

Fair Dynamic Valuation of Insurance Liabilities

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Abstract

This thesis study sets out to investigate the topic of fair insurance liability valuation. Considering a discrete multi-period time setting, we explore a class of fair dynamic valuations that combine market consistency, actuarial judgment as well as time consistency. Furthermore, we show how to construct a fair dynamic valuation using a backwards iteration procedure. This procedure is implemented numerically through the usage of Least Square Monte Carlo (LSMC) approximation techniques. As part of this, we focus on investigating two main aspects; the choice of underlying regression models used in the LSMC approximations as well as the choice of actuarial valuation function. Moreover, we assess how these choices affect the resulting fair dynamic valuation. Our results indicate that the choice of regression models has an evident impact on the subsequent valuations. In particular, we identify smoothing splines and LOESS regression models as promising candidates that achieve improved estimates in the LSMC approximations.

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