

(Download) The SABR/LIBOR Market Model: Pricing, Calibration and Hedging for Complex Interest-Rate Derivatives

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Riccardo Rebonato, Kenneth McKay, Richard White
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Riccardo Rebonato, Kenneth McKay, Richard White : The SABR/LIBOR Market Model: Pricing, Calibration and Hedging for Complex Interest-Rate Derivatives before purchasing it in order to gage whether or not it would be worth my time, and all praised The SABR/LIBOR Market Model: Pricing, Calibration and Hedging for Complex Interest-Rate Derivatives:

11 of 11 people found the following review helpful. aTraderBy aTraderI am surprised this book only got 1 reiew after

been published more than a year. I am a trader in rates vol, and have a MS degree in MFE. I have briefly read through the book especially the models and the hedging parts. I enjoyed the parts that described the impacts of the alpha/beta/rho/nu to the skew, and I liked the parts of hedging adjustments very much. To me, hedging is what it is all about. The author has hands on experience in trading desk thus the reading is very fun and smooth. Part of the book is very technical especially the implementation part. Otherwise the book is easy to understand and follow given that you have a MFE degree. I don't give 5 star to the book because I think given the current status of SABR, which is just a model that bank use to describe the skew, I am not sure how widely is this LIBOR-SABR model used by the banks out there. It is a nice mixture of stochastic vol into LMM, but the question is do the big boys really use them in their trading desk? To my experience when pricing exotic IR products there really is no "science", no model gives the "correct" price. All the desks just use whatever model they have and they find out their price is off compared to the market level, they will then tweak their model params a little bit until it matches the market price. Given this situation, what really matters now is not the price but the hedging the model outputs. Does LIBOR-SABR gives the best delta and vega hedging compared to a naive LMM model? I somewhat didn't find the answer from this book. 8 of 8 people found the following review helpful. Lucid thinking about models. Model details of less general interest. By Un francais en angleterre Having to deal with Exotic Interest Rates product professionally, I had to get the latest Rebonato's opum. I've found in the past that there is much to be annoyed with this author (he gets fairly deep into the details but not necessarily at the level where you can re-implement things yourself), but also very frequently insights you would not get anywhere else: in the case of this book, the couple of pages where he explains what makes a good model should be mandatory reading for any aspiring "quant" thinking about applying the tools of his trade to the dirty world of finance. This is much better stuff than the more common-place fare he served in his "plight of the fortune tellers". Recommended as such. If you're buying this for the specific model that Rebonato advocates, unless you're very deeply involved in Rates structured products, I don't think you're getting a bargain.

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

From the Inside Flap: This is the best of Rebonato's books. The conversational spirit of the previous manuscripts is here pleasantly retained. But, the value added is the mathematical rigor that permeates the description of the proposed model. Definitely a must. Fabio Mercurio, Senior Quantitative Analyst, Bloomberg New York
A book that has all the hallmarks of Riccardo Rebonato: rigorous theory, up-to-date market knowledge, practical application, and empirical testing to destruction. This time, with co-authors, he applies himself to the most central banking market: LIBOR-related contracts. Ian Cooper, Professor of Finance, London Business School
In this concise book Riccardo Rebonato and his co-authors introduce a new financially motivated model combining the best features of the Libor Market and SABR models. The authors provide a useful roadmap to pricing, calibrating, and hedging interest rate derivatives in the new framework. The book will be of interest to practitioners and academics alike. Alexander Lipton, Managing Director, Merrill Lynch and Visiting Professor, Imperial College
From the Back Cover The authors take two market standards, the SABR and the LIBOR Market Model (LMM) and produce a coherent synthesis for the pricing of complex interest rate derivatives. The SABR model has become the market standard to recover the price of European options. Its main strengths are its financial justifiability, and its

ability to recover the dynamics of the smile evolution when the underlying changes. However, the SABR model treats each European option in isolation. The processes for forward rates and swap rates cannot easily be combined to create coherent dynamics for the entire yield curve. With their new model, the authors bring the dynamics of the various forward rates and stochastic volatilities under a single measure, and derive 'drift adjustments' to ensure the absence of arbitrage and to allow for the pricing of complex derivatives. The credible evolution of future smiles generated by the model is essential to complex derivatives pricing as it determines future prices for caplets and swaptions and therefore plausible re-hedging costs. The authors calibrate their model to hedging instruments in a way that is both accurate and extremely simple. They also propose a pragmatic hedging approach, inspired by work done with the two-state Markov-chain approach which relies on the empirical regularities of the dynamics of the smile surface and the robustness of the fits proposed. The final chapter considers 'survival' hedging in times of market turmoil. It does so by providing a set of transactions that can protect the value of a complex derivatives book in a stressed market. The extension of the LMM model provides a valid description of the financial reality while retaining tractability, computational speed and ease of calibration. The goal for the new model is to offer the ability to reduce uncertainty in market prices to an acceptable minimum by making as judicious a use as possible of the econometric information available. The grounding in empirical information of the modelling approach utilised by the authors differentiates this title from the stochastic-calculus-heavy, but empirically light, work of others. The title will be of interest to quantitative analysts, quantitative developers, risk managers and traders in complex derivatives.

About the Author
Riccardo Rebonato is Global Head of Market Risk and Global Head of the Quantitative Research Team at RBS. He is a visiting lecturer at Oxford University (Mathematical Finance) and adjunct professor at Imperial College (Tanaka Business School). He sits on the Board of Directors of ISDA and on the Board of Trustees for GARP. He is an editor for the International Journal of Theoretical and Applied Finance, for Applied Mathematical Finance, for the Journal of Risk and for the Journal of Risk Management in Financial Institutions. He holds doctorates in Nuclear Engineering and in Science of Materials/Solid State Physics. He was a research fellow in Physics at Corpus Christi College, Oxford, UK. Kenneth McKay is a PhD student at the London School of Economics following a first class honours degree in Mathematics and Economics from the LSE and an MPhil in Finance from Cambridge University. He has been working on interest rate derivative-related research with Riccardo Rebonato for the past year. Richard White holds a doctorate in Particle Physics from Imperial College London, and a first class honours degree in Physics from Oxford University. He held a Research Associate position at Imperial College before joining RBS in 2004 as a Quantitative Analyst. His research interests include option pricing with Levy Processes, Genetic Algorithms for portfolio optimisation, and Libor Market Models with stochastic volatility. He is currently taking a fortuitously timed sabbatical to pursue his joint passion for travel and scuba diving.