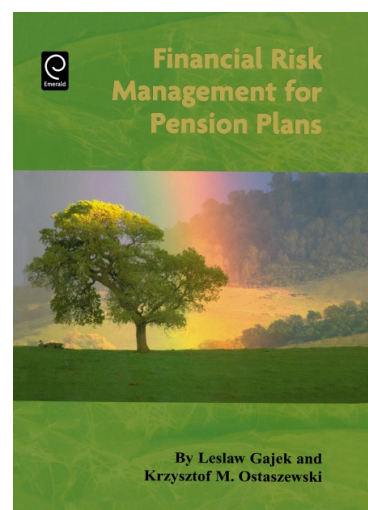


Financial Risk Management for Pension Plans

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About the Book

This book is devoted to modern methodologies of financial risk management of pension plans, mostly defined benefit plans. The reader is expected to know basic probability theory and mathematical analysis, while all required concepts in financial and actuarial mathematics are developed in the text. The book outlines basic actuarial valuation concepts and then presents actuarial funding and valuation methods for defined benefit plans, and discusses their relationship to other types of pension plans. Optimal funding methodologies are developed in simple deterministic and in stochastic cases. The question of measurement of rate of return of a fund is analyzed in detail, pointing out how the choice of a market index affects it. The problem of stability of the value of liabilities is analyzed as well. Modern investment theory, including equilibrium and arbitrage models, is used to discuss ways to value both marketable and non-marketable assets, as well as liabilities. All commonly used methodologies of valuation of assets are listed and analyzed. Finally, financial risk management for pension plans is presented in detail, with emphasis on applicable asset-liability management methodologies. This portion of the book starts with the basics: duration, convexity, immunization, and develops alternative immunization methodologies, as well as other risk management tools, such as value-at-risk, risk-based-capital, and shortfall constraint approach. A new optimal methodology, an alternative to classical immunization, is developed, and shown to be strikingly similar to conservative management approaches used by practitioners. Throughout the book, all concepts and methodologies are illustrated with examples and exercises, including past problems from the Society of Actuaries and Casualty Actuarial Society professional examinations (used with permission).



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