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INDUSTRIAL ORGANIZATION AND THE PROBLEM OF THIN MARKETS

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This paper assesses what the field of industrial organization has to contribute to the analysis of thin markets and the prescription of policies for them. The net will be cast broadly, to capture not just the empirical evidence available on the characteristics of industrial markets but also certain features of the theory of market structures. The first section addresses the definitional issue of identifying the senses in which markets can be described as thin. The second selects for close analysis a source of thinness that seems strategically important in the markets for primary agricultural commodities. The third gathers some relevant empirical evidence.

IN WHAT SENSES IS A MARKET THIN?

Thin markets can raise an issue of market failure, but it is not clear exactly what market failure or failures might be involved. A brief look at the general problem of identifying market failures will help to orient our discussion. Problems of market failure are fungible, and often a given situation can be consistently characterized as displaying either one or another market failure. For instance, when scale economies in production are large relative to the size of the market, we often say that a market failure of "natural monopoly" has been imposed by immutable technology. But someone might argue that the market failure—the lack of structural conditions necessary to assure the equality of price and marginal costs—is not technological but instead a contractual one, because nobody has had the wit to draw up a contract whereby a large number of enterprises can cooperatively own the efficient-scale plant and compete in selling its output.

Several implications follow from this example. First, when more than one logically sufficient diagnosis of a situation can be made, some criterion is needed to help us select among the candidates. Second, a market failure can be characterized either by the existence of some (putatively) unchangeable circumstances that creates the difficulty (the technological scale economy) or by failure to employ some device that would (again, putatively) offset the unchangeable circumstance (the output-sharing contract). Third, any given definition of a market failure tends to lead to its own distinctive policy implications. In this case, the label "contractual failure" sends us scampering for a better contractual device, whereas the tag "natural monopoly" turns our thoughts to public regulation or ownership. Fourth, because competing characterizations of a market failure invoke competing policy prescriptions, the choice among them should ultimately rest on the comparative benefits and costs of these alternative policies. Finally, it is potentially valuable to explore all possible diagnoses of an alleged market failure, because each new one might lead to efficacious remedies previously unsuspected.

Let me apply these considerations to the problem of thin markets, as outlined in the paper by Hayenga, *et al.*

1. In a static or single-period context, a market can be thin because of a limited number of transactors on one or both sides of the market. Note that the thinness in this case reposes in the number of transactors and not necessarily in the number of transactions. The thinness might be artificial, because some force excludes agents who would transact at the price that has actually prevailed. Or it might be natural, either because new agents demand or supply the good at *any* price, or because few demand or supply it at the *prevailing* price.

2. Still in a static or single-period context, a market can be thin because of scale economies or discontinuities or fixed costs in the transaction itself, no matter what the number of potential bidders in the infrequent transactions. There is only one Brooklyn Bridge, although legend has it that many rubes have offered cash for what they believed was a valid title. (Of course, a sophisticated swindler could offer fractional shares.)

3. A market can be thin because of high costs or arbitrage over space. These costs inhibit the movement of the item transacted, the transactors, or both. As a result, either the number of transactors, the number of transactions, or both, can be thin in the relevant localized market. Analytically, these transportation costs shade into general costs of transaction or of market information that vary with the situation of the potential transactor.

4. A market can be thin because of high costs of arbitrage over time. A large number of agents might make many transactions over an appreciable period of time, and yet the number of alternative transactions and/or transactors might be small at any one time. The limits on intertemporal arbitrage might arise because the article transacted is costly or impossible to store, or because some limitation of property rights makes it impossible to capture the rents from the arbitrage.

Each characterization implies its own natural set of possible remedies. Fewness of transactors suggests that we remove any artificial restraints on their entry into the market, subsidize such entries, or divide up any divisible agents already present. Discontinuities in transactions themselves foster a search for improved contractual arrangements or for intermediaries who can efficiently unbundle large transactions. Thinness due to barriers to spatial movement lead us to assess the naturalness of these barriers and to search for transaction forms that would reduce the need for movement. Thinness due to nonspatial costs of moving into the transactions space or informing oneself about the potential gains to entering this space call our attention to any artificiality in these transaction and/or information costs. And thinness due to limited arbitrage in time causes us to ask whether resources are allocated efficiently to storage facilities, or if the maintenance of property rights through time is subject to artifically imposed uncertainties.

INTEGRATION AND THIN MARKETS

Which, if any, of these sources affect the markets for primary agricultural commodities is a factual question. The empirical literature on industrial organization contains few if any high-quality studies bearing directly on these markets. Therefore I shall simply borrow the orientation of the introductory paper of this symposium and assume that thinness in spot markets may arise because some participants opt out in favor of vertical integration or a long-term contractual relation. This phenomenon leads to a fairly rich vein of theoretical and empirical literature in industrial organization. The theory of

vertical integration is not a single general model but rather a family of models that explains why potentially arm's-length pairs of transactors might profitably combine into a single administrative unit. Some of these models apply only to markets in which the participants on one or both sides are few in number. I shall put these aside and examine motives leading to integration in markets that might be structurally competitive on both sides, unless the motive for vertical integration itself leads to concentration. I shall jump freely between consideration of vertical integration and long-term contracts that do not involve the full consolidation of enterprise units.

1. **Transaction costs.** Williamson [19] pointed out that vertical integration could occur to avoid the costs and difficulties of long-term contractual arrangements. There may be circumstances, however, in which either vertical integration or long-term contracts suffice to avoid transactions costs that would be incurred on a spot market. Consider the processor of a perishable commodity that is subject to quality variations from one primary producer to the next. Determining the quality of the product at the moment it comes to market may, in effect, be more costly than if the processor can exert some inspection or supervision while the product is being grown or prepared. The grower and processor could then gain from a long-term contract to avoid the greater costs of spot determination of the product's quality. This preference for a long-term contract could prevail even if there are well-functioning markets to determine the spot prices of "good" and "poor" quality products as they come to market.

2. **Heterogeneous preferences of buyers.** The processor in our preceding case did not necessarily need a distinctive quality of input, only an accurate assessment of the quality of the lot actually bought. Another occasion for integration may arise if the processor has a distinctive preference in regard to certain qualitative characteristics of the primary input. This preference could arise in any circumstance where the input's characteristics affect the quality of the final product in which it is incorporated, or the cost of fabricating that product using the processor's particular technology. Porter and Spence (15) have analyzed this case on the assumption that the input supply industry experiences some fixed cost for any given variety of the input produced. It is then possible that the total benefits to the processor of securing a special-quality input, the area under its derived demand curve, could exceed the total costs of producing it, yet an arm's-length supplier could not charge any single price for it that would yield him normal profits.

3. **Access to information.** Integration may occur so that one group of market participants can acquire valuable information possessed by others. In the case analyzed by Arrow [2], the size of the crop produced by each farmer is a random variable, but the farmer does know one period before the crop ripens how large his own output will be. The processor's technology is such that he must commit himself to a capital stock of a given capacity one period before the crop it will process comes to market. The processor who integrates or contracts with a farmer gains information on that farmer's expected output, which is a valuable signal with respect to the market supply and price (even if the farmer is one among very many, so long as his output is positively correlated with the market output). Arrow's processor hence integrates in order to buy information that will improve the information on which he plans his next-period production capacity. Although one wonders why Arrow's farmer cannot simply sell the output information rather than undergoing full integration, the model is certainly fruitful in its general

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suggestion that integration may "disimpact" information that has value to participants on the other side of the market.

Arrow's model readily leads to the more general point that information may be handled more efficiently within a single administrative unit than through arm's-length transactions [cf. Malmgren, 11] . First, information passing between two potential parties to a transaction suffers from "impactedness" because the one with cheaper access to it has an incentive to distort the data communicated in order to swing the terms of the prospective bargain in his favor. Even if the party with superior access to information does not employ this strategem, his potential transactions partner may assume that the distortion is occuring. Either way, a nonoptimal volume of transactions takes place.[1] Second, even if the problem of impacted information does not intrude (and it would not, in the circumstances assumed by Arrow) , a suboptimal volume of transactions may occur because the information is a "public good" that can be transferred at no cost, whereas a positive price is demanded by those with proprietary access to it. Incentives to exploit the impactedness of information are not unknown within administrative hierarchies, of course, but vertical integration may alleviate the problem as it arises in an arm's-length market.

4. **Risk aversion.** Long-term contracts might take the place of transactions in a nonexistent forward market,[2] especially if there is structural asymmetry between the risk exposure of the farmer and the processor. Suppose that the farmer can (at least after planting time) supply only one crop, but the processor can handle any of a number through his facilities. Negative covariances among crop prices might let the processor easily balance the risks to which he is exposed. But the farmer might asymetrically need to acquire and employ specialized machinery that would make diversification uneconomical. In these circumstances the farmer and processor might reach a long-term contract in which the farmer trades some risk away by selling for an assured price less than the expected spot price.

5. **Lender's risk.** Even with all participants risk-neutral in the market at hand, risk aversion in the capital market can create an incentive for integration in an intermediate-product market. Suppose that the only security that the farmer can offer the bank is the ripening pea vines that the bank's loan is to finance. Under reasonable assumptions this collateral is likely to have greater value to a pea canner than it does to a bank. In order to minimize transaction costs and optimize the distribution of risk, the processing sector might in effect act as financial intermediaries, supplying credit for the growing season and thereby entering into some degree of integration with the farmer.

6. **Avoiding or promoting noncompetitive prices.** The preceding motives for integration all apply to markets that potentially are purely competitive. There is a class of circumstances in which integration can occur as a means of averting the market distortion caused by a price not equal to shadow value or to the appropriate marginal cost. The buyer of shipping services has an incentive to integrate by acquiring his own fleet of trucks if the price of common-carrier trucking services is kept above its marginal cost by protective regulation [Oi and Hurter, 14, chap. 2] . The monopolistic supplier of an input has an incentive to integrate forward into the activity using that input, because he can profit by correcting the distorted proportions in which it is combined with other inputs—the result of his own monopolized price [Schmalensee, 16] . Bilateral monopolists whose bargained outcome involves less than the competitive throughput have an incentive to integrate as a method of removing this distortion.[3] Integration could provide

a method for two firms to avoid the market distortions associated with "business reciprocity," which amounts to an all-or-nothing offer imposed by one trading party on another.[4] While vertical integration in a noncompetitive market can avert market distortion, it is also true that vertical integration in some circumstances can create distortions in otherwise potentially competitive markets. It can exploit possibilities for price discrimination: a monopolist can integrate forward to acquire a competitive group of his customers and institute price discrimination that could not be affected by the displaced individual competitors.[5] Vertical integration in a bilaterally concentrated market can raise barriers to entry to both of the stages in production: vertical integration shrivels the spot market and forces the entrant to choose between the uncertainly of dealing in the shrunken spot market (if he enters unintegrated) and the capital-acquisition problems that may arise if he tries to enter at an efficient scale fully integrated.

Integration between transactors on opposite sides of a market can take a variety of forms [see Blois, 4]. Williamson [19] points to some of the factors that may tilt a given pair of transactors away from long-term contracts and toward full vertical integration.[6] The determinants of this decision need not concern us here. What does matter is the extent to which integration of whatever form desensitizes the integrated transactors to spot market prices in the short run and thus effectively "thins" the remaining spot market. No such desensitization necessarily takes place. If integration has occurred in order to economize on the use and dissemination of information, as Arrow's [2] model illustrates, the gains to the parties requires no commodity transactions between them at all. The business-administration literature suggests that companies often instruct their divisions to compare intracorporate trading terms with market alternatives lest units with captive customers sink into inefficiency. Some forms of integration, however, necessarily take the integrated parties out of the spot market over various time horizons. In the case of physical integration or contractual integration undertaken to reduce or transfer uncertainty, the essence of the integration is to tie the parties to each other and remove them from the spot market for the lifetime of the physical intertie or the integrating contract. Integration may even be designed to push uncertainty onto the remaining transactors in the spot market. An example is the practice of "tapered integration," whereby a company maintains the capacity to supply itself with the minimum flow of an input it requires, and the relatively variable excess of its needs over this steady flow is bought on the spot market. Thus, the significance of integration for thinning the spot market depends sensitively on the motive that prompted the integration in the first place.

An important question for any normative approach to the problem of thin markets is whether the private gains associated with these assorted forms of integration are identical to their social productivity. Some forms of vertical integration are generally undesirable on this ground, because they create rents by a process that directly inflicts welfare losses on other parties. Examples are vertical integration to foster price discrimination or build barriers to entry. Other forms of integration are thought generally free from such offsetting drawbacks—integration to reduce uncertainty or economize on the use of information or fixed facilities.

But what if these forms of benign integration remove transactor pairs from the spot market? The information content of the spot price may be reduced, as a signal of the long-run equilibrium price and thus as a guide to the current allocation of resources for

future production. Specifically, the transactor pairs temporarily removed through integrating arrangements might cause a different short-run equilibrium price to prevail, if they were restored to the spot market. Even if their presence had no effect on the mean expected spot market, their absence might increase the variance of that price as indicated by the central limit theorem. The information loss is an external diseconomy of the decision to integrate—a loss not subject to any private recompense, because there is no property right in the advice on allocation decisions provided by a well-functioning market. Therefore it is correct to say that an incidental social cost arises from otherwise benevolent forms of vertical integration that remove pairs of transactors from the spot markets for some nontrivial period of time. The policy implications flowing from this conclusion are hard to develop in much generality, but there is evidently a need to weigh the private and social direct gains from integration at the margin against the incidental information loss.

Empirical Evidence

The paper so far has dealt with thin markets and integration at a theoretical level, using the microeconomic theory of markets underlying the study of industrial organization. I now turn to the empirical contribution—actual and potential—that this branch of economics can make. I shall consider the general potential of its mode of analysis for dealing with thin markets, then certain relevant specific findings.

The structure-conduct-performance paradigm is used by many students of industrial organization as an organizing framework for their hypotheses and as a guide to empirical research. This paradigm is simply a taxonomic framework for the empirical application of theoretical models of markets, in which given environmental conditions and constraints (structure) and the motivational and cognitive properties of the market's resident decision units (conduct) suffice to determine normatively significant aspects of the resulting allocation of resources (performance). The thinness of a market (in any sense discussed in the first section of this paper) is not itself a dimension of performance. Rather, it indicates a set of conditions of market structure that could affect performance adversely—producing abnormal short-run price-cost margins in the production activities of sellers and/or buyers, suboptimal dissemination of information, or an inefficient trading of the risk facing individual participants in the market (an inefficiency that can erupt into symptoms such as excessive risk premia charged for access to the capital markets).

The bulk of empirical research in industrial organization has sought to test theoretical hypotheses about the influence of market structure on performance, with the heaviest traffic converging on the performance dimensions of allocative efficiency and "adequate" progressiveness (or commitment of resources to innovative activities). These lines of inquiry offer some general guidance for testing the implications of thin markets for performance, but my feeling is that the possibilities here are limited. That is because thinness itself is a derived trait of the structure of a market—something to be explained rather than assumed or observed. An enlightening analogy is to the familiar structural element of seller concentration. The influence of high concentration on sellers' profit rates (as an indicator of allocative efficiency) has been copiously tested, usually with the finding that concentrated industries tend to earn high profits and employ suboptimal stocks of resources [Weiss, 18]. Yet this conclusion is less useful for public policy than it might seem, because it leaves us ignorant of why concentration got high in the first

place—essential knowledge if we are to prescribe a remedy for the situation. Research has hence pressed on to establish the various structural and behavioral sources of barriers to entry as the chief force lying behind high seller concentration. Seller concentration, that is, turns out to be a derived rather than a prime dimension of market structure.

In parallel, research on market thinness could take two hypothetical forms. We could test the hypothesis that the performance malfunctions theoretically associated with thinness—high bid-ask spreads, high variance of prices, high risk premia in rates of return—actually occur in markets that display some structural indication of thinness. This procedure implicitly tests both the theoretically derived prediction of poor performance and the accuracy of our empirical measure of thinness, and the test could turn out negative if either prerequisite fails. The other form of hypothesis addresses the structural sources of thinness. Do we find it associated with the kinds of vertical and contractual integration described above? Are there other structural (and observable) forces that can be theoretically identified as sources of thinness, and tested for a significant effect on thinness in actual markets? Although economic theory has not generally been developed to assist us in specifying this sort of structure-causes-structure hypothesis,[7] we do have plenty of general analytical guidance as to the conditions that could thin a market's participants—either naturally or artificially. It may prove impractical to proceed with the two-fold approach to the causes and effects of thinness—structure-causes-thinness and thinness-causes-performance—if thinness cannot be measured directly but only inferred from its effect. In that case, we may have to go to a reduced form of these relations, testing the hypothesis that the structural sources of thinness are associated with the performance malfunctions that should result from it. Industrial organization economists use this strategy constantly to short-circuit the problem of observing systematic behavior patterns in oligopolistic markets. Economic theory declares that market structure influences patterns of market behavior which in turn have predictable performance outcomes. The behavior being largely incapable of simple and systematic measure, we regularly resort to testing the reduced-form hypothesis that structure influences performance.

Research of this type of industrial market has taken two general forms—cross-section statistical investigations of a sample of commodity markets and detailed case studies of individual markets. Fashionable economists tend to look down their noses at the case study, which indeed suffers the intrinsic deficiency of dealing with a sample of one and leaves the investigator without any solid comparative ground on which to draw conclusions. On the other hand, case studies can be highly valuable where economic theory has not produced well-developed models or where problems of measurement enforce a largely qualitative approach. My hunch is that case studies are the only feasible starting point for systematic investigation of the problem of thin markets. If a number of them are done competently and in parallel, the "sample of one" problem is removed. And the experience of industry studies in the manufacturing sector is that even a single industry often affords some basis for comparative analysis, because it can be examined in different geographical submarkets or over a span of time under changing environmental conditions.

What about the information on the causes and consequences of thin markets found in existing studies of industrial organization? If we apply this label to markets with few sellers surrounded by barriers to entry, the majority of the statistical research undertaken over the last decade becomes relevant. My feeling, though, is that thinness as a

distinctive property of primary commodity markets has rather little to do with monopoly and market power as it has been found in industrial markets. More relevant is research on vertical integration and contractual arrangements in markets for homogeneous commodities. Let me summarize some lines of investigation that may prove suggestive:

1. **Conditions for futures markets.** The line of inquiry most directly related to the structural bases for thin markets is that into the conditions under which futures markets can exist. The futures market magnifies the influence of conditions creating breadth and depth in markets. This is because a futures market exists for its participants to trade in uncertainties about the future spot prices, rather than in commodities, and if the malfunctions associated with thinness are present the whole exercise lacks viability. Houthakker's (10) classic paper pointed out that viable futures markets have depended on sufficient breadth to avoid the risk of squeezes (temporary monopolizations on the long side) or large random fluctuations, and that this has been achieved in part by increasing the number of delivery points and standardizing the grading of the product to make the market useful for more participants. Rendering more and more contracts fungible reduces risks to the speculator and makes the market more attractive for speculative participants. However, its attraction to hedgers depends not just on the variability of the spot price but also on the correlation between the futures price and the spot price realized when the futures mature, and that correlation is reduced as less substitutable contracts are made interchangeable. These countervailing considerations, he suggests, control the opportunities for enlarging the futures market. If we accept this account of what makes forward markets viable, we have some testimony of the "revealed preference" variety about what properties of spot or cash markets provide utility to their participants.[8]

2. **Integration and spot-market exposure.** Our theoretical discussion showed that the various forms of integration might or might not remove the parties from the spot market. Studies of the nonferrous metals and minerals industries shed some light on the patterns that prevail in these sectors. It is possible to report only impressions from this literature. The large scales, long lives, and specific character of capital projects in resource extraction and processing impose large risks on the participants, and these may be amplified by oligopoly / oligopsony conditions that add competitive uncertainties to the uncertainties stemming from fluctuating demand and heavy fixed costs. Therefore it is no surprise to find extensive vertical integration and long-term contractual arrangements that divide the risk between buyers and sellers and provide certain guarantees about minimum quantities to be supplied and purchased. Copper ingot is an interesting case because of the existence of at least one important market—the London Metals Exchange—coupled with large sellers who sometimes choose to set prices differing from those on the Exchange.[9] It appears, though, that long-term international supply contracts for copper price their deliveries at the current London Metals Exchange price, or some other spot price that must be closely related to this one, and that at least one party is capable of going to the spot market to bid for or offer quantities over his contractual commitments. Other evidence points to a similar conclusion that integration in these markets does not remove the parties from spot markets. McKern's (1976) study of multinational enterprises engaged in developing Australia's extractive sector found that their objective was not self-supply in the conventional mode of vertical integration. Rather, they were pursuing rents to their expert knowledge of international markets for primary materials. The subsidiary might sell to Japan a primary material produced in Australia while its United States parent bought its own input requirements of the same

material from another source. It is clear that this sort of vertical integration can allow the parent firm to capture rents to its stock of market information (as well as to its technological skills) and to hedge against shifts in the price of the primary material relative to the processed output—all without either the motive or the need to remove its short-run output decisions from contact with the current market price.

3. **Integration in trading activities.** Another revealing case is the large-scale international grain trading companies, engaged in trading, storing, transporting, and (to some extent) processing grain. The basis for the large scale of these organizations is not immediately apparent, and from a casual knowledge one might fear that their integration across space, time and processing activities involves some displacement of market transactions. My own analysis (Caves, 6) suggests that this is not the case. Their size can be explained by a combination of economies of scale in the processing of information (a public good to the firm once it is acquired), economies of scale in storage and transshipment facilities at particular locations, and economies in pooling the risks associated with large-scale bulk shipments (especially international). This analytical explanation is supported by numerous empirical observations of this industry. The large grain trader's various divisions do not interface with one another through administrative transfers of grain; rather, they buy and sell independently at market prices. The large traders hold a larger share of business in long-distance and particularly international transactions—where the information and risk-bearing costs are particularly large— than in local trade. And the profits of these companies seem to move over time not with the total volume of their activities (as is characteristic in the manufacturing sector) but rather with the degree of disruption and irregularity in the year's trading patterns; large disturbances enable them to put their costly market knowledge to work and capture the rents thereto. Thus, integration and scale in the grain trading companies is not hostile to the breadth and depth of cash and futures markets in any way apparent to me.

4. **Manipulation of a shriveled spot market.** The industrial market situations examined so far support reasonably sanguine conclusions about the compatibility of well-functioning spot markets with substantially integrated transactors. A cautionary note can be added, however, by reference to an antitrust case that illustrates possible gains to integrated traders from manipulating the spot market.[10] A group of integrated petroleum refiners were convicted in 1940 of attempting to rig the wholesale market prices of petroleum products by such a collusive arrangement in the mid-1930s. The key factor for understanding the arrangement was the pricing of gasoline distributed by the refiners to jobbers and thence to franchised and independent service stations. The price paid by the jobbers under their contracts with the integrated refiners was the spot tank car price, which was determined by a relatively small amount of sales made by independent refiners who lacked franchised or contractual arrangements for retail distribution. If the integrated refiners could divert gasoline from the spot tank car market, they could raise that price and thus escalate the prices which they received on their larger volume of sales to jobbers. Therefore, in both the East Texas and Mid-Continent petroleum fields the major refiners worked out an informal arrangement whereby each of them purchased from one or more of these independent refiners any "distress" gasoline that could not be sold on the spot market. The Supreme Court's decision is not entirely clear on this point, but this excess supply presumably existed at some current or target price, so that the intended effect of the arrangement was to prevent increases in supplies offered by the independents from depressing this market price. During the period of time under review in the case, the defendant integrated refiners allegedly bought nearly

50 percent of the gasoline output of the independents. The *Socony-Vacuum* decision illustrates the point that the effect of collusive supply restrictions can be leveraged in a shriveled spot market of this type. This enlarged payout to collusive arrangements does not necessarily imply restricting the integration that shrinks the spot market—if it is undertaken to attain some real economic advantage. But it does imply that close public scrutiny is warranted to make sure that such opportunities for profitable collusion are not exploited.

The possible goals of collusive behavior include not just manipulating a thin competitive market but also extinguishing it in order to increase the uncertainty faced by entrants. It has recently been alleged that the absence of a futures market in rice in the United States imposes a risk-related barrier to entry and preserves the margins of noncompetitive rice processers.[11]

NOTES

[1]This is the "lemons" problem raised by Akerlof [1]. Either you buy a car from me and regret the purchase because you discover later what I knew but concealed that the car is a lemon; or you decline to purchase a sound vehicle because I cannot convince you that it is not a lemon. In a competitive market equilibrium, the price tends to an equilibrium for "lemons" and a suboptimal volume of transactions occurs in "good cars."

[2]Arrow [2] points out that risk aversion itself can deter entry into forward contracts. If the farmer's output is a random variable and the contract once entered into is legally binding, with substantial penalties for nonfulfillment, he would enter into forward contracts for less than his expected output.

[3]See Fellner [9]. The suboptimal throughput generally occurs if either party dominates the bargain and imposes his own maximizing monopoly or monopsony outcome on the partner. Williamson [19 p. 115] points out that the costs of haggling over the bargain supply a case for integration.

[4]Specifically, reciprocity occurs when Y, who is X's supplier of B, is a buyer of product A produced by Y. If Y buys B at a price exceeding its marginal cost, X will purchase A from Y at terms inferior to alternative sources of A rather than forego the rents on X's sales of B. See Caves [5].

[5]Also see Crandall [7].

[6]They include costs of negotiating and policing contracts, impacted information coupled with opportunism by the favorably situated party, and economies in processing information.

[7]For a rare example of this scarce commodity, see Spence [17].

[8]Indirectly relevant is the large literature on the question of whether speculators earn a premium for their services; see Dusak [8] and references cited therein.

[9]See Banks [3], chap. 3; McNicol [13].

[10]*United States* v. *Socony-Vacuum Oil Company,* 130 U.S. 150 (1940).

[11]See *Business Week,* February 13, 1978, pp. 88-90.

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