
Good bids and bad: Can economists tell the difference?

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California
State Bar
Journal

NOV./DEC 1978
VOL. 53 NO. 6

ECONOMISTS increasingly are being called upon in antitrust cases to offer an opinion as to whether the conduct of a firm or group of firms in a particular industry is consistent with what one would expect under conditions of free and open competition. Quite frequently, the issue is whether the defendants were colluding. As antitrust observers are well aware, making this determination can be a tremendously difficult task: while economic theory describes the broad outlines of competitive behavior, the real world behavior which the economist is asked to interpret may be extremely complex. In view of this fact, it is frequently true that the most the economist can hope to do is take the available data and determine how *likely* it is that firms were colluding. This may be less than one would like, but such conclusions, based on inference and judgment, are surely preferable to leaving the courts in a vacuum.

This article considers the extent to which attorneys can expect economists to testify as experts on the witness stand, particularly on cases where defendants are accused of colluding in markets where contracts normally are let on a sealed bid basis. The conventional wisdom in antitrust economics is that such markets are especially prone to collusion among vendors. This belief was

strikingly reinforced in the early 1960s when the now (in)famous electrical equipment conspiracy was uncovered and more than 2,000 private antitrust actions were spawned by successful government prosecution.¹

As a theoretical matter, sealed bid contracts are especially susceptible to collusion: such contracts provide an ideal avenue by which colluding firms can prevent individual participants in the conspiracy from cheating on one another. With sealed bid procurement, when the contracting firm (often a public entity) opens the submitted bids and announces the winning entry, any cheating on prior agreements is available for all to see. We can begin, then, by saying that economic theory suggests that sealed bid markets are likely targets for collusion.

Seven questions

This is fine as a preliminary, but it does not take the economist very far when asked whether a *specific* pattern of bids appears to be the product of competition or collusion. What else does economic theory have to say on the subject?

There is a fair degree of consensus about the structural conditions most likely to result in noncompetitive behavior and this consensus also would seem to apply to a market characterized by sealed bids. Thus, in investigating the plausibility of collusion, the economist can ask such things as: (1) Are there relatively few sellers in the market, so that collusion costs tend to be low? (2) Is entry of new firms particularly costly so that bids above the competitive level will not spark a high influx of firms? (3) Is the ratio of fixed to variable costs high, so that sellers have an especially strong incentive to avoid price competition? (4) Is the industry demand for the product relatively unresponsive to price changes, so that price increases will not be fully offset by reductions in the quantity purchased? (5) Is demand stable (rather than subject to cyclical swings)? (6) Is the market growing? and (7) Is the product fungible? Not all of these conditions are absolutely necessary for collusion to exist, but the more that are present, the more likely it is that firms in the industry have an incentive to collude and the ability to collude.

While evidence on market structure can be valuable, it does not enable the economist to make a definitive judgment about market performance. That is, an industry may be competitive even if the

¹Richard A. Posner, *A Statistical Study of Antitrust Enforcement*, *Journal of Law & Economics* XIII (October 1970): 365-419.

answer to all seven questions posed above is "yes". Ultimately, it will be necessary to examine data on market conduct such as actual pricing and bidding patterns: one must concern oneself with whether it is possible to isolate bidding patterns which are inconsistent with competitive behavior. And what types of patterns are these? Some examples may prove helpful.

First, it is noted above that conspirators face the problem of controlling cheating by greedy participants. If one firm shades its price, it will attract sales from other firms. If these firms recognize the cause of their drop in sales, they will respond by cutting their own price and, in time, the conspiracy will disintegrate. One way to prevent this from occurring is to structure the cartel in such a manner that if a firm makes certain types of sales, it becomes obvious to all that the firm must have been cheating. A classic example of this strategy is for conspirators to divide up the market on a geographic basis. Firms are restricted to sales in a particular territory and any sales in other territories constitute certain evidence of cheating. Another example of this strategy is for the firms to divide up the customers. In this scheme, firms can sell only to certain parties and again, any deviation is sure evidence of cheating.

This insight into the dynamics of collusion gives the expert economic witness an initial basis for evaluating bidding patterns. One should be on the lookout for patterns of winning bids across regions or customers which cannot be explained by economic factors such as transportation costs. If firms are located in the same city, yet one firm consistently sells just in one region while another sells just in some other region, the economist can take this pattern as suggestive of collusion.

Bid distribution

In addition to the pattern of winning bids, the economist might hope to learn something from an examination of the *distrib-*

ution of bids submitted on various jobs. An example can be found in the Cast Iron Pipe antitrust cases, which involved an alleged conspiracy to allocate customers and increase prices on the part of manufacturers of cast iron pipe used to transmit water under pressure.² Trial testimony by plaintiffs' experts included an extensive analysis of the alleged conspirators' bidding practices. Among the patterns that emerged were the following:

A. It was possible to identify a number of cities in which a single bidder consistently won over an extended period of time (in excess of 8 or 10 years). In that relevant sellers all had foundries in the same city (Birmingham, Alabama), this history of unabated success could not be explained in terms of a geographic freight advantage. Indeed, what was observed were groups of "city-pairs": one bidder would consistently win in one city while consistently losing in a neighboring city. At the same time, the bidder submitting losing bids in the other bidder's city would consistently win in its own.

Four examples of the city-pair concept can be seen below. In each instance, the city-pairs shown in column 1 are within 50 miles of one another. Companies shown in column 2 were consistent winners in each city over an extended period; companies shown in column 3

consistently lost in the same cities over the same period. At the very least, this pattern is suggestive of a territorial allocation scheme.

B. This suspicion was reinforced when it was possible to identify a number of cities and even states in which an individual bidder submitted uniformly unsuccessful bids over a 10- to 15-year period. In light of costs associated with preparing a bid, an economist finds this kind of behavior puzzling. The winning bid was announced at the time of each award so that companies which failed to win were aware of the degree to which their bids were out of line; had they truly desired to get the business, presumably they could have lowered their bids in subsequent years.

C. Within city-pairs such as Miami/Miami Beach, the following set of circumstances was observed. American consistently submitted winning bids in Miami Beach that were under losing bids submitted by that same company over the same period when it bid in Miami. U.S. Pipe, the consistent winner in Miami, similarly would submit bids in Miami Beach that were \$5 or \$10 higher than its winning bids. It is difficult to see why either company's costs of selling to each city would be so different in the 10- to 15-year period that this type of bidding practice was observed. Plaintiffs' conclusion was

City-Pair (1)	Consistent Winner (2)	Consistent Loser (3)
Miami, FL	U.S. Pipe	American
Miami Beach, FL	American	U.S. Pipe
Ft. Walton Beach, FL	American	U.S. Pipe
Milton, FL	U.S. Pipe	American
Gainesville, FL	Alabama	American
Starke, FL	American	Alabama
Albany, GA	American	Alabama
Thomasville, GA	Alabama	American

²Cast Iron Pipe antitrust cases, U.S. District Court, Northern District of Alabama, Civil No. 71-516.

that the losing bids submitted were simply shadow bids.

D. There is an additional anomaly in the Miami/Miami Beach bid history. Although American had traditionally been awarded the job in Miami Beach, the data show that U.S. Pipe was the Miami Beach winner of the job awarded on May 11, 1966. The books were balanced again, however, eight months later (January 17, 1967), when American rather than U.S. Pipe received the award in Miami.

Various reasons

Defendants' response to all this was that sometimes losing bids were submitted so that companies might remain on the bidders' list and maintain some visibility before the public entity purchasers. This reasoning strikes me as somewhat disingenuous: what is the value of maintaining a position on the bidders' list if one *never* gets the business?

Defendants also contended that public entity specifications tended to place some of them at a disadvantage in certain locales. Although there may have been a number of instances where this occurred, the fact is that cast iron pipe is a fungible product with each seller's pipe interchangeable with pipe sold by other manufacturers. Furthermore, why bid at all if the specification itself is such as to disqualify you.

Defendants also alleged that certain public entities had expressed a "preference" for dealing with certain sellers. Again, while there may have been exceptions, public entity purchasers typically are constrained to purchase on the basis of lowest price. The "preference" defense simply does not make much sense.

Finally, defendants pointed to a number of cities in which the city-pair pattern simply did not exist. In these cities, the winning bidder would change from year to year.

Two other pieces of evidence were pointed to by plaintiffs in their analyses of price behavior. First, there was some testimony to the effect that the conspiracy broke down in late 1962 and 1963

in the face of a new entrant. When bids during that period were reviewed, one observed a sharp break in the historic level of bids and bid patterns. Thus, not only did prices drop by as much as 20 percent or more, but the city-pair concept was violated: alleged conspirators which traditionally won in certain cities did not necessarily win in those cities during this period. Similarly, firms which traditionally were unsuccessful in certain cities managed to obtain business during this period by significantly altering their historic bid strategy.

Second, these same manufacturers were selling pipe in Puerto Rico at prices which were 25 percent below the level of domestic bids over the entire period (roughly 1960 to 1970). Indeed, the depth of the price break during the 1962/1963 outbreak of competition corresponded very closely to the level of prices at which pipe was sold in Puerto Rico. This made it possible for plaintiffs' experts to form an opinion as to the likely level of prices had more vigorous competition been present.

In sum, when viewed in the context of all the evidence, collusion seemed to be a possible explanation of the observed bidding patterns. The jury, however, was *not* convinced: after one mistrial (hung jury) and a partial settlement, a jury came back with a finding for defendants.

Conspiracy patterns

Another action in which extensive bid analyses were undertaken involved an alleged bidding conspiracy among utility construction contractors. Here, the following patterns emerged:

A. For contracts on which only alleged conspirators submitted bids, the observed bids were remarkably stable over time and fluctuated within very narrow ranges. However, on contracts for similar jobs where both alleged conspirators and those not a part of the alleged conspiracy bid, the winner's bid typically was lower than winning bid levels when only alleged conspirators bid. One

might ask how this came about—how did the alleged conspirators know when nonconspirators would be bidding—but the tendency of the alleged conspirators to lower their bids when faced with competition from bidders outside the group was unmistakable.

B. For those contracts on which only alleged conspirators bid during the alleged conspiracy, the dispersion of bids was rather narrow, i.e., the highest losing bid was generally within 25 percent of the winning bid. For those contracts on which both alleged conspirators and nonconspirators bid during the same period, bid dispersion often was significantly wider—the highest conspirator was often 50 to 100 percent above the winning bidder.

C. After indictments were handed down and the alleged conspiracy theoretically terminated, the range between low and high indicated bidders widened relative to the range observed during the pre-indictment period.

Taken together, these patterns suggest that the following may have occurred:

A. On pre-indictment contracts with only the alleged conspirators bidding, the winning bidder's bids first were agreed upon; the other alleged conspirators then set their bids at a level which was 10 to 15 percent higher. This would account for the narrow range of bid dispersion.

B. On pre-indictment contracts with both alleged conspirators and nonconspirators bidding, the winning bidder's bids were set either at a predatory level (when it was felt necessary to do so in order to win) or at a competitive level (perhaps when the job was less important), while other alleged conspirators bid in the normal range for losing bids. This tended to widen dispersion as compared with the range which existed when only indicted bidders were present.

C. On post-indictment contracts with both alleged conspirators and nonconspirators bidding, there was less knowledge of what others were doing so that prices were more widely dispersed.

Of course, it is easier to discern patterns in retrospect than it is to see them at the time of occurrence. Moreover, it may be that a suspect conspiracy is not in effect each time alleged conspirators are invited to bid. (This could account for the existence of "open" cities in the cast iron pipe case.) However, all this does not mean that it is impossible to infer the presence of collusion via an analysis of bidding patterns.

Where does this leave the economist? In each of the cases cited above, industry structure was such that it would have been relatively easy for a bidding conspiracy to develop. Each market was fairly concentrated so that collusion costs were low; entry of new firms was difficult; and the demand for a fungible product was relatively insensitive to changes in price so that there clearly existed a potential gain from collusion. Add to this the fact that bids were announced and one had a perfect market for a conspiracy to emerge.

Conclusion

In conclusion, then, it does seem possible for an economist to make some inference regarding the presence of collusion by studying bid patterns in the context of industry structure. Essentially, what one attempts to do is ascertain whether the observed bidding patterns are consistent with what one would expect in the presence of vigorous competition. In the cast iron pipe cases, the patterns suggested (to this economist at least) that some firms in some cities simply were not trying very hard. In the action involving utility construction contractors, one

observed deep price cuts when the alleged conspirators knew they were facing bids from outsiders. These patterns really were quite easy to see once the price data had been assembled and organized.

To those who are rule-oriented, the following approach is suggested. In order to test for the existence of bidding irregularities, it is first necessary to establish norms, that is, the typical range within which past bids have fallen. To begin, then, it is necessary to calculate a winning bidder's average bid over all contracts awarded during the relevant period. These averages can be viewed as representative prices.

(In the cast iron pipe cases, these averages were calculated from f.o.b. mill bids; in the utility contractor proceeding, the averages were based on unit price bids for standardized items of work.)

Having computed such averages, it is necessary to specify the range within which winning bids can be expected to fall. This range should be determined after close inspection of the data, and should be wide enough to include a substantial majority of all previous winning bids.

The next step involves identifying and isolating those contracts in which winning bids diverge significantly from the average, i.e., bids which fall outside the usual range. Such contracts should be set aside for the following types of additional review: are the bidders on such contracts different from the bidders on contracts on which winning bids are close to the average; did some "exogenous" event, such as a new grand jury investigation, occur immediately prior to the submission of bids; has there been a recent new entrant, etc. The

suggestion is that one may be able to identify anomalies after bid pricing data have been properly organized.

This type of analysis permitted one to identify "flyers" in both of the cases cited herein. In pipe, there was a sharp price break coinciding with new entry; one also observed much lower prices associated with sales in Puerto Rico. In the construction contractor matter, substantial differences in the bid patterns emerged when those outside the alleged conspiracy submitted bids.

This does not mean that all this is an easy task. It may, in certain instances, be necessary to standardize for certain aspects of the bidding procedure such as the location or size of the job. There also may be instances where other factors such as the temporary presence of excess capacity causes sellers to adopt a pricing strategy which masked historic patterns; or instances where the existence of price controls may have had a constraining influence on the market. But an understanding of the economics of collusion provides the economist with the tools necessary to discern between "good" bids, arrived at through the competitive process, and "bad" bids, arrived at through collusion. 