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SEMINAR

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Tuesday, February 12, 2008
304 Whitehead Hall
Refreshments: 3:30 p.m.
Seminar: 4:00 p.m.

UTILITY-BASED VALUATION OF EMPLOYEE STOCK OPTIONS

Abstract

Employee stock options (ESOs) have become an integral component of compensation in the U.S. Financial regulations now require firms to expense these options in their accounting statements. ESOs have a number of complicated characteristics that distinguish them from standard market-traded American call options. Their value is much less due to the suboptimal exercising strategies of the holders, which arise from risk aversion, hedging constraints, and job termination risk. We analyze a utility-based valuation procedure that accounts for the combined effect of all of these factors, along with multiple exercising rights and vesting periods. This leads to the numerical study of a system of nonlinear free-boundary problems of reaction-diffusion type. In addition, we examine the holder's hedging strategies that involve a combination of dynamic trading of a correlated asset and static positions in market-traded put options. We find that static hedges induce the ESO holder to delay exercises, and lead to higher ESO costs.