

Impact '25 Report



About the Institute

2025

Founded in 1985, the Investments & Wealth Institute is the premier professional association, education provider, and standards body for financial advisors. Through its award-winning events, publications, courses, and acclaimed certifications, Certified Investment Management Analyst® (CIMA®), Certified Private Wealth Advisor® (CPWA®), and Retirement Management Advisor® (RMA®) certifications, the Institute delivers Ivy League-quality, highly practical education to more than 35,000 practitioners annually in over 40 countries. Members of the Institute include the industry's most successful investment consultants, advanced financial planners, and private wealth managers who embrace excellence and ethics in applying a broad set of knowledge and skills in their daily work with clients.

Our Mission

To be the leading educational community of financial professionals, dedicated to elevating the practice of investment and wealth management to generate better client outcomes.

Our Purpose

Investments & Wealth Institute purposefully works to:

- Improve professionalism of our members through educational and certification programs
- Develop and encourage the practice of high standards of professional conduct
- Promote and protect the interests of the profession and the public it serves
- Broaden public understanding of investment consulting and wealth management

2025 BOARD OF DIRECTORS

Leadership

**Chair**

Christine Gaze, CIMA®, CFP®,
Founder and President,
Purpose Consulting Group

**Vice Chair, Professional Development**

Noel Pacarro-Brown, CIMA®, CPWA®,
Senior Vice President and Financial
Advisor, The Conscious Wealth
Management Group at Morgan Stanley

**Vice Chair, Standards**

Elizabeth "Libet" Anderson,
CIMA®, Community Leader,
Cetera Wealth Partners

**Vice Chair, Finance**

Lauris S. Lambergs, CIMA®,
GFP (USA), Co-founder and
Chief Investment Officer,
Renaissance Wealth Advisors

**Past Chair**

Dorothy Bossung, Director,
BDO Wealth Advisors



Morgan Becker, CIMA®,
Managing Director, Wealth
Management, Family Wealth
Director, Financial Advisor,
Morgan Stanley Wealth
Management



Douglas D. Hanson,
CIMA®, Senior Relationship
Manager, Charles Schwab
Advisor Services



Desiree Maldonado,
CIMA®, CPWA®, CFP®,
Financial Consultant,
at Popular Securities



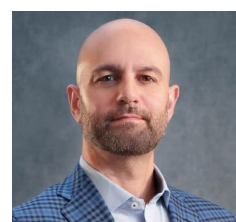
Hatem Zarrouk, CIMA®,
Dynamic Executive in
Investment and Wealth
Management, Toronto, Canada



Moe Allain, MBA, CPWA®,
RMA®, AAMS®, Vice President,
Financial Advisor, Baird
Retirement Management



Anuj Gupta, CIMA®, CPWA®,
Principal Director, Wealth
Products, Business
Solutions Investnet



Roger Mussa, Senior Vice President,
Wealth Management Advisor, Senior
Portfolio Manager, Merrill Lynch
Wealth Management, Merrill Lynch,
Pierce, Fenner & Smith Inc.



William "Bing" Waldert,
Managing Director, U.S.
Research, Cerulli Associates

Introduction



SEAN WALTERS, CAE®
Chief Executive Officer

Investments & Wealth Institute

Dear Members,

For the past four decades, the Investments & Wealth Institute has served as the premier professional membership association, education provider, and credentialing authority for financial advisors and wealth managers serving high-net-worth clients. As we reflect on 2025, we are encouraged by the strength of our momentum and the clarity of our strategic focus.

This year marked the Institute's 40th anniversary—a milestone that reinforces the durability and continued relevance of our mission. Founded in 1985 by a small group of visionary investment consultants committed to elevating professionalism in their field, the Institute has consistently advanced ethical practice, rigorous standards, and advanced education for financial professionals entrusted with complex investment, wealth, and retirement decisions.

In 2025, our programs reached more than 35,000 professionals across 46 countries, affirming the global relevance of our mission. Membership remains the foundation of our community, with more than 15,500 financial service professionals currently holding Institute membership. Notably, our Signature and Elite membership tiers grew 11% over 2024, reflecting increased demand for deeper engagement, expanded access to education, and a stronger professional network.

Engaging Lifelong Learners

Our certifications remain the primary way we define, uphold, and advance professional

excellence in financial advice and wealth management. In 2025, the number of professionals maintaining an Institute certification increased by 4.2% year over year and is up 17% over the past three years.

Growth continues to be led by the Certified Private Wealth Advisor® (CPWA®) certification, which has firmly established itself as the premier designation for advisors serving high-net-worth clients. Over the past three years, the number of professionals actively holding the CPWA® certification has increased by 47%.

The Certified Investment Management Analyst® (CIMA®) certification also reached an important milestone in 2025, surpassing 9,000 actively certified professionals. While fewer than 6% of client-facing wealth management professionals hold this prestigious credential, nearly 18% of advisory teams managing more than \$500 million in assets include a CIMA® professional. This concentration among leading firms is a meaningful indicator of the credential's growing relevance.

We also completed a comprehensive overhaul of the Retirement Management Advisor® (RMA®) program in 2025. The curriculum is now structured into four distinct components: the "Retirement Management Essentials" certificate program, a streamlined online RMA® curriculum, a 12-week synchronous learning experience, and a two-day capstone available either at The University of Chicago Booth School of Business or online through our certification team. This modular design better aligns with how

advisors build and apply retirement expertise in practice.

The Investments & Wealth Academy continued to expand access to advanced education and continuing education as well, reinforcing our commitment to lifelong learning, professional relevance, and tangible member value.

Empowering Organizational Capabilities

Another ongoing strategic priority is strengthening the technical infrastructure that supports our members, candidates, and partners. Through our EMPOWER initiative, we made significant progress in 2025 toward modernizing the Institute's technology ecosystem, transitioning to a scalable, fully integrated association management and CRM environment.

These investments are already reducing operational friction, improving user experience, and enhancing the quality and accessibility of our data to enable more informed decision-making. This transformation is also strengthening our internal capacity to serve the profession, as staff surveys conducted during the year reflect marked improvements in technology satisfaction.

Elevating the Brand and Expanding Impact

Solidifying and strengthening our brand was a defining achievement of 2025. Through a disciplined marketing strategy, expanded thought leadership, and a broader, more intentional media presence, we materially increased awareness of the Institute and its credentials. Results exceeded our expectations across key indicators: new lead generation surpassed goals by nearly 80%, branded search impressions exceeded targets by more than 50%, and our Strategy Forum conference in New York City generated record levels of media engagement.

Our post-pandemic revitalization continued as well. More than 1,000 advisors participated in Institute conferences during the year, including 762 professionals at Investments & Wealth Experience in Austin, Texas, representing a 6% increase in paid attendance over the prior year.

Annual revenues surpassed \$18 million in 2025, an increase of 5% over 2024 and 35% over 2022, strengthening our

financial resilience and long-term capacity to invest in member value. Entering 2026, we do so with diversified revenue streams, a strong balance sheet, and a clear strategic roadmap aligned with the evolving needs of the profession.

Advancing Access and Broadening Markets

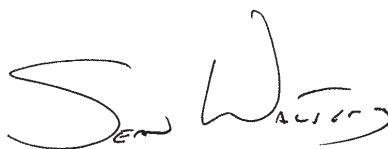
The Investments & Wealth Foundation achieved its strongest fundraising year to date in 2025, bolstered by a significant multi-year private donation that enhances our ability to expand access to advanced credentials. At the same time, refinements to our scholarship application and review processes increased the representation of female, Black, and Latino applicants.

Internationally, we expanded our global footprint through the launch of the CIMA® Direct Global program, increasing access to certification in new markets. In Canada, focused regulatory advocacy efforts advanced recognition among provincial regulators, reinforcing the credibility and portability of our credentials. By year-end, more than 10% of the Institute's learning engagement originated outside the United States.

As we conclude 2025, the Institute stands on solid ground. We are guided by rigorous standards, informed by credible research, and grounded in a clear mission to elevate the practice of investment and wealth management in service of the public.

We are grateful to our members, volunteers, partners, donors, and staff whose engagement and leadership make this work possible.

We hope you find this report informative, and we welcome your continued input as we move forward together in strengthening the profession we serve.



Sean R. Walters, CAE®
Chief Executive Officer
Investments & Wealth Institute


3 CONFERENCES
Investments & Wealth Experience
Investments & Wealth Strategy Forum
Focus Series

**THOUGHT
LEADERSHIP**
2,500+
**PEER REVIEWED
ARTICLES**


15,500+
MEMBERS


25,400
Social Media Followers


5,450+
Live + Online Registrations


**3 AWARD-WINNING
PUBLICATIONS**
Investments & Wealth Review
Journal of Investment Consulting
Retirement Management Journal

35,000+
**LEARNERS SERVED
(ALL PROGRAMS)**

300,324
HOURS OF CE PROCESSED

3 CERTIFICATIONS



14,100
**Institute Certified
Professionals**



7 CERTIFICATE PROGRAMS
Private Wealth Essentials
Investment Management Essentials
Retirement Management Essentials
Global Financial Planning Essentials
Applied Behavioral Finance
Private Markets for Advisors
Endowments & Foundations Consulting

**7 SHORT COURSES &
MICROCOURSES**

121
**SCHOLARSHIPS
AWARDED**


375,800
**TOTAL ANNUAL
WEBSITE VISITORS**

15
**EDUCATIONAL
PROGRAMS
DELIVERED**

Educational Program Calendar

ANNUAL REPORT '25

January	"How IRMAA Impacts Social Security Benefits" (Academy Visual Insights Micro Learning)
February	"Wealth Planning Trends 2025: Super Bowl, Asset Values and Silver Tsunami" (Webcast – Sponsored by Janus Henderson Investors)
	"Tax Implications of Investing in Mutual Funds" (Academy Visual Insights Micro Learning)
March	"How the Roth Conversion Pro Rata Rule Works" (Academy Visual Insights Micro Learning)
April	Investments & Wealth Experience (Austin, Texas)
	"Public vs. Private College: Don't Be Fooled by Sticker Prices" (Academy Visual Insights Micro Learning)
May	"How U.S. Government I-Bonds Work" (Academy Visual Insights Micro Learning)
June	Focus on Advanced Portfolio Construction (Boston)
	"Mastering the Ultra-Wealthy Client Journey" (Webcast - CEG Masterclass Series)
	"Advisor-Centric AI: How Financial Advisors Are Leveraging AI for Greater Productivity and Client Service" (Webcast – Sponsored by DataDasher)
	"Gain Exclusion on the Sale" (Academy Visual Insights Micro Learning)
July	"Retirement Management Essentials" (Investments & Wealth Academy Certificate Program)
	"Comprehensive Retirement Planning with Home Equity" (Webcast – Sponsored by Finance of America)
	"Moving Up Market" (Webcast – Sponsored by PSBLTY)
	"How 401(k) Matches and the True Up Provisions Work" (Academy Visual Insights Micro Learning)
August	"The Psychology of Growth: What Sets Top Advisory Teams Apart" (Webcast – Sponsored by New York Life Investments)
	"How the New Trump Accounts Will Work" (Academy Visual Insights Micro Learning)
September	"Private Market Investments: Position Your Practice for HNW Growth" (Webcast – Sponsored by Sandro Wealth and KKR)
	"Trusts, Taxes and Transfers: Advanced Strategies for Modern Estate Planning" (Webcast – Sponsored by Vanilla)
	"How the New RAP Student Loan Repayment Plan Will Work" (Academy Visual Insights Micro Learning)
October	"From Cash Drag to Opportunity: Navigating Liquidity Across Market Cycles" (Webcast – Sponsored by PIMCO)
	"How Different Health Insurance Plans Work" (Academy Visual Insights Micro Learning)
November	Investments & Wealth Strategy Forum (New York)
	"Unlocking Home Equity in Retirement Planning" (Webcast – Sponsored by Finance of America)
	"How Charitable Remainder Annuity Trusts (CRATs) Work" (Academy Visual Insights Micro Learning)
December	"Capturing the Entrepreneurial Market" (Webcast – CEG Masterclass Series)
	"An Academic View of Active Management with Practical Application for Advisors" (Webcast – Sponsored by Touchstone Investments)
	"Tax Planning with Capital Gains and Losses" (Academy Visual Insights Micro Learning)

Certification & Education Innovations



CERTIFIED PRIVATE WEALTH ADVISOR® (CPWA®) CERTIFICATION

The CPWA® certification is an advanced designation for advisors serving high-net-worth investors, providing cutting-edge knowledge in wealth strategies, estate planning, wealth transfer, behavioral finance, tax management, and legacy planning. With 118 topics across four knowledge domains, the CPWA® curriculum is delivered through executive education at The University of Chicago Booth School of Business and Yale School of Management and is available online through the Institute's CPWA® Direct program.

RECORD CPWA® DIRECT ENROLLMENT & CONTINUED GROWTH IN CPWA® PRIVATE CLASS DEMAND

The December 2025 CPWA® Direct program (formerly CPWA® Accelerate) achieved the highest single-class enrollment in program history, with more than 80 candidates participating.

Interest from firms seeking private CPWA® class offerings also continued to increase year over year. In 2025, two private cohorts completed executive education in a live online format; one cohort attended in-person executive education at Chicago Booth, and another firm hosted in-person executive education at its corporate headquarters.

CPWA® BODY OF KNOWLEDGE

Revisions to the CPWA® Core Body of Knowledge and corresponding certification exam were finalized in the Fall of 2025. Updates were implemented across all four knowledge domains, 11 curriculum sections, and 118 topics to ensure continued alignment with the competencies required of advisors serving high-net-worth and ultra-high-net-worth clients.

The current CPWA® curriculum now encompasses the following sections: Ethics; Behavioral Finance and Investor Psychology; Family Dynamics; Tax Planning; Portfolio Management; Risk Management and Asset Protection; Charitable Giving and Philanthropy; Estate Issues and Wealth Transfer; Planning for Executives; Planning for Closely Held Business Owners; and Retirement Management.

Certification & Education Innovations



CIMA®
CERTIFIED INVESTMENT
MANAGEMENT ANALYST®

CERTIFIED INVESTMENT MANAGEMENT ANALYST® (CIMA®) CERTIFICATION

The CIMA® certification is an advanced designation for wealth management practitioners who provide portfolio construction services to individual or institutional clients. The CIMA® certification focuses on advanced investment management theory and practical application, covering topics such as asset allocation, ethical and legal considerations, due diligence, risk measurement, investment policy, and performance measurement.

CIMA® DIRECT PROGRAM DEBUTS IN FALL 2025

The introduction of the CIMA® Direct pathway expands the range of options available to candidates pursuing certification. Candidates may now choose from the following formats:

- CIMA® Direct: Online self-study and exam preparation, followed by live online executive education
- Chicago Booth School of Business: Online self-study with live weekly webinars and exam preparation, plus an optional in-person test preparation workshop
- Yale School of Management: On-demand online self-study and exam preparation

RMA®
RETIREMENT
MANAGEMENT
ADVISOR®

RETIREMENT MANAGEMENT ADVISOR® (RMA®) CERTIFICATION

The RMA® certification equips advisors with advanced skills to create custom retirement income plans and navigate the retirement planning process, utilizing behavioral finance, industry research, and practitioner experience. Covering topics like retirement mindset, risk management, and portfolio allocation, the recently revised curriculum is available online through the Institute's RMA® Direct program and as a hybrid course through The University of Chicago Booth School of Business.

RMA® DIRECT ONLINE PROGRAM LAUNCHED

In August 2025, enrollment opened for the new RMA® Direct online program. This 12-week structured pathway guides candidates through comprehensive self-study modules that include required readings, recorded lectures, and applied case studies.

Throughout the program, candidates participate in weekly live online curriculum reviews and engage directly with RMA® faculty to reinforce key retirement income planning concepts. The program concludes with a two-day live online capstone experience featuring presentations from industry practitioners and focused exam preparation led by RMA® faculty.

CERTIFICATION & EDUCATION INNOVATIONS



The Investments & Wealth Academy continues to serve as the Institute's premier online learning platform, delivering rigorous, practice-relevant education for both seasoned and NextGen investment and wealth management professionals. Through a curated mix of certificate programs, short-form learning, and applied educational resources, the Academy supports professional development and continuing education requirements for CIMA®, CPWA®, RMA®, and CFP® certifications.

NEW ACADEMY OFFERINGS IN 2025

RETIREMENT MANAGEMENT ESSENTIALS CERTIFICATE PROGRAM

A foundational certificate program designed to introduce advisors to the core disciplines of retirement management, this 15-hour certificate provides specialized knowledge and practical skills to guide clients through the complexities of retirement income planning.*

The curriculum establishes a strong grounding in retirement theory, client psychology, risk assessment, and planning methodologies, helping advisors build confidence and competence in one of the most critical phases of the client relationship. The curriculum modules address:

- "The Retirement Landscape and Retirement Behaviors"
- "Client Discovery and Analysis"
- "Assessing Retirement Readiness"
- "Retirement Risk Management"
- "Retirement Portfolio Allocations"

* Note: "Retirement Management Essentials" is a certificate course and does not culminate in a professional designation or credential.

VISUAL INSIGHTS

In addition to structured coursework, the Academy continued to expand its Visual Insights offerings. Visual Insights are complimentary, short-form micro-learning sessions designed to help advisors communicate complex financial concepts to clients in a clear, engaging, and practical way. Each Visual Insight is approximately 10–15 minutes in length and is available to Institute members as part of their membership benefits.

Visual Insights micro learning in 2025 included:

- "How IRMAA Impacts Social Security Benefits"
- "Tax Implications of Investing in Mutual Funds"
- "How the Roth Conversion Pro Rata Rule Works"
- "Public vs. Private College: Don't Be Fooled by Sticker Prices"
- "How U.S. Government I-Bonds Work"
- "Gain Exclusion on the Sale"
- "How 401(k) Matches and the True Up Provisions Work"
- "How the New Trump Accounts Will Work"
- "How the New RAP Student Loan Repayment Plan Will Work"
- "How Different Health Insurance Plans Work"
- "How Charitable Remainder Annuity Trusts (CRATs) Work"
- "Tax Planning with Capital Gains and Losses"

In-Person Events Highlights

Investments & Wealth Experience

Our annual conference, Investments & Wealth Experience, took place in Austin, Texas, from March 30–April 2, 2025, and brought together more than 700 investment and wealth management professionals. The multi-day event featured keynote presentations and sessions addressing wealth management, investment strategies, retirement planning, and practice management. Keynote speakers included:

- Jeffrey Gundlach, Founder, Chief Executive Officer, and Chief Investment Officer of DoubleLine Capital, examined how to protect client portfolios and navigate the shifting economic landscape.
- Anastasia Amoroso, Managing Director and Chief Investment Strategist at iCapital, shared perspectives on private and public market opportunities for high-net-worth investors.
- Lauren Goodwin, CFA®, Chief Market Strategist at New York Life Investments, delivered insights on the macroeconomic forces influencing global markets and high-net-worth portfolios.
- Nichol Bradford, Executive-In-Residence for AI + HI at the Society for Human Resource Management, examined the intersection of artificial intelligence, human potential, and professional judgment.
- Herman Brodie, Behavioral Economics Specialist, addressed the role of trust in advisory relationships and organizational success.



INVESTMENTS & WEALTH STRATEGY FORUM

Strategy Forum was held at the Marriott Marquis in New York City on November 17–18, 2025. Convened under the theme “Building Resilient Portfolios for High-Net-Worth Clients During Volatile Times,” the Forum attracted approximately 300 experienced investment and wealth management practitioners. The program featured more than 20 in-depth sessions led by industry-leading speakers at the forefront of investment and wealth management innovation.

Sessions focused on navigating market uncertainty and delivered tailored content aligned with the professional standards and continuing education needs of Certified Investment Management Analyst® (CIMA®) and Certified Private Wealth Advisor® (CPWA®) designees.

Notable speakers included:

- Emma Seppälä, PhD, Lecturer at the Yale School of Management and Director of Yale’s Women’s Leadership Program, addressed the role of resilience and well-being in high-performing organizations.
- Christopher Geczy, PhD, Finance Faculty Member at the Wharton School and Academic Director of the Wharton Wealth Management Initiative, examined the behavioral foundations of investor decision-making.
- Liz Young Thomas, CFA®, Head of Investment Strategy, SoFi, analyzed the evolving economic landscape and its impact on the capital markets.



FOCUS ON ADVANCED PORTFOLIO CONSTRUCTION

In 2025, the Institute hosted a specialized in-person program on June 11 in Boston focused on current trends in portfolio construction and asset allocation. Designed for advanced practitioners, this one-day program provided an intimate setting for direct engagement with subject-matter experts, peer advisors, and educational content supported by industry-expert sponsors, including Commonwealth, Invesco, J.P. Morgan, Loomis Sayles, and Ren.



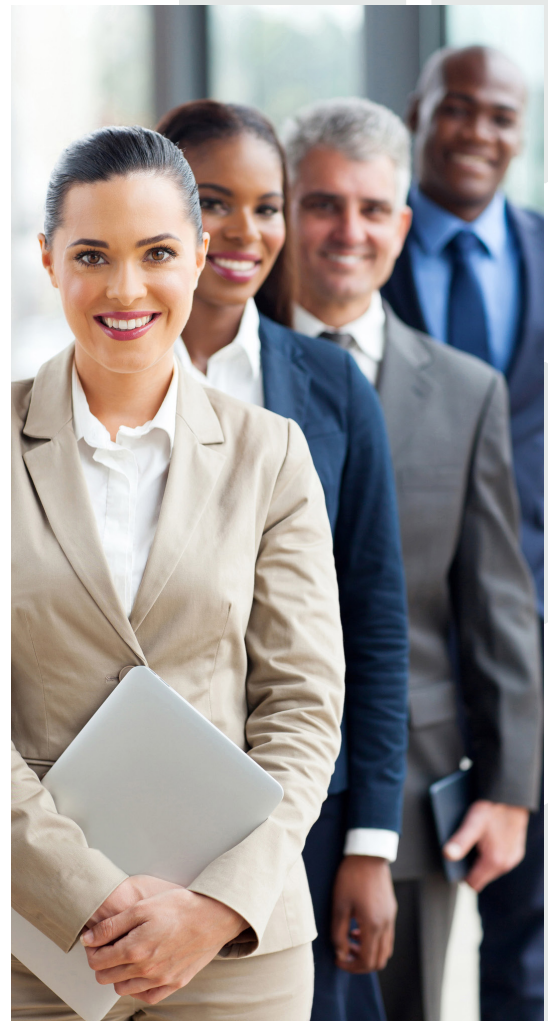


Investments & Wealth Foundation

The Investments & Wealth Institute Foundation, a 501(c)(3) nonprofit charity, provides generous scholarships—primarily for the prestigious Certified Investment Management Analyst® (CIMA®) and Certified Private Wealth Advisor® (CPWA®) programs offered through The University of Chicago Booth School of Business and Yale School of Management—enabling recipients to work toward earning one of the Institute’s professional certifications.

In 2026, we aim to build on a strong year of fundraising in 2025, which included the establishment of our first endowed scholarship, the Karen Lee Richards Advancing Women in Finance Scholarship. Ms. Richards committed \$80,000 over five years to fund scholarships for women pursuing any of the Institute’s advanced certifications. We are grateful to extend the reach of the Investments & Wealth Foundation through the support of dedicated members of the financial services community.

By reducing the financial barriers associated with the Institute’s industry-leading certifications, we help talented individuals, who both represent and serve a wide range of communities, strengthen their professional capabilities as financial advisors. In doing so, we contribute to increased public access to, and trust in, the financial advice profession. The Investments & Wealth Foundation is governed by a board of volunteer directors committed to advancing a more sustainable workforce within the financial advisor profession.





Donation Impact

Since inception, more than **\$1.8 million** in scholarships have been awarded and **352 recipients** have been certified.

286

CIMA®
PROSPECTIVE
CANDIDATES

289

CPWA®
PROSPECTIVE
CANDIDATES

61

RMA®
PROSPECTIVE
CANDIDATES

In 2025

5%

Increase in Female
Applicants Since
Last Year

7.9%

more applicants from
Black, Latino, Asian, and
Native American advisors
than their representation
in the industry advisor
population

INSTITUTE IMPACT AND THOUGHT LEADERSHIP



Investments & Wealth Review

The Institute's bimonthly educational magazine—formerly *Investments & Wealth Monitor*—is written by award-winning authors from across the financial industry. The publication keeps members current through timely industry news and articles that deliver education, insight, and practical explanation of key issues, including developments in academic research, investment strategy, legal and regulatory considerations, business development, retirement planning, and wealth management.

2025 Issues

[January/February – “The Advice Industry Evolves”](#)

[March/April – “Advising the Ultra-Wealthy”](#)

[May/June – “The Next Wave: Alts and Advisors 2.0”](#)

[July/August – “Uncertainty and the Advice Premium”](#)

[September/October – “The Retirement Advisor: Cracking the \[Entitlements\] Code”](#)

[November/December – “Tax-Action Before Taxation: Wealth Advisory and the Matter of Tax”](#)

Retirement Management Journal

Retirement Management Journal—the first peer-reviewed journal dedicated to advancing research, scholarship, and innovative thinking in retirement and retirement-income planning—is an annual publication designed to equip advisors with insights and strategies to help clients prepare for financial independence during this important life stage.

2025 Issue*

[Vol. 14, No. 1, 2025](#)

* Interviews with Zvi Bodie, PhD, and Anna Rappaport, FSA, MAAA, are included in the Appendix as part of our 2025 Visionaries Series.

Journal of Investment Consulting

Journal of Investment Consulting is an annual academic publication focused on empirical, graduate-level research in investments and private wealth, including commentary from academic authorities, industry thought leaders, and award-winning authors.

2025 Issue*

[Vol. 24, No. 1, 2025](#)

* Interviews with Jeremy Siegel, PhD, and Andrew W. Lo, PhD, are included in the Appendix as part of our 2025 Master Series.



Investments & Wealth Research

Investments & Wealth Research provides custom research that examines member demographics, best practices, and how Institute members deliver investment consulting and wealth management services. Distributed as a supplement to *Investments & Wealth Review*, this research is further strengthened through our partnership with CEG Worldwide—an elite financial advisor coaching, research, and consulting firm—which contributes targeted insights into the needs, concerns, and expectations of high-net-worth families.

2025 Issues

[Issue 1 – “The Economic Impact of Certification on Today’s Wealth Management Practices”](#)

[Issue 2 – “Future-Proofing Your Practice: Earning the Loyalty of the \\$25-million+ Segment”](#)

[Issue 3 – “Driving Growth, Delivering Excellence: Six Strategies to Attract, Serve, and Retain Today’s Wealthy Investors”](#)

[Issue 4 – “Technology Excellence: A Make-or-Break Proposition for Advisors’ Future Success”](#)

[Issue 5 – “The Opportunity in Front of You: Capturing Wallet Share”](#)



Partner Research

[“Investments & Wealth Certifications: A Key Driver of Financial Advisor Success”](#)

To examine the professional and business value of Institute certifications, CEG Insights, in partnership with the Institute, conducted a comprehensive research study. The survey assessed how holding Institute certifications correlates with key measures of advisor success, including client acquisition, assets under management, income levels, and the ability to serve clients with complex financial needs.

[“2025 Team & Business Leader Study”](#)

Conducted in partnership with Logica Research, this study surveyed investment and wealth management professionals who lead client-facing teams. The research provides insight into the leadership challenges, talent needs, and growth strategies shaping advisory teams across the investment and wealth management industry.

Investments & Wealth Institute Award Winners

The Institute recognized outstanding contributions to the investment and wealth management body of knowledge during a special awards ceremony at Investments & Wealth Experience, the Institute's annual flagship conference, held April 2025 in Austin, Texas.

The full text of the award-winning articles is available in the Appendix.

INVESTMENT CONSULTING IMPACT AWARD

Honors individuals who have made an outstanding contribution and demonstrated commitment to the field of investment consulting, including contributions to industry-specific technology or advances in the advisor skill set.



Roger Ibbotson, PhD, Professor in the Practice Emeritus of Finance at Yale School of Management and Chairman of Zebra Capital Management.

WEALTH MANAGEMENT IMPACT AWARD

Honors individuals who have contributed exceptional advancements in the field of private wealth management, embodied by the Investments & Wealth Institute CPWA® program. The award recognizes key innovations and thought leadership in any of the following CPWA® knowledge domains: human dynamics, wealth management strategies, client specialization, and legacy planning.



Dorothy E. Bossung, CFP®, CIMA®, CPWA®, RMA®, Senior Director at Choreo.

JOURNAL RESEARCH AWARD

Honors the author(s) of an original article representing the best writing for the previous year germane to investment consulting and/or private wealth management published in the *Journal of Investment Consulting* or the *Retirement Management Journal*.



Honoree: Javier Estrada, PhD, for his article, "Retirement Planning: A Comprehensive Approach" (RMJ Vol. 13, No. 1, 2024). Estrada is Professor of Finance at IESE Business School in Barcelona, Spain.



Honorable Distinction: James B. Sandidge, JD, for his article, "When a Guarantee Isn't a Guarantee" (JIC Vol. 23, No. 1, 2024). Sandidge was Principal at The Sandidge Group.

INVESTMENTS & WEALTH WRITING AWARD

Honors Institute members for their excellent editorial contributions to the *Investments & Wealth Review* during the previous year.



Honoree: John Nersesian, CIMA®, CPWA®, for his article, "Managing Concentration Risk" (May/June 2024). Nersesian is Senior Consultant of Advisor Education at PIMCO.



Honorable Distinction: Steve Dean, CFA®, and Lance Lehman, CFP®, CIMA®, CPWA®, for their article, "Are Your Clients Missing a 'Free Lunch'? An Advisor's Guide to Investing in Alternatives" (September/October 2024). Dean is Chief Investment Officer and Lehman is Senior Wealth Advisor at Compound Planning.



Honorable Distinction John W. Moore, CFA®, CAIA®, CMT®, and William R. Moore III, CPWA®, CFP®, CLU®, ChFC®, AEP®, CAP®, for their article, "A Virtuous Cycle of Trust: Proactive Approaches that Tie Portfolio Management to Client Relationships" (July/August 2024). John Moore is Director of Investments and William Moore is Private Wealth Advisor at Stratview Wealth Management.

Institute News in 2025



In 2025, the Institute continued to expand its editorial presence across leading financial news outlets, elevating our thought leadership on professional standards, advanced education, and the critical trends shaping the financial advice profession. Institute CEO Sean Walters served as a regular contributor to Kiplinger, offering perspective on topics including private markets and the delivery of exceptional client advice.

Our Strategy Forum conference in New York City drew record engagement from

the media, with more than 30 financial journalists and industry reporters in attendance. This resulted in expanded coverage of our research, educational initiatives, and event programming.

Media coverage throughout the year emphasized the measurable professional value of our advanced credentials and underscored the importance of rigorous advisor education in navigating today's markets and planning complexities. Articles in *Barron's*, *WealthManagement.com*, *Financial Planning*, *InvestmentNews*, and

ThinkAdvisor featured Institute perspectives on holistic planning, the growing role of advisor teams in serving high-net-worth clients, and the evolution of industry conferences as vehicles for advanced practitioner education.

Collectively, this coverage reinforced the Institute's role as a trusted voice on how professional development and advanced certifications contribute to professional excellence, specialization, and strong client outcomes.

2025 Media Highlights

- ["Advisors With CIMA, CPWA and RMA Marks Have More Income and AUM," *Financial Planning*](#)
- ["Private Markets for Main Street: What Financial Advisers' Clients Need to Know," *Kiplinger*](#)
- ["Raising the Bar With Sean Walters," *ThinkAdvisor*](#)
- ["Conferences Are Back. But Are They Worth It?," *Financial Planning*](#)
- ["IWI Set to Focus on Advisor Teams, HNW Planning at Event," *ThinkAdvisor*](#)
- ["How Savvy Is Your Financial Adviser? Three Ways To Find Out," *Kiplinger*](#)
- ["Three Key Holistic Planning Trends Reshaping the Industry," *Wealthmanagement.com*](#)
- ["IWI Focuses on BeFi, Family Dynamics With CPWA Changes," *Wealthmanagement.com*](#)
- ["IWI's April Ferrell: Why the Advisor Industry Needs To Double Down on DEI Efforts," *Barron's*](#)
- ["Beyond the Junk Label: Mastering High-yield Bonds To Deliver Client Value," *InvestmentNews*](#)
- ["Investments & Wealth Institute CEO Talks 'Alphabet Soup' and Certifications for 2025," *Citywire*](#)

THANK YOU TO THE INSTITUTE'S 2025 CORPORATE PARTNERS AND SPONSORS

Diamond Partners



Platinum Partners



Touchstone Investments®
DISTINCTIVELY ACTIVE®



Prudential

Gold Partners



CAPITAL GROUP® | AMERICAN FUNDS®



iCapital®

Janus Henderson
INVESTORS

Silver Partners



A·A·M
ADVISORS ASSET MANAGEMENT



American Century
Investments®



BLUEROCK™

Alternatives by
FRANKLIN TEMPLETON®

GQG
PARTNERS

matsonmoney®

nuveen
A TIAA Company



iwicentral.org/partnersponsor

APPENDIX

Journal of Investment Consulting Master Series Interviews

Jeremy Siegel, PhD
Andrew W. Lo, PhD

Retirement Management Journal Visionaries Series Interviews

Zvi Bodie, PhD
Anna Rappaport, FSA, MAAA

2025 Journal Research Award Winner

"Retirement Planning: A Comprehensive Approach"
Javier Estrada, PhD

2025 Journal Research Award—Honorable Distinction

"When a Guarantee Isn't a Guarantee"
James B. Sandidge, JD

2025 Institute Writing Award Winner

"Managing Concentration Risk"
John Nersesian, CIMA®, CPWA®

2025 Institute Writing Award—Honorable Distinction

"Are Your Clients Missing a 'Free Lunch'?"
An Advisor's Guide to Investing in Alternatives"
Steve Dean, CFA®, and Lance Lehman, CFP®, CIMA®, CPWA®

"A Virtuous Cycle of Trust: Proactive Approaches
that Tie Portfolio Management to Client Relationships"
John W. Moore, CFA®, CAIA®, CMT®, and
William R. Moore III, CPWA®, CFP®, CLU®, ChFC®, AEP®, CAP®



Jeremy Siegel, PhD

REFLECTIONS ON GROWTH, INFLATION, AND INVESTMENT RETURNS

Jeremy Siegel is the Russell E. Palmer Professor Emeritus of Finance at The Wharton School of the University of Pennsylvania. He earned a BA in mathematics and economics from Columbia University in 1967, earned a PhD in economics from the Massachusetts Institute of Technology in 1971, and spent one year as a National Science Foundation Post-Doctoral Fellow at Harvard University. Siegel taught for four years at the Graduate School of Business of the University of Chicago before joining the Wharton faculty in 1976.



Jeremy Siegel, PhD

Siegel has written and lectured extensively about the economy and financial markets and appears frequently on CNN, CNBC, NPR, and other networks. He has contributed articles to the Wall Street Journal, Barron's, Financial Times, and other national and international news media. He served for fifteen years as head of economics training at J. P. Morgan. For the past thirty years, he has been the academic director of the U.S. Securities Industry Institute.

Siegel is the author of numerous professional articles and three books. His best-known book, *Stocks for the Long Run*, in its sixth edition, was named by the Washington Post as one of the ten best investment books of all time. His book, *The Future for Investors: Why the Tried and the True Triumph over the Bold and the New*, was named one of the best business books published in 2005 by Businessweek, the Financial Times, and Barron's magazine.

Siegel has received many awards and citations for his research and excellence in teaching. In November 2003, he was presented with the Distinguished Leadership Award by the Securities Industry Association. In May 2005, he was presented the prestigious Nicholas Molodovsky Award by the Chartered Financial Analysts Institute to "those individuals who have made outstanding contributions of such significance as to change the direction of the profession and to raise it to higher standards of accomplishment."

Past awards also include the Graham and Dodd Award for the best article published in the Financial Analysts Journal in 1993 and the Peter Bernstein and Frank Fabozzi Award for the best article published in the Journal of Portfolio Management in 2000.

In 1994, Siegel received the highest teaching rating in a worldwide ranking of business school professors conducted by BusinessWeek magazine. In March 2015, he was awarded The Adam Smith Distinguished Leadership Award for the individual who exemplifies an outstanding level of leadership, deep commitment to public service, and strong devotion to furthering economic initiatives among today's youth. He received the Investments & Wealth Institute Investment Consulting Impact Award in 2020.

In October 2025, Inna Okounkova, Journal of Investment Consulting editor-in-chief; Mark Anson, The Commonfund; Edward Baker, EthicalFin; Geoffrey Gerber, TWIN Capital Management; and Arun Muralidhar, Alpha Engine Global Investment Solutions spoke with Siegel about long-term equity investing, U.S. exceptionalism, inflation, and the role of financial advisors.

INNA OKOUNKOVA: What were the major factors that helped to shape your career? What do you regard as your major achievement as well as your biggest mistake or disappointment?

JEREMY SIEGEL: I was always very interested in the financial markets. I was good at math. I was a math major before turning to economics, and I double majored in those subjects at Columbia College. Once I took economics, I knew I loved it. Back in the sixties, finance was an undeveloped field. Advisors said, "If you want to understand about markets, you should go to a PhD program in economics." MIT had a PhD program in finance, but finance was very different then. The capital asset pricing model or the Sharpe ratio was being developed at that time and was not in the curriculum. There wasn't even the Black-Scholes model when I went to graduate school.

If I was born maybe ten years later, I would have pursued a finance PhD. In hindsight, I think taking economics gave me a good perspective because I approached finance from a macro standpoint. Some prominent financial advisors make mistakes because they don't always understand the macro context. Even though I didn't have a formal finance degree, I think my course of study was beneficial for me.

My greatest contribution is *Stocks for the Long Run*. I won't go into the details about what prompted me to write it, but I was an unknown author at the time. But the book received rave reviews. The first edition came out in 1994, and the book is now in the sixth edition. I think it's sold almost a half a million books over this thirty-year time span. The book tries to explain the market from an integrated macroeconomics-finance point of view.

What I documented in *Stocks for the Long Run*—and one of the things I think made this book so popular—was that, although stocks tend to be volatile in the short run, they are less volatile than bonds, in terms

of purchasing power, in the long run. I emphasized that this asset class gave a higher return for long-term investors with less volatility than bonds. It was a real breakthrough to explain why investors with long-term horizons should have a heavy equity market allocation.

I would say my biggest regret is that I did not see the beginnings of the financial crisis of 2008 and 2009. I was complacent. I didn't know all these bad loans were part of the balance sheets of these banking institutions. Neither did Alan Greenspan, then the chairman of the U.S. Federal Reserve. However, I made an excellent call a few years earlier when I nailed the peak of the stock market during the dot-com bubble of 2000.

INNA OKOUNKOVA: You were a key inspiration for investors to see equities as a more reliable path to long-term growth rather than short-term speculation, me included. Edward McQuarrie of Santa Clara University extended the data backwards. He claims that asset return patterns you documented in your book, *Stocks for the Long Run*, do not generalize to the nineteenth century. In your view, should this expanded historical data set influence how we present long-term opportunities to investors today?

JEREMY SIEGEL: I'm very acquainted with, and appreciate, Ed's work. He is a careful researcher who got into the weeds of that older data. Equity returns since 1871 come from the Cowles datasets, which Ed and all others say is accurate.¹ He said researchers, including me, overstated our conclusions based on pre-1871 data. He further maintained we didn't consider the failure of the First and Second Banks of the United States, which was a big part of the market in those early years.² Once you include those, the first sixty to seventy years of my sample, ranging from 1802 to 1871, equity market returns were not as good as I or others had indicated. However, there's no question about the data I used from 1871 onward, which is more than 150 years of data.

The bonds that McQuarrie uses in this early period are not what we would call the bonds of today. They were extremely risky and had a high correlation with the stock market. They were more like junk bonds with an equity-like return. That's why the bond returns he used for earlier years were much higher than mine. Today, of course, government bonds have a negative beta with the stock market rather than a positive beta. They are what we economists refer to as the risk-free rate of interest. His early bonds are not the same type of what we now call risk-free instruments. From 1871 onward, our bond returns are virtually the same. I stick with my thesis that equity returns are still not only superior, but more stable. If memory serves, his article in the *Financial Analysts Journal* ends with the great bull market of bonds in 2021 that then crashed in 2022 (McQuarrie 2023).

INNA OKOUNKOVA: Thank you for clarifying that. Following up on the bond crash, you were one of the people who provided insights into the cause of that crash. You spoke at the Q Group seminar where you explained how the money supply, as measured by M2, increased by 40 percent in

two years, which caused high inflation. Given the high rate of inflation, returns on bonds, and even T-bills, declined as much as 45 percent in real terms over the course of two years or so. Given that inflation subsequently decreased, do we still need to be concerned about inflation risk going forward?

JEREMY SIEGEL: I was shocked by the Fed's profligate behavior during the pandemic. The excesses began in March 2020, the month that COVID hit. Government spending ramped up and the Federal Reserve just printed money and handed it to the government. We had the biggest two-year increase in money supply in 150 years. I was absolutely convinced substantial inflation would result and prices would not come down. It wasn't going to be temporary. The Federal Reserve slammed on the brakes hard after that episode, almost causing a recession.

Since 2023 the money supply has been growing at a modest rate of 4 percent per annum.³ That's why I am not worried about inflation in the near term. The Trump tariffs will put a small bump to inflation because they are really a consumption and production tax.

If we look ahead, we know the budget deficit is not controlled in the long term. This means we could face the threat of inflation to be sure. It's something we all must consider. However, at the present time, we are in a very different world than we were during 2020-2022. I think inflation in the near term is going to be controlled.

GEOFFREY GERBER: Jeremy, I remember crossing paths with you on Locust Walk in the early 1980s when I was a graduate faculty member at Penn. How has your perspective on markets evolved from the 1980s to now, especially considering recent economic cycles? Do demographic trends alter your long-term return expectations? Are there still big misconceptions about stock market investing you encounter among investors today?

JEREMY SIEGEL: Your question relates to the major thesis of *Stocks for the Long Run*. The short run is different than the long run. I've been critical of much portfolio analysis because we calculate one-year standard deviations of asset returns and then construct efficient frontiers for all holding periods. Years ago, I asked: "Well, what happens if you have a thirty-year horizon?" The profession's answer was: "Oh, we can prove that if asset prices are random walks, it doesn't matter what your horizon is. The horizon of your portfolio will not affect your allocation."

That was the prevailing wisdom, but, when you look at long-term stock returns, as I did, you observe the mean-reversion property of these equity returns. They are not random walks. When you have a mean-reverting series, its long-term volatility is much lower, relative to a random walk. Therefore, you cannot use one-year standard deviations. I pointed this out in the first edition of my book. This is why I emphasized why longer-term investing does involve a much higher allocation to equities. Notably, other researchers were beginning to get similar results even before *Stocks for the Long Run*.

EVEN THOUGH THE MIX BETWEEN THE GROWTH OF HUMAN WORKERS AND ROBOTS OR TECHNOLOGICAL CHANGE MIGHT SHIFT, EITHER DEVELOPMENT PRODUCES GDP AND EQUITY GROWTH. BOTH ENHANCE EQUITY RETURNS AND TECHNOLOGICAL OPPORTUNITIES.

This principle has been repeatedly confirmed in all sorts of different market regimes. Things certainly have changed. We've had longer business cycles and longer expansions. COVID, which is a totally black swan event, put an end to the expansion after the financial crisis.

Another surprise is the continued pre-eminence of the United States in equity returns. Twenty to thirty years ago, U.S. equities represented one-third of the world's total world equity. I expected this fraction to continue to decline as China, India, and other countries came into the fore. In fact, the opposite happened due to the rise of U.S. technology stocks, such as the Magnificent Seven [MAG 7].⁴ In fact, the proportion of U.S. equities has increased worldwide to more than 50 percent now.

What produces economic growth? The answer is population growth and technology. On the population side, we are experiencing a slow-down. Birth rates have shrunk around the world. In the United States, we have a sharp slowdown in immigration, which is a drag on our population growth.

However, with AI [artificial intelligence], we have a possibility of a speed-up in productivity growth that could offset declining birth rates. Who knows? A robot might be able to do the work of a human, which you could count as a form of population growth. I'm still optimistic about GDP [gross domestic product] growing over time. Even though the mix between the growth of human workers and robots or technological change might shift, either development produces GDP and equity growth. Both enhance equity returns and technological opportunities.

GEOFFREY GERBER: How will these emerging technologies such as AI and cybersecurity tools influence macroeconomic trends and market productivity? How should investors think about adjusting their portfolios going forward?

JEREMY SIEGEL: I remain bullish on equities in the long run. I do think real returns on equities going forward may not be as robust as the 6.5-7-percent after-inflation return I determined from my 220-year dataset, covering 1802 to the present. If you take the past thirty or sixty years, or even just look at the Cowles Foundation period, long-term returns are almost always 6.5-7 percent. I think in the future we'll probably be closer to a 5-5.5 percent after-inflation rate of return. That's still good because the real return on bonds is much lower. So, the equity

premium, which is the excess return of stocks over bonds, is not going to change that much.

EDWARD BAKER: Given your thoughts about continuing economic growth but slowing population growth, does that combination translate into rising GDP growth per capita?

JEREMY SIEGEL: Yes, absolutely. That's the standard-of-living growth. More population produces GDP growth but not per capita growth. AI is more related to productivity. If we take the post-World War II trend—and we have quarterly productivity numbers going back to 1947—there has been a slight decline of productivity growth over time. This surprises a lot of people.

We had a lot of productivity growth, particularly in manufacturing, in the sixties and early seventies, etc. Will AI be able to give us a boost again? There is a lot of evidence that it might. The internet gave us a boost, but it was short-lived and we went back to the normal productivity growth. AI, I think, promises to be bigger and yield more durable productivity growth. If this happens, the standard of living and real wages will rise.

MARK ANSON: You made a comment earlier about the pre-eminence of the U.S. equity market that we all see. It's been an amazing run. At the same time, we've also seen many economic cycles, up, down, all around. In the U.S. equity market right now, we observe higher multiples being applied to cash flows, something that continues to create this U.S. exceptionalism. We call it U.S. exceptionalism because we don't have any economic theory to back it up. Have you ever seen anything like this before?

JEREMY SIEGEL: In the past fifteen years, we have never seen a cycle of growth stocks outperform value stocks for as long and by as much in the 100-year history of the CRSP [Center for Research in Security Prices] data series. People often ask me, "Jeremy, when is this going to end?" I say, "I have no idea and I don't think anyone else knows either." We can talk about the reasons for what you call U.S. exceptionalism.

MARK ANSON: What economic theory can possibly support this U.S. exceptionalism?

JEREMY SIEGEL: Let me relate several things that are going on here in the United States. I don't think there is any country in the world for which out-of-the-box thinking is more acceptable than in the United States. We revel in the creative destruction of the Schumpeterian model.⁵ There are forces in other countries, some being societal, where, if there is a big, prominent company that employs 80,000 people, you don't mess with it. You don't have an upstart that can destroy it.

We are a country that values mavericks like Tesla busting into the auto industry or an upstart taking on IBM. Recall IBM dominated 80 percent of the computers back in the sixties and seventies. We lionize monopoly-busters and innovators in a way no other society does.

This attitude is something that's in the blood of Americans. We question things. You're not demeaned for questioning assumptions.

I think that's why Bezos can come in and make Amazon into a powerhouse and Walmart can enter a local market and destroy smaller businesses. We could criticize entrepreneurs that lay waste to other businesses, but it does make consumers better off. We accept this competition more than most other countries. I think that's key to American exceptionalism. It's why so many people from foreign countries come to the United States to get educated, develop their ideas, and seek financing here. But many then go back to their own countries and implement them.

MARK ANSON: In the asset management industry, I call that thinking outside the benchmark.

EDWARD BAKER: I read your 2003 paper on bubbles. I am amused by your approach. You take a long-term and ex-post view to determine whether something is a bubble or not. Because of that, and because of the strong market we've had, you've identified virtually no bubbles at all. However, you did think perhaps we had a bubble in 1999 and 2000. What are your current thoughts about bubbles? Might you use the word bubble for the current environment?

JEREMY SIEGEL: These are good questions. We economists can't explain the equity risk premium by standard models. We can't explain why it's so high. This is a problem, especially when I found how long stocks give a 3-3.5-percent premium over bonds. I'm not the first person to address this topic in the popular or academic literature. Others earlier speculated that, in the long run, the purchasing power of stocks is more stable than that of bonds. In the short run, people think stocks are riskier and therefore need an extra premium. If they hold stocks for a sufficiently long period, they don't have that degree of volatility. This means, from a long-term standpoint, stocks are chronically undervalued.

When we look at historical prices over the past century and a half, we see the big spike of 1929. People say, "That was a bubble then." I flipped things around, showing that 1929 was at a valuation that made stocks' long-term stock return more consistent with what people are getting with bonds. When volatility hits, people turn back to their short-run thinking. Behavioral finance introduces loss aversion and the tendency of investors to disproportionately fear a loss.

Every so often, people adjust their risk-return expectations and the equity premium falls to levels that are more consistent with what we economists have found. Repeating, ever since Mehra and Prescott [1985], we haven't been able to explain why the equity premium is so high.

But there was a true bubble in 1999. I wrote about it in an op-ed piece that appeared in the *Wall Street Journal*. My op-ed was fortuitously timed because it was published at the beginning of March 2000 when the bubble broke. It was titled "Big-Cap Tech Stocks Are a Sucker's Bet." I pointed out why I thought the MAG 7 at that time were way overvalued. You can go down the list of companies such as AOL and EMC and note many don't

exist today. Some do. Cisco Systems traded at \$50.30 per share in March 2000. It traded at roughly the same price, \$48.90, in August 2024. It's now trading at \$79.52.

The word "bubble" is overused. Anytime a stock is even 5 or 10 percent higher than what people think it should be worth, many say it's in a bubble. A bubble should be reserved for something that is way outside normal boundaries. I remember Fischer Black, when he gave his presidential address to the American Finance Association, being asked: "You talk about efficient markets. When is a price efficient?" He said: "Oh, when it's either less than 100 percent above or more than 50 percent below its fundamental value."⁶ He answered this question referring to efficiency. Bubbles should be reserved for something that is way out of line. I do not think the MAG 7 prices today are way out of line.

Does this mean I think the MAG 7 are fairly priced? Can the market be 20 or 30 percent overvalued? Absolutely, it could be. These stocks might also be 20 or 30 percent undervalued. In either case we don't have a bubble. When you look ahead, and I'm excluding Tesla because Tesla is unique, with the other MAG 7 you have forward PEs [price-to-earnings ratios] in the low 30s. These are not unreasonable given their growth even though they are massive companies. We had forward PE ratios in 2000 of internet stocks like Cisco that were 100 to 300 times earnings, much higher than what we see today.

Could it turn out these stocks today could go as high as the internet stocks did in 1999 and 2000? Of course, that's possible. Are we there yet? No. Are we headed there yet? No one knows.

Some say: "Oh, yeah, we're in the early stage. It's like 1997. We have two more years of huge gains, then it's all going to burst." If the MAG 7 go up much higher, yes, it could burst, but we may not see such an escalation. It's not there now. I'm not saying go buy these stocks. I'm not saying they're not overvalued now, but they are in a range I think can be justified by economic analysis.

GEOFFREY GERBER: What role do you see policy decisions under the current administration playing in predicting the market outlook compared to previous administrations?

JEREMY SIEGEL: I'm on record as being against the tariffs. I think tariffs reflect a terrible policy. I'm all for trying to negotiate deals where we open markets, but the way things have been implemented and the size of the tariffs has been haphazard and detrimental.

There are other Trump policies that are positive, such as the pro-merger, anti-regulation stance. I think there was far too much of an anti-merger stance under the previous administration. I like the new corporate tax bill. I like expensing capital. That's a positive. Clearly, I like less regulation in the areas where there has been too much. That's a positive. I think that's the reason why the stock market is basically at all-time highs. It isn't that every policy under the Trump administration is great and working, it's just that the positive factors at this point outweigh the negative factors.

We are the only OECD [Organisation for Economic Co-operation and Development] country in the world that does not have a VAT [value-added tax] on tariffs. We rely on income tax proceeds more than any other country in the world. Tariffs could be seen as a small part of a VAT system, but they have been applied haphazardly. We should be taxing certain types of consumption and not relying so much on the income tax.

To recap, the positives of the current administration include lower regulation, the tax bill, and moving away from the staunch anti-merger policy of the previous administration. These are factors that outweigh the negativity of the tariffs and have rationally boosted the stock market over the past nine months.

ARUN MURALIDHAR: Colleges and universities are under financial pressure right now with endowments being largely illiquid because of allocations to alternatives. Their government grants are being either cut off or offered with unattractive strings attached. Revenues are down due to lower foreign student enrollments. What financial engineering strategy would you advise the president, treasurer, or chief investment officer of a college or university endowment to implement to improve the financial stress they are experiencing?

JEREMY SIEGEL: There are a lot of things packed into what you asked. When you look at college and university endowments, they are big. Many of them are in the tens of billions of dollars. Twenty years ago, we couldn't have dreamed about how much money they have. Your statement about being illiquid is apt because some endowments have been forced to issue bonds. However, there is a rationale for their illiquidity. If you are a real long-term holder, you should get a higher rate of return on illiquidity. That's the theory since you cannot sell illiquid assets easily in tough times. I still think the major universities have enough dollars and funding to keep necessary research going. And a lot of innovation in the private sector doesn't depend on the government.

Consider SpaceX. Thirty years ago, no one thought any space innovation would be implemented outside of NASA or the federal government. Now we see it's done in the private sector. A lot of things can be done in the profit-making private sector. We talk about biotech as replacing some NIH [National Institutes of Health] grants. These are things we should be aware of. I do not believe that there will be a significant reduction in funds going into research that would have an adverse long-term effect on economic growth.

Don't forget, the U.S. presidency is limited. A different president could reverse policies and beef up the amount of grants to institutions of higher education. When we look at innovation, we see a lot of that innovation has been in the private sector and not from the universities. Moderna is a case in point with its production of the mRNA vaccine. Certainly, university research generates good outcomes.

We are the wealthiest country in the world. We are also the most generous country in the world in terms of our charitable giving. We donate vast amounts to universities. Funding of programs carried out by higher

education could come from either charitable or profit-seeking sources. I am not worried about the Trump stance on universities.

EDWARD BAKER: The venture capital area has been an important contributor to what Mark calls American exceptionalism. Other countries don't seem to be able to find people who are willing to risk capital in the same way. What are your thoughts about venture capitalists?

JEREMY SIEGEL: I think what you say is mostly true, but the role of the venture capitalist is related to ideas I discussed earlier. Other countries are unwilling to risk capital if they fear the government is going to go after them when or if they try to break up a company with ties to the government.

The opportunity for venture capitalists to prosper is intimately linked to the notion that, if you do fund an innovation that could put other companies out of business, it is likely your innovation is going to stand. In other countries many say: "This established company is important. This company accounts for 20,000 to 30,000 jobs. You, the venture capitalist, can't go through with your plans." I think that's one reason why there are not a lot of venture capital firms elsewhere.

Venture capital is critical and numerous firms have grown due to their support. As noted before, one sees a tolerance for busters of established firms in the United States. Innovation busters of established firms do not occur in other parts of the world to the degree they exist in the United States.

INNA OKOUNKOVA: Siegel's paradox, named after you, shows that expected gains depend on the currency used for measurement, allowing both sides of a currency exchange to expect gains. How should international investors incorporate this concept when constructing their respective portfolios, particularly when they decide whether to hedge their currency exposures and when they are evaluating the expected returns on foreign assets?

JEREMY SIEGEL: Regarding the Siegel paradox, let me tell you a story about my interaction with Professor Lars Hansen. He received a Nobel Prize in Economic Sciences in 2013, along with Eugene Fama and Bob Shiller, for research about the efficiency of financial markets. He introduced me at a conference by saying: "We have a speaker here. There's something like sixty or seventy Nobel Prize winners in Economics, but only about twelve people that have an economic paradox named after them." When I got up to the microphone, I said, "Lars, thank you so much but I'll trade my paradox for your Nobel Prize!"

Regarding the paradox: It was a minor observation—just one page—of my first published article. I was looking at the Bretton Woods Agreement and asking whether we can use forward exchange rates to determine what expected future spot rates were going to be. I was examining whether they were biased or not, and then I noted the fact that one over the expected value of a random variable is not equal to the expectation of one over a random variable. That's a very famous inequality

(Jensen's inequality)—the expectation of a reciprocal is not the reciprocal of the expectation: $E[1/X] \neq 1/E[X]$. So, I determined that dollar-based traders and, say, euro-based traders cannot have the same unbiased expectations of the exchange rate. Everyone said, oh my God, how can that be? And the profession named it the Siegel paradox.

I never solved the paradox because it wasn't where my research led. I thought it was more a second-order issue. But others thought it was fascinating. Forty years later, I still have economists writing: "Dr. Siegel, I think I solved the Siegel paradox." Mark Kritzman included the Siegel paradox in his book, *Puzzles of Finance: Six Practical Problems and Their Remarkable Solutions*, published in 2000. I think he solved it. I won't go into his solution. I said: "Good for you, Mark. I never worked on it!"

The important message is that futures prices are not unbiased estimates of expected future spot prices. We all look at Fed funds futures. We hear the business reporters saying, "Oh, they are predicting two and a half cuts." I say: "These futures are not unbiased. They're all biased because of risk premiums."

Regarding Fed funds, we even know the direction of the risk premiums. If there is going to be a recession, the Fed is more likely to lower rates and risk assets are likely to go down. Therefore, Fed funds futures are a negative beta asset. Their rates will underestimate what the expected future spot rate is going to be. However, it seems like the financial media struggles with grasping this notion. I even see notes from such prestigious groups as Goldman Sachs and J. P. Morgan that suggest to me that some analysts may be missing this point.

EDWARD BAKER: Cryptocurrency is an exciting area that came on the scene in a blitz in 2009. There doesn't seem to be a standard valuation model that works. Alternative valuation models have been put forth such as Robert Metcalfe's rule for valuing networks.⁷ He explains that the value of a network increases exponentially as the number of connected users grows. Considering the spectacular run in bitcoin prices and the absence of an acceptable valuation model, would you characterize the crypto market as being in a bubble?

JEREMY SIEGEL: One reason why crypto has gained prominence is the fact there have been so few innovations in monetary transfers over the past fifty years. Transfers cost too much and the United States has one of the worst systems in the world. Credit card companies charge merchants 3 percent and we get 2 percent back on our cards. It's costing consumers hundreds of billions of dollars a year. With international transfers, fees are worse and everyone takes their bite. Some firms are now beginning to offer cut-rate transfers.

We have the ability, and have had for more than ten years, to do electronic transfers at about 5 basis points. That's the way it should be. We should be able to move dollars instantaneously around the world for much less than the cost of bitcoin transfers. I believe Visa, MasterCard, and American Express are monopolies. Everyone is feeding at the

trough. The banks and the credit card companies both make billions of dollars.

They don't allow these large fees in Europe and elsewhere. The U.S. banks and the credit card companies wanted to put 1-1.5-percent charges on debit cards. The U.S. Congress had to step in to limit this. Lawmakers said it's ridiculous to add these surcharges because the money is there and there is no fraud. They forced fees downward. I don't know what it is now, maybe 37 basis points. No one, including the banks, has an incentive to innovate in this area.

I think it's a failure of the Federal Reserve. The Fed should have told the banking system to develop a more efficient electronic transfer system between merchants and individuals, but they didn't because they were getting so many billions of dollars from the credit card companies. The Fed should have pushed it. As a result of the high fees, we saw the ushering in of the stablecoin market. With the recent rise in gold, there are people who want to return to gold as our currency and use blockchain technology for international transfers.

Besides the banking system, there is the issue of overregulation. Three credit card companies account for roughly 90 percent of the transfer business. They sit on fat profits with little incentive for them to change. Practically speaking, money transfers must be completed between 9 a.m. and 3 p.m. on weekdays. Given these conditions, some people said, "Well, we can have a digital coin that has none of these restrictions whatsoever."

The rise of crypto is related to these issues. I don't think bitcoin would be priced the way it is today had the United States been in the forefront of developing an extremely efficient electronic-transfer system for both global and domestic use. This is my opinion.

Bitcoin and Ethereum, supposedly the basis of stablecoin, would not be so popular if we had an efficient domestic and international transfer system. We need a system of monetary transfers for the twenty-first century.

EDWARD BAKER: I agree with your views. You mentioned gold. What do you think about gold as a holding in long-term investor portfolios? Does it have a role or not?

JEREMY SIEGEL: Well, it's interesting. Gold is having a great run recently. Gold's return after being freed in price in the 1970s, when Nixon went off the international gold standard, has performed almost as well as stocks. But the return over my 223-year period, from 1802 to the present, has only been about 1 percent a year over inflation, while stocks are returning 6-7 percent. Gold hasn't even done as well as bonds over the long haul, because of its nonproductive nature. Gold is an inflation hedge and can hedge against geopolitical risks. It can hedge against other risks, such as market panics. It can be used to diversify a portfolio. But it doesn't have a great long-term return.

Bitcoin does not have these hedge properties. We just had a recent sell-off when Trump threatened big new tariffs on China. Bitcoin sold

off, but gold did not. Bitcoin was not a good short-term diversifier of risk. It hasn't been because it's too tied to risk markets. The same participants who invest in bitcoin invest in Nasdaq stocks and other risk assets. If their wealth goes down because risk is off, they sell their bitcoin to finance whatever positions they have. Gold has not suffered that way. If you would like short-term diversification, gold is much better than bitcoin.

I'd rather have property and equity than gold or bitcoin if I fear inflation in the future. These are productive assets versus gold, which is non-productive. Gold will keep up with inflation, but little more than that.

GEOFFREY GERBER: Jeremy, you mentioned before that you don't like the way the media uses the term "bubbles" all the time. How should investors think about volatility even if the media focuses on sound bites?

JEREMY SIEGEL: We love to talk about the short-run drama in the market. Anyone who is motivated to trade because of this drama is generally going to be a loser. We know that. If the market is off 5 or 10 percent, the media hypes this as doom and gloom and says everything is bad and investors should sell. Alternatively, the media may amplify the concept of FOMO [fear of missing out] and suggest investors get in when the market's good.

These messages cannot be part of your long-term strategy. I always say 75 to 80 percent of your long-term portfolio should be in some broad stock index, tilted if you wish, toward value or growth. But it should reflect your decisions, independent of good and bad headlines. You can speculate, if you wish, with the remaining 20 percent. I'll make a bet over twenty years that your 20 percent in speculative assets won't do as well as the other 80 percent that is indexed.

GEOFFREY GERBER: Right. I always like to say: "Think about Rip Van Winkle every now and then. Go to sleep and don't look at your investments." That works well for the 80 percent of your long-term portfolio. But for that 20 percent in speculative assets, you mentioned gold. Are there other ways that investors should look to invest their speculative assets?

JEREMY SIEGEL: If you want to allocate 5 percent in gold or 5 percent in bitcoin, even as part of your long-term strategy, okay. However, I think it would ultimately be a drag on your portfolio. I don't see either gold or bitcoin as ultimately productive. Property has net rental income. Equity has returns from the productive use of capital. Gold is basically sterile.

GEOFFREY GERBER: But it doesn't pay income.

JEREMY SIEGEL: It pays no income, zero. Yes, there is an opportunity cost in terms of income. It is an inflation hedge. If you think the real rate is zero, gold will match the return on short-term U.S. Treasury bills, assuming the short-term bill rates are the same as the inflation rate. That's all.

PROPERTY HAS NET RENTAL INCOME. EQUITY HAS RETURNS FROM THE PRODUCTIVE USE OF CAPITAL. GOLD IS BASICALLY STERILE.

ARUN MURALIDHAR: I'd like to expand a little bit on the income side again. In practice, it's completely different from the assumptions one makes in academia. For example, academics assume investors maximize the expected utility of wealth whereas goals-based investing is all about ensuring cash flows and income for goals, as Bob Merton has noted in the context of retirement.⁸ How do you address these competing views?

JEREMY SIEGEL: Bob was in my PhD class at MIT. I have huge respect for him. There are certain equivalences if you think about cash flows and ensuring those cash flows materialize over your lifetime. A lot of people have more wealth than needed for those cash flows. Additionally, some investors want to finance their children's activities or bequests, i.e., a legacy of some kind. Bob has worked on these issues. He is working to help others generate the cash flows they expect they will need.

How do you do that? There are techniques to ensure these cash flows. Investors need to talk about what's important to them. An advisor must sit down with the investor and ask about what that investor owns, what are that investor's minimum income needs, what does that investor need for their children, and how long should a charitable trust (if one exists) last? Then the advisor can help the investor construct a portfolio that is richer and probably better suited to their goals than just investing in a plain vanilla indexed portfolio.

There is a lot to the goal-based approach. Does it differ a lot from what we've thought of as the standard portfolio selection? I think the longer your horizon, the less of a difference there is between these approaches. Nevertheless, I think Bob's work is extremely important.

EDWARD BAKER: If you are concerned with inflation, how do you protect yourself against inflation risk?

JEREMY SIEGEL: In the bond world I like TIPS [Treasury Inflation-Protected Securities]. Of course, the tax features are bad so you should keep them in your tax-exempt accounts. I prefer TIPS over the standard bonds because I think inflation is a threat. As we saw during the pandemic months, the government or the Fed can just start increasing the money supply, which is inflationary.

But note, the current yield on the ten-year TIPS is 1.7 percent. A 20 PE stock has a 5-percent real return. This is almost 5 percentage points higher if you think of the stock market as forward-looking. If you take out the MAG 7, which have spectacular earnings growth, you have a PE of around 20 for the rest of the market. A 20 PE implies a 5-percent real return, while TIPS are returning 1.7 percent. This is a big return gap. Nevertheless, TIPS are inflation-protected and give you income. I hold some and I certainly would not begrudge anyone who does.

Realize, however, if you have a long horizon, that 3.5-percentage-point difference between TIPS and equities is going to compound over time.

EDWARD BAKER: You make a good point, one that relates to the earlier question about cash flows for endowment funds. Any endowment fund must support the programs offered by its institution. They have a spending policy. They don't typically own a lot of cash-yielding assets. They own stocks and venture capital interests. They invest for the long term and generate the income they need by selling things. What are your views about investments for endowments?

JEREMY SIEGEL: If you have a market, you can sell. And don't forget, U.S. stocks have a low dividend yield. One of the reasons we have such a low dividend yield relates to harsh tax rules on dividends. I think we have one of the most punitive tax laws on dividends in the world. I remember I was on a President [George W.] Bush tax panel and I advocated that, if you reinvested your dividends back into the stock (or market), you should not be taxed until you finally sold the stock. That would put dividends on the same basis as capital gains. There was a lot of support for the recommendation, but this reform never went through. It has not been part of the Trump or the Republican program over the past few years. Basically, firms buy back their shares to generate capital gains that are taxed lightly and deferred.

If you want income, you must sell your stocks. Suppose an endowment's goal is 5-percent income, but the stock has only a 1-percent dividend yield. I am going to get 1 percent and then I'm going to sell 4 percent of the stock each year, and the stock is appreciating because the firm is buying back their shares. On average buybacks will produce 4 percent per year appreciation. In other words, I'm taking that appreciation and selling it instead of receiving it all in dividends. It's harder for people to do this, but our tax laws influence firms to lower dividends.

INNA OKOUNKOVA: You advocated for international equity diversification; however, investors in some foreign countries only have access to domestic equity markets. Do you believe that, for non-U.S. investors, your long-term equity thesis remains valid, or would you suggest a different investment strategy?

JEREMY SIEGEL: People say foreign stocks haven't done well. If you go outside the United States, you are in a value world. I just did a quick little review. The Russell 1000 value total return over the past five years has been the same as Europe. It's just that once you leave the United States, there are very few growth firms. On the value side, Europe or Asia haven't done much worse than our value.

The underperformance of international stocks over the past ten to fifteen years is the flip side of the underperformance of value stocks.

Once you understand this, it gives you a better perspective. The question is, "When will non-U.S. markets start doing better?" It is almost the same question as: "When will value stocks start doing better?" Who knows whether this grand unprecedented growth-stock cycle that we have never seen before will end? We just don't know.

INNA OKOUNKOVA: But at least you believe it will end.

JEREMY SIEGEL: I do think it will end. I hope I'm alive when it ends, but I'm not sure.

INNA OKOUNKOVA: So, the value premium will prevail?

JEREMY SIEGEL: Yes, the value premium will finally prevail.

INNA OKOUNKOVA: Finally, what can we do to educate investors more broadly? How can we emphasize the importance of discipline and long-term focus? How do we help investors overcome psychological barriers that we observe in most investors? How do we stop them from short-term trading and help them to focus on longer-term goals? Do you have any suggestions?

JEREMY SIEGEL: It is really a matter of education and understanding. I like to look at my long-term chart and show investors that all those little wiggles in the stock market total return are the great bull and bear markets over time. These wiggles represent market volatility, an event that scares most investors. Yet, when you look at a long period, you can see that the ups and downs were not so important in the long run.

We need to educate investors about volatility—what it means and how to manage it. When I was younger, I did not think I needed the help of a professional advisor. I would simply invest in an index and leave my investment alone. I've concluded that most investors need someone to hold their hands when times are tough and to emphasize what historical performance implies about future returns. The advisor has the data to support a meaningful discussion.

The worst time to sell is at the bottom of a bear market. We've always bounced back and you should always have some part of your portfolio that is in safe bonds. All the scary headlines do is attract eyeballs. Eyeballs lure advertisers. Advertisers pay money to the broadcasters. You need someone you can trust to provide you with the necessary educational materials, explain the investing process, offer wisdom, stay calm, and give the investor an objective perspective.

INNA OKOUNKOVA: So, there is a role for financial advisors to play.

JEREMY SIEGEL: Absolutely. 🟡

ENDNOTES

1. The Cowles Commission for Research in Economics was founded in 1932 by economist Alfred Cowles at Colorado Springs. Among its work, in 1938 it published a monument of financial research: *Common-Stock Indexes, 1871–1937*, and a second edition in 1939. The Cowles Foundation continues the work of the Cowles Commission, which moved to Chicago in 1939 and was affiliated with the University of Chicago until 1955. In 1955 the professional research staff of the Commission accepted appointments at Yale and, along with other members of the Yale Department of Economics, formed the research staff of the newly established Cowles Foundation. <https://cowles.yale.edu/about-cowles>.
2. The Bank War, in U.S. history, refers to the struggle between President Andrew Jackson and Nicholas Biddle, president of the Bank of the United States, over the continued existence of the only national banking institution in the nation during the second quarter of the nineteenth century. The first Bank of the United States, chartered in 1791 over the objections of Thomas Jefferson, ceased in 1811 when Jeffersonian Republicans refused to pass a new federal charter. In 1816 the second Bank of the United States was created, with a twenty-year federal charter. <https://www.britannica.com/event/Bank-War>.
3. See <https://www.stlouisfed.org/on-the-economy/2023/may/the-rise-and-fall-of-m2>.
4. The “Magnificent Seven” refers to a group of seven high-performing, influential stocks in the technology sector. The name derives from a 1960 Western film, *The Magnificent Seven*, which depicts a powerful group of seven gunmen. A Bank of America analyst coined the phrase in 2023 when commenting on the seven companies commonly recognized for market dominance, technological impact, and changes to consumer behavior and economic trends: Alphabet, Amazon, Apple, Meta Platforms, Microsoft, NVIDIA, and Tesla. However, as of 2025, Broadcom jumped into the ranking with a market cap of \$1.4 trillion, while Tesla, with a market cap of \$1.08 trillion, has dropped out. <https://www.investopedia.com/magnificent-seven-stocks-8402262>.
5. Joseph Schumpeter was an economist known for his theories on entrepreneurship and creative destruction that describe how innovation drives economic growth by replacing outdated practices and technologies. <https://www.investopedia.com/terms/j/joseph-schumpeter.asp>.
6. In Black (1986), he said: “We might define an efficient market as one in which price is within a factor of 2 of value, i.e., the price is more than half of value and less than twice value.”
7. In 1983, Robert Metcalfe developed a simple mathematical formula for valuing decentralized networks, such as the blockchain. Metcalfe’s law states that the value of the network increases with the square of the number of participants, perhaps subject to a time decay. See, for example, M. Hossp, “Metcalfe’s Law in Crypto: How User Growth Drives Value” (November 20, 2024), <https://www.morpher.com/blog/metcalfes-law>.
8. Robert C. Merton is the School of Management Distinguished Professor of Finance at MIT Sloan School of Management, and the John and Natty McArthur University Professor Emeritus at Harvard University. He received the Alfred Nobel Memorial Prize in Economic Sciences in 1997 for a new method to determine the value of derivatives.

REFERENCES

- Black, F. 1986. Noise. *Journal of Finance* 41, no. 3 (July): 428–543.
- Kritzman, M. P. 2000. *Puzzles of Finance: Six Practical Problems and Their Remarkable Solutions*. Wiley.
- McQuarrie, E. 2023. Stocks for the Long Run? Sometimes Yes, Sometimes No. *Financial Analysts Journal* 80, no. 1: 12–28.
- Mehra, R., and E. C. Prescott. 1985. The Equity Premium: A Puzzle. *Journal of Monetary Economics* 15, no. 2 (March 1985): 145–161.
- Siegel, J. J. 2000. Big-Cap Tech Stocks Are a Sucker Bet. *Wall Street Journal* (March 4). <https://www.wsj.com/articles/SB952997047343478041?msockid=36b9780e19506dc4316e6e18db6c34>.
- . 2003. What Is an Asset Price Bubble? An Operational Definition. *European Financial Management* 9, no. 1 (March): 11–24.
- . 2005. *The Future for Investors: Why the Tried and the True Triumph Over the Bold and the New*. Crown Currency.
- . 2022. *Stocks for the Long Run: The Definitive Guide to Financial Market Returns & Long-Term Investment Strategies*, sixth edition, McGraw Hill.



Andrew W. Lo, PhD

A RENOWNED SCHOLAR ON INVESTING AND INNOVATION

Andrew W. Lo is the Charles E. and Susan T. Harris Professor, a Professor of Finance, and the Director of the Laboratory for Financial Engineering at the MIT Sloan School of Management.

Lo's current research spans four areas: evolutionary models of investor behavior and adaptive markets; artificial intelligence and financial technology; healthcare finance; and deep-tech and impact investing. Recent projects include an evolutionary explanation for bias and discrimination and how to reduce their effects; a new analytical framework for measuring the influence of impact investing; the potential for large language models to provide trustworthy financial advice to retail investors; new statistical tools for predicting clinical trial outcomes; incorporating patient preferences into the drug approval process; and accelerating innovation in deep-tech via novel business, financing, and payment models.

Lo has been published extensively in academic journals. His most recent book is *The Adaptive Markets Hypothesis: An Evolutionary Approach to Understanding Financial System Dynamics*. His awards include Batterymarch, Guggenheim, and Sloan fellowships; the Paul A. Samuelson Award; the Eugene Fama Prize; the IAFE-SunGard Financial Engineer of the Year; the Global Association of Risk Professionals Risk Manager of the Year; the Harry M. Markowitz Award; the Managed Futures Pinnacle Achievement Award; one of *TIME*'s "100 most influential people in the world"; and awards for teaching excellence from both Wharton and MIT. His book *Adaptive Markets: Financial Evolution at the Speed of Thought* won the 2018 Professional and Scholarly Excellence Award for Excellence in Social Sciences from the Professional and Scholarly Publishing Division of the Association of American Publishers.

He is a fellow of the American Finance Association, Academia Sinica, the American Academy of Arts and Sciences, the Econometric Society, and the Society of Financial Econometrics. Lo is also a principal investigator at the MIT Computer Science and Artificial Intelligence Laboratory, an external faculty member of the Santa Fe Institute, and a research associate of the National Bureau of Economic Research.

He has co-founded several asset management and biotech companies and sits on the boards of several for-profit and nonprofit public and private healthcare organizations. Lo earned a BA in economics from Yale University and AM and PhD degrees in economics from Harvard University.

In October 2025, Inna Okounkova, *Journal of Investment Consulting* editor-in-chief; Mark Anson, *The Commonfund*; Edward Baker, *EthicalFin*; Ludwig Chincarini, University of San Francisco; Philip Fazio, Merrill Lynch;



Andrew W. Lo, PhD

and Matthew Morey, Pace University spoke with Lo about the state of financial innovation and what this means for the global economy.

INNA OKOUNKOVA: What were the major factors that helped shape your career and bring you to where you are today?

ANDREW LO: One of the major influences of my career is my upbringing. I'm the youngest of three children, and my older brother and sister are seven and five years older, both scientists. So you can imagine the kinds of discussions we would have at the dinner table throughout my childhood. Being much older than me, my siblings obviously knew more than I did, so it was a struggle for me to keep up, but I had a lot of motivation. My brother became a mathematician and now works at Caltech's Jet Propulsion Lab as a real rocket scientist. And my sister became a developmental biologist, now at the University of Pittsburgh Medical School. So I had to get a PhD just to keep up with them, and being intellectually challenged throughout my childhood (and even today) has been a key component to my current occupation. But the main inspiration was my mother, a single mom who raised three children by herself as an immigrant in New York City, and put them through college all on a secretary's salary with lots of overtime.

Another formative element of my educational journey were some extraordinary mentors that shaped who and what I am today. My undergraduate advisor, Sharon Oster,¹ who passed away a couple years ago from cancer, was a significant reason that I chose to major in economics, despite my STEM [science, technology, engineering, and mathematics] background in high school. Until meeting Sharon, I had planned on pursuing a degree in STEM.

Bob Merton, one of my graduate school professors, was another huge influence.² I was a Harvard PhD student who cross-registered for his introductory finance course at MIT, and his lectures were transformative. That class led to my decision to become a financial economist.

INNA OKOUNKOVA: What was your biggest achievement and biggest disappointment?

ANDREW LO: It feels a bit presumptuous to be speaking about any of my achievements as being "great" or "the greatest." So instead, let me just tell you what I'm proudest of and why.

If you asked me this question ten or twenty years ago, I would have said it was the adaptive markets hypothesis [AMH], the idea that markets behave more like complex biological systems subject to the principles of evolution rather than physical systems governed by a small number of immutable mathematical “laws of motion.” One of the earliest renditions of this work is contained in an article I published in the *Journal of Investment Consulting* [2005].

The reason I’m so proud of this body of work is because it reconciles the traditional neoclassical economics notion of rational expectations, general equilibrium, and market efficiency with the seemingly contradictory discipline of behavioral finance.

Early in my career, I struggled with the notion of market efficiency—a beautiful theory with logic so compelling that its truth seemed inescapable—in light of the empirical evidence rejecting the random walk hypothesis that Craig MacKinlay and I developed [Lo and MacKinlay 1988, 1990]. It was like trying to square the circle. I’d been taught throughout my graduate program that markets are efficient, yet all the data we generated suggested the opposite.

I only began to uncover the deep answers to this conundrum once I started looking into behavioral finance, and then neuroscience and artificial intelligence [AI], and then evolutionary biology and ecology. It was this process of searching for the answers within each of these different disciplines that helped me develop an explanation for how to reconcile the theory of efficient markets with the reality of various empirical violations of efficiency.

I concluded that the efficient markets hypothesis [EMH] isn’t wrong—it’s just incomplete. We have to consider exceptions to the rule, a rule deemed valuable, generally well-accepted, and supported by economists. But the exceptions are incredibly important and interesting. And over the past two or three decades, we just happen to be living in a time when exceptions occur with increasing frequency, thanks to technological breakthroughs such as algorithmic trading, high-speed networked telecommunications among financial institutions, computation, and artificial intelligence.

This is how I would have answered your question twenty years ago about what, among all my research accomplishments, I’m proudest of. But I’ve changed my mind since then, partly due to personal challenges. About fifteen years ago, friends and family members were dealing with various kinds of cancer, and over a six-year period, five people close to me all died of this terrible disease. I’d never dealt with death up close and personal before then, so it was a rude awakening for me.

During that time, I felt completely useless and helpless; a cancer patient needs a financial economist about as much as a fish needs a 401(k) plan. It wasn’t until I started learning more about how cancer drugs were developed and delivered to patients that I realized something that was obvious to biomedical experts: Finance plays a huge role in the healthcare industry. I was naive enough to think that, if a patient was in need and a particular piece of science or medicine could help, money would magically appear to develop a treatment for that patient.

Nothing could be further from the truth. It can be incredibly challenging for even the most brilliant physician-scientist to convince investors to take on the risk of biomedical R&D [research and development] given the “triple whammy” of drug development: low or unknown probability of success, outsized capital needs—often hundreds of millions to billions of dollars per drug—to develop and clinically test a single drug candidate, and an investment horizon that sometimes can stretch beyond a decade before any cash flows are generated. Biomedical investments, especially at the early stages of development, are simply too risky for most stakeholders.

So, over the past two decades, I’ve re-oriented my focus toward developing new financing models to accelerate biomedical innovation, and this research area has now become the most meaningful to me. I’ve applied the principles of finance that all of us financial economists know instinctively and use daily—diversification, portfolio optimization, securitization, risk management, and so on. Being able to take those ideas and work with collaborators in the medical industry to put them into practice in specific settings has been some of the most meaningful work I’ve done in my entire career.

This research agenda is especially satisfying because it shows how finance doesn’t always have to be a zero-sum game. There are ways of doing well by doing good and helping patients along the way. Thanks to the progress my collaborators and I have made in this area, I now see so much more potential for how what we do in finance can have a huge positive impact on the world.

Along the same lines, I guess my greatest disappointment is that a set of ideas I proposed for large-scale funding has not yet been implemented by the healthcare industry. In 2012, I published my very first article in a leading biomedical journal (*Nature Biotechnology*) on novel ways to fund drug development, proposing the use of securitization techniques to unlock billions of dollars in capital. I called this idea the “mega-fund” model, and there were two pieces to it. One was portfolio theory and diversification, the idea that taking “multiple shots on goal,” to use a hockey/soccer catchphrase, would improve the odds of at least one or two wins when compared to making bets one at a time. That part has been implemented successfully.

But the second and, I thought, more elegant and important piece, was to finance the development of these therapies via securitized debt rather than just equity. This second part has not yet been done. But I haven’t given up.

I’m hoping that within the next few years, we will get to that second part, where we start using securitized debt to finance drug development, unleashing an order of magnitude more capital than what’s available today.

LUDWIG CHINCARINI: Why are you keen on debt financing?

ANDREW LO: There are three reasons why I proposed debt financing. First, debt markets are one to two orders of magnitude larger than equity

markets—there's a ton of money waiting to be deployed. If you just look at corporate bonds, that's certainly a risky asset class, but bondholders are aware of what the default risks are. They model it, and therefore they are able to invest large amounts of capital for various purposes, including mortgage-backed securities that financed trillions in commercial and residential real estate. The 2008 financial crisis made it obvious to me that a lot of money could be raised in a relatively short period of time for a very specific purpose, if you properly model and manage the risks. That's one reason.

But the second, and probably more relevant, reason is that the typical cost of capital in drug development among biotech companies is estimated to be anywhere from 20–35 percent and higher, depending on the specific stage of R&D. Today's corporate bond yields are in the mid to high single digits for investment-grade bonds. It's a huge efficiency gain if you can finance biotech via securitized debt, assuming the risk can be accurately measured and managed, which in turn is a function of analytics and scale.

Finally, it's because one of the key concerns of biotech entrepreneurs is dilution. Drug development requires multiple rounds of funding, and at each round these entrepreneurs face greater dilution. In fact, it's not at all unusual for a founder—the person who came up with the drug and got it all the way to FDA [U. S. Food and Drug Administration] approval—to own less than 5 percent of the equity of the company by the end of that very expensive process. Securitized debt is a source of non-dilutive financing, allowing equity holders to maintain their equity stake and get “more bang per buck” due to increased leverage.

From multiple perspectives, it seems like everyone benefits. The problem is that we don't yet have a widely accepted set of analytics that will allow bondholders to accurately measure the risk and reward of a given investment in biomedical assets. We're getting closer. I do believe that will happen sometime in the next few years. But I've been feeling that way for the past five years, so who knows whether it will really come to fruition.

EDWARD BAKER: I continue to be impressed by your work on the AMH and believe it offers an important perspective on financial market dynamics, most deeply reflected in your paper “The Origin of Behavior” [Brennan and Lo 2011]. You first published your work on the AMH in its most formal version in the *Journal of Portfolio Management* in 2004, their 30th anniversary edition.

At the end of that paper, you said you were looking forward over the next thirty years, and hoped your paper received a lot of mentions in the journals to come. Has it achieved what you hoped, at least in terms of bridging the gap between the EMH and the various quirks and anomalies identified by behavioral finance?

ANDREW LO: Well, I believe it's still early days for the AMH. As the saying goes, the proof of the pudding is in the eating, and that will require other researchers to weigh in and generate additional theoretical and empirical analysis. I don't think there's been enough done yet.

Part of the reason is the way the AMH frames the problem. It's not the traditional approach that economists have borrowed from physics—develop a mathematical hypothesis for a given law of motion, collect data, and then test the hypothesis. Testing the AMH is not quite as simple as testing whether the intercept or alpha is zero in a standard one-factor CAPM [capital asset pricing model] regression.

It's more akin to an ecological research problem. If you ask an ecologist whether a particular ecosystem is sustainable or not, the ecologist doesn't usually begin by testing any single mathematical formula, even though mathematics does play a big role in ecology and evolutionary biology. They typically start by spending some time doing field studies, living in that particular ecosystem, measuring and cataloging the different species and biomasses of flora and fauna, and documenting how they relate to each other, e.g., via predator-prey relationships. They'll basically immerse themselves in that ecosystem. After six months to a year, or however long is needed to complete their field studies and create case studies of the various species, these scientists then will turn to modeling the mathematical relationships among those species. Only then will they be able to say: “Yes, if you eliminate this portion of the forest, you'll lose certain keystone species, which may then lead to a collapse of the food chain, and the entire ecosystem could be in jeopardy due to a sudden decline in biodiversity.”

Although the AMH has now received additional exposure in the mainstream finance literature, it doesn't have nearly the same level of empirical validation that the EMH does. The AMH does have growing empirical validation in the context of providing evolutionary explanations for behavioral biases such as loss aversion, anchoring, and framing. But because the AMH is a much more complicated way of looking at things, testing it requires a fundamentally different approach. In fact, I only came to the AMH after taking a two-year leave of absence to start my own hedge fund, AlphaSimplex Group, in 1999.

It was through the process of putting money on the line—developing trading strategies, seeing those strategies generate significant profits initially, and then watching those profits decline over time as other trading groups reverse-engineered them and competed away those profits—that I realized markets don't work the way the EMH tells us they should. They work more like the way biologists and ecologists think about how the flora and fauna of an ecosystem evolve in the face of competition, innovation, mutation, and natural selection.

EDWARD BAKER: It seems that a lot of behavioral research is attacking the assumptions of the EMH, such as the assumption of rationality, rather than attempting to disprove it directly. Beyond that kind of thinking, has the AMH achieved the prominence you hoped for? Is it getting the publication mentions hoped for? Are other academics using it in their work?

ANDREW LO: Not as much on the academic side. It's funny—practitioners are more familiar with it than my academic colleagues. Once a practitioner reads about the AMH, they usually respond positively, saying,

“Of course, this is exactly what’s been going on.” Not surprisingly, this is because the AMH emerged as my attempt to reconcile theory with practice, not so much as an academic exercise. However, the rejection of the random walk hypothesis that Craig [MacKinlay] and I wrote was the beginning of the academic journey, and I believe that economists are beginning to appreciate that body of work a bit more in the context of the AMH.

But because I didn’t frame it as a simple alternative, like a two-factor alternative to the CAPM, or the Fama–French five-factor model, I didn’t work out all the implications of the AMH for the existing academic literature. I think that’s why it may not have gotten more acceptance or visibility among academics. In fact, the first time I published anything about the AMH was in a practitioner journal. And the first complete exposition of the AMH was published as a trade book in 2017 [Lo 2017], written for a general audience, not my academic peers. I felt that the multi-disciplinary nature of the AMH required a broader and more accessible approach, so that even non-specialists could understand the overall logic and vision of the AMH.

However, more academics are starting to take an interest in it, and in 2024 I published a much more technical exposition of the AMH [Lo and Zhang 2024] that contains a lot of the mathematical and statistical implications that academics like to focus on, which were deliberately omitted from the 2017 version.

In fact, “The Origin of Behavior,” the paper you kindly mentioned [Brennan and Lo 2011], led to one of the biggest aha moments I had in my entire career. That one paper crystallized for me the solution to the decades-old controversy between the EMH and its behavioral critics, and when Tom and I completed it, I said, “Now I finally get it.” In my 2024 monograph, published by Oxford University Press as part of their Clarendon Lectures in Finance, I hope to reach my academic colleagues and show them that market efficiency and behavioral finance are not competing theories but merely opposite sides of the same coin of adaptive human behavior in a complex and highly dynamic environment.

EDWARD BAKER: Have there been any surprises along the way in your further research?

ANDREW LO: Well, I certainly didn’t expect this research, starting with the simple idea that individuals’ behaviors are shaped by their environment, would generate so many different, rich implications. Nor did I expect that some of those implications would be relevant for the readers of the evolutionary biology literature. I didn’t start out looking to contribute to that literature; I liked my chosen field of finance just fine and had no intention of moving into other fields. It just turned out that, in seeking answers to questions about financial anomalies, I discovered certain contradictions in some of the things that evolutionary biologists had concluded.

One example is the idea of “group selection”: Can natural selection operate at the level of a group rather than at the level of an individual

THAT ONE PAPER CRYSTALLIZED FOR ME THE SOLUTION OF THE DECADES-OLD CONTROVERSY BETWEEN THE EMH AND ITS BEHAVIORAL CRITICS, AND WHEN TOM AND I COMPLETED IT, I SAID, ‘NOW I FINALLY GET IT.’

gene? The work I published on the AMH ended up having implications for the theory of group selection in evolutionary biology. To make sure I wasn’t totally off base, I published that research in peer-reviewed scientific journals, and the referees, who were evolutionary biologists, confirmed that the AMH was a different but valid way of understanding group selection.

EDWARD BAKER: In what ways would you like to see your research impact others’ thinking?

ANDREW LO: I guess I’ve always felt there should be some consistency between what academics and practitioners do. To give you a little bit of a window into my own psychology, one of the reasons I decided to start my own asset management company in 1999, AlphaSimplex Group, was because I’d been teaching investments at MIT for years. I taught my students the EMH because that’s exactly what I was told to teach by my older and wiser colleagues. I took their teaching notes as my starting point and tried to teach the subject to the best of my abilities. But I have to tell you, I felt like a total fraud for two reasons.

First, I didn’t believe what I was teaching. But second, and more relevant, I actually didn’t know very much about investing. Of course, I understood all the academic models of investment management, and had authored a number of those models in my research career by then. But I had never invested personally before I became an assistant professor of finance and started teaching investments. I did do some consulting for a few large financial institutions, but that was different. The institutions were the ones doing the investing, not me. So when I started AlphaSimplex Group, I felt I was taking an important step forward because I was putting my money where my mouth was, both literally and figuratively, from a career perspective.

That was a hugely formative experience and I learned a tremendous amount. The point of the AMH is that, now, I believe practitioners and financial economists in academia can be on the same page. Differences may still exist because we look at the world through different lenses and use different vocabulary to describe what we see. But there’s a lot more agreement than academics and practitioners realize when you look through the lens of the AMH. It’s like the old adage about five blind monks who encounter an elephant for the very first time. The monk who grasps the elephant’s trunk says the elephant is just like a snake, while the monk who feels the elephant’s leg says the elephant is just like a tree. They’re not wrong, they just don’t have the complete picture.

This aspect of the AMH was, and still is, particularly satisfying. I finally felt like I wasn't talking to two completely different groups of stakeholders who had nothing in common. We academics have a lot in common with our practitioner colleagues, but it may not seem so because we don't have a common language for exchanging ideas. The AMH provides that language.

PHILLIP FAZIO: I read *A Non-Random Walk Down Wall Street*. Certainly, for most of us, the math in that book is intense. There was an update if I recall. What are your observations today about non-randomness? Are there significant revelations that modify your work?

ANDREW LO: That was indeed an intense book, and I apologize for your having to wade through the thicket of equations and tables and figures. It took ten years of our academic careers for Craig and me to work all of that out, and I wouldn't expect too many people to read it for pleasure.

But that book was important for my professional development because I desperately wished for the EMH to be true. That was how I was taught. I learned about the EMH first from Bob Merton, and then from Fischer Black, and yet again from Stew Myers. All the teachers I had at Harvard and MIT believed that the EMH was true. That's why Craig and I thought we might have had a programming error in our code.

And the reason it took a decade for us to finally conclude that stock prices aren't random walks is because we tried to explain away the rejections time after time, using various explanations. We developed a model of non-synchronous trading. We developed a model of illiquidity. We developed a model of price discreteness (in those days, prices traded on discrete intervals of \$0.125). We tried every possible angle to conclude that markets were in fact efficient and we were incorrectly rejecting the random walk due to one of these attributes.

In the end, this book—aptly titled *A Non-Random Walk Down Wall Street*—became a compendium of all our failed attempts to explain away the evidence as anything other than market inefficiency. Ultimately, what finally convinced me to stop doing my testing and just acknowledge markets can be inefficient at times was when I attended a talk at MIT by a hedge fund manager who was invited by the MIT Computer Science and AI Lab. He was a computer scientist and one of the first to create a statistical arbitrage, or “stat arb,” hedge fund. I'd never met him before his visit and hadn't heard of him because I wasn't involved with the industry at the time. I was just writing papers and trying to get tenure.

He came up to me after the talk and seemed to know a lot about my research with Craig on testing the random walk, including the key equations in our 1988 paper. When I asked him how he knew so much about our work, he said that his first trading strategy made use of our research.

I was blown away. Some people have asked whether I felt bad that I didn't do it first. I said, “Of course not.” I was in no position to do what this talented trader did. The fact that he was a computer scientist meant that he had no interest in academic theories—he just wanted to develop

a profitable trading algorithm. That's not something Craig and I could have done when we published the paper in 1988.

But his experience told me that Craig and I were right. Markets don't follow random walks at times. If you have the right hardware, software, telecommunications, financing, people, and circumstances, one could profit handsomely from our ideas. And this talented hedge fund manager did just that, until it stopped working.

This notion of market efficiency as a black-and-white phenomenon basically went out the window when I met this impressive trader. He acknowledged this was their first trading strategy, and eventually everybody else figured it out and copied it with minor variations, at which point he turned to another set of strategies.

So my publications with Craig may have contributed to his success, but only a very small portion. However, his willingness to share his experience with me was invaluable, and gave me a clear sense of how dynamic financial markets must be and how practitioners look at the world differently because they're forced to. They're just trying to make a living, and lots of other talented hard-working professionals are competing with them to do the same.

Thus began my path down this AMH journey.

MATTHEW MOREY: I sometimes use *How Markets Fail* by John Cassidy when I teach my courses. The book was published in 2009. I really like the book. I think it's an intellectual tour de force. One of its basic central theses is that the Chicago style or concept of “utopian economies” equates speculation to stabilizing. If the market is overvalued, people will see that and push it downward and vice versa. He counters this is not the case at all. Speculation is in fact destabilizing. What are your thoughts on this, especially given where we are in the markets today?

ANDREW LO: I spent a lot of time thinking about this idea as an undergraduate and graduate student. Given my high school background in STEM studies, I naturally gravitated to mathematical economics, due in large part to Sharon Oster's mentorship. I studied general equilibrium theory and the beautiful mathematics involved in that literature, and wrote my senior thesis on that topic. I was fortunate to have studied under some of the very best mathematical economists such as Herb Scarf, Pradeep Dubey, and Martin Shubik.

What I learned from that experience is that neoclassical economics is akin to the simplified world of frictionless physics. It assumes that markets are always in equilibrium and there is no cost to engaging in the price discovery process. The EMH conveys the same idea, that prices always reflect all available information, because it was implicitly assumed that markets equilibrate instantaneously. [Eugene] Fama didn't say it explicitly when he formulated the EMH, but it's embedded in the theory.

This is an important point because, in the event of a supply and demand imbalance, prices for that moment may not reflect all available

information. But if you assume all supply and demand imbalances are eliminated immediately, then you're back in the happy world of efficient markets and rational expectations. The question remains, "Why do prices equilibrate at all?"

This question was asked and answered over a century ago by the French economist Léon Walras, who came up with a clever idea now known as the *tâtonnement* or "groping" process. Imagine a hypothetical auctioneer whose job it is to raise or lower prices in response to market demand. In the face of excess demand, the auctioneer raises prices until such demand is eliminated. If there's excess supply, the auctioneer will lower prices until it's eliminated. Through this process of successive approximations, the Walrasian auctioneer will reach market-clearing prices quickly and efficiently. This *tâtonnement*, or iterative process of trial and error, is how economists typically think about equilibrium prices, at least in theory. Of course, practice can be quite different.

When I looked at price movements on the New York Stock Exchange and Nasdaq, I didn't observe *tâtonnement* happening instantaneously. And there are days such as October 19, 1987, where it doesn't happen at all. Markets occasionally break down completely.

Walras was thinking like a mathematician, not a Wall Street trader or market maker. The process of equilibrating markets takes time, effort, and skill. If you acknowledge that aspect of the traditional economic paradigm you quickly come to the AMH, where prices don't always and everywhere fully reflect all available information at all times.

... I DON'T BELIEVE MARKETS ARE ANYWHERE CLOSE TO BEING IN EQUILIBRIUM AT ALL TIMES. DISEQUILIBRIUM IS THE RULE, NOT THE EXCEPTION.

On the other hand, given the intense competition in financial markets, it's not trivial to exploit market inefficiencies when they do arise. Even if there's an imbalance, to arbitrage supply/demand gaps requires a lot of capital. In my view, you need to understand what the underlying fundamentals are to be able to exploit temporary disequilibria.

In fact, I don't believe markets are anywhere close to being in equilibrium at all times. Disequilibrium is the rule, not the exception. The most talented hedge fund managers—individuals like Warren Buffett, David Shaw, Jim Simons, and George Soros—are able to identify the nature of this disequilibrium at different horizons and take advantage of that knowledge.

MATTHEW MOREY: I remember reading about the Shleifer noise trader model. It reflects the idea that it's effectively better to ride the bubble than to fight it. It seems consistent with what you're talking about, absolutely.

ANDREW LO: If you can manage the risk, and know when to get out, or at least get out without too big a loss, then you can keep some of those profits. I would call that alpha. That's where the reality of financial markets meets the fictional theory that we all know and love. It's also why I believe you can integrate the two into a single narrative that practitioners and academics can agree on.

LUDWIG CHINCARINI: I interviewed Chi-Fu Huang for my book, *The Crisis of Crowding* [2012], when I was trying to understand all these peculiarities happening in the markets. I think he was a co-professor with you at MIT at one point and left for LTCM [Long-Term Capital Management].

He said the following: "The big innovation in finance was separating alpha from beta and that investors should focus on alpha and leverage." In fact, he believes that the 2008 financial crisis erased thirty to forty years of academic theory. What is your opinion on this statement?

ANDREW LO: Well, I think the statement needs to be qualified, specifically around the conclusion that it doesn't work. It doesn't work for whom?

If it doesn't work for Chi-Fu, or John Meriwether or George Soros, I get that. But I think it does work for most retail investors.

Here's what I mean. If you don't have the time, inclination, and resources to start your own hedge fund and be able to trade against institutions like Citadel, D. E. Shaw, Renaissance, and Two Sigma, then looking at the world in terms of alpha versus beta is a pretty good approach, along with putting your money in a passive index fund or ETF [exchange-traded fund]. Investing in passive low-fee financial products during a twenty- or thirty-year period prior to retirement has demonstrated tremendous value-added for generations of workers since Jack Bogle created the very first index fund in 1976.

So, I would venture to guess that when Chi-Fu talked about alpha versus beta, he was probably thinking more like a hedge fund manager than he was as a retail investor with no specific financial training.

The reason I love the field of finance so much is because what we do broadly applies to real-life situations. This notion of systematic versus idiosyncratic risk applies equally to retail investors and pension funds that don't want to engage in active management. Both parties want to index to a benchmark and grow their financial wealth in a responsible way.

At the same time, finance also allows for the existence of extraordinary people like Warren Buffett, David Shaw, Jim Simons, and George Soros. They have skills that not all of us possess. Those skills have value. So alpha does exist in those circumstances.

LUDWIG CHINCARINI: Can I just add to your statement? When I finished at MIT, I went to Wall Street and so did a student of yours, Toshi Baily, I think you remember.

ANDREW LO: I do indeed.

LUDWIG CHINCARINI: We upset a lot of people by leaving. But I thought, “Okay, I’m going to use my training and blow away these Wall Street guys.”

Instead, every model I built could not beat the market. All of them failed and I was utterly depressed. Given your mention of these successful investors, what do you think “it” is? With AI [artificial intelligence], do you think people who claim you can use AI to pick the best stocks for the next week are right? I have a friend who is doing that. What do you think is the skill you need? Is it understanding quantitative investing? Is it combining a quantitative approach with other factors? What is a skill you need to be one of those extraordinary guys?

ANDREW LO: That’s a question I’ve been asking myself for a long time. I ended up developing an answer that satisfied me, but maybe not all of my academic colleagues, in an article I published called, “Where Do Alphas Come From?” in the *Journal of Investment Management* [2008].

In that paper, I tried to reconcile exactly the point you’re making. How does someone like Warren Buffett coexist with someone like the day trader Steve Cohen? How do I think about what they do? Are they so different that they have nothing to do with each other? There is no way finance can explain or even be able to frame what they do, other than to say that they are anomalies. They don’t fit our model.

But I came up with what I thought was a satisfactory mathematical framework to help academics and investment managers understand where alpha comes from. The answer is so simple and obvious, which is why I think others hadn’t looked at it this way before. All active investment returns stem from the ability to predict the future. In statistical terms, this can be characterized by positive correlation between a manager’s portfolio weights and asset returns. In other words, what we mean by “investment alpha” is simply the ability to do “market timing” but at the asset level, i.e., buying an asset when it’s about to go up and selling or shorting an asset when it’s about to go down.

This idea may seem trivial, but it leads to a very concrete metric for capturing investment alpha that isn’t based on the CAPM or any other asset-pricing model—it’s based on the ability to predict future asset returns and take advantage of it by changing one’s portfolio weights to exploit this predictability. [A more technical explanation of this measure is included in the appendix.]

Now getting back to the original question of a common framework to understand how Warren Buffett and Steve Cohen both make money. Both are predicting future asset returns and adjusting their portfolio weights to exploit these predictions. But Cohen’s predictions are being made at the five-minute level whereas Buffett’s are at the five-year level. They have different information sets that update at vastly different time horizons, but they are both doing the same basic thing.

All investors make predictions. The key to making reasonable predictions, as instantiated by their portfolio weights, is to use an appropriate time horizon. This gives us a way to analyze the skills of all investors as a function of their weights/returns covariances.

MARK ANSON: Your company QLS [Quantitative Life Sciences] has developed a proprietary model to estimate the probability of success of clinical drug trials. To what extent have you embedded AI into your probability of successful models?

ANDREW LO: Thank you, I’m really glad you asked this question because it’s completely outside of finance, so I wouldn’t have normally brought it up myself. However, as I said earlier, there is a link.

Recall my previous comment about my great disappointment that the biotech and pharmaceutical industries have not yet embraced the idea of using securitization for drug development. I said that the issue was missing analytics—we need to be able to calculate default probabilities.

One of the reasons the mortgage-backed securities markets grew so rapidly was an innovation in analytics: a formal mathematical model of prepayment risk, the so-called “Gaussian copula formula.”³ This model enabled all these mortgage-backed securities traders to be able to assess the risk of their positions and generate alpha or beta through that framework.

When I first started asking why securitization isn’t being done, I learned there are no equivalent models for calculating the default probability of a portfolio securitized by biomedical assets. To assess default risk, you have to be able to forecast the likelihood that the FDA will approve or deny a particular drug candidate—an estimated probability of success for a given clinical trial. Basically, you need to create a Barra model for drug development.⁴ And that didn’t exist when I first started working on healthcare finance in the 2010s.

THE KEY TO MAKING REASONABLE PREDICTIONS, AS INSTANTIATED BY THEIR PORTFOLIO WEIGHTS, IS TO USE AN APPROPRIATE TIME HORIZON.

I was kind of shocked by that because the biopharma industry has been around a lot longer than I have, and there are a lot of smart, quantitative people in the field of drug development such as scientists and engineers, MDs, PhDs, and MD/PhDs. I was even more surprised to learn that, although there were some efforts to calculate historical rates of success in clinical trials, nobody had ever used AI before—particularly machine learning—to make forecasts of drug approvals.

I’d been using artificial neural networks for a long time to predict defaults for consumer credit, and published a number of articles using random forests, multi-layer perceptrons, radial basis functions, and other AI techniques. Apparently, no one in the biopharma industry had ever thought to apply these same models to predicting drug development outcomes.

To help fill this void, I published several papers on how to do so using various machine learning techniques [Wong et al. 2019; Lo et al. 2019;

Siah et al. 2021; Xu et al. 2022]. I figured once I published these tools, biomedical experts would start using them, and then we'd have a Barra model for the biopharma industry. But this didn't happen. The work was greeted initially with silence and indifference.

So together with my former PhD student/post-doc, Shomesh ["Sho"] Chaudhuri, we decided to take on this challenge and co-founded a company called QLS Technologies. Borrowing from my experience in the financial industry, in starting AlphaSimplex and building risk models for our internal use, and Sho's PhD research with me on healthcare finance, we created a comprehensive quantitative portfolio management framework for investors in biomedical assets. Our models are based on machine learning techniques and, most recently, large language models, and we now provide this analytics platform to biotech and pharma companies, as well as to investors. We hope that in the near future, these analytics will change the way investors look at risk and reward in the healthcare industry and create new sources of capital for this important sector.

EDWARD BAKER: You've written a lot about neuroscience. Your paper "The Origin of Behavior" touches on the issue of non-rationality and how it fits into the behavioral framework. What conclusions have you come to about the importance of non-rationality as an element of investment decision making? How does it blend with rationality? Do you think that part of what investment advisors should do is to serve as coaches and help clients manage these psychological tensions, so they make better investment decisions?

ANDREW LO: When I first encountered behavioral finance literature I was initially very excited because I thought it was going to offer an alternate theory to market efficiency. But I was ultimately disappointed because the behavioralists didn't come up with any alternative. Instead, they came up with a host of counterexamples of the EMH. Now, I'm not criticizing the pioneers of behavioral finance; they provided an important contribution to the profession by cataloging all the apparent failures of the EMH. But someone wise once said that "it takes a model to beat a model," and the behavioral finance literature had no model that could challenge the EMH. So what do you do with all their counterexamples? What should we replace the EMH with?

This dissatisfaction prompted me to spend time reading the neurosciences literature, in an attempt to understand why people behave the way they do. That was an eye-opener. I began to understand that what we call "rationality" is a delicate balance among the multiple components of our cognitive faculties. It involves being able to calculate, it involves memory, but it also involves emotion. You know, patients who have suffered damage to areas of the brain that are responsible for emotion—and therefore can't feel any emotion—end up acting quite irrationally sometimes. For example, they focus on one task completely, mindlessly, and not realizing they're late for an appointment or missing some other more-important task. Prioritization, it turns out, requires emotional

states such as anxiety, fear, guilt, shame, excitement, enthusiasm, etc. If you eliminate emotion, you eliminate rationality. On the other hand, too much emotion also can make us irrational. For example, it's a well-established fact that love makes you stupid. I've re-learned that lesson firsthand several times through a number of bad relationships.

Rationality, from a neuroscientific point of view, differs from that of economics: It's a state of mind that requires the proper balance between IQ and EQ [emotional quotient].

Financial advisors could all benefit from a bit of neuroscience so they can explain to their clients why retail investors sometimes act in ways that are counterproductive to their financial health. Investors should focus on how they might be able to be more productive by changing their perspective, acknowledging that sometimes they enter emotional spirals that make it difficult for them to act rationally. In those circumstances, having professional advisors—or, nowadays, AI chatbots—may help restore balance to our temporarily misaligned cognitive functions.

INNA OKOUNKOVA: It's been a great pleasure to discuss your cutting-edge work, but we've unfortunately run out of time here. Is there anything you would like to add?

ANDREW LO: We've covered a lot. I just want to say that it's incredibly gratifying that colleagues whom I've known and respected for so many years would take so much time reading and thinking about my work. Thanks to you all, Inna Okounkova, Mark Anson, Edward Baker, Ludwig Chincarini, Philip Fazio, and Matthew Morey for this great pleasure and honor. ●

ENDNOTES

1. American economist Sharon Monica Oster (1948–2022) was the Frederic D. Wolfe Professor Emerita of Management and Entrepreneurship and the dean of the Yale School of Management, where she was the first woman to receive tenure as a professor at the Yale School of Management and the first woman to be named its dean, serving through 2008–2011 and the Great Financial Crisis. During her forty-three-year career at Yale, Oster became an expert in competitive strategy, microeconomic theory, industrial organization, the economics of regulation and antitrust, and nonprofit strategy. She strongly influenced the curriculum of the Yale School of Management, where she three times received the school's Award for Excellence in Teaching. See <https://som.yale.edu/story/2022/sharon-oster-1948-2022> and <https://www.nytimes.com/2022/06/14/business/sharon-oster-dead.html>.
2. Robert C. Merton is the School of Management Distinguished Professor of Finance at Massachusetts Institute of Technology, and the John and Natty McArthur University Professor Emeritus at Harvard University. He is currently resident scientist at Dimensional Fund Advisors, where he is the creator of Target Retirement Solution, a global integrated retirement funding solution system. See <https://robertcmerton.com/about/>.
3. *Wired* magazine's Felix Salmon (2009) published the article "Recipe for Disaster: The Formula That Killed Wall Street" in the aftermath of the 2008 financial crisis and specifically identified David Li's (2000) Gaussian copula formula as the culprit. The role of analytics in the financial crisis was subsequently studied in greater depth by MacKenzie and Spears (2014).
4. Barra refers to the multi-factor model, pioneered by Barr Rosenberg in 1975, that measures risk associated with a security relative to the market. These models help investors and portfolio managers forecast risk for

equity, fixed income, cash, and derivative instruments, at both the asset and portfolio level. See <https://www.investopedia.com/terms/b/barrarisk-factor-analysis.asp>.

REFERENCES

- Brennan, T. J., and A. W. Lo. 2011. The Origin of Behavior. *Quarterly Journal of Finance* 1, no. 1 (2011): 55–108.
- Cassidy, J. 2009. *How Markets Fail: The Logic of Economic Calamities*. Farrar, Straus and Giroux.
- Chincarini, L. 2012. *The Crisis of Crowding: Quant Copycats, Ugly Models, and the New Crash Normal*. Wiley/Bloomberg.
- Fernandez, J.-M., R. M. Stein, and A. W. Lo. 2012. Commercializing Biomedical Research Through Securitization Techniques. *Nature Biotechnology* 30 (October): 964–975. <https://doi.org/10.1038/nbt.2374>.
- Li, D. X. 2000. On Default Correlation. *Journal of Fixed Income* 9, no. 4: 43–54.
- Lo, A. W. 2004. The Adaptive Markets Hypothesis. *Journal of Portfolio Management* 30, no. 5 (30th Anniversary Issue): 15–29.
- . 2005. Reconciling Efficient Markets with Behavioral Finance: The Adaptive Markets Hypothesis. *Journal of Investment Consulting* 7, no. 2: 21–44. <https://ssrn.com/abstract=1702447>.
- . 2008. Where Do Alphas Come From? A Measure of the Value of Active Investment Management. *Journal of Investment Management* 6, no. 2: 1–29.
- . 2017. *Adaptive Markets: Financial Evolution at the Speed of Thought*. Princeton University Press.
- Lo, A. W., and A. C. MacKinlay. 1988. Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test. *Review of Financial Studies* 1: 41–66.
- . 1990. When Are Contrarian Profits Due to Stock Market Overreaction? *Review of Financial Studies* 3, no. 2: 175–205.
- Lo, A. W., K. W. Siah, and C. H. Wong. 2019. Machine Learning with Statistical Imputation for Predicting Drug Approval. *Harvard Data Science Review* 1, no. 1. <https://doi.org/10.1162/99608f92.5c5f0525>.
- Lo, A. W., and R. Zhang. 2024. *The Adaptive Markets Hypothesis: An Evolutionary Approach to Understanding Financial System Dynamics*. Oxford University Press.
- MacKenzie, D., and T. Spears. 2014. The Formula that Killed Wall Street: The Gaussian Copula and Modelling Practices in Investment Banking. *Social Studies of Science* 44, no. 3 (June): 393–417.
- Salmon, F. 2009. Recipe for Disaster: The Formula That Killed Wall Street. *Wired* (February 23). <https://www.wired.com/2009/02/wp-quant/>.
- Siah, K. W., N. W. Kelley, S. Ballerstedt, B. Holzhauser, T. Lyu, D. Mettler, S. Sun, S. Wandel, Y. Zhong, B. Zhou, S. Pan, Y. Zhou, and A. W. Lo. 2021. Predicting Drug Approvals: The Novartis Data Science and Artificial Intelligence Challenge. *Patterns* 2, no. 8 (August): 100312.
- Walras, L. 1874. *Éléments d'Économie Politique Pure ou Théorie de la Richesse Sociale*. Lausanne/Paris: Corbaz & Cie.
- Wong, C. H., K. W. Siah, and A. W. Lo. 2019. Estimation of Clinical Trial Success Rates and Related Parameters. *Biostatistics* 20, no. 2: 273–286.
- Xu, Q., E. Ahmadi, A. Amini, D. Rus, A. Lo. 2022. Identifying and Mitigating Potential Biases in Predicting Drug Approvals. *Drug Safety* 45: 521–533.

Appendix

If you think about how to characterize the expected return of a given trading strategy, formulaically, how would you do that? Well, we can start by calculating the expected return of the strategy, which in turn is just the expectation of the sum of the products of individual portfolio weights times the corresponding asset returns. In finance textbooks, the formula usually appears as something like this:

$$R_p = \omega_1 R_1 + \omega_2 R_2 + \dots + \omega_n R_n$$

$$E[R_p] = E[\omega_1 R_1 + \omega_2 R_2 + \dots + \omega_n R_n] = E[\omega_1 R_1] + E[\omega_2 R_2] + E[\omega_n R_n] \quad (A1)$$

So far, this derivation isn't particularly controversial or interesting. But the next step is both:

$$E[\omega_1 R_1] + E[\omega_2 R_2] + \dots + E[\omega_n R_n] = \omega_1 E[R_1] + \omega_2 E[R_2] + \dots + \omega_n E[R_n] \quad (A2)$$

The right side of this expression simply moves the portfolio weights outside of the expectations operator, a step that every finance academic has done countless times in calculating the expected return of a portfolio. But this operation is only correct if portfolio weights are fixed constants. In practice, portfolio weights are in fact functions of various inputs such as corporate announcements, macroeconomic news, fund inflows and outflows, and a portfolio manager's view of that asset's future prospects. These considerations imply that the weights are themselves random variables, hence they cannot be brought outside the expectations except under very restrictive statistical assumptions that generally aren't satisfied in practice.*

Because of the following statistical property of any two random variables and

$$E[XY] = \text{Cov}[X, Y] + E[X]E[Y] \quad (A3)$$

we can rewrite (A2) in the following interesting way:

$$\begin{aligned} E[R_p] &= E[\omega_1 R_1] + E[\omega_2 R_2] + \dots + E[\omega_n R_n] \\ &= (\text{Cov}[\omega_1, R_1] + E[\omega_1]E[R_1]) + \dots + (\text{Cov}[\omega_n, R_n] + E[\omega_n]E[R_n]) \\ &= (\text{Cov}[\omega_1, R_1] + \text{Cov}[\omega_2, R_2] + \dots + \text{Cov}[\omega_n, R_n]) + (E[\omega_1]E[R_1] + E[\omega_2]E[R_2] + \dots + E[\omega_n]E[R_n]) \end{aligned} \quad (A4)$$

The last expression in (A4) says something important. As an active trader, there are two ways you can make money for your investors. One way is to generate positive covariance between portfolio weights and asset returns, i.e., have higher weights in assets when their returns are higher, and lower weights in assets when their returns are lower. The second way is to have larger positive average holdings in assets with larger positive average returns, i.e., have higher average weight on assets with higher risk premia. The first source of expected return is from being able to predict future returns—a dynamic activity that implies changing weights over time. The second source is from holding higher-yielding assets. This decomposition provides a natural interpretation of active versus passive generation of investment returns.

* In particular, portfolio weights must be statistically independent of contemporaneous returns. Even in the case of passive market-cap-weighted indexes, the weights will typically be correlated with contemporaneous asset returns.



Zvi Bodie, PhD

RETIREMENT PLANNING IN A LIFECYCLE FRAMEWORK

Zvi Bodie is professor emeritus at Boston University, where he taught from 1972 to 2013. He has served on the finance faculty at Harvard Business School (1992–1994) and MIT Sloan School of Management (2008–2009). In 2007, the Retirement Income Industry Association gave Bodie its Lifetime Achievement Award for applied research; in 2019, the Plan Sponsors Council of America selected him for its lifetime achievement award.

Bodie has published widely on pension finance and investment strategy. He is best known for applying modern financial theory to lifecycle saving and investing. He popularized the idea of hedging against inflation using Series I savings bonds, Treasury Inflation-Protected Securities (TIPS), and Consumer Price Index-linked annuities in defined contribution pension and saving plans. He also has advocated for strategies that guarantee a minimum life-long retirement income regardless of the performance of the stock market.

With Nobel laureate Robert C. Merton, Bodie developed a framework for the analysis of financial system design that they call functional and structural finance. This framework synthesizes neoclassical, transaction-cost, and behavioral theories of finance and posits that a financial system performs six basic functions that change very slowly over time and across borders. The institutions that perform these functions change much more quickly and differ across borders.

Bodie has directed major research projects for the National Bureau of Economic Research and the Pension Research Council. With support of the CFA Institute Research Foundation, he organized a series of three conferences on the future of lifecycle saving and investing (2006, 2008, 2010) and edited the resultant conference volumes. Bodie has published papers in academic journals, authored many books about pensions, co-authored three textbooks, and written two books for the mass market, *Worry-Free Investing* and *Risk Less and Prosper*. Among his books about pensions are *Foundations of Pension Finance*, *Pensions in the U.S. Economy*, *Issues in Pension Economics*, and *Financial Aspects of the U.S. Pension System*. His textbook, *Investments*, co-authored with Alex Kane and Alan Marcus, is used in major business schools around the world and has been translated into 10 languages in addition to English. With Robert Merton, Bodie co-authored an introductory textbook, *Financial Economics*, which has been translated into nine languages. His latest textbook, *Principles of Finance*, was published in 2025 by Cambridge University Press.

Bodie earned a PhD in economics from the Massachusetts Institute of Technology, an MA in economics from the Hebrew University, and a BA with honors in philosophy from Brooklyn College.



Zvi Bodie, PhD

In June 2025, Bodie spoke with Robert Powell, CFP®, RMA®, Retirement Management Journal editor-in chief; and Margaret M. Towle, PhD, principal at Yakima River Partners, LLC, about the evolution of finance as a science, retirement planning in a lifecycle framework, the importance of distinguishing between real and nominal cash flows, the distinction between outcome and wealth, and other topics.

MARGARET TOWLE: You offer a unique vantage point since you've been in the business world and education for so long. What significant shifts or evolutions have you observed in

business school curriculum, especially in finance? What are the critical challenges for business education in preparing students for this complex financial world, including intangible assets such as crypto, especially in light of the risk management principles you advocate?

ZVI BODIE: That's a great question, and I have some answers for you. I started teaching as a visiting assistant professor at MIT in 1975, and when I went across the river to Boston University, I taught at the business school. It was still the early days of finance as a science. In other words, the big transition was from teaching finance as essentially an extension of accounting, where you started from a company's financial statements, you analyzed them, you maybe did a present value analysis, but that was the most mathematical, most scientific part of the curriculum in finance. Gradually things like portfolio theory, the Markowitz model, and the analysis of the effects of diversification on risk crept into the syllabus and started taking a bigger and bigger slice.

The option-pricing model was a major transition into how one could use quantitative methods to price all sorts of securities.¹ I was a very good friend at that point of Bob Merton, who was at the center of those developments.² He later shared a Nobel Prize in economics for his contribution to option pricing and other quantitative models in finance. Since then, the field has become more and more about mathematical models as the core curriculum and what I would call financial engineering—using the underlying models and the scientific method to create new products and to understand and analyze existing securities. In fact, the term that was developed was “contingent claim,” and we talked not about option pricing theory but contingent claims analysis. Every type of security, every asset is some form of contingent claim.

For example, in the late 1970s to the early 1980s, Bob Merton applied option theory to the pricing of corporate debt, risky debt. He says,

“Basically we can decompose any debt instrument into a risk-free debt instrument less a put option on the value of the underlying assets of the firm,”

MARGARETTOWLE: But you do have an application of contingent claim analysis that’s derived from option theory. It’s very powerful for understanding financial decisions, for corporations as well as for individuals. Would you elaborate on how a retiree or someone nearing retirement can leverage insights from contingent claim analysis? If there’s increasing market volatility and uncertain longevity, how would they view their retirement plan and whether to work longer or draw on savings? How could we apply contingent claim analysis to your big conceptual framework of worry-free choices?

ZVI BODIE: Two things are involved here. One is the lifecycle finance framework, in which for most people human capital is one of the most important assets, and it can be valued as a contingent claim. That’s point number one.

If you view the process of retirement planning in a lifecycle framework, it’s optimization under constraints. You’re trying to maximize something. In the lifecycle framework, it’s utility or happiness, if you will, satisfaction from consumption over your entire lifecycle. Included in that is leisure. That’s one of the important things that you’re consuming, and you could view that as using up some of your human capital.

One thing that makes the problem complicated from a mathematical point of view is risk. There’s uncertainty all along the path. If you’re trying to maximize utility from consumption of goods and leisure, then there’s a trade-off between leisure and other goods. If your wealth or labor income goes down, one way you adjust is by reducing leisure—that would be working more. So, the terminology gets confusing here because you’re trading off consumption of leisure against other goods. How does that happen? Through your salary.

Another aspect of this problem that becomes fairly complicated is how you define risk. In the lifecycle framework, risk is defined relative to your stream of lifetime leisure and consumption of goods. It’s a flow variable, so anything that disrupts that flow is risky. But the conventional way that many analysts and advisors look at retirement saving and investing is that the risk is the risk to your wealth, which is the present value of your future stream of earnings and your other assets. Well, volatility of wealth is not the same as volatility of consumption flow.

To see that, just take the stage of life that I’m in. I’ve retired. For me, a risk-free flow of goods and leisure is in place because I’ve got annuities. In fact, my annuities are inflation-protected. So that’s safe. It’s a stream of inflation-protected income, essentially. If interest rates change that has no effect on the flow, so I’m not worried because I’ve annuitized my wealth. But changes in interest rates do affect the present value of that flow or, in other words, my wealth. So, I’m not worried about interest rates changing, I’ve hedged that. Now, I don’t think many financial planners or even programs like the CFA® Program even talk about the difference

between the risk of consumption flow versus the risk of wealth. Correct me if I’m wrong, but the Retirement Management Advisor® [RMA®] program also probably doesn’t emphasize that distinction.

ROBERT POWELL: Well, to a degree it does focus on cash flow and consumption. I think the reason it broke ground was because it was based on the lifecycle finance theory and focused on outcomes measured in terms of cash flows and consumption versus wealth per se.

ZVI BODIE: Well, yes, to the extent that I was involved in advising that curriculum, that was definitely one of the things that I emphasized.

ROBERT POWELL: I’ve always described it as part of the secret sauce.

You and I have talked a lot about the failings of financial education at all levels, elementary, high school, college, professional designations. What are these failures and what should we be teaching?

ZVI BODIE: First of all is the issue of distinguishing between real and nominal cash flows. I don’t think there’s any discussion about that distinction at the initial level. When time value of money is taught, it’s typically taught in essentially nominal terms because inflation is ignored. The first unit in investing analysis—saving and investing—should be about U.S. Treasury Series I savings bonds or I bonds, because that makes the difference between nominal and real quite explicit.³ When you invest in I bonds, a given real rate of return is fixed for 30 years, but every six months the dollar amount that you get that’s added to your accumulation reflects the semi-annual inflation rate. Now, that is, to my knowledge, absent from most financial basics curricula.

A long time ago, we introduced the “I Bond Manifesto.”⁴ We got a whole bunch of prominent financial gurus to sign on to it. David Enna played a prominent role, but more importantly, he actually started a website called TIPSwatch.com, which he still maintains. It’s the first place I go to read about new developments with regard to the TIPS market and I bonds. At a conceptual level, what’s so important here is a clear distinction between nominal and real interest rates. In fact, I would tell people that if you go to a financial planner, the first thing you want to ask them is, “What is your opinion of I bonds?” If they say, “What are I bonds?” you don’t want that financial planner.

ROBERT POWELL: Let’s talk about the work that Annamarie Lusardi⁵ and Olivia Mitchell⁶ have done around financial literacy, where they talk about the big three and the big five financial literacy questions.⁷

One question about interest rates focuses on the nominal level rather than the real, inflation-adjusted level: “Suppose you had \$100 in a savings account and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account if you left the money to grow?”

But another question distinguishes between nominal and real rates of return: “Imagine that the interest rate on your savings account was

1 percent per year and inflation was 2 percent per year. After one year, how much would you be able to buy with the money in this account?" That question gets at the real rate of return because you have to make an assumption about whether your money grew faster or slower than the rate of inflation.

To a degree, they're getting at whether an individual understands nominal versus real.

WHAT GOOD IS A NOMINAL GUARANTEE? IT'S OKAY WITH INFLATION OF 2 PERCENT OR 2.5 PERCENT PER YEAR, BUT WHAT IF INFLATION GOES TO DOUBLE DIGITS AND IT'S NOT EVEN OFFERED AS AN OPTION?

ZVI BODIE: Yes, to a degree. But now the question is, do individuals understand the difference in practice? Annamaria and Olivia are two good economists, and Annamaria founded the Global Financial Literacy Excellence Center.⁸

But in the real world of customers coming to financial planners for advice about saving and investing, customers get shown a chart of future value—your retirement income, for example. Is it real or nominal? That's the first question that has to be asked and it very rarely is. I just encountered this yesterday, in fact, when I was on a website. The topic was protected growth investment strategy. Well, that's great. Who doesn't want protected growth, especially in retirement or anything involving annuities, right? The question is, is the annuity piece the part that's being guaranteed? Is it guaranteed in nominal terms or in real terms? I'd be willing to bet that in 99 percent of the cases, it's nominal terms that are being guaranteed, not real terms.

What good is a nominal guarantee? It's okay with inflation of 2 percent or 2.5 percent per year, but what if inflation goes to double digits and it's not even offered as an option?

The other thing that I like to talk about is optionality in the context of guarantees, because that's where it's probably of greatest interest to investors who are concerned about downside risk. We know that concern is very great, and rightly so. But here's the difference between a 30-year U.S. Treasury marketable TIPS bond and a 30-year savings bond: The savings bond has an embedded put option. You never lose any money; it only goes up over time. You could sell it after five years and the interest rate five years later could have gone up. However, the TIPS bond will have lost money in market value terms, right? If real interest rates go up, the price of a TIPS goes down, but not so with a Series I savings bond. It's true you can't sell it in the marketplace, but you can redeem it from the U.S. Treasury. Well, that's a very valuable put option.

ROBERT POWELL: Sadly, I can only buy \$10,000 a year though, right?

ZVI BODIE: That is correct. And your wife can buy another \$10,000.

ROBERT POWELL: Right. Not enough to retire on yet.

ZVI BODIE: Well, unless you started really early.

ROBERT POWELL: Fair.

ZVI BODIE: What I'm talking about is the part of your portfolio that you want to be guaranteed. That's why "The I Bond Manifesto" talks about using I bonds for your safety net. I'm not saying you shouldn't invest in stocks. By all means you should invest in stocks, but my concern has always been worry-free investing.

MARGARET TOWLE: We touched on this idea of human capital, and my background is in political economy, so I have a special interest in this area. Your lifecycle finance framework emphasizes the importance of human capital, and that would be the present value of an individual's future earning potential. But that concept has a long and varied history in economic thought from the early notions of labor power, for example, in classical economics, or Marx's analysis of labor as a commodity.

There's also human capital theory from people like Theodore Schultz⁹ or Gary Becker,¹⁰ who viewed investments in education and skills as generating future returns. How does your conceptualization of human capital, for example, in the implications for optimal portfolio allocation and risk management, intersect or diverge with these other influential perspectives on human capital, especially if we look at individuals' agency in building and leveraging their human capital compared to a more deterministic view like Marx or others?

ZVI BODIE: The only thing I can say, and it's important, is how do you incorporate risk? How do you take the risk of one's human capital into account and layer that onto all the great works that came before that you have cited? The answer is like so many other things when you bring risk in. A major consideration is how volatile the earning stream is and how correlated it is with other assets. Clearly, the safer the human capital, the more risk people are going to be willing to take in other parts of their portfolios. And to the extent that your human capital is correlated with, say, the stock market, then you're going to want to hedge or insure against risks coming from the capital market.

MARGARET TOWLE: So if I take on the role of devil's advocate, do you think that those like Marx and others consider risk as systemic risk and it's more of an exogenous variable and something you can't control?

ZVI BODIE: To my knowledge, it's not complete knowledge, but in my youth, I was a Marxist, so I did read some of *Das Kapital* and other such works.

ROBERT POWELL: Moshe Milevsky popularized this in his book, *Are You a Stock or a Bond?*¹¹ He talked about if you're a venture capitalist, maybe your portfolio should be more in fixed income; and if you're a school-teacher, you can take more risks and invest more in equities.

ZVI BODIE: That's exactly right.

MARGARET TOWLE: One more extension of the human capital issue: In the *Retirement Management Journal* we published a review of the book *Outlive*.¹² In it, the author makes a compelling argument in terms of what we're seeing now, especially among the baby boomer bulge. The author argues for this idea of "healthspan," or a period of living in good health through very proactive steps such as nutritional and lifestyle interventions, rather than lifespan.

Healthspan has been extending—the 60s are the new 50s. Should we be able to extend what you described as the leisure period of retirement? Does that necessitate a reevaluation of your optimal human capital investments in later life? Because it's obviously going to be a bit different in terms of what you would define as a successful retirement if individuals are now living longer and are thus more productive and active for many more decades.

ZVI BODIE: That's a great set of questions. I don't have too many answers. But I will tell you that I am one of the people going through the stage in life that used to be death. I'm 82 years old, and that's beyond life expectancy.

MARGARET TOWLE: Well, you embody healthspan then.

ZVI BODIE: Yes, exactly. The whole idea of healthspan is a really good one, and the psychology of aging is also terribly important. I don't know to what extent psychological health or brain health is included in the definition of healthspan, but I can tell you they're pretty important. I just finished reading a book about the Harvard Study of Adult Development, an 80-year study. The author is Robert Waldinger, a psychiatrist. He's given lots of YouTube talks. He's all over the internet with his talks about the secret to a long life and, more importantly, a good life. He has a book called *The Good Life*.¹³

He wasn't in charge of the study for 80 years, but he has been for the past 40 years or so. The main finding—and it's a really important one—is socialization, maintaining good family relations, maintaining friendships, community, etc., make a big difference. So, I decided to change my ways and be a nice guy.

ROBERT POWELL: Let's merge this discussion about extended lifespan in retirement with the discussion about nominal versus real. Michael Hurd at the RAND Corp¹⁴ and David Blanchett,¹⁵ when he worked at

Morningstar, both found that people's spending over the course of retirement declines 1–2-percent on an annual basis. In other words, it's quite possible that we're saving more than we need to and investing incorrectly to mitigate the effects of inflation that may not be there, given this decline in spending. So, do we have it all wrong if their research is correct?

ZVI BODIE: I'm not sure what the dataset is.

ROBERT POWELL: The Health and Retirement Study for Blanchett.¹⁶

ZVI BODIE: There's only so much you can learn from these studies, and you try to reduce the uncertainty as much as you can. But it's still subject to considerable error, and there hasn't been all that much inflation over the period that they're looking at. That doesn't mean there won't be. So many uncertainties could affect the rate of inflation dramatically, uncertainties of every sort. Who knows, for example, where cryptocurrencies are going to take us. As their name implies, they're money supply—currency.

If I am to believe monetarists, the quantity of money affects the rate of inflation. That's what I learned when I studied Milton Friedman¹⁷ and the other monetarists. So, should I make a forecast based on that? Maybe. But I'm much better at estimating standard deviations than I am point estimates of the mean. In other words, all I can say about that way of thinking is yes, all these things are subject to error, but that's why we have guarantees. That's why we have insurance. To some extent, that's why we have government.

MARGARET TOWLE: Your philosophy champions securing essential retirement spending with, say, inflation-indexed assets, primarily U.S. TIPS. But often, especially in today's U.S. political environment, some observers have expressed growing concern about the long-term stability and valuation of the domestic bond market due to increasing national debt as well as continued confidence in the U.S. dollar as the world's primary reserve currency.

How do you view these current macroeconomic and political anxieties? How does it impact your core recommendation for U.S. government-backed securities? Are you evaluating what truly constitutes a safe asset for retirees if we're talking about sovereign risk or decline in the dollar confidence with alternative safe havens? And if you are, what should individuals consider?

ZVI BODIE: The only other safe haven that I can think of, at least for young people, is an investment in their own human capital, because that's controllable—the broader your education and the more adept you are at technology, the better. And of course, investing in your own health.

Beyond that, I don't see anything that approaches the safety of dollar-denominated assets issued by the U.S. government. Certainly, the stock market isn't going to do it for you. Usually people who argue that TIPS aren't really safe are trying to sell stocks as an alternative.

MARGARETTOWLE: Right, or international or crypto.

ZVI BODIE: Right. And the volatility of those assets is quite large.

I'm a strong believer in the whole business of irrational or rational behavior; that is, behavioral finance. In fact, when I was a student at the Hebrew University in Jerusalem doing my master's degree in economics, one of the first courses that I took was taught by Daniel Kahneman and Amos Tversky.¹⁸

They had just come back from studying abroad, they were new PhDs, and they were teaching a course in what they called cognitive processes. I'm a big fan of behavioral finance, but I myself have not contributed to it except insofar as I endorse strategies that involve setting a floor.

MARGARETTOWLE: Considering behavioral finance—and obviously your worry-free investing is central to this entire philosophy—if you look at the data around this boomer generation's ability to have sufficient assets, especially if sufficient means maintaining the standard of living, the vast majority do not. What can financial advisors and others do to help subsequent generations better mitigate this risk? Because if we look at the current generation, even though perhaps the financial advisory community understands and has embraced behavioral finance, the vast majority of people that are going to be retiring soon do not have sufficient assets.

ZVI BODIE: As that generation finds it has much less available than they previously thought, it will have political ramifications. As a political scientist as well as an economist, you would be sympathetic to considering what the political options are. Certainly, this latest tax legislation, which primarily benefits the super wealthy, would not be tolerated, it seems to me, in an environment where you have masses of people who are experiencing a decline in their standard of living. We have to look back to the Great Depression to look for a precedent, and certainly, the government became very active in the economic sphere in the 1930s.

ROBERT POWELL: Someone like Andrew Biggs¹⁹ will say that there is no retirement crisis writ large for the wealthiest, they're fine because they have enough money to support their desired standard of living. For those in the lowest income quintile, Social Security will replace most, if not all, of the income that they had in their working years. But maybe those in the vast middle would be in the crisis segment.

ZVI BODIE: Well, that's right. Let's take the Social Security system. We know that given current projections, it's going to be bankrupt in the conventional sense. Now do you think we're going to cut Social Security benefits that have been earned? I don't think so. That's a political decision, and politicians have to get elected. Of course, in my thinking I always allow for extreme events that nobody anticipates.

ROBERT POWELL: Would you tell advisors to start making projections that benefits would be cut or that a solution will come in the form of higher taxes, maybe lower benefits for younger workers, maybe increased retirement age?

ZVI BODIE: All of those things, yes, unless people are prepared to keep working. That's where I'd start. By the way, I have to say that I think maintaining at least one foot in the labor force is a desirable thing for the individual as well as society.

ROBERT POWELL: It was John Shoven and others who did research on the best way to improve your retirement security, whether to invest more, invest more aggressively, or work longer.²⁰ Of the three, it was work two years longer to increase your retirement security, which would give you another two years to save and two years less to fund in retirement.

ZVI BODIE: Absolutely. But I'm going for more than that. That's important, but I'm saying it's better to be part of the workforce as opposed to being retired, from a social point of view and a psychological point of view. Incidentally, the Waldinger study on the importance of happiness in later life finds that, for men in particular, at least this past generation, the workplace was where they had most of their social interaction, and social interaction is the secret of happiness. So why would you want to pull out of that?

MARGARETTOWLE: I think it relates to what you were saying about leisure. What I see is pretty much a binary or one-dimensional view of leisure, and maybe it's not such a binary thing in terms of leisure versus working.

ZVI BODIE: Well, there is such a thing as too much leisure.

ROBERT POWELL: There's that story of planners who say that their clients retired to play golf seven days a week and then realized that golfing seven days a week was like work.

ZVI BODIE: Yes, exactly right.

MARGARETTOWLE: In the behavioral finance space, we've seen differences especially in how women tend to be more risk-averse and prioritize capital preservation. But what I discovered as it relates to implementing financial advisory advice is that the assumption is one-size-fits-all. Do you have any recommendations that allow financial advisors to tailor recommendations to both men and women from a behavioral finance perspective?

ZVI BODIE: Make sure they understand the difference between nominal and real. That's not easy; even explaining I bonds to people is not terribly

easy. Distinguishing between real and nominal is the best way to explain the implications for saving and investing.

The other thing is the persistence of risk in the long run. There's no such thing as time diversification of risk, that's nonsense. It's hard to see that it doesn't exist because it has a lot of intuitive appeal.

Paul Samuelson²¹ once told me that he wrote no fewer than 30 pieces explaining why risk does not go away in the long run. It was one of the hardest things for him to get across. He actually thanked me for showing that the cost of a put option, which protects you against earning less than the risk-free rate of return, increases with T , T being the time to expiration of the option, rather than decreases. It's a mathematical proof using option theory.

But I've had a hard time convincing people even using that argument. So, it's important to understand how to take account of time and risk, and that's the essence of finance. Finance is the allocation of economic resources over time, under risk. That's my definition of finance.

ROBERT POWELL: In the RMA curriculum, we're fond of the floor and upside approach, the floor being the amount of money that you would need to cover your consumption, and the upside would be the surplus for discretionary expenses. How you invest the surplus could be different, even though there's no such thing as time diversification.

ZVI BODIE: But that's a different proposition. That's saying the downside doesn't go away because you're holding for many periods. That's what the time diversification argument is. The downside goes away because you're guaranteeing against it, and that may take almost all your wealth.

ROBERT POWELL: For advisors who use the bucket approach, would you say that they're doing it incorrectly?

ZVI BODIE: Well, I'm sure some of them are doing it fine, and there may be good behavioral reasons to do a bucket approach as well.

ROBERT POWELL: Asset-liability matching.

ZVI BODIE: Exactly.

ROBERT POWELL: I know you love target-date funds.

ZVI BODIE: Oh no. I think target-date funds do not deal with risk properly. In fact, I wrote an article about target-date funds²² with a former student who later became my son-in-law, Jonathan Treussard.²³ In the article we talked about target-date funds, among other things, and the question is, what do you do with the target date? Is it your retirement date that you're trying to lock in? Supposedly, yes. What is it that you're putting into the fund? How does it affect the asset mix?

Well, it's not at all clear. It doesn't get around the problem of risk tolerance. So, in some sense it's a misnomer because, for example, if an

employer decides the default option for employees, is it going to be the date of their retirement or when they reach age 65? If they match that, how does that take account of risk aversion? I don't see how.

ROBERT POWELL: Well, it's just taking one factor out of three, right? If the classic input would be your time horizon, your risk tolerance, and your investment objective, target-date funds just take the time horizon into account.

ZVI BODIE: Right, but that's not enough.

ROBERT POWELL: Not to mention, the asset allocation may not reflect other assets that you own outside the target-date fund.

**... IT'S IMPORTANT TO UNDERSTAND HOW
TO TAKE ACCOUNT OF TIME AND RISK,
AND THAT'S THE ESSENCE OF FINANCE.
FINANCE IS THE ALLOCATION OF ECONOMIC
RESOURCES OVER TIME, UNDER RISK.**

MARGARET TOWLE: If we look at the external environment, and especially if you're advocating for TIPS as a worry-free investment strategy, I would love to hear your thoughts on what might happen if we faced a prolonged period of stagflation. In this environment, we could experience both elevated interest-rate risk and inflation risk. How robust do you believe TIPS would be in delivering safety and guaranteed income in that environment? Would you adjust your recommendation?

ZVI BODIE: Good question. Stagflation. So, what do you envision? That there's no growth in the economy or we're in a depression or what?

MARGARET TOWLE: Well, I don't know the exact situation, but yes, very low growth and very high inflation.

ZVI BODIE: Okay, so the very high inflation would not be a problem, it seems to me.

MARGARET TOWLE: Because you're protecting against that. By definition, TIPS would cover essential spending needs, even with very, very high inflation.

ZVI BODIE: Right, so high inflation is not an issue. But with low growth, whatever part of your asset portfolio that is invested in the market is not going to grow as much as you hope.

Israel has many years of experience in its economy with high inflation. In fact, they introduced inflation-linked government bonds back

in the early days of the state of Israel, almost when the Bank of Israel was created in the early 1950s. When I was writing my doctoral dissertation at MIT in the early 1970s, I was drawing on that experience. It wasn't until 1998 that the U.S. Treasury started issuing TIPS. As long as there is political stability, that's the key. Because my guess is that if there were hyperinflation, there'd be political pressure to index the tax system. Right now nominal income is taxed whether it's caused by inflation or something else. So, if inflation-indexed income on TIPS were taxed, even though it was not real income, I think there'd be considerable political pressure to change that.

ROBERT POWELL: Right now, the financial advisor compensation model doesn't always accommodate advisors including TIPS in portfolio management because they charge 1 percent of assets under management, and it's hard to charge 1 percent of assets under management on TIPS. I don't envision there'll be a lot of pressure from advisors to get their clients into TIPS and out of much riskier assets.

MARGARETTOWLE: I guess that's a bigger issue in the industry relative to a more holistic approach to providing financial advice. I was speaking with an advisor who has clients who are very interested in philanthropic activity. She works for a very large firm, and the firm said, "Don't even spend your time talking to clients about their philanthropic activity because we don't get paid on it." That model is one that we have to examine and wonder, is there a better way to do it?

ZVI BODIE: Good question. I mean, that's a pervasive issue in other areas as well. How about artificial intelligence and the use of recorded material that's copyrighted? Take the issue of my friend who's got the TIPSwatch.com website, which has free access.

Of course, there are all these nonprofit entities on the internet that ask you to contribute, but my guess is that voluntary contributions are insufficient. So, I think we're in for a lot of lawsuits for copyright infringement with regard to artificial intelligence. I mean, I have a new textbook just published by Cambridge University Press, *Principles of Finance*, co-authored with Bob Merton and Richard Thakor. How do we protect our material? We want royalties to access it, but how do we guarantee or ensure that?

ROBERT POWELL: Speaking of lawsuits, in some firms the advisor isn't allowed to talk about reverse mortgages, for instance. So, in a world where you can't be holistic, I would think that the advisors are at risk of being sued, if not by the client, by the client's heirs who might say, "Well, you didn't do right by my mom and dad, because you never talked about reverse mortgages or philanthropic activities," or whatever the case may be. The advisor will either have to take measures to have people sign away their rights to sue because they can't talk about reverse mortgages or be at risk of being sued.

MARGARETTOWLE: The big difference is the fiduciary responsibility wrapper, whether it's ERISA [the Employee Retirement Income Security Act of 1974] or UPMIFA [Uniform Prudent Management of Institutional Funds Act] or even the prudent man rule.²⁴ If you're in the business of giving investment advice, you can't just sign away that responsibility. Having worked for a large organization with a huge compliance department, I know that you almost can't write an email without qualifying what you're saying in the email. There has to be some kind of reckoning between the two.

ZVI BODIE: I just got something from one of the fiduciary firms that is holding my assets, this is for estate planning purposes. I asked the firm for a list of everything that I own and what's in my wife's name and what's in my name. Well, that's one page, but the handout I received is seven pages. And it's all legalese.

MARGARETTOWLE: For financial advisors working with clients, what do you think is the most important shift in mindset that they should adopt based on your research and philosophy?

ZVI BODIE: I wrote a piece called "Retirement Investing: A New Approach."²⁵ It points to three things.

The first is the importance of inflation risk. In other words, the problem of inflation and how to tackle that.

The second is the fallacy of time diversification. Stocks don't become less risky over the long run. There's always risk, and tail risk actually grows the further out you go, right? The more periods there are, the more times stocks can go down again. Now it's not high probability, but there's a difference between the probability of a loss and the maximum potential loss. So that whole business: How to take account of the interaction of time and risk. And that would include the distinction between wealth risk versus consumption risk or income risk.

The third thing would be the importance of thinking about options. I can show you the difference between the payoff structure of holding TIPS with upside leverage derived from a call option. So, it's basically protected growth with any degree of risk that you want, but a level of protection versus committing to just holding a portfolio invested in stocks.

ROBERT POWELL: Zvi, we commonly ask the people we interview when they plan to retire, but that question is null and void in your case.

ZVI BODIE: Well, you could ask me, "Do I regret having retired?"

ROBERT POWELL: Okay. Do you regret having retired?

ZVI BODIE: Well, I have not retired, because I had the flexibility as an academic to continue writing textbooks. Which I did, and Cambridge University Press, God bless them, was willing to publish it. ●

ENDNOTES

1. Developed in 1973 by Fischer Black, Robert Merton, and Myron Scholes, the Black-Scholes model was the first widely used mathematical method to calculate the theoretical value of an option contract. It uses current stock prices, expected dividends, the option's strike price, expected interest rates, time to expiration, and expected volatility; see <https://www.investopedia.com/terms/b/blackscholes.asp>.
2. Robert C. Merton is the School of Management Distinguished Professor of Finance at the MIT Sloan School of Management, and the John and Natty McArthur University Professor Emeritus at Harvard University. He received the Nobel Memorial Prize in Economic Sciences in 1997 for a new method to determine the value of derivatives; see <https://mitsloan.mit.edu/faculty/directory/robert-c-merton>.
3. First introduced in September 1998, I Bonds (the "I" stands for "Inflation") are inflation-protected, issued by the United States Treasury, and provide a guaranteed real rate of return for 30 years. This contrasts with the nominal fixed rate of interest provided by most traditional bonds and certificates of deposit; see Z. Bodie, M. Lindauer, D. Enna, and M. Ashton (2021), "I Bond Manifesto: Why Inflation-Linked Savings Bonds Can Work as Part of Your Emergency Fund," <https://tipswatch.com/i-bond-manifesto/>.
4. See Z. Bodie et al. (2021), "I Bond Manifesto," cited in endnote 3.
5. Annamaria Lusardi is director of the Stanford University Initiative for Financial Decision-Making, a collaboration between the Graduate School of Business (GSB), the Stanford Institute for Economic Policy Research (SIEPR), and the school's Economics Department. She is also professor of finance (by courtesy) at the GSB and a senior fellow at SIEPR; see <https://www.gsb.stanford.edu/faculty-research/faculty/annamaria-lusardi>.
6. Olivia S. Mitchell is International Foundation of Employee Benefit Plans Professor, Professor of Business Economics and Public Policy, Professor of Insurance and Risk Management, and executive director of the Pension Research Council at The Wharton School of the University of Pennsylvania; see <https://knowledge.wharton.upenn.edu/faculty/olivia-mitchell/>.
7. Annamaria Lusardi and Olivia Mitchell have developed and refined questionnaires to determine individuals' financial literacy. The questionnaires have been used worldwide, including in the U.S. National Financial Capability Study; see <https://gflec.org/education/questions-that-indicate-financial-literacy/>.
8. Lusardi is the founder and academic director for The Global Financial Literacy Excellence Center (GFLEC), which has the mission of "advancing research and solutions that open the door to universal financial literacy;" see <https://gflec.org/about/>.
9. Theodore W. Schultz (1902–1998) was an American Nobel laureate, an economist, and chair of the economics department at the University of Chicago. He is famous for developing the human capital theory of economic recovery from disaster; see <https://www.investopedia.com/terms/t/theodore-w-schultz.asp>.
10. Gary S. Becker (1930–2014) was an economist who was recognized in 1992 as a Nobel laureate for his microeconomic analysis of the impact of economic considerations on human behavior and interaction; see <https://www.investopedia.com/terms/g/gary-s-becker.asp>.
11. See M. Milevsky (2012), *Are You a Stock or a Bond? Identify Your Own Human Capital for a Secure Financial Future* (FT Press).
12. See M. M. Towle (2024), "Outlive: The Science & Art of Longevity" (book review), *Retirement Management Journal* 13, no. 1: 105–106.
13. See R. J. Waldinger and M. Schulz (2023), *The Good Life: Lessons from the World's Longest Scientific Study of Happiness* (Simon & Schuster).
14. See M. D. Hurd and S. Rohwedder, "Spending Trajectories after Age 65 Variation by Initial Wealth," *Journal of the Economics of Ageing* 26 (2023): 100,468, <https://doi.org/10.1016/j.jeoa.2023.100468>; and M. D. Hurd and S. Rohwedder, "The Adequacy of Economic Resources in Retirement," Michigan Retirement Research Center Working Paper 2008-184 (September 2008), <https://mrrdc.isr.umich.edu/wp-content/uploads/2024/04/rb184.pdf>.
15. D. Blanchett, "Estimating the True Cost of Retirement," Morningstar (2013), <https://www.morningstar.com/content/dam/marketing/shared/research/foundational/677785-EstimatingTrueCostRetirement.pdf>.
16. The Health and Retirement Study is a longitudinal survey of a representative sample of Americans older than age 50 conducted by the Survey Research Center at the University of Michigan's Institute for Social Research and supported by the National Institute on Aging. The study interviews approximately 20,000 respondents every two years about subjects such as health care, housing, assets, pensions, employment, and disability; see https://en.wikipedia.org/wiki/Health_and_Retirement_Study and <https://hrsparticipants.isr.umich.edu/>.
17. Milton Friedman (1912–2006) was an influential American economist and educator and a leading proponent of monetarism in the second half of the 20th century. He was awarded the Nobel Memorial Prize in Economic Sciences in 1976 for "his achievements in the fields of consumption analysis, monetary history, and theory and for his demonstration of the complexity of stabilization policy." See <https://www.nobelprize.org/prizes/economic-sciences/1976/friedman/facts/>.
18. Amos Tversky (1937–1996) was an Israeli-American cognitive and mathematical psychologist. Tversky was a pioneer of cognitive science and a long-time collaborator of Daniel Kahneman (1934–1924), an Israeli-American psychologist best known for his work on the psychology of judgment and decision-making as well as behavioral economics. In 2002 Kahneman was awarded the Nobel Memorial Prize in Economic Sciences with Vernon L. Smith. See https://en.wikipedia.org/wiki/Daniel_Kahneman and <https://www.nobelprize.org/prizes/economic-sciences/2002/kahneman/facts/>.
19. Andrew G. Biggs is a senior fellow at the American Enterprise Institute, where he studies Social Security reform, state and local government pensions, and public sector pay and benefits; see <https://www.aei.org/profile/andrew-g-biggs/>.
20. See G. Bronshtein, J. Scott, J. B. Shoven, and S. N. Slavov, "The Power of Working Longer," NBER Working Paper 24226 (January 2018), <https://www.nber.org/papers/w24226>.
21. Economist Paul A. Samuelson (1915–2009) was the first American to win the Nobel Memorial Prize in Economic Sciences, which cited his "scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science." See <https://www.nobelprize.org/prizes/economic-sciences/1970/samuelson/facts/>.
22. See Z. Bodie and J. Treussard (2007), "Making Investment Choices as Simple as Possible, but Not Simpler," *Financial Analysts Journal* 63, no. 3 (May/June): 43–47.
23. Jonathan Treussard, PhD, is founder of Treussard Capital Management LLC, a registered investment advisor that operates as a fiduciary for its clients.
24. The prudent-person rule is a legal principle that restricts the advisory choices of financial managers to the types of investments that prudent people seeking reasonable income and preservation of capital might buy for their own portfolios; see <https://www.investopedia.com/terms/p/prudentmanrule.asp>.
25. See Z. Bodie, "Retirement Investing: A New Approach," Pension Research Council Working Paper 2001-8 (February 2001), <https://pensionresearchcouncil.wharton.upenn.edu/wp-content/uploads/2015/09/WP2001-08.pdf>.



Anna Rappaport, FSA, MAAA

I'M NOT DONE YET

Anna Rappaport is an internationally recognized expert on the impact of change on retirement systems and workforce issues. Following a 28-year career with Mercer Human Resource Consulting, she established her own firm specializing in strategies for better retirement systems. Before that she spent 1958-1976 in the life insurance industry. She is committed to improving America's retirement systems based on the data, with a special focus on women's retirement.

Rappaport was studying and writing about how changing demographics impact financial security systems long before baby boomers brought attention to the issue. She published her first paper on social and demographic issues in 1975 and has continued to focus on the future of employee benefits, strategies for retirement security, implications of an aging workforce, phased retirement, post-retirement risk, Social Security, and women's retirement challenges. Recently she's taken on issues related to achieving retirement security in a world dominated by defined contribution plans, and on the impact of long-term disability on retirement security.

For the past 25 years she has chaired the Society of Actuaries Committee on Post-Retirement Needs and Risks, playing a major role in developing research into post-retirement risks and enhancing retirement security.

She is a frequent speaker and contributor to business events and trade publications. She is the co-author of three books on the topics of demographics, retiree medical benefits, and retirement. For many years, she wrote a column on post-employment benefits for Employee Benefit Plan Review. She is a Fellow of the Society of Actuaries and a member of the American Academy of Actuaries; she earned an MBA from the University of Chicago.

In June 2025, Robert Powell, CFP®, RMA®, Retirement Management Journal editor-in-chief, and Stacy Schaus, CFP®, CPSP, founder and chief executive officer of the Schaus Group, an independent consultant to retirement fiduciaries and providers, spoke with her about holistic retirement planning, the value of personal experience, challenges for solo agers and women, multi-disciplinary collaboration, her work with the Society of Actuaries Committee on Post-Retirement Needs and Risks, and more.

STACY SCHAUS: Anna, I read your Society of Actuaries autobiographical article and there's so much to discuss. Your work helps advisors help people transition into retirement and have the right risks covered. Then there's your personal life—making transitions, your art pursuits, and serving as a caregiver.¹



Anna Rappaport, FSA, MAAA

ANNA RAPPAPORT: Understanding important issues such as late-in-life experiences and solutions is so important. We learn in different ways—by personal experiences, education, research, and observing family members and those around us. Caregiving for my mom and my husband, and watching others, has been key for me. Dementia is common as people age. I have read about it, but I've also witnessed it, for example, in the dining room at the Admiral at the Lake, which is the continuing care retirement community [CCRC] where I live. One resident who has dementia never gets the right food because she can't remember

what she ordered. That is a big lesson for me.

We learn so much from what we experience. I've seen that throughout my work on the post-retirement risk situation, as well as in medical situations. Physicians were unsympathetic to my father, but one doctor really understood the situation. Why? Because he'd gone through it with his own mom. Likewise, it's important for advisors to understand how people's lives are affected by what happens to them.

ROBERT POWELL: You're involved in the elder planning course that Bob Mauterstock, Annalee Kruger, and I teach at the Financial Planning Association [FPA]. People often sign up for both professional and personal reasons because they're dealing with dementia and caregiving issues in their own families.

ANNA RAPPAPORT: Right, but it's their own experience that enables them to deal with it for clients too. Traditional financial planning was about getting enough money to reach retirement age, and that's still a really important role for advisors. But then people get to retirement and they still need to make a lot of decisions. The traditional approach was, "Can you afford to retire?" If you can afford to retire, you'd retire, of course. But that's not all there is. How do you want to live your life? What do you need to do to have a happy and productive life in retirement? Let's assume that you have enough money and you've got health protection. We're not talking about basic economics now; we're talking about feelings. You need passions, you need to feel that as a human being you are valuable.

When you stop working, you don't suddenly stop being valuable. Some think, "Oh, I'm going to play golf, travel, and go sailing." Well, six months from now you're bored because you can't be on vacation all the

time. Why? Vacation is a break from what you normally do. That doesn't change when you're retired. You have to think about what is important and meaningful. At The Admiral there are people who are 85, 90, or 95, and they are passionate.

You should have been here on June 14 [2025] for "No Kings Day." In front of The Admiral, there were about 100 people. They're in wheelchairs, they've got walkers, they've got signs—it was amazing. These active, passionate people care. They can't walk very well, but they care.

You get to retirement age and you've got decisions to make about the things you need to do. What's going to make me happy? Where am I going to get support? Where am I going to live? How am I going to interact with my family? Advisors with clients at this stage also have to ask, "Am I going to help them with that, or am I going to help them only with their investments?" The truly valuable advisors of the future are going to be able to help them with a lot more than finances. And this brings us, Bob, to the aging plan that we're doing with the FPA.

FPA is one of the groups that's addressing high-age issues. As you get to retirement, you have to establish an income plan and an economic plan that works, but how do you establish a life plan for the different stages of aging? I'm particularly focused on a problem that I see as a big issue: People get their wills and all their papers in order and say: "Thank God, it's done."

And I'm like, "Wait a minute, it's not done."

Why isn't it done? Because your life changes. Here are some of the real-life stories happening around me:

- › You had minor grandchildren last year. Two years from now they might not be minors.
- › Or, you may have lost somebody; somebody may have dementia. Everybody's life is changing, and we need to keep updating.
- › A widow, somebody who had a responsible job, whose husband died about three or four years ago—she hasn't updated her papers yet; she knows she hasn't updated her papers yet.
- › Somebody's mom almost lost a piece of property because she didn't see the notices about taxes on an undeveloped piece of property and it was about to go through a tax auction.

As you progress and go forward, it's important to address all these issues and to pay attention to them.

ROBERT POWELL: One of the questions is about solo agers and the blind spots and challenges they must address.

ANNA RAPPAPORT: Solo agers are people who don't have family support or somebody to help them. But they have the same care issues and needs everybody else does, so they have to find people to help them. Living in a CCRC solves part of that problem, but the people who provide care are not going to help the residents manage their money.

Solo agers, especially people who had responsible jobs, tend to think: "Hey, I've been managing this stuff for the past 30 years. What do you mean I can't manage it?" But they can get dementia the same as anybody

else, and they need helpers. Where do you find helpers? At The Admiral, there's a firm called Your Life Services that does the same thing your kids or somebody else would do for you.² For example, they can collect papers and find someone to help you prepare (or file) a tax return. They can take you to the doctor.

How do solo agers find people who can recognize their support needs? That's a critical issue, because they have problems and making sure that they have everything in place is crucial. If they don't have it in place, they're going to end up with a mess and maybe in court. It's an issue that's being increasingly recognized elsewhere.

One other thing that's interesting about solo agers is the growth of families of choice. Families of choice are people pairing up to help each other. They can be siblings; they can be same-sex couples. I know a group of five women who said, "We're all alone, we're all going to take care of each other." One of them died, and she had a partner with severe dementia who she went to see every day. Now the remaining people still go see her every day. They take care of her. So, they basically formed a little family.

STACY SCHAUS: It's interesting hearing you talk about women coming together. There's a unique sense of community that forms when women stand together in ways they may not have in other parts of their lives.

ANNA RAPPAPORT: Because of differences in mortality and the personal roles they play, women are much more likely to be widows, divorcees, or never married than men, and they're much more likely to live alone in old age. That's a huge issue.

ROBERT POWELL: Talk a bit about caregiving. In 2024, unpaid caregivers provided care worth more than \$1 trillion in this country, and most of these unpaid caregivers are women.³ The effects are enormous in terms of women leaving the workforce, not contributing to their 401(k) plans, losing Social Security benefits, and sometimes dipping into their retirement accounts to pay for caregiving needs.

ANNA RAPPAPORT: That's absolutely what happens. It's important for planners to work with caregivers and help them evaluate if they are better off leaving employment or continuing to work and using some paid caregiving. So often when people have a caregiving situation—and this goes back to the aging plan—they jump in and do whatever they need to do. They deal with it, but they don't think, "What effect is this going to have on my life?"

There are some very good papers by Sandra Timmermann,⁴ and I myself have written some on caregiving.⁵ This is my personal experience and opinion; it's not scientific at all. I was a caregiver for almost 10 years, and I know that caregiving can leave you absolutely devastated. It can destroy you as a person. If you let yourself be totally committed to caregiving, then when the person dies, you've lost your caregiving role and you've lost the person. It's so hard to recover.

I was much more of an outsourcer. While I was caregiving, I also was hiring people to help me. By doing that, I was able to keep going, and it

was much easier for me after my husband died to be able to say: “I’ve been through a lot of grief. I’ve been through this, I’m okay. Let’s put one foot in front of the other and move forward.” For me, the amazing thing is I am doing more right now at age 85 than I’ve been doing for the past 10 years. It’s a story I’m interested in sharing, because it’s something that other people can do, but it doesn’t happen by accident.

In the past couple years, I’ve come to recognize more that you can learn from your experience. If something doesn’t work well, that’s something to learn from. If something works well, that’s also something to learn from. Several years ago, my leg was injured because of a piece of metal on a bed frame. Instead of just dealing with the injury, I said: “Okay, what’s in the apartment? What else might I get cut on? Let’s remove hazards so that it’s not going to happen again.” Learning from our experience can really help us.

My parents were immigrants, refugees from Germany. In many ways, it was a difficult childhood for me. But looking back, I see that I learned how to deal with difficult situations. My mom showed us how she coped. My high school offered only one year of a foreign language. Well, she wanted her kids to go to good schools. So, she went to the school board, pounding her fists on the table, saying, “We’ve got to have a second year of foreign language.” We got a second year of foreign language. I went to the University of Chicago, my brothers went to Harvard, and my sister went to Mount Holyoke. I saw my parents fight, and I learned from that.

STACYSCHAUS: A lot of people, as they age, are more focused on family and children. How do you think about balancing grandchildren, volunteer work, and everything you do? How do you think about those trade-offs?

ANNA RAPPAPORT: It’s interesting you say that because I’m currently staying at a hotel 20 minutes from two of my great-grandchildren. I’m visiting them this week. I love being involved with my family, and it is a balance. Here I am on this call, taking time from my visit to do professional work. One family member here is also an artist. Part of the reason I’m visiting is to do art with both great-grandchildren but also with their mom. It all weaves together into a life pattern that works.

ROBERT POWELL: You speak about the power of interdisciplinary approaches. Can you share a time when working with people from outside your profession led to a surprising or powerful breakthrough?

ANNA RAPPAPORT: In the post-retirement risk work we’ve done at the Society of Actuaries, which is very important to the financial planning industry, we use multidisciplinary teams. Project after project, we get better results because it’s a multidisciplinary team.

Why do I think this happens? Say I’m trained as an actuary, you’re trained as a lawyer, you’re trained as an economist, and you’re trained as a demographer. When we look at something we have different perspectives. And because we have those different perspectives, we add value to the situation. If four people with the same training look at the same

thing, then we may very well have the same comments, but we don’t get much value. You can go project to project and see how team members make comments influenced by their perspectives. It’s like the advisor who partners with an accountant or a lawyer. In the high-age field and other work, you see different aspects of the same thing, and when you work together you get a good result. If everybody goes off on their own, what happens? You have a mess.

ROBERT POWELL: There’s one other topic with respect to your work with the committee and the Society of Actuaries that I’d love you to touch on. It’s the retirement risk chart, where you have identified more than a dozen risks that people might face in retirement, the probability of the risks happening, the consequences, and the risk mitigation suggestions.⁶ It’s inside the RMA® [Retirement Management Advisor®] curriculum. I talk about it whenever I give a speech, and I’d be eager for you to talk about its use and value to planners.

ANNA RAPPAPORT: The risk chart is great for planners, regulators, and individuals; we’ve received nice compliments.

When an individual thinks about planning, they’ll obviously think about money. Hopefully, they’ll also think about health, health insurance, and long-term care. They might think about where they have to live. The risk chart gets people to think about managing all of that.

People are aware that they need long-term care, but guess what? They don’t plan for it very much. The decision briefs from the Society of Actuaries don’t tell you what to do, but they do tell you that this is important and here are some questions to ask. A lot of these questions depend on each person’s life and situation. They have to think through the answers on their own or with somebody to brainstorm with and help them, advise them. But if they don’t even ask the questions, we’re stuck. So, the retirement risk chart raises the questions.

For the most recent risk chart, we divided risks into three basic categories: economic risks, personal planning considerations, and unexpected and unpredictable events. I would say the economic risks—inflation, interest rates, and financial markets—are prominent. Although people know about the risks, they often have a low level of financial literacy. So, in terms of understanding how these things work, that’s a different question. That’s really where an advisor can add a lot of value, because that’s where advisors do have a high level of understanding of what works, or they shouldn’t be advisors.

We know that some people overestimate longevity and some people underestimate longevity. They all know that there is such a thing as longevity. The big challenge is getting people to plan for longer longevity and for variability.

We learned that a lot of people are planning for short-term cash flows, not longevity. The whole concept of dealing with variability is very difficult. Some people are able to understand variable rates of return and how you plan for variability, some aren’t. I remember when I was on the technical advisory group to the Social Security advisory panel, there

was discussion about illustrating variability. The Social Security actuaries were like, “We give a high, medium, and low estimate.” Well, why don’t you do something more sophisticated?

Increasingly, people are thinking about retirement as something that’s not an all-in-one proposition. They retire, they take some time, they go back to work, they leave work. I would say that’s an area where advisors can help. There’s a lot that you can do to make yourself more employable and to know where the special opportunities are. That’s one of the things I’m passionate about: creating better opportunities.

Changes in housing and support needs—that’s an area with a big need for planning, and that’s an opportunity for advisors. Within that category you have changes in marital or partnership status, and that’s an advisor issue. For example, if you’re married to someone who has a pension plan and you get divorced, you have rights to the pension benefits. There are legal issues around it and people don’t necessarily know what to do about that. Women tend to get the house, men tend to get the retirement benefits. There’re a lot of planning issues there. Then you have unexpected and unpredictable events: bad advice, fraud, or theft. One of the good things about the last survey is that people at least are becoming more aware that these are a growing challenge.

ROBERT POWELL: How do you think artificial intelligence [AI] fits into the discussion?

ANNARAPPAPORT: AI is a growing challenge. One troublesome issue is the automated systems we have today, such as call centers. Guess what happens when someone with dementia tries to call a call center? It’s not good. You call and you get into this closed loop.

I have two recommendations for the financial services industry that are really important. One is that these loops need to have an exit strategy. If you call and you can’t figure out what to do, there needs to be a way that you can press zero or one and talk to a human being. Imagine that. But more than that, people with dementia need a special service; they need special people to service them in order to deal effectively with these situations. They’re not going to be able to deal successfully with a call center and get whatever they need. If you’re selling a product and some people can’t successfully deal with the system to buy the product, that’s okay. But if you have money in a 401(k) plan or a bank account and people are having trouble getting it, guess what? Every single customer who has money there is entitled to get service, and you need a way to service them so that it’s not a disaster.

When my husband died, I had interesting experiences with the financial services industry. When I called Fidelity and told them somebody died, they said: “Oh, we have people that handle that. We’ll call you back.” And a person called me back and said, “I handle death claims.” He told me what to do and I did it, and they paid the money. That’s pretty good.

On the other hand, my husband left me a little piece of survivor benefit, and I called the company to try to report the death. They said, “Oh, no ma’am, you have to send it in writing.”

“Well, can you send me the information where to send it? Can you email me the information?”

“No, ma’am. We don’t email, it’s not secure.”

I said: “Wait a minute. You don’t email any information when we report a death, and that’s not secure? You’ve got to be crazy.”

It was one of the major financial companies. To this day it is a nightmare for me to deal with them. I believe that they just are not updating their systems because they don’t have enough survivor benefits. And this is a major U.S. bank. It’s a recognized name that everybody would know. They need to set up service operations that recognize the needs.

STACYSCHAUS: Let’s turn to the defined contribution market. You were recognized by the Employee Benefit Research Institute (EBRI) with the Lillywhite Award⁷ and have worked closely with that organization over the years. As you know from EBRI’s research, a large share of the population has built meaningful savings in their defined contribution plans—but many hesitate to spend those assets, largely out of fear of running out of money.

We’ve also seen research suggesting that if people had additional longevity protection—say, through a guaranteed annuity income—they might feel more comfortable drawing down their savings. Still, there’s often reluctance to take a portion of those balances and shift them into an annuity that could provide greater financial security and peace of mind.

You’ve long been an advocate for retirement income and guaranteed lifetime income solutions. Many industry discussions today are focused on helping participants move from accumulation to decumulation. Roughly 70 new products have come to market to support that transition. The solutions getting the most attention right now combine target-date strategies with an option to annuitize, though there are also a growing number of out-of-plan alternatives.

Given all this, how do we encourage individuals who have saved diligently to take the next step—turning those savings into the sustainable income they’ll need throughout retirement?

ANNARAPPAPORT: We need to remember that Social Security covers a good part of the basic needs for many people. But this is an issue in the United States, the United Kingdom, and I believe in Australia. It’s a common across-the-board issue, and it also interconnects with a long-term care issue in terms of whether people are really better off spending down their money or holding onto it because of the long-term care needs.

It’s also an issue for survivors and family members. I think people know what they want more than we think they know what they want. Holding on to the money isn’t so bad. People seem willing to reduce their spending. Spending on medical care tends to increase with age, but spending for housing tends to be flat or go down as household size declines or as people do things to save. So, the spending patterns are a lot more complicated. But it’s a very good question, and I don’t have a good answer.

STACY SCHAUS: It's an interesting point that sometimes people are better off keeping money rather than annuitizing. I thought you would have said they should annuitize, but if they have Social Security covering a good percentage of their ongoing expenses, maybe they don't need to.

ANNA RAPPAPORT: Social Security annuitizes a good part of their income, and a lot of their expenses are variable. Steve Vernon did a series of projects that was sponsored by the Society of Actuaries and Stanford's Longevity modeling.⁸ They found the best situation was delaying Social Security and then taking RMDs [required minimum distributions]. You need to count Social Security in the annuitization.

ROBERT POWELL: Your research in some ways conflicts with research that David Blanchett and Michael Finke recently published around having an annuity as a license to spend.⁹ I notice from my perch that published research often conflicts with other published research. It leaves me thinking that I don't know what the best practice would be. In this case, does an annuity give me a license to spend or am I getting enough from Social Security that I don't need additional lifetime income?

ANNA RAPPAPORT: This is a very difficult question. There's no consensus among the advisory community about the best income strategies. In terms of the license to spend, if you have enough assets that you think you're going to be okay, you may feel you have a license to spend. Likewise, if you're not a good planner, you may feel you have a license to spend if you haven't overdrawn your credit card. It's really important to think about three levels of people from an economic point of view, because they call for three very different strategies.

First are people who are financially fragile and dependent on government program benefits. They are unable to save for retirement until they are stabilized. Financial wellness programs can help so that paying off high-cost loans and using credit cards for day-to-day spending is no longer preoccupying. The individual gets connected to the financial system. That's the bottom tier. If employers can give them advice through wellness programs, they can get stabilized and start saving for retirement.

Second is a better-off group that's more likely to have financial planners and is actually saving for retirement. The goal is to get those bottom two groups to move up and be less dependent on government benefits and get them saving for retirement. Today, a lot of people live off Social Security, but you would be surprised how they manage and what they live on.

The third group, of course, is the people with retirement assets and retirement resources. But on the other hand, there is an increasing number of homeless older people, and it's really a bad situation.

STACY SCHAUS: You've drawn such an important picture of the very different realities people face in retirement—from those just trying to get financially stable to those with the means to make broader life choices. That made me think about the recent news surrounding Daniel Kahneman, who chose to end his life at age 90.¹⁰ It raises deep questions

about control, purpose, and dignity later in life. How do you think about people making that kind of decision?

ANNA RAPPAPORT: Having a successful death is important, and the right to die is very important. What I hope for myself is to do well, and then when I get to the end—I hope it's quick. I have a couple paintings by a very good friend who was a typesetter for the *New York Times* who committed suicide because, he said, "I can't do what I want to do anymore, and I'm done." I think he was very courageous, and I admire it.

I've seen an increasing number of people doing this. The idea is that we want to live as long as we have something useful to live for and then be able to say, "Okay, we're done now." We need to learn to accept that life has its end. It's not something that we've managed to do very well in the United States.

STACY SCHAUS: That's such an important topic, even though it's not an easy one to talk about. The phrase "a successful death" really stayed with me. It's something most people avoid, yet it's part of the planning we all have to face eventually.

I also want to say how much I admire the care you gave your husband over those 10 years. That takes incredible strength. Losing both the person and the caregiving role at the same time must have been so hard.

It really shows how important it is to stay connected—to have passions, purpose, and community. Your work with actuaries, your art, the people around you—those things clearly give you meaning and keep you moving forward.

ANNA RAPPAPORT: I've done a lot in my life, and I started making travel journals. When you draw something, you experience it differently from photographing it. When you take a picture with a camera it records something; when you draw it records something in you. Art has been wonderful for me.

STACY SCHAUS: You've inspired, influenced, and helped so many people, Anna. I know firsthand how generous you are with your time—you've read and reviewed books I've written, and you've always encouraged thoughtful discussion about ideas that matter. And on a personal note, you also inspired me to spend more time on my art and to get more involved in the art community. You helped me see how creativity can open our eyes to the world in a different way and help us experience life more deeply.

ANNA RAPPAPORT: My parents left Germany with a lot of documents. The documents were critical for being able to leave and they were able to get some other people out; they of course couldn't get everybody out. Before my mother died, it was very important to her that these documents be someplace where researchers could access them. There's now a collection of these documents in the Leo Baeck collection in New York that are available for researchers.¹¹ She taught German at Sidwell Friends School and her German students—she had an exchange program—were

winning prizes. We learned a lot about this because we met people from the school at her memorial. She and my father really cared about making a positive difference, and I think that has rubbed off on me.

STACYSCHAUS: It's clear that your parents' sense of purpose and commitment to making a difference had a lasting influence on you. You've carried that forward in so many ways—through your work, your writing, and now through your art. I know one of your goals has been to publish a book of your artwork and also to have your pieces shown in museums.

ANNA RAPPAPORT: I would like to get some art in a museum, yes. I have been told by people that it is not a realistic idea, but if you don't try, it isn't going to happen. So, I am trying. In 2025, the Plein Air Painters of Chicago¹² had a window in the Monadnock Building that was linked to the [Gustave] Caillebotte exhibit at The Art Institute [of Chicago]—and I had a painting in that window.

STACYSCHAUS: That's exciting, congratulations.

ROBERT POWELL: Is there anything you would like to put a bow on with what we've talked about?

ANNA RAPPAPORT: In terms of my personal life, I'm honored that I've received three or four lifetime achievement awards. Stacy mentioned the EBRI award. The Society of Actuaries gave me the Lifetime Volunteer Award and the Presidential Award; the Plan Sponsor Council of America gave me a lifetime achievement award. At age 75, I was feeling like: "Am I stupid to keep doing this? Does anybody care or is it just my vanity?" Then I got a couple of awards and I thought, "People really do care about what I'm doing."

STACYSCHAUS: You've truly earned each of those awards, Anna—they reflect your long career as well as the lasting impact you've had on the profession. One that particularly stands out is the Trailblazer in Actuarial Science Award. We had planned to ask about breaking through glass ceilings, and this feels like a perfect time to hear your thoughts on that.

ANNA RAPPAPORT: The Trailblazer in Actuarial Science Award is from a women's leadership group within the Society of Actuaries. It was significant that seven women were chosen and they were very diverse. I definitely think it's something that I was entitled to and it made me feel good. It just keeps me going. At 85, I've learned that you really need to pay attention to what you eat; you need to do as much as you can to stay physically fit. You can keep going, but you need a plan. Networking has been extremely important in my life. Trying to protect and help other women is a passionate issue, as has been creating better opportunities.

We didn't talk at all about disability. The disability system is broken and it needs repairing. Part of what is broken is that there are different

definitions of disability and a variety of different programs, and the programs don't integrate well. It's just a bad situation.

STACYSCHAUS: That multidisciplinary approach really seems to be a hallmark of your work, Anna. You've emphasized personal planning—staying healthy, building networks, and supporting women—as well as the importance of connecting ideas and people across different fields. How do you identify those needs and bring the right disciplines together? And how do you help create those networks or teams that make the work more holistic and impactful?

ANNA RAPPAPORT: Support is really critical. The support system is a critical issue for planning. I have worked on two 25-or-more-year projects for the Society of Actuaries, both of which I think are really important. One is to try to bring the work of the Society of Actuaries to as many people as possible and as many organizations as possible. Bob, you have experienced many versions of this—to make things interdisciplinary, that's part of how this is all happening. 🟡

ENDNOTES

1. A. Rappaport, "What I Have Learned from My Experiences," *SOA Retirement Section News* (April 2025), <https://www.soa.org/sections/retirement/retirement-newsletter/2025/april/ret-2025-04-rappaport/>.
2. Your Life Services Group bridges gaps to provide help with financial, household, and healthcare matters, see <https://yourlifeservicesgroup.com/contact/>.
3. See <https://nationalpartnership.org/if-americans-were-paid-for-their-caregiving-they-would-make-more-than-1-1-trillion/#:~:text=Caring%20for%20our%20loved%20ones,a%20pile%20of%20insurance%20paperwork>.
4. Sandra Timmermann, EdD, is a nationally recognized gerontologist with a focus on aging and its relation to business. See <https://wiserwomen.org/caregiver-home/>. See also "The 65 Plus Age Wave and the Caregiving Conundrum: The Often Forgotten Piece of the Long-Term Care Puzzle," SPA (2014), <https://www.soa.org/49399b/globalassets/assets/files/resources/essays-monographs/managing-impact-ltc/mono-2014-ltc-manage-timmermann.pdf>.
5. See https://annarappaport.com/wp-content/uploads/2012/09/pubs_list.pdf.
6. See the SOA 2025 Retirement Risk Chart in "Managing Post-Retirement Risks: Strategies for a Secure Retirement," <https://www.soa.org/4a8deb/globalassets/assets/files/resources/research-report/2020/post-retirement-strategies-secure-chart.pdf>.
7. EBRI's Lifetime Achievement Award, <https://www.ebri.org/about/ray-lillywhite-award>.
8. See <https://www.soa.org/globalassets/assets/files/resources/essays-monographs/redefining-goal-retirement/vernon-part-2.pdf>.
9. "D. Blanchett and M. Finke, "Guaranteed Income: A License to Spend," Retirement Income Institute (June 2024), https://www.protectedincome.org/wp-content/uploads/2024/06/RP-28_BlanchettFinke_v2.pdf.
10. Nobel laureate Daniel Kahneman was best known for his work on the psychology of judgment and decision-making as well as behavioral economics. In March 2024, at age 90, he chose to privately end his life at an assisted-suicide facility in Switzerland. See https://en.wikipedia.org/wiki/Daniel_Kahneman; <https://www.wsj.com/arts-culture/books/daniel-kahneman-assisted-suicide-9fb16124>.
11. The Leo Baeck Institute, <https://www.lbi.org/>.
12. Plein Air Painters Chicago, <https://www.pleinairpainterschicago.com/>.

Retirement Planning

A COMPREHENSIVE APPROACH

By Javier Estrada, PhD

ABSTRACT

This article puts together all the steps that must be considered when designing a retirement plan, a process that must be worked out backward. These steps include considering the lifestyle desired in retirement, the withdrawals needed to sustain that lifestyle, the portfolio needed to support those withdrawals, and the contributions needed to build that portfolio. The steps also include considering the portfolio's asset allocation and expected return over the lifecycle, performing sensitivity analysis, and evaluating the feasibility of the plan.

INTRODUCTION

A retirement plan ideally should be put in place as early as possible, giving individuals plenty of time to make the contributions needed to build a target retirement portfolio over a long period of time. That said, the target portfolio cannot be any aspirational number; it must be consistent with the withdrawals needed to sustain the lifestyle desired in retirement, which is something most people are reluctant to consider early in their working years. And yet it still is the case that the process must be worked out backward, from the lifestyle desired in retirement, to the withdrawals needed to sustain that lifestyle, to the portfolio needed to support those withdrawals, to the contributions needed to build that portfolio.

Proper retirement planning also requires determining a target bequest, which can be essentially thought of as the final withdrawal from the portfolio. It requires choosing an asset allocation for the portfolio, considering how (or if) it should change over time, and estimating the portfolio's expected return. And when evaluating the plan's feasibility on the basis of historical or simulated working and retirement periods, it requires determining maximum acceptable failure rates for both the withdrawal plan and the bequest.

The framework discussed in this paper brings together all the steps that must be followed when designing a retirement plan. To elaborate briefly, the proposed framework starts with the sequence of withdrawals needed to sustain the lifestyle desired in retirement, including a target bequest. These withdrawals

and this bequest, together with the portfolio's asset allocation (hence its expected return) chosen for the retirement period, determine the target retirement portfolio. This target portfolio, together with the asset allocation (hence its expected return) chosen for the working period, determines the contributions to be made during the working years.

The withdrawals and bequest are exogenous variables, to be adjusted only if the initial plan is deemed likely to fail, or if circumstances along the way make it essential to do so. The portfolio's asset allocation (hence its expected return), which is partly determined by risk tolerance, also is exogenous and may—and likely will—vary over time. The endogenous variables are the target retirement portfolio and the contributions to be made to it during the working years; closed-form solutions for both exist and are discussed here.

The ultimate goal of this paper is to provide step-by-step guidelines to elaborate a financial plan for retirement. The discussion includes the analytical framework and highlights the key mathematical expressions needed for the relevant calculations; it also includes an example that considers a base case plan, sensitivity analysis on the plan, and an evaluation of the plan's feasibility based on both historical data and Monte Carlo simulations.

The rest of the paper is organized as follows. First, I discuss the intuition behind the methodology proposed here, provide a 10-step framework for retirement planning, and highlight the relevant expressions of the model. I then review an example based on the long-term performance of U.S. stocks and bonds, including a base case, a sensitivity analysis, and an evaluation of the plan's feasibility over historical and simulated periods. Finally, I provide an assessment. An appendix with the analytical framework concludes the article.

THE BASICS THE BIG PICTURE

Planning for retirement ideally should start as early as possible during the working years; the size of the annual contributions needed to build a target retirement portfolio is negatively

related to the number of years over which the portfolio is built. In other words, given the target portfolio, the longer someone waits to start building a portfolio, the larger the periodic contributions and saving rate must be (Pfau 2011).

Granted, at the beginning of a career no one wants to think about life in retirement, or the size and beneficiaries of a bequest, let alone how long one is going to live. Unfortunately, the alternative is to take a shot in the dark. It is far better to make a feeble attempt at quantifying tentative withdrawals (and a bequest) over a tentative retirement period and adjust the estimates over time if needed than picking an arbitrary number for the size of the retirement portfolio. Eisenberg (2006) discusses this issue at length.¹

Similarly, most people likely have very little idea about how high or low their risk tolerance in retirement will be, thus making it difficult to determine the portfolio's asset allocation (hence its expected return) during that period. Then again, a crude idea is better than no idea. In this regard, a possible broad guideline is the asset allocation of target-date funds during retirement. Vanguard's target-date funds, for example, hold a 50/50 stock-bond allocation on the retirement date; they gradually decrease (increase) the proportion of stocks (bonds) during the first seven years in retirement and finally settle on a 30/70 stock-bond allocation, which is kept constant from that point on (Donaldson et al. 2019).

Given a sequence of withdrawals (including a bequest) over a specified period of time and given the expected annualized return for the portfolio during that period, the size of the target portfolio can be formally determined (Estrada 2020a). But that is only half the work to be done. In order to determine the periodic contributions to the target portfolio, the length of the working period and the portfolio's asset allocation (hence its expected return) during that period also need to be determined.²

It is likely to be the case that someone's risk tolerance during the working years will be different from (and in general higher than) that during retirement, which implies that the portfolio's asset allocation for the working period may be different from that for the retirement period.³ The asset allocation during the working years (which may or may not vary over time) will determine the portfolio's expected return (which may or may not vary over time) during that period. Then, given the target portfolio, the expected number of working years, and the expected annualized return for the portfolio during those years, the size of the periodic contributions can be formally determined (Estrada 2020a).

Having reached this point, the individual has a financial plan. A possible next step, not strictly necessary but very useful, is to outline the path of the retirement portfolio over the lifecycle, that is, from the beginning of the working period to the end of

the retirement period. This may be valuable when considering how (or if) to adjust the plan when reality does not conform to its underlying assumptions, which is almost certain to happen at some point.

In any case, regardless of whether the plan's expected path is outlined, the analysis should not end at this point. An important next step is performing sensitivity analysis; that is, asking how the size of the retirement portfolio and the periodic contributions to it would change if some of the framework's parameters (the exogenous variables) change. Another important next step is evaluating the feasibility of the plan, which can be done on the basis of historical or simulated periods, and ideally both ways. These two additional steps may lead an individual to conclude that the plan is feasible and implement it, or alternatively to conclude that the plan is unlikely to happen as outlined and therefore that some adjustments need to be considered.

The feasibility of a plan should be evaluated across a large number of historical or simulated periods. A plan may fail because it depletes the portfolio before the end of the retirement period, or because it delivered the planned withdrawals but fell short from delivering the target bequest. Given that it seems reasonable to assume that most people would care more about the first failure than about the second, these two should ideally be treated as separate failures.

Importantly, any given plan is extremely unlikely to succeed across all the historical or simulated periods over which it is evaluated; in other words, the plan should be expected to fail (in one or both of the two dimensions just discussed) during some of those periods. For this reason, it is important to determine, ex ante, a maximum acceptable failure rate. For example, should a plan be implemented if history or simulations show that it would have failed in 10 percent of the periods considered? What if it had failed in 20 percent of those periods? Or, more generally, what is the failure rate beyond which the plan becomes unacceptable? Ideally, a maximum acceptable failure rate should be determined ex ante and for both the withdrawal plan and the bequest.

A 10-STEP FRAMEWORK

The discussion in the previous section can be summarized in a sequence of steps to be followed when designing a financial plan for retirement. The 10 essential steps, beginning from the retirement (or withdrawal) period and continuing with the working (or accumulation) period, are:

1. Estimate the expected number of years in retirement; absent better information, use 30 years as the retirement period.
2. Estimate the expected annual cost of the lifestyle desired during retirement, summarizing it in a sequence of annual withdrawals during the period determined in step one.

3. Determine the target bequest, which will be the last withdrawal from the retirement portfolio.
4. Determine the portfolio's (fixed or time-varying) asset allocation during the retirement period and estimate its expected (fixed or time-varying) return.
5. Solve for the retirement portfolio needed to sustain the withdrawals in step two and the bequest in step three, given the portfolio's expected return in step four.
6. Estimate the expected number of working years; absent better information, use 40 years as the working period.
7. Determine the portfolio's (fixed or time-varying) asset allocation during the working period and estimate its expected (fixed or time-varying) return.
8. Solve for the annual contributions during the period in step six needed to build the target retirement portfolio in step five, given the portfolio's expected return in step seven. (If deemed necessary, outline the plan's expected path over the lifecycle, from the beginning of the working period through the end of the retirement period).
9. Perform sensitivity analysis to assess how much the endogenous variables change given changes in the main parameters of the model.
10. Determine maximum acceptable failure rates for the withdrawal plan and the bequest and evaluate the feasibility of the plan on the basis of historical and/or simulated periods.

Steps five and eight require solving for the endogenous variables (the retirement portfolio and the contributions needed to build that portfolio during the working years) given the assumptions made on the other steps of the planning process. The solution requires an underlying analytical framework, the basics of which are discussed in the appendix; the next section highlights the set up and essential expressions of that framework.

THE ANALYTICAL FRAMEWORK

Consider a client who is at the very beginning of a career. This young adult considers a desired lifestyle in retirement, which is expected to last N years; estimates its annual cost; and summarizes it in a sequence of annual real (inflation-adjusted) withdrawals $W_1, \dots, W_N$ to be made from the retirement portfolio (P) at the beginning of each year in retirement. The client also plans to leave a bequest (B), which will be the final withdrawal from the portfolio at the end of the retirement period. Finally, the client selects an asset allocation for the portfolio during retirement and estimates a corresponding sequence of expected annual real returns $R_1, \dots, R_N$. As shown in the appendix, the target portfolio (P^*) needed to sustain these retirement plans is given by:

$$P^* = \frac{B + \sum_{t=1}^N W_t \cdot \prod_{j=t}^N (1+R_j)}{\prod_{t=1}^N (1+R_t)} \quad (1)$$

Expression (1) can be simplified if the goal is to keep purchasing power constant over time, in which case $W_1 = \dots = W_N = W$, where W is the constant annual real withdrawal. In addition, if the sequence of expected annual real returns $R_1, \dots, R_N$ is replaced by the expected annualized real return during retirement (R), then expression (1) can be rewritten as:

$$P^* = \frac{B - W \cdot (1+R) \cdot \left(\frac{1-(1+R)^N}{R} \right)}{(1+R)^N}, \quad (2)$$

which expresses the target portfolio as a function of the constant annual real withdrawal, the target bequest, the expected annualized real return of the portfolio during retirement, and the length of the retirement period.

Our client expects to work M years and make $M-1$ constant annual real contributions (C) to the portfolio at the end of each working year, with the exception of the last one (when the individual retires and makes the first withdrawal instead). The client also selects an asset allocation for the portfolio during the working years and estimates a corresponding sequence of expected annual real returns $S_1, \dots, S_{M-1}$. As shown in the appendix, the annual real contribution that follows from this framework (C^*) is given by:

$$C^* = \frac{P^*}{\sum_{t=1}^{M-1} \prod_{j=t}^{M-1} (1+S_j)} \quad (3)$$

This expression can be simplified if the expected annual real returns $S_1, \dots, S_{M-1}$ are replaced by the expected annualized real return during the working period (S), in which case expression (3) can be rewritten as:

$$C^* = \frac{P^*}{\left(\frac{(1+S)^M - (1+S)}{S} \right)} \quad (4)$$

which expresses the constant annual real contribution to the retirement portfolio as a function of the target portfolio that satisfies the assumptions made for the retirement period, the portfolio's expected annualized real return during the working years, and the length of the working period.

Finally, although it is not strictly necessary to do so, expression (1) can be inserted into expression (3), thus obtaining:

$$C^* = \frac{B + \sum_{t=1}^N W_t \cdot \prod_{j=t}^N (1+R_j)}{\frac{\prod_{t=1}^N (1+R_t)}{\sum_{t=1}^{M-1} \prod_{j=t}^{M-1} (1+S_j)}} \quad (5)$$

Similarly, expression (2) can be inserted into expression (4) thus obtaining:

$$C^* = \frac{B - W \cdot (1+R) \cdot \left(\frac{1-(1+R)^N}{R} \right)}{\left(\frac{(1+R)^N}{\left(\frac{(1+S)^M - (1+S)}{S} \right)} \right)} \quad (6)$$

Expression (5) yields the constant annual real contributions to be made during the working years in the more general case, with time-varying real withdrawals and returns; expression (6), on the other hand, yields the same variable in the more restricted case, with constant real withdrawals and annualized returns.

Expressions (5) and (6) highlight one of the critical messages of the framework proposed in this article, that is, *properly calculated*, the contributions to be made to a retirement portfolio during the working years ultimately depend on:

- The expected withdrawals during retirement, which in turn depend on the lifestyle desired for that period;
- The target bequest;
- How long someone expects the working period and the retirement period to be; and
- The expected returns of the portfolio during those two periods, which in turn depend on the asset allocations selected for each period.

Unlike the unified framework proposed here, which ties the retirement and the working periods together, most of the previous literature focuses on just one of the two periods. Exceptions to this are Pfau (2011), which considers both periods when introducing the concept of safe saving rates, and Estrada (2020a), which also considers both periods and advances the unified approach discussed and generalized in this paper.⁴

The research that focuses only on the working period usually discusses strategies aimed at maximizing the size of the retirement portfolio; see, for example, Basu and Drew (2009), Ayres and Nalebuff (2010), Arnott et al. (2013), and Estrada (2014). The research that focuses only on the retirement period, on the other hand, usually discusses optimal withdrawal strategies or metrics that can be used to decide between different withdrawal strategies; see, for example, the pioneering work of Bengen (1994), as well as Blanchett (2007), Stout (2008), Blanchett and Frank (2009), Pfau and Kitces (2014), Zolt (2014), Kitces and Pfau (2015), Estrada (2016), Estrada and Kritzman (2019), and Blanchett (2022).⁵

A RETIREMENT PLAN EXAMPLE THE BASE CASE

Having discussed the intuition and analytical framework, as well as the 10 essential steps that must be followed when designing a retirement plan, it may be useful to go over a specific example. Consider a client who, at the beginning of the working years, expects to live 30 years in retirement (N). This investor contemplates a desired lifestyle during that period, aims to keep purchasing power constant over time, and concludes that 30 annual real withdrawals (W) of \$100,000, made at the beginning of each year in retirement, would do the

job. At the same time, the client decides to leave a bequest (B) equal to five years of annual withdrawals (\$500,000).

The client knows that Vanguard keeps a 30/70 stock-bond allocation on its target-date funds during most of the retirement period and decides to implement that allocation, expecting an annualized real return (R) of 4.1 percent, based on the long-term performance of U.S. stocks and bonds. The target portfolio (P^*) consistent with these assumptions follows from expression (2) and is equal to \$1,928,222; more precisely:

$$P^* = \frac{\$500,000 - \$100,000 \cdot (1 + 0.041) \cdot \left(\frac{1 - (1 + 0.041)^{30}}{0.041} \right)}{(1 + 0.041)^{30}} = \$1,928,222$$

Having determined the target portfolio, the next step is to determine the annual contributions (C) needed to build the portfolio during the working years. The client expects to work 40 years (M) and decides to keep the contributions to the portfolio constant over time in inflation-adjusted terms. The client also decides to make those contributions at the end of each of the working years, with the exception of the last one; at the end of that last year, which will mark the beginning of retirement, the first annual withdrawal will be made from the portfolio.

The client thinks that the 30/70 stock-bond allocation that will be implemented during retirement is too conservative for the working years and therefore decides to implement a 70/30 allocation instead. Based on the long-term performance of U.S. stocks and bonds, an annualized real return (S) of 5.8 percent is expected from the portfolio during the working years. The constant annual real contribution (C^*) consistent with these assumptions follows from expression (4) and is equal to \$13,189; more precisely:

$$C^* = \frac{\$1,928,222}{\left(\frac{(1 + 0.058)^{40} - (1 + 0.058)}{0.058} \right)} = \$13,189$$

To summarize, our client expects to live 30 years in retirement, plans to spend \$100,000 in real terms in each of those years, aims to leave a bequest of \$500,000, and expects an annualized real return of 4.1 percent from the portfolio during those years. To be consistent with these expectations, this client needs to start retirement with a \$1,928,222 portfolio. To build that portfolio during the expected 40-year career, given an expected annualized real return of 5.8 percent during those years, the client needs to make 39 annual real contributions of \$13,189.

Our client also knows that this (or any other) plan is very unlikely to evolve as expected and that more likely than not adjustments will need to be made along the way. In order to make the proper adjustments, the client thinks it will be useful to know periodically whether the plan is on the right track, and

Table
1

A RETIREMENT PLAN BASE CASE: EXPECTED PORTFOLIO PATH

Y	P	Y	P	Y	P	Y	P	Y	P	Y	P
1	13.2	13	245.9	25	703.6	37	1,603.9	49	1,562.1	61	1,018.8
2	27.1	14	273.3	26	757.6	38	1,710.1	50	1,526.2	62	960.5
3	41.9	15	302.4	27	814.7	39	1,822.5	51	1,488.7	63	899.9
4	57.5	16	333.1	28	875.1	40	1,828.2	52	1,449.8	64	836.8
5	74.1	17	365.6	29	939.1	41	1,803.2	53	1,409.2	65	771.1
6	91.5	18	400.0	30	1,006.7	42	1,777.1	54	1,367.0	66	702.7
7	110.0	19	436.4	31	1,078.3	43	1,750.0	55	1,323.0	67	631.6
8	129.6	20	474.9	32	1,154.1	44	1,721.7	56	1,277.3	68	557.5
9	150.3	21	515.6	33	1,234.2	45	1,692.3	57	1,229.6	69	480.3
10	172.2	22	558.7	34	1,318.9	46	1,661.7	58	1,180.1	70	500.0
11	195.4	23	604.3	35	1,408.6	47	1,629.8	59	1,128.4		
12	219.9	24	652.5	36	1,503.5	48	1,596.6	60	1,074.7		

This table shows the expected path of a portfolio (P) over 70 years (Y), 40 during the working period and 30 during the retirement period. P receives real contributions of \$13.2 at the end of years one through 39 and earns a 5.8-percent real return during the first 39 years. P is also subject to 30 real withdrawals of \$100 at the beginning of years 40 through 70, leaves a bequest of \$500 at year-end 70, and earns a 4.1-percent real return during the last 30 years. Y in years and P in thousands of inflation-adjusted dollars.
Source: Author's calculations.

if not, by how much. The plan's expected path is shown in table 1; the portfolio values shown are at the end of each year and in thousands of real dollars.

As table 1 shows, the first \$13,189 contribution to the retirement portfolio is made at the end of the first working year. Contributions of the same amount in real terms are made at the end of each of the following 38 years, for a total of 39 annual contributions. During the working period, the portfolio grows at the annualized real rate of 5.8 percent. At the end of year 40, our client retires with the \$1,928,222 target portfolio and immediately takes the first \$100,000 withdrawal (hence the \$1,828,222 shown in table 1). From that point on the client takes another 29 real withdrawals of \$100,000 at the beginning of each of the following years in retirement for a total of 30 withdrawals. Then the portfolio compounds for one more year and leaves the \$500,000 target bequest. During the retirement period, the portfolio grows at the annualized real rate of 4.1 percent.

That is the retirement plan. At this point our client knows the target portfolio and the annual contributions needed to build it. And importantly, this client also knows where the portfolio needs to be at the end of each year. Should the plan go off track, as it will sooner or later, our client would know how far the portfolio is from where it needs to be and can consider the best way to get back on track.

SENSITIVITY ANALYSIS

The American professional boxer Mike Tyson presumably said that everybody has a plan until they get punched in the mouth; much the same could be said about retirement planning. It is critical to plan, but it would be naive to believe the plan is going to happen exactly as expected. For this reason, it is always important to consider how the endogenous variables (the size of the retirement portfolio and the contributions needed to build it) would change if the values assumed for the model's parameters change; table 2 addresses this issue.

Table
2

A RETIREMENT PLAN: SENSITIVITY ANALYSIS

<i>N</i>	<i>P*</i>	<i>C*</i>	<i>M</i>	<i>P*</i>	<i>C*</i>	<i>R</i>	<i>P*</i>	<i>C*</i>
20	1,626.2	11.1	30	1,928.2	25.6	3.1	2,195.0	15
25	1,792.3	12.3	35	1,928.2	18.2	3.6	2,054.8	14.1
30	1,928.2	13.2	40	1,928.2	13.2	4.1	1,928.2	13.2
35	2,039.4	13.9	45	1,928.2	9.7	4.6	1,813.7	12.4
40	2,130.3	14.6	50	1,928.2	7.1	5.1	1,709.8	11.7
<i>S</i>	<i>P*</i>	<i>C*</i>	<i>W</i>	<i>P*</i>	<i>C*</i>	<i>B</i>	<i>P*</i>	<i>C*</i>
4.8	1,928.2	16.9	90	1,750.4	12	400	1,898.3	13
5.3	1,928.2	14.9	95	1,839.3	12.6	450	1,913.2	13.1
5.8	1,928.2	13.2	100	1,928.2	13.2	500	1,928.2	13.2
6.3	1,928.2	11.6	105	2,017.1	13.8	550	1,943.2	13.3
6.8	1,928.2	10.2	110	2,106.1	14.4	600	1,958.2	13.4

This table shows a sensitivity analysis on the base case retirement plan. It shows the target retirement portfolio (*P**) and the annual real contribution to the portfolio (*C**) for different values of the number of years in the retirement (*N*) and the working (*M*) periods; the annualized real return obtained during the retirement (*R*) and the working (*S*) periods; the annual real withdrawal (*W*); and the bequest (*B*). *N* and *M* in years; *P**, *C**, *W*, and *B* in thousands of inflation-adjusted dollars; *R* and *S* in percent.

Source: Author's calculations.

Table 2 shows the target portfolio and the annual contributions needed to build it for different values of the length of the working and retirement periods, the annualized real return of the portfolio during both periods, the annual withdrawals, and the bequest. Interestingly, living in retirement five years more or less than expected has a moderate impact (less than 8 percent in absolute value) on the target portfolio and the annual contributions to be made during the working years. Similarly, if the portfolio's annualized return during retirement is half a percentage point higher or lower than expected the impact on the target portfolio and annual contributions is again rather moderate (less than 7 percent in absolute value).

On the flip side, working five years more or less than expected does have a very substantial impact on the annual contributions: +38.2 percent when working less and -26.8 percent when working more. Similarly, if the portfolio's annualized return during the working period is half a percentage point higher or lower than expected the impact on the annual contributions is again sizeable: +13.3 percent with lower returns and -11.9 percent with higher returns.⁶

Increasing or decreasing the annual withdrawals by 5 percent has a symmetric impact on the target portfolio (± 4.6 percent), and the same (and also symmetric) impact on the annual contributions to the portfolio (± 4.6 percent). Finally, increasing or decreasing the bequest by 5 percent has a very small impact on the target portfolio, and therefore on the annual contributions to it; in both cases the impact is less than 1 percent in absolute value.⁷

This type of sensitivity analysis is critical in order to determine which parameters of the analytical framework have a larger

impact on the endogenous variables. In this regard, it is clear from table 2 that the parameters for the working period, in particular the number of working years, have a much larger impact on the size of the retirement portfolio, and therefore on the contributions needed to build it, than the parameters for the retirement period.

FEASIBILITY: METHODOLOGY

Once the target portfolio and the contributions needed to build it over the working years have been determined, the plan's expected path has been outlined (if deemed necessary), and a proper sensitivity analysis has been performed, the next important step is to evaluate the feasibility of the plan. This can be done by assessing the plan's success or failure over a large number of historical or simulated periods, and ideally both ways.

The feasibility analysis essentially asks, for each historical or simulated period considered, whether the retirement plan has succeeded or failed. As already discussed, a plan may fail because it depleted the portfolio before the end of the retirement period, or because it delivered the withdrawals planned but fell short from delivering the target bequest.⁸ And, as already mentioned, maximum acceptable failure rates ideally should be determined ex ante and separately for both situations.

The data used in what follows consists of annual returns from U.S. stocks and government bonds from 1872-2022.⁹ All returns are real (adjusted by inflation) and account for capital gains/losses and cash flows. Unless otherwise stated, the analysis is performed on the base case retirement plan discussed above; that is:

- Thirty annual real withdrawals of \$100,000 from the retirement portfolio, made at the beginning of each year in retirement;
- A 30/70 stock-bond allocation during retirement;
- Thirty-nine annual real contributions of \$13,189 to the retirement portfolio, made at the end of each working year, with the exception of the last one;
- A 70/30 stock-bond allocation during the working years; and
- Annual rebalancing of the target asset allocations during both the retirement and the working periods.

To complete this set up, assume that our client has decided that a plan is unacceptable if it fails to deliver the planned withdrawals in more than 25 percent of the evaluated periods, and the target bequest in more than 30 percent of the evaluated periods. Put differently, assume that this client has determined, ex ante, maximum acceptable failure rates of 25 percent for the withdrawal plan and 30 percent for the bequest.

The metric most widely used to evaluate the feasibility of a retirement plan is the failure rate. However, as is well known, this metric has serious shortcomings, including that it ignores how far into a retirement period a strategy fails, and the size of the bequest left.

The metric most widely used to evaluate the feasibility of a retirement plan is the failure rate. However, as is well known, this metric has serious shortcomings, including that it ignores how far into a retirement period a strategy fails, and the size of the bequest left; see Milevsky (2016), among others. The coverage ratio introduced by Estrada and Kritzman (2019) overcomes both limitations; that is, it does distinguish between a strategy that fails early and another that fails late into a retirement period, as well as between a strategy that leaves a small bequest and another that leaves a large bequest.

Formally, for any strategy i and any retirement period t , let Y_{it} be the number of years of inflation-adjusted withdrawals sustained by the strategy, both during and after the retirement

period; and L be the length (in years) of the retirement period considered. Then the coverage ratio of strategy i in retirement period t (CR_{it}) is defined as:

$$CR_{it} = \frac{Y_{it}}{L} \quad (7)$$

By definition, $CR_{it} < 1$ indicates that the strategy depleted the portfolio before the end of the retirement period (it failed); $CR_{it} > 1$ indicates that the strategy sustained the withdrawals planned through the whole retirement period and left a bequest; and $CR_{it} = 1$ indicates that the strategy sustained the withdrawals planned exactly through the end of a retirement period (thus leaving no bequest).¹⁰

Furthermore, the coverage ratio of strategy i (CR_i) is defined as:

$$CR_i = (1/T) \cdot \sum_{t=1}^T CR_{it} \quad (8)$$

where T is the number of retirement periods considered. In other words, calculating a strategy's coverage ratio involves two steps: First, calculating the strategy's coverage ratio for each retirement period in the sample; and second, calculating the average of those coverage ratios across all the retirement periods considered.¹¹

Note that for any given retirement period, a coverage ratio lower than 1 indicates a strategy that failed; therefore, by definition, the proportion of retirement periods considered for which the coverage ratio is lower than 1 is equal to the widely used failure rate. Thus, as far as the withdrawal plan is concerned, the target coverage ratio is a value of 1; the target bequest, on the other hand, is the already mentioned \$500,000. Note, also, that in the base case plan the \$500,000 target bequest is equal to five years of annual real withdrawals; therefore, a strategy that sustains the target withdrawal plan and the target bequest would have a coverage ratio of 1.17 (that is, 35/30).

FEASIBILITY: HISTORICAL ANALYSIS

The history of annual U.S. stock and bond returns during 1872–2022 enables the consideration of 83 rolling 70-year lifecycle periods (40-year working periods followed by 30-year retirement periods), beginning with 1871–1940 and ending with 1953–2022. Table 3 summarizes the feasibility of the retirement plan discussed, as well as that of three modifications to it, from a historical perspective. The probability of being short of the target values (P_S) actually is a historical frequency, which may be viewed as a forward-looking probability as long as history can be reliably extrapolated into the future.

Table
3

FEASIBILITY: HISTORICAL PERSPECTIVE

Parameters	Base Case	Scenario 2	Scenario 3	Scenario 4				
<i>M</i>	40	40	40	40				
<i>N</i>	30	30	30	30				
<i>AA_W</i>	70/30	80/20	80/20	80/20				
<i>AA_R</i>	30/70	30/70	40/60	40/60				
<i>C</i>	13.2	13.2	13.2	15.8				
<i>W</i>	100.0	100.0	100.0	100.0				
Results	<i>CR</i>	<i>B</i>	<i>CR</i>	<i>B</i>	<i>CR</i>	<i>B</i>	<i>CR</i>	<i>B</i>
<i>P_S</i>	73.5	84.3	50.6	59.0	42.2	51.8	12.0	27.7
Mean	0.83	0	1.05	131.5	1.16	464.5	1.63	1,882.0
Median	0.80	0	0.97	0	1.08	245.0	1.54	1,609.6

This table summarizes the feasibility of the base case retirement plan from a historical perspective, as well as the feasibility of three variations of the base case. It shows the coverage ratio (*CR*) and the bequest (*B*) for different stock-bond asset allocations during the working (*AA_W*) and the retirement (*AA_R*) periods, as well as for different annual real contributions (*C*), for given values of the number of years in the retirement (*N*) and working (*M*) periods and the annual real withdrawal (*W*). *P_S* denotes the probability of being short of the target coverage ratio and bequest. The target coverage ratio and bequest are 1 and \$500,000. *N* and *M* in years; *C*, *W*, and *B* in thousands of inflation-adjusted dollars.

Source: Author's calculations.

Table 3 shows that, across the 83 historical lifecycle periods considered, in 73.5 percent the target withdrawal plan (30 annual withdrawals of \$100,000 each) was not sustained, and in 84.3 percent the target bequest (\$500,000) was not left, both clearly above the 25-percent and 30-percent maximum acceptable failure rates. Both the mean (0.83) and the median (0.80) coverage ratios are below 1, indicating that the retirement plan sustained 24–25 years of withdrawals in the average historical retirement period, therefore falling short from delivering on the target withdrawal plan, and therefore on the target bequest.

Assume that given this rather gloomy assessment of the retirement plan outlined, our client decides, or the financial planner recommends, to be somewhat more aggressive with the portfolio's asset allocation during the working years; in particular, assume that the client considers an 80/20 stock-bond allocation for this period (scenario 2 in table 3). In that case, the failure rates of the target withdrawal plan and target bequest would have fallen considerably to 50.6 percent and 59 percent but still would be higher than the maximum acceptable failure rates. The mean (1.05) and median (0.97) coverage ratios both would have been close to 1, indicating that in the average historical retirement period the portfolio would have sustained the withdrawals planned (and would have left just over 26 percent of the target bequest in the mean period, and no bequest in the median period).

What if besides implementing an 80/20 allocation during the working years, our client considers to also implement a more aggressive (40/60) allocation during retirement (scenario 3 in table 3)? In that case the failure rates of the target withdrawal plan and the target bequest would have again fallen considerably to 42.2 percent and 51.8 percent but still would remain

higher than the maximum acceptable failure rates. The mean and median coverage ratios would have both been above 1; that is, in the average period the withdrawal plan would have been sustained, and the mean bequest would have been close to the target bequest.

Finally, what if besides being more aggressive with the portfolio's asset allocation during both the working period and the retirement period our client also considers increasing the annual contribution to the portfolio by 20 percent, from \$13,189 to \$15,827 (scenario 4 in table 3)? In this case the decrease in the failure rates of the target withdrawal plan and target bequest would have been even more dramatic (to 12 percent and 27.7 percent). In the average historical period, a sizeable bequest (more than three times its target value) would have been left, thus obviously implying that the withdrawal plan would have been sustained. And importantly, in this scenario both failure rates (12 percent and 27.7 percent) are below the maximum acceptable failure rates (25 percent and 30 percent).

This type of analysis is critical to determine whether a base case plan should be put in place or, alternatively, adjustments to the plan need to be made. A plan may look ideal when its expected path is outlined, but the historical evidence may show that it would hardly have been successful, as was largely the case, in fact, with the base case plan considered here. The feasibility analysis called for changes to the plan, albeit maintaining the lifestyle desired during retirement. Adjustments to the portfolio's asset allocation (making it more aggressive during both the retirement and the working periods) and to the annual contributions to the portfolio (a 20-percent increase) turned an unacceptable plan into an acceptable one.

Table
4

FEASIBILITY: MONTE CARLO PERSPECTIVE

Parameters	Base Case	Scenario 2	Scenario 3	Scenario 4				
<i>M</i>	40	40	40	40				
<i>N</i>	30	30	30	30				
<i>AA_W</i>	70/30	80/20	80/20	80/20				
<i>AA_R</i>	30/70	30/70	40/60	40/60				
<i>C</i>	13.2	13.2	13.2	15.8				
<i>W</i>	100.0	100.0	100.0	100.0				
Results	<i>CR</i>	<i>B</i>	<i>CR</i>	<i>B</i>	<i>CR</i>	<i>B</i>	<i>CR</i>	<i>B</i>
<i>P_S</i>	42.2	47.7	38.2	42.9	34.6	39.3	24.8	28.7
Mean	1.93	2,552.3	2.30	3,680.4	2.75	4,989.1	3.55	7,498.1
Median	1.24	727.1	1.43	1,288.7	1.66	1,973.0	2.27	3,807.9

This table summarizes the feasibility of the base case retirement plan from a Monte Carlo perspective, as well as the feasibility of three variations of the base case. It shows the coverage ratio (*CR*) and the bequest (*B*) for different stock-bond asset allocations during the working (*AA_W*) and the retirement (*AA_R*) periods, as well as for different annual real contributions (*C*), for given values of the number of years in the retirement (*N*) and working (*M*) periods and the annual real withdrawal (*W*). *P_S* denotes the probability of being short of the target coverage ratio and bequest. The target coverage ratio and bequest are 1 and \$500,000. *N* and *M* in years; *C*, *W*, and *B* in thousands of inflation-adjusted dollars.

Source: Author's calculations.

FEASIBILITY: MONTE CARLO ANALYSIS

The feasibility of a retirement plan can be evaluated on the basis of historical lifecycle periods (as done in the previous section), or on the basis of simulated lifecycle periods (as done in this section), and ideally both ways. The late Nobel laureate Paul Samuelson famously said that we have only one sample of history,¹² which is why it is useful to assess how the retirement plan considered would have fared in many alternative lifecycle periods that could have happened. Table 4 summarizes the feasibility of the base case retirement plan discussed, as well as that of three adjustments to it, based on 10,000 simulated lifecycle periods using Monte Carlo analysis.¹³

As is often the case when comparing historical and Monte Carlo perspectives, the latter reveals more extreme results; that is, relative to a historical analysis, a Monte Carlo analysis tends to show a larger variance, with better results on the upper tail and worse results on the lower tail. Table 4 shows that in the average (mean or median) simulated period, coverage ratios are well above 1 and bequests are well above \$500,000; in other words, in the average period, the base case plan and all the alternative scenarios considered were successful. The three alternative scenarios in table 4 are the same as those considered in the previous section; that is, first setting an 80/20 asset allocation during the working period (scenario 2 in table 4), then adding a 40/60 asset allocation during the retirement period (scenario 3 in table 4), and finally adding a 20-percent increase in the annual contributions (scenario 4 in table 4).

Interestingly, for the base case plan both the probability of failing to sustain the target withdrawal plan (42.2 percent) and that of failing to leave the target bequest (47.7 percent) are lower for the simulated periods than for the historical periods. That said, in the Monte Carlo analysis, as the scenarios become more

aggressive these two probabilities decline more slowly, to the point that in scenario 4 both are higher (24.8 percent and 28.7 percent) than they were in the historical perspective. Note, also, that in this final scenario both probabilities are just below the maximum acceptable failure rates for the withdrawal plan and the bequest; thus, once again, a few adjustments turned an unacceptable plan into an acceptable one.

As mentioned above, this type of analysis is critical to determine whether a plan should be put in place or adjustments to it need to be made. Needless to say, the historical and Monte Carlo perspectives are not expected to provide identical results or even insights. Far from being a matter of right or wrong, these two perspectives should be considered as complementing each other. In short, after outlining a base case plan and performing sensitivity analysis on it, a critical next step is to assess its feasibility over historical or simulated periods, and ideally both ways.¹⁴

SOME FINAL THOUGHTS

The framework proposed here is comprehensive but, as usual, some comments and caveats are in order. First, and most obviously, this (or any other) framework requires individuals to make guesses about the value of variables in a highly uncertain environment, which in turn implies that the plan almost never will come to happen as outlined; far more often than not the plan will require adjustments along the way. In that case, Estrada (2019) shows that adjusting the contributions to the portfolio is a far more effective way to get the plan back on track than adjusting the portfolio's asset allocation.¹⁵

Second, the steps above assume away other sources of income that could be received during retirement. Most individuals, however, have social security in addition to the retirement

portfolio that is the focus of this discussion. In that case, the withdrawals taken from the portfolio considered here can be thought of as the annual cost of the lifestyle desired in retirement net of whatever can be funded by other sources of income received during that period.

Third, taxes and transaction costs are not considered in the analysis. Transaction costs have been decreasing over time, both in the United States and globally, and can be reduced in many ways; investing in a few broadly diversified, passively managed funds and minimizing portfolio turnover are two obvious ways to do so. Taxes, on the other hand, vary greatly across individuals (and across countries) and to focus on specific tax-related circumstances would run counter to the general analysis that this paper aims to focus on.

And fourth, the focus of the discussion is on planning for retirement, not on portfolio construction. The asset allocations considered here could be implemented in many different ways, with individual stocks and bonds in one extreme, or with two broadly diversified funds in the other extreme, and with countless alternatives in between. Furthermore, because many of the pros and cons of different types of retirement accounts, such as traditional individual retirement accounts (IRAs), Roth IRAs, etc., are tax related, the choice for the ideal type of account is beyond the scope of this paper.¹⁶

ASSESSMENT

Admittedly, for younger adults in particular, retirement planning can be viewed as a nuisance. It requires them to consider issues they would rather not think about such as how long they are going to live after they retire, what kind of life they would like to have in retirement, and how large a bequest they would like to leave behind. But, unfortunately, the alternative to not planning ahead is to take a shot in the dark.

Contributing periodically to a retirement portfolio without having a specific target in mind makes planning impossible; and having a target retirement portfolio that may not sustain the lifestyle desired in retirement makes little sense. Therefore, retirement planning must be done from the lifestyle desired in retirement, to the withdrawals needed to sustain such lifestyle, to the portfolio needed to support those withdrawals, to the contributions needed to build that portfolio. The framework proposed in this paper is designed to do just that.

Unfortunately, that does not solve all the problems that retirement planning entails. Individuals still have to face the many uncertainties that will affect their decisions, such as the number of years they will work, how much they will be able to contribute periodically to a retirement portfolio, the size of that portfolio, the number of years in retirement, the lifestyle desired

during that period, the withdrawals needed to support it, and the portfolio returns over the lifecycle.

And yet, having an uncertain plan clearly beats having no plan. A plan that needs to be adjusted when circumstances change is a far better option than improvising contributions and withdrawals along the way. A plan provides the destination and the directions to get there; enables the periodic evaluation of whether an individual is on the right track to reach goals; and if that is not the case, the changes that need to be made to get back on track.

The comprehensive framework proposed here consists of 10 steps that start from the end; that is, from the variables that affect the retirement period, which determine the size of the target portfolio, which in turn determines, together with the variables that affect the working period, the periodic contributions that need to be made to build that portfolio. Importantly, a base case plan needs to be complemented by sensitivity analysis; and perhaps more importantly, by an evaluation of the feasibility of the plan on the basis of historical and simulated lifecycle periods.

Retirement planning is too important to tackle only when someone feels that it can no longer be postponed; it needs to be tackled as early and as thoroughly as possible. The step-by-step methodology proposed in this paper, including the relevant analytical framework and essential mathematical expressions, illustrated with a comprehensive example, hopefully will give individuals the incentive to confront, by themselves or with the help of a financial planner, a critical problem they will have to deal with sooner rather than later. ●

Javier Estrada, PhD, is a professor of finance at IESE Business School in Barcelona, Spain. Contact him at jestrada@iese.edu.

ACKNOWLEDGMENTS

I would like to thank Jack Rader for his comments. Ignacio Talento and Valeria Devoto provided valuable research assistance. The views expressed and any errors that may remain are entirely my own.

ENDNOTES

1. Although ex post it may vary dramatically across individuals, and life expectancy statistics may help each person in this regard, the length of the retirement period most widely used for the purpose of retirement planning is 30 years.
2. Although ex post it may vary substantially across individuals, the length of the working period most widely used for the purpose of retirement planning is 40 years.
3. Albert and Duffy (2012) report experimental evidence showing that older people are more risk averse than younger people. ING (2012) reports survey evidence showing that, approaching retirement and after retirement, most investors prioritize protection from losses over potential for growth.

4. The present paper borrows from but also generalizes the analytical framework advanced in Estrada (2020a). It also introduces and highlights a 10-step framework for retirement planning; features a different sensitivity analysis; and discusses a feasibility analysis based on a historical perspective and on a Monte Carlo perspective.
 5. Some additional general references that may be useful to consider when putting together a retirement plan are Zwecher (2010), Gadenne (2013), Idzorek and Kaplan (2024), and Pfau (2023).
 6. The size of the target portfolio is fully determined by the parameters for the retirement period (its length, the annual withdrawals, the bequest, and the returns obtained during that period), which explains why it is not affected by the length of the working period or the returns obtained during that period.
 7. The base case assumes that the bequest is equal to five years of annual withdrawals, an assumption that is relaxed in these last two scenarios. This is because in the standard sensitivity analysis one parameter is changed and the rest remain fixed at their base case values. Thus, in our case, when the level of withdrawals is changed, the bequest remains fixed at \$500,000; and when the bequest is changed, the level of withdrawals remains fixed at \$100,000.
 8. For the feasibility analysis the bequest is whatever is left at the end of the retirement period; therefore, part of the analysis involves asking whether the goal of leaving a \$500,000 bequest has been achieved.
 9. Downloaded from Robert Shiller's online data. See <http://www.econ.yale.edu/~shiller/data.htm>.
 10. To illustrate, consider a 30-year retirement period, a \$1-million retirement portfolio, annual inflation-adjusted withdrawals of \$40,000, and three strategies. The first strategy depleted a portfolio in 24 years, the second did so in exactly 30 years, and the third sustained withdrawals for 30 years and left a bequest of \$240,000 (which can support another six years of \$40,000 withdrawals). Then, for the first, second, and third strategies Y would respectively be 24, 30, and 36; and CR would respectively be 0.8, 1.0, and 1.2.
 11. Estrada (2023) discusses how the whole distribution of coverage ratios can be used to decide between competing retirement strategies.
 12. Paul Samuelson was an American economist who was the first American to win the Nobel Memorial Prize in Economic Sciences. See <https://www.nobelprize.org/prizes/economic-sciences/1970/samuelson/biographical/>.
 13. Kolmogorov-Smirnov tests do not reject the normality of the distributions of annual returns of the 70/30 and 30/70 allocations, with p -values of 0.764 and 0.987. The autocorrelation coefficients of the return series of these two allocations respectively are 0.028 and 0.126, neither of which is statistically significant.
 14. The historical and Monte Carlo perspectives discussed here also can be used to evaluate tail risks, thus incorporating in the analysis the consideration of unlikely but relevant scenarios, which would yield a more comprehensive evaluation of the risk of different strategies.
 15. Similarly, if adjustments need to be made during the retirement period, Estrada (2020b) shows that adjusting withdrawals is far more effective than adjusting the portfolio's asset allocation.
 16. Other issues that may be important when planning for retirement, such as disability risk and long-term health expenditures, also are beyond the scope of this paper.
- Basu, A. K., and M. E. Drew. 2009. Portfolio Size Effect in Retirement Accounts: What Does It Imply for Lifecycle Asset Allocation Funds? *Journal of Portfolio Management* 35, no. 3: 61–72.
- Bengen, W. P. 1994. Determining Withdrawal Rates Using Historical Data. *Journal of Financial Planning* 7, no. 4: 171–180.
- Blanchett, D. M. 2007. Dynamic Allocation Strategies for Distribution Portfolios: Determining the Optimal Distribution Glide Path. *Journal of Financial Planning* 20, no. 12: 68–81.
- . 2022. Redefining the Optimal Retirement Income Strategy. *Financial Analysts Journal* 79, no. 1: 5–16.
- Blanchett, D. M., and L. R. Frank. 2009. A Dynamic and Adaptive Approach to Distribution Planning and Monitoring. *Journal of Financial Planning* 22, no. 4: 52–66.
- Donaldson, S. J., F. M. Kinniry, B. J. Scott, T. Dinucci, and E. Cilla. 2019. Vanguard's Approach to Target-Date Funds. Vanguard Research (March): 1–22. <https://institutional.vanguard.com/content/dam/inst/iig-transformation/insights/pdf/2022/Vanguards-approach-to-target-date-funds.pdf>.
- Eisenberg, L. 2006. *The Number: What Do You Need for the Rest of Your Life, and What Will It Cost?* The Free Press.
- Estrada, J. 2014. The Glidepath Illusion: An International Perspective. *Journal of Portfolio Management* 40, no. 4: 52–64.
- . 2016. The Retirement Glidepath: An International Perspective. *Journal of Investing* 25, no. 2: 28–54.
- . 2019. Managing to Target: Dynamic Adjustments for Accumulation Strategies. *Journal of Financial Planning* 32, no. 8: 46–53.
- . 2020a. Retirement Planning: From Z to A. *Journal of Retirement* 8, no. 2: 8–22.
- . 2020b. Managing to Target (II): Dynamic Adjustments for Retirement Strategies. *Journal of Retirement* 7, no. 4: 28–38.
- . 2023. Retirement Planning: Is One Number Enough? *Journal of Financial Planning* 36, no. 7: 64–81.
- Estrada, J., and M. Kritzman. 2019. Toward Determining the Optimal Investment Strategy for Retirement. *Journal of Retirement* 7, no. 1: 35–42.
- Gadenne, F. 2013. The Retirement Management Analyst (RMA) Designation: Curriculum Book for RMA Candidates. CreateSpace Independent Publishing Platform.
- Idzorek, T., and P. Kaplan. 2024. Lifetime Financial Advice: A Personalized Optimal Multilevel Approach. CFA Institute Research Foundation. Charlottesville, Virginia.
- ING Investment Management. 2012. Participant Preferences in Target-Date Funds: Examining Perceptions and Expectations Among Target-Date Users and Non-Users. ING Retirement Research Institute (February): 1–20. http://graphics8.nytimes.com/packages/pdf/tdf_white_paper.pdf.
- Kitces, M. E., and W. D. Pfau. 2015. Retirement Risk, Rising Equity Glide Paths, and Valuation-Based Asset Allocation. *Journal of Financial Planning* 28, no. 3: 38–48.
- Milevsky, M. 2016. It's Time to Retire Ruin (Probabilities). *Financial Analysts Journal* 72, no. 2: 8–12.
- Pfau, W. D. 2011. Safe Savings Rates: A New Approach to Retirement Planning Over the Life Cycle. *Journal of Financial Planning* 24, no. 5: 42–50.
- . 2023. *Retirement Planning Guidebook: Navigating the Important Decisions for Retirement Success*. Retirement Researcher Media.
- Pfau, W. D., and M. Kitces. 2014. Reducing Retirement Risk with a Rising Equity Glide Path. *Journal of Financial Planning* 27, no. 1: 38–48.
- Stout, G. 2008. Stochastic Optimization of Retirement Portfolio Asset Allocations and Withdrawals. *Financial Services Review* 17: 1–15.
- Zolt, D. 2014. Retirement Planning by Targeting Safe Withdrawal Rates. *Journal of Financial Planning* 27, no. 10: 20–23.
- Zwecher, M. 2010. *Retirement Portfolios: Theory, Construction, and Management*. John Wiley & Sons, Inc.

REFERENCES

Albert, S. M., and J. Duffy. 2012. Differences in Risk Aversion Between Young and Older Adults. *Neuroscience and Neuroeconomics* 1: 3–9.

Arnett, R. D., K. F. Sherrerd, and L. Wu. 2013. The Glidepath Illusion ... and Potential Solutions. *Journal of Retirement* 1, no. 2: 13–28.

Ayres, I., and B. Nalebuff. 2010. *Lifecycle Investing: A New, Safe, and Audacious Way to Improve the Performance of Your Retirement Portfolio*. Basic Books.

Figure
A1

TIMELINE

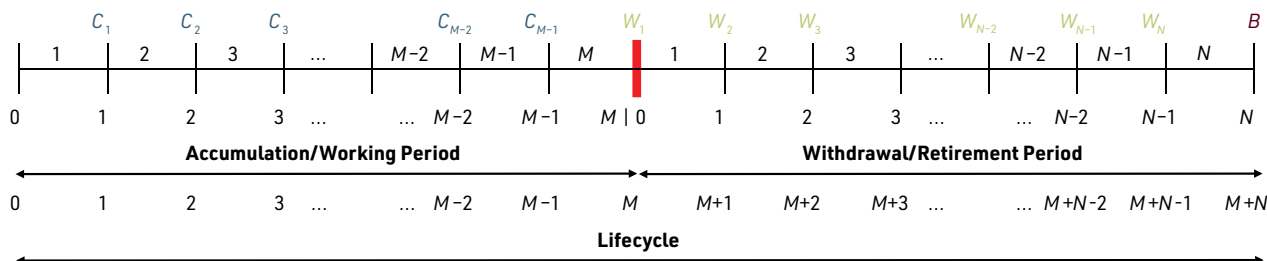


Figure A1 shows the timeline on which the analysis is based, with an M -year working period followed by an N -year retirement period. The individual makes $M-1$ contributions (C_t) to, and N withdrawals (W_t) from, the retirement portfolio, the former at the end of each working year (except the last one) and the latter at the beginning of each year in retirement. The bequest (B) is what is left after taking the last withdrawal and after one more year of compounding.
Source: Author's calculations.

APPENDIX

This appendix discusses the analytical framework behind expressions (1) through (6) borrowing from and generalizing Estrada (2020a). As in the text, and for the reasons already discussed, the discussion starts with the retirement period and then continues with the working period. Because the exact mathematical expressions depend on the timing of the relevant cash flows (contributions and withdrawals), figure A1 shows the specific timeline behind the framework presented in this article.

THE RETIREMENT (OR WITHDRAWAL) PERIOD

Consider a young adult at the beginning of a career. This client expects to live N years in retirement and estimates the cost of the lifestyle desired during that period, which is summarized in a sequence of real (inflation-adjusted) withdrawals $W_1, \dots, W_N$, to be made from the retirement portfolio (P) at the beginning of each year in retirement. This individual also plans to leave a bequest (B), which will be the final withdrawal from the portfolio, at the end of the retirement period. Finally, the individual selects the portfolio's asset allocation for the retirement period and estimates a sequence of (expected) annual real returns $R_1, \dots, R_N$. Then, at the beginning of the first, second, third, and last year in retirement, the value of the portfolio will be:

Year 1:

$$P - W_1$$

Year 2:

$$(P - W_1)(1 + R_1) - W_2 = P(1 + R_1) - W_1(1 + R_1) - W_2$$

Year 3:

$$[P(1 + R_1) - W_1(1 + R_1) - W_2](1 + R_2) - W_3 = P(1 + R_1)(1 + R_2) - W_1(1 + R_1)(1 + R_2) - W_2(1 + R_2) - W_3$$

...

Year N :

$$P(1 + R_1) \dots (1 + R_{N-1}) - W_1(1 + R_1) \dots (1 + R_{N-1}) - W_2(1 + R_2) \dots (1 + R_{N-1}) - \dots - W_N$$

After compounding for one final year the portfolio becomes the bequest; therefore:

$$[P(1 + R_1) \dots (1 + R_{N-1}) - W_1(1 + R_1) \dots (1 + R_{N-1}) - W_2(1 + R_2) \dots (1 + R_{N-1}) - \dots - W_N](1 + R_N) = B$$

$$P(1 + R_1) \dots (1 + R_N) - W_1(1 + R_1) \dots (1 + R_N) - W_2(1 + R_2) \dots (1 + R_N) - \dots - W_N(1 + R_N) = B$$

and solving for P yields the target retirement portfolio (P^*), which is given by:

$$P^* = \frac{B + \sum_{t=1}^N W_t \cdot \prod_{j=t}^N (1 + R_j)}{\prod_{t=1}^N (1 + R_t)} \quad (A1)$$

which is expression (1) in the article text. If the goal is to keep the purchasing power constant over time, then $W_1 = W_2 = \dots = W_N = W$, where W is the constant annual real withdrawal. If, in addition, the annual real returns are replaced with the expected annualized real return during the retirement period (R), then $R_1 = R_2 = \dots = R_N = R$, and then (A1) becomes:

$$P^* = \frac{B + W \cdot \sum_{t=1}^N (1 + R)^t}{(1 + R)^N} \quad (A2)$$

which, using the expression for the sum of a geometric series, can be written as:

$$P^* = \frac{B - W \cdot (1 + R) \cdot \left(\frac{1 - (1 + R)^N}{R} \right)}{(1 + R)^N} \quad (A3)$$

which is expression (2) in the article text.

THE WORKING (OR ACCUMULATION) PERIOD

Having determined the target retirement portfolio (P^*), and expecting to work M years, our client needs to determine the annual contributions that will enable a retirement with P^* . The individual expects to make $M-1$ annual contributions to the portfolio ($C_1, \dots, C_{M-1}$), the first at the end of the first working year and the last one year before retirement, and the goal is to keep the annual contributions constant in real terms; therefore $C_1 = \dots = C_{M-1} = C$, where C is the constant annual real contribution. The client selects the portfolio's asset allocation for the working years and estimates a sequence of expected annual real returns $S_1, \dots, S_{M-1}$. Then, at the end of the first, second, third, and next-to-last working years the portfolio's value will be:

Year 1:
 C

Year 2:
 $C(1+S_1) + C$

Year 3:
 $[C(1+S_1) + C](1+S_2) + C = C(1+S_1)(1+S_2) + C(1+S_2) + C$

...

Year $M-1$:
 $C(1+S_1)\dots(1+S_{M-2}) + C(1+S_2)\dots(1+S_{M-2}) + C(1+S_3)\dots(1+S_{M-2})$
 $+ \dots + C(1+S_{M-2}) + C$

After compounding for one more year, during our individual's last working year, the portfolio becomes the target retirement portfolio; that is:

$$\begin{aligned} \text{Year } M: \\ [C(1+S_1)\dots(1+S_{M-2}) + C(1+S_2)\dots(1+S_{M-2}) + C(1+S_3)\dots(1+S_{M-2}) \\ + \dots + C(1+S_{M-2}) + C](1+S_{M-1}) = P^* \end{aligned}$$

$$C(1+S_1)\dots(1+S_{M-1}) + C(1+S_2)\dots(1+S_{M-1}) + C(1+S_3)\dots(1+S_{M-1}) \\ + \dots + C(1+S_{M-1}) = P^*$$

$$C[(1+S_1)\dots(1+S_{M-1}) + (1+S_2)\dots(1+S_{M-1}) + (1+S_3)\dots(1+S_{M-1}) \\ + \dots + (1+S_{M-1})] = P^*$$

and solving for C yields the constant annual real contribution (C^*), which is given by

$$C^* = \frac{P^*}{\sum_{t=1}^{M-1} \prod_{j=t}^{M-1} (1+S_j)} \quad (\text{A4})$$

which is expression (3) in the article text. If the annual real returns are replaced with the expected annualized real return during the working period (S), then $S_1 = \dots = S_N = S$, and then (A4) becomes

$$C^* = \frac{P^*}{\sum_{t=1}^{M-1} (1+S)^t} \quad (\text{A5})$$

which, using the expression for the sum of a geometric series, can be written as:

$$C^* = \frac{P^*}{\left(\frac{(1+S)^M - (1+S)}{S}\right)} \quad (\text{A6})$$

which is expression (4) in the article text.

When a Guarantee Isn't a Guarantee

By James B. Sandidge, JD

Potential financial and psychological costs are associated with fixed annuities once insurance companies file for insolvency. This paper argues that past performance of state guaranty associations does not warrant calling annuities “risk-free” and that doing so creates an illusion of safety. Unfortunately, that illusion is created by some of the people that consumers are most likely to listen to for guidance. A better understanding of the historical worst case around fixed annuities should help advisors create safer portfolios for clients. It also should minimize unnecessary litigation for advisors because juries tend to assume that it’s reasonable to expect that what has happened historically will happen again and expect advisors to have a plan to manage that.

This paper focuses on worst-case insolvencies such as Baldwin-United Corporation (BUC) in the 1980s and half a dozen major insurers in the 1990s, including Executive Life Insurance Company (ELIC) and Mutual Benefit Life Insurance (MBLI), to show that past insolvencies do not warrant calling annuities “risk-free” and that people who label them as such are creating an illusion of safety, which is more dangerous than a clear threat.

The paper is organized to first discuss sources of misinformation around annuity safety, the three financial risks of fixed annuities after filing for insolvency, and then five psychological costs. It concludes with the implications of this research. The paper quotes extensively from the media to try and convey the emotion of the moment, but history feels more confusing and messier when living through it than reading it years later.

SOURCES OF MISINFORMATION

Annuities are sold, not bought—as illustrated by the number of quotes found in the source materials in which disappointed policyholders said an intermediary told them that their annuities were “risk-free,” “safe,” “highly rated,” or “A-No.1.” Those comments were the culmination of faulty information cascades that began with employees of organizations such as state insurance departments, insurance companies, the National Organization of Life & Health Insurance Guaranty Associations (NOLHGA), or other people viewed as experts who use words such as “guaranteed,” “risk-free,” and “made whole.”

The problem is consumers likely equate words such as those with the legal principle “benefit of the bargain,” which says anyone breaching a contract must pay the aggrieved party an amount that would put them in the position they would have been in but for the breach. However, state guaranty statutes require only that people be made whole up to the filing of insolvency and allow companies to change the terms of outstanding annuities after filing. The result is policyholders in past insolvencies have been surprised when they got less than they bargained for.

Todd and Wallace (1992) found that four months before ELIC failed, an internal memo by the National Association of Insurance Commissioners declared ELIC was “in no imminent financial danger” and that a 1992 survey found the information that state insurance departments give consumers is “generally unhelpful and often misleading or wrong.”

The BUC court noted that one brochure distributed by a defendant described the BUC single premium deferred annuities (SPDAs) as “a tax shelter that’s as safe as a savings account” (*In re Baldwin United* 1985). The court further recognized that industry experts such as Milliman & Robertson opined that BUC SPDAs were “salesworthy right up until the eve of Rehabilitation” and that there was no reason to advise customers to redeem the SPDAs they already had purchased. The court further noted that state insurance officials “repeatedly provided reassurances during the months immediately preceding Rehabilitation” and that those officials “uttered comforting bromides almost to the end.”

After the BUC assets were transferred to Metropolitan Life Insurance, the executive vice president of Metropolitan stated policyholders will “be whole” (Keppel 1987). Contrast that with what the BUC court later said, “all participants in the Baldwin-United debacle have shown that the Emperors of state insurance regulation had no clothes.” Here again, policyholders likely were under the mistaken impression that will be “made whole” was the same as “benefit of the bargain” (*In re Baldwin-United Corp.* 1985).

U.S. General Accounting Office (GAO 1992a, 8) focused on bankruptcies by ELIC, ELIC of New York, First Capital, and

Fidelity Bankers and found that “[s]tate insurance regulators used untimely, incomplete and inaccurate financial reports to monitor the four troubled insurers.” Thus, part of the problem was state officials were passing on flawed information. Their happy talk also was likely an attempt to stem any run on the bank by investors who held products capable of being redeemed.

In *The Tragic Science*, DeMartino (2022) discusses the harm economists sometimes do while trying to do good and points to an “epistemic paradox” in which “economists know so much, and yet know so little.” Often the knowledge they lack is the kind that comes with practical experience.

For example, in April 2011—more than twenty years after the ELIC and MBLI insolvencies—I was taking part in a discussion among retirement-income investing thought leaders from LPL Financial and New York Life. During this discussion, Nobel laureate Robert Merton stated that state guaranty associations make fixed annuities “risk-free” so advisors who choose not to use them are making an “irrational decision.” Merton’s statement reflects a lack of knowledge of how state guaranty associations performed in worst-case scenarios, yet given his high profile, his statement could trigger a faulty information cascade that creates an illusion of safety that leaves investors more exposed than they realize.

The ELIC failure was precipitated by the 1989 collapse of the junk bond market and the early 1990 failure of Drexel Burnham Lambert. It was almost a year later before ELIC filed for bankruptcy and in that year, policyholders withdrew \$4 billion from ELIC and its subsidiary ELIC of New York. The ELIC insolvency then triggered similar runs at First Capital and Fidelity Bankers (GAO 1992a).

MBLI’s problems stemmed from bad real estate investments and their policyholders were able to withdraw \$500 million just before MBLI filed for insolvency (*In re the Rehabilitation of Mutual Benefit Life Insurance Company* 1993). Thus, advisors who were paying attention and ignored reassurances had a window in which they were able to get money out before ELIC and MBLI filed for insolvency.

FINANCIAL RISK 1: RESTRUCTURED TERMS

Firms become insolvent because they have more liabilities than assets. So, to reduce liabilities in line with assets, the receiver of an insolvent insurance company will restructure the terms of outstanding annuities after filing for insolvency.

In previous major insurer insolvencies, all annuity payments were immediately cut by 30 percent or more and interest going forward credited at below-market rates. When MBLI became insolvent, the rehabilitation plan reduced the interest rates on its annuities to the point where it was crediting interest of

3.5 percent when the industry average at the time was between 7 percent and 7.5 percent (Davis 1992).

The court, in approving that plan, acknowledged that it “will not yield as much money as policyholders reasonably expected to earn” and “The concise effect of the proposed plan on an account of \$100,000 on July 16, 1991 is to maintain the value at \$100,000 but credit interest at specific levels, below market rates, until December 31, 1999,” eight years after insolvency (*In re the Rehabilitation of Mutual Benefit Life Insurance Company* 1993).

Policyholders are given the opportunity to opt in or opt out of any rehabilitation plan, with opt outs receiving a reduced payout and losing any rights to payments by NOLHGA. Opting out may sound irrational, but more than 50 percent of ELIC and MBLI policyholders still were making premium payments after those companies filed for insolvency (Davis 1992). How rational did it look to continue sending money to a company that looked like it was going out of business? Policyholders who have seen payments cut and interest credited at below-market rates may feel reallocating a reduced lump sum is the optimal way to maximize their savings.

For example, Terry Carter settled a medical malpractice claim for a \$513,889 annuity from ELIC with a monthly benefit that began at \$4,000 in 1984 and escalated 3-percent annually. In November 1993 Carter’s monthly benefit, which had grown to \$5,478, was cut in half to \$2,739. Carter chose to opt out and take a lump sum that represented 53 percent of the original principal (Winninghoff 1994). The fact that a 50/50 portfolio averaged 13 percent per year during the trailing ten years, with no negative years, likely influenced that decision. For the policyholder whose confidence in an insurer has been shaken by insolvency, taking a reduced payout that could then be invested at market rates may look like the optimal strategy.

FINANCIAL RISK 2: TIME VALUE OF MONEY

To prevent a run on the bank, receivers will restrict policyholders’ access to their money, and this lack of compensation for the time value of money is the second way policyholders can lose money. As an interested party, NOLHGA will be involved in any rehabilitation discussions but does not typically make any payments until an actual liquidation or as part of a rehabilitation plan approved by the court. It took more than two years before NOLHGA payments began in both the ELIC and MBLI cases.

The court in the BUC bankruptcy noted the rehabilitation plan reduced earnings on the annuities to below-market rates and froze all withdrawals in the first year (*In re Baldwin-United Corp.* 1985). After that first year, policyholders could withdraw up to 75 percent of their principal but the withdrawal was treated as a loan and the interest would eat up part of the remaining principal (Gaines 1987).

The MBLI court noted that policyholders “have lost the liquidity of their investments” and that “this loss of liquidity has value” (*In re the Rehabilitation of Mutual Benefit Life Insurance Company* 1993).

A report on the ELIC bankruptcy by the California State Auditor (2008) seventeen years after insolvency noted:

[I]n accordance with the rehabilitation plan, some benefit payments that would normally have been paid to policyholders were delayed for five years until September 3, 1998. During the five-year period from September 3, 1993, to September 3, 1998, referred to as the moratorium period, deferred annuity payments that would have matured were delayed, representing losses to policyholders in terms of the interest that could have been earned had these funds been available. In addition to the delayed payments on matured annuities, there were other fees and restrictions imposed during the moratorium period, including the imposition by Aurora [Aurora National Life Insurance Company] of additional surrender charges.

The auditor’s report quantified the costs of restructured policies and time value of money for policyholders in the ELIC case and calculated total policyholder losses of \$3.1 billion compared to the California Insurance Department’s estimate of \$936 million, with the primary difference being the auditor included time value of money (\$1.8 billion) and reduced value of the restructured policies (\$0.4 billion).

The auditor discussed the importance of including losses from restructured contracts and time value of money:

The delay in payments denied policyholders the opportunity to earn interest at the level they would have under their original ELIC policy. This lost interest increases policyholder losses because it reduces the value of the account and payments received from the policy from what they would have been if the policies had not been restructured.

In addition, the department’s calculation of the shortfall in policy value does not fully measure policyholder economic losses. The calculation of shortfall does not include or measure the financial impact caused by all of the changes made to policy terms subsequent to ELIC’s insolvency, and therefore does not fully reflect policyholder losses. When Aurora assumed ELIC’s assets and liabilities, the terms of some policies were changed. In some cases, policyholders were charged higher premiums in order to receive the same benefits, and some policies were restructured to pay out at lower interest rates.

The relevant portions of the auditor’s report regarding valuation of policyholder losses are as follows:

Our calculation of estimated opt-in policyholder losses is the sum of several factors. The first factor that is included in our calculation is the increase in mortality charges for opt-in life policies during the interim period [the period between April 11, 1991, when ELIC was conserved, and September 3, 1993, when the rehabilitation plan took effect] ...

We also included the lost account value interest that resulted from the insolvency due to decreased crediting rates. This loss was determined using the difference between the industry average interest rates and the rates that annuity policies actually earned under the rehabilitation plan ...

Our estimation of opt-in losses at closing also includes the department’s calculation of the shortfall in policy value, which is the department’s calculation of the difference between what the original ELIC policy promised and what the restructured ELIC policy provided. This amount was reduced by the guaranty association enhancement amount, which was contributed by the participating guaranty associations and administered by the National Organization of Life and Health Insurance Guaranty Associations ...

The estimation of losses for opt-out policyholders was much less complicated. We started with the expected account value at industry average rates that policyholders would have held had ELIC not become insolvent and reduced this amount by the payments received by opt-out policyholders prior to the closing date.

Note the auditor calculated losses by using the difference between the industry average interest rates and the rates the policyholders earned under the rehabilitation plan. Yet most of those policyholders likely bought those investments because they were paying higher than industry rates. ELIC was crediting 13 percent at a time when the industry average was 9.9 percent (U.S. Congress 2002). By using industry average rates instead of the rates policyholders expected to earn, the auditor’s methodology understated losses.

The auditor’s report noted the lawyer for the state insurance department acknowledged in a 2005 letter to a California state senator that the department’s focus on statutory liability may not tell the whole story regarding losses:

The \$936 million estimated shortfall set forth in the chart is somewhat artificial; it represents the amount of the shortfall that would have existed as of September 3, 1993 if all of the subsequent distributions had been paid to the policyholders on that date. In addition, it does not reflect the amount by which the benefits due to policyholders would have increased over time.

In contrast to the state auditor, the California Insurance Department did not include losses from restructured policies or time value of money because it was not statutorily required to compensate for losses incurred after filing for insolvency. Statements by employees of state insurance departments or NOLHGA about policyholders being “made whole” are talking about statutory liability for losses fixed at the date of insolvency. I suspect clients who bought “guaranteed” policies view losses more in line with the auditor’s methodology.

FINANCIAL RISK 3: LACK OF COVERAGE

Lack of NOLHGA coverage is the third way annuity holders can lose money. According to the auditor’s report, ELIC policyholders who opted out of the rehabilitation plan or opted in but had no or partial coverage accounted for 58 percent of the statutory reserve value of all policies.

Staying within payment caps sounds simple but GAO (1992b, 30) found:

The current state guaranty funds do not provide uniform coverage to policyholders of failed insurers. Even though all states (but not the District of Columbia) have funds, variations in state rules and coverage criteria cause gaps in coverage. In addition, policyholders of the same failed company may not be treated equally in an insolvency of a multistate insurer because of differences in the types of policies covered and limitations on benefit payments.

One way to lack coverage is where one’s initial investment may have been below these caps, but accumulated earnings caused the account value to grow over the limits. The result is those policyholders were only partially covered.

Some of the bigger policies that exceeded caps in the ELIC case included several corporations that had replaced their retirement plans with ELIC annuities. This group included RJR Nabisco, Merritt Peralta Hospital Center, Smith International Inc., Bulova Watch Co., Revlon, Blue Cross of California, and Kentucky Fried Chicken (Rosenblatt 1991). It is unlikely that any of the employees from those firms were aware of cap limits that applied at the plan level rather than the individual investor level.

Some of the largest policies in the ELIC case were among the 5,600 structured settlement annuities held by investors (some of them disabled) who likely were unaware of any cap limits.

California capped payments at the smallest of 80 percent of the contractual obligation or the various cap limits that apply to different types of policies (GAO 1992b). The result is that California statutorily mandated state guaranty coverage of less than 100 percent for everyone.

The ability to stay within payment caps was made more problematic by the fact that it is against the law in most states for an advisor to use the existence of state guaranty associations to induce the purchase of insurance. The relevant California statute (2023) is as follows:

No person, including an insurer, agent, or affiliate of an insurer shall make, publish, disseminate, circulate, or place before the public, or cause directly or indirectly, to be made, published, disseminated, circulated, or placed before the public, in any newspaper, magazine, or other publication, or in the form of a notice, circular, pamphlet, letter, or poster, or over any radio station or television station, or in any other way, any advertisement, announcement, or statement, written or oral, which uses the existence of the California Life and Health Insurance Guaranty Association for the purpose of sales, solicitation, or inducement to purchase any form of insurance covered by the California Life and Health Insurance Guaranty Association Act. Provided, however, that this section shall not apply to the California Life and Health Insurance Guaranty Association or any other entity that does not sell or solicit insurance.

Advisors should check the statutes of every state in which they are licensed; however, the California statute adds that the Association shall prepare a summary document to be delivered with a policy or contract, or upon request by the policyholder and specifies that the document shall contain a “clear and conspicuous disclaimer on its face” that does all the following:

1. State the name and address of the life and health insurance guaranty association and insurance department.
2. Prominently warn the policy owner that the California Life and Health Insurance Guaranty Association may not cover the policy or, if coverage is available, it will be subject to substantial limitations and exclusions and conditioned on continued residence in the state.
3. State that the insurer and its agents are prohibited by law from using the existence of the California Life and Health Insurance Guaranty Association for the purpose of sales, solicitation, or inducement to purchase any form of insurance.
4. State that the policy owner should not rely on coverage under the California Life and Health Insurance Guaranty Association when selecting an insurer.

Note, there is no mention of specific payment caps in the summary document, and coverage is clearly downplayed in an attempt to avoid moral hazard.

Many of the ELIC “opt-outs” were accounted for by guaranteed investment contracts (GICs) that were used in corporate retirement plans such as 401(k)s. Buyers of GICs included employee

plans from Honeywell, Unisys, Xerox, and Holiday Inn. The scope of this problem was illustrated by GAO (1992b, 26), which cited a study of 174 large pension funds that found 28 percent of defined contribution plans assets were held in GICs with insurance companies. In discussing the confusion around state guaranty coverage of GICs, the report showed that whereas California did not provide coverage for GICs, a Washington-based pension fund holding the same type of contract with ELIC would receive up to \$5 million from that state's guaranty fund. The GAO report went on to note:

As of October 1, 1991, 17 of the state guaranty funds provide limited coverage for these obligations, and 16 specifically exclude them from coverage. In two states, Indiana and Minnesota, coverage was required by court decision. The remaining 16 states do not explicitly include or exclude them, so coverage by these states is uncertain. The question of coverage in these states may have to be resolved through litigation or revisions to the guaranty laws.

The confusion surrounding coverage of GICs also was described in Ruyter (1993):

The 401(k) sponsor who hopes to avoid the sort of limbo that Mutual Benefit GIC holders have endured must be prepared to master a forest of specialized accounting rules, unique liability categories, and much jargon. Policyholders should also be aware of other, previously ignored factors that can influence their position. Who is the owner of the GIC insurance policy? What state has jurisdiction? And precisely what kind of policy is it? ...

Just as important, once the crisis hits, is an understanding of the insurance company rehabilitation process, which moves according to arcane rules of its own. The insurance industry is state-regulated, so companies must respond to the dictates of insurance departments in each state in which they are licensed ...

The result is that a nationwide US insurer faces a wide web of politically-attuned regulatory oversight ...

California's guaranty fund, for example, does not cover GICs. Indiana limits guaranty coverage to \$100,000, while Texas' limit is \$5 million per contract and New York's \$1 million. The type of contract matters, too. In some states, GICs owned by 403(b) plans, GICs owned by defined benefit plans, and GICs held by 401(k) plans all receive different treatment.

GICs had no statutory rights to NOLHGA payments in the MBLI case but, as part of the rehabilitation plan, a group of

eight major life insurers agreed to support MBLI's pension liabilities. ELIC GIC holders were unable to negotiate similar coverage. Loomis and Pare (1991) said that California's guaranty law "bars coverage for GICs, on the ground that these are bought by financial sophisticates who should know better than to entrust their money to unreliable insurers."

One group of GIC buyers did not realize they were GIC buyers when they purchased AAA-rated taxable municipal bonds issued by public finance authorities in five states (Pare and Kirsch 1991). The \$1.85 billion raised by the sale of these bonds was supposed to be used for socially useful purposes, but eligibility requirements for the loans were so strict that no loans were made and instead the money was parked in ELIC GICs. The California insurance commissioner stated during the ELIC rehabilitation period that if the insurer is liquidated, "The municipal GICs are at the bottom of the credit ladder." Pare and Kirsch (1991) further described the situation as follows:

Is there no end to the list of victims trapped in the collapse of Executive Life? Last month regulators seized the failing California insurer as well as the New York subsidiary, and the iron bell of misfortune tolls on and on. First, for the policyholders whose claim checks have been delayed, then for the holders of annuities whose payouts have been cut by 30%, and now for hundreds of investors, including small country banks, charitable foundations, retirees, and widows. They thought they were salting their \$1.85 billion away in safe municipal bonds. It turned out they weren't ...

The muni investors are furious. Many say that they had no idea their money was ending up in the Executive Life junk pile until March 1990. That's when S&P finally lowered the ratings on all the muni issues to reflect the junk behind them, and the bonds' trading value dropped nearly as fast as the bondholders' jaws. Typical of the thunderstruck are the Devlins of York, Nebraska. Timothy, 74, a retired letter carrier, and his wife, Marie, 70, a former bookkeeper, bought \$10,000 of a Nebraska Investment Finance Authority issue, thinking it was a safe way to add to their retirement income. Says Marie: "This has destroyed every bit of faith we had in AAA ratings." The Devlins and an army of other bondholders are trooping to court. So far, 18 lawsuits covering all the muni issues have been filed.

Policyholders in previous insolvencies suffered financial losses, even those covered by state guaranty associations. Those losses represent risk that must be accounted for and are why one cannot call annuities "risk-free." It is much harder to quantify the lost time, lost clients, and emotional distress for advisors having to shepherd clients through a confusing legal process that feels very unfair. Yet the emotional toll of insolvency is very real and long-lasting.

PSYCHOLOGICAL COST 1: INITIAL SHOCK

The psychological costs of insolvency begin with the initial shock of reduced payments and frozen savings. Rosenblatt (1991), in an article published one month after ELIC became insolvent, captured that surprise:

[William and Elvera Beale] are supposed to receive \$22,000 from a retirement annuity coming due in November. But Beale, a 74-year-old resident of Leisure World in Seal Beach, says: "I haven't the slightest idea what will happen. We've been told all along you never miss with insurance."

They are not alone. Misplaced confidence in the sanctity of an insurance company has ensnared thousands of unwitting casualties. People such as the Beales bought individual policies for an economically secure old age ...

Even some individuals hurt in accidents or by medical malpractice have had their settlement payments coming from Executive Life cut back.

In San Diego, a woman whose sole income comes from a malpractice settlement for botched medical treatment received her May check on Wednesday. It was \$2,186, slashed from the normal allotment of \$3,123. "I haven't digested it yet," she says. "But it will put a lot of pressure on me to change my life. I haven't thought it through." ...

Eligible to start drawing a retirement check in January, [Las Vegas resident Fred Calandra] is entitled to \$390 a month, but will only get \$271 because of Executive Life's problems. "My feeling is one of hostility and disappointment," he says ...

"It is a very frustrating situation," says a Los Angeles man whose teen-age daughter receives payments every two years to cover her extensive medical costs. Her leg was badly burned in a motorcycle accident, and she has undergone 12 surgical operations.

After Wallace Albertson's ELIC annuity payment was cut 30 percent she stated, "I feel grateful that I'm not bankrupt, but having worked all one's life to achieve a certain standard, it's disappointing" (Davis 1992). The uncertainty of what to expect from the rehabilitation process was captured in a comment by ELIC annuity holder Dela Wright who said, "I wonder if I will see a penny" (Berg 1991).

In addition to the initial shock of reduced payments and frozen funds, ELIC and First Capital policyholders were likely shaken to hear "guaranteed" may not mean what they assumed it did. Two months after the ELIC insolvency the *New York Times* published an article with the headline, "Life Insurer Failures

Point Up Flaws in Safety Net of States" (Berg 1991). In discussing state guarantee funds, the article noted:

The recent collapses of two huge Los Angeles-based life insurers present a sobering reality to regulators and consumers: the safety programs set up by 48 states to protect policyholders when their insurance companies fail may be woefully unprepared for a crisis of this magnitude. ...

The programs also differ from state to state on who and what is covered—so much that their "guarantee" may be much more limited than many people expect.

"The term 'state guarantee fund' is a gross misnomer," masking the system's faults, said Mary Lynn Sergent, a researcher at the General Accounting Office, Congress's investigative arm, who has studied the programs.

Just as the Federal Deposit Insurance Corporation, administered by the Government, covers depositors whose banks fail, the insurance guarantee programs were set up to protect insurance policyholders. But there are more differences than similarities between the two systems, mostly because of a crazy quilt of state laws governing the insurance programs. ...

"You look at the current guarantee system and you have to say to yourself, 'This is an odd jerry-built system,'" said Orin Kramer, a former White House policy adviser who is a consultant to the insurance industry.

The one failure of a truly large insurer so overwhelmed the funds that they had to be rescued themselves. When BUC collapsed in 1983, policyholders were left with \$279 million in losses. The guarantee funds could raise only \$62 million a year.

Rather than risk a public relations disaster, insurers decided to rescue BUC themselves, but many holders of BUC annuities had to wait more than a year for money they were owed, and the interest rate was cut on their annuities.

Reduced payments, frozen savings, and negative media coverage required considerable time commitments by advisors to reassure nervous investors. Unfortunately, the initial shock of insolvency led to confusion and anger that required considerably more handholding.

PSYCHOLOGICAL COST 2: CONFUSING LEGAL LIMBO

Insolvency—involving an insurance company or not—is a legal proceeding that is confusing, contentious, rarely called fair, and leaves the average person feeling like a stranger in a strange land.

The BUC court was so concerned that laypersons may be so confused by court notices about opting in or out that it directed that anyone who had opted out could elect to opt back in (*In re Baldwin-United Corp.* 1985). As the court noted:

The risk commonly experienced, and present here, is that on receiving a sufficiently complete notice to satisfy the requirements of due process, some persons may become confused and, affected by the understandable suspicion widely held by lay persons concerning court papers, may opt-out thoughtlessly and without professional advice.

In testimony to the House of Representatives (U.S. Congress 2002) the former Commissioner of Insurance for New York described the process as follows:

I knew the minute you triggered a rehabilitation process, you landed up in a State court. Not like your Federal bankruptcy court, where you have judges who are trained in the area, who can look at it and understand the rights ... You have all of these rights that vest. All of a sudden, the carcass is being pulled apart by investment bankers, lawyers, accountants, actuaries, and it really is a feeding frenzy.

The court in the MBLI case noted that one of the initial hearings was attended by sixty lawyers (*In re the Rehabilitation of Mutual Benefit Life Insurance Company* 1993). Companies become insolvent because they have more liabilities than assets, and where there is a shortage of money and a surplus of lawyers, emotions run high, and nobody thinks they are being treated fairly.

Spiro and Weber (1992) noted the confusion inherent in state regulation of life insurance companies and rehabilitation:

The lesson is that there is vast room for improvement in the current system of state regulation of life insurance companies. Before and even after a rescue, policyholders are often suspended in a never-never land of uncertainty over their assets. They have few rights and are at the mercy of powerful interest groups. "The state regulation of the insurance business has very serious shortcomings," says Joseph M. Belth, professor of insurance at the University of Indiana.

"State guaranty associations haven't been triggered yet, one year after Mutual Benefit failed," says Belth. "The idea that somebody puts his life savings into a life insurance policy and is unable to get his money is unacceptable."

Loomis and Pare (1991) called the state guaranty system "weak and convoluted."

Ruyter (1993) discussed the confusion surrounding negotiations by plan sponsors to protect their interests in the MBLI

rehabilitation plan only to have to start over when New York's regulators and guaranty association filed objections:

The move by New York regulators—acting, they said, on behalf of the state's policyholders—highlights the confusion caused by overlapping interests in an insurance company rehabilitation. New York's guaranty fund had already been involved in the plan through NOLHGA, and AMLIC [Association of Mutual Benefit Life Insurance Contract-holders] represented a significant chunk of the policyholders. In fact, exactly which of the policyholders New York represented is not clear. No rules determine which state has jurisdiction when, for example, the plan sponsor's corporate headquarters are in Ohio, its manufacturing plants are in three other states, the trust holding the 401(k) assets is in New York, and current and retired employees are scattered across the nation.

Commenting on the delays and uncertainty that accompanied the development of the ELIC rehabilitation plan, policyholder Fisher Lane stated: "Every time something reasonably decent happens, your heart lifts. Then [the next piece of news] dashes all your hopes" (Davis 1992).

Disappointed policyholders blame their advisors, insurance companies, insurance commissioners, and guaranty associations and all those groups become targets for lawsuits. Merrill Lynch reported its first quarterly deficit ever in January 1984 due to an \$88-million write-off to settle lawsuits with policyholders who bought BUC annuities through the firm (Sloane 1984). At the time, the BUC insolvency was the largest insurance failure in history and spawned thousands of lawsuits (Gaines 1987). ELIC was a bigger failure, then MBLI was bigger still (Zonana and Kristof 1991).

PSYCHOLOGICAL COST 3: FEELINGS OF UNFAIRNESS

The California auditor found that in the ELIC case inconsistent administration added to the general confusion and feelings of injustice that permeated the insolvency process. That is not surprising given the process was run by state courts and insurance department employees who come and go over the course of time. California Commissioner John Garamendi was barely on the job 100 days when he was forced to administer both the ELIC and First Capital Life Insurance insolvencies (Winninghoff 1994). Together those two companies had roughly a million policyholders and several parties accused Garamendi of mismanaging the ELIC insolvency.

ELIC's problems stemmed from holding too many junk bonds when that market collapsed. Garamendi quickly sold those bonds at depressed prices to a single investor group that policyholders said was a front for French bank Credit Lyonnais, used to circumvent federal and state laws, triggering a wave of lawsuits. "Had they not sold to the French, had they backed

off and put it out to bid again, the policyholders would have gotten 100% on their dollars,” said Tom Schaefer, a San Diego lawyer who represents policyholders. “In a recovered bond market, there would be no reason to restructure the policies downward” (Girion 2002). By quickly selling a block to one buyer, Garamendi got 50 cents on the dollar.

By comparison, when New Jersey took over MBLI in July 1991 and froze its assets, the state chose to hang onto MBLI's troubled real estate investments. Had the state liquidated MBLI, the company's assets would have been worth 55 cents on the dollar and guaranty payments would have begun immediately (Kerr 1992). But unlike California, which sold ELIC's junk bonds quickly, New Jersey decided to rehabilitate MBLI and hold onto its bad real estate in hopes it would recover. One state sold the offending assets quickly but the other chose to hang onto them. Policyholders in neither case felt it was a fair decision.

Kerr (1992), five months after MBLI's insolvency, captured the moment as follows:

The rehabilitation plan, which is subject to approval by all states in which the company has policyholders, drastically disappoints consumers who had put their faith in the guarantee system, New York officials have argued. The plan promises most customers access to their savings seven years after approval and possibly after a 12-year wait. And the plan promises interest on their investments of only 3.5 percent ...

Since insurance companies benefit from the sense of security the guarantee fund system provides when they make their sales, the [New York] department has argued that insurance companies should agree to provide customers with higher rates of return or a shorter waiting period ...

In New Jersey, an organized group of New Jersey customers with annuities are outraged that it is the customers, not the insurance industry, whose money will be tied up while Mutual Benefit's management waits for its deeply troubled real estate investments to rebound. “The industry can't have it both ways,” said Robert Hunter, the president of the National Insurance Consumer Organization in Alexandria, VA., and a bitter critic of the industry. “You can't say to people, ‘Don't worry, we have a guarantee association, everything is going to be fine,’ and then produce this sort of result.” ...

Michael Trofino, a tax accountant in Holmdel, New Jersey, who has formed a group that has reached out to more than 5,000 Mutual Benefit customers in the state, said that the group planned to petition the court in New Jersey to argue that individual consumers were treated unfairly. “We should have gotten paid immediately, and the New Jersey guarantee association, if there was a shortfall, should have

made it up,” Mr. Trofino said. “Let them sit on the real estate for seven years if they are positive this is going to turn around.” ...

New York officials were particularly disturbed by the length of the moratorium. If the plan is approved by the New Jersey courts in January and is extended to its full length of 12 years, Mutual Benefit customers may wind up waiting nearly 14 years after the state takeover to get their money ...

The retirement savings of people like Josephine Davis ... are bound up in Mutual Benefit annuities. Sometime in the next few years, Ms. Davis says, she hopes to retire and had planned to take out her money in one lump sum as she had always been told her contract allowed. Now she worries about when she will be able to go ahead with plans for life after she leaves work. “People my age want the security that they have always depended on,” Ms. Davis said.

PSYCHOLOGICAL COST 4: LONG-TERM HARM

The emotional drain can last years. The California Department of Insurance (2015) settled with the last remaining defendant in a lawsuit that arose out of the ELIC liquidation sixteen years after ELIC became insolvent.

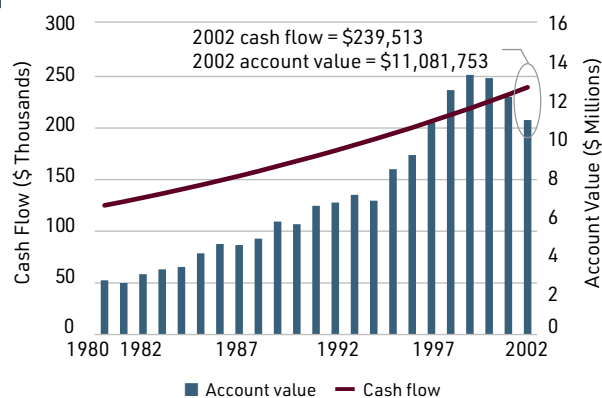
The House of Representatives held hearings on the collapse of ELIC eleven years after insolvency (U.S. Congress 2002). Those hearings included testimony by Bob Bozeman and the daughter of another policyholder of ELIC structured settlement annuities. They both testified that they were assured annuities were safe, about how hard it was to get information after ELIC filed for insolvency, and how their checks often were late. Bozeman, a disabled railroad employee testified:

So I told them, “Get me the most secure, safe-type product that you can because I'm not some wealthy guy trying to supplement his income. This is my income.” So it ended up I was supposed to receive \$2,000 a month, and things went along pretty well from 1985 to 1991. Then, all of a sudden, this thing happens to a company that was supposed to be risk-free and rated very highly.

Bozeman's payment fell from \$2,000 a month to \$1,300 during the two-year restructuring then increased to \$1,455. In addition to reduced payments, Bozeman testified his checks were often late.

[W]hen the check was late ... I would get on the phone and I would call everybody. I would say, “Did they go completely under? I am not even going to get the \$1,300 now I guess.”

Dru Ann Jacobsen, whose seventy-four-year-old mother, Ann Dixon, was a policyholder of an ELIC structured settlement annuity, also testified in the House hearings. Dixon's hips

Figure
1**50/50 PORTFOLIO, 1980–2002**

Source: The Sandridge Group

and pelvis were shattered when her car was struck by a drunk driver leaving her confined to a wheelchair. Her right leg was crushed so badly it had to be amputated. Dixon followed her lawyer's advice and converted a \$2.5-million settlement for her injuries into an ELIC annuity. Recalling the conversation with the lawyer Jacobsen stated, "The lawyers elected to put it into this Triple A Executive Life. This is the safest thing we can put it in. ... It's rated high, excellent, A-No. 1."

Dixon's experience also was chronicled in Giron (2002) in "Little People Floundering from Executive Life Losses." That article focused on how, ten years after ELIC's insolvency, many of its policyholders, some of them elderly and disabled, were struggling to get by on monthly annuity payments that were 30 percent to 50 percent less than they had been guaranteed. After Dixon's payments were slashed, she refinanced her home several times to pay her bills. Eventually she had to sell her home of thirty years and move into a mobile home near her daughter.

Giron (2002) also told of Katie Watson who was admitted to the hospital with a mild case of pneumonia. Medical malpractice left her severely brain damaged, unable to walk or feed herself, and in need of full-time, round-the-clock care. Her structured settlement annuity payments from ELIC were cut from \$13,000 a month to \$5,000. Unable to sell their home in a depressed real estate market, her parents lost it in foreclosure. The annuity payment had grown to \$10,000 by 2002, but that was far short of what had been promised. Vince Watson stated, "If anything happened to Susie and I, there's still not enough money coming in on a monthly basis to get Katie in a full-care facility" and "We're still kind of holding our breath about whether ... if anything happened Katie would be taken care of."

PSYCHOLOGICAL COST 5: REGRET

Regret is a psychological component of any product disappointment because the only perfect product or strategy is the one a client could have used instead of the one their advisor recommended.

Because the BUC, ELIC, and MBLI insolvencies coincided with terrific bull markets in both bonds and stocks that began in October 1981 and August 1982, respectively, the disappointed annuity holders discussed in this paper would have fared considerably better investing in a simple stock/bond portfolio.

For example, Dixon could have invested her 1979 \$2.5-million legal settlement into a 50/50 stock/bond portfolio instead of an ELIC annuity. Had she done so at the start of 1980, withdrew 5 percent initially, increased cash flow 3 percent annually, and paid a 1.5-percent annual fee, her cash flow and account value in 2002—when the *Los Angeles Times* published its article about little people floundering—would have grown to \$239,513 and \$11,081,753, respectively (see figure 1).

Consider if Dixon had split her money between two advisors, one of whom invested in the ELIC annuity and the other in a 50/50 stock/bond portfolio. She would have received regular quarterly statements from one that looked like her cash flow and account value were growing. From the other she would have received court notices full of confusing legalese delivering shocking news regarding reduced benefits. That illustrates the importance of product diversification.

The California auditor's report quantified the financial losses to policyholders, but it is much harder to calculate the costs associated with the psychological strain insolvency places on the policyholders and by extension their advisors. Regardless, history shows that those emotional costs are very real and long-lasting and coupled with the financial costs do not warrant calling annuities "risk-free," despite the existence of state guaranty associations.

CONCLUSIONS

First, advisors should not assume fixed annuities are a set-it-and-forget-it product. The courts in BUC, ELIC, and MBLI all noted those corporations held the highest credit ratings possible just a couple of years before insolvency. So, although advisors should invest in highly rated instruments, they should take reassurances and credit ratings at face value. They should focus on the long term, perform their own ongoing due diligence, and have a plan for dealing with deteriorating financial conditions at their insurers. That includes being prepared to redeem any products that can be redeemed.

Slovic et al. (1978) found that a disabling injury results from auto accidents only once in every 100,000 car trips and that each safe trip reinforces the non-use of seatbelts. However, based on a lifetime of car trips, they calculated you have a 33 percent chance of experiencing a disabling injury at some point in your lifetime. Similarly, advisors should focus on the lifetime risk of an insurance insolvency (or in the case of multiple clients, multiple lifetimes).

Second, the longer you go without experiencing a rare event, the more vulnerable you are to such an event as you may be prone to let your guard down by assuming what has happened recently will continue to happen. As such, advisors should study the history, specifically the worst-case scenario of any product or strategy they are using, especially one some may be tempted to view as risk-free. Playing out in thousands of lawsuits, multiple government hearings, and many media stories, the history regarding fixed annuities was very much in the news and is not hard to find for those looking for it. Advisors should be able to articulate their plans to hedge a worst-case scenario and with fixed annuities, that plan should include diversifying annuity holdings across multiple insurers, being aware of possible coverage gaps, and diversifying across products.

Third, advisors should avoid over-selling annuity safety with language that could be interpreted as equating to the benefit of the bargain. The failure of state guaranty associations to provide a seamless transition after multiple major insurer insolvencies caused a generation of advisors to view annuities as a product failure, not just because of the size of the losses but because of the size of the losses relative to the size of expectations.

Finally, the benefit of state funds is that they provide some backstop for insurance company guarantees but there are limitations. This paper discusses those in a general sense, but part of the problem is advisors deal with different rules in each state, unlike working with the federal bankruptcy court. Advisors could benefit from a comprehensive review of each state's regulations, and although that is beyond the scope of this paper it could serve as a topic for further research. ●

James B. Sandidge, JD, is principal of The Sandidge Group LLC. He earned BA, MBA, and JD degrees from the University of Denver. Contact him at jbsandidge@gmail.com.

REFERENCES

- Berg, E. 1991. Life Insurer Failures Point Up Flaws in Safety Nets of States. *New York Times* (June 24). <http://www.nytimes.com/1991/06/24/business/life-insurer-failures-point-up-flaws-in-safety-nets-of-states.html>.
- California State Auditor. 2008. Department of Insurance: Former Executive Life Insurance Company Policyholders Have Incurred Significant Economic Losses, and Distributions of Funds Have Been Inconsistently Monitored and Reported. Report 2005-115.2. <https://information.auditor.ca.gov/pdfs/reports/2005-115.2.pdf>.
- California Statute. Insurance Code, INS § 1067.17 (last updated January 1, 2023). <https://codes.findlaw.com/ca/insurance-code/ins-sect-1067-17/>.
- California Department of Insurance. 2015. Settlement in Executive Life Insurance Case Ends 16 Years of Litigation. <https://www.insurance.ca.gov/0400-news/0100-press-releases/archives/release068-15.cfm>.
- Davis, K. 1992. The Dirty Half Dozen Revisited. *Kiplinger's Personal Finance Magazine* 46, no. 11: (November): 76-80.
- DeMartino, G. 2022. *The Tragic Science*. Chicago: The University of Chicago Press.
- Gaines, S. 1987. Annuities Bankruptcy is Blunted. *Chicago Tribune* (February 9). <https://www.chicagotribune.com/news/ct-xpm-1987-02-09-8701100905-story.html>.
- Girion, L. 2002. Little People Floundering from Executive Life Losses. *Los Angeles Times* (April 28). <https://www.latimes.com/archives/la-xpm-2002-apr-28-fi-execlife28-story.html>.
- In re Baldwin-United Corp. 1985. 607 F. Supp. 1312 (S.D.N.Y.). <https://law.justia.com/cases/federal/district-courts/FSupp/607/1312/2372187/>.
- In re the Rehabilitation of Mutual Benefit Life Insurance Company. 1993. Superior Court of New Jersey. LEXIS 940.
- Keppel, B. 1987. Baldwin-United Assets Transferred; Annuity Holders to Get Payoffs. *Los Angeles Times* (July 10). <https://www.latimes.com/archives/la-xpm-1987-07-10-fi-1915-story.html>.
- Kerr, P. 1992. State Protection in Insurance Failures Put to Test. *New York Times* (November 12). <https://www.nytimes.com/1992/11/12/business/state-protection-in-insurance-failures-put-to-test.html>.
- Loomis, C., and T. Pare. 1991. What Fred Carr's Fall Means to You. *Fortune* (May 6). http://money.cnn.com/magazines/fortune/fortune_archive/1991/05/06/74977/index.htm.
- Pare, T., and S. Kirsch. 1991. Who Got Killed by Executive Life? *Fortune* (May 20). https://money.cnn.com/magazines/fortune/fortune_archive/1991/05/20/75024/index.htm.
- Rosenblatt, R. 1991. Insurers Failure Ensnare Thousands of Casualties: Executive Life: Pension Payments Have Been Slashed. A Crisis of Confidence Threatens the Industry. *Los Angeles Times* (May 17). <https://www.latimes.com/archives/la-xpm-1991-05-17-mn-1874-story.html>.
- Ruyter, T. 1993. Making a Play for the Payout. *Plansponsor* (July). <https://www.plansponsor.com/magazine/making-a-play-for-the-payout/>.
- Sloane, L. 1984. Annuities: A New Life After Baldwin-United's Fall. *New York Times* (January 29). <https://www.nytimes.com/1984/01/29/business/annuities-a-new-life-after-baldwin-united-s-fall.html>.
- Slovic, P., B. Fischhoff, and S. Lichtenstein 1978. Accident Probabilities and Seat Belt Usage: A Psychological Perspective. *Accident Analysis & Prevention* 10, no. 4: 281-285.
- Spiro, L., and J. Weber. 1992. This Rescue Is Raising More Questions Than Cheers. *Businessweek*. (July 27). <https://www.bloomberg.com/news/articles/1992-07-26/this-rescue-is-raising-more-questions-than-cheers?embedded-checkout=true>.
- Todd, R., and N. Wallace. 1992. SPDAs and GICs: Like Money in the Bank? *Federal Reserve Bank of Minneapolis Quarterly Review* 16, no. 3 (summer). <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=1c90ba6f6e4f13eacb57bd8335aa233ca0b3fc92>.
- U.S. General Accounting Office (GAO). 1992a. Insurance Regulation: The Failures of Four Large Life Insurers, Testimony Before the Committee on Banking, Housing, and Urban Affairs, United States Senate (statement of Richard L. Fogel, Assistant Comptroller General, General Government Programs). GAO/T-GGD-92-13. Washington, DC. <https://www.gao.gov/assets/t-ggd-92-13.pdf>.
- . 1992b. Insurer Failures: Life/Health Insurer Insolvencies and Limitations of State Guaranty Funds. Testimony Before the Subcommittee on Antitrust, Monopolies and Business Rights, Committee on the Judiciary, United States Senate (statement of Richard L. Fogel, Assistant Comptroller General, General Government Programs). GAO/T-GGD-92-44 (March 1992). Washington DC. <https://www.gao.gov/assets/ggd-92-44.pdf>.
- U.S. Congress. 2002. House of Representatives. Committee on Government Reform. The Collapse of Executive Life Insurance Company and its Impact on Policyholders, Hearing Before the Committee on Government Reform. 107th Cong., 2nd sess., October 10. <https://www.govinfo.gov/content/pkg/CHRG-107hrrg83976/pdf/CHRG-107hrrg83976.pdf>.
- Winninghoff, E. 1994. Smart Buyer, Dumb Seller. *Forbes* (March 14): 71-76.
- Zonana, V., and K. Kristof. 1991. Mutual Benefit Insurance Fails After Run on Assets: Economy: It Is the Largest Such Collapse in U.S. The New Jersey Company Cites Bad Real Estate Investments. *Los Angeles Times* (July 16). <https://www.latimes.com/archives/la-xpm-1991-07-16-mn-2351-story.html>.

Managing Concentration Risk

John Nersesian, CFP®, CIMA®, CPWA®

Concentration risk often is defined as an exposure to a single security, or multiple holdings with correlated tendencies, of greater than 10 percent of the total portfolio value. Although the sources of concentration risk often are pleasing—significant equity awards to a corporate executive, explosive growth in a single stock, acquisition of a business holding paid via a non-taxable equity transaction, long-term accumulation via a family legacy holding—investors need to be cognizant of the unintended consequences of these positions. The most obvious consequence is significant financial loss and wealth destruction along the lines of investors who held large positions in Enron, Sears, Lehman, and other notable companies that suffered significant declines. Although market beta is a necessary factor for an equity market participant, idiosyncratic risk—the additional risk of holding a

specific security with unique attributes and risk factors—can be reduced via effective portfolio diversification.

Additionally, although overall market volatility, measured as standard deviation of the S&P 500, historically has averaged around 16 percent, the volatility of a single stock in an index could be significantly greater (see figure 1). Many investors are unaware of this significant risk, and just as importantly, often are not paid for the assumption of it in their returns.

This additional volatility can have adverse consequences for investors both financially and emotionally. Increased volatility can reduce the probability of successful outcomes, in particular during retirement distribution, because any drawdowns require the investor to liquidate more assets to meet cash-flow needs, leaving fewer dollars available

for exposure when markets turn higher. This volatility also can lead to negative behavioral decisions, because investors' emotional responses often lead to lower investment returns.

OBSTACLES INVESTORS FACE

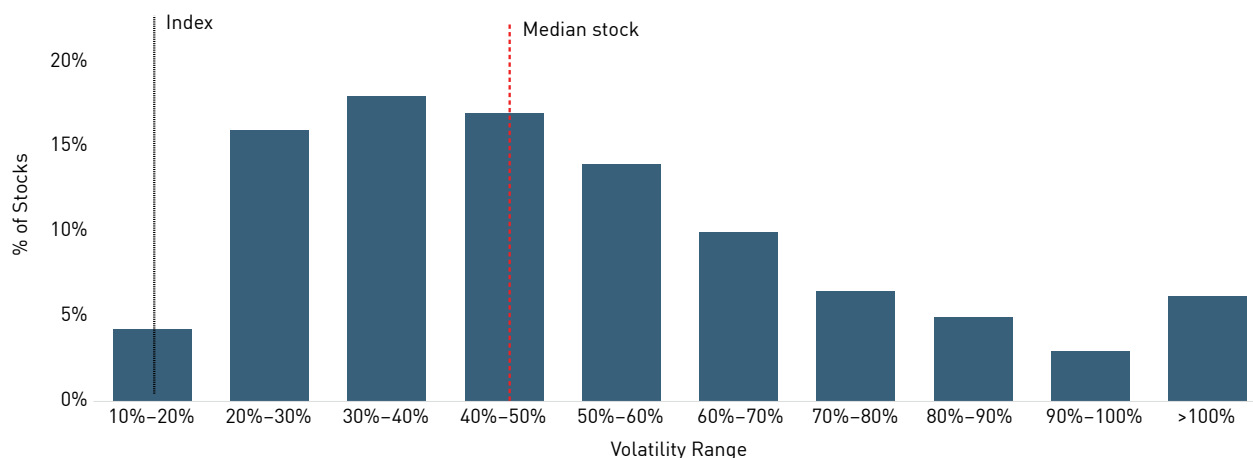
Investors often maintain an existing predisposition toward these concentrated positions, preferring to maintain current exposures instead of taking proactive steps to manage them in a prudent fashion. These views can be based partly on financial logic; investors may prefer to avoid the immediate tax recognition due to the sale of a highly appreciated position. But the behavioral biases described in table 1 frequently are also a contributing factor.

OVERCOMING OBJECTIONS BY ASKING THE RIGHT QUESTIONS

Advisors can help to create a viable path forward by providing broader education,

Figure 1

CONCENTRATION RISK: INDIVIDUAL STOCK VS. INDEX ILLUSTRATION



For illustrative purposes only.

Source: PIMCO. Data does not represent any specific index or stock and is provided for illustrative purposes only to illustrate how the volatility of a stock held by an index may vary from the index.

Table
1**BEHAVIORAL BIAS**

Bias	Definition	Potential effect on investor
Overconfidence	The tendency to overestimate or exaggerate one's ability to successfully perform a given task.	Because executives generally have access to greater inside knowledge of an individual firm, they tend to overrate their abilities and overvalue company holdings.
Status quo	Increased choices and information generally lead to greater indecision.	The scientific principle of inertia; investors often avoid making changes, instead selecting the option that keeps conditions the same.
Home country	The tendency to favor companies in one's own country over those from other regions and countries.	With wealth heavily concentrated in a single stock, investors may not realize their allocations could be negatively impacting portfolio diversification.
Recency	A belief that recent past returns will be replicated in the future.	Investors choose to maintain their concentrated holdings expecting similar results.
Endowment	Tendency to give holdings that are owned a disproportionate value because they already are owned versus purchasing outright.	Investors may hold onto inappropriate assets that they otherwise would not buy (or own) if they didn't already hold them.

*For illustrative purposes only.
Source: PIMCO*

Table
2**MATRIX OF POTENTIAL SOLUTIONS: MATCHING STRATEGIES TO CLIENT OBJECTIVES**

Liquidity	Tax minimization	Hedging	Diversification	Wealth transfer
- Restricted stock sale - Writing OTC covered call - Securities-based loan	- Variable prepaid forward 83(b) plan - NUA - Direct indexing	- Purchase OTC put option - Zero-premium collar - Participating collar	- Variable prepaid forward - Exchange fund - Purpose loan - Custom diversification collar	- Gifting to family - Donor-advised funds - Charitable remainder trust - Family foundation

*For illustrative purposes only.
Source: PIMCO*

and by personalizing the experience through a discussion that helps investors better understand their own financial and emotional preferences. The following discovery questions may uncover helpful insights:

- What is your primary objective for these assets (tax minimization, appreciation, risk reduction)?
- What is the primary purpose of these assets in your financial plan (retirement, business, charitable)?
- What is your expectation for the future performance of your concentrated holding?
- What is your view on the direction of tax rates?
- Can you describe your exit strategy for these positions?
- If you didn't work at your current company, how much of the stock would you own in your portfolio (for executives)?
- What would be more disturbing: selling a security that continues to rise or holding one that continues to fall?
- If we were designing an objective portfolio and you were presented

with cash equal to the value of your current position, how much would you allocate to this position?

POTENTIAL CONCENTRATION RISK SOLUTIONS

Helping clients develop an effective strategy to deal with a concentrated position in a portfolio often depends on a number of inputs, including overall portfolio holdings, required capital needs, tax circumstances, and risk tolerance. An effective approach might start with an understanding of a client's primary objectives and the solution matrix best positioned to solve for them (see table 2). Primary objectives may include the following:

- Liquidity
- Tax minimization
- Hedging
- Diversification
- Wealth transfer

STOCK SALE/LOAN FOR LIQUIDITY

An outright sale of the underlying security might be the simplest solution for consideration and could be a

baseline to use in comparison with other strategies. An outright sale is a perfect hedge against future downside risk. The sale creates immediate liquidity that can be used for diversified reinvestment, e.g., into complementary assets with low correlation to the client's core holding, or for personal expenditures. Of course, a sale would produce immediate tax recognition, but low-basis positions held in excess of 12 months would receive preferential tax treatment at long-term capital gains rates, which are attractive relative to ordinary income tax rates. The 2024 maximum capital gains rate is 20 percent for married joint filers with income in excess of \$583,750 and single filers at \$518,900 (see table 3). Of course, the additional 3.8-percent net investment income tax applies to married joint filers with income above \$250,000 and single filers at \$200,000, producing a combined maximum tax rate of 23.8 percent.

Advisors might consider the following approaches to help clients effectively manage this process:

- Setting specific price targets that would trigger a sale to limit risk.
- Systematic selling at different intervals to reduce timing risk and to spread the tax liability.
- Simultaneous sales of loss holdings in the portfolio to offset recognized capital gains in concentrated positions.

Table
3**TAXABLE INCOME: MARRIED, FILING JOINTLY VS. SINGLE, 2024**

Tax rate	Taxable income	
	Married, filing jointly	Single
0%	\$0–\$94,050	\$0–\$47,025
15%	\$94,050–\$583,750	\$47,025–\$518,900
20%	\$583,750+	\$518,900+

Source: Internal Revenue Service

Alternatively, clients might consider avoiding an outright sale and borrowing against their securities as a method to create liquidity and maintain upside exposure while deferring tax recognition. Generally, securities-based loans provide access to approximately 75 percent of the underlying value with variable interest rates based on an underlying index such as the secured overnight financing rate. Although loan proceeds can be used to affect personal expenditures, e.g., college tuition, auto purchases, real estate acquisitions, etc., they cannot be used to purchase additional securities.

USING ZERO-PREMIUM COLLARS FOR HEDGING

Listed options can be used to achieve certain objectives. Selling covered call options against a concentrated, highly appreciated position can be useful in generating additional income but fails to provide downside protection. Purchasing put options against a long position can hedge against downside risk but can become expensive over an extended time horizon.

Zero-premium collars can be used to reduce downside exposure while deferring capital gains recognition at no or limited cost.

Zero-premium collars can be used to reduce downside exposure while deferring capital gains recognition at no or limited cost. Collars are created by selling call options with a strike price above the current market price, then simultaneously using the premiums received to purchase put options with a strike price below the current market price. Assuming the premiums received are equal to the premiums paid, the net cost to the investor is zero. These derivative contracts can be created allowing the investor to specify option maturities and option strike prices with intended upside/downside price exposure. The investor retains all ownership benefits, including dividend income and voting

rights, and defers potential capital gains exposure until expiration, if exercised.

The following transactions are structured as European options, which, unlike listed options, cannot be exercised before maturity. There are three potential outcomes at maturity:

The stock remains at a price between the upper and lower collars. The investor retains ownership and is now free to hold, sell, or engage in another transaction. The call premium received is taxed as a short-term capital gain and the put premium paid is treated as a long-term capital loss.

The stock finishes at a price higher than the call strike price. The underlying stock position is called away at this price. The investor recognizes a capital gain equal to the call strike price plus the call premium received minus the original cost basis. The put premium paid is treated as a long-term capital loss.

The stock finishes at a price below the put strike price. The underlying stock

Table
4**ZERO-PREMIUM COLLAR**

Share delivery				
Closing price	Client value	Total value	Value protected	Profit participation
\$25	\$45	\$4,500,000	\$2,000,000	\$0
\$40	\$45	\$4,500,000	\$500,000	\$0
\$45	\$45	\$4,500,000	\$0	\$0
\$50	\$50	\$5,000,000	\$0	\$0
\$55	\$55	\$5,500,000	\$0	\$500,000
\$60	\$60	\$6,000,000	\$0	\$1,000,000
\$75	\$60	\$6,000,000	\$0	\$1,000,000

Assumptions: Number of shares: 100,000 / Current price: \$50 / Total value: \$5,000,000 / Put (floor) price: 90% (\$45) / Call (ceiling) price: 120% (\$60) / Net premium*: 0% (\$0) / Term: 12 months / * Net premium may vary based on the terms of the structure.

For illustrative purposes only.

Source: PIMCO

is put to the counterparty at this price. The investor recognizes a capital gain equal to the put strike price minus the original cost basis and put premium paid. The call premium received is treated as a short-term capital gain.

Although these transactions offer many benefits, the greatest potential risk is the lost profit potential if and when the underlying stock reaches a price far in excess of the call strike price, producing a cost of lost opportunity.

Table 4 presents an example of an investor that is long 100,000 shares of a security trading at \$50/share for a total position value of \$5 million. The client wishes to hedge downside risk and avoid the capital gains liability from an immediate sale. The investor chooses to create a collar by selling call options with a strike price of \$60/share (20 percent above current market) and by selling put options with a strike price of \$45/share (10 percent below the current market). The premium received from the calls offsets the premium paid for the puts, resulting in a zero-cost transaction. If the stock remains between the \$45 and \$60 limits, the investor will retain the position without any capital gain impact. If the stock rises to a price above \$60/share, the investor will have the position called away at \$60, forgoing any additional profit beyond this price. If the stock were to fall to a price below \$45/share, the investor would put the shares, resulting in a sale at \$45 and eliminating any downside exposure below this price.

Although these transactions offer many benefits, the greatest potential risk is the lost profit potential if and when the

underlying stock reaches a price far in excess of the call strike price, producing a cost of lost opportunity. Investors need to accept this potential outcome before execution, recall the original intent of the strategy, i.e., hedging against loss, and recognize that the increase in price is a more desirable outcome than a decline that would reduce the value of unhedged holdings.

EXCHANGE FUNDS FOR DIVERSIFICATION

Exchange funds are used to diversify a large, highly appreciated equity position while deferring capital gains recognition. Investors contribute securities from different sectors into a common pool. Participants “exchange” ownership of a single security (and the associated attributes) for a proportional share of this diversified pool and avoid the tax recognition that typically would accompany an outright sale. This specialized tax treatment is achieved primarily via Internal Revenue Code 352C, which requires a minimum exposure of 20 percent to non-liquid holdings (generally attained through real estate positions) to avoid constructive sale. These private placements are exempt from registration and avoid the public disclosure, and participation is not a public sale and does not require a Form 144 filing from affiliates, e.g., executive offices, directors, and 10-percent owners.

Here are some characteristics of these vehicles:

- Participation is subject to acceptance by the fund sponsor. Many funds look to produce overall portfolio diversification and may therefore limit or reject the contribution of securities that would produce an overweight in a sector or single security.
- The contribution of restricted securities held by executives is permissible but may be limited or discounted by the sponsor when accepted.
- The minimum contribution for these funds generally is \$1 million and the upfront placement fee is

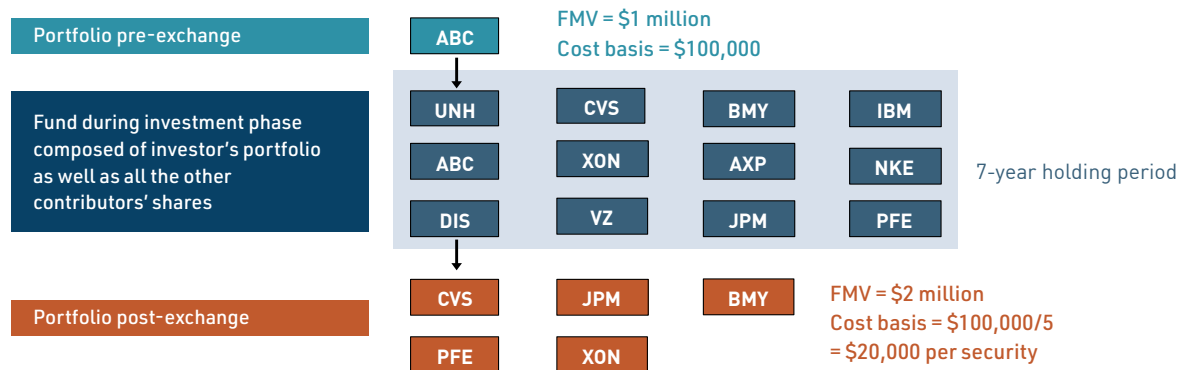
approximately 1 percent of the contributed amount. Although the fund charges administrative fees, there are no ongoing management fees because these vehicles are professionally selected but not actively managed.

- Liquidity is limited for the first seven years. Although earlier withdrawal may be allowed, it could produce adverse tax consequences including constructive receipt based on the date and price at the time of contribution.
- Some funds do permit minimal distributions to shareholders, generally from the dividends received from securities held inside the fund.
- Withdrawal requests from the fund can identify specific securities for distribution, but it's ultimately the choice of the fund sponsor to determine the exact make-up of the distribution. Fund sponsors often will use these withdrawal requests to rebalance the portfolio by distributing securities or sectors that have grown to overweight positions.
- The resulting cost basis of the received distribution is allocated on a pro-rata basis. The original cost basis of the contributed security is divided among each of the received securities based on the security's proportional weight in the total distribution amount.

Figure 2 may help to illustrate. An investor contributes \$1 million of ABC stock with an original cost basis of \$100,000 to an exchange fund. The investor's return is no longer determined by the performance of the contributed stock but by the performance of the entire fund. The investor holds this share of the fund for the required seven-year term, and the fund doubles in value, increasing the investor's position to \$2 million. The investor requests a withdrawal of the investment, receiving five different securities each worth \$400,000. The original cost basis of \$100,000 is divided equally among the five securities, so each would obtain a cost basis of \$20,000/security.

Figure
2

DIVERSIFICATION: EXCHANGE FUND



For illustrative purposes only.

Source: PIMCO. The stocks referenced are examples of securities of issuers PIMCO considers to be well known. References to specific issuers are not intended and should not be interpreted as recommendations to purchase, sell, or hold securities of those issuers. PIMCO products and strategies may or may not include the securities of the issuers referenced and, if such securities are included, no representation is being made that such securities will continue to be included. Individuals should consult with their own financial professionals to determine the most appropriate allocations for their financial situations, including their investment objectives, time frames, risk tolerance, savings, and other investments.

Table
5

DEDUCTION LIMITS FOR CHARITABLE GIFTS

Property	Public charity		Private foundation	
	Deduction	AGI limit	Deduction	AGI limit
Cash	FMV	60%	FMV	30%
Ordinary income property	Cost basis	50%	Cost basis	30%
Long-term capital gain property	FMV	30%	Cost basis/FMV**	20%
Personal property—same use	FMV	30%	Cost basis	20%
Personal property—not same use	Cost basis	50%	Cost basis	20%

*Can elect cost basis deduction with 50-percent AGI limit.

**Cost basis if non-operating, FMV if operating.

Charitable contributions that are not deductible due to AGI limitations can be carried forward for up to five years.

Source: Internal Revenue Service

USING CONCENTRATED POSITIONS TO FULFILL CHARITABLE INTENT

Wealthy investors continue to share their success philanthropically, with charitable donations continuing to reach all-time annual highs in the United States. Using low-basis, highly concentrated assets to fund charitable giving can provide numerous advantages including a reduction in concentration risk, a potential income tax deduction, avoidance of capital gains tax, and a reduction in a taxable estate.

Charitable giving remains one of the few available itemized deductions under Schedule A, along with state and local taxes, mortgage interest, and medical expenses above 7.5 percent of adjusted gross income (AGI). Giving long-term,

appreciated property to a public charity, including most 501(c)(3) organizations, provides a deduction of the full fair market value (FMV), subject to a maximum deduction of 30 percent of AGI in a given tax year (see table 5). Any contribution in excess of this limit would be carried forward for a period of up to five additional years. For example, a contribution of \$250,000 of long-term property to a public charity made by an investor with AGI of \$700,000 would produce a current deduction of \$210,000 (30 percent of \$700,000) with the remaining \$40,000 carried forward.

In addition to a potential income tax deduction, using appreciated property to fund charitable giving allows the investor to avoid the capital gains tax liability that would accompany an outright sale

(see table 6). Consider an investor with a long position of \$100,000 in appreciated stock with a cost basis of \$20,000. A sale would produce capital gains exposure of \$80,000 and a tax liability of \$19,040, leaving approximately \$80,960 available for donation and a tax benefit of \$29,955. Giving the \$100,000 property directly to charity avoids the associated capital gains liability, affording a full \$100,000 charitable donation and a tax benefit of \$37,000. The net benefits are an incremental gift to charity of more than \$19,000 and an additional tax deduction to the donor of more than \$7,000.

Donors can make direct gifts to charity or instead leverage the benefits of donor-advised funds (DAFs), which provide the opportunity to complete a

Table
6

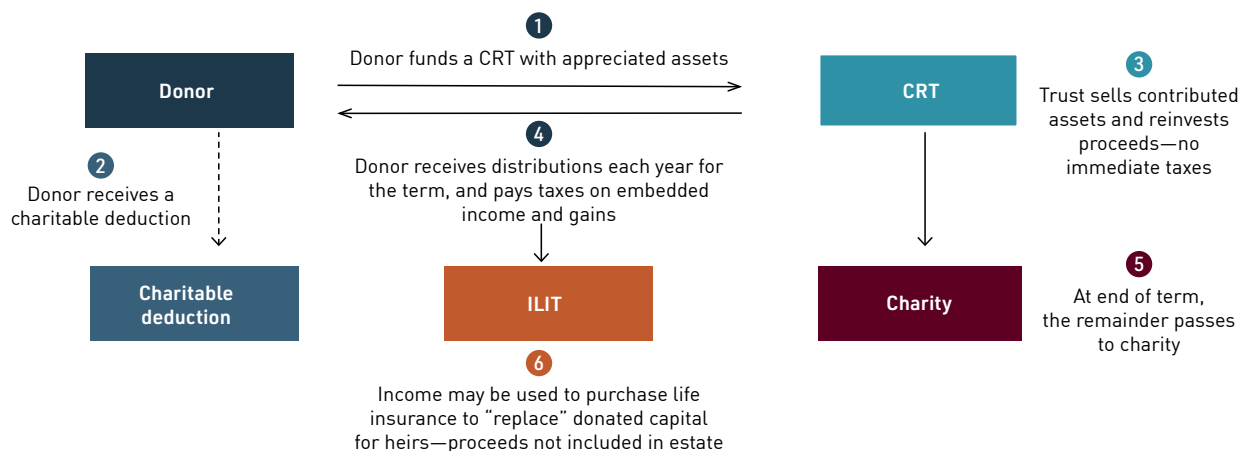
WEALTH TRANSFER: GIVING APPRECIATED PROPERTY TO REDUCE CAPITAL GAINS LIABILITY

Sell asset, contribute cash		Contribute appreciated asset	
Capital asset FMV	\$100,000	Capital asset FMV	\$100,000
Cost basis	\$20,000	Cost basis	\$20,000
Realized capital gain	\$80,000	Realized capital gain	\$0
Capital gain tax @23.8%	\$19,040	Capital gain tax @23.8	\$0
Charitable contribution	\$80,960	Charitable contribution	\$100,000
Value of deduction @ 37.0%	\$29,955	Value of deduction @ 37.0%	\$37,000
Net benefit to charity: \$19,040			
Net benefit to donor: \$7,045			

FMV = fair market value
For illustrative purposes only.
Source: PIMCO

Figure
3

WEALTH TRANSFER: CHARITABLE GIVING



For illustrative purposes only.
Source: PIMCO

contribution (and associated tax deduction) in the current taxable year that allow grants to charity at later dates. DAFs also provide the opportunity to bunch a donor's giving activities into a single calendar year in order to exceed the standard deduction (currently \$29,200 in 2024 for joint filers) and produce the maximum tax benefit. Most DAFs offer relatively low minimum contribution requirements, varied investment options, and flexible grant-making to provide a significant convenience in executing a charitable program.

A charitable remainder trust (CRT) may be a viable tool for investors with concentrated stock positions, because CRTs allow for the sale of a concentrated position to improve diversification and

avoid immediate tax consequences. Here's how CRTs work (see figure 3):

- The donor establishes a CRT for a specified term (either a number of years or life of income beneficiary).
- The donor funds the trust with the appreciated property and receives a current income tax deduction, generally discounted from the full value of the property.
- The trustee sells the appreciated property and reinvests in a diversified portfolio, deferring the capital gains recognition.
- The donor receives annual distributions from the trust, either a fixed dollar amount through a charitable remainder annuity trust or a fixed percentage of trust assets through a

charitable remainder unitrust. The donor is responsible for the taxes on these distributions.

The remainder passes to the charity at the end of the term.

The benefits of a CRT include the following:

- Fulfillment of charitable intent
- Diversification of a concentrated position
- An immediate income tax deduction
- Beneficial capital gains treatment
- An income stream to the donor for a specified term
- Removal of the asset from the donor's taxable estate

Continued on page 54 →

MANAGING CONCENTRATION RISK

*Continued from page 36***CONCLUSION**

Investors with concentrated positions may be accepting additional risks that they are unaware of or not being compensated to assume. These investors face a number of financial and emotional obstacles that need to be addressed in the development of an effective strategy with their financial advisors. The identification of an individual's primary objectives, including liquidity, tax minimization, diversification, hedging, or wealth transfer, can help in targeting potential solutions. 🟡

John A. Nersesian, CFP®, CIMA®, CPWA®, is head of advisor education at PIMCO, a former board member of the Investments & Wealth Institute, and an instructor for the Institute's Certified Private Wealth Advisor® and Certified Investment Management Analyst® education programs. Contact him at john.nersesian@pimco.com.

PIMCO does not provide legal or tax advice. Please consult your tax and/or legal counsel for specific tax or legal questions and concerns. The discussion herein is general in nature and is provided for informational purposes only. There is no guarantee as to its accuracy or completeness. Any tax statements contained herein are not intended or written to be used, and cannot be relied upon or used for the purpose of avoiding penalties imposed by the Internal Revenue Service or state and local tax authorities. Individuals should consult their own legal and tax counsel as to matters discussed herein and before entering into any estate planning, trust, investment, retirement, or insurance arrangement.

PIMCO as a general matter provides services to qualified institutions, financial intermediaries and institutional investors. Individual investors should contact their own financial professional to determine the most appropriate investment options for their financial situation. This material contains the current opinions of the manager and such opinions are subject to change without notice. This material has been distributed for informational purposes only and should not be considered as investment advice or a recommendation of any particular security, strategy or investment product. Information contained herein has been obtained from sources believed to be reliable, but not guaranteed. No part of this material may be reproduced in any form, or referred to in any other publication, without express written permission. PIMCO is a trademark of Allianz Asset Management of America LLC in the United States and throughout the world.

CMR2024-0509-3571764

CONTINUING EDUCATION

To take the CE quiz online, go to
www.investmentsandwealth.org/IWMquiz

Are Your Clients Missing a ‘Free Lunch’?

AN ADVISOR'S GUIDE TO INVESTING IN ALTERNATIVES

By Steve Dean, CFA®, and Lance Lehman, CFP®, CIMA®, CPWA®

Of all the decisions advisors and their clients make in formulating an investment program, asset allocation is arguably the key determinant to its success. One often-quoted study found that approximately 90 percent of the variation in returns of an investment portfolio over time is the result of asset allocation policy choices.¹ Given that level of importance, the investment industry has emphasized developing approaches to asset allocation to help advisors and their clients make better decisions.

A BRIEF HISTORY OF ASSET ALLOCATION

Several approaches are commonly used to decide the strategic allocation to various asset classes: asset-focused, liability-driven, endowment, and goals-based.² Regardless of the approach used, expected asset returns, risks, correlations, and a realistic assessment of the client's time horizon remain the core inputs.

ASSET-BASED ALLOCATION AND MEAN-VARIANCE OPTIMIZATION

Mean-variance optimization (MVO) is a well-established theoretical approach to asset allocation that seeks to maximize the expected return of a portfolio of investments per unit of risk, measured by the variance or riskiness of that investment.³ The various combinations of assets that deliver the highest expected return for a given level of risk are called the “efficient frontier.”

MVO is a fundamental part of modern portfolio theory (MPT), which has been

studied and deployed for decades and is based on precise expected return and risk inputs.⁴ However, actual investment results often differ from those predicted, and investor behavior may challenge sticking to a plan driven by mean variance. As any advisor working with clients can attest, clients often make irrational investment choices that contradict the mean-variance framework—especially during economic and capital market turmoil.

LIABILITY-DRIVEN APPROACH

The liability-driven approach focuses on the investor's projected expenses to determine an asset allocation that aligns with the payment of their liabilities. Defined benefit plans, such as pensions, often employ this approach.

Many alternative investments offer a regular schedule of income distributions that can be helpful for funding expenses. Still others have longer horizon lock-up periods where access to the funds may not be allowed or may be penalized. Even when withdrawals are permitted

during liquidity windows, the alternative investment sponsor often can limit the amount of withdrawals. These constraints add an element of liquidity risk that the advisor and client must consider when planning for future cash-flow needs.

ENDOWMENT APPROACH

Today's university endowment funds often rely heavily on alternative investments; they are inspired by the approach of Yale University's endowment fund under the leadership of the late David Swensen, who served as its chief investment officer during 1985-2021.⁵ Swensen's insight was understanding that the investment time horizon for a perpetual entity such as an endowment is essentially infinite. This understanding allowed these organizations to invest a large share of their assets in relatively illiquid investments to capture the return premium that often comes with illiquidity. During the past 20 years, Yale's endowment has earned 10.9 percent annually, about 3 percent per year ahead of university endowments generally.⁶

KEY TAKEAWAYS

- Asset allocation remains an essential driver of client wealth outcomes—and there are several distinct allocation approaches for advisors to consider.
- Beyond traditional mean-variance optimization, we have goals-based and endowment-oriented approaches, in which alternative investments become more relevant to certain investor types.
- An expanding range of alternative investment options adds to the ability to enhance returns, control risks, and increase the possible “free lunch” from diversification.
- The increased democratization and adoption of alternative investments warrant ongoing evaluation of the new opportunities and risks.

Endowments and many other institutional investors have very long or infinite time horizons, but individuals do not have the same luxury. Swensen mentioned that he wouldn't recommend private investments for most individual investors due to the lack of liquidity and resources required to evaluate them.⁷ However, for some wealthy individuals or family offices, extending the time horizon to match the heirs' may be appropriate and allow for a greater allocation to less-liquid alternative investments.

GOALS-BASED APPROACH

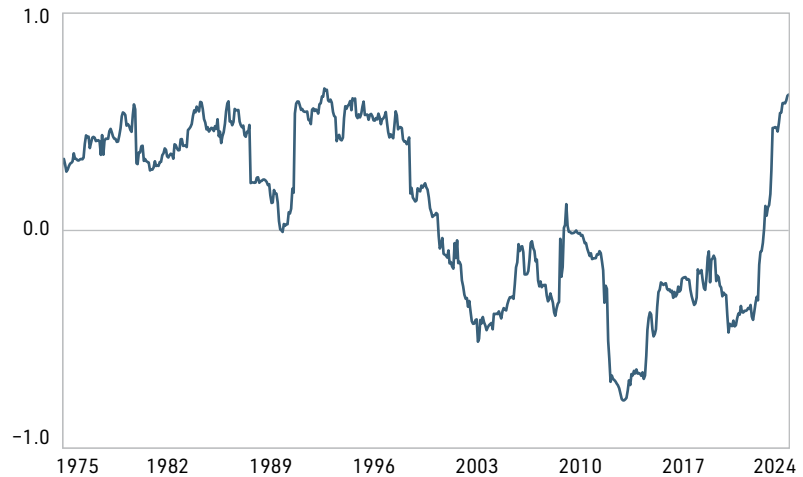
A goals-based approach involves segmenting specific assets into portfolio buckets, each with distinct goals. These goals have different cash-flow requirements, time horizons, return objectives, and risk tolerances that make certain assets well-suited to achieving them.⁸ For each goal, portfolio buckets can be formed using different types of assets. For example, a bucket for short-term needs likely would hold highly liquid and low-risk assets. Although some alternatives offer robust current income streams and low volatility appropriate for the shorter term, alternatives typically are best suited to longer-term goals that are not critical to maintaining a client's current lifestyle. Still, advisors should carefully consider the uncertainty around the ability to withdraw funds before deciding where alternative investments belong.

A NEW LANDSCAPE OF ALTERNATIVE INVESTMENT OPTIONS

Regardless of the approach—maximizing return-to-risk trade-offs or aiming for specific portfolio outcomes, the key factors driving the results are the inputs, including expected returns, risks, and correlations of the universe of assets available to the investor. Although the anticipated characteristics for individual assets are hard to predict, more asset class choices can provide increased opportunities to enhance returns at lower risks.

Figure 1

ROLLING THREE-YEAR CORRELATION BETWEEN U.S. STOCKS AND BONDS



Source: Morningstar Direct. Ibbotson Stocks, Bonds, Bills, and Inflation. U.S. stocks are Ibbotson® S&P 500 U.S. Large Cap Stock index. U.S. bonds are Ibbotson® SBBI® U.S. Long-term (20-year) Government Bonds index.

With more than 18,000 private placement funds and more than 9,000 hedge funds, alternative investments are an area where asset choices have grown significantly.⁹ These investments offer new and unique sources of returns with potentially low or negative correlation with traditional asset classes. Incorporating assets with positive expected returns that do not move similarly to the other assets in a portfolio can help reduce overall variability in investment portfolio returns.

CONSIDERATIONS IN ALLOCATING TO ALTERNATIVE INVESTMENTS

Expanding the asset classes considered to include alternative investments allows expanded opportunities to achieve a client's goals. Of course, with greater choice comes greater responsibility. Estimating expected returns and risks for alternatives can be more challenging than for public market assets because of the lack of consistently tracked historical returns, risks, and other characteristics. Notably, alternative investments should not be viewed as a single category because they contain many different types of investments, each with unique expected returns, risks, and correlations with public asset classes. Yet, alternatives' abilities to enhance a portfolio's diversification

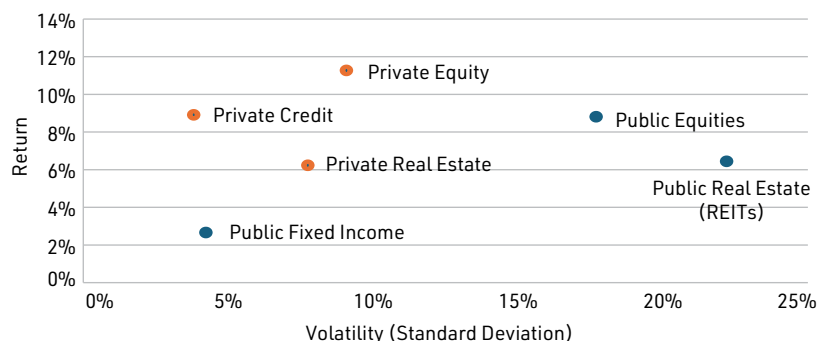
warrant their consideration when recommending them for a client's portfolio.

Correlation measures the relationship between the returns of two assets during a given time frame, ranging from +1 (perfectly positively correlated) to -1 (perfectly negatively correlated). Recognizing that correlations between asset classes are not fixed and can deviate from long-term expectations, sometimes for extended periods, is essential. This can reduce the diversification benefits the investor was counting on, often when they are needed most. For example, figure 1 shows how the correlation between the returns for U.S. stocks and bonds has been positive for long stretches during the past 50 years when many asset allocation frameworks assumed a negative relationship. Arguably, alongside increased accessibility, the growing interest in alternative investments can be attributed partly to a rising correlation between the returns of traditional assets—specifically stocks and bonds—in recent years.

As Nobel laureate Harry Markowitz is reported to have said, diversification may be the only "free lunch in investing," but advisors understand that client emotions can create challenges in sticking with a well-diversified investment

Figure 2

15-YEAR ANNUALIZED RETURN AND RISK BY ASSET CLASS, 2008–2022



Source: Cliffwater, Evestment, Preqin, NAREIT. Time period is January 1, 2008–December 30, 2022, most recent data available. Equities: S&P 500 Index, Fixed Income: Bloomberg U.S. Aggregate Bond Index, Public Real Estate: NAREIT Index, Private Real Estate: NCREIF Open-End Diversified Core Equity Fund Index (NFI-ODCE), Private Equity: Preqin Capital Quarterly Index, Private Credit: Cliffwater Direct Lending Index. Standard deviation is a measure of price variability (risk). Past performance is not a guarantee of future results.

frame considered—resulting in different asset allocation conclusions.

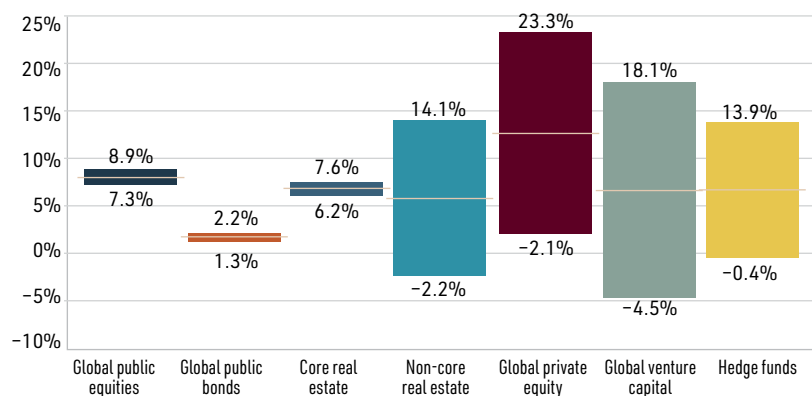
A recent Morningstar study showed that compared with public market assets, the correlations across private investments differ dramatically from quarter to quarter.¹¹ For example, they found that during the past decade, the rolling three-year correlation of private equity with public stocks was a relatively low 0.69 at the end of 2021 but had previously spiked to 0.93 during the 2020 pandemic stress period. For private debt, Morningstar reported a negative correlation with public equities in 2019 but a much higher positive correlation (ranging from 0.61 to 0.77) since that time. Basing an asset allocation decision on an expected correlation that differs from what occurs during the investor's time horizon can yield unexpected results.

Figure 2 shows the historical returns and volatility of three broad alternative asset classes: private equity, private credit, and private real estate, compared with their public counterparts. During 2008–2022, the alternative asset classes do show meaningfully different return and risk profiles than public stocks and bonds: Private equity delivered higher returns with substantially lower volatility than public equities; private credit delivered substantially higher returns with slightly less volatility than traditional fixed income; and private real estate showed similar returns with far less volatility than public real estate.¹²

Historically, private investments have a significantly wider range of returns than publicly traded investments such as stocks and bonds.¹³ Given the wider return dispersion, the alternative investment manager selection is more crucial than in public investments (see figure 3). As a result, it can be more likely for an investor to be disappointed due to suboptimal manager selection than it might be when choosing investments in public assets. Some advisor firms have dedicated research staff, and third-party alternative platforms often can provide

Figure 3

PUBLIC AND PRIVATE MANAGER RETURN DISPERSIONS: 75TH-PERCENTILE/25TH-PERCENTILE RETURNS OVER A 10-YEAR WINDOW*



Sources: Burgiss, NCREIF, Morningstar, PivotalPath, J.P. Morgan Asset Management. Global equities (large cap) and global bonds dispersion are based on the world large stock and world bond categories, respectively. *Manager dispersion is based on the annual returns for U.S. Fund Global Equities, U.S. Fund Global Bonds, Hedge Funds, and U.S. Core Real Estate over a 10-year period ending Q3 2023. Non-core Real Estate, Global Private Equity, and Global Venture Capital are represented by the 10-year horizon internal rate of return (IRR) ending Q2 2023. U.S. Fund Global Equities and Bonds are comprised of U.S.-domiciled mutual funds and exchange-traded funds. Data are based on availability as of November 30, 2023. Past performance is not a guarantee of future results. It is not possible to invest in an index.

plan.¹⁰ The low or negative correlations of alternatives with traditional stocks and bonds offer a compelling opportunity to diversify an investment portfolio and potentially improve portfolio outcomes. Alternatives may be part of that free lunch, but they have more complicated characteristics than traditional public investments that advisors and clients must consider alongside the benefits they can contribute to a portfolio.

RETURNS, RISKS, AND CORRELATIONS

A significant benefit to investing in alternative assets is providing investors access to parts of the capital markets and economy that the public markets do not. However, that is only valuable if the expected returns, risks, and correlations improve upon those readily found in public markets. These metrics vary significantly depending on the historical period used and the time

fully vetted and approved alternative managers to help reduce the risks of poor manager selection.

A 2023 study from Verdad concluded that the higher performance dispersion in alternatives may be overstated. It found that much of the dispersion in private equity funds compared with public equity funds comes not from manager skill (or lack thereof) but rather from differences in the composition of the respective portfolios.¹⁴ Private equity funds tend to be more concentrated, focused on micro-caps, and hold more highly leveraged companies than the average public equity mutual fund. This doesn't mean that private equity funds do not have a large dispersion in returns (as we have seen, they do). Instead, it means they might not be any wider than public equity funds with similar characteristics.

In public markets, different asset classes that historically have low or negative correlations tend to move together during periods of financial crisis. Hence the saying, "In a time of crisis, all correlations go to 1." This result is unfortunate, given that diversification benefits are most valuable to the investor during periods of extreme volatility.

For example, during the Great Financial Crisis (GFC) of 2007–2009 and, most recently, the 2022 bear market, portfolios invested only in publicly traded markets experienced a significant loss of value, exacerbated by an unusual (relative to history) positive correlation between stocks and bonds. A 60/40 public stock/bond portfolio returned –28.6 percent between October 2007 and February 2009 and –22.3 percent during 2022's bear market. At the start of the GFC, the three-year correlation between stocks and bonds was –0.25 but rose to +0.15 by the end of the period. Notably worse, during the 2022 bear market, the three-year correlation in January 2022 was –0.33 and increased to +0.45 by the market trough in October 2022.

Figure
4

CORRELATION MATRIX ACROSS PUBLIC AND PRIVATE ASSETS

	Public Fixed Income		Public Equity		Public Real Estate		Private Equity		Private Real Estate		Private Credit	
Public Fixed Income	1											
Public Equity	0.4	1										
Public Real Estate (REITs)	0.5	0.8	1									
Private Equity	0.3	0.8	0.7	1								
Private Real Estate	–0.3	0.00	–0.3	0.3	1							
Private Credit	0.1	0.7	0.6	0.8	0.2	1						

Sources: J.P. Morgan Asset Management Guide to Alternatives, Q2 2024. Bloomberg, Burgiss, Cliffwater, FTSE, HFRI, MSCI, NCREIF, J.P. Morgan Asset Management. Private Equity is the time-weighted return from Burgiss. Public Equities: MSCI AC World Index. Public Fixed Income: Bloomberg Global Aggregate Index. Public Real Estate (REITs): FTSE EPRA NAREIT Global REITs Index. Private Real Estate: NCREIF Property Index—Open End Diversified Core Equity component. Private Credit: Cliffwater Direct Lending Index. All correlation coefficients are calculated based on quarterly total return data for the period June 30, 2008–December 31, 2023.

Private markets tend to show less correlation with public markets even during times of financial stress because they invest in unique parts of the market, and, importantly, less-frequent valuations allow them to avoid some of the shorter-term market's gyrations (see figure 4).

TIME HORIZON

Another key differentiating aspect of alternatives that contributes to their low correlation with public market assets is the generally longer investment time horizon.

Many institutional investors, such as pensions, charities, sovereign wealth funds, etc., often assume a time horizon of perpetuity when deciding asset allocations to support their pensioners, grantees, and donees. Like endowments, institutional investors' recognition of effectively infinite time horizons led them to appreciate that they potentially were missing opportunities to improve their portfolios by not allocating to private investments.

This viewpoint is widespread today, with institutional investors' portfolios averaging 23 percent allocated to alternative investments.¹⁵ Endowments' characteristics of low liquidity needs and perpetual

time horizons afford them the opportunity for increased exposure to alternatives—upward of 50 percent.¹⁶

Individual investors have a finite time horizon—typically their lifespans. Their portfolios often are called upon to provide for cash-flow needs throughout their lifetimes (or, for couples, the longer of two lifespans). Consequently, individuals and their wealth advisors must incorporate and continually review their mortality into portfolio design—especially when deciding the appropriate amount to allocate to less-liquid alternative investments.

If, however, generational wealth transfer of the portfolio assets is the primary goal, as it is for many ultra-high-net-worth investors with the use of dynasty trusts, clearly delineating and documenting the differences between the client's expected lifespan and the portfolio's time horizon is a must. In this case, a longer time horizon may warrant a higher allocation to alternative investments.

LIQUIDITY CONSTRAINTS

Cash-flow needs over the investor's time horizon also are essential when considering alternatives. Many institutional

Table
1

INTERVAL FUNDS VS. OTHER FUNDS

Structure	Leverage	Liquidity	Net Asset Value (NAV) Liquidity	Liquidity Considerations	Tax Treatment
Private Fund	Yes	Flexible	Yes	Minimum lock-up periods and restrictions	K-1
Interval Fund	Yes	Quarterly, bi-annually, or annually	Yes	Liquid assets to meet periodic repurchases (5-25%)	1099
Closed-End Fund	Yes	Secondary market	No	Less liquid assets, secondary market liquidity	1099
Open-End Fund	Limited	Daily	Yes	More liquid assets to meet daily redemptions	1099

Source: Nuveen, *Investing in Interval Funds*.

investors have resources that allow them to avoid making withdrawals from liquidity-constrained alternative investments, but individual investors may not have that luxury. For many, the predictability of making withdrawals from a portfolio is a critical part of a financial plan that may limit the amount allocated to alternatives. In addition, some private equity and venture capital funds have an initial investment followed by additional periodic investments, or capital calls, that must be factored into the cash-flow needs assessment.

In response to the challenges of illiquidity, alternative investment providers have developed several types of investment vehicles with more-frequent liquidity opportunities (see table 1). Interval and tender-offer funds offer liquidity (the ability to sell) at predetermined intervals—typically quarterly, bi-annually, or annually.¹⁷ These funds will repurchase a limited number of outstanding shares; the minimum is 5 percent, but it can be as much as 25 percent of fund assets.¹⁸ Importantly, an investor is not guaranteed to be able to sell all of the investment if the fund receives redemption requests above the mandated 5 percent of fund assets. Still, this “liquidity valve” feature distinguishes interval and tender-offer funds from many alternatives. This liquidity, as well as low minimum investment requirements, e.g., \$1,000, are vital factors in advisors’ increasing use of interval funds in client portfolios.

FEES

Alternative investments often have higher and more complicated fees than

public assets. Typically, the fees include a base management fee plus a performance or incentive fee. The management fees can range up to 2.5 percent, and incentive fees tend to vary between 10 percent and 20 percent of the investment’s return above a specified level, known as the “hurdle rate.” Some alternative funds also add fees to cover operational expenses that the manager bears in running the fund, e.g., legal and audit costs. These typically are fixed costs, so they will be a higher percentage for smaller funds that can’t spread them over a larger asset base.

REPORTING CHALLENGES

A common frustration with alternative investments is limited performance reporting and the challenge of gathering data on the underlying assets. Unlike public investments, no regulatory body dictates reporting standards for alternatives. Most funds produce and distribute regular updates, but because each fund decides what and when it will report, many illiquid strategies have relatively long lags in reporting. Consistent reporting can be easier to get with funds held by custodians, which typically have processes to source the necessary information from the funds, especially when the strategy is held in many client accounts.

TAX CONSIDERATIONS

Taxes can impact the relative attractiveness of many alternatives significantly. Advisors and their clients should understand the types of income the alternative investment generates and the kind of tax reporting the investor will receive, a 1099 or a K-1.

Some alternative investments generate unrelated business taxable income (UBTI) or unrelated debt-financed income (UDFI). UBTI is income earned by a tax-exempt entity that is unrelated to the entity’s tax-exempt purpose. Locating UBTI- or UDFI-generating alternative investments within an individual retirement account (IRA) or Roth IRA can create unwanted complications, stress, and costs for the investor. For example, when an IRA or Roth IRA invests in a master limited partnership or limited partnership, it becomes a partner, which is not considered within the exempt purpose of the IRA. Because most retirement accounts seek to mitigate (if not avoid) taxes, advisors will want to verify whether such a fund might generate UBTI and, if so, whether the fund manager has an offshore vehicle that may shield the investor from such income.

That said, allowances in the tax code can help lower the tax burden for some alternative investments. For example, a real estate investment trust vehicle allows distributions to be taxed at typically lower capital gains rates rather than as ordinary income. Some oil and gas investments create depletion or intangible drilling cost deductions that can offset current income. Other alternative investments are available for tax-mitigation purposes, including real estate investments that allow immediate write-offs of capital gains from the sale of appreciated property (1031 exchanges) or investments in qualified opportunity zones that permit similar write-offs from current income.

Asset location is another tactic to mitigate tax costs by holding different asset

classes in various account types. Allocating different alternative investments in taxable vehicles (joint tenants with right of survivorship, revocable trusts, etc.), in tax-deferred vehicles, (IRA, Keough plan, health savings accounts, etc.), or in tax-free Roth IRAs may improve after-tax returns and reduce tax-filing burdens.

WHO QUALIFIES TO INVEST IN ALTERNATIVES

Many institutional investors, family offices, and ultra-high-net-worth investors (typically defined as having more than \$30 million of investable assets) have been deploying capital to alternatives for decades. The combination of ample investable assets and considerably longer time horizons make alternatives a natural fit. The Securities and Exchange Commission (SEC) distinguishes two types of investors: accredited investors and qualified purchasers.

Accredited investors are:¹⁹

- Investment professionals, partners of companies selling particular securities, and select employees of private funds.
- Individuals with a net worth greater than \$1 million, excluding primary residence (individually or with spouse or partner).
- Annual income of more than \$200,000 (individually) or \$300,000 (with spouse or partner) in the prior two years with reasonable expectations for the same for the current year.
- Any client of a family office that qualifies as an accredited investor.

Qualified purchasers include:²⁰

- An individual, family, or estate planning entity with more than \$5 million net worth, excluding primary residence.
- An investment manager with more than \$25 million in assets under management.
- A qualified institutional buyer under Rule 144A with more than \$100 million in investments.

Investors who do not meet these criteria can still access alternative investment strategies through interval funds, tender-offer funds, and business development companies (BDCs). Although still small relative to mutual funds and exchange-traded funds, the number of these alternative investment funds has grown rapidly. At the close of 2023, there were 92 interval funds (with assets of \$77 billion), 98 tender-offer funds (\$60 billion), and 132 BDCs (\$159 billion)—totaling 322 funds representing \$296 billion in assets—double the \$139 billion total at 2020's year-end.²¹ This increases the opportunity set of assets for an expanded audience of investors, but it also presents risks if not adequately considered.

The SEC authorized interval funds more than 30 years ago, but these funds have proliferated only recently.²² Interval funds are closed-end funds that offer shares continuously at a daily net asset value (NAV). The funds allow investors to sell shares at specified periods (often quarterly). There are rules governing the minimum amount the funds must make available for redemption at each interval, but the fund company can limit redemptions. Thus, although there is the potential for full liquidity at each interval period, full redemption is not guaranteed. Interval funds are now available across several alternative asset categories and often have significantly lower minimums than traditional alternatives.

Tender-offer funds are like interval funds, continuously offering shares at a daily NAV. Unlike interval funds, however, the repurchase of tender-offer shares is not on a recurring schedule nor for a set percentage or number of shares. Redemption parameters are at the fund's discretion, and the tender-offer fund may hold "tender offers" ranging from quarterly to once over several years. The latest data shows that half of tender-offer funds held redemptions four times during the year, only 11 percent held between one and three repurchases during the year, and the remaining

39 percent did not hold any tender offers during the year.²³ Tender-offer funds also tend to have higher initial investment minimums than interval funds.

Business development companies are SEC-registered, closed-end funds that typically invest in the debt or equity of small to medium-sized public and private companies. BDCs must invest at least 70 percent of their assets in U.S. companies with less than \$250 million in market value.²⁴ They often provide ways for smaller, nonaccredited investors to access private equity and venture capital investment opportunities.²⁵ They may be listed on a stock exchange or unlisted but offer more liquidity than many alternative investments. Still, BDCs carry risks, including illiquid underlying holdings and greater use of leverage that can potentially magnify losses.

WHO SHOULD CONSIDER INVESTING IN ALTERNATIVES

Similar to traditional assets such as stocks, bonds, and cash, alternatives are another tool in the investor's toolbox. As a first step in considering alternative investments, it is paramount for investors to have an introspective assessment of their understanding of the illiquidity (including redemption criteria), fees, taxes, and overall complexity of any alternative. Second, investors must determine their appetite and comfort with exposure to the alternatives' attributes. Having one without the other can be disastrous for the investor. Prime candidates to consider investing in alternatives include investors with the following:

- Sufficient investable assets (\$250,000 or more)
- Ample liquid emergency funds, e.g., a minimum of 6–12 months of living expenses
- Long-term time horizon, e.g., 10-plus years
- Commitment to a portfolio strategy over sufficient periods
- An understanding of the drivers of the alternative's returns and risks

Table
2

ATTRIBUTES OF ALTERNATIVE INVESTMENTS

	Private Equity	Private Credit	Real Assets	Hedge Funds
	• Generalist • Private Equity • Buyout • Venture Capital • Growth Equity • Secondaries	• Direct Lending • Distressed Debt • Collateralized Loan Obligations • Mezzanine Debt • Opportunistic Credit	• Real Estate • Transportation • Commodities • Infrastructure • Fine Art/Collectibles	• Equity Hedge • Relative Value • Options-Based • Event-Driven • Macro
Portfolio Diversification	X	X	X	X
Volatility Mitigation			X	X
Current Yield		X	X	
Inflation Mitigation		X	X	X
Return Enhancement	X	X		

Source: Authors. For illustrative purposes only.

- Reasonable expectations of the likely yield and return potential and diversification benefits from adding alternative investments

WHO SHOULD AVOID INVESTING IN ALTERNATIVES

Despite their many potential benefits and the industry's notably increased promotion in the past few years, alternative investments are not appropriate for every investor. Just because investors can invest in alternatives doesn't mean they should. Prime candidates to avoid investing in alternatives include investors with the following:

- Modest investable assets (less than \$250,000)
- Constrained liquid emergency funds, e.g., less than six months of living expenses
- Short-term time horizon, e.g., less than five years
- Lack of interest or the time to understand the attributes of the alternative investment
- Noncommittal to a portfolio strategy over sufficient periods
- Unrealistic expectations for return or yield and liquidity

In addition to these investor characteristics, an honest assessment of whether other attributes of alternatives, e.g., higher fees, more challenging monitoring and reporting, and potential tax implications, are worth facing. The advisor and client may conclude that

these complications make alternatives inappropriate despite some expected return and risk benefits.

BEST PRACTICES FOR ALLOCATING TO ALTERNATIVES

Although the nuances and personalization differ from investor to investor, some overarching parameters can be used as guidelines for building a portfolio.

- Many individual investors' liquidity needs are far less than they perceive. Lower liquidity needs may allow for a longer investment time horizon and, as a result, a greater potential allocation to alternative investments.
- Narrowing the list of options is essential. Evaluating and successfully distilling the growing menu of alternative investments to an actionable roster requires a deep understanding of the private capital markets and an ongoing commitment by the advisor and investor to research the chosen alternatives.
- Understanding the potential tax implications of the alternative can dictate where to hold the investment or whether to hold it at all.

If the advisor and client determine that adding alternative investments to the mix is prudent, the question becomes, what is the optimal allocation to alternatives? The answer, of course, depends on myriad criteria that warrant a thorough analysis and understanding of the attributes outlined in table 2.

Still, advisors and clients can seek guidance on exposure to alternatives in general and the mix of private asset classes, specifically from other alternative investors such as endowments or ultra-high-net-worth individuals. For example, Cambridge Associates recently reported that a typical 60/40 endowment portfolio had 18.9 percent in private equity, 15.9 percent in hedge funds, 6 percent in real assets, and 1.8 percent dedicated to private credit, for a total allocation to alternatives of 42.6 percent (see figure 5).²⁶

Private bank clients of J. P. Morgan recently indicated a range of 15–30 percent of their overall portfolio is dedicated to alternatives. Meanwhile, the bank's ultra-affluent clients with multi-generational planning efforts commonly allocate 50 percent or more to alternatives—akin to large endowment investors.²⁷

These examples can be helpful; however, the amount private investors should allocate to alternative investments will vary depending on the specific situation, time horizon, and prioritized liquidity needs.

Investors with typical non-discretionary cash-flow demands for their portfolios, e.g., 4–6 percent per annum, should limit the exposure to alternatives to 20–30 percent of the overall portfolio. Such exposure diversified across private equity (growth), private credit, private real estate (yield), hedge funds, and real

assets (inflation mitigation) can provide sufficient return and diversification complements to the portfolio's public investments.

Investors with relatively low budgetary requirements for their portfolios—e.g., 1–3 percent per annum, or discretionary cash-flow needs—should target a similar range dedicated to alternatives. The allocation, however, should focus on heavier exposure to private equity, hedge funds, and commodities, with less emphasis on yield-generating assets such as private credit or private real estate.

Investors with no expected cash-flow demands for their portfolios should consider allocating up to 30–50 percent of the overall portfolio to alternatives, with a focus on private equity, hedge funds, and commodities, to maximize the expected returns for the given level of risks.

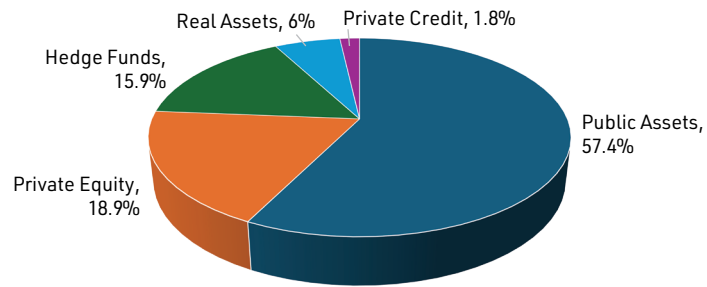
SUMMARY

The landscape of investable assets available to investors has changed dramatically in recent decades. Alternative investments covering a comprehensive range of private asset classes are now accessible in various fund structures. Despite this democratization of alternatives, their widespread inclusion in many client portfolios remains well below what might be suggested in various asset allocation approaches. The gradual uptake is reminiscent of how exchange-traded funds initially met resistance from advisors and investors until their advantages over mutual funds were recognized.²⁸ As the investment industry innovates new and better products, alternatives likely will become more commonplace in investors' portfolios in the coming years.

Alternative investments can provide a range of potential benefits to an investor's portfolio. When applied correctly, they can exemplify the "free lunch" available through diversification. With ongoing high and positive correlations between stocks and bonds, prudent exposure to alternatives—private credit,

Figure 5

TYPICAL 60-PERCENT EQUITY / 40-PERCENT BOND ENDOWMENT MODEL



Source: Cambridge Associates.

private equity, private real estate, commodities, and hedge funds—can potentially bring greater returns with lower risk to a diversified portfolio of only public investments.

Still, free lunches are rare, and investors and their advisors are wise to consider all the characteristics of alternative investments. Alternatives are not appropriate tools for all investors. Not all investors are a good fit for alternatives. Further, not all alternatives are created equal. Advisors and their clients must understand the unique illiquidity, fees, time horizon, tax implications, overall complexity, and manager selection of alternative investments. They are markedly different and require a more nuanced understanding than traditional public investments. Investors should assess their risk appetite and comfort with exposure to these attributes.

Focusing solely on the expected returns and risks while discounting the other characteristics can lead to disappointment. On the other hand, a well-planned allocation to alternatives that considers all aspects can provide a powerful tool for investors to reach their financial goals. ●

Steve Dean, CFA®, is chief investment officer at Compound Planning based in the San Francisco Bay area. He earned a BA in economics from Hamilton College and an MBA from the University of California, Berkeley. Contact him at steve.dean@compoundplanning.com.

Lance Lehman, CFP®, CIMA®, CPWA®, is a senior wealth advisor at Compound Planning based in Tampa, FL. He earned a BA in psychology and an MBA from Alfred University. Contact him at lance.lehman@compoundplanning.com.

ENDNOTES

1. "Principles of Asset Allocation," CFA Institute, <https://www.cfainstitute.org/en/membership/professional-development/refresher-readings/principles-asset-allocation>.
2. Ibid.
3. "Mean-Variance Analysis," Corporate Finance Institute, <https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/mean-variance-analysis/>.
4. Op. cit., "Principles of Asset Allocation."
5. See <https://investments.yale.edu/team>.
6. "Yale Reports Investment Return for Fiscal 2023," *YaleNews* (October 10, 2023), <https://news.yale.edu/2023/10/10/yale-reports-investment-return-fiscal-2023>.
7. See D. Swensen, *Pioneering Portfolio Management: An Unconventional Approach to Institutional Investment*, 2nd ed. (New York: Free Press, 2009).
8. "Overview of Asset Allocation," CFA Institute, <https://www.cfainstitute.org/en/membership/professional-development/refresher-readings/overview-asset-allocation>.
9. K. K. Rowland, "Private Markets: 4 Steps to Help You Optimize Your Allocation to Alternatives," J. P. Morgan, <https://privatebank.jpmorgan.com/apac/en/insights/markets-and-investing/private-markets-4-steps-to-help-you-optimize-your-allocation-to-alternatives>.
10. B. Halliburton, "Diversification Is the Only Free Lunch," *Forbes* (October 5, 2019), <https://books.forbes.com/author-articles/diversification-is-the-only-free-lunch/>.
11. E. Zink, "Do Private Investments Belong in a Diversified Portfolio?" *Morningstar* (June 22, 2023), <https://www.morningstar.com/portfolios/do-private-investments-belong-diversified-portfolio>.

Continued on page 66 →

ARE YOUR CLIENTS MISSING A 'FREE LUNCH'?

Continued from page 17

12. "Client Resource Kit: Alternatives," First Trust, <https://www.ftportfolios.com/Commentary/Insights/2024/11/5/alternatives-client-resource-kit--fourth-quarter-2023>.
13. J. P. Morgan Guide to the Markets (U.S. data as of June 30, 2024), <https://am.jpmorgan.com/us/en/asset-management/adv/insights/market-insights/guide-to-the-markets/#>.
14. B. Chingono and D. Rasmussen, "Private Equity's Return Dispersion Is the Same as Public Stocks with Similar Characteristics," *Verdad* (December 11, 2023), <https://verdadcap.com/archive/the-dispersion-delusion#:~:text=Private%20equity's%20return%20dispersion%20is,public%20stocks%20with%20similar%20characteristics>.
15. "A Study of Allocations to Alternative Investments by Institutions and Financial Advisors," *Fidelity* (June 23, 2023), https://institutional.fidelity.com/app/item/RD_9906996/a-study-of-allocations-to-alternative-investments-by-institutions-and-financial-advisors.html.
16. "A New Era of Portfolio Construction for Endowments," *BlackRock*, <https://www.blackrock.com/institutions/en-us/insights/investment-actions/portfolio-construction-endowments>.
17. S. Graber, D. W. Freese, and C. M. Nassauer, "Interval Funds: An Alternative to 'Liquid Alternative' Funds? Part 1," *The Investment Lawyer* (September 2015), <https://www.morganlewis.com/~media/files/publication/outside%20publication/article/til-interval-funds-alternative-to-liquid-alternative-funds-part1-sept2015.ashx>.
18. "Interval Funds—6 Things to Know Before You Invest," *FINRA* (January 23, 2018), <https://www.finra.org/investors/insights/interval-funds>.
19. "Qualified Purchaser vs. Accredited Investor—What You Need to Know," *Yieldstreet* (January 30, 2024), <https://www.yieldstreet.com/resources/article/qualified-purchaser-vs-accredited-investor-what-you-need-to-know/>.
20. *Ibid.*
21. "The Closed-End Fund Market, 2023," *ICI Research Perspective* (May 2024), <https://www.ici.org/system/files/2024-05/per30-05.pdf>.
22. M. Taggart, "Interval Funds Are a Fast-Growing Alternative Investment Vehicle," *CAIA Institute* (April 25, 2022), <https://caia.org/blog/2022/04/25/interval-funds-are-fast-growing-alternative-investment-vehicle>.
23. *Ibid.*
24. J. Chen, "Business Development Company (BDC): Definition and How to Invest," *Investopedia* (August 11, 2023), <https://www.investopedia.com/terms/b/bdc.asp>.
25. *Ibid.*
26. Cambridge Associates, *Endowments Quarterly* (2nd Quarter, 2023), <https://publishedresearch.cambridgeassociates.com/wp-content/uploads/2023/09/2023-09-Endowments-Quarterly-2Q2023.pdf>.
27. J.P. Morgan Private Bank, "Private Markets: 4 Steps to Help You Optimize Your Allocation to Alternatives," <https://privatebank.jpmorgan.com/apac/en/insights/markets-and-investing/private-markets-4-steps-to-help-you-optimize-your-allocation-to-alternatives>.
28. S. D. Simpson, "A Brief History of Exchange-Traded Funds," *Investopedia* (June 7, 2024) <https://www.investopedia.com/articles/exchangetradedfunds/12/brief-history-exchange-traded-funds.asp>.

A Virtuous Cycle of Trust

PROACTIVE APPROACHES THAT TIE PORTFOLIO MANAGEMENT TO CLIENT RELATIONSHIPS

By John W. Moore, CFA®, CAIA®, and William R. Moore III, CPWA®, CFP®, CLU®, ChFC®, AEP®, CAP®

Financial markets are ever evolving and so are the lives of your clients. Coordinating the two requires an intentional blend of science, art, diligence, patience, and humility. It also provides a critical window to better engage clients and build a bond of trust. Sometimes the timing of an advisor's outreach to a client means as much as the message the advisor delivers.

Trust welds the foundation of the advisor-client relationship; it articulates goals into strategies and transforms strategies into reality. Trust is the hallmark of an enduring advisory partnership.

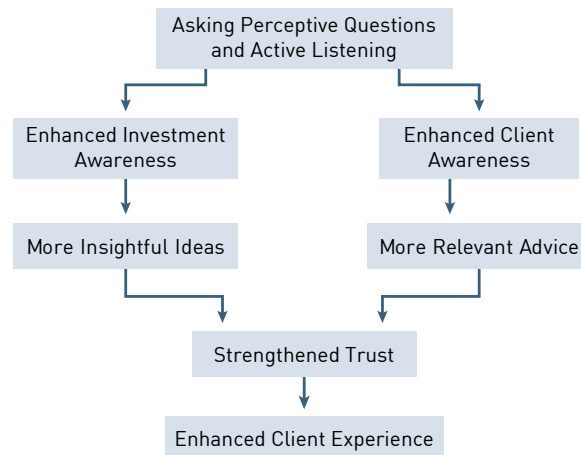
Trust-building resources are everywhere. Goal-mapping exercises, thought leadership, and webinars flood advisor inboxes. These materials may offer helpful information, but they do not outsource an advisor's critical responsibility to maintain a deep sense of client awareness and the often-implicit need for ongoing guidance. Higher-quality ingredients can enhance a recipe, but they can't cook for you.

So how can advisory teams bolster client relationships, improve their investment analysis, and—most of all—deepen trust?

We believe that a deeper understanding of our clients and a clearer sense of financial markets stem from a shared mindset (see figure 1). Asking more perceptive questions and active listening are the catalysts that set into motion this virtuous cycle among investment awareness, client awareness, trust, and results.

Figure 1

A SHARED MINDSET



Source: Stratview Wealth Management

In this article, we describe how setting a clear philosophy upfront and demonstrating consistency over time collectively improves the investment experience and deepens trust.

SETTING THE TONE FOR THE INVESTMENT EXPERIENCE

Just as each client arrives with unique goals, needs, and life experiences, each client also brings a unique perception of investing. This perception may be driven by life circumstances, personal preferences, and knowledge of investing itself. Making a concerted effort to understand this personal context can help advisors deliver customized solutions and provide more valuable advice.

The start of a client relationship is typically an exciting time with shared enthusiasm for new opportunities. Though it can be easy to glide through the joys of a new relationship, this is a critical time

to harness trust-based energy and define a clear approach to the partnership ahead.

Intentionally addressing a variety of core topics upfront transforms today's trust into tomorrow's confidence.

INVESTMENT MANAGEMENT—PREFLIGHT ADVISOR DISCUSSION CHECKLIST

Similar to the way pilots systematically prepare before takeoff, the following “preflight” investment discussion checklist—by no means exhaustive—has played an indispensable role in enhancing the overall experience for our clients (see sidebar).

COHESIVE INVESTMENT PHILOSOPHY

Articulating a clear investment philosophy connects the multifaceted role of the portfolio to the broader wealth plan,

PREFLIGHT ADVISOR DISCUSSION

Understanding the flight plan

- Cohesive investment philosophy
- Clear client communication strategy

Understanding the investment engine

- Strategic investment process
- Tax-smart strategies

Understanding how to navigate uncertainty

- Approach to navigating market volatility
- Approach to navigating macro turbulence

Understanding the value added across time

- The client's investment in your partnership—costs and fees
- Performance in context

helps clients see the bigger picture, and differentiates the true value provided.

Through this lens, a carefully crafted wealth strategy becomes the platform on which advisors can make ongoing recommendations and clients can make well-informed decisions. Clarity of process and purpose transforms numbers into a living, breathing plan and empowers the advisor-client partnership by offering confidence in the path forward.

Steadily reinforcing the core planning philosophy is an invaluable investment over time. Weaving these ideas into regular and recurring client conversations fosters a methodical framework for approaching new topics, exciting and difficult alike.

CLEAR CLIENT COMMUNICATION STRATEGY

Communication is the core of the virtuous cycle of trust—a robust communication strategy, both calendar-based and opportunistic, directly supports the actual investment and planning strategies themselves. An ongoing, proactive,

and reliable dialogue requires a defined process and a proven approach. It is one of the best ways we can show our sincere dedication to being a steadfast partner.

Setting this expectation with clients early pays dividends in trust across time.

Regular and active listening helps us hear how life events are impacting our clients' emotions and their feelings about their investments, both good and bad. Exploring the thought process behind these topics opens a window into the unique ways clients view universal situations. Naturally, the stronger the trust the more a client will share. This process deserves time and is an essential early investment in the relationship.

Ultimately, the strategic investment process is an advisor's investment identity.

STRATEGIC INVESTMENT PROCESS

Perhaps the least surprising of preflight discussion topics is a detailed overview of the objective and a diligent approach to managing assets in a manner that supports wealth planning goals across time. The portfolio then becomes a source of long-term growth and a key that can unlock deeper value through prudent tax management and cash-flow management as well.

Although clients certainly have varying levels of investment knowledge and curiosity, all deeply value knowing the portfolio engine is positioned to hit on all cylinders.

Here is the time to be technical and specific.

How does your research process cut through the noise at the headline level to gauge what matters at the portfolio level? What resources do you use and what is your research routine? What

guides how you transform those insights into asset allocation decisions? How do you express fundamental and technical insights consistently across investment holdings? What is your detailed risk management framework? What guides when and how to make portfolio adjustments over time? How specifically does the portfolio support the broader wealth plan today and in the future?

Ultimately, the strategic investment process is an advisor's investment identity. The ability to clearly, completely, and consistently describe every aspect of how you make decisions is essential to conveying your expertise, proving your attention to detail, and building trust.

TAX-SMART STRATEGIES

When, where, and how a taxable portfolio realizes capital gains and losses is a critical aspect of the overall investment experience. However, returns data alone do not clearly capture this reality.

Balancing efforts to be tax-smart and asset-allocation smart is a bit like not letting the tail wag the dog. Still, that tax "tail" has a direct cash-flow impact on most clients. Most notably, this impact usually comes with a meaningful lag. Strategic portfolio adjustments and the tax impacts months ago are not easily top of mind when mid-April notoriously comes around.

Thus, designing an approach for the months leading up to tax season mitigates surprises and reaffirms trust. A simple game plan to share an ongoing total of investment-related taxable insight can alleviate an annual headache. It also can clearly show significant value added through strategic initiatives such as tax-loss harvesting and tax-smart asset location.

APPROACH TO NAVIGATING MARKET VOLATILITY

No matter your relationship with money, there will be market downturns. Pullbacks feel bad in the moment. Losses hurt far more than gains feel good,

as has been widely researched and demonstrated. Down markets are thus stressful but important opportunities to reaffirm trust through consistency and expertise.

If the reality of regular downturns is addressed early on, clients can lean on trust in their plan and keep short-term losses in perspective when they inevitably occur.

Drawdowns are a normal part of long-term investing. A diversified portfolio is not “the stock market” quoted in headlines. Returns over short periods of time are snapshots, not final outcomes. A goals-based timeline is often not a few months but rather years if not decades into the future.

For perceptive advisors these challenging moments are opportunities to lean in, help keep a long-term view, and maintain a steady approach.

APPROACH TO NAVIGATING MACRO TURBULENCE

Remarkably, many topics featured in the news may not have a sustained impact on a client’s portfolio. Elections and geopolitics, for instance, can conjure up deep emotions but may not always have clear implications for financial markets. An upfront discussion, along with periodic reinforcements of the message, will help clients create a healthy distance between these headline concerns and market concerns.

Examining global events, economic shifts, and other headlines through the lens of the investment process—rather than a mainstream news outlet—cultivates a healthier perspective.

THE CLIENT’S INVESTMENT IN YOUR PARTNERSHIP—COSTS AND FEES

Advisory costs collectively reflect an investment in a full suite of financial planning services. It is imperative for these costs to be explained clearly and transparently.

Financial guidance, long-term risk-adjusted returns, tax synergies, cash-management, risk-management, coordination with other trusted professionals such as accountants and attorneys, and coordination with broader wealth strategies, just to name a few, collectively provide the confidence deserved from this deeply trust-based investment.

By keeping an intentional and open line of discussion about clients’ non-financial lives, advisors can proactively identify opportunities that directly relate to their financial strategies.

PERFORMANCE IN CONTEXT

Returns data reflect point-to-point updates over given intervals. But this is far from the full story. Understanding the amount and types of risk taken to achieve that performance sheds light on how effective the approach has been and how that journey felt along the way.

The nature of investments inside the portfolio brings significantly more clarity to returns data. This nature includes the blend of asset classes, the types of holdings within each asset class, and the strategic approach to manage these holdings across market environments and across time. This mindset fosters trust by helping clients think about performance in terms of their long-term goals versus a short-term comparison to the market.

Purposeful dialogue reveals a natural tendency to think and feel differently about the past versus the future. In hindsight, outcomes seem more predictable. Returns are seen more easily in averages that have a funny way of muddying our memories of the volatility endured to achieve them. Looking ahead, however,

we quickly become more mindful of uncertainty.

Ultimately, the value in discussing a clear approach to the road ahead bolsters confidence when it’s needed most. Encouraging clients to have these conversations with their future selves can cultivate a healthier investment perspective and build trust.

A strong foundation plus a consistent approach equals an enduring advisory partnership.

The investment experience is now prepared to take off.

DEMONSTRATING CONSISTENCY ACROSS TIME

With a solid foundation in place, consistency across time brings those promises to life and further strengthens trust.

As described earlier, investment and client awareness are essential for providing the most relevant advice. This means having a framework for investment developments and also for important updates in the lives of clients.

Life, business, and family experiences often don’t fit neatly into a predictable framework. By keeping an intentional and open line of discussion about clients’ non-financial lives, advisors can proactively identify opportunities that directly relate to their financial strategies.

Many other topics have a sense of cyclicity—recurring and rhyming themes that surface with the ebb and flow of markets and life.

Our team has found value in cross-referencing a life-based perspective with a calendar-based framework to help guide discussions (see sidebar). Although the concept of the client service calendar certainly has existed for years, this particular tool focuses on the investment portfolio’s role across wealth strategies. The nuances will of course vary depending on the client’s

circumstances, depth of planning, and other factors.

Ultimately, the goal is to foster a sense of organization and awareness through relevant touchpoints.

A systematic approach such as this can serve as a core complement to other client service initiatives such as thought leadership and client events to collectively weave trust through dedication and value added across time.

CONCLUSION

To earn and strengthen trust, advisors must remember how incredibly personal money is to each client.

Starting each discussion with a focus on the person rather than just the client's portfolio provides a genuine opportunity to refresh, recalibrate, and realign.

Only then can trust empower clients with a clear understanding of the process and confidence in the expertise behind each decision.

Only then can trust empower advisors to chart a clear roadmap, conscientiously update the strategy along the way, and demonstrate a consistent process to deal with certain uncertainties.

Above all, trust bolsters one of the most critical aspects of a successful advisory partnership and investment plan—the ability to confidently stick to it over time. ●

CONTINUING EDUCATION

To take the CE quiz online, go to www.investmentsandwealth.org/IWMquiz

CALENDAR-BASED FRAMEWORK

First Quarter

Life and wealth goals refresh. Ensuring the investment portfolio is directly supporting the most up-to-date circumstances.

Portfolio progress update. Gauging how the investment portfolio is empowering the broader wealth plan.

Final tax insight. Gathering relevant tax context and conveying value added across the prior tax year.

Estate planning professional synergies. Collaborating with the client's estate planning attorneys to gauge opportunities and ensure a cohesive wealth strategy.

Second Quarter

Comprehensive planning coordination. Ensuring risk tolerance, asset location, and cash management are synchronized with updated goals, insurance, estate planning, and related wealth strategies.

CPA planning professional synergies. Collaborating with a client's accounting professionals to ensure topics such as estimated tax payments, tax-loss harvesting, and other tax-smart strategies are operating in tandem.

Third Quarter

Portfolio progress update. Gauging how the investment portfolio is empowering the broader wealth plan.

Proactive year-end preview. Gauging upcoming timelines for year-end initiatives such as taking required minimum distributions, 529 allocations, Roth conversions, tax-loss harvesting, gifting and giving, etc.

Fourth Quarter

Year-end initiatives. Implementing previously discussed strategies and keeping in close communication with updates.

Proactive tax communication. Maximizing tax-smart opportunities and minimizing tax-related headaches.

CPA planning professional synergies. Collaborating with client's accounting professionals to ensure topics such as estimated tax payments, tax-loss harvesting, and other tax-smart strategies are operating in tandem.

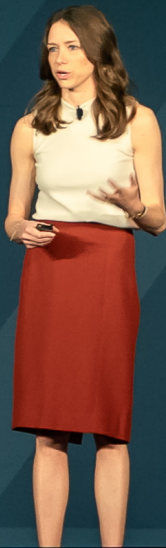
John W. Moore, CFA®, CAIA®, is director of investments at Stratview Wealth Management. He earned a BA in economics from the University of Virginia and an MS Commerce from the University of Virginia McIntire School of Commerce. Contact him at j.moore@nm.com.

William R. Moore III, CPWA®, CFP®, CLU®, ChFC®, AEP®, CAP®, is the founder and

private wealth advisor at Stratview Wealth Management in Richmond, VA. He earned a BA in business and economics from Randolph-Macon College. Contact him at bill.moore@nm.com.

All investments carry some level of risk, including loss of principal invested. No investment strategy can assure a profit and does not protect against loss in declining markets. Learn more at www.stratviewwealth.com.

INVEST & WEA INSTITU



**5619 DTC PARKWAY SUITE 600
GREENWOOD VILLAGE, CO, 80111**

www.investmentsandwealth.org

INVESTMENTS & WEALTH INSTITUTE® is a registered mark of Investment Management Consultants Association Inc. doing business as Investments & Wealth Institute. CIMA®, CERTIFIED INVESTMENT MANAGEMENT ANALYST®, CPWA®, and CERTIFIED PRIVATE WEALTH ADVISOR® are registered certification marks of Investment Management Consultants Association Inc. doing business as Investments & Wealth Institute. RMA® and RETIREMENT MANAGEMENT ADVISOR® are marks owned by Investment Management Consultants Association Inc. doing business as Investments & Wealth Institute. ©2025