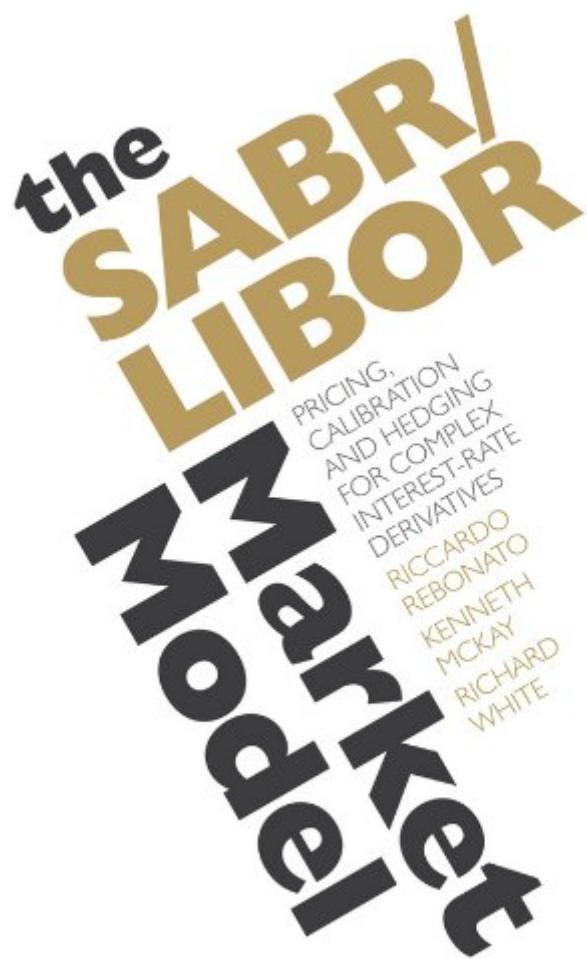


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# The SABR/LIBOR Market Model: Pricing, Calibration And Hedging For Complex Interest-Rate Derivatives



## Synopsis

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

## Book Information

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## Customer Reviews

I am surprised this book only got 1 review 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.

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.

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