

Numerical analysis of rating transition matrix depending on latent macro factor via nonlinear particle filter method

Abstract

We propose a new nonlinear filtering model for a better estimation of credit rating transition matrix consistent with the hypothesis that rating transition intensities as well as dynamics of financial asset prices depend on some unobservable macroeconomic factor. We attempt a branching particle filter method to numerically obtain the conditional distribution of the latent factor. For an illustration, we analyze a rating transition history of Japanese enterprises. As a result, we realize that our model can capture some contagion effect of credit events and an interpolative role of financial market information on the rating transition intensities.