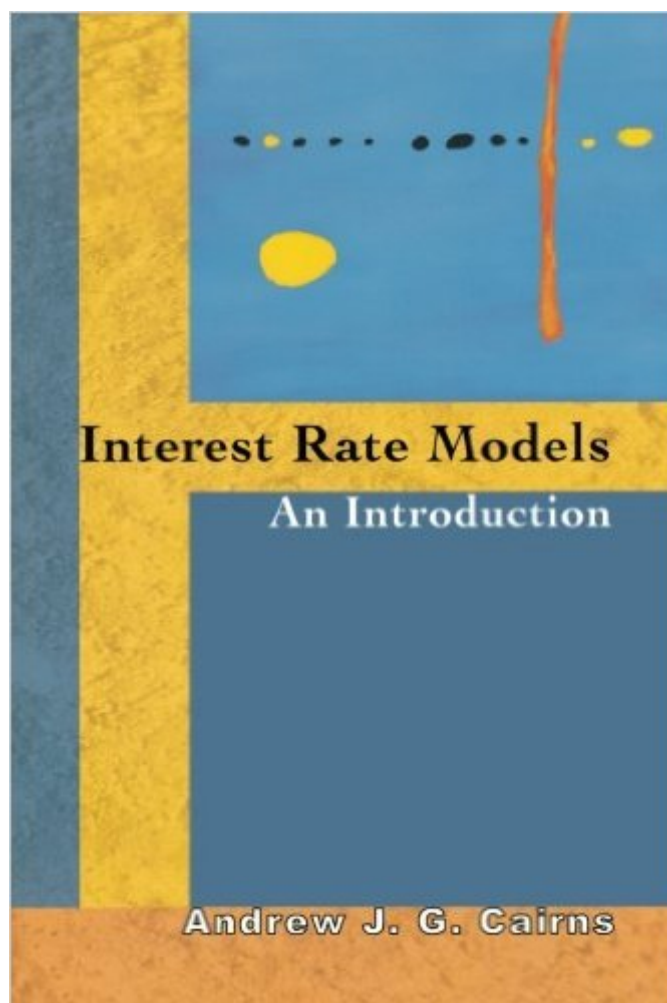


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# Interest Rate Models: An Introduction



## Synopsis

The field of financial mathematics has developed tremendously over the past thirty years, and the underlying models that have taken shape in interest rate markets and bond markets, being much richer in structure than equity-derivative models, are particularly fascinating and complex. This book introduces the tools required for the arbitrage-free modelling of the dynamics of these markets. Andrew Cairns addresses not only seminal works but also modern developments. Refreshingly broad in scope, covering numerical methods, credit risk, and descriptive models, and with an approachable sequence of opening chapters, *Interest Rate Models* will make readers--be they graduate students, academics, or practitioners--confident enough to develop their own interest rate models or to price nonstandard derivatives using existing models. The mathematical chapters begin with the simple binomial model that introduces many core ideas. But the main chapters work their way systematically through all of the main developments in continuous-time interest rate modelling. The book describes fully the broad range of approaches to interest rate modelling: short-rate models, no-arbitrage models, the Heath-Jarrow-Morton framework, multifactor models, forward measures, positive-interest models, and market models. Later chapters cover some related topics, including numerical methods, credit risk, and model calibration. Significantly, the book develops the martingale approach to bond pricing in detail, concentrating on risk-neutral pricing, before later exploring recent advances in interest rate modelling where different pricing measures are important.

## Book Information

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## Customer Reviews

The book assumes that you've done some stochastic analysis courses before. You need to be

familiar with Girsanov's theorem (change of measure) and some PDE theories (Feynman-Kac) to better understand the materials. The book starts with the introduction of instruments in the interest rate market. Then before introducing the continuous-time models, it shows how to price interest rate derivatives/ZCB in a binomial model, the classical Ho/Lee model is also introduced. The chapter on short-rate models is good, it shows 2 different ways to price zero-coupon bonds, martingale approach and the PDE approach. The book even proves ZCB/options on ZCB under the Vasicek and CIR models (in the appendices). More recent developments such as LIBOR/HJM are also introduced. The book might be a little bit difficult to read at the start (formal maths), however, it rewards perseverance. P.S. the solutions to the exercises of chapters 1-5 can be found from A.Cairn's web-page. P.S.2 note that the book does not give any details on implementing different interest rate models in practice.

I agree with the previous reviewer. The exposition is very nice and clear, one is not bogged down with too complicated calculations of too complicated models. It's a shame that there are no solutions to end of chapter exercises though. Hence one star down.

This book provides an excellent reference and point of view of old and new topics in the interest rate modelling field. From short rate models, HJM model, multifactor models, positive interest models and market models, it gives you a very well explanation all without forget the calibration of them. You can not find many books about this topic. This one gives a clear and easy to follow chapters in order to increase your knowledge of this not easy field. The formality is a key point in all the book.

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