

Alternative Investments

CAIA Level II

THIRD EDITION

HOSSEIN KAZEMI, KEITH H. BLACK, DONALD R. CHAMBERS

Alternative Investments

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WILEY

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Published simultaneously in Canada.

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ISBN 9781119016397 (Hardcover)
ISBN 9781119016366 (ePDF)
ISBN 9781119016380 (ePub)

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

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Preface

A*lternative Investments: CAIA Level II* is designed as the primary reading resource for the Level II exam of the Chartered Alternative Investment Analyst (CAIA) Association's Charter program. To ensure that the material best reflects up-to-date practices in the area of alternative investments, the CAIA Association invited a group of leading industry professionals and academics to contribute to the production of this book. While some of them helped directly by writing some of the chapters of this book, others provided valuable input as members of our advisory board. Without their immense talent and dedication, this book would not have been completed.

Since its inception in 2002, the CAIA Association has strived to be the leader in alternative investment education worldwide and to be the catalyst for the best education in the field wherever it lies. The CAIA program was established with the help of a core group of faculty and industry experts who were associated with the Center for International Securities and Derivatives Markets (CISDM) at the Isenberg School of Management and the Alternative Investment Management Association (AIMA). From the beginning, the CAIA Association recognized that a meaningful portion of its curriculum must be devoted to codes of conduct and ethical behavior in the investment profession. To this end, with the permission and cooperation of the CFA Institute, we have incorporated its Code of Ethics and its *Standards of Practice Handbook* into our curriculum. Further, we have leveraged the experience and contributions of our members and other alternative investment professionals who serve on our board and committees to create and update the CAIA Association program's curriculum and its associated readings.

The quality, rigor, and relevance of our curriculum readings derive from the ideals upon which the CAIA Association was based. The CAIA program offered its first Level I examination in February 2003. Our first class consisted of 43 dedicated investment professionals who passed the Levels I and II exams and met the other requirements of membership. Many of these founding members were instrumental in establishing the CAIA designation as the global mark of excellence in alternative investment education. Through their support and with the help of the founding cosponsors—the AIMA and the CISDM—the CAIA Association is now firmly established as the most comprehensive and credible designation in the rapidly growing sphere of alternative investments.

The AIMA is the hedge fund industry's global, not-for-profit trade association, with more than 1,500 corporate members worldwide. Members include leading hedge fund managers, fund of hedge funds managers, prime brokers, legal and accounting services, and fund administrators, all of whom benefit from the AIMA's active influence in policy development; its leadership in industry initiatives, including education and sound practice manuals; and its excellent reputation with regulators.

The CISDM of the Isenberg School of Management at the University of Massachusetts–Amherst seeks to enhance the understanding of the field of alternative investments through research, education, and networking opportunities for member donors, industry professionals, and academics.

The CAIA Association has experienced rapid growth in its membership over the past 14 years. It is now a truly global professional organization, with more than 8,000 members in over 80 countries. We strive to stay nimble in our process so that the curriculum remains relevant and keeps pace with the constant changes in this dynamic industry.

Although the CAIA Association’s origins are largely based in the efforts of professionals in the hedge fund and managed futures space, these founders correctly identified a void in the wider understanding of alternative investments as a whole. From the beginning, the CAIA curriculum has also covered private equity, commodities, and real assets, always with an eye toward shifts in the industry. Today, several hundred CAIA members identify their main area of expertise as real estate or private equity, and several hundred more are from family offices, pension funds, endowments, and sovereign wealth funds that allocate across multiple classes within the alternative investment industry. To ensure benefit to the widest spectrum of members, we have developed curriculum subcommittees that represent each area of coverage within the curriculum. Alternative investment areas and products share some distinct features, such as the relative freedom on the part of investment managers to act in the best interests of their investors, alignment of interests between asset owners and asset managers, and relative illiquidity of the investment positions of some investment products. These characteristics necessitate conceptual and actual modifications to the standard investment performance analysis and decision-making paradigms.

Our curriculum readings are designed with two goals in mind: first, to provide readers with the tools needed to solve problems they encounter in performing their professional duties; and second, to provide them with a conceptual framework that is essential for investment professionals who strive to keep up with new developments in the alternative investment industry.

Readers will find the publications in our series to be beneficial, whether from the standpoint of allocating to new asset classes and strategies in order to gain broader diversification or from the standpoint of a specialist needing to better understand the competing options available to sophisticated investors globally. In both cases, readers will be better equipped to serve their clients’ needs.

CAIA Level II required readings consist of three parts: this book and the CFA Institute’s *Standards of Practice Handbook* and *Current and Integrated Topics Readings*. Information about obtaining the last two components can be found on our website, caia.org. Many resources are freely available on our website as well.

We will continue to update the *CAIA Level II Study Guide* every six months (each exam cycle). The study guide outlines all of the readings and corresponding learning objectives (LOs) that candidates are responsible for meeting. The guide also contains important information for candidates regarding the use of LOs, testing policies, topic weightings, where to find and report errata, and much more. The entire exam process is outlined in the *CAIA Candidate Handbook*, which is available at caia.org. Candidates can also access a workbook that solves the problems presented at the end of each chapter and other important study aids.

We believe you will find this series to be the most comprehensive, rigorous, and globally relevant source of educational material available within the field of alternative investments.

Hossein Kazemi, PhD
Senior Adviser to the CAIA Association

Acknowledgments

We would like to thank the many individuals who played important roles in producing this book. In particular, we owe great thanks to William Kelly, Chief Executive Officer of the CAIA Association, and our committee members:

Curriculum Advisory Council

Stephane Amara, CAIA
Mark Anson, CAIA
Garry Crowder
David McCarthy
Tom Robinson, CAIA
Hilary Till
James Tomeo

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Samuel Gallo, CAIA
James T. Gillies, CAIA

Special credit goes to CAIA staff for their valuable contributions in painstakingly bringing the third edition to completion.

CAIA Staff

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Kathy Champagne, Senior Associate Director Exams Administration
Kristaps Licis, Senior Associate Director of Exams
Nancy E. Perry, Publications Coordinator

Outside Editor

Jamie Thaman

About the Authors

Hossein Kazemi received his PhD from the University of Michigan, Ann Arbor and is a senior adviser to the CAIA Association. He is the Michael and Cheryl Philipp Professor of Finance at the University of Massachusetts–Amherst, Director of the Center for International Securities and Derivatives Markets, a cofounder of the CAIA Association, and Editor-in-Chief of *The Journal of Alternative Investments*—the official publication of the CAIA Association. He was a managing partner at Schneeweis Partners and Alternative Investment Analytics. He has authored or coauthored more than 30 scholarly articles and is a coauthor of *The New Science of Asset Allocation: Risk Management in a Multi-Asset World* (2010, John Wiley & Sons) and *Postmodern Investment* (2013, John Wiley & Sons).

Keith Black received his PhD at the Illinois Institute of Technology, Chicago. He serves as Managing Director of Curriculum and Exams at the CAIA Association. He was previously an Associate at Ennis Knupp and an Assistant Professor at Illinois Institute of Technology. He is a member of the editorial board of *The Journal of Alternative Investments*. He is also a CFA Charter Holder and a member of the inaugural class of CAIA candidates. He is the author of *Managing a Hedge Fund* (2004, McGraw-Hill). He was named to *Institutional Investor* magazine’s list of “Rising Stars of Hedge Funds” in 2010.

Don Chambers received his PhD from the University of North Carolina, Chapel Hill. He is Associate Director of Programs at the CAIA Association; the Walter E. Hanson/KPMG Professor of Finance at Lafayette College in Easton, Pennsylvania; and Chief Investment Officer of Biltmore Capital Advisors. Professor Chambers previously served as Director of Alternative Investments at Karpus Investment Management. He is a member of the editorial board of *The Journal of Alternative Investments*. He is also a CAIA Charter Holder and the primary author of *Alternative Investments: CAIA Level I*, third edition (2015, John Wiley & Sons).

Mark Anson is Chief Investment Officer of Commonfund. He is responsible for overall client asset allocation, portfolio management, manager research and due diligence across equities, fixed income, and hedge funds. Prior to joining Commonfund, he was Chief Investment Officer for the Bass Family Office. Previously, Mark has served as President of Nuveen Investments, Chief Executive Officer and Chief Investment Officer for Hermes Pension Management and for the British Telecom Pension Scheme, and the Chief Investment Officer for CalPERS. Mark currently serves on the Executive Advisory Board of MSCI-Barra, The Investment Advisory Council of the UAW Pension Fund, the Law Board of Northwestern University School of Law, and the Board of Directors for the Chartered Alternative Investment Association. Mark earned a BA in Economics and Chemistry from St. Olaf College, a JD from

Northwestern University School of Law, and a PhD and Master's in Finance from Columbia University Graduate School of Business. Mark earned the Chartered Financial Analyst, Chartered Alternative Investment Analyst, Certified Public Accountant, and Chartered Global Management Accountant professional degrees, and is a Member of the Bar of the State of New York and the State of Illinois.

Jim Campasano is the President of Marshall James Capital, LLC, an advisory firm focusing on volatility products. A graduate of Harvard University with a degree in Economics, cum laude, he received a JD from Vanderbilt University School of Law and is a PhD candidate in finance at the Isenberg School of Management, University of Massachusetts–Amherst. Prior to Marshall James Capital, Mr. Campasano worked as a portfolio manager at Vicis Capital and Millennium Limited Partners, where he ran a long volatility, cross-asset portfolio. He contributed to Chapter 30 (Volatility, Correlation, and Dispersion Products and Strategies).

Michal E. Crowder received her JD from Northwestern University School of Law in Chicago and has a Master of Arts in Political Science from Northwestern University. Ms. Crowder has worked for several hedge fund and investment management firms over the past eight years and has traveled extensively throughout Europe and Asia. She is fluent in four languages and supports a number of not-for-profit endeavors. Ms. Crowder is licensed to practice law in Illinois and currently clerks for the Honorable Judge Abdul Kallon in the United States District Court of Northern Alabama. She is the primary author of Chapter 34 (Regulation and Compliance).

Satyabrota Das has more than 10 years of experience working in financial markets. He has developed and traded hedge fund and CTA replication products using liquid exchange-traded securities. Most recently, he developed an interactive web-based replication program that allows investors to create customized replication portfolios. Previously, he supported the Alternative Commodity Benchmark Index, a second-generation commodity index, for Alternative Investment Analytics, LLC. He is a CFA and CAIA Charter Holder, and is working on his PhD at the Isenberg School of Management, University of Massachusetts–Amherst. He is the primary author of Chapter 31 (Hedge Fund Replication).

Malay K. Dey is currently a senior partner of FINQ LLC, a diversified financial technology startup. He held faculty positions at the University of Illinois at Urbana Champaign, Cornell University, and the University of Minnesota, Twin Cities. Professor Dey has frequently visited the Indian Institute of Management Calcutta (IIMC) and has lectured at ISI Calcutta and other leading Indian institutions. He was a Research Fellow at the Networks Financial Institute at Indiana State University (2006–2008) and served as a Vice President, quantitative trading strategy, at ITG from 2006 to 2007. Professor Dey received his PhD in Finance from the Isenberg School of Management, University of Massachusetts–Amherst. His research focuses on theoretical and empirical issues related to institutional trading and liquidity in equity markets. He contributed to Chapter 27 (Relative Value Strategies).

Jaeson Dubrovay is a Managing Director at Blackcomb Holdings, Inc., an independent investment company. Previously he was a partner and cohead of Americas

advisory for Aksia, LLC, one of the largest hedge fund specialty consulting firms. Prior to that, he was the Senior Strategist, Hedge Funds, at NEPC LLC, one of the industry's leading general investment consulting firms. Mr. Dubrovay has been managing money and consulting with leading institutional investors in connection with their hedge fund portfolios for more than 25 years. In 2008, he was named the Hedge Fund Consultant of the Year (*Institutional Investor*) and recognized for his contribution to the Investors Committee of the President's Working Group on Financial Markets, on Hedge Fund Best Practices. In 2009, Mr. Dubrovay was named Consultant of the Year by Foundation & Endowment Money Management (*Institutional Investor*) and was the major contributor to the team at NEPC that was named *PLANSponsor* magazine's Alternative Asset Consultant of the Year. He is a CPA and CAIA Charter Holder. He holds an MBA with honors from Santa Clara University. He is the primary author of Chapter 32 (Funds of Hedge Funds and Multistrategy Funds).

Urbi Garay received a PhD in Finance from the Isenberg School of Management, University of Massachusetts–Amherst, an MA from Yale University, and a BA in Economics from *Universidad Católica Andrés Bello* (Caracas, Venezuela). He is a Professor of Finance at the IESA Business School (Caracas, Venezuela). He was a visiting researcher at the CISDM (2007–2008), and has been a visiting professor at various business schools in Latin America, the United States, and Europe. He has been a consultant to the Inter-American Development Bank, the Venezuelan Central Bank, and the Caracas Stock Exchange. He is a coauthor of *Fundamentals of Finance* (IESA, 2005) and *Long Term Investing* (IESA, 2007). He has published articles in *The Journal of Alternative Investments*, *Emerging Markets Review*, *Emerging Markets Finance and Trade*, *Econometrics*, *Corporate Governance: An International Review*, and the *Journal of Business Research*. He is the primary author of Chapters 14–18 (Real Estate) and 35–36 (Structured Products).

Kathryn Kaminski is a Director at Investment Strategies at Campbell & Company. Prior to her recent move to Campbell & Company, she was Deputy Managing Director at the Institute for Financial Research (SIFR) and affiliated faculty at the Stockholm School of Economics. She is a featured contributor to the CME Group. Kathryn has experience working for a CTA fund of funds as well as quant experience in both emerging fixed income and credit markets. She lectures on derivatives, hedge funds, and financial management at the Stockholm School of Economics and has lectured previously at the Swedish Royal Institute of Technology (KTH) and the MIT Sloan School of Management. Kathryn completed her PhD at MIT Sloan, conducting research on financial heuristics. Kathryn is a coauthor of *Trend Following with Managed Futures: The Search for Crisis Alpha* (2014, John Wiley & Sons). Kathryn is a 100-Women in Hedge Funds PAAMCO CAIA Scholar and a CAIA Charter Holder. She is the primary author of Chapters 25 and 26 (Managed Futures).

Jim Kyung-Soo Liew is an Assistant Professor of Finance at Johns Hopkins Carey Business School. Dr. Liew teaches Advanced Hedge Fund Strategies, Corporate Finance, Derivatives, Entrepreneurial Finance, Fixed Income, and Wealth Management at the Johns Hopkins Carey Business School. Prior joining Johns Hopkins, Dr. Liew taught Statistical Arbitrage at Columbia University and CUNY Baruch College, and Hedge Fund Strategies at NYU Stern School of Business, as an Adjunct Professor.

Prior to that, he worked in the hedge fund industry where he built and implemented systematic investment strategies. Dr. Liew currently serves on the Editorial Advisory Board of *The Journal of Portfolio Management*. He resides with his wife and two daughters just outside of Baltimore. He is the primary author of Chapter 28 (Hedge Funds: Directional Strategies).

George Martin is a Senior Advisor to Wood Creek Capital Management, a real assets investment manager that is an affiliate of MassMutual and its asset management subsidiary Babson Capital Management. At Wood Creek, he has particular responsibility for matters related to research, portfolio construction, and risk management, and with a sector focus that emphasizes mid- and upstream agriculture. He is also a Senior Research Associate for the Center for International Securities and Derivatives Markets (CISDM) at the University of Massachusetts, Amherst, and a member of the Editorial Board of *The Journal of Alternative Investments*. He has been commercially active in real asset investing and commodity-based investments for the past decade. He is regularly called upon to speak on various aspects of the Alternative Investment business, and frequently publishes his research. Previously, he was a Research Fellow at the Brookings Institution. He has a BA and MA from Johns Hopkins University. He is the primary author of Chapters 20 and 21 (Real Assets).

Pierre-Yves Mathonet is Head of Risk in the Private Equities Department of the Abu Dhabi Investment Authority. He is a permanent member of the EVCA's Risk Measurement Guidelines working group. He codirected the Certificate in Institutional Private Equity Investing (CIPEI) course held by the Oxford Saïd Business School's Private Equity Institute. Previously, he was the head of the private equity risk management division of the European Investment Fund (part of the European Investment Bank group), worked as an investment banker in the technology groups of Donaldson, Lufkin & Jenrette and Credit Suisse First Boston, and, earlier, for the audit and consulting departments of PricewaterhouseCoopers. Pierre-Yves has coauthored several books including *Beyond the J Curve* (2005, John Wiley & Sons) and *J Curve Exposure* (2007, John Wiley & Sons). He holds a Master of Science cum laude in Finance from London Business School and a Master of Science magna cum laude in Management from Solvay Business School in Brussels. He is also a Certified European Financial Analyst cum laude. Pierre-Yves Mathonet and Thomas Meyer are the primary authors of Chapters 7–9 and 11–13 (Private Equity and Venture Capital).

Thomas Meyer is partner and cofounder of LDS Partners, specializing in the development of investment strategies, portfolio management, cash-flow forecasting, and asset allocation models for real assets (private equity, infrastructure, real estate). Mr. Meyer was responsible for the creation of the European Investment Fund's risk management function and was a director of EVCA (now Invest Europe). He was the secretary of the EVCA Private Equity Risk Measurement Group, codirected the limited partner course delivered by the Private Equity Institute at the Saïd Business School, University of Oxford, that led to the EVCA-awarded CIPEI. He is a Shimomura Fellow of the Development Bank of Japan and was a visiting researcher at Hitotsubashi University in Tokyo. Other career stations include intelligence officer in the German Air Force and CFO of Allianz Asia Pacific in Singapore. Mr. Meyer has published

several books on investment strategies and risk management for real assets. He has authored *Private Equity Unchained* (2015, Palgrave MacMillan) and is the coauthor of *Beyond the J Curve* (2005, John Wiley & Sons), *J Curve Exposure* (2007, John Wiley & Sons), and *Mastering Illiquidity* (2011, John Wiley & Sons). Thomas Meyer and Pierre-Yves Mathonet are the primary authors of Chapters 7–9 and 11–13 (Private Equity and Venture Capital).

Putri Pascualy is a Partner and Managing Director at PAAMCO. She manages the firm's Long/Short Credit Portfolio and is the Portfolio Manager for custom portfolios for leading institutional investors. Ms. Pascualy leads the firm's investment efforts in corporate credit including high-yield bonds, bank loans, event-driven and opportunistic credit, distressed debt, and structured products. In addition to her research responsibilities, her expertise includes portfolio construction, structuring, and risk management of complex portfolios and investments throughout various market cycles. She graduated from UC Berkeley with a BA in Economics and an MBA from the Haas School of Business. Putri is also a frequent contributor to media outlets including the *Wall Street Journal*, Bloomberg and Bloomberg Television, *U.S. News and World Report*, *Barron's*, the *Financial Times*, and CNBC. She is the author of *Investing in Credit Hedge Funds: An In-Depth Guide to Building Your Portfolio and Profiting from the Credit Market* (2013, McGraw-Hill). She is the primary author of Chapter 29 (Hedge Funds: Credit Strategies).

Jason Scharfman is a Managing Partner of Corgentum Consulting, LLC. Corgentum is a specialty consulting firm that performs operational due diligence reviews and background investigations on fund managers of all types globally including hedge funds, private equity, and real estate funds. Mr. Scharfman is recognized as one of the leading experts in the field of operational due diligence and is the author of *Hedge Fund Governance: Evaluating Oversight, Independence, and Conflicts* (2014, Academic Press), *Private Equity Operational Due Diligence: Tools to Evaluate Liquidity, Valuation, and Documentation* (2012, John Wiley & Sons) and *Hedge Fund Operational Due Diligence: Understanding the Risks* (2008, John Wiley & Sons). Before founding Corgentum, he oversaw the operational due diligence function for a \$6 billion alternative investment allocation group called Graystone Research at Morgan Stanley. Prior to joining Morgan Stanley, he held positions at Lazard Asset Management, SPARX Investments and Research, and Thomson Financial. Mr. Scharfman received a BS in Finance with an additional major in Japanese from Carnegie Mellon University, an MBA in Finance from Baruch College's Zicklin School of Business, and a JD from St. John's School of Law. He is the primary author of Chapters 10 and 33 (Private Equity and Hedge Fund Operational Due Diligence).

Ed Szado is an Assistant Professor of Finance at Providence College and the Director of Research at the Institute for Global Asset and Risk Management. Dr. Szado earned a PhD in Finance from the Isenberg School of Management, University of Massachusetts–Amherst, an MBA from Tulane University, and a BComm from McMaster University. He has taught at Boston University, Clark University, Providence College, and the University of Massachusetts–Amherst. He is a former options trader and has worked extensively on asset allocation and risk managed investment

programs. He was a founding coeditor of the *Alternative Investment Analyst Review (AIAR)* and currently a member of the editorial board of *The Journal of Alternative Investments (JAI)*. He is a CFA Charter Holder and has consulted to the Options Industry Council, the Chicago Board Options Exchange, the Chartered Alternative Investment Analyst Association, and the Commodity Futures Trading Commission. He is the primary author of Chapters 22–24 (Commodities).

PART

1

Asset Allocation and Institutional Investors

Asset Allocation Processes and the Mean-Variance Model

This is the first of two chapters discussing asset allocation, with a focus on the decision-making process of asset allocators who consider portfolios consisting of traditional as well as alternative asset classes. This chapter describes the basic steps of the asset allocation process followed by a typical asset allocator. The objectives and constraints that apply to different types of asset owners are presented, and the important features of strategic and tactical asset allocation approaches are discussed. The chapter then explains the mean-variance approach, which is the best-known quantitative approach to allocation. Finally, some important limitations of the mean-variance approach are discussed.

1.1 IMPORTANCE OF ASSET ALLOCATION

Asset allocation refers both to the process followed by a portfolio manager to determine the distribution of an investor's assets to various asset classes and to the resulting portfolio weights. The allocation is determined to meet one or more objectives subject to a set of constraints set by the investor or dictated by the markets. An objective might be to maximize the expected value of a portfolio at a certain date subject to a set of constraints either established by the investor, such as a maximum level of return volatility or a maximum exposure to certain sectors, or dictated by the markets, such as no short selling of certain assets and a minimum investment level demanded by hedge fund managers.

While asset allocation refers to composition of an investor's portfolio in terms of different asset classes, we define **security selection** as the process through which holdings within each asset class are determined. For example, the asset allocation process may suggest that 20% of an investor's portfolio should be allocated to hedge funds, while security selection in this case is concerned with the hedge fund managers that are eventually selected for the investment purpose.

The importance of asset allocation versus security selection has been the subject of a long-running and controversial debate. The basic question is: Which of these two decisions has a larger impact on a portfolio's performance? As it turns out, the answer to this seemingly simple question is not that simple and, in some sense, it is impossible to provide.

First, we must specify whether the performance of a diversified or a concentrated portfolio is being measured. Clearly, the performance of a concentrated portfolio that consists of some allocation to cash and the rest to a single stock is mostly determined by the security selection decision. A significant portion of the characteristics of this portfolio's performance through time will depend on the choice of the single stock that constitutes the risky part of the portfolio. The choice of allocating a portion of the portfolio to cash will have some impact on the portfolio's performance, but it will be relatively small. In contrast, security selection is likely to have only a minor impact on the portfolio's performance if its equity portion consists of several thousand stocks that are listed around the world.

Second, we need to specify what is meant by portfolio performance. Is the impact of asset allocation on expected monthly return the sole criterion for evaluating the importance of asset allocation? How about higher moments of the return distribution or the beta of the portfolio with respect to some benchmark? As will be discussed, what is meant by performance will have an impact on the importance of asset allocation.

One of the most notable studies on the importance of asset allocation was published in 1986 by Brinson, Hood, and Beebower (BHB). The authors regressed the quarterly rates of return reported by a group of U.S. pension funds against passively managed benchmarks that were created using the weights proposed by the investment policy statements of the pension funds. The goal was to examine the relationship between the actual performance of the funds and the performance that would have been realized had the funds invested their capital in passively managed market indices according to the weights set forth in their investment policy statements. The average r -squared of these regressions exceeded 90%. Although BHB were clear in presenting their results, the rest of the investment community took the reported r -squared figure and made the blanket statement that more than 90% of the performance of these pension funds could be explained by the asset allocation decision described in the investment policy and that less than 10% of the performance could be explained by the active management decisions of the portfolio managers, such as security selection and tactical tilts. This would be the right conclusion if by performance one means the return *volatility* of the portfolio through time. However, this would be an incorrect conclusion if by performance one means the average return itself through time. In other words, BHB never claimed that 90% of the average return on diversified portfolios could be explained by the asset allocation decision.

As discussed in the CAIA Level I book, the r -squared of the regression tells how much of the variation in the dependent variable can be explained by variations in the independent or explanatory variables. In other words, the BHB study only confirmed that more than 90% of variability in the realized returns of fully diversified portfolios could be explained by the asset allocation decision. More important, it did not say anything about the impact of asset allocation on the average return on those pension funds. The study had a lot to say about the second moment of the funds' return distribution and very little about the first moment of their return distribution. Further, the sample included fully diversified portfolios and therefore could not consider the importance of security selection because the portfolio managers had already decided to fully diversify and not to hold concentrated positions

in securities that they considered to be undervalued. In short, the study was not meant to answer some of the most important questions faced by asset allocators, but it did spur a large set of studies that have gradually provided answers to practitioners.

Three important questions that could be asked and answered regarding the importance of asset allocation for the performance of diversified portfolios are:

1. How much of the variability of returns across time is explained by the asset allocation framework set forth in the investment policy? That is, how many of a fund's ups and downs are explained by its policy benchmarks? The impact of asset allocation on time variation was studied in BHB. Since then, a number of studies have reexamined this question (Ibbotson and Kaplan 2000). These studies generally agree that a high degree (85% to 90%) of the time variation in diversified portfolios of traditional assets is explained by the overall asset allocation decisions of asset owners and portfolio managers. Therefore, if an asset allocator wants to evaluate the expected volatility of two diversified portfolios, then the asset allocation policies of the two funds will be very informative.
2. How much of the difference in the average returns among funds is explained by differences in the investment policy? That is, if the average returns of two diversified funds are compared, how much of the difference in relative performance can be explained by differences in asset allocation policies? The answer depends greatly on the sample, but most studies show that less than 50% of the difference in average returns can be explained by differences in asset allocation. Other factors—such as asset class timing, style within asset classes, security selection, and fees—explain the remaining differences. Therefore, if an asset allocator wants to evaluate the expected returns of two diversified funds, asset allocation policies of the two funds will be useful, but other factors should be taken into account.
3. What portion of the average return of a fund is explained by its asset allocation policy? In this case, we are considering the absolute performance of a fund. That is, suppose the realized average return on a fund is compared with the return on the fund if the manager had implemented the proposed asset allocation using passive benchmarks. How do these two performances compare? Does the manager outperform the passive implementation of the asset allocation policy? This appears to be the most relevant question, because it directly tests the active management of the portfolio. It turns out that this is the most difficult question to answer, and the available results are highly dependent on the sample and the period they cover. Most studies find that asset allocation has little explanatory power in predicting whether a manager will outperform or underperform the asset allocation return. In fact, available studies covering samples of mutual funds and pension funds conclude that 65% to 85% of them underperform the long-run asset allocation described in their investment policy statements or their passive benchmarks (Ibbotson and Kaplan 2000).¹

Given the importance of asset allocation, the rest of this chapter focuses on the asset allocation process, the role of asset owners in determining the objectives and

constraints of the process, and the difference between strategic and tactical asset allocation programs.

1.2 THE FIVE STEPS OF THE ASSET ALLOCATION PROCESS

This section describes the typical steps that must be taken to implement a systematic asset allocation program.² A systematic approach enables the asset allocator to design and implement an investment strategy for the sole benefit of the asset owners. Such an approach needs to focus on the objectives and the constraints that are relevant to the asset owner. We begin with a discussion of the first of the five steps in the asset allocation process: identifying the asset owners and their potential objectives and constraints. In most cases, assets are managed to fund potential liabilities. In some instances, these liabilities represent legal obligations of the asset owner, such as the assets of a defined benefit (DB) pension fund. In other cases, assets are not meant to fund legal obligations but to fund essential needs of the asset owners or their beneficiaries. For example, a foundation's assets are managed to fund its future philanthropic and grant-giving activities. The nature of these potential needs or liabilities is a major determinant of the objectives and constraints of each asset owner.

The second step involves developing an overall approach to asset allocation. A critical step is preparing the investment policy statement. The **investment policy statement** includes the asset allocator's understanding of the objectives and constraints of the asset owners, the menu of asset classes to be considered, whether active or passive approaches will be used, and how often and under what circumstances the allocation will be changed. Such changes arise because of fundamental changes in economic conditions or changes in the circumstances of the asset owner.

The third step is implementing the overall asset allocation policy described in the investment policy statement. This step will require applications of both quantitative and qualitative techniques to determine the weight of each asset class in the portfolio. Since allocations to alternative investments typically involve selection and allocation to managers (e.g., hedge fund and private equity managers), this step will need to have built-in flexibility, as extensive due diligence on managers must be completed, and thus planned allocations may turn out to be infeasible. For instance, the planned allocation may turn out to be less than the minimum investment level accepted by the manager who has emerged on top after the due diligence process.

The fourth step is allocating the capital according to the optimal weights determined in the previous step based on the due diligence and manager evaluation already conducted by the portfolio manager's team or outside consultants.

The final step is monitoring and evaluating the investments. Inevitably, the realized performance of the portfolio will turn out to be different than expected. This will happen because of unexpected changes in the market and because selected fund managers did not perform as expected. As previously stated, the investment policy statement should anticipate circumstances under which the allocation will be revised. This chapter focuses on the first four steps of the asset allocation process. The final step, which deals with benchmarking, due diligence, monitoring, and manager selection, was covered in CAIA Level I (benchmarking) and the rest of this book (due diligence, monitoring, and manager selection).

1.3 ASSET OWNERS

A systematic asset allocation process starts with the asset owners. Chapters 3 through 6 of this book provide detailed descriptions of major types of asset owners and their investment strategies. This section briefly describes major classes of asset owners. Although the list of asset owners will not be exhaustive, it should be sufficient to highlight the differences that exist among major types of asset owners and how their characteristics influence their asset allocation policies. The following sections discuss four categories of asset owners:

1. Endowments and foundations
2. Pension funds
3. Sovereign wealth funds
4. Family offices

1.3.1 Endowments and Foundations

Endowments and foundations serve different purposes but, from an investment policy point of view, share many characteristics. **Endowments** are funds established by not-for-profit organizations to raise funds through charitable contributions of supporters and use the resources to support activities of the sponsoring organization. For example, a university endowment receives charitable contributions from its supporters (e.g., alumni) and uses the income generated by the fund to support the normal operations of the university. Endowments could be small or large, but since they have long investment horizons and are lightly regulated, the full menu of assets is available to them. In fact, among institutional investors, endowments are pioneers in allocating to alternative assets.

Foundations are similar to endowments in the sense that funds are raised through charitable contributions of supporters. These funds are then used to fund grants and support other charitable work that falls within the foundation's mandate. Most foundations are long-term investors and are lightly regulated in terms of their investment activities. However, in order to enjoy certain tax treatments, they are required to distribute a minimum percentage of their assets each year. Foundations are able to invest in the full menu of assets, including alternative asset classes.

1.3.2 Pension Funds

Pension funds are set up to provide retirement benefits to a group of beneficiaries who typically belong to an organization, such as for-profit or not-for-profit businesses and government entities. The organization that sets up the pension fund is called the plan sponsor. There are four types of pension funds (Ang 2014):

1. **NATIONAL PENSION FUNDS.** **National pension funds** are run by national governments and are meant to provide basic retirement income to the citizens of a country. The U.S. Social Security program, South Korea's National Pension Service, and the Central Provident Fund of Singapore are examples of such funds. These types of funds may not operate that differently from sovereign wealth funds,

which are described later in this chapter and in Chapter 5 of this book. The investment allocation decisions of these large funds are controlled by national governments, which makes their management different from private pension funds. Given the size and long-term horizons of these funds, the menu of assets that are available for potential investments is large and includes various alternative assets.

2. **PRIVATE DEFINED BENEFIT FUNDS.** **Private defined benefit funds** are set up to provide prespecified pension benefits to employees of a private business. The plan sponsor promises the employees of the private entity a predefined retirement income, which is based on a set of predetermined factors. Typically, these factors include the number of years an employee has worked for the firm, as well as his or her age and salary. The plan may include provisions for changes in retirement income, such as a cost-of-living adjustment or a portion of the retirement income to be paid to the employee's surviving spouse or young children. The plan sponsor directs the management of the fund's assets. While these funds may not match the size or the length of time horizon of national funds, they are still large long-term investors, and therefore the full menu of asset classes, including alternative assets, are available to them.
3. **PRIVATE DEFINED CONTRIBUTION FUNDS.** **Private defined contribution funds** are set up to receive contributions made by the plan sponsor into the fund. The pension plan specifies the contributions that the plan sponsor is expected to make while the firm employs the beneficiary. The contributions are deposited into accounts that are tied to each beneficiary, and upon retirement, the employee receives the accumulated value of the account. The employee and the plan sponsor jointly manage the fund's assets, in that the sponsor decides on the menu of asset classes available, and the employee decides the asset allocation. The menu of asset classes available to these funds is smaller than both national funds and defined benefit funds. Lumpiness of alternative investments, lack of liquidity, and government regulations typically prevent these funds from investing in a full range of alternative asset classes. Historically, real estate is one alternative asset class that has been available to these funds. In recent years, liquid alternatives have slowly become available as well.
4. **INDIVIDUALLY MANAGED ACCOUNTS.** **Individually managed accounts** are no different from private savings plans, in which the asset allocation is directed entirely by the employee. Since the funds enjoy tax advantages, they are not free from regulations, and therefore the list of asset classes available to the beneficiary will be limited. In particular, privately placed alternative investments are not normally available to these funds.

1.3.3 Sovereign Wealth Funds

Sovereign wealth funds (SWFs) are funds set by national governments as a way to save and build on a portion of the country's current income for use by future generations of its citizens. SWFs are similar to national pension funds in the sense that they are owned and managed by national governments, but the goal is not to provide retirement income to the citizens of the country.

SWFs have become major players in global financial markets because of their sheer size and their long-term investment horizons. Most SWFs invest a portion of

their assets in foreign assets. SWFs are relatively new, and their growth, especially in emerging economies, has been tied to the rise in prices of natural resources such as oil, copper, and gold. In some cases, SWFs are funded through the foreign currency reserves earned by countries that enjoy a significant trade surplus, such as China.

SWFs are large and have very long horizons; therefore the full menu of assets should be available to them. However, because national governments manage them, they may not invest in all available asset classes.

1.3.4 Family Offices

Family offices refer to organizations dedicated to the management of a pool of capital owned by a wealthy individual or group of individuals. In effect, it is a private wealth advisory firm established by an ultra-high-net-worth individual or family.

The source of income for a family office can be as varied as the underlying family that it serves. In some cases, the capital is spun off from an operating company, while in other cases, it might be funded with what is known as legacy wealth, which refers to a second or third generation of family members that have inherited their wealth from a prior source of capital generation. The financial resources of a family office can be used for a variety of purposes, from maintaining the family's current standard of living to providing benefits for many future generations to distributing all or a portion of it through philanthropic activities in the current generation. Family offices tend to have relatively long time horizons and are typically large enough to invest in a full menu of assets, including alternative asset classes.

1.4 OBJECTIVES AND CONSTRAINTS

As already discussed, different asset owners have their own particular objectives in managing their assets and face various constraints, which could be internal or external. An **objective** is a preference that distinguishes an optimal solution from a sub-optimal solution. A **constraint** is a condition that any solution must meet. Internal constraints are imposed by the asset owner and may be a function of the owner's time horizon, liquidity needs, and desire to avoid certain sectors. External constraints result from market conditions and regulations. For instance, an asset owner may be prohibited from investing in certain asset classes, or fees and due diligence costs may prevent the owner from considering all available asset classes. The next sections describe the issues that must be considered while attempting to develop a systematic understanding of asset owners' objectives and constraints.

1.5 INVESTMENT POLICY OBJECTIVES

Asset owners' objectives must be expressed in terms of consistent risk-adjusted performance values. In other words, it is safe to assume that asset owners would prefer to earn a high rate of return on their assets. However, higher rates of return are associated with higher levels of risk. Therefore, asset owners should present their objectives in terms of combinations of risks and returns that are consistent with market conditions and their level of risk tolerance. For instance, the objective of earning 30%