Yield curve event tree construction for multi stage stochastic programming models

Dynamic stochastic programming (DSP) provides an intuitive framework for modelling of financial portfolio choice problems where market frictions are present and dynamic re-balancing has a significant effect on initial decisions. The application of these models in practice, however, is limited by the quality and size of the event trees representing the underlying uncertainty. Most often the DSP literature assumes existence of “appropriate” event trees without defining and examining qualities that must be met (ex-ante) in such an event tree in order for the results of the DSP model to be reliable. Indeed defining a universal and tractable framework for fully “appropriate” event trees is in our opinion an impossible task. A problem specific approach to designing such event trees is the way ahead. In this paper we propose a number of desirable properties which should be present in an event tree of yield curves. Such trees may then be used to represent the underlying uncertainty in DSP models of fixed income risk and portfolio management.

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