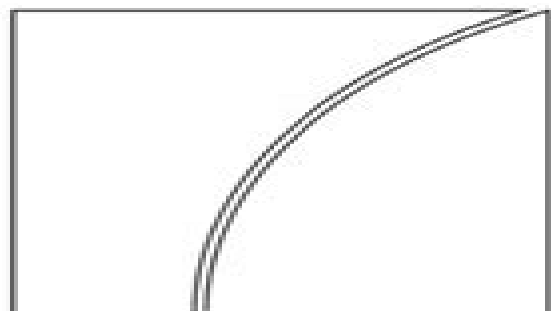




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BIS Papers

No 25

Zero-coupon yield curves: technical documentation

Monetary and Economic Department

October 2005

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Zero-Coupon Yield Curves Bank for International Settlements, 2014 Following a meeting on the estimation of zero coupon yield curves held at the BIS in June 1996 participating central banks have since been reporting their estimates to the Bank for International Settlements The BIS Data Bank Services provide access to these data which consist of either spot rates for selected terms to maturity or represent estimated parameters from which spot and forward rates can be derived In the case estimated parameters are reported the Data Bank Services provides in addition to the parameters also the generated spot rates The purpose of this document is to facilitate the use of these data It provides information on the reporting central banks approaches to the estimation of the zero coupon yield curves and the data transmitted to the BIS Data Bank In most cases the contributing central banks adopted the so called Nelson and Siegel approach or the Svensson extension thereof A brief overview of the relevant estimation techniques and the associated mathematics is provided below General issues concerning the estimation of yield curves are discussed in Section 1 Sections 2 and 3 document the term structure of interest rate data available from the BIS The final section provides examples of estimated parameter and selected spot and forward rates derived thereof A list of contacts at central banks can be found after the references The remainder of this document consists of brief notes provided by the reporting central banks on approaches they have taken to estimate the yield curves Since the last release of this manual in March 1999 there have been four major changes Switzerland started to report their estimates of the yield curve to the BIS in August 2002 Furthermore Sweden began to use a new estimation method in 2001 the United Kingdom since September 2002 and Canada since January 2005 These changes are included in Tables 1 and 2

Yield Curves and Forward Curves for Diffusion Models of Short Rates Gennady A. Medvedev, 2019-05-18 This book is dedicated to the study of the term structures of the yields of zero coupon bonds The methods it describes differ from those usually found in the literature in that the time variable is not the term to maturity but the interest rate duration or another convenient non linear transformation of terms This makes it possible to consider yield curves not only for a limited interval of term values but also for the entire positive semiaxis of terms The main focus is the comparative analysis of yield curves and forward curves and the analytical study of their features Generalizations of yield term structures are studied where the dimension of the state space of the financial market is increased In cases where the analytical approach is too cumbersome or impossible numerical techniques are used This book will be of interest to financial analysts financial market researchers graduate students and PhD students

Die Marktrisikoprämie im Rahmen der objektivierten Unternehmensbewertung Peter Pinzinger, 2017-01-03 Der Marktrisikoprämie kommt bei der Bestimmung der risiko äquivalenten Eigenkapitalkosten mithilfe des CAPM zentrale Bedeutung zu Im Schrifttum wie auch in der Praxis der Unternehmensbewertung gehen die Meinungen hinsichtlich der Ermittlung und der Höhe der Marktrisikoprämie erheblich auseinander Das CAPM übert sich hierzu nicht explizit Der vorliegende Band der Schriftenreihe zum Finanz Prognostik und

Rechnungswesen leistet einen Beitrag zur Beilegung des anhaltenden Meinungsstreits bezüglich der Marktrisikoprämie im Rahmen der objektivierten Unternehmensbewertung. Besonderes Gewicht liegt hierbei auf der Identifizierung und der Schließung konzeptioneller Lücken. Auf der Grundlage seiner Forschungsergebnisse plädiert der Autor für einen Paradigmenwechsel hinsichtlich der Bestimmung der Marktrisikoprämie. Bei Bewertung eines Unternehmens von unendlichem Fortbestand ist der geometrisch gemittelte Markttrendrate eines möglichst langen Referenzzeitraums lauffähig, der sehr langfristige Kassazinssatz 0 gegenberzustellen, welcher mit der risikolosen Anlage im Sitzland des Bewertungsobjekts korrespondiert und entsprechend den Verhältnissen am Bewertungsstichtag abzuleiten ist.

Modellierung und Prognose der Zinsstruktur auf der Basis dynamischer Modelle der Nelson/Siegel-Klasse Miriam Weber, 2012 *Zero-coupon Yield Curves* Bank for International Settlements. Monetary and Economic Department, 2005 *Analysing and Interpreting the Yield Curve* Moorad Choudhry, 2019-04-15 Understand and interpret the global debt capital markets. Now in a completely updated and expanded edition, this is a technical guide to the yield curve, a key indicator of the global capital markets and the understanding and accurate prediction of which is critical to all market participants. Being able to accurately and timely predict the shape and direction of the curve permits practitioners to consistently outperform the market. *Analysing and Interpreting the Yield Curve* 2nd Edition describes what the yield curve is, explains what it tells participants, outlines the significance of certain shapes that the curve assumes and most importantly demonstrates what factors drive it and how it is modelled and used. Covers the FTP curve, the multi-currency curve, CSA, OIS, Libor and 3-curve models. Gets you up to speed on the secured curve. Describes application of theoretical versus market curve, relative value trading. Explains the concept of the risk-free rate. Accessible demonstration of curve interpolation, best practice using cubic spline. Nelson, Siegel and Svensson 94 models. This advanced text is essential reading for traders, asset managers, bankers and financial analysts, as well as graduate students in banking and finance.

Rechnungslegung, Prüfung und Unternehmensbewertung Michael Dobler, Dirk Hachmeister, Christoph Kuhner, Stefan Rammert, 2014-01-20 über 50 bekannte Fachgebiets-Experten diskutieren aktuelle Themen zu Rechnungslegung, Wirtschaftsprüfung, Unternehmensbewertung, Corporate Governance, Insolvenzrecht, Unternehmensfinanzierung und Besteuerung. Die Beiträge vereinen Theorie und Praxis. State of the Art der BWL in den titelgebenden Teilbereichen.

Risk-free rate dynamics Michel van der Wel, 2008 **Macrofinance Model of the Czech Economy** International Monetary Fund, 2012-03-01 The paper develops a VAR macrofinance model of the Czech economy. It shows that yield misalignments from the yields implied by the macrofinance model partially determine subsequent yield changes over three to nine months. These yield misalignments tend to persist for a number of months. This persistence of the misalignments was explained by a) the fact that the macro economy influences asset markets only at lower frequencies b) the liquidity effect, particularly during the times of capital inflows to the Czech Republic and c) the fact that not all misalignments were greater than their historical one standard deviation.

Quantitative Global Bond Portfolio Management Gueorgui

S Konstantinov, Frank J Fabozzi, Joseph Simonian, 2023-10-06 Quantitative Global Bond Portfolio Management offers a comprehensive discussion of quantitative modelling approaches to managing global bond and currency portfolios Drawing on practitioner and academic research as well as the extensive market experience of the authors the book provides a timely overview of cutting edge tools applied to the management of global bond portfolios including in depth discussions of factor models and optimization techniques In addition to providing a solid theoretical foundation for global bond portfolio management the authors focus on the practical implementation of yield curve and currency driven approaches that can be successfully implemented in actual portfolios As such the book will be an indispensable resource to both new and seasoned investors looking to enhance their understanding of global bond markets and strategies New Methods in Fixed Income Modeling Mehdi Mili, Reyes Samaniego Medina, Filippo di Pietro, 2018-08-18 This book presents new approaches to fixed income modeling and portfolio management techniques Taking into account the latest mathematical and econometric developments in finance it analyzes the hedging securities and structured instruments that are offered by banks since recent research in the field of fixed incomes and financial markets has raised awareness for changes in market risk management strategies The book offers a valuable resource for all researchers and practitioners interested in the theory behind fixed income instruments and in their applications in financial portfolio management **Handbook of Asset and Liability Management** Stavros A. Zenios, William T. Ziemba, 2006-07-17 This first volume of the Handbook of Asset and Liability Management presents the theories and methods supporting models that align a firm's operations and tactics with its uncertain environment Detailing the symbiosis between optimization tools and financial decision making its original articles cover term and volatility structures interest rates risk return analysis dynamic asset allocation strategies in discrete and continuous time the use of stochastic programming models bond portfolio management and the Kelly capital growth theory and practice They effectively set the scene for Volume Two by showing how the management of risky assets and uncertain liabilities within an integrated coherent framework remains the core problem for both financial institutions and other business enterprises as well Each volume presents an accurate survey of a sub field of finance Fills a substantial gap in this field Broad in scope **Exploratory Data Analysis Using Fisher Information** Roy Frieden, Robert A. Gatenby, 2010-05-27 Sustainability is often used in a qualitative sense However there is at present a great need to quantitatively measure and monitor its many qualitative aspects in real systems Real systems are regarded as sustainable if they can maintain their current desirable productivity and character without creating unfavorable conditions elsewhere or in the future 1 4 Sustainability therefore incorporates both concern for the future of the current system temporal sustainability and concern about the degree to which some areas and cultures of the planet are improved at the expense of other areas and cultures spatial sustainability That is sustainability is to hold over both space and time Sustainability encompasses many disciplines For example economic systems are not sustainable if they degrade their natural resource base and impoverish some sectors

of the human population 5 6 Indices are needed that will measure sustainability through time and over space at several scales These indices must also have the ability to aggregate the many disciplinary facets of sustainability often incorporated through a large number of environmental social and economic variables Such a multidisciplinary dynamic system can be regarded as sustainable if it maintains a desirable steady state or regime including fluctuations that are desirable such as those that respond to natural disturbances 8

Functional and High-Dimensional Statistics and Related Fields Germán Aneiros, Ivana Horová, Marie Hušková, Philippe Vieu, 2020-06-19 This book presents the latest research on the statistical analysis of functional high dimensional and other complex data addressing methodological and computational aspects as well as real world applications It covers topics like classification confidence bands density estimation depth diagnostic tests dimension reduction estimation on manifolds high and infinite dimensional statistics inference on functional data networks operatorial statistics prediction regression robustness sequential learning small ball probability smoothing spatial data testing and topological object data analysis and includes applications in automobile engineering criminology drawing recognition economics environmetrics medicine mobile phone data spectrometrics and urban environments The book gathers selected refereed contributions presented at the Fifth International Workshop on Functional and Operatorial Statistics IWFOS in Brno Czech Republic The workshop was originally to be held on June 24 26 2020 but had to be postponed as a consequence of the COVID 19 pandemic Initiated by the Working Group on Functional and Operatorial Statistics at the University of Toulouse in 2008 the IWFOS workshops provide a forum to discuss the latest trends and advances in functional statistics and related fields and foster the exchange of ideas and international collaboration in the field

Modelling and forecasting stock return volatility and the term structure of interest rates Michiel de Pooter, 2007 This dissertation consists of a collection of studies on two areas in quantitative finance asset return volatility and the term structure of interest rates The first part of this dissertation offers contributions to the literature on how to test for sudden changes in unconditional volatility on modelling realized volatility and on the choice of optimal sampling frequencies for intraday returns The emphasis in the second part of this dissertation is on the term structure of interest rates

Mathematical and Statistical Methods for Actuarial Sciences and Finance Marco Corazza, Pizzi Claudio, 2011-06-07 This book features selected papers from the international conference MAF 2008 that cover a wide variety of subjects in actuarial insurance and financial fields all treated in light of the successful cooperation between mathematics and statistics

Theory and Applications of Time Series Analysis Olga Valenzuela, Fernando Rojas, Héctor Pomares, Ignacio Rojas, 2019-10-18 This book presents selected peer reviewed contributions from the International Conference on Time Series and Forecasting ITISE 2018 held in Granada Spain on September 19 21 2018 The first three parts of the book focus on the theory of time series analysis and forecasting and discuss statistical methods modern computational intelligence methodologies econometric models financial forecasting and risk analysis In turn the last three parts are dedicated to applied topics and include papers on time series analysis in the

earth sciences energy time series forecasting and time series analysis and prediction in other real world problems The book offers readers valuable insights into the different aspects of time series analysis and forecasting allowing them to benefit both from its sophisticated and powerful theory and from its practical applications which address real world problems in a range of disciplines The ITISE conference series provides a valuable forum for scientists engineers educators and students to discuss the latest advances and implementations in the field of time series analysis and forecasting It focuses on interdisciplinary and multidisciplinary research encompassing computer science mathematics statistics and econometrics

The Moorad Choudhry Anthology, + Website Moorad Choudhry, 2018-07-18 The definitive and timeless guide to the principles of banking and finance addressing and meeting the challenges of competition strategy regulation and the digital age Moorad Choudhry Anthology compiles the best of renowned author Professor Moorad Choudhry's incisive writings on financial markets and bank risk management together with new material that reflects the legislative changes in the post crisis world of finance and the impact of digitization and global competition Covering the developments and principles of banking from the 1950s to today this unique book outlines the author's recommended best practices in all aspects of bank strategy governance and risk management including asset liability management liquidity risk management capital planning Treasury risk and corporate framework and describes a vision of the future with respect to a sustainable bank business model You will gain the insight of a global authority on topics essential to retail corporate and investment wholesale banking including strategy risk appetite funding policies regulatory requirements valuation and much more The companion website is a goldmine for senior practitioners that provides templates that can be applied in virtually any bank including policy documents pricing models committee terms of reference teaching aids and learning tools including PowerPoint slides and spreadsheet models These facilitate a deeper understanding of the subject and the requirements of the senior executive making this book an ideal companion for practitioners graduate students and professional students alike The intense demand for knowledge and expertise in asset liability management liquidity and capital management has been driven by the regulatory challenges of Basel III the European Union's CRDIV the Volcker Rule Dodd Frank Act and a myriad of other new regulations This book meets that need by providing you with a complete background and modern insight on every aspect of bank risk management Re engage with timeless principles of finance that apply in every market and which are the drivers of principles of risk management Learn strategic asset liability management practices that suit today's economic environment Adopt new best practices for liquidity models and choosing the appropriate liquidity risk management framework Examine optimum capital and funding model recommendations for corporate retail and investment wholesale banks Dig deeper into derivatives risk management balance sheet capital management funding policy and more Apply best practice corporate governance frameworks that ensure a perpetual and viable robust balance sheet Adopt strategy formulation principles that reflect the long term imperative of the banking business In the 21st century more than ever banks need to re learn traditional risk

management principles and apply them every day Every bank in the world needs to be up to speed on these issues and Anthology from Professor Moorad Choudhry is the answer to this new global policy response Verfahren zur Erklärung und Schätzung von Zinsstrukturen Sebastian Krah,2003-07-15 Inhaltsangabe Einleitung Relevanz der Thematik In volkswirtschaftlichen Modellen sowie in betriebswirtschaftlichen Theorien so z B in der Investitionstheorie und im Bondmanagement wird zur Modellbeschreibung bzw als Basis f r Berechnungen oftmals ein einziger Marktzinssatz zu Grunde gelegt Die Unterstellung eines solchen Zinssatzes widerspricht jedoch empirischen Beobachtungen nach denen sich auf den Geld Kapital und Kreditm rkten verschiedene Zinss tze f r unterschiedliche Anlagezeitr ume Bonit ten der Emittenten und andere Merkmale feststellen lassen Insbesondere der Zusammenhang zwischen der Verzinsung von festverzinslichen Wertpapieren und deren Laufzeiten ist in der wirtschaftswissenschaftlichen Forschung von steigendem Interesse Kenntnisse ber diesen Zusammenhang als Fristigkeitsstruktur der Zinss tze oder auch Zinsstruktur bezeichnet bieten eine Vielzahl von Anwendungsm glichkeiten in der Praxis Ein Einsatzgebiet stellt die Bewertung von zinsabh ngigen Finanztiteln u a von Kuponanleihen dar In einfachen Barwertberechnungen wird zur Ermittlung des arbitragefreien Preises eines Bonds eine nicht realistische flache Zinsstrukturkurve unterstellt Bei Kenntnis der Zinsstruktur kann der Wert von Anleihen mittels einer modifizierten Barwertformel unter Verwendung periodenspezifischer Zinss tze wesentlich exakter bestimmt werden Im Bereich des Bondmanagements er ffnet sich ein weiteres Anwendungsgebiet hinsichtlich verbesserter Immunisierungsstrategien von Portfolios festverzinslicher Wertpapiere gegen Zins nderungsrisiken W hrend das gew hnliche Konzept der Duration ebenfalls eine flache Zinsstrukturkurve voraussetzt sind auf komplexeren Annahmen beruhende Durationsmodelle in der Lage die zeitliche Entwicklung nichtflacher Zinsstrukturen zu ber cksichtigen Es lassen sich daher genauere Aussagen bez glich des Zins nderungsrisikos von Anleihen treffen und Strategien zur verbesserten Immunisierung von Portfolios erarbeiten Gesch ftsbanken haben in ihrer Funktion als Finanzintermedi r u a die Aufgabe der Fristentransformation zu erf llen Durch Fristeninkongruenzen zwischen Aktiv und Passivgesch ft entstehen Zins nderungsrisiken die eine Prognose der zuk nftigen Zinsentwicklung notwendig machen Diesem Zweck k nnen Zinsstruktursch tztungen dienen Sie erm glichen Banken weiterhin sich mittels dieser Informationen entdeckte Ineffizienzen auf den Kapitalm rkten zur Erzielung von berschussrenditen nutzbar zu *Zero-coupon Yield Curves* Bank for International Settlements. Monetary and Economic Department,2005

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