

# Commentary

BUFFIN PARTNERS INC.

ECONOMIC INVESTMENT AND ACTUARIAL RESEARCH

## Financial Economics: A Wake-up Call

In 1998 The Actuarial Foundation published a 669-page textbook, *Financial Economics with Applications to Investments, Insurance and Pensions* that its editor described as suitable for a two-semester course at the early graduate school level. The title page with the imprimatur of The Actuarial Foundation included the words *Preparing for tomorrow's possibilities*. That tomorrow may perhaps now have arrived, some nine years later, with the publication of *Pension Actuary's Guide to Financial Economics* prepared by the Joint American Academy of Actuaries and Society of Actuaries Task Force on Financial Economics and the Actuarial Model.

The 1998 text was motivated by the explosive growth of financial economics over the preceding half-century. Its foreword stated: "It is clear that actuaries need to enhance their education about these new ideas if the profession is to keep its eminent position in planning and managing financial security systems." The hope was expressed that the book would enable actuaries to "send a powerful communication that they have the intellectual tools to solve modern financial security problems." The book comprised eleven chapters written by a ten-member team of distinguished academic authors from three continents, four nations, and eight universities. The authors succeeded in presenting the principal ideas underlying financial economics, including: financial markets; derivative securities; interest rate risk and immunization; equilibrium pricing; no-arbitrage pricing theory; options and derivatives; term structure models; portfolio selection; investment return models; and option pricing in continuous time. The book was immediately recognized as a significant contribution to the actuarial literature by a small number of actuaries, mainly in the academic community, and those PhD actuaries engaged in pension, insurance and social security work, but was not widely acknowledged, fully appreci-

ated, or perhaps, understood, by many practitioners who did not immediately recognize the significance of financial economics or what its implications would be for traditional actuarial models and practices. The intervening years since 1998 have seen a gradual acceptance and appreciation of financial economics by an increasing number of actuaries as its new concepts and terminology have become more widely incorporated into the actuarial practitioner's toolkit and vocabulary. The terminology of option pricing, the Black-Scholes model, interest rate swaps, securitization, equilibrium pricing, no-arbitrage pricing, derivative valuation, lattice models, dynamic hedging, yield curves, capital-asset pricing model, autocorrelation, Brownian motion, martingales, etcetera are all now relatively commonplace for today's well-informed practicing actuary, whereas a decade ago these terms were generally regarded as mysterious, and even with suspicion or as irrelevant to actuarial practice.

What was missing until now is a simple-to-understand introduction to financial economics for the non-PhD actuary. This need has been admirably met with the publication of *Pension Actuary's Guide to Financial Economics*. It also serves as a wake-up call for those members of the actuarial profession who have chosen to ignore, or who are in denial of, the significance of financial economics. An important message to the reader appears in the Introduction: "The task force believes it is important for actuaries to consider what financial economics teaches so that (they) can better evaluate (their) practice and role as actuaries. It is not important that every actuary agree with what financial economics says about pension plan management. But in light of the importance attached to financial economics by financial professionals, actuaries should not ignore financial economic theory."

The Pension Actuary's guide introduces readers to some basic concepts in modern

corporate finance including agency theory and the capital indifference model. It continues with an explanation of pension finance and makes good use of an augmented balance sheet to illustrate the effect of pension plan assets and liabilities, with appropriate tax adjustments, which leads to a focus on the efficacy of equity investment from the perspective of corporate shareholders. This section of the guide offers a quick formula for the analysis of the implied arbitrage to show that it is unaffected by the equity return and how it is proportional to the bond rate, the tax spread and the complement of the corporate tax rate.

The guide gives good definitions of pension liabilities, distinguishing clearly between solvency liability, market liability, and budget liability, and presents a visual aid that shows the effect of default risk and discount rates, accompanied by a statement that the challenge for today's pension actuary is to educate plan sponsors on how to interpret different types of pension liability. The guide devotes separate sections to discussions of pension accounting, pension funding and pension investment, and does an excellent job of making the point that these are three separate aspects of pension management that need to be considered in their appropriate contexts. Perhaps these explanations will help actuaries to see pension fund investment strategy from a financial economics perspective and to fully comprehend the significance of default risk and non-economic discount rates that incorporate an equity risk premium element.

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