



CLAREMONT CENTER
for MATHEMATICAL SCIENCES

CCMS COLLOQUIUM

TOWARDS THE NEXT GENERATION
OF HIGH-FREQUENCY TRADING MODELS

by

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Abstract: High-frequency traders have been using information from the electronic order books to forecast the market. I argue that now is the time for high-frequency traders to move to a different goal: pricing options better. In our model, we assume that there is no arbitrage in the market. However, the market is illiquid. We show that there is no arbitrage in the market, if there exists a probability measure, called the risk-neutral measure, where the clearing price is a martingale. Moreover, the price of an option should be equal to the expected value, in the risk-neutral measure, of its terminal value, appropriately discounted. We analyzed one month of data from the NYSE to infer the parameters of the inputs of our model, namely the parameters of the stochastic demand and supply curves. We developed an algorithm to calculate this risk-neutral measure from the latter parameters and to price options. The model uses advanced concepts in stochastic processes: Girsanov theorem for Brownian sheets, and the Ito-Wentzell formula for stochastic partial differential equations. However I will focus in this talk on the economic/probabilistic intuition.

Wednesday, March 27, 2013, at 4:15pm

Beckman B126, Harvey Mudd College

Refreshments at 3:45 p.m. in Harvey Mudd Math Lounge, Olin B161
(around the corner from Beckman B126)

and wine and cheese after the talk in the Math Lounge, Olin B161

The dinner will be hosted by Prof. Mark Huber.

Please contact Prof. Huber if you are interested in attending the dinner