CHAPTER 2

FUTURES MARKETS: REFINEMENTS

OVERVIEW

In this chapter we explore the structure of the futures markets in more detail than we did in Chapter 1, and we consider some of the current issues facing the futures industry. We begin with a more detailed examination of the margin system. In Chapter 1, we considered margins for single futures contracts. Margin rules also apply to combinations of futures positions, and this chapter explores how margins function when traders hold several related futures positions. Today, the exchanges are developing and implementing systems to consider the risk level for a trader's entire position across all futures exchanges.

We next consider the economic forces that shape the competitive structure of the futures industry. In the futures industry we rarely see multiple exchanges offering similar contracts and competing head-to-head in direct competition. However, this does not mean that competition between exchanges is lacking. In fact, futures exchanges vigorously compete with each other for the right to host a market, such as the market for 10-year Treasury note futures. The usual result of this competition is that virtually all trading volume for a contract will migrate to a single exchange and stay there. This result occurs because of "network effects" that result in lower trading costs as more trading volume flows to an exchange.[1] We will explore in detail the many ways in which futures exchanges compete, both with each other and with services provided in related markets.

In the next section, we examine the specialized role of brokers, trading advisors, and other professionals within the futures industry to show more completely how futures trading works. These specialists, collectively called "intermediaries," provide the interface between customers and the exchange. We will explore the function of each group and how they fit into the regulatory structure of the futures industry.

As we noted in Chapter 1, the United States has dominated the futures industry for many decades. Now, non-U.S. markets are major players and compete with markets in the United States for global primacy. Starting from relative obscurity in the 1980s, non-U.S. markets are now collectively larger than markets in the United States. The process of globalization will continue to shape the futures industry in the years ahead. We consider the impact of globalization on the futures industry in this chapter.

Globalization is intimately tied to electronic trading. As recently as 1998, electronic trading accounted for only a small percentage of total trading volume. Today, half of all futures trades, and most financial futures trades, occur on electronic systems. These systems allow traders in New York to trade in Japanese markets as if they were sitting in Tokyo. Worldwide electronic trading through the

Chicago Mercantile Exchange's (CME's) Globex system began in 1992. Eurex, a pioneer in electronic trading that began operations in 1997, has seen trading volume on its all-electronic exchange surpass the volume of the world's largest futures exchanges within the first 5 years of operation. This chapter addresses the key issues associated with electronic trading.

We next look at current issues facing the futures industry. We begin by exploring issues of exchange governance and clearinghouse governance. Governance issues have become controversial in the futures industry as trade execution and clearing have evolved into separate, as opposed to integrated, functions. Governance issues have also become important as exchanges have changed their ownership structure from membership organizations to for-profit corporations. Other important industry issues include the clearing of Over-the-Counter (OTC) derivatives at futures clearinghouses, block trading, dual trading, the proposed repeal of Federal speculative position limits, and payment for order flow. In addition, we look at issues raised by the development of event markets. These markets allow market participants to trade on the probability of occurrences such as the outcome of an election, corporate earnings results, or natural disasters. These markets gained notoriety in the summer of 2003 when it was revealed that the U.S. Department of Defense was considering sponsorship of an experimental event market to assess the probability of certain political events occurring. This chapter considers these industry issues in detail.

Finally, we explore market manipulation and the laws and regulations aimed at deterring it. We explore various types of manipulation strategies and provide examples of actual manipulations and alleged attempts to manipulate futures markets. We also look at the issues raised by Commodity Futures Trading Commission (CFTC) investigations into several energy-trading companies who allegedly reported false prices to the providers of price indexes used to settle futures contracts.

MARGINS: A CLOSER LOOK

Chapter 1 introduced the concept of margins for futures markets. There we saw that **initial margin** is a deposit of cash or Treasury securities required before any futures trade. This deposit protects the broker and the market from default by a trader who incurs losses. When the value of that initial deposit is eroded to a level below the **maintenance margin**, the trader must make new payments, called **variation margin**, to restore the value of the trader's account to the level of the initial margin. In this chapter, we extend our discussion of margin-to-margin practices for combinations of futures positions, and we show how margin rules are being developed to reflect the risk of these combined positions.

MARGINS FOR COMBINATIONS OF FUTURES POSITIONS

As we explore in Chapter 4, speculators often hold combinations of related futures positions. Such a combined futures position is called a **spread**. For example, a speculator might hold a long position in a wheat futures contract for July delivery and a short position in a wheat futures contract for September delivery. (The speculator would be attempting to profit on a change in the relationship between the prices on the two futures contracts.) Not surprisingly, the prices of the July and September wheat futures contracts are closely related. In this example, both futures positions are in the same commodity. A spread position with both futures positions in the same commodity is called an **intramarket spread**,

a **calendar spread**, or a **time spread.**[2] The futures contracts in a spread usually have related price movements, which reduces the risk of a spread relative to a single contract. Because the risk of the spread is less than the risk of holding a single outright contract, the exchange imposes lower margin requirements on such spreads. As an example, the wheat contract might have an initial margin requirement of $2,500 for a single futures contract. If a trader holds an intramarket spread in wheat, the margin could be much lower, say $1,500. This lower spread margin covers both contracts in the spread of our example. Thus, the spread margin per contract is less than half the outright margin. All time spreads receive this favorable margin treatment.

In addition to intramarket spreads, there are also spreads between different, but related, commodities. For example, a trader might hold a long futures position in July wheat and a short position in July oats. A spread in two distinct, but related, commodities is called an **intermarket spread** or **intercommodity spread.** Not every pair of commodities is sufficiently related to receive treatment as an intermarket spread. For example, there is a close relationship between wheat and oats, but such a close relationship does not exist between wheat and coffee. The exchanges determine which commodity pairs constitute an intermarket spread for purposes of margins. Table 2.1 shows some pairs of commodities that qualify for spread margins. As the table shows, qualification for intermarket spread margining treatment depends on a close economic relationship between the two commodities. Notice that each of these spread margin pairs is for commodities traded on the same exchange. This system results from the fact that each exchange sets its own margins. With each exchange establishing its margins independently, there is little opportunity for considering spread relationships between related commodities traded on two different exchanges.

As an example of an intermarket spread, consider a trader who holds a short position in one December S&P 500 futures contract and a long position in one December NASDAQ 100 futures contract. Both contracts are traded at the CME, and the combined positions qualify for an intercommodity spread credit. Based on historical price movements, the clearinghouse has determined that the maintenance margin for the S&P 500 futures position is $17,250 and the maintenance margin for the

Table 2.1 Examples of Intermarket Spreads Qualifying for Spread Margin Treatment

Exchange	Commodity Pair
Chicago Board of Trade	Treasury bonds versus Treasury notes
	Any pair of wheat, corn, or oats
	Any pair of soybeans, soyoil, or soymeal
	Gold versus silver
Chicago Mercantile Exchange	Eurodollars versus Treasury bills
	S&P 500 versus NASDAQ 100
	Any pair of foreign currencies (British pound, European Union Euro, Swiss franc, Japanese yen, Canadian dollar, Australian dollar)
	Any pair of cattle, feeder cattle, or hogs.
	Pork bellies versus hogs

NASDAQ 100 futures position is $27,000. Separately margined, the positions would have a combined maintenance margin of $44,250. Based on the historical correlation between the two contracts, the clearinghouse allows a $26,993 intercommodity spread credit. This means that the maintenance margin for the combined positions is $17,257, that is $44,250 − $26,993.[3]

INTERMARKET CROSS-MARGINING

Intermarket cross-margining is a system that establishes a trader's margin requirement by considering the trader's entire portfolio, even if portions of that portfolio are held on different exchanges. In essence, the idea extends the principle of spread margins across exchange boundaries. As an example, Eurodollar and Treasury bond futures prices are clearly related. However, Eurodollar futures trade at the CME and Treasury bond futures trade at the Chicago Board of Trade (CBOT). A margining system that recognizes a spread between Eurodollar futures and bond futures would be a system of intermarket cross-margining. In total, there are 11 futures clearinghouses in the United States, each of which imposes its own margin requirements for its clearing members. With some exceptions, one clearinghouse does not recognize the positions that traders hold at other clearinghouses. As a consequence, each position is margined separately.[4]

Today there is a limited intermarket cross-margining system. Intermarket cross-margining for futures becomes possible if a trader holds positions on two different exchanges through the same brokerage firm. For example, assume a trader holds a long SEP Eurodollar futures contract and a short SEP Treasury note contract with her broker, Merrill Lynch. This position would qualify for spread margin, because both sides of the spread are held with the same broker. The broker fulfills the function of identifying the two individual futures positions as two halves of a single spread. However, if the trader held the Eurodollar position with Merrill Lynch and the note position with Salomon Brothers, for example, the position would not qualify for reduced margins.

Some market observers have called for an extension of intermarket cross-margining. Under these proposals, margin rules would consider a trader's full position, not only across different futures exchanges, but also across fundamentally different types of instruments. Much of the impetus for such a broad cross-margining system has emerged from studies of the market crash of October 1987. After the crash, the Brady Commission studied the performance of the financial system during that stressful time. As one of their conclusions, the commission endorsed intermarket cross-margining. Because the Brady Commission focused on equities, we will use stock trading as an example. The principles apply to other kinds of instruments. Individual stocks trade on stock exchanges and through the NASDAQ system. Options on individual stocks and stock indexes trade on various option exchanges. Stock index futures trade on various futures exchanges, as do options on those stock index futures. Considered in total, equity trading spans a large number of exchanges.

Full intermarket cross-margining would consider a trader's total equity position of all types in determining the necessary margin position. Because margin requirements are supposed to reflect the trader's risk exposure, such a system of cross-margining would be highly desirable, since it would monitor the trader's total risk. In many instances, a trader's entire portfolio risk can be less than the sum of the risks represented by the individual pieces. For example, a trader holding a large portfolio of individual stocks, who sells a stock index futures contract, is essentially a spread trader. Like spread traders in other goods, this trader's total risk exposure might well be less than the risk exposure

represented by either the stock portfolio alone or the futures position alone. Under intermarket cross-margining, the margin requirements would recognize the real extent of the trader's risk.

There are at least five benefits of such a cross-margining system. First, the total amount of initial margin required from traders will be less for a given degree of risk protection. This would free capital for other applications, such as meeting variation margin calls. Second, cross-margining would probably require a central clearinghouse to serve the various markets. Such a central clearinghouse would reduce transfers of money between accounts and increase the operational efficiency of the market. Third, lower margin requirements would help to attract more traders. Having more traders in the system would contribute to making the markets more liquid. Fourth, such a system would help U.S. exchanges compete with the burgeoning foreign financial markets. Finally, in periods of dramatic price changes, cross-margining would reduce the chances of a forced sell-off by some traders. For example, assume there is a large price rise in the stock market and consider a trader who owns stocks and is short a stock index futures contract. Rising stock prices generate a loss for a short stock index futures trader. If the margin system requires margin based only on considering the futures position in isolation, the trader would be required to pay variation margin. However, if the trader owns stock and sells a stock index futures contract against it, the rise in stock prices might generate a gain on the stock itself that would fully offset the losses on stock index futures. The economics of such a situation do not require any increase in the trader's margin payments. Only a system of cross-margining could reflect the true economics of this trader's position.

Cross-margining also may involve certain risks. First, reducing margin might free capital for additional trading, not merely as a reserve against future margin calls. Cross-margining might merely mean that the system as a whole holds less margin money, thereby causing an increase in the overall risk of system-wide default. Second, the offsetting positions might diverge from their normal relationships. In this case, there could be losses on both sides of the position instead of a loss on one side coupled with an offsetting gain on the other.

Cross-margining can take place between clearinghouses in different countries. For example, the CME, the London Clearing House (LCH), and the London International Financial Futures Exchange (LIFFE) entered into a cross-margining program for clearing member firms and their affiliates who have positions in the CME's Eurodollar contract and LIFFE's Euribor and Euro LIBOR contracts.

One impediment to full intermarket cross-margining is the clearinghouses and the exchanges themselves. Cross-margining means that clearinghouses could be consolidated or eliminated. Therefore, some clearinghouses are reluctant to open a Pandora's box of cross-margining that may lead to their demise.[5] In addition, some exchanges resist intermarket cross-margining because they fear it will aid rival exchanges who may trade nearly identical products.

THE SPAN MARGIN SYSTEM

While full cross-margining remains in the future, a partial cross-margining system is already in widespread use. SPAN stands for **Standard Portfolio Analysis of Risk**. SPAN is in use at most U.S. futures clearinghouses today. It offers cross-margining between futures and options on futures by considering the entire portfolio in setting margin requirements. The price of an option on a futures contract depends on a number of factors, including the price of the futures, the volatility of price

movements on the futures, and the amount of time remaining until the option expires. Option pricing models are discussed in Chapters 12 and 13.

The SPAN system considers 16 possible "what if" scenarios to determine the appropriate portfolio margin. The 16 scenarios reflect changes in the futures price and changes in the volatility of futures prices. To implement SPAN, the clearinghouse must first determine the maintenance margin level for each futures contract traded at the exchange on a separate, stand-alone basis. The maintenance margin level is selected subjectively by the clearinghouse based on a series of historical one-day price movements for the futures contract. A higher maintenance margin level reflects margin coverage over a greater range of possible outcomes than a lower maintenance margin level. The maintenance margin level becomes an input into the SPAN portfolio margin calculation. Within SPAN, a scenario specifying a futures move of "up $\frac{2}{3}$" means that we view the futures price as moving upward from the current futures price by two-thirds of the maintenance margin level. Within SPAN the futures maintenance margin level is called the **price scan range**.

A volatility range, called the **volatility scan range**, is defined for each futures option-contract. The volatility scan range is determined subjectively by the exchange based on the volatility levels implied by futures option prices. For a portfolio consisting only of futures contracts, the volatility scan range does not affect the portfolio margin calculation. In such a case, the SPAN result will be consistent with the intercommodity spread margin discussed above. Clearinghouses update their scan ranges and other risk parameters each day.

Table 2.2 shows the 16 different scenarios applied to a portfolio containing both futures and futures options. Each scenario is defined in terms of the price scan range for the individual futures contract and the volatility scan ranges for each of the futures option contracts. The SPAN system uses option-pricing models to compute how the value of the portfolio would change under each of the 16 scenarios. The margin requirement equals the largest loss under any of the 16 scenarios.[6] For example, the largest loss in Table 2.2 occurs under scenario 14 at $31,172 (note: losses are reflected by positive values). The minimum maintenance margin requirement for this portfolio would be the **scanning range risk charge** of $31,172. The exchange will set the initial portfolio margin requirement as a function of the scanning range risk charge. For example, the CBOT sets the initial portfolio margin level to be 35 higher that the scanning risk charge. SPAN can be used at the clearinghouse level to determine clearing member margin requirements or at the broker level to determine margin requirements for individual customer accounts.

VALUE-AT-RISK (VAR)

Value-at-risk (VAR) is a concept developed to measure, in a single number, the entire price risk of a firm's portfolio. Originally developed to measure the risk of trading portfolios containing derivatives, VAR can be applied to all types of financial instruments and represents the underlying logic behind risk measurement systems like SPAN. The goal is to estimate the level of loss on a portfolio that is expected to be equaled or exceeded with a given, small probability. For example, the manager of a trading desk might compute a daily VAR of $20 million at the 99 percent confidence level. In other words, the manager estimates that there is a 1 percent chance (i.e. 100–99), under normal market conditions, that a daily loss greater than $20 million will occur. This single number summarizes the trading desk's exposure to market risk. VAR is a probabilistic statement, and therefore VAR is a statistical measure of risk exposure.

SPAN Margin for a Portfolio Containing Futures and Futures Option Contracts **Table 2.2**

Scenario Number	Scenario	Long 1 June Futures Contract	Long 1 June Futures Call Option Contract	Total
1	Futures unchanged; volatility up	0	−1,636	−1,636
2	Futures unchanged; volatility down	0	2,123	2,123
3	Futures up $\frac{1}{3}$; volatility up	−5,750	−5,954	−11,704
4	Futures up $\frac{1}{3}$; volatility down	−5,750	−2,647	−8,397
5	Futures down $\frac{1}{3}$; volatility up	5,750	2,384	8,134
6	Futures down; volatility down	5,750	6,523	12,273
7	Futures up $\frac{2}{3}$; volatility up	−11,500	−10,533	−22,033
8	Futures up $\frac{2}{3}$; volatility down	−11,500	−7,711	−19,211
9	Futures down $\frac{2}{3}$; volatility up	11,500	6,077	17,577
10	Futures down $\frac{2}{3}$; volatility down	11,500	10,478	21,978
11	Futures up $\frac{3}{3}$; volatility up	−17,250	−15,340	−32,590
12	Futures up $\frac{2}{3}$; volatility down	−17,250	−12,995	−30,245
13	Futures down $\frac{2}{3}$; volatility up	17,250	9,415	26,665
14	Futures down $\frac{2}{3}$; volatility down	17,250	13,922	31,172
15	Futures up 3 × price scan range	−15,525	−14,065	−29,590
16	Futures down 3 × price scan range	15,525	6,837	22,362

Value-at-risk can be estimated by simulation or through analytical techniques. One common simulation technique is called the Monte Carlo approach. The Monte Carlo approach is used to simulate a variety of different scenarios for a portfolio's next-day value. The approach requires assumptions about the distribution of daily changes in the underlying market factors such as interest rates, foreign exchange rates, and market indexes. A common assumption is that underlying market factors are normally distributed. Using historical observations of the factors, the parameters of the distribution are estimated. The Monte Carlo approach then uses the estimated factor distribution to generate a simulated set of possible future daily changes in the factors. For each set of simulated factor changes, the portfolio is revalued using valuation models. The result is a set of simulated portfolio values corresponding to the set of simulated changes in the underlying market factors. The set of simulated portfolio values produces a distribution of values from which the 99th percentile loss represents the daily VAR at that level of confidence.

A second simulation method for calculating VAR is called historical simulation. The historical simulation approach resembles the Monte Carlo simulation approach except that it skips the step of making assumptions about the distribution of changes in market factors. Instead, the approach uses observed historical changes in the factors to generate an historical distribution of factor price changes.

This type of distribution is sometimes called an empirical distribution because it relies only on historical outcomes and makes no assumptions about distributional shape or distributional parameters. The approach uses actual historical changes in market factors as the simulated changes used to revalue the current portfolio. As with the Monte Carlo approach, the current portfolio is revalued using valuation models for each position in the portfolio. The only difference between the two techniques is that the Monte Carlo approach generates simulated factor changes from assumed factor distributions whereas the historical approaches uses actual historical factor changes to determine the expected distribution of portfolio values. The end result of historical simulation is a set of portfolio values corresponding to the set of possible factor changes. From this simulated distribution, the 99th percentile loss would be the VAR at this level of confidence.

In addition to simulation, many institutions use an analytical technique, called RiskMetrics, popularized by JP Morgan (now JP Morgan Chase) in the 1990s. RiskMetrics has evolved into a separate product supported by the RiskMetrics Group. RiskMetrics provides a vector of risk factors to its clients, updated each day, via the Internet. An historical time series of the daily changes in the underlying factors is used to determine the variance for each factor and the covariance between each factor. Under the RiskMetrics approach, the variances and covariances are combined with "factor sensitivity" measures and position information to produce an estimate of the distribution of possible portfolio changes over the next day. The term "factor sensitivity" refers to how much the portfolio's value changes in response to a small change in the value of a factor. A separate factor sensitivity is estimated for each factor. The factor sensitivities are determined position by position – analytically, that is, by modeling the price change of a product due to a change in a factor, assuming that all other factors are held constant. This process is repeated for all factors. The result is a set of factor sensitivities that describe the expected change in portfolio value resulting from small changes in the portfolio's underlying risk factors. The portfolio factor sensitivities are found by simply adding the individual product factor sensitivities across all products in the portfolio. By combining the matrix of variances and covariances for the factors with the vector of factor sensitivities, and transforming the result to the desired level of confidence, the VAR estimate for the portfolio can be determined.[7]

For measuring market risk in portfolios containing only futures, the RiskMetrics approach works well. This approach works particularly well for portfolios containing "linear instruments," that is derivative products whose value changes proportionally with changes in the value of the underlying instrument. Futures contracts, as we will see in Chapter 3, meet the definition of linear instruments. For portfolios containing more complicated derivative instruments, such as options, either historical simulation or Monte Carlo simulation may be a more appropriate approach to measuring VAR.

EXCHANGE COMPETITION

Within the futures industry there are two levels of exchange competition. The first level is competition between traders on the exchange floor, or electronic trading system, who make bids and extend offers for futures contracts. This type of competition is often cited as an example of unfettered free enterprise and pure competition. This view was memorably expressed in a scene from Paramount Studio's 1983 hit movie *Trading Places*. In the scene, Dan Aykroyd's character remarks to Eddie Murphy's character

as they prepare to enter the exchange floor that futures trading represents "the last bastion of pure capitalism left on Earth." Yet it is important to note that transactions in these markets are highly regulated and in a manner quite different from any government regulation there might be. Futures exchanges regulate in great detail trading practices, what can be traded, the terms of clearance and settlement, and standards of business conduct. Futures exchanges also impose sanctions against those who infringe upon exchange rules. Apparently, for perfect competition to exist, an intricate system of rules and regulations is needed to lower the cost of trading, increase trading volume, and to promote overall trading efficiency.[8] Futures exchanges adopt rules and regulations necessary to promote vigorous competition in the markets they host.

The second level of competition exists between futures exchanges to become the market host. Although several exchanges may launch similar contracts in direct competition with each other, typically only one (if any) exchange succeeds in establishing a viable market for the product. Once a market is established at a particular exchange, the cost of switching from the established, liquid market to a new, illiquid market can be prohibitively high.[9] There are only a few instances in futures market history where an established contract has been pulled away to be hosted by a competing exchange.[10] We rarely see multiple exchanges offering similar contracts and competing head-to-head. Trading volume tends to migrate to one exchange and stay there. Because exchanges know that switching costs are high, there are tremendous advantages to being the first exchange to offer a contract.[11]

Occasionally direct exchange competition does result in trading volume migrating from one exchange to another. But such occurrences are rare and noteworthy when they do occur. Perhaps the most well-known episode of trading volume migrating from an established exchange occurred in 1998 with the 10-year German Bond contract (called the Bund). Prior to 1998, Bund futures were the flagship contract of the LIFFE (now Euronext.liffe), where nearly all Bund futures were traded. Starting in 1997, Eurex launched its own Bund futures contract and by August of 1998, nearly 100 percent of Bund futures trading volume resided at Eurex. The pace of migration away from LIFFE to Eurex accelerated as Eurex's share of trading volume approached the 50 percent mark. At that point the market "tipped," meaning that Eurex had now become the more liquid market, and trading volume quickly migrated away from LIFFE and to Eurex. As a result, Eurex trading accounted for nearly 100 percent of volume and LIFFE's volume dwindled to nothing.

Eurex was able to win the competition for the Bund contract for four reasons. First, Eurex, as a German-based exchange, already had substantial trading volume in futures contracts on other German debt instruments. The Bund contract complemented these other contracts. Second, Eurex introduced a new fee structure that gave volume discounts to brokers who directed trading volume to the exchange. LIFFE responded with competing volume discounts of its own, but only after it was too late. Third, Eurex, an all-electronic exchange, had recently gained regulatory approval to install trading terminals in the United States. Trading volume from the United States formed a substantial share of Eurex's volume. Finally, German banks held a substantial stake in Eurex and directed their substantial trading volume in Bund futures to Eurex.[12]

As demonstrated by the competitive advantage Eurex enjoyed as a result of offering an array of German debt instruments, one way for exchanges to compete is by trading contracts in a group of related, complementary, contracts. The CBOT trades contracts in the soybean complex, offering contracts on soybeans, soymeal, and soyoil. Trading contracts on all three gives traders the opportunity to trade one contract against the others.[13] With all three contracts trading, there is little opportunity for

another exchange to enter the field. If the CBOT traded only the soybean contract, then other exchanges might try to enter the market by offering contracts on soymeal or soyoil in an effort to draw away the business from the CBOT. To date, the CBOT has been successful in maintaining its dominant position in the soybean complex. No other exchange has been successful in this area, although the MidAmerica Commodity Exchange at one time tried to compete in soybeans by offering smaller (1,000-bushel versus 5,000-bushel) contracts.[14]

Another example of the grouping phenomenon can be drawn from the interest rate futures market. Successful contracts are traded on interest rate futures at the CBOT and the International Monetary Market (IMM) of the Chicago Mercantile Exchange. The IMM trades contracts on only very short maturity instruments, such as 3-month Eurodollar time deposits. The CBOT, by contrast, trades contracts on instruments of longer maturities, such as 10-year Treasury notes.

Another way exchanges compete is through specializing and attempting to develop market niches. For some commodities, futures contracts trade on a number of exchanges. In such cases, some product differentiation usually makes the competition less than direct. A good example of this occurs in the case of wheat. Wheat contracts are traded on the CBOT, the Kansas City Board of Trade (KCBT), and the Minneapolis Grain Exchange (MGEX). These futures contracts, however, specify somewhat different kinds of wheat. By specifying different deliverable grades of wheat, the exchanges may carve out their own market niches. For example, the Kansas City contract is written for No. 2 Hard Winter wheat, the MGEX contract is for U.S. No. 2 Northern Spring wheat, and the CBOT contract calls for delivery of one of the following types of wheat: No. 2 Soft Red, No. 2 Hard Red Winter, No. 2 Dark Northern Spring, or No. 1 Northern Spring. Since the kind of wheat differs slightly in each case, the exchanges avoid direct competition.

For wheat, another important factor in keeping contracts alive on three exchanges is the geographical distance. Each contract must specify how and where delivery can occur. The CBOT, Kansas City, and Minneapolis contracts all call for delivery at different places. If we actually consider the cost of taking delivery, the difference between a Kansas City and a Minneapolis delivery is very important, since wheat's bulk makes its transportation quite expensive.

Futures exchanges also compete with related markets. For example, OTC swap contracts in many cases are economically identical to exchange-traded futures contracts. In fact, many dealers advertise the fact that the swaps they are offer are "look alike" swaps, meaning that the swap's contract terms closely correspond with the contract terms of futures contracts. Although exchanges often view swap contracts as substitutes for exchange-traded futures contracts, the relationship can be complementary as well. Often times swap dealers turn to the futures market to hedge the risk in their swap portfolios. The best example of this is found with dealers of interest rate swaps who hedge the risks of their deal making in the Eurodollar futures market. One reason the CME's Eurodollar contract has been so successful is that swap dealers can rely on it to hedge their risks.

Another example of where futures exchanges compete with other (non-futures) markets is in stock index products. For many years the cheapest way to trade an entire stock index was to use a futures product based on a stock index. However, the development of the market for exchange-traded funds (ETFs) in the late 1990s means that there now is another avenue for investors to trade an entire stock index. An ETF is a transferable trust certificate that represents the shares of stock in an index. For example, a SPDR (Standard and Poor's Depository Receipt) is an ETF on the S&P 500. ETFs are offered by securities exchanges.

Futures exchanges also compete with some commodity price stabilization programs and crop insurance programs offered by the federal government. In recognition of this possibility, the 1996

Federal Agricultural Improvement and Reform (FAIR) Act authorized the United States Department of Agriculture (USDA) to determine whether futures and options could provide producers with reasonable protection from the financial risks of fluctuations in price, yield, and income inherent in the production and marketing of agricultural commodities.

To understand how exchanges compete, it is helpful to understand the economic incentives to which futures exchanges are responding. First, we must recognize that a futures exchange is a business firm that creates markets. The creation of markets is an entrepreneurial activity that entails substantial costs, such as gathering information, searching for trading partners, bargaining, and enforcing contracts.[15] Futures exchanges economize on these costs by specifying the rules of trading, the terms of exchange contracts, the conditions of exchange membership, and the technology employed for order entry and trade execution.

By viewing futures exchanges as firms that create markets, we can see more clearly some of the ways exchanges compete. Among the ways exchanges compete is through innovation in the design of the contracts they offer, the technology they employ, the fees they charge, the business models they adopt, and the quality of trading information they provide to investors.

Exchanges also compete directly for the exclusive right to trade particular contracts. For example, exchanges bid for the exclusive right to use the S&P name in the creation of S&P stock index futures contracts in North America. For more than 20 years the CME has prevailed in this competition. Likewise, the CBOT outbid its competitors to win the exclusive right to create Dow Jones futures contracts based on the Dow Jones trademarks. Exclusivity rights come up for bid periodically. Bidding for the exclusive right to trade is true competition even though the exclusivity embedded in the agreement will necessarily mean that the contract will trade at only a single exchange. The "franchise-bidding model" is a credible way for competition to exist and flourish.

Still, if the final result of competition between exchanges is that trading volume migrates to a single exchange, isn't this bad? The answer is "not necessarily." Centralized trading, that is, trading on a single exchange, can actually be efficient in the sense that it reduces the economy-wide costs of producing the service. In futures markets, the network effects of centralized trading lower trading costs to everyone by increasing liquidity and reducing so-called transaction costs, that is, the costs of searching for trading partners, bargaining, enforcing contracts, resolving disputes, etc.

Having trading volume migrate to a single, dominant exchange raises antitrust concerns. However, antitrust law is aimed at deterring market dominance that is achieved or extended through anticompetitive conduct. Under antitrust law, the important question is whether an exchange's dominant position was achieved through open market competition, that is, by offering a superior product, service, or business model. Anticompetitive conduct refers to the creation of artificial barriers to prevent potential competitors from entering the industry.[16] Often times these artificial barriers are created by government as a result of lobbying by aspiring monopolists. In other words, under antitrust law there is nothing wrong with being the dominant futures exchange as long as the exchange's dominant position was achieved through open competition.

Is it possible that the dominant position of futures exchanges in trading particular contracts reduces their incentive to innovate? This does not appear to be the case as one of the most fertile areas of exchange competition is through innovation, particularly innovation in contract design and other forms of intellectual property. Exchanges know that if they are successful in launching a new product they will likely have a dominant position for many years to come. If this is so, exchanges will have a powerful incentive to innovate because they know they will reap the exclusive reward from their effort if they are successful.

Market Transparency and Competition

The word "transparency" can mean different things to different people. In the corporate finance world, people use the term to refer to the degree a firm's accounting choices help investors understand the true value of items on the firm's balance sheet. In the world of futures markets, the word *transparency* refers to the degree to which a futures exchange publicly disseminates real-time information on transaction prices, quotations, order flow, and other market variables. In the United States, the United Kingdom, and other domains, the level of government-mandated market transparency has become a source of contentious public debate. A central element of this debate is the extent to which market forces can be relied upon to supply the level of transparency demanded by the public. The debate has intensified due to recent innovations in trading technology that allow for the capture and dissemination of vast amounts of market information at low cost.

Transparency can be viewed as one dimension of competition between competing marketplaces. Futures exchanges compete in many other dimensions too: through their contract offerings, their technology employed for order entry and trade execution, their fee tructure, and their business models. As an example of how futures exchanges compete based on their transparency, consider the experience of the New York Mercantile Exchange (NYMEX), the world's major market for energy futures and options. Following the collapse of Enron, many participants in the off-exchange, OTC derivatives market (in which Enron had been a major player) complained about the lack of transparency in the OTC market. At the same time, the NYMEX saw its trading volumes soar 35 percent in the first six months following the Enron collapse. The then-president of NYMEX, Robert Collins, explained the rise in volume this way: "People are looking at us as a flight to quality. We give customers the benefit of transparency."[17] In other words, traders in the energy market who valued transparency voted with their feet and moved their trading volume from the OTC to the NYMEX.

CONTRACT INNOVATION AND CONTRACT SUCCESS

We have seen that exchanges tend to specialize in certain groups of commodities. Yet they also compete in fringe areas where their successful contracts overlap. Relatively little is known about what makes a contract succeed or fail. For the exchanges this is an important question because introducing a new futures contract requires a substantial expense. The contract must be designed, trading must be organized, and the contract must be promoted through advertising. To commit all of these resources and still fail is very frustrating. Yet, by recent estimates, less than 50 percent of new futures contracts remain viable after 3 years and only 20 percent remain viable after 10 years.[18] This low success rate for new contracts indicates how much remains to be learned in the areas of contract design and competition.

Table 2.3 lists 10 factors that increase the chance of a contract's success.[19] First, there needs to be a large cash market. Usually, futures trading starts only for goods with a well-established market for the cash good. For example, stock index futures trading was attractive because of the active market in stocks. Second, there must be price volatility. If the price does not fluctuate, there can be little interest in trading on the future price of the underlying good. In 1984, a futures contract on the Consumer Price Index (CPI)

Commodity Characteristics Desirable for Futures Trading **Table 2.3**

1. Large cash market
2. Substantial price volatility
3. Good information on cash prices
4. Lack of close substitutes
5. Availability of related contracts for spread trading
6. Good contract design
7. Strong support from exchange members
8. Large deliverable supply
9. Absence of regulatory barriers
10. Homogeneous cash commodity

was launched. It failed in 2 years, perhaps due to a lack of volatility. Even in periods of high inflation, the CPI may not be particularly volatile. However, the contract launch occurred at an unlucky time of low and stable inflation. Third, there needs to be good information on cash market prices. As we discuss in Chapter 3, there is an intimate relationship between cash market prices and futures market prices. Traders in both markets look to the other for information about the present and future direction of prices. In essence, traders trade futures contracts against the cash market goods. This makes good information about cash prices essential. Fourth, there must be a lack of close substitutes for the new futures contract. If a successful contract already exists for a particular good, traders will not want to switch to a new and untried similar contract. Traders like to trade in liquid contracts, so they will likely stay with a liquid existing contract rather than try an unproven and illiquid similar futures contract.

Fifth, traders not only trade the futures contract in relation to the cash market, but they also trade one futures against another. Therefore, a contract has an improved chance of success if there is already a similar, but not too similar, existing contract. For example, the CBOT lists futures contracts on 10-year Treasury notes and 5-year Treasury notes. The two are closely related, so the presence of both stimulates spread trading. However, they are sufficiently distinct so that each contract is viable. Sixth, the contract must be designed well. In 1975 the CBOT listed a contract on mortgage interest rates, the Government National Mortgage Association (GNMA) contract. The contract suffered from poor design because one set of traders was interested in high coupon GNMAs, while a second group wanted to use the market for low coupon GNMAs. This conflict of trading interest contributed to the demise of the contract.[20] Seventh, there must be strong support from exchange members. When an exchange launches a contract, the exchange members need to support the new contract with active trading. If the members of the exchange are unwilling to trade the contract, the market will lack the liquidity necessary to attract traders from outside of the exchange. Other factors on the list, such as price volatility, the potential for spread trading, and an active cash market help to stimulate floor trader interest. Eighth, there should be a large deliverable supply of the cash market good. With a large deliverable supply, no one party can control the cash good and affect price. Ninth, there should be an absence of legal barriers. In the early 1980s, the CBOT attempted to list a futures contract based on the Dow Jones Industrial Average of thirty blue chip stocks. Dow Jones successfully sued to prevent the listing altogether. It was not until 1997 that the CBOT was able to gain the permission of Dow Jones to form futures products based on the Dow Jones stock indexes. Finally, the underlying good should be homogenous, or "fungible." Fungibility is important for ensuring a uniform and large deliverable supply. If the underlying good varies tremendously in quality, for example, the delivery process will be impaired.

In spite of these apparent determinants of futures market success, much is still unknown.[21] Among the exchanges themselves there is considerable consternation about what makes a futures contract

succeed. More often than not, new contracts fail in spite of the best efforts of the exchanges. Other times, exchanges inadvertently stumble onto successful contracts. For example, in 1998 the CME created a smaller version of its successful S&P 500 futures contract. This smaller contract, called the e-mini, was one-fifth the size of the regular S&P 500 futures contract and was aimed at individual investors. It was traded exclusively on the CME's Globex electronic trading system. The CME did not have great hopes for this contract but figured it would bring in some additional retail trades. The CME fully expected that institutional investors would continue to use the larger floor-traded contract. To their amazement, institutional volume migrated to the smaller contract and the e-mini became tremendously successful, while the established S&P 500 futures contract withered.

The story of the CME's Eurodollar futures market points out another path to success. Initially, the CME viewed OTC interest rate swap transactions based on the London Inter-Bank Offer Rate (LIBOR) as pure substitutes for the Eurodollar contract. As a result of this view, the CME viewed interest rate swaps as a threat to the survival of the Eurodollar futures contract. However, the exchange soon discovered that swap dealers used the Eurodollar futures markets as a way to hedge the risks from their dealing activities. In fact, the two markets were complementary and swap activity spawned new trades in the Eurodollar futures pit. Largely because of the participation of swap dealers, the CME's Eurodollar futures contract is now viewed as one of the most successful futures contracts ever developed.

How Does a Futures Exchange Make Money?

A futures exchange is a business. Although many exchanges are organized as "not-for-profit" businesses, this does not mean that the owners of the exchange, that is, the members, are unconcerned about making money. The term not-for-profit simply means that earnings are not distributed as cash dividends to the members. Instead of distributing earnings, not-for-profit exchanges invest the retained earnings in a variety of ways to improve the productivity and comforts of their members. The earnings are invested in improving the quality of the trading facilities, hiring professional staff to run the exchanges' day-to-day operations, and investing in the development of new futures contracts. In the past there have been numerous productive uses for the retained earnings so that the not-for-profit structure of the exchanges was not a constraint on wealth maximization. Over the past decade, however, exchange members have become more skeptical about investing more retained earnings into exchange operations. More and more exchanges are "demutualing" and becoming "for profit" businesses so that free cash flows can be returned to the members. In December 2002, the CME, which had already demutualized, conducted the first initial public offering of shares by a futures exchange. These shares are traded at the New York Stock Exchange (NYSE) under the ticker symbol CME.

Shown below are excerpts from the 2002 income statement for the CME. The sources of income and revenue are characteristic of most major exchanges. In particular, notice that the sale of real-time data, that is, the quotation data fees, represent the second largest source of income. At other exchanges, such as the CBOT and the MGEX rent from real estate holdings is a major contributor to revenue.

Continued

Revenues	
Clearing and transaction fees	$356,396,000
Quotation data fees	$48,717,000
Globex access fees	$12,945,000
Communication fees	$9,733,000
Investment income	$7,740,000
Securities lending interest income	$18,169,000
Other	$15,379,000
Expenses	
Salaries and benefits	$114,899,000
Stock-based compensation	$3,811,000
Occupancy	$22,400,000
Professional fees and licenses	$32,549,000
Maintenance of computers and software	$46,569,000
Depreciation and amortization	$48,509,000
Patent litigation settlement	$6,240,000
Public relations and promotion	$6,514,000
Other	$17,457,000

BROKERS, ADVISORS, AND COMMODITY FUND MANAGERS

We have already seen that speculators and hedgers are traders who trade for their own accounts. Also, we have mentioned that the market utilizes brokers, that is, individuals who execute trades for a customer or a firm, whether they be a speculator or a hedger. In this section, we consider brokers in more detail, because there are a number of different types of brokers. In addition, this section considers advisors and managers of futures funds, as listed in Table 2.4.

In discussing brokers in Chapter 1, we focused on an individual who executes orders on the floor of the exchange. We mentioned that such a broker is often the employee of a brokerage firm, such as Merrill Lynch. In the futures market, there are special names for the individuals and firms that execute orders on behalf of others.[22]

Floor Broker (FB)

When an individual trader, who is not a member of the exchange, places an order, he or she usually does so through an account executive with a brokerage firm. The order is transmitted to the floor of the exchange where it is executed by a **floor broker** (FB), an individual who executes an order for the purchase or sale of a futures contract for another person. There are about 8,500 FBs registered across all exchanges in the United States.

Many FBs are members of **broker associations** or **broker groups**. A broker group is an association of FBs who band together to fill orders for their customers. The group might be as small as two brokers

Table 2.4 Futures Industry Registrants Brokers, Advisors, and Fund Managers

Category	Number (September 30, 2003)
Associated Person (AP)	48,062
Commodity Pool Operator (CPO)	2,059
Commodity Trading Advisor (CTA)	2,812
Floor Broker (FB)	8,756
Floor Traders (FT)	1,458
Futures Commission Merchant (FCM)	205
Introducing Broker (IB)	1,646
Total	64,998

Source: CFTC 2003 Annual Report.

who cover for each other during vacations or as large as groups of brokers that operate in several markets and who share profits and expenses. These broker groups have become an important force among the trading community. For example, there are more than 200 broker groups at the CME and more than 100 at the NYMEX.

Broker groups provide some services to the futures community. First, they provide a training ground for new brokers. Second, they provide a flexible pool of manpower to respond to radical fluctuations in trading volume. Third, they provide an easy way for large brokerage houses to achieve execution in several pits simultaneously. Fourth, the capital of the association stands behind each of the members of the group. Thus, there is less chance of any single broker defaulting.

These broker groups have become the object of criticism for several reasons. First, the existence of an association might encourage members to trade with each other preferentially, instead of offering a trade to the entire market as the rules require. Second, broker groups were accused of dishonesty in fulfilling customer orders in some important legal actions during the 1990s. For example, one member of a broker group might trade for his own account, while another member of the same group might act as a FB in executing an order for someone outside the broker group. The temptation exists to give a preferential price to the other member of the broker group at the expense of the outside party.[23] In 1993, the CFTC increased its monitoring of these broker groups and required identification of such cooperative relationships.

The advent of electronic exchanges has reduced the role of FBs. The electronic trading environment has produced a new type of trader, called an "e-local," who performs many of the same tasks that FBs performed in an open outcry trading environment. These traders also form associations, called **trading arcades**, that allow e-locals to trade in the company of other e-locals and share in office overhead expenses for such things as computer systems and real-time news feeds. Other e-locals associate through a **prop shop**, that is, a proprietary trading firm that pays the e-local a salary and a share of the firm's profits.

Futures Commission Merchant (FCM)

A **futures commission merchant** (FCM) is a brokerage firm that accepts orders to trade futures on behalf of public customers and who accepts money to support such an order. In many cases, the FCM will be a large firm with offices in many cities that accepts orders from individuals and other firms. The FCM transmits these orders to the floor of the exchange where they are executed by a FB. The FB may be an employee of the FCM, although this is not always the case. Since the mid-1980s, the number of FCMs has declined due to consolidation in the industry and very stiff competition. In 1984, there were approximately 400 FCMs, but that number declined to about 205 by 2003. FCMs must be registered with the NFA. FCMs are periodically audited for regulatory compliance by the NFA with oversight by the CFTC.

Within the futures industry, FCMs are sometimes called **carrying firms**, or **commission houses**. The FCM earns a commission for executing orders and for performing other services, such as clearing, on behalf of customers. Customer margin balances that are not forwarded to the clearinghouse can be invested by the FCMs in safe financial instruments from which the FCM can earn investment income. In this respect, FCMs play a role similar to that of a bank.

Over the past decade, mergers within the financial services industry have reduced the number of stand-alone FCMs. Although stand-alone FCMs still make up the majority of FCMs, many FCMs today are also broker/dealers who are registered with both the CFTC and the Securities and Exchange Commission (SEC). These broker/dealer–FCMs trade securities in addition to futures. FCMs are often part of a financial services holding company that offers a variety of services to customers. For example, Fimat is one of the world's largest global brokers. They are a wholly owned subsidiary of Société Générale in France. They offer clearing and execution services on exchange traded financial and commodities futures and options contracts across 21 marketplaces. Appendix C shows the top 40 FCMs in the United States during 2004.

With few exceptions, public customers must use an FCM to place a trade at an organized futures exchange. Two small exchanges, FutureCom and HedgeStreet, allow customers to trade without an intermediary but these are exceptions to the general rule.

Churning

Churning refers to the actions of brokers who execute trades on behalf of investors with the intent of generating commissions at the expense of the investors' interests. Churning is really a form of fraud, because the broker misrepresents how she would trade the investor's money. Churning is also a form of unauthorized trading because the broker trades the account beyond the limits to which the investor has agreed.

To establish a claim for churning in futures markets, an investor must be able to demonstrate three elements by a preponderance of the evidence: (1) that the broker (or advisor) controlled the level and frequency of trading in the account, (2) that the overall volume of the broker's trading was excessive in light of the investor's trading objective, and (3) that the broker acted with the intent to defraud the investor or acted with a reckless disregard for the investor's interests.

Continued

One way to satisfy the "excessive trading" element of proof is to compare the trading activity in an investor's account with professionally managed accounts (with similar investment objectives) where the account operators receive compensation based on performance and not on commissions. Because compensation is based on performance, these accounts do not have an incentive to churn. One study found the commission-to-equity ratio in actively managed commodity pools to be close to 19 percent annually.[24] Of course, this ratio can vary greatly depending on the fund's investment objective.

Introducing Broker (IB)

An **introducing broker** (IB) is an individual or firm that accepts orders to trade futures, but who does not accept the funds from customers. Instead, the IB will have an established relationship with one or more FCMs, where the FCM processes the customer's trade, holds the customer's margin deposit, and provides accounting and documentation of the trades to the customer. Such an FCM is called the **carrying broker**. Customers of the IB must open accounts that are carried separately on the FCM's books. Essentially, the IB finds a customer, solicits that customer's business, and is responsible for maintaining customer relationships and servicing customer accounts. However, the IB does not process the trade or hold margin deposits. The IB and carrying broker share the commissions earned for executing trades. In 1989, the number of IBs peaked at about 1,800. By late 2003, the number of IBs had fallen to about 1,650.

A 2004 survey of IB firms offers a business profile of a typical IB. Although some IBs operate on a large scale, the typical IB is a small, one-office operation with 50 active accounts and gross commissions of less than $200,000/year. Customers of IBs tend to trade agricultural commodities and the primary reason they choose their IB is for service. Half the IBs surveyed had maintained a relationship with a single FCM for more than 3 years.[25]

Associated Person (AP)

An **associated person** (AP) is an individual who solicits customer orders, customer funds, or customer participation in a commodity pool, or an individual who supervises anyone who makes such solicitations. Associated Persons are the account executives and sales people who deal directly with customers on behalf of an FCM or IB. This broad category includes most of the professional individuals who make their livings in the futures industry. There were more than 55,000 APs in 1990, but that number fell to about 48,000 by 2003.

Commodity Trading Advisor (CTA)

A **commodity trading advisor** (CTA) is a person who directly or indirectly advises others regarding their futures trading. This category also applies to individuals who advise the public through written

publications or other mass media. Thus, the writer of a futures newsletter who recommends certain positions in the futures market would be a CTA. In 2003, there were more than 2,800 CTAs registered in the United States.

Commodity Pool Operator (CPO)

A **commodity pool operator** is an individual or firm that pools together the funds of many investors into a single account for the purpose of trading futures and futures options. A **commodity pool** is the futures market analog to the securities market's mutual fund in which individuals contribute funds for investment in stocks and bonds. Typically, a number of individuals contribute funds to form the commodity pool. The pool operator uses those funds to engage in futures trading designed to achieve to a predetermined trading objective. The individuals who contributed funds to the pool own a share of the entire pool. There are over 2,000 CPOs in the United States.

Bunched Orders and Post trade Allocations

It is common practice for an account manager, such as a Commodity Trading Advisor (CTA), to administer a single trading program for several clients. For good business reasons the CTA may choose to place a single large order on behalf of all customers using the same trading program as opposed to placing individual trades on behalf of each separate client. In the jargon of the futures industry, a collective trade on behalf of several accounts is called a **bunched order.** In placing a bunched order, the CTA may not be able to fill the entire order at a single price. In other words, the CTA may receive "split fills" on his order. This means that the CTA will have to allocate the filled trades among the various accounts after the trade has been executed. Inevitably some customers will receive more favorable, and some less favorable, fills because of the fact that portions of the order were executed at different prices. Although there is nothing wrong with this practice *per se*, it presents the CTA with the opportunity to favor some accounts over others by allocating the more profitable trades to favored accounts. It is for this reason that federal commodities laws prohibit brokers, advisors, and other market professionals, except in specific instances, from allocating orders among accounts after trades have been executed. This prohibition is aimed at preventing such persons from abusing their discretion in allocating trades.

Commodity Futures Trading Commission regulations require that customers provide written instructions to account managers for bunched orders. Regulations require that post trade allocations be fair and equitable, that they occur as soon as practicable after the entire transaction is executed, and that no account (or group of accounts) receives consistently favorable or unfavorable treatment. In addition, posttrade allocations must be completed "no later than a time sufficiently before the end of the day the order is executed to ensure that clearing records identify the ultimate customer for each trade." Regulations also require that the allocation method be sufficiently transparent so that regulators and outside auditors can verify the allocations.

THE INTERNATIONALIZATION OF FUTURES MARKETS

For decades, the United States has dominated the futures industry. Until recently, the totality of foreign exchanges generated a relatively insignificant trading volume compared to the United States. That has changed in the last 15 years, and all indications suggest that foreign futures exchanges will continue to grow rapidly. Figure 2.1 shows how non-U.S. markets have grown relative to U.S. markets in recent years.

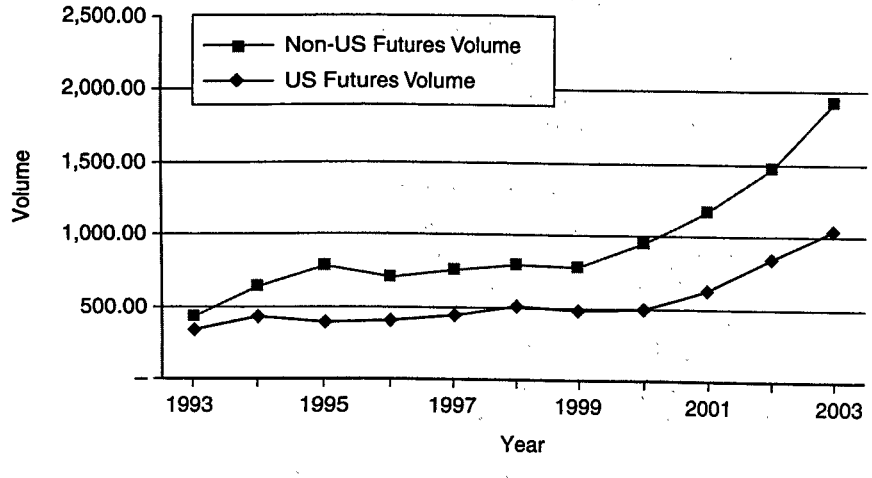
Growing Foreign Exchanges

While U.S. exchanges continue to enjoy a commanding lead over the exchanges of any other nation, U.S. futures volume now accounts for less than half of total world volume. Only a few years ago, the United States accounted for much more than half of world futures volume. For example, in 1988 U.S. volume was 69.11 percent of the world's total.

Most foreign exchanges are quite new. In spite of their recent start and relatively small size, the foreign exchanges present new competitive challenges to U.S.-based exchanges. This competition arises in virtually all types of futures contracts. Table 2.5 lists the 10 most successful contracts traded worldwide. From this table it can be seen that 5 of the top 10 contracts are traded on foreign exchanges.

In 2003 international competition took a new form when Eurex announced they were forming a subsidiary exchange in the United States, called Eurex US to compete directly with U.S. exchanges. In early 2004 Eurex US began trading U.S. Treasury futures contracts in direct competition with the flagship products of the CBOT.

Figure 2.1 U.S. and Non-U.S. Volume of Exchange Traded Futures 1993–2003 (Millions of Contracts)



Source: Compiled from various sources.

Top 10 Futures Contracts Worldwide **Table 2.5**

Contract	Exchange	2003 Volume (millions of contracts)
Euro Bund	Eurex	224.4
3 month Eurodollar	Chicago Mercantile Exchange	208.8
TIIE 28 Day	Mexican Derivatives Exchange	162.1
E-Mini S&P 500	Chicago Mercantile Exchange	161.2
3-month Euribor	Eurex	150.1
U.S. 10-year T-Note	Chicago Board of Trade	146.8
3 month Euribor	Euronext	137.7
DJ Euro Stoxx 50	Eurex	116.0
U.S. 5-year T-Note	Chicago Board of Trade	73.8
E-mini Nasdaq	Chicago Mercantile Exchange	67.9

Source: Futures Industry Association for calendar year 2003. © Futures Industry Association.

A decade ago it was an easy task to determine whether a firm was domestic or foreign. One simply had to look for the physical location of the exchange's trading floor. Today, because of changes in communications technology and exchange ownership structures, the distinction between foreign and domestic exchanges has become blurred. Does the exchange reside where its computer server resides?; where it's corporate headquarters are located?; where it is legally incorporated?; or where its investors reside?[26]

Today we see many examples of exchanges that are truly global enterprises that cannot be easily classified by geography. For example, Eurex US is headquartered in Chicago and is owned by a Delaware limited liability corporation called United States Futures Exchange that is in turn 80 percent owned by a holding company that is ultimately owned by the SWX Swiss Exchange and Deutsche Boerse AG., a publicly traded corporation. The International Petroleum Exchange operates in London but is a wholly owned subsidiary of the Intercontinental Exchange, a Delaware corporation, headquartered in Atlanta. The CME is headquartered in Chicago but has Globex electronic trading terminals throughout the world. Likewise, Eurex is headquartered in Germany but has its terminals distributed globally. Many mutually owned U.S. futures exchanges have foreign members who own seats and who participate in exchange governance. For demutualized stockholder-owned exchanges like the CME and its parent CME Holdings, there is no way to know the nationality of shareholders.

U.S. Trading of Foreign Products

For many years the U.S. futures products have been traded globally. Since 1992, the year the CME launched its Globex trading system, traders around the globe have had direct electronic access to certain U.S. markets. Foreign futures products have also been available for trading by U.S. participants.

In general, U.S. laws and regulations do not restrict the offer and sale of foreign exchange-traded futures products in the United States. However, certain restrictions do apply for the offer and sale of

futures on foreign stock indexes and futures on foreign government debt. The U.S. law requires that the CFTC approve foreign stock index futures products before they can be offered for sale in the United States. In 2004, 64 foreign stock index futures products had been approved for U.S. customers including index futures based on the Dow Jones Euro STOXX 50, the FTSE 100, and the Nikkei 225. Futures contracts based on the debt obligations of the following countries have been approved for offer and sale to U.S. participants as of 2004: United Kingdom, Canada, Japan, Australia, France, New Zealand, Austria, Denmark, Finland, the Netherlands, Switzerland, Germany, Italy, Ireland, Spain, Mexico, Brazil, Argentina, Venezuela, Belgium, and Sweden.

United States futures exchanges also offer their own contracts based on foreign instruments. For example, the CME offers a futures contract on the Nikkei 225 and the CBOT offers futures contracts on the 2-year and 5-year German government notes (called the Schatz and BOBL, respectively), and the 10-year German Bund.

International Competition in Trading Costs

With the ability of many traders to choose the country in which they wish to trade, exchange fees have become a matter of competitive concern. For example, we have seen that Eurodollars trade in a number of markets worldwide. As a result, exchanges compete for Eurodollar trading volume. One element of this competition is the fee the exchange charges for executing an order. The large exchanges with well-established contracts have the most latitude in setting fees. Traders need those contracts and face powerful incentives to pay high fees in order to trade in those markets.

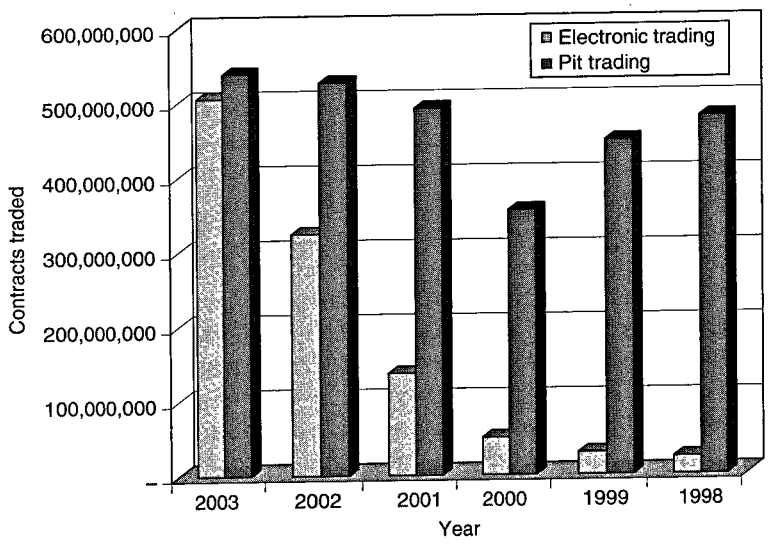
Perhaps ironically, the largest exchanges, those in the United States, have the lowest fees. These lower fees may reflect economies of scale in operating a futures exchange. European exchanges are somewhat higher, and the highest fees are found in Asian markets. For example, a member of the CBOT can trade a contract for 10 cents or less, depending on the commodity and trading platform. By contrast, a member of the Tokyo Commodity Exchange may face a fee as large as $1.5. Many observers see exchange fees as an important point of future competition among exchanges.[27]

In the uncertain U.S. budget environment of the early 1990s some government officials floated the idea of a tax on futures transactions. However representatives of the futures industry prevailed in their argument that such a tax would harm the competitiveness of U.S. markets by raising trading costs on U.S. futures products relative to the costs of futures products offered by foreign competitors.

ELECTRONIC FUTURES TRADING

From the beginning of organized futures exchanges in the mid-1800s until a few years ago, the system of open outcry has been the only method of futures trading. However, since the late 1990s, the dominance of open outcry trading has been challenged by electronic trading systems. As Figure 2.2 shows, open outcry trading accounted for over 95 percent of all U.S. futures trading volume in 1998. By 2003, open outcry trading accounted for barely more than half of all U.S. futures trading volume. For many financial futures, open outcry accounts for only a small percentage of trades. Many knowledgeable observers expect the role of open outcry trading to continue its decline in coming years as open outcry markets are challenged directly by all-electronic competitors. It is fair to say that electronic trading systems are rapidly changing the entire face of the futures markets.

Electronic versus Pit Trading, U.S. Exchanges 1998–2003 **Figure 2.2**



Source: Compiled from exchange web sites.

The advent of electronic trading systems also promises to be an important element in determining how futures exchanges are structured. One motive for the conversion of not-for-profit mutual exchanges to shareholder-owned exchanges is to create an institutional structure that can rapidly accommodate technological change. The problem exchanges face in adopting new technology can best be seen in the Chicago markets, where a high proportion of members are individuals who trade for their own accounts. Their livelihood depends upon the trading acumen that they have developed through their years in the trading pits. Electronic trading systems threaten to make those open-outcry skills obsolete. Not surprisingly, these members have resisted any threats to the system of open-outcry. Having the exchange organized as a shareholder-owned for-profit enterprise provides a means of coping with traders who, for their own private reasons, do not want to adopt new technology that would enhance the profitability of the exchange: the buyout.

Compared to open-outcry pit trading, launching new contracts on an electronic trading platform is definitely cheaper. Many traders also believe that electronic systems are operationally superior to pit trading. Further, there are many different electronic trading systems, all of which have their own features. No matter what one believes about the virtues of open outcry versus electronic trading, it is clear that electronic trading is here to stay. Because electronic trading is largely driven by rapidly evolving technology, we can expect further change in this area in coming years.

In 1992 the CME launched Globex, its electronic trading platform for futures. Trading volume on Globex during its first decade was small compared to open outcry trading volume. However, Globex trading now plays a significant role in the CME's overall operation. Some of the CME's most successful contracts, such as the e-mini version of its S&P 500 futures contract, trade exclusively on

Globex throughout the day and evening. Other Globex contracts, such as the 3-month Eurodollar contract, trade side-by-side with open outcry contracts with pit traders monitoring Globex prices using handheld devices. Still other Globex contracts trade only after open-outcry trading hours.

The CBOT was originally a partner in Globex but eventually decided to form its own electronic system. Throughout the 1990s the CBOT tried creating its own electronic trading platform without success. In August 2000, the CBOT entered into a joint venture alliance with Eurex to create a/c/e (Alliance/Chicago/Eurex). This alliance was abandoned 3 years later and the CBOT entered into a licensing agreement to use the Liffe Connect electronic trading platform in November 2003. Liffe Connect is designed and built by the Euronext.liffe exchange. The vast majority of trades in financial futures contracts at the CBOT now take place electronically. The CBOT also serves as the host for other North American futures exchanges using the Liffe Connect platform.

Outside the United States, electronic trading dominates open-outcry trading. For example, in 2004, Eurex was the world's largest derivatives exchange and it trades only electronically. Similarly, in 1998 the LIFFE, now a subsidiary of Eurnext Liffe, decided to abandon pit trading for its financial futures and move to a totally electronic trading system.

With the development of electronic trading systems, futures trading on some contracts continue almost 24 hours a day. For example, Eurex US trades futures contracts on U.S. Treasury products in a daily session that runs from 7 PM. Central time to 4 PM the next day. At the CME, Eurodollar futures begin trading on Globex at 5 PM Chicago time. Trading continues until 4 PM the next day. During the Globex trading session, open outcry trading of Eurodollar futures occurs between 7:20 AM until 2:00 PM.

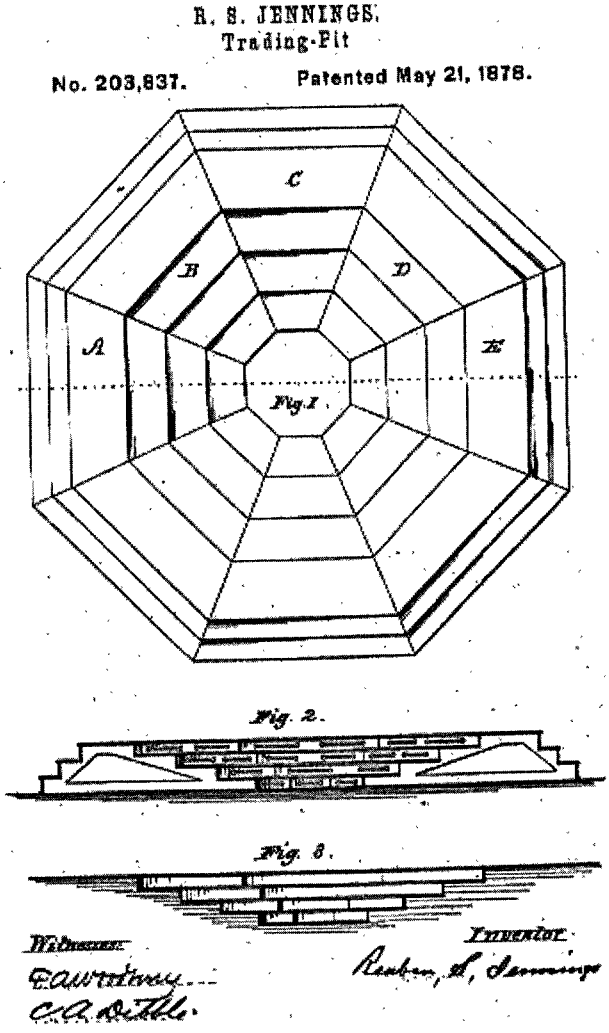
Increasingly, the intellectual property associated with new electronic trading technology has become an important asset for exchanges to hold as they develop and license their products to other exchanges.[28] For example, Euronext.liffe developed its Liffe Connect electronic trading platform and licenses its use to the CBOT, the KCBT, the MGEX, and the Tokyo International Futures Exchange. For Euronext.liffe, their trading platform is one of their most important products. In order for futures exchanges to protect their investment in new trading technology, and to protect the licensing potential of their inventions, exchanges have become increasingly attentive to possibilities for patenting, trademarking, or copyrighting their intellectual property. In the late 1990s a new type of business model emerged in the futures industry with exchanges holding intellectual property related to trading technology, with an eye toward licensing the use of the property to others or suing infringers for damages. Futures exchanges are being forced to think more carefully about intellectual property law and its potential application to their trading technology.

Perhaps the most noteworthy example of this business model is eSpeed, Inc., a subsidiary of Cantor Fitzgerald L.P. and an operator of a number of electronic trading platforms. ESpeed has acquired a portfolio of patents used to support its technology licensing business. In April 2001 eSpeed paid $1.75 million to acquire the rights to U.S. patent number 4,903,201 covering automated futures trading systems, also known as the Wagner patent.[29] In August 2001, eSpeed sued the CME, CBOT, and NYMEX for patent infringement. In August 2002, the CME and CBOT settled the eSpeed patent litigation by each agreeing to pay eSpeed $15 million over a 5-year period. In December 2003, the NYMEX resolved their share of the dispute by agreeing to pay eSpeed $8 million over a 3-year period.

In 2004 eSpeed found itself being sued for patent infringement by Trading Technologies International, a Chicago-based company holding a patent on a software platform that allows screen traders to see a range of bids and offers in the market before placing an order.[30]

Patents on trading technology are nothing new to the futures industry. In 1877 Reuben S. Jennings of Chicago submitted to the U.S. Patent Office his claim for the invention of the trading pit. The invention was patented on May 21, 1878 as U.S. patent number 203,837. The patent states that the pit "furnishes sufficient standing-room, where persons may stand and conveniently trade with persons in any other part of the pit or platforms. It has great acoustic advantages over a flat floor ..." Immediately after receiving his patent, Jennings served notice to futures exchanges, demanding a royalty payment from those using the trading-pit technology. A copy of Jennings' patent diagram is shown in Figure 2.3.

The Jennings Trading Pit Patent, 1878 **Figure 2.3**



Source: United States Patent and Trademark Office

Out Trades

An "out trade" occurs when a discrepancy exists between the trade data submitted by the broker representing the buyer and the trade data submitted by the broker representing the seller. Out trades are discovered when a clearinghouse matches trades – the first step in the clearing process. Brokers will attempt to reconcile the discrepancy and resubmit the trade for clearing before the opening of the next trading session. If an agreement cannot be reached by the two brokers, then the dispute will be settled by an appropriate exchange committee or by a predetermined procedure. Out trades are common and traders maintain error accounts to handle positions they may acquire as a result of out trades. Out trades are often resolved by brokers compromising and exchanging money to resolve their disputes. Traders who consistently use out-trade procedures to their advantage face a powerful sanction: other traders will refuse to trade with them.

There are two types of out trades: those caused by a discrepancy in the reported price and those caused by a discrepancy in the reported quantity. Exchange rules usually require the brokers to choose between the trade data submitted by the buyer and that submitted by the seller. Any compromises or adjustments are handled by side payments between the brokers. If the brokers cannot resolve the discrepancy, exchange rules may enforce a predetermined solution. For example, at the CBOT, in cases where there is an unresolved discrepancy about quantity, the higher of the quantity figures will be used for clearing. In cases where there is an unresolved discrepancy about price, by rule the buyer's price will be used. Exchange rules only facilitate timely clearing – they do not make the dispute go away. Brokers often split the difference with cash side payments, or bring the dispute to arbitration before an exchange committee designed to handle member disputes.

An out trade is part of the "frictions" of trading. It is costly for all involved and great effort is expended to economize on this cost. Some exchanges use cameras that may help in resolving disputes. The exchange committees assigned to resolving disputes between members are another mechanism for economizing on this cost of using the market. An out trade is a feature of open outcry trading. As trading volume continues to migrate from open outcry trading to electronic trading platforms, out trades should diminish. In an electronic trading environment, out trades should be impossible.

However, even though out trades may be impossible in an electronic trading environment, other kinds of trading mistakes can occur. So-called fat finger errors may result from a trader mistakenly adding an extra zero to an order before hitting the "send" button. Sometimes these inadvertent trades can roil markets.[31] Therefore, supervisors of electronic trading platforms have devised "error trade" policies and procedures for "busting," or canceling, transactions that are the result of clear error. The rules require that a transaction be challenged immediately after it has occurred. If the trade is busted, the party who committed the error may still be liable for any costs incurred by other traders as a result of the error. These disputes are handled by exchange committees devoted to hearing membership disputes.

CURRENT FUTURES INDUSTRY ISSUES

In this section we examine some current issues to better understand the structure and operation of futures markets. Other current issues, such as those resulting from global exchange competition or the move to electronic trading, have already been addressed above. Many of the issues discussed below involve conflicts between different groups of industry participants. Others affect the public at large. We begin by exploring issues of exchange governance and clearinghouse governance followed by a discussion of the clearing of OTC derivatives at futures clearinghouses, block trading, dual trading, the proposed elimination of federal speculative position limits, and payment for order flow. In addition, we look at issues raised by the development of event markets.

Exchange Governance

Exchange governance refers to the means by which an exchange organization deals with conflicts of interest between (1) exchange members and public customers, (2) different categories of members, for example, between FBs and FCMs, or (3) members and exchange managers. Exchanges attempt to mitigate these conflicts through their internal rules and through their choice of board members.

Three of the core principles for futures exchanges contained in the Commodity Futures Modernization Act speak to exchange governance. These three core principals, numbers 14, 15, and 16 (the entire set is shown in Appendix A), require futures exchanges to establish and enforce appropriate fitness standards for directors, and members of any disciplinary committee; establish and enforce rules to minimize conflicts of interest, establish a process for resolving such conflicts of interest; and ensure that the composition of the governing board reflects market participants.

In recent years some futures industry professionals have raised questions about the proper form of exchange governance particularly in light of the fact that many exchanges have been converting from not-for-profit mutually owned membership organizations to for-profit shareholder-owned corporations. Some critics of futures exchange governance have suggested that exchange governance could be strengthened by (1) enhancing the independence and authority of the board of directors, (2) insulating the self-regulatory function of the exchange from exchange profit centers; and (3) providing public customers additional representation in exchange decisions. These same critics would like to see government regulators play an active role in promoting the changes they seek. In May of 2003 the CFTC announced that it would address these questions through a review of exchange governance as it applies to exchange self-regulatory responsibilities.

Exchange governance has been an extremely controversial topic, especially outside of the futures industry. On September 17, 2003 Richard Grasso, Chairman and Chief Executive Officer of the NYSE, submitted his resignation to the NYSE Board over what many viewed as excessive compensation. The resignation led some to question the governance structure of the NYSE, particularly with respect to its ability to discharge its self-regulatory functions.

Clearinghouse Governance

Related to exchange governance is clearinghouse governance. This topic is one of the more controversial issues facing the futures industry. On one side are clearinghouse members who argue that, since it is their money that is at risk in supporting the clearinghouse, they should have a greater say in determining how

that risk is managed. Clearing members, particularly the largest clearing members who happen to be large FCMs, are seeking ways to more efficiently use their capital that supports clearinghouse operations. These FCMs would like for the clearinghouse function to be separated entirely from the trade execution function. These FCMs argue that the industry practice of offering trade execution and clearing services together as a single, integrated bundle is anticompetitive because it allows exchanges to extend their dominance in trade execution services to clearing services. Ultimately, the FCMs would like lower clearing fees and more efficient means of margining across exchanges in order to reduce the amount of capital needed from FCMs and other clearing members to support clearinghouse functions. They would like to have the right to clear through the clearinghouse of their choice after trade execution.[32]

The exchanges argue that trade execution and clearing are two parts of an integrated product that must be offered together in order to protect the financial integrity of futures contracts. They argue that the integration of trade execution and clearing is a successful business model that has won out in the marketplace over competing business models. The exchanges argue that they are able to offer the bundled service of trade execution and clearing at a lower cost than offering the same services independently. They argue that other exchanges are free to enter the industry to offer a competing business model of separate trade execution and clearing.

In fact, the 2004 entry of Eurex US into the U.S. marketplace has defused the debate for the time being. As a result of the new competition, the CME and CBOT formed a clearing alliance that gave the clearing members much of what they were seeking. The alliance provides additional efficiency in use of the members' clearinghouse capital. The alliance has also resulted in lower clearing fees.

Clearing of OTC Derivatives at Futures Clearinghouses

The Commodity Futures Modernization Act (CFMA) of 2000 significantly changed the status of futures clearinghouses. Among other things, the CFMA permitted clearinghouses to participate in the clearing of OTC derivatives. At the same time, the CFMA removed legal restrictions on OTC contracts that prevented them from being cleared by a central clearinghouse. Prior to the CFMA, OTC contracts had to be cleared "bilaterally," that is, between the two counterparties to a contract. After the CFMA, OTC contracts could be cleared "multilaterally," that is, collectively across multiple OTC counterparties through a central clearinghouse.[33]

By extending the benefits of multilateral clearing to OTC markets, Congress intended to prevent the failure of a single market participant from having a disproportionate effect on the overall market. This risk to the entire market is called **systemic risk**. Congress also hoped to improve the efficiency of OTC clearing by facilitating the offset and netting of contract obligations.

Futures clearinghouses, most noticeably the NYMEX clearinghouse, have begun to offer products that facilitate OTC clearing. The NYMEX began offering OTC clearing services on selected energy product in May 2002. By 2004, the NYMEX was clearing over 12 million OTC contracts/year through its ClearPort facility. The NYMEX process essentially converts OTC positions into futures positions and then clears the futures positions. OTC positions are converted to futures through a transaction called an **exchange of futures for swaps**, or EFS transaction. An EFS transaction works similarly to an exchange of futures for physicals (EFP) transactions. The parties to EFS are allowed to privately negotiate the execution of an OTC swap and related futures transaction on their own pricing terms. To initiate an EFS position a market participant must work through a member of the clearinghouse. The clearing member is responsible for evaluating the creditworthiness of the market participant.

The mingling of futures and OTC positions for clearing purposes has raised some concerns. First, bringing OTC transactions into the futures clearing system may concentrate credit risk in one place. This may increase systemic risk within the clearing system, a result directly at odds with Congress' intent in passing the CFMA. To mitigate systemic risk, the CFMA requires that clearing systems be subject to regulatory oversight in order to help ensure that proper risk management procedures are implemented and that the clearing system is properly structured.

Another issue with OTC clearing is whether the margins posted need to be adjusted to reflect any additional credit risk or liquidity risk posed by the OTC markets. The NYMEX applies special margin provisions to OTC contracts. These special margins account for any additional credit or liquidity risk OTC contracts may possess.

Perhaps the most controversial aspect of combining OTC and futures clearing is whether futures customer funds should be commingled with those of OTC participants at the clearinghouse or at the FCM. At the heart of the issue is how participants in regulated markets are to be protected from liabilities resulting from financial difficulties outside of the regulated marketplace. To address this concern, the NYMEX has set up a special guarantee fund to satisfy any shortfall created by the default of an OTC participant at the clearinghouse. This approach has satisfied regulators, but not all critics. As an alternative, a clearinghouse could in theory set up separate segregated accounts for OTC transactions. However, this would likely involve significant operational and administrative costs for the clearinghouse and for its clearing members.

Block Trading

A block trade is a large trade negotiated away from the exchange, but pursuant to exchange rules, and then submitted to the exchange for clearing and settlement. Traders who engage in a block trade do so because they can privately negotiate a single price that applies to a large number of futures contracts without subjecting their order to the risk of being broken up and filled at multiple and uncertain prices.

Block trades have been used for years in equity markets, but their use in futures markets is relatively recent. Block trades have been common in Europe. For example, at the Euronext.liffe exchange, where block trading was introduced in April 1999, block trades accounted for 10 percent of all trades in the FTSE 100 futures contract and 40 percent of all Euribor (pronounced "yer-RI-bor") futures options in 2003. In the United States, the CFTC has permitted block trading since 1999 and several exchanges have written block-trading rules. To date, block trading has accounted for only a negligible portion of U.S. futures volume. This fact may change as European-based exchanges compete more directly with U.S. exchanges.

Exchanges that permit block trading have rules pertaining to (1) the reporting of the trade (e.g. 15-minute a reporting delay following the time the exchange is notified of the transaction), (2) the price of the trade (e.g. "fair and reasonable" price), (3) the size of the trade (e.g. at least 500 contracts); and (4) the parties permitted to participate in a block trade (e.g. members or qualified clients of members). Although some futures exchanges have embraced block trading, many other exchanges are extremely wary of the practice because of the fear that block trading will fragment the central marketplace (i.e. the trading pit or electronic trading system) and undermine price discovery.

Another concern with block trading is that it may provide a means to arrange trades at prices that are not close to the current market. In certain instances, prearranged trades that are away from the current market price may be an indication of "money passing," that is, trading at a fictitious price that is

used to disguise the settlement of a trading error or dispute, dressing up financial statements, or outright fraud. For this reason some industry critics have urged exchanges to adopt rules setting strict price parameters on block trades. Others fear that strict limits on pricing would only drive block traders away from the futures market toward the OTC market, further fragmenting the market.

Proponents of block trading argue that the practice actually helps integrate markets by bringing OTC transactions into an exchange-traded environment where prices and volumes are publicly reported. In addition, proponents argue that block transactions spawn futures transactions in the central market as block trading participants hedge their positions. They also argue that block-trading activity leads to higher overall contract volume over time because it is common for positions opened via block trades to be closed out sooner or later in the central marketplace.[34]

Dual Trading

In **dual trading**, a single individual fulfills the function of a floor trader (FT) and a FB simultaneously. That is, a single individual trades for his or her own account, while executing orders for traders off-the-floor of the exchange. Although permitted for many decades, dual trading does offer potential for abuse, and the practice has come under heightened scrutiny. Because dual trading creates a situation in which a single individual has his or her own orders in hand along with orders from an outside customer, dual trading can also facilitate front running and other questionable trading practices.

Traders maintain that dual trading serves the market in several ways. First, defenders maintain that dual trading helps promote liquidity in the market. If a trader can only execute orders for his or her own account or only execute orders for others, there will be less potential trading volume at any given time. Second, this lack of liquidity may lead to larger spreads between bid and asked prices, thereby making the market less efficient than it would be otherwise. Finally, defenders of dual trading maintain that the practice keeps trading costs low, because a dual trader needs to make only a portion of his or her income by acting as a FB.[35]

Dual trading is a pervasive feature of futures trading. In 1989, the CFTC conducted a major study of dual trading. According to this study, over half of all contracts traded were handled by dual traders in the CFTC study period. Further, over 40 percent of the floor participants were dual traders. Also, dual traders executed 46 percent of all personal trading and 82 percent of all customer volume.

Table 2.6 summarizes the major findings of that study. The CFTC found, first, that most dual traders tend to specialize. As a general rule, most dual traders perform mainly as brokers or mainly as floor traders. Few dual traders had a thoroughly mixed collection of orders. Second, dual trading is not

Table 2.6 Major Findings of CFTC Study of Dual Trading

1. Dual traders tend to specialize in acting as FBs or FTs.
2. Dual trading is not more prevalent in low volume markets or in more distant trading months.
3. Dual traders do not achieve better execution than nondual brokers.
4. Dual traders do not perform better than nondual brokers in providing market liquidity.

Source: Commodity Futures Trading Commission, "Economic Analysis of Dual Trading on Commodity Exchanges," November 1989.

concentrated in the less liquid portion of the market, such as low volume contracts or contracts in the distant trading months. If dual trading has a primary function of providing liquidity to the market, dual trading should be more concentrated in these less liquid trading situations. Third, dual traders and exclusive brokers appear to perform equally well in fulfilling customer orders. Fourth, dual traders do not seem to provide more liquidity to the market than do exclusive traders. Based on its study, the CFTC concluded, "... dual trading is not critical to providing liquidity and low-cost trade executions on commodity exchanges."[36] Other studies, however, have found that dual trading can increase market liquidity and reduce bid-ask spreads.[37]

Faced with the conclusions of the CFTC report and a legislative effort in Congress to restrict dual trading, the CME imposed restrictions on dual trading in 1990. The CME voted to end dual trading on contracts with daily volume of more than 10,000 contracts. In late 1993, the CFTC banned dual trading, but allowed a number of significant exceptions. For example, dual trading continues to be permitted for commodities with daily trading volume of less than 8,000 contracts, for exchanges with very well-developed audit systems, and where the banning of dual trading would adversely affect the public interest. In recent years, it appears that former dual traders on the CME have not gained a greater share of customers now that the trader's personal trading is restricted, and these traders have not shifted their trading to other commodities.[38]

The Proposed Elimination of Federal Speculative Position Limits

Speculative position limits for most futures contracts are set by exchanges in accordance with their best business judgment. However, for a small set of contracts designated by Congress in the Commodity Exchange Act, speculative position limits are set by the federal government. In the summer of 2004, the CBOT, the KCBT, and the MGEX separately petitioned the CFTC to eliminate these federal speculative position limits. In the absence of federal limits, the exchanges would set and administer their own speculative position limits subject to CFTC oversight and enforcement.

Federal speculative position limits were first introduced in 1938 for a small set of agricultural commodities. Over time, the list of commodities subject to federal limits was amended, and by 2004 included nine futures contracts. These nine contracts were for corn, oats, soybeans, wheat, soybean oil, and soybean meal traded at the CBOT, wheat traded at the KCBT, and cotton traded at the (NYBOT). Federal limits are set by the CFTC separately for positions in the spot month, individual non-spot months, and all-months-combined. The petitioning exchanges have argued that the federal position limits are inconsistent with the regulatory regime governing all other futures contracts.

When the CFTC was created in 1974, the federal speculative position limits that were on the books from earlier times were retained and included in CFTC regulations. After the creation of the CFTC, speculative position limits for new contracts were set by the exchanges subject to CFTC oversight. In 1981, the CFTC formalized their policy by requiring exchanges to establish speculative position limits for all commodities not subject to federal limits.

Federal speculative position limits survived the passage of the CFMA of 2000. The CFMA established a regulatory regime based on a set of core principles that replaced the previous regulatory regime based on prescriptive rules. One of the CFMA's core principles requires exchanges to have either position limits or position accountability limits for the delivery month, but allows the exchanges to determine the appropriate levels. Under the CFMA, exchanges were not required to have all-months-combined limits nor non-spot individual month limits.

The petitioning exchanges have argued that the prescriptive approach embodied in federal speculative position limits is inconsistent with the core principles approach adopted in the CFMA. By retaining federal speculative position limits, the exchanges argue that a small set of contracts are singled out for separate treatment. Moreover, the exchanges argue, the basis for the separate treatment is historical accident as opposed to any well thought-out logic. The exchanges argue that it is hard to justify a regulatory regime where federal limits apply to one set of agricultural futures contracts but do not apply to futures contracts on other agricultural commodities, such as live cattle and hogs.

In addition to the petitioning exchanges, pension funds, hedge funds, and other investors complain that federal speculative position limits constrain their ability to efficiently diversify their portfolios into the commodity asset class. Agricultural interests, primarily grain producers, argue that federal speculative position limits are necessary to constrain the exchanges who, they believe, cannot be relied upon to set limits consistent with the best interests of producers. In 2005, the CFTC resolved this issue by retaining federal speculative limits but raising the levels of the limits.

Payment for Order Flow

Payment for order flow refers to the practice of some exchanges that pay brokers to direct orders to the exchange. The term is commonly used to describe incentives offered by securities exchanges, such as the Chicago Board Options Exchange (CBOE), to compete for trading volume with other exchanges that are offering identical products. Payment for order flow is most likely to occur when competing products are indistinguishable. In such an environment cash incentives can be the key difference affecting a broker's choice as to where to direct an order.

In the futures industry, products at competing futures exchanges are rarely identical. As we have seen, trading volume in a particular contract tends to migrate to a single exchange and stay there. Instead of offering identical products exchanges choose to offer contracts in niche markets or offer contracts with unique design features. Because exchanges typically choose not to compete directly by offering identical contracts, payment for order flow has not been a significant issue in the futures industry.

However, concern over the practice emerged in 2003 with the arrival of Eurex US in Chicago. Eurex US announced its intention to trade products that were nearly identical to the products offered by competing exchanges. Eurex US announced that as part of its marketing plan the exchange intended to offer volume rebates during the first 2 years of operation. Similar rebates had been part of the business plan of Eurex US's largest parent, Eurex, when they successfully lured trading volume away from LIFFE's Bund futures contract.

As the Eurex US rebate episode shows, the term "payment for order flow" can be applied to any marketing program designed to get brokers to direct order flow to an exchange. Although the term is new to the futures industry, incentive programs are not. The CME, CBOT, and NYMEX have all used various incentive programs and fee holidays aimed at generating trading volume on each exchange. For example, the CME offered an incentive program for its agency debt futures contracts in 2000, and on its Euro FX products in 1999. The CBOT offered incentive programs for its Wilshire Small Cap Index Futures product in 1993. NYMEX offered a market maker incentive program for certain products in 1998.[39]

Proponents of payment for order flow and other incentive programs argue that the practice is one form of exchange competition that ultimately benefits investors who see lower trading costs. Just

as exchanges must compete for orders from brokers, brokers must compete for orders from customers through the commissions they charge. Payment for order flow at the exchange level provides brokers with the incentive to lower their commission rates in order to attract customer order flow. Customers are the end beneficiaries of this competitive process.

Critics of payment for order flow and other incentive programs fear that the practice will distort open, competitive, and efficient trading by making abusive practices, such as wash trading, economically attractive. Critics also fear that the practice creates a conflict of interest between brokers and the fiduciary duties owed to customers. Receiving payment for order flow reduces the broker's incentive to send orders to the market where the best quality execution may be found. Finally critics contend that payment for order flow harms liquidity and the quality of trade execution in the central marketplace by fragmenting order flow across multiple exchanges.

Event Markets

In August 2003 a furor erupted in Washington D.C. over the disclosure that the Pentagon intended to operate an experimental market that would have allowed online traders to trade on the probability of future terrorist attacks and the occurrence of future political events in the Middle East. For a few days, it was the best-known market in America even though it was dissolved before trading actually commenced. Formally, it was called the Policy Analysis Market (PAM), but many news accounts referred to the market as "terrorism futures" or the "turmoil exchange." The market would have traded 24 hours a day, 7 days a week. The Pentagon wanted to create the PAM in order to gather information that would help validate other sources of intelligence that could be used to stop terrorism and reduce political instability.

The PAM was inspired by the Iowa Electronic Markets (IEM), where investors trade contracts on election outcomes. In over 15 years of experience, research has demonstrated that IEM markets do a better job of predicting actual election results than polls do.[40] PAM was supposed to harness the power of markets to aggregate the knowledge and information of thousands of investors. Markets do a good job of aggregating information. Because traders are using real money to back their opinions, they have an incentive to use cold, hard, honest logic and reliable information in basing their trades. This feature mitigates the so-called yes man effect within organizations whereby an analyst may be tempted to tell the boss what she wants to hear. News reports cited this feature as one reason the Pentagon was contemplating a market to aggregate intelligence information.

There are good reasons why markets may work better in aggregating information than other devices, such as polling. For a poll to provide good predictions, the sample polled should be representative of the population upon which the prediction is based. For a market to provide good predictions, one needs only to have informed traders. A poll asks individuals their preferences for an outcome. A market asks traders what they expect the outcome to be. For this reason, markets may be less influenced by emotion and focus instead on the hard reality of event outcomes.

The PAM and IEM are part of a broader set of markets called "event markets." Event markets allow participants to profit from the occurrence of a specific event.[41] These markets go by a variety of names: non-price markets, prediction markets, decision markets, proposition markets, opinion markets, information markets, and nontraditional markets.

Several facilities offer contracts on various types of events.[42] For example, TradeSports, based in Ireland, offers over 1,300 contracts on everything from sporting events to elections, to the probability

of key terrorists being "neutralized" by a particular date. During the furor of the PAM in August 2003, they even listed a contract on the resignation of the Pentagon official in charge of the market. Other event markets, such as the Hollywood Stock Exchange, offer contracts on the box-office success of new film releases.

Although they are often referred to as futures markets, the contracts are more often styled as options. The contracts are typically crafted with a fixed payout if the event occurs and zero payout if the event does not occur. A payoff structure of this sort resembles what finance practitioners refer to as "binary options" or "digital options." For example, a contract may be structured so that it pays $1.00 if a Republican is elected president and zero otherwise. If the contract is currently trading at 60 cents, this means an investment of 60 cents today could yield $1.00 if a Republican is elected. If one ignores for the moment the time value of money, the price can be interpreted as the market's assessment of the odds of the event occurring. In this case, the contract price of 60 cents can be interpreted as 60 percent chance that a Republican will be elected.

Legally, it is not clear that all event contracts qualify as futures contracts as defined by the Commodity Exchange Act (CEA). The CFMA of 2000, which amended the CEA, permitted futures contracts to be traded on "an occurrence, extent of occurrence, or contingency ... that is ... beyond the control of the parties ... and ... associated with a financial, commercial, or economic consequence." Whether the CFTC could assert jurisdiction over these markets most likely depends on whether the contracts are associated with a financial, commercial, or economic consequence. Contracts that are designed strictly for gambling most likely would not meet the "economic consequence" standard. Futures contracts on weather events currently trade under CFTC jurisdiction.

MARKET MANIPULATION

The most dramatic dislocation in a futures market occurs in a market manipulation. Manipulating the price of a futures contract is a violation of the CEA. Section 9(a) of the CEA makes it a felony punishable by a fine of up to $1 million ($500,000 for individuals) and imprisonment of not more than 5 years, for any person found to "manipulate or attempt to manipulate the price of any commodity in interstate commerce, or for future delivery on or subject to the rules of any contract market, or to corner or attempt to corner any such commodity ..." Market manipulation not only cheats other traders, but it also impairs the marketplace. First, other traders are cheated because the manipulation forces them to trade at a price that is not economically justified. In general, markets function properly when prices in the market represent the true equilibrium value of the good being traded. By definition, if the price is manipulated it cannot be at its equilibrium level. Second, a manipulation also impairs the market because honest traders flee markets in which prices do not correspond to the true economic value of the good being traded. If honest traders abandon the futures market, the market cannot serve its social functions. The market will not serve its price discovery function because the prices in the market are manipulated prices. Also, the market does not provide a means for transferring risk, because honest traders are afraid to participate in the market. For these reasons, market manipulation is among the worst fates that can befall a market.[43]

Since 1922 futures markets in the United States have been subject to federal regulation, a primary purpose of which is to deter manipulation in futures markets. One curious feature of the Commodity

Deterring Manipulation in Tudor England

Throughout the history of financial markets one can find attempts to deter market manipulation.[44] The Bible (Proverbs 11:26) condemned grain traders who withheld corn from the market in an attempt to gain advantage.[45] In Tudor England, the Statute of Victuals required all sellers of commodities to sell for a reasonable price. Royal decrees prohibited trading practices that were deemed to be manipulative. Prohibited practices included "forestalling," "regrating," and "engrossing" in the sale of grain or other "victuals." Forestalling was the practice of hoarding grain in order to cause the price to rise. Regrating was the practice of a trader buying goods and reselling them in the same market at a higher price. Engrossing was the practice of buying up a significant amount of a commodity in order to drive up its price. Violators were prosecuted and punished by the Star Chamber, the institution that hadthe authority to enforce manipulation prohibitions. Violators were fined and pilloried. The prohibitions were repealed by Parliament in 1844 but the repeal did not apply to "the offence of knowingly and fraudulently spreading or conspiring to spread any false rumour with intent to enhance or decry the price of any goods or merchandise ..."

Exchange Act, and the regulations promulgated under the Act, is that manipulation is referred to nearly 100 times without ever once being defined. The lack of a definition is not surprising because the word is so broad. Attempts to precisely define the term inevitably dissolve into circular logic: a manipulated price is an artificial price; an artificial price is one that has been manipulated.

Because the statute does not define manipulation, it has been left to the federal courts to identify the characteristics and attributes of an unlawful manipulation. Federal courts use a four-pronged test, that has evolved though the common law, to determine by a preponderance of the evidence whether a set of facts are consistent with an alleged manipulation. The four elements of proof in manipulation cases are:

(1) that the accused had the ability to influence market prices;

(2) that the accused specifically intended to do so;

(3) that an artificial price occurred; and

(4) that the accused caused an artificial price.

Some critics have argued that the real-world use of this four-part test by courts and the CFTC makes it extremely difficult to meet any one of these standards, let alone all standards simultaneously.[46] The cost and difficulty of meeting these elements of proof diminishes the effectiveness of what should (in theory at least) be one of the most effective and efficient tools for deterring manipulation: the certain application of after-the-fact sanctions for anyone caught manipulating or attempting to manipulate a futures market. In addition to after-the-fact sanctions, there are other methods regulators use to achieve deterrence. For example, the CFTC employs a staff of economists and futures market specialists who conduct real-time market surveillance of the positions of traders. The CFTC also has emergency powers

to force would-be manipulators to liquidate their positions. Other anti-manipulation tools of regulators and the exchanges (which are self-regulatory organizations) include position limits and contract design elements that make manipulation more costly for the would-be manipulator. Futures exchanges also conduct surveillance of their markets in order to deter manipulation before it occurs.

The history of futures markets has revealed many imaginative attempts to manipulate markets. We discuss three types of manipulation below: (1) market power manipulation, (2) false report manipulation, and (3) micromanipulation.

Market Power Manipulation: Corners, Squeezes, and Hugs

In a market power manipulation, the trader has control of the underlying commodity and a large futures position that enables his actions to corner or squeeze the market. While various commentators use somewhat different definitions, we will define a **corner** as a successful effort by a trader or group of traders to influence the price of a futures contract by intentionally acquiring market power in the deliverable supply of the underlying good while simultaneously acquiring a large long futures position. If the deliverable supply is captured by long futures traders, it becomes unavailable to shorts for delivery. This means that the shorts will be forced to settle their contracts with the longs at inflated prices.

In a market **squeeze**, a trader achieves effective control over the price of a futures contract due to disruptions in the supply of the cash commodity. The manipulative part of a squeeze arises when the trader uses this circumstance to create artificially high prices. The disruptions that create the squeeze need not be due to actions of the controlling trader, but might originate from other natural forces, such as the weather. A **hug** is a mild squeeze.

Corners, squeezes, and hugs boil down to instances of exercising market power. In theory, this market power can be exercised on either the long side or the short side of the market. In practice, however, market power is almost exclusively used to drive prices up so as to benefit the holder of a long position.

Exchanges design futures contracts with large deliverable supplies to lessen the chances of corners, squeezes, or hugs. Exchanges may use a system of delivery price differentials to expand the supply eligible for delivery. Exchanges also use position limits to reduce the chances that a trader can acquire enough market power to move the price to an artificial level. Corners, squeezes, and hugs are bad for business and contracts prone to these dislocations have little chance for success.

As a practical matter, the costs and risks associated with a market power manipulation can be formidable for the manipulator. For starters, buying up large quantities of the underlying stocks of the cash commodity requires considerable investment. If the manipulation is not successful, the manipulation strategy will yield only costs and no benefits. Even if the manipulation is successful the costs to the manipulator can be high. After the manipulation has run its course, the manipulator must dispose of the stocks he has acquired to corner the market, that is, he must **bury the corpse**. If the manipulation is successful, stocks of the underlying commodity will flow to the delivery point in response to the high price. This means that the price at the delivery point will plunge once the manipulator sells his stocks into the glutted market. Burying the corpse can be the most significant cost of executing a manipulation and can make an attempted manipulation self-defeating. A foresighted manipulator might attempt to solve this problem by selling distant contracts at the artificially high price to dispose of the corpse.

A successful market power manipulation leaves telltale footprints that are characteristic of a manipulation episode. The burying-the-corpse effect, that is, the collapse of spot prices (both in absolute terms and in relation to deferred contracts and spot prices at other locations) following the termination of manipulative actions, is one such characteristic footprint. Investigators, and the courts, will use the collapse in prices to help prove that the price during the alleged manipulation was artificial.

Stephen Craig Pirrong has identified other characteristics of a successful (long) market power manipulation that include:[47]

(1) The cash market price at delivery locations specified in the futures contract is abnormally high relative to prices at nondelivery locations.

(2) The price of the delivery-eligible grade of a commodity rise relative to the prices of nondelivery grades of the same commodity.

(3) The spread relationship between related commodities is distorted (e.g. corn versus soybeans).

(4) Unusually large shipments of the commodity are diverted to the delivery point immediately prior to and during the delivery period. And shipments from the delivery point are unusually small as traders amass stocks to make delivery.

(5) Unusually large shipments of the commodity away from the delivery point at the end of a manipulation and unusually small inflows to the delivery location.

(6) The price of the manipulated contract is abnormally high relative to the price of adjacent and deferred contacts (e.g. the price of the front-month contract versus the prices of back-month contracts).

The Case of the Short-Sighted Shorts

Do shorts have an obligation to avoid being victims of market squeezes? Possibly, at least according to one court ruling.

In October 1957 Volkart Brothers Inc., a large cotton dealer and a member of the New York Cotton Exchange (NYCE) and the New Orleans Cotton Exchange, held long futures positions in delivery month contracts at both exchanges exceeding all certified stocks of cotton eligible for delivery against the contracts by almost 100 percent. Volkart held its long position throughout the delivery month and on the last trading day shorts found that they either had to pay a substantial premium to Volkart in order to offset their futures positions or pay a huge premium in the cash market in order to obtain the cotton they needed to fulfill their delivery obligations. The squeezed shorts alleged that Volkart had manipulated the delivery process and the case went to court.

In its defense, Volkart argued that the shorts only had themselves to blame for placing themselves in such a vulnerable position. Volkart noted that there were great quantities of cotton stocks at delivery locations and that shorts could have had these stocks certificated in preparation for fulfilling their delivery obligations. Under this expanded definition of deliverable supply, Volkart's long position did not dominate the deliverable

Continued

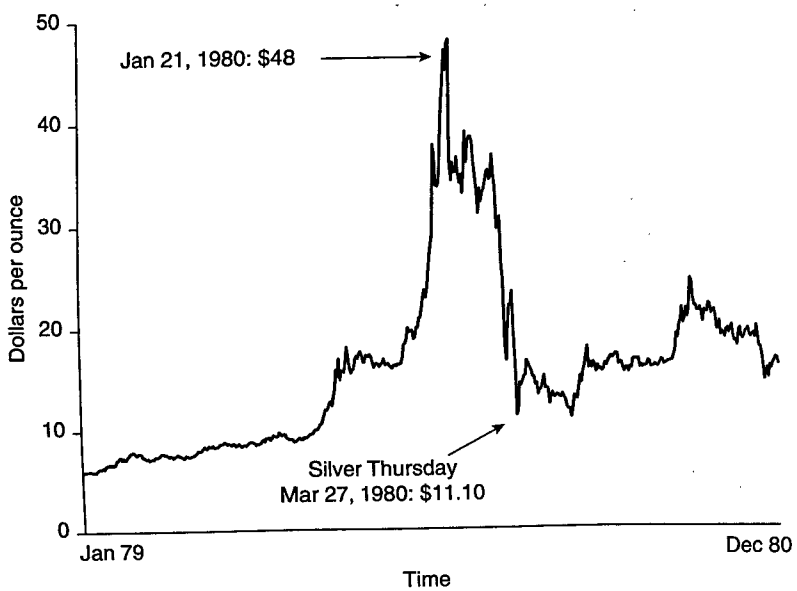
stocks meaning that there could be no manipulation. The Court of Appeals held that the squeeze occurred only because the shorts were negligent in failing to seek certification of cotton stocks in a timely matter.[48] Volkart was exonerated.

In other cases, courts have not accepted the expanded definition of deliverable stocks beyond certificated stocks, meaning that the value of the Volkart case as a precedent is unclear.

Discussed below is one proven market power manipulation and one alleged market power manipulation. First, we consider a manipulation in silver by the Hunt brothers of Dallas and their co-conspirators. This manipulation occurred in 1979–80. Second, we examine an alleged manipulation of soybeans that occurred in 1989. At that time, the large grain-trading firm Ferruzzi Finanziaria held 7 million bushels of soybeans, and the exchanges and the CFTC moved to force Ferruzzi to liquidate. In Federal Court, the Hunt brothers were found to have manipulated silver prices. However, Ferruzzi has never been brought to trial, and the manipulation in soybeans has not been proven, although Ferruzzi has paid the CBOT in settlement of the dispute.

The Hunt Silver Manipulation. With little doubt, the Hunt manipulation of silver in 1979–1980 was the grandest futures manipulation of the twentieth century. At one time, the Hunts and their co-conspirators controlled silver worth more than $14 billion. Figure 2.4 shows the price of silver for 1979 and 1980. At the beginning of 1979, an ounce of silver was worth about $6. In January 1980, the price briefly exceeded $50 during one trading day. In March 1980, the price of silver crashed, and silver fell to the $12 per ounce range. In 1996, silver traded for about $5–6 per ounce.

Figure 2.4 Silver Prices in 1979–80



In some ways, the silver manipulation was very simple, while in other ways it was incredibly complex. The manipulative efforts involved many other participants besides the flamboyant and well-known Hunts. These other conspirators included a number of very wealthy Saudis. In outline, the Hunts operated a corner on the silver market. They amassed gigantic futures positions and demanded delivery on those contracts as they came due. At the same time, they bought tremendous quantities of physical silver and held the physical silver off the market. Thus, they accelerated demand through the futures market as they restricted supply through the cash market. As a result the price of silver shot up.

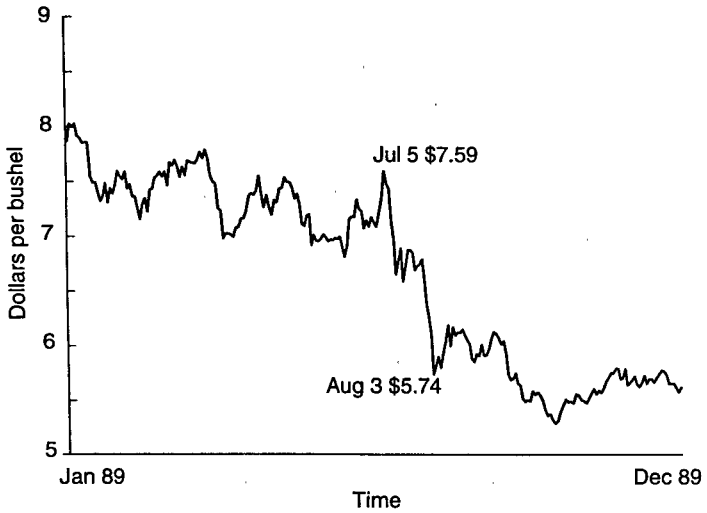
As silver approached $50 per ounce in January 1980, the exchanges and the CFTC took effective action by imposing liquidation-only trading. Under **liquidation-only trading**, traders are allowed to trade only to close an existing futures position; they are not allowed to establish any new positions. (This rule forces traders to exit the market as any existing positions come to expiration; they cannot roll those positions forward to a later contract maturity.) The next day, the price of silver dropped by $12 per ounce in one day. From January through February and into March, the manipulators struggled to support the price of silver. However, the exchanges also increased margins on silver. On March 19, the Hunts defaulted on their margin obligations. In a final desperate attempt to support the price of silver, the manipulators announced a plan on March 26, 1980, to issue bonds backed by their physical silver holdings. The market interpreted this ploy as an act of desperation and the market crashed again the next day. March 27, 1980, has come to be known as Silver Thursday because of this famous crash that ended the Hunts' effective domination of silver.

Minpeco, S.A., a Peruvian government-sponsored minerals marketing firm, was a major short trader in the silver market during 1979–1980. They sued the Hunts, their co-conspirators, and their brokers for $90 million of actual losses, plus interest, plus trebled punitive damages. Minpeco won about $200 million in settlements and judgments against the defendants. This sum included a prejudgment settlement payment of $34 million by Merrill Lynch and Bache, two of the conspirators' largest brokers. The jury found that the three Hunt brothers, Bunker, Herbert, and Lamar, had indeed manipulated the silver market. After the verdict, Lamar Hunt, owner of the Kansas City Chiefs NFL team, paid $17 million in settlement. The full settlement was never collected from Bunker and Herbert, who sought protection in bankruptcy. Thus, these two brothers, who began the 1980s among the world's richest men, were bankrupt by 1990.[49]

The Alleged Soybean Manipulation of 1989. The Soybean crisis of 1989 had its origins at least as far back as the preceding year. In 1988, the Midwest suffered a severe drought, which greatly reduced soybean yields. Thus, the market entered the 1989 crop year with greatly diminished supplies. Figure 2.5 shows the price of soybeans for 1989. Through early 1989, Central Soya, a wholly owned grain subsidiary of the Italian firm Ferruzzi, amassed large holdings of physical soybeans and took large long positions in the May 1989 soybean contract. As late as May 16, Ferruzzi held 16.2 million bushels of May soybean futures. The CBOT revoked Ferruzzi's status as a hedger on May 18. This meant that Ferruzzi was forced to reduce its futures position to the 3 million bushel speculative position limit. As a result, the May contract liquidated in an orderly manner.

However, instead of merely offsetting its May positions, Ferruzzi **rolled its position forward**. That is, Ferruzzi sold May contracts and bought July soybean futures. This action set the stage for a larger problem in July. By early June, Ferruzzi held a long position of 32 million bushels in the July futures contract. In addition, by July 1, Ferruzzi had achieved effective control over the deliverable supply of soybeans. Ferruzzi controlled 7 million bushels, while all other traders controlled only 1.6 million. With Ferruzzi holding 32 million bushels in long futures and only 1.6 million bushels available for delivery by other traders, Ferruzzi clearly had a dominant market position.

Figure 2.5 Soybean Prices in 1989



On July 11, 1989, the CBOT declared that an emergency existed. Effective on July 12, the Board of Trade revoked Ferruzzi's status as a hedger. This meant that Ferruzzi was once again subject to the 3 million bushel position limit. Further, the CBOT ordered liquidation of at least 20 percent of futures positions for each of the next several trading days down to an absolute limit of no more than 1 million bushels at the close of trading on July 20. These actions helped avert the crisis, and the July contract traded without further disruptions. On September 15, 1989, Ferruzzi announced that its major grain and oilseed traders in Paris had resigned due to "differences over trading strategies."[50]

Ferruzzi later filed suit against the CBOT, and the CBOT imposed fines on Ferruzzi. In 1992, the dispute was laid to rest when Ferruzzi paid $2 million to the CBOT and dropped its suit. The CBOT viewed this payment as a fine, but Ferruzzi has disputed this characterization. The aftermath of this mess lingered into 1993, when the chairman of Ferruzzi committed suicide and deep losses of about $350 million, apparently stemming from the trading debacle, were discovered.[51] The case also led to changes in the delivery points specified in CBOT soybean contracts.

False Report Manipulation

Section 9(a)(2) of the CEA makes it illegal for "anyone to knowingly make false communications or misleading or inaccurate reports concerning crop or market information or conditions that affect or tend to affect the price of any commodity in interstate commerce." Between 2002 and 2005 the CFTC settled enforcement proceedings for $297 million against 25 energy-trading firms alleged to have manipulated or attempted to manipulate the cash natural gas market when they provided false reports to the publishers of natural gas price indexes, *Platts Gas Daily*, and *Inside FERC Gas Market Report*. The index providers published price indexes that tend to affect futures prices. The false reports involved the altering of price and volume information for actual trades. The false reports also involved the reporting of nonexistent trades.

Micromanipulation

A micromanipulation results from a momentary rigging of a futures contract's settlement price. A micromanipulation involves the intent to trade in a way that creates an artificial price that may last only an instant. A trader may find it profitable to conduct this type of manipulation if they have an OTC derivatives position that is valued using the futures price as a reference price. In 2001, the CFTC settled allegations of a micromanipulation with Avista Energy, Inc.[52] The CFTC alleged that Avista manipulated the settlement prices of NYMEX Palo Verde and California–Oregon–Border electricity futures contracts between April 1988 and July 1988 to benefit cash-settled OTC options positions that were tied to daily settlement prices of the NYMEX electricity futures contracts. The CFTC alleged that Avista was able to raise and lower settlement prices by placing large orders ahead of the market close. The CFTC alleged that the before-the-close trading had no business or economic purpose and was undertaken for the sole purpose of manipulating settlement prices to benefit Avista's OTC positions.

Old Hutch

Benjamin Hutchinson (1829–99) was a legendary Chicago trader whose career spanned nearly 40 years during the second half of the nineteenth century. His many attempts to corner the CBOT's grain markets earned him a fortune, a reputation, and the nicknames "King of the Corner" and "Old Hutch."

Perhaps the most memorable of his corners was aimed at the CBOT's September 1888 wheat contract. As early as January 1888, when wheat was trading for around 85 cents/bushel, Old Hutch began secretly accumulating cash market inventories of wheat while at the same time he began building a long futures position. In the midst of his accumulation of cash wheat, rumors circulated that Old Hutch had died. This depressed prices and allowed Old Hutch, who was in fact very much alive, to accumulate additional stocks of wheat at even lower prices. In July and August, he shipped large amounts of wheat out of Chicago to East Coast markets on boats he had chartered. By chartering these vessels, he impeded the ability of the shorts to quickly increase the deliverable supply once Old Hutch's position was disclosed. His ownership of all cash wheat in Chicago and other cities became public on August 31. It is estimated that he acquired his cash position for an average price of 87 cents/bushel. His corner increased prices considerably and made him popular with farmers. One report from the time mentions that farmers were "blessing Old Hutch and that his name was being mentioned at rural prayer meetings."[53]

Old Hutch also increased his cash position during the expiring months. Prices continued to rise as crop reports worsened. On September 27, cash wheat reached $1.28. Some shorts now had trouble making delivery. Old Hutch settled with some shorts for $1.25. On the last trading date of the contract, the cash price rose to $2.08.

Continued

Old Hutch set the price of the contract at $2.00, which became the settlement price. Chicago newspapers reported that some shorts committed suicide to avoid their obligation to deliver. Reports from the period estimate that Old Hutch made as much as $8 million from the corner.

In 1889, Old Hutch's career came to an end the same way it began: by attempting a massive corner. He ventured millions attempting to corner the July 1890 corn contract, an unforeseen disruption in the markets led to a decline in the price of corn and Old Hutch suffered heavy losses. Within a year Old Hutch's fortune and reputation were gone and he left the markets permanently. Afterwards, he was occasionally seen in the galleries of the CBOT but he never traded again. He spent his last years alone in rural Wisconsin and died in 1899.[54]

CONCLUSION

In this chapter, we have considered some of the organizational features of the futures industry in detail. We began by examining the rules for margins on combinations of futures positions. With greater integration of markets, these futures spreads are becoming more common and presenting a greater challenge to clearinghouses' abilities to assess risk. Efforts to consider the risk of the trader's entire portfolio have led to the SPAN margin system and the development of intermarket cross-margining.

We have also considered the economic forces that shape the competitive structure of the futures industry. We noted how the competitive structure of the industry is changing as market become increasingly internationalized and as the pace of technological change advances. We explored the many ways in which futures exchanges compete with each other and with services provided in other markets.

We also considered the variety of futures market professionals. The floor broker, futures commission merchant, and introducing broker all play related but specialized roles. The function of the account executive and introducing broker often overlap with the role of the commodity trading advisor. In recent years, managed futures trading has become more important, creating a growing role for the commodity pool operator

Today, the futures industry in the United States faces challenges from emerging foreign futures markets and a movement toward electronic trading accelerated by technological change. Although these trends are threatening to end the dominance of futures trading long enjoyed by U.S. exchanges, these same developments broaden the range and scope of futures trading in the increasingly worldwide economy.

We next considered current issues in the futures industry. We explored issues of exchange governance, clearinghouse governance, clearing of OTC derivatives at futures clearinghouses, block trading, dual trading, the proposed elimination of Federal speculative position limits, payment for order flow, and event markets. Finally, we explored various types of market manipulation strategies and laws aimed at deterring them.

QUESTIONS AND PROBLEMS

1. Explain the difference between an inter-commodity and an intracommodity spread.
2. A speculator buys a nearby and sells a distant silver futures contract. What must happen for the trader to make a profit from this combined position?

3. A speculator buys a silver futures contract and sells a gold futures contract for the same expiration month. What kind of spread is this? What must happen for the speculator to profit?
4. What is "intermarket cross-margining"? Explain how cross-margining employs the ideas of portfolio theory.
5. If margins are maintained at levels that keep risk constant for individual contracts, but intermarket cross-margining is introduced, what is likely to happen to the overall pool of margin funds across all markets? Explain.
6. Consider a rainfall futures contract that might be written for cash settlement depending on the amount of rainfall by a certain date at a variety of government weather stations. How would such a contract meet the conditions for success outlined in this chapter?
7. Explain the different roles of a FB and an account executive.
8. At a party, a man tells you that he is an IB. He goes on to explain that his job is introducing prospective traders such as yourself to futures brokers. He also relates that he holds margin funds as a service to investors. What do you make of this explanation?
9. Assume that you are a FB and a friend of yours is a market maker who trades soybeans on the floor of the CBOT. Beans are trading at $6.53 per bushel. You receive an order to buy beans and you buy one contract from your friend at $6.54, one cent above the market. Who wins, who loses, and why? Explain the rationale for making such practice illegal.
10. Why are some futures exchanges wary of block trading? Why do some exchanges embrace block trading?
11. Back at the party after several more hours. Your buddy from Question 8 buttonholes you again and starts to explain his great success as a dual trader, trading both beans and corn. What do you think?
12. You are having trouble escaping from your friend in Question 11. He goes on to explain that liquidation-only trading involves trading soybean against soyoil to profit from the liquidation that occurs when beans are crushed. Explain how your understanding of "liquidation-only trading" differs from your friend's.
13. A trader holds a long position in the MAR T-bond futures contract. She offsets this position and buys a JUN T-bond futures contract. What is the name for this kind of transaction?
14. In what ways do futures exchanges compete?
15. How do futures exchanges make money?
16. What are bunched orders? What issues are involved in the post-trade allocation of bunched orders?
17. What is an "out trade?" How do futures exchanges facilitate the reconciliation of out trades?
18. What are the four elements of proof required for a futures market manipulation claim?
19. In what ways is futures market manipulation deterred by the actions of the CFTC and the futures exchanges?
20. What does it mean for a futures market to be *transparent*?
21. What does it mean for a commodity to be *fungible*?
22. What is churning?

NOTES

[1] For more information on network effects, see S. J. Liebowitz and S. E. Margolis, "Network Externalities (Effects)," *The New Palgrave's Dictionary of Economics and the Law*, MacMillan, 1998.

[2] The terminology for spreads is quite diverse. The definitions used here are not universal.

[3] This example is drawn from *Review of Standard Portfolio Analysis of Risk "SPAN" Margin System* published in April 2001 by the CFTC and posted on their web site at www.cftc.gov.

[4] V. G. France, "The Regulation of Margin Requirements: A Survey," Unpublished working paper, August 1990, University of Illinois, provides a comprehensive survey of margin regulations for futures, options, and options on futures.

[5] This discussion of cross-margining draws on three principal sources. J. P. Behof, "Intermarket Cross-Margining for Futures and Options," Issue Summary of the Federal Reserve Bank of Chicago, May 1989; R. D. Rutz, "The Myth and Reality of Intermarket Cross-Margining," *Intermarket*, August 1988; and K. Pierog, "Cross-Margining Caught in Clearinghouse Cross Fire," *Futures*, September 1988. In his article, Gordon Gemmill, "Margins and the Safety of Clearing Houses," *Journal of Banking & Finance*, 18:5, 1994, pp. 979–996, Gordon Gemmill finds that having one clearing house clear trades for many exchanges allows for the same degree of safety with much less capital, due to the diversification benefit. Gikas A Hardouvelis and Dongcheol Kim, "Margin Requirements, Price Fluctuations, and Market Participation in Metal Futures," *Journal of Money, Credit & Banking*, 27:3, 1995, pp. 659–671 emphasize the costliness of margins. They find that increasing margins in one metal market drive traders to other metal markets with unchanged margins.

[6] For more on the SPAN system, see the following three Chicago Mercantile Exchange booklets, "Standard Portfolio Analysis of Risk," 1989; "SPAN Overview," July 1990; "SPAN Technical Specifications," July 1990; and T. Mayer, "SPAN-ning the Margin Problem for Commodity Options," *Futures*, December 1989. Paul H. Kupiec, "The Performance of S&P 500 Futures Product Margins Under the SPAN Margining System," *Journal of Futures Markets*, 14:7, 1994, pp. 789–811 finds that the SPAN system performs more efficient that the earlier system.

[7] For an introduction to VAR and its extensions, see the following three articles: Charles Smithson and Lyle Minton, "Value at Risk," *Risk*, 9:1, 1996, pp. 25–27; Charles Smithson and Lyle Minton, "Value at Risk (2)," *Risk*, 9:2, 1996, pp. 38–39; Chris Turner, "VAR as an Industrial Tool," *Risk*, 9:3, 1996, pp. 38–40. The following three articles document the differing VAR results from alternative calculation methods: Arturo Estrella, Darryll Hendricks, John Kambhu, Soo Shin, and Stefan Walter, "The Price Risk of Options Positions: Measurement and Capital Requirements," Federal Reserve Bank of New York, *Quarterly Review*, 19:2, 1994, pp. 27–43; Tanyo Styblo Beder, "VAR: Seductive but Dangerous," *Financial Analysts Journal*, 51:5, 1995, pp. 12–24; James V. Jordan and Robert J. Mackay, "Assessing Value at Risk for Equity Portfolios: Implementing Alternative Techniques," in Rod Beckstrom, Alyce Campbell, and Frank Fabozzi (ed.) *Handbook of Firm-Wide Risk Management*, Homewood, IL: Irwin Publishing Company, 1996.

[8] See Ronald H. Coase, "The Institutional Structure of Production: The 1991 Alfred Nobel Memorial Prize Lecture in Economic Sciences," *The American Economic Review*, 82:4, 1992.

[9] Traders fear that once they have switched a position from an established, liquid market to an illiquid market, the cost of exiting from their position may be prohibitively high if other traders do not join the stampede to the new exchange. Traders refer to illiquid markets as "roach motels" because, just like in the pest-control commercial for a product with the same name, "you can get in but you can't get out."

[10] For examples of direct competition between exchanges, see M. E. Holder, M. J. Tomas III, and R. L. Webb, "Winners and Losers: Recent Competition Among Futures Exchanges for Equivalent Financial Contract Markets," *Derivatives Quarterly*, 5:2, 1999, pp. 19–27.

[11] Da-Hsiang Donald Lien, "Entry-Deterring Contract Specification on Futures Markets," *Journal of Futures Markets*, 10:1, 1990, pp. 89–95, analyzes exchange motivation in introducing new futures contracts. Consider an exchange that first introduces a contract in a given commodity. Lien argues that this innovative exchange will tend to introduce a conventional cash settlement contract to bar entry from a similar contract by another exchange. Lien argues that, if there were no competitive pressure, the exchange would be more likely to use a different settlement method. Thus, the exchanges and traders of the contract all lose when the innovative exchange chooses a contract specification to deter entry from a competitor.

[12] See Craig Pirrong, "Bund for Glory, or It's a Long Way to Tip a Market," working paper, University of Houston, 2003.

[13] The relationship among soybeans, soymeal, and soyoil is known as the "crush," because beans are crushed to make meal and oil. Chapter 4 examines the pricing of the crush in detail.

[14] The Mid-America Commodity Exchange was acquired by the CBOT in 1986 and closed in 2003. Its contracts are now offered as "mini" contracts by the CBOT. The Mid-America Exchange no longer exists.

[15] See Ronald H. Coase, *The Firm, the Market, and the Law*, Chicago: University of Chicago Press, 1988.

[16] Yale Brozen, in his book *Concentration, Mergers, and Public Policy*, New York: Macmillan Publishing Co., Inc., 1982, offers support for this point of view: "The antitrust agencies attack the wrong targets when they ask for deconcentration. Persistent concentration or dominance demonstrates either superior performance or the continuing use of ... improper exclusionary devices. If the former is the case, deconcentration will cause large costs. If the latter, then the use of such devices should be attacked and such tactics stopped ... It is time to remove dominance and concentration ... from the center of the antitrust stage" (pp. 405–406).

[17] Quoted in article by Mary Chung, "NYMEX is Boosted by Enron Backlash," *Financial Times*, May 31, 2002.

[18] In an exhaustive study of the successes and failure of futures contracts, CFTC economist Michael Penick finds that of the 632 new futures contracts listed since 1940, 72 percent survive 1 year, 44 percent survive 3 years, and 20 percent survive 10 years. He also finds that the rate of survival varies greatly across exchanges and across product types. Contracts developed by the old Mid-America exchange had high survival rates (86 percent after 3 years) although the exchange itself did not survive as a stand-alone entity. The CBOT survival rate was a much lower 36 percent after 3 years. Contracts based on metals had the highest survival rates while contracts based on energy had the lowest. See Michael A. Penick, "The Life Cycle of Futures Contracts: The Success and Failure Rates of Futures Contracts in the United States," Working paper, CFTC, Washington, DC: 2004.

[19] Recently, there have been more formal attempts to explain why some contracts succeed and others fail. Deborah G. Black, *Success and Failure of Futures Contracts: Theory and Empirical Evidence*, Salomon Brothers Monograph Series in Finance and Economics, Monograph 1986–1, argues that the more variable the price of a commodity and the larger the market for the cash good, the better is the chance for a successful futures contract. In addition to these traditional factors, she argued that residual risk and liquidity for cross-hedging were important. The list of ten contract features stems in part from Black and from K. Pierog and J. Stein, "New Contracts: What Makes Them Fly or Fail?" *Futures*, September 1989.

[20] Elizabeth Tashjian Johnston and John J. McConnell, "Requiem for a Market: An Analysis of the Rise and Fall of a Financial Futures Contract," *The Review of Financial Studies*, 2:1, 1989, pp. 1–23, conclude that the contract failed due to its poor design. See also K. Pierog and J. Stein, "New Contracts: What Makes Them Fly or Fail?" *Futures*, September 1989. Subsequently, the CBOT has tried to introduce improved contracts on mortgage interest rates.

[21] See, for example, D. Carlton, "Futures Markets: Their Purpose, Their History, Their Growth, Their Successes and Failures," *The Journal of Futures Markets*, 4:3, 1984, pp. 237–271. See also, R. W. Anderson, *The Industrial Organization of Futures Markets*, Lexington, MA: D. C. Heath and Company, 1984. Anderson's book contains a number of articles on different aspects of the industrial organization of futures markets.

[22] The definitions used in this section are drawn from various publications of the National Futures Association. Statistics regarding the number of firms and individuals of each classification appear in the 1989 *Annual Report* of the Commodity Futures Trading Commission.

[23] For more on broker groups, see G. Szala and S. Abbott, "Broker Groups: The Good, the Bad and the Ugly," *Futures*, 19, 1990, pp. 46–48.

[24] Scott H. Irwin, Terry R. Krukemeyer, and Carl R. Zulauf, "Investment Performance of Public Commodity Pools: 1979–1990," *Journal of Futures Markets*, 13:7, 1993, pp. 799–820.

[25] David K. Bruderle, "Introducing Brokers: Small and Ag-Focused but Tech Savvy," *Futures Industry Magazine*, 25, 2004, pp. 62–65.

[26] See Paul M. Architzel, Nancy E. Yanofsky, and Michael Riedlinger, "Locating the Futures Exchange and its Regulatory Impact," *Journal of Global Financial Markets*, 3, 2002, pp. 17–24.

[27] See A. Rosenbaum, "Are Exchange Fees Worth Scrutiny of Traders?" *Futures*, 19, 1990.

[28] For a general discussion of use of intellectual property protections in finance, see Josh Lerner, "Where Does State Street Lead? A First Look at Finance Patents 1971 to 2000," *The Journal of Finance*, 57:2, 2002, pp. 901–930; and Peter K. Trzyna, "Legal Protections For Innovative Financial Products and Services," in John F. Marshall and Vipul K. Bansal (eds), *Financial Engineering*, 2nd edn, Miami, FL: Kolb Publishing, 1992.

[29] See Will Acworth, "Patent Dispute Erupts Over Futures E-Trading," *Futures Industry Magazine*, 11, 2001, pp. 20–23.

[30] For more information on the Trading Technologies International patent, See Mark Young and Gregory Corbett, "A New Competitive Force," *Outlook 05*, published by the Futures Industry Association 2004, pp. 46–48.

[31] See Daniel P. Collins, "Errant Drops in Dow, S&P Futures Raise Eyebrows," *Futures*, 32, 2003, pp. 14–16.

[32] The position of clearing member FCMs is fully articulated by John Damgard, President of the Futures Industry Association, in "Restructure Clearing," *Futures Industry Magazine*, 12, 2002, pp. 14–17.

[33] Prior to the CFMA, the legality of many OTC contracts depended on the CFTC's Swap Exemption, which exempted certain OTC transactions from the CFTC's regulation. However, the Swap Exemption did not extend to transactions subject to multilateral clearing systems.

[34] See Jana Hranaiova, Michael Haigh, and James Overdahl, "Do Block Trades Harm Markets? An Empirical Analysis of Block Trading's Impact on the FTSE 100 Futures Market," *Futures Industry Magazine*, 14, 2004, pp. 24–29.

[35] Michael J. Fishman and Francis A. Longstaff argue that dual trading can actually help the broker's customers in many circumstances in "Dual Trading in Futures Markets," *Journal of Finance*, 47:2, 1992, pp. 643–671. They also find that dual traders earn higher profits than non-dual traders.

[36] Commodity Futures Trading Commission, "Economic Analysis of Dual Trading on Commodity Exchanges," November, 1989.

[37] See M. J. Walsh and S. J. Dinehart, "Dual Trading and Futures Market Liquidity: An Analysis of Three Chicago Board of Trade Contract Markets," *Journal of Futures Markets*, 11:5, 1991, pp. 519–537.

[38] See Eric. C. Chang, Peter R. Locke, and Steven C. Mann, "The Effect of CME Rule 552 on Dual Traders," *Journal of Futures Markets*, 14:4, 1994, pp. 493–510; and Eric Chang and Peter Locke "The Performance and Market Impact of Dual Trading: CME Rule 552," *Journal of Financial Intermediation*, 5, 1996 pp. 23–48. Other studies are quite skeptical regarding the benefits of restrictions on dual trading: Tom Smith, and Robert E. Whaley, "Assessing the Costs of Regulation: The Case of Dual Trading," *Journal of Law & Economics*, 37:1, 1994, pp. 215–246; Sugato Chakravarty, "Should Actively Traded Futures Contracts Come Under the Dual-Trading Ban?," *Journal of Futures Markets*, 14:6, 1994, pp. 661–684. Hun Y. Park,

Asani Sarkar, and Lifan Wu, "The Costs and Benefits of Dual Trading," Federal Reserve Bank of New York, *Staff Reports*, 2, June 1995 find that dual traders attain better execution for their customers than pure brokers. But, they also find that this performance is pit specific, with this superior performance not being characteristic of trading in all commodities.

[39] For examples of exchange incentive programs see CME Incentive Program for Agency Futures Trading, March 2000); New York Mercantile Exchange (NYMEX) ClearPort Incentive Plan, February 17, 2003; CME Euro FX and Euro FX Cross-Rate Incentive Program, April 1999); CBT Modified Market Maker Program for the Wilshire Small Cap Index Futures Contract, June 18, 1993; CME Principal Market Maker Program, April 20, 1995; NYMEX Specialist Market Maker Program, July 8, 1998; CBT a/c/e Temporary Fee Waiver Program Extension, March 25, 2003.

[40] See Joyce Berg, Robert Forsythe, Forrest Nelson, and Thomas Rietz, "Results from a Dozen Years of Election Futures Markets Research," Working Paper, College of Business Administration, Iowa City: University of Iowa, 2000.

[41] For an excellent survey of event markets, see Michael Gorham, "In the Event Markets," *Futures Industry*, 14, 2004, pp. 13–17.

[42] Gorham, cited above, surveys 33 of these facilities

[43] Praveen Kumar and Duane J. Seppi, "Futures Manipulation with Cash Settlement," *Journal of Finance*, 47:4, 1992, pp. 1485–1502, argue that cash settlement, rather than actual delivery of the underlying good, will prevent corners and squeezes. Stephen Craig Pirrong, "Mixed Manipulation Strategies in Commodity Futures Markets," *Journal of Futures Markets*, 15:1, 1995, pp. 13–38, develops a formal model of manipulation. Robert A. Jarrow, "Derivative Securities Markets, Market Manipulation, and Option Pricing Theory," *Journal of Financial & Quantitative Analysis*, 29:2, 1994, pp. 241–261 argues that the introduction of derivative markets enriches opportunities for manipulation.

[44] Information in this section comes from an excellent essay on the history of market manipulation by J.W. Markham, L. H. Hunt, Jr., M. S. Sackheim, "Market Manipulation – From Star Chamber to Lone Star," *Futures & Derivatives Law Report*, 2003, pp. 7–18.

[45] "He that withholdeth corn the people shall curse him; but blessing shall be upon the head of him that selleth it." *The Bible*, King James version.

[46] See Craig Pirrong, "Squeezes, Corpses, and the Anti-Manipulation Provisions of the Commodity Exchange Act," *Regulation*, 17:4, 1994; and Jerry W. Markham, "Manipulation of Commodity Futures Prices – The Unprosecutable Crime," *Yale Journal on Regulation* 8:2 1991, pp. 281–390.

[47] See Stephen Craig Pirrong, "Manipulation of the Commodity Futures Market Delivery Process," *Journal of Business*, 66:3, 1993, pp. 335–369.

[48] *Volkart Bros. Inc v. Freeman*, 311 F.2d.52, 58(5th Cir.1960).

[49] Warren Bailey and Edward Ng, "Default Premiums in Commodity Markets: Theory and Evidence," *Journal of Finance*, 46:3, 1991, pp. 1071–1093, explore the price impacts of the Hunt activity.

[50] This account relies on F. Bailey, *Emergency Action: July 1989 Soybeans*, Chicago: Chicago Board of Trade, 1990. See also K. Schap and C. Flory, "Ferruzzi versus CBOT: Who Is Right?" *Futures*, September 1989, and K. Pierog, "Report Vindicates CBOT Action in July Soybeans," *Futures*, October 1989.

[51] See Peter Truell and Maureen Kline, "Ferruzzi's Problems May be Italy's Too," *The Wall Street Journal*, August 12, 1993, p. A7

[52] Commodity Futures Law Reporter (CCH) ¶28,623 (CFTC 2001).

[53] E. J. Dies, *The Plunger, A Tale of the Wheat Pit*, New York, NY: Arno Press, orig. pub. 1929, pp. 137–138.

[54] For more on the era of Old Hutch, see Jonathan Lurie, *The Chicago Board of Trade 1859–1905*, Urbana, IL: University of Illinois Press, 1979.