A Neural Network Approach to Efficient Valuation of Large VA Portfolios

Abstract-Although Variable Annuities (VAs) are lucrative products for insurance companies, the embedded guarantees in these instruments expose insurance companies to substantial risks. To manage the risks associated with VA products, many insurance companies have introduced intraday hedging programs. As part of these hedging programs, the insurance companies need to value the key risk metrics of interest, such as the Greeks, daily for a large portfolios of VAs.

Existing methodologies for fair valuation of VA products, including the industry standard Monte Carlo (MC) simulations, are computationally demanding and do not scale well to large portfolios of VA products, especially for intraday valuations. In this talk, we present a neural network approach to valuation of large portfolios of VA products that significantly reduces the valuation time.