Assignment 2: Answers

(April 13, 1999)

Eurodollar volatility smile. Implied volatilities are

Strike	Call Price	Call Volatility	Put Price	Put Volatility
94.50	(na)		0.0075	0.1112
94.63	(na)		0.0150	0.1041
94.75	0.2225	0.0847	0.0225	0.0884
94.88	0.1125	0.0692	0.0375	0.0682
95.00	0.0425	0.0629	0.0925	0.0687
95.13	0.0225	0.0833	(na)	
95.25	0.0125	0.0980	(na)	
95.38	0.0075	0.1150	(na)	
95.50	0.0075	0.1417	(na)	

The "volatility smile" (below) suggests that out-of-the-money options are more valuable than Black-Scholes suggests. Why? One possibility is that big changes are more frequent than the log-normal distribution suggests. Another is that the market, for whatever reason, places more value on these instruments. Eg, equity investors place a high value on out-of-the-money puts, which protect them against large drops in the market.