

# Hedging Borrowing Costs with Eurodollar Futures

DTN/The Progressive Farmer 2010 Ag Summit  
December 9, 2010

James Boudreault, CFA  
Financial Research & Product Development  
CME Group

# Agenda

1. Introduction
2. Eurodollar Futures Contract Specifications
3. Hedging Example
4. Learn More
5. Contact Information

# CME Eurodollar Futures Fundamentals

**Most active short-term interest rate futures contract in the world**

- **Launched December 1981. Market growth facilitated by interplay vs. interest rate swap (IRS) markets**
- **Notional value of ADV exceeds \$2 trillion per day**
- **Notional value of open interest exceeds \$8 trillion**
- **More than 97% of Eurodollar futures volume is traded electronically**

# CME Eurodollar Futures Specifications

<b>Underlying Instrument</b>	Eurodollar Time Deposit having USD \$1,000,000 principal value and 3-month term to maturity.
<b>Final Settlement</b>	Delivery by cash settlement to 100 minus British Bankers' Association 3-month US Dollar LIBOR on Last Trading Day. Final settlement price is rounded to 4 decimal places (1/10,000 of a percent = \$0.25 per contract).
<b>Quote</b>	Quoted in "IMM index points" (100 minus rate). A rate of 5.055% is quoted as 94.945. 1 basis point = .01 percent = \$25.
<b>Minimum Price Fluctuation</b>	1/4 of one basis point (0.0025 = \$6.25 per contract) in nearest delivery month. 1/2 of one basis point (0.005 = \$12.50 per contract) in all other delivery months.
<b>Delivery Months</b>	Nearest 40 months in March-quarterly cycle (Mar, Jun, Sep, Dec). nearest 4 "serial" months not in March-quarterly cycle.
<b>Hours of Trade</b>	CME Globex®: 5:00 pm to 4:00 pm, Sunday - Friday Open Outcry: 7:20 am to 2:00 pm
<b>Last Trading Day</b>	2 <sup>nd</sup> London bank business day immediately preceding 3 <sup>rd</sup> Wednesday of contract delivery month. Trading in the expiring contract terminates at 11:00 a.m. London Time on Last Trading Day.
<b>Block Thresholds</b>	Regular Trading Hours: 4,000 contracts for nearest 20 March-quarterly delivery months and for monthly serial delivery months. 1,000 contracts otherwise.
<b>Ticker Symbols</b>	Open Outcry: ED      Globex: GE      Bloomberg: ED

# CME Eurodollar Futures Fundamentals

*IMM Index Quotation System for Short-term Interest Rate Futures ...*

$$\begin{aligned}\text{Price Quote} &= 100.00 - \text{Rate} \\ &= 100.00 - 0.51\%\end{aligned}$$

Eurodollar futures prices = ~~99.490~~ **99.490** public fixed income asset prices:  
As rates decline, futures prices rise and vice versa.

*Eurodollar futures basis point value (BPV) is fixed, regardless of time to contract expiry...*

$$\begin{aligned}\text{BPV} &= \$1,000,000 \times (\text{days}/360) \times 0.01\% \\ &= \$1,000,000 \times (90/360) \times 0.01\% \\ &= \$25.00\end{aligned}$$



# Eurodollar Mechanics – Outrights, Spreads, Strips

## Outrights

- **Contract terms to expiry span 10 years: 40 March-quarterly delivery months plus 4 monthly serial delivery months**

## Strips

- **The purchase or sale of two or more contracts with consecutive March-quarterly delivery months**

## Spreads

- **Simultaneous purchase and sale of contracts in different months**

# Eurodollar Mechanics - Packs & Bundles

## Packs & Bundles are “pre-packaged” Strips

- Facilitate rapid execution of specific Strips with a single transaction

- **Packs**

- 10 specific packages of futures with 4 consecutive delivery months
- Quoted in  $\frac{1}{4}$  basis point (0.0025) price increments
- Quoted on the basis of average net change of each individual contract from previous day's settlement price
- Designated by color codes that correspond to number of years to contract expiration:

- **Years**

1	2	3	4	5	6	7	8	9	10
White	Red	Green	Blue	Gold	Purple	Orange	Pink	Silver	Copper

- **Bundles**

- 2-year through 10-year packages of consecutive futures contracts
- Always begin with the nearby quarterly delivery month
- Quoted in  $\frac{1}{4}$  basis point (0.0025) price increments
- Quoted similarly to Packs (net change from previous day's settlement price)



# Eurodollar Futures – Lock in Borrowing Costs

## Bank Loan – for 2015 Growing Season (estimated)

**Dates:** Borrow on March 16, 2015. Repay on September 14, 2015 (182 days)

**Rate:** 3M LIBOR + 1 percent,

3M LIBOR set on March 16, 2015 for interest payment on June 15, 2015, and 3M LIBOR reset on June 15, 2015 for interest payment on September 14, 2015.

**Amount:** \$1 Million

**Basis Point Value:**  $\$1,000,000 \times 182 \text{ days} / 360 \text{ days} \times 1 \text{ basis point} = \$50.56$

**Estimated Total Interest Expense:**  $\$1,000,000 \times 182 \text{ days} / 360 \text{ days} \times 4.5\% = \$22,750$

---

## Eurodollar Futures – Anytime between now and 2015

**Dates:** EDH5 (Mar 2015): 3M LIBOR (Fix date) coverage from 3/16/15 + 90 days  
EDM5 (Jun 2015): 3M LIBOR (Fix date) coverage from 6/15/15 + 90 days

**Rate:** EDH5 expires with reference to spot 3M LIBOR on Monday, March 16, 2015  
EDM5 expires with reference to spot 3M LIBOR on Monday, June 15, 2015

**Amount:** \$1 Million per contract per quarter

**Basis Point Value:** \$25 per CME Rulebook





# Eurodollar Futures – Lock in Borrowing Costs

## ED Hedge Construction (in November 2010)

Borrowing \$1 million for 6 months. Intuitively, you need to string together a sequence of 2 consecutive ED futures expiries to cover the 6-month interval, with 1 contract for each half of the interval.

### **A more precise method is to compare the Basis Point Values (BPV) of each --**

LOAN Basis Point Value:  $\$1,000,000 \times 182 \text{ days} / 360 \text{ days} \times 1 \text{ basis point} = \$50.56$

ED Basis Point Value: \$25 per CME Rulebook

### **Number of ED futures required = 2.02 (equal to \$50.56 / \$25).**

For practical purposes this rounds to 2 contracts.

### **EDH5 current market price is 96.600**

Represents a forward 3M LIBOR rate of 3.40% starting on March 16, 2015.

### **EDM5 current market price is 96.400**

Represents a forward 3M LIBOR rate of 3.60% starting on June 15, 2015.

## **Sell: 1 EDH5 and 1 EDM5 (short position)**

Will profit if rates rise. Will create a loss if rates fall.



# Eurodollar Futures – Lock in Borrowing Costs

## ED Hedge Performance (at expiration 5 years later in 2015)

Suppose hypothetically that EDH5 (March 2015 expiration month) were to expire on March 16, 2015 at a price 95.600. This would signify a **100 bps (1%) increase** in 3M LIBOR to 4.4% versus the price at which you sold the EDH5 futures contract in mid-November, 2010.

Suppose as well that EDM5 (June 2015 expiration month) expires on June 15, 2015 at a price of 95.400, signifying a **100 bps (1%) increase** in 3M LIBOR to 4.6% versus the interest rate that was reflected in the EDM5 futures contract when you sold it in mid-November.

**How has your hedge performed?**



# Eurodollar Futures – Lock in Borrowing Costs

## Hedge Recap

LIBOR rates increased by a uniform 100 bps from Nov 2010 to March/June 2015

### ED Futures

3M LIBOR goes up, ED futures prices go down.

100 bps x \$25 per bp per contract x 2 contracts = **+\$5,000**

### Loan

3M LIBOR goes up, interest expense goes up

\$1,000,000 x 182 days / 360 days x 1 percent = **-\$5,055.56**

**Total Effect = \$5,000 - \$5,055.56 = -\$55.56**

(due to rounding down to 2 ED contracts)

## Total Interest Expense

**\$22,750** *estimated* in **November 2010** (\$1,000,000 x 182 days / 360 days x **4.5%**)

**\$27,805** *actual* interest expense in **2015** (\$1,000,000 x 182 days / 360 days x **5.5%**)

**-\$5,055.56** additional interest expense *without* the Eurodollar futures hedge



# Information Sources

## Online Resources

CME Group Interest Rate Products Center:

[www.cmegroup.com/trading/interest-rates/](http://www.cmegroup.com/trading/interest-rates/)

Sample of white papers and reference guides in CMEG Interest Rate Products Center

[Eurodollar Futures: Interest Rate Market Building Blocks Reference Guide](#)

[Eurodollar Packs and Bundles](#)

[Creating Inexpensive Swaps](#)

## Books

Burghardt, Galen, **The Eurodollar Futures and Options Handbook**, McGraw Hill, 2003

# Research Contact

James Boudreault, CFA | Associate Director | 312 930 3247 | [james.boudreault@cmegroup.com](mailto:james.boudreault@cmegroup.com)



Futures trading is not suitable for all investors, and involves the risk of loss. Futures are a leveraged investment, and because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money deposited for a futures position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles. And only a portion of those funds should be devoted to any one trade because they cannot expect to profit on every trade.

All references to options refer to options on futures.

The Globe Logo, CME®, Chicago Mercantile Exchange®, and Globex® are trademarks of Chicago Mercantile Exchange Inc. CBOT® and the Chicago Board of Trade® are trademarks of the Board of Trade of the City of Chicago. CME Group is a trademark of CME Group Inc. All other trademarks are the property of their respective owners.

The information within this presentation has been compiled by CME Group for general purposes only. CME Group assumes no responsibility for any errors or omissions. Although every attempt has been made to ensure the accuracy of the information within this presentation, CME Group assumes no responsibility for any errors or omissions. Additionally, all examples in this presentation are hypothetical situations, used for explanation purposes only, and should not be considered investment advice or the results of actual market experience.

All matters pertaining to rules and specifications herein are made subject to and are superseded by official CME, CBOT and CME Group rules. Current rules should be consulted in all cases concerning contract specifications.

Copyright © 2010 CME Group. All rights reserved.

