Abstract

Parameterization of Cox-Ingersoll-Ross interest rate model for zero coupon yield curve and his application for selecting the discount rate and using Floorlets and Caplets for postretirement and pension plans.

One crucial matter in valuating derivates are interest rate securities. According to John Hull (2009) on Options, Futures and other Derivatives, there are two main issues for:

1) Modelling the entire zero coupon model
2) Using the fact that the volatility is not constant on the whole curve.

So, it is necessary having one model that estimates the future behaviour of the interest rates.

Having the historic yield curves, we can estimate using GARCH Models the volatility and determine the Cox-Ingersoll-Ross parameters for the entire curve and resulting for:

1) Building of long term curve to which the spot curve converges.
2) Having one model that forecasts the rates for all terms.
3) Modelling derivate such as floorlets and/or captlets for establishing a range in which the discount rate may vary and valuing the premiums for having such hedge.

For projecting interest rates paths are via stochastic simulations using Excell.

Act. Angel Flores Fuentes

About Author:

He received his bachelor degree at UNAM (Faculty of Science) and was studying a Master of Science degree at IIMAS (Research Institute of Mathematics and Applied Systems at UNAM). He is also finishing a Master of Finance at Instituto Tecnologico de Monterrey (campus cd de Mexico). Was professor at faculty of Science in the topics: Risk Theory, Actuarial Calculus and Social Security.

Today, He is working at BBVA Bancomer as responsible of Pension branch.

Before He worked at: Watson Wyatt México (2003 -2007)