

# A Multi-Factor Cheyette Model with Nonparametric Local Volatility

Bayarbileg Bujintuul

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## **Abstract**

In this thesis, we study the Cheyette term structure model which is practical to use for pricing more complex instruments thanks to its Markovian representation and is one of very popular interest rate models.

The Cheyette style models have stochastic and/or local volatility specifications, and one- and multi-factor settings. We work with a local volatility Cheyette model, more specifically, the non parametric local volatility model proposed by Gatarek & Jablecki (2016).

Using this model with one-factor setup, we value European swaptions via Monte Carlo pricer. The calibrated model with large number of simulations, small time step, and small mean reversion precisely match observed market smiles in US dollar and Euro interest rate swaptions. In addition, we try to calibrate the model in the multi-dimensional setting.