

Alternative Beta Strategies and Hedge  
Fund Replication

**Lars Jaeger**  
*with Jeffrey Pease*



John Wiley & Sons, Ltd



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# Preface

The increased academic and nonacademic effort in modeling and understanding hedge fund return sources has finally reached Wall Street. A new buzzword is out and has quickly captured the imagination of product providers and investors alike: ‘hedge fund replication’. In the broadest sense, replicating hedge fund strategies means replicating their return sources and corresponding risk exposures. However, there is still no coherent picture of what hedge fund replication means in practice, what its premises are, how to distinguish different approaches, and where this can lead us to. In this book I will try to change that.

Because investors must understand return sources to achieve replication, I will present them in considerable detail. Thus the early chapters of this book cover some of the same, though updated, ground as two of my earlier books: *Risk Management in Alternative Investment Strategies* (2002) and *Through the Alpha Smokescreen: A Guide to Hedge Fund Return Sources* (2005). The discussion of replication techniques and their practical application, however, is entirely new.

## **How this book is different**

As hedge funds grow, so does the number of books about them. But it has taken a long time to see a first handbook dedicated to the topic of replicating hedge fund strategies. This is in part because the financial community is only now coming around to the view that hedge fund replication is possible. As far as I know, this is the first book on the topic. It uniquely focuses on replication, explaining along the way the return sources (and systematic risks) that make replication possible. If you wish to understand the background of the new discussion on hedge fund replication and how to derive the returns of many hedge fund strategies at much lower cost, to differentiate the various underlying approaches, or simply to understand in greater detail how hedge fund replication can improve your own investment process into hedge funds, you have come to the right place.

## **Who needs it?**

Anyone who wants to understand hedge funds and the new hedge fund replication discussion can benefit from this book. It is aimed at financial professionals who work with or allocate assets to hedge funds. But it will also be helpful to traditional asset managers, financial analysts,

consultants, regulators, legal authorities, advisors, financial journalists, and students. Because I examine a wide range of strategies, even hedge fund experts are likely to learn something new.

### **What do you need to know first?**

All you need to benefit from this book is a basic knowledge of financial markets. To serve a broad audience, I have minimized the math and defined any technical jargon. On the way, I will also explain what hedge funds really are and detail how different strategies derive their returns. In the process I hope to dispel popular misperceptions of hedge funds as either a magic money machine or a scam. If you understand the fundamentals of these three things: traditional investment vehicles such as equity, fixed income, foreign exchange and commodities; plain vanilla derivatives such as options and futures; and the core principles of modern portfolio theory – then you are good to go.

### **What is in the book**

This book is divided into three parts: Hedge Fund Background; Return Sources; and Replication Techniques.

The first part consisting of Chapters 1 and 2 – Hedge Fund Background – provides a short course in what hedge funds actually are and how they operate. It will arm you with the background knowledge you will need to absorb the rest of the book. Chapter 2 is an overview of the hedge fund industry and its recent developments. It also dispels common myths and misperceptions about hedge funds.

Armed with this background, the Return Sources part illuminates, unsurprisingly, the sources from which hedge funds derive their returns. Most importantly this section shows that the majority of hedge fund returns derive from systematic risk exposure rather than manager ‘alpha’. Chapter 3 describes the individual hedge fund strategies in some detail, while Chapter 4 examines their past performance characteristics. Chapter 5 discusses the background of the capital markets theory and explains the economic reasons for hedge fund returns. Hedge fund managers and veterans might choose to skip ahead, but both the Background and Return Sources parts will be useful if you are either new to hedge funds, or simply want a refresher before heading into new territory.

The third part – Replication Techniques – is the beating heart of this book. It presents both conventional and emerging approaches to replicating hedge fund returns. Chapter 6 presents the first generation of hedge fund replications products, and points out the pitfalls of the linear factor model approach that underlies them. Chapters 7 and 8 introduce alternative approaches to hedge fund replication, designed to overcome some of the problems of previous models, and also discuss the limitations of hedge fund replication. Chapter 9 is a practical guide for using your new replication knowledge to construct optimal portfolios. You will learn about a new ‘core–satellite’ investment approach, which optimizes returns and costs by integrating sector allocation and manager selection. This chapter is especially useful for the fund-of-funds manager.

With hedge fund replication going mainstream, investors are given a choice among several different views and approaches. But despite its immense importance, there is not yet a book out which gives readers clear guidance on this topic. This is what motivated me to write this book.

This book represents untold hours of effort by many persons other than myself, and I would like to thank everybody who helped me to complete this work. The first person I owe gratitude

is my dear wife, Julie, who provided love, understanding and support throughout many hours of writing. Secondly, I owe particular gratitude to Jeffrey Pease, my brother-in-law, who spent countless hours editing and rewriting the manuscript. Without him, the book would not be in the form and language presented here. Furthermore, I would like to acknowledge my colleagues and partners at Partners Group, who were the joint architects of many of the ideas presented in this book, particularly Michel Jacquemai for numerous years of collaboration, Dr Stephan Müller for valuable support and ideas on the topic as well as in the implementation of these ideas into a real-world trading environment, and Björn Imbjerowic for helping on some calculations presented.

Finally, I thank my editor at Wiley, Pete Baker, for his enthusiastic support of this book and for assistance in editing and reviewing the manuscript. Despite the extensive support I received, I take responsibility for any mistakes, misrepresentation, or omissions in the book.

Dr Lars Jaeger  
*September 2008*



# Breaking the Black Box

This is a handbook for replicating the returns of hedge funds at considerably lower cost. Once thought to be impossible, hedge fund replication is fast becoming a buzzword in the finance community – driven by the growing realization that most hedge fund returns come from risk premiums rather than manager alpha. Not since the emergence of index funds have so many people gotten active about being ‘passive’!

However, the term ‘hedge fund replication’, while catching the imagination of investors and product providers, is also a source of confusion. What is it that we want to replicate: the past time series properties of past hedge fund returns, the distributional properties of the past hedge fund performance, or maybe the economic sources of hedge fund returns? This book will shed some light on this legitimate question.

Because replication means modeling beta-driven returns, it requires a thorough understanding of hedge return sources and their associated risks. So I will pave the way for replication by first reviewing what hedge funds really are (and aren’t), and explaining the return sources of common strategies. By opening the black box of hedge funds, I also hope to dispel two conflicting but popular misconceptions. Hedge funds as a class are neither magic money machines nor scams but simply innovative investment vehicles whose characteristics can, in most cases, be understood, analyzed, modeled, and duplicated. I hope to help you do just that.

## 1.1 NEW POPULARITY, OLD CONFUSION

Not so long ago, the investment industry did not need to worry what people thought about hedge funds – because most people did not think about them at all! Hedge fund managers operated with little scrutiny and disclosed very little of their strategies. As recently as 10 years ago, hedge funds were limited to a few very wealthy individuals. These super-rich generally accepted high fees and a ‘black box’ lack of transparency as the fair tribute to the hedge fund wizards, and their apparently market-proof returns. So investors with millions at stake left the wizards alone to work their magic. No wonder that average people, if they had even heard of hedge funds, thought of them as mystical money machines for the rich.

That old world is gone – blown apart by huge success and a few truly spectacular failures. Hedge fund investment volume has multiplied fifteenfold in as many years. An investment once limited to the wealthy has been democratized. Even many staid institutional investors now see hedge funds as an essential element of their portfolios. This mainstreaming has fueled such unprecedented growth that hedge funds are today the fastest growing ‘asset class’ in the investment world. Some researchers even hail hedge funds as a ‘new paradigm in asset management’,<sup>1</sup> and more and more investors see them as a necessary element of their overall portfolio.

Now the bad news. Despite all of this growth and acclaim, in the popular imagination the very term ‘hedge fund’ carries a whiff of scandal. Some European politicians went so far as

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<sup>1</sup> See, for example, the introduction to A. Ineichen, *Absolute Returns* (2002), *Asymmetric Returns* (2007).



to brand hedge fund managers as ‘locusts’.<sup>2</sup> The popular business press heavily covered such high-profile fund meltdowns as Long Term Capital Management in 1998, Amaranth Capital in 2006, or Peleton Capital in 2008. In these stories hedge funds are often portrayed as a scam, the likely cause of the next investment bubble, or even a threat to the very architecture of the global capital markets.

What accounts for these wildly differing views of hedge funds? If they are successful enough to draw ever more investment, why do so many people view them so negatively? Certainly the extraordinarily rich compensation hedge fund managers receive – successful fund managers are among the richest of Wall Street billionaires – causes some jealousy. And some even refer to hedge funds as a ‘compensation scheme rather than an asset class’. But there is more at work here. The press and public also periodically criticize the compensation and perks of traditional industry CEOs or investment managers as well. But the tone of coverage of a Jack Welch or Warren Buffet is more often admiring than critical; and the basic premise that a GE or Berkshire Hathaway should exist at all is not questioned. Why does there seem to be a special circle of purgatory reserved for those who make their living in hedge funds?

The answer is that most investors, business writers, and even many investment managers outside the hedge fund arena simply do not know how hedge funds make money. And hedge fund managers’ traditionally low transparency has only aggravated this problem. Hedge funds draw such heated debate because they have produced both extraordinary gains and spectacular losses by means that most people simply do not understand well enough.

## 1.2 THE CHALLENGES OF UNDERSTANDING HEDGE FUNDS

Hedge funds are by nature challenging to understand. They are both diverse and technically complex involving techniques that the average investor is not entirely familiar with, such as spread strategies, leverage, and short selling, and investing in a variety of different asset classes and instruments at the same time. To make matters worse, hedge fund strategies evolve quickly, so they are changing even as investment professionals struggle to understand them. But these innate challenges have been exacerbated by an artificial one: lack of transparency.

Unfortunately, understanding of hedge funds has been hampered by many hedge fund managers’ unwillingness to disclose details of their strategies. But besides the complexity in the specifics of a hedge fund strategy, the investor can make a simple statement: misunderstanding and myth flourish in darkness. So this ‘black box’ approach on the part of hedge fund managers has perpetuated myths about hedge funds, both positive and negative. Many investors still incorrectly regard hedge funds as an ‘asset class’ that generates returns by mysterious means. Without visibility into actual return sources, investors could only judge these successful managers by their past returns. But the hedge fund battlefield is now littered with the bodies of secretive and once-stellar funds such as LTCM, Quantum, Tiger, Niederhoffer, Beacon Hill, Amaranth, Basis Capital, and very recently in 2008<sup>3</sup> such names as Drake Management,

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<sup>2</sup> A term used by some German politicians (originally applied by the former leader of the German Social Democrats, Franz Münterfering, however, to private equity managers). The popular press usually does not distinguish between private equity and hedge funds although these two investment types are very different in their nature.

<sup>3</sup> Every author has his own time frames in which he writes his books: I happened to finish this book in early 2008, a period in which the industry is about to experience a shake-out that could easily become its largest in history.

Peleton Partners, or Carlyle Capital – all of which failed spectacularly, even as they were supposed to offer market-neutral returns.

But greater transparency is being forced on the industry. These very public failures occurred at just the time when hedge funds broadly expanded their investor base to include institutional investors bearing fiduciary responsibilities. These investors require a better understanding of hedge funds in order to overcome the negative perceptions created by these high-profile disasters, and allocate capital to them. Institutional investors in particular insist on a credible and understandable answer to the question of ‘How do hedge funds earn returns?’ This level of disclosure provides risk-averse investors with the knowledge they need to protect their stakeholders from the next great hedge fund disaster. And only transparency about return sources will allow hedge funds to be universally regarded as a legitimate asset class.

### 1.3 LEAVING ALPHAVILLE

Traditionally hedge funds were thought to derive their returns from manager ‘alpha’: superior expertise and information that allowed wizard-like fund managers to safely take advantage of market inefficiencies. Recent hedge fund returns challenge this notion.

Ironically the surge in capital flows and increased institutional investment to hedge funds come at a time when hedge fund managers have provided only mediocre returns: returns which are significantly below their historical means. In the seven-year period from early 2001 to 2007, hedge fund performance averaged only 300–400 basis points per annum above the risk-free rate. This seems quite anemic compared with the prior seven years’ average of 800–1000 bps above the risk-free rate.<sup>4</sup>

Furthermore, despite the claim of market-neutrality, hedge funds as a group have clearly not escaped the losses in times of global stock market distress. In fact periods of weak hedge fund performance coincide with the most severe equity downturns: October 2005, May/June 2006, February/March 2007, July/August 2007, March 2008. We must now admit that today the average hedge fund portfolio has shown a substantial correlation with the broad equity markets.

Falling returns and increased correlations to the global equity markets naturally lead investors to ask about hedge fund return sources and risk exposures, before allocating capital to them. But even more importantly, it leads investors to ask why the hedge fund managers receive such high fees. Further, can at least some hedge fund returns be duplicated at lower cost?

In the quest to understand and even replicate hedge funds, academics and investors have started to unravel the mystique of hedge fund returns. Shining light into the ‘black box’ reveals an ‘inconvenient truth’: the majority of hedge fund returns stem from risk premiums rather than market inefficiencies – in other words, from ‘beta’ rather than ‘alpha’. In still other words, hedge fund managers earn most of their returns the same way as every other investment manager. They take systematic risks.

This is not to say that alpha doesn’t exist, only that it is far rarer than previously believed. The search for alpha in hedge funds must begin with understanding their betas, the latter constituting an important – if not the most important – source of their returns. This insight has finally caught wider attention. The question that is changing the industry is this: isn’t it possible to construct suitable benchmarks for hedge funds on the basis of an analysis of the underlying systematic risk factors? If so, why not render these models into an investable format?

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<sup>4</sup> Based on Hedge Fund Research data. The result does not change significantly if we consider other indices.

## 1.4 THE BEAUTY OF BETA

The attraction of alpha, if it can be found, is obvious. Who would not want to take advantage of market imperfections and superior information if possible? The charms of beta are more mundane, but also more abundant. The general attraction of beta – be it traditional or alternative – is that it can be systematically described, modeled, and replicated. The particular charm of hedge funds' beta is that it can provide investors with new systematic sources of return which are not highly correlated to traditional risk premia and thus provide efficiency enhancement to their overall portfolio. And the attraction of applying replication techniques to hedge fund profiles can be summarized in one short word: fees! If beta (in alternative form, see below) accounts for 80% of hedge fund returns, and replication can make savings of approximately 2% in management fees and 20% in performance fees, then approximately 2.5% to 3.5% p.a. of total fees can be eliminated. Assuming a gross performance of 9% to 18% on the manager level and roughly 1.5% fees for the replication, this is a dramatic saving against a typical fund of funds' total fee burden.

But as they say in TV commercials: wait, there's more. Replication techniques can also save another layer of fees. In traditional funds of funds, the performance of individual managers is not netted before they are paid their individual performance fees. In other words, the investor participates only 80% with the winning managers, but 100% with the losers.<sup>5</sup> Hedge fund replication saves these asymmetric performance fees or (as I would like to refer to them) 'diversification costs', which range from 0.4% to 0.8% per annum in a typical hedge fund portfolio.

Financing costs for leverage impose a third, even less transparent fee layer onto a traditional fund of funds. Inevitably some hedge funds employ external leverage, while others such as CTAs retain extra cash. As there is no way of netting the collateral across different hedge funds, the fund of funds investor pays the financing spread to the prime broker. Leverage financing comes in at around Libor plus 60–80 bps while the credit on cash yields roughly Libor minus 20 bps. This spread is lost to the investor in the form of lower returns. Replication products avoid this cost simply by trading futures and options on margin. The leverage cost or cash credit of each strategy is correctly allocated. Netting the collateral across the various replicated strategy sectors saves the investor 40–80 bps p.a. – a 'fee retrocession' that comes right out of the pocket of the prime broker, or does not find its way there in the first place.

## 1.5 ALTERNATIVE VERSUS TRADITIONAL BETA

The hypothesis that drives replication is that the majority of hedge funds' returns stem from beta rather than alpha. However, hedge fund beta and traditional beta are often very different. While both are the result of exposure to systematic risks in global capital markets, the beta in hedge fund returns can be significantly more complex than traditional beta. We shall therefore refer to this beta as 'alternative beta' (or synonymously 'hedge fund beta').

Unlike traditional beta, extracting alternative beta requires nonconventional techniques, including short selling, leverage and the use of derivatives. These techniques are often directly used to characterize hedge funds, because hedge funds are among the few market participants allowed to employ them. This grants hedge funds a somewhat exclusive access to alternative

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<sup>5</sup> Performance fees can be seen as a free option given to the hedge fund manager. A portfolio of single options on the various underlyings is surely more expensive than an option on the overall portfolio.

beta returns. So we will label these methods ‘hedge fund techniques’, to contrast them with the conventional long only ‘buy and hold’ investment techniques employed to extract traditional beta. Alternative betas extracted by hedge funds include: various equity style factors, such as small cap versus large cap, value versus growth, and momentum; event risk premia; exposure to volatility (vega risk); commercial hedging demand premia in the global futures markets; and various types of spread positions, such as those employed in FX (foreign exchange) and interest rate carry strategies.

Since alternative beta is so complex, it’s no surprise that much of what is now understood to be alternative beta was once thought to be alpha. This hidden beta was disguised as manager alpha simply because earlier models were not sophisticated enough to account for it any other way. The good news for investors is that this is changing. New modeling approaches capture more alternative beta, and set the stage for a revolution.

## 1.6 THE REPLICATION REVOLUTION

So can investors directly access these beautiful beta characteristics? Can hedge funds be modeled, and those models turned into investments. I propose that the answer is a strong, though qualified, ‘Yes.’ While there is by definition no way to model and replicate alpha – since alpha indicates superior information about market inefficiencies – returns derived from risk premia (beta) can indeed be replicated. The lure of replication is that it allows investors to optimize their portfolios with cheaper beta, and pay higher fees only for justifiably expensive true alpha. Since some returns that were once thought to be alpha-driven have now been revealed as unaccounted beta, fund managers will be increasingly under pressure to prove they deliver the alpha that justifies their rich compensation. Had he been an investor rather than an attorney, Johnny Cochran<sup>6</sup> might have rhymed, ‘If beta explains it away, you should not pay!’

In the Winter 2005 edition of the *Journal of Alternative Investments*, I published an article entitled ‘Factor modelling and benchmarking of hedge funds: Can passive investments in hedge fund strategies deliver?’ The models introduced in this article were not a major innovation on other previously published articles. Academic research had introduced a variety of different models – mostly based on linear factors and regressions – to explain hedge fund returns. But the article did deal with a truly new question: Can we turn these well-known academic models into trading models and thus replicate hedge fund returns?

This was timely because the effort to model and understand hedge fund return sources has now, a couple of years later, finally reached Wall Street. The new buzzword (actually words) ‘hedge fund replication’ is quickly capturing the imagination of product providers and investors alike. Several product providers have either launched, or at least announced their intention to launch what they call ‘passive hedge fund products’ or ‘hedge fund clones’. The underlying claim is that we can represent hedge fund-like returns at significantly lower fee levels to the investors.<sup>7</sup> So this is an opportune time to examine to what extent ‘passive hedge fund products’ are possible.

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<sup>6</sup> For those not familiar with the recent US legal history: Johnny Cochran was the lawyer who defended O. J. Simpson in his murder trial. He became famous for using rhymes in his defence speeches. ‘If it does not fit, you must acquit,’ he said famously after the glove used as evidence against O. J. did not fit him.

<sup>7</sup> See the first article in the *Financial Times* on this topic from November 20 2006, ‘Replication is the new buzz word’.

I have not been shy in the past about publicly expressing the ‘return source hypothesis’ that hedge funds make returns primarily by assuming risks and earning risk premia. If true, this means that hedge fund managers are in fact earning most of their returns in the same fashion as other investors, albeit at a higher level of complexity, across a wider spectrum of risk factors and with a greater degree of freedom from regulatory constraints.<sup>8</sup> This contention flies in the face of the alpha mystique the industry has sometimes used to market itself. But it is wholly consistent with, and in fact is the very heart of, hedge fund replication.

I hope that my previous books have validated this hypothesis, but this one goes further. Building on the return source hypothesis, it shows how investors can harness the beta-driven nature of most hedge fund strategies to reap lower-cost returns. I believe replication strategies based ‘alternative beta’ will become an important element in investors’ hedge fund portfolios. And they may even change the landscape of the hedge fund industry.

## 1.7 FULL DISCLOSURE

Every human being has their biases and vested interests. The best an author can do is to disclose them, so here are mine: I am a participant as well as an observer in the ‘hedge fund replication’ movement. In 2004 I started a fund jointly with my colleagues at Partners Group: The ‘Partners Group Alternative Beta Strategies’ fund was the first of its kind and pioneered the idea of extracting the generic risk premia across the global capital markets, and thus to provide a cost-efficient alternative to traditional hedge funds. It has now been running for more than three and a half years. My involvement in the fund means of course that I have a commercial interest in hedge fund replication;<sup>9</sup> but it also means that I have been intimately involved with testing out the ideas presented here, pioneering many of them. I am proud that its underlying hypothesis has by now found numerous followers, including the larger Wall Street investment banks. That is the last mention you will read of this, my specific fund product, in this book.

But now let’s get started!

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<sup>8</sup> From this perspective it is actually doubtful whether hedge funds constitute a new ‘asset class’ as many protagonists of the industry proclaim.

<sup>9</sup> The reader should let his own judgment guide him on how to judge on solid arguments and commercial interest. I strongly believe that the strength and validity of an argument is independent of who states it. In particular, the person expressing the argument might or might not have a commercial or another type of interest in having a wide spectrum of people following the argument. The validity is independent thereof.

# What Are Hedge Funds, Where Did They Come From, and Where Are They Going?

In order to elaborate on hedge fund return sources and replication techniques, we will first need to define what a hedge fund is and give a brief overview of the universe of hedge fund strategies. This chapter will give the reader the necessary background on hedge funds, including an understanding of where this industry came from and where it stands today. As it happens, defining what constitutes a hedge fund is quite tricky.<sup>1</sup> Nevertheless, before plunging into the discussion of hedge fund return sources and hedge fund replication, we must define the hedge fund universe, discuss some basic characteristics and developments of the industry (this chapter), and describe the individual strategies together with their empirical risk and return characteristics (next two chapters). Only then can we make sense of the details in later chapters. The advanced reader might want to progress to Chapter 5 right away (but may find interesting bits and pieces in this and the next two chapters).

## 2.1 CHARACTERISTICS OF HEDGE FUNDS

The term ‘hedge fund’ denotes a very heterogeneous collection of different investment strategies. The confusion many people have around hedge funds starts with the lack of any precise formal or legal definition of the term. What makes a hedge fund different from other types of investment? In the world of animals, the term ‘guinea pig’ describes a popular pet that is not from Guinea, and is not a pig. In the financial world, the term ‘hedge fund’ is not much more precise. Hedge funds include a heterogeneous collection of investment strategies that do not always hedge, and are almost never structured as funds.

A very common, but nevertheless not very explanatory, description is that hedge funds seek ‘absolute returns’. In other words, the goal of hedge funds is often said to be to generate performance independent of prevailing market conditions. The notion of ‘absolute returns’ means that a hedge fund manager and a traditional equity or bond fund manager have different goals. Typically, the traditional fund manager seeks *relative* returns; in excess of defined benchmarks. For example, an equity mutual fund manager will seek to beat the performance of stock indices. If that manager achieves 15% return in a year when a market index returns 10%, and then loses 5% in a year the market lost 10%, she is said to have had two good years. In contrast, the hedge fund manager cares only about absolute returns. If she achieves 15% growth in year one, and 5% loss in year two, she has had one good year followed by a bad one. Since only absolute returns matter, hedge fund managers use investment strategies designed

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<sup>1</sup> I sometimes find myself during dinner and cocktail party conversations struggling to provide a concise answer when asked for a short *and* comprehensive explanation of the essence of hedge funds.

to yield positive returns regardless of prevailing underlying market conditions. Because hedge funds have absolute performance targets and are not measured against any broad market index, they are also referred to as ‘skill-based investment strategies’.<sup>2</sup>

The notion of ‘absolute return’ has some important implications on how a hedge fund manager defines risk. ‘Absolute returns’ come with ‘absolute risk’. This is in contrast to most traditional equity and bond (long-only) managers who measure risk relative to a benchmark and quantify it correspondingly by the so-called ‘tracking error’. The latter define risk as only the ‘active risk’ element in the portfolio introduced by the manager’s choice of deviation from her benchmark. The exclusion of the ‘passive risk’, i.e. the ‘beta risk’ of the broad market, leaves the largest risk source in a traditional portfolio unconsidered. The traditional manager has neither the incentive nor the means to manage passive risk.<sup>3</sup> That risk is ‘managed’ (i.e. determined) by the market itself. In contrast the hedge fund manager has strong incentives to keep the total risk of the investment under control. Because of a hedge fund’s focus on absolute returns, the first priority of the manager is capital preservation. Hedge funds make consistency and stability of absolute returns, rather than magnitude, their key priorities. A good hedge fund manager follows strict risk controls and concentrates on very particular risks, which he understands and for which he has good experience. He then actively hedges away unwanted and uncontrolled risk such as the risk of broad equity market downturns. That does not, however, mean that hedge funds hedge away all risks in the portfolio. Certain risks (albeit those that might be unrelated to traditional equity or interest rate risks) almost always remain in the portfolio as I will highlight in later chapters.

One can thus argue that it is the notion of active total risk management that sets hedge funds apart from traditional investment techniques. For ‘hedge fund risk management’ the risk-neutral position is cash rather than a benchmark as for passive investing and correspondingly ‘passive risk management’.<sup>4</sup> Hedge funds have a way to manage the downside risk of an investment, i.e. they have some contingency – or exit – plan if something goes surprisingly wrong.

If hedge fund managers seek absolute returns, how do they go about it? The flippant but accurate answer is: in any way they can. The idea of absolute returns offers the only fully inclusive definition of hedge funds precisely because managers are free to seek those returns through a wide variety of different strategies. Hedge fund managers traditionally have enormous flexibility to invest in a wide spectrum of instruments, including equity, fixed income, currencies, commodities, and their derivatives. These instruments are used to execute a wide variety of directional and nondirectional trading strategies with few constraints. However, despite the large flexibility in their investment styles, the majority of the managers actually have a specific skill-set or experience which they apply to a rather limited range of instruments and markets. Most hedge fund managers are strongly specialized in specific niche strategies. But collectively those niches form the broadest and most heterogeneous universe of investment strategies in the world of finance. If you know that a colleague is an equity mutual

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<sup>2</sup> Although almost all hedge fund strategies declare absolute and market-independent returns as their goal, the degree of compliance with this goal varies strongly across the different strategies.

<sup>3</sup> The end investor’s definition of risk, however, is total risk as this is what determines the influence on the terminal level of his wealth.

<sup>4</sup> Risk measured against a benchmark can yield to the counterintuitive effect that an increase of the cash allocation in a portfolio at the expense of a lower stock allocation can lead to a higher risk in the portfolio. A traditional ‘relative’ money manager’s first goal is to not perform worse than the benchmark, even when the benchmark loses 50%.

fund manager, you know that person is investing in a portfolio of stocks. However, knowing that someone is a hedge fund manager does not tell you much about what specific investment strategy that person is pursuing.

Despite these disparate strategies, hedge funds do have some important characteristics in common besides the pursuit of absolute returns. Since I will be devoting the next chapter to specific hedge fund strategies, let us focus for now only on general characteristics the great majority of hedge fund strategies have in common:

- absolute performance targets (as previously discussed);
- application of leverage through borrowing or investments on margin;
- application of short selling techniques for individual securities as well as entire markets or market segments;
- application of derivative instruments, either for the purpose of hedging or for taking leveraged directional positions;
- significant investment by the manager in his/her own strategy and performance-based compensation.

This last characteristic is important because it aligns the hedge fund manager's interest with those of the investors. In addition to a performance-based fee (which usually accounts for a significant part of the overall compensation scheme to the managers), many managers allocate a significant amount of their personal net worth to their own funds in an attempt to demonstrate their commitment to achieve high returns and to assume an appropriate share of the risk.

It is the employment of leverage which causes many investors to view hedge funds as 'high risk' investments. However, not all hedge fund strategies are highly leveraged. Long/Short Equity strategies, for example, do not use much leverage (and may still be risky), while on the other hand, some Relative Value strategies such as Fixed Income Arbitrage may leverage up to 10 times and more the investment amount (and may still display relatively low volatility).

Hedge fund managers obtain leverage through two means: borrowing and margin investment. In the first case the hedge fund manager simply borrows additional capital from his prime broker to obtain a higher exposure to her investment ideas. Secondly, the employment of derivatives enables the hedge fund manager to seek an investment exposure beyond her notional capital as she does not have to collateralize the entire notional position.

Hedge funds are distinctly different from traditional funds in the freedom managers have to sell securities short. Hedge fund managers use short selling as an efficient way to express their negative views and 'bet on losers' while taking long positions in securities they perceive to be the future 'winners'. Further, short selling serves them to hedge out unwanted risks. A hedge fund manager who believes in her stock-picking skills but does not believe she has an edge in market timing, uses 'shorts' to decrease exposure to broad market fluctuations.

An alternative way to hedge against unwanted risks is to use derivatives. The global derivatives markets have grown increasingly complex and have enabled various investors to obtain very specific risk and payout profiles. In traditional investment, most derivative engagements are performed to reduce unwanted risk. However, hedge funds may use derivatives as instruments of speculation as well. It is the occasional well-publicized failure of this type of speculation that has given the general public the notion that derivatives are innately risky, even though this is not the case if we consider the industry as a whole. In fact, hedge fund managers often use derivatives to both increase and reduce risk, hedging out certain unwanted risks while systematically increasing exposure to other wanted risks.



Hedge funds are typically organized as limited partnerships or limited liability companies and are often domiciled offshore for tax and regulatory reasons.<sup>5</sup> They are generally exposed to few regulatory constraints, and many hedge fund managers are not registered with regulatory agencies.<sup>6</sup> An exception is the strategy sector Managed Futures in which the managers are mostly registered with the National Futures Association (NFA) as ‘commodity trading advisors’ (CTAs) or ‘commodity pool operators’ (CPOs).<sup>7</sup> In 2005, the Securities and Exchange Commission (SEC) attempted to change the regulatory framework of hedge funds so that hedge fund management companies would have to register with the SEC. The courts struck down these efforts. Many management companies register anyway, perhaps because they believe that registration gives them credibility, especially with institutional investors. Note that hedge funds in which US pension funds invest must have registered management companies under the US Act.

By now the reader will recognize the inherent inaccuracy of applying the term ‘hedge fund’ to this heterogeneous and dynamic collection of investments. Since hedge fund managers are generally free to seek returns as they see fit, hedge funds almost never serve to provide a zero-risk investment. In many cases hedge fund strategies are rather designed to isolate specific risks to which the manager wishes to be exposed in compensation for expected returns. Most commonly, this is referred to as a ‘risk premium’. We note that *hedge* funds do not always *hedge*. Likewise, since most hedge *funds* are actually organized as limited partnerships or limited liability corporations, they are not, strictly speaking, *funds*. However, it is this characteristic of isolating in certain risks while isolating out others that gives some truth to the term ‘hedge’ for hedge funds. Indeed, the very first hedge funds were equity investment strategies where the manager reduced his exposure to adverse downward movements in the broad market by combining long and short stock positions (the Jones model, see below). Additionally, investors can use hedge funds to provide a hedge (or more precisely a diversification) for other portfolio investments that are more directly exposed to the risk of broad market downturns.

Generally hedge funds are investment strategies that have a clear concept of risk and performance attribution. In some cases they add some small excess returns which are uniquely manager-skill-based to the return mix offered to investors; in other cases they seek expected returns for exposure to certain risks or lower liquidity. As discussed above hedge funds are putting capital at risk where they see their fortunes to be skewed to the upside, while hedging out as much as possible the undesired part of the randomness on the downside. They often do so in niches in which they possess a special expertise and unique skill-set. Without features like short selling or leverage, which are typically part of the hedge fund structure, this would simply not be possible.

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<sup>5</sup> See the article ‘A primer on hedge funds’ by W. Fung and D. Hsieh for more details of hedge funds’ legal and regulatory issues. A good coverage of regulatory issues for hedge funds is given by S. Lhabitant in his book *Hedge Fund Myths*, Wiley (2002).

<sup>6</sup> In the United States, investment advisors with less than 15 clients do not have to register with the Securities and Exchange Commission under the Investment Advisers Act of 1940. The management company in the case of a hedge fund has few clients – only the funds it manages. Consequently, the management company does not have to register with the SEC under the traditional interpretation of ‘clients’.

<sup>7</sup> It should be noted that, as part of the institutionalization of the hedge fund industry, an increasing number of hedge fund managers register themselves with regulatory agencies such as the SEC in the USA or the Financial Services Authority (FSA) in the UK.

Since hedge funds can be used to seek risk as well as to reduce it, some in the field prefer the term ‘Alternative Investment Strategies’.<sup>8</sup> However, for better or worse, the term hedge fund is historically established. So I will continue to use that term in its broader modern meaning throughout this book.

## 2.2 HEDGE FUNDS AS AN ASSET CLASS

The question of whether hedge funds constitute an asset class by themselves, or only extend the range of investment strategies within existing asset classes, is mostly a matter of perspective. Strictly speaking, hedge funds are not a separate asset class because hedge fund managers do not trade any particular new assets or instruments. Instead they execute alternative investment strategies using a set of existing instruments.

Why then do investors increasingly consider hedge funds as a separate ‘alternative’ class in their asset allocation process? Because for the practical investor, asset classes are identified as much by the purpose they serve in a portfolio, as by the identity of the instruments themselves. Hedge funds serve a different purpose in a portfolio from more straightforward investments, even though some of the same instruments may be contained in both the hedge fund and traditional components of the portfolio. So while a purist could argue that hedge funds are not a distinct asset class, because they do not invest in a separate set of assets, the practical investor or portfolio manager often treats them as a separate class for the different purpose they serve in her global portfolio.

## 2.3 TAXONOMY OF HEDGE FUNDS

Due to the complexity and heterogeneity within the industry there is an ongoing debate about how to categorize the hedge fund universe.<sup>9</sup> In the broadest sense, hedge funds are a subset of the global alternative investment universe, which includes all investments beyond traditional bond and equity investments. Figure 2.1 provides an overview of the alternative investment universe and embeds hedge funds in it.

There have been numerous professional and academic attempts to resolve the question of strategy definition and classification for hedge funds. These attempts include sophisticated statistical techniques such as clustering based on ‘sum of square minimization’<sup>10</sup> and asset-based style factor models.<sup>11</sup> Partly as a result of these studies, as well as managers’ own classifications and ‘brand name’ marketing by financial organizations, more or less widely

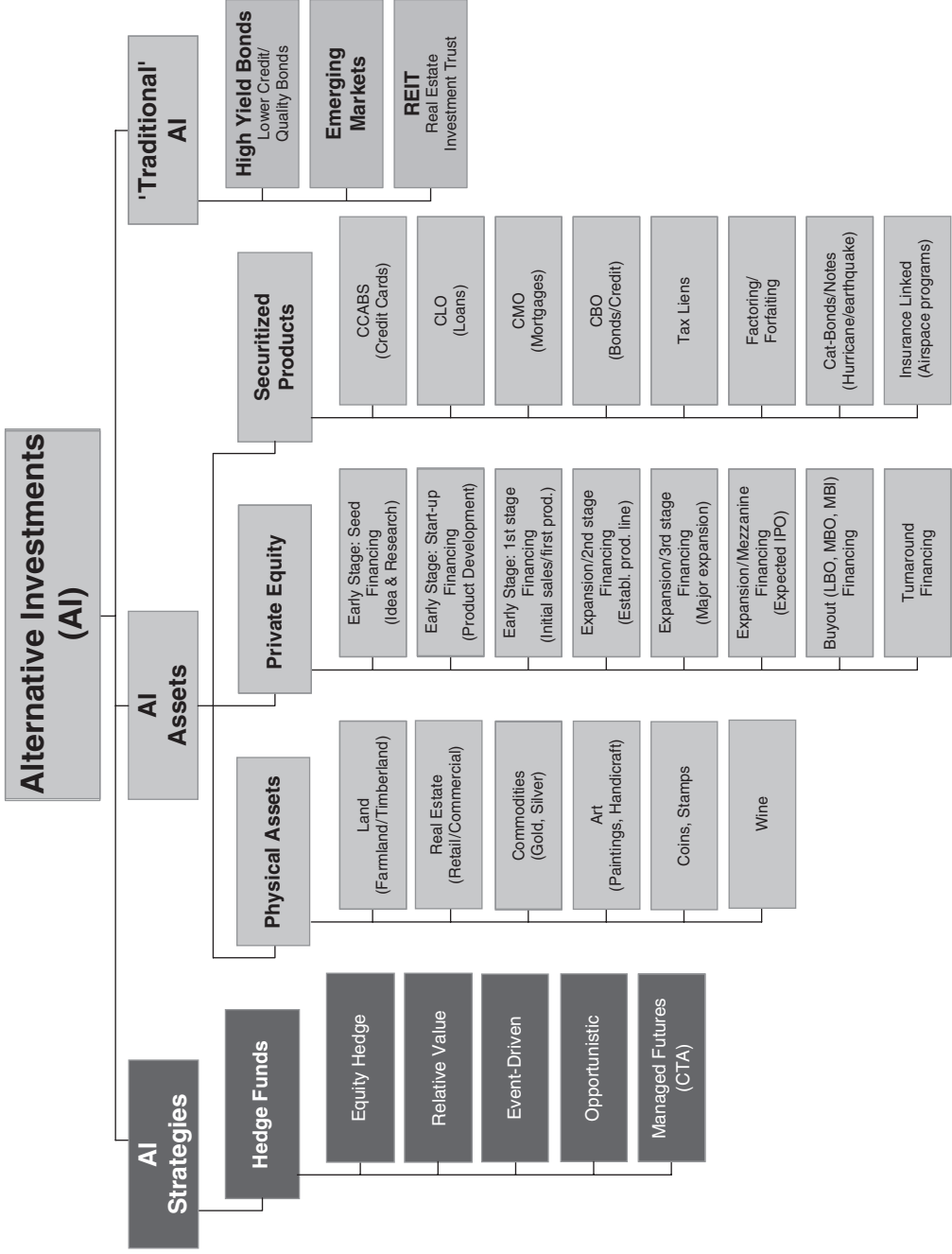
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<sup>8</sup> As I did myself in one of my previous books, *Risk Management in Alternative Investment Strategies* (2002), or more recently A. Ineichen does in *The Critique of Pure Alpha* (2005).

<sup>9</sup> A discussion of the characteristics of hedge fund strategies (including their historical return properties) and a hedge fund classification scheme is presented by A. Ineichen in ‘In Search of Alpha’, October 2000 (updated and extended version ‘The Search for Alpha Continues’, September 2001, and the book *Absolute Returns*, 2002, by the same author).

<sup>10</sup> See the paper ‘Hedge funds with style’ by S. Brown and W. Goetzmann (2003) and references therein.

<sup>11</sup> See the following papers: ‘Asset-based hedge fund styles and portfolio diversification’, by W. Fung and D. Hsieh (2001); ‘Characteristics of risk in risk arbitrage’ by M. Mitchell, T. Pulvino (2001); ‘The risk in hedge fund strategies: Theory and evidence from trend followers’ by W. Fung and D. Hsieh (2001). A good summary of asset-based style factors can be found in the following publication: W. Fung, D. Hsieh, ‘The risk in hedge fund strategies: alternative alphas and alternative betas’, in *The New Generation of Risk Management for Hedge Funds and Private Equity Investment*, ed. by L. Jaeger (2003).



**Figure 2.1** Hedge funds in the universe of alternative investments

accepted general classification schemes have emerged. Figure 2.2 presents a classification scheme that is probably very close to the industry's consensus. An important differentiating factor between the different strategies is the degree of directional trading. While the returns of Equity Hedge and Opportunistic strategies depend strongly on financial markets' directions, Relative Value strategies earn returns largely independent of those. The 'Equity Hedged' strategies, Long/Short Equity, Equity Market Neutral, and Short Selling, are strategies with a varying degree of directional bias to equity markets. 'Relative Value' strategies (Convertible Arbitrage, Fixed Income Arbitrage, Volatility Arbitrage, Capital Structure Arbitrage) in contrast capitalize on various 'spread' relationships and arbitrage opportunities in equity and fixed income markets employing various 'arbitrage' techniques to benefit from changing spread relationships between similar or related instruments.<sup>12</sup> Relative Value strategies are 'market neutral' (or 'non-directional') in that they do not have any directional dependency on the underlying financial markets. 'Event Driven' strategies (Distressed Securities, High Yield Credit, Spin-offs, Merger Arbitrage, and private placement arbitrage strategies under Regulation D of the US Securities Act) capitalize on the occurrence of special events such as mergers, spin-offs, distress or additional (often complex) financing rounds that impact the valuation of particular securities. 'Opportunistic' strategies describe a more heterogeneous class of strategies that take position according to the manager's perception of macroeconomic situations and corresponding profit opportunities. The most prominent strategy in this sector is Global Macro, attempting to benefit from the anticipated price movements across liquid global capital markets using a top-down approach that concentrates on forecasting how global macroeconomic and political events affect the valuations of financial instruments. I also include the growing class of multi-strategy hedge funds in this category. Finally, 'Managed Futures' programs (also called 'commodity trading advisors', CTAs) are investment strategies which assume long and short positions in exchange-traded derivatives, in particular futures and options on commodities and 'financials' (equity, fixed income, and foreign exchange).

In contrast to some classification schemes used by index providers, I do not classify hedge funds operating in Emerging Markets as a separate hedge fund category. Hedge funds with a focus on Emerging Markets can easily be classified in one of the sectors presented, as they trade along the same principles as their colleagues in the developed markets. Most of them operate with a Long/Short Equity or Global Macro strategy, while Fixed Income Arbitrage strategies in emerging markets have started to emerge more recently. Emerging Markets have for long displayed too many constraints and restrictions for hedge funds to operate their strategies properly. Specifically, short selling possibilities are limited and most derivatives markets do not display the necessary liquidity. It is therefore no surprise that most Emerging Markets equity hedge funds have come with a strong long bias and often emerged out of a previous long-only focus. That being said, however, we can observe an increased engagement of hedge funds employing their full spectrum of techniques in emerging markets in recent years.

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<sup>12</sup> Unfortunately, the term 'arbitrage' as used within the hedge fund community is a misnomer. It does not refer to its original meaning, which is a risk-less trading profit above the risk-free rate of return. Here the term 'arbitrage' is used with the same meaning as 'relative value trading': buy an undervalued instrument and simultaneously sell an overvalued instrument and benefit from the probable (and statistically expected) reversion of their 'fair value'. But of course, this is by no means free of risk. The spread (mis-valuation) can become larger which leads to losses in the trading positions. This misuse of the word 'arbitrage' by the hedge fund community can lead to rather amusing oxymorons such as the term 'risk arbitrage' (another expression for 'merger arbitrage'), which literally translates into 'risky risk-free profit'.