recognized that there are feedback effects from conduct to structure and/or the basic conditions, the usual paradigm is: basic supply and demand conditions determine market structure, which in turn determines conduct, which ultimately determines performance.

The major goal of U.S. antitrust policy is to influence market performance (i.e. by fostering competition to achieve allocative efficiency). Yet as Funderback so aptly put it: "An interesting feature of American antitrust policy is that while it is undoubtedly intended to influence performance, the antitrust statutes tend to be highly conduct oriented."⁶

Thus, the courts in general try to deduce subjective market conduct from objective market structure and performance. It is in making this difficult inference that the court and jury have considerable difficulty.

C. IDENTICAL BIDS

One example of inferring conduct from performance is reflected by bidding practices. Although LA is used for a variety of pur-

5. For example, see F. SCHERER, *INDUSTRIAL MARKET AND ECONOMIC PERFORMANCE* 1-7 (Chicago: Rand McNally & Co., 1970). See also Kamerschen & Lam, *A Survey of Measures of Monopoly Power*, 22 *RIVISTA INTERNAZIONALE DI SCIENZE ECONOMICHE E COMMERCIALI* 1131-56 (Dec. 1975), and Kamerschen, *The Texas Public Utilities Regulatory Act—An Economist's View*, 3 *URB. L. REV.* 229-49 (1977).

6. FUNDERBACK, *supra* note 4, at 1.

poses—brake lining, floor covering, insulation, roofing, etc.—its primary use is in highway construction and maintenance. Therefore, since public bodies—such as state and county highway commissions—often use formal bidding procedures, and since LA firms frequently submit similar if not identical bids, it is worth reviewing Cook's classic paper on the topic of bidding as it relates to the Kansas LA market with which we are most familiar.⁷

In Kansas two salient points can be made about the public LA markets: (1) The state highway commission solicits sealed bids once a year for its asphalt needs, whereas the county purchasing agents obtain bids by less formal means.⁸ (2) Since the bulk of LA purchases by the county and the state bodies are for maintenance rather than for new construction, their demand is inelastic—that is, output is relatively insensitive to price changes. This is due simply to the fact that LA has relatively fewer substitutes for maintenance work than for new construction work.⁹

The Cook study indicates that identical bids are not necessarily indicative of collusion.¹⁰ He suggests several conditions favoring identity¹¹ of bids when no collusion is involved: (1) an industry characterized by relatively few sellers; (2) an industry in which there is a reasonable opportunity for retaliatory action; (3) an industry with a well specified product; (4) an industry in which the delivered product has modest transportation costs, or common carriers are frequently

7. Cook, *Fact and Fancy on Identical Bids*, 4 HARV. BUS. REV. 67-72 (1963) [hereinafter cited as Cook]. On a more advanced level involving a lucubrated mathematical analysis see E. ATTANASI, S. JOHNSON, & D. KAMERSCHEN, *A Numerical Analysis of Bid Distributions in Sealed Tender Markets*, in ESSAYS ON INDUSTRIAL ORGANIZATION IN HONOR OF JOE S. BAIN 221-40 (R. Masson ed. 1976).

8. Although the antitrust litigation in which we were actively involved was in the state court, testing hoary Kansas antitrust laws—including provision for an inquisition procedure which was in fact employed—the general tenor of the statutes is consistent with the federal Sherman and Clayton Acts. See also Kamerschen, *The Changing Face of Antitrust*, 37 GA. BUS. 1-6 (July-August, 1977).

9. For instance, while a concrete road may be repaired with LA, a LA road cannot be repaired with concrete.

10. Of course, the law, while spotty on this, does recognize that a fungible product produced by firms with similar costs should be expected to have identical prices. See *Pevely Dairy Co. v. United States*, 178 F.2d 363 (8th Cir. 1949), cert. denied, 339 U.S. 942 (1950). But see *Beatrice Foods Co. v. United States*, 312 F.2d 29 (8th Cir. 1963), cert. denied, 373 U.S. 904 (1963).

11. Of course, how close bids need to be in order to be classified as identical depends on the product and market in question. The major thrust of Cook's article is summarized in his caption which reads:

Despite government's all-out attack on them, identical bids may sometimes be more honest, more competitive, and more practical than any other kinds of bids. Cook, *supra* note 7, at 67.

Without committing ourselves to the veracity of his statement, we do urge the reader to analyze his arguments before castigating categorically identical bids as *ipso facto* collusive.

used; and (5) an industry in which the volume of the product involved in the identical bids is small relative to the total sales of the product.

The LA market in certain states clearly meets several of the above conditions, and thus provides some basis for expecting a substantial degree of similarity in bids. Several additional reasons will be advanced below to explain how the unfettered forces of supply and demand *could* produce a remarkable degree of similarity in LA prices to public bodies. These include the following: (1) Special spatial forces are operating to restrict the dispersion of delivered prices within certain geographical areas. (2) The possibility for wide differences in prices is substantially narrowed inasmuch as specific costs of production are virtually unmeasurable, and in some markets the sales represent a small percentage of the total sales. (3) Mature, non-collusive oligopolists selling homogeneous products would tend to charge similar prices.

In addition, Cook mentions certain public practices which encourage closeness in the bid prices, many of which are frequently found in sales of LA. For instance, public bodies often: (1) have public openings on sealed bids;¹² (2) use "most-favored-customer" clauses in sales contracts;¹³ and (3) tend to use full requirement contracts, or solicit bids on quantities so large that it is not commercially feasible for some of the sellers to seek the business.

Thus, because of special market conditions peculiar to the LA industry, one would expect in the absence of collusion: (1) similar if not identical bids on the instate public business; (2) different prices to private contractors and out-of-state customers, both relative to each other and relative to instate public sales; and (3) the geographical marketing of the out-of-state sales by any surplus LA states, such as Kansas, to take place in deficit states, such as Missouri or Nebraska, and not in other surplus states, such as Oklahoma.

D. SPECIAL SUPPLY CONDITIONS IN LA MARKETS

There are special conditions in both the supply and demand market that make LA firms particularly winsome targets for successful anti-trust litigation. There are several noteworthy features about the supply side of LA markets. First, the location of the supplier is quite crucial, since transportation costs are fairly prominent as a percentage of the netback price.¹⁴ LA must normally be delivered hot to be usable

12. Cook, *supra* note 7, at 7 avers that it would be hard ". . . to find a device less calculated to foster open and aggressive competition among sellers."

13. This factor is still valid if it applies as a matter of courtesy or expectation rather than as a formal clause in a contract.

14. For example, in the Kansas county market, the average transportation costs as a percentage of the netback price for all grades sold over the 11 year period 1958-1968 were 17.75. A netback refers to the price of LA f.o.b. refinery—i.e., the price of LA at the seller's plant without

instantly, yet most purchasers have limited or no storage facilities. Moreover, sales are often made on the basis that the purchaser may cancel the order entirely if done within a reasonable time before the truck has been dispatched (and in some cases even after the truck is on the road).

Second, since LA is a byproduct rather than a joint product,¹⁵ technology dictates that once the throughput is given, there is no independent choice of more or less LA. As a factual matter, the residual LA at the bottom of the barrel represents about 3 percent of the crude oil input for the nation as a whole.¹⁶

Third, petroleum refining tends to be characterized by a high fixed cost.¹⁷ While not all petroleum costs are joint or common, nonjoint specific costs—such as for storage or further processing—represent a small percentage of total costs. Perhaps the most salient feature of these joint costs is that there is no wholly satisfactory way of allocating them among the various petroleum products.¹⁸ As a result, demand often seems to be the only reasonable guide to LA pricing. This means that LA prices, *absent collusion*, tend to be more inflexible than the prices of products sold in competitive markets where both demand and/or cost changes can and do influence the price. Since firms know

any freight charges being included. A delivered price refers to price of LA f.o.b. destination—i.e. the price of LA which includes or adds a price or component for freight from the seller's plant to the destination.

15. This distinction is apparently based principally or wholly on empirical considerations; if a jointly produced product is of an arbitrarily small order of magnitude—in either physical or value terms—it is considered a by-product rather than a joint product. To be absolutely accurate, LA was more a joint product before the cracking process was developed in 1913. The limitations now are more economic than technological.

16. The figures used in this paper came from such trade publications as *Asphalt Magazine* (formerly *Asphalt Institute Quarterly*) *Oil and Gas Journal* and *Platt's Oil Price Handbook*, testimony in the LA lawsuits, articles in professional economic journals and book-length industry studies. Some of the better articles in this area include: Griffin, *The Process Analysis Alternative to Statistical Cost Functions: An Application to Petroleum Refining*, 62 AM. ECON. REV. 46-56 (1972); Manne, *A Linear Programming Model of the U.S. Petroleum Refining Industry*, 26 ECONOMETRICA 67-106 (1958); Griffin, *Multiple Products Costing in Petroleum Refining*, 105 J. OF ACCOUNTANCY 46-57 (1958); Nerlove & Balestra, *Pooling Cross Section and Time Series Data in the Estimation of a Dynamic Model: The Demand for Natural Gas*, 34 ECONOMETRICA 585-617 (1966); and *Price Fixing*, *supra* note 4. From these sources we find such vital statistics as the following: there are approximately 42 gallons in a barrel of crude oil; the wholesale price of gasoline in 1972, before the October, 1973 OPEC oil embargo which resulted in an unprecedented fourfold increase in the price of oil—see D. KAMERSCHEN, *MONEY AND BANKING* chs. 26-27 (6th ed. 1976)—was about \$5.25 a bbl. and \$1.61 for LA; the costs from the wellhead to the refinery per gallon of LA are 1¢ or more; there are at least 20-30 grades LA and some suppliers keep 8-12 grades in storage; the costs of crude petroleum and blending stocks constitute approximately 75 to 80 percent of total refinery costs, with transformation or conversion costs aggregating 20 to 25 percent.

17. For example, fixed costs have been estimated to be approximately 3 percent of the total costs in a conventional refinery operating at its 10,000-20,000 b.p.d. capacity.

18. The most common methods for allocating joint costs in the petroleum industry have been by: (1) sales realization; (2) by-products; (3) replacement value; (4) barrel-gravity; and (5) gravity-heat. See e.g., Griffin, *supra* note 16.

that their cost estimates are often not tolerably accurate, they rely almost exclusively on demand considerations in arriving at a price policy. Thus, one of the most common factors causing vicissitudes in competitive prices, *viz.*, changes in cost, is frequently not applied in formulating the price of LA.

To summarize, the following is known about the cost or supply of LA: (1) Because of the nature of technology in petroleum refining, the supply of LA is determined primarily by the size of the throughput and by the demand for other petroleum products (especially gasoline). (2) The average, marginal, and total costs of LA are generally indeterminate. (3) Since production costs cannot be determined with any degree of precision, they *perforce* cannot be as important a consideration in LA pricing as production costs in other competitive markets.

E. SPECIAL DEMAND CONDITIONS IN LA MARKETS

On the demand side of the market, it is possible to delineate four classes of LA customers facing the suppliers of LA in a given state: (1) private contractors and industrial buyers; (2) local government units; (3) the state highway commission; and (4) out-of-state users. In contrast to (2) and (3), the private users are profit-motivated. Since the total revenue spent on LA is set by legislation and since there are no good substitutes for LA in road maintenance work, the demand by (2) and (3) is less elastic than that of (1).¹⁹ In short, private users tend to have the most elastic demand because: (1) they are profit maximizers who will change their total outlays as prices change; (2) they build new roads which do allow some substitution other than LA, (e.g., toward concrete); and (3) they have more latitude in shifting suppliers and in purchasing from out-of-state sellers than do public bodies who are often restricted by existing bidding procedures and specifications.²⁰ Thus, the persistence of higher prices intrastate than interstate is not irrefutable evidence of collusion, inasmuch as out-of-state buyers have more elastic demands and therefore tend to be charged lower prices, absent collusion.

The aforementioned tendency of higher prices to public users than private users is strengthened by the typically stringent purchase methods and contractual terms demanded by public authorities. The governmental contracts often contain open-end requirement provisions in which neither the time of delivery nor the volumetric desires are specified precisely. The bids are usually on a f.o.b. refinery basis. And as

19. The quantity bought by a user with a less elastic demand is less responsive to price changes than the quantity bought by a user with a more elastic demand.

20. For example, it was only in recent years that outstate bids were invited or accepted in Oklahoma.

previously mentioned, common carrier transportation costs are significant. (They are often of an order of magnitude of 1¢ per gallon every 50 miles). The LA, purchased at the state or to a lesser extent, local government level, is often picked up by state or local government return privileges on the unused portion.²¹ Public bodies seldom accept bids unless satisfied with the adequacy of the refinery, blending, loading, and testing facilities. Finally, there is frequently a cancellation clause on the contract that imposes virtually no obligation on the government to purchase from the chosen supplier.

Since the demand elasticities do differ between the various markets, and since it is not only possible, but economically feasible to keep these markets separate—thereby preventing resale by arbitrators from higher priced to lower priced markets—one would expect price differentials, absent collusion, to develop. Economic analysis would lead one to expect, in noncollusive markets, both lower and more flexible transaction prices²² in private markets than in public markets for one or more of the following reasons: (1) price cutting is more effective in private markets since total outlays are not set; (2) secret price concessions can be made to private purchasers with a smaller probability of discovery; (3) higher prices would be expected *ceteris paribus* on sales to public bodies as an “uncertainty premium” for the unspecified quantities and unscheduled delivery dates typically contained in the public contracts; and (4) transaction costs tend to be higher for public than private users, as the former frequently require more in the way of service.

F. PRICE DISCRIMINATION

Of course, a price differential between markets that can be explained by cost differences is not price discrimination by either legal or economic standards. Price discrimination involves selling different units of a fungible product at different prices for reasons not associated with cost variances.²³ Such discriminatory power mandates that the seller control supply to prevent reselling from the high price to the low price market, and that the buyers' elasticities differ in the various markets.

In the case of LA, price discrimination has not been important because the lawsuits have typically been concerned with the *level* of prices in all the markets,²⁴ and not with the *differential* of prices. Moreover,

21. It should be observed that LA cannot be returned directly to the seller's storage tank, but has to go to a slop tank to be rerun through the refinery.

22. And it is these actual transaction prices and not list or book prices that are of major concern to an economist.

23. Alternatively, if a firm sells different units of a nonhomogeneous product at the same price to different buyers, this would also be price discrimination.

24. In the Kansas county LA litigation, tried under state antitrust statutes, price discrimination was not at issue.

because of cost differences, it would be exceedingly difficult to document any allegation of discrimination.

On this second point, our perusal of the depositions of LA salespeople in Kansas and Oklahoma reveals a number of reasons why the higher prices to public users might very well be simply a reflection of higher transaction costs, including inspection, specification and transportation costs. Although several of the explanations given by the salespeople overlap, let us enumerate some of the factors mentioned by them without debating the merits of this list: (1) LA suppliers, as well as some of LA trade associations, have occasionally provided gratis consulting services to public bodies; (2) public buyers often have no storage facilities, and require the asphalt heated at a certain minimum temperature at the time of delivery;²⁵ (3) the paperwork costs are relatively higher on public than on private sales since the shipments are relatively smaller; (4) the indefinite nature of the delivery time and volumetric requirements on public contracts mandate an uncertainty premium, (5) bidding specifications on some public projects require that a potential supplier post a bond; (6) suppliers are sometimes required to provide laboratory facilities to public buyers, especially the state highway commissions, and to be willing to open their plants to inspection by public officials at any time; (7) the private business is bigger, steadier, and more certain; (8) on private transactions the prices are often for immediate spot sales, whereas on public transactions the quoted prices are often guaranteed by the supplier not to change over the period of the contract (which is typically a year); (9) contractor work is more continuous, involves larger quantities, and the suppliers often have their own heating and storage facilities.

It is also instructive to inquire how the county engineers or other purchasing agents select the supplier(s). In the case of some state markets, the decision-making algorithm is easy and almost immutable. Typically a sealed bid procedure is used and the lowest bid on each homogeneous grade is awarded the contract.²⁶

However, the purchasing agents at the county level, frequently an engineer, have more latitude in making purchase commitments. It is instructive to compare the differences between the attitudes and buying procedures of public and private users. Of course, private users are necessarily profit motivated and search out low prices, playing off the sellers one against the other, particularly on large purchases. A public

25. One salesperson estimated that it cost about 2 1/2¢ a gallon to heat LA.

26. About the only exception to this occurs when the total awards won by a supplier would involve a projected volume of LA that would exceed the maximum capacity limitation stated by the supplier before the bids were considered. In such a case, the award is instead made to the next lowest bidder whose *a priori* stated capacity constraint would not be violated by the likely volume involved.

purchasing agent such as the county engineer often has many duties in addition to the purchase of LA. An agent is influenced by political and social considerations in addition to the usual economic factors. For instance, a purchasing agent is less likely to be subject to criticism if he or she follows the buying procedures of predecessors, and utilizes the same suppliers.

The evidence in the LA cases is replete with examples of public purchasing agents influenced by the personality and/or persistence of the salespeople, the time honored procedures employed by predecessors, or a variety of political constraints. In Kansas, various county purchasing agents stated that they bought LA for one or more of the following reasons: (1) They found that when they needed LA, a particular supplier had an easy telephone number to remember! (2) They used a sealed bid procedure, but also had a "buy local" policy! (3) They preferred multiple suppliers in case one supplier failed to deliver (e.g., a flood immobilized a refinery one year). (3) They preferred as few sellers as possible in order to keep bookkeeping at a minimum, and/or wanted to become good customers in order to get preferential treatment. (4) They preferred close suppliers both because LA must be delivered hot and because it is easier to cancel the shipment in event of inclement weather. (5) They found the delivery service, whether suppliers owned the equipment or hired the services, of one supplier superior to others. (6) Higher officials, such as county commissioners, delivered a ukase to buy locally. (7) In the case where the delivery trucks were self-owned, they favored the superior loading facilities of one supplier which allowed them to get their trucks in and out quickly. (8) They appreciated the training films one supplier provided them.

It is also worth noting that some purchasing agents expressed the opinion that it was immoral to brandish the quotes of other suppliers in an effort to dragoon lower prices. In total, one cannot help but be surprised at a wide variety of considerations, in addition to price, that cause public purchasing agents to select one supplier over another. While one would normally expect proximity to be material, inasmuch as transportation costs are relatively important as a percentage of selling price and timing of delivery is essential,²⁷ some of the other aforementioned factors were not so obvious.

G. OTHER FACTORS

In the typical complaint against LA suppliers, the following factors are explicitly or implicitly invoked, although none constitutes apodictic proof of an antitrust violation: (1) businesspeople do not always try to

27. Purchasing agents in Kansas estimated that it cost anywhere from \$40-\$300 an hour to keep a LA crew standing around in the event the delivery of LA was dilatory.

promote the social welfare; (2) LA markets are typically oligopolistic;²⁸ (3) collusive agreements are more prevalent under oligopoly than under pure competition (which of course is tautological) and are easier to enforce within than between states;²⁹ and (4) there is a fairly active trade association representing the interests of the LA industry in the market in question.

To repeat, none of these factors separately or taken together should *per se* be an occasion for antitrust litigation. Any lawsuit that depends exclusively upon such factors hangs on an exceedingly slender reed that may alternatively bend upward or droop downward, depending on the species of the litigious zephyrs blowing at the time.

Another factor that should be considered in assessing the veracity of any price-fixing lawsuit is the egress or exodus rate of firms. Just as entry into an industry during a period of alleged predation³⁰ flies in the face of such a claim, a decision to exit from an industry for economic reasons during a period of alleged price-fixing should weaken *ceteris paribus* any such allegation. While it is not apodictically certain that collusive prices will be set so high as to reap supernormal profits, firms would be foolish to collude in setting prices that produce only normal or subnormal profits.

28. While it is recognized by economists that there is nothing *per se* undesirable or unusual about oligopoly—some scholars feel as much as two-thirds of all manufactured goods in the U.S. are produced under oligopoly—somehow the noneuphonious term “oligopoly” has come to acquire perjorative connotations. Oligopoly refers to a market model where there is mutual interdependence between rivals, some recognition being given to the fact that demand and price are interrelated. This does not, of course, mean that an oligopoly market is inevitably or even generally collusive or alternatively that a collusive market is inevitably oligopolistic. The national LA market falls somewhere between the economist’s market paradigms of monopolistic competition and oligopoly. See Kamerschen, *An Empirical Test of Oligopoly Theories*, 76 J. OF POLITICAL ECON. 615-634 (1968), reprinted in 2 J. OF REPRINTS FOR ANTITRUST L. AND ECON., 1207-1226 (1969).

29. The difficulty of coordinating an informal, tacit collusion may rise exponentially with the number of firms, inasmuch as without a central coordinating agency each firm must tacitly or overtly communicate with each of its rivals over a *modus vivendi* in pricing. Letting N equal the number of firms in the relevant market, the number of two-way communication flows required is given by the combinatorial expression $C = N(N-1)/2$. Thus, in a market with 10 suppliers, $C = 10(9)/2 = 90/2 = 45$. Thus, 45 is the number of channels that must be maintained to keep industry discipline. See Kamerschen & Wallace, *The Costs of Monopoly*, 17 ANTITRUST BULL. 485-96 (1972); Kamerschen & Kerchner, *Market Share Valuation of Control*, 6 INDUS. ORGANIZATION REV. (1978); and Kamerschen, *An Economic Approach to the Detection and Proof of Collusion*, 16 AM. BUS. L.J. (1978).

30. In the conceptualization of economists, predatory pricing involves a firm knowingly pricing substantially below marginal costs for a sustained period of time in certain geographic markets for the purposes of weakening, taming, or eliminating existing market rivals and reducing the threat of new entrants. See Kamerschen, *Predatory Pricing Vertical Integration, and Market Foreclosure*, 12 INDUS. ORGANIZATION REV. 143-68 (1974).

H. RELEVANT MARKET

The determination of the market is always crucial in antitrust law and economics. Generally speaking, a market is a set of firms each of which is supplying products that have some degree of substitutability to the same potential buyers.³¹ A market is at least three-dimensional, involving product, geography, and time.

In defining the relevant product market, substitutability is the touchstone. If goods are close substitutes for each other, they are in the same product market. In general, the outer boundaries of a product market are determined by the reasonable functional end use interchangeability, or by cross price elasticity of demand (and/or supply). However, submarkets may exist by reason of public or industry recognition, peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, specialized vendors, and sensitivity of price changes.³² To an economist, the most common measure of substitutability of product is the coefficient of cross price elasticity of demand. It shows the proportionate change in the amount buyers demand of one product, say X, to the proportionate change in the price of another product Y, which induces the change in the demand for X, the price of X and all other factors which are capable of influencing the demand for X being held constant. If the value of the coefficient is positive in sign, the goods have some substitutability. The fact that LA constitutes a relevant product market for antitrust purposes has never been seriously challenged in any case of which we are aware.

The geographic dimension of a market is sometimes the most important of all. Products which are potential close substitutes will not face actual competition if geographical considerations do not permit rivalry for some set of customers. Because of high transportation costs or other factors, such as convenience or lack of product durability, some markets (for example, the ready-mix concrete market) are primarily local or regional in nature. Because of an absence of local or regional cost barriers, other markets (for example, the national network television market) are effectively national markets.

The Supreme Court has discussed geographic market areas in such celebrated cases as *Brown Shoe*,³³ and *Tampa Electric*.³⁴ *Tampa* is perhaps the most widely cited. The Supreme Court held that the area of effective competition is determined by: (1) the area in which the

31. See D. KAMERSCHEN & L. VALENTINE, INTERMEDIATE MICROECONOMIC THEORY (Cincinnati: South-Western Publishing Company, 1977). A "market" (*i.e.*, buyers and sellers) is not synonymous with the more commonly used term "industry" (*i.e.*, sellers).

32. See *United States v. Brown Shoe Company*, 370 U.S. 294 (1962), and *United States v. F.I. Dupont*, 351 U.S. 377 (1956).

33. *Id.*

34. *Tampa Electric Co. v. Nashville Coal Co.*, 365 U.S. 320 (1961).

seller operates and effectively competes; and (2) the area to which the purchaser can practically turn for supplies.

One reasonable and simple, but unfortunately not infallible, test for discerning the relevant geographical market for LA is the following: "Is most of the LA consumed in that state produced in that state, and is most of the LA produced in that state consumed in that state?" If the answer is yes, the odds are better than even that the relevant market can for all intents and purposes be considered intrastate.³⁵

The *time* dimension is important because price elasticities of demand and supply increase as time passes. In determining a market we must specify some time period. Given enough time to adjust, many firms are potential competitors. The relevant time period should neither be so short as to include in the market only existing firms, or so long as to allow for substantive changes in technology, demand, and tastes that could completely alter the situation.

If forced to make a horseback generalization—never a completely satisfactory substitute for a careful marshalling of all the relevant factors—we would opine, based primarily on transportation costs, that the relevant geographic market for LA is typically at the state level, and, therefore, the avenue of discovery for most LA lawsuits can be limited to the metes and bounds of the state in question. That is, the incremental gains to society are unlikely to exceed the incremental costs to society if the scope of the inquiry in a LA case is extended to out-of-state evidence, thereby requiring an enormous quantum of discovery to describe with tolerable accuracy the market conditions in the other states. In short, while any precise delineation of the relevant market is *perforce* arbitrary, the economic and legal arguments for the parochial state definition are often convincing.

I. SUMMARY

The typical lawsuit involving LA seeks to establish collusion by demonstrating that there was an improbable degree of price and market share uniformity and stability, coupled with persistent and significant

35. This is a simplified version of the procedure developed recently by Elzinga & Hogarty, *The Problem of Geographic Market Delineation in Anti-Merger Suits*, 18 ANTITRUST BULL. 45-81 (1973) which demonstrates the need to assess both supply and demand factors to define a geographic market. They espouse a concise method of defining geographic markets. According to their procedure, if 75 percent or more of the demand for the product in the selected area is met by suppliers in that area and if 75 percent or more of the supply of the product emanating from the selected area is consumed by users in that area, then the geographic market has been properly defined. To state their test briefly, if little of the relevant product enters an area from outside and if little leaves the area from inside, that area is a relevant geographic market. See also Kamerschen, *The Economic Effects of Monopoly: A Lawyer's Guide to Antitrust Economics*, 27 MERCER L. REV. 1061-1109 (1976) and Kamerschen, *Antitrust Goes to the Dogs*, 15 AM. BUS. L.J. 249-72 (1977).

price differentials between markets. Often, the price differentials actually found are not cordial to the collusion thesis, and the pricing and market share trends observed appear to be emphatic in their contradiction of it.

The ascertainable facts in the LA industry include all of the following: LA is a relatively standardized product which is frequently sold in oligopolistic markets. Prices are determined primarily by demand because of controlling technological and economic factors. LA is a by-product for which specific production costs are virtually unobtainable. Finally, because of differences in demand elasticities and/or transaction costs, prices charged profit-motivated private users are usually lower than those charged public bodies. However, this is entirely consistent with noncollusive oligopolistic pricing. In peroration, any consensus that LA firms are inevitably or likely to be involved in tacit, informal collusion arrangements, *at this stage*, rests more upon intuition than evidence. The proper approach is to examine each case on its own merits.