Foreword

Life-cycle finance is the branch of finance that affects everybody. It deals with the questions faced by individuals seeking to get ahead: How much should I save, and what should I invest in to build wealth? When I retire or if I become unemployed, how much of my savings can I spend each year? Is there something I can do to make sure I do not outlive my savings? What can my spouse and children expect to inherit?

Despite the urgent needs represented by these questions, financial researchers have devoted relatively little attention to most of them. "What should I invest in?" has received the lion's share of the attention, and as a result, a well-accepted body of theory exists that says how to build optimal portfolios out of securities or asset classes. Mainstream finance has evolved pretty much in a straight line as a series of progressively more sophisticated answers to this question. The seeds planted by Irving Fisher and Frederick Macaulay gave rise to the trunk wood of Harry Markowitz, Franco Modigliani, Merton Miller, and the incomparable William Sharpe.[1] The more modern explorations launched by Fischer Black have been carried on by successors too numerous to mention. This progression has produced an integrated body of theory that is taught in business schools and that most finance practitioners and academics agree on, at least in broad outline.

But this body of work does not say (or at least it does not say very clearly) how much to save, how quickly to spend down one's assets, or how to insure against untoward events. It does not answer the central question of life-cycle finance: How can I spread the income from my *working* life over my *entire* life? To address these questions, we need to look outside mainstream finance—in particular, at actuarial science and the theory of insurance.

In fact, the lead role in life-cycle finance has historically been played by actuaries, working mostly in obscurity for insurance companies. Their contribution is critical because life-cycle finance depends on the ability to estimate how many people will undergo a life change—be born, have children, get a job, retire, become disabled, or die—in a given period, which is what actuaries do. By combining the experiences of large groups of people for whom each of these events would arrive almost randomly, they turn chaos into order, unpredictability into predictability.

[1]Sharpe, to his credit, turned his attention to life-cycle finance, both as an academic and as an entrepreneur, later in life. See the discussion on pages 96–99 of Peter L. Bernstein's *Capital Ideas Evolving* (Hoboken, NJ: John Wiley & Sons, 2007). Franco Modigliani and Milton Friedman also studied the life cycle, from the consumption and/or saving and investment viewpoints, and these accomplishments were noted by the Nobel Prize committee (Modigliani won the Nobel Prize in economics in 1985, and Friedman won it in 1976). The classic literature on insurance and risk pooling is generally considered to begin with Menahem E. Yaari, "Uncertain Lifetime, Life Insurance, and the Theory of the Consumer," *Review of Economic Studies,* vol. 32, no. 2 (April 1965):137–150. Emily N. Zeitz, in "An Examination of the Demand for Life Insurance," *Risk Management & Insurance Review,* vol. 6, no. 2 (September 2003):159–191, provides an excellent bibliography of this literature.

Perhaps most importantly, actuaries create the knowledge gained by combining the law of large numbers with the pooling of risk. Through these powerful tools, they are able to estimate with substantial accuracy the probability that someone will die in a particular period of time; and death is the event that causes a life insurance policy to pay off or that causes pension or annuity payments to stop. Armed with this foreknowledge, financial institutions can issue safe instruments that have payoffs linked to the longevity of the buyer. Guaranteed pensions, life annuities, and life insurance are thus added to the tool kit of finance, and these are the tools that make life-cycle finance—the spreading of income over time—possible.

Our understanding of life-cycle finance has been enriched by the usual suspects: professors of finance, insurance professionals, and risk managers as well as investment managers and other financial institution executives. But there are many other characters in this complex story. Lawmakers, lawyers, regulators, and accountants have played major roles. So have pension plan executives—a broad category that includes corporate managers, government officials, labor union representatives, and so forth. Trade associations, and their leaders and resident scholars, have likewise made important contributions.

In this spirit, the Research Foundation of CFA Institute teamed with Boston University and the Federal Reserve Bank of Boston to present a conference exploring the frontiers of life-cycle finance from the perspective of the many disciplines mentioned above. The event was called "The Future of Life-Cycle Saving and Investing" and was held at Boston University on 25–27 October 2006. This volume presents the proceedings of this extraordinary gathering of minds. It is unique among the books presented by the Research Foundation of CFA Institute in that it includes contributions from people in just about all the fields mentioned above. It is a testament to the creativity of the conference organizers that the contributors have such a wide variety of backgrounds. Insights from such leading thinkers as Paul Samuelson, Robert Merton, and Zvi Bodie are captured in this single volume, which we hope our readers will treasure for a long time.

This book is yet another in a series of efforts by the Research Foundation of CFA Institute to educate investors and advisers on the challenges of planning and saving for life. We believe it serves as a useful complement to our recent publication *Lifetime Financial Advice: Human Capital, Asset Allocation, and Insurance*, by Roger G. Ibbotson, Moshe A. Milevsky, Peng Chen, CFA, and Kevin X. Zhu, and continues to build on our other recent book and literature review efforts in private wealth management. We encourage you to visit the Research Foundation area at www.cfapubs.org for more information.

The remarkable cohesion of this collection of readings—which includes speeches, written papers, and discussions—is attributable in large part to the organizational effort of Professor Bodie, of the Boston University School of

Management, who designed the conference. We owe him a large debt of gratitude. Financial support for the conference was provided by the Boston University School of Management and the Federal Reserve Bank of Boston as well as by the Research Foundation of CFA Institute.

This is the first conference proceedings that we have considered important and cohesive enough for the Research Foundation to publish. We are truly delighted to present it.

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The Research Foundation of CFA Institute

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