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Commodity Market Manipulation Law: A (Very) Critical Analysis and a Proposed Alternative

Craig Pirrong*

I. Introduction

Evidence abounds that commodity market manipulation law in the United States is extraordinarily confused.¹ For example, courts and administrative law judges (ALJs) have violently attacked the reasoning underlying precedent-setting cases.² Commodity market regulators have publicly lamented the acute difficulty of determining whether a manipulation has occurred.³ Legal scholars have argued that the existing law borders on the chaotic. In the extreme, some have claimed that judicial

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1. Section 9 of the Commodity Exchange Act (CEA) makes manipulation or attempted manipulation a felony 7 U.S.C. § 13(a)(2) (Supp. V 1993). Section 5 of the CEA requires Boards of Trade (i.e., commodity exchanges) to prevent the "manipulation of prices and the cornering of any commodity" *Id.* § 7(4). The CEA was originally titled "The Grain Futures Act," which was passed in 1922. *Id.* § 1 (1988).

2. The ALJ in David G. Henner, 30 Agric. Dec. 1151 (1971), included a 28 page appendix excoriating the reasoning in *Volkart Brothers, Inc. v Freeman*, 311 F.2d 52 (5th Cir. 1962), even though *Henner* was not a market power manipulation case. David G. Henner, 30 Agric. Dec. at 1264-91. The United States Court of Appeals for the Eighth Circuit also pointedly criticized *Volkart*. See generally *Cargill, Inc. v Hardin*, 452 F.2d 1154 (8th Cir. 1971).

3. See Vincent W. Kosuga, 19 Agric. Dec. 603, 615 (1960) ("Drawing a line between legitimate trading and trading with manipulative intent is sometimes a very difficult task."). Similarly, the Commodity Futures Trading Commission (CFTC) noted the "lack of objective standards for identifying and preventing potentially disruptive situations in futures markets." 43 Fed. Reg. 15,438, 15,439 (1978).

action is incapable of deterring manipulation and that more thorough regulatory restrictions on trader conduct are therefore necessary⁴

The suggested regulatory remedies to judicial failure (e.g., more restrictive position limits, more aggressive market surveillance, and preventative intervention) are troubling because they are so broad that they will inevitably demoralize legitimate activity in futures markets to some (perhaps considerable) degree. This is costly. For example, position limits may limit the ability to shift risk from the very risk averse to the very risk tolerant (a primary function of futures markets) because the latter are constrained from taking very large positions. This result compromises the hedging function of futures markets and may also increase price volatility. Moreover, it is difficult to adjust position limits in a discriminating fashion in response to changed economic circumstances. As another example, government intervention into the market intended to prevent a manipulation (e.g., an order requiring trading for liquidation only) is by necessity based on incomplete information about intentions and market power.⁵ As a result of this paucity of information, the regulator may intervene when intervention is inappropriate or may fail to intervene when a manipulation is indeed in progress.

Given these potentially substantial costs of alternative means of manipulation deterrence, it is decidedly preferable to establish a legal standard that avoids the pitfalls of the existing law and reliably distinguishes manipulative conduct from legitimate uses of futures markets. This standard could be employed after an alleged manipulation, when information about the effects of and intentions behind traders' actions is most complete. Moreover, since it would be employed only when a manipulation is suspected, unlike position limits and other *ex ante* restrictions on traders' activities, this standard would not constrain legitimate activities when the threat of manipulation is small. Such an *ex post* standard avoids the problem of throwing the baby out with the bath water by contributing to the effective deterrence of damaging forms of trader conduct without impairing the legitimate activities of market users.

4. See George A. Davidson, *Squeezes and Corners: A Structural Approach*, 40 BUS. LAW 1283, 1296-98 (1985); Jerry W. Markham, *Manipulation of Commodity Futures Prices—The Unprosecutable Crime*, 8 YALE J. ON REG. 281, 361-76 (1991).

5. Section 8a(9) of the CEA gives the CFTC the power to intervene in contract markets in the event of "threatened or actual market manipulation and corners." 7 U.S.C. § 12a(9) (1988 & Supp. V 1993).

In this Article, I formulate such a standard by relying upon a firm understanding of the economic implications of market manipulation developed in my earlier work on the subject. I show that such reliance allows the construction of a robust, practical legal standard that accurately discriminates between competitive and anticompetitive uses of the futures market delivery process. That is, I combine the implications of a formal model of the economic effects of manipulation and classical statistical methodology in order to show that manipulation is not an "unprosecutable crime," as some have argued.

The basic approach that I present in this Article is as follows. The most important form of manipulation consists of the exercise of market power in a commodity market. Economic theory predicts how prices and quantities behave during a manipulation. In particular, it demonstrates that prices and quantities behave differently during a manipulation than they do when traders do not exercise market power. Thus, it is possible to use data on prices and classical statistical techniques to test the following hypothesis: "A manipulation did not occur in Market X at time T ." Rejection of this hypothesis creates a presumption that some trader(s) exercised market power in X at time T . Economic theory also describes how traders must behave in order to corner a commodity market. Thus, by comparing the observed behavior of traders to this predicted behavior, it is possible to identify who exercised market power. In sum, I show that because manipulation is essentially an economic offense, standard economic tools can be reliably employed to detect and deter it. Such a rigorous approach avoids the numerous pitfalls inherent in the existing legal tests for manipulation.

The remainder of this Article is organized as follows. Part II presents a short description of futures markets. Part III provides a brief summary of the economic analysis of long manipulation and lists several testable implications of this conduct. Part IV uses the insights derived from the economic analysis to examine critically manipulation case decisions and the scholarly legal literature on manipulation. Part V builds upon the economic analysis to construct an alternative set of tests for manipulation to avoid the glaring errors and logical inconsistencies inherent in the existing precedents. Part VI provides a brief summary of the Article.

II. Futures Markets: An Overview

As their name suggests, futures exchanges are centralized marketplaces where traders buy and sell commodities for delivery in the future. For example, in May 1995, an individual or firm can purchase or sell 5,000 bushels of soybeans for delivery in Chicago in November 1995 by purchasing a futures contract traded on the Chicago Board of Trade (CBOT). A seller of a futures contract is called a "short," and the buyer is called a "long." Commodities traded in futures markets include traditional physical commodities (e.g., corn, gold, cattle, and oil) and financial assets (e.g., Treasury Bonds and stock indices).

Futures contracts are bought and sold in centralized trading "pits" in an open outcry auction. Customers submit buy and sell orders for futures contracts to brokerage firms. These firms transmit the orders to brokers located in the pit. The brokers call out their desire to buy or sell, and other traders in the pit compete to take the other side of the trade. The broker accepts the best bid or offer made in the pit to fill his order. In addition to trading for customers, some pit participants trade on their own account.

In order to limit negotiations in the futures pit to price alone, a futures exchange standardizes all other terms of futures contracts. These terms include when and where delivery must occur and the quantity and quality of the commodity to be delivered.⁶ For example, the November 1995 soybean futures contract traded on the CBOT states that shorts must deliver 5,000 bushels of #2 quality soybeans in Chicago during the month of November 1995. Shorts also have the option to deliver in Toledo and in St. Louis at prices that differ by fixed amounts from the Chicago price. Similarly, shorts have the option to deliver higher quality #1 soybeans and receive a fixed price premium over the #2 soybeans for doing so. These delivery options are intended largely to deter manipulation.

6. Some futures contracts are "cash settled." The S&P 500 contract traded on the Chicago Mercantile Exchange is a well-known example of a cash settled contract. In this contract, a short does not deliver the actual stocks that comprise the index in order to satisfy his contractual obligation. Instead, the value of the stocks at the end of a contract month determine a settlement price. The long and short close their contract by making cash payments; the size of these payments and who pays whom depends upon the settlement price and the price prevailing when the long and short entered the contract. Only delivery settled contracts are susceptible to the kind of manipulation discussed in this Article, so I ignore cash settled contracts hereafter.

Contracts need not be closed by delivery. A seller or buyer of a contract can purchase or sell a contract prior to the end of the delivery period. Upon doing so, the clearinghouse of the relevant futures exchange nets the sale and purchase which leaves the trader with no obligation to make or take delivery. In fact, upwards of 95% of futures contracts are offset in this fashion. However, since a short or long must find a willing seller or buyer in order to close his position, no trader can *unilaterally* escape his contractual obligations. Thus, if a resolute buyer demands delivery and refuses to sell all of her futures contracts, those who have sold futures contracts to her have no choice but to comply or else face severe penalties for default. As Part III shows, if delivery and default are sufficiently costly, this ability to demand delivery may allow a large long trader to manipulate the market.

III. The Economics of Commodity Market Manipulation

The manipulation of commodity markets has been a subject of intense debate and interest since the birth of futures markets in the mid-nineteenth century. Despite the attention this issue has received, there is no consensus definition on the meaning of "manipulation." An old-time cotton broker's comment reveals how promiscuously the term has been applied: "The word 'manipulation' in its use is so broad as to include any operation in the cotton market that does not suit the gentleman who is speaking at the moment."⁷ Any analysis of manipulation must therefore begin with a definition. In this Article, I define manipulation as follows:

Manipulation is the exercise of monopoly power in a futures market and/or the cash market for the underlying commodity *near the expiration date of a futures contract*. A long exercises market power by taking delivery on so many futures contracts that shorts must acquire the commodity from uneconomic locations in order to satisfy the long's demands.⁸

7 2 FEDERAL TRADE COMM'N, THE COTTON TRADE, S. DOC. NO. 100, 68th Cong., 1st Sess. 148 (1924), *microformed on* CIS No. 8242. (Congressional Info. Serv.).

8. More generally, one can replace the term "futures" with the term "derivative security." Derivative securities include forward contracts and options. The Salomon Brothers squeeze of the two-year Treasury Note in May 1991 is an example of a squeeze in a derivative security market. In that case, the "when issued" and "repurchase" contracts were squeezed. Both are forward contracts, as opposed to exchange traded futures contracts.

Five considerations justify this limitation of the analysis of manipulation to corners and squeezes. First, the exercise of market power in a commodity market is universally recognized as a form of manipulation; there is no such agreement for other forms of conduct so labeled.⁹ Indeed, the Commodity Exchange Act (CEA) explicitly proscribes corners, although it also bans other, unspecified kinds of manipulative conduct.¹⁰ As a result, most of the important manipulation cases involve a corner.¹¹ Second, corners and squeezes are historically important. Numerous market power manipulations have occurred in the past, and these episodes have generated popular, legal, and legislative responses.¹² Third, economic theory implies that market power manipulations help to make possible other sorts of conduct that are sometimes deemed manipulative. To take an important example, market power manipulation makes so-called "bear raids" (the sales of massive

9. Daniel Fischel and David Ross consider, but reject, the possibility that the exercise of market power is the essence of manipulation. See Daniel R. Fischel & David J. Ross, *Should the Law Prohibit "Manipulation" in Financial Markets?*, 105 HARV. L. REV. 503, 544 n.182 (1991). Fischel and Ross argue that "the possibility of market power provides incentives for traders who believe prices will rise to go long and incentives for shorts to obtain deliverable supplies to alleviate possible shortages." *Id.* The theory that market power has beneficial effects is specious because the possibility of market power gives too strong an incentive to go long and leads to excessive efforts to obtain deliverable supplies. Fischel and Ross also claim that "market power can arise from legitimate trades." *Id.* at 546. By this they apparently mean that a trader can *acquire* a position (for hedging purposes, for instance) with no manipulative intent, but exercise market power at contract expiration due to a fortuitous change in circumstances between the time the trader buys and the time the contract expires. This reasoning closely parallels that of several cases criticized heavily below. See *infra* part IV.B. Thus, whereas Fischel and Ross appear to distinguish manipulative trading from the exercise of market power at contract expiration, I consider market power to be a particular type of manipulative conduct. My usage is more typical than that of Fischel and Ross. See Frank H. Easterbrook, *Monopoly, Manipulation, and the Regulation of Futures Markets*, 59 J. BUS. 5103, 5117-20 (1986) (identifying manipulation with exercise of market power); Linda N. Edwards & Franklin R. Edwards, *A Legal and Economic Analysis of Manipulation in Futures Markets*, 4 J. FUTURES MARKETS 333, 345 (1984) (same).

10. See 7 U.S.C. § 7(4) (Supp. V 1993) (requiring exchanges to prevent "manipulation of prices and the cornering of any commodity").

11. For a list of manipulation cases brought under CEA, see Markham, *supra* note 4, at 380-89. Of the 44 cases, 37 (84%) were market power manipulation cases. *Id.*

12. See JULIUS B. BAER & GEORGE P. WOODRUFF, *COMMODITY EXCHANGES* 182-95 (1929); CEDRIC B. COWING, *POPULISTS, PLUNGERS, AND PROGRESSIVES* 3-24 (1965); JERRY W. MARKHAM, *THE HISTORY OF COMMODITY FUTURES TRADING AND ITS REGULATION* 3-34 (1987).

numbers of futures contracts in order to depress prices) profitable.¹³ Fourth, the exercise of market power at contract expiration distorts market prices prior to contract expiration and makes these prices more volatile and less informative than they would be if no traders exercised market power.¹⁴ Fifth, the exercise of market power at contract expiration distorts consumption and production decisions, thereby creating deadweight losses.¹⁵ The combination of reduced price efficiency and distortion in economic decisions makes it desirable to reduce market power if this can be accomplished at low cost.

It is essential to distinguish the exercise of market power near the expiration of a futures contract from the effect of large trades that move prices. That is, a hedger's or speculator's trading can cause prices to rise or fall without being manipulative. To see why, consider the case of a large speculator who purchases vast quantities of a commodity because he believes it to be undervalued. Prices increase in response to this trading activity because other traders recognize that the speculator may possess private information on the true value of the commodity. Thus, the price rises to reflect this "bullish" private information.

The speculator's trading moves the market, but it is not in itself an exercise of market power. Indeed, the speculator would prefer that his trading *not* move the market. As long as the large trader does not stand for deliveries with the *purpose* of raising the price *during the delivery period*, his trading is not manipulative. Thus, the concept of market power should *not* be equated with the ability to move prices. Instead, use of the term should be restricted to those instances in which a trader uses the power inherent in a large futures position to cause the price *at contract expiration* to rise above what she believes to be its fundamental value.¹⁶

The equation of manipulation and market power raises other issues. Most importantly, this linkage immediately brings antitrust law to mind.

13. See S. Craig Pirrong, *Mixed Manipulation Strategies in Commodity Futures Markets*, 15 J. FUTURES MARKETS (forthcoming 1995).

14. See *id.*

15. See S. Craig Pirrong, *Manipulation of the Commodity Futures Market Delivery Process*, 66 J. BUS. 335, 344-48 (1993).

16. At first blush, this test seems inherently subjective and thus impossible to prove in practice. This conclusion is incorrect. A true manipulator's actions reveal that she indeed believes that she caused the price to exceed fundamental value. For details of this argument, see *infra* part V.B.3 (discussing method of discerning speculative from manipulative motives).

The definition and measurement of market power in that context has proven illusive. Moreover, under antitrust law, the use of monopoly power to raise prices is not illegal. This raises the following question: If the concept of market power is well-nigh useless in antitrust analysis, why should it prove any more illuminating in a futures market context?

There are two answers to this question. First, it is undeniable that a corner or squeeze represents the exercise of market power. Thus, a failure to connect the concept of market power to the statutory prohibitions against corners is to ignore the essence of the offense. Put another way, the incorporation into commodity law of the antitrust view that it is legal to exercise market power in order to increase prices would represent a *de facto* legalization of corners. This would render the antimanipulation sections of federal commodity statutes meaningless.¹⁷ Second, it is undeniably true that the concept of monopoly power is nebulous in many markets. In these cases, it is difficult, if not impossible, to define the relevant market and to determine whether a firm or individual artificially reduced output or raised price. Fortunately, this is not the case in futures markets because the relevant market is very well defined as the market at the delivery point during the delivery period. Moreover, because economic theory clearly demonstrates the effects of a long futures market manipulation on prices and quantities, it is possible to collect and observe the relevant data to determine whether the predicted effects of the exercise of market power occurred in a particular instance.

Specifically, if a trader exercises market power during the delivery period:¹⁸

1. The futures price and the cash price at the delivery market are abnormally high relative to prices at other, nondeliverable locations, prices of nondeliverable grades of the same commodity,

¹⁷ Section 9 of the CEA makes it a felony "to corner or attempt to corner any commodity" 7 U.S.C. § 13(a)(2) (Supp. V 1993). Moreover, § 5 of the CEA requires exchanges to prevent corners, *id.* § 7(4), § 8a(9) allows the CFTC to intervene in order to prevent corners, *id.* § 12a(9) (1988 & Supp. V 1993), and § 5a requires exchanges to establish delivery systems and delivery differentials in order to reduce the likelihood of a corner, *id.* § 7(a)(10). Thus, it is apparent that the statute regards exercise of market power—a corner—as an important form of market manipulation. In fact, a corner is the only kind of manipulation that is listed by name. Moreover, the cases discussed in Part IV clearly state that a corner is a form of market manipulation. See *infra* part IV.B.

¹⁸ See Pirrong, *supra* note 15, at 346-48 (deriving this theory).

and prices of related commodities (e.g., in a corn manipulation, the corn price should rise relative to the price of soybeans, which is affected by similar weather and demand factors). Again, these distortions may manifest themselves gradually, and they are largest immediately prior to the time that the manipulator liquidates. Moreover, at some time prior to contract expiration the futures and deliverable spot prices rise abnormally, relative to prices of comparable commodities.

2. Large shipments of the commodity flow to the delivery point immediately prior to and during the delivery period. Moreover, shipments *from* the delivery point are abnormally small during the delivery period as traders amass stocks to make delivery
3. The price of the manipulated contract is abnormally high relative to the price of the next expiring contracts (i.e., the price of the "front month" contract is artificially high relative to the deferred or "back month" contracts). This elevation should become evident sometime prior to the end of trading and may become manifest only gradually as traders become progressively more aware of the possibility of a manipulation. The magnitude of the distortion is largest immediately prior to the time that the manipulator liquidates his position because then other traders are most fully aware of the prospects for a squeeze. For a given value of the spot-futures differential (adjusted for the costs of carrying inventory between the current date and the expiration of the deferred futures contract), there is an abnormally large amount of the deliverable commodity in store in the delivery market. That is, the amount of the commodity in store at the delivery market is significantly larger than the so-called "supply of storage curve" implies.¹⁹
4. The spot price in the delivery market declines precipitously both absolutely and relative to deferred month futures prices and spot prices at other locations around the end of futures trading or the delivery period. (This is the "burying the body" effect.) The

19. See JEFFERY WILLIAMS, *THE ECONOMIC FUNCTION OF FUTURES MARKETS* 137-42 (1986) (analyzing supply of storage curve); JEFFERY C. WILLIAMS & BRIAN D. WRIGHT, *STORAGE AND COMMODITY MARKETS* 248, 350-56 (1991) (same); Lester G. Telser, *Futures Trading and the Storage of Cotton and Wheat*, 66 J. POL. ECON. 233, 234-37 (1958) (same); Holbrook Working, *Theory of the Inverse Carrying Charge in Futures Markets*, 30 J. FARM ECON. 1, 17-26 (1948) (same). The supply of storage curve plots the spot-futures basis adjusted for carrying costs against the amount of the deliverable commodity in store.

timing of this decline may vary, depending upon when the manipulator liquidates and the time required to move stocks to the delivery point.

5. Delivery point receipts are abnormally small after the delivery period because of the glut of the commodity that results from the artificially large shipments. Shipments from the delivery point increase after the end of a corner as some of the excess shipments are returned to their original sources and delayed shipments are released.

The intuition behind these results is straightforward. A manipulation may be profitable when (1) the incremental cost of augmenting deliverable supplies increases as shorts make more deliveries and (2) a trader owns enough futures positions.²⁰ Under these circumstances, a large long who stands for an excessive number of deliveries drives up the costs that shorts must incur to deliver even more of the commodity. Shorts are willing to pay the long a price equal to this artificially inflated cost of delivering against another contract in order to settle the remainder of their positions. Submitting to the long's "extortion" in this fashion allows shorts to avoid incurring the high cost of delivering even more. Thus, by calling for too many deliveries of the commodity (i.e., by liquidating too few contracts) the large long induces shorts to repurchase their remaining positions at artificially high prices. The large long profits when he sells contracts at these high prices.

This description shows that a cornerer artificially increases demand for the commodity at the delivery point during the delivery period in order to earn a supercompetitive profit. This artificial demand stimulus explains the five enumerated effects of manipulation. Because the demand increase is confined to the delivery market, the price in that market rises relative to the prices in other markets (Implication 1). Moreover, this relative price

20. Marginal costs of delivery are typically increasing for "spatial commodities" (i.e., commodities which are (1) produced and consumed over a wide geographical area and (2) costly to transport). Examples of such goods include grains and industrial metals. The marginal cost of delivery is increasing for such commodities because it is necessary to acquire additional supplies from progressively less economical locations. Manipulation is not limited to spatial commodities, however. Any transaction cost that makes it costly to increase deliverable supply can facilitate manipulation. Thus, a corner may occur in a financial market, although the conditions in financial markets are typically less conducive to manipulation than the conditions in physical commodity markets.

increase in the delivery market (1) attracts additional supplies to that point and (2) induces some traders to hold stocks at the point at which they would have shipped elsewhere but for the manipulation (Implication 2). Together these actions inflate stock prices in the delivery market. The demand increase is also confined to a narrow time interval—the delivery period. This raises the price in the delivery market during the delivery period relative to the prices for deferred delivery (Implication 3). This distortion in temporal pricing patterns is even more evident when one controls for the size of the stocks in the delivery market. In a competitive market, the spot price is high relative to the deferred futures price only when deliverable stocks are unusually small. Therefore, if the current spot price is high relative to the deferred futures price at the same time that deliverable stocks are very large, it is unlikely that all traders were acting competitively at contract expiration. Finally, the cornerer abruptly terminates the artificial demand stimulus at the end of the delivery period. This sudden decrease in demand, combined with the artificial inflation in stock prices, causes the spot price to plunge in the delivery market (Implication 4). The spot price declines both absolutely and relative to (1) prices in other markets, (2) the deferred futures price, and (3) the but-for-manipulation competitive spot price.²¹ Market participants refer to this postdelivery price collapse as the "burying the body (or corpse)" effect.²² The decline in demand at the end of the delivery period also leads to an increase in shipments from, and a reduction in shipments to, the delivery market (Implication 5).

It is important to note that these price and quantity effects are quite distinct from the price and quantity effects of other "unusual" events in futures markets.²³ Most importantly, the effects of manipulation are readily distinguishable from systemic demand or supply shocks.²⁴ For

21. The postmanipulation spot price is below the no-manipulation spot price because the corner increases supplies in the delivery market.

22. This phrase is attributed to the noted grain trader and meat magnate P.D. Armour. When once asked whether it was easy to manipulate the market, Armour replied that the manipulator faced the same problem as a murderer: "To commit murder is very simple, the trouble is to bury the corpse." BOB TAMARKIN, *THE MERC* 83 (1993). That is, it is easy to drive the price up by buying huge quantities, but hard to sell what one buys at a profit.

23. See Easterbrook, *supra* note 9, at S107 (arguing that price and quantity effects of manipulation are distinctive).

24. A systemic shock is one that affects all markets in common in a similar fashion. That is, a systemic shock is not concentrated in the delivery market alone.

example, some argue that an export boom or a crop failure could produce the same economic symptoms as a manipulation. It is indeed true that shocks of this sort can lead to a large increase in prices and changes in commodity flows, but the pattern of these price and quantity changes is substantially different from those resulting from a manipulation.

Take, for instance, the case of an export boom in soybeans. During the typical boom, demand increases at the major export points, including the Gulf of Mexico, Toledo, the East Coast of the United States, as well as Chicago, the primary delivery point for the CBOT soybean futures contract. This increase in demand causes prices to vary at all of these points and at the points tributary to them (e.g., the growing regions of Iowa). Although prices rise at all locations, relative prices between the various export ports should not change much because demand is rising at all points. In particular, the relative price at the futures delivery point does not *necessarily* rise during an export boom. Indeed, the price may fall. During a squeeze, in contrast, demand increases only at the delivery point; thus, the price in Chicago should rise significantly relative to the prices in the other important soybean markets. In other words, during an export boom, the relative price in Chicago would increase dramatically only if the boom were confined to that point. This would be peculiar, to say the least.

Manipulation has other telltale signs that distinguish it from systemic shocks. For example, the "burying the body" effect is unique to manipulation.²⁵ Moreover, export booms do not lead to an unusual relationship between stocks of the commodity and the spread between spot and futures prices. Furthermore, during an export boom the number of shipments from the delivery market should increase, whereas during a manipulation the number of shipments from the delivery market should decline. Similar arguments hold for other systemic shocks. In sum, therefore, one can distinguish a large manipulation from other unusual events that affect commodity prices and flows. Only a large surge in demand confined to the delivery market during the delivery period can explain the price and quantity effects of manipulation; absent a squeeze, such a demand shock is highly unusual and, hence, should be readily identifiable.

25. The "burying the body" effect is unique to manipulation unless, of course, one was willing to believe that the export boom collapsed on a single day that just happened to correspond with the expiration of a futures contract.

One should not interpret the foregoing to mean that unusual events cannot make a manipulation more likely. For example, a drought that reduces supplies of a commodity can make a manipulation more profitable and, hence, more likely. It is inappropriate to conclude, however, that the drought *causes* the corner. Traders must take positive actions to complete a corner. These actions cause prices to deviate noticeably from those that would prevail if there is a drought, but no squeeze.²⁶

Economic theory also describes how a manipulator behaves in order to maximize her profits. I will argue below that these implications are important because they allow a fact finder to determine whether a large long acted with manipulative intent. Specifically:

1. The manipulator takes an abnormally large number of deliveries, but also liquidates a substantial portion of her position.
2. The manipulator may sell large quantities of the commodity immediately after the expiration of the cornered contract, but a competitive trader would not.

The first implication holds true because the cornerer must take delivery of a large quantity of the commodity in order to drive up the marginal cost of delivery.²⁷ These deliveries are "large" relative to (1) the

26. Some analysts have asserted the existence of a so-called "natural corner." See 7 U.S. FED. TRADE COMM'N, REPORT OF THE FEDERAL TRADE COMMISSION ON THE GRAIN TRADE: EFFECTS OF FUTURE TRADING 243-44 (1926) (asserting existence of natural corners). A natural corner is said to occur when some exogenous development reduces supplies of a commodity and allows a trader with a relatively small position to exercise market power. Some claim that the trader who does so is blameless because he simply took advantage of the prevailing conditions; several judicial and regulatory decisions discussed below adopt this view. See *infra* part IV.B.3. I argue below that this is a very dangerous proposition because it gives large traders a "manipulation option." See *infra* part V.B.3.

27. One subtle point deserves mention in this context. Many commercial futures traders engage in so-called "exchange for physical" (EFP) transactions. In an EFP, a trader of short futures makes the following arrangement with a trader of long futures: The short delivers the commodity to the long and buys a futures contract from the long. This transaction is essentially equivalent to the short simply delivering the commodity to the long because the two traders' futures positions cancel, and the short tenders the good to the long. The only important difference between a delivery and an EFP is that in the latter, the parties can choose to make or take delivery outside the delivery market, before the delivery period, or both. In the context of a manipulation, an EFP is not a substitute for a delivery, as the long must agree to the transaction. Thus, shorts cannot unilaterally use EFPs to escape a corner.

amount of deliveries that normally occur in the market and (2) the number of deliveries taken by other traders during a manipulation. The second implication is true because competitive traders would rather liquidate their futures positions at the artificially high price than take delivery of a good that they know will imminently decline in value. In other words, the manipulator bears the burden of burying the body, and she must take the lion's share (perhaps all) of the deliveries. Although she takes substantial deliveries, the manipulator must sell some futures contracts prior to expiration in order to earn a profit. Because of the burying the body effect, if she took delivery on the entire position, she would actually incur a loss when reselling the goods delivered to her.

These implications distinguish a manipulator's conduct from a competitive trader's actions. A trader that takes delivery because he actually wants the commodity (rather than to corner the market) would not simultaneously sell futures contracts. Moreover, a cornerer knows that the price of the commodity will decline at the end of the delivery period, but the cornerer nevertheless takes deliveries because she knows that she must do so in order to inflate the price at which she sells futures contracts. Once the manipulated contract expires, she has no use for what was delivered to her, so she is likely to sell. The sale of the commodity in the face of a price decline upon contract expiration is not consistent, however, with competitive motivations. In the absence of new information about the value of the commodity, a competitive trader who takes a large number of deliveries for legitimate reasons (e.g., to fill an export order) would want to *buy* more of the commodity if the price were to decline precipitously immediately after he had just taken delivery of the good at the expiration of a futures contract.

In conclusion, market power manipulation has distinctive effects on price and quantity relations. In the sections that follow, I use the criteria identified by this economic analysis of manipulation to (1) analyze the manipulation case law and (2) construct an antimanipulation doctrine that addresses the shortcomings of the existing doctrine implicit in these cases.

IV An Analysis of Manipulation Law and Commentary

A. An Overview

There is a substantial, though not overwhelming, body of case law on manipulation. This case law derives from various authorities, including the federal and state courts in criminal and private suits and ALJs and commissioners of federal regulatory agencies including (in chronological

order of establishment) the Grain Futures Administration, the Commodity Exchange Authority, and the Commodity Futures Trading Commission (CFTC). Unfortunately, these examples of *ex post* adjudication of manipulation have "become an embarrassment—confusing, contradictory, complex, and unsophisticated."²⁸ In particular, the current precedents make it extremely difficult to find a trader guilty of manipulation even in cases in which the economic analysis suggests that the trader has indeed manipulated. Given this state of affairs, *ex post* deterrence is currently a weak bulwark against future manipulations. This raises the question of whether it is possible to construct a set of legal rules applicable *ex post* that would provide a superior deterrence mechanism.

The remainder of this Part documents the failings of the received law and constructs an economically and legally defensible set of alternative legal criteria. Subpart IV.B uses the economic analysis of the previous Part as a benchmark by which to examine this law critically. Subpart IV.C analyzes some alternative tests for manipulation that have been advanced in the legal literature.

B. The Existing Law on Manipulation

The existing law on manipulation derives from a relative handful of federal judicial and regulatory agency decisions. The landmark court cases include *Great Western Food Distributors, Inc. v Brannan*,²⁹ *Cargill, Inc. v Hardin*,³⁰ and *Volkart Bros. v Freeman*.³¹ Important regulatory decisions include *Hohenberg Bros.*,³² *Indiana Farm Bureau Cooperative Ass'n*,³³ *Cox*,³⁴ and *Abrams*.³⁵

28. Edward T. McDermott, *Defining Manipulation in Commodity Futures Trading: The Futures "Squeeze,"* 74 Nw. U. L. REV 202, 205 (1979).

29. 201 F.2d 476 (7th Cir. 1953).

30. 452 F.2d 1154 (8th Cir. 1971).

31. 311 F.2d 52 (5th Cir. 1962).

32. [1975-1977 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 20,271 (Feb. 18, 1977).

33. [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796 (Dec. 17, 1982).

34. [1986-1987 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786 (July 15, 1987).

35. [1987-1990 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 24,408 (Feb. 8, 1989).

These cases have defined a basic three-part test for determining whether a manipulation has occurred.³⁶ Specifically, to prove that a trader manipulated the market at a particular time, it is necessary to demonstrate that (1) an artificial price existed at that time; (2) the accused trader caused the artificial price; and (3) the accused trader intended to cause the artificial price. This set of conditions is eminently defensible. Unfortunately, the burden of proof that has evolved for each condition is not. I discuss each condition in turn.

1 Price Artificiality

The analysis in Part III clearly demonstrates that manipulation has pronounced effects on prices. Specifically, manipulation elevates the futures price and the price of the deliverable commodity both absolutely and relative to the prices for other grades, locations, and delivery dates. Thus, price artificiality is the *sine qua non* of manipulation.

By making price artificiality a necessary, but not a sufficient, condition for a finding of manipulation, the courts have recognized the central importance of prices in determining whether a corner or squeeze occurred. Unfortunately, however, the relevant decisions have not established firm or defensible criteria for determining whether a particular price is or is not artificial. Indeed, recent decisions may have the effect of excluding the evidence most valuable for establishing price distortion. Specifically, these cases (and some scholarly commentary) discount the use of historical price comparisons as a means of determining price artificiality

*Cargill, Inc. v Hardin*³⁷ and *Great Western Food Distributors, Inc. v Brannan*³⁸ both illustrate the use of historical price comparisons. *Cargill* involved the actions of a large grain merchant during the liquidation of the May 1963 wheat future traded on the CBOT.³⁹ *Cargill* owned all of the deliverable supply of wheat and, in the days leading up to contract expiration, purchased a speculative long futures position.⁴⁰ Fifteen minutes

36. See 3 PHILIP M. JOHNSON & THOMAS L. HAZEN, *COMMODITIES REGULATION* §§ 5.13-5.27, at 32-54 (2d ed. 1989) (discussing price artificiality, causation, and intent as they relate to manipulation).

37. 452 F.2d 1154 (8th Cir. 1971).

38. 201 F.2d 476 (7th Cir. 1953).

39. See *Cargill, Inc. v Hardin*, 452 F.2d 1154, 1158-59 (8th Cir. 1971).

40. See *id.* at 1159.

before the close of trading on the contract's expiration date, Cargill entered limit orders to sell contracts at a price of \$2.29 per bushel, \$0.14 per bushel higher than the price prevailing only forty minutes earlier.⁴¹ In finding the firm guilty of manipulation, the court relied upon four types of price evidence: (1) The price rise in the last hour of trading was larger than any observed in the prior nine years; (2) The May-July spread change was larger than any observed in the prior nine years; (3) The spread between Chicago and Kansas City wheat was far larger than had been observed previously; and (4) the futures price at the closing of trade exceeded the price other traders were bidding for wheat in the Chicago cash market by a very large margin.⁴²

In *Great Western*, the court conducted a similar analysis of the defendant's conduct in the December 1947 refrigerated egg contract traded on the Chicago Mercantile Exchange.⁴³ The court found that the egg futures price at the close of trading was abnormally high (relative to past values) when compared to the January 1948 egg futures price.⁴⁴ Moreover, even though refrigerated eggs typically sold at a discount to fresh eggs, during the period of interest the opposite was true.⁴⁵

According to the analysis in Part III, the reasoning in both cases is solid. The courts relied upon the appropriate relative prices. The only ground for criticism is that the courts did not establish a standard for determining how large a deviation from typical price relations is sufficient for a finding of artificiality. Prices can deviate from historical relations for reasons unrelated to manipulation. For example, the Chicago-Kansas City spread varies with local supply, demand, and transport conditions. It would have been desirable, therefore, for the court to have examined explicitly the variability of past price relations (e.g., by adjusting the Chicago-Kansas City spread by its mean and standard deviation). If the observed deviations from the mean were far larger than those likely to appear by chance given the observed past variability, the court could have established artificiality more authoritatively.

41. *See id.* at 1160.

42. *Id.* at 1167-70.

43. *See Great W Food Distribs., Inc. v Brannan*, 201 F.2d 476, 478, 482-84 (7th Cir 1953).

44. *Id.* at 483.

45. *Id.*

The failure to adjust the deviations from normal price relations for their observed variability opened the door for later decisions to ignore historical price data altogether. Specifically, the decisions of the CFTC commissioners in *Indiana Farm Bureau* and *Cox* discounted extremely strong evidence of price distortions resulting from (1) the behavior of the Indiana Farm Bureau (Bureau) on the last trading day of the July 1973 CBOT corn contract and (2) the actions of brokers Cox and Frey on the last trading day of the May 1971 CBOT wheat contract. In both cases, on the basis of historical price comparisons similar to those employed in *Cargill* and *Great Western*, the ALJs found strong evidence of price distortions.⁴⁶ The distortion in *Indiana Farm Bureau* was particularly extreme: the price of corn rose 30% on the last trading day, an unprecedented rise in such a short period of time.⁴⁷ Relative prices were similarly out of line with previous experience. Although not as spectacular as those observed in July 1973 corn, the price distortions in May 1971 wheat were pronounced nonetheless. As in *Cargill*, the closing futures price was high (when compared to historical levels) in comparison to prices in other markets, prices of deferred contracts, and contemporaneous and deferred cash prices in Chicago.⁴⁸

In later hearings, however, this kind of evidence did not persuade the commissioners of the CFTC. Although Commissioners Johnson and Stone found prices artificial in *Indiana Farm Bureau*,⁴⁹ a majority of the commissioners did not.⁵⁰ Indeed, the majority decision asserted that cash-futures price comparisons were useless.⁵¹ The commissioners argued that instead of examining prices alone, "one must look at the aggregate forces of supply and demand and search for those factors which are extraneous to the pricing system."⁵² The outcome in *Cox* was similar. In the majority opinion, the

46. *Cox*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,267, at 27,092-101 (Jan. 3, 1983); *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,280-81 (Dec. 17, 1982).

47. *Indiana Farm Bureau*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,280-81.

48. *Cox*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,267, at 27,072, 27,093; see *Cargill, Inc. v Hardin*, 452 F.2d 1154, 1167-70 (8th Cir. 1971).

49. *Indiana Farm Bureau*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,290, 27,301.

50. *Id.* at 27,287

51. *Id.* at 27,286-87

52. *Id.* at 27,288 n.2.

commissioners concluded that "the prospective behavior of a 'normal' market is not necessarily bounded by the market's historical experiences."⁵³ In sum, the CFTC explicitly rejected the use of historical price comparisons and suggested that a complete analysis of overall supply and demand conditions was necessary to find price artificiality

Some academic commentators have concurred with this reasoning.⁵⁴ The academic commentators argue that an anomalous price relation is not a sufficient condition for a finding of price artificiality because it is *possible* that such a relation could arise in the absence of manipulation due to the occurrence of unprecedented supply, demand, or transport considerations. In essence, these critics assert that because historical data cannot prove with metaphysical certainty that the price observed in a particular instance was not the result of unusual conditions in a competitive market, a court cannot use these data to determine whether this price was in fact the result of noncompetitive conduct by some trader. Although it is certainly logically correct that divine revelation is more certain than historical comparisons, this is untenable as a principle of jurisprudence. One can never be absolutely certain of any "fact", any decision based on any evidence involves some probability of error. The relevant questions are: (1) How likely is a particular inference to be wrong, and (2) what level of confidence is required to establish guilt? If the answer to the latter question is 100%, a judicial system is superfluous because certainty is impossible. Conversely, if a more practical standard (e.g., 95%) is adopted, historical data analysis is extraordinarily useful.

Fortunately, statistical analysis of historical data allows a very precise answer to the first question. Given the variability observed in historical price relations (spreads of various sorts, changes in a single price, or changes in spreads), one can calculate measures of variability such as the standard deviation. Now consider a price relation that allegedly results from manipulative conduct. Given some assumptions about the probability

53. Cox, [1986-1987 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786, at 34,064 (July 15, 1987).

54. See JOHNSON & HAZEN, *supra* note 36, § 5.18, at 39; Robert C. Lower, *Disruptions of the Futures Market: A Comment on Dealing with Market Manipulation*, 8 YALE J. ON REG. 391, 394-96 (1991); McDermott, *supra* note 28, at 211-12; Wendy C. Perdue, *Manipulation of Futures Markets: Redefining the Offense*, 56 FORDHAM L. REV. 345, 373-80 (1987). See generally M. Van Smith, *Preventing the Manipulation of Commodity Futures Markets: To Deliver or Not to Deliver?*, 32 HASTINGS L.J. 1569 (1981).

distribution of the price relation, under the null (maintained) hypotheses that (1) the market was in fact competitive and (2) the structural conditions prevailing at the time of the manipulation were in the universe of possibilities that generated the historical data set, one can calculate the probability that the observed relation was actually consistent with competitive behavior by the accused and merely resulted from a chance combination of exogenous conditions. Thus, one can calculate exactly the likelihood of a wrongful conviction. To the extent that these various relative prices are independent, this probability may be extremely small.

Some still object to the use of historical data for a variety of reasons. Wendy Perdue claims that the historical prices may themselves be artificial, that cash prices are unreliable, and that the artificial price test is too vague, complex, and rigid.⁵⁵ She also asserts that price standards cannot detect attempted but failed manipulations and that standards may provide a legal justification for regulators to intervene to prevent unusual price movements.⁵⁶ Edward McDermott claims that any use of historical data assumes constant supply and demand conditions and that "a test of manipulation based ultimately on price comparison has very limited utility."⁵⁷ These statements echo claims made in *Indiana Farm Bureau* and *Cox*. In addition, Robert Lower claims that "[b]ecause futures contracts are artificial in the sense that they are stylized and divorced from the actual commodities to which they relate, the concept of price artificiality as a measure of manipulation is elusive and, possibly, illusory."⁵⁸ Daniel Fischel and David Ross argue that unusual supply and demand conditions create unusual prices and, therefore, that it is difficult to distinguish noncompetitive prices from competitive prices resulting from unusual scarcity.⁵⁹

Fortunately, none of these objections is fatal nor even particularly damaging. If historical prices are themselves artificial, it is indeed true that given a standard of proof, more, but not all, manipulators may escape conviction than if the historical data set is unblemished; the accused are the beneficiaries of past artificialities. Note, however, that if these artificialities may themselves be identified, they can be excluded from comparisons. This

55. See Perdue, *supra* note 54, at 365-67.

56. See *id.* at 373-80.

57. McDermott, *supra* note 28, at 211-12.

58. Lower, *supra* note 54, at 394.

59. See Fischel & Ross, *supra* note 9, at 546.

costs degrees of freedom, and therefore statistical precision, but allows more exact comparisons. In any event, only borderline cases are affected. Extreme distortions (as sometimes occur) still stand out. In other words, someone found guilty of manipulation on the basis of historical comparisons cannot claim that past artificialities in the data led to a wrongful verdict; only a disappointed plaintiff or prosecutor can do so. Although it is most beneficial to deter the most egregious offenses, reduced precision in marginal ones is no reason to discard historical price analysis altogether.⁶⁰

Nor are unreliable cash price data an insuperable obstacle. Like past artificialities, measurement errors simply add noise to the historical data; they are less precise as a result. As before, the lower precision favors the accused, but mainly in borderline cases. Moreover, as a practical matter, cash price data, though much maligned, are frequently quite precise. For example, my analysis (in conjunction with Roger Kormendi and David Haddock) of grain futures markets in the 1980s demonstrates that grain cash bids (which are belittled by some industry participants) actually perform quite well when evaluated by objective standards.⁶¹

With respect to vagueness, complexity, and rigidity, it should be noted that these tests are anything but vague; there is a huge amount of literature describing the proper way to execute these tests. Moreover, courts have shown an ability to interpret statistical evidence in securities fraud, merger, antitrust, and affirmative action cases. Because the tests proposed here are typically more straightforward and more readily motivated and explained than those employed in these other settings, it is clear that they are not beyond the capacity of a court to utilize. Nor is rigidity a problem unless artificial rules are established limiting the use of the tests.

The alleged inability to detect failed manipulations is not especially damaging either. First, there are numerous historical examples of severe price distortions prior to and contemporaneous with the collapse of manipulations.⁶² Second, if an attempted manipulation has no pronounced

60. See generally Note, *The Delivery Requirement: An Illusory Bar to Regulation of Manipulation in Commodity Exchanges*, 73 YALE L.J. 171 (1963) (making similar argument). "While some miscreants may inevitably escape under the cover of ambiguity, this is not a sound reason for refusing to punish those who cannot." *Id.* at 184.

61. S. CRAIG PIRRONG ET AL., *GRAIN FUTURES CONTRACTS: AN ECONOMIC APPRAISAL* 9-50, 107-38 (1993).

62. See generally WILLIAM G. FERRIS, *THE GRAIN TRADERS* (1988); 1 *HISTORY OF THE BOARD OF TRADE OF THE CITY OF CHICAGO* (Charles H. Taylor ed., 1917); 2 *id.* As an

price effects, then the manipulation is not particularly costly and, therefore, not worth the expense of prosecution. In other words, it is wasteful to prosecute those who act with malicious intent but who inflict no harm.

Given past criticisms of futures markets, the elastic use of the word "manipulation," and the frequent overreaching of self-appointed guardians of market integrity, one can imagine that some overly aggressive regulator could use a statistical test to declare certain large price shocks resulting from large fundamental changes as the product of manipulation to justify an intervention into the price determination process. However, because the existing manipulation standard also requires findings of causation and intent, it is unlikely that a price change alone is sufficient cover for such an action. Moreover, one should not discard a useful tool because it may be misused. Finally, manipulation causes large changes in *relative* prices, while most fundamentally driven price shocks (e.g., weather announcements during the 1988 drought) do not alter relative prices drastically. Therefore, if applied correctly by focusing on relative price changes, a price artificiality test for manipulation is a legitimate tool and is unlikely to be vulnerable to opportunistic exploitation.

It is patently false to claim that statistical comparisons assume constant supply and demand conditions. In fact, the proposed statistical tests recognize, and explicitly correct for, fundamental variability. In reality, the key assumption underlying the analysis is that the conditions prevailing at the time of the alleged manipulation were within the bounds of the experience that generated the observed data set. Larger data sets can therefore reduce the severity of this problem. Moreover, truly remarkable conditions should be readily identified. It is unlikely that an event that would cause an extreme price change would go unnoticed; if no one noticed the unique shock, how could it cause the price change? Finally, because manipulation distorts relative prices, any condition (other than manipulation) that causes an observed price change must occur in a fairly circumscribed market—the delivery market. Again, it is unlikely that any event that would cause such a noticeable distortion in such a narrow region would pass unobserved.

This discussion relates to the CFTC's assertion in *Indiana Farm Bureau* that it is necessary to examine "aggregate forces of supply and demand" in

example, the collapse of the Leiter corner in 1898 resulted in a nearly 39% price decline in a period of minutes. See *id.* at 967-69. The collapse of the gold corner during "Black Friday" in 1869 resulted in an equally calamitous price shock. See KENNETH D. ACKERMAN, *THE GOLD RING 189-91* (1988).

order to determine whether a price is artificial.⁶³ This is an invitation to obfuscation. In particular, it ignores the main virtue of prices—their ability to summarize immense quantities of information dispersed among millions of individuals, information that would be impossible for any individual or group to collect, organize, or articulate coherently.⁶⁴ The alternative is to rely upon ad hoc theorizing and incomplete information. Moreover, discarding the explicit use of historical price data does not eliminate the need to rely upon some set of historical facts. Any analysis of "aggregate forces of supply and demand" presumes some underlying model of how these forces interact to determine price. Such a model is almost certainly based on some basic theory calibrated to some set of historical observations. Unfortunately, these historical observations are almost certainly imperfectly remembered and haphazardly interpreted and, therefore, vulnerable to criticism of subjectivity and incompleteness by the accused manipulator. It is also clear that these judgments are still at least implicitly based upon historical data, but such data are not rigorously tested. Furthermore, such a standard provides the perfect opportunity for the accused to construct an elaborate theory and provide superfluous and misleading evidence with no purpose other than to sow confusion. As a result, an expansive review of more basic supply and demand factors should at most supplement, and not supplant, a rigorous analysis of price data.

The criticism that futures prices are inherently artificial is also far off-base. Futures prices are not, as Lower claims, "divorced from the actual supply and demand" situation specific to any time and place.⁶⁵ In fact, the delivery requirement ensures that futures prices are determined by the anticipated supply and demand situation at a very specific place and a very specific time—the delivery point during the delivery period.

Finally, the analysis in Part III demonstrates clearly that the exercise of market power has far different effects on prices than "unusual," but competitive, supply and demand conditions. In particular, the burying the body effect is unique to a corner.

In sum, although some seminal court cases have relied upon historical data of price artificiality to determine whether a corner or squeeze in fact

63. Indiana Farm Bureau Coop. Ass'n, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,288 n.2 (Dec. 17, 1982).

64. See THOMAS SOWELL, KNOWLEDGE AND DECISIONS 78-80 (1980); F.A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519, 524-29 (1945).

65. See Lower, *supra* note 54, at 393-94.

occurred, recent regulatory decisions and scholarly analysis discount the validity of historical price comparisons. This skepticism is entirely unwarranted and undermines one of the primary methods of detecting and proving manipulation. As the discussion here suggests, historical price data can provide a highly reliable (although not infallible) way to establish that someone has exerted market power. Indeed, it is difficult to see how one could prosecute manipulators without some reliance on price data. As one commissioner noted in his dissent in *Cox*, the interpretation of historical data implicit in recent manipulation cases suggests that *ex post* adjudicators cannot rely on *any* data in manipulation cases.⁶⁶ If this is true, there is a very high probability that anyone attempting a manipulation could escape punishment, for the main evidence of his conduct would be inadmissible. This is one reason why manipulation is not prosecutable under current law. Unfortunately, it is not the only reason. As the following sections show, the prevailing interpretations of causation and intent also benefit would-be cornerers.

2. Causation

Assuming that a price artificiality has been proved, courts and regulatory agencies have established that a finding of manipulation against a particular trader requires a demonstration that the trader had the power to cause the artificiality. Demonstration of this power to cause price changes is analogous to the demonstration of market power in an antitrust case.⁶⁷ Parallel to the structure of an antitrust case, the demonstration of causation in manipulation cases has proceeded in two steps: (1) definition of the relevant market and (2) presentation of evidence that the accused manipulator had the ability to affect price in the market as defined. Although theoretically appropriate in certain circumstances, in practice, this two-step test has produced some extraordinarily convoluted reasoning and has created some dangerous precedents.

The analysis in Part III suggests that a trader can exert market power by holding claims granting ownership to the deliverable grade in the delivery market in excess of the quantity in store there at contract expiration. These

66. Cox, [1986-1987 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786, at 34,076 (July 15, 1987) (Comm'r West, dissenting).

67. Richard D. Friedman, *Stalking the Squeeze: Understanding Commodities Market Manipulation*, 89 MICH. L. REV. 30, 44-46 (1990) (comparing demonstration of ability to cause price changes to demonstration of market power in antitrust cases).

claims can consist of either long futures positions or direct ownership of the physical commodity. In all of the relevant cases the courts and commissions have used some variant on this criterion to determine whether traders possess market power. Unfortunately, they have too often stumbled in the seemingly straightforward task of defining the deliverable stock.

The two most damaging cases are *Indiana Farm Bureau* and *Cox*. In the former, a total of 4.6 million bushels of corn were in store in Chicago (the delivery point), while the Bureau's position was only 2.5 million bushels.⁶⁸ At first blush, it appears that the Bureau's position was too small to confer market power. However, inquiries revealed that the vast bulk of the stocks in Chicago were committed to firm export sales.⁶⁹ According to CFTC Division of Enforcement investigations, only 511,000 bushels of free stocks of corn were readily accessible for delivery; 4.1 million bushels were committed to firm export sales.⁷⁰

This disparity resulted in considerable confusion. The ALJ and the CFTC commissioners both declared the deliverable supply to be 4.6 million bushels and, therefore, doubted whether any actions by the Bureau could have inflated prices artificially.⁷¹ The ALJ and the CFTC commissioners discounted the importance of committed stocks.

This interpretation is subject to dispute. The model in Part III did not explicitly address the issue of commitment, but it can be modified to do so in order to reveal the defect in the reasoning in *Indiana Farm Bureau*. Specifically, delivering committed stocks may impose transactions costs on the short. Moreover, the model in Part III implicitly *assumed* that the large long sold the commodity delivered to him in a competitive market immediately after the delivery period. If this assumption changes, and the long instead acts as a postdelivery monopolist, commitment of stocks may become a very important factor.

A grain merchandising firm that has committed to supply a customer with a given quantity of grain at a given time may incur severe costs if it is unable to fulfill this contractual obligation. There may be explicit penalties for default. The firm may also be forced to pay demurrage on ship or rail

68. *In re Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,287, 27,308 (Dec. 17, 1982).

69. *Id.*

70. *Id.*

71. *Id.*

transport committed to move the stocks. More importantly, a firm that earns a reputation for poor contractual performance is likely to operate at a disadvantage in this extremely competitive business. In order to avoid defaulting, a firm may have to make costly logistical adjustments in order to accommodate the disruptions that occur when it delivers committed stocks against futures.

These factors influence the willingness of merchants to supply stocks committed to fulfill obligations to shorts for delivery during a potential manipulation; thus, they affect the marginal cost of delivery. The transaction costs of making delivery arising from a default on an export commitment or logistical adjustment are a form of economic friction that can make market power manipulation profitable.

Moreover, owners of committed stocks in the delivery market realize that if control of these stocks falls into the hands of a single party, they are faced with several unpalatable options. They may (1) fail to meet their contractual obligations and bear the explicit penalties and the costs arising from reputational loss; (2) attempt to acquire replacement stocks outside the delivery market and transport them to an export point; or (3) repurchase the stocks from the trader who took delivery.

If the trader who took delivery can act as a monopolist instead of a competitor, the trader can charge the merchants a high price for the stocks. This is true because the first two options are very costly. Moreover, it is quite likely that the manipulator *can* indeed act as a monopolist in the spot market because the source of his market power is the ability to price discriminate intertemporally. The manipulator can intertemporally price discriminate because the necessity of timely delivery on export commitments makes the merchants more willing to pay more for immediate return of the stocks than for their return at some time in even the near future. Current owners of the stocks—the grain merchants with export commitments—recognize that if they sell their stocks to shorts to permit them to satisfy delivery obligations, then they are likely to pay a monopoly price to reacquire them. As a result, they are willing to sell their stocks only at the high, monopoly price. This analysis implies that it is inappropriate to ignore commitment of stocks.

A similar issue arose in *Cox*, in which there was a dispute over the willingness of millers to make their stock of wheat available to shorts.⁷² Another question of delivery stock definition also caused contention in that

72. *Cox*, [1986-1987 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786, at 34,059-60 (July 15, 1987).

case. Specifically, the accused manipulator argued that stocks of wheat outside the delivery point (Chicago) should be included when calculating the deliverable supply; these stocks included wheat owned by the principal short, Cook Industries (Cook), contained in barges on the Missouri River near Kansas City.⁷³ Cook intended to sell this wheat for export at New Orleans.⁷⁴ The commissioners accepted this broad definition of deliverable supply and calculated that twenty-six million bushels of wheat were available for delivery.⁷⁵ The fact that this supply was larger than the position owned by the alleged manipulators implied that they could not have caused any artificial price movement.

The argument supporting this position defies logic. For example, the commissioners argued that shipment of the wheat in Kansas City to Chicago was economic because Cook intended to ship it to New Orleans, and New Orleans is farther (as the barge floats) from Kansas City than Chicago is.⁷⁶ This statement is consistent with the physical geography of the case, but ignores the relevant economic geography. Of course, it was physically possible to ship the grain to Chicago; the appropriate question is, however, whether this was an economic transaction. If it was not, the short would have rationally paid a noncompetitive price to liquidate his futures positions in Chicago rather than deliver his Kansas City wheat.

The economics of manipulation demonstrate that the necessity of distorting the direction and timing of commodity flows in order to enhance delivery market stocks is just what allows the manipulator to inflate prices.⁷⁷ It is clear that the diversion of the Kansas City wheat to Chicago would have caused such a distortion; if Chicago was the most valuable destination for Kansas City wheat, why did Cook plan to ship it to New Orleans instead? The reasoning in *Cox*—namely, that the physical ability to move stocks into deliverable position makes them part of the deliverable

73. *Id.* at 34,062.

74. *Id.*

75. *Id.* at 34,063.

76. *Id.*

77. See Pirrong, *supra* note 15, at 339-55. The decision in *Cox* is also contrary to a stated objective of the CEA. As a part of the CEA's clear antimanipulation intent, § 5a requires exchanges to choose delivery points and delivery differentials in order to prevent the disruption of commodity flows. 7 U.S.C. § 7a(10) (1988 & Supp. V 1993). *Cox*, in contrast, encourages such distortions.

supply⁷⁸—makes it virtually impossible to prove causation because the quantity of stocks that could be moved to the delivery market is quite large. Because many of the stocks that *could be* moved *should not be* shipped there, however, it is clear that situations will arise in which a large trader effectively exploits market power but can plausibly claim that the precedent of *Cox* implies that he is blameless. The *Cox* decision, therefore, is a strong card that a manipulator can play in his defense.

There are other problems with *Indiana Farm Bureau* and *Cox*. Most importantly, they beg the following question: If deliverable supplies were indeed so large, why (in the absence of any new fundamental information) did shorts bid up the price so dramatically? This is most clearly evident in *Indiana Farm Bureau* because the price rise was so large⁷⁹ and because in *Cox* there was some dispute concerning whether shorts would have had the time to deliver the supplies in Kansas City and elsewhere.⁸⁰

Recall that in *Indiana Farm Bureau*, there was considerable disagreement concerning the size of the deliverable stock of corn; estimates varied from about 500,000 bushels to over four million bushels.⁸¹ If the latter estimate was correct, shorts would have been able to acquire more than enough corn to cover their outstanding futures commitments at prices far lower than the \$3.90 per bushel that they willingly paid to liquidate their futures positions. Thus, if one presumes that shorts were rational and acting in their own self interest, the decision in *Indiana Farm Bureau* cannot adequately explain how the price change resulted, and the commissioners advanced no other plausible explanation for it. In other words, the price data strongly suggest that deliverable supplies were far smaller than four million bushels, but an expansive definition of the deliverable stock essentially removes the fact of the price change from the debate. This conflict is especially apparent in the concurring opinion of Commissioner

78. *Cox*, [1986-1987 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786, at 34,062-63.

79. *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,307-08 (Dec. 17, 1982).

80. *Cox*, [1986-1987 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786, at 34,062-63. The dispute in *Cox* over whether shorts would have had the time to deliver the supplies raises questions concerning the culpability of shorts in failing to prepare to make deliveries, which I discuss later.

81. *Indiana Farm Bureau*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,287

Johnson, who found the price artificial, but claimed that the Bureau had no power to affect the price because deliverable supply was so large.⁸² Because Commissioner Johnson advanced no other cause of the artificial price, it is impossible to reconcile these competing claims.

Other decisions (including *Cargill* and *Great Western*) do not include such egregious errors, but rely upon similar reasoning. That is, they compare some estimate of deliverable stock with the size of the accused's position to determine whether he had market power. In each case, the fact finders used a priori considerations to include or exclude certain stocks from the deliverable supply. In *Cargill*, for instance, the court excluded hard wheat,⁸³ in *Great Western*, the court excluded fresh eggs.⁸⁴ In each case, the court decided these alternative sources were excessively expensive.⁸⁵

Although these decisions are more defensible than those made in *Indiana Farm Bureau* or *Cox* (because the findings in *Cargill* and *Great Western* are consistent with the observed price pattern), they are still fundamentally ad hoc and leave open the possibility of future errors. Unlike *Volkart*, *Indiana Farm Bureau*, *Cox*, and *Abrams*, *Cargill* and *Great Western* explicitly recognize that the costs of obtaining supplies for delivery are relevant. Because the courts and commissions are ill-equipped to determine these costs, however, it is by no means clear that they will be able to evaluate accurately an accused manipulator's market power. The courts and commissions will be unable to assess adequately the accused's ability to "cause" an artificial price. Indeed, the market price at contract expiration implies a *lower bound* on these costs and provides the most reliable estimate of them. Thus, the deliverable supply test essentially collapses into a price artificiality test.⁸⁶

82. *Id.* at 27,290 (Comm'r Johnson, concurring).

83. See *Cargill, Inc. v Hardin*, 452 F.2d 1154, 1165-66 (8th Cir. 1971).

84. See *Great W Food Distribs., Inc. v Brannan*, 201 F.2d 476, 480-81 (7th Cir. 1953).

85. See *Cargill*, 452 F.2d at 1165-66; *Great Western*, 201 F.2d at 481.

86. Evidence from *Indiana Farm Bureau* provides further illustration of this fact. Specifically, the delivery stock estimates provided by the CFTC's Division of Enforcement conflict with the facts of the case. The Commission's staff estimated that deliverable stocks were only about 500,000 bushels, but the Farm Bureau took delivery of over two million bushels. *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,786, at 27,280 (Dec. 17, 1982). This again illustrates that delivery stock estimates may be arbitrary when issues like commitment and the ability to bring new supplies

In many respects, the analysis of deliverable supplies resembles the vacuous debates over market definition that occur in antitrust cases. In antitrust cases, the existence of a variety of substitutes in consumption and production makes it impossible to demarcate firm divisions between different markets. As a result, accused manipulators attempt to define the market as broadly as possible, and the accusers attempt to define it as narrowly as possible. Similarly, in manipulation cases, issues of commitment and economic geography make it difficult to establish definitively what the deliverable stock is and, therefore, what the relevant marginal cost of delivery is. If manipulation cases turn on definitions of deliverable supplies, they may simply decay into struggles to draw firm boundaries where none naturally exist. Establishing the quantity of a commodity available at the competitive price requires information on the value of the alternative uses of the various stocks. This information is held by many individuals and may be extremely difficult to articulate. The history of antitrust analysis suggests that, given the vagaries inherent in such a situation, confusing debates and incoherent outcomes are inevitable.⁸⁷ In other words, deliverable supply estimates provide little information not already contained in prices, and making a manipulation conviction turn on inevitably artificial estimates of supplies invites confusion and contradiction. *Indiana Farm Bureau* and *Cox* are two examples of how this can happen in manipulation cases.

There are other problems with the accepted view on causation. Most importantly, the precedents set by *Volkart*, *Indiana Farm Bureau*, and *Cox* may allow a long manipulator to escape unscathed by arguing that the shorts, rather than a large long, "caused" the artificial price. For example, the *Volkart* court found that there was substantial uncertificated cotton (i.e., cotton not regular for delivery) that the shorts could have made deliverable through some effort, but did not: "Unless the shorts are to be excused from the performance of their contracts and from the *exercise of due diligence to that end*, the ample supply of uncertificated cotton must be considered as

to the market are relevant. Under these circumstances, the amount that will be delivered is an increasing function of price. That is, there is no single number that gives "the" deliverable stock. Price changes around contract expiration are the most reliable estimates of the marginal cost of delivering the commodity. Thus, a priori estimates of deliverable stock provide little information not already communicated by prices. In his concurring decision, Commissioner Stone criticized the "binary treatment" of stocks as deliverable or unalterably committed regardless of price. *Id.* at 27,302 (Comm'r Stone, concurring).

87 See ROBERT H. BORK, *THE ANTITRUST PARADOX* 116-33 (1993).

available to them."⁸⁸ In the eyes of the court, the shorts were responsible for their own predicament. This reasoning, like that in *Indiana Farm Bureau* and *Cox*, implicitly assumes that the cost of making the uncertificated cotton deliverable was trivial; however, this is difficult to reconcile with the behavior of the shorts in bidding up the futures price. In *Indiana Farm Bureau*, the majority decision declared: "That shorts with no delivery capacity chose to bid up the price rather than seek cash corn is not evidence of manipulative activity on the part of the longs."⁸⁹ The shorts were irresponsible, and thus the price change was largely attributable to them; they had no business staying short that late in the delivery month. In *Cox*, the commissioners also substantially blamed the shorts who kept their positions open without preparing for delivery for any resulting price increase.⁹⁰

These decisions conflict sharply with *Cargill* and *Great Western*, which imply that shorts are not obligated to purchase fancy grades, or to go outside the delivery market, in order to acquire deliverable supplies.⁹¹ The court's decision in *Cargill* is especially instructive in this regard. The defendant in *Cargill* argued:

[I]t is clear that if the long is not permitted to ask what, in his judgment, is a price reflecting the cost of bringing in wheat from outside, the futures market is no longer reflecting the real supply-demand situation, but is artificially low, and the prices are therefore useless to the trade and nation.⁹²

In a stinging rebuke, the court replied: "It is this price [i.e., the price that reflected the cost of out-of-town wheat] which was artificially high and therefore useless to the trade and nation."⁹³

Indiana Farm Bureau, *Cox*, and *Volkart* contain no such limits on the actions that shorts must take in order to satisfy the demands of a large long.

88. *Volkart Bros. v Freeman*, 311 F.2d 52, 60 (5th Cir. 1962) (emphasis added).

89. *Indiana Farm Bureau*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,289 n.18.

90. *Cox*, [1986-1989 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 23,786, at 34,062 (July 15, 1987).

91. *Cargill, Inc. v Hardin*, 452 F.2d 1154, 1165-66 (8th Cir. 1971); *Great W Food Distributions, Inc. v Brannan*, 201 F.2d 476, 481 (7th Cir. 1953).

92. *Cargill*, 452 F.2d at 1173.

93. *Id.*

These cases can be read to mean that if shorts can acquire supplies for delivery—no matter how uneconomical the source—a large long can be found innocent of a manipulation if the shorts fail to do so, but instead consent to liquidate at high prices. The economic analysis of manipulation reveals that such an interpretation would render any antimanipulation statute meaningless.

Although there is some merit in giving shorts an incentive to take actions (such as preparing for delivery) that mitigate a long's market power, the wording in *Indiana Farm Bureau*, *Cox*, and *Volkart* is so broad that it could provide considerable legal cover for a would-be manipulator. Note that shorts with positions equal in total size to the manipulator's position must remain in the market at the latter's sufferance. Even if shorts *desire* to close their positions prior to the expiration of the contract, they cannot do so unless the long sells to them. Thus, although the wording in *Indiana Farm Bureau*, *Cox*, and *Volkart* suggests that shorts have the option to leave the market unilaterally, this is not the case.

Moreover, if the failure of shorts to make delivery is considered evidence of their culpability for a corner—and a fair reading of *Indiana Farm Bureau*, *Cox*, and *Volkart* would clearly support such a position—it is nearly impossible to find a long guilty of market power manipulation. Recall that a profit maximizing manipulator liquidates some contracts at a price that exceeds the competitive price, but at a price that is low enough to make it rational for some shorts to liquidate rather than deliver. That is, the manipulator exploits the fact that it is costly for the shorts to deliver in order to "blackmail" them into liquidating at high prices. Because a successful manipulation always involves a substantial number of liquidations, if the failure of shorts to deliver is in itself considered sufficient to absolve a large long from any responsibility for an artificial price, then by definition manipulation cannot occur.

One may object that the causation theory advanced in *Indiana Farm Bureau* (the *Indiana Farm Bureau* rule) is desirable because it gives shorts an incentive to take actions that make manipulation less likely. It is indeed the case, under this rule, that shorts have a strong motive to take such precautions and that this will reduce the vulnerability of futures markets to manipulation. The relevant question, however, is whether it is efficient to rely primarily upon the efforts of shorts to prevent manipulation, or whether it is better instead to impose sanctions on longs who exercise market power regardless of whether shorts take precautions or not.

In order to answer this question, it is necessary to analyze how the behavior of market participants changes when the different rules are implemented. Under the *Indiana Farm Bureau* rule, shorts have no recourse against a corner unless they take actions to secure deliverable supplies. As interpreted in *Cox*, such actions may include the distortion of normal commodity flows in order to enhance deliverable stocks.⁹⁴ Alternatively, shorts may attempt to liquidate their futures positions long before the end of the delivery period. Shorts possess greater flexibility in acquiring deliverable stocks the more time they have to make delivery. This flexibility reduces the marginal cost of delivery; therefore, a large long possesses less market power when shorts attempt to liquidate early. The large long's market power is not necessarily eliminated, however.

Acting rationally under the *Indiana Farm Bureau* rule, shorts will take precautions until the marginal cost of precautions equals the marginal benefit. The marginal benefit of precautions equals the expected savings to shorts attributable to a lower probability and a reduced severity of corners. In this legal regime, rational shorts will take precautions that lead to increases in deliverable stocks, premature termination of futures positions, and excessive searching to obtain deliverable supplies relative to what would occur in a legal regime that effectively deters the exercise of market power by long traders. All of these actions are costly. For example, continuously holding large deliverable stocks of corn in Chicago may well reduce the probability of manipulation, but it also leads to the construction and use of more storage space in Chicago; the reduction of corn consumption outside of Chicago; and the use of more railroad, barge, and trucking resources to transport the extra corn to that city. Similarly, early liquidation of futures positions may reduce hedging effectiveness. Just as the possibility of burglary induces homeowners to expend real resources on locks, alarms, and guard dogs in order to reduce the likelihood of theft, the possibility of manipulation induces shorts to expend real resources to reduce the likelihood and severity of manipulation. These are the deadweight costs of the *Indiana Farm Bureau* rule.⁹⁵

94. *Cox*, [1986-1987 Transfer Binder] Comm. L. Fut. Rep. (CCH) ¶ 23,786, at 34,062, 34,067

95. Fischel and Ross argue that manipulation is "self-deterring" because the possibility of manipulation gives shorts a strong incentive to obtain additional deliverable supplies. See Fischel & Ross, *supra* note 9, at 544 n.182. This is true, but it is not sufficient to justify reliance upon short self-protection to deter market power manipulation. These actions by

These deadweight costs are likely to be large. This conclusion is strengthened when one recognizes that when deciding on the number of precautions to take, shorts have very poor information. The number of precautions taken by an individual short depends upon both the size of positions held by long traders and the number of precautions taken by other shorts. Individual shorts are likely to know little about either. As a consequence of this poor information, the level of precautions taken will differ dramatically from those that would be appropriate under the *Indiana Farm Bureau* rule if knowledge were perfect. Therefore, given the vagaries of information, shorts will sometimes take too many precautions under this rule. Sometimes they will take too few.⁹⁶ When shorts take too many precautions, deadweight losses result in the form of excessive storage and transportation costs. When shorts take too few precautions, corners with their attendant deadweight losses will occur. Corners will occur because under the *Indiana Farm Bureau* rule, longs know that they are immune from sanction for manipulation when shorts take few precautions.⁹⁷ Thus,

shorts distort consumption and production decisions. Therefore, even if they markedly reduce the frequency and severity of corners, it is more efficient to deter manipulation through legal sanctions if the costs of deterring manipulation in this manner are smaller than the deadweight costs attributable to the distortions inherent in short self-protection. In other words, the fact that shorts take precautions against corners does not imply that legal prohibitions against manipulation are superfluous, as suggested by Fischel and Ross. *See id.* at 547-49.

96. Shorts may take few precautions for another reason as well. Specifically, if there are many shorts, a "free rider" (i.e., externality) problem may exist. The preparations taken by individual short *A* benefit other shorts because all shorts benefit from any action that reduces the probability and severity of corners. However, short *A* will not take the benefits accruing to other shorts into account when deciding upon the level of precautions to take. As a result, the other shorts free ride off of *A*'s efforts. Similarly, *A* free rides off of the efforts of other shorts. It is well known that the existence of such a positive externality induces the shorts to take too few precautions.

The existence of this type of free rider problem creates an incentive for a single trader to consolidate all of the short positions and thereby internalize the externality. This may not be a practical response in futures markets. Wealth constraints and/or risk aversion may preclude one trader from assuming the entire open interest. Moreover, in the present regulatory environment, position limits would make it very difficult for a single individual or firm to acquire all open short positions.

97 In essence, under *Indiana Farm Bureau* and *Volkart* it is axiomatic that if a corner occurs, the shorts failed to take sufficient precautions. *See generally* *Volkart Bros. v. Freeman*, 311 F.2d 52 (5th Cir. 1962); *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796 (Dec. 17, 1982). Moreover, under

substantial deadweight costs are inevitable if the *Indiana Farm Bureau* rule becomes the recognized standard for deciding guilt in a manipulation case.

There are no analogous incentive distortions in a legal regime that penalizes the exercise of market power by longs regardless of short precautions. Deterring longs from exercising market power during the delivery period does not confer market power on shorts.⁹⁸ Thus, this form of deterrence makes the market competitive during the delivery period. In such a competitive market, if shorts are subject to severe penalties for defaulting on their contractual obligations, they have incentive to bring the socially optimal supplies to the delivery point, liquidate their contracts efficiently, and search the right amount for cash supplies. As a result, the only cost of sanctioning longs for the exercise of market power is the administrative cost of enforcing antimanipulation rules.⁹⁹ There are no deadweight distortions analogous to those inherent under the *Indiana Farm Bureau* rule.¹⁰⁰

these two decisions, such a failure on the part of shorts is sufficient to absolve the cornerer from any legal responsibility. Thus, taken to their logical conclusion, these decisions return us to the *laissez-faire* regime that prevailed prior to the passage of the Grain Futures Act and the CEA.

98. See Pirrong, *supra* note 15, at 359-60 (showing that manipulation by short traders is extremely unlikely if conditions favor execution of long manipulation). Deterring long manipulation, which has historically been far more prevalent than short manipulation, essentially makes the market competitive during the delivery period. In other words, if a corner is analogous to pulling on a rope, shorts who attempt to exercise market power at the end of the delivery period will have as much success as someone who tries to push a rope.

99. The *Indiana Farm Bureau* rule may actually inflate the costs of enforcing antimanipulation laws as well. In order to reach a verdict in a case under this rule, it is necessary for the fact finder to determine whether the short took the proper precautions. Such an investigation is costly, but would be unnecessary under the alternative rule that simply proscribes the exercise of market power by longs regardless of the precautions taken by shorts. Moreover, it is uncertain how much preparation by shorts is enough. This inherent ambiguity is costly to resolve. Such resolution would be unnecessary under the alternative rule. Finally, the *Indiana Farm Bureau* rule increases the returns to manipulation because a cornerer can escape punishment if shorts are found culpable. This increase in the returns to manipulation should increase its frequency, thereby increasing the number of cases that arise under the anti-corner provisions of the CEA. All of these factors tend to make the *Indiana Farm Bureau* rule more costly to implement than the alternative rule. As a result, the *Indiana Farm Bureau* rule is likely to entail both higher deadweight costs due to excessive precautions by shorts and higher litigation expenses.

100. The underlying reason for placing the onus for deterring manipulation on shorts in *Volkart*, *Indiana Farm Bureau*, and *Cox* seems to be a fear that prosecuting manipulators

would give shorts an incentive to evade their contractual obligations, which would compromise the surety of performance on futures contracts. In *Volkart*, the New York Cotton Exchange submitted an amicus curiae brief which stated that a finding of manipulation in that case would allow shorts to escape their delivery obligation and, therefore, undermine the markets. *Volkart Bros. v Freeman*, 311 F.2d 52, 57-58 (5th Cir. 1962). The court relied upon similar reasoning in its decision:

The petitioners can be held to a purpose to create prices not responsive to the forces of supply and demand *only upon the assumption that shorts should not be held to their contract obligation to deliver the cotton*. For the respondents to proceed on the assumption that the shorts should not be required to deliver at maturity would be to put them in the position of regulating a gambling institution rather than a legitimate futures exchange. That, of course, was not the intention of the statutes prohibiting manipulation.

Id. at 60 (emphasis added) (citations omitted).

This reasoning is specious. Imposing sanctions on large long traders who corner or squeeze a market does not free shorts from their obligation to perform on their contracts. Under the operation of a legal regime that imposes penalties on traders who exercise market power, exchanges can (and should) continue to take strong measures to give shorts and longs an incentive to perform. Although enforcing strict performance on contracts may allow a large long to manipulate the market, *see generally* Friedman, *supra* note 67, such bad behavior can be deterred by imposing sufficiently punitive sanctions on those who do so. In other words, although the large penalties for defaulting on contracts facilitate manipulation, it is a *non sequitur* to assert that sanctioning traders who exercise market power makes default by shorts attractive. Sanctioning shorts for failure to perform and sanctioning longs for cornering are two separate, independent, and mutually compatible actions.

The hostile attitude toward shorts expressed in *Volkart*, *Indiana Farm Bureau*, and *Cox* echoes the sentiments of exchanges during the preregulation era of futures trading. During this era, exchange members frequently blamed shorts for corners and argued that shorts deserved no protection against the demands of large longs. For example, a CBOT committee investigating an alleged barley corner asserted in 1869 that "the market is virtually cornered by reason of parties selling that which they did not possess at the time of making their contracts, and which they could not procure at the time of the maturity of such contracts." 7 U.S. FED. TRADE COMM'N, *supra* note 26, at 252 n.3. Similarly, the secretary of the Minneapolis Chamber of Commerce (a grain exchange) stated:

[S]peaking frankly, I would say that some of those who have cried out against alleged manipulations in the markets have been conducting their own business in a rather unintelligent fashion in permitting their hedges to remain until the last hour, hedging grain that was not geographically so located to be deliverable there, possibly grain that is not deliverable there.

2 U.S. FED. TRADE COMM'N, REPORT OF THE FEDERAL TRADE COMMISSION ON THE GRAIN TRADE: TERMINAL GRAIN MARKETS AND EXCHANGES 17 (1920).

This reasoning contradicts the correct economic justification for futures markets. Futures markets serve an important economic purpose because (1) they allow traders in all markets (not just the delivery markets) to hedge their transactions by selling futures in a

The foregoing analysis implies that the *Indiana Farm Bureau* rule is more efficient than an alternative rule that punishes manipulators even if shorts fail to take these precautions, if (and only if) the costs of precaution and corners are less than the costs of detecting and punishing traders who exercise market power during the delivery period. Because it is possible to detect and punish market power manipulators with high probability,¹⁰¹ it is possible to deter the exercise of market power at very low cost through the use of an alternative legal rule that bans market power manipulation regardless of the actions of shorts. As a result, it is highly unlikely that it is cheaper to deter manipulation by inducing shorts to secure deliverable supplies that are larger than would be optimal if all traders act competitively than it is to deter manipulation by imposing sanctions on longs who exercise market power.¹⁰² The *Indiana Farm Bureau* rule, which imposes the primary manipulation deterrence burden on shorts, is therefore objectionable.

The foregoing difficulties presented by *Indiana Farm Bureau* and *Cox* do not exhaust the problems with the current doctrine of causation. Two remaining problems stand out. First, the use of market shares to establish the market dominance of a large trader can be misleading. Second, the case law suggests that ownership of the deliverable commodity is essential to the

central location, and (2) traders with information about fundamentals can trade in order to improve price informativeness without handling the actual commodity. Both of these essential functions require some traders to "sell what they do not possess." Therefore, blaming shorts for squeezes imposes costs on those who are using the markets in a perfectly legitimate and socially useful fashion. Moreover, the use of this logic to absolve cornerers from any responsibility for the exercise of market power rewards those who impose these costs upon the legitimate users.

101. See *infra* part V.B.

102. Steven Shavell argues that *ex post* deterrence (i.e., sanctioning manipulators after they have exercised market power) dominates *ex ante* deterrence (i.e., imposing restrictions such as position limits or intervening in the market before the end of the delivery period in order to prevent the exercise of market power) for offenses that (1) are detected with high probability; (2) cannot occur without the knowledge of the malfactor; and (3) are executed by individuals or firms with substantial wealth. See Steven Shavell, *The Optimal Structure of Law Enforcement*, 36 J.L. & ECON. 255, 261-66 (1993). All three conditions occur in a market power manipulation. See *infra* part V (demonstrating that corners have marked and easily observed effects on prices and quantities). Moreover, corners require substantial planning. Finally, only individuals or firms with large financial resources can corner a market. Because they are almost certain to be detected, wealthy manipulators can be deterred by levying substantial fines upon them.

completion of a manipulation. Because a futures contract and possession of deliverable supplies are perfect substitutes during the delivery period, this suggestion is incorrect.

Consider the use of market share. In all of the major cases, the decision makers have determined the fraction of the open positions owned by the large trader. Although market share and changes in market share can reveal important information,¹⁰³ ownership of a large fraction of the open interest is neither necessary nor sufficient for a successful manipulation. A trader may own 100% of the outstanding positions, but this is of little importance if the marginal cost of delivery is constant over the range of his position. Alternatively, a trader may own a relatively small share but still exercise market power if the marginal cost of delivery is increasing or if there are enough other large traders.

Finally, the case law attaches considerable importance to the alleged manipulator's ownership of the deliverable supply. In *Volkart*, for instance, the court averred: "In most, if not all of the cases in which a trader has been adjudged guilty of manipulation, it has effectively controlled the spot commodity to the extent necessary to enable it to convert its dominant long futures position into an illegal corner or squeeze."¹⁰⁴ In *Cargill*, the court reasoned: "[A] corner amounts to nearly a *monopoly of a cash community*, coupled with the ownership of long futures contracts in excess of the amount of that commodity."¹⁰⁵ Similarly, the ALJ in *Abrams* stated:

It is when [the manipulator] *knows*, by virtue of his ownership of deliverable supply, that supplies will be short that his actions may be considered manipulative.

Unless respondent either physically controls most of the deliverable supply for a given contract, or is otherwise privy to some "inside information" it is not clear how [the respondent] could possibly know what the potential deliverable supply will be at contract expiration.¹⁰⁶

Although none of these statements asserts that ownership of the deliverable is necessary for manipulation, all strongly suggest that it may be

103. See *infra* part IV.C (discussing information revealed by market share and changes in market share).

104. *Volkart Bros. v. Freeman*, 311 F.2d 52, 59 (5th Cir. 1962).

105. *Cargill, Inc. v. Hardin*, 452 F.2d 1154, 1162 (8th Cir. 1971) (emphasis added).

106. *Abrams*, [1987-1990 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 24,408, at 35,785 (Feb. 8, 1989).

very difficult to prove manipulation if the accused does not possess some of the physical commodity. It is clear, however, that a long futures position and a unit of the deliverable commodity are equivalent in their contribution to manipulative profit. This is true because both a futures contract and a unit of the commodity represent a claim on the same commodity in the same market at the same time. Thus, as a logical matter, such a plausible reading of the cases is inconsistent with an understanding of the economics of manipulation.

The reasoning in *Abrams* is particularly troubling. One can interpret the statements made in *Abrams* to mean that a long in possession of the deliverable supply can readily purchase futures contracts at the competitive price from shorts ignorant of this fact; other traders sell freely because they perceive the open interest to be small compared with the deliverable supply, which they presume to be held by competitive traders. Such a situation would certainly benefit the long (as it did in *Cargill*, for instance), but there are cases (the Hunt soybean¹⁰⁷ and Ferruzzi soybean¹⁰⁸ episodes, for example) in which the long either owned no physical supplies, or knowledge of the long's physical position was widespread when he entered the futures market. Thus, secret ownership of the deliverable is not even necessary for a long to acquire a dominant futures position. Moreover, if the trader can acquire the physical commodity at the competitive price from those oblivious to his intent, he should be able to acquire futures contracts at the competitive price as well. As a result, the asymmetric treatment of the physical commodity and futures contracts implicit in the ALJ's argument in *Abrams* is highly suspect.

Read more critically, the ALJ's assertion is nonsense. If the term "deliverable supplies" is interpreted narrowly to mean the stocks certified regular for delivery, the claim is patently incorrect because exchanges regularly publish deliverable supply figures. If the term is interpreted broadly to mean those stocks that could be made deliverable (at unspecified cost), it is clear that the large long could never know for certain "what the

107 See *CFTC v Hunt*, 591 F.2d 1211 (7th Cir. 1979); *Reauthorization of the Commodity Futures Trading Commission: Hearings Before the Subcomm. on Agricultural Research and General Legislation of the Senate Comm. on Agriculture, Nutrition, and Forestry, Part II*, 95th Cong., 2d Sess. 214-16 (1978).

108. See Bruce Ingersoll, *As Congress Returns, Will CFTC Feel the Squeeze on Soybean Flap?*, WALL ST. J., Aug. 22, 1989, at C1, Scott Kilman & Sue Shellenbarger, *Soybeans Sink as CBOT Acts to Avert Squeeze*, WALL ST. J., July 13, 1989, at C1.

deliverable supply will be," no matter how much he owns; he just knows how much shorts *cannot* deliver to him. This may be important information, but it does not provide the certainty that the ALJ erroneously asserts is crucial to a successful squeeze.¹⁰⁹

In conclusion, major precedents concerning the evidence necessary to determine causation in a manipulation case may provide substantial legal shelter to a cornerer. Most importantly, the potential for the accused to refute causation by convincing a court or commissioners that the deliverable supply is large may allow him to escape unscathed. Indeed, because several cases suggest that any supplies that shorts can physically make deliverable should be included in the deliverable supply regardless of the cost of doing so, the concept of deliverable supply is so elastic as to provide no meaningful check on manipulative conduct. Moreover, because these cases can be interpreted to mean that a short who pays a high price to escape his obligation to deliver (regardless of the level of the marginal cost of delivery) is in fact the "cause" of the artificial price, it may be impossible as a practical matter to find any large long trader guilty of manipulation.

Like the current interpretations of price artificiality, one can make a very strong case that several (although not all) causation precedents legalize de facto manipulation. Moreover, the following section demonstrates that the third leg of the prevailing doctrinal triad—intent—also places an extreme burden on anyone attempting to prove manipulation.

3. Intent

"[I]ntent," stated the commissioners in *Indiana Farm Bureau*, "is the essence of manipulation."¹¹⁰ Although requiring a finding of an intention to create an artificial price in order to prove guilt is justifiable, the definition of intent that has evolved over time is not. As is the case for price artificiality

109. The ALJ in *Abrams* also stated that because warehouse receipts can be retendered, shorts can deliver an amount greater than the deliverable stocks on hand. *Abrams*, [1987-1990 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 24,408, at 35,782. The ALJ argued that this would constrain the long's ability to influence price. *Id.* This reasoning is incorrect. Warehouse receipts can be retendered only if the long who initially receives delivery sells them. A profit maximizing manipulator who receives delivery of warehouse receipts would only sell them at a price equal to the price at which he is willing to sell futures contracts. Thus, retendered warehouse receipts do not represent an additional source of the deliverable commodity

110. *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,282 (Dec. 17, 1982).

and causation standards, the prevailing intent doctrine seems calculated to permit manipulation in many circumstances. The prime culprits again are *Indiana Farm Bureau*, *Cox*, *Abrams*, and *Volkart*, but the better reasoned opinions in *Cargill* and *Great Western* muddy the waters somewhat as well; indeed, errors in the later decisions stem largely from statements in the earlier ones.

The major problem with the existing case law on intent concerns the notion of a "natural" corner or squeeze. In *Cargill*, the court noted that "[m]any squeezes do not involve intentional manipulation."¹¹¹ They instead arise when an unexpected shortage occurs due to drought, unusually high demand, or transportation problems. Similarly, in *Volkart*, the court cited the Federal Trade Commission's (FTC) landmark grain study from the 1920s as authority for its claim that many squeezes are unintentional, again because events unforeseen at the time a trader creates a position may subsequently confer market power on that trader.¹¹² Moreover, the *Great Western* court also cited the authority of the FTC's study when the court asserted the existence of an unpunishable, "unintentional" corner.¹¹³

It is a short, but incorrect, step from the assertion that exogenous events may facilitate manipulation to the conclusion that if such an event occurs, a trader who exerts market power cannot have intended the result. The *Cargill* court did not take this step. In fact, the court deliberately rejected that conclusion.¹¹⁴ Thus, although the *Cargill* court recognized that natural conditions facilitate some squeezes, the court also recognized that a long trader cannot exploit these conditions. In *Indiana Farm Bureau*, however, the majority of the commission drew the opposite conclusion. According to *Indiana Farm Bureau*, the Bureau did not initiate its position with the intent of manipulating; the Bureau was legitimately hedging instead.¹¹⁵ Between the time the hedge was placed and the contract expired, however, conditions evolved that placed the Bureau in a position to squeeze the market.¹¹⁶ The commission found the Bureau blameless for "seek[ing] the best price from the

111. *Cargill, Inc. v Hardin*, 452 F.2d 1154, 1162 (8th Cir. 1971).

112. *See Volkart Bros. v Freeman*, 311 F.2d 52, 59 (5th Cir. 1962).

113. *Great W Food Distribs., Inc. v Brannan*, 201 F.2d 476, 479 (7th Cir. 1953) (emphasis added).

114. *See Cargill*, 452 F.2d at 1173.

115. *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,286 (Dec. 17, 1982).

116. *Id.* at 27,285-86.

existing situation"¹¹⁷ and asserted that a "long has a contractual right to stand for delivery or exact whatever price for its long position which a short is willing to pay in order to avoid having to make delivery "¹¹⁸ The *Volkart* court reasoned similarly¹¹⁹

According to the CFTC's decision in *Indiana Farm Bureau*, one can infer intent only if a trader deliberately "exacerbates the congestion" at contract expiration.¹²⁰ Exacerbating acts include buying additional futures positions in the delivery period and intentionally decreasing the cash supply¹²¹ Because a trader can amass a position that confers market power without engaging in such acts, it is clear that this opinion—which has been cited as authoritative in the two subsequent manipulation cases of *Cox* and *Abrams*—permits manipulation in many circumstances. Only in a case like *Cargill*, in which the firm engaged in just this sort of conduct, can one infer intent under the guidelines established in *Indiana Farm Bureau*.¹²²

Together, these decisions imply that a trader's intent at the time he *initiates* a futures position is relevant to determining whether his actions during the delivery period are manipulative. It is readily apparent, however, that a trader's state of mind when he creates a futures position has no bearing on either his state of mind during the delivery period or whether he exercises

117 *Id.* at 27,285.

118. *Id.* at 27,286.

119. *See Volkart Bros. v Freeman*, 311 F.2d 52, 59 (5th Cir. 1962).

120. *Indiana Farm Bureau*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,285.

121. *Id.*

122. *Indiana Farm Bureau* contains other examples of peculiar reasoning as well. The majority decision noted that the Bureau utilized the corn delivered to it to satisfy outstanding sales commitments and claimed that this demonstrated that the Bureau's actions were commercially legitimate. *Id.* at 27,286. This is balderdash. The analysis in Part III implies that a trader with an outstanding short position (like the Bureau) is an especially dangerous manipulator because he has already acquired a plot in which to bury the corpse. In *Volkart*, the defendants shorted deferred futures, similarly "insuring" the firm against a drop in price after the termination of the squeeze. *Volkart*, 311 F.2d at 57 The Commissioners' assertion in *Indiana Farm Bureau* also overlooks the fact that the Bureau liquidated a large number of contracts even though it still had some sales commitments that remained open. If the futures market was truly the cheap source of corn (as the Commissioners' logic requires), and if the Bureau needed more corn to satisfy its sales requirements, the Bureau should have taken more deliveries. This reasoning suggests that the Commissioners possessed only a dim understanding of how manipulation works.

market power in the delivery month. The doctrine of a "natural" squeeze provides a large trader with a manipulation option; if the trader creates a large long position for a legitimate hedging or speculative purpose, the trader can exercise his option to squeeze the market if conditions subsequently change to make manipulation profitable. One can imagine the havoc that would result if judges were to find only those who meticulously planned a murder guilty of the crime and to free those who merely killed impulsively when the opportunity presented itself. The precedents in manipulation law create the conditions for such chaos in futures markets.

The reasoning in *Abrams* presents still further difficulties to any attempt to prove manipulative intent. In *Abrams*, the ALJ concluded: "Abrams' actions were taken with the purpose of extracting the best possible price for his long positions, which he established after correctly divining the market's future direction. Under the Commission's precedents, Abrams did nothing beyond what speculators normally do, and indeed must do to make markets function."¹²³ If widely adopted, this reasoning will have mischievous implications. If a rise in price during the delivery period is interpreted merely as evidence of a speculator's prescience in "divining the market's future direction," a large long can effectively escape conviction even if he does manipulate the market.¹²⁴ A successful manipulation *causes* the price to rise. *Abrams* implies that a rise in price is sufficient to deny any intent to manipulate the market because the long can cite this price increase as evidence of his legitimate speculative motives for buying futures. If a price rise is considered dispositive evidence of legitimate speculative intent, and if a finding of manipulative intent is necessary to convict a cornerer, application of the reasoning in *Abrams* makes it impossible to convict a successful manipulator.

Another difficulty with the prevailing view of intent is the emphasis placed on ownership of the deliverable commodity before the completion of a squeeze. *Cargill*, *Great Western*, *Volkart*, *Indiana Farm Bureau*, and *Abrams* all mention the importance of the ownership of deliverable stocks in determining intent.¹²⁵ Again, because such ownership is neither necessary

123. *Abrams*, [1987-1990 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 24,408, at 35,786 (Feb. 8, 1989).

124. *Id.*

125. See *Cargill, Inc. v Hardin*, 452 F.2d 476, 480 (8th Cir. 1971); *Volkart Bros. v Freeman*, 311 F.2d 52, 59 (5th Cir. 1962); *Great W Food Distribs., Inc. v Brannan*, 201 F.2d 476, 480 (7th Cir. 1953); *Abrams*, [1987-1990 Transfer Binder] Comm. Fut.

nor sufficient for a successful manipulation, this emphasis is misplaced and highly misleading. Because a manipulator must take deliveries of virtually the entire deliverable stock, ownership of this stock *after* the expiration of a futures contract is strong evidence that a particular trader intended to corner the market. Thus, courts and the CFTC have focused on the deliverable stock at an inappropriate time.

In conclusion, the precedents concerning intent provide a would-be manipulator with considerable latitude. As long as a would-be manipulator can demonstrate a legitimate intent for initiating a futures position (e.g., hedging or informed speculation) and does not purchase the deliverable commodity, the would-be manipulator can utilize these precedents in his defense.

4. Summary

The existing judicial and regulatory decisions on manipulation resemble a rickety three-legged stool that is ready to collapse under the slightest weight. Each leg—artificial price, causation, and intent—is rotted through. Taken collectively, the relevant decisions (especially the most recent ones—*Indiana Farm Bureau*, *Cox*, and *Abrams*) (1) make it difficult to employ the most valuable evidence concerning price distortions; (2) obscure the determinants of market power; and (3) make it possible for those who intend to exercise market power in the delivery period effectively to deny this intent. With such a collection of precedents, it is no wonder that some believe that the prosecution of manipulation is futile.¹²⁶

It is important to note that the prevailing confusion does not simply jeopardize *ex post* prosecutions of accused manipulators. The confusion also undermines the foundations for interventions by regulators and exchanges, such as emergency actions and forced liquidation (as occurred in the 1989 Ferruzzi episode).¹²⁷ Any exchange or regulatory body that attempts to force a particular trader to liquidate a position because of a fear of an impending manipulation runs the risk that the accused will challenge the action on the ground that existing precedents imply that his actions do not satisfy the

L. Rep. (CCH) ¶ 24,408, at 35,782-85; *Indiana Farm Bureau Coop. Ass'n*, [1982-1984 Transfer Binder] Comm. Fut. L. Rep. (CCH) ¶ 21,796, at 27,285 (Dec. 17, 1982).

126. See *infra* note 138 and accompanying text.

127. The CFTC did not order an emergency action in the Ferruzzi episode; rather, the CBOT did. According to Commissioner Fowler West, the CFTC did not act because it had adopted a definition of manipulation that was so cramped that it was "virtually impossible" to prove the existence of a squeeze. Ingersoll, *supra* note 108, at C1.

established criteria of price artificiality, causation, or intent. It is certainly possible that a court will accept the challenge and overturn the emergency action. Moreover, although subsequent appeals may reinstate the emergency order, given the time required to complete appeals, it is almost certain that the futures contract will expire (and the manipulation succeed) before the process ends. If the trader successfully stalls emergency intervention through the courts, the trader need only worry about *ex post* adjudication. Given the highly favorable odds that the existing precedents provide, the prospect of *ex post* adjudication may be less than daunting.

C. Legal Commentary on Manipulation Law

Given the foregoing analysis, it is unsurprising that the literature on manipulation case law is almost uniformly critical. Some of these criticisms overlap those that I have just made, while others are quite different. The most important difference between these criticisms and mine is that several commentators strongly object to the law's reliance on evidence of price artificiality in deciding manipulation cases.¹²⁸ In contrast, I consider this evidence crucial.

The legal commentators focus on intent or conduct and either denigrate the importance of establishing price artificiality in manipulation litigation or fail to provide any tests to establish the existence of price abnormalities that address the problems raised by *Cox* and *Indiana Farm Bureau*. As a result, the proposed alternatives do not provide a complete methodology that a court can apply to determine whether a particular set of facts supports the conclusion that a trader manipulated the market.

For example, Wendy Perdue proposes the following "price impact" test: Did the trader act as he did in the expectation that his action would affect the market price? But for the anticipated price increase would the trader have engaged in this conduct?¹²⁹ Richard Friedman modifies Perdue's formulation by adding the following question: "If the only sanction for a short's default [on a futures contract] were the ordinary measure of contract damages, would the long trader have withheld supply to a lesser extent than he did?"¹³⁰ Edward McDermott proposes a conduct-based test. Calling for a

128. See *supra* part IV.B.1.

129. See Perdue, *supra* note 54, at 393 ("Prices reflect the conclusions reached by traders after weighing the innumerable conditions that traders consider relevant to predicting future prices.").

130. Friedman, *supra* note 67, at 51.

test analogous to the common-law standard of hindrance, McDermott argues that a long manipulates only if the long "engages in unjustifiable economic transactions [during the delivery period]. In effect, the long buys or threatens to take delivery of the same product twice."¹³¹ In reasoning that parallels that in *Indiana Farm Bureau*, McDermott considers purchases of additional cash or futures contracts during the delivery period to be a hindering action that provides evidence of manipulative intent.¹³² McDermott also argues that holding a futures position that is larger than the deliverable stock is also evidence of manipulative intent.¹³³

These tests do not overcome the obstacles to a successful prosecution of a cornerer laid by the decisions in *Indiana Farm Bureau* and *Cox*. Most importantly, although Perdue's alternative is eminently defensible as a test for intent, it is incomplete because it does not allow a fact finder to determine whether the alleged conduct actually had any impact on price. Moreover, because Perdue attempts to discredit the main means of establishing whether anyone's conduct had an impact on price, she creates a standard that relies upon proof of intent to raise prices without proof that such an increase in price actually occurred.¹³⁴

Furthermore, it is extraordinarily difficult to prove intent (and thus, to implement Perdue's test) without relying upon price data to demonstrate the existence of artificiality.¹³⁵ The defendant can claim other motives for his conduct; therefore, it is necessary to compare the observable implications of the defendant's explanation for his conduct with the implications of the alternative explanation that he acted in order to squeeze the market. Because price effects are among the most important of these implications, that Perdue discredited the utility of price data undermines the most effective means of carrying out her test.

In contrast, Friedman does not discount the use of price data to determine whether a manipulation occurred. To the contrary, he notes that manipulation necessarily distorts prices and, therefore, argues that price data can be very helpful in establishing whether an offense occurred.¹³⁶ Friedman's proposed test is a useful means of refining the inquiry into intent, with the added

131. McDermott, *supra* note 28, at 214.

132. *See id.* at 204-05, 214-19.

133. *See id.*

134. *See supra* notes 55-56 and accompanying text.

135. *See infra* part V.B.1.

136. *See* Friedman, *supra* note 67, at 54-57

advantage that Friedman (unlike Perdue) does not rule out the examination of the most powerful evidence available to implement his test. However, given the current state of manipulation case law and legal commentary and the resulting confusion and suspicion surrounding what constitutes an artificial price, Friedman's test alone is an insufficient foundation upon which to erect a complete legal analysis of manipulation. Moreover, the measure of damages that Friedman uses to motivate his analysis equals the difference between the market price and the but-for-manipulation competitive price.¹³⁷ Friedman's test requires the fact finder to quantify the price distortion. Determining this distortion without relying upon the historical data analysis discredited in *Indiana Farm Bureau* and *Cox* is problematic, to say the least. Thus, implementation of Friedman's test of intent requires a rehabilitation of the price artificiality doctrine.

McDermott's conduct test also fails to address the fundamental problems with manipulation law. Because McDermott's test relies upon deliberate, exacerbating conduct during the delivery period, it is subject to the same criticism as the *Indiana Farm Bureau* decision. Namely, a squeeze can succeed even if the manipulator does not engage in this aggravating conduct. Moreover, the other form of conduct that McDermott deems manipulative—holding a position in the delivery month that exceeds the deliverable stock—requires measurement of this quantity and the definition of the relevant market. As the preceding analysis makes clear, this raises intractable difficulties.

Still other commentators despair altogether of establishing any test or standard that judges can employ to determine whether a defendant has manipulated the market.¹³⁸ These scholars conclude that it is necessary to replace *ex post* adjudication with expansive *ex ante* restrictions on trader conduct. This alternative regulatory structure resembles a civil code system of justice; it attempts to foresee every eventuality, to define clearly the line between allowed and disallowed behavior before any case has arisen, and to intervene while a transgression is in progress.

This view is subject to severe criticism on the grounds that it discards valuable information about the economic effects of any trader's actions that is available only after the fact. Both an *ex post* and an *ex ante* fact finder can determine whether a particular trader engaged in a particular form of conduct. Only the *ex post* fact finder, however, can determine whether that conduct had

137 See *id.* at 48.

138. See Davidson, *supra* note 4, at 1297; Markham, *supra* note 4, at 361-76.

detrimental economic effects. Moreover, only an *ex post* fact finder can observe (1) whether the price in the delivery market plunged after the end of an alleged manipulation, (2) whether the accused manipulator sold the commodity immediately after the delivery period, and (3) whether the accused manipulator both took deliveries and sold futures contracts. The first observation is a crucial test of whether a manipulation occurred, while the second and third observations are necessary to determine whether the accused manipulator acted with manipulative intent. Thus, if closely related forms of conduct can have widely divergent economic effects, *ex post* adjudication dominates because it can exploit more information. *Ex post* adjudication is more discriminating and less likely to demoralize legitimate actions that are difficult to differentiate from illegitimate ones on the basis of information available before the end of the delivery period.¹³⁹

If some forms of conduct are uniformly harmful, there is little difference between *ex post* and *ex ante* measures. The case law and legal scholarship clearly demonstrate, however, that no one has yet established such a "smoking gun," conduct-based test. This is not surprising. An action (e.g., buying a large number of futures contracts or taking deliveries of large quantities) that is manipulative in one set of circumstances is innocuous in others because changeable underlying fundamental conditions (e.g., supply in the delivery market and transportation costs) affect a market's response to a trader's actions. Given these difficulties, there is no reason to believe that broad proscriptions of various forms of conduct will provide benefits (in the form of manipulation deterrence) that more than offset the costs resulting from demoralization of legitimate trading activity. Putting the issue in the form of a question, if conduct alone is sufficient to infer intent and effect, and the undesirable forms of conduct are known and identifiable, why have the courts not simply proscribed these actions? Moreover, why should regulators be able to detect and deter these actions with less information *ex ante* than the courts have available *ex post*?

In sum, legal scholars have identified many flaws in the existing law of commodity market manipulation. They have not, however, provided a viable alternative set of standards and tests that would improve the performance of courts and regulators. Most importantly, despite numerous assertions to the contrary, the suggested alternatives to the existing rules fail to provide a reliable methodology to determine whether a manipulation

139 See Shavell, *supra* note 102, at 261-66 (discussing criteria that imply that *ex post* deterrence of manipulation is preferable to *ex ante* deterrence).

actually occurred. Conduct-based standards require no analysis of price effects, but are overinclusive. Moreover, the denials of some authors notwithstanding, intent-based standards are dependent upon a price analysis. Those advancing such standards fail to show, however, how such an analysis should be carried out (if they do not demigrate price analysis altogether).

Although far from encouraging, the analysis of court cases and legal commentary should not be considered as grounds for complete despair. It is not *inherently* impossible to determine whether a particular trader has exercised market power. Rather, certain decision makers have simply failed to understand the workings of manipulation and have strayed into logical dead ends as a result. I concur with Richard Friedman's assessment:

I prefer to hope, until hope appears vain, that the apparent intractability in manipulation litigation does not inhere in the subject but results from a failure to understand it. Asking the right questions, ones that accurately describe the phenomenon at issue, will make the factfinder's task easier, and in any event far more rational.¹⁴⁰

The following Part presents an economically defensible antimanipulation doctrine by relying upon the analysis of manipulation contained in my earlier work and outlined in Part III. In Part V, I attempt, as Friedman suggests, "to ask the right questions." Most importantly, I wed the predictions of the manipulation model to classical statistical hypothesis testing techniques to create a reliable methodology to determine whether a trader exercised market power. This methodology also allows a fact finder to implement the tests of intent derived by Friedman and Perdue. Thus, my methodology both expands upon and complements existing analyses of manipulation law

V *An Alternative Manipulation Deterrence Doctrine*

A. *Introduction*

The proper objective of an antimanipulation strategy is to deter the exercise of market power in derivative product markets. To do so, an *ex post* deterrence mechanism must be able to determine reliably whether a manipulation has occurred and to assign liability for this conduct. In this Part, I propose a methodology that allows a decision maker to perform these tasks with considerable precision.

140. Friedman, *supra* note 67, at 60.

B. An Alternative Test for Market Manipulation

The detection of manipulation and assignment of liability to a particular trader require answers to three questions:

1. What is the probability that competitive interactions between traders produced the observed market outcomes?
2. If competitive interactions were unlikely, is the accused trader's conduct consistent with the exercise of market power?
3. Are there any nonmanipulative explanations for this conduct?

If the answer to Question 1 is a small number, an investigator may infer with confidence that some trader or traders exercised market power. Question 2 aims to identify a particular trader acting in a noncompetitive fashion. Question 3 examines whether there is some alternative explanation for his conduct.

In many respects, the structure of these questions parallels the structure of the existing law discussed earlier. Question 1 corresponds to price artificiality, Question 2 corresponds to causation, and Question 3 corresponds to intent. Thus, one can view the analysis that follows as a rehabilitation of the existing doctrine. Given the disreputable state of that doctrine, however, it is desirable to wipe the slate clean and discard the old terms to prevent them from contaminating the new analysis. Moreover, the questions focus the issues more clearly on the relevant issue of market power at contract expiration than the original three terms do. This should reduce the probability that inquiries based on these questions will go astray, as have those based on the original classification.

1. Answering Question 1

The analysis in Part III presents five economic effects of manipulation. By undertaking a systematic empirical examination (using established statistical methodology) of these symptoms or implications, it is possible to quantify the likelihood that some trader has exercised market power.

This is accomplished by testing *the null hypothesis that all traders acted competitively at expiration of a particular contract where manipulation is suspected*. Under the null hypothesis, the price, shipment and receipt, and delivery patterns during the expiration period should be statistically indistinguishable from the past patterns exhibited in that

market. Under the *alternative hypothesis that manipulation occurred*, the five effects are pronounced.¹⁴¹ Given the historical variability in the relevant variables, one can calculate the probability of falsely rejecting the null hypothesis. That is, one can calculate the likelihood of incorrectly finding a competitive trader guilty of exercising market power. Because (1) the specific hypotheses tested are derived from a rigorous model of the effects of manipulation and competition on prices and (2) the testing methods are the standard ones employed in both the social and physical sciences, this proposed standard addresses the criticisms raised in *Cox, Indiana Farm Bureau*, and the legal literature and avoids the ad hoc reasoning implicit in the alternatives proposed in these decisions.¹⁴²

An examination of the relevant implications shows that they represent an enhanced price artificiality standard. The standard is enhanced because it relies upon quantity data (delivery point receipts and shipments and the number of deliveries) as well as price data. By utilizing historical data and universally accepted statistical hypothesis-testing techniques, an investigator can determine the probability that the prices and quantities observed during an alleged manipulation were the result of competitive behavior by all traders. If the estimated probability is very small, one may reliably infer that a manipulation occurred. Because these tests are likely to be statistically powerful, especially in combination, this methodology can separate competitive and manipulative episodes with a high degree of precision.

An example demonstrates how these tests can be employed and how very powerful they can be. In particular, consider a test of Implications 1

141. It is, of course, possible to reverse the null and alternative hypotheses. That is, one could treat the hypothesis that a particular contract was manipulated as the null. This reversal essentially shifts the burden of proof to the defendant. Under this hypothesis, if the statistical tests are met, then manipulation would be presumed unless the defendant could provide evidence to support an alternative explanation. It is clear that the question of who bears the burden of proof is important. However, it is not the objective of this Article to answer that question. Instead, my objective is to create a methodology that can be employed to determine reliably whether a manipulation occurred. The validity and power of this methodology is independent of who bears the burden of proof.

142. Indeed, the observable implications of the manipulation model and the data available to test them are far more exact than those employed in other types of cases in which similar issues arise. In particular, the contrast between the clearness of these implications and tests and those employed in antitrust cases is strikingly evident.

and 4.¹⁴³ Recall that these implications state that during a manipulation, the spot price first should rise precipitously relative to the deferred futures price and then should fall even more precipitously at the end of corner.

In April 1991, there was an allegation of a corner in zinc, which is traded on the London Metal Exchange.¹⁴⁴ From April 10 to April 15, 1991, the spot price of zinc rose 11.6%.¹⁴⁵ During this same period, the price of zinc for delivery in three months, the deferred futures price, fell 1.7%. Thus, as one would expect to occur during a manipulation, the spot price rose appreciably, more than 13%, *relative* to the futures price.

The corner ended on April 15, 1991. The next day the spot price of zinc fell 10%, while the futures price fell by 0.1%. On April 17, the spot price fell by another 1.97%, while the futures price declined again by only 0.1%. This price pattern is strongly consistent with the burying the body effect, which is symptomatic of manipulation.

Figure 1 illustrates the price pattern over the relevant period. Note the dramatic "spike" in the spot price and the lack of movement in the forward price. Also note that the spot price after the end of the corner was lower than it was prior to the alleged corner.

143. See *supra* notes 18-22 and accompanying text (setting forth five implications of manipulation).

144. I focus on this episode because while working with my colleague, Victor Ng, I have closely studied the dynamics of industrial metals prices. See generally Victor K. Ng & S. Craig Pirrong, *Fundamentals and Volatility: Storage, Spreads, and the Dynamics of Metals Prices*, 67 J. BUS. 203 (1994). I can speak with some authority about this market because I have considerable familiarity with the behavior of zinc prices.

145. All reported percentage price changes (returns) have been stripped of their predictable components. The reported returns are equal to actual returns net of the expected return. Such returns are sometimes called "residual" returns. The use of residual returns is motivated by the fact that some fraction of price movements on a given date t can be predicted using information available on date $t-1$. Such information includes past price changes and past price levels. In the zinc data, Ng and Pirrong estimate this predictable component using an ordinary least squares regression model. As is the case for most financial data, a very small fraction of the movements in zinc returns are predictable; past price changes and price levels explain less than 2% of the variation in zinc spot and forward prices. Thus, observed price changes are almost identical to price changes net of the predicted price changes. Moreover, since residual returns have been stripped of their predictable components, the expected residual return equals zero. The data on changes in deliverable stocks have also been stripped of their predictable components through the use of a regression model. As a result, the expected change in stocks under the null hypothesis is zero.

Figure 1: ZINC SPOT AND FORWARD PRICES

January-June, 1991

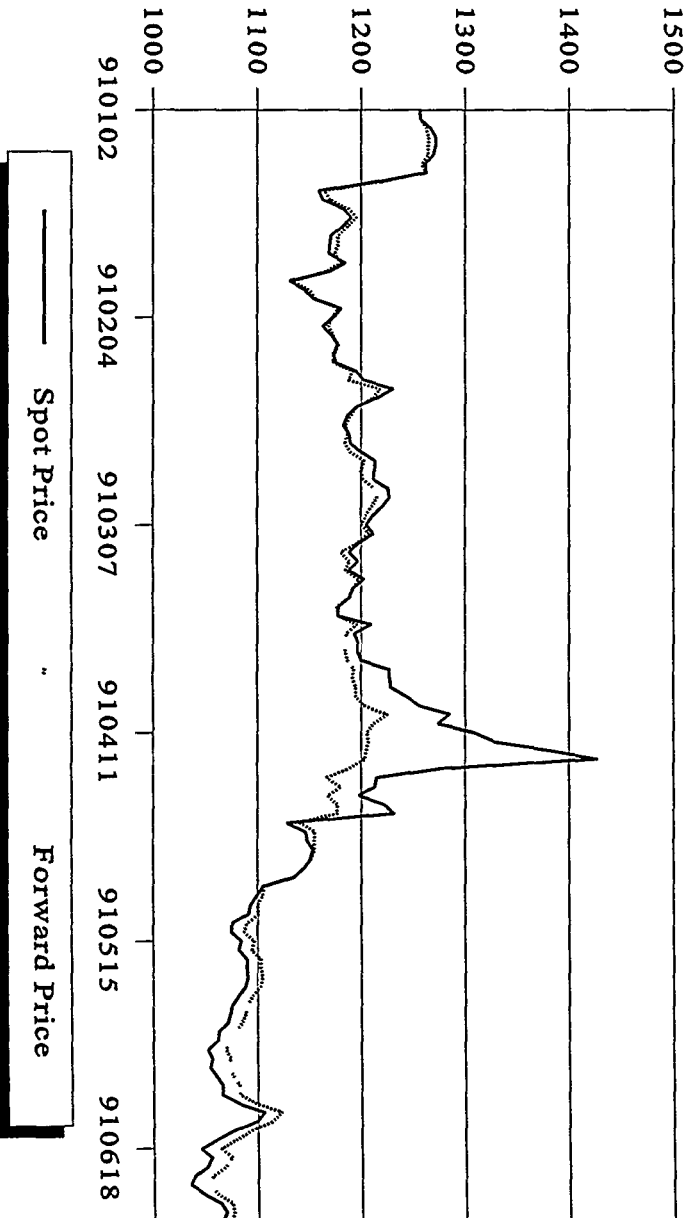


Figure 2 plots the difference between the logarithms of spot and forward prices—the difference in the log transformed prices essentially measures the spread as a percentage of the spot price.¹⁴⁶ This price difference is called the "spread" in the argot of commodities markets. This figure shows clearly the large increase in the spot price relative to the forward price. It also shows that the ratio between the spot and forward prices was lower after the alleged corner than before—the spot price fell relative to the forward price. The pattern illustrated in the figures is, therefore, consistent with the existence of a corner in zinc.

In order to implement fully the proposed methodology, it is necessary to compare these relative price changes, which are superficially consistent with a corner, to some measure of the "natural" variability of prices. If the spot price of zinc was extremely variable relative to its futures price (e.g., on the order of 5% per day) even if all traders had acted competitively, the price changes observed in the April 10-April 17 period may have occurred with a high probability even if no one had manipulated the market. Thus, one can confidently reject the null hypothesis of no-manipulation only if the observed price changes were large relative to their normal variation.

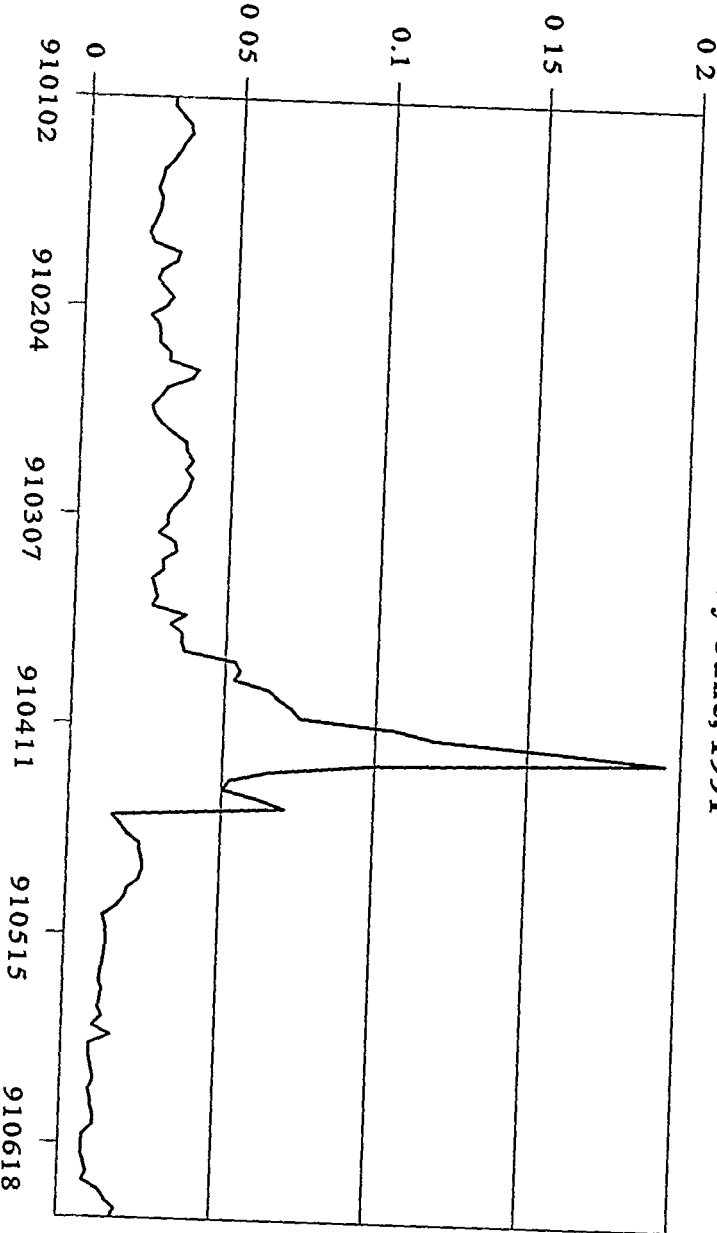
The traditional measure of variability is the standard deviation. In this context, the standard deviation measures the average deviation of actual price changes from their expected value of zero. Therefore, the larger the observed price change is relative to the standard deviation, the smaller the probability that the price change resulted from chance, rather than from a manipulation.

Based on a model of spot and futures price dynamics that allows the standard deviations of spot and forward prices, and the correlation between these prices, to vary with fundamental supply and demand conditions,¹⁴⁷

146. The spread also corrects for the effects of interest rates and the costs of warehousing zinc. For details, see Ng & Pirrong, *supra* note 144, at 207, 217-18.

147 *See id.* Specifically, the model adjusts standard deviations to reflect the fact that even in competitive markets, spot and futures prices become more variable, and vary more independently, when the spot price is high relative to the futures price. This is true because the spot price increases relative to the futures price when supply conditions tighten (holding demand constant) or demand increases (holding supply constant). Thus, although a rise in the spot price relative to the futures price could signal an impending corner, it could also reflect a natural tightening of supply conditions, which would tend to make prices more volatile. Given that a corner causes the spot price to rise relative to the futures price, use of this model tends to favor an accused manipulator. In particular, under the null hypothesis, the model attributes the initial rise in the spot price-forward price ratio to a fundamental

Figure 2: ZINC SPREAD
January-June, 1991



the increase in the ratio of the spot price to the forward price over the period April 10-April 15 was six standard deviations away from the change that would be expected under competition. Under the null of competition, such a large gap between observed prices and their expected value would occur by chance with a probability of 0.0011. Similarly, the relative price decrease during the period April 16-April 17 was 4.44 standard deviations below the expected value (under the competitive null) of zero. If all agents in the zinc market acted competitively, this would occur by chance with a probability of 0.0039. Thus, if all traders were acting competitively in the period April 10-April 17, the large increase in relative price and the subsequent large decrease in relative price were both extremely unusual events. Together, they were truly extraordinary. The probability that they *both* would have occurred if all traders had acted competitively equals 0.0000044. Thus, these data overwhelmingly reject the null hypothesis that no manipulation occurred in the zinc market in April 1991 and favor the alternative that the market was squeezed.

In other words, the data reject the null hypothesis at a confidence level of 0.00044%. This is far higher than the 1% and 5% levels of confidence commonly employed in scientific work. This implies that if a trader were found guilty of manipulation of the zinc market on the basis of this evidence, the odds of a wrongful conviction would be on the order of four chances in one million.¹⁴⁸

shock to supply or demand conditions and increases the estimated standard deviation of spot and forward prices. The increase in these statistics makes the price plunge that is attributable to the burying the corpse effect seem less unusual. The example in the text shows that despite this advantage to the accused, the statistical test for the existence of a corner can be extremely powerful.

148. The null can be rejected at any level of confidence. This is a choice variable for the court. This choice corresponds to the selection of a burden of persuasion. A "preponderance of the evidence" standard corresponds to a wide confidence interval (e.g., 50%). A "beyond a reasonable doubt" standard corresponds to a narrow confidence interval (e.g., 5% or 1%). It is not my aim to establish the appropriate standard of proof. Again, my objective is to create a set of tests that can be employed under any proof standard. However, the example just discussed shows that the effects of manipulation can be so pronounced that even a very strict standard is not insurmountable. Because it is most beneficial to deter the most egregious episodes of manipulation, and because the costs of demoralizing legitimate trading activity through the use of a low threshold may be large, a narrow confidence interval is likely to be optimal. The court in *Great Western* stated that a preponderance of the evidence is necessary in order to sustain a conviction for manipulation. *Great W Food Distribs., Inc. v Brannan*, 201 F.2d. 476, 479 (7th Cir. 1953).

Some other available data bolster the conclusion that the zinc market was cornered. In particular, consistent with Implication 2,¹⁴⁹ the deliverable stocks of zinc rose dramatically between April 10 and April 18, 1991. This implies that receipts of zinc to exchange warehouses rose, shipments of zinc from these warehouses fell during this week, or both. Correcting for how changes in stocks in one week are related to changes in previous weeks and for the effect of the difference between spot and futures prices, these stocks rose by 40% during the week of the alleged corner. This is more than forty standard deviations away from the expected value of zero. Given the variability of changes in deliverable supplies observed in the data, the probability that such a large increase in stocks would occur by chance is of the magnitude of the probability that an individual will be struck by lightning. Thus, the deliverable stock data are also inconsistent with the hypothesis that nothing unusual happened in the zinc market in mid-April 1991. Like the price evidence just discussed, the increase in deliverable stocks is therefore strongly consistent with the view that the zinc market was manipulated during that period.

Viewed together, the observed behavior of prices and deliverable stocks provides even stronger evidence of a squeeze. Recall from Part III that the theory of storage implies that in competitive markets, the spot price should *fall* relative to the forward price when stocks increase dramatically. The spread between forward and spot prices measures the return to storing the commodity. This is true because the forward price must rise relative to the spot price in order to make storage of additional quantities of a commodity profitable. In the present case, however, we observe the exact opposite. Although contrary to what one would expect to observe in a competitive market, the simultaneous movement of prices and stocks in zinc in April 1991 are exactly what one would expect to observe during a market power manipulation. Thus, when considered jointly, the price and deliverable stock evidence provides even stronger support for the alternative hypothesis of market power manipulation in this episode.

This brief overview of an analysis of the events in the zinc market clearly demonstrates how price and quantity data can be used to determine the probability that a market was cornered. I have already addressed some common objections to this methodology. The example shows that these

149. See *supra* notes 18-22 and accompanying text (setting forth five implications of manipulation).

criticisms are irrelevant to the analysis of a large manipulation. These are just the corners that it is most beneficial to deter. It should also be noted that the elimination of large manipulations also improves the ability to detect smaller ones. Recall that this methodology implicitly assumes that a competitive process generates the observed historical data. If some past episodes of manipulation contaminate the data, they are "noisier" and, therefore, less powerful as a means of detecting the existence of a corner or a squeeze; this is especially true in the case of smaller manipulations. The employment of a reliable set of tests for market power, however, will deter the more dramatic squeezes. This, in turn, reduces the noisiness of the data. The data can then be used to detect less pronounced manipulations that were difficult to distinguish statistically before the larger manipulations were deterred. These smaller corners are now detectable and deterrable, which reduces the noisiness of the data further still. Thus, the adoption of a reliable set of manipulation tests commences a bootstrapping process that largely renders null and void the criticism that historical data contaminated by past episodes of market power are an unreliable means of establishing price abnormalities allegedly resulting from manipulation.

In carrying out such an investigation, it is necessary to distinguish between "surprise" manipulations (such as those alleged in *Cargill*, *Indiana Farm Bureau*, and *Cox*) that occur during the last moments of futures trading for a particular contract and those that manifest themselves prior to this time. This is true because the implications of the two types of manipulation are somewhat different. The possibility that traders become aware of a manipulation only gradually dictates how an investigator must implement the tests of these implications. Most importantly, tests of Implications 1 and 3¹⁵⁰ require comparisons of relative price *levels* during the delivery period rather than relative price *changes* prior to that time because the normal noise in prices is likely to obscure the gradual trend in relative prices. This does not imply that relative price *changes* are irrelevant altogether, however. Tests of Implication 4¹⁵¹ can utilize price change data because spot price declines (absolute and relative) in the

150. See *supra* notes 18-22 and accompanying text (setting forth five implications of manipulation).

151. See *supra* notes 18-22 and accompanying text (setting forth five implications of manipulation).

delivery market are likely to occur very rapidly after the end of a manipulation.

Moreover, it is necessary to replace Implication 4 with:

S4. The futures price rises relative to delivery market spot bids at the time that the manipulator liquidates his position.

This implication requires some comment. The use of cash-futures comparisons has been criticized¹⁵² because cash and futures prices are supposed to converge during the delivery period. To the extent that a manipulation is anticipated, this is correct, which is why the original implications discussed above exclude any comparison of the expiring futures price and delivery market spot prices. During an anticipated manipulation, shorts bid up the spot price to equal the futures price because they can extinguish their position either by purchasing the deliverable and tendering it or by buying a futures contract. In equilibrium, the costs of these actions must be equal. Given the nature of most spot price data, however, it is quite possible that convergence does not occur in a surprise squeeze. Spot price data for most physical commodities including grains, petroleum products, and metals, consist of bids to purchase the commodity rather than transaction prices determined in transparent competitive auctions. As a result, these prices tend to be somewhat "sticky." Although this feature is frequently a source of criticism of these data, it is quite important in this context. Bidders do not react immediately to surprise events, such as a last minute squeeze, so the occurrence of such an event causes an unusual divergence between spot and futures prices. If other factors (e.g., weather news or information about demand) can be excluded as a cause of the futures price shock, an unusually large spot-futures divergence is inconsistent with competitive behavior by all market participants. Moreover, the failure of spot bids to rise dramatically *subsequent* to the increase in the futures price at contract expiration, the failure of the deferred futures price to rise at this time, or both make it highly unlikely that exogenous factors caused the rise in the expiring futures price. One can again analyze historical data using classical methods to estimate the probability that a rise of a given size in the expiring

152. See Joseph J. Bianco, *The Mechanics of Futures Trading: Speculation and Manipulation*, 6 HOFSTRA L. REV. 27, 28-29 (1977); Philip M. Johnson, *Commodity Market Manipulation*, 38 WASH. & LEE L. REV. 725, 752 (1981); Lower, *supra* note 54, at 393-94 (citing Bianco, *supra*, at 29); McDermott, *supra* note 28, at 211, Perdue, *supra* note 54, at 368.

futures prices is not followed by a similar rise in the spot price or accompanied by a similar rise in the deferred future.

One potential difficulty in diagnosing a surprise squeeze is that if one occurs, shorts may not have time to acquire supplies elsewhere to make deliveries. Therefore, Implications 2 and 5¹⁵³ do not hold for this type of squeeze.

Finally, use of the quantity data requires some care. In particular, because many commodities against which futures are traded (e.g., grains) exhibit pronounced seasonal variations in shipments, receipts, and stocks, it is necessary to correct for this seasonality. Moreover, because delivery point receipts and shipments frequently show considerable positive autocorrelation (i.e., rises (or declines) tend to be followed by rises (or declines)), tests of Implications 2 and 5 are likely to be very powerful because these implications imply a negative autocorrelation around the end of the delivery period. That is, in contrast to their normal pattern, during a corner increases (or declines) tend to be followed by declines (or increases).

In conclusion, market power leaves telltale footprints in the form of distorted prices, shipments, receipts, and deliveries. The price and quantity indicia of manipulation differ markedly from the effects of other unusual events in futures markets. Under the assumption that historical price and quantity data represent a sample of competitive outcomes drawn from the same universe of underlying conditions as those prevailing during an alleged manipulative episode, an investigator can employ classical statistical techniques to determine the likelihood that the prices and quantities observed during this episode were in fact consistent with competition. If the estimated probability is small, there is strong evidence that some traders have exercised market power. This permits the investigator to proceed to Question 2 and determine who exercised this power.

2. Answering Question 2

The analysis of causation in Part IV notes that courts and commissions have attempted to determine whether a particular trader had the ability to influence market price and that this has led to considerable confusion and

153. See *supra* notes 18-22 and accompanying text (setting forth five implications of manipulation).

misunderstanding.¹⁵⁴ In particular, this standard requires a detailed understanding of costs that are difficult, if not impossible, for *ex post* adjudicators to calculate. Fortunately, the analysis in Part III identifies several actions that a large trader must take in order to exercise market power.¹⁵⁵ It is possible, therefore, to replace a standard that requires the determination of *ability* to exercise market power (a difficult task that requires knowledge that is extremely costly to collect) with a standard that relies upon the identification of the accused's readily observable conduct.

Specifically, recall that a long manipulator:

1. Stops an abnormally large number of deliveries, but liquidates a substantial proportion of his position.
2. Stops a large fraction of deliveries relative to the total number of deliveries made.
3. Liquidates his futures position at a price that exceeds the value of the units delivered to him.

Each of these implications is testable, although an investigator must exercise care in doing so. First consider Implication 1. It is necessary to establish a standard in order to test whether the number of deliveries a long takes is large or small. This standard should correct for the identity of the trader and his past behavior, whether or not he owns a substantial portion of the deliverable unbeknownst to shorts, and for certain conditions that may affect the marginal cost of delivery

A trader's type and past behavior are relevant because some traders (especially commercial traders and some arbitrageurs) take delivery as a part of their normal commercial operations. An investigator should therefore compare the number of deliveries stopped by the accused trader with (1) the number of deliveries taken concurrently (i.e., at the time of the alleged manipulation) by other traders of a similar type (e.g., compare an alleged commercial manipulator with other commercials or an alleged arbitrageur manipulator with other arbitrageurs) and (2) the number of deliveries taken by traders of a similar type during previous delivery periods.

In making the second comparison in particular, it is necessary to correct for certain factors that influence the economics of taking delivery. These include: contract month (e.g., there are more corn deliveries in

154. See *supra* part IV.B.2.

155. See *supra* part III.

December than July), stocks on hand in the delivery market, and (especially) futures spreads—the annualized percentage difference between the price of the deferred future and the expiring futures price net of the cost of storage and the time value of money. The futures spread is motivated by the fact that it is much costlier to take delivery and hold inventories when a market is "inverted" (i.e., the difference is a large negative number) rather than when it is at "full carry." In a full carry market, the futures price exceeds the spot price by the costs of storing inventory until the expiration of the future. In such a market, the trader taking delivery can short the deferred future and receive a payment sufficient to cover the costs of storage and forgone interest that the trader incurs before he can deliver against the deferred contract. If the market is not at full carry, however, the trader suffers a loss from holding inventory until the expiration of the deferred contract.

This discussion suggests testing a regression model of delivery behavior. Specifically, the number of deliveries taken by a commercial trader, D , is a function of: the contract month, C_t , a dummy variable equal to 1 in month t and 0 in other months, where $t=1, \dots, n$, and n is the number of delivery months in a year; stocks on hand in the delivery market, S ; and the return to holding inventory, R , where $R = F_D - F_E - c - rF_E$, and F_D is the deferred futures price, F_E is the expiring future, c is the dollar cost of storing inventory until the expiration of the deferred contract, and rF_E is the dollar value of interest forgone on the value of the commodity from the expiration of the nearby contract to the expiration of the deferred contract. Formally, one estimates the model:

$$D = a + b_1 C_1 + \dots + b_{n-1} C_{n-1} + b_S S + b_R R + e$$

where e is a random error term, and the b_i are parameters.

Given historical data on deliveries taken by traders of the same type as the manipulator and assuming competitive behavior during the sample period, one can estimate the parameters of this model (including the variance of the error) over the sample period, calculate the fitted value of D for the period of the alleged manipulation, and determine whether the fitted value is statistically significantly different from the value observed during the delivery period in question. If the probability that the difference between the fitted and observed values (estimated by using the relevant values for the C s, R , and S) is consistent with competition is sufficiently small, an investigator can infer manipulative conduct.

The primary potential obstacle in implementing this test is data availability. This test requires historical data on the number of deliveries taken by this trader or other similar traders in the past. These data are not publicly available, and an investigator would probably have to secure them by competitive means; the data may be especially difficult to acquire from those other than the accused.

This problem does not affect tests of the other implications as seriously. In particular, an investigator can rely upon publicly available price data and information on the alleged manipulator's postexpiration actions.

Indeed, the information used to verify the burying the body effect, and the spread between spot and deferred futures prices, relate directly to this issue. The finding of a substantial spot price decline in the delivery market (especially relative to other prices) at the end of an alleged anticipated squeeze implies a significant difference between liquidation prices and the value of the commodity received via delivery. An anomalous futures spread has a similar implication. In fact, although an accused manipulator may try to argue that the decline in the spot price was unexpected (i.e., he expected the price of the deliverable after contract expiration approximately to equal the price at which he liquidated futures contracts), this claim is unpersuasive if the deferred futures price (which is a publicly available measure of the expected spot price) is depressed.

Similarly, in a "surprise" squeeze, a disparity between the price at which an accused manipulator sells futures contracts and contemporaneous spot bids is strongly consistent with the existence of a manipulation; the spot bids represent an independent measure of the true value of the commodity. What if the accused alleges that the price pattern resulted from other traders' incorrect perceptions of his intentions? Assuming this is true, the alleged manipulator would consider the postdelivery spot price too low and should purchase deferred futures, spot supplies, or both at that time. Thus, this potential defense is contradicted if he sells, rather than buys, the commodity after the manipulation.

In conclusion, it is possible to determine whether a particular trader has behaved in a manipulative fashion by comparing the number of deliveries that the trader takes to that trader's past performance and the performance of other traders, with a correction for various factors that affect the delivery calculus. It is also very informative to compare the value of the deliveries the trader takes relative to the price at which the

trader liquidates futures contracts.¹⁵⁶ This analysis does not require an estimation of potentially amorphous quantities like the deliverable supply. Instead of estimating the *ability* of a trader to manipulate, the proposed method examines whether the trader's conduct mimics that predicted by the model of manipulation. If it does, and one can rule out alternative explanations of the accused trader's conduct, the probability of mistakenly assigning liability to the trader is very small. I next examine criteria for evaluating the accused trader's possible excuses for his conduct.

3. Answering Question 3

The objective of this final question is to address an alleged manipulator's potential defenses.¹⁵⁷ In particular, the alleged manipulator may argue that his actions were not motivated by a desire to manipulate the market, but instead were the product of some legitimate strategy. The alternative rationales include: (1) a desire to obtain the physical commodity for commercial purposes; (2) legitimate speculation; (3) hedging; (4) tax considerations; and (5) stupidity or ignorance.

Each alternative rationale has observable implications that differ from the implications of manipulative conduct. Thus, one can reliably test the validity of the claims of a suspected manipulator by comparing his actual conduct to that implied by the manipulation theory and that implied by the theory advanced as a defense. I consider each rationale in turn.

156. It is possible to use other information to improve this analysis. Specifically, an accused manipulator may claim that the actions of other long traders, rather than his own actions, caused the price and quantity anomalies. Data on market share are directly relevant in this case.

157. The analysis in this section bears some similarities to that of Friedman and Perdue. See generally Friedman, *supra* note 67; Perdue, *supra* note 54. Each proposes that the test of manipulative intent should be: Would the accused trader behave as observed but for the desire to influence price? Friedman's proposed methodology for answering this question implicitly requires a knowledge of the competitive price. He asks whether the shorts submit to the demands of a large trader only because there are stiffer penalties for default on futures contracts than there are for failure to perform under contracts governed by the Uniform Commercial Code. In order to answer this question, Friedman poses another: Would shorts choose to default if the only penalties for doing so were liquidated damages? In order to calculate these damages, it is necessary to know the competitive price. Conversely, the methodology proposed in this section permits answering the question without knowing the competitive price. Therefore, the criteria established here can be implemented.

Because manipulators stand for excessively large numbers of deliveries, some claim that their actions were motivated by a need to obtain the cash commodity for commercial reasons. As noted in Part III, however, successful frictional manipulators also liquidate large numbers of contracts. An accused manipulator must therefore explain why he did both. In order for such behavior to be consistent with competitive, price-taking, behavior, the marginal value of a delivery taken, its price, must necessarily equal the liquidation price on the marginal contract.¹⁵⁸

If an investigator documents a burying the body effect, however, the accused cannot claim that he chose the number of deliveries in order to minimize the cost of acquiring the physical commodity. This is true because the burying the body effect implies that the value of the marginal contract liquidation exceeded the value of the marginal delivery at contract expiration. This is inconsistent with competitive, price-taking, behavior.

Moreover, if the long takes deliveries to satisfy an existing sales commitment—a short position in the cash or futures markets—this "defense" actually undermines the accused manipulator's case if he liquidates some contracts as well. The primary cost of executing a manipulation is the loss incurred on deliveries taken due to the burying the body effect. That is, a manipulator takes delivery of a large amount of the commodity which must be disposed of. A trader who has no short position in the same commodity must sell these deliveries at a low price. In contrast, a trader with an outstanding short position is hedged against the price decline that results at the end of a manipulation. Thus, *ceteris paribus*, traders with existing sales commitments actually find manipulation more profitable than those without such commitments. As a result, the

158. To see why, assume the opposite. If a price-taking owner of a long position faces a futures price of P and a value of the deliverable commodity of V , where $P > V$, he can increase his wealth by selling the futures contract. Conversely, if $V > P$, he should take another delivery. A price-taking, competitive, trader cannot be in equilibrium, therefore, unless $P = V$.

The evidence presented in *Indiana Farm Bureau* provides a clear-cut case of the importance of this fact. Respondent Johnston in that case stated that he preferred to liquidate futures contracts at a price of \$3.80 per bushel rather than take delivery at that price because after the market closed, the "corn would be worth a dollar a bushel less." *Indiana Farm Bureau Coop. Ass'n.*, [1982-1984 Transfer Binder] *Comm. Fut. L. Rep. (CCH)* ¶ 21,796, at 27,308 (Dec. 17, 1982). Because Johnston took substantial deliveries at prices greater than \$2.80 per bushel, *id.*, this statement is inconsistent with the notion that the Bureau was acting as a price taker in the July 1973 corn futures contract.

existence of such commitments is less a defense against a charge of manipulation than an inducement to execute one.

Other information may also disprove an accused squeezer's claim that the futures market was the cheap source of the cash commodity. In particular, bids on the cash market that are lower than the futures price are strong evidence that there are cheaper sources of the deliverable. This is particularly true if the accused is one of the bidders, as in *Indiana Farm Bureau*.¹⁵⁹ Moreover, if the fraction of the open futures position that the trader owns grows as expiration approaches, his claim is open to serious question. The change in market share indicates that his behavior is opposite that of other longs—he is buying, or holding a long position, while they are actively selling. To explain this behavior, the accused manipulator must demonstrate why the futures market is a cheaper source of cash supplies for him, but not for the longs who liquidate.

Rational competitive speculation also requires an equation of the price at which the trader liquidates the marginal contract and the value of the marginal delivery. To explain his behavior as the product of a speculative strategy, an accused manipulator must argue that he valued the physical commodity at the high liquidation price he accepted. The accused manipulator must argue that the expiring futures price is cheap relative to prices at other locations and deferred futures prices. Again, if there is a large and rapid spot price decline in the delivery market, a burying the body effect, the failure of the trader *to purchase* more of the spot commodity contradicts his assertion that the expiring futures price was cheap.¹⁶⁰ Similarly, sale of the cash commodity or sale of deferred futures contracts is inconsistent with the speculative rationale. Again, there are several behavioral implications of the assertion of a speculative motive, and an

159 *See id.* at 27,280. Sometimes (as occurred in the Ferruzzi episode), the large long does not bid in the delivery market, but instead bids in some other market. In this case, it is necessary to calculate the cost of acquiring supplies in the delivery market (the futures price) plus the cost of transporting the delivered commodity to the place where the long is bidding. If this so called "delivery value" exceeds the cash bid, one can infer that the futures market is not the cheap source of the cash commodity.

160. As an example, assume that the futures price at contract expiration equaled 10. This equals the value of a delivery by assumption; taking the trader's justification at face value implies that the trader is willing to pay 10 for a unit of the physical commodity when trading ends. Immediately after trading ends, the price falls to nine. If the trader's marginal willingness to pay at contract expiration was 10, the trader should purchase the commodity at the lower price.

investigator can compare these implications with the trader's observed conduct.

Moreover, if an investigator establishes relative price distortions, then an accused manipulator bought the commodity that was atypically dear. The accused manipulator purchased the deliverable commodity when it was unusually expensive relative to the same commodity at other times and other locations and to other commodities. Because the old speculative adage is "buy cheap and sell dear," any accused manipulator will find it extraordinarily difficult to provide an explanation for such behavior. This is especially true if his market share grew as the contract neared expiration because this suggests that other traders disagreed with his claimed rationale.

Some traders may also claim that their large positions are hedges; speculators who do not trade on the cash market cannot employ this rationale. Hedging is a potentially plausible explanation long before contract expiration, but hedging is far less credible immediately before the end of trading. The expiring future can hedge only those cash market transactions that take place in the time remaining before the end of trading. Thus, as trading in a particular contract nears its end, a trader with a large long futures position must be able to show that he has a fixed price sales commitment of approximately the same size as the futures position and that the long plans to acquire the commodity to meet that commitment prior to the end of the futures trading. This rationale is patently ridiculous if the long holds a substantial position to the very end of trading. Moreover, if the long liquidates earlier, his behavior provides an acid test for his motives. Specifically, in order for the hedging rationale to withstand scrutiny, it must be the case that prior to or immediately following the liquidation, the trader acquires the cash commodity in an amount approximately equal to the size of his futures position. A failure to do so, or sales of the cash commodity on the spot market, contradicts the hedging rationale.

Furthermore, as in the speculative explanation, the accused manipulator can be questioned closely about the reasonableness of his actions. Again, given a wide spread between the expiring and deferred futures, a legitimate long hedger could reduce his hedge costs by selling the expiring contract at a high price and buying the deferred future at a low price. A trader's failure to do so is strongly consistent with manipulative intent.

In one manipulation case, the defendants, N. Bunker Hunt, W. Herbert Hunt, and Lamar Hunt, claimed that they stood for large numbers of

deliveries against silver futures contracts for tax purposes and that they had no intent to manipulate the market.¹⁶¹ The defendants reasoned that any profits earned on a liquidated contract are taxed at the time the position is closed.¹⁶² Profits earned on the sale of a commodity acquired by taking delivery on a futures contract are not taxable until the commodity is sold; a trader can defer taxes for as long as the trader desires. Deferring taxes is valuable if interest rates are positive. Deferral is especially beneficial to a trader if short-term gains are taxed at a higher rate than long term gains, as was the case in the late 1970s and early 1980s.

The tax advantages of taking delivery do not necessarily imply that a trader has *not* manipulated a market if he takes a large number of deliveries. If a trader does not exert market power, he should either liquidate his entire position or take delivery on his entire position. This is true because if a trader does not exert market power, the spot and futures prices do not depend upon the number of contracts he liquidates. Thus, if prices are such that tax considerations imply that the trader is better off taking delivery on one contract, he should take delivery upon all of them. Tax considerations, therefore, do not explain why a competitive trader would liquidate some contracts and take delivery on others. As a result, even if these tax considerations are relevant, a trader who both liquidates contracts and accepts deliveries acts like a trader who exerts market power.

Moreover, if a trader exercises market power, the advantages of deferring taxation may indeed induce him to take more deliveries than an untaxed trader would. However, this should not excuse his actions because the additional deliveries merely exacerbate the distortions resulting from the exercise of market power. That is, *ceteris paribus*, a taxable trader who manipulates does more damage than a nontaxable one. Because the objective of manipulation law is to reduce the frequency and intensity of price and quantity distortions, it would be perverse indeed to allow a manipulator to use the tax advantages of taking delivery to escape penalty. The CEA states that it is unlawful to corner the market;¹⁶³ it does not say

161. *Minpeco, S.A. v ContiCommodity Servs., Inc.*, 673 F Supp. 684, 698 (S.D.N.Y. 1987). It should be noted that the evidence supporting the assertion that the Hunts engaged in a true market power manipulation was very weak. It is still worth discussing the possible defense of tax considerations, however, because the defense could be employed in a market power manipulation case in order to rationalize the taking of large numbers of deliveries.

162. *See id.*

163. 7 U.S.C. § 7(4) (Supp. V 1993).

that it is unlawful for a trader to run a corner *unless* the corner can reduce the trader's taxes.

When all else fails, a manipulator may claim stupidity or ignorance. It is impossible to refute definitively either explanation using reasoning similar to that used heretofore. If the accused is an experienced or sophisticated trader, however, such a defense is easily dismissed.

C. *Summary and Conclusions*

A trader who exercises market power undertakes certain readily observed actions. These actions, in turn, have pronounced and well-defined effects on prices and quantities. By testing these implications of manipulative conduct, therefore, it is possible to determine whether an observed set of prices and the actions of a particular trader are consistent with competitive behavior. Thus, when properly understood, manipulation is not "unprosecutable." Rejection of this hypothesis with a high degree of confidence implies that it is very likely that a trader exerted market power. Moreover, examination of an accused trader's actions allows a fact finder to determine whether the trader exercised this power. The existence of an offense is readily identified, and manipulative conduct is readily distinguished from competitive conduct.

VI. *Conclusion*

This Article has (1) examined the state of commodity market manipulation law and (2) proposed a new set of tests that promises to address many of the defects in the existing decisions in manipulation cases. Two findings deserve emphasis.

First, the existing case law on manipulation is extraordinarily misguided. In particular, many of its precepts are based on a complete misunderstanding of the economics of manipulation. In its current state, the law is less a deterrent to manipulators than an invitation to them.

Second, this state of affairs is redeemable. It is possible to assign the liability for manipulative conduct with a considerable degree of precision by employing a set of criteria firmly grounded in an understanding of the economics of manipulation. A corner leaves a trail that is readily followed to its source if one recognizes the telltale markers—price effects, quantity effects, and trader conduct. Straightforward application of statistical inference techniques allows an adjudicator to determine *ex post* whether a market was manipulated and who manipulated it with a high degree of

precision. Thus, I strongly concur with Richard Friedman's statement that by asking and answering the right questions—questions motivated by a clear understanding of the predictable effects of the offense—courts can effectively detect and deter manipulation.¹⁶⁴ If they do so, courts will make draconian *ex ante* restrictions on trader conduct that demoralize legitimate trader conduct unnecessary

164. *See supra* text accompanying note 140 (quoting Friedman's statement).