Hints for the First Test

October 4, 2010

The exam will be finance-oriented, so make sure you know how to argue using arbitrage. There are some points you need to pay attention.

- Know how to price an European call and a lookback option in a two-period binomial model. Both the backward recursion and the risk-neutral expectation are required.
- Know how to price a forward contract with risk-neutral expectation, and be able to use Put-Call parity.
- For the above options, be able to find an arbitrage opportunity and take advantage of it. For example, your calculation shows the price of a lookback is 1.376, but someone wants to buy it with 1.40 (or someone is selling it for 1.35), you need to know how to construct a portfolio with zero net value at time zero, rebalance it if necessary, so that you can lock some profit at maturity no matter what happens later.
- Know how to price an European call and a lookback option under the physical measure in a two-period binomial model. You need to use the Radon-Nikodým derivative/process.
- Know how to price an American put/straddle in a two-period binomial model using backward recursion.
- For the above American derivatives, be able to find the optimal exercise time for each contract.