

An Intensity-based Model for Pricing Variable Coupon Bonds

Albert Lee Chun*

Abstract

This paper presents a reduced form model for the valuation of variable-coupon bonds where the coupon rate fluctuates with the credit rating of the issuing firm. We work within a class of intensity based pricing models where a Cox (or a doubly stochastic Poisson) process governs the intensity of the ratings change. The time-variation in the credit transition process is modeled via a continuous-time inhomogeneous Markov chain. With a desire to avoid making strong assumptions on the properties of the generator matrix, we develop a general recursive pricing model. As a special case, we derive essentially closed form solutions for the prices of step-up only bonds within an affine term structure setting.

*HEC Montreal, Department of Finance, albertc@stanfordalumni.org

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