Competitive bidding and the production of precontract information

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This note is concerned with the effects of contractual complexity on the precontract bidding process. Competitive bidding is seen to be a heterogeneous class of devices for transmitting information between organizations. Even for rather simple contracts (e.g., Demsetz' license plates contract), the purchaser is seldom interested solely in price—he is interested in acquiring and providing information as well. For complex contracts, such as a fifteen-year cable television franchise, the information problems tend to dominate. The implications of locating the liability for provision of precontract information on providers and on purchasers are considered.

1. Introduction

■ Many of the prospective difficulties with franchise bidding for complex projects, especially those which arise at contract execution and contract interval stages, have been examined by Williamson (1976). This note addresses some specific difficulties arising at the precontract formation stage with which Williamson dealt only obliquely.

The workings of competitive bidding mechanisms have been largely ignored by economists;[1] uncritical confidence in the bidding process has sometimes resulted. My purpose is to help put that process in perspective. Competitive bidding is one of several devices for transmitting information between organizations. As such it is both a substitute and complement for alternative devices such as negotiated contracts, institutional advertising, and vertical integration by contract.[2] In its simplest manifestation it is a price-searching device, but as the complexity of the transaction increases, the relative significance of the price term will diminish. Competitive bidding for provision of complex goods and services—of which Williamson's CATV franchise is a prime example—will look very different from a simple price-search model. The properties (and the relative efficacy)

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[1] To the extent that economists have considered competitive bidding, their attention has been largely confined to the problems of inferring price-fixing conspiracies; see, for example, Comanor and Schankerman (1976). For one discussion of bidding mechanisms, see Cassady (1974).

[2] For an interesting discussion of interfirm coordination short of full integration, see Richardson (1972). Formal vertical integration is, of course, another alternative; see Williamson (1975, pp. 82–131).

of competitive bidding mechanisms will depend crucially on the subject matter of the bidding competition.

The implications of the analysis extend beyond regulation versus franchising, which is the principal context in which they have previously been addressed. Competitive bidding is also common in government procurement; furthermore, competitive bidding is often utilized in the private sector (especially in construction contracts) which is subject to the public law of contracts.[3] What impact will legal constraints on competitive bidding have in both contexts? Analytically, what factors enhance the relative attractiveness of competitive bidding vis-à-vis the alternatives? How does the impact of these factors differ in the public and private sectors?

This note does not settle these issues dispositively. Its main purpose is to reinforce the proposition that contractual bidding processes need to be examined at a finer level of microanalytic detail than is customary. Treatments of competitive bidding in which the details of the precontractual bidding process are neglected or suppressed easily lead to excessively sanguine views on the merits of bidding.

2. Competitive bidding for a seemingly simple contract

■ Ultimately, the factors which raise great difficulties for competitive bidding mechanisms concern the complexity of the service (or product) being contracted for and the reliance of one party on the continued performance of the other. However, rather than beginning with such complex contracts, it is convenient to begin with a simple and familiar case—Demsetz' license plate contract. Demsetz (1968), in his clever demolition of the naive natural monopoly justification for regulation,[4] suggested that competitive bidding for the franchise to supply a good or service subject to increasing returns could alleviate traditional natural monopoly concerns. To abstract from "irrelevant complications" he used as an example a contract for the provision of license plates, an industry he assumed (for expositional convenience) to be subject to scale economies. I must stress that the license plate example is used only to introduce the qualitative problems that arise in the precontract stage and that in this simple case the costs are not likely to be quantitatively significant. The example does, however, facilitate analysis of the nature of these expenses in concrete terms.

Suppose that there was only one relevant parameter—price[5]—to be determined by competitive bidding. In this instance the bidding is merely one manifestation of a price search mechanism similar to that first analyzed by Stigler (1961).[6] Whereas in Stigler's model the customer continued shopping until the expected benefits of continued search were offset by the anticipated costs, in the pure competitive bidding model the customer first makes the nonmarginal determination that it is better to have the producers come to him. His direct

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[3] The public law includes both statutes and judge-made law.

[4] Both Williamson (1976) and I (1976a) use the Demsetz argument as a point of departure for our exploration of contractual complexity.

[5] For present purposes this could be a price per unit, a price for the entire supply of license plates, or some complex multipart pricing rule. The only constraints are that all bidders are quoting a price for precisely the same anticipated bundle of goods and that bids can be directly compared.

[6] For a summary of related literature, see Rothschild (1973).

search costs would be in the form of soliciting and evaluating bids. In addition there are indirect costs arising from the producer's search efforts. Producers must ascertain the existence of the opportunity to bid, which may be costly. Also, if the expected benefits of preparing and submitting a bona fide[7] bid exceed the expected costs, bid preparation costs must be incurred. The object is to design the bidding mechanism so that the value of the incremental price information is just equal to the marginal cost of providing it.

The problem takes on a much more interesting character if further parameters are added. In the initial formulation it was assumed that there was no quality dimension. Suppose, however, that durability is important to the purchaser. If the purchaser's preferences for durability could be accurately conveyed to bidders, then the bidders would bid price/durability combinations designed to maximize the purchaser's net benefits.[8] So long as the purchaser's preference can be conveyed accurately and costlessly, there is no significant difference between the first case and this one. But what if preferences can be conveyed neither accurately nor costlessly? The purchaser has a number of options. He could leave the durability term open, requiring the bidders to submit a number of price/durability combinations. After the bids are in, the purchaser can then choose the optimal combination from the set of submitted bids. There is, however, no reason to believe that this method would yield the lowest cost for attaining that particular durability (or that the chosen durability is the best that could be attained); the outcome is simply the resultant of one of the many methods available for truncating the search procedure. An alternative would be for the purchaser to choose a reasonable range of durability and accept bids only on specific levels of durability. Another alternative would be to choose the winning bidder on the basis of being the low bidder for a single durability and then negotiate a price with that producer for the durability in which that producer has a comparative advantage.[9] In all these cases (costly)

[7] In practice, bidders will often submit bids for the purpose of keeping themselves on the bidders' list for future contracts. The costs of preparing and submitting such bids will obviously be less than the costs of bids entered with the intent of winning the contract.

[8] Actually, the bidders will maximize their expected profits; the purchaser's net benefits will, however, strongly influence their probability of winning the bid and, therefore, the statement in the text is a reasonable approximation.

[9] Williamson (1976, pp. 92–98) found that in Oakland's cable television contract the initial bidding was evaluated on the basis of a minimal package (System A) with the price of the more extensive package (System B) being left open to negotiation. Most users eventually opted for System B. Universities frequently contract with private firms for the provision of a food service. Typically, the contract specifies the price for the first year in the contract with the price in subsequent years remaining subject to mutual agreement.

The food service contract provides a convenient illustration of the issues involved in a contract that is somewhat more complex than the license plate examples (although far less complex than the cable television agreement). To simplify, let us assume that quality problems have been solved and that the bid is for one year only. Even in this instance the university might be interested in a number of pricing options. It could price *à la carte* on a per meal basis, or a flat rate per semester. If the contract were for the semester, there are a number of options—three meals per day, weekdays only, no breakfast, or some other variants or combinations of these. If students were to be given a choice of contracts, then the university must decide whether it should leave it to the bidders to guess the proportion of customers in each category or whether it should fix the proportion of customers in each category; the latter option would shift some of the risks of erroneous projections of popularity of the various options from the providers to the university; it would also facilitate the comparison of bids (although, as noted in footnote 10 below, there is no

information on the technical feasibility and expected costs of different durabilities should improve the purchaser's ability to choose a satisfactory rule.

In the one parameter case the purchaser's decisions concern only the extent to which the bidding is to be advertised and a one-dimensional ranking of the bids submitted. In the simple two parameter case he faces the same problems[10] and another as well. Given his knowledge of the bidding costs and underlying technologies of the providers, he must decide on a "sampling rule" to impose upon them—that is, a rule to determine how the initial bidding document should be designed, since the producer cannot solicit bids on every possible alternative.

What if the purchaser's preferences are not fully formulated? Among the reasons he cannot transmit them to the potential bidders is that he may not know precisely what he wants. Suppose that heretofore all license plates produced have had a life of one to three years. Over time the purchaser forms a reasonable judgment concerning the relative merits of alternatives within the observed range (and nonobserved fringe cases). But what of distant outliers—plates with lives of 10 or more years? It is prohibitively costly to evaluate all possible alternatives, and therefore the purchaser faces still another search problem: How seriously should he explore the merits of particular alternatives? (I shall not concern myself with the precise form the search rule will take, but I can at least make two suggestions. First, the purchaser's search activity will be predominantly "local"—search will be directed first at the fuzzy edges of existing technology.[11] Second, the expected prices of goods not currently produced will be useful indicators of the potential value of exploring certain options. If, for example, the 10-year license plate cost 10 times the three-year plate, the likelihood that such a plate will be desirable is less than if it were only twice as expensive.)

What will happen if the winning bidder cannot perform? Is it likely that for some reason (inadequate technical capability, overbidding, inadequate financial resources) the provider will fail to perform and further that such failure will cause the purchaser great damages? Such risks can in part be covered by bonding or by including stipulated damages clauses in the contract (see Macneil, 1975, pp. 671–702). Alternatively, the purchaser can at times mitigate damages in a less costly manner by prescreening potential bidders. This can take the form of restricting the bidder competition to a list of acceptable bidders or soliciting information on the capabilities of potential bidders which would be used in the bid evaluation.

Thus, even for such an apparently simple problem as the license plate contract, a number of rather awkward difficulties arise. The purchaser is not, except as a special case, interested only in the low bid—he is interested in acquiring and providing information as well. While this

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comparability problem if the preferences are fully spelled out—if preferences are only partially formulated, as I argue below, then noncomparability will be a problem).

[10] If, as I have assumed thus far, the purchaser's preferences are fully spelled out, then he can evaluate the disparate bids in one dimension—net benefits. If the preferences are not fully spelled out, then there will be problems of comparability.

[11] Nelson and Winter (1975) utilize the local search concept in a related context. Another problem concerns the assignment of costs arising from formulating specifications; this is discussed in the next section.

point is surely correct, its significance in many contracts is probably nil. The relevant information can be acquired inexpensively through routine channels. While it might not be provided "optimally" as defined in rigorous models, it will be provided adequately with simple, inexpensive institutional devices.

If instead of license plates we consider a 15-year cable television franchise, construction of a large shopping center, a customized computer reservation system, or a military research and development contract, the informational difficulties move beyond the minor annoyance category. The license plate manufacturer will in practice have little difficulty determining the feasible quality range and evaluating the alternatives; but for the computer system purchaser the acquisition of that information is crucial. For such complex contracts information for defining and evaluating the product and the potential provider's technical (and financial) capabilities assumes great importance. Indeed, if, as is common in such contracts, the contract price entails a flexible pricing rule with a cost-based component,[12] the nonprice informational issues are apt to be the dominant concerns.[13]

In sum, in competitive bidding for complex contracts, conveyance of information at the precontract stage is likely to be a substantial problem. In the next section I shall consider the difficulties the parties (and society) face in structuring incentives to facilitate the conveyance of that information. The concluding section will examine some of the implications of the analysis for positive analyses of competitive bidding (or substitute mechanisms) and for public policy.

3. Information and Incentives

■ Consider a purchaser about to put out to bid a contract for provision of a complex service for which the specifications are yet to be determined. Formulating those specifications will require interaction with the potential providers at the precontract stage which will be both time-consuming and costly. The costs of transferring the information will influence both the relative efficacy of alternative bidding mechanisms and the nature of the output itself.[14] They will also, of course, influence the relative merits of competitive bidding versus nonbidding alternatives—negotiated contracts, vertical integration, regulation (as in the CATV case), or doing without; however, the discussion will proceed on the assumption that the decision to utilize competitive bidding has already been made.[15]

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[12] For a discussion of flexible pricing, see Goldberg (1976a and 1976b, pp. 50–51).

[13] Williamson's cable television contract provides an interesting example. The price for one variant (System B) was to be negotiated after the contract was awarded; further, rate changes were to be permitted annually although no criteria for the changes were specified in the initial contract. Given this apparent (and, as subsequent events proved, genuine) relative unimportance of the bid-price, it is rather surprising that the City appeared to place so much weight on it in evaluating the bids; see Williamson (1976, pp. 93–98).

[14] In a somewhat different context, Grossman and Stiglitz (1976, p. 252) make a similar point: ". . . the separation . . . of information and allocative questions is inappropriate . . . [;] alternative informational structures will be characterized by different real allocations." See also Demsetz (1969).

[15] Alternatively, we can view this as determining the best bidding mechanism which the purchasing agent would then compare to nonbidding techniques. For convenience I am ignoring alternative sources of information that are less closely related to the precontract

One problem the purchaser faces is attaining the appropriate level of protection of proprietary information—his own and that of the potential suppliers. Conveying accurate information to potential bidders can decrease the likelihood that some valuable trade secrets will remain secret. (Likewise, a solicitation which requires suppliers to reveal confidential information might induce those suppliers to forego the bidding or demand costly safeguards.) There is, therefore a tradeoff between the accuracy of information given potential bidders on a particular contract and the value of the stock of trade secrets.[16] The purchaser has a number of options for dealing with this difficulty. He can limit the number of bidders in an attempt to control access to the secrets. He can alter the nature of the ultimate output so that less proprietary information need be revealed. Or he might conduct the bidding on the basis of specifications entailing little proprietary information and then, after choosing the winning bidder, negotiate a final contract which embodies the information.[17]

Protection of proprietary information is only one aspect of the more general problem—transmitting information between the purchaser and the potential bidders. The purchaser must determine the appropriate incentive structure for the provision of that information. How do the incentives governing information transmission influence the outcomes? For simplicity I shall focus on the problem of acquiring information from potential providers.[18] How, if at all, should the purchaser compensate the bidders for information provided at the precontract stage? What are the allocative implications of alternative assignments of costs?

The costs of providing precontractual information fall initially on the potential bidders and the purchaser must decide whether (or to what extent) this initial incidence should be shifted. I shall confine my attention to the extreme cases in which the purchaser bears either none or all of the costs; the discussion will concentrate on the former case which raises a more interesting set of issues. The emphasis on the extremes should not obscure the fact that there exists a rich array of intermediate arrangements which enables the purchaser to offset some of the difficulties arising under the two extreme solutions (and also forces the purchaser to confront an even more complex choice problem in determining the best bidding mechanism). Air Force procurement practices provide a good example of the nature of this intermediate range. In the 1930s the Air Corps usually, but not always, purchased at cost full-scale prototypes that were submitted in design competitions; in 1939 legislation was passed which provided that the Air Corps could not pay more than 75, 60, and 50 percent, respectively, of development and manufacturing cost for the first three unsuccessful prototypes (see Peck and Scherer, 1962, p. 345). More recently, Air Force contracts for projects characterized by great uncertainty have utilized a "management competition"

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stage (for example, advertising or organizations like the Cable Television Information Center, mentioned by Williamson (1976, p. 82)).

[16] In Williamson's CATV example, the purchaser (Oakland) probably had no proprietary information to worry about. It did, however, have to worry about the *suppliers'* secrets.

[17] These by no means exhaust the possibilities. The purchaser might, for example, sell the trade secrets to a subgroup of potential suppliers and restrict the bidding to this group.

[18] I assume, therefore, that the problems of protecting proprietary information and determining how much information (and the content) should be provided to the potential bidders have already been "solved." It should be clear, however, that the solutions to these problems are not independent of the solution to the problem in the text.

as a preliminary filter to narrow the firms to two or three; these firms would then be given contracts to perform further research and to develop designs (or perhaps even prototypes); after this second phase a single winner would be chosen to perform (Peck and Scherer, 1962, p. 347).

□ **The providers bear the costs.** Suppose first that all costs are placed on potential providers—the purchaser will not compensate for information produced. Further, let us presume that the providers are ongoing concerns providing similar services to other purchasers. The costs of providing information and preparing unsuccessful bids[19] will eventually be passed on to final customers (like an excise tax). In the long run, providers must cover their costs if they are to survive. Thus, even though the parties do not directly shift the costs from the bidders to purchasers (and final consumers), market forces will indirectly accomplish this feat.

This does not, however, mean that the magnitude of the costs and the allocational implications are insensitive to the compensation rule chosen. The analytics of the "no compensation" rule are interesting and complex. I have chosen to keep the analysis at a somewhat impressionistic level, sacrificing rigor for a broader picture of the difficulties facing the purchaser (and the provider) at the precontract stage.

It is convenient to analyze the no compensation case in three stages with the assumptions becoming progressively more realistic. Assume first that requests for information are met passively by potential providers. Since providers will treat much of the cost of bidding as overhead costs not attributable to any single contract,[20] the costs arising from an individual purchaser's request for additional information will not be borne by that purchaser, but by the entire group of purchasers. The purchasers face a "free rider" problem. As a group they would prefer to limit their requests for further information, but each acting independently has incentives to request excessive information. The passive bidders respond by providing the information, and these costs are passed forward to the final customers. Thus, at least a *prima facie* case can be made for the proposition that the "no compensation" rule could induce an excessive supply of information.[21]

The provider's ability to load bidding costs in the overhead category is, of course, limited by competitive forces. High costs vis-à-vis

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[19] It should be noted that the costs of preparing an unsuccessful bid are similar to the costs of contract negotiations that failed or an advertisement that fails to persuade. These are all marketing costs stemming from alternative marketing strategies.

[20] If the buyer is the dominant purchaser (for example, the federal government in defense contracting), then ultimately it does bear most of the costs of acquiring the additional information. Peck and Scherer (1962, p. 351) note that these costs are typically charged to overhead which is reimbursable. Note, however, that if government contracting officers do not act as if the government were a monolith, then they will face incentives similar to those of private contracting parties.

[21] The free rider problem cuts both ways. If a purchaser requests general information from a large number of potential suppliers, each has the incentive to let the other bear the costs of providing that information. If, however, the information is provider-specific or if the act of providing the information increases the probability of a provider's winning the bid, the rewards to free riding are tremendously reduced. (Notice that the purchaser might have an incentive to structure his requests for information to ameliorate this free rider problem).

the competitors would lead eventually to the firm's failure. It is necessary, therefore, to drop the passivity assumption and to recognize that providers will not fill all requests.[22] It is useful to assume initially that the purchaser will make only a single request for information concerning a particular contract. (The complications arising from repeated requests for information will be treated immediately below.) The potential provider must decide whether he should submit a bid at all, and, if that question is answered affirmatively, he must also determine the expenditure he should make to provide the information. The bidder's problem can be extremely complex, but for present purposes it is sufficient to note that the probability that an individual firm will submit a bid will almost certainly be a decreasing function of the amount of information requested. For a given set of specifications, a decrease in the number of bidders might result in a higher price, but this effect is probably not very important beyond a modest number of bidders. But, of course, specifications are *not* given—the purchaser, by increasing the amount of information requested, in effect, substitutes intensive information production by a few firms for a lower level of information production by a large number of firms. The competitive behavior of the potential bidders, therefore, both attenuates the free rider problem and influences the process of determining specifications (and, ultimately, outcomes). Purchasers will have to concern themselves both with the providers' supply response and the expected productivity of intensive versus extensive information.

Suppose that a bid has already been submitted and that the purchaser then asks for additional information to revise specifications and justify cost estimates.[23] In a sense, the problem is the same as before, since requests for further information will eventually lead some potential providers to drop out. But there is a difference. By having begun the process, the bidder has made himself vulnerable to requests for further information. This situation is analogous to the "hold up" problem that can arise within contractual relationships (see Goldberg, 1976a). Once the party has entered into the relationship (submitted its initial bid), its opportunity set is very different than it was before the relationship had been entered into. Had the bidder known initially that such information would be solicited, he perhaps would not have submitted a bid in the first place; having done so, however, he now finds it the better course of action to provide the additional information.

Thus, by responding to an initial request for information, a potential provider makes himself vulnerable to further solicitations.[24] To some extent the potential providers can anticipate this vulnerability and they can attempt to cope with the problem in a number of ways

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[22] It is quite possible that one could devise a set of assumptions that would permit the determination of the existence of an equilibrium level of information production and the optimality properties of that equilibrium. While it is natural for economists to pursue this line of reasoning (see, for example, Rothschild, 1973), I have chosen to look at a somewhat different set of questions.

[23] For a description of the process for procuring a specialized piece of capital equipment (a rotary indexing machine tool), see Glinsky (1973, pp. 23–24).

[24] For an example of a potential provider's being strung along (albeit not in a competitive bidding situation), see *Hoffman* v. *Red Owl Stores, Inc.*, 26 Wis. 2d 683, 133 N.W. 2d 267 (1965).

(and this coping activity must, in turn, be anticipated by purchasers!). While providers have a broad range of strategic options available, four deserve specific mention: (1) they might simply not enter bidding competitions in which there is a substantial likelihood of finding themselves in such a vulnerable position;[25] (2) they might come to rely on the purchaser's reputation for good faith solicitation of information; (3) they might alter the nature of the information they provide (or perhaps even the services they provide) to make themselves less vulnerable to hold up problems; or (4) they might attempt contractually to bind the purchaser to limit his ability to solicit post bid information at a zero price.

It would be fruitless to attempt to trace the allocational ramifications of the many alternative information search rules that might be adopted under a provider-bears-the-cost rule. It is sufficient to note that purchasers in attempting to solicit information to formulate specifications and in attempting to acquire additional precontract information must tailor their search effort to the context (which includes complexity of the subject matter and vulnerability to hold up). Whether the process will produce "too much" or "too little" information is of less importance than the type of information produced. Product specifications, and therefore the nature of the final output, will depend upon the purchaser's search strategy. Hence, beside the direct dollar cost of information production there is a second, more subtle (but no less important), form of cost—a change in the nature of the final output.[26] Changes in the context will alter the relative merits of alternative search strategies; the nature of the preferred form of competitive bidding will therefore shift, as will the relative ranking of bidding versus nonbidding alternatives.

□ **The purchaser bears the costs.** This case can be handled much more briefly. Full reimbursement of bidding costs is equivalent to having pure cost-plus contracts for the provision of information with these "contracts" being let on a noncompetitive basis. Full compensation will be afflicted with the usual problems of cost-plus pricing—weakened incentives to control costs, gold plating, and the like. While full compensation would not, for this reason, appear at all attractive, it should not be dismissed out of hand. Some of the worst abuses will be ameliorated by the purchaser's reliance on reputation—those who appear to take advantage of the cost-plus arrangement will have a lower probability of being invited to participate in future biddings. Further, and perhaps of greater significance, the fact that cost-plus pricing is unattractive compared to a costless ideal does not mean that it is dominated by the costly imperfect alternatives. It might well be that despite the obvious failings, strategies close to the full compensa-

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[25] It is worth stressing that the workings of competition will provide some discipline for potential providers. Those who subject themselves "too often" to hold up situations will, in the long run, be more likely to fail; likewise, those who are too conservative—who do not expose themselves to the risk "often enough"—will also have an increased probability of failure.

[26] This should not be interpreted to mean that there is an "optimal product" which could be achieved if only we were smart enough, and that we can measure the costs of a particular search strategy by the shortfall from that optimum. The point is simply that the purchaser must come to realize that the problem of formulating specifications involves a number of compromises.

tion extreme will, in certain circumstances, yield the most attractive outcomes.

4. Concluding remarks

■ The preceding discussion in no way diminishes the force of Williamson's analysis. His primary concern was the impact of "transactional"[27] factors on the post contractual setting. The analysis here suggests that these factors are likely to cause further problems in the precontract stage as well. Economists have implicitly assumed that the bidding competition can be judged in one dimension—price—and that the specifications are determined exogenously; the bidding mechanism merely entails incidental transactions of no great cost or analytical import. However, deeper exploration shows that this view of the competitive bidding mechanism is an inaccurate characterization of that which should be expected for franchises to provide public utility services. Rather, we should anticipate bidding mechanisms designed to convey (and protect) information for formulating specifications and evaluating potential suppliers. The bidding process is not only apt to be costly, but it will also have a significant impact on the nature of the output itself.

Further exploration might enable us to estimate the quantitative significance of these precontractual complexities. Roughly, we would like answers to questions of the following type: Assuming that a particular service will be provided by an independent contractor, how much would an intelligent private-sector purchasing agent pay to *avoid* having to put the contract out to competitive bid? It is my conjecture that for contracts entailing the complexity of CATV or provision of traditional public utility services, this premium is apt to be considerable.

The implications of the preceding analysis go beyond the issue of the viability of competitive bidding for franchises to provide public utility services. The discussion provides at least a starting point for consideration of a perplexing problem in the law of contract: Under what conditions should a party be responsible for precontract costs incurred by the other party? The civil code tradition generally imposes a precontractual liability under the doctrine of *culpa in contrahendo* (literally, fault in negotiating), whereas the common law tradition does not (although as Kessler and Fine (1964; see also Knapp, 1969) show, the *culpa* doctrine has been incorporated piecemeal into the common law under such rubrics as promissory estoppel). A full analysis of this issue is well beyond the scope of the present essay, but it would appear that instances in which precontract "hold up" is potentially significant would be likely candidates for application of the *culpa* doctrine.

Williamson's analysis (1975) extended his earlier work on inter- and intrafirm organization of exchange. What factors would make vertical integration relatively more attractive than market exchange? Similar questions carry over to the precontract stage. Under what conditions will production for the market, what Knight referred to as the most fundamental feature of the economic system (1971, p. 241), be superseded by competitive bidding mechanisms? Will execution difficulties and confidentiality requirements at the bidding stage be so great as to make

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[27] Williamson's transactional elements are essentially the same as the "relational" factors discussed by Macneil (1974) and me (1976a, 1976b).

vertical integration (or variants) superior? Under what conditions will negotiated contracts prove more efficacious than competitive bidding? Again, this is not the place to delve into these issues in detail, but the discussion should at least suggest the types of factors likely to be dispositive. It is plausible, for example, that in private transactions competitive bidding is dominated both for very simple exchange (in which case production for the market and purchase "off the shelf" will be superior) and for very complex, relational exchange (in which case negotiated contracts or vertical integration will be superior); further, as the relational complexity increases, the type of competitive bidding mechanism chosen should change in a predictable manner with more restrictions on eligible bidders being imposed and with greater emphasis on determining specifications and capabilities and a corresponding lesser concern with price.[28]

In the public sector, competitive bidding is often utilized to ameliorate favoritism and corruption; also, it enables purchasing officers to externalize their search effort and yet not suffer the penalties that would befall their counterparts in private firms facing the discipline of the market. But for these features, competitive bidding would be less common in the public sector.[29] Whether the resulting costs are warranted or not turns on a net benefit calculation. In any event, costs of these kinds almost certainly make public sector precontract search more expensive than private sector search, *ceteris paribus*.

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[28] Construction contracts for petrochemical plants provide some impressionistic evidence. *Business Week* notes: "Most of the industry has switched to a negotiated, cost-plus-fixed-fee type of contract from the old fixed-price bid where the contractor with the lowest bid got the project." See "Fluor Gambles on a Flock of New Orders," *Business Week*, November, 1974, p. 129.

[29] Grether (1974, p. xx) makes a similar point: ". . . much of pricing under public bidding, sealed or open, should really take place through private negotiations. Sealed public bidding is used frequently either as an attempt to protect public officials against charges of favoritism or because of the belief, often erroneous, that the guaranteed outcome will be lower 'competitive' prices. Time and again, price making by private negotiations among informed, honest professionals should and will provide better results than artificial bidding schemes inappropriate to the circumstances." Grether is concentrating on the simple exchange end of the spectrum. The point is perhaps even more compelling for highly relational exchange.

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