

# Guide To Technical Indicators

Volume 2

More Ways To Use Technical Indicators To  
Predict Future Market Action





**M**ost experienced traders use technical analysis to help them predict market moves, and then make trading decisions based on those predictions. Typically, these traders are knowledgeable about many different technical indicators, have used a number of them, and subsequently have settled on a few that they use over and over again.

To most newer traders, however, technical analysis remains somewhat of a mystery. To some, the term “technical analysis” itself takes on an almost mystical meaning.

In reality, technical analysis is no more than the study of market action using any of a variety of mathematics-based tools called technical indicators, with the objective being to accurately predict future activity. In a sense, traders use technical analysis as a diagnostic tool to study the markets, much like a doctor uses radiology as a diagnostic tool to study the human body.

The understanding of these diagnostic tools is essential to your growth as a trader. Without them, you will be severely handicapped in your trading.

This booklet can help you understand and apply these technical tools. The contents first appeared as a series of articles in *Futures*, the world’s leading monthly magazine devoted to trading the futures and options markets for profit. It is designed to take the mystery out of technical analysis by explaining the popular indicators in non-technical language, with graphic examples to demonstrate their use.

We hope you enjoy reading about these proven tools and applying them to your own trading program.

The Editors of *Futures* Magazine

***Futures***  
News, analysis and strategies for  
futures, options and derivatives traders

# Spreads

**A firm grasp of the principles and price relationships between contracts or markets can improve your understanding of the markets — whether you trade spreads or not.**

*By the Editors of Futures*

**S**preads sometimes are touted as a no- or low-risk trading option, ideally suited to smaller or more risk-averse traders. Although some do have limited risk in certain circumstances, spreads are by no means risk free, and in fact contain some unique risks, especially for traders who don't have a clear understanding of the limitations and possibilities of these transactions.

In options markets, the term spread covers everything from simple time spreads to complex butterflies, boxes and conversions. Although futures spreads are, at least on the surface, more straightforward than many of their option counterparts, understanding the basic price relationships between different futures contracts as well as the function of

spread trading is integral to a well-informed market perspective.

In the most basic sense, a spread refers to the price difference between two or more trading instruments, whether they are two contract months of the same commodity, two different commodities or the cash and futures price of a particular commodity. (The cash/futures spread is commonly called basis.) If June Treasury bonds are trading at 105-02, and September T-bonds are trading at 104-16, the spread between these two months is 18/32.

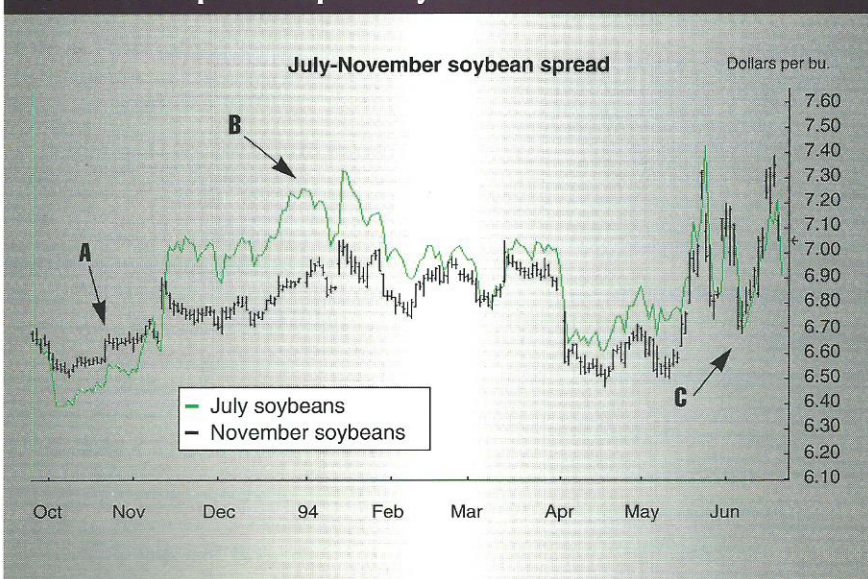
When putting on a spread, a trader establishes a long position in one month or contract while simultaneously establishing a short position in another month or contract. For example, a trader might buy September bonds and sell June bonds, or buy October cattle and sell October hogs. In putting on a spread, the trader seeks to profit from an in-

crease or decrease in the price difference between the two contracts (legs) of the spread, rather than the outright price movement of the commodities involved. In the T-bond example, if a trader put on a spread at 18/32 (the price difference between the long September position and the short June position), and the spread then widened to 26/32, the trader could offset his position and make a profit of 8/32 per spread.

Spread orders commonly are placed and executed at the price difference (differential) rather than at the individual prices of each leg. An exception may occur when a trader deliberately buys or sells one leg of the spread outright, and then waits to complete the other half of the spread, usually to secure a better spread differential. This process, called legging, can be very risky.

When buying the spread, the trader expects the spread differential to

**FIG. 1: Old-crop/new-crop overlay chart**



The July-November soybean spread is a popular example of an old-crop/new-crop spread, so called because the July contract is part of the old crop year and November is part of the new crop year. Fig. 1 shows a typical chart representation of this spread, with charts of the daily price movement on the two contracts overlaid together on a single grid.

increase; when selling, he expects it to decrease. Suppose the September S&P 500 contract is trading at 461.00 and the June contract is trading at 459.00. A trader expecting the September contract (which he feels is underpriced) to gain more on the upside than the June contract in the near future, might "buy" the spread, going long the September and short the June at a 2.00 differential. If he is correct, the September might rally to 462.50 while the June might only rally to 460.00. The spread now has widened to 2.50, and the trader could "sell" his spread at a .50 profit (see Fig. 3).

**Reduction** Spreads can reduce risk and offer expanded trading opportunities for two main reasons. First, because a spread contains both a long and short position in the same or related contracts, losses on one leg of the spread are countered by gains on the other. This will limit profit as well, but for many traders, this is an acceptable compromise. Second, by virtue of this reduced risk, some spreads also will have the added advantage of lower margins, often significantly lower than the margin on outright positions. This offers the option of putting on a greater number of spread positions, but will, of course, increase exposure.

Two questions naturally arise about spreads: Why do price differences occur, and how do traders profit on spreads if losses are offset by gains in different legs?

Spreads occur between different months of the same contract for a

variety of reasons. For many agricultural contracts, the cost of storing and insuring the physical commodity from month to month (referred to as carrying cost) is incorporated into the price of the back months in relation to the nearby month or the cash price, and will account for at least a minimum price difference between two contracts.

Changes in the supply and demand picture from month to month, as well as basic uncertainty about the future, will contribute to a fluctuating spread. Seasonal differences, such as the change from an old crop year to a new one, also influence the spread. For financial contracts, changing interest rates, the relationship between short-term and long-term interest rates, and currency rates also will affect the value of contracts from month to month and account for a widening or shrinking of the spread. The same commodities on different exchanges can differ for locally specific economic reasons, like the varying transportation and carrying costs in the different markets.

Intense market volatility and confusion, such as often occurs during rollover periods (when the front month of a commodity is nearing expiration and many positions are reestablished in the next nearby month), also will create spread opportunities. Traders commonly will put on spreads to roll positions into the next month. A long June S&P position could be rolled over by selling the June-September spread, that

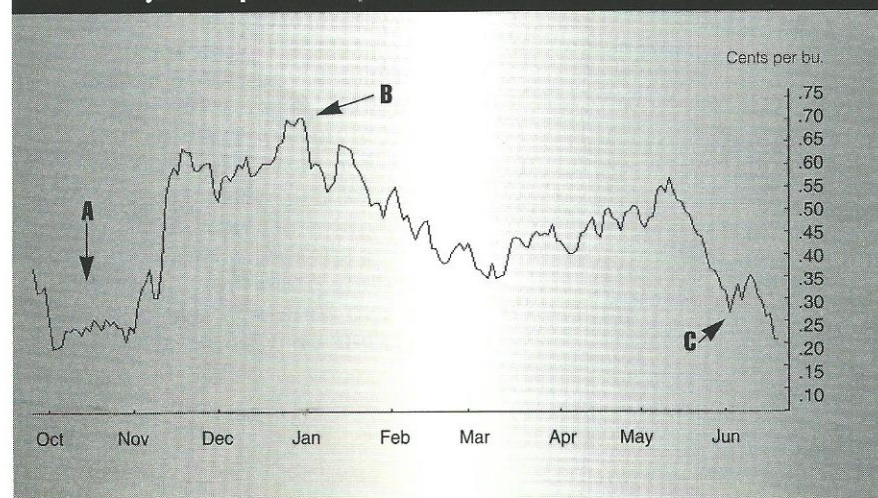
is, selling the June contract and buying the September. The June position is liquidated, leaving a new outright position in September. In every market, speculators and hedgers will have a fundamental knowledge of the factors affecting the spread, and will sense when prices are out of line.

**Basics** The three basic types of spreads that can be performed in the futures markets are intracommodity spreads, intercommodity spreads and intermarket spreads.

Probably the most common, intracommodity spreads (also known as intermonth spreads), refer to the simultaneous purchase and sale of different months of the same commodity, as in the S&P and T-bond scenarios. Strategies will vary from market to market, depending on the nature of the contract. Many commodities trade the back months at a premium to the front months, or vice versa. The latter is known as an inverted market, or backwardation. Some traders use "inverted" to refer to a market trading in a manner opposite to its normal pattern, regardless of whether the front month is at a premium or a discount to the back months. Even in markets that have a fairly established pattern, these relationships sometimes will flip-flop due to seasonal changes or extreme market conditions.

For example, in early June, September oats may be trading at a discount to December oats. If there is a dramatic increase in demand for September oats due to unexpected orders, September might well trade

**FIG. 2: Soybean spread value chart**



Spreads also can be charted using the spread value itself, as shown in Fig. 2. Points A, B and C mark areas where it would have been advantageous to buy or sell the spread as the price differential increased or decreased.

at a premium to December oats, wreaking havoc on spreaders who were counting on the discounted relationship.

Looking at the S&P example, you may ask why, if the trader expected the September contract to rally, he didn't just buy that contract at 461.00 and make a profit of 1.50 points outright, instead of .50 points on the spread. Look at what might have happened if the market dropped instead of rallied. Had the September contract broken to 459.00 and the June contract dropped to 457.50, the trader would have lost only .50 points on his spread [(459.00 - 457.50) - 2.00 = -.50] but would have lost 2.00 points on his outright position, a difference of \$750. The trader also would have benefited from the lower margin rate applied to intracommodity spreads.

Intercommodity spreads involve buying and selling separate but price-related contracts, such as T-bonds and T-notes or wheat and corn. Certain contracts, mostly those within a commodity group, historically have exhibited related price movements that make them attractive candidates for spreading. Wheat and corn might move in the same direction, but at different rates at different times.

One difficulty with this type of spread is a conflict in the size or denomination of contracts. You must then buy and sell different numbers of contracts to establish an equivalent money ratio for the spread.

Crush and crack spreads illustrate this phenomenon. With the crush spread, traders who feel soybeans are underpriced compared to soybean meal and oil will buy the spread, buying 10 soybean contracts while selling 11 soybean meal and nine soybean oil contracts. Traders who feel beans are overpriced in relation to meal and oil would sell the beans and buy meal and oil in the same ratio. Soybean contract size is 5,000 bu., soybean meal is 100 tons and soybean oil is 60,000 lbs., so the ratio

of the spread approximates an equal proportion of soybeans to what will be produced, meal and oil. The crack spread is a similar trade in the energy markets, where crude oil, gasoline and heating oil are spread in a 3-2-1 ratio.

Intermarket (or interexchange) spreading entails going long and short the same commodity in a different marketplace — CBOT wheat

derpriced in relation to September oats, and show greater bullish potential over the next few weeks. Rather than placing your order in the front month automatically, you could then place your buy order in December.

**Downside** Despite their advantages, spreads are not without their drawbacks. Transaction costs, while still less expensive than putting on two outright positions, are greater than they are for single transactions. Intercommodity and intermarket spreads, depending on the relationship of the commodities and exchanges involved, may not have the same margin reductions available for intracommodity spreads.

Also, where low margins do exist, traders can be tempted to put on too many spread positions, thus exposing themselves to as much, if not more, risk than they would have had they put on an outright position.

Also, if a market inverts after a trader puts on spread, the basic price relationship

he based his position on is gone, and he can face unlimited losses.

Another trap in the spread game is the practice of legging in and out of spreads. In most cases this is an unadvisable strategy. A good rule is not to put on a spread unless prices are already conducive to doing so. If you have to wait, don't. Buying or selling one-half of the spread outright and then waiting for a more favorable price in the other outright market leaves a trader open to the distinct possibility that a market will go against him before he can complete the spread. Furthermore, if the initial position was established in a back month with little liquidity, getting out could be a real nightmare.

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### FIG. 3: Anatomy of a spread

<b>Current market:</b>	September S&P 500 futures trading at 461.00	
	June trading at 459.00	
	Spread differential: 2.00 points	
<b>Strategy:</b>	"Buy" the spread at 2.00, with the expectation that the price difference between the two contracts will increase.	
<b>The trade:</b>	Buy September at 461.00 Sell June at 459.00	
<b>The result:</b>	The September contract rallies to 462.50, while the June rallies to 460.00. Spread differential: 2.50 points, .50 (\$250) profit per spread.	
	September: Buy 461.00 Sell 462.50 = 1.50 gain	June: Buy 460.00 Sell 459.00 = 1.00 loss
	<b>.50 gain overall</b>	

against MGE wheat, or New York vs. London coffee. This type of spreading is similar to the arbitrage trading performed in the financial markets, where traders might look for discrepancies in the price of a particular stock traded on two different exchanges. The trader buys the lower priced and sells the higher priced for an immediate profit. Opportunities like this are rare and short-lived, and usually require putting on extremely large positions to take advantage of the small price differentials.

Understanding spreading concepts and having a good idea of where different contracts should trade in relation to one another can still help you if you simply want to put on an outright position. After you decide you want to go long a particular commodity, you still have to pick which month to buy. After performing some spread analysis, you might determine that December oats seem un-

# Dow, Elliott, Fibonacci and Gann

Some of the more obscure schools of market analysis can teach you a lot about price behavior.

By the Editors of Futures

In this chapter we outline some of the more sophisticated and obscure analytical techniques: Fibonacci numbers, Elliott Wave Theory, Gann techniques and cycle analysis. We also will touch upon Dow Theory as it relates to the other schools of thought.

Some of these theories are closely related, and interesting parallels exist between almost all of them. Like most areas of technical analysis, however, debate continues over the value of each method in predicting market behavior. Some people swear by these techniques; others scoff. At the very least, they provide additional (and interesting) angles from which to approach trading.

The common theme running throughout these theories is the idea that markets obey the same forces that govern the natural world and human behavior. R.N. Elliott's final treatise on wave theory was titled *Nature's Law: The Secret of the Universe*; W.D. Gann's major work was called the *Natural Law of Vibration*. Markets, functioning as barometers of human emotion and psychology, reflect predictable patterns of human behavior.

**Dow Theory** Some technicians consider Dow Theory the bedrock of technical analysis, incorporating such ideas as pattern recognition and the use of confirming indicators (e.g. -volume) to gauge the strength of a trend. Charles Dow (as in the Dow Jones Industrial Average) developed a theory of stock index price movement which, among other things, held that prices progressed in recognizable wave patterns, which he classified

into three types based on magnitude — primary, secondary and minor — which he equated respectively with the tide, waves and ripples of the ocean. The time span covered by these wave forms ranges from over a year to less than three weeks. Dow also defined trend retracements, finding 1/3, 1/2 and 2/3 to be common levels. These retracements reappear throughout technical analysis.

**Fibonacci numbers** The work of a medieval mathematician studying the reproductive rate of rabbits, the Fibonacci series is an infinite string of numbers in which any member of the series is the sum of the two numbers directly preceding it, i.e. 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144...etc. The fascinating relationships among the numbers in this deceptively simple set are too numerous to list here in their entirety.

The most important elements for our purposes are the numbers themselves and the ratio of adjacent numbers. The ratio of any two consecutive Fibonacci numbers approaches 1.618 as the series continues to infinity. For example  $13/8 = 1.625$ ,  $21/13 = 1.615$ ,  $34/21 = 1.619$ , etc. So what, you say? Well, the informed Fibonacci or Elliottician would point out that 1.618 is the famed "Golden Mean" dating back to antiquity, a ratio that is evident in many natural and manmade phenomena, such as the dimensions of the Parthenon and the spiral progression of galaxies.

Many analysts have related the size and duration of price moves in stocks and commodities to this number. Its inverse, .618 (dividing

## FIG. 4: The Fibonacci number series

Each number is the sum of the previous two numbers: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144... etc.

Important ratios/relationships:

$1/2 = .50$  (50% retracement of a trend)

$2/3 = .67$  (67% retracement)

1.618, the "Golden Mean," and its inverse, .618, are useful in gauging future price objectives. 2.618 and 3.618 also are important.

$.618/1.618 = .382$  (38.2% retracement)

The difference between the square of any Fibonacci number and the product of the two numbers on either side of it is 1 [ $3^2 = (2 \times 5) - 1$ ].

144 is the only square Fibonacci number.

a Fibonacci number by the number immediately after it), also figures heavily in Fibonacci studies, as does the ratio of these two major ratios ( $.618/1.618 = .382$ , a common retracement percentage). The ratios of the first few Fibonacci numbers,  $1/2 = .50$  and  $2/3 = .67$ , correspond to Dow and Gann theory retracement percentages.

Two of the more common applications of Fibonacci numbers have to do with timing future market events and estimating the size of price movements. One way to apply them to a price chart would be to pick a particular price event, such as a new high or low, and then move forward along the time axis by increments corresponding to numbers of the Fibonacci series (i.e. 21, 34 or 55 days in the future). You might then look for recurrences of the original event or reversals of a trend at these points.

Some traders use this method to confirm analysis they are already performing. If, for example, you have been following an uptrend in the gold market and you see evidence of a head-and-shoulders formation that might peak in a week or so, you could check to see if Fibonacci analysis places a likely market event around the same time, say 55 days since the last major top you marked.

**Elliott Wave Theory** Like Dow Theory, Elliott Wave Theory categorizes price movement in terms of predictable waves. Beginning in the

**FIG. 6: Gann cardinal squares**

55	56	57	58	59	60	61
54	37	38	39	40	41	62
53	36	27	28	29	42	63
52	35	26	25	30	43	64
51	34	33	32	31	44	65
50	49	48	47	46	45	66
73	72	71	70	69	68	67

The middle price (25) is a contract low. Prices falling on the vertical and horizontal "crosses" represent levels of support and resistance.

properties of certain geometric figures and angles to predict price behavior. Gann had a cyclic view of market behavior and placed enormous emphasis on proportional relationships between price and time. He

believed market events occurred at intervals that could be determined mathematically. And like Elliott, he believed the relationships he "discovered" reflected the natural law of the universe.

Gann calculated price retracements on percentages derived from dividing price action into eighths, i.e.  $2/8 = 25\%$ ,  $4/8 = 50\%$ , etc. He also included the Dow and Fibonacci retracements of  $1/3$  (33%) and  $2/3$  (67%) in his list of key percentages. He constructed support and resistance lines (Gann lines) based on varying ratios of time units to price units. His most important trendline, plotted at 45 degrees (up from a market bottom or down from a market top) represents one unit of time movement per one unit of price movement.

He also placed lines with other time/price ratios, like 1:2, 2:1, 1:3, 3:1, etc. The angle of these lines corresponds to the strength and speed of a trend. As long as prices stay above (or below, depending on the direction of the trend) the 45-degree line, the trend will continue. Once prices break that line, they will theoretically proceed to the next line of resistance, 1:2 or 1:3, for example, as the trend is played out.

Gann determined "anniversary dates" for timing market events based on the degrees of a circle (30, 60, 90, 180 and 360 days) as well as periods of 12 months and 144 days (144 is the only square Fibonacci number). For example, when a market made a high or low, Gann looked for another significant price milestone 144 days or a year in the future.

He also predicted future support and resistance points using "cardinal squares." Starting with a low price for a contract, he spiraled prices clockwise around it on a grid until the prices reached the current trading range. Prices that fell on the "cardinal cross," the perpendicular

late 1920s, R.N. Elliott developed his own concept of price waves and their predictive qualities. In Elliott theory, waves moving with the trend are called impulse waves, while waves moving against it are called correction waves.

Impulse waves are broken down into five primary price movements, while correction waves are broken down into three (see Fig. 5, "Impulse waves," below). An impulse wave is always followed by a correction wave, so any complete wave cycle will contain eight distinct price movements (3, 5 and 8 are all Fibonacci numbers). Breaking down the primary waves of the impulse/correction wave cycle into subwaves produces a wave count of 34 (21 from the impulse wave plus 13 from the correction wave), producing more Fibonacci numbers.

Elliott analysis can be applied to time frames as short as 15 minutes or as long as decades, with smaller waves functioning as subwaves of larger waves, which are in turn subwaves of still larger formations. By analyzing price charts and maintaining wave counts, you can determine price objectives and reversal points.

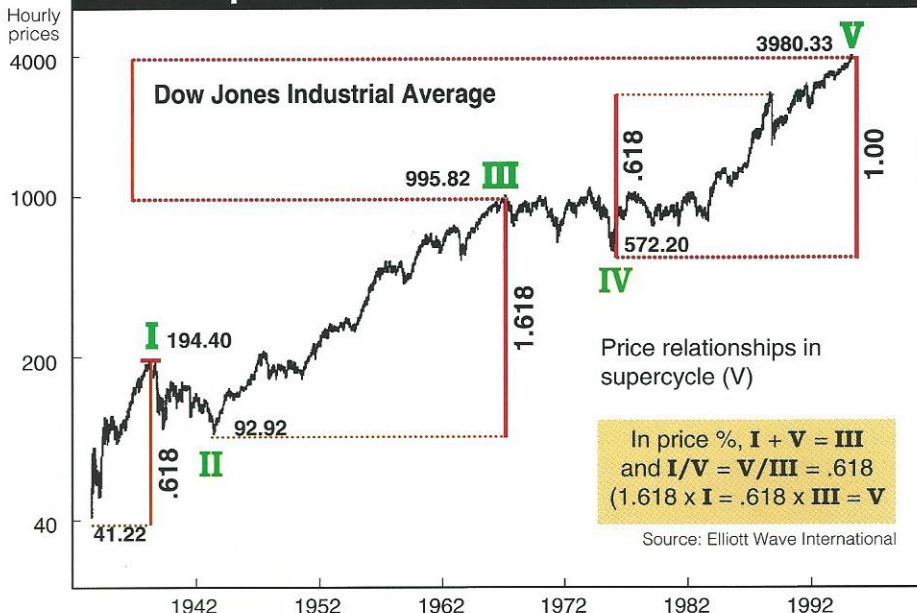
A key element of Elliott analysis is defining the wave context you are in: Are you presently in an impulse wave uptrend, or is it just the correction wave of a larger downtrend? The larger the time frame you analyze, the larger the trend or wave you find

yourself in. Because waves are almost never straightforward, but are instead composed of numerous subwaves and minor aberrations, clearly defining waves (especially correction waves) is as much an art as any other kind of chart analysis.

Fibonacci ratios play a conspicuous role in establishing price objectives in Elliott theory. In an impulse wave, the three principal waves moving in the direction of the trend (see I, III and V below) are separated by two smaller waves moving against the trend (II and IV). Elliotticians often forecast the tops or bottoms of upcoming waves by multiplying previous waves by a Fibonacci ratio. For example, to estimate a price objective for wave III, multiply wave I by the Fibonacci ratio of 1.618 and add it to the bottom of wave II for a price target. Fibonacci numbers also are evident in the time it takes for price patterns to develop and cycles to complete.

**Gann Theory** W.D. Gann was a trader in the early 1900s who devised a unique and complex trading method that parallels some of these other theories. His technique is sometimes referred to as geometric because of his use of the mathematical pro-

**FIG. 5: Impulse waves**



**FIG. 7: Five schools of thought**

	<b>Fibonacci</b>	<b>Elliott Wave</b>	<b>Gann</b>	<b>Dow</b>	<b>Cycle</b>
<b>In a nutshell</b>	Properties of the series applied to predict size and timing of price movements.	Price movement occurs in patterned "waves" that can help pinpoint future price targets and reversal points.	Precise mathematical relationship between price and time is key to understanding markets. Geometric patterns applied to price charts to forecast behavior.	Early wave theory. Classifies price waves by magnitude: Primary, secondary and minor. Gauges direction and strength of trend.	Price movements result of numerous overlapping cycles. Certain seasonal cycles, like agriculturals, are easily recognized.
<b>Notable numbers</b>	1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144... etc.	Time span of price movements often correspond to Fibonacci numbers. 5-wave impulse formation 3-wave correction formation (5 + 3 = 8, all Fibonacci numbers)	Timing of market events based on degrees of a circle: 30, 60, 90, 120, 180 or 360 days	Three types of wave formations (primary, secondary and minor).	
	The Golden Mean, 1.618 and its inverse, .618. .618/1.618 = .382 (common retracement percentage).	1.618, .618 and variations of these numbers often correspond to relative size of waves.	Divide price movement into eighths, 3/8 = 37.5%, 4/8 = 50%, etc. Use these percentages as retracement values.		28-day lunar cycle; 6- to 12-month season and yearly cycle. Five-, 10- and 20-day cycles correspond to popular moving averages.
	3/8 = 37.5%, 1/2 = 50%, 5/8 = 62.5%, 2/3 = 67%		33%, 37.5%, 50%, 62.5% and 67% retracement levels.	1/3 (33%), 1/2 (50%) and 2/3 (67%) retracement levels.	
	144 only "square" Fibonacci number (12x12 = 144).		144 days and 12 months prominent anniversary dates for market events. 45-degree trendline (1:1 price/time ratio) most popular. 1:2, 2:1, 1:3, 3:1 price/time ratios also common.		

lines equivalent to the X and Y axes of a graph, represented probable levels of future support and resistance.

Gann techniques are most effective when used together. Instances in which a trend reversal corresponds to a previously calculated retracement ratio, a cardinal square price, an anniversary date and the breaking of a trendline would represent important market events.

**Cycles** Like the other theories, cycle analysis draws much of its philosophical basis from a projected relation to the natural world, in this case the recurring cycles of the seasons, planets, and events like the regular ebb and flow of species populations, as well as social cycles of war and economic expansion. Astronomical cycles apparently influenced Gann. Cyclists look for manifestations of this repetitive behavior in the markets in regular progression of price tops and bottoms.

Traders and analysts disagree about the existence of different cycles and their usefulness in predicting price movement. Cycles may span such a great length of time it may be difficult to apply them pragmatically in a trading strategy, unless you plan on putting on a decade-long position.

Certain cycles are fairly well known, such as those related to the seasonal changes affecting many agricultural commodities. Other commonly applied analytical cycles run in lengths of five, 10 and 20 days, which correspond to popular oscillator and moving average periods. Another popular cycle is the 28-day cycle, which revolves around the lunar month.

The value of cycles, if and when they are clearly defined, lies in time regularity. The length of a cycle, measured from trough to trough, is called the period. Once this time span has been established, whether it is 20 days or 10 years, it can be extrapolated to determine future price patterns. A basic tenet of cycle analysis is that two or more cycles can be added together to form composite ones, a rule known as summation. The peaks and troughs of the various cycles in a market may coincide, pushing prices higher or lower. At other times, the cycles will work against one another (one cycle is up while another is down), flattening price movement. Markets are thus driven by numerous cycles of varying lengths, and price patterns are the result of these overlapping

forces. The problem lies in the difficulty of defining the component cycles of a market and understanding what is driving them.

The benefit of cycle analysis is similar to identifying the larger trends in wave analysis: If you know where you are, you will have a bet-

**If you know where you are, you'll have a better idea of where you're going and how to trade with the cycle.**

ter idea of where you are going and how to avoid trading against the cycle. Another application is to use moving averages and oscillators that correspond to cycle lengths.

One cycle that has drawn particular attention over the years is the 54-year Kondratieff cycle, the work of Stalinist era Soviet economist Nikolai Kondratieff. Studying numerous commodities and economic indicators (as well as social trends) in capitalist societies, Kondratieff concluded that prices move in a 54-year cycle.

Kondratieff's government sponsors were not impressed with his findings, though. They apparently rewarded him by shipping him off to a labor camp. The life of a market analyst is indeed fraught with peril. **FM**



# Price/Time Relationships

**Understanding the theories of W.D. Gann and the relationship between price and time can help you pinpoint the best time to enter or exit a market.**

*By the Editors of Futures*

**T**he element of time is an important, if commonly overlooked factor in trading. A bar chart has both a price axis and a time axis, but most traders think of time simply as an offshoot of price: the “when” they’re getting in or getting out of a trade meaningful only in terms of the price.

W.D. Gann, a trader and market analyst in the early 1900s, took a different stance. He believed time was a critical element of market behavior, and that understanding the dynamics between price and time was the key to forecasting prices. He developed a unique system of retracement percentages, geometric trendlines (“Gann angles”), and time cycles (“anniversary dates”) based on strict mathematical relationships to gauge trend strength and pinpoint reversals.

Gann analysis can become incredibly layered and complex. Anyone who has wandered through the maze of Gann’s original writings can testify to the number of ideas he tied together in his theory.

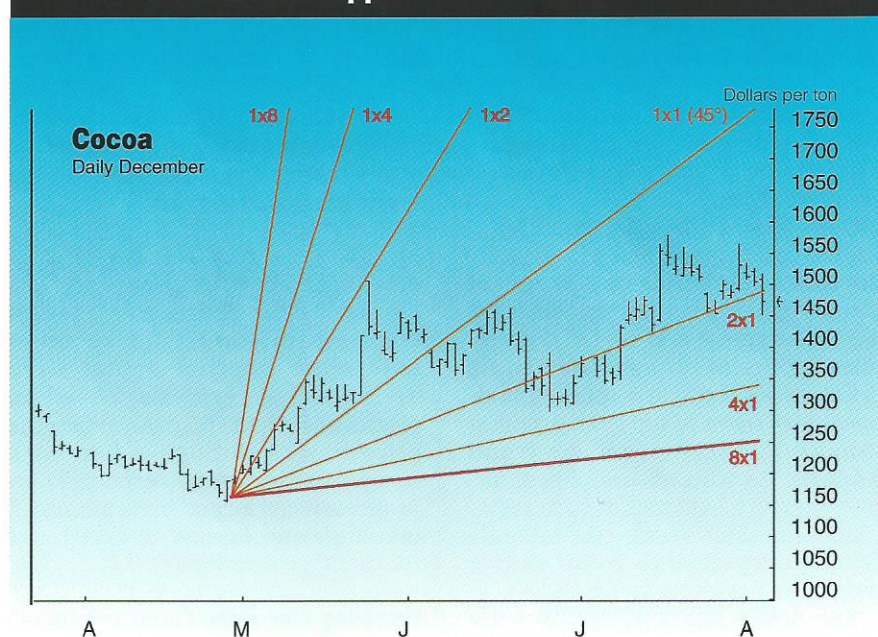
Despite some of its more mystical aspects (apparently Gann was influenced by astrology and numerology), his theory is based upon a cyclical view of market behavior and proportionality between price and time. Many of his time theories are common to other schools of analysis, such as his rule that the length of a trend is directly related to the length of the eventual correction. He defined another circumstance called the “overbalance of time,” referring to instances when the time span of a countertrend move is longer than previous price swings, indicating a likely trend change.

Gann placed great emphasis on fundamental trading and risk management techniques, like using stop orders to limit risk, trading with the trend and analyzing markets from a macro down to a micro scale — monthly, weekly, daily.

Like his contemporary R.N. Elliott (developer of the Elliott Wave Principle), Gann believed his methods were based on the laws of science and nature. To him, markets were manifestations of human behavior, and human behavior followed predictable patterns deter-

mined by natural law, and natural law in turn revealed itself in the markets through the repetition and proportionality of price movement. In his book *How to Make Profits in Commodities* (Lambert-Gann Publishing, Pomeroy, Wash.), his comments that “mathematics is the one exact science...everything in existence is based on exact proportion and perfect relation,” and “the future is but a repetition of the past” underline his penchant for seeing strict mathematical relationships and cycles in markets.

**FIG. 8: Gann time & support lines**



Prices initially are contained between the 1x2 and 1x1 lines before breaking below the 2x1 line. It remained to be seen whether or not the high of 1580 in mid-July constitutes the beginning of a significant downtrend. New angles can be plotted down from this point to gauge the possibility of an emerging trend.

Source: FutureSource

Some of the most used Gann techniques include Gann angles, retracement percentages and anniversary dates (cycles). Gann analysis combines these indicators to find and reinforce trends and reversal points. A key point on a price chart to Gann was something he referred to as the "gravity center" — the point at which a 50% price level retracement coincides with a 50% retracement of the time length of the previous trend. For example, if a 30¢ corn down move spanned two months, the gravity center would occur one month into the uptrend correction when the price had regained 15¢ from the low. This point represents a likely future target for the market.

**Angling for trends** Angles are probably the most important single component of Gann analysis. Gann constructed trendlines based on proportions of price to time, referring to price and time as "squared" when one unit of time movement coincided with one unit of price movement on a chart. This is represented by a diagonal line joining the corners of a square, meaning time and price are perfectly balanced in a 1:1 ratio. This line (often referred to as the 45-degree line, though its actual slope will vary depending upon the scale of a particular chart), drawn up from market bottoms or down from market tops, is the primary trendline in Gann analysis.

Subsequent lines representing 2:1 (26 1/2 degrees) and 4:1 (7 1/2 degrees) time/price ratios reflect increasingly weaker trends, while 1:2 (63 1/2 degrees), and 1:4 (75 degrees) lines represent stronger trends. As prices break through stronger trendlines, they move to the next strongest line and continue, or the trend reverses. As with all trendlines, former support becomes future resistance, and vice versa, conveniently forming price channels as the market progresses (see cocoa chart, Fig. 8.)

The definitions of time and price units depend on how a trader calibrates his chart, and can range from the minimum tick value to large trading ranges. You can plot Gann angles two ways: "geometrically," that is, by isolating a section of a price chart using the time span and price range of a trend for the boundaries, and

drawing the trendlines from a top or bottom using straight degree calculations (45 degrees, 26 1/2 degrees, etc.); or by using the time/price ratios of 1:1, 2:1, 1:2, etc. The second method will not always produce true angles of 45 degrees or 26 1/2 degrees, but more often will provide the most accurate and useful picture of trend strength and direction.

Gann referred to points where price breaks through a line only to

retracement level of 452.00, a 37.5% (3/8) retracement at 455.00, etc. Gann also included 1/3 = 33% and 2/3 = 67% in this list of significant retracements. (Some of these percentages will look familiar to those acquainted with the Fibonacci series.)

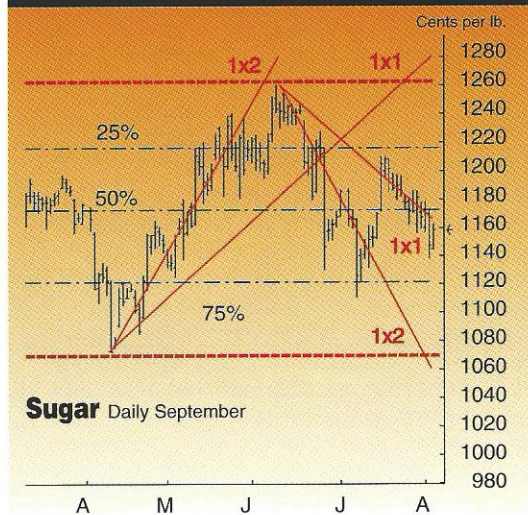
The key Gann retracement levels are 50%, followed by 25% and 75%. The outer extremes of 12.5% and 82.5% are the least important. CTA and analyst James A. Hyerczyk links the significance of division by eighths to such phenomena as price movement in the grain markets (1/4 cent for futures, 1/8 cent for options) as well as the \$12.50 (1/8) tick values of many currencies and the \$25.00 (2/8) tick values of other contracts.

Gann also used a second method to determine future levels of support and resistance. He created the "cardinal square" chart that spirals prices outward from a center price, usually a starting price or significant low for a contract. Prices that fall on the vertical and horizontal axes, and the diagonals, represent future support and resistance levels. (See previous chapter.)

It is unclear whether Gann felt there was some hidden mathematical relationship in the spiraling prices of his chart. Many traders and analysts consider this technique, on its own, one of the least useful Gann applications. The proportionally higher support/resistance levels that are created as the chart unwinds, however, are in keeping with Gann's general tenets of price/time relationships.

**Happy anniversary** Consistent with his emphatic belief in the importance of time, Gann believed in cyclical recurrence of significant market events. He dubbed the term "anniversary dates" to denote likely points in the future when important highs or lows might fall. Gann specifically cited periods of 12 months (the basic one-year "anniversary" cycle) and 144 days or weeks as significant timing periods. He also used the 360 degrees of a circle as a basis for determining future price milestones, for

**FIG. 9: Gann support & resistance lines**



Prices rally from April to June, then break from June to July. In the uptrend (and most of the downtrend) prices remained on the "strong" side of the 1x1 (45 degree) line. The low of 1117 in early July is approximately a 75% retracement and occurs roughly one month after the top (50% of the time of the uptrend).

Source: FutureSource

move back above or below it as "lost motion." This represents market momentum, and traders must determine whether or not such events signal reversals, based on similar moves in the past. When the price breaks through a line for a second or third time, especially by progressively larger increments, it may indicate the end of that leg of the trend or a reversal.

**Retracing your steps** Gann calculated trend retracement levels by dividing price activity into eighths and converting to percentages, i.e., 1/8 = 12.5%, 2/8 = 25%, 3/8 = 37.5%, 4/8 = 50%, 5/8 = 62.5%, 6/8 = 75% and 7/8 = 82.5%. A rally in the S&P 500 from 440.00 to 464.00, for example, would have a 50% (4/8)

example, counting forward 90, 180, 270 or 360 days from a previous top or bottom.

Although at first glance these may appear to be rather arbitrary figures, the 90-day period is roughly three months respectively, 180 and 360 days are approximately six months and one year. Monthly and seasonal cycles are commonly studied by many other analysts.

Also key is that dividing the 360 degrees of the circle into eighths (as Gann did with price to determine retracement points) results in 45 degrees — the primary Gann trendline. Time, like price, can be described as a percentage of a previous move. The same percentages used in the retracement levels, 25%, 50% or 75% can be applied to the duration of a trend. The circle also was important to Gann and the departure point for many of his calculations.

**More is better** The various Gann techniques are best applied in unison to help locate pivotal support, resistance and reversal points on a chart. For example, when measuring a trend, you can calculate retracement levels by dividing the trend into eighths and plotting the corresponding percentages as horizontal lines. Next, plot the Gann angles based on the 1:1, 1:2, 2:1, etc., time/price ratios from the high or low. Also, determine the duration of the previous trend so you have a basis from which to gauge the relative time span of the new trend or correction and can locate such milestones as the 50% time retracement.

Look for key market events at points where the various indicators meet. Is the price breaking the 45-degree trendline at the 50% retracement, or is it bouncing off this price level? Does this also correspond to the point at which the new move has taken half the total elapsed time of the previous trend?

Applying Gann's dictum "The future is but a reflection of the past," a convenient way to project the dynamics of a previous price move into the future is to construct a box using the absolute

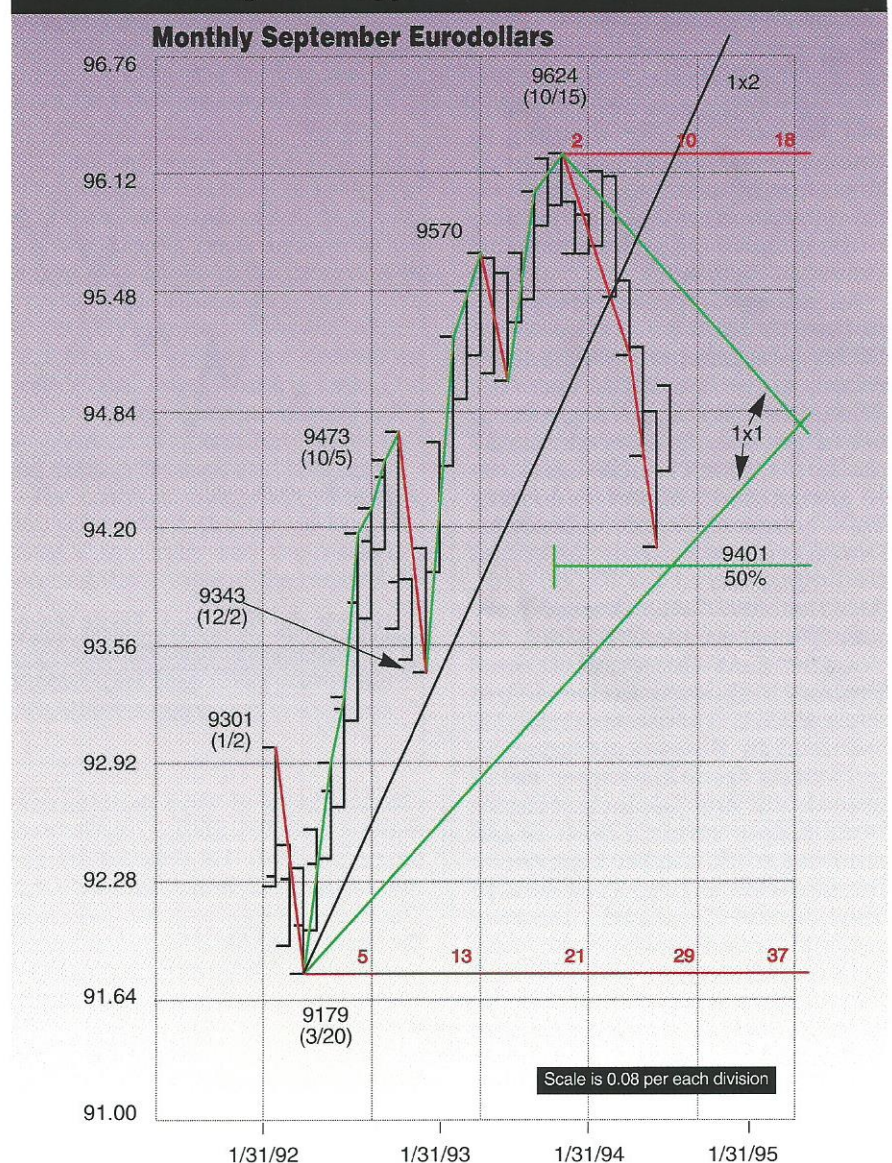
price length of a move from high to low and the time frame covered by it as the vertical and horizontal sides, respectively. This box is then "flipped" forward horizontally, pivoting at the reversal point.

Because in Gann theory the future price move will in some way reflect the previous one in both size and duration, percentage retracements and trendlines are plotted in this new box to identify support, resistance and reversal points. Trendlines, such

as the 45-degree line, then can be plotted geometrically, that is, by thinking of the newly created box as one large price-time square, and constructing a diagonal line connecting the corners of the box.

Gann himself urged traders to practice and experiment with his techniques to become comfortable with them. Most traders, in fact, incorporate Gann analysis into their larger arsenal of technical tools and charting techniques for a more rounded perspective. **FM**

**FIG. 10: Nearing Gann support**



Prices are approaching both the 1x1 line and the 50% retracement level of the steep uptrend at the end of May. Breaking through this support area (and staying below the 1x1 down angle) would be a good indication a new downtrend is in force.

Source: Ganntrader

# Elliott Wave Principle

Increasingly accepted into the “mainstream” of technical analysis, the Elliott Wave Principle can help you apply strict discipline to your market timing.

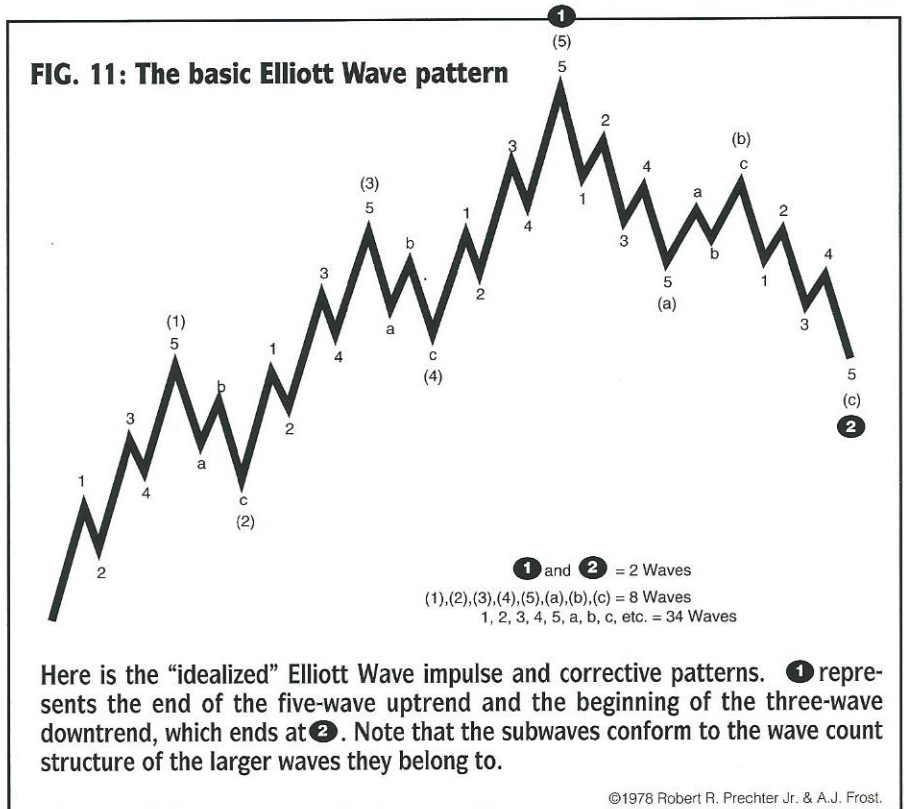
By the Editors of Futures

What do waves have to do with trading, other than retiring to a tropical island after making a killing in the markets? Well, if you're one of the growing number of traders, investors and analysts who have rediscovered the Elliott Wave Principle, everything.

An almost forgotten art in the not-so-distant past, the Wave Principle experienced a significant rebirth in the late 1970s and early '80s. Although it saw a slight drop-off in popularity after the 1987 crash, the Wave Principle continues to attract new supporters looking for a holistic approach to analysis. Don Evans, president and chief trading strategist for FX500 Ltd., says the often misunderstood Wave Principle is “not the Holy Grail, but it's the best thing out there,” because it allows a trader to “use some discipline in market timing.”

Forced by illness into an early retirement from his career as an accountant and business consultant, Ralph Nelson Elliott began studying stock market behavior in the late 1920s. Until his death in 1947, he steadily refined a theory of recurring price waves in the markets, publishing his thoughts and forecasts in a series of books, monographs, magazine articles and newsletters.

The fundamental premise of the Wave Principle is that markets move in repetitive wave cycles that reflect the ebb and flow of mass psychology. Although he clearly owed much of his basic concept to Dow Theory, which also defines price movement in terms of waves, Elliott went into greater depth, identifying the specific



characteristics of wave patterns and making detailed market predictions based on them. He believed (as the title of his final work, *Nature's Law: The Secret of the Universe*, indicates) the Wave Principle reflected universal laws that guided everything in existence, including human behavior in the markets.

**Impulses and corrections** Elliott's theory rests upon the concept of two major types of price wave formations: impulse waves, which define the direction of the prevailing trend, and corrective waves, which move against it. The impulse wave formation has five distinct price movements, three in the direction of the

trend (I, III and V) and two against it (II and IV). The corrective wave formation has three distinct price legs, two in the direction of the correction (A and C) and one against it (B). An impulse wave formation followed by a corrective wave formation constitutes a complete Elliott cycle of trend and countertrend (refer to “The basic Elliott Wave pattern,” above). The terms “impulse” and “corrective” themselves do not signify either bull or bear trends, merely the direction of the major trend in force at a given time.

A crucial element of the Wave Principle is that large wave formations are composed of smaller “subwaves,” which are in turn composed

of even smaller waves, etc. This is similar to a mountain range: When viewed from a great distance, it appears to consist of a few large, smooth crests, but upon closer inspection reveals a much more detailed and jagged outline.

Subwaves conform to the structure (impulse or corrective) of the larger wave formation they are part of. In other words, if wave III of an impulse formation contains a sub-wave pattern one degree smaller, those subwaves will adhere to the I-II-III-IV-V impulse formation of the wave it belongs to. Conversely, the subwaves of wave IV, which moves counter to the trend, would display the A-B-C corrective structure, as would the subwaves of a B leg of a corrective wave formation. Although Elliott himself recognized exceptions to this rule, the basic premise remains a bedrock of wave analysis. "The Basic Elliott Wave pattern" shows subwaves of the basic impulse/correction wave cycle.

Wave analysis can be performed on everything from five-minute bar charts to periods spanning decades. Elliott defined nine distinct degrees of a trend ranging from two centuries to a number of hours: Grand Supercycle, Supercycle, Cycle, Primary, Intermediate, Minor, Minute, Minuette and Sub-minuette.

The catch is, like any other method of technical analysis, aber-

**FIG. 13: Impulse wave on copper**



This chart shows an impulse wave structure containing a subwave formation one degree smaller in wave III. The triangle formation in wave IV illustrates the rule of alternation: A simple corrective wave (in this case, II) is followed by a complex or irregular corrective wave. The parentheses denote the larger impulse wave structure.

©1994 Elliott Wave International

rations and exceptions make the Wave Principle more of a subjective art than an objective science. Markets almost never behave as we would like them to in theory, and precisely defining wave patterns (especially corrective waves, which can take on numerous forms) in context can be a daunting task. The fact that any wave can extend adds an element of uncertainty when trying to pinpoint tops and bottoms.

For example, just when you think you've reached the top of impulse wave V in a rally and the market is forming the A wave of the major A-B-

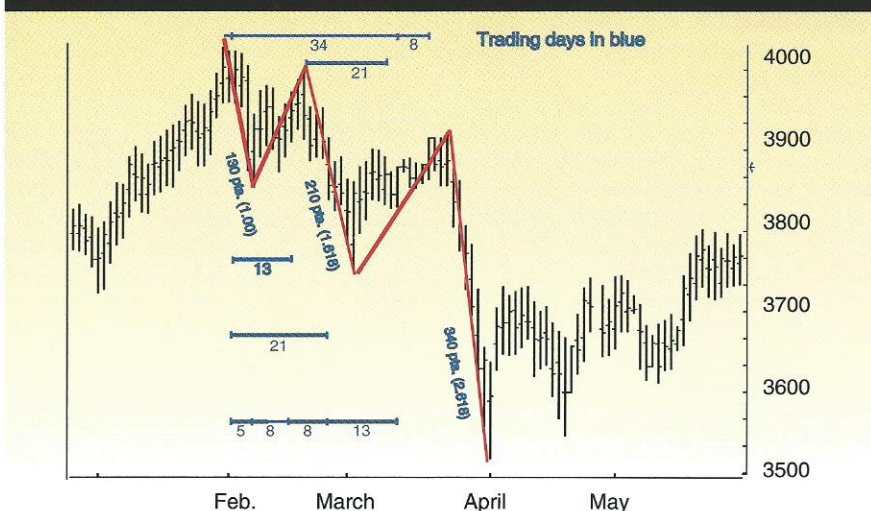
C correction, the price quickly takes off again to the upside and completes a smaller five-wave impulse formation before beginning the actual correction — revealing the pattern to be an extension of wave V.

Elliott identified three versions of the impulse wave structure and 10 versions of the corrective wave structure. Many Elliott Wave chart formations, such as bull and bear market failures and triangles, would look familiar to students of standard chart analysis as double tops and bottoms, flags or wedges.

**The Fibonacci connection** One thing you quickly learn when investigating the Wave Principle: Wherever it goes, the Fibonacci series is sure to follow. The Fibonacci series is a mathematical sequence in which any number is the sum of the two preceding numbers (1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, etc.). The properties of this sequence appear throughout the natural world and in the arts and sciences, most notably in the ratio of 1.618, the "Golden Mean" that is approached by dividing a Fibonacci number by its preceding number as the sequence extends into infinity. (See "Dow, Elliott, Fibonacci and Gann, chapter 2.) Ratios of .618 (the inverse of 1.618) and .382 (.618/1.618) also figure prominently in Fibonacci studies.

Charles Collins, an associate of Elliott's, first brought to Elliott's attention that the Wave Principle exhibited Fibonacci relationships.

**FIG. 12: Waves overlaid on DJIA chart**



The waves in the DJIA chart display Fibonacci time spans between the tops and bottoms, and variations of the Fibonacci ratio 1.618 in the proportions of the waves.

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The wave counts of the impulse and correction patterns (5 + 3 = 8 total) are Fibonacci numbers, and breaking down wave patterns into their respective subwaves produces Fibonacci numbers indefinitely.

Fibonacci is often used to define support and resistance levels in a market, using the ratios of the numbers of the sequence (1:3 = 33%, 1:2 = 50%, 2:3 = 67%, 5:8 = 62.5%, as well as the aforementioned ratios of 1.618, .618, and .382) to determine percentage retracement levels. Others use the sequence to time market events, counting forward using Fibonacci numbers from a past top or bottom to locate a future top or bottom.

The Fibonacci sequence also manifests itself in the proportions of one wave to another. Waves are often related to each other by the ratios of 1.618, .618 and .382, or variations like 2.618. This fact can aid in estimating possible price objectives for future waves. For example, in the early stages of an impulse wave formation, multiplying wave I by 1.618 and adding it to wave II can locate a probable top for wave III. These relationships are hardly carved in stone, but they are conspicuous enough to make them worth investigating when defining wave patterns and looking for future tops and bottoms. The Dow Jones Industrial Average daily chart (Fig. 12) illustrates some interesting Fibonacci relationships, both in wave duration and size.

**Trading with the wave** Elliott (like Dow before him) developed his theory studying the various stock market averages of his day, and debate continues over the Wave Principle's usefulness in different situations.

Robert Prechter, president of Elliott Wave International in Gainesville, Ga., and the foremost figure of the Wave Principle renaissance that began in the late 1970s, says the Wave Principle is "most applicable in markets that are widely traded and most likely to reflect mass emotion," noting that many commodities, especially meats, reveal little in the way of definable wave patterns.

Glenn Neely, head of the Elliott

Wave Institute in Laguna Beach, Calif., also feels that many "consumable" commodities, i.e., grains, meats and softs, do not exhibit reliable wave patterns.

Don Evans sees few weaknesses in Elliott Wave, citing its ability to "provide a highly reliable road map of the market," but recognizes certain anomalies in commodities, noting that "the fifth wave can more often contain the largest move, perhaps due to short squeezes because of [high] leverage."

Robert Miner, of Gann/Elliott Educators in Tucson, Ariz., says the Wave Principle "has great practical application under limited circumstances, mostly in analyzing stock

**According to Elliott Wave expert Robert Prechter, the Wave Principle is most applicable in markets that are "widely traded and most likely to reflect mass emotion."**

indexes. For commodities, it's more useful for intermediate rather than long-term time frames." He also thinks that a major deficiency of many Elliott practitioners is their "failure to admit when the market doesn't unfold in a predictable manner" as dictated by the Wave Principle.

As far as futures contracts are concerned, highly liquid financial contracts with active public participation such as currencies, interest rates and of course, stock indexes, seem to provide the best opportunities for successful wave analysis.

By understanding wave patterns and knowing where you are in the larger wave context, you can determine the probabilities of the market taking one course over another, and base entry and exit points on the success or failure of pattern completions. The weekly copper chart (see Fig. 13) shows a five-wave impulse rally, starting from the October low. Previous longs would plan on liquidating their positions, seeing that

the rally likely is in its final stage. Sellers could anticipate getting in on the A-B-C correction, looking for a pullback to the bottom of wave IV. If prices rise after a downtrend begins, you could immediately exit your position rather than wait for a stop to kick in.

A starting point is to find a significant high or low, determine where you are in the overall wave pattern, then focus on the level of analysis required for your trading objectives. Practice and familiarity with the idiosyncracies of a particular market will go a long way toward successfully applying the Wave Principle.

**More than markets** As his study progressed, Elliott became increasingly certain his principle was a manifestation of natural law, the influence of which extended far beyond the circles of finance, and that social trends and popular mood swings corresponded to the wave patterns exhibited in the markets — in fact, were the impetus behind them. Today, such organizations as Elliott Wave International accompany market analysis with critiques of

popular culture, tracking the flow of positivism and negativism in the entertainment and political arenas that mirror bull and bear financial sentiment.

Market behavior in this light is seen as the reflection of a prevailing social mood rather than a series of isolated reactions to news events. In other words, key market events (like the stock market crashes in '29 and '87) do not "cause" subsequent social circumstances (i.e.- the Great Depression), but are inevitable results of a change in mass psychology. The crash of '29 was a "direct recording of the mass psychological change," as Prechter says, and the events that followed a "result of that change."

The Wave Principle can pay dividends if you apply it in the correct situations and don't look for it to answer all questions for all markets. If you catch the right wave, though, you could be in for a great ride.

FM

# An Options Primer

**To be a successful futures trader, you must also have knowledge about options. This options primer provides basic terminology, pricing and volatility fundamentals, plus some popular options strategies.**

*By the Editors of Futures*

Options on futures have come of age. In fact, at some exchanges, options trading outstrips growth in futures trading by a 2:1 margin. But this growth has a major flaw: Many people use options for the wrong reasons. Sound options trading begins with understanding basic concepts and dispelling common misconceptions about the potential benefits and limitations of these instruments.

**The basics** An option contract gives you the right to buy or sell something at a set price for a limited amount of time or at a specific future date. Options are common in many businesses, such as real estate, where an investor might purchase an option that will give him the right to buy a parcel of land at an agreed upon price for a six-month period, regard-

less of fluctuations in the market price of the land.

Options on futures are no different. A trader can buy an option in June allowing him to buy December T-bond futures at 100-00, even if the market price in December is 105-00. The buyer pays a price for this opportunity, called the premium. The option buyer is sometimes referred to as the holder, and the seller is sometimes called the writer.

There are two kinds of options: **calls** and **puts**. A call option gives the owner the right to buy futures at a specific price; a put option gives the owner the right to sell futures at a specific price. This predetermined price is called the exercise price, or strike price. A call option owner who "exercises" his right becomes long futures, while an option seller is "assigned" a short futures position. When a trader sells an option, he risks having a losing futures position at any time. In return for assuming this risk, he receives the option premium.

The owner, on the other hand, is under no obligation to exercise, and may sell the option or hold it through the term of the agreement. The last day a buyer can exercise an option is called the expiration date, which is established by the exchange. For example, the owner of a March 445 S&P call can buy March S&P futures at 445.00 until March 17, if he so chooses. The option expires at the end of trading on this day.

Most listed options in the United States are American style options,

**FIG. 14: Anatomy of an option**



which allow the holder to exercise any time up through expiration day. European style options can be exercised on expiration day only.

**Inns and outs** The strike price of an option can be described three ways:

**In-the-money** refers to calls with strike prices below the current market price of the underlying future and puts with strike prices above market price. If coffee futures are trading at 195.00, a 194.00 call is in-the-money, as is a 196.00 put.

**At-the-money** options are calls and puts with strike prices equal to the current futures price. If coffee is at 197.00, both 197.00 coffee calls and puts are at-the-money.

**Out-of-the-money** refers to calls with strike prices above the current futures price, and puts with strike prices below the futures price. With coffee at 194.00, a 195.00 call and a 193.00 put would both be out-of-the-money.

With March bonds at 100-22, the owner of a March 98-00 call could exercise his option, become long bond futures at 98-00, sell the futures and make 2.22. If the trader paid less than 2.22 for the option, he would make a profit on the trade.

Because option buyers are not required to exercise, their market exposure is limited to the premium paid for the option. For sellers, however, risk is equivalent to an outright futures contract, because they can be assigned a futures position at any time.

**The price is right** There are four components to an option's price: underlying contract price, intrinsic value (determined by the strike price), time value (time remaining until

## It's Greek to me

Commonly known as option "Greeks," these variables measure an option's sensitivity to changing market conditions.

**Delta:** How much an option price moves in relation to a one point move in the underlying contract. Usually expressed as a percentage. An option that moves .75 points for a one-point futures move has a delta of .75, or 75%. At-the-money options normally have a delta close to 50%.  
=  $\text{change in option price} \div \text{change in futures price}$

**Gamma:** The "delta of the delta." How much the delta changes in relation to the underlying contract.  
=  $\text{change in delta} \div \text{change in futures price}$

**Theta:** Time decay factor, commonly quoted in points lost per day.  
=  $\text{change in option price} \div \text{change in time (until expiration)}$

**Vega or kappa:** How much option price changes for a 1% change in volatility.  
=  $\text{change in option price} \div \text{change in volatility}$

expiration) and volatility. (A fifth element, interest rates, also can affect option prices, but for our purposes is unimportant.)

Intrinsic value refers to the amount an option is in the money. With Eurodollar futures at 95.55, a 95.00 call has an intrinsic value of .55. The more an option is in the money, the greater its intrinsic value. At-the-money and out-of-the-money options have no intrinsic value.

Options are referred to as “wasting” assets because their value decreases over time until it reaches zero at expiration, a process called time decay. Time value refers to the part of an option’s price that reflects the time left until expiration. The more distant an option’s expiration date, the greater the premium because of the uncertainty of projecting prices further into the future.

Consider two equivalent call options. With May corn futures at 232 1/4, July corn futures at 236 1/4 and 10 days left until May corn options expire, a May 230 call might cost 2 3/8 while a July 234 call costs 6 1/2, even though they are equally in-the-money.

Volatility, perhaps the most important and most widely ignored aspect of options, refers to the range and rate of price movement of the underlying contract. The “choppier” the market, the higher the price that will be paid for this instability in the form of higher option premiums.

Volatility usually is expressed as a percentage, and is comparable to the standard deviation of a contract. Higher volatility means higher premiums. Lower volatility means lower premiums. A trader familiar with the volatility history of a contract can gauge whether volatility at a given time is relatively high or low, and can profit from fluctuations in volatility that will in turn increase or decrease option premium (see “Trading volatility,” next page).

The Black-Scholes price model, first introduced by Fischer Black and Myron Scholes in 1973, is the most popular theoretical options pricing model largely because it was the first relatively straightforward arithmetic method for determining a fair value for options.

**Weighing your options** Many people like options because they believe them less risky than futures. Options sometimes offer reduced risk, but usually at the cost of reduced profit potential.

One drawback of options is a trader must consider market speed (volatility) as well as direction. Traders who buy or sell options outright to profit from up or down moves in the underlying market can find themselves fighting an uphill battle against volatility and time decay. With futures, if you’re right about market direction, you’ll win. With options, you can be right

about the market and still lose.

If a market is trading at 200 and you buy a 210 call expecting a rally, you’ll still lose on the trade if the market only rallies to 205 by expiration; your 210 call will be worthless. The same thing would happen even if the market rises as high as 220 — but does so one week after expiration. In each case you would be right about market direction, but would not profit.

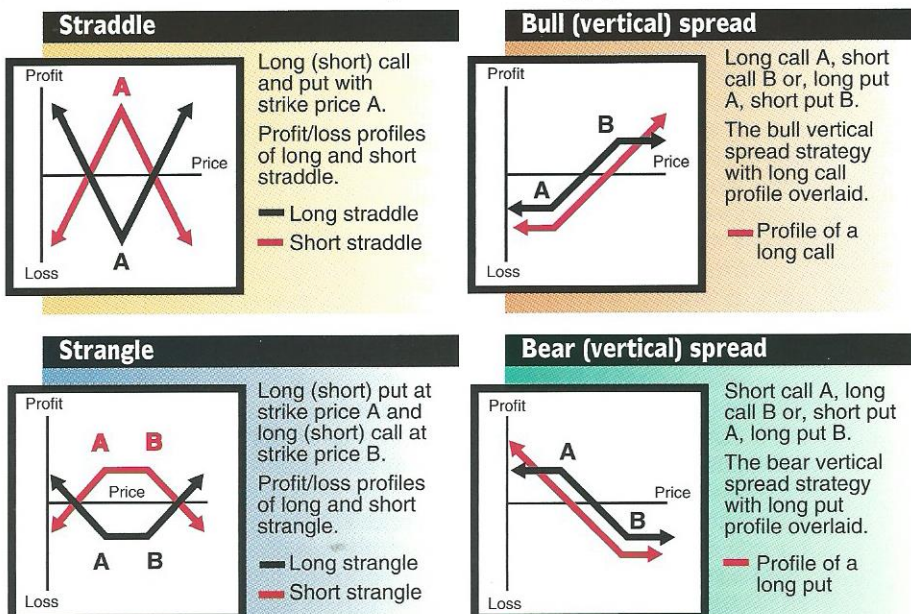
The advantage of options is their flexibility. Because of the variety of strike prices and expiration dates a trader can choose, options naturally lend themselves to spreading strategies (simultaneously buying and selling different options), accommodating varying views of market direction and risk levels. Traders can design option strategies that will profit if the underlying market goes up or down, moves in either direction by a certain degree or remains unchanged.

Options also allow you to profit without predicting market direction because of time decay and fluctuations in volatility that increase and decrease premium. For example, a trader might sell an out-of-the-money call on a relatively volatile futures contract he thinks will fall. Over the next two months, however, the market does not fall, but gradually moves higher, trading in a narrow range (but still below his strike price). The trader was wrong about market direction, but finds the combination of decreased volatility and time decay has eroded the value of his option to the point that he can buy it back at a profit (or perhaps hold it until expiration).

**Spreading your risk** Two of the more common option strategies are horizontal spreads (identical strike prices, different expiration days) and vertical spreads (different strike prices, same expiration day). Other spread types are combinations or variations of these categories: Diagonal spreads are a mixture of horizontal and vertical spreads; butterfly spreads combine two different vertical spreads.

Selling a March 450 S&P call and buying a June 450 S&P call is an example of a horizontal spread, also known as a time, or calendar spread. The object is to profit from the quicker decay of time value of

**FIG. 15: Options strategy profiles**





# Trading volatility

In real estate, they say the three most important things are location, location and location. In options, the three most important things are volatility, volatility and volatility. Often neglected by option rookies, volatility is the cornerstone of an option professional's trading strategy.

In its simplest form, expressed as the annualized percentage of the standard deviation, volatility measures how far a contract can be expected to swing from a mean price. A contract trading at 50 would have a volatility of 10% if it traded between 45 and 55 over a given period of time.

Historical volatility is just that: the volatility calculated (using closing prices) over a given period — 20 days, 20 weeks, one year, etc. Implied volatility is the volatility using current market prices. For example, using four primary option pricing inputs — futures price, settlement price, time until expiration and volatility — would result in a theoretical price.

By plugging in the current option price in place of the theoretical price and working backward, it would be possible to determine the volatility the current market is implying. (It is not mathematically possible to work backward and solve for implied volatility using an equation like the Black-Scholes model, but an approximation can be derived.)

Options on quick-moving, highly volatile contracts will demand a higher premium because of the increased possibility of such options being in-the-money. For example, an out-of-the-money option on a slow, non-volatile contract will have a lower premium than a comparable option on a volatile contract because there is a greater chance the volatile contract will shift in price enough to put the currently out-of-the-money option in-the-money.

Astute options traders look at volatility figures to evaluate the potential of a trade, buying or selling options when volatility is exceptionally high or low. If a market is trading at historically low volatility levels, option premiums could be expected to rise as market volatility increases, presenting a buy opportunity. The reverse is true for high volatility situations.

the nearby short option compared to the more distant long option. The trader is, in effect, selling time value. Most time decay occurs in the last three months, and especially the last month, of the contract. This strategy is generally more profitable with equity options than with futures options.

If you sell the March option at 7.75 and buy the June option at 11.75, you establish the calendar spread at a 4.00 debit. (Debit spreads are spreads that the trader pays to establish, while in credit spreads the trader collects premium.) The March contract then drops to 1.25, while the June option drops to only 10.50. You could then "lift" (offset) the spread, buying the March back at a 6.50 profit and selling the June for a 1.25 loss, for a total profit of 1.25 (5.25 minus the 4.00 paid to establish the spread).

In a vertical spread, the options share the same expiration date but have different strike prices. An example would be buying a March 445 S&P call at 6.50 and selling a March 455 S&P call at 3.00 with the futures at 450.00, for a 3.50 debit on the spread.

If the market rallies, the deeper in-the-money long option would gain more than the short option would lose. If the futures are unchanged at expiration, the 445 call will be worth 5.00 (its intrinsic value) and the 455 call will expire worthless, for a 1.50 profit on the trade. Once the futures price rises above the higher strike, gains on the lower strike are offset by losses on the higher strike, so profit is limited. If the market falls, loss is limited to the amount paid for the spread.

Option spreads are characterized as bear or bull strategies depending on whether they will profit in up or down markets. The previous example is a bull call spread, because it would make more money in a rising market. A bear call spread would consist of selling the lower strike option and buying the higher strike option.

Bull and bear spreads also can be established using put options. For example, a bull put spread would consist of buying a December 445 S&P put and selling a December 455 put. Selling the 445 put and buying the 455 put would be a bear put spread. Generally, you should

use calls for bull spreads and puts for bear spreads.

You can alter spreads by modifying the number of options, for instance establishing a vertical bull call spread with two short calls for every long call, also known as a ratio spread. Whether all or some of the options in a spread are in-, at- or out-of-the-money also will affect the risk/reward profile of a spread.

Other strategies focus on the magnitude of price movement rather than direction. Straddles and strangles are two strategies traders use to take advantage of volatility swings. A straddle consists of buying at-the-money puts and calls with the same strike price and expiration day, for example, buying a June 100 bond call and a June 100 bond put. The straddle buyer expects a futures price move large enough (in either direction) that the profit on the in-the-money option will be more than the cost of putting on the spread. If you thought the market would remain virtually unchanged, you could sell the straddle (at a credit) and reap the profits as time eroded its value.

A strangle consists of combining out-of-the-money calls and puts. With June bonds at 102, a strangle buyer might purchase a June 104 call and a June 100 put, again expecting a sizable move in either direction. (An advantage to this strategy is it is cheaper than a straddle, but the market also has to move more to make it profitable.) For a trader who expects bond prices to stay between 100 and 104, however, selling this straddle offers an excellent opportunity to "sell volatility." If the market does stay between these prices, the seller will keep his premium. "Options strategy profiles," (Fig. 15) illustrates some spread strategies, including straddles and strangles.

A final note on option trading: Traders should be aware that because of higher commissions and increased slippage, a marginally profitable options trade can actually be a loser when all is said and done. Understanding volatility and time decay concepts will help identify strategies with the highest probability of success. **FM**

# Money Management

**Managing your money is one of the best ways to manage your risk. Here are some “nuts and bolts” tips on effective money management from experienced professional traders.**

*By the Editors of Futures*

**C**rucial but often overlooked, money management practices can mean the difference between winning and losing in the markets.

Plenty of books, manuals and software packages will help you form an opinion of a market, but not many will tell you how to trade once you have decided to get long or short. The goal of money management is to increase the odds of high quality trades. And as we'll see, leaving the money management variable out of your trading equation can lead to ruin, even if you're correct about the market direction.

In a broad sense, money management can encompass those ele-

ments of trading outside the initial decision to get long or short in a given market or markets — that is, how much money to risk on a trade, how many positions to put on, when to get out, where to place protective stops. More specifically, it refers to the strategic allocation of capital to limit risk and optimize trading performance in the long run. Allocation of capital can refer to how much money to put into any one market or how much money to risk on any one trade. These decisions directly affect how many positions to put on and where to place stop orders.

Given the negative odds inherent in trading (a successful trader can expect to lose money on 60% of his trades), how do you go about maximizing the profit potential of the few

winning trades you can expect to have? The answers vary with the disposition and trading style of the individual trader. There exist, however, basic concepts that can be successfully adapted and modified to individual needs, and when followed in spirit, can boost the promise of long-term trading profits and take some of the stress and uncertainty out of trading.

**Establish a goal** Having a clear idea of what you want to accomplish by trading, whether it is a short-term profit on a single trade or the desire for a long-term trading career, can go a long way toward building successful trading habits. Regardless of whether or not the goals are set on a per trade, daily or long-term basis, establishing from the outset basic levels of acceptable risk and financial

## Important elements of money management

- Setting a goal** — Decide what your trading objective is (quick profit and steady return) as well as your risk tolerance level.
- Diversification** — If possible, allocate your finances between different products to avert the danger of getting wiped out in a single market. Don't go overboard, though; think in terms of three to five unrelated instruments. Stick with markets you know, rather than risking the unknown for the sake of diversification.
- Deciding how much money to risk** — The total amount you risk at a given time in a particular market group or on a particular trade should be based on a percentage of your total trading equity. Exceeding your allocation parameters can result in overexposure.
- Use of stop orders** — The name of the game is preservation of capital. Placing conservative stops to cut losses will ensure you are around to trade another day. Stick to the limits determined by your equity allocation percentages.
- Determination of reward/risk ratios** — Deciding what the potential loss or profit might be for a trade, as well as the probability of success or failure, will help direct capital toward trades with the best chance of winning.

reward will help curtail avoidable risk and extreme losses. Also, determine a specific time frame in which to trade: Will a position have to be liquidated by a certain time for tax purposes or for some other reason?

**Diversification** Just as in the stock market, a portfolio of different instruments can be one of the best hedges against severe and unsustainable losses; a loss in one market will hopefully be offset by gains in others. Traders must take caution, though, to truly diversify their portfolios with contracts that are price independent. Spreading your trading among three or four different interest rate contracts that move in a similar fashion is not a good example of diversification, because a loss in one contract is likely to be mirrored by losses in the others. But over-diversification is dangerous, too. A trader can spread his money over too many markets, and not have enough capital in any one of them to weather even small adverse price swings.

A good rule of thumb is to stick with what you are comfortable; do not venture blindly into unknown markets just for the sake of diversification. A balance must be struck between available resources and a manageable trading scenario. Capital constraints will, of course, limit the choices traders can make, forcing those with smaller trading accounts to bypass or minimize diversification.

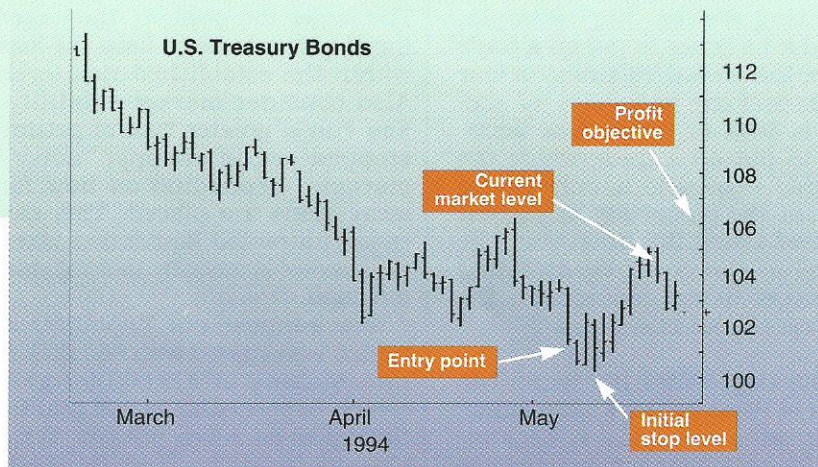
**Amount of money to risk** It's difficult to come up with hard and fast rules to determine how much money to risk on different markets and trades. For our purposes, though, it's best to think conservatively. Although some studies suggest initially allocating equity in broad terms of original margin (40% to 50% of total equity committed to the markets at a given time in the form of original margin, 15% to a particular market, 5% to a single trade, etc.), many traders consider these percentages too high, and do not consider margin to be an accurate measure of risk or a sound basis on which to allocate funds, because a trader can always, technically, lose more than the margin amount. These traders find it more beneficial to think in terms of the actual money amount they are willing to lose on any particular trade or

**FIG. 16: A typical trading scenario**

Position: Long two T-bond futures at 101.14  
 Current market price: 104.06  
 Unrealized profit: \$5,500  
 Initial trading objective: 106.14 (\$10,000 profit)  
 Initial stop level: 100.06 (\$2,500 loss, if hit)

Total trading capital: \$50,000  
 Capital committed to other markets: \$10,000  
 Capital available for T-bonds: \$5,000 (10% of total)  
 Capital available for this trade: \$2,500 (5% of total)  
 Estimated reward/risk ratio: 5 to 1

For the trader to reap his \$10,000 profit, the market must rally to 106.14. While the trader thinks the market will inevitably return to this level, he also sees the possibility of the market testing its recent low (100.08) before that level is reached. If the low is reached, he feels the market will continue to drop and he will get stopped out. In addition, the trader is anxious to free up some of his capital to trade in other markets, and also wants to protect his current profits. He could therefore sell one bond at the current market price (104.06) and take an immediate profit of \$2,750 while putting in a new stop at a higher level to protect his remaining position and lock in a profit on the overall trade.



trades, determined by their stop level or through some other calculation.

Although in specific circumstances professional traders may actually risk comparable or even greater percentages of total equity than those listed previously, on average they risk much less — perhaps 12% to 20% of total capital at a time, and 2% to 4% per trade. Depending on the size of your trading account, these levels might seem overly strict, but again, the idea is to conserve money for the long haul.

In developing your trading goal, determine how much you could accept losing on a trade, both financially and psychologically. Based on

total capital and the number of markets in which you are active, allocate your equity proportionally between individual trade, market group and total trading activity levels.

These guidelines protect you from dangers of extreme leverage in the futures markets. Though it may seem attractive to have the chance to make big money on a small initial investment, the risk of loss is just as great.

**Determining reward/risk ratios** Another common rule in trading is never to put on a position unless your possible profits outweigh your possible losses by a ratio of 3 to 1, or at the

very least 2 to 1. So, if a particular trade has the potential of losing \$100, the profit potential should be at least \$200 to \$300. This is not a bad rule, but like so many other aspects of trading, it is somewhat intangible. Once you have formed an opinion of a market, determined your entry point and calculated the maximum amounts you could win or lose on a trade, you still are left with the uncertainty of the probability of your trade winning or losing, and unfortunately there is no secret formula for removing this uncertainty.

Some traders don't consider probabilities valid at all. The most any trader can do is perform his or her best analysis of the market, and, along with experience and intuition, come up with some rough idea of the probability of success for a given trade. This probability can then be weighed against the reward/risk ratio in selecting trades. For example, would it be better to put on a trade where the reward/risk ratio is four to one and the probability of success is 30%, or would it be advisable to put on a trade where the reward/risk ratio is only two to one but the probability of success is 75%? Using this rule, you'll be ahead of the game by directing resources to the trades with the greatest chance of success.

**Placing stop orders** It's helpful to think of these by their more formal name, stop-loss orders, because that is what they are designed to do — stop the loss of money. Stop orders are offsetting orders placed away from the market to liquidate losing positions before they become unsustainable.

Placing stop orders is more of an art than a science, but adhering to money management rules can optimize their effectiveness. Stops can be placed using a number of different approaches: by determining the exact dollar amount a trader wishes to risk on a single trade; as a percentage of total equity; or by applying technical indicators.

Realistically, methods may overlap, and you'll have a certain amount of leeway in deciding where to put a stop, but always be

wary of straying too far from the basic asset allocation parameters established earlier. For example, if a trader is long one S&P 500 future at 450.00, and based on his total equity he has \$2,500 to risk on the position, he might place a sell stop at 445.00, which would take him out of the market with a \$2,500 loss (\$500 per full index point, per contract). But after consulting his charts, he discovers strong support at 444.55, a level he believes if broken will trigger a major break. If this level is not broken, the trader believes, the rally will continue. So he might consider putting a stop at 444.55 to avoid being stopped out prematurely. Although he's risking an extra \$225, he's staying close to his money allocation percentages and modifying his system to take advantage of additional market information.

Of course, the size of a position will affect the placement of stops. The larger the position, the closer the stop has to be to keep the loss within the established risk level. Also consider market volatility. You run a greater risk of getting stopped out in choppy, "noisy" markets, depending on how far away stops are placed. This can cause unwanted liquidation when the market is actually moving your direction.

Now suppose our hypothetical trader, who started with \$50,000, is now looking at a \$10,000 gain (which happened to be his goal for this trade) on a long position. What should he do? That depends entirely on his trading goals. He can take the \$10,000 profit and, assuming he leaves the money in his trading account, turn to other trading opportunities. If he desires, he can increase the size of his trades proportionally to his increase in trading equity. This would give him the potential to earn greater profits, with the accompanying risk of greater losses.

He also could choose to keep the size of his trades identical to what they were before he made his initial profit, thus minimizing his risk (as he would be committing a smaller percentage of his total equity to his trades) but at the same time bypassing the chance

for larger profits. If his winning position had consisted of more than one contract and he believed the market was still in an uptrend, he could opt to take his profit immediately on some of the trades, while leaving other positions open to gain even more. He then could limit his risk on these remaining trades by entering a stop order at a level that would keep him within his determined level of risk, as well as protect his profits. He does run the risk of giving back some of his money if he is stopped out, but counters that with the potential for even larger gains if the market continues in his direction.

Good money management practices dictate stop orders be placed at levels that minimize loss; they should never be moved farther away from the original position. You should accept small losses, understanding that preservation of capital will in the long run keep you in the market long enough to profit from the winning trades that make up for the losers.

Trading in the real world almost never seems to go as smoothly as it does on paper, mainly because paper trading typically never figures in such real world factors as commissions, fees and slippage. "Slippage" refers to unanticipated loss of equity due to poor fills (especially on stops) that can result from extreme market conditions or human error. Factoring these elements into your overall money management program can help create a more realistic trading scenario, and reduce stress and disappointment when gains do not seem to be as large as they should be.

**One final note** Do your money management homework before you start trading. This helps you decide what to trade and how to trade it. On paper, money management sounds so obvious and based in common sense that its significance can be overlooked. The challenge is to apply its principles in practice. Without money management, even the most astute market prognosticator may find himself caught in a downward trading spiral, right on the trend, but wrong on the money.

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