El Departamento de Estadística del ITAM

anuncia la siguiente sesión de

EL SEMINARIO ALEATORIO

que, con el título

GAMMA STOCHASTIC VOLATILITY MODELS

Impartirá

BOVAS ABRAHAM
DEPARTMENT OF STATISTICS
UNIVERSITY OF WATERLOO

Abstract

Studies on financial time series reveal that a sequence of returns on some financial assets such as stocks, currency, and commodities often exhibit time-dependent variances (volatility) and excess kurtosis in the marginal distributions. In such cases, forecasts of asset-return variance are central for financial applications such as portfolio optimization and valuation of financial derivatives. Empirical studies of stock returns also indicate that although the returns are uncorrelated the squared returns are not uncorrelated. Time series models, called volatility models in the literature, have been employed to capture these salient features.

In a broader sense, there are two kinds of models for time-dependent variances. They are observation-driven and parameter-driven models. An example of the former is the autoregressive conditional heteroskedastic (ARCH) model introduced by Robert Engle in 1982. In this model, the variance of the return at time t is assumed to be a deterministic function of lagged values of the squared errors. The second type of models called stochastic volatility (SV) models have assumed that the conditional distribution of returns is normal or student t- distributed and the volatility sequence evolve as an autoregressive sequence with log normal marginals.

In this paper, we propose models for returns in which the return volatilities evolve according to a stationary gamma auroregressive (GAR) model. We obtain moment estimators for the parameters of the models and show that these estimators are consistent and asymptotically normal. We show by simulation that these estimates are reasonable. We illustrate the use of the model using some stock data. In this analysis with stock index return data we find that return models with gamma stochastic volatility processes capture the leptokurtic nature of return distributions and the slowly decaying autocorrelation functions of squared returns for some of the return series.

Fecha: Lunes 4 de Diciembre
Hora: 13:00 hrs.
Salón: B-3

Lista de seminarios próximos. Visite:

http://estadistica.itam.mx/seminarios_prox.html

El Seminario Aleatorio está destinado tanto a profesores como a estudiantes, por lo que el Departamento de Estadística agradece a los profesores que colaboren invitando a sus alumnos a estas sesiones.

María F. Rojano Agraz
ITAM
Depto. Académico de Estadística
Rio Hondo # 1,
Col. Tizapán San Angel
C.P. 01000 México, D. F.
Tel. 5628-4000 ext. 3803
Fax 5628-4086