EURODOLLAR FUTURES ARBITRAGE

Short Arbitrage

t = 0

CASH 1	*CASH* 2	*FUTURES*
Borrow Q$ in the Eurodollar market for 6 months at r_e (0, 6 months)	Invest Q$ in the Eurodollar market for 3 months at r_e (0, 3 months)	Go LONG *EU*(0, *T* = 3 months) => (1 + i_e (0, 3 month, 6 month))

t = 3 months

Use maturing Q$ (1 + r_e (0, 3 months) to purchase/settle Long 3 month futures position

t = 6 months Use maturing 3 month to 6 month Eurodollar position to settle the 6 month loan

$\pi = Q\ \{(1 + r_e\ (0, 3\ \text{months}))\ (1 + i_e\ (0, 3\ \text{month}, 6\ \text{month})) - \ (1 + r_e\ (0, 6\ \text{months}))\ \}$

Absence of arbitrage requires: $(1 + i_e\ (0, 3\ \text{month}, 6\ \text{month})) \leq (1 + r_e\ (0, 6\ \text{months})) / (1 + r_e\ (0, 3\ \text{months}))$

–> the quoted Eurodollar futures rate is an implied forward rate

Example: Let r_e (0, 6 months) be 1.6% annualized –> .8% for 6 months
Let r_e (0, 3 months) be 1.6% annualized –> .4% for 3 months

If i_e (0, 3 month, 6 month) is quoted at 1.6% annualized –> .4% for 3 months –> this is an arbitrage opportunity as
(1.004)(1.004) = 1.00802 > 1.008

LONG ARBITRAGE

The long arbitrage differs from the short arbitrage in the timing of the deliveries

t = 0

CASH 1	*CASH* 2	*FUTURES*
Invest Q$ in the Eurodollar market for 6 months at r_e (0, 6 months)	Borrow Q$ in the Eurodollar market for 3 months at r_e (0, 3 months)	Go SHORT *EU*(0, *T* = 3 months) => (1 + i_e (0, 3 month, 6 month))

t = 3 months

Use Eurodollar investment which is now a deliverable 3 month Euro with value Q$ (1 + (r_e (0, 6 months)/2))
deliver against the short 3 month futures position