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P198 Comdty EDR

## EURODOLLAR FUTURES RISK (DP/DY)

VALUATION DATE **5/ 4/06**

	Days	Euro Rate	\$FutVal	--Cumulative-- Days	'strip' \$FutVal	BndEq+1bp Bond Eqv	Implied \$FutVal	Euro Rate	RISK Chnge x\$25
	A	B	C	D	E	F	G	H	I
	46	5.25	1.0067147	46.00	1.0067147	5.3279833	1.0067273	n.a.	n.a.
Jun06	91.25	5.25	1.0133200	137.25	1.0201241	5.3517688	1.0201617	5.2647286	.2433
Sep06	91.25	5.35	1.0135608	228.50	1.0339578	5.4060341	1.0340208	5.3596328	.2409
Dec06	91.25	5.30	1.0136241	319.75	1.0480448	5.4338976	1.0481339	5.3847303	.2433
Mar07	91.25	5.34	1.0135354	411.00	1.0622303	5.4338976	1.0623467	5.3497275	.2433
Jun07	91.25	5.32	1.0134721	502.25	1.0765407	5.4323030	1.0766849	5.3247342	.2433
Sep07	91.25	5.31	1.0134467	593.50	1.0910166	5.4296186	1.0911893	5.3147323	.2433
Dec07	91.25	5.32	1.0134721	684.75	1.1057148	5.4290192	1.1059168	5.3247342	.2433
Mar08	91.25	5.33	1.0135101	776.00	1.1206531	5.4303732	1.1208851	5.3397333	.2433
Jun08	91.25	5.36	1.0135734	867.25	1.1358643	5.4341453	1.1361270	5.3647342	.2433
Sep08	91.25	5.39	1.0136495	958.50	1.1513682	5.4401336	1.1516626	5.3947322	.2433
Dec08	91.25	5.43	1.0137635	1049.8	1.1672151	5.4480896	1.1675420	5.4397293	.2432
Mar09	91.25	5.46	1.0138269	1141.0	1.1833541	5.4586861	1.1837142	5.4647302	.2432

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D = Days between today (Valuation DATE) and expiration of next contract

Example:  $46.00 + \frac{91.25}{91.25} = 137.25$

$137.25 + 91.25 = 228.50$

$C = \frac{1.0067147}{(COLUMN "E")} * \frac{1.0133200}{(COLUMN "E")} = \frac{1.0201241}{(COLUMN "E")}$

E = Terminal wealth i.e., \$1 invested today is worth \$X future date.  
It is future value. (See pg 72 in Eurodollar book)

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HELP FOR **EURODOLLAR FUTURES RISK (DP/DY)**  
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Use EDR to calculate Eurodollar futures risk by measuring the implied forward rate change as the spot curve parallel shifts one bond-equivalent basis point in yield.

- 1) Instructions
- 2) Description of Display
- 3) Assumptions
- 4) Example

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**INSTRUCTIONS**

Once you enter EDR <Go>, additional instructions appear on the screen.

**DESCRIPTION OF DISPLAY**

**VALUATION DATE:** The date on which the futures contract value is determined.

**Days:** The number of days between the valuation of the futures contract and the valuation of the next contract in the series.

**Euro Rate:** The rate of the futures contract. For more information, enter EDSF <Go>.

**\$ FutVal:** The future value of a dollar based on the rates in column B over the length of time in column A (91.25 days).

**Cumulative Days:** The cumulative number of days between the valuation of the futures contract and the valuation of the next contract, starting with today's date.

**Cumulative \$FutVal:** The future value of a dollar based on the rates in column B over the length of time in column A.

**"strip" Bond Eqv:** The bond equivalent rate for the coupon strip.

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**BndEq+1bp \$FutVal:** The future value of a dollar based on the bond equivalent rate from column F plus one bond equivalent basis point shift in the yield of the spot curve.

**Implied Euro Rate:** The Euro rate that is based on the cumulative number of days and the corresponding future value of the bond equivalent rate plus one basis point.

**RISK:** A measurement used by Bloomberg to indicate price sensitivity given shifts in interest rates. Risk is 100 times the price value of a basis point change in yield.

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#### ASSUMPTIONS

There are several basic algorithms and assumptions:

- 1) Use Eurodollar strip as Eurodollar curve proxy.
- 2) Use rate of first future as rate for initial strip stub.
- 3) Each Eurodollar future is assumed to be for 91.25 days, exactly rolling over into the next contract.
- 4) Shift futures strip one bond-equivalent basis point and re-calculate the implied Eurodollar 91.25 day forwards to compute DP/DY.

#### EXAMPLE

Actual algorithm, using indicated columns:

$$C = 1 + AB/36000$$

$$D1 = A1$$

$$D(n+1) = D(n) + A(n+1)$$

$$E1 = C1$$

$$E(n+1) = E(n) \times C(n+1)$$

If  $D < 182.5$ , then  $F = (E-1)36500/D$   
else  $= 200(E^{*(182.5/D)} - 1)$

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HELP FOR **EURODOLLAR FUTURES RISK (DP/DY)**

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If  $D < 182.5$ , then  $G = 1 + (F+.01)D/36500$   
else  $= (1+(F+.01)/200)**(D/182.5)$

$H2 = (G2/G1 - 1)36000/A$   
 $I = 25(H-B)$

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