CAIA ASSOCIATION®

CAIA KNOWLEDGE SERIES

Alternative Investments

CAIA Level I

THIRD EDITION

DONALD R. CHAMBERS

MARK J. P. ANSON, KEITH H. BLACK, HOSSEIN KAZEMI

Alternative Investments

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Preface

Alternative Investments: CAIA Level I is designed as the primary reading resource for the Level I exam of the Chartered Alternative Investment Analyst (CAIA) Association's Charter program, as well as a textbook for university courses and a resource for alternative investment professionals. This book is a thrice-revised edition of Mark Anson's *Handbook of Alternative Assets* and represents another milestone in our efforts to continuously improve and update the CAIA curriculum. 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 to contribute to the production of the series, covering core areas of alternative investments: real assets, hedge funds, private equity, and structured products.

FOUNDATION

Since its inception in 2002, the CAIA Association has striven 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 University of Massachusetts 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 Level I and Level 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 Center for International Securities and Derivatives Markets (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 over 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 13 years. It is now a truly global professional organization, with over 7,000 members in over 80 countries. We strive to stay nimble in our process so that curriculum remains relevant and keeps pace with the constant changes in this dynamic industry.

BENEFITS

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, which 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. 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.

THE CAIA PROGRAMS AND THE CAIA ALTERNATIVE INVESTMENT ANALYST SERIES

The CAIA Level I required readings are contained in this one text, supplemented only by the CFA Institute's *Standards of Practice Handbook*. Level I candidates are assumed to have mastered some knowledge of financial markets, securities pricing, and derivatives markets in advance of commencing studies for the Level I exam.

Many resources are freely available on our website (caia.org). We will continue to update the *CAIA Level I 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.

Donald R. Chambers, PhD, CAIA
Associate Director of Curriculum
CAIA Association
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Curriculum Advisory Council

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James T. Gillies, CAIA

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CAIA Staff

Beth Rochon, Curriculum Project Manager
Andrew Dunham, Research and Publications Coordinator
Nelson Lacey, Director of Exams
Kathy Champagne, Senior Associate Director Exams Administration
Kristaps Licis, Senior Associate Director of Exams

Outside Editor

Jamie Thaman

About the Authors

The CAIA Association is an independent, not-for-profit global organization committed to education and professionalism in the field of alternative investments. The Association was established in 2002 by industry leaders under the guidance of the Alternative Investment Management Association (AIMA) and the Center for International Securities and Derivatives Markets (CISDM) with the belief that a strong foundation of knowledge is essential for all professionals. The curriculum includes two exams (Level I and Level II) administered to professional analysts in this growing field so that, upon successful completion, the individuals are designated Chartered Alternative Investment Analysts (CAIA). The CAIA designation has a great deal of prestige in the global community. Members come from over 80 countries on six continents.

Dr. Donald R. Chambers, CAIA, 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. Dr. 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*.

Dr. Mark J. P. Anson, CAIA, CFA, CPA, Ph.D., J.D, is a board member of CAIA and the President and Chief Investment Officer of the Bass Family Office—winner of the Family office of the Year award for 2014–2015. Dr. Anson previously served as President and Executive Director of Investment Services at Nuveen Investments Inc., Chief Executive Officer of both the British Telecom Pension Scheme and its wholly owned asset management company in London, Hermes Pension Management Limited, and Chief Investment Officer at California Public Employees' Retirement System. He has published over 100 research articles in professional journals, has won two Best Paper Awards, is the author of six financial textbooks, and sits on the editorial boards of several financial journals.

Dr. Keith H. Black, CAIA, is Managing Director of Curriculum and Exams at the CAIA Association. He was previously an Associate at Ennis Knupp and, before that, an Assistant Professor at Illinois Institute of Technology. He is a member of the editorial board of the *Journal of Alternative Investments*.

Dr. Hossein Kazemi 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.

Alternative Investments

PART

One

Introduction to Alternative Investments

Part 1 begins with an introduction to alternative investments and a description of the environment of alternative investing. Chapters 3 to 6 include primers on quantitative methods, statistics, and financial economics as they relate to alternative investments, as well as a chapter on measures of risk and return. The last three chapters of Part 1 discuss performance attribution, hypothesis testing of risk and return, and multivariate and nonlinear methods. The material is designed to provide a foundation for Parts 2 to 5, which detail each of the four main categories of alternative investments.

CHAPTER 1

What Is an Alternative Investment?

Definitions of what constitutes an alternative investment vary considerably. One reason for these differences lies in the purposes for which the definitions are being used. But definitions also vary because alternative investing is largely a new field for which consensus has not emerged, as well as a rapidly changing field for which consensus will probably always remain elusive.

Analyzing these various definitions provides a useful starting point to understanding alternative investments. So we begin this introductory chapter by examining commonly used methods of defining alternative investments.

1.1 ALTERNATIVE INVESTMENTS BY EXCLUSION

Alternative investments are sometimes viewed as including any investment that is not simply a long position in traditional investments. Typically, **traditional investments** include publicly traded equities, fixed-income securities, and cash. For example, if a particular investment (such as private equity) is not commonly covered as equity in books on investing, then many people would view it as an alternative investment.

The alternative-investments-by-exclusion definition is overly broad for the purposes of the CAIA curriculum. First, the term *investment* covers a very broad spectrum. A good definition of an **investment** is that it is deferred consumption. Any net outlay of cash made with the prospect of receiving future benefits might be considered an investment. So investments can range from planting a tree to buying stocks to acquiring a college education. As such, a more accurate definition of alternative investments requires more specificity than simply that of being nontraditional.

This book and the overall CAIA curriculum are focused on institutional-quality alternative investments. An **institutional-quality investment** is the type of investment that financial institutions such as pension funds or endowments might include in their holdings because they are expected to deliver reasonable returns at an acceptable level of risk. For example, a pension fund would consider holding the publicly traded equities of a major corporation but may be reluctant to hold collectibles such as baseball cards or stamps. Also, investments in very small and very speculative projects are typically viewed as being inappropriate for such an institution due to its responsibility to select investments that offer suitable risk levels and financial return prospects for its clients.

Not every financial institution, or even every type of financial institution, invests in alternative investments. Some financial institutions, such as some brokerage firms, are not focused on making long-term investments; rather, they hold securities to provide services to their clients. Other financial institutions, such as deposit-taking institutions like banks (especially smaller banks) might invest in only traditional investments because of government regulations or because of lack of expertise.

Of course, institutional-quality alternative investments are also held by entities other than financial institutions. Chapter 2 of this book discusses the alternative investment environment, including the various entities that commonly hold them (e.g., endowment funds and wealthy individuals).

1.2 ALTERNATIVE INVESTMENTS BY INCLUSION

Another method of identifying alternative investments is to define explicitly which investments are considered to be alternative. In this book, we classify four types of alternative investments:

1. Real assets (including natural resources, commodities, real estate, infrastructure, and intellectual property)
2. Hedge funds (including managed futures)
3. Private equity (including mezzanine and distressed debt)
4. Structured products (including credit derivatives)

These four categories correspond to Parts 2 to 5 of this book. Our list is not an exhaustive list of all alternative investments, especially because the CAIA curriculum is focused on institutional-quality investments. Furthermore, some of the investments on the list can be classified as traditional investments rather than alternative investments. For example, real estate and especially real estate investment trusts are frequently viewed as being traditional institutional-quality investments. Nevertheless, this list includes most institutional-quality investments that are currently commonly viewed as alternative. Exhibit 1.1 illustrates the relative proportion of these four categories of alternative investments.

The following sections provide brief introductions to the four categories.

1.2.1 Real Assets

Real assets are investments in which the underlying assets involve direct ownership of nonfinancial assets rather than ownership through financial assets, such as the securities of manufacturing or service enterprises. Real assets tend to represent more direct claims on consumption than do common stocks, and they tend to do so with less reliance on factors that create value in a company, such as intangible assets and managerial skill. So while a corporation such as Google holds real estate and other real assets, the value to its common stock is highly reliant on perceptions of the ability of the firm's management to oversee creation and sales of its goods and services.

An aspect that distinguishes types of real assets is the extent to which the ownership of the real assets involves operational aspects, such as day-to-day management decisions that have substantial impacts on the performance of the assets. For example, in many instances, direct ownership of oil reserves or stockpiles of copper involve

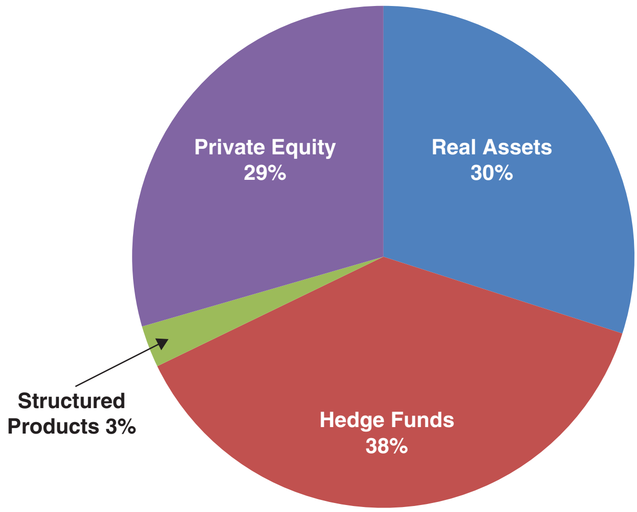

EXHIBIT 1.1 Major Alternative Asset Categories (percentages approximate), 2014
Source: Global Alternatives Survey 2014, Towers Watson; CAIA Association estimates.

substantially less day-to-day managerial attention than does direct ownership of real estate, infrastructure, or intellectual property.

Natural resources focus on direct ownership of real assets that have received little or no alteration by humans, such as mineral and energy rights or reserves. Commodities are differentiated from natural resources by their emphasis on having been extracted or produced. **Commodities** are homogeneous goods available in large quantities, such as energy products, agricultural products, metals, and building materials. Most of the investments covered in the commodities section of the CAIA curriculum involve futures contracts, so understanding futures contracts is an important part of understanding commodities. Futures contracts are regulated distinctly and have well-defined economic properties. For example, the analysis of futures contracts typically emphasizes notional amounts rather than the amount of money posted as collateral or margin to acquire positions.

Commodities as an investment class refer to investment products with somewhat passive (i.e., buy-and-hold) exposure to commodity prices. This exposure can be obtained through futures contracts, physical commodities, natural resource companies, and exchange-traded funds. Actively traded futures contracts on commodities are discussed in Part 3 on hedge funds and managed futures.

Some real assets are operationally focused. For the purposes of the CAIA curriculum, **operationally focused real assets** include real estate, land, infrastructure, and intellectual property. The performance of these types of real assets is substantially affected by the skill and success of regular and relatively frequent managerial decision-making. Traditional common stocks are typically even more highly operationally focused.

Real estate focuses on land and improvements that are permanently affixed, like buildings. Real estate was a significant asset class long before stocks and bonds became important. Prior to the industrial age, land was the single most valuable asset class. Only a few decades ago, real estate was the most valuable asset of most individuals, because ownership of a primary residence was more common than ownership of financial investments.

Land comprises a variety of forms, including undeveloped land, timberland, and farmland. Although undeveloped land might appear to belong under the category of natural resources rather than operationally focused real assets, the option to develop land often requires substantial and ongoing managerial decision-making. **Timberland** includes both the land and the timber of forests of tree species typically used in the forest products industry. While the underlying land is a natural resource, timberland requires some level of ongoing management. Finally, **farmland** consists of land cultivated for row crops (e.g., vegetables and grains) and permanent crops (e.g., orchards and vineyards). Farmland necessitates substantial operations and managerial decisions.

Infrastructure investments are claims on the income of toll roads, regulated utilities, ports, airports, and other real assets that are traditionally held and controlled by the public sector (i.e., various levels of government). Investable infrastructure opportunities include securities generated by the privatization of existing infrastructure or by the private creation of new infrastructure via private financing.

Finally, while some descriptions of real assets limit the category to tangible assets, we define real assets to include intangible assets, such as intellectual property (e.g., patents, copyrights, and trademarks, as well as music, film, and publishing royalties). The opposite of a real asset is a financial asset, not an intangible asset. A **financial asset** is not a real asset—it is a claim on cash flows, such as a share of stock or a bond. Intangible assets, such as technology, directly facilitate production, thereby creating increased value. It can be argued that intangible assets represent a very large and rapidly increasing role in the wealth of society.

1.2.2 Hedge Funds

Hedge funds represent perhaps the most visible category of alternative investments. While hedge funds are often associated with particular fee structures or levels of risk taking, we define a **hedge fund** as a privately organized investment vehicle that uses its less regulated nature to generate investment opportunities that are substantially distinct from those offered by traditional investment vehicles, which are subject to regulations such as those restricting their use of derivatives and leverage. Hedge funds represent a wide-ranging set of vehicles that are differentiated primarily by the investment strategy or strategies implemented. Managed futures funds are included as hedge funds in Part 3.

1.2.3 Private Equity

The term **private equity** is used in the CAIA curriculum to include both equity and debt positions that, among other things, are not publicly traded. In most cases, the debt positions contain so much risk from cash flow uncertainty that their short-term return behavior is similar to that of equity positions. In other words, the value of the debt positions in a highly leveraged company, discussed within the category of private equity, behaves much like that of the equity positions in the same firm, especially in the short run. Private equity investments emerge primarily from funding new ventures, known as venture capital; from the equity of leveraged buyouts of existing businesses; from mezzanine financing of leveraged buyouts or other ventures; and from distressed debt resulting from the decline in the health of previously healthy firms.

Venture capital refers to support via equity financing to start-up companies that do not have a sufficient size, track record, or desire to attract capital from traditional sources, such as public capital markets or lending institutions. Venture capitalists fund these high-risk, illiquid, and unproven ideas by purchasing senior equity stakes while the start-up companies are still privately held. The ultimate goal is to generate large profits primarily through the business success of the companies and their development into enterprises capable of attracting public investment capital (typically through an initial public offering, or IPO) or via their sale to other companies. In the context of investment management, venture capital is sometimes treated as a separate asset class from other types of private equity.

Leveraged buyouts (LBOs) refer to those transactions in which the equity of a publicly traded company is purchased using a small amount of investor capital and a large amount of borrowed funds in order to take the firm private. The borrowed funds are secured by the assets or cash flows of the target company. The goals can include exploiting tax advantages of debt financing, improving the operating efficiency and the profitability of the company, and ultimately taking the company public again (i.e., making an IPO of its new equity). Management buyouts and management buy-ins are types of LBOs with specific managerial changes.

Mezzanine debt derives its name from its position in the capital structure of a firm: between the ceiling of senior secured debt and the floor of equity. Mezzanine debt refers to a spectrum of risky claims, including preferred stock, convertible debt, and debt that includes equity kickers (i.e., options that allow investors to benefit from any upside success in the underlying business, also called hybrid securities).

Distressed debt refers to the debt of companies that have filed or are likely to file in the near future for bankruptcy protection. Even though these securities are fixed-income securities, distressed debt is included in our discussion of private equity because the future cash flows of the securities are highly risky and highly dependent on the financial success of the distressed companies, and thus share many similarities with common stock. Private equity firms investing in distressed debt tend to take longer-term ownership positions in the companies after converting all or some portion of their debt position to equity. Some hedge funds also invest in distressed debt, but they tend to do so with a shorter-term trading orientation.

1.2.4 Structured Products

Structured products are instruments created to exhibit particular return, risk, taxation, or other attributes. These instruments generate unique cash flows as a result of partitioning the cash flows from a traditional investment or linking the returns of the structured product to one or more market values. The simplest and most common example of a structured product is the creation of debt securities and equity securities in a traditional corporation. The cash flows and risks of the corporation's assets are structured into a lower-risk fixed cash flow stream (bonds) and a higher-risk residual cash flow stream (stock). The structuring of the financing sources of a corporation creates option-like characteristics for the resulting securities.

Collateralized debt obligations (CDOs) and similar instruments are among the best-known types of structured products. CDOs partition the actual or synthetic returns from a portfolio of assets (the collateral) into securities with varied levels of seniority (the tranches).

Credit derivatives, another popular type of structured product, facilitate the transfer of credit risk. Most commonly, credit derivatives allow an entity (the credit protection buyer) to transfer some or all of a credit risk associated with a specific exposure to the party on the other side of the derivative (the credit protection seller). The credit protection seller might be diversifying into the given credit risk, speculating on the given credit risk, or hedging a preexisting credit exposure.

Historically, the term *structured products* has referred to a very broad spectrum of products, including CDOs and credit derivatives. In recent decades, however, the term is being used to describe a narrower set of financially engineered products. These products are issued largely with the intention of meeting the preferences of investors, such as providing precisely crafted exposures to the returns of an index or a security. For example, a major bank may issue a product designed to offer downside risk protection to investors while also offering the potential for the investor to receive a portion of the upside performance in an index. Part 5 discusses these specially designed structured products along with more generic structured products, including credit derivatives and CDOs.

When the structuring process creates instruments that do not behave like traditional investments, those instruments are considered alternative investments.

1.2.5 Limits on the Categorizations

These four categories of alternative investments are the focus of the CAIA curriculum. While the categorization helps us understand the spectrum of alternative investments, the various alternative investment categories may overlap. For example, some hedge fund portfolios may contain substantial private equity or structured product exposures and may even substantially alternate the focus of their holdings through time. This being said, the four categories discussed in the previous sections represent the investment types central to the Level I curriculum of the CAIA program.

1.3 STRUCTURES AMONG ALTERNATIVE INVESTMENTS

The previous sections defined the category of alternative investments by describing the investments that are or are not commonly thought of as alternative. But the question remains as to what the defining characteristics of investments are that cause them to be classified as alternative. For example, why is private equity considered an alternative investment but other equities are considered traditional investments? What is the key characteristic or attribute that differentiates these equities? The answer is that traditional equities are listed on major stock exchanges whereas private equity is not. We use the term *structure* to denote this attribute and others that differentiate traditional and alternative investments. In this case, traditional equities possess the characteristic of public ownership, which can be viewed as a type of institutional structure.

Because structures are a descriptive and definitional component of alternative investments, they are a crucial theme to our analysis of asset classes. Structures denote a related set of important aspects that identify investments and distinguish them from other investments. There are five primary types of structures:

1. Regulatory structures
2. Securities structures
3. Trading structures
4. Compensation structures
5. Institutional structures

For example, mutual funds are usually considered to be traditional investments, and hedge funds are usually considered to be alternative investments. But many hedge funds invest in the same underlying securities as many mutual funds (e.g., publicly traded equities). So if they have the same underlying investments, what distinguishes them? If we look at the funds in the context of the five structures, we can develop insight as to the underlying or fundamental differences. For example, hedge funds are less regulated, often have different compensation structures, and often have highly active and esoteric trading strategies or structures. Each of these attributes is viewed as a structure in this book.

When we analyze a particular type of investment, such as managed futures, we should think about the investment in the context of these various structures: Which structural aspects are unique to managed futures, how do particular structural aspects affect managed futures returns, and how do particular structural aspects cause us to need new or modified methods for our analysis?

1.3.1 Structures as Distinguishing Aspects of Investments

Exhibit 1.2 illustrates the concept of structures. On the left-hand side is the ultimate source of all investment returns: real assets and the related economic activity that generates and underlies all economic compensation to investors. The cash flows from those assets emanate toward the investors on the right. The placement of the second box illustrates conceptually the idea that various structures alter, shape, and

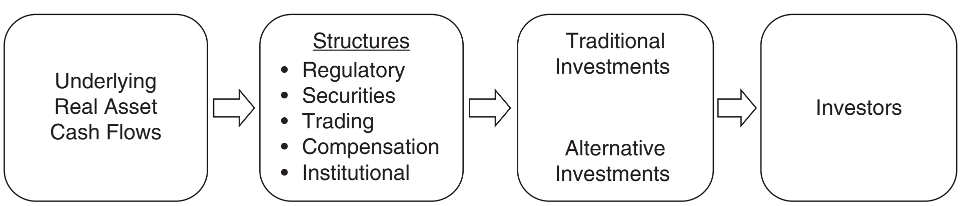

EXHIBIT 1.2 Structures Distinguish Alternative Investments from Traditional Investments