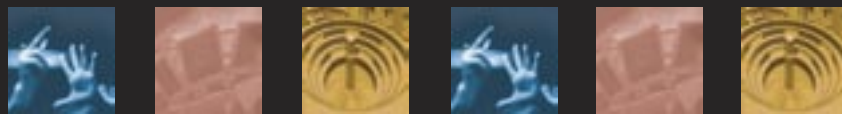


Understanding Futures & Options



	Sep3	Nov3	Jan4	Mar4	May4	Jul4	Sep4
3rd	7815	8170	8295	8500	8620	8760	9350
2nd	7820	8200b	84000B	8500B	8625	8765	9355
Last	7600	8300A	8700A	8630	8888	8888	9368

	Sep3	Dec3	Mar4	May4	Jul4	Sep4	Dec4
3rd	7095	105	766	3564	5985	145	7295c
2nd	7100	110	771	3574	5998	699	

This brochure – Understanding Futures and Options – offers an overview of the role and function of the modern exchange. It contains examples and descriptions designed to foster better understanding of futures and options transactions. The examples and descriptions are not intended to serve as investment advice and cannot be the basis for any claim. While every effort has been made to ensure accuracy of the content, the New York Board of Trade does not guarantee its accuracy, or completeness or that any particular trading result can be achieved. The New York Board of Trade cannot be held liable for errors or omissions in the content of this brochure. Futures and options trading involves risk of loss and is not suitable for everyone. Readers are advised that brokerage fees and commissions are not included in the examples and that margin levels are subject to change. Contact a broker for fee and commission information and current margin requirements. Trading on the NYBOT Exchange markets is governed by specific rules and regulations set forth in exchange rules. These rules are subject to change. For more detailed information and specifications on any of the products traded on the NYBOT exchanges, contact NYBOT or your broker.

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Since 1870, the futures and options markets of the New York Board of Trade® (NYBOT®) have provided price discovery, risk management and price dissemination tools for industry users and ongoing investment opportunities for market participants. By developing and supporting efficient and transparent markets, the New York Board of Trade reaffirms on a daily basis the historic role of the traditional futures and options exchange.

The New York Board of Trade, Inc. was formed in 1998, as the parent company of the Coffee, Sugar & Cocoa Exchange, Inc. (CSCE) and the New York Cotton Exchange (NYCE®). Through the merger of its two exchanges, NYBOT provides futures and options markets for a broad range of products including cocoa, coffee, cotton, frozen concentrated orange juice (FCOJ), ethanol, sugar, currency cross-rates, the U.S. Dollar Index® (USDIX®), the Russell Indexes, the New York Stock Exchange (NYSE) Composite® Index and the Reuters CRBSM Futures Price Index.

While providing market users with reliable **price discovery** and **price risk transfer** functions through traditional open outcry trading in its global marketplace, the NYBOT offers **price dissemination** via the internet through its real time market data service at www.nybotlive.com. Continuous exchange and market information is also available through the NYBOT web site at www.nybot.com.

In addition to its traditional price-related functions, the **NYBOT develops and supports innovative industry-related services** such as the electronic commodity operations and processing system (eCOPS®) – a web-based electronic delivery documentation platform that serves the coffee trade.

C D X R M U E U X A . . .

NYBOTLive.com



Understanding Futures and Options

The Markets (*Cash and Futures*)

Trading of basic commodities represents one of humanity's oldest commercial activities. Nearly every community throughout history developed some sort of central marketplace where people could meet and trade necessities such as foods, fibers and other basic commodities. Over time, more participants entered the **physical (cash) market**. This lengthening of the marketing chain directly affected the value (price) of each commodity. Each participant in the chain added value to the commodity (processed, transported, stored, refined, manufactured, etc.) and this affected the price. As participants added value, they acquired a stake in the price and thus a profit margin to protect. Participants became more and more vulnerable to sudden price changes, thereby increasing instability and supply/demand speculation. A sudden change in the supply/demand equation can squeeze anyone in the chain needing to acquire a commodity that suddenly jumps in value or required to hold a commodity that decreases in value.

As the markets for commodities like sugar, cocoa, cotton and coffee grew larger, the supply lines grew longer. The TransAtlantic route (e.g. between London and New York) introduced another level of risk and merchants began writing individual contracts for expected deliveries (**forward contracts**) containing specific terms of delivery (quantity, quality, anticipated date of delivery) all for a fixed price.

With this increasing cash market risk, merchants for several basic commodities joined together in the late nineteenth century to establish a more organized and specialized marketplace for each commodity where they could meet and negotiate these forward contracts. The forward contract, however, was still a cash market instrument whereby a price was negotiated for an actual physical commodity transaction at a future date of delivery. The contract applied to the unique terms of one transaction, but the existence of this piece of paper added another possible level of trade – the idea of buying and selling the contract itself. As a binding instrument that committed the holders to a transfer of the physical commodity, the contract itself could change hands many times as long as its terms remained outstanding (until the actual delivery took place).

As the buying and selling of an existing contract became an accepted practice, the standardization of that contract became the next logical step. The standardization of the forward contract led to the creation of the **futures contract** that added a whole new dimension to commodity trading. The cash market continued its day-to-day business of selling and buying a commodity at that day's price.

The organization of merchants buying and selling the physical commodity evolved into an organization that standardized the contracts and the trading practices, and became the **futures exchange**. The acceptance of the standard contract allowed organized trading of the value of the commodity for delivery at some future date through a **futures market** for the commodity.

The futures contract had specific terms, amount, type, price, timeframe, etc., but unlike the forward contract, it did not apply to any specific transaction. A “standard” contract with standard terms that applied across the board was developed. The terms applied to the commodity being priced and therefore gave validity to the price. The commodity could change hands under the terms of the contract, but that was not its purpose – its purpose was to establish a **price** for the commodity for a defined period of time (the term of the contract). This price became a benchmark for determining the day-to-day cash market price. It also established the futures contract as an instrument that had its own value and could be traded apart from the physical commodity. The standardization of the contract and trading practices even removed the need to trade actual pieces of paper. No longer was a paper contract necessary, only an enforceable record of the transaction and payment.

The Exchange

Historically, the futures and options exchange has been a membership organization that provides and operates the facilities for trading; establishes, monitors and enforces rules for trading; and keeps and disseminates trading data. By establishing a visible, free market setting where the forces of supply and demand can come together for the trading of futures and options, the exchange can fulfill its pricing functions – **price discovery** (the negotiation of the current best price); **price risk transfer** (the shifting of cash market price risk exposure to other hedgers with opposite risk profiles or to other futures market participants who are willing to assume risk in return for a profit opportunity); and **price information** (the regular and timely dissemination of pricing information to all interested parties around the world).

The Price

The current price of the “nearby” futures contract (the contract with the closest expiration date) represents a benchmark for the cash market price. The worldwide dissemination of the futures price information contributes to wider market participation, which reflects the conditions of the cash market as a whole more effectively. More buyers and sellers in the marketplace mean better pricing opportunities (more competition for price), thereby increasing the quality of the price discovery process. The exchange ensures the integrity of the trading process through its clearly defined and monitored rules that include an arbitration process to resolve trading disputes.

The difference between the specific futures contract price and the cash price for the commodity at the local delivery point is called the “basis.” Normally, the futures price (in the case of a physical commodity) should be equal to the present cash price plus the amount of storage, insurance, etc. (carrying charges) necessary to carry the commodity to the delivery month of the contract. In addition, basis pricing can also reflect the location (port of delivery) and the quality of the commodity. For example, a particular growth of coffee from a specific country might trade at a negotiated premium or discount to the futures price.

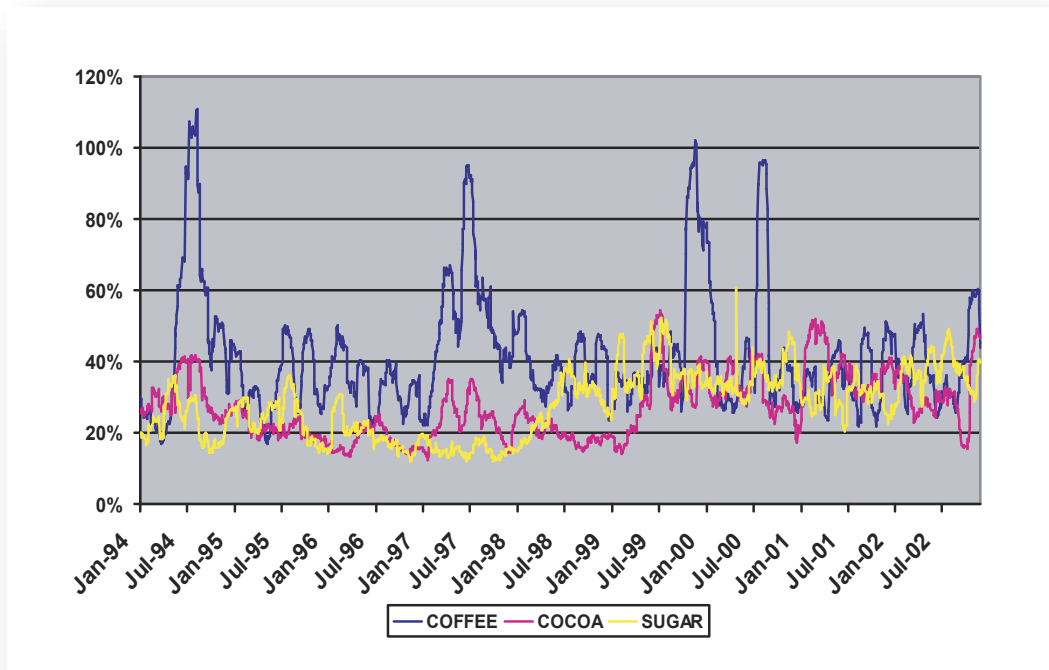
Although the futures and cash prices have a basis difference, the commodity pricing system works well because they tend to parallel each other over time. As the contract delivery date approaches, the nearby futures price and the cash price move closer together (**convergence**). While futures and options do have a strong parallel relationship, the basis figure is not constant. The basis tends to widen or narrow depending on such key factors as supply and demand at the local delivery point. The existence of price risk in the cash market makes futures and options markets necessary.

Price Dissemination

As one of the three basic functions of an exchange (the others being price discovery and price risk transfer), price dissemination is a critical responsibility. Market participants need access to “real-time” data in order to effectively trade markets. Such data feeds have historically been available through third-party vendors who package market data from various exchanges and deliver it to subscribers over their own proprietary systems. With the evolution of the Internet, NYBOT now offers direct access to its market data over the world wide web via **NYBOTLive**. Market participants can subscribe through **www.nybotlive.com** to receive the specific data required. The subscriber also has access to important trading tools (historical data, charts and graphs) to help interpret the data.

Price risk is measured in terms of **price volatility** (the magnitude of price movement in either direction). Greater volatility means greater risk for everyone in the marketing chain. Price volatility makes futures and options trading possible. Exchanges measure price volatility for a specific commodity to determine its suitability for futures/options trading. Futures and options markets do not create or remove volatility and risk; the volatility and risk originate in the underlying cash market. That same volatility creates trading opportunities for all market participants. Futures and options markets provide risk management tools to help reduce the price risk exposure that comes from price volatility.

30-Day Historical Volatility



Futures Contract on Coffee "C"

The Contract

The futures contract is a standardized legal commitment to deliver (or receive) a specific quantity of a commodity with specific quality/characteristics (or its cash equivalent) on a specified date at a specified delivery point.

Cash market participants negotiate the buying and selling (the transfer of title) of a specific product; futures market participants focus on the buying and selling of a contract on the underlying product. With the contract standardized in terms of delivery months and locations, quantity and grade of the commodity, **the only element left to negotiate in the exchange market is the price.**

In essence, traders of futures are buying and selling in an open marketplace a price for the underlying commodity.

Since price and not the commodity is the focus of the futures and options market, delivery of the actual commodity is a function that generally is assigned to the cash market. The market makes it easy to enter and exit the market before delivery becomes even a possibility. All the mechanisms of the futures marketplace focus on the taking of a "price" position and then closing it out at a profit or loss.

Although only a small percentage of contracts actually come to delivery, the NYBOT exchanges have programs and procedures that guide the delivery process. For coffee and cocoa deliveries at the New York Board of Trade, the process has historically been managed electronically by the **Commodity Operations and Processing System (COPS®)**. Based upon this pioneering system, the NYBOT has developed eCOPS – an Internet-based system designed to serve both the futures and cash delivery process through electronic documentation and standardized procedures.

The Marketplace

The futures market serves buyers and sellers equally; they may enter the market on either the buy or the sell side. New buyers of futures contracts establish a "long" position and new sellers of futures establish a "short" position. Most positions are closed out by completing an equal transaction on the opposite side of the original position: long positions are closed out by selling and short positions by buying. Physical delivery or cash settlement can also satisfy the obligation if the position is carried to contract expiration.

The Traders

Futures exchanges serve essentially two types of traders – **hedgers** who seek to transfer their cash market price risk to other futures market participants and **investors/speculators** who are willing to assume that risk in exchange for the opportunity to profit from price movement in the futures market. The hedger enters the futures market to transfer/reduce risk associated with cash market transactions. The hedger may be protecting a cash market buy or sell price; they are representatives of different levels of the actual trade (grower, merchant, manufacturer, etc.) who are subject to cash market price risk. Hedging involves establishing a position in the futures market equal to and opposite a position in the cash market.

Hedging is not about taking risk. Hedging is the opposite of speculating. An effective hedging strategy reduces risk exposure. A gain in the futures market will offset a loss in the cash market, or vice versa. A grower who harvests coffee, for example, has coffee to sell. Therefore, the grower is said to be a natural **“long”** in physical/cash coffee. To hedge the crop, the grower could protect the selling price of the cash market coffee by establishing the opposite or **“short”** position in the futures market (sell futures contracts). Other hedgers, such as a coffee roaster, may need coffee (are **“short”** physical coffee) and therefore seek to protect the buy price of cash market coffee. The roaster could take a long position in the futures market (buy futures) to place a hedge.

Investors, on the other hand, are willing to assume the price risk by taking a position on either side of the market in order to pursue a profit from changing prices. Futures investors seek only to buy low and sell high and vice versa. The unimportance of chronology in buying low and selling high illustrates a unique element of the futures market – the availability of opportunity in a rising or declining market. Market participants can enter the market on either side (long or short). Access, risk level and opportunity over the long term are basically similar on both the long and short sides of the market. The presence of different participants in the marketplace – hedgers with opposing risk profiles, investors with different short or long-term strategies and goals – creates ongoing trading opportunities on both sides. The participation of investors with a wide variety of goals and strategies contributes important liquidity to the market, increases price discovery efficiency, and facilitates the hedging process. Types of investors may range from a **“local trader”** who seeks gains from small price movements within a short time frame (often holding a position for less than a day) all the way to large commodity funds that may establish a strategic position for a longer term until a specific price goal is reached.

Price volatility broadens the spectrum of opportunities for all market participants. The fact that prices can swing in either direction quickly and substantially can benefit both hedgers and investors. The same price volatility that makes futures and options markets effective tools for hedgers creates opportunities for investors. It should be understood, however, that price volatility in a commodity is inherent to the cash market, not the result of speculation in the futures market. Without volatility no reason exists for a futures market, because price risk is minimal. The need to transfer risk is a primary engine for the futures market.

The Transaction

Futures trades begin with one basic step: buyers and sellers deposit funds – called margin – as a performance bond or good faith deposit with a brokerage firm to ensure that market participants will meet their contractual obligations. The margin commitment is the same for both buyers and sellers. There is often a difference, however, between the margins required of hedgers and the commitments for speculators. This system of **initial (or original) margin** deposits (usually a small percentage of the total value of the underlying contract) helps to maintain the financial integrity of the futures market and provides

MARKET		SPECULATIVE			
		7/7/04			
		Outright		Straddle	
		Initial	Maint.	Initial	Maint.
I.	Agricultural (In U.S. Dollars)				
	SUGAR #11	700	500	210	150
	SUGAR # 14	560	400	350	250
	COCOA	1,190	850	280	200
	COFFEE	2,240	1,600	280	200
	MINI COFFEE	770	550	98	70
	COTTON	2,240	1,600		
	Intra Crop Straddle*			420	300
	Inter Crop Straddle*			700	500
	FCOJ	560	400	210	150

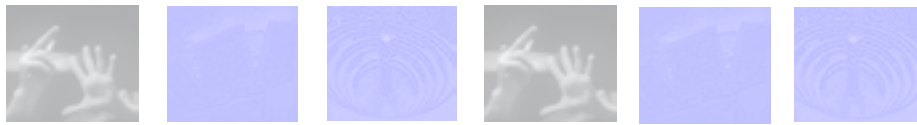
participants with the leverage that is a major feature of futures trading. Since a futures contract is not intended for use as a merchandising contract for transfer of title from seller to buyer, there is no need for the full contract value to change hands.

An illustration: On September 10, 2003, the initial margin for a hedger in the Cotton No. 2sm Contract was \$1,000 on a contract valued on that day at \$30,350 (price = 60.70 cents/lb.). The initial margin for a speculator was \$1,400 per contract. Even for the speculator that represents less than 5% of the total value of the contract.

New York Clearing Corporation

The New York Clearing Corporation (NYCC) – the clearinghouse for all trades in the NYBOT markets – guarantees contract performance to its members by establishing, with the exchange, minimum margin levels for each market and periodically adjusting them to reflect current price volatility. The clearinghouse is made up primarily of brokerage firms who serve as clearing members and must meet certain financial requirements and responsibilities including a guaranty deposit at the clearinghouse.

The NYCC serves as counterparty to every trade and guarantees the integrity of each contract in the NYBOT markets. The clearinghouse also oversees the transfer of money among members. At the close of each trading day, each trader's account equity is adjusted (**marked to the market**) to reflect price movements. If the market has moved against the trader's position, **variation margin** payments may be required to restore the trader's equity to the required minimum level.



In the traditional exchange, the actual transaction takes place in designated **trading rings (pits)** where members meet to make bids and offers to each other by voice and hand signals (**open outcry**). Trades are acknowledged by the participants and confirmed in writing or through an **electronic order routing system (EOR)**. Since only exchange members can trade on the floor, customer orders are delivered to floor brokers who execute them according to the customer's instructions. Among the common orders that are filled in the pit are **market orders** (executed immediately at the prevailing price in the pit); **limit orders** (to be executed at the stated price or better); and **stop orders** (instructs broker to execute an order at the market if a certain price is reached).

Once the transaction has taken place, it is entered manually or electronically into NYBOT's **Trade Input Processing System (TIPS®)** where it is matched, and assigned to a clearing member. Only clearing members can submit trades for clearing. When the trade is matched and submitted, the clearinghouse then becomes the buyer to every seller and seller to every buyer.

From the moment the order enters the market, its path is marked clearly in terms of time stamps that record its progress. This path is called an audit trail that helps to protect the interests of all parties involved in the trade. The audit trail is one of the key tools of regulation that govern the futures market and protect the integrity of each trade.

Regulation

The exchange subsidiaries and divisions of the New York Board of Trade write, administer and enforce their own rules, utilizing their surveillance and compliance systems and staff.

The Commodity Futures Trading Commission (CFTC) is the federal regulatory agency responsible for the oversight of all futures markets in the U.S. **The National Futures Association (NFA)** is a self-regulatory organization registered with the CFTC. It promotes ethical standards, enforces customer protection rules and screens professionals for membership in the NFA. Registration with the CFTC is required for floor traders – including floor brokers (exchange members who handle customer orders on the trading floor) and locals (exchange members who trade for their own account), **futures commission merchants (FCMs)**, **introducing brokers (IBs)** and their **associated persons (APs)** who handle customer funds. The registration requirement for **commodity trading advisors (CTAs)** and **commodity pool operators (CPOs)** depends on the amount of money they control in customer funds and the number of participants in the pool.

Hedging

Different markets utilize different hedging strategies, which may change throughout the year depending on cash market situations and business goals. The basic elements of hedging are constant. Establishing a futures hedge locks in a price for the buyer or the seller. The hedger will still be subject to basis risk and the strengthening or weakening of the hedger's basis (difference between the cash and futures price) will affect the net result of the hedge.

An effective hedging strategy requires a working knowledge of how futures markets function combined with a specific marketing plan that accurately computes and interprets cash market costs and projected profit margins. A number of tools exist within and around the futures market that can help both hedgers and investors. Along with a marketing plan, hedgers must be able to fundamentally analyze their market – to know the physical factors that affect price and how to interpret these signals.



A frost threat in Florida, for example, can obviously play a role in the pricing of FCOJ. This **fundamental analysis** is an important part of a basic hedging program. Investors also need knowledge of these factors.

Investors (and to some degree hedgers) also have come to rely on a variety of mathematical tools that allow **technical analysis** of the markets over time. Technical tools utilize charting programs that track and interpret historical patterns (e.g., moving averages), which can assist a trader in developing a strategic plan. The NYBOTLive market data service provides a charting package with an array of technical tools to assist traders. The importance of quality market information, thorough analysis of that information, strategic planning and disciplined execution cannot be overemphasized for both hedgers and investors.

The NYBOT web site at www.nybot.com provides a **Research Reports** section that offers market users complimentary access to market analysis and commentary by prominent analysts and other industry professionals. Such reports can be an excellent source of specific market information and opinions on both the fundamental and technical levels.

Trading Examples

For purposes of simplicity, the following examples do not include the commission costs that buyers and sellers may incur in futures and options trading. The commission costs, which vary from one brokerage firm to another, also include exchange/clearing fees. Although the brokerage and exchange fees for futures and options trading are relatively modest, these costs must be factored into any hedging or investment program to provide an accurate picture of the net profit or loss. Ask a broker for current commission rates and exchange fees. Such costs are usually calculated on a per-contract-traded basis and often quoted in terms of a “round turn” – meaning upon the closing out of each contract position. The first two hedging examples do not include the basis figure, which will vary over time. A full understanding of historical basis is a necessary component of any risk management plan. Consult a broker to learn more about calculating and interpreting basis. All of the hypothetical examples in this brochure are for illustration purposes only. They do not constitute trading advice.

Trading Futures

Futures markets serve the objectives of both hedgers and investors. Hedgers use the futures market to protect cash market transactions and thereby reduce the effect of price volatility in the cash market on their bottom line. Hedgers assume a position in the futures market roughly equal to and opposite the cash market position they wish to hedge. Investors, on the other hand, may enter the market on either side depending on their individual strategy. Regardless of the market direction, they seek to anticipate and profit from the price changes that may occur over the short or long term. It is important to understand the basic difference in the business goals of hedgers and investors when examining the trading scenarios that follow.

A Sugar Long Futures Hedge Example

Commercial firms use the futures market to protect cash market commitments that arise in their day-to-day operations.

SCENARIO:

A candy manufacturer has profit margins that are extremely sensitive to the cost of sugar. In August, he/she contracts to sell candy for delivery in November at a fixed price. The manufacturer will need **224,000 pounds of raw sugar (equal to 2 Sugar No. 11sm futures contracts of 112,000 pounds each)** to make the candy. In order to maximize profits, the candy maker needs to buy sugar for October delivery at a price of **7.20 cents/lb.** or better. By purchasing the futures (currently trading at 7.20), the manufacturer can lock in raw material costs and protect his/her profit margin.

STRATEGY:

On August 10, the manufacturer **sells candy for November delivery with 224,000 pounds** of raw sugar content. His/her profitability depends on purchasing sugar at no more than **7.20 cents/lb.** At the time the manufacturer contracts to sell the candy, he/she **buys 2 October Sugar No. 11 futures at the current price of 7.20 cents/lb.**

Futures Contract on Sugar No. 11

Calls for delivery of cane sugar, stowed in bulk, FOB from any of twenty-eight foreign countries of origin as well as the United States.

Trading Unit: 112,000 lbs. (50 long tons)

Deliverable Growths: Growths of Argentina, Australia, Barbados, Belize, Brazil, Colombia, Costa Rica, Dominican Republic, El Salvador, Ecuador, Fiji Islands, French Antilles, Guatemala, Honduras, India, Jamaica, Malawi, Mauritius, Mexico, Nicaragua, Peru, Republic of the Philippines, South Africa, Swaziland, Taiwan, Thailand, Trinidad, United States, and Zimbabwe.

Price Quotation: Cents per pound

Delivery Points: A port in the country of origin or in the case of landlocked countries, at a berth or anchorage in the customary port of export. Subject to minimum standards established by the Exchange's rules.

Notice Day: First business day after last trading day.

Contract specifications are current as of January 26, 1998 and may be subject to change; verify information with your broker.

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RESULT:

On September 15, the candy maker closes out the futures position by **selling 2 October Sugar No. 11 futures at the current price of 9.92/cents/lb. for a 2.72 cents/lb. gain.** This means a futures gain of \$6,092.80 (112,000 lbs. x \$.0272 = \$3,046.40/contract x 2). On September 15, the candy maker purchases raw sugar in the cash market at **9.92 cents/lb.**, paying **2.72 cents/lb.** more than planned, meaning an unexpected **\$6,092.80 shortfall** on the manufacture of the candy. When the futures gain is applied to the cash market shortfall (**2.72 cents/lb. futures gain minus 2.72 cents/lb. cash market loss**), the manufacturer has in effect purchased sugar for **7.20 cents/lb. – the target purchase price** that had to be locked in to protect the profit margin.

If sugar prices had fallen to **5.10 cents/lb.**, the futures market **loss of 2.10 cents/lb.** would be offset by the **gain of 2.10 cents/lb.** from the lower cash market price of 5.10 cents/lb. The end result would still be the target price of 7.20 cents/lb. While it may be tempting to view the long futures hedge in a declining market as a loss, it is important to remember the purpose of the hedge – **to lock in a price.** Had the manufacturer remained unhedged, he/she would be speculating in the cash market and risk losses when cash prices rise. Protecting the bottom line is sound business management. The target price that represented a profit in August still represents a profit in September.

A Cocoa Short Futures Hedge Example

Many commercial firms who carry an inventory of a commodity are exposed to the risk of falling prices. A short hedge (selling futures contracts) helps to reduce this risk.

SCENARIO:

A cocoa importer holds **100 metric tons of cocoa inventory** (equal to 10 futures contracts at 10 metric tons/contract) in anticipation of future sales. Market prices have been falling and a continued decline in the period between the inventory purchase and release for sale can lead to significant losses. On September 18, the **nearby Cocoa December futures are selling at \$1326/metric ton.**

STRATEGY:

On Sept.18, the importer **sells 10 December Cocoa futures at \$1326/metric ton** to cover the 100 metric ton inventory.

Futures Contract on Cocoa

Calls for delivery of any kind of cocoa bean-"the growth of any country or clime, including new or yet unknown growths"-as long as it meets F.D.A. standards for importation.

Trading Unit: 10 metric tons (22,046 pounds)

Minimum Fluctuation: \$1.00/metric ton, equivalent to \$10.00 per contract and approximately 5/100 cent/lb.

Daily Price Limits: None

Position Limits: Spot Month: 500 Contracts* as of first notice day in the expiring month. Additionally, Position Accountability Rules apply to all futures and options months. Contact the Exchange for more information.

*750 contracts commencing with the May 2002 contract.

Standards: Established by Exchange licensed graders in accordance with specified tolerances for defects, bean count, bean size and other standards.

Deliverable Growths: The growth of any country or clime, including new or yet unknown growths. Growths are divided into three classifications: Group A, deliverable at a premium of \$160/ton (including the main crops of Ghana, Nigeria, Ivory Coast, among others); Group B, deliverable at a premium of \$80.00/ton (includes Bahia, Arriba, Venezuela.

RESULT:

On November 8, the importer **sells his inventory on the cash market for \$1237/metric ton for an \$89/metric ton loss.** At the same time, the importer closes out the short futures position (**buys 10 December cocoa futures at \$1237/metric ton for a total futures market gain of \$8,900 (\$89/metric ton x 10 tons x 10 contracts).** The futures market gain offsets the cash market loss, maintaining the value of the inventory (**\$1326/metric ton**) in a declining market.

A Cotton Short Futures Hedge (*with narrowing basis*)

Calculating **basis** is a major component of any risk management program. The first two examples assume a perfect basis relationship between futures and cash. The following hedging example utilizes a changing basis during the period covered by the hedge. Agricultural commodity producers, who are often under-represented in the futures market, must pay particular attention to changing basis in hedging a target price for their unharvested crop.

SCENARIO:

On August 10, a cotton producer projects a harvest of **1,500 bales (approx. 750,000 lbs.).** The producer's cash market price currently stands at **65 cents/lb.** December cotton futures are trading at **68 cents/lb.** The basis (difference between cash and futures) would therefore be **3 cents/lb. under futures.** The producer anticipates a price decline in the coming months and wishes to lock in a net return at or near his **target price of 65 cents/lb.**

STRATEGY:

On August 10, the producer **sells 15 December Cotton No. 2sm futures at 68 cents/lb.** (one Cotton No. 2 contract = 50,000 pounds of approximately 100 bales).

RESULT:

On November 18, futures are trading at **64 cents/lb.** and the cash price has also declined to 62 cents/lb. The basis has changed from **3 cents/lb. to 2 cents/lb under futures.**

The producer **sells his cotton on the cash market at 62 cents/lb. or 3 cents less** than his anticipated price. The producer closes out the futures position by **buying 15 December futures at 64 cents/lb. for a 4-cents/lb. futures market gain.**

By offsetting the 3-cents/lb. cash market shortfall with the 4-cent/lb. futures gain, the producer receives a **net cotton price of 66 cents/lb.** The producer protected a **target price of 65 cents/lb.** The basis change added another cent to the sale price.

In this scenario, a change in basis favored the producer. If the basis had widened to four cents, however, (e.g., **cash at 60 cents/lb. and futures at 64 cents/lb.**) the producer would effectively be receiving **64 cents/lb.**

Unhedged, the producer would be facing a **5-cents/lb.** shortfall from his **target price of 65 cents/lb.** The price risk outweighs the basis risk.

An understanding of historical basis is crucial in determining the level of risk exposure and developing a hedging plan that will help reduce that risk when executed successfully.

Strategic Futures Investment Example

By serving the needs of hedgers, futures markets provide opportunities for investors. For example, increased volatility in the equities markets has generated interest in futures contracts based on equity indexes such as the Russell 1000[®] Index (a market capitalization-weighted index of the 1,000 U.S. stocks with the largest market capitalization). The Russell 1000 contracts (R1000, R1000 Growth, R1000 Value) along with contracts on the Russell 2000[®] (small cap) and Russell 3000[®] (broad U.S. equity market) are traded in NYBOT's financial products markets. The traditional advantages of futures markets (low transaction costs, leverage, etc.) plus the ability to enter the market on the long or short side make index futures an effective alternative instrument for a speculator who wishes to take advantage of a stock market move (up or down) without assuming the commitment of buying and selling a full basket of stocks.

A Russell 1000 Index Futures Trade (*short*)

SCENARIO:

In January, an investor believes that a short-term market decline in the broad equities market is imminent. He considers that large cap U.S. stocks will be the sector most affected. The investor wishes to profit from the possible price decline, without the complexity of "going short" on a basket of large cap stocks. The investor considers the Russell 1000 Index to be the most objective, broad-based measurement of large cap U.S. equities performance.



STRATEGY:

On January 14, Russell 1000 Index March futures (regular size = \$500 times the Index) are trading at 575.00. The investor **sells 2 March contracts at 575.00**. The regular contract requires an initial margin commitment of approximately \$9,000/contract for a total of \$18,000. [Initial and Variation margin requirements are set by the exchange clearinghouse and are subject to change. Investors should check with the exchange as well as their brokerage firm for current margin rates.]

RESULT:

On February 14, the broad equities market has declined and **Russell 1000 March futures are trading at 540.50**. The investor closes out the short position (**buys 2 Russell 1000 regular March futures at 540.50**) for a **futures gain of 34.50 Index points**. The **net gain is \$34,500** ($34.50 \times \500×2 contracts).

The leverage, transaction cost savings and trading simplicity available in the futures market offer certain advantages to investors. In addition, the unrealized gains from an open futures position are available for withdrawal on a daily basis.

Leverage, however, works both ways.

If the market had risen, the investor could face increased margin commitments to maintain required margin levels. Unlike a traditional equities position where losses are not realized until the actual transfer of the stock, futures market losses are deducted from the margin account **on a daily basis**, perhaps leading to variation margin payments. Those losses and subsequent margin calls can continue as long as the investor maintains the open position during the adverse market move.

Futures markets provide time-tested risk management tools and continuous investment opportunities for market participants. The first four hypothetical examples in Understanding Futures and Options demonstrate some of the basic mechanics of futures trading. In each case the traders (hedgers and investors) would rely on a clear understanding of the characteristics of futures markets and a working knowledge of the factors that affect pricing in the underlying industry (**fundamental analysis**). The traders might also utilize the variety of **“technical analysis”** techniques that provide mathematical and historically-based theories of price movement to assist in market decisions.

These analytical tools do not provide any magic trading formulas; they each offer a particular interpretation of market data. Different tools have varying levels of effectiveness in changing market conditions. For example one charting tool might more accurately interpret a strong bull market while another would be more useful in a flat market. It is important to emphasize once again that the overall effectiveness of any hedging program or investment strategy relies upon market analysis, careful market monitoring and the proper execution of clearly defined business plans and objectives.

Options on Futures

Option Contract on Sugar No. 11 Futures

In 1982, the CSCE introduced **options on commodity futures** to the U.S. – the first exchange-traded option on a commodity futures contract (Sugar No. 11 futures) since 1936. Since that time, options have provided a widening array of risk management capabilities and trading opportunities for hedgers and investors. The multi-dimensional flexibility of options has contributed to the growth and success of the NYBOT options markets. **Option contracts grant the owner or buyer of the contract the right, but not the obligation, to buy (a call) or sell (a put) a futures contract on an underlying commodity at a predetermined price within a specified period of time.** The seller of the contract is always under obligation to the buyer to fulfill the terms of the option.

The exercise style of the option falls into two categories. **American-style options** – the type of option traded in the NYBOT markets – allow exercise at any point up to the expiration date. **European-style options** can be exercised only on expiration. Hedging with options may establish a **price floor or ceiling** while retaining upside or downside potential, respectively, in a favorable cash market. Options add greater flexibility to investment planning. **Option trading strategies** are as diverse as the objectives of those who trade them. Strategies exist for rising, falling and flat markets. Some have limited risk and reward potential while others have unlimited risk and reward. Strategies exist for buying options, selling options, or combinations of the two, and may also include simultaneous trading of futures.

Although complex option strategies are numerous and varied, options trading may not be for everyone. Investors and hedgers are urged to undertake a careful study of options – their markets, the various components and trading strategies – before entering the market.

A call option (American-style) confers the purchased right – but not the obligation – to buy a specific futures contract at a specific price (**strike price**) at any point within a specified period of time (up until the option expiration date). If the option is exercised, the buyer may assume a long position in the underlying futures contract at the strike price.

Option	Underlying	Expires 2nd	Option	Underlying	Expires 2nd
Month	Future	Friday of	Month	Future	Friday of
Jan**	March/Jan	December	Jul	July	June
Feb	March	January	Aug	October	July
Apr	May	March	Oct	October	August
May	May	April	Nov***	March/Jan	October

***The Nov 2001 and Dec 2001 serial options will be the last to have the March as the underlying future; beginning with the Nov 2002 and Dec 2002 these serial options will have the January as the underlying future.

First Trading Day: "Regular Options" -Business day following the day on which the underlying future is listed for trading. "Serial Options" -First trading day of the third calendar month preceding the serial option month.

Minimum Fluctuation: 1/100 cent/lb., equivalent to \$11.20 per contract.

Daily Price Limits: None

A **put option (American-style)** confers the right – but not the obligation – to the option buyer to sell a specific futures contract at a specific strike price at any point within a specified period of time. If the option is exercised, the holder will assume a short position in the underlying futures contract at the strike price.

Each option transaction involves two parties: a **buyer (holder)** and a **seller (writer or grantor)**.

Options are identified by the following elements: **option contract month and year; strike price and type (call or put)**.

For example, in the coffee options market, buying a **Sep 04 70 Put** gives the option holder the right to take a short coffee futures position (sell a September 2004 Coffee “C”[®] futures contract) at a price of 70 cents/lb. at any time up to the option expiration day.

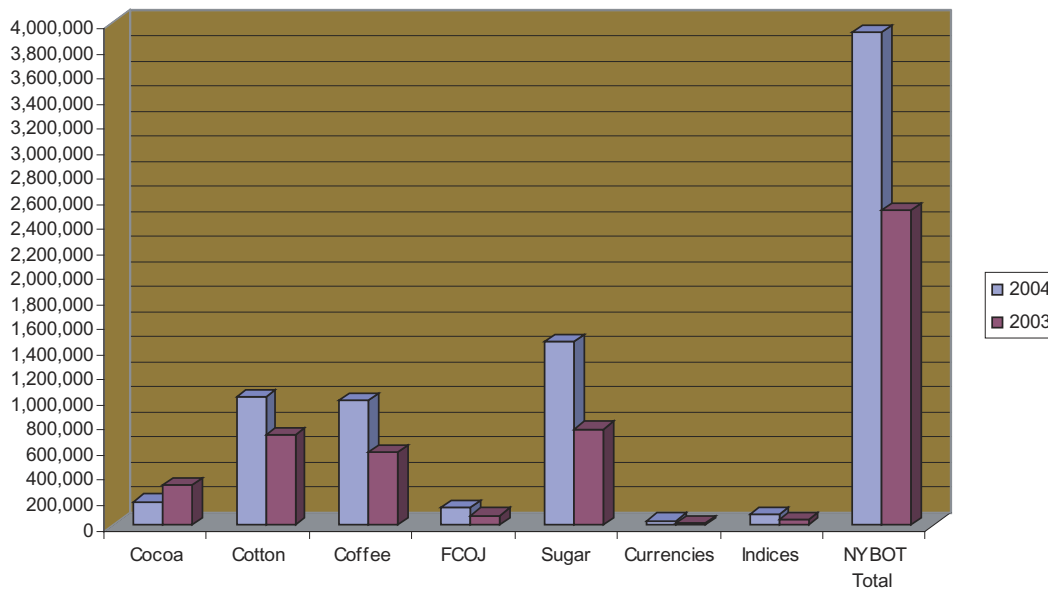
To obtain the option rights, the **buyer (holder)** makes a **payment (premium)** to the **seller (writer)** of the option. Traders in traditional markets agree on premiums in an open outcry auction similar to that for futures contracts. Because an option buyer is under no obligation to enter the futures market, losses are strictly limited to the premium paid. If the underlying futures market moves against an option position, the holder can simply let the option expire worthless. If the futures market moves favorably to an option position, net potential gains beyond the strike price can be unlimited, minus the premium paid. Option holders can exercise the option at any time up to the expiration date.

Option buyers (holders) can exit a position in one of three ways: exercising the option and entering the futures market; selling the option back into the market; or simply letting the option expire worthless.

Option holders are not required to post margin until they assume a futures position.



Year-to-Date Options Volume (through 6/30/04)



The Premium

In exchange for the premium paid, **option writers (grantors)** assume the risk of being assigned a position opposite that of the holder in the underlying futures market at any time during the life of the option. When a call is exercised, the option holder assumes a long futures position and the option writer is assigned a short futures position at the option's strike price. Similarly, when a put is exercised, the holder acquires a short futures position, and the writer a long futures position.

Because option writers may have to enter the futures market at any time, they assume a potentially unlimited risk. Option writers therefore are required to maintain a margin account. Writers may only offset their position by buying back their options in the market.

Several fundamental factors affect premium pricing. The amount buyers are willing to pay for a particular option and the price sellers are willing to accept for granting the option are influenced by key variables including **intrinsic value**, **time value**, and **interest rates**. The intrinsic value represents the difference between the option strike price and the current futures price. A strike price that is immediately profitable to exercise (**in-the-money**) would have greater intrinsic value than a strike price that was **at-the-money** (at or very near the current futures price) or **out-of-the-money** (unprofitable to exercise at the current futures price). Market volatility combined with length of time to expiration and other related market factors contribute to the time value of the option (in other words, the elements that increase the likelihood of option exercise over a period of time).

Time and intrinsic value are reflected in the option premium in much the same way that an insurance premium reflects the calculated risk that the coverage in the policy will be utilized. The greater the volatility and the longer the time until expiration, the higher the option premium will be. The exchange generally lists at least seven strike prices for each option contract: one at or near the futures price, three above and three below.

Option contracts with different strike prices and expiration dates are affected to different degrees by the change in the underlying futures price. Changes in the futures price, however, seldom result in an identical change in the option premium. This relative change in the premium is known as the option's delta. **Delta** measures the sensitivity of option premiums to movements in futures prices. The number assigned as an option's delta represents the change in a specific option's premium for each point of change in the underlying futures price.

For example, if a \$2 increase in the price of cocoa futures is expected to result in a \$1 premium increase for a specific option, the delta is said to be 0.5. Generally, the deeper an option is in-the-money (the more likely to be exercised), the more it responds to futures price changes and delta moves closer to 1. Delta tends to move away from 1 for an option that is more out-of-the-money and less responsive to futures price movements. An understanding of delta is necessary, particularly for a seller/writer of options, in order to assess the risk exposure of an option contract or to assure an efficient hedging program.

Specialized Option Contracts

In addition to regular option listings (for the corresponding underlying futures month), some NYBOT markets also list flexible and serial options.

Flexible options help commercial firms to customize specific option strategies by allowing the user to select certain contract terms and conditions including the option expiration date, strike price and method of exercise (American or European). American style options allow for exercise on any day up until expiration while European style can only be exercised on the final day.

Serial options are short-life options designed to offer additional trading opportunities by having options expire monthly. The underlying futures contract for the serial option is the next expiring futures contract.

Options on Spreads are options on Futures Contract Spreads (simultaneous sale and purchase of a futures contract in any one commodity in two different months at a stated price differential). These specialized options have been available in the **OTC (over-the-counter)** market and are now being offered by exchanges with the accompanying exchange advantages of standardization, liquidity and counterparty guarantees.

Hedging With Options

Traditionally, hedging with futures allows firms to lock in prices for future purchases or sales, assisting in business planning and smoothing operations. Hedging with options provides the ability to manage risk in many different market environments through the payment of option premiums for price protection or earning premium income through option sales to augment business income. Because option holders are never obligated to enter the futures market, purchasing options allows a hedger to guard against adverse price movements at a known cost without foregoing the benefits of favorable price movements.

Trading Options

An option-trading plan involves a thorough assessment of risk exposure and an understanding of the specific capabilities and relative potential gains of a variety of option strategies. Hedgers can utilize options as a kind of price insurance. Investors can use options to add greater flexibility to their trading strategies. Option strategies can be as simple or complex as the goals of the market participants demand.

Buying a Call Option

Call options can provide hedgers with a means to establish a price ceiling. They also can offer strategic choices for speculators. For example, options on U.S. Dollar Index[®] (USD[®]) futures can represent opportunities for investors who seek certain currency sector exposure using asset proxies. The USD[®] tracks the value of the U.S. dollar

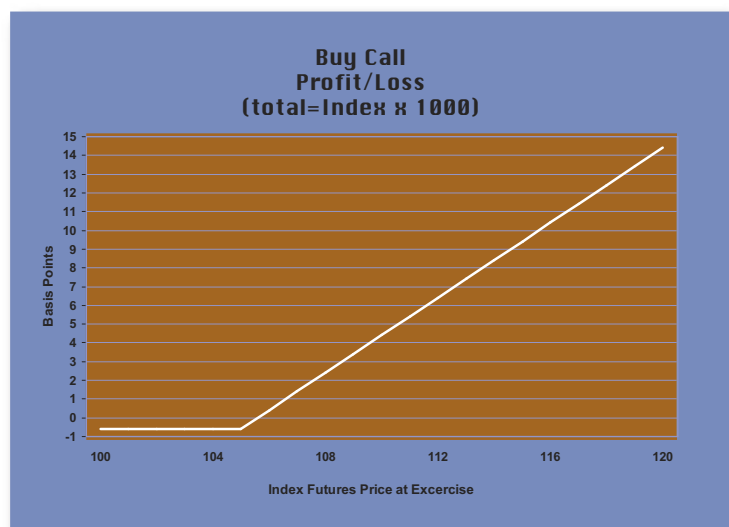
against a basket of six currencies: Euro, Japanese Yen, British Pound, Canadian Dollar, Swedish Krona, Swiss Franc. USD[®] futures and options offers investors the opportunity to trade a global proxy for the U.S. Dollar, without running the risk of exposure to any one specific currency.

SCENARIO:

In early January, a U.S. investor seeks to benefit from a potential appreciation of the U.S. Dollar in the next two months. The investor does not have a strong view on any single currency, but he believes that the dollar will show strength overall. **March USD[®] futures are trading at 102.94.** He would like to limit his risk while still pursuing possible gains from a rise in the value of the dollar.

STRATEGY:

The manager determines that **105 calls are selling for .59 (\$590).** With each contract valued at **\$102,940**, the investor decides to **purchase five Mar 105 calls.** The total premium is therefore **\$2,950.**



RESULT:

By the end of February, the **USDX has risen to 108.20**. The investor exercises his 105 calls and closes out his Long position for a **net gain of 2.61 (3.20-0.59)** or a total of **\$13,050 (2,610 x 5 contracts)**. Had the dollar declined, the investor's total risk exposure would not exceed the premium of **\$2,950 (plus commissions)**.

The call option can serve as a limited risk investment on a bullish market view or (for hedging purposes) as price insurance that establishes a price ceiling without removing the potential gains in the underlying holding from a decline in the dollar.

Buying a Put Option

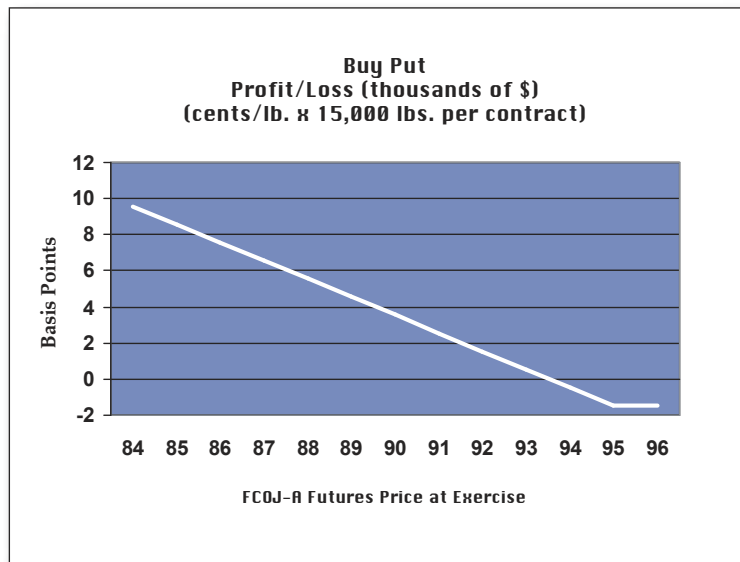
Put options can be used by hedgers to establish a price floor – a kind of price protection – without sacrificing gains in a favorable cash market. An orange juice processor, for example, might wish to protect an inventory purchase by guarding against a price decline.

SCENARIO:

In October, a juice processor seeks to hedge an inventory purchase of **30,000 lbs. of FCOJ**. January FCOJ-A futures (representing 15,000 lbs.) are trading at **96.40 cents/lb.** A put option on a January FCOJ-A futures contract with a strike **price of 95.00 is available at a 1.45 cents/lb. premium**. This means the processor has the right to sell Jan FCOJ-A futures at **95.00 cents/lb.**

STRATEGY:

On October 18, the processor **buys 2 Jan 95 put options at 1.45 cents/lb. (\$217.50/contract x 2 = \$435 total premium)**. The processor has established an effective price floor of **93.55 cents/lb. (95.00 cents/lb. selling price – 1.45-cents/lb. premium)**.



RESULT:

On December 14, Jan FCOJ-A futures are trading at **84.05 cents/lb.** The processor **sells the inventory at 84.05 cents/lb.** Simultaneously, the processor exercises the two Jan 95 put options for a **net futures market gain of 9.50 cents/lb. ($95.00 - 84.05 - 1.45$).** The processor therefore has received an effective **93.55 cents/lb.** for the FCOJ inventory. Had the cash market moved upward during the period, the processor could still profit from the gain (less only the cost of the option).

By comparison, a straight futures hedge would have meant selling 2 FCOJ-A Jan futures on October 18 at **96.40** and closing out the position on December 14 at **84.05** for **12.35-cents/lb.** futures gain. When the 12.35 gain is added to the lower cash FCOJ price of 84.05, the processor would receive an effective **96.40 cents/lb.** for the FCOJ sale. Conversely, the options hedge protected the processor against a downward move while preserving the ability to benefit from a rise. The advantage of locking in a higher price for the FCOJ (with its accompanying margin commitment) must be weighed against the flexibility of the option purchase in offering an upside potential in a favorable cash market. Unhedged, the processor would have been left with an **84.05 cents/lb. price** for FCOJ.

Options with different exercise prices (and different premiums) provide different levels of protection. For example, a **Jan 90 put option** might carry a lower premium of 0.45 cent/lb., but it would reduce the protection by 5.00 cents/lb. With a 90 strike price, the resulting futures market gain of 5.50 ($90.00 - 84.05 - 0.45$) would provide a reduced level of protection and leave the processor with an effective 89.55 cents/lb. price for FCOJ.

Writing Options

Option sellers receive the premium paid by the option buyer. Depending on the option sold writing a call or put option entails considerably greater risk than buying an option. For this reason, option writers must meet significant margin requirements. An option writer's potential gain is limited to the premium received on the sale, while the potential loss could be open-ended. Technically, puts do not have open-ended potential; the maximum loss stops if the futures price reaches zero. Writing options is usually confined to sophisticated traders who understand the calculation of their risk exposure, option pricing and the appropriate hedging of their position. Option sellers generally devise their own risk management programs where they lay off the risk assumed through the trading of futures, other options or a combination.

Writing an FCOJ Call

SCENARIO:

With March FCOJ-A futures trading at **113.50** cent/lb., a trader anticipates in early January that prices will not rise by mid-February.

STRATEGY:

The trader **sells one March 115.00 call for 3.5 cents/lb.** (\$525/contract).

RESULT:

By February, the price has not risen appreciably and March futures are trading at **114**. The option expires worthless and the option writer keeps the whole **\$525** premium. For the call option writer to have suffered a net loss, futures would have to trade above **118.50** at the option expiration. If the price had taken a sharp rise above **118.50**, however, the loss could have been substantial. Selling calls “naked” (without the underlying futures) has unlimited loss possibility.



Trading Futures Combinations

A primary and popular combination strategy involves “**Spread Trades**” in different futures contracts. A futures spread can involve the simultaneous sale and purchase of a futures contract in any one commodity in two different months at a stated price differential. The risk on one side of the spread is generally reduced by the other leg of the spread. Going “long” the spread differential, for example, involves the belief that the spread price differential will increase. Since the price differential normally includes the cost of transportation, storage, insurance, etc., any increase or decrease in that differential beyond the normal costs of carry may signal a spread strategy opportunity.

In a **futures spread**, the investor takes opposite positions in two futures contracts with the objective of profiting from changes in their price relationship. NYSE Composite® Index futures offer a number of spread possibilities. The NYSE Composite Index tracks all the common stocks listed on the New York Stock Exchange.

Intra-Market Spreads

An **Intra-market spread** seeks gain from differences in the price movements of two different expiration months of the same contract, such as the price movement of the June and September NYSE Composite futures contracts. The intra-market spread when underlying market activity affect each contract month to different degrees.

Strategy: On February 20, a trader **sells one NYSE regular June futures contract at 5705.50**. At the same time he **buys one NYSE regular Sep futures contract at 5707.50**.

Sell one June NYSE @ 5705.50

Buy one Sep NYSE @ 5707.50

Result: On March 18, the trader closes out the **June futures at 6020 and a 314.50 (\$15,725) loss** and the **Sep futures at 6030 and a 322.50 (\$16,125) gain**. The net gain from both positions is 8 points or \$400 (8 x \$50).

6020 (June Buy price) – 5705.50 (June Sell price)
= 314.50 point (loss)

314.50 index points x \$50 (one regular contract)
= \$15,725 (loss)

5707.50 (Sep Buy Price) – 6030 (Sep Sell Price)
= 322.50 point (gain)

322.50 x \$50 = \$16,125 (gain)

\$16,125 (profit from Sep) - \$15,725 (loss from June) = \$400 net gain

Inter-Market Spreads

Because the NYSE Composite represents the broad market, futures on the NYSE Index can be spread against futures on a sector index such as the Russell 1000 Index of large cap U.S. equities to capture divergent price moves between the broad market and the large cap stocks. Because both contracts are traded on the NYBOT, favorable spread margin rates are available. Spread strategies can also be implemented using index futures traded on other exchanges such as the S&P 500.

Options on Futures Spreads

Traders in the NYBOT agricultural markets have utilized futures spreads to serve a number of hedging and investment strategies. The use of spread strategies has led to the introduction of options on futures spreads for NYBOT agricultural products, beginning in the sugar market. A generic example of a call option on a spread would give the buyer the right to buy the nearby futures contract and sell the second (or “deferred”) futures contract at a differential equal to the option strike price. A put option on a spread gives the option buyer the right to sell the nearby futures and buy the deferred futures at a differential equal to the option strike price. The options on spreads are specifically tailored for each market. Options on futures spreads are another example of the many customized options strategies that are available through the open outcry markets of the New York Board of Trade.

Using Futures and Options Together

The availability of options allows hedgers to establish combination strategies tailored to specific markets and utilizing both futures and options. In the coffee market, for example, which is characterized by significant price swings, a hedger might choose to lock in a buy price with a traditional futures hedge. At the same time, the hedger doesn't want to miss the opportunity to participate in a sudden price rise. In that case, the purchase of a call that is far out-of-the-money, for a very small premium presents a possible opportunity to profit from a sharp market upturn.

Short Futures Hedge, Buy Call Example

SCENARIO:

On June 15, a coffee producer/exporter contracts with a dealer to deliver 2,500 bags (equivalent to 10 Coffee "C"[®] futures contracts at 250 bags/contract) of prime washed Mexican arabica coffee at **4.00 cents/lb. over Sep futures price** on August 7. The producer believes that without a frost prices will decline significantly in August. The producer wants to establish a hedge against declining prices, but also doesn't want to completely limit the upside potential in case of a frost.

STRATEGY:

On June 15, the producer **sells 10 Sep futures at 70.00 cents/lb.** to protect against a price decline. A target price above **70.00** will lock in an acceptable profit margin. The producer also **purchases 10 Sep 100 calls** (out-of-the-money) for **3.00 cents/lb. each** to provide upside potential. Even with the call purchase, the producer's futures hedge has locked in at least a **71.00 cents/lb. price (70.00 + 4.00 - 3.00)** for his August 7 coffee delivery.

RESULT: (There is a frost.)

On August 7, with futures at **120.00**, the producer closes out his entire futures position (offsets the 100 strike options against the short futures at 70) for a **net futures/options loss of 30 cents/lb.** The producer sells the coffee in the cash market for **124.00 cents/lb. (120.00 + 4.00)**. The net selling price is **93.00 cents/lb. (124 - 30 - 3.00)**. Without the call option, the net selling price would be **71.00 cents/lb.**

RESULT: (There is no frost.) On August 7, the producer **buys 10 Sep futures at 55.00 cents/lb.** to liquidate the futures position for a **15.00-cents/lb. gain.**

On August 7, the producer sells coffee in the cash market for **59.00 cents/lb. (55.00 + 4.00)**. The options are allowed to expire worthless and the net selling price is **71.00 cents/lb.**

$$59.00 \text{ (cash price)} + 15.00 \text{ (futures gain)} - 3.00 \text{ (premium)} = 71.00 \text{ (net price).}$$

Unhedged, the producer would be left with a 59.00 cents/lb. price for coffee.

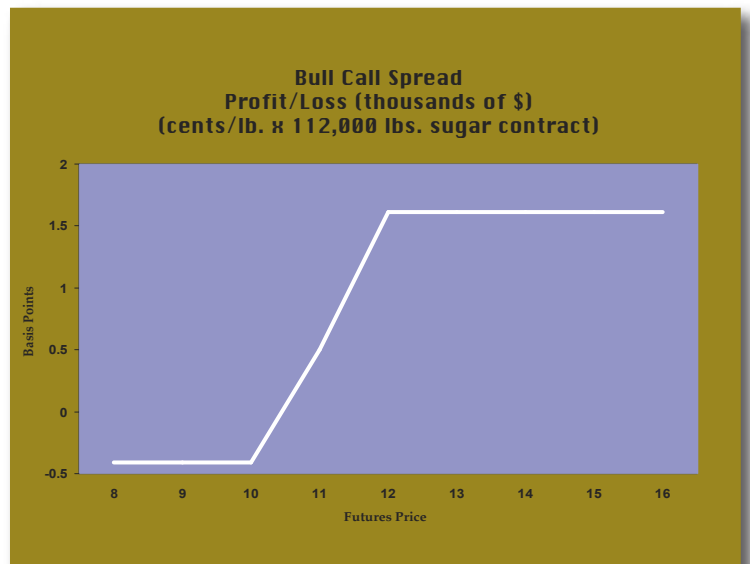
Trading Option Combinations

Combination option strategies can be tailored to suit many different management goals. These strategies often involve buying and/or writing different options in varying combinations of strike price, calendar month and expiration. Option combinations can serve both hedgers and investors. The options spread strategy, like the futures spread, is very common, but it takes a wider variety of forms. An options spread involves the simultaneous purchase and sale of different options even in different months.

Bullish option spreads are strategies that yield a profit when underlying asset prices rise. They are established by purchasing a low strike price option and selling a high strike price option with the same expiration date.

A **Bull Call Spread** (long vertical call spread) will protect the natural short (needs to buy physical commodity) from slightly higher prices. It is a strategy that is most appropriate in a steadily rising market when there is a significant risk that prices might, at any time, suddenly turn downward. This spread affords the opportunity to earn a limited return for a small increase in price with limited risks.

While this strategy limits the potential profit, it also reduces the potential loss. To create the spread, the investor would buy a call and sell another call with a higher strike price and the same expiration (buy the lower strike and sell the higher strike). Investors can construct bull spreads (vertical spreads) with either calls or puts; however, because calls are more oriented to upward price movements than puts, the bull call spread is generally considered a superior strategy.



The maximum potential profit is the difference between the exercise price of the option bought and the exercise price of the option sold minus the net premium paid. The maximum loss is limited to the cost of the premium.*

* In commodities that don't settle for cash, traders are either long or short the market at expiration (e.g., long cotton 70 call for May short 76 call settles at 74 means the trader is "long" cotton).

This strategy is used when one's market view is moderately bullish and when one is willing to limit the upside potential. The downside risk is limited as well, in contrast to the short put position alone.

SCENARIO:

May Sugar No. 11 futures are priced at **9.70 cents/lb.** The market has been rising steadily but an investor is concerned about the potential for a sudden drop in prices. The investor wishes to profit from the rising market while limiting the risk exposure.

STRATEGY:

The investor establishes a call spread by **purchasing a May 10 call for 0.59 cents/lb. and writing a May 12 call to earn 0.20 cents/lb.** The net premium cost is **0.39 cents/lb. or \$436.80 (0.39 cents x 112,000 lbs. = \$436.80).**

RESULT:

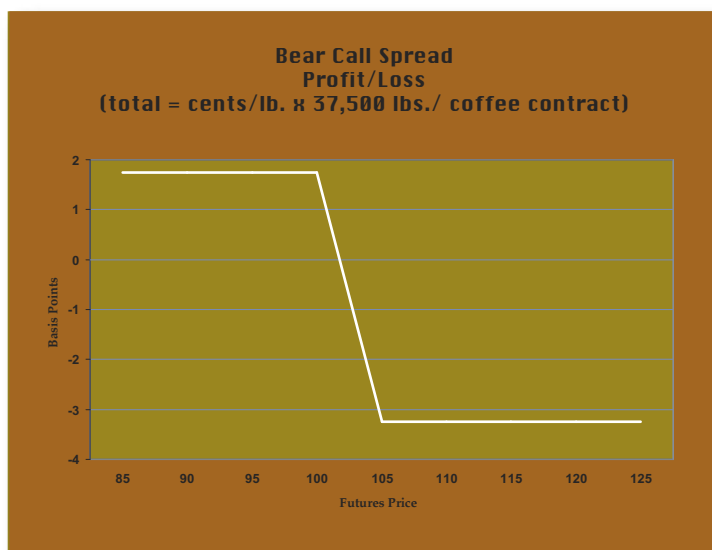
The maximum profit is realized when the underlying futures prices are at or above the higher strike (May 12 call). That profit represents the difference between the two strikes minus the net premium or **\$1,803.20 (1.61 cents/lb.)**. If the price is at **12.50 cents/lb.**, for example, the investor achieves a **\$1,803.20 gain**. With the price at **11.00 cents/lb.**, the **gain** would be **\$683.20 (0.61 cents/lb. x 112,000 lbs.)**. A price of 9.50 cents/lb. would translate into a **loss of \$436.80 (0.39 cents/lb. x 112,000)**.

A Bull Put Spread is created by selling a put with a higher strike price and buying a put with a lower strike price. Its profit/loss characteristics are similar to that for the bull call spread. An advantage of the bull put spread is that it can be created at a credit: the premium earned for the writing the put will be greater than the premium paid for the put purchased. Maximum profit is therefore the net premium received.

In the Bull Put Spread, the hedger will buy a put at a lower strike price and simultaneously sell a put with a higher strike price. This is a credit spread in that the user collects a greater premium from selling the higher strike put than he pays for buying a lower strike put. The upside protection for the natural short is equal to the net premium received. Risk is defined as the difference in strike price minus the net credit. Risk managers frequently use Bull Put Spreads (and Bull Call Spreads) since the maximum profit and loss is well defined prior to entering the trade.

Bearish option spreads are strategies that yield a profit when underlying futures prices decline. They are established by the sale of an option with a relatively low strike price and the purchase of an option with a higher strike price with the same expiration date. Hedgers can construct a bear spread with either calls or puts. But because puts are more oriented to downward price movements than calls, the bear put spread is generally superior.

A **Bear Call Spread** would be appropriate in a steadily falling market when there is a risk that prices might suddenly turn upward. To create the spread, the investor would sell a call and buy another call with a higher strike price for the same delivery month. The maximum profit (the net premium received) is realized when futures are at or below the lower strike. The maximum loss is the difference between the two strikes minus the net premium received.



SCENARIO:

December coffee futures are at **104.00 cents/lb.** An investor believes that prices will decline slightly.

STRATEGY:

The investor **sells a December 100 Coffee "C" call for 12.00 cents/lb.** and **buys a December 105 call for 10.25 cents/lb.** The net premium received is **1.75 cents/lb.** ($12.00 - 10.25 = 1.75$) which is the maximum profit potential of **\$656.25** per bear call spread ($1.75 \text{ cents} \times 37,500 \text{ lbs.} = \656.25).

RESULT:

As the chart demonstrates, the maximum potential loss is greater than the maximum potential profit (\$656.25). With futures at **95.00**, the investor would realize the full profit of **\$656.25**. A futures price of **102.00** would leave a **gain of \$93.75**. A futures price of **110.00** would mean the investor **lost** the maximum amount of **\$1,218.75** ($5.00 \text{ cents} - 1.75 \text{ cents} \times 37,500 \text{ lbs.}$).

A **bear put spread** can be created by selling the put with the lower strike price and buying the put with the higher strike. Its profit/loss characteristics are similar to that for the bear call spread. Maximum profit is the difference between strike prices less the premium paid. Maximum risk is equal to premium paid. This spread is designed to protect against a limited price fall, but with protection against a large price increase.

Calendar spreads involve the purchase and sale of options with different expiration months. Although the Short Call Calendar Spread is not considered a typical hedging strategy (it is speculative in nature), it can be used by a hedger in a neutral stable (market is moving sideways with little or no volatility). A calendar spread, sometimes called a time spread, entails the sale of an option for a nearby maturity and the simultaneous purchase of an option for a more distant maturity. The idea behind this strategy is that the passage of time will erode the value of the near term option at a faster rate than the far-out option, possibly generating a profit when the near-term option expires.

Calendar spreads may be established with either calls or puts. As with **vertical spreads**, one would choose calls for the calendar spread if the overall viewpoint on price movement is bullish. If the strike prices of each maturity are the same, the strategy is also called a **horizontal spread**. If the strike prices are close to the market price, the strategy is regarded as neutral, that is, no view of the direction of price movement, and the trader is simply "selling time." If the trader is bullish, he/she would choose strike prices that are above the market for the call calendar spread. If both different strikes and maturities are used, the spread is called a diagonal spread. In this situation one is seeking the ability to close out the short term option at a sufficient profit that the long term option will essentially be free. The risk in this strategy is that the underlying commodity price will rise or drop substantially.

Short Put Calendar Spread

Although the Short Put Calendar Spread is not considered a typical hedging strategy (it is speculative in nature) it can be used by a hedger in a neutral stable (market is moving sideways with little or no volatility). A put calendar spread is a bearish time spread. The principles are the same as those of a call calendar spread.

Ratio spreads seek to capitalize on the fact that the time value of an at-the-money option responds differently to a given change in the futures price than the time value of an out-of-the-money option. A ratio call spread, for example, can be constructed by buying a number of calls at a lower strike price and selling a greater number of calls at a higher strike price. The spread's value is highest when the market is at or near the upper strike price.

Although the **Short Call Ratio Spread** is not considered a typical hedging strategy (it is speculative in nature) it can be used by a hedger in a neutral stable (market is moving sideways with little or no volatility). In this strategy you simultaneously sell two call options at a higher strike price and buy one call option at a lower strike price. You expect a slight rise in the market, but want to be protected against a market decline. The two premiums you receive from the calls you sell will nearly or totally offset the premium you pay for the call you buy.

The **Short Put Ratio Spread** is also not considered a typical hedging strategy (it is speculative in nature). It can be used by a hedger in a neutral stable (market is moving sideways with little or no volatility). This strategy involves the selling of two put options at a lower strike price and the buying of one put option at a higher strike price. The market point of view is slightly bearish: anticipating a slight market decline and a willingness to limit gains if the market rises. The risk in this position is that the market drops sharply.

Buying Options Combinations (*Straddles and Strangles*)

Situations can exist in which prices are expected to move either sharply higher or sharply lower, depending perhaps on events that have not yet occurred or information not yet available. Significant uncertainty exists as to which direction the market will move. The strategy of buying both a call and a put allows the investor to profit from a significant price change in either direction. Specifically, if prices increase, the call option could become worthwhile to exercise; if prices decrease, the put option could become worthwhile to exercise. Profitability hinges on the gain from one or the other option being greater than the total premiums paid for the two.

Maximum risk is that neither option will become worthwhile to exercise and the entire premium will be lost. Potential profit may be unlimited (minus the total premiums paid for the two options).

A **straddle** is produced through the purchase or sale of an equal number of calls and puts having the **same exercise price and expiration**.

SCENARIO:

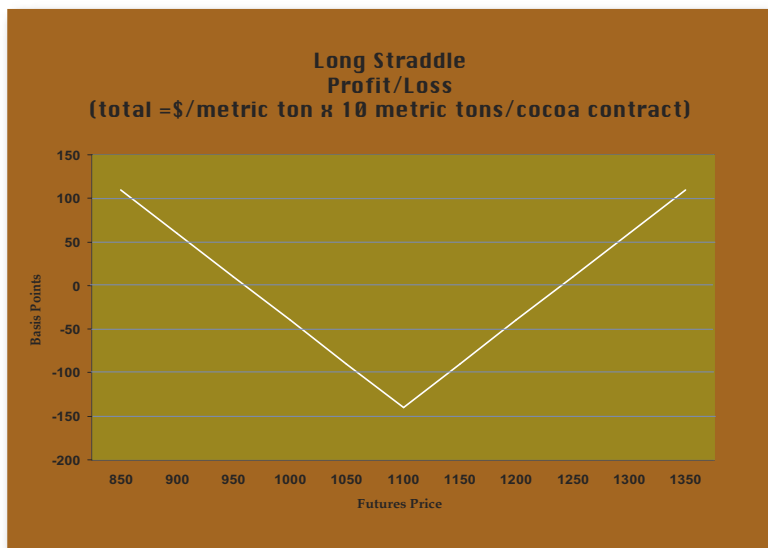
In May, cocoa futures are trading at **\$1,100/metric ton**. Expecting a major price change (either higher or lower) over the next few months, an investor wants to be in position to profit from either direction of the price jump.

STRATEGY:

The trader pays a premium of \$70/metric ton for an at-the-money Sep 1100 call, plus a premium of \$70/metric ton for an at-the-money Sep 1100 put. Total premium cost is \$1,400 (\$140 X 10 metric tons).

RESULT:

The combination will produce a profit at expiration if prices move either below \$960 (put strike of 1100 less \$140 premium cost) or above \$1,240 (call strike plus premium cost). The trader stands to lose the entire amount of the premium (\$1,400) only if neither option is worthwhile to exercise (i.e., the price of Sep cocoa is exactly \$1100/metric ton at expiration).



A **strangle** is produced through the purchase or sale of an equal number of calls and puts having **the same expiration and different strike prices** (the strike price of the call exceeds that of the put). The strangle buyer expects to profit from a large price movement in either direction of the underlying futures contract.

Writing Combinations (*Straddles and Strangles*)

By combining the sale of puts and calls, an individual can create an investment opportunity that benefits from stable, slow moving markets. A combination can be sold with either identical put and call strikes (straddle) or different put and call strikes (strangle). The strategy will be profitable, if at expiration, the futures price is at (identical strikes) or between (different strikes) the strike price(s).

Maximum profits are realized when neither option is exercised. Potential losses are unlimited on the upside but are cushioned by the premium income. Downside loss is fixed as price can't go lower than zero.

The strangle writer hopes to retain the premium received from granting options through a stable price environment over time. This strategy involves considerable risk in a historically volatile market such as coffee. If the prices move sharply higher or lower, the potential losses could be substantial. Such strategies are suitable only for the most experienced options traders.

A Short Strangle Example:

SCENARIO:

In October, Coffee "C"® futures are trading at **110.20 cents/lb.** An investor anticipates that prices will remain at or near that level. Selling a **May 105 put** can earn a premium of **4.65 cents/lb.** and a **May 115 call** may be sold for **5.30 cents/lb.**

STRATEGY:

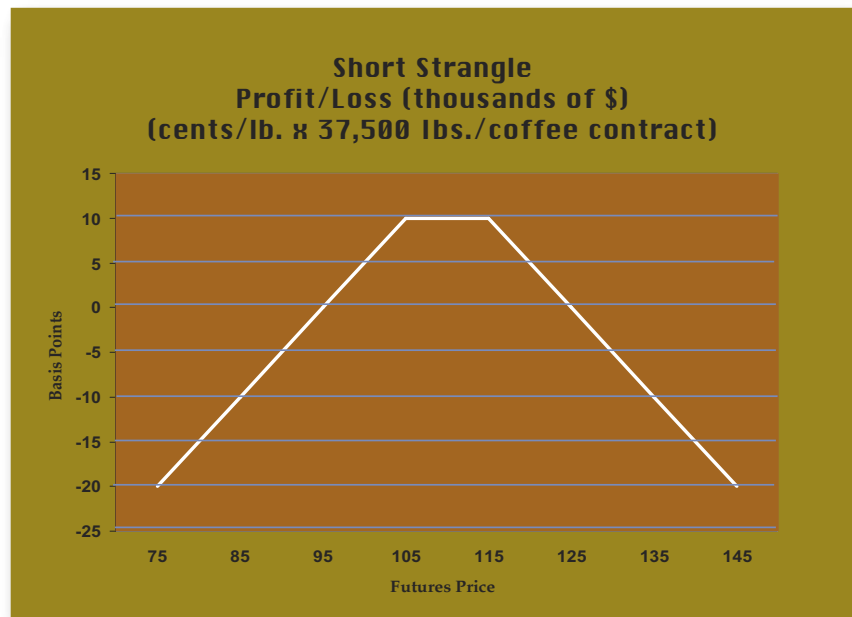
Investor writes the **May 105 put at 4.65 cents/lb.** and the **May 115 call at 5.30 cents/lb.** for a total premium income of **9.95 cents/lb. or \$3,731.25** per combination [(4.65 cents + 5.30 cents) x 37,500 lbs.].

RESULT:

May futures expire at **111.50.** Both options expire worthless and the investor keeps the total premium of **9.95 cents/lb. or \$3,731.25** per combination. If futures decline to **100,** the **gain** would be **\$1,856.25.** [(100 cents/lb. - 105 cents/lb. + 9.95 cents/lb.) x 37,500 lbs.]. If futures move above 115 to **140,** the **loss** would be **\$5,643.75** [(140 cents/lb.-115 cents/lb. + 9.95 cents/lb.) x 37,500 lbs.].

SUMMARY:

This brochure describes several options strategies. Options can be used in an ever-growing number of sophisticated combinations. Options traders at the New York Board of Trade specialize in customized combinations. For more information consult a licensed broker.



Conclusion

The markets of the New York Board of Trade present opportunities as well as risk. Futures and options offer different advantages and disadvantages for both hedgers and investors. Futures offer more certainty while options offer more flexibility. This brochure has been designed to provide an introductory understanding of futures and options trading in the diverse NYBOT markets. The brochure includes a representative sampling of some of the strategies used by futures and options traders. The examples do not constitute trading or investment recommendations. They are offered solely for illustration purposes. The NYBOT produces a number of brochures and other materials that describe its individual markets and products. Further information on any of the NYBOT markets, as well as other educational material on the trading of futures and options can be found on the NYBOT web site at www.nybot.com – or by contacting a broker or NYBOT directly.

Glossary

Actuals: the physical (cash) commodity.

American-style option: an option that can be exercised on any business day before the option's expiration.

Arbitrage: the simultaneous purchase and sale of similar products in different markets (cash or futures) to take advantage of price discrepancies.

Assign: to designate an option writer (seller) for fulfillment of his obligation to sell a futures contract (call option writer) or buy a futures contract (put option writer).

At-the-Money: an option with an exercise (strike) price equal to the current futures price.

Backwardation: Market situation in which futures prices are progressively lower in the distant delivery months. The opposite of "contango", or carrying-charge market.

Basis: the difference between a cash price at a specific location and the price of a particular futures contract for the same commodity. Basis is usually calculated using the nearby futures contract.

Bearish: a belief that prices will decline.

Bullish: a belief that prices will rise.

Bid: an indication of a willingness to buy at a stated (bid) price

Bid/Ask Spread: The difference between the highest bid price (buy price) and the lowest offer (ask/sell price). The spread widens and narrows in relationship to the market conditions and the level of trading activity.

Buyer: an individual (holder of an option) who buys a call or put option. A holder has a "long" options position.

Call Option: a contract which gives the holder the right, but not the obligation, to buy (go long) a futures contract at a specific price, within a specified period of time.

Carrying Charges: inventory costs for a physical commodity or a financial instrument over a period of time (includes insurance, storage and interest paid to carry the position). Carrying charges are part of the pricing of futures contracts in the months listed further out from the nearby.

Cash Market: a market (physical) in which transactions for immediate purchase and sale (actual transfer of ownership) of the physical commodity are made.

Cash Settlement: method of settling futures or option contracts by final cash pricing (based upon procedures specified in the contracts) with the resulting debit or credit as an alternative to delivery.

Clearing Corporation (Clearinghouse):

an exchange-designated entity responsible for settlement of futures and options transactions.

Clearing Member: a firm that is a member of the exchange and the exchange's clearing corporation and holds trader positions.

Combination: any position involving the simultaneous purchase and/or sale of both puts and calls. Combinations can also include futures positions.

Commodity Futures Trading

Commission (CFTC): the federal agency responsible for regulation of commodity futures and options trading in the United States.

Commodity Pool Operator (CPO):

an individual or organization (generally registered with the CFTC) that operates or solicits funds for a commodity pool.

Commodity Trading Advisor (CTA):

individuals or firms (generally registered with the CFTC) that, for a fee, provide commodities analysis or reports and advise others on commodity futures and options trading.

Contango: Market situation in which futures prices are progressively higher in distant delivery month. Opposite of "backwardation" market.

Delta: the amount by which an option premium changes relative to a price change in the underlying futures contract.

Derivatives: a financial instrument, traded on or off the exchange, (e.g., a futures or options contracts) the price of which is derived from an underlying commodity, index, financial product, or other derivative instrument.

Delivery Month: The specified month for the maturing of a futures contract during which, if a buyer or seller has not closed out a long or short contract position, the contract must be satisfied by delivery or cash settlement according to exchange rules.

EFP: An exchange of futures for physicals, which is a transaction in which one party buys the physical commodity and simultaneously sells futures and the other party does the opposite-sells the physical commodity and simultaneously obtains long futures position. In the NYBOT Rules they are referred to as "Against Actuals" (AA).

Electronic Order Routing (EOR): a system that allows market participants to enter an order electronically which is then sent directly to the trading floor (a booth screen or a handheld in the ring); when the order is filled the same EOR system sends it simultaneously to the TIPS for matching and clearing and a confirmation to the trader.

European-Style Option: an option that can be exercised only at the option's expiration.

Exercise: action taken by option holder to assert rights under terms of option contract. Call holder is assigned a long futures contract at the strike price, or put holder is assigned a short futures contract at the strike price.

Exercise Price: the price (also called strike price) at which a person may purchase or sell the underlying futures contract upon exercise of an option.

Expiration Date (option): the last day when an option may be exercised into the underlying futures contract. (See contract specifications for details of expiration.) American-style options allow exercise on any business day prior to expiration. European-style options can be exercised only on expiration day.

Flexible Option: an option that allows the user to select certain contract terms and conditions, including the strike price, option expiration date and style of exercise.

Floor Broker: individual exchange member (registered with the CFTC) who stands in the exchange-trading ring executing orders for customers.

Floor Trader (Local): person with exchange trading privileges who executes trades for his/her own account.

Forward Contract: a cash market transaction in which two parties agree to the purchase and sale of a commodity at some future time under such conditions as the two agree.

Fungibility: ability to trade the same instrument interchangeably across exchanges or other marketplaces.

Futures Commission Merchant (FCM): individuals, associations, partnerships and corporations engaged in soliciting or in accepting orders for futures and options and charging commissions for their services; such entities must be registered with the CFTC.

Futures Contract: a legally binding and transferable agreement to make or take delivery of a standardized amount and grade of a commodity (or a cash equivalent) during a specific month, under terms and conditions established by the designated contract market upon which trading is conducted.

Hedge: the purchase or sale of futures and/or options contracts in order to protect against unfavorable price movements in cash markets.

In-the-Money: an option that has intrinsic value. For calls: exercise price is less than the market price of the underlying futures contract. For puts: exercise price is greater than the market.

Intrinsic Value: the dollar value of the difference between the option strike price and the current futures price that would be realized in the event of option exercise.

Introducing Broker (IB): independent brokerage firm (registered with CFTC) that “introduces” business to an FCM.

Leverage: potential for a large percentage profit or loss in the underlying investment.

Limit Order: order to buy or sell a contract at a stated price or better.

Liquidity: a market where selling and buying can be accomplished with ease, because of the presence of a large number of interested buyers and sellers willing and able to trade substantial quantities at small price differences. Liquidity can be measured by the amount of open interest – the number of positions entered and not exited.

Locals (Floor Traders): exchange members (registered with the CFTC) that stand in the exchange trading ring and trade for their own accounts.

Long: a market position that has been established through the purchase of an option or future.

Margin: funds that must be deposited by buyers and sellers to help ensure performance of the contract terms (initial margin – at time of opening the position; variation margin – additional deposits required to maintain margin level). Margins are set and adjust periodically by the exchange.

Margin Call: call for additional margin payments (variation margin) to bring original margin deposits up to required minimum level following adverse price change in the market.

Marked-to-the-Market: the daily process of updating margin accounts to reflect price movements in the market.

Market Order: order to buy or sell a contract immediately upon receipt by the floor broker.

National Futures Association (NFA): a self-regulatory organization charged with monitoring firms and individuals handling orders in the futures markets (floor brokers, locals, FCMs, IBs, etc.)

Nearby Futures: the futures contract closest to expiration.

Offer (Ask): an indication of a willingness to sell at a stated (offer) price.

Open Interest: represents the total number of open futures contracts that have not been offset by opposite futures transactions or fulfilled by delivery. While each open transaction represents a buyer and a seller, the calculation of the open interest figure includes only one side of the contract.

Open Outcry: a method of trading by public auction that involves making verbal bids and offers for futures and options contracts.

Option: contract that gives the holder the right, but not the obligation, to purchase (call) or sell (put) the underlying futures contract at a specific price within a specified period of time.

Original (Initial) Margin: minimum deposit required to guarantee contract fulfillment at the time the futures or options position is established.

Out-of-the-Money: an option with no intrinsic value. For calls: exercise price is more than the market price of the underlying futures contract. For puts: market price exceeds exercise price.

Position: open contracts that have been bought or sold. Those having a long or buy position can liquidate by selling or going short; those having a short or sell position can liquidate by buying or going long. In addition, option positions can be exercised or allowed to expire.

Premium: amount paid for an option. The option cost is agreed upon between the buyer and seller.

Price Discovery: result of open outcry trading on the exchange floor. Prices established on the trading floor are widely used reference prices for commerce in the underlying commodity.

Put Option: a contract that gives the holder the right, but not the obligation, to sell a futures contract at specific price, within a specified period of time.

Ring (Pit): a specially constructed area on the trading floor of an exchange where trading in future and options is conducted in open outcry.

Round Turn: a completed futures transaction involving both a purchase and a liquidating sale or a sale followed by a covering purchase.

Serial Option: a short-life option offering additional option expirations on existing futures contracts.

Settlement Price: the price at which the futures clearinghouse settles all accounts between clearing members each day; price also used to determine margin calls and invoice prices for deliveries made against futures contracts.

Short: a market position that has been established through the sale of an option or futures contract.

Spreads: for futures – positions that involve the purchase or sale of one futures delivery month against the purchase or sale of another delivery month of the same commodity. For options – positions that result from the sale of options on the same futures contract on which options are purchased; terms of the option may differ as to expiration date, strike price, or both. The term also refers to the difference between the price of one futures month and the price of another month of the same commodity.

Spot Market: Cash market for immediate delivery and payment for the product.

Spot Price: cash price for a physical commodity at a given time and place

Spot Month: nearest delivery month of a futures contract.

Stop Order: an order to buy or sell contracts at the market once a certain price level is reached.

Straddle: produced through the purchase or sale of an equal number of calls and puts having the same exercise price and expiration.

Strangle: produced through the purchase or sale of an equal number of calls and puts having the same expiration and for which the strike price of the call exceeds the put.

Strike Price: see exercise price.

Time Value: part of the option premium that reflects excess over intrinsic value. It is based on the time left until expiration and decreases as expiration nears.

Tick: minimum price fluctuation of a futures or options contract.

Variation Margin: additional margin payments to bring original margin deposits up to the required levels in relation to changing prices.

Volatility: a measure of the size and frequency of price fluctuations in the past or in the future. Markets with frequent large price changes are said to be highly volatile.

Volume: total number of contracts traded.

Writer: option seller or grantor

The New York Board of Trade (NYBOT), New York's original futures exchange, provides a global marketplace for a wide variety of traditional and innovative agricultural and financial products including futures and options for cocoa, coffee, cotton, ethanol, orange juice, sugar and currencies as well as equity, currency and commodity indexes.

Beginning in 1870 with the founding of the New York Cotton Exchange, and in 1882 with the creation of the Coffee Exchange of the City New York, the NYBOT exchanges have built and sustained crucial futures and options markets through dangerous and difficult times. The exchanges of the New York Board of Trade have a long history of providing effective price discovery and risk management tools for major international industries as well as opportunities for well-informed investors. Risk management is the foundation of our business. We provide a fair, transparent and carefully regulated marketplace where hedgers and investors can pursue their business goals.

The New York Clearing Corporation (NYCC) – the designated clearinghouse for all NYBOT markets – represents over a century of continuous financial integrity.



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