Real Time Counterparty Credit Risk Management With Adjoint Algorithmic Differentiation (AAD)

Luca Capriotti (Credit Suisse Group, NYC, USA)

Abstract:

One the most active areas of risk management today is counterparty credit risk management (CCRM). Managing counterparty risk is particularly challenging because it requires the simultaneous evaluation of all the trades facing a given counterparty. For multi-asset portfolios this typically comes with extraordinary computational challenges.

We show how Adjoint Algorithmic Differentiation (AAD) can be used an be used to reduce the computational cost by hundreds of times. As a result, AAD allows one to perform in minutes risk runs that would take otherwise several hours or could not even be performed overnight without large parallel computers. AAD makes therefore possible real time risk management in Monte Carlo, allowing investment firms to hedge their positions more effectively, actively manage their capital allocation, reduce their infrastructure costs, and ultimately attract more business.