COUNTERPARTY CREDIT RISK MODELING USING LINEAR GAUSSIAN TWO FACTOR MODEL (G2++) AND LIBOR MARKET MODEL (LMM)

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A thesis paper submitted in partial fulfilment of the requirements for the degree of

Master of Science (Statistics)

School of Statistics

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May 2017

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Credit Valuation Adjustment (CVA) is a measurement tool that quantifies Counterparty Credit Risk (CCR) or the possibility of the counterparty not being able to fulfil its contractual obligations. The Hull-White One Factor Model (HW1F) is the most commonly used short rate model in CVA calculation, particularly in interest rate simulation. Its simplicity and straightforward nature, however, presents major disadvantages. This study proposes alternative models of calculating CVA using Linear Gaussian Two Factor (G2++) and LIBOR Market Model (LMM) to calculate exposures. The proposed methods were computationally compared and supported by simulation scenario analysis, with the HW1F as the benchmark. The results suggest that LMM not only resulted to lower CVA and DVA estimated but provides expected exposures estimates that exhibit desirable properties of risk measure.

Keywords: *Counterparty Credit Risk, Credit Valuation Adjustment, G2++, LIBOR Market Model, Monte Carlo Simulation, Interest Rate Swap, Swaption, Black's Model, CVA*