

## ED Basics (cont)

(4)

### 36 Packs & Bundles

Packs = Simultaneous buy or sell of equally weighted consecutive series of 4 ED's.

Quoted on an average net chng basis from previous days close.

Tic size =  $1/4$  tics

Bundles = Simultaneous buy or sell of consecutive series of ED contracts w/ maturities of 1-10 yrs.

1<sup>st</sup> contract in a bundle is generally the 1<sup>st</sup> quarterly contract.

The exception is the 5-yr bundle which covers 5-10 yrs.

Rolling packs & bundles allow for traders to execute p & b's w/ "NON-STANDARD" dates.

### 37 How Eurodollar Futures works (Exhibit 3.5)

Price =  $100 - \text{futures rate}$

where: future rate is expressed in percentage points.

Tic =  $\$25$  (0.01 bp)

1 bp Tic Value =  $\$25$

DV01 =  $\$25$ . Always.

### 38 Eurodollars are a hedgers contract, as defined by:

Its turn-over rate.

Turn over rate =  $\text{Daily Volume} / \text{Open Interest}$ .

## ED Basics (cont.)

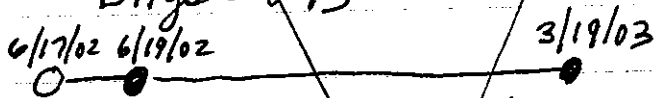
6

76 Find a 3-mos forward rate 6 mos forward  
scenario ① Lend \$1 mm for 9 mos @ 2.12 on Monday 6/17.

Settle = 6/19/02

Mat Date = 3/19/03

Days = 273



For each dollar lent you will receive the following on 3/19/03:

$$\text{Value}_{3/19/03} = \$1 \left[ 1 + 0.0212 \left( \frac{273}{360} \right) \right] = \$1.0161$$

scenario ② Lend \$1 mm for 6 mos @ 1.97 on Monday 6/17

Settle = 6/19/02

Mat Date = 12/19/02 (move date to 12/18 to match cash market. See pg 46)

See pg 47 for equation

8. This exercise is showing how to combine a short rate w/ a forward rate to get a long rate.

93 The U.S. Treasury has a better credit standing than do Libor quality banks. Therefore, if you value a t-bond using ED zero prices, the PV produced will be lower than the bond's price. (See ch 11)

The excellent credit the US Treasury has is precisely why EDs trade @ a premium to treasuries.

102 Dealers use EDs to price & hedge swaps.

→ The futures price tells them the rate they can lock in.

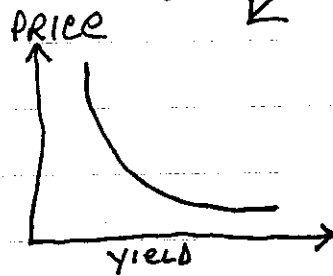
→ If a dealer receives fixed & pays floating they will hedge by buying EDs

## ED Basics <cont>

(7)

102 → If the dealer receives fixed & pays float they will hedge by selling ED<sup>s</sup>.

117 Convexity Differences between Forward & Futures rates  
Eurodollar hedge ratios tend to rise as IR rates fall & fall as IR rates rise. This is because PV of cash flows rise when rates fall & fall when rates rise. This fact is known as "positive convexity", which describes the curvature in the relationship between the price of non-callable bonds/notes (our type of b/n) & its yield. ↘



In contrast...

ED<sup>s</sup> have no convexity. The PV of a bp is always \$25.00. It doesn't matter what the level of IR<sup>s</sup> are, or, time to expiration. The DVOI is always \$25.

The difference between convexity's of US treasuries and ED<sup>s</sup> is a source of hedging income.

A trader who is long a bond (or receiving fixed on a swap) and hedges w/ED<sup>s</sup> will make money on the ED<sup>s</sup> as rates rise & fall. If rates fall they must increase their ED hedge (at a higher price). When they are increasing their hedge at a higher price they are selling. If rates rise they must decrease their hedge (at a lower price).

## ED Basics &lt;cont.&gt;

117 Think about this: You're Long bonds, hedge w/ a short ED position. Rates fall/Prices rise,  $\neq$  then, you must increase your ED position by selling @ a higher price. Then, rates rise & you buy back the EDs @ a lower price (and at a profit) because you are suppose to decrease your hedge ratio as rates rise. This is a trailing stream of hedging income!

120 This convexity bias is why EDs ~~are~~ have higher rates (lower prices) than forward rates (cash market rates).

Said differently, there's an advantage to being short ED futures. You pay for this advantage thru higher rates/lower prices, than the forward rates in the cash. I like "convexity bias" to the "Short's Strategic Delivery Option" in the fixed income futures market.

## 125 Comparing 3 yield curves

- 127
- Forward, zero coupon, ~~the~~ par-coupon curves
  - all can be derived from the ED curve.
  - View these curves after they have been "convexity adjusted".
  - Forward will be higher than zero & zero will be higher than par-coupon, in a positively sloped curve environment.
    - This is because zeros reflect an "average of the Forward & par-coupon rates.
    - Said differently: Zeros blend Forwards to come up the term rate. Zeros are really a pv of a par coupon FV.

# Measuring Fed Spreads (etc)

195 2 Kinds of F-spreads

a) weighted & unweighted

our type of trading is interested in unweighted.

These types of trades are "curve-directional" trades.

206/7 Credit Spread

You would trade a fully weighted hedge. This trade is insulated from changes in the slope of the curve. This type of hedge gives greater weighting to the front Eurodollar contracts.

208 A flattening of the forward rate curve will decrease the price of the coupon bearing treasury note relative to the price of the corresponding zc note, which is represented by the Eurodollar strip. The resulting loss should track the decrease in the ED strip measure of the Fed spread. ~~This scenario is for~~ This type of scenario is borne out w/unweighted hedges.

## Misc Notes

(1)

- Pg 382: Write down these definitions of Rate Volatilities  
" 418: Fomc trades  
419: Bottom of page.

### 429 Implied Relative Rate Volatility

Example of equations: ① Dec 01 Eurodollar options implied relative rate volatility = 22.5%

② Implied futures rate for Dec 01 = 3.29

③ Implied basis pt volatility = 74.9 bp  
[ $.225 \times 3.29 = 74.9$ ]

430-31 Basis Point Volatility is a measure of whether options are rich or cheap.

### 432-33-34 Fascinating!

If fed raises rates from 4.50 to 4.75, the increase is said to be 25 basis points. However, I should look at it this way: what is the % increase? It is the percentage of  $4.50/4.75$ .

So if they raise rates from 4.75% to 5.00 it will be a lower % increase, than from 4.50 - 4.75.

That's because  $4.75/5.00$  is a smaller percent than  $4.50/4.75$ !

This is why you should use basis point Vol & not Relative Vol.

### 435 Use this equation

Implied relative rate Vol  $\times$  rate level = Bp Vol

This equation can be used to gauge options richness or cheapness.

