

Solving for the foreign interest rate implied by Covered Interest Parity using CME Currency Futures and Eurodollar Futures

Useful information:

The Eurodollar futures contract is for delivery of a \$1 million par value **3 month** Eurodollar deposit (see below for quotes)

$$F(0,T) = \left(\frac{1 + r(0,T-N)}{1 + r^*(0,T)} \right) F(0,N)$$

$$(1 + r^*(0,T-N)) = (1 + r(0,T-N)) \frac{F(0,N)}{F(0,T)}$$

Solving using the quotes below → A\$ futures using June 17 and Sept 17 (this is a 3 month spread) $F(0,N) = .7528$ $F(0,T) = .7518$

→ Eurodollar futures for June 17 is for a three month deliverable

$$r(0,T-N) = (100 - 98.74) = 1.26\%$$

This is an annualized rate → convert to three month rate by dividing by 4:

$$(1 + r^*(0,T-N)) = (1 + r(0,T-N)) \frac{F(0,N)}{F(0,T)}$$

$$\rightarrow (1 + r^*(0,T-N)) = \left(1 + \frac{.0126}{4} \right) \frac{.7528}{.7518} = 1 + .004484$$

$$r^* = 1.7936\%$$

Note: This r^* is annualized estimate of the 3 month Euro-Aussie dollar interest rate.

See Lecture 4 for an explanation of why the Eurodollar rate is the correct rate to use instead of other possible money market interest rates → Treasury bills, commercial paper, bankers' acceptances.

Solving for the term structure → combine a nearby 3 month + the next delivery 3 month to get a six month rate assumes UEH holds (no liquidity premia):

:

$$\left(\left(1 + \frac{.0126}{4} \right) \left(1 + \frac{0.01355}{4} \right) \right) = (1.00315)(1.0033375) = 1.006498$$

$$1 + r^*(0,T-N) = 1.006548 \left(\frac{.7528}{.7511} \right) = 1.008776 \rightarrow r^* = 1.755$$

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Trade Date: Friday, 09 Jun 2017 (Final)

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Month	Open	High	Low	Last	Change	Settle	Estimated Volume	Prior Day Open Interest
JUN 17	.7536	.7544	.7519	.7529	-.0018	.7528	63,285	121,531
JLY 17	.7522	.7539B	.7517	.7527B	-.0018	.7525	82	49,000
AUG 17	.7531	.7537B	.7514A	.7524B	-.0018	.7522	70	30,000
SEP 17	.7525	.7533	.7509	.7523	-.0018	.7518	4,342	8,811
OCT 17	-	-	-	-	-.0018	.7516	0	-
DEC 17	.7516	.7522	.7495	.7511A	-.0018	.7511	22	24,000
MAR 18	-	-	.7510A	.7510A	-.0017	.7504	0	0
JUN 18	-	-	-	-	-.0018	.7497	0	20,000
SEP 18	-	-	-	-	-.0018	.7491	0	0
DEC 18	-	-	-	-	-.0018	.7485	0	0
MAR 19	-	-	-	-	-.0018	.7479	0	0
JUN 19	-	-	-	-	-.0018	.7473	0	0
SEP 19	-	-	-	-	-.0014	.7463	0	0
DEC 19	-	-	-	-	-.0011	.7453	0	0

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Month	Open	High	Low	Last	Change	Settle	Estimated Volume	Prior Day Open Interest
JUN 17	98.7475	98.7475	98.7375	98.7375	-.0075	98.7400	196,100	1,514,330
JLY 17	98.7300	98.7300	98.7200	98.7200	-.0100	98.7250	13,110	85,040
AUG 17	98.7000	98.7000	98.6950	98.7000	UNCH	98.7000	2,470	33,900
SEP 17	98.6700	98.6700	98.6550	98.6600	-.0050	98.6650	176,748	1,358,190
OCT 17	-	-	-	-	-.0050	98.6400	0	29,000
NOV 17	-	-	-	-	-.0050	98.6150	0	0
DEC 17	98.5900	98.5900	98.5750	98.5850	-.0050	98.5850	214,477	1,687,520
MAR 18	98.5200	98.5200	98.5000	98.5100	-.0050	98.5150	170,385	1,147,170
JUN 18	98.4400	98.4400	98.4150	98.4300	-.0100	98.4300	159,504	1,048,800
SEP 18	98.3650	98.3650	98.3350	98.3600	-.0100	98.3550	171,149	1,034,670
DEC 18	98.2750	98.2850	98.2450	98.2700	-.0150	98.2650	210,161	1,410,370
MAR 19	98.2250	98.2250	98.1900	98.2150	-.0150	98.2100	133,626	823,800
JUN 19	98.1750	98.1750	98.1350	98.1600	-.0150	98.1550	104,534	717,280
SEP 19	98.1250	98.1250	98.0850	98.1100	-.0150	98.1050	88,953	652,960
DEC 19	98.0450	98.0500	98.0100	98.0400	-.0150	98.0350	86,825	757,000
MAR 20	98.0150	98.0150	97.9750	98.0050	-.0150	97.9950	66,957	450,230