

ENCONTRO SPE-CIM-CEMAPRE

MODELOS ESTOCÁSTICOS EM FINANÇAS *STOCHASTIC MODELS IN FINANCE*

22 de Outubro de 2010

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Local:

ISEG, Auditório 2

PROGRAMA

14H30	Crashes, Volatility, and the Equity Premium: Lessons from S&P500 Options Pedro Santa-Clara, Shu Yan Faculdade de Economia, Universidade Nova de Lisboa
15H15	Lévy Market Models and Hedging Portfolios João Guerra Dept. Matemática, ISEG - Universidade Técnica de Lisboa e CEMAPRE
16H00	COFFEE-BREAK
16H20	On Continuous Time Models with Regime Switching, Delay and Threshold Manuel Esquível Dep. Matemática – Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa
17H05	DISCUSSÃO

Abstracts

Crashes, Volatility, and the Equity Premium: Lessons from S&P500 Options

Pedro Santa-Clara, Shu Yan
Faculdade de Economia, Universidade Nova de Lisboa

Abstract

We use a novel pricing model to imply time series of diffusive volatility and jump intensity from S&P 500 index options. These two measures capture the ex-ante risk assessed by investors. Using a simple general equilibrium model, we translate the implied measures of ex-ante risk into an ex-ante risk premium. The average premium that compensates the investor for the ex-ante risks is 70 percent higher than the premium for realized volatility. The equity premium implied from option prices is shown to significantly predict subsequent stock market returns.

Lévy Market Models and Hedging Portfolios

João Guerra
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Abstract

Lévy market models have become very popular in financial applications. After introducing these models and their main properties, we shall use some important tools of the stochastic analysis of Lévy processes, in order to study the hedging problem.

In general, a Lévy market is incomplete. However, using a predictable representation formula, it is possible to complete the Lévy market by introducing a series of new artificial assets into it, the so-called power-jump assets. Using this procedure and a static hedging formula, we obtain hedging formulas for contingent claims in the original Lévy market. The corresponding hedging portfolios are made up of bonds, stocks and call options.

On Continuous Time Models with Regime Switching, Delay and Threshold

Manuel Esquível
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Abstract

Motivated by the need to describe bear-bull market regime switching in stock prices, we introduce and study a stochastic process in continuous time with two regimes, threshold and delay, given by a stochastic differential equation. When the difference between the regimes is simply given by different set of real valued parameters for the drift and diffusion coefficients, changes between regimes depending only on these parameters, we show that if the delay is known there are consistent estimators for the threshold as long we know how to classify a given observation of the process as belonging to one of the two regimes. When the drift and diffusion coefficients are of geometric Brownian motion type we obtain a model with parameters that can be estimated in a satisfactory way, a model that allows to differentiate regimes in some of the NYSE 21 stocks analyzed and also, that gives very satisfactory results when compared to the usual Black-Scholes model for pricing call options. We also propose a model for the price evolution of stock exchange assets that incorporates the information contained in liquidity values as expressed in local currency. The model is given by a system of stochastic differential equations, one for price and another for liquidity, having regime switching parameters that change according to the crossings of thresholds by the trajectories of the processes. By means of a simple simulation study we present some of the properties of the model and show that it allows recovering some of the evolution features of a typical stock of the equity Portuguese market.