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Monopoly, Manipulation, and the Regulation of Futures Markets*

In the textbook model of competition all buyers and sellers are tiny compared with the market as a whole. These people trade fungible commodities in an ongoing auction. Every seller's product is the same as every other's. All participants in the market are sophisticated. Every buyer continues to purchase so long as the price is less than the value he places on the commodity; every seller continues to sell so long as the price is greater than the marginal cost of production. New buyers and sellers can jump in at an instant's notice, and if they find the going rough they can jump out again. No one can take advantage of a trading partner because someone else will offer the prospective victim a better deal. Information about bids and offers spreads instantly to all participants and would-be entrants. Every beneficial trade takes place. The trading leads to an outcome that is best for each buyer, each seller, and society as a whole.

Of course textbook economies occur only in textbooks. It is commonplace to lament the fact that traders are not microscopic compared with the market, traders are gullible, entry and exit

Futures markets are hard to manipulate or monopolize because of actual and potential competition from the cash commodity.

Either manipulation or monopoly depends on secrecy. The futures exchanges have the appropriate incentive to establish the optimal degree of secrecy, which promotes trading even as it facilitates manipulation. The loss from monopoly and manipulation cannot exceed the gains from trading any contract, so it is never right to limit entry.

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not quick and free, information not cheap and ubiquitous, products not identical. These departures from the utopian vision of perfect competition give rise to calls for intervention by the government to "perfect" the operation of our regrettably imperfect markets. If the intervention of the government is afflicted with the same costs and failures as the markets, we shall have to sigh in resignation.

Yet some markets come close to the model. Agricultural and financial markets have standard products handled by many sophisticated traders. Products are comparable. Information spreads quickly. True, all of us can't be farmers or bankers, and even farmers cannot produce more wheat instantly or move it costlessly to where it is demanded, so the free entry and exit condition does not hold. Farmers and bankers do not always honor their contracts, so their promises are not really interchangeable. And of course all of us can't be glued to video monitors displaying price information. So perfection can not be achieved. But a market can come close.

Futures markets come closer than cash markets. A futures contract is a claim to the underlying commodity but because of its standard terms is more easily traded than the commodity itself. Every contract (for a given commodity and time) is identical to every other, so contracts are fungible. The contracts are made with or guaranteed by a clearing house, so the performance of a contract does not depend on the identity, wealth, or inclinations of the person holding it. Anyone can buy a contract; entry and exit are quick and cheap; contracts can be sold nationwide without transportation cost; the supply of contracts can grow or shrink quickly. Traders in futures markets are largely professionals—both those who use futures contracts to hedge and those who trade for a living. They have up-to-the-minute information on price. Futures markets accordingly are all but indistinguishable from the textbook models of perfect competition.

In most product markets, from razor blades to iron ore to computers, firms may introduce products as they wish. If they fail, both the firms and the customers suffer. (Customers may be left without service or performance of warranties.) Few people think that the departure of the computer market from the model of perfect competition is a reason to restrict entry, which would force the market even farther away from the model.

Yet both entry into and the daily conduct of futures markets are heavily regulated. The usual reason given is that futures markets suffer from monopoly and manipulation. Traders can "corner the market" to their profit, or they can manipulate prices. So they can. The question I investigate is whether the threat of monopoly and manipulation is so serious (compared with the threat in other markets) that entry should be restricted. Section I shows how monopolization could occur and assesses the costs of monopoly in futures markets. Section II takes up the way futures markets respond to these costs. It looks at the kinds of

precautions exchanges take and whether they are apt to take the appropriate level of precaution. Section III looks at some cases of actual or asserted monopolization to see whether there were substantial losses and whether the private mechanisms worked. Finally, Section IV evaluates the case for regulation of entry and compares the costs of monopoly against the costs of preventing the operation of markets altogether.

I. The Nature and Effects of Monopoly in Futures Markets

In markets for commodities such as wheat and automobiles, monopoly means controlling the supply. A merger or effective cartel of all automobile manufacturers would enable the sellers to reduce output. Consumers bid more for the remaining supply. Producers get monopoly profits. Consumers who would buy at the competitive price but are unwilling to pay the higher price lose the difference between the value they place on a car and the real cost of producing one. The foregone consumers' surplus is the allocative welfare loss of monopoly. The prospect of obtaining the monopoly profit also induces would-be monopolists to spend resources getting and keeping their position, which increases the total cost of monopoly. (See Posner 1976, pp. 8–22, 237–55.) The higher price attracts new entry, however, and the monopolist cannot hold onto its position without barricading this entry. The cartel must not only prevent entry but also prevent “cheating” by members—that is, the practice of increasing one's own output hoping to sell more at the enhanced price. The allocative loss is limited by cheating and new entry; the sooner and the more the cheating, and the quicker the entry, the less the loss.¹

A futures market is a slice of the market in the underlying commodity. A contract may entitle the buyer to delivery of wheat in Chicago in March. Accordingly it seems simpler to monopolize the supply. The would-be monopolist need not capture the entire supply of wheat; it is enough to get hold of wheat deliverable in Chicago in March. But it turns out not to be so easy. The monopolist of cars, wheat, or ore can extract an overcharge because people need the commodity. Someone who needs wheat does not need a futures contract for wheat; he can purchase the wheat directly. Thus a person with a monopoly of futures contracts to deliver wheat in Chicago in March cannot easily extract an overcharge. People who want wheat will not transact with him.

The general point is that for many purposes transactions in the commodity are substitutes for transactions in futures contracts.² Because

1. If entry is immediate, even the producer of 100% of the supply must charge the competitive price (Baumol, Panzar, and Willig 1982).

2. The cash commodity is not a perfect substitute, for otherwise we would not see futures markets. Futures are useful in hedging risks, and they also create additional liquidity akin to money. (See Telser and Higinbotham 1977; and Telser 1981). I return to these features below.

buyers can use whichever is cheapest, they cannot easily be exploited in futures markets. The "monopolist" of a futures contract must find someone to stand on the other side of the transaction, and no one voluntarily subjects himself to monopoly when a competitive price is available. If it becomes known that one person has a monopolistic position on one side of the market, the contract dies. The putative monopolist cannot find anyone to exploit.

"Monopoly" in a futures market therefore turns out to be a species of fraud. The putative monopolist must conceal his position and intentions from his would-be trading partners, for otherwise he won't have partners. People do not knowingly submit to exploitation. In fact, a reasonable definition of monopolization of a futures market is any explicit or implicit misrepresentation of the size of one's position in relation to the rest of the open interest. The misrepresentation may take two forms. (Each can occur on either the buying or the selling side, and for ease of exposition I do not distinguish them.)

The first, which I call a Position Fraud, is the unexpected assembly or maintenance of a large position on one side of the market. (I forswear the usual terminology of "squeezes," "corners," and the like, not only because people do not agree on the meaning of these terms, but also because this jargon makes the argument hard to follow.) The party may acquire a large portion of the existing contracts, thus undercutting the usual assumption that every trader is "small" in relation to the market. Or the party may simply decline to liquidate his position, so that at the very close of trading a formerly small holding becomes large in relation to the open contracts. The holder of these contracts then demands or tenders delivery (depending on whether he is long or short). Holders of opposite positions, surprised by the sudden demand or tender, unable either to make or take delivery without incurring large costs, and unable to find other parties with whom to close out their positions, must pay a premium to negotiate around the demand. If the adverse parties had been aware of the large position, they could have stayed out of the market, liquidated their positions earlier, or prepared to take or make delivery (such preparations could greatly reduce the costs or compliance and therefore the premium available to the holder of the large position).

The second maneuver, the Ownership Fraud, entails owning both futures contracts and the underlying commodity. For example, the perpetrator buys up the supplies of wheat available for delivery in Chicago in March. Then he enters "long" contracts giving him a right to delivery, and he insists on delivery. The "shorts" (the people who have promised to deliver wheat) are embarrassed by their inability to obtain supplies to fulfill their obligations. They are shocked to discover that the person entitled to delivery already owns the deliverable supply. They must either spend large sums to put more supplies into a

deliverable position or pay a premium to the holder of the long interests. Again secrecy is important. People would not knowingly sell wheat short to someone who already owned the wheat; and if they did so by accident and found out in time, they could bring new supplies to market to reduce the premium they must pay to cancel their obligations. Of course the defrauder must pay a premium to get control of the deliverable supply; when the fraud is over he must unload the commodity at a loss.³ He seeks to make more by jacking up the price of the futures contract than he loses on the cash commodity.

Both types of fraud leave a characteristic trail. There will be substantial concentration of ownership on one side of the market and sudden changes of price around the end of the contract's term. As soon as the contracts have been settled prices return to the level established by the terms of supply and demand in the underlying commodity. The sudden price fluctuation produces a transfer of wealth among participants in the market and also enables us to identify suspicious events. The manipulation may be secret at the start but cannot be secret at the end. An undisclosed manipulation is an unsuccessful manipulation. (A flurry of wash sales might lengthen the period during which the price change occurs but cannot eliminate the change, at least not without eliminating the profit from the transaction.)

What are the losses from these frauds? There are transfers of wealth from victim to perpetrator, but these shifts of wealth are not real economic loss. No resources are used up. The transfers are not even unambiguous losses to the victims. The risk of manipulation in futures markets is known. People transact in these markets voluntarily, and they will not do so if the anticipated costs (including the loss on becoming a victim) are less than the anticipated returns. The opportunities outside futures markets (including investing in the cash commodity) will determine the returns required to justify participation in futures. When manipulation is possible, the terms of trade adjust; there is no reason to think that participants in futures markets make smaller net profits on account of manipulation.

The real costs of manipulation *come from the adjustments* of terms that prevent the occurrence of anticipated net losses. The adjustment for the risk of manipulation drives a wedge between the futures price and the anticipated price of the cash commodity. This gap—needed to compensate the participants for risk—also makes the futures contract

3. Some traders have control of the deliverable supply because they monopolize it. Governments monopolize the production of their currencies, and some nations participate in cartels monopolizing physical commodities (such as tin and cocoa) traded in futures markets. These markets are therefore more open to manipulation by the monopolist, and we should expect to see less trading in them, relative to the trade in the underlying commodity. I put these unusual markets to one side in this paper. For treatment of their special properties, see Anderson and Sundaresan (1983).

less valuable as a tool for hedging. Someone who owns the underlying commodity and wants to reduce the risk of a change in its price cannot obtain an exactly offsetting position in the futures contract but must continue to bear some of the risk. The futures contract becomes a little less liquid and therefore a little less useful as a money substitute. The price signals sent by the futures market also become a little less accurate. A farmer looking at futures prices in order to decide how much corn to plant will miscalculate by a little on account of the change.⁴ And if a futures exchange alters the contract to reduce the possibility of manipulation—say, by permitting delivery in three places instead of one, thus enlarging the deliverable supply and making it harder to commit the Ownership Fraud—the change creates the same sorts of loss. A contract with a defined supply spanning three cities is less useful to someone who wants to hedge against wheat in Chicago, and so forth. The larger area means that there is no single index of value; a greater supply produces greater uncertainty in price.

Manipulations also create some direct welfare losses. People who are surprised by the state of the market may expend extra resources moving new supplies to a deliverable condition. The costs of shipping commodities at the last minute are wasted. People may take precautions such as moving additional supplies earlier; again these are wasteful. Finally, people may spend resources trying to execute these manipulations or to shift the costs of manipulations to others. These resources are lost to society.

It is not possible to quantify these costs, but they are not likely to be large. Manipulations are rare—since they must be disclosed eventually, it is hard to commit more than one. Each manipulation affects only a single contract among the many that cover each commodity. The number of recorded manipulations is a minuscule fraction of the total number of futures contracts that have been traded. Thus the change in price needed to compensate people for the risk of manipulation will be small, and the losses entailed in creating and taking precautions against manipulations also must be small. Hedgers can obtain almost perfect hedges; farmers can obtain almost perfect price signals to guide future conduct.

Although we cannot know the social costs of monopoly and manipulation in futures markets, we can know the *maximum* costs. They will be less than the social benefits of the futures contract itself. No one

4. A farmer who looked at the prices during a manipulation would of course be sent wildly astray. But no one makes planting decisions on the basis of the price in the last few days of the current contract, the only price seriously affected by a manipulation. People make decisions on the basis of prices predicted for some time hence by open contracts. (See Marcus and Modest [1984], explaining how futures markets influence production decisions. See also Forsyth, Palfrey, and Plott [1984], confirming predictions that futures markets lead to more accurate prices in spot markets.)

enters into a futures transaction unless he expects to obtain benefits exceeding expected costs—including the costs of being the victim of manipulation. When private costs become too high, people shift to using forward contracts and other transactions in the underlying commodity rather than futures markets. For reasons I have sketched, the private costs of being a victim, which include the transfer of wealth to the perpetrator, exceed the social costs. Similarly the social gains from futures markets exceed the expected private gains. The social gains include benefits derived from more accurate planting by farmers, more accurate investing by owners of Treasury bills, and so on, yet the futures exchanges cannot charge the farmers or investors for all these benefits. The benefits flow from the price signals sent by the futures markets, not from the actual purchase and sale of contracts. Thus those who never trade get some benefits from futures markets. (A process of linkage discussed in Section II ensures, however, that the futures exchanges take into account some of the value these people place on information.)

Because participation in futures markets is voluntary, people will cease dealing in a given contract when expected private gains fall to zero. Expected private gains fall to zero while social gains are still positive (because social gains exceed private ones while social costs of monopoly are less than private costs). The futures market in a given commodity will close down—with or without regulation—before monopoly and manipulation create net social costs. Thus whenever we observe a futures market in operation, we may be confident that there are net social benefits; however large the costs of monopoly and manipulation may be, they are not large enough to extinguish the gains from having the market.

II. Market Responses to the Costs of Monopoly

Traders can protect themselves against monopoly and manipulation by withdrawing. As soon as they learn of the existence of a manipulative strategy, they close their positions. They can go on to transact in another contract free from the attempted manipulation. Entry and exit are so easy that monopoly cannot thrive.

This is not an interesting response, though, when the would-be monopolist can keep his position secret. Then the response must be organized rather than individual. The exchange on which the futures contract trades will handle the collective response.

Some futures contracts hardly require an organized response to the possibility of monopoly. Both of the frauds discussed above depend on the ability of the manipulator to obtain a "large" position in relation to the open interest and the deliverable supply. For some futures contracts this is all but impossible. Consider, for example, a futures con-

tract covering Treasury securities of a particular maturity. The securities are readily available. They can be carried from one end of the country to the other quickly and for trivial cost, and so all of them are potentially available for delivery. No one could corner the supply of them. Futures in precious metals or other easily shipped, fungible commodities also are almost impossible to manipulate because of the large deliverable supply.⁵

Or consider a contract based on the price of some other security, such as a contract on the Standard and Poors 500 stock index. The value of this index depends on the price of a large basket of stocks. The futures contract on the index is not settled by delivery or even by transactions to set a price; the cash settlement price of the futures contract is derived mechanically by inspecting the value of the index. No one can manipulate this contract even by having 100% of the futures interest. To manipulate the futures price you must manipulate the price in the other market that determines the futures price.

Because the reference market is much larger than the futures market, manipulation becomes almost impossible. Suppose someone wanted to manipulate the price of an index in stocks of the electronic industry. He would have to jack up the closing price of IBM, Xerox, and other electronics stocks, on the day specified in the futures contract. This is no mean feat; if he makes a higher bid price, he must be prepared to buy. Securities markets are very liquid, and even a small increase in the bid price may bring a flood of offers. The manipulator must accept these offers through the closing, else the price will return to where it was. Few people or institutions have the assets to manipulate the price of IBM stock even for an instant.⁶ And things get worse. Having jacked up the price of the securities in the index, and thus

5. Every once in a while someone tries. Between 1978 and 1980 the price of silver futures rose rapidly and then fell. The result: a welter of charges and countercharges of manipulation. The principal targets of lawsuits are members of the Hunt family who, it is alleged, took substantial long positions and demanded delivery, driving up the price. (For example, *Friedman v. Bache Halsey Stuart Shields, Inc.*, 738 F.2d [D.C. Cir. 1984], one of the many suits.) I do not try to sort out these charges. But if it is true that the Hunts were trying to monopolize silver and silver futures, they were apparently the largest victims of their scam. Their desire to take delivery month after month became known, and people scoured the world to find deliverable supplies. The price rose, but the Hunts discovered that they could not sell the silver for what they paid; the price was driven by their demand, not by the demands of others. Apparently they lost more than a billion dollars. Not the stuff that encourages future manipulations! When a tactic generates only losses for the perpetrators, it suffocates itself. Neither the exchange nor the government need be concerned.

6. It would be easier to affect the price of IBM or any other stock by spreading lies about the firm's prospects. Fraud could affect the value of any commodity, from stock to oil, underlying a futures contract. The defrauder would need to make the false news believable, however, and then escape detection. No set of precautions can prevent futures frauds that involve lies about the commodity—but then this sort of fraud also does not appear to be common. I have not seen any claim that a futures fraud has been committed in this way.

having realized more on the futures contract, the manipulator is stuck with a lot of IBM and Xerox stock that cannot be sold for what the manipulator paid. The manipulator supported the price; with the manipulator selling rather than buying, the price will fall. The manipulator's gain in the futures market must exceed his loss in the securities market, and because the securities market is so much larger, this is unlikely.⁷ Manipulation of this sort is not logically impossible, but it should be sufficiently rare that this risk may be discounted in the absence of evidence that such manipulations occur. None has ever been established. (See Federal Reserve System 1985, pp. VII-5-VII-13.)

I return, then, to commodities such as grains in which manipulation is more likely. Here a few simple precautions will go a long way to reducing the amount of manipulation. Because monopolization of futures markets is a form of fraud, the best antidote is information. A futures exchange can monitor the positions the traders hold; if a trader appears to have too large a share of the open interest, the exchange can instruct him to reduce his holdings. (Position limits perform some of this task automatically, and an exchange can monitor holdings to ensure that even amounts less than the limit do not become excessive in relation to the rest of the market.) If the trader will not sell, the exchange can publicize the situation. Most traders believe that publicity would prevent the realization of profit and will act to avoid it.⁸ Publicity enables other traders to make appropriate responses; it also means that in the future other people will be less likely to trade with the potential offender. The exchange might formally bar a person from trading (sanctions can include bans for life). "Shunning" of professional traders by other traders also could be effective. The value of a

7. In late April 1984 the press expressed concern that the Chicago Board Options Exchange's (CBOE) options contract on the Standard and Poors 100 stock index had been manipulated through coordinated last-minute bloc transactions that jacked up the price of the securities. A quick check revealed that the implied losses on reselling the securities would be approximately five times the apparent gains on the futures contract. (See 16 Securities Regulation and Law Report 723, 750 [April 27, May 4, 1984].) The CBOE established that no manipulation had occurred. (Report of the Special Index Study Committee, CBOE [August 22, 1984].) So far as I can tell, this is the only time a manipulation in a financial options contract has been alleged, and no one has ever seriously alleged, let alone documented, a manipulation of a financial futures contract (Federal Reserve System 1985, pp. VII-5-VII-13). In principle a defrauder could sell the underlying securities short to "recover the corpse." This, too, seems to be significant only in principle. Short sales require the posting of 100% margin and thus are very expensive; they also are so closely monitored that a strategy involving large-scale buying and simultaneous short selling would be detected.

8. Secrecy is the order of the day in futures markets, and for good reasons. Hedgers do not want others to learn their positions because that would convey information valuable to their competitors in the underlying commodity. Traders seek secrecy even knowing that the secrecy possessed by others facilitate frauds. That traders subject themselves to occasional frauds as the price of general secrecy speaks volumes about both the value of secrecy and the infrequency of fraud.

trader's seat is open to forfeiture if the trader misbehaves. Traders who commit an ownership fraud may find people unwilling to sell them the cash commodity in the future for the market price, and this too is an effective sanction. (Recall that the ownership fraud involves buying the cash commodity for less than the perpetrator will demand to settle the contract, which implies a loss for its trading partners.)

A futures exchange has a large arsenal of other weapons against monopolization. By establishing daily price change limits the exchange reduces the ability of a manipulator to capitalize on a position. The exchange may elect to require liquidation of a contract at a fixed price if the probability of monopolization becomes too high. It could change the terms of delivery, enlarging the deliverable supply to frustrate a manipulative maneuver. Indeed, the exchange could build any of these precautions into the terms of the contract.

Every futures exchange uses some or all of these methods—and every exchange used at least some of them before federal regulation began with the Grain Futures Act of 1922 (42 Stat. 998). The exchanges today frequently impose position limits more restrictive than those required by regulations, and they frequently intervene quietly to require traders to reduce their positions. (See Federal Reserve System 1985, pp. VII-17–VII-35.) Although interventions that alter the terms of the contract or require immediate liquidation are much less frequent, these too occur.⁹

It is plainly in the interest of exchanges to define the terms of contracts and establish rules that reduce the amount of monopoly and manipulation. Each exchange must attract business, which will not be forthcoming (in the desired volume) if the contracts are needlessly risky. Traders control the terms by their ability not to trade. They can buy forward contracts on the underlying commodity or simply stay out of the market. Each exchange also faces competition from contracts designed by other exchanges. Traders can take their business elsewhere in a twinkling of an eye. This competition, together with the availability of substitutes for futures markets, ensures that the exchanges will do a great deal to police transactions. (See Fischel in this issue.) An exchange that neglects to take precautions—and to find ways to certify that it will make these precautions effective—cannot long survive.

The question remains whether an exchange will take the right precautions. To say it will take some is not to say it will take enough. There is an optimal amount of precaution in any market, an amount that stops short of eliminating fraud. The only way to have no manipulation is to have no market. Traders are willing to suffer the risk of

9. For example, *Sam Wong & Son, Inc. v. New York Mercantile Exchange*, 735 F.2d 653 (2d Cir. 1984), recounting in some detail the New York Mercantile Exchange's handling of Maine potato futures in the spring of 1979.

manipulation in exchange for the benefits of the futures market, and they want to conserve on enforcement costs. The exchange should continue taking additional precautions only until the social gains at the margin just equal the social costs. But of course an exchange looks only at the private costs and benefits—those it can appropriate for itself and its members. The question, then, is whether the private costs and benefits facing a futures exchange closely approximate the social costs and benefits.

The answer is almost certainly yes. The traders incur both the private and the social gains and suffer the losses from futures trading and manipulation. These traders constantly transact with the exchanges and among themselves. So long as no significant effects are felt only by third parties, strangers to these contracts, the exchanges have the proper incentives to design optimal contracts and take optimal precautions.¹⁰ And here almost every affected party is in on the contract.

Only "almost" because those who plan transactions in reliance on the price information produced by a futures exchange may stand outside the circle of contracting parties. For example, people deciding whether to plant wheat may rely on the information about future prices of wheat contained in the quotations from a futures exchange. These producers (and therefore the rest of us) gain when the prices permit more astute decisions about production, yet the futures exchange has no obvious way to charge for this service. Accordingly the exchanges will take too few precautions designed to preserve the accuracy of price.

This is not likely to be a serious shortcoming, however. Many who deal in wheat are likely to hedge by transacting in the futures markets, and if they do so the exchanges will be induced to take the appropriate precautions. Even if the occasional farmer disdains the futures markets, the farmer expects to sell to someone else who does. If the person to whom the farmer sells hedges by trading in the futures market, then again this transmits the appropriate incentives to the exchange. The social benefits of accurate prices that are not reflected in futures transactions of one sort or another are likely to be small. Certainly there is no reason to think that futures markets take less care than other markets to make prices accurate for the benefit of such parties.¹¹ (This is

10. Coase (1960) points out that the private solution will diverge from the optimal one when transactions costs are high and that they are likely to be so in multiparty cases. But the exchanges themselves are in a position to coordinate the actions of the many traders. The exchanges set the terms of the contracts and then see whether people want to trade. The action of the exchanges replaces the need for an express series of negotiations among the many potential traders.

11. The difficulty of appropriating the value of accurate prices extends beyond futures markets and is only casually related to the problem of monopoly and manipulation. For example, the interest rates at auctions of Treasury bills may be used by many people to plan transactions, and it is not possible to charge those who refer to the information. Because of the webs of contracting among producers, hedgers, and other traders, futures markets probably come closer than other markets to taking optimal precautions.

not to say that they take the optimal degree of care; it is only to say that they are likely to be driven in the appropriate direction to a greater degree than many markets that are unregulated.)

It has been argued, however, that futures markets do not respond to these (and other) costs and benefits completely because of the way they operate. The futures exchanges sell trading services. They charge by the trade, and they cannot engage in price discrimination to collect extra from those who gain the most from less manipulation and more accurate prices. A reduction in the number of episodes of monopolization does not necessarily lead to more trading. Consequently, the argument concludes, the exchange will not take optimal precautions (Edwards and Edwards 1984, pp. 354–55). This argument is fallacious. Although a futures exchange sells transactional services, and although a reduction in manipulation does not necessarily lead to an increase in the number of transactions precisely reflecting the gains from less manipulation, it does not follow that the futures exchange cannot charge for the value of its precautions. The exchange can increase the price it collects per trade. Traders will pay higher prices per trade so long as the change is less than the value of the reduction in the costs of manipulation. The futures exchange can charge for its precautions even if, by increasing the accuracy of the price signals, the precautions lead to fewer trades.

In sum, there is no reason to think that futures exchanges will systematically take suboptimal precautions against monopoly and manipulation. Edwards and Edwards (1984) eventually come to this conclusion. The traders (and the traders' trading partners) reap the gains and suffer the losses of manipulation, so they will compensate the exchanges for taking the appropriate steps. Each exchange must do so, or it will lose business to another exchange that selects the appropriate mix of precautions. No exchange will stamp out manipulation because that is not worth the cost. The cost of catching each episode rises as they become more rare, and the value of stamping out that last offense is small. The optimal rate of crime is always greater than zero, and so too no manufacturer tries to eliminate defects from its products.

If it is necessary to choose between the level of precaution set by the exchanges and the level set by a regulatory agency, several considerations suggest that the exchange will do better than the agency. One consideration favors the regulator: the regulator can consider 100% of the social gains and losses from monopoly and manipulations; a futures exchange, while approaching that, will always fall short. In principle, then, the regulator could promulgate the perfect rule. But practice falls far short of principle. Consider these three difficulties.

First, a regulatory agency must act on the basis of estimates of costs and benefits. The exchange, too, acts on the basis of estimates. A regulator who estimates wrongly suffers no loss; loss falls rather on

private parties for whom beneficial transactions have been foreclosed. The regulator may suffer a political loss, but the political "market" does not transmit price signals very well. A futures exchange that estimates wrongly suffers real losses. The exchange can reward employees who analyze correctly and penalize those who do not. The regulatory agency pays its employees at a fixed civil service scale, quite impervious to profit and loss. You should trust those who wager with their own money to do the calculations correctly. They may be wrong, but they are less likely to err than are the regulators, who are wagering with other people's money.

Second, the futures exchanges compete with one another. We may suppose (despite the first consideration above) that both exchanges and regulators make haphazard estimates of the appropriate level of precautions to take. When an exchange estimates wrongly, people do less trading there and move their business to other exchanges that are more nearly right. When a regulatory agency guesses wrong, it is hard for "customers" to take their business elsewhere. Armen Alchian and Gary Becker have shown that, even if participants in markets are stupid and respond poorly to incentives, the reactions of their customers lead the market in the direction of efficiency. (See Alchian 1950; Becker 1976; and Sowell 1980.) A form of natural selection is at work. Businesses that miscalculate are sifted out. Certainly a process of selection is at work in the futures business. Carlton (1984) illustrates the rapid birth and death of both contracts and exchanges. No similar process eliminates regulatory agencies.

Third, regulatory agencies can cause futures exchanges to diverge from efficient practices in ways the exchanges cannot achieve by themselves. Regulators can impose costly rules that make it hard for new futures exchanges to compete with existing ones. They can prevent the entry of new exchanges altogether or delay existing exchanges from offering new contracts. They can award new contracts to the least successful exchanges in order to buoy them up, protecting them from competition by others. Traders lose as the penalty for failure goes down and as contracts migrate toward less efficient forums. The exchanges cannot do these things; only the government can. Yet as I emphasized at the outset, persistent monopoly is possible only if new competition may be nipped in the bud. The ability of government to reduce competition and produce monopoly profits for the exchanges makes it an attractive nuisance. (See Stigler 1975; and Salop, Scheffman, and Schwartz 1986.) Consider the airline business. For a long time the Civil Aeronautics Board justified its existence as necessary to ensure safe, low-cost air transport. To that end it excluded new entry and tightly regulated existing firms. It awarded "plum" routes to failing airlines. Since deregulation in 1978 fares have fallen, air travel is safer, and there is more frequent service (provided by new commuter

airlines) to small cities. The experience showed that the principal function of regulation had been to prop up a cartel of the major carriers. We should incur the risk that regulation will be put to anticompetitive ends only if there is strong evidence that government has a comparative advantage over private conduct in solving important failures in markets. There is neither a logical argument nor evidence showing such a comparative advantage in futures markets.¹²

III. Regulation and the History of Manipulation

No one seeking to demonstrate the existence of monopoly and fraud in futures markets would have much difficulty doing so. The Hutchinson wheat fraud of 1867, the Harper Deal of 1887, the Cargill wheat corner of 1963, and many others are part of the lore of the markets.¹³ But of course no one wanting to demonstrate the existence of monopoly in the underlying commodities or fraud in the issuance of securities of firms that deal in commodities would want for examples either. The question is not whether there is monopoly and manipulation but how much there is—and whether the amount has declined with the recent increase in the amount of regulation by enough to cover the costs of that regulation.

These questions are not easily answered. One problem is the lack of a benchmark. The number of futures contracts offered has increased through the years. This naturally leads to an increase in the opportunities for manipulation. But we cannot count the total number of attempted manipulations. Perhaps exchanges handle attempted manipulations with greater secrecy now than they used to. I have been unable to persuade the exchanges to furnish me with any data about the number or circumstances of private interventions.

Then there is a problem of determining whether any change in the amount of manipulation was produced by the exchanges or the government. Both the exchanges and the government have altered their rules over time. Even if we could determine whether the exchanges' rules or governmental regulations were responsible for a change in the frequency of manipulation—which is unlikely—we could not determine who was responsible for the rules and regulations. Do futures exchanges adopt their rules freely, or are some of the rules responses to or anticipations of regulatory pressure? Do regulators adopt their regulations on the basis of independent judgments about the benefits of

12. The Federal Reserve System's 1985 study does not perform any comparative analysis. It also finds few problems and recommends little additional regulation. It never considers whether the current level of regulation is excessive.

13. These and others discussed below are discussed in Hieronymus (1977), Johnson (1981), and McDermott (1979). See also *Cargill, Inc. v. Hardin*, 452 F.2d 1154 (8th Cir. 1971), cert. denied, 406 U.S. 932 (1972) (finding liability for the conduct in 1963).

regulation, or are some of these regulations merely copies of the exchanges' private rules (or, worse, efforts to reduce rather than enhance competition)? These difficulties make it all but impossible to determine whether the amount of monopoly and manipulation has decreased and, if so, why.

It may be helpful to recall that monopoly and manipulation (which I have used almost as synonyms) are not the same as exploiting an advantageous position in the market. Markets offer people the opportunity to assess anticipated supply and demand. Someone who takes a long position (buying the right to delivery or to settlement) does so because he believes or fears the price will rise. The stronger his belief, the more long contracts he will buy. Both hedgers and speculators, on both sides of the market, serve valuable functions in bringing to light new information, both about supply and about demand, that makes the price more accurate and the futures market more useful. The reward for this effort (and the associated risk) is the ability to obtain a profit from coming to the right conclusion. If a shortage of supply develops and the price rises, we cannot logically turn around and accuse the holder of a large long position of "manipulation"; that would remove the lure of profit that makes the market work.

Any effort to find and denounce "manipulation" therefore must differentiate that conduct from astute anticipation of changes in the conditions of supply and demand. The usual legal definitions of manipulation invoke notions such as "intentional wrongdoing" or creation of "artificial" conditions. The most-cited definition is that behavior is manipulative when "conduct has been intentionally engaged in which has resulted in a price which does not reflect basic forces of supply and demand."¹⁴ This gets us nowhere.

An effort to isolate which "forces of supply and demand" are "basic" and which are not is doomed to failure. What is a "basic" demand? Economists think of supply and demand as givens. People demand what they demand, and never mind the reasons why. If people want to purchase wheat to admire its beauty rather than to mill it into flour, they may be weird, but their demand is real. Is a demand for gold to be put into a safe "basic"? How about a demand for wheat to be held in silos in anticipation of famine? People may want warehouse receipts for wheat in order to bake bread, but they may also want them (as they want Treasury bills) for their close equivalence to money. There is no way to say what demand is real and what is artificial. The addition of "intent" does not help. No one accumulates futures contracts—for reasons good or ill—unaware of what he is doing. Everyone in the futures market intends to make as much money as he can.

14. *Cargill, Inc. v. Hardin* (n. 13 above), 452 F.2d at 1163. See also, e.g., *In re Cox, CCH Commodity Futures Law Reports* ¶ 21,767 at 27,076 (CFTC 1983).

Scrutiny of intent therefore is not likely to assist in the search for manipulation.

Yet the legal tests nonetheless point in the right direction. For reasons I have explained, manipulation is a form of fraud. A person who accumulates a substantial long position could be counting on one of two things to produce profit: either a storage of the commodity or the ignorance of other traders about what the first is doing. Someone who buys long positions because he understands the supply of the commodity better than other traders is engaged in normal economic behavior; his actions drive the price in the direction it should move. Someone who is betting on his ability to conceal his own position from others, and to profit solely from that concealment, is engaged in fraud; his actions likely drive the price in the wrong direction. The person who seeks profit solely from concealment makes today's price less, not more, accurate as a predictor of future prices. The decrease in accuracy is a source of economic loss. Moreover, the inaccurate price is likely to cause people to ship the commodity toward the place where the price suddenly rises, only to ship it back again later. This, too, is a source of economic loss.

Concealment by itself may be beneficial. Concealing one's position may be useful in obtaining the profit from one's ability to predict actual conditions of supply and demand, and hedgers need secrecy to avoid revealing their positions in the cash commodity. Secrecy is a valuable commercial strategy, which increases the value of searching for new information. The essential distinction is between secret strategies necessary to capture the value of new information about underlying conditions and secrecy designed to cause prices to diverge from those that reflect the underlying conditions.

So a reasonable economic definition of manipulation is conduct in which the profit flows solely from the trader's ability to conceal his position from other traders and the trades do not move price more quickly in the direction that reflects long-run conditions of supply and demand. Someone searching for manipulation might look for asymmetric information. He also might look for the telltale sign of sudden price fluctuations. When the closing price on a futures contract significantly diverges from the price of the cash commodity immediately before and after, this is strong evidence that someone has reduced the accuracy of the market price and inflicted real economic loss on participants in the market. Courts usually look for both concealment and sudden swings in price.

A search for examples of manipulation in light of this test turns up remarkably few. You can find one in 1931, another in 1957, and a few more before and since.¹⁵ While thousands of suits are filed each year

15. *Peto v. Howard*, 101 F.2d 353 (7th Cir. 1939) (July 1931 corn in Chicago); *Volkart Bros., Inc.*, 20 A.D. 306 (1961) (October 1957 cotton in New Orleans), reverse sub nom.

alleging violations of the antitrust statutes, and goodly numbers of plaintiffs win antitrust judgments every year, most years go by without a single judgment of liability for a futures manipulation. Even some of the adjudicated incidents of manipulation demonstrate its rarity.

Take, for example, the Ownership Fraud involving the May 1963 wheat contract on the Chicago Board of Trade. Cargill secured 2,471,000 of the 2,804,000 bushels of wheat available for delivery in Chicago. Then it took a long position of almost 2,000,000 bushels and demanded delivery. On the last day of trading Cargill owned about 62% of the long interest. The shorts discovered to their chagrin that Cargill owned the wheat available to be delivered and would not sell to them for less than \$2.28¼ per bushel—the same price it wanted to settle delivery obligations under the contract. Cargill got its \$2.28¼. Yet just before the last day of trading on the May contract, Cargill had sold 600,000 bushels of wheat for \$2.09, and right after the settlement cash wheat in Chicago sold for between \$2.03 and \$2.15. The court found Cargill liable for manipulation, pointing out that this situation could be called “artificial” because such a price fluctuation had never been observed before: the court made the rarity of the price changes the tip-off of the offense.¹⁶ It also concluded that Cargill had used its special knowledge to advantage—it profited not because it knew more about the demand and supply of wheat in the cash market but because it alone knew who owned the deliverable wheat in Chicago.¹⁷ (The court also might have observed that Cargill alone knew that it would demand delivery, which most longs do not.)

When there is no fraud, there also is no manipulation. The May 1979 Maine potato futures contract, like the May 1963 Chicago wheat contract, was marked by a sudden price rise. But this time evidence showed that the rise was caused by an unexpectedly poor crop. One trader accumulated almost all the long interest in the contract, but others knew what this trader was doing, and, according to the opinion of the court, they also anticipated that he would stand for delivery.¹⁸ The exchange ultimately stopped trading in the contract and required an orderly liquidation—a demonstration of the ability and willingness of a

Volkart Bros., Inc. v. Freeman, 311 F.2d 52 (5th Cir. 1962). See also the cases collected in the sources cited in n. 13 above.

16. Rarity of the fluctuation is a common element of the claim of manipulation. For example, In re Cox (n. 14 above) (comparative tables showing rapid price fluctuations, a dramatic change in the relation among Chicago, Kansas City, and Minneapolis prices that could not be accounted for by transportation costs, and the lack of similar fluctuations and price relations in other years).

17. Cargill, Inc. v. Hardin (n. 13 above), 452 F.2d at 1159: “It is important to note here that Cargill was in possession of a valuable piece of information that other traders and grain dealers in Chicago did not have access to, namely that it owned the bulk of deliverable wheat in Chicago.” (See also 452 F.2d at 1170.)

18. Sam Wong & Son, Inc. v. New York Mercantile Exchange (n. 9 above).

futures exchange to prevent even suspicious conduct.¹⁹ The point: there is often a large price change and a large profit without manipulation. The number of cases of real manipulation seems to be small indeed.

IV. The Methods and Limits of Regulation

Regulation of futures markets may take three principal forms. The first is to punish monopolistic or manipulative behavior. The second is to establish rules for the administration of futures contracts. The third is to prohibit the writing of contracts unless a regulator concludes that the contract is not subject to manipulation.

The first approach allows the exchanges to offer such products and take such precautions as they choose. Then an agency or the courts may punish those who engage in monopolistic or manipulative conduct. This form of regulation by deterring wrongful conduct is the prevailing one in most markets. People make their own arrangements, and the antitrust laws (administered by the courts, the Department of Justice, and the Federal Trade Commission) punish wrongdoers. It has also been the method of regulating futures markets for most of our history.

The second approach allows exchanges freely to offer futures contracts and requires them to establish precautions, such as reporting requirements and position limits, that reduce the probability of manipulation. An agency reviews the requirements the exchanges establish and, if it concludes that these are inadequate, requires changes. This approach has been used (though to varying degrees) since the Grain Futures Act of 1922.²⁰ It relies heavily on the self-interest of the futures exchanges to identify and implement effective precautions. If the markets function well without rigorous constraints, then the agency does not intervene. This approach is also the one in use today for the securities markets. Anyone may offer a new security without obtaining the SEC's approval. The regulatory agency requires some disclosure by the issuer of the characteristics of the security, and it also requires the

19. The court held that the exchange was not liable for failure to stop trading sooner or to redefine delivery obligations to increase deliverable supply. It concluded, however, that Anthony Spinale, the disappointed holder of the long contracts, might be entitled to recover if he could prove that the exchange stopped trading out of malice or in order to give other traders an advantage. As the court observed, there is nothing wrong with guessing the deliverable supply and insisting on maximum profit. "The Exchange is not a social club. We see no reason to believe that if a surplus of potatoes had developed, the shorts would have exhibited a higher quality of mercy to Spinale than he did to them" (Sam Wong & Son, Inc. v. New York Mercantile Exchange [n. 9 above], 735 F.2d at 678).

20. See Grain Futures Act, 42 Stat. 998 (1922); Commodity Exchange Act, 49 Stat. 1491 (1936), both amended and substantially superseded by the Commodity Futures Trading Commission Act of 1974, 7 U.S.C. §§ 2-22.

stock exchanges to adopt and enforce some simple rules of honest conduct. The system of regulation assumes that informed traders should be left to their own judgment, to decide well or poorly as they choose, both in buying stocks and in designing rules. The SEC largely defers to the exchanges' rules—especially those that have been successful through the years. (Loss [1983] describes the rules.)

The third approach, entry regulation, requires an exchange to demonstrate both that futures contracts are not subject to manipulation and that they are otherwise in the public interest. Entry regulation was applied to futures markets for the first time by the Commodity Futures Trading Commission Act of 1974 (7 U.S.C. §§ 2–22). Under this approach the exchange must justify each contract. The burden is on the exchange to support the contract rather than on a court or an agency to expose flaws in the contract. It is obviously the most effective in preventing monopolization—you can't monopolize a market that does not exist—but also has the highest costs.

The costs of deterrence, the first method, are least. The cost of regulation of the exchanges, the second method, are higher because the regulator may require the exchanges to take excessive precautions. The regulator may set the position limit too low, for example, thus reducing the value of the contract in hedging and also reducing the liquidity of the market. This form of regulation is unlikely to be beneficial unless regulators systematically do better than the exchanges at finding the optimal precautions. For the reasons discussed in Section II, it is unlikely that the government has a comparative advantage here.

Entry controls almost certainly are not cost justified. For the reasons discussed in Section I, the costs of monopoly and manipulation in a futures market cannot exceed the other benefits of the futures contract in question. The participants in futures markets bear the costs of monopoly and manipulation; if these costs exceed the benefits from the futures contract, they will stop trading.

Even if the costs of monopoly are high, and futures exchanges do not take appropriate precautions, the costs of having no contract at all exceed the costs of having a manipulable contract. Recall from Section I that the cost of monopoly is the forgone value that the buyers of a product could receive. Monopoly means a lesser output at a higher price; people do less trading in monopoly-prone contracts because the implicit price (including the cost of being victimized) is higher. The value to the buyers is lost altogether, however, when the contract is abandoned or not introduced. Consider: which is worse, a world in which videocassette recorders (VCRs) are subject to monopolization, or one in which VCRs do not exist at all because of fear that, if they existed, someone might monopolize them? In the former world the buyers priced out of the market lose the value they place on having a

VCR; in the latter world everyone who would buy a VCR loses. We do not prohibit the manufacture of products that might become monopolized; we do not even prohibit the manufacture of products such as power lawn mowers that might prove dangerous. Instead we punish misconduct when it occurs. What is true of the market in VCRs and lawn mowers is true of the market in futures contracts.

To make matters worse, the absence of a futures contract makes it easier to monopolize the market in the underlying commodity. Recall again how monopoly works. The sellers reduce their output, so customers pay more for what remains. So long as they can keep output down, and keep new entrants out, they stand to profit. New entry, and cheating by members of the cartel, ultimately undercuts the monopoly, and prices fall again. The existence of a futures market makes cartels harder to form and maintain. Producers participate in futures markets to hedge their risks. They will sell futures contracts, locking in a price for some time ahead. The existence of these price commitments on the part of producers is a form of prearranged "cheating" on the cartel. It is very hard to organize to drive down output when sellers have commitments to deliver. The futures market commits sellers to deliver and enables buyers to obtain the competitive price for some time to come. By the time all these prearranged commitments have expired, new entry from other producers is likely, so the cartel never really gets off the ground.

There is another perspective from which to assess the costs and benefits of both entry control and regulation of the exchanges. That is to ask how often the costs are incurred. The costs of prohibiting the introduction of a contract apply to every transaction that would have been consummated. The costs of regulation of the operation of the futures exchanges apply to every transaction, too. If a stringent position limit makes a contract less useful for hedging or makes the market less liquid, that cost is reflected in every transaction because the price of the futures contract becomes less accurate. The gains of regulation, on the other hand, are realized only to the extent the regulation prevents particular episodes of monopoly or manipulation. As Section I showed, the beneficiaries from a reduction in monopoly are the marginal traders—those who are priced out of the market if monopoly raises the effective cost of participating. Regulation therefore trades a certain loss on all trades under existing contracts for a possible gain on some trades on some contracts. This is worthwhile only if monopoly and manipulation, when it occurs, is quite costly indeed. Yet we have no reason to conclude that monopoly in futures markets is particularly costly. There are so many substitutes for futures markets (the purchase of the underlying commodity on forward contracts and the purchase of options on securities are just two among many) that the allocative welfare loss from monopoly and manipulation of futures markets is

bound to be small. The swap of certain losses on many trades for possible gains on a few trades is unlikely to be worthwhile.²¹

Whether this trade-off is worth making depends in part on how often manipulation occurs and whether deterrence of violations is likely to be effective. If monopoly and manipulation are rare, it is cheaper to penalize the wrongdoer in that rare case than to penalize all participants in every case by establishing costly precautions.²² Why spend resources scrutinizing each contract and each trade in advance when very few are undesirable? Regulation by deterrence comes at lower cost than regulation by prior scrutiny.

Of course whether manipulation is "rare" depends in turn on the effectiveness of the sanctions meted out on offenders. The discussion in Section III suggests that offenses are indeed rare. It is easy to see why. Sanctions deter conduct by increasing the loss associated with that undesired conduct. The effective sanction depends on the probability that the offense will be detected and on the size of the penalty imposed when detection occurs. The penalty is the sum of any fine actually collected by the government and the effective private sanction.

It is very hard to commit an undetected monopoly or manipulation in futures markets. All futures exchanges require traders to report substantial holdings. These reports are confidential, but they provide evidence with which holdings can be traced. (In litigation arising out of asserted monopolization and manipulation, courts customarily can compute to the hundredth of a percent every trader's share of the open interest throughout the life of the contract.) When one trader owns a large portion of the open interest at the end of a contract, others find out—and fast. The trader with the big stake can't capitalize on his position except by demanding a higher price to settle the contract. The

21. This discussion is closely related to the trade-off between allocative losses and productive efficiency gains in mergers. A merger may enable the surviving firm to reduce its real costs of production even while it gets the monopoly power to increase price. The lower costs of production increase efficiency, while the monopolistic reduction in output decreases efficiency. The lower cost of production apply to all units of output, however, while the efficiency loss from monopoly applies only to the forgone units (the reduction in output). Unless the loss from each unit is forgone, the savings from lowering the actual costs of production on each unit will exceed the losses from the cutback in output. (For discussions, see, e.g., Williamson [1968] and Fisher, Lande, and Vandaele [1983].) This is one reason why antitrust law does not bar all mergers but concentrates instead on the very large mergers that could cause substantial reductions in output. The parallel to futures contracts is plain. A futures contract with fewer precautions is "more efficient" because it can be "produced" at lower cost, and these savings apply to all transactions. Unless the contract creates a substantial prospect of monopoly and consequent cutbacks in output, the savings from the lower-cost production of transactions exceed the potential losses from the monopoly, which apply only to the marginal units.

22. Several scholars discuss the trade-offs between regulation and the use of penalties and show why, as the number of violations falls, the use of penalties becomes relatively more attractive (Shavell 1984a, 1984b; Wittman 1977, 1984).

traders quickly learn with whom they must deal to close their positions. The holder of a large position may say that the position was not acquired with the purpose or effect of manipulation; large positions and manipulation certainly are not synonymous. The point, rather, is that no one is likely to obtain gains from monopoly or manipulation without being identified, so penalties can be imposed. This is not like robbery, where the principal task is finding the culprit.

Offenses may be harder to detect when they involve more than one market. For example, an effort to influence the price of a futures contract that reflects the value of a stock index will take the form of an effort to change the price of the stocks in the index. The offender will attempt to disguise these efforts as normal trading, perhaps the trading of a few large blocs at the last minute. A regulatory agency may have a comparative advantage at monitoring substantial trades in order to determine whether they have cross-market effects. Even here, however, it is possible to use computers to detect abnormal price movements, and the markets can investigate appropriately. If the bloc traders also hold substantial positions in the futures markets, there are grounds for investigation. It should be rare indeed for someone to engage in manipulation without attracting notice. (A manipulation too small to notice also does not impose substantial costs. Because we do not want to deter all offenses, however trivial, the existence of such small manipulations is not a compelling reason for regulation.)

Once a person has been certified as a monopolist or manipulator, it is relatively easy to impose a substantial penalty. Traders are not judgment proof. Many have substantial wealth. People holding seats on the exchange may forfeit the value of the seats; traders who do not hold seats may forfeit the value of their reputations (shunning by other traders can impose enormous losses). So deterrence is likely to be an effective, low-cost method of dealing with wrongdoing in futures markets.

Notwithstanding the utility of deterrence, many people believe that futures markets impose substantial costs on unsuspecting third parties and that futures exchanges systematically underestimate the size of these costs. For example, they may contend that futures markets are especially risky and that because the professional traders can protect themselves the bulk of the cost of manipulation will fall on "outsiders"—less sophisticated, less wealthy investors. Certainly most traders in futures markets are sophisticated, and many are wealthy. It is hard to evaluate arguments that these traders arrange for losses to fall elsewhere. But let us suppose for the moment that they do. What is the appropriate response? One possibility is that the government should prevent sophisticated, wealthy people from trading a futures contract with their eyes open just on the off chance that widows and orphans might gain from the ban. The other possibility is that the government

should prevent widows and orphans from doing themselves injury. This is the less costly alternative. In securities markets certain privately sold, risky securities may be sold only to "accredited investors"—people of substantial income, wealth, or knowledge.²³ Similar restrictions could protect less sophisticated investors in futures markets without injuring people who use futures markets for hedging. I do not recommend such restrictions; there is no solid evidence that exchanges fail to take adequate precautions against the exploitation of the unsophisticated. (Some exchanges and dealers establish minimum account sizes designed to keep unsophisticated traders from the markets.) But if there were such evidence, the response should be limited.

What remains is the persistent belief that the existence of futures contracts increases the likelihood of manipulation in other markets. This is the stated ground of the legislative and regulatory antipathy to contracts on "narrow-based" indices. (See Federal Reserve System [1985], making an argument of a sort characterized in Fischel [in this issue] and Fischel and Grossman [1984].) I have indicated in earlier discussion that such cross-market manipulation is unlikely to be profitable. Now assume that this is wrong and that futures contracts create opportunities for profitable manipulation. It still does not follow that prohibition of the futures contract is the optimal solution. Regulation by deterrence remains the least-cost option, just as in markets for other products. It is possible to detect manipulatory conduct and impose appropriate sanctions.

No one believes that the right response to corporate officers' trading on material inside information is to prohibit corporate officers from owning or trading stock. The officers' ownership of stock is highly valuable to other participants in the corporate venture because it aligns the officers' interests with those of other investors. It is foolish to sacrifice these gains in order to reduce the amount of inappropriate trading. We therefore permit trading but penalize wrongful trades. The same principles apply to futures markets. Futures contracts are highly valuable in hedging or distributing risk, in creating liquidity, and so on. It is foolish to sacrifice these benefits when a system of penalties imposed on wrongful conduct can preserve them.

V. Conclusion

The exchanges that establish futures contracts are led by the demands of traders to establish the optimal precautions against monopoly and manipulation. These offenses are not nearly as costly in futures mar-

23. See Section 4(6) of the Securities Exchange Act of 1934 and SEC Rules 215, 501-5 (defining "accredited investor" and specifying certain securities for which status as an accredited investor is a necessary condition of purchase).

kets as they are in the underlying product markets, so "optimal" precautions do not seek to eradicate the misconduct. Instead a futures exchange seeks some mix of care and deterrence that reduces the frequency of these offenses so long as it is beneficial to do so. The exiting evidence suggests that there are some episodes of monopoly and manipulation, but not very many. This is what we should expect to see.

Because the exchanges seek to select the right mix of precaution and penalty, there is no strong justification for either imposing regulations on trading or restricting the creation of new contracts. Because the loss from manipulation cannot exceed the value of the contract itself, it is never right to limit new entry.

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