Math 582: paper topic and proposal

Christian Drappi (netid: cld22

Friday, February 28, 2014

Paper topic: **Tail risk in options pricing**

This paper will explore the consequences of relaxing one of the BSM model's most fundamental assumptions: normality of the underlying's log-returns. The primary motivation is rooted in real-world considerations. Originally, mathematician Benoit Mandelbrot established that price changes do not necessarily follow a Gaussian distribution. Rather, they fall under the more general class of Levy stable distributions, some of which have infinite variance.

In this project, I will analyze market data and observe deviations from log-normality in stock prices. With help from texts by Duffie, Boyarchenko and Taleb, I will compute theoretical options prices in light of these added tail risks. Obviously, I expect the prices of both calls and puts to increase, but especially those that are deep out-of-the-money.