

Wiley Trading Series



A COMPLETE GUIDE TO THE
**FUTURES
MARKET**

S E C O N D E D I T I O N

Technical Analysis, Trading Systems, Fundamental
Analysis, Options, Spreads, and Trading Principles

JACK D. SCHWAGER
AND MARK ETZKORN

WILEY

**A COMPLETE GUIDE
TO THE
FUTURES MARKET**

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Technical Analysis, Trading Systems,
Fundamental Analysis, Options, Spreads, and
Trading Principles

SECOND EDITION

Jack D. Schwager

Mark Etzkorn

WILEY

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In memory of Stephen Chronowitz, my mentor and friend.

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PART I

PRELIMINARIES

For Beginners Only

If a little knowledge is dangerous, where is the man who has so much as to be out of danger?

—Thomas Henry Huxley

■ Purpose of This Chapter

The focus of this book is on analysis and trading. Although these subjects are explored in far greater depth than in most general commodity texts, the presentation in the following chapters does not assume any prior knowledge except for a familiarity with the basic concepts of futures markets. This chapter is intended to provide a sketch of the background information necessary to make this book accessible to the novice reader. The title of this chapter should be taken literally. Traders who are already familiar with futures markets should proceed directly to Chapter 2.

The introductory discussion provided by this chapter is deliberately brief and does not purport to cover all background subjects. Topics such as the history of exchanges, choosing a broker, and operation of the clearinghouse are not covered because a familiarity with these subjects is unnecessary for the analysis and trading of futures markets. Readers who desire a more detailed discussion of commodity market basics can refer to a wide range of introductory commodity texts.

■ The Nature of Futures Markets

A futures contract is a commitment to deliver or receive a standardized quantity and quality of a commodity or financial instrument at a specified future date. The price associated with this commitment is the trade entry level.

The essence of a futures market is in its name: Trading involves a commodity or financial instrument for a future delivery date, as opposed to the present time. Thus, if a cotton farmer wished to make a current sale, he would sell his crop in the local cash market. However, if the same farmer wanted to lock in a price for an anticipated future sale (e.g., the marketing of a still unharvested crop), he would have two options: He could locate an interested buyer and negotiate a contract specifying the price and other details (quantity, quality, delivery time, location, etc.). Alternatively, he could sell futures. Some of the major advantages of the latter approach are the following:

1. The futures contract is standardized; hence, the farmer does not have to find a specific buyer.
2. The transaction can be executed virtually instantaneously online.
3. The cost of the trade (commissions) is minimal compared with the cost of an individualized forward contract.
4. The farmer can offset his sale at any time between the original transaction date and the final trading day of the contract. The reasons this may be desirable are discussed later in this chapter.
5. The futures contract is guaranteed by the exchange.

Until the early 1970s, futures markets were restricted to commodities (e.g., wheat, sugar, copper, cattle). Since that time, the futures area has expanded to incorporate additional market sectors, most significantly stock indexes, interest rates, and currencies (foreign exchange). The same basic principles apply to these financial futures markets. Trading quotes represent prices for a future expiration date rather than current market prices. For example, the quote for December 10-year T-note futures implies a specific price for a \$100,000, 10-year U.S. Treasury note to be delivered in December. Financial markets have experienced spectacular growth since their introduction, and today trading volume in these contracts dwarfs that in commodities. Nevertheless, futures markets are still commonly, albeit erroneously, referred to as commodity markets, and these terms are synonymous.

■ Delivery

Shorts who maintain their positions in deliverable futures contracts after the last trading day are obligated to deliver the given commodity or financial instrument against the contract. Similarly, longs who maintain their positions after the last trading day must accept delivery. In the commodity markets, the number of open long contracts is always equal to the number of open short contracts (see section Volume and Open Interest). Most traders have no intention of making or accepting delivery, and hence will offset their positions before the last trading day. (The long offsets his position by entering a sell order, the short by entering a buy order.) It has been estimated that fewer than 3 percent of open contracts actually result in delivery. Some futures contracts (e.g., stock indexes, eurodollar) use a *cash settlement* process whereby outstanding long and short positions are offset at the prevailing price level at expiration instead of being physically delivered.

■ Contract Specifications

Futures contracts are traded for a wide variety of markets on a number of exchanges both in the United States and abroad. The specifications for these contracts, especially details such as daily price limits, trading hours, and ticker symbols, can change over time; exchange web sites should be consulted for up-to-date information. Table 1.1 provides the following representative trading details for six futures markets (E-mini S&P 500, 10-year T-note, euro, Brent crude oil, corn, and gold):

1. **Exchange.** Note that some markets are traded on more than one exchange. In some cases, different contracts for the same commodity (or financial instrument) may even be traded on the same exchange.
2. **Ticker symbol.** The quote symbol is the letter code that identifies each market (e.g., ES for the E-mini S&P 500, C for corn, EC for the euro), combined with an alphanumeric suffix to represent the month and year.
3. **Contract size.** The specification of a uniform quantity per contract is one of the key ways in which a futures contract is standardized. By multiplying the contract size by the price, the trader can determine the dollar value of a contract. For example, if corn is trading at \$4.00/bushel (bu), the contract value equals \$20,000 ($\$4 \times 5,000$ bu per contract). If Brent crude oil is trading at \$48.30, the contract value is \$48,300 ($\$48.30 \times 1,000$ barrels). Although there are many important exceptions, very roughly speaking, higher per-contract dollar values will imply a greater potential/risk level. (The concept of contract value has no meaning for interest rate contracts.)
4. **Price quoted in.** This row indicates the relevant unit of measure for the given market.
5. **Minimum price fluctuation (“tick”) size and value.** This row indicates the minimum increment in which prices can trade, and the dollar value of that move. For example, the minimum fluctuation for the E-mini S&P 500 contract is 0.25 index points. Thus, you can enter an order to buy December E-mini S&P futures at 1,870.25 or 1,870.50, but not 1,870.30. The minimum fluctuation for corn is $\frac{1}{4}$ ¢/bu, which means you can enter an order to buy December corn at $\$4.01 \frac{1}{2}$ or $\$4.01 \frac{3}{4}$, but not $\$4.01 \frac{5}{8}$ per bushel. The tick value is obtained by multiplying the minimum fluctuation by the contract size. For example, for Brent crude oil, one cent ($\$0.01$) per barrel \times 1,000 barrels = \$10. For corn, $\frac{1}{4}$ ¢/bu \times 5,000 = \$12.50.
6. **Contract months.** Each market is traded for specific months. For example, the E-mini S&P 500 futures contract is traded for March, June, September, and December. Corn is traded for March, May, July, September, and December. Table 1.2 shows the letter designations for each month of the year, which are added (along with the contract year) to a market’s base ticker symbol to create a contract-specific ticker symbol. For example, December 2017 E-mini S&P 500 futures have a ticker symbol of ESZ17, while the symbol for the March 2018 contract is ESH18. The symbol for May 2017 corn is CK17. The last trading day for a contract typically occurs on a specified date in the contract month, although in some markets (such as crude oil), the last trading day falls in the month preceding the contract month. For most markets, futures are listed for contract months at least one year forward from the current date. However, trading activity is normally heavily concentrated in the nearest two contracts.

TABLE 1.1 Sample Futures Contract Specifications

E-Mini S&P 500		10-Year T-Note	Euro FX	Brent Crude Oil	Corn	Gold
Exchange	CME Group	CME Group/CBOT	CME Group	Intercontinental Exchange (ICE Futures Europe)	CME Group/CBOT	CME Group/NYMEX
Ticker Symbol	ES	TY	EC	B	C	GC
Contract Size	\$50 × S&P 500 Index	U.S. Treasury note with a face value at maturity of \$100,000.	125,000 euros	1,000 barrels	5,000 bushels (~127 metric tons)	100 troy ounces
Price Quoted In	Index points	Points (\$1,000) and halves of 1/32 of a point (e.g., 126-16 represents 126 16/32 and 126-165 represents 126 16.5/32).	U.S. dollars per euro	U.S. dollars and cents	Cents per bushel	U.S. dollars and cents per troy ounce
Minimum Price Fluctuation ("tick") Size and Value	0.25 index points = \$12.50	One-half of 1/32 of one point (\$15.625, rounded to the nearest cent per contract).	\$0.00005 per euro increments (\$6.25/contract)	One cent (\$0.01) per barrel = \$10	1/4 cent per bushel = \$12.50	\$0.10 per troy ounce = \$10
Contract Months	Mar, Jun, Sep, Dec	Mar, Jun, Sep, Dec	Mar, Jun, Sep, Dec	All months of the year	Mar, May, Jul, Sep, Dec	The current month; the next two months; any Feb, Apr, Aug, and Oct within a 23-month period; and any June and Dec within a 72-month period beginning with the current month.
Trading Hours	Mon–Fri, 5:00 p.m. previous day to 4:15 p.m.; trading halt from 3:15 p.m. to 3:30 p.m.	5:00 p.m. to 4:00 p.m., Sun–Fri.	Sun–Fri, 5 p.m. to 4 p.m. CT with a 60-min. break each day beginning at 4:00 p.m.	1 a.m. to 11 p.m. London time	Sun–Fri, 7:00 p.m. to 7:45 a.m. CT and Mon–Fri, 8:30 a.m. to 1:20 p.m. CT.	Sun–Fri, 6:00 p.m. to 5:00 p.m. (5:00 p.m. to 4:00 p.m. Chicago time/CT) with a 60-minute break each day beginning at 5:00 p.m. (4:00 p.m. CT).

Daily Price Limit	7%, 13%, and 20% limits are applied to the futures fixing price, effective 8:30 a.m. to 3 p.m. CT, Mon–Fri. (See exchange for specifics.)	7%, 13%, and 20% limits are applied to the futures fixing price, effective 8:30 a.m. to 3 p.m. CT, Mon–Fri. (See exchange for specifics.)	N/A	N/A	\$0.25	N/A
Settlement Type	Cash settlement	Deliverable	Deliverable	Physical delivery based on EFP delivery, with an option to cash settle against the ICE Brent Index price for the last trading day of the futures contract.	Deliverable	Deliverable
First Notice Day	N/A	Final business day of the month preceding the contract month.	N/A	N/A	Last business day of month preceding the delivery month.	The last business day of the month preceding the delivery month.
Last Notice Day	N/A	Final business day of the contract month.	N/A	N/A	The business day after the last contract's last trading day.	The second-to-last business day of the delivery month.
Last Trading Day	Until 8:30 a.m. on the 3rd Friday of the contract month.	12:01 p.m. on the 7th business day preceding the last business day of the delivery month.	9:16 a.m. CT on the second business day immediately preceding the third Wed of the contract month.	The last business day of the second month preceding the relevant contract month.	Business day prior to the 15th calendar day of the contract month.	The third-to-last business day of the delivery month.
Deliverable Grade	N/A	U.S. T-notes with a remaining term to maturity of 6.5 to 10 years from the first day of the delivery month.	N/A	N/A	#2 Yellow at contract price, #1 Yellow at a 1.5 cent/bushel premium, #3 Yellow at a 1.5 cent/bushel discount.	Gold delivered under this contract shall assay to a minimum of 995 fineness.

TABLE 1.2 Contract Month Designations

Month	Ticker Designation
January	F
February	G
March	H
April	J
May	K
June	M
July	N
August	Q
September	U
October	V
November	X
December	Z

7. **Trading hours.** Trading hours are listed in terms of the local times for the given exchange. (All U.S. exchanges are currently located in either the Eastern or Central time zones.)
8. **Daily price limit.** Exchanges normally specify a maximum amount by which the contract price can change on a given day. For example, if the December corn contract closed at \$4.10 on the previous day, and the daily price limit is 25¢/bu, corn cannot trade above \$4.35 or below \$3.85. Some markets employ formulas for increasing the daily limit after a specified number of consecutive limit days.

In cases in which free market forces would normally seek an equilibrium price outside the range boundaries implied by the limit, the market will simply move to the limit and virtually cease to trade. For example, if after the market close the U.S. Department of Agriculture (USDA) releases a very bullish corn crop production estimate, which hypothetically would result in an immediate 30¢/bu price rise in an unrestricted market, prices will be *locked limit up* (25¢/bu) the next day. This means that the market will open and stay at the limit, with virtually no trading taking place. The reason for the absence of trading activity is that the limit rule restriction maintains an artificially low price, leading to a deluge of buy orders at that price but few if any sell orders.

In the case of a very severe surprise event (e.g., sudden major crop damage), a market could move several limits in succession, although such moves are less common than in the days before near-24-hour electronic trading. In such situations, traders on the wrong side of the fence might not be able to liquidate their positions until the market trades freely. The new trader should be aware of, but not be overly frightened by, this possibility, since such events of extreme volatility rarely come as a complete surprise. In most cases, markets vulnerable to such volatile price action can be identified. Some examples of such markets would include commodities in which the USDA is scheduled to release a major report, coffee or frozen concentrated orange juice during their respective freeze seasons, and markets that have exhibited recent extreme trading volatility. For some markets, the limit on the nearby contract is removed at some point

approaching expiration (frequently *first notice day*—see item 10). Daily price limits can change frequently, so traders should consult the exchange on which their products trade to ensure they are aware of current thresholds.

9. **Settlement type.** Markets are designated either as physically deliverable or cash settled. In Table 1.1, the E-mini S&P 500 futures are cash settled, while all the other markets can be physically delivered.
10. **First notice day.** This is the first day on which a long can receive a delivery notice. First notice day presents no problem for shorts, since they are not obligated to issue a notice until after the last trading day. Furthermore, in some markets, first notice day occurs after last trading day, presenting no problem to the long either, since all remaining longs at that point presumably wish to take delivery. However, in markets in which first notice day precedes last trading day, longs who do not wish to take delivery should be sure to offset their positions in time to avoid receiving a delivery notice. (Brokerage firms routinely supply their clients with a list of these important dates.) Although longs can pass on an undesired delivery notice by liquidating their position, this transaction will incur extra transaction costs and should be avoided. **Last notice day** is the final day a long can receive a delivery notice.
11. **Last trading day.** This is the last day on which positions can be offset before delivery becomes obligatory for shorts and the acceptance of delivery obligatory for longs. As indicated previously, the vast majority of traders will liquidate their positions before this day.
12. **Deliverable grade.** This is the specific quality and type of the underlying commodity or financial instrument that is acceptable for delivery.

■ Volume and Open Interest

Volume is the total number of contracts traded on a given day. Volume figures are available for each traded month in a market, but most traders focus on the total volume of all traded months.

Open interest is the total number of outstanding long contracts, or equivalently, the total number of outstanding short contracts—in futures, the two are always the same. When a new contract begins trading (typically about 12 to 18 months before its expiration date), its open interest is equal to zero. If a buy order and sell order are matched, then the open interest increases to 1. Basically, open interest increases when a new buyer purchases from a new seller and decreases when an existing long sells to an existing short. The open interest will remain unchanged if a new buyer purchases from an existing long or a new seller sells to an existing short.

Volume and open interest are very useful as indicators of a market's liquidity. Not all listed futures markets are actively traded. Some are virtually dormant, while others are borderline cases in terms of trading activity. Illiquid markets should be avoided, because the lack of an adequate order flow will mean that the trader will often have to accept very poor trade execution prices if he wants to get in or out of a position.

Generally speaking, markets with open interest levels below 5,000 contracts, or average daily volume levels below 1,000 contracts, should be avoided, or at least approached very cautiously. New markets will usually exhibit volume and open interest figures below these levels during their

initial months (and sometimes even years) of trading. By monitoring the volume and open interest figures, a trader can determine when the market's level of liquidity is sufficient to warrant participation. Figure 1.1 shows February 2016 gold (top) and April 2016 gold (bottom) prices, along with their respective daily volume figures. February gold's volume is negligible until November 2015, at which point it increases rapidly into December and maintains a high level through January (the February contract expires in late February). Meanwhile, April gold's volume is minimal until January, at which point it increases steadily and becomes the more actively traded contract in the last two days of January—even though the February gold contract is still a month from expiration at that point.

The breakdown of volume and open interest figures by contract month can be very useful in determining whether a specific month is sufficiently liquid. For example, a trader who prefers to initiate a long position in a nine-month forward futures contract rather than in more nearby contracts because of an assessment that it is relatively underpriced may be concerned whether its level of trading activity is sufficient to avoid liquidity problems. In this case, the breakdown of volume and open interest figures by contract month can help the trader decide whether it is reasonable to enter the position in the more forward contract or whether it is better to restrict trading to the nearby contracts.

Traders with short-term time horizons (e.g., intraday to a few days) should limit trading to the most liquid contract, which is usually the nearby contract month.

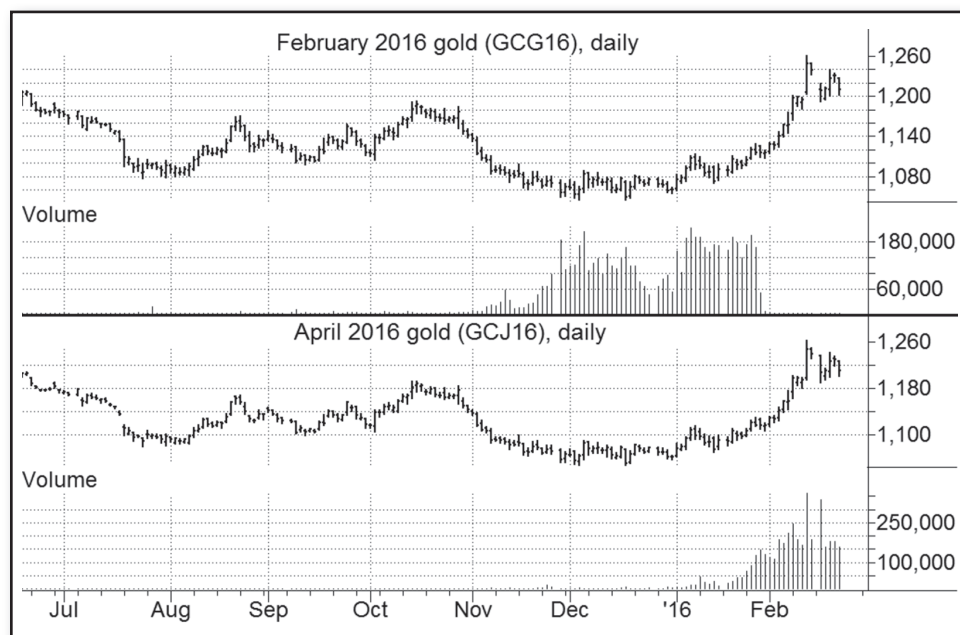


FIGURE 1.1 Volume Shift in Gold Futures

Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

■ Hedging

A sell hedge is the sale of a futures contract as a temporary substitute for an anticipated future sale of the cash commodity.¹ Similarly, a buy hedge is a temporary substitute for an anticipated forward purchase of the cash commodity. In essence, the goal of the hedger is to lock in an approximate future price in order to eliminate exposure to interim price fluctuations. The concept of hedging is perhaps best explained through illustration. Let's look at several examples of hedging.

Hedging Examples for a Commodity

Cotton Producer Sell Hedge The date is April 1. A cotton farmer estimates his potential production at approximately 200,000 lbs, assuming average yields. The current cash price is 95¢/lb—an extremely attractive price, but one the producer cannot take advantage of, since his crop will not be harvested until November. December futures are trading at 85¢/lb, reflecting market expectations for an interim price decline. The producer believes the December price may actually be overly optimistic. He expects that a large increase in U.S. production, in response to high prices, will result in a major price collapse by the time the new crop is harvested. Given his bearish expectations, the producer is eager to lock in a price on his anticipated production.

Historical comparisons indicate the November–December cash prices in the producer's region tend to average approximately 2–4¢ below the December futures price. (The difference between cash and futures is called the *basis*. In this case, the November–December basis is said to be “2–4¢ under.”) Thus, by selling December futures at the current price of 85¢/lb, the farmer can lock in an approximate cash price of 81–83¢. Because the producer believes prices will be significantly below 80¢/lb by harvest time, he decides to sell three December futures contracts against the expected post-harvest sale of his crop. This is called a *sell hedge*.

Note that three contracts represent 150,000 lbs of cotton, an amount equivalent to three-quarters of the producer's anticipated crop. The farmer does not hedge his entire crop, because his eventual output is still open to considerable uncertainty. If weather conditions are extremely poor, his yields could be reduced by more than 25 percent. Consequently, to avoid the possibility of overhedging his crop, an action that would leave him with a net short position, he prudently decides to sell only three contracts.

Table 1.3 illustrates two hypothetical outcomes of this hedge. In case 1, the producer is entirely correct in his expectations, and cash prices decline to 72¢/lb by December 1. In line with the normal historical basis relationship, December futures are simultaneously trading at 75¢/lb. The producer sells his cash crop at 72¢/lb, but also realizes a profit of 10¢/lb on his futures position. Thus, on the 150,000 lbs of crop that he has hedged, his effective price is 82¢/lb. (Commissions have not been included in this or the following illustrations in order to keep exposition as simple as possible. The adjustment for commissions would not meaningfully alter the results.) As a result of hedging, the

¹The sell hedge may also be used as a proxy for temporary inventory reduction (see example of stock portfolio manager later in this section).

TABLE 1.3 Cotton Producer Sell Hedge

Case 1: Severely Weakening Cash Price		Case 2: Relatively Firm Cash Price	
Apr. 1	Dec. 1	Apr. 1	Dec. 1
Cash price 95¢	72¢	Cash price 95¢	92¢
Futures price 85¢	75¢	Futures price 85¢	95¢
Results:		Results:	
Cash sale price: 72¢		Cash sale price: 92¢	
Profit on futures: 10¢		Loss on futures: 10¢	
Effective sale price: 82¢		Effective sale price: 82¢	

farmer has locked in a much better price than he would have realized had he waited until his crop was harvested before taking any marketing action. In dollar terms, the producer's income is \$15,000 higher than it would have been without the hedge:

$$3 \times 10¢/\text{lb} \times 50,000 \text{ lbs} = \$15,000$$

A hedge will not always be profitable. In the situation illustrated by case 2, Table 1.3, the producer's projections proved wrong as cash prices remained firm, declining a mere 3¢/lb from their lofty April 1 levels. In this case, the farmer is able to sell his crop at a much better than expected 92¢/lb, but he experiences a loss of 10¢/lb on his futures position. His effective sales price is once again 82¢/lb. Of course, in this instance, with the benefit of hindsight, the producer would have been much better off had he had not hedged. Nonetheless, note that even though he has sacrificed the opportunity for a windfall profit by hedging, he still realizes his target sales price of 82¢/lb.

The value of hedging is that it provides the producer with a much wider range of marketing strategies. Remember, if he prefers to take his chances and wait until after the harvest to market his crop, he can do so. Futures widen the range of possibilities by allowing the producer to lock in any futures-implied price during the interim. Thus, although he will not always make the right choice, presumably, over the long run, the increased marketing flexibility provided by futures should prove advantageous.

Cotton Mill Buy Hedge The date is June 1. A cotton mill has forward contracted to supply a fabric order for the following March. To meet this production order, the mill will need 1 million lbs of cotton on hand by December.

The current cash price is 77¢/lb, and December futures are trading at 80¢/lb. Assuming the same -3¢/lb basis established in the aforementioned cotton producer example, the December futures price quote implies cash prices will be unchanged in December relative to their current levels.

Although the mill has plenty of time to purchase the actual cotton, it is concerned that cash prices will rise significantly in the coming months. Since the end-product sales price has already been negotiated, the company must lock in its input price in order to guarantee a satisfactory profit margin. Given this scenario, the mill has two choices:

1. Increase its inventory sufficiently to cover its anticipated December–March requirements.
2. Hedge its forward requirements by buying December cotton futures.