

# Calibrating and Estimating Exponential-Affine Models in

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# Exponential-Affine models in

## The Class of Exponential-Affine Models

Continuous Time Dynamic models used in Finance for:

- Asset Pricing
- Term Structure Modelling

### Advantages:

Multi-factor models

Flexibility can incorporate Stochastic volatility

Jumps

Log-Prices are Affine (linear + constant)  
functions of (latent) state variables

### Tractability

Coefficients are solutions of a  
(known) system of Riccati ODEs

# Exponential-Affine models in

## Fitting model parameters to Market Data

### Two Approaches

- Calibration: uses a single cross-section of Market prices at a fixed date
- Estimation: uses a panel of prices observed at different dates

### Challenges and difficulties

Likelihoods (usually) not known in closed form

Computationally intensive Optimization of non-convex functions

No single software available for estimation or calibration

### Our Proposal

Build a dedicated tool for the analysis of Exp-Affine models in 

Currently: Term Structure of Interest Rates

Planned: Asset Pricing for financial derivatives