

# **Efficient Methods for Calibrating and Pricing Interest Rate Options**

Lluís Navarro Girbés

## **Abstract**

This PhD thesis deals with the valuation and hedging of interest rate derivatives, a major topic in Financial Economics. Chapters 1, 2 and 3 contain a self contained summary of previous literature, while the rest of the thesis present the new contributions of this research work.

In particular, in Chapter 4 we review the general features of the geometric view of the HJM models, introducing the concept of consistent families within this class of models.

In Chapters 5 and 6 we use the ideas of Chapter 4 to propose multi-objective extensions of several calibration methods. As a consequence, a consistent framework for the calibration of vanilla interest rate derivatives is developed.

Finally, new pricing methods are introduced in the Chapter 7 as an application of the findings of previous chapters. In particular, several discretization and simulation techniques to the valuation of vanilla caps, bond options and binary caps are derived.