Department of Decision Sciences

Occasional Seminar

A stochastic programming model for the optimal issuance of government bonds

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Abstract

Sovereign states issue fixed and floating securities to fund their public debt. The value of such portfolios strongly depends on the fluctuations of the term structure of interest rates. This is a typical example of planning under uncertainty, where decisions have to be taken on the base of the key stochastic economic factors underneath the model.
We propose a multistage stochastic programming model to select portfolios of bonds, where the aim of the decision maker is to minimize the cost of the decision process. At the same time, we bound the conditional Value-at-Risk, a measure of risk which accounts for the losses of the tail distribution. We build an efficient frontier to trade-off the optimal cost versus the conditional Value-at-Risk and analyze the results obtained.

Keywords: Stochastic programming · Sovereign debt · Optimal debt issuance · Debt structuring

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