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SABR and SABR LIBOR Market Models in Practice The SABR/LIBOR Market Model The LIBOR Market Model in Practice Modern Pricing of Interest-Rate Derivatives Libor Market Models Versus Swap Market Models for Pricing Interest Rate Derivatives Interest Rate Models Theory and Practice SABR and SABR LIBOR Market Models in Practice Interest Rate Models - Theory and Practice Libor Market Model Calibrating Libor Market Models Calibration and Parameterization Methods for the Libor Market Model Libor Market Models with Stochastic Volatility and CMS Spread Option Pricing Libor Market Models Pricing Credit Derivatives in a 'Libor Market Model' LIBOR Market Models with Stochastic Volatility Extending Libor Market Models Extended Libor Market Models with Stochastic Volatility Libor and Swap Market Models for the Pricing of Interest Rate Derivatives Libor Market Model with Stochastic Volatility Libor Market Models The Libor Market Model and Its Application in the Safex-Jibar Market Extended Libor Market Models with Affine and Quadratic Volatility Robust Libor Modelling and Pricing of Derivative Products An Efficient Lattice Algorithm for the Libor Market Model Engineering BGM Extended Libor Market Models Multi-Factor Cross Currency Libor Market Models Smile-consistent LIBOR market models Comparing Discretisations of the Libor Market Model in the Spot Measure Term-structure Models and the Libor Market Model Volatility Skews and Extensions of the Libor Market Model Libor Market Mode - Theory and Practice Interest Rate Modelling: The Market Models Approach Cross-currency Libor Market Models Libor Market Model and Gaussian HJM Explicit Approaches to Option on Composition Interest Rate Modeling: Post-Crisis Challenges and Approaches Cap and Swaption Approximations in Libor Market Models with Jumps Interest Rate

Volatility and Derivatives (Libor Market Model). Lognormal Random Field Approximations to LIBOR Market Models Volatility Specifications in the LIBOR Market Model

Libor Market Models Apr 17 2022 This manuscript reviews standard classes of Libor Market models and discusses their numerical approximation machinery. It gives introduction to non-defaultable, defaultable models, Levy-forced models and affine Libor models.

LIBOR Market Models with Stochastic Volatility Feb 15 2022

Calibrating Libor Market Models Jul 20 2022 The Libor Market Models arise from the general multi-factor Heath-Jarrow-Morton interest rate model. The Libor Market Models assume that, say, 3 months simple rates are log-normal. With pricing formulae for caps/floors and swaptions this makes the model easy to calibrate for a specific choice of volatility function. We describe how to calibrate the model using a non-parametric volatility function. We apply a smoothness criteria to the quality of fit used in calibration as erratic volatilities otherwise result from the calibration. We perform numerical studies using real market data from several markets to check the robustness of the implementation towards changes in model/calibration parameters. The implementation is indeed very robust and market quotes are matched within bid-offer spread.

Lognormal Random Field Approximations to LIBOR Market Models Jan 22 2020

***Libor Market Models Versus Swap Market Models for Pricing Interest Rate Derivatives* Dec 25 2022**

Modern Pricing of Interest-Rate Derivatives Jan 26 2023 In recent years, interest-rate modeling has developed rapidly in terms of both practice and theory. The academic and practitioners' communities, however, have not always communicated as productively as would have been desirable. As a result, their research programs have often developed with little constructive interference. In this book, Riccardo Rebonato draws on his academic and professional experience, straddling both sides of the divide to bring together and build on what theory and trading have to offer. Rebonato begins by presenting the conceptual foundations for the

application of the LIBOR market model to the pricing of interest-rate derivatives. Next he treats in great detail the calibration of this model to market prices, asking how possible and advisable it is to enforce a simultaneous fitting to several market observables. He does so with an eye not only to mathematical feasibility but also to financial justification, while devoting special scrutiny to the implications of market incompleteness. Much of the book concerns an original extension of the LIBOR market model, devised to account for implied volatility smiles. This is done by introducing a stochastic-volatility, displaced-diffusion version of the model. The emphasis again is on the financial justification and on the computational feasibility of the proposed solution to the smile problem. This book is must reading for quantitative researchers in financial houses, sophisticated practitioners in the derivatives area, and students of finance.

Libor Market Model with Stochastic Volatility **Oct 11 2021 Four papers introducing LIBOR market model (LMM) were published in 1997. They seemed to unify market practice with arbitrage-free framework - it came out that for one year only. The next year, after Russian crisis, cap and swaption markets started to show evident volatility smile and skew. Several attempts were made to capture that phenomenon into the arbitrage-free framework. Our note is strongly inspired by papers and conference talks by Mark Joshi and Riccardo Rebonato. We share their opinions that:- Since smiles and skews are caused by different market features, it is more natural to model smile and skew separately, rather then to use unified framework of implied smile.- Displaced Diffusion approach is easier in treatment then Constant Elasticity of Variance (CEV) approach for interest rate derivatives and gives the same modelling possibilities.- Displaced Diffusion and Stochastic Volatility are perfectly suited to work together.Since our attention is fixed more on swaptions then on caps/floors, we would like to opt for another version of the LIBOR market model with stochastic volatility and displaced diffusion (SVDDLMM) then Joshi and Rebonato:- We use various random displacement factors for various LIBOR rates. - For Stochastic Volatility we propose a new simple non mean reverting multi-lognormal**

model. We also try to convince the Reader that mean reversion in stochastic volatility models excludes correct modelling of long term options - swaptions are canonical example.Easy closed form formulae are given for caps/floors and European swaptions what makes calibration procedure more effective and transparent - at least we are not quot;prisoners of Monte Carloquot;. We are able to calibrate model to various smile/skew shapes for caps/floors and swaptions with various length and of various maturities.

Extended Libor Market Models Mar 04 2021

The LIBOR Market Model in Practice Feb 27 2023 The LIBOR Market Model (LMM) is the first model of interest rates dynamics consistent with the market practice of pricing interest rate derivatives and therefore it is widely used by financial institution for valuation of interest rate derivatives. This book provides a full practitioner's approach to the LIBOR Market Model. It adopts the specific language of a quantitative analyst to the largest possible level and is one of first books on the subject written entirely by quants. The book is divided into three parts - theory, calibration and simulation. New and important issues are covered, such as various drift approximations, various parametric and nonparametric calibrations, and the uncertain volatility approach to smile modelling; a version of the HJM model based on market observables and the duality between BGM and HJM models. Co-authored by Dariusz Gatarek, the 'G' in the BGM model who is internationally known for his work on LIBOR market models, this book offers an essential perspective on the global benchmark for short-term interest rates.

An Efficient Lattice Algorithm for the Libor Market Model May 06 2021 The LIBOR Market Model (LMM or BGM) has become one of the most popular models for pricing interest rate products. It is commonly believed that Monte-Carlo simulation is the only viable method available for the LIBOR Market Model. In this article, however, we propose a lattice (or tree) approach to price interest rate products within the LIBOR Market Model by introducing a shifted forward measure and several novel fast drift approximation methods. This model should achieve the best performance without losing much accuracy. Moreover, the calibration is

almost automatic and it is simple and easy to implement. Adding this model to the valuation toolkit is actually quite useful; especially for risk management or in the case there is a need for a quick turnaround.

Robust Libor Modelling and Pricing of Derivative Products Jun 07 2021 One of Riskbook.com's Best of 2005 - Top Ten Finance Books The Libor market model remains one of the most popular and advanced tools for modelling interest rates and interest rate derivatives, but finding a useful procedure for calibrating the model has been a perennial problem. Also the respective pricing of exotic derivative products such

Interest Rate Modelling: The Market Models Approach Jul 28 2020 The market models are the recent most popular approach for interest rate modelling. This thesis presents two market models: the LIBOR market model and swap rate market model. A comprehensive review of the LIBOR market model is provided. We are interested in the calibration and implementation of the LIBOR market model. We provide a thorough analysis on the appropriateness of the LIBOR market model, the optimal specification and calibration of the model. Numerical experiments are taken for the calibration. We implement the model by means of Monte Carlo simulation of the forward rate dynamics and then examine the performance of the calibration. Our study have shown that the calibration is effective, accurate and optimistic. It is believed that the technique we develop and use in this study will prove to be useful in practice.

Interest Rate Volatility and Derivatives (Libor Market Model). Feb 21 2020 Heath, Jarrow, & Morton (1989, HJM) develop a framework in which all interest rate models can be expressed. The starting point is a continuum of zero coupon bonds, or, equivalently, of instantaneous forward interest rates. In this way, the whole of the yield curve is modelled, according to some covariance model (between the bond prices or forward rates), in as many factors as required. It is not possible, however, to specify a strictly log-normal HJM model due to the well-known "blow up" effect; it is necessary to truncate the volatility function at some suitably high level of rates. Much greater problems arise with numerical implementation, since a computer will be unable to store the

infinite number of forward rates in the continuous yield curve. The HJM approach can be modified, however, to deal with discretely compounded forward rates. Brace, Gatarek, and Musiela (1997, BGM) formally present a framework in which forward Libor rates are modelled, and Jamshidian (1997) describes a similar model in which forward-starting swap rates are modelled. It seems that generally, models of this class are referred to as BGM models. The advantages of this type of modelling come from the fact that it is market observables that are modelled, in a fashion which can be shown to be consistent with the Black pricing model used in the market. The model can be easily extended to more than one factor, and is very closely related to the principal component analysis of yield curve movements. Furthermore, since the volatilities of market observables are included directly in the model, much greater transparency is achieved, and calibration is not necessary. For these reasons, this model is often referred to as the market model.

SABR and SABR LIBOR Market Models in Practice Apr 29 2023 Interest rate traders have been using the SABR model to price vanilla products for more than a decade. However this model suffers however from a severe limitation: its inability to value exotic products. A term structure model à la LIBOR Market Model (LMM) is often employed to value these more complex derivatives, however the LMM is unable to capture the volatility smile. A joint SABR LIBOR Market Model is the natural evolution towards a consistent pricing of vanilla and exotic products. Knowledge of these models is essential to all aspiring interest rate quants, traders and risk managers, as well an understanding of their failings and alternatives. SABR and SABR Libor Market Models in Practice is an accessible guide to modern interest rate modelling. Rather than covering an array of models which are seldom used in practice, it focuses on the SABR model, the market standard for vanilla products, the LIBOR Market Model, the most commonly used model for exotic products and the extended SABR LIBOR Market Model. The book takes a hands-on approach, demonstrating simply how to implement and work with these models in a market setting. It bridges the gap between the understanding of the models from a conceptual and mathematical

perspective and the actual implementation by supplementing the interest rate theory with modelling specific, practical code examples written in Python.

Libor Market Model **Aug 21 2022 The Libor Market Model is a financial model used to price and hedge exotic interest rate derivatives. The model is accepted and used widely due to its consistence with the standard market formula, Black's cap (floor) formula. This compatibility simplifies the calibration because the Black's quoted prices for standard interest rate derivatives can be directly used as an input for the model. The goal of this book is to examine the Libor Market Model theoretically and apply it practically to the pricing of standard caps, discrete barriers, European swaptions and ratchets. The dynamic of the Libor Market Model will be derived and all steps of its implementation using Monte Carlo simulation will be explained. Implementation is fulfilled using different volatility and correlation structuring. Certain care should be taken when calibrating the Libor Market Model and structuring the forward rate volatilities and correlations as they may affect prices of interest rate derivatives considerably. The book is aimed at graduate students of finance and practitioners implementing this model in practice. C source code, used for pricing interest rate derivatives in this book, may be ordered at the following web site: http: //www.irina-goetsch.com/libor-market-model/**

Libor and Swap Market Models for the Pricing of Interest Rate Derivatives Nov 12 2021

Multi-Factor Cross Currency Libor Market Models Feb 03 2021 We review multi-factor cross-currency LIBOR market models. We present a new method for the calibration of cross-currency market models to FX markets. We study the case of Power Reverse Dual Currency derivatives. We also present a new version of Least Square monte carlo method which makes handling of complex Bermudan callable structured derivatives much simpler.

Libor Market Model and Gaussian HJM Explicit Approaches to Option on Composition May 26 2020 The twin brothers Libor Market and Gaussian HJM models are investigated. A simple exotic option, floor on

composition, is studied. The same explicit approach is used for both models. Using an approximation the LLM price is obtained without Monte Carlo simulation. The results of the approximation are very good, with an error well below the uncertainty due to the simulation. The appendices proves the existence of the (modified) normal and shifted log-normal LMM used in the pricing. The link of the latter with the Ho and Lee continuous time model is described.

Calibration and Parameterization Methods for the Libor Market Model Jun 19 2022 The Libor Market Model (LMM) is a mathematical model for pricing and risk management of interest rate derivatives and has been built on the framework of modelling forward rates. For the conceptual understanding of the model a strong background in the fields of mathematics, statistics, finance and especially for implementation, computer science is necessary. The book provides the ne cessary groundwork to understand the LMM and delivers a framework to implement a working model where possible calibration and parameterization methods for volatility and correlation are explained. Special emphasis lies also on the trade off of speed and correctness where differences in choosing random number generators and the advantages of factor reduction are shown.

Pricing Credit Derivatives in a 'Libor Market Model' Mar 16 2022 Diploma Thesis from the year 2002 in the subject Business economics - Investment and Finance, grade: 1,0, University of Bonn (Institut f r Gesellschafts- und Wirtschaftswissenschaften, Statistische Abteilung), 48 entries in the bibliography, language: English, abstract: The growing importance of credit derivatives creates the need to price them in a market consistent manner. In this thesis the well known and accepted Libor Market Model is extended following Sch nbucher (2000). The thesis consists of two main parts: one describing and explaining the theoretical framework that will yield the pricing formulae for credit derivatives, and a second part explaining how to practically implement and calibrate the model. The second part also reports results of our implementation. We show that approximations introduced by Sch nbucher (2000) hold and that the model can be used to price defaultable bonds, credit default

swaps as well as options on credit default swaps. The thesis has been written at the Department of Statistics, University of Bonn in cooperation with Deutsche Postbank AG Credit Risk Management.

The Libor Market Model and Its Application in the Safex-Jibar Market Aug 09 2021 The main objective of this work is to construct and implement a LIBOR market model and a Swaptions market model for the South African market.In his Thesis, Victor Gumbo starts by recapitulating the basic theory of arbitrage pricing, forward measures and term structure models for zero-coupon bonds. He goes on to describe and analyze the LIBOR market models. Apart from the standard models, he goes on to discusses market practice and provides numerous formulae for pricing as well as terminal measure existence. In Chapter 3, he gives a similar outline for Swap Market models. It should be emphasized that these models are quite complicated from a theoretical point of view but Victor manages to give an extremely pedagical account of this difficult theory.

***Extended Libor Market Models with Stochastic Volatility* Dec 13 2021 This paper introduces stochastic volatility to the Libor market model of interest rate dynamics. As in Andersen and Andreasen (2000a) we allow for non-parametric volatility structures with freely specifiable level dependence (such as, but not limited to, the CEV formulation), but now also include a multiplicative perturbation of the forward volatility surface by a general mean-reverting stochastic volatility process. The resulting model dynamics allow for modeling of non-monotonic volatility smiles while explicitly allowing for control of the stationarity properties of the resulting model dynamics. Using asymptotic expansion techniques, we provide closed-form pricing formulas for caps and swaptions that are robust, accurate, and well-suited for both model calibration and general mark-to-market of plain-vanilla instruments. Monte Carlo schemes for the proposed model are proposed and examined.**

Smile-consistent LIBOR market models Jan 02 2021

***Cap and Swaption Approximations in Libor Market Models with Jumps* Mar 24 2020 This paper develops formulas for pricing caps and swaptions in LIBOR market models with jumps. The arbitrage-free**

dynamics of this class of models were characterized in Glasserman and Kou (1999) in a framework allowing for very general jump processes. For computational purposes, it is convenient to model jump times as Poisson processes; however, the Poisson property is not preserved under the changes of measure commonly used to derive prices in the LIBOR market model framework. In particular, jumps cannot be Poisson under both a forward measure and the spot measure, and this complicates pricing. To develop pricing formulas, we approximate the dynamics of a forward rate or swap rate using a scalar jump-diffusion process with time-varying parameters. We develop an exact formula for the price of an option on this jump-diffusion through explicit inversion of a Fourier transform. We then use this formula to price caps and swaptions by choosing the parameters of the scalar diffusion to approximate the arbitrage-free dynamics of the underlying forward or swap rate. We apply this method to two classes of models: one in which the jumps in all forward rates are Poisson under the spot measure, and one in which the jumps in each forward rate are Poisson under its associated forward measure. Numerical examples demonstrate the accuracy of the approximations.

Interest Rate Models Theory and Practice Nov 24 2022 The 2nd edition of this successful book has several new features. The calibration discussion of the basic LIBOR market model has been enriched considerably, with an analysis of the impact of the swaptions interpolation technique and of the exogenous instantaneous correlation on the calibration outputs. A discussion of historical estimation of the instantaneous correlation matrix and of rank reduction has been added, and a LIBOR-model consistent swaption-volatility interpolation technique has been introduced. The old sections devoted to the smile issue in the LIBOR market model have been enlarged into a new chapter. New sections on local-volatility dynamics, and on stochastic volatility models have been added, with a thorough treatment of the recently developed uncertain-volatility approach. Examples of calibrations to real market data are now considered. The fast-growing interest for hybrid products has led to a new chapter. A special focus here is devoted to the pricing of inflation-linked derivatives. The three final new chapters of this second

edition are devoted to credit. Since Credit Derivatives are increasingly fundamental, and since in the reduced-form modeling framework much of the technique involved is analogous to interest-rate modeling, Credit Derivatives -- mostly Credit Default Swaps (CDS), CDS Options and Constant Maturity CDS - are discussed, building on the basic short rate-models and market models introduced earlier for the default-free market. Counterparty risk in interest rate payoff valuation is also considered, motivated by the recent Basel II framework developments.

Extended Libor Market Models with Affine and Quadratic Volatility Jul 08 2021 The market model of interest rates specifies simple forward or LIBOR rates as lognormaly distributed, their stochastic dynamics has a linear volatility function. This model is extended to quadratic volatility which is the product of a quadratic polynomial and a level-independent covariance matrix. I derive extensions of the Black cap pricing formula in this setup and give examples for the possible shapes of implied volatilities. Then I give a new approximative swaption pricing formula and discuss the goodness of the approximation. The model is calibrated to market prices, it shows no extended model specification outperforms the others. The criteria for model choice should thus be theoretical properties and computational efficiency.

Libor Market Models with Stochastic Volatility and CMS Spread Option Pricing May 18 2022

The SABR/LIBOR Market Model Mar 28 2023 This book presents a major innovation in the interest rate space. It explains a financially motivated extension of the LIBOR Market model which accurately reproduces the prices for plain vanilla hedging instruments (swaptions and caplets) of all strikes and maturities produced by the SABR model. The authors show how to accurately recover the whole of the SABR smile surface using their extension of the LIBOR market model. This is not just a new model, this is a new way of option pricing that takes into account the need to calibrate as accurately as possible to the plain vanilla reference hedging instruments and the need to obtain prices and hedges in reasonable time whilst reproducing a realistic future evolution of the smile surface. It removes the hard choice between accuracy and time

because the framework that the authors provide reproduces today's market prices of plain vanilla options almost exactly and simultaneously gives a reasonable future evolution for the smile surface. The authors take the SABR model as the starting point for their extension of the LMM because it is a good model for European options. The problem, however with SABR is that it treats each European option in isolation and the processes for the various underlyings (forward and swap rates) do not talk to each other so it isn't obvious how to relate these processes into the dynamics of the whole yield curve. With this new model, the authors bring the dynamics of the various forward rates and stochastic volatilities under a single umbrella. To ensure the absence of arbitrage they derive drift adjustments to be applied to both the forward rates and their volatilities. When this is completed, complex derivatives that depend on the joint realisation of all relevant forward rates can now be priced. Contents THE THEORETICAL SET-UP The Libor Market model The SABR Model The LMM-SABR Model IMPLEMENTATION AND CALIBRATION Calibrating the LMM-SABR model to Market Caplet prices Calibrating the LMM/SABR model to Market Swaption Prices Calibrating the Correlation Structure EMPIRICAL EVIDENCE The Empirical problem Estimating the volatility of the forward rates Estimating the correlation structure Estimating the volatility of the volatility HEDGING Hedging the Volatility Structure Hedging the Correlation Structure Hedging in conditions of market stress

Interest Rate Modeling: Post-Crisis Challenges and Approaches Apr 24 2020 Filling a gap in the literature caused by the recent financial crisis, this book provides a treatment of the techniques needed to model and evaluate interest rate derivatives according to the new paradigm for fixed income markets. Concerning this new development, there presently exist only research articles and two books, one of them an edited volume, both being written by researchers working mainly in practice. The aim of this book is to concentrate primarily on the methodological side, thereby providing an overview of the state-of-the-art and also clarifying the link between the new models and the classical literature. The book is intended to serve as a guide for graduate students and researchers as well as

practitioners interested in the paradigm change for fixed income markets. A basic knowledge of fixed income markets and related stochastic methodology is assumed as a prerequisite.

Libor Market Mode - Theory and Practice Aug 29 2020 Diploma Thesis from the year 2006 in the subject Economics - Monetary theory and policy, grade: 2.0, University of Frankfurt (Main), 32 entries in the bibliography, language: English, abstract: The goal of this thesis is to examine the LMM theoretically and apply practically to derivatives pricing. The input data structuring and calibration to market and historical data, implementing and pricing issues will be specifically investigated. This work begins with the comparison of the LMM to alternative interest rate models in chapter 2. A review of basic theory of the valuation of derivatives, which will be used in the next chapters, is presented in chapter 3. Theoretical description of the LMM is presented in the next chapter. Chapter 5 investigates several methods of calibrating directly to market cap and swaption prices. The way of obtaining the initial Libor yield curve is also summarized. In chapter 6 and 7 modeling of forward Libor rates volatility and correlation is presented. Hedging issues are to find in chapter 8. Chapter 9 covers pricing with the LMM by Monte Carlo simulations. This chapter presents the results of implementing the cascade calibration and of valuation of derivatives to illustrate the performance of the LMM. Finally the last chapter summarises and concludes the thesis.

Libor Market Models Sep 10 2021

Extending Libor Market Models Jan 14 2022

Interest Rate Models - Theory and Practice Sep 22 2022 The 2nd edition of this successful book has several new features. The calibration discussion of the basic LIBOR market model has been enriched considerably, with an analysis of the impact of the swaptions interpolation technique and of the exogenous instantaneous correlation on the calibration outputs. A discussion of historical estimation of the instantaneous correlation matrix and of rank reduction has been added, and a LIBOR-model consistent swaption-volatility interpolation technique has been introduced. The old sections devoted to the smile issue

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SABR and SABR LIBOR Market Models in Practice Oct 23 2022 Interest rate traders have been using the SABR model to price vanilla products for more than a decade. However this model suffers however from a severe limitation: its inability to value exotic products. A term structure model à la LIBOR Market Model (LMM) is often employed to value these more complex derivatives, however the LMM is unable to capture the volatility smile. A joint SABR LIBOR Market Model is the natural evolution towards a consistent pricing of vanilla and exotic products. Knowledge of these models is essential to all aspiring interest rate quants, traders and risk managers, as well an understanding of their failings and alternatives. SABR and SABR Libor Market Models in Practice is an accessible guide to modern interest rate modelling. Rather than covering an array of models which are seldom used in practice, it focuses on the SABR model, the market standard for vanilla products, the LIBOR Market Model, the most commonly used model for exotic products and the extended SABR LIBOR Market Model. The book takes a hands-on approach, demonstrating simply how to implement and work with these models in a market setting. It bridges the gap between the understanding of the models from a conceptual and mathematical

perspective and the actual implementation by supplementing the interest rate theory with modelling specific, practical code examples written in Python.

Engineering BGM **Apr 05 2021 Also known as the Libor market model, the Brace-Gatarek-Musiela (BGM) model is becoming an industry standard for pricing interest rate derivatives. Written by one of its developers, Engineering BGM builds progressively from simple to more sophisticated versions of the BGM model, offering a range of methods that can be programmed into production code to suit readers' requirements. After introducing the standard lognormal flat BGM model, the book focuses on the shifted/displaced diffusion version. Using this version, the author develops basic ideas about construction, change of measure, correlation, calibration, simulation, timeslicing, pricing, delta hedging, barriers, callable exotics (Bermudans), and vega hedging. Subsequent chapters address cross-economy BGM, the adaptation of the BGM model to inflation, a simple tractable stochastic volatility version of BGM, and Brazilian options suitable for BGM analysis. An appendix provides notation and an extensive array of formulae. The straightforward presentation of various BGM models in this handy book will help promote a robust, safe, and stable environment for calibrating, simulating, pricing, and hedging interest rate instruments.**

Comparing Discretisations of the Libor Market Model in the Spot Measure Dec 01 2020

Cross-currency Libor Market Models Jun 26 2020

Volatility Specifications in the LIBOR Market Model Dec 21 2019

Term-structure Models and the Libor Market Model Oct 31 2020

Volatility Skews and Extensions of the Libor Market Model Sep 29 2020 This paper considers extensions of the Libor market model (Brace et al (1997), Jamshidian (1997), Miltersen et al (1997)) to markets with volatility skews in observable option prices. We expand the family of forward rate processes to include diffusions with non-linear forward rate dependence and discuss efficient techniques for calibration to quoted prices of caps and swaptions. Special emphasis is put on generalized CEV processes for which exact closed-form expressions for cap prices are

derived. We also discuss modifications of the CEV process which exhibit appealing growth and boundary characteristics. The proposed models are investigated numerically through Crank-Nicholson finite difference schemes and Monte Carlo simulations.