

HOW
TO GET STARTED TRADING CME INTEREST RATE PRODUCTS



CHICAGO MERCANTILE EXCHANGE®

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Since the introduction of financial futures at the Chicago Mercantile Exchange in 1972, the importance of futures in transferring financial risk has been proven by the explosive growth in the market. The vast array of CME interest rate products allows professionals to manage interest rate risks ranging from one day to ten years.

Interest rates, which loosely can be defined as the price of money, affect the livelihoods of individuals and businesses each and every day. The cost of a home mortgage, the finance charge applied to a credit card balance, the amount of interest received on a savings account or the coupon on a corporate bond issue are all examples of the interest rates that influence our personal and commercial activities. Like all goods and services, interest rates are determined by the market forces of supply and demand; however, the federal government also can influence key interest rates via monetary policy, that is, by adjusting them upward or downward to slow down or stimulate the economy. Interest rate levels often are regarded as key indicators of a country's economic health.

The money market comprises the markets for short-term, heavily traded credit instruments with maturities of less than one year. Money market instruments include Treasury bills, commercial paper, bankers' acceptances, negotiable certificates of deposit, Federal Funds, and short-term collateralized loans. While the markets for these various instruments are distinct, their respective interest rates reflect general credit conditions with adjustments for differences in risk and liquidity.

As the money markets have become more liquid, money managers borrow and lend in whichever markets offer a price advantage. No longer willing to leave balances as unproductive, non-interest-earning demand deposits, corporations today are making more aggressive use of cash management techniques. Cash market participants primarily use the CME's interest rate products for pricing and hedging their money market positions.

CME INTEREST RATE PRODUCTS

The CME lists a variety of contracts on short-term US and foreign interest rates. Here's a brief description of the markets on which the CME products are based:

THREE-MONTH EURODOLLARS

Eurodollars are simply US dollars on deposit in commercial banks outside of the United States. The Eurodollar market has burgeoned over the past 30 years as the dollar has become a world currency. Eurodollar deposits play a major role in the international capital market. The interbank market for immediate (spot) and forward delivery of offshore dollars is deep and liquid, giving banks the ability to fund dollar loans to foreign importers without incurring currency exchange risks.

Eurodollar deposits are direct obligations of the commercial banks accepting the deposits. They are not guaranteed by any government. Although they represent low-risk investments, Eurodollar deposits are not risk-free.

The CME's Eurodollar time deposit futures contract reflects the London Interbank Offered Rate (LIBOR) for a three-month, \$1 million offshore deposit. A total of 40 quarterly futures contracts, spanning ten years, plus the two nearest serial (non-quarterly) months are listed at all times. Eurodollar futures are the cornerstone of the Exchange's interest rate quadrant and are the most liquid exchange-traded contracts in the world when measured in terms of open interest.

ONE-MONTH LIBOR

LIBOR is a reference rate for dealing in Eurodollar time deposits between commercial banks in the London Interbank Market. LIBOR often is the benchmark rate for commercial loans, mortgages, and floating rate debt issues. The CME's LIBOR contract is analogous to the Eurodollar contract, but represents one-month LIBOR on a \$3 million deposit. The Exchange currently lists twelve consecutive monthly LIBOR futures at any given time.

13-WEEK TREASURY BILLS

As direct obligations of the US government, Treasury bills are considered risk-free debt instruments and provide the foundation for the money markets because of their unique safety and liquidity. Because of their risk-free nature, changes in the yield on T-bills reflect “pure” interest rate movements. Four quarterly T-bill futures contracts are available for trading at any given time.

EUROYEN

Analogous to Eurodollars, Euroyen are Japanese yen deposits outside Japan. Like the dollar, the Japanese yen is globally traded on a 24-hour-a-day basis. The CME’s Euroyen futures are fully fungible with the Euroyen

contracts traded on the Singapore International Monetary Exchange (SIMEX). Via the Mutual Offset System with SIMEX, open positions may be held either in Chicago or Singapore. Like the SIMEX, the CME currently lists twelve quarterly Euroyen contracts, covering three years.

ONE-MONTH FEDERAL FUNDS

Federal Funds are funds in excess of reserve requirements held by member banks of the Federal Reserve System, transferable between those banks within one business day. Because the reserve accounts banks maintain at the Fed are not interest-bearing, selling Fed Funds allows institutions to earn a positive return on balances that might otherwise lie idle. The most common Fed Funds transaction is an overnight, unsecured loan between two banks.

The CME lists twelve consecutive Fed Funds futures, the same as LIBOR, with a new month added on the first business day following expiration of the front-month contract.

91-DAY CETES* (MEXICAN TREASURY BILLS)

Certificados de la Tesorería de la Federación, commonly referred to as Cetes, are government-issued, short-term discount instruments that are denominated and paid in Mexican pesos. The Cetes market is considered the benchmark for short-term interest rates in Mexico. Like US Treasury bills, Cetes are issued in a variety of maturities, with 28-day and 91-day maturity issues the most common.

28-DAY TIIE (MEXICAN INTEREST RATE)

The Tasa de Interés Interbancario de Equilibrio, or TIIE, is a benchmark interbank interest rate that represents the price at which Mexican banks are willing to borrow from or lend to the Bank of Mexico (the country’s central bank). The TIIE is an equilibrium or market-clearing rate.

THE CME-SIMEX MUTUAL OFFSET SYSTEM (MOS)

In 1984, the Chicago Mercantile Exchange, in partnership with the Singapore International Monetary Exchange, pioneered an innovative approach to futures trading known as the Mutual Offset System (MOS). Through the MOS, contracts opened on one exchange can be liquidated or held at the other. The CME-SIMEX link effectively extends the trading hours of both exchanges beyond their operating hours, allowing traders to manage their overnight risk. This agreement, the first international futures trading link of its kind, is available for both Eurodollar and Euroyen futures.

For a more detailed description of MOS, please consult the brochure titled *CME/SIMEX Mutual Offset System: The World’s Most Successful Trading Link*.

INTEREST RATE FUTURES CONTRACT MONTHS

Eurodollar, LIBOR, TIE, Fed Funds and T-bill contracts are listed for all calendar months. Cetes and Euroyen contracts are on a March quarterly cycle—March, June, September and December. A contract month identifies the month and year in which the futures or options contract ceases to exist. It is also known as the “delivery month.” This procedure ensures that the futures price converges with the cash market price. However, the vast majority of market participants close out their positions before expiration by establishing new positions in the next month or rolling their positions forward. In fact, only a very small percentage of futures transactions reach delivery.

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

INTEREST RATE FUTURES BASICS

All CME interest rate futures contracts are traded using a price index, which is derived by subtracting the futures’ interest rate from 100.00. For instance, an interest rate of 5.00 percent translates to an index price of 95.00 ($100.00 - 5.00 = 95.00$). Given this price index construction, if interest rates rise, the price of the contract falls and vice versa. Therefore, to profit from declining interest rates, you would buy the futures contract (go long); to profit from a rise in interest rates, you would sell the contract (go short). In either case, if your view turns out to be correct, you will be able to liquidate or offset your original position and realize a gain. If you are wrong, however, your trade will result in a loss.

The design of most CME interest rate futures contracts features a minimum price move, or “tick” of 0.01. Gains or losses, therefore, are calculated simply by determining the

INTEREST RATE FUTURES

number of ticks moved, multiplied by the value of the tick. For the first four quarterly and two serial Eurodollar and T-bill contracts, as well as all LIBOR contracts, the minimum tick is .005, or \$12.50. Thus a price move of from 95.005 to 95.01 for example, would mean a \$12.50 gain for the long position and a \$12.50 loss for the short position. For the Euroyen contract and the Mexican interest rates, the treatment is analogous, but the gains and losses are realized in Japanese yen and Mexican pesos, respectively. That is, each 0.01 price move gives a ¥2,500 or MP 50 result.

HEDGING WITH INTEREST RATE FUTURES

Interest rate futures can be used to hedge against an existing or future interest rate risk. This is accomplished by maintaining a futures position that will generate profits to cover (or offset) the losses associated with an adverse move in interest rates. It is important to note that a

properly constructed futures hedge can also generate losses that will offset the effects of a beneficial interest rate move. In addition, because futures are quoted in terms of price rather than interest rate, futures exhibit an inverse relationship between rates and price. A borrower would sell futures to protect against an interest rate rise, i.e., to profit from a decrease in the futures price, and a lender would buy futures to hedge against an interest rate decline or capitalize on an increase in the futures price. Consider these examples:

Hedging a Forward Borrowing Rate

In late September a corporate treasurer projects that cash flows will require a \$1 million bank loan on December 16. The contractual loan rate will be 1% over the three-month Eurodollar (LIBOR) rate on that date. LIBOR is currently at 5.56%. The December Eurodollar futures, which can be used to lock in the forward borrowing rate, are trading at

94.24, implying a forward Eurodollar rate of 5.76% (100.00–94.24). By selling one December Eurodollar futures contract, the corporate treasurer ensures a borrowing rate of 6.76% for the three-month period beginning December 16. This rate reflects the bank's 1% spread above the rate implied by the futures contract.

Modifying Maturities

With either assets or liabilities, hedging can serve as an alternative to restructuring the portfolio in the cash markets. Asset managers can lengthen the effective maturity of short-term investment assets by buying futures contracts, or shorten the effective maturity by selling futures. Assume a lender places \$1 million in a three-month time deposit at 5% in September. After some time, the lender believes that rates will decline in the coming months and wants to extend the duration of the loan out to six months. At this time, the lender can purchase a December Eurodollar futures contract, thereby synthetically

extending the duration of the loan. Liability managers can achieve the same effects by doing the opposite, i.e., selling futures to lengthen their liabilities and buying futures to shorten them.

The use of futures may be an attractive alternative when physical restructuring is not possible; for example, term deposits cannot be bought back prior to their maturity dates. It also may be less expensive to use futures because transaction costs may be lower than those in cash markets, or liquidity conditions in the cash market would result in substantial market penalties.

Swapping Fixed and Floating Rates

Many swaps dealers incorporate CME interest rate futures into their portfolios to hedge and/or arbitrage their money market swaps. One of the most common uses of Eurodollar futures is to convert a floating interest rate exposure to a fixed rate,

or vice versa. When using futures contracts as part of a swaps transaction, it is important to note that futures cover single interest periods only, whereas swaps are multi-period instruments. To hedge between futures and swaps then, it is necessary to transact a strip, i.e., a coordinated purchase or sale of a series of futures contracts with successive expiration dates. For a detailed description of using Eurodollars to construct interest rate swaps, see the CME strategy paper titled "Comparing Eurodollar Strips to Interest Rate Swaps."

Locking in a Funding Rate

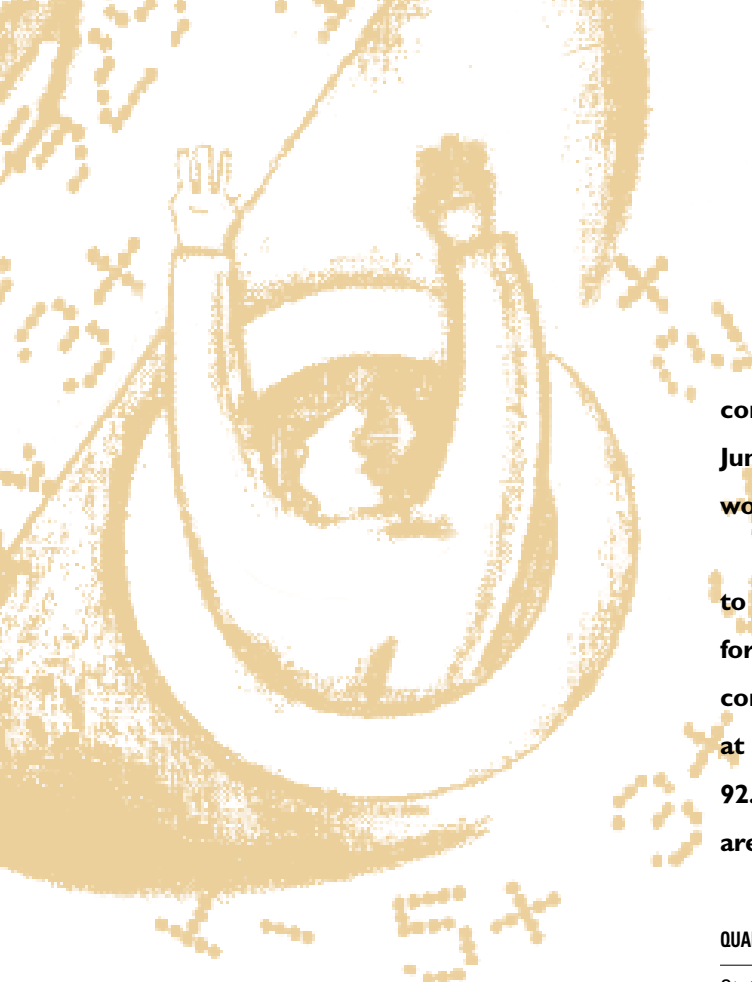
Consider the case of a bank that funds itself with three-month Eurodollar Time Deposits at LIBOR. Let's assume this bank has a customer who wants a one-year, fixed-rate loan of \$10 million, with interest to be paid quarterly. At the time of the loan disbursement the banker raises three-

month funds at 5.75%, but has to roll over this funding in three successive quarters. If he does not lock in a funding rate and interest rates rise, the loan could prove to be unprofitable.

The three quarterly re-funding dates fall shortly before the next three Eurodollar futures contract expirations in March, June, and September. At the time the loan is made, the price of each contract is 94.12, 93.95, and 93.80, corresponding to yields of 5.88%, 6.05%, and 6.20%, respectively. Coupled with the initial funding rate of 5.75%, the bank could lock in a cost of funds for the year equal to 6.11%.*

The banker knows that the money needed to fund the loan can be locked in for a year at approximately 6.11% in the futures market. This rate can be used as a basis for quoting the fixed rate to the customer. Generally speaking, the rate quoted will cover hedging expenses and allow a profit margin.

* $\left[\left(\left(1 + .0575 \times \frac{91}{360} \right) \times \left(1 + .0588 \times \frac{91}{360} \right) \times \left(1 + .0605 \times \frac{91}{360} \right) \times \left(1 + .0620 \times \frac{91}{360} \right) - 1 \right) \times \frac{364}{360} \approx 6.11\% \right]$



contracts would be liquidated in June; and September contracts would be liquidated in September.

In this scenario, the banker is able to re-fund at 7.00%, 7.15%, and 7.35% for the respective quarters. The corresponding futures are liquidated at 92.98 (7.02%), 92.80 (7.20%), and 92.66 (7.33%). The overall results are shown below.

QUARTERLY EURODEPOSIT COSTS

Qtr 1:	$\$10 \text{ million} \times .0575 \times 91/360$	=	\$145,347
Qtr 2:	$\$10 \text{ million} \times .0700 \times 91/360$	=	\$176,944
Qtr 3:	$\$10 \text{ million} \times .0715 \times 91/360$	=	\$180,736
Qtr 4:	$\$10 \text{ million} \times .0735 \times 91/360$	=	\$185,792
			\$688,819 (6.89%)

LESS THE FUTURES PROFITS

Mar: 10 contracts x (9412-9298) x \$25 =	\$28,500
Jun: 10 contracts x (9395-9280) x \$25 =	\$28,750
Sep: 10 contracts x (9380-9266) x \$25 =	\$28,500
Futures gain	(\$85,750) (0.86%)
Total interest expense	\$603,069
Effective rate	6.03%

If the loan is made and the risk is hedged in the futures market, the banker would sell 10 contracts for each expiration, reflecting the funding need of \$10 million per quarter. Then, on the refinancing dates, the banker would take in three-month Eurodeposits and simultaneously liquidate the appropriate hedging contracts by buying them back. With the March refunding, the March contracts would be liquidated; June

The unhedged interest expense over the four quarters would have been 6.89%, substantially higher, in fact, than the hedged expense. It should be recognized that effective futures hedges materially lock in an interest rate, precluding both advantage and loss from rate movement. Had interest rates moved lower over the life of the hedge, the bank would have incurred an opportunity cost roughly equal to the difference between the effective (hedged) rate and the lower rate which could have been realized by forgoing the use of futures.

Recall that the banker had expected to lock up funding at 6.11%. In fact, funds were acquired at 6.03%, or approximately eight basis points lower. This discrepancy occurred because of less-than-perfect convergence between the cash re-funding rates and the futures liquidation rates. If the bank had funded at exactly the same rate as the futures liquidation rate, the target would have been achieved. In this case,

however, the actual funding over the term of the loan was, on average, one and one-third basis points lower than the futures liquidation rates. Put another way, these basis adjustments positively affected the performance.

The minimal difference between the target rate and the effective funding rate can be attributed to the fact that the re-funding dates were quite close but not identical to the futures expiration dates. If the respective dates were further apart, the funding rates and the futures rates would not necessarily converge as closely as those used in the above example.

This example of a one-year loan funded with three-month deposits illustrates a negative interest rate “gap”— that is, where shorter-term liabilities are funding a longer term asset, and rising interest rates will have an adverse impact. The same basic hedging approach can be followed to remedy an overall balance sheet maturity mismatch.



EURODOLLAR AND EUROYEN BUNDLES AND PACKS

To expedite the execution of strip trades the CME offers bundles and packs for Eurodollar and Euroyen futures. Bundles and packs are simply “pre-packaged” series of contracts that facilitate the rapid execution of strip positions in a single transaction rather than constructing the same positions with individual contracts.

Bundles

Bundles are the simultaneous sale or purchase of one each of a consecutive series of Eurodollar or Euroyen contracts. The first contract in any bundle is generally the first quarterly contract in the strip. Currently one-, two-, three-, five-, seven-, and ten-year Eurodollar bundles are available for trading. For example, a two-year bundle consists of the first eight Eurodollar contracts. A five-year “forward” bundle, which is composed of the twenty Eurodollar contracts from years six through ten, is also listed. Similarly, one-, two-, and three-year bundles are available for Euroyen futures.

Bundles are quoted on the basis of the net average price change of the contracts in the bundle relative to the previous day’s settlement price, in increments of one-quarter ($1/4$) of a basis point.

Packs

Packs are another simultaneous purchase or sale of an equally weighted, consecutive series of Eurodollar futures; however, the number of contracts in a pack is fixed at four. Packs are quoted in minimum quarter-tick increments and, like Eurodollar futures, are designated by a color code that corresponds to their position on the yield curve (see sidebar). For example, the red pack consists of the four contracts that constitute year two on the curve, the green pack those in year three, etc. As a result, there are generally nine Eurodollar packs (covering years two through ten) and two Euroyen packs (spanning years two and three) available for trading at a given time.

INTEREST RATE STRIP COLOR CODES

COLOR	YEAR	CONTRACTS
White	One	1-4
Red	Two	5-8
Green	Three	9-12
Blue	Four	13-16
Gold	Five	17-20
Purple	Six	21-24
Orange	Seven	25-28
Pink	Eight	29-32
Silver	Nine	33-36
Copper	Ten	37-40

OPTIONS ON INTEREST RATE FUTURES

FINAL SETTLEMENT PROCEDURES

The CME's interest rate futures are much like Forward Rate Agreements (FRAs) in that delivery of the face value of the contract never occurs. All CME interest rate futures are cash-settled upon expiration. Long and short positions are simply marked to a final settlement price. The following table shows the final settlement procedures for the CME's interest rate contracts.

CONTRACT	FINAL SETTLEMENT/DELIVERY
13-week Treasury bills	The final settlement price will be equal to 100 minus the weighted average discount rate of the 91-day T-bill auction in the week of the third Wednesday of the contract month.
Three-month Eurodollar time deposits	All open positions are debited or credited based on the final settlement price as determined by the British Bankers Association Interest Settlement Rate for three-month dollar deposits at 11:00 a.m. London time on the contract's last trading day. The cash market offered rate for three-month Eurodollar time deposits (or LIBOR) is deducted from 100.00 to determine the final settlement price.
One-month LIBOR	Settled in a manner analogous to that for the Eurodollars, however, the cash market offered rate for one-month Eurodollar time deposits is deducted from an index of 100.00.
Three-month Euroyen time deposits	The final settlement price is based on the interest rate for three-month yen deposits offered to prime banks in Tokyo. This is the same final settlement price used by the Singapore International Monetary Exchange (SIMEX).
One-month Federal Funds Rate	The final settlement price is determined by subtracting from 100 the arithmetic mean of the Fed Funds effective overnight rates calculated by the Federal Reserve during the period covered by the contract.

Options on interest rate futures provide the opportunity to limit losses while maintaining the possibility of profiting from a favorable move in rates. Options are analogous to an insurance policy – the option buyer pays a price or premium in return for the right to buy (call) or sell (put) a futures contract, within a stated period of time, at a predetermined price known as the strike (or exercise) price. If the price of the underlying futures contract never reaches a level that makes it profitable for the option buyer to exercise his/her right, the option expires worthless.

All CME interest rate options are American-style, meaning that the options may be exercised on or before expiration. When taking an

option position by purchasing a call or put, a performance bond (margin) is not required because the price paid on the option, also referred to as the option premium, is the maximum loss that can be incurred by a long option position.

The CME lists options on Eurodollars, LIBOR, 13-week T-bills and Euroyen (Euroyen options are not eligible for mutual offset). Quarterly and serial (non-quarterly) options are available for Eurodollar, LIBOR, Euroyen, and 13-week T-bills. Mid-curve options, which are short-dated, American-style options on long-dated Eurodollar futures, also are listed. These options have as their underlying instrument Eurodollar futures contracts one and two years out. Because the options are short-dated, they offer a low-premium, high-time-decay alternative in this segment of the yield curve.

OPTIONS ON EURODOLLAR FUTURES

The CME currently offers three different types of options on Eurodollar futures: quarterly, serial and Mid-curve.

OPTION TYPE	QUARTERLY	SERIAL	MID-CURVE
UNDERLYING CONTRACT	Corresponding futures contract	Next quarterly futures contract	Quarterly Eurodollar futures that expires one or two years after the option
CONTRACT MONTHS	Mar, Jun, Sep, Dec	Jan, Feb, Apr, May, Jul, Aug, Oct, Nov	All twelve calendar months for one-year mid-curves and Mar, Jun, Sep, Dec for two-year mid-curves
NUMBER LISTED	6	2	8: 2 serial, 4 red quarterly, 2 green quarterly
LAST TRADING DAY	11:00 a.m. London time on the second London bank business day preceding the third Wednesday of the contract month	2:00 p.m. Chicago Time on the Friday preceding the 3rd Wednesday of the contract month	2:00 p.m. Chicago Time on the Friday preceding the 3rd Wednesday of the contract month
SETTLEMENT/EXERCISE	Cash-settled	Position in front quarterly futures contract	Quarterly options: Position in the corresponding futures contract expiring either one or two years after the option expires; Serial options: Position in the next quarterly futures contract expiring one year after the option expires

OPTIONS ON 5-YEAR EURODOLLAR BUNDLES

UNDERLYING CONTRACT	One 5-year Eurodollar bundle
CONTRACT MONTHS	All 12 calendar months
NUMBER LISTED	Two quarterly and two serial months
LAST TRADING DAY	Friday 2:00 p.m. Chicago Time preceding the third Wednesday of the contract month
SETTLEMENT/EXERCISE	Position in the 5-year bundle (First 20 quarterly Eurodollar contracts)

PRICES OF INTEREST RATE OPTIONS

CME interest rate option prices are quoted in terms of index points rather than a dollar value. Because the futures price, options price and strike price are quoted in the same terms, the price relationships are clearly observable. The price of an option is shaped by the following factors:

1. Option strike price versus the current underlying futures price: As a rule of thumb, the closer an out-of-the-money option is to being at-the-money, the higher the option price. For in-the-money options, the more an option is in-the-money, the greater its value and thus, price.

2. Time to expiration: Premiums on options with a greater time to expiration tend to be higher than those that are close to expiring. This occurs because a longer time period provides more opportunity for the option to expire “in-the-money.”

3. Market volatility: Generally, the greater the volatility of the underlying futures price, the more valuable the option.

A Glossary of Options Terms

Call: Gives the holder the right to buy a futures contract at the strike price

Put: Gives the buyer the right to sell a futures contract at the strike price

Strike: The price at which the underlying futures contract will be bought (in the case of calls) or sold (in the case of puts)

Intrinsic Value: The amount the futures price is higher than a call's strike; or the amount the futures price is below a put's strike.

Time Value: The part of the option price that is not intrinsic value

At-the-money: An option is said to be “at-the-money” when the underlying futures price is equivalent to the option strike price.

In-the-money: An option is said to be “in-the-money” when the underlying futures price is greater than a call option's strike price or less than a put option's strike price.

Out-of-the-money: An option is said to be “out-of-the-money” when the underlying futures price is less than a call option's strike price or greater than a put option's strike price.

Delta: A measurement of the rate of change of an option premium with respect to a price change in the underlying futures contract. Delta is always expressed as a number between -1 and +1.

To determine how much an interest rate option premium is in dollar terms, simply take the stated price, for example 1.32 points, and multiply by \$2,500. In this case, the premium equals \$3,300.

HEDGING WITH OPTIONS ON INTEREST RATE FUTURES

Whenever Eurodollar, LIBOR, or T-bill futures can be used to lock in a rate, options on futures can be substituted to guarantee a rate floor or ceiling. As an alternative to a long

futures position, which determines a forward investment return for an asset, the purchase of a call option can be substituted. The call gives the right to buy the futures contract at a stated price, providing a floor for a return on the asset while preserving the opportunity for a potential profit.

On the other hand, instead of taking a short futures position to predetermine a liability rate, buying a put option can provide protection. The put gives the right to sell the futures at a stated price, providing a ceiling for the liability rate, while preserving the opportunity for a lower cost of funds.

The *effective floor or ceiling* rate provided by the option is determined by its strike price and the premium paid. The “strike yield” (simply 100 minus the option strike price) is adjusted to reflect the cost of the option. For example, suppose the following prices were observed:

Contract	Price/ Premium	Delta
Dec Eurodollar futures	94.24	1.00
Dec 94.25-strike call	.12	.49
Dec 94.50-strike call	.025	.22
Dec 94.25-strike put	.13	.51
Dec 94.00-strike put	.05	.23

Under these conditions, the user of the futures contract could expect to lock in a target LIBOR of 5.76 percent ($100.00 - 94.24$) – an asset return if long or a liability cost if short. Subject to basis risk, this yield would be locked in regardless of whether market rates rise or fall over the hedge period.

Using the 94.25-strike call to hedge a floating rate investment, a

hedger could guarantee a minimum return of 5.75 percent for a cost of 12 basis points. In other words, the realized minimum return would be 5.63 percent as a worst case ($5.75 - .12$).

If the rate falls below 5.75 percent, futures prices would rise and the call option would increase in value. The lower investment rate on the asset would be supplemented by the profit on the call to ensure a minimum net return of 5.63 percent. On the other hand, if the rate rises above 5.75 percent, the option would be worthless at expiration, and the investor would simply lose the cost of the option and receive the higher market rate on the asset.

Using the 94.50-strike call, the investment hedger would establish a minimum return of 5.475 percent ($100.00 - 94.50 - .025$). Why would someone use the 94.50-strike call rather than the 94.25-strike call, when the latter offers a higher minimum return? The question involves an important tradeoff consideration.



GLOBEX®

GLOBEX is a network-based electronic trading system developed by the CME and Reuters to provide after-hours access to exchange-traded products.

All of the CME's interest rate products, with the exception of Euroyen, are available for GLOBEX trading. CME members, their parents and affiliates, and CTA's are eligible to have GLOBEX terminals. Members and their parent/affiliates can trade for their own account or for their customers.

A primary benefit of trading via GLOBEX is the opportunity for pre-execution discussions. Potential counterparties may discuss their intent to place or fill an order prior to entering it through a GLOBEX terminal. If the trade has not been filled within a reasonable period of time (15 seconds for a futures order and 30 seconds for an options order), the party with which the pre-execution discussion took place can enter the opposite side.

CME interest rate products are traded on GLOBEX from 2:45 p.m. to 7:05 a.m. Chicago time. On Eurodollar and LIBOR expiration days, traders can access the products exclusively through GLOBEX because the final settlement occurs at 11:00 a.m. London time (5:00 a.m. Chicago time), before the CME trading floor opens.

While it is true that the 94.25-strike call provides a more attractive worst-case scenario, it does so for a larger upfront cost. The purchaser of the 94.25-strike call pays \$300 for this protection (\$25 x 12 basis points), while the cost of the 94.50-strike call is only \$62.50 (\$25 x 2.5 basis points).

To hedge floating rate liabilities, put options present a similar set of choices. A short futures contract can establish a forward rate of 5.76 percent; the 94.00-strike put can provide a ceiling rate of 5.95 percent (100.00 – 94.00 – .05) for the premium of \$125 (\$25 x 5 basis points); and the 94.25-strike put can provide a 5.62 percent (100.00 – 94.25 – .13) ceiling rate for the price of \$325 (\$25 x 13 basis points).

THE TRADING PROCESS

THE WORLD OF INTEREST RATE TRADING NEVER SLEEPS

At any time of the day or night someone, somewhere, is trading interest rates. You can too. CME interest rate products are available for trading virtually 24 hours a day. Pit trading on the CME trading floor begins at 7:20 a.m. (Chicago time), and runs until 2:00 p.m. Monday through Friday. Once these open outcry trading hours end, trading resumes at 2:45 p.m. on GLOBEX®. GLOBEX is the CME's automated order-entry and matching system, available worldwide. The GLOBEX trading session ends at 7:05 a.m. the following business day. (You can even trade interest rates on Sundays on GLOBEX, beginning at 5:30 p.m.)

HOW AN ORDER IS EXECUTED

Once you've made your trading decision, you would then contact your futures broker. After you give your broker the buy or sell order, it is transmitted directly to the CME

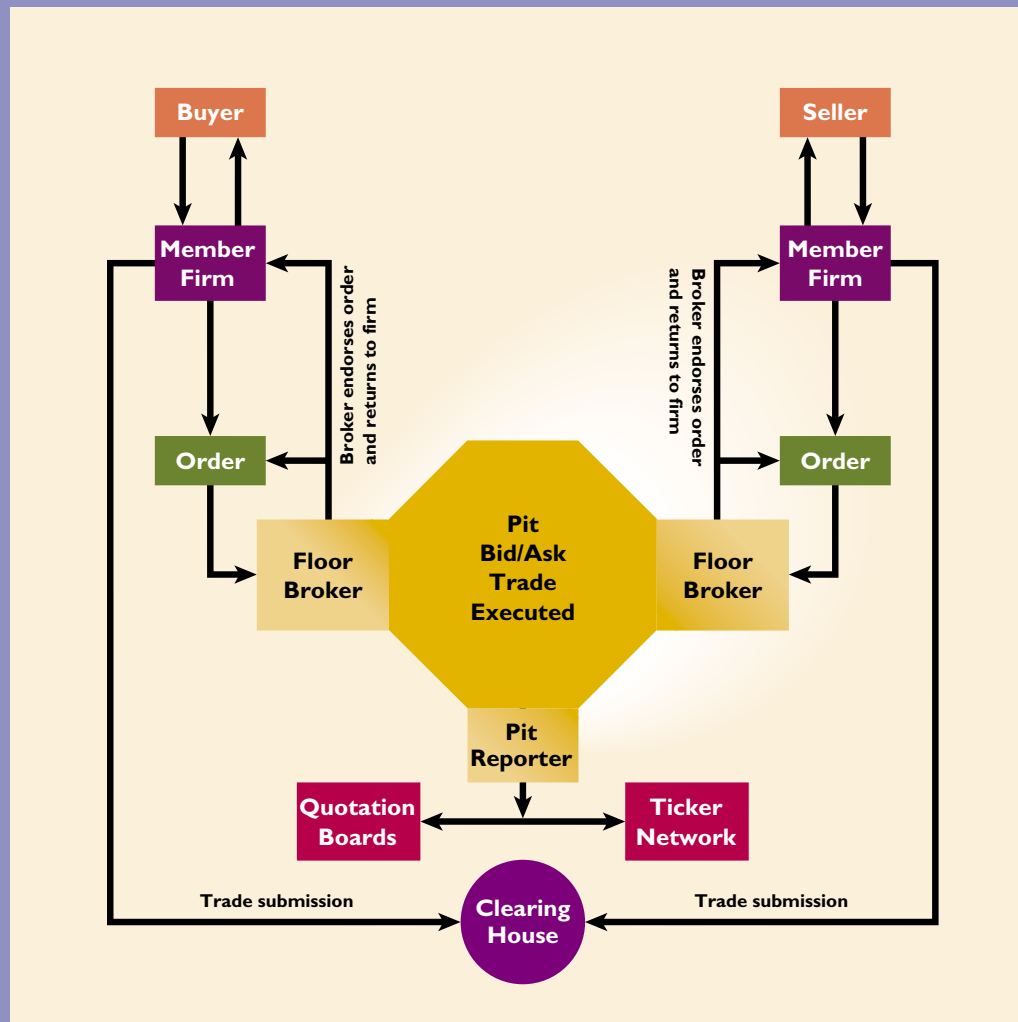
floor via telephone or data transmission lines. Upon receipt, the order is time-stamped and delivered to the trading area, or pit, by an order clerk or runner. (If you're trading on GLOBEX, your order would be entered into a GLOBEX terminal. If your order is matched, it is confirmed to your broker and then to you. To ensure fairness, the GLOBEX system processes all orders based on price and time priority. Your broker can give you further GLOBEX information.)

The trading pits are each divided into a number of sections designated for trading in particular contract months. No trading may occur outside a contract's assigned pit, nor is trading permitted at any time other than during those hours which have been designated by the Exchange.

FLOOR BROKER RESPONSIBILITIES

An individual floor broker is responsible for executing your order in the trading pit. (Your brokerage firm can execute it on the GLOBEX system.)

HOW A TRADE IS MADE



Floor brokers are licensed by an agency of the federal government to execute trades for the public.

ORDER TYPES

There's lots of variety in the instructions you can give to the floor broker to help you get exactly the type of order execution you want. You may wish to rely on your broker for expert advice as to which instructions you should use in a particular market situation. (Please note that some of these orders are not available on GLOBEX.)

Market (MKT) An order to be executed immediately at the current market price.

Limit An order that can be executed only at a specified price or better.

Day An order that automatically expires if it is not executed on the day it is entered.

Open An order that remains in force until canceled or until the contract expires. Also called a "good-'til-canceled" order.

Spread An order to simultaneously buy and sell at least two different contracts at a quoted differential; sometimes three or more "legs" are involved.

Stop An order that becomes a market order only when the market trades at a specified price; also called a "stop-loss" order.

TRACKING YOUR TRADES

"What's the current price?" is the first and most important question you need to answer when you're trading. Price information is available from:

- Brokers
- Information services, such as Reuters, Telerate, Bloomberg, etc.
- Major daily and weekly newspapers
- Computer information services, such as the CME's Home Page on the World Wide Web:
<http://www.cme.com>
- Private advisory services
- Financial programs on television and radio
- The CME MercLine, at 312-930-8282

How TO GET STARTED

HOW TO READ INTEREST RATE PRICES

Finding futures and options prices is fairly easy. But how do you decipher what you see or hear? Although the amount of information published by a source often differs, all the information will look something like Tables 1 and 2.

Futures							
EURODOLLAR (CME) -\$1 million; pts of 100%							
	Open	High	Low	Settle	Change	Yield	Open
						Settle	Interest
Mr97	94.52	94.58	94.52	94.55	+04	5.45	-04 381,130
June	94.44	94.48	94.43	94.47	+05	5.53	-05 300,057
Sept	94.35	94.40	94.30	94.39	+06	5.61	-06 187,615
Dec	94.23	94.27	94.22	94.25	+06	5.75	-06 179,957

Est vol 492,446; vol Fri 376,752; open int 2,386,860, +3,387.

Options						
EURODOLLAR (CME) -\$1 million; pts of 100%						
Strike Price	Calls-Settle			Puts-Settle		
	Dec	Jan	Feb	Dec	Jan	Feb
9400	0.56	0.55	....	0.00	0.00	0.01
9425	0.26	0.32	0.33	0.00	0.01	0.02
9450	0.03	0.10	0.13	0.02	0.05	0.08
9475	0.00	0.02	0.04	0.24	0.22	....
9500	0.00	0.00	....	0.49	....	....
9525	0.00	....	....	0.74	....	....

Est vol 148,132 Fri 70,693 calls 66,151 puts
Op int Fri 1,078,385 calls 1,232,462 puts

In the daily newspaper listings, the tables reflect the previous day's prices. Open interest figures are published on a two-day lag. Here are some of the terms you'll need to know to read the tables.

Open The average price at which the first bids and offers were made or the first transactions were completed.

High Top bid or top price at which a contract was traded during the trading period.

Low Lowest offer or the lowest price at which a contract was traded during the trading period.

Settlement price The official daily closing price, typically set at the midpoint of the closing range.

Net change The amount of increase or decrease from the previous trading period's settlement price.

Yield settlement The interest rate implied by the settlement price

Yield change One day's change in the futures' interest rate—equal and opposite to change the in settlement price

Volume The number of contracts traded (one side of each trade only) for each delivery month during the trading period.

Open interest The accumulated total of all currently outstanding contracts (one side only). Refers to unliquidated purchases and sales.

Strike price The price at which the buyer of a call (put) option may choose to exercise the right to purchase (sell) the underlying futures contract. Also known as exercise price.

Put The right, but not the obligation, to sell a futures contract at the option's strike price on or before the expiration date.

Call The right, but not the obligation, to buy a futures contract at the option's strike price on or before the expiration date.

SELECT A BROKER

Futures and options on futures contracts are bought and sold through brokerage firms, just like stocks. You may want to talk to several futures brokers before making your selection; you shouldn't enter the market until you feel comfortable with your choice. Your broker represents YOU—he or she will enter your order as you instruct and report the execution price back to you promptly. In addition, you may wish your broker to give you advice and help on various aspects of the market and to simply “be there” when you have questions.

All brokers in the U.S. must pass qualifying examinations and receive a license before they are permitted to handle customer orders. You can check on the registration status of your broker, or “associated person,” by calling the *National Futures Association* at 312-781-1410.

SIGN ACCOUNT PAPERS

Once you've found a broker who meets your needs, you would then open a *trading account*. Opening an account can involve several steps. After you've met the financial requirements set by your particular broker, you must sign a *risk disclosure statement*. You cannot open an account until you've read and signed this document, indicating that you understand the risks involved in futures and options trading. Other documents that you may need to sign are a *performance bond agreement* (a statement that binds you to pay for any losses incurred in the course of trading) and a *futures account agreement* outlining how the account is to be handled by the broker.

DEPOSIT PERFORMANCE BOND

Before you open an account to trade CME interest rate futures or options, you must deposit cash or certain securities with your broker. The

CME establishes minimum *initial and maintenance performance bond levels* for all products traded at the Exchange; your broker's requirements may be higher. (Buyers of options pay the full price of the option and are not subject to performance bond requirements.)

MARKING TO THE MARKET

At the end of each trading day and all following days that your position remains open, the contract value is “*marked-to-the-market*”; your account is credited or debited based on that day's trading session. This system gives futures trading rock-solid credit standing because losses are not allowed to accumulate.



If your account falls below the maintenance level (a set minimum performance bond per outstanding futures trade), your broker will contact you for additional funds to replenish it to the initial level. Of course, if your position generates a gain, you may be able to withdraw any excess funds from your account.

COMMISSIONS

Commission costs vary according to the services provided by a brokerage firm. For futures and options contracts, the commission is normally a “roundturn” fee charged to cover the trades you make to open and close each position. This is payable when you exit the position.

FINANCIAL SAFEGUARDS OF THE CME

The Chicago Mercantile Exchange uses sophisticated risk management and financial surveillance techniques to protect Exchange members and customers from default on futures and options contracts. The Exchange *Clearing House* acts as the third party to every trade (the seller to every buyer and the buyer to every seller), thus ensuring the integrity of *all* trades. The CME is financially backed by its clearing members as well as a special Trust Fund. This combination provides unparalleled safeguards for the protection and benefit of all CME market users. In the entire history of the Chicago Mercantile Exchange, there never has been a default or failure resulting in a loss of customer funds.

CONCLUSION

The Chicago Mercantile Exchange is recognized as the world's leading marketplace for short-term interest rate futures and options. These contracts serve as benchmarks for pricing a wide range of financial products. CME interest rate products offer a myriad of expirations and combinations covering interest rate exposure from one day to ten years out on the yield curve. Trading interest rate futures and options at the CME gives market participants the most efficient, global risk management tools available today.



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